WILSONVILLE
OREGON

29799 SW Town Center Loop E, Wilsonville, OR 97070
Phone: 503.682.4960 Fax: 503.682.7025
Web: www.ci.wilsonville.or.us

Planning Division
Development Permit Application

Final action on development application or zone change is required within 120 days in accordance with provisions of ORS 227.175

A pre application conference is normally required prior to submittal of an application. Please visit the City's website for submittal requirements

Pre-Application Meeting Date: _____

Incomplete applications will not be scheduled for public hearing until all of the required materials are submitted.

Applicant:
Name: Chris Sanford
Company: BTC III Grahams Ferry IC LLC
Mailing Address: 4675 MacArthur Court, Suite 625
City, State, Zip: Newport Beach CA 92660
Phone: 949.892.4920 Fax: _____
E-mail: chris.sanford@blackcreekgroup.com

Property Owner:
Name: Gary S. Rychlick, Susan M. Rychlick, and Gary S. Rychlick as Trustee of the Eileen Rychlick Trust dated September 21, 1998
Mailing Address: 25190 SW Grahams Ferry Road
City, State, Zip: Sherwood OR 97140
Phone: 503-329-3359 Fax: _____
E-mail: grychlick@gmail.com

Authorized Representative:
Name: Lee Leighton
Company: Mackenzie
Mailing Address: 1515 SE Water Avenue, Suite 100
City, State, Zip: Portland, OR 97214
Phone: 971-346-3727 Fax: _____
E-mail: LLeighton@mcknze.com

Property Owner's Signature: Gary Rychlick (Trustee)
Printed Name: Susan Rychlick, Gary Rychlick Rychlick Trust Via Gary Rychlick Date: _____

Applicant's Signature: (if different from Property Owner)
Printed Name: _____ Date: _____

Site Location and Description:
Project Address if Available: 25190 and 25020 SW Grahams Ferry Road, Sherwood Or 97140 Suite/Unit _____
Project Location: South of SW Cahalin Road between Grahams Ferry and Garden Acres Roads, Coffee Creek Industrial District
Tax Map #(s): 3S103D Tax Lot #(s): 000100 County: ☒ Washington ☐ Clackamas

Request:
Annexation, Zone Map Amendment, Planned Development Stage I & II, Site Design Review, and related development applications for a single-building speculative industrial development consistent with the Coffee Creek Industrial Area Plan.

Project Type: **Class I** ☐ **Class II** ☐ **Class III** ☒
☐ Residential ☐ Commercial ☒ Industrial ☐ Other: _____

Application Type(s):

☒ Annexation	☐ Appeal	☐ Comp Plan Map Amend	☐ Parks Plan Review
☐ Final Plat	☐ Major Partition	☐ Minor Partition	☐ Request to Modify Conditions
☐ Plan Amendment	☐ Planned Development	☐ Preliminary Plat	☒ Site Design Review
☐ Request for Special Meeting	☐ Request for Time Extension	☒ Signs	☒ Stage II Final Plan
☐ SROZ/SRIR Review	☐ Staff Interpretation	☒ Stage I Master Plan	☐ Variance
☒ Type C Tree Removal Plan	☐ Tree Permit (B or C)	☐ Temporary Use	☐ Other (describe)
☐ Villebois SAP	☐ Villebois PDP	☐ Villebois FDP	_____
☒ Zone Map Amendment	☒ Waiver(s)	☐ Conditional Use	

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Mailing Address: 25190 SW Grahams Ferry Road
City, State, Zip: Sherwood OR 97140
Phone: 503-329-3359 Fax: _____
E-mail: grychlick@gmail.com

Property Owner's Signature:

Printed Name: _____ Date: _____

Applicant's Signature: (if different from Property Owner)

Printed Name: Chris Sanford Date: 12/6/21

Site Location and Description:

Project Address if Available: 25190 and 25020 SW Grahams Ferry Road, Sherwood Or 97140 Suite/Unit _____
Project Location: South of SW Cahalin Road between Grahams Ferry and Garden Acres Roads, Coffee Creek Industrial District
Tax Map #(s): 3S103D Tax Lot #(s): 000100 County: ☒ Washington ☐ Clackamas

Request:

Annexation, Zone Map Amendment, Planned Development Stage I & II, Site Design Review, and related development applications for a single-building speculative industrial development consistent with the Coffee Creek Industrial Area Plan.

Project Type: Class I ☐ Class II ☐ Class III ☒

☐ Residential ☐ Commercial ☒ Industrial ☐ Other: _____

Application Type(s):

☒ Annexation	☐ Appeal	☐ Comp Plan Map Amend	☐ Parks Plan Review
☐ Final Plat	☐ Major Partition	☐ Minor Partition	☐ Request to Modify Conditions
☐ Plan Amendment	☐ Planned Development	☐ Preliminary Plat	
☐ Request for Special Meeting	☐ Request for Time Extension	☒ Signs	☒ Site Design Review
☐ SROZ/SRIR Review	☐ Staff Interpretation	☒ Stage I Master Plan	☒ Stage II Final Plan
☒ Type C Tree Removal Plan	☐ Tree Permit (B or C)	☐ Temporary Use	☐ Variance
☐ Villebois SAP	☐ Villebois PDP	☐ Villebois FDP	☐ Other (describe)
☒ Zone Map Amendment	☒ Waiver(s)	☐ Conditional Use	_____

MACKENZIE.

ANNEXATION
ZONE MAP AMENDMENT
STAGE I & II PLANNED DEVELOPMENT REVIEW
SITE DESIGN REVIEW
WAIVER REQUESTS
TYPE C TREE PLAN DRB REVIEW
CLASS 3 SIGN PERMIT

To
City of Wilsonville

For
BTC III Grahams Ferry IC LLC

Dated
December 20, 2021
(Revised February 14, 2022)
(Revised March 23, 2022)

Project Number
2210157.00

MACKENZIE
Since 1960

RiverEast Center | 1515 SE Water Ave, Suite 100, Portland, OR 97214
PO Box 14310, Portland, OR 97293 | T 503.224.9560 | www.mcknze.com

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ATTACHMENTS

I. PROJECT SUMMARY

Applicant:	BTC III Grahams Ferry IC LLC Attn: Chris Sanford 4675 MacArthur Court, Suite 625 Newport Beach CA 92660
Owner:	Gary S. Rychlick as Trustee of the Eileen Rychlick Trust dated September 21, 1998 Gary S. Rychlick, an individual Susan M. Rychlick, an individual 25190 SW Grahams Ferry Road Sherwood OR 97140
Site Address:	25190 SW Grahams Ferry Road, Sherwood OR 97140
Tax Map/Lot:	3S1 03D 00100 (Washington County)
Site Acreage:	Per Assessor: 8.12 acres; Per Survey: 8.17 acres
Comprehensive Plan Designation:	Industrial
Current Zoning:	Washington County: Future Development 20-Acre District (FD-20)
Proposed Zoning:	Wilsonville Planned Development Industrial – Regionally Significant Industrial Area (PDI-RSIA) with Coffee Creek Industrial Design Overlay District
Adjacent Zoning:	Washington County FD-20 to the north, south, east, and west
Existing Structures:	Residence with accessory agricultural buildings
Request:	Land use approvals for construction of an approximately 148,279 SF warehouse/manufacturing building with ancillary office space: ▪ Annexation ▪ Zone Map Amendment ▪ Stage I and Stage II Planned Development Review ▪ Site Design Review ▪ Waiver Requests ▪ Type C Tree Plan DRB Review ▪ Class 3 Sign Permit
Project Contact:	Mackenzie, Attn: Lee Leighton, AICP 1515 SE Water Avenue, Suite 100 Portland, Oregon 97214 LLeighton@mcknze.com P: 503-224-9560 (direct: 971-346-3727)

II. INTRODUCTION

Description of Request

This request is for annexation and development review for a speculative industrial development project on an 8.17-acre site in the Coffee Creek Industrial District. The applicant intends to proceed with development as soon as City approval processes can be completed.

This request includes applications for the following land use approvals in a consolidated/concurrent process:

- **Annexation** of the 8.17-acre site and the abutting full width of Grahams Ferry Road into the City of Wilsonville.[1]
- **Zone Map Amendment** to apply the City's Planned Development – Regionally Significant Industrial Area/Coffee Creek Industrial Design Overlay District designation to the property immediately upon annexation.
- **Stage I** and **Stage II Planned Development Review.** Because this is a speculative industrial development proposal, the specific use of the property is not known at this time. The building is being designed to meet the needs of a High-Cube Parcel Fulfillment Center Sort Warehouse facility, but it could also be suitable for more traditional warehousing or for a mix including some uses in the manufacturing category. This application requests approval for the full list of potential uses allowed in the PD-RSIA Zone, to allow flexibility for efficient future tenanting on an ongoing basis.
- **Site Design Review** for a new, single-phase development of an approximately 148,279 square foot speculative industrial building.
- **Waivers** from specific Code standards, for approval under Guidelines in the Coffee Creek Industrial Design Overlay District Pattern Book:
    1. **Parcel Access:** to accommodate vehicle turning movements, the southern driveways onto the proposed Supporting Street need to be wider than the maximum 24' width in the Code standard.
    2. **Parking Location:** parking adjacent to SW Garden Acres Road (Addressing Street) exceeds the Code maximum of 20 spaces allowed.
    3. **Parking Setback:** the parking adjacent to SW Garden Acres Road is not set back 20' from the right-of-way.
    4. **Grading and Retaining Walls:** due to the property's topography, some portions of the retaining walls necessary to create a flat site for a large building and industrial operations will exceed the maximum height and lineal feet limitations in the Code standards.
    5. **Location, Screening, and Size of Utilities and Services:** the proposed trash enclosure is smaller than the Code standard, and its location adjacent to SW Grahams Ferry Road (Addressing Street) does not meet the Code standard.
    6. **Height of Entrance Canopy**: the proposal to align the height of the entrance canopies and office interior ceilings at the 12' height deviates from the minimum 15' Code standard.
    7. **Height of Office Interior**: the proposal to align the height of the entrance canopies and office interior ceilings at the 12' height deviates from the minimum 15' Code standard.

[1] The SW Cahalin Road and SW Garden Acres Road rights-of-way have previously been annexed into the City. The applicant is also submitting a separate request to Metro to annex the property into the Metro District Boundary.

- **Type C Tree Plan DRB Review** for proposed tree conservation, removal, and mitigation replanting consistent with the above development plans.
- **Class 3 Sign Permit** to identify locations and sizes/proportions of proposed nonexempt signs; actual sign permitting will be deferred until tenanting of the building.

Following the introductory sections, the recitation of Code provisions and applicant's responses are organized based on the sequence presented above.

Existing Site and Surrounding Land Use

The subject property is a single 8.17-acre tax lot located south of SW Cahalin Road between Grahams Ferry Road and Garden Acres Road, in the Coffee Creek Industrial District. It is currently zoned FD-20 under Washington County Zoning.

The subject property has been in residential use since 1950 ("Year Built" per Washington County Assessment Records). Because the City has previously annexed two (2) abutting rights-of-way, the City Limit Line currently runs along the property's north boundary (SW Cahalin Road right-of-way) and its east boundary (SW Garden Acres Road right-of-way). The SW Grahams Ferry Road right-of-way is not within the City Limit at this time; the applicant proposes to include its full width adjacent to the property frontage in the territory to be annexed.

Other than the two (2) rights-of-way discussed above, the only adjacent property that is within the City Limit at this time is the Oregon Correctional Facility located northwest of SW Cahalin Road and SW Grahams Ferry Road. It is designated Public in the Comprehensive Plan Map, and it is in the City's Public Facility – Corrections (PFC) Zone. Neighboring parcels to the north, east, south, and west of the subject property are designated Industrial in the City's Comprehensive Plan Mapping.

The subject property has been used for two (2) personal residences and agricultural facilities such as equipment storage sheds, which are concentrated in the western roughly one-third of the property. All existing improvements will be razed as part of the redevelopment plan. The eastern approximately two-thirds of the site is unimproved and was previously used for agricultural tree production. The eastern one-third has overgrown agricultural trees that will be removed. The applicant's proposed development plan will protect and preserve a stand of ten (10) mature Douglas fir trees adjacent to Garden Acres Road near the northeastern corner of the site.

Description of Proposed Development

The proposed development is a single speculative industrial building suitable for a wide range of potential industrial tenants consistent with the uses and activities allowed in the PD-RSIA Zone. Its size and height characteristics make it particularly suitable for a High-Cube Parcel Fulfillment Center Sort Warehouse tenant, but the site and building can also accommodate a mix of warehouse/distribution and manufacturing uses with ancillary office space, suitable for one or two tenants.

The irregular four-sided site is surrounded on all four boundaries by right-of-way or access roads: on the east and west frontages, Grahams Ferry Road and Garden Acres Road are designated Addressing Streets in Figure CC-1, Wilsonville Development Ordinance (WDO) Section 4.134 (the "Regulating Plan"). The unimproved right-of-way for Cahalin Road is located at the north. The Regulating Plan requires a Supporting Street along the south property line, extending between Grahams Ferry and Garden Acres Roads. Access spacing requirements on both Grahams Ferry and Garden Acres Roads will not allow

driveways on either of those property frontages, so access must be achieved via the new Supporting Street and a special design section for Cahalin Road, forming an intersection with Garden Acres Road but not connecting to Grahams Ferry Road.

The applicant will be required to make right-of-way dedications and frontage improvements to widen both Grahams Ferry Road and Garden Acres Road. Improvements will also be required in Cahalin Road, using a special design section, and the southern Supporting Street improvements will be constructed within an access easement on the subject property. The Cahalin Road and Supporting Street improvements are designed to provide access for the proposed development, while also enabling the abutting neighbors to access their properties in the future by making driveway connections and related widening improvements as their redevelopment occurs over time.

The site plan orients the new building and automobile parking to establish the Primary Building Façade (front of building) facing Garden Acres Road to the east, with two office-area pop-outs at the northeast and southeast building corners. The southeast entrance is the Primary Building Entrance. The proposed pedestrian Wayside is located near the stand of native trees to be preserved, near the building's northeast office area. On the west (rear) side, truck access facilities including loading docks and trailer storage spaces will be screened from view from Grahams Ferry Road by a combination of landscaping, security perimeter fencing with slats, and topography: leveling the building within the sloping topography will require lowering the west side of the site relative to Grahams Ferry Road, such that the plantings, fencing, and view angles from the street will help conceal activities at the lower grade level within the site.

The proposed building contains an estimated 148,279 square feet (SF) of floor area, and the traffic study is conservatively based on an assumed total building size of 148,500 SF. The site has been designed to potentially accommodate any and all uses allowed within the Planned Development Industrial/Regionally Significant Industrial Area (PDI/RSIA) zone, to the extent the tenanting is compatible with the on-site capacities: 71 vehicle spaces, 20 dock doors, two (2) drive-in loading doors, and 14 trailer parking spaces.

The site plan proposes two (2) driveways on the required Supporting Street to support employee parking located east of the building, and to provide sufficient access and circulation for trucks west of the building. A third point of access to the site will be the Cahalin Road – Garden Acres Road intersection to the north, providing access to employee parking located north of the building and a truck corridor to the loading docks on the west side of the building. Departing trucks will be able to use Cahalin Road to access Garden Acres Road at the northeast, or use the Supporting Street at the south to access either Garden Acres Road or Grahams Ferry Road.

The proposed landscaping plan along the SW Grahams Ferry Road and Garden Acres Road frontages uses street trees, shrubs within PUE corridors, and ground covers, consistent with appropriate spacing for their long-term growth habits and survival needs, to provide screening and maintain a naturalistic appearance along the road corridors. Pedestrian paths and usable spaces further contribute to the public realm, consistent with the goals of the Coffee Creek Industrial Design Overlay Pattern Book and Design Guidelines.

TABULATION OF SITE PLAN FEATURES (from Sheet C1.10, Attachment 6):

Total Site Area:	355,691 SF +/- (8.17 acres)
Less: Right-of-Way Dedication:	25,814 SF +/- (0.59 acres)
Net Buildable Site Area:	**329,877 SF +/- (7.57 acres) | 100.0%**

Building Area:	148,279 SF +/- (3.40 acres) |	45.0%
Parking and Paving Coverage:	124,425 SF +/- (2.86 acres) |	37.7%
Landscape (LS) Area:	57,173 SF +/- (1.31 acres) |	17.3%
Minimum Landscape Area Requirement:	49,482 SF +/- (1.14 acres) |	15.0%

Parking Area Landscaping		**% Site**	**% Parking**
Parking Lot Areas (not truck access):	11,294 SF +/- (0.26 acres) |	7.6%	100.0% *
Parking Area Landscaping:	2,911 SF +/- (0.067 acres) |	0.88%	25.8% *
Minimum Parking Area LS Requirement:	1,129 SF +/- (0.026 acres) |	0.34%	10.0% *

* 2,911 SF = 25.8% of the 11,294 SF of site area in Parking Areas;
this exceeds the 10% minimum requirement in § 4.155(.03)B.1.

Aerial Image – Project Site (with 2' contour topography)

Public Improvements and Transportation

Right-of-Way Dedication and Public Improvements

The subject property is located between Grahams Ferry Road and Garden Acres Road, south of Cahalin Road, near the intersection of SW Day Road and Grahams Ferry Road and the Garden Acres Road "T." These roadways have the following designations:

Roadway	Transportation System Plan (TSP) Designation	Coffee Creek Industrial Design Overlay District Regulating Plan Designation
Grahams Ferry Road (west)	Minor Arterial	Addressing Street
Garden Acres Road (east)	Minor Arterial	Addressing Street
(New Road)[2] (south)	Future Collector	Required Supporting Street
Cahalin Road (north)	n/a	n/a

Currently, **Grahams Ferry Road** runs along the western boundary of the property at a current right-of-way width of 40'. In the Coffee Creek Industrial Pattern Book, the Addressing Street Typology diagram includes final curb-to-curb width of 82 feet within an overall 110' right-of-way easement, containing two travel lanes and a center left turn lane, bike lanes, planting strips, and sidewalks. Because the applicant does not control property on the west side of Grahams Ferry Road, the applicant is unable to make a right-of-way dedication except along the subject property's west-side frontage. The applicant's design team has worked closely with City staff to prepare a feasible interim configuration for street improvements in conjunction with the proposed development. The proposed roadway construction is found in the R-series drawing sheets (R0.00 through R1.51). Construction within the right-of-way will include:

- An approximately 18.5' dedication of public right-of-way to widen the existing 40' right-of-way to provide 38.5 feet from centerline, consistent with a future overall width of 77 feet and the Minor Arterial street design section (see Street Section on Sheet R0.02 in Attachment 6)
- Saw-cutting to match the existing pavement
- Construction of widened pavement surface and the eastern curb at final line and grade
- Striping per direction from the City Engineer
- Curbside planter strip/stormwater planters (quality treatment/infiltration facilities)
- Sidewalk
- Street lights
- Street signs

This configuration is designed to provide capacity and safe operations on an interim basis; the City Engineer has proposed a special striping configuration and alignment to fit a southbound left-turn lane at the Supporting Street intersection. The full design section will be achieved in the future when property on the west side of the roadway is developed and makes improvements on that side of the roadway.

Existing public utilities (water, sanitary sewer, and storm drainage) are depicted in the applicant's proposed construction plans for the Garden Acres frontage and will not be extended in Grahams Ferry Road.

Garden Acres Road runs along the eastern boundary of the property at a current right-of-way width of 45'. In the Coffee Creek Industrial Pattern Book, the Addressing Street Typology diagram includes final curb-to-curb width of 24 feet within an overall 52' right-of-way easement, containing two (2) travel lanes with shared bike lanes, planting strips, and sidewalks. Because the applicant does not control property on the east side of Garden Acres Road, the applicant is unable to make a right-of-way dedication except along the subject property's east-side frontage. The applicant's design team has worked closely with City staff

[2] New Road will not be dedicated to the City; instead it will be constructed within an access easement along the south property boundary, providing vehicular access to the properties between Grahams Ferry Road and Garden Acres Road.

to prepare a feasible interim configuration for street improvements in conjunction with the proposed development. The proposed roadway construction is found in the R-series drawing sheets (R0.00 through R1.51). Construction within the right-of-way will include:

- An approximately 20.5' dedication of public right-of-way to widen the existing right-of-way to provide 40.5 feet from centerline, consistent with a future overall width of 81 feet and the full Minor Arterial street design section (see Street Section on Sheet R0.03 in Attachment 6)
- Saw-cutting to match the existing pavement
- Construction of widened pavement surface and the western curb at final line and grade
- A bike path outside the curbed vehicular travel surface (between the curb and sidewalk)
- Curbside planter strip/stormwater planters (quality treatment/infiltration facilities)
- Planter strip between bike path and sidewalk
- Sidewalk
- Street lights
- Street signs

This configuration is designed to provide capacity and safe operations on an interim basis with two (2) travel lanes and no center turn lane until development occurs on property to the east, when matching improvements can be constructed on the east side of the street.

Existing public utilities (water, sanitary sewer, and storm drainage) are depicted in the applicant's proposed construction plans for the Garden Acres Road frontage.

The new Supporting Street runs along the southern boundary of the property within a proposed 32' wide easement. In the Coffee Creek Industrial Design Overlay District, the Supporting Street diagram (Figure CC-2) includes final curb-to-curb width of 24 feet within an overall 52' right-of-way or easement, containing two travel lanes, bike lanes, planting strips, and sidewalks. The applicant does not control the property to the south, and is unable to make a complete right-of-way dedication or easement for the full improvement width, or to construct improvements south of the property boundary. Instead, the new Supporting Street will be constructed within an access easement along the south property boundary, providing sufficient paved width for two-way vehicular access to the subject property, with a curbside storm planter/street trees strip, a pedestrian sidewalk, and additional street tree plantings and landscaping on the north side of the sidewalk. A varying design section is proposed along the street edge, to meet competing requirements for stormwater infiltration and street tree plantings, grading, and the non-parallel orientation of the proposed building, while creating a shaded pedestrian environment framed by trees providing a shade canopy on both sides along the corridor. In the future, the neighboring property to the south will be able to take access from the south side of the easement and make corresponding improvements to complete the roadway between Grahams Ferry Road and Garden Acres Road. The applicant's design team has worked closely with City staff to prepare a feasible configuration for street improvements in conjunction with the proposed development. The proposed roadway construction is found in the R-series drawing sheets (R0.00 through R1.51). Construction within the access easement will include:

- An approximately 32' access easement
- Construction of 24' wide pavement surface and north curb at final line and grade
- Center line striping
- Curbside stormwater planter/street tree strip (8 trees)
- Sidewalk
- Additional street trees (8 trees) north of the sidewalk
- Street lights

- Street signs

This configuration is designed to provide capacity and safe operations with two travel lanes and no center turn lane, with a 6' sidewalk.

Public utilities (water, sanitary sewer, and storm drainage) are depicted in the applicant's proposed construction plans for the Garden Acres Road frontage and will not be installed within the access easement.

The north boundary of the subject property is formed by the unimproved Cahalin Road right-of-way, with a 45' total width. Cahalin Road will intersect Garden Acres Road, extending west to serve the subject property and the parcel to the north in the future, but it will not intersect Grahams Ferry Road at the west. The special design section for this limited segment Cahalin Road will allow perpendicular parking on the south side of the travel way, and it will provide a connection to the private drive west of the proposed building to complete truck circulation to the loading dock area and the new Supporting Street to the south. The applicant's design team has worked closely with City staff to prepare a feasible configuration for street improvements in conjunction with the proposed development. Construction within the access easement will include construction of a 40' wide paved travel surface with curb on the north side.

This configuration is designed to provide capacity and safe operations with two travel lanes for the subject site and the property to the north.

Public utilities (water, sanitary sewer, and storm drainage) are depicted in the applicant's proposed construction plans for the Garden Acres Road frontage. No utilities extensions are proposed in the Cahalin Road right-of-way. The applicant will modify existing utilities to the extent needed to accommodate the proposed improvements, subject to Public Works Permit review and approval(s).

Transportation Impact Analysis

The City's traffic engineering consulting firm, DKS Associates, prepared a Traffic Impact Study (TIS), included as Attachment 11. The analysis studied five intersections in the vicinity (Boones Ferry Road/Day Road, Grahams Ferry Road/Day Road, Boones Ferry Road/95th Ave, I-5 SB Ramps/Elligsen Road, and I-5 NB Ramps/Elligsen Road), and concluded that all intersections will achieve Level of Service (LOS) D with the proposed development, which meets the minimum operating standard, LOS D.

The TIS recommends providing a southbound left-turn pocket on Grahams Ferry Road at the proposed Supporting Street intersection. The City Engineer has provided an interim striping plan to allow a southbound center turn lane configuration without requiring dedication of additional right-of-way by the property owner to the south. As additional development occurs to the south and west of the site (by other owners/developers), additional dedications and improvements will upgrade Grahams Ferry Road to match the applicable design section.

Site Access and Circulation

Access is proposed at the north end of the site at the intersection of Cahalin Road and Garden Acres Road, as well as via the required Supporting Street at the south boundary of the site. The Supporting Street will provide access to properties between Garden Acres Road and Grahams Ferry Road in an access easement.

The northeast (Cahalin Road) access serves employee parking adjacent to the northeast office area of the building but also provides truck access to the loading docks and trailer storage located on the west side of the building. The Required Supporting Street provides two driveways, one to serve the employee

parking lot east of the building and a second driveway at the west for access to truck parking and loading operations. The distance between the driveways meets the 150’ minimum spacing requirement for Collector Streets. Garden Acres Road is designated as a minor arterial with a minimum access spacing of 600’. The spacing between the Cahalin Road intersection and the Supporting Street to the south is approximately 635’, meeting the City’s minimum requirement.

III. NARRATIVE & COMPLIANCE

A. Annexation and Zone Map Amendment

Section 4.700. Procedures Relating To The Processing Of Requests For Annexation And Urban Growth Boundary Amendments

(.01) The City of Wilsonville is located within the Portland Metropolitan Area, and is therefore subject to regional government requirements affecting changes to the city limits and changes to the Urban Growth Boundary (UGB) around Wilsonville. The City has the authority to annex properties as prescribed in State law, but the City's role in determining the UGB is primarily advisory to Metro, as provided in Oregon Revised Statutes. The following procedures will be used to aid the City Council in formulating recommendations to those regional entities. [Amended by Ordinance No. 538, 2/21/02.]

A. Proponents of such changes shall provide the Planning Director with all necessary maps and written information to allow for review by city decision-makers. The Planning Director, after consultation with the City Attorney, will determine whether each given request is quasi-judicial or legislative in nature and will make the necessary arrangements for review based upon that determination.

Response: This application is an owner-initiated request for annexation of the subject property into Wilsonville City Limits, and a corresponding Zone Map Amendment applicable only to the subject property. The applicant understands that a quasi-judicial procedure is appropriate.

B. Written information submitted with each request shall include an analysis of the relationship between the proposal and the City's Comprehensive Plan, applicable statutes, as well as the Statewide Planning Goals and any officially adopted regional plan that may be applicable.

Response: The following responses provide information about how the annexation and zone change request relate to the Comprehensive Plan and the Statewide Planning Goals.

Comprehensive Plan

The applicant has reviewed the Comprehensive Plan for applicable policies that demonstrate the project's compliance with annexation- and zone change-related approval criteria. As demonstrated in this submittal package, this project is consistent with the City's adopted zoning and development standards and will serve to implement the goals, policies, and objectives of the comprehensive plan.

The annexation of the property and subsequent development as proposed will further the city's goals for Coffee Creek Industrial Area and align with specific city annexation polices:

Policy 2.2.1. *The City of Wilsonville shall plan for the eventual urbanization of land within the local planning area, beginning with land within the Urban Growth Boundary.*

Implementation Measure 2.2.1.a*. Allow annexation when it is consistent with future planned public services and when a need is clearly demonstrated for immediate urban growth.*

Response: The subject site is located within the UGB and in the Coffee Creek Industrial Area (CCIA). The City of Wilsonville has designated and planned the CCIA for industrial development, which has begun to occur at other locations within the CCIA during the past two years, demonstrating the need and market demand for industrial land at this time. In

the course of such development, applicants/permittees are required to construct public services extensions including roadway improvements, necessary infrastructure, and utility services to development sites in accordance with City of Wilsonville infrastructure master planning and applicable Public Works standards. The City can similarly require such improvements when a development project is proposed for the subject property.

Implementation Measure 2.2.1.*e Changes in the City boundary will require adherence to the annexation procedures prescribed by State law and Metro standards. Amendments to the City limits shall be based on consideration of:*

1. *Orderly, economic provision of public facilities and services, i.e., primary urban services are available and adequate to serve additional development or improvements are scheduled through the City's approved Capital Improvements Plan.*
2. *Availability of sufficient land for the various uses to insure choices in the marketplace for a 3 to 5 year period.*
3. *Statewide Planning Goals.*
4. *Applicable Metro Plans;*
5. *Encouragement of development within the City limits before conversion of urbanizable (UGB) areas.*
6. *Consistency with legislative Master Plans and other applicable provisions of the Comprehensive Plan and Development Code.*

Response: Metro and the City of Wilsonville have identified the Coffee Creek sub-area for industrial and employment land uses, and the City has gone through years of planning work to adopt zoning and other regulations to guide and direct such annexation, development, and use. This submittal package responds to applicable approval standards, guidelines, and criteria to demonstrate that the proposal is consistent with all of those policies, plans, and regulations. A future development project will be required to demonstrate that the project type and use match the goals and objectives of the Coffee Creek Industrial Area planning. Additionally, to the extent adequate facilities are not already in place, the developer of the subject property will be required to construct public facilities and services as identified in the City's Capital Improvement Plan to serve the site.

At this time, the applicant understands there is a public 18" water line in SW Garden Acres Road with capacity to serve the site. For sanitary sewer service, City staff has advised the applicant to connect to an existing 12" line flowing south in SW Garden Acres Road, which has capacity to serve the site. Similarly, there is a 30" public storm drain line flowing south in SW Garden Acres Road, but its downstream system has limited capacity to accommodate a 25-year design storm event; the proposed development plan uses street-side stormwater planters and rain gardens, rock galleries and Underground Infiltration Chambers (UICs) within the site to achieve 100% infiltration of site flows from both 10-year and 25-year design storm events (i.e., zero discharge to the City's storm drain system). . The applicant further understands that construction of roadways abutting the subject property will be required, consistent with the appropriate street design sections in the Coffee Creek Pattern Book.

For the above reasons, the proposed annexation is timely to meet community growth and economic development/jobs growth needs, it is consistent with and will help implement regional and local development and orderly infrastructure master planning, and it will

help ensure a sufficient supply of buildable land to address industrial and employment market needs.

Implementation Measure 3.1.2.a *Urban development will be allowed only in areas where necessary facilities and services can be provided.*
Response: Consistent with the City's expansion of the UGB to include the CCIA, the City has developed urban infrastructure for the CCIA area and planned for the construction of additional infrastructure as development progresses within the CCIA. The applicant's design team has worked closely with City staff to verify that utility service systems have capacity to serve the site. As noted above, to the extent utility extensions and street improvements are necessary for consistency with service systems master plans, the City can require such construction through the site development approval process.

GOAL 3.4: To facilitate the safe, efficient and economic flow of freight and other goods and services within the city and the region.

Policy 3.4.1 Upgrade and/or complete the street network on the west side of I-5, including in the Coffee Creek and Basalt Creek areas, to serve the warehousing, distribution, and other industrial uses located there.
Response: Annexation and a zoning map amendment to PDI-RSIA are necessary for development of the site with industrial uses. Industrial development will require the developer to contribute to upgrades to the street network surrounding the Site in accordance with the CCIA, in the form of construction of improvements along the property's street frontages, as well as payment of Transportation Systems Development Charge fees.

Statewide Planning Goals

Goal 1: Citizen Involvement
Objective: *To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.*
Response: The City's acknowledged Comprehensive Plan & Development Code includes procedures that apply to this application and provide opportunities for citizen involvement. The City Council is required to hold a public hearing on the proposal. Notice of the hearing is posted on site and elsewhere, the City mails notices to nearby property owners, and notice is published in the newspaper. Citizens are able to communicate their input regarding the Annexation and Zone Map Amendment at the public hearing or by submitting written comments. This process complies with Goal 1.

Goal 2: Land Use Planning
Objective: *To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions.*
Response: The procedural requirements for annexation and zone changes are contained in the Development Code, which involve assessment of the application's merits, notice to affected parties, and public hearings. Notice of the annexation and zoning map amendment will be provided by the City to the Oregon Department of Land Conservation and Development (DLCD) and Metro as required, and the City's decision will be based on findings of fact. Therefore, the proposed annexation and zone change are consistent with Goal 2.

Goal 3: Agricultural Lands

Objective: *To preserve and maintain agricultural lands.*

Response: This Goal is not applicable because the site is within the Metro Urban Growth Boundary and will be developed as urban land.

Goal 4: Forest Lands

Objective: *To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.*

Response: This Goal is not applicable because the site is within the Metro Urban Growth Boundary and will be developed as urban land.

Goal 5: Open Spaces, Scenic and Historic Areas and Natural Resources

Objective: *To protect natural resources and conserve scenic and historic areas and open spaces.*

Response: The subject site is not designated as open space, or a scenic or historic resource area by the City, and it does not contain any known significant Goal 5 resources, such as open space, scenic, or historic areas, or mineral/aggregate resources, subject to protection requirements. Therefore, the proposed annexation and zone change are consistent with Goal 5.

Goal 6: Air, Water and Land Resources Quality

Objective: *To maintain and improve the quality of the air, water and land resources of the state.*

Response: The site is planned for industrial uses as part of the CCIA area. If the annexation and zone change are approved, the site will become subject to City regulations for industrial lands which seek to minimize off-site impacts from noise, vibration, odors, glare, or other "nuisance" effects, consistent with the types of economic activities allowed within the zone. The potential harmful effects on air, water, and land resource quality are therefore limited. The annexation and zone change proposal will therefore have no significant impact with respect to Goal 6.

Goal 7: Areas Subject to Natural Disasters and Hazards

Objective: *To protect people and property from natural hazards.*

Response: According to data from the Oregon Department of Geology and Minerals,[3] the subject site is not located within a landslide hazard area, and there are no known active fault lines in the immediate vicinity. According to the Federal Emergency Management Agency's Flood Insurance Rate Map 41067C0609E, effective 11/4/16, the subject property is not located in a regulated flood hazard area. The development proposal will be required to document compliance with the applicable standards for development at the time of building permit review. The proposal to annex and zone the subject property for industrial development is consistent with avoidance of natural disasters and hazards under Goal 7.

[3] https://gis.dogami.oregon.gov/maps/hazvu/

Goal 8: Recreational Needs

Objective: *To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.*

Response: The annexation area is presently designated Industrial on the Comprehensive Plan Map and is proposed to be zoned Planned Development Industrial – Regionally Significant Industrial Area (PDI-RSIA) upon annexation. The site is not identified as a resource site suitable for park and recreation use in any adopted City resource inventories or plans. Consequently, the proposed annexation and zone change will have no effect on the City's recreational land supply. Therefore, the proposed annexation and zone change are consistent with Goal 8.

Goal 9: Economic Development

Objective: *To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.*

Response: The City's 2012 Economic Opportunities Analysis (EOA) identifies the Coffee Creek Master Plan Area as containing approximately 174 acres of industrial land area, 50 acres of which could be served with adequate public facilities in the next four (4) years. The proposed project is within this area and aligns with the EOA's intentions of ensuring the City has adequate industrial lands to provide jobs and economic opportunity. The proposed annexation and zone map amendment are necessary for the proposed development that will contribute to the state and local economy by providing industrial employment and associated benefits. Therefore, the proposed annexation, rezoning, and development are consistent with Goal 9.

Goal 10: Housing

Objective: *To provide for the housing needs of citizens of the state.*

Response: The property contains dwellings but is designated Industrial on the Comprehensive Plan map and is not considered housing land for purposes of the City's housing needs analysis. The proposed annexation and zone change to Planned Development Industrial – Regionally Significant Industrial Area (PDI-RSIA) therefore will have no effect on the housing supply within City Limits. Goal 10 is not applicable to this request.

Goal 11: Public Facilities and Services

Objective: *To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.*

Response: The subject property lies within the Urban Growth Boundary (UGB) and therefore requires the extension of public facilities and services as urban development occurs. At this location, to support economic development, the City has already annexed some public rights-of-way – including SW Cahalin Road and SW Garden Acres Road abutting the site – and installed water, sewer, and storm drainage infrastructure capable of serving the subject property. Annexation of the subject property is therefore consistent with infrastructure development work the City has already completed, and its subsequent development will further contribute by completing road widening and improvements along the property's street frontages. Therefore, Goal 11 will be furthered by the proposed annexation.

Goal 12: Transportation

Objective: *To provide and encourage a safe, convenient and economic transportation system.*

Response: Statewide Planning Goal 12 is implemented by the state Transportation Planning Rule (TPR). The City adopted a Transportation System Plan (TSP) in 2013 and adopted amendments to it in November 2020. The transportation impacts associated with future industrial development of the subject site were analyzed as part of the TSP, which based its analysis on the site's Industrial Comprehensive Plan designation. The proposed zoning is consistent with the land designation and trip generation assumptions used to develop the TSP, and therefore complies with OAR 660-012-0060(9). For these reasons, the proposed annexation and rezoning are consistent with the TPR.

Goal 13: Energy Conservation

Objective: *To conserve energy.*

1. *Land use plans should be based on utilization of the following techniques and implementation devices which can have a material impact on energy efficiency:*
   a. *Lot size, dimension, and siting controls;*
   b. *Building height, bulk and surface area;*
   c. *Density of uses, particularly those which relate to housing densities;*
   d. *Availability of light, wind and air;*
   e. *Compatibility of and competition between competing land use activities; and*
   f. *Systems and incentives for the collection, reuse and recycling of metallic and nonmetallic waste.*

Response: Clustering industrial activities near each other facilitates carpooling and allows for convenient access to principal roadways designated for truck traffic. The subject property is within a large area of land within the UGB and designated for industrial uses. Therefore, the proposal will contribute to a more energy-efficient land use pattern within the City's Urban Growth Boundary, consistent with Goal 13.

Goal 14: Urbanization

Objective: *To provide for an orderly and efficient transition from rural to urban land use.*

Response: The subject property is within the Metro Urban Growth Boundary (UGB) and no expansion of the UGB is proposed. The proposed annexation and zone change will achieve the transition from rural to urbanized land as foreseen in the Comprehensive Plan. The City has previously installed utilities infrastructure, including necessary public water lines, sewer lines, and storm drainage lines, within abutting streets, and street widening and frontage improvements will be required of the developer through the development review and construction permitting processes. Therefore, the application is consistent with Goal 14.

Goal 15: Willamette River Greenway

Response: The site is not located near the Willamette River. This Goal is not applicable.

Goal 16: Estuarine Resources

Response: The site is not located in or near an estuary. This Goal is not applicable.

Goal 17: Coastal Shorelands

Response: The site is not located near the coast. This Goal is not applicable.

Goal 18: Beaches and Dunes
Response: The site is not located near beaches or dunes. This Goal is not applicable.

Goal 19: Ocean Resources
Response: The site is not located near the ocean. This Goal is not applicable.

C. The Planning Director shall review the information submitted by the proponents and will prepare a written report for the review of the City Council and the Planning Commission or Development Review Board. If the Director determines that the information submitted by the proponents does not adequately support the request, this shall be stated in the Director's staff report.

Response: This provision provides procedural guidance for implementation and requires no evidence from the applicant. The applicant has endeavored to provide adequate information to allow the City to approve the annexation and zone change proposal.

D. If the Development Review Board, Planning Commission, or City Council determine that the information submitted by the proponents does not adequately support the request, the City Council may oppose the request to the regional entity having the final decision-making authority.

Response: This provision provides procedural guidance for implementation and requires no evidence from the applicant. The applicant has endeavored to provide adequate information to allow the City to approve the annexation and zone change proposal.

(.02) Each quasi-judicial request shall be reviewed by the Development Review Board, which shall make a recommendation to the City Council after concluding a public hearing on the proposal, except in the following circumstance:

A. When an annexation in the Coffee Creek Industrial Design Overlay District is requested concurrent with a quasi-judicial Comprehensive Plan Map amendment and/or zone map amendment as specified in Section 4.197 (.02) A. and Section 4.198 (.02), the annexation shall be reviewed by the City Council without prior review or recommendation by the Development Review Board.

a. The ordinance adopting such annexation request shall state the annexation expires 120 days from Council adoption unless a Stage II Final Plan receives final local approval for the area subject to the annexation. In the event of a LUBA appeal of the final local approval, the 120-day expiration period will be tolled pending completion of the appeal process.

b. Notwithstanding the process described above an applicant may elect to have the annexation reviewed by the Development Review Board for a recommendation to City Council concurrently with other land use applications for the subject property.

c. If the Planning Director anticipates that individuals other than the applicant can be expected to question the requested annexation's compliance with the applicable criteria the Planning Director may require the annexation be first reviewed by the Development Review Board to make a recommendation to City Council.

Response: This proposal includes "*a requested quasi-judicial zone map amendment within the Coffee Creek Industrial Design Overlay District … consistent with the adopted or concurrently proposed Comprehensive Plan Map designation and only one option exists for a zone map amendment consistent with the Comprehensive Plan Map,*" per Section 4.197(.02)A. The applicant understands that the proposal can therefore proceed directly to a public hearing and ordinance adoption by the Wilsonville City Council.

This provision provides procedural guidance for implementation and requires no further evidence from the applicant.

(.03) Each legislative request shall be reviewed by the Planning Commission, which shall make a recommendation to the City Council after concluding a public hearing on the proposal.
Response: The applicant has submitted a quasi-judicial annexation request. This standard does not apply because this is not a legislative proposal introduced by the City.

(.04) As applicable, the City Council shall consider the information in the record of the Development Review Board or Planning Commission and shall, after concluding a public hearing on the request, determine the appropriate course of action. That course of action may be:

A. In the case of a proposed amendment to the Regional Urban Growth Boundary: forward its recommendation in the form of a Resolution to the Metro Council.

Response: The applicant is not proposing an amendment to the UGB. This standard does not apply.

B. In the case of a proposed annexation to the City, select from the following as allowed by State law (ORS 222):

1. Take no action;
2. Declare the subject property, or some portion thereof, to be annexed;
3. Set the matter for election of the voters residing within the affected territory; or
4. Set the matter for election of City voters.

Response: The applicant requests that the City Council declare the proposed territory as represented in the submitted legal description and map to be annexed to the City in accordance with option "2" above.

(.05) The City Council may adopt a development agreement with the owners of property that is proposed for annexation to the City, and such agreement may include an agreement to annex at a future date. A development agreement with an agreement to annex shall be subject to the same procedural requirement as other annexations in terms of staff report preparation, public review, and public hearings.
Response: The applicant requests immediate annexation of the subject property, which is within the City's UGB and contiguous to the City's boundaries. A development agreement is not proposed.

Section 4.197. Zone Changes and Amendments To This Code – Procedures

(.01) The following procedure shall be followed in applying for an amendment to the text of this Chapter: [detailed provisions omitted for brevity]
Response: The applicant is not requesting an amendment to the text of the Development Code. These provisions do not apply.

(.02) In recommending approval or denial of a proposed zone map amendment, the Planning Commission or Development Review Board shall at a minimum, adopt findings addressing the following criteria:

A. That the application before the Commission or Board was submitted in accordance with the procedures set forth in Section 4.008, Section 4.125 (.18)(B)(2) or, in the case of a Planned Development, Section 4.140; and [Amended by Ord 557, adopted 9/5/03]

Response: The applicant has submitted this request for Annexation and Zone Map Amendment in accordance with the City's procedural requirements, including utilization of City forms, payment of application fees, and submission of supporting evidence. This standard is met.

B. That the proposed amendment is consistent with the Comprehensive Plan map designation and substantially complies with the applicable goals, policies and objectives, set forth in the Comprehensive Plan text; and

Response: The site is designated Industrial on the Comprehensive Plan map and has been identified by Metro as a Regionally Significant Industrial Area. The proposed Planned Development Industrial – Regionally Significant Industrial Area (PDI-RSIA) zone is consistent with the Comprehensive Plan map designation. For that reason, the proposed annexation and Zone Map Amendment do not represent a proposal to change the City's land use policy with respect to the Property; rather, they are required steps in the process of implementing the Comprehensive Plan. Taking those steps is consistent with the following Goal, Policy, and Implementation Measures at this time, based on these findings:

GOAL: 2.1 ***To allow for urban growth while maintaining community livability, consistent with the economics of development, City administration, and the provision of public facilities and services.***

Policy 2.1.1. ***The City of Wilsonville shall support the development of all land within the City, other than designated open space lands, consistent with the land use designations of the Comprehensive Plan.***

Implementation Measure 2.1.1.a. Allow development within the City where zoning has been approved and other requirements of the Comprehensive Plan have been met.

Implementation Measure 2.1.1.c. Encourage a balance between residential, industrial, and commercial land use, based on the provisions of this Comprehensive Plan.

Response: The property is located within the Coffee Creek Industrial District, where the City has made substantial investments in planning and infrastructure development to promote economic development and job growth. Adoption of the Coffee Creek Plan, Code Amendments, Design Standards, and Pattern Book have prepared the City to efficiently complete the land use reviews and approvals necessary to achieve desired industrial development in the Regionally Significant Industrial Area. City utilities infrastructure with capacity to serve industrial development is in place in public rights-of-way adjacent to the site; additionally, the developer will be required to provide improvements to public streets and infrastructure elements in conjunction with site development. The proposal to zone the site PDI-RSIA is consistent with the City's overall plan to balance a variety of use types within the City in areas best suited for those uses. The City's plans and preparatory work within the CCIA satisfy these tenets of the Comprehensive Plan.

Implementation Measure 2.1.1.d. Establish and maintain revenue sources to support the City's policies for urbanization and maintain needed public services and facilities.

Response: Application of City zoning, and permitting development of the property for industrial use will add value to the City's tax base on a permanent basis, in addition to payment of one-time fees (e.g., Systems Development Charges) as development occurs. Those sources of revenue contribute to constructing and maintaining needed public services and facilities.

Implementation Measure 2.1.1.e. Allow new development to proceed concurrently with the availability of adequate public services and facilities as specified in Public Facilities and Services Section (Section C) of the Comprehensive Plan.

Response: The City has extended urban services to the CCIA area to facilitate development with industrial and employment uses. The proposed application of City zoning will allow permitting and construction of development of the property

for industrial use, together with required improvements to abutting roads and infrastructure elements, where needed. As noted above, development will also include payment of Systems Development Charges. The accompanying Annexation application materials include evidence of adequate public facilities and services for the City to apply the PD-RSIA Zone to the property at this time.

Implementation Measure 2.1.1.f. To insure timely, orderly and efficient use of public facilities and services, while maintaining livability within the community, the City shall establish and maintain growth management policies consistent with the City's regional growth allocation and coordinated with a Capital Improvements Plan.

1. *The Planning Commission shall periodically review growth-related data, e.g., the availability of public facilities, scheduled capital improvements, need for housing, commercial development and/or industrial development, etc.; and shall, as determined necessary following a public hearing, make recommendations to the City Council regarding Growth Management Plans.*
2. *To maximize design quality and conformity to the Comprehensive Plan, the City shall encourage master planning of large land areas. However, as an added growth management tool, the Development Review Board may, as a condition of approval, set an annual phasing schedule coordinated with scheduled Capital Improvements, particularly streets and related transportation facilities.*

Response: Please refer to the response above for Implementation Measures 2.1.1.a and c.

See also responses to Comprehensive Plan provisions applicable to annexation above in the response to Section 4.700(.01)(B). This standard is met.

C. In the event that the subject property, or any portion thereof, is designated as "Residential" on the City's Comprehensive Plan Map; specific findings shall be made addressing substantial compliance with Implementation Measures 4.1.4.b, d, e, q, and x of Wilsonville's Comprehensive Plan text; and [Amended by Ordinance No. 538, 2/21/02.]

Response: The subject property is designated Industrial (not Residential) in the Comprehensive Plan Map. This provision does not apply.

D. That the existing primary public facilities, i.e., roads and sidewalks, water, sewer and storm sewer are available and are of adequate size to serve the proposed development; or, that adequate facilities can be provided in conjunction with project development. The Planning Commission and Development Review Board shall utilize any and all means to insure that all primary facilities are available and are adequately sized; and

Response: As noted above, utility services are in place with capacity to serve the subject property, and the City can require the developer to construct widening and improvements in roadways abutting the property through the concurrent/consolidated development review and approval process. The applicant's engineering team has coordinated with city staff to ensure that system capacities are available to serve the site; more particularly:

Water: An 18" public water line exists in SW Garden Acres Road; it is sized appropriately and has capacity to serve the subject property. Water service is provided by City of Wilsonville through the Willamette River Water Treatment Plant with a transmission line in Kinsman Road.

Sewer: There is an existing 12" sanitary sewer line flowing south in SW Garden Acres Road, with capacity to serve the subject property.

Stormwater: There is an existing 30" public storm drain line flowing south in SW Garden Acres Road, with capacity to serve the subject property, although a downstream flow limitation requires that flows from the proposed development in a 25-year design storm event be limited. The applicant's submitted stormwater treatment/infiltration plan will infiltrate 100% of flows from 10-year and 25-year design storm events, discharging zero flow to the City's stormwater system. (See further discussion below in the response to Code Section 4.140(.09)J.3.)

Additionally, development of the subject property is proposed to include roadway improvements consistent with designations in the Coffee Creek DOD Regulating Plan [Figure CC-1, Section 4.134(.09)]:

- SW Grahams Ferry Road and SW Garden Acres Road are "Addressing Streets"
- A "Supporting Street" is required along the property's southern boundary
- Improvements will be made in the SW Cahalin Road right-of-way at the north boundary of the subject property (which segment is not identified as a Supporting Street in the Regulating Plan).

Based on the presence of sufficient utility services and the City's ability to require construction of transportation improvements through the development approval process, including street widening, landscaping, sidewalks, lighting, signage, and other features, this approval criterion is satisfied.

E. That the proposed development does not have a significant adverse effect upon Significant Resource Overlay Zone areas, an identified natural hazard, or an identified geologic hazard. When Significant Resource Overlay Zone areas or natural hazard, and/or geologic hazard are located on or abut the proposed development, the Planning Commission or Development Review Board shall use appropriate measures to mitigate and significantly reduce conflicts between the development and identified hazard or Significant Resource Overlay Zone and

Response: The subject property does not contain, and is not within or abutting, a Significant Resource Overlay Zone Resource Area or Impact Area as shown in the City of Wilsonville Significant Resource Overlay Zone Map. The subject property also does not contain identified natural hazard or geologic hazard areas. The proposed annexation is consistent with this requirement.

F. That the applicant is committed to a development schedule demonstrating that development of the property is reasonably expected to commence within two (2) years of the initial approval of the zone change; and

Response: The applicant is engaged in preparing applications for development and construction approvals at this time, and intends to begin construction as soon as the necessary permits are approved. The applicant has not identified any current barriers to beginning work within two years. This criterion is met.

G. That the proposed development and use(s) can be developed in compliance with the applicable development standards or appropriate conditions are attached that insure that the project development substantially conforms to the applicable development standards.

Response: The applicant's design team has worked with city staff to create an acceptable site plan with access locations and other features in compliance with City of Wilsonville standards. The required land use approval procedures, including but not limited to Stage I/Stage II Planned Development and Site Design Review, are sufficient to assure compliance with all applicable development standards and guidelines. This criterion is met.

H. Adequate public facilities, services, and transportation networks are in place, or are planned to be provided concurrently with the development of the property. The applicant shall demonstrate compliance with the Transportation Planning Rule, specifically by addressing whether the proposed amendment has a significant effect on the transportation system pursuant to OAR 660-012-0060. A Traffic Impact Analysis (TIA) shall be prepared pursuant to the requirements in Section 4.133.05.(01).

Response: The proposed annexation and zone change from the Washington County: Future Development 20-Acre District (FD-20) to the City of Wilsonville Planned Development Industrial – Regionally Significant Industrial Area does not significantly affect the transportation system pursuant to OAR 660-012-0060(9), which states the following:

660-012-0060

(9) Notwithstanding section (1) of this rule, a local government may find that an amendment to a zoning map does not significantly affect an existing or planned transportation facility if all of the following requirements are met.

(a) The proposed zoning is consistent with the existing comprehensive plan map designation and the amendment does not change the comprehensive plan map;

(b) The local government has an acknowledged TSP and the proposed zoning is consistent with the TSP; and

(c) The area subject to the zoning map amendment was not exempted from this rule at the time of an urban growth boundary amendment as permitted in OAR 660-024-0020(1)(d), or the area was exempted from this rule but the local government has a subsequently acknowledged TSP amendment that accounted for urbanization of the area.

As noted above, the proposed zoning is consistent with the Acknowledged Comprehensive Plan Map and the applicant has not requested an amendment to the Comprehensive Plan designation. The City's TSP has been acknowledged by the Oregon Department of Land Conservation and Development and the proposed zoning is consistent with the TSP, which analyzed the site based on its Industrial Comprehensive Plan designation. Furthermore, the site was not exempted from the Transportation Planning Rule as part of a prior UGB amendment. Based on these conditions, the proposed zoning complies with OAR 660-012-0060(9) and this requirement is satisfied.

Additionally, the development approval and permitting process requires the developer to present a TIA prepared by the City's transportation consultant (DKS Associates) in accordance with the provisions of Section 4.133.05.(01), identifying traffic impacts associated with the proposed development. The developer will be required to make improvements and provide mitigations as indicated by that report.

(.03) If affirmative findings cannot be made for all applicable criteria listed above the Planning Commission or Development Review Board shall recommend that the proposed text or map amendment, as the case may be, be denied.

Response: The applicant has provided sufficient information to support City approval of the annexation and zone change proposal.

(.04) City Council action approving a change in zoning shall be in the form of a Zoning Order.
Response: This provision provides procedural guidance for implementation and requires no evidence from the applicant.

(.05) In cases where a property owner or other applicant has requested a change in zoning and the City Council has approved the change subject to conditions, the owner or applicant shall sign a statement accepting, and agreeing to complete the conditions of approval before the zoning shall be changed.
Response: The subject site is currently in Washington County, but its annexation into the City of Wilsonville has been anticipated. The site will be annexed and then immediately zoned as Planned Development – Regionally Significant Industrial Area (PD-RSIA) within the Coffee Creek Industrial Overlay District. No conditions of approval are anticipated for the zone change itself, as conditions will instead be applied to concurrent development proposal approvals, such as Stage I & II Planned Development Review and Site Design Review. The applicant acknowledges that the City Council may impose conditions of approval if Council finds that doing so would be necessary to approve the proposal. This criterion is met.

B. Stage I and Stage II Planned Development Plan

Section 4.117. Standards Applying To Industrial Developments In Any Zone

(.01) All industrial developments, uses, or activities are subject to performance standards. If not otherwise specified in the Planning and Development Code, industrial developments, uses, and activities shall be subject to the performance standards specified in Section 4.135 (.05) (PDI Zone).
Response: The proposal is for an industrial development and will comply with the performance standards. These standards are addressed more specifically in this narrative under Section 4.135.5. This standard is met.

Section 4.118. Standards Applying to all Planned Development Zones

(.01) Height Guidelines: In "S" overlay zones, the solar access provisions of Section 4.137 shall be used to determine maximum building heights. In cases that are subject to review by the Development Review Board, the Board may further regulate heights as follows:

- *A. Restrict or regulate the height or building design consistent with adequate provision of fire protection and fire-fighting apparatus height limitations.*
- *B. To provide buffering of low density developments by requiring the placement of three or more story buildings away from the property lines abutting a low density zone.*
- *C. To regulate building height or design to protect scenic vistas of Mt. Hood or the Willamette River.*

Response: The proposal is not located in an "S" overlay zone. This standard does not apply.

(.02) Underground Utilities shall be governed by Sections 4.300 to 4.320. All utilities above ground shall be located so as to minimize adverse impacts on the site and neighboring properties.
Response: All underground utilities will comply with City of Wilsonville standards as detailed in the responses to Sections 4.300 to 4.320, below.

(.03) Notwithstanding the provisions of Section 4.140 to the contrary, the Development Review Board, in order to implement the purposes and objectives of Section 4.140, and based on findings of fact supported by the record may:

A. *Waive the following typical development standards:*
   1. *minimum lot area;*
   2. *lot width and frontage;*
   3. *height and yard requirements;*
   4. *lot coverage;*
   5. *lot depth;*
   6. *street widths;*
   7. *sidewalk requirements;*
   8. *height of buildings other than signs;*
   9. *parking space configuration and drive aisle design;*
   10. *minimum number of parking or loading spaces;*
   11. *shade tree islands in parking lots, provided that alternative shading is provided;*
   12. *fence height;*
   13. *architectural design standards;*
   14. *transit facilities; and*
   15. *On-site pedestrian access and circulation standards; and*
   16. *Solar access standards, as provided in section 4.137.*

Response: The applicant is proposing six waivers to the Coffee Creek Design Overlay requirements. Descriptions and findings to support those waivers can be found in Section III.D of this narrative.

B. *The following shall not be waived by the Board, unless there is substantial evidence in the whole record to support a finding that the intent and purpose of the standards will be met in alternative ways:*
   1. *open space requirements in residential areas…;*
   2. *minimum density standards of residential zones…;*
   3. *minimum landscape, buffering, and screening standards;*

Response: Not applicable; this proposal is not located in a residential area and the applicant is not proposing waivers to these standards.

C. *The following shall not be waived by the Board, unless there is substantial evidence in the whole record to support a finding that the intent and purpose of the standards will be met in alternative ways, and the action taken will not violate any applicable federal, state, or regional standards:*
   1. *maximum number of parking spaces;*
   2. *standards for mitigation of trees that are removed;*
   3. *standards for mitigation of wetlands that are filled or damaged; and*
   4. *trails or pathways shown in the Parks and Recreation Master Plan.*

Response: Not applicable; the applicant is not proposing waivers to these standards.

D. *Locate individual building, accessory buildings, off-street parking and loading facilities, open space and landscaping and screening without reference to lot lines; and*

Response: The property is a single lot and the applications does not propose development across lot lines. This criterion does not apply.

E. *Adopt other requirements or restrictions, inclusive of, but not limited to, the following:*
   1. *Percent coverage of land by buildings and structures in relationship to property boundaries to provide stepped increases in densities away from low-density development.*

2. *Parking ratios and areas expressed in relation to use of various portions of the property and/or building floor area.*
3. *The locations, width and improvement of vehicular and pedestrian access to various portions of the property, including portions within abutting street or private drive. [amended by Ord. 682, 9/9/10]*
4. *Arrangement and spacing of buildings and structures to provide appropriate open spaces around buildings.*
5. *Location and size of off-street loading areas and docks.*
6. *Uses of buildings and structures by general classification, and by specific designation when there are unusual requirements for parking, or when the use involves noise, dust, odor, fumes, smoke, vibration, glare or radiation incompatible with present or potential development of surrounding property. Such incompatible uses may be excluded in the amendment approving the zone change or the approval of requested permits.*
7. *Measures designed to minimize or eliminate noise, dust, odor, fumes, smoke, vibration, glare, or radiation which would have an adverse effect on the present or potential development on surrounding properties.*
8. *Schedule of time for construction of the proposed buildings and structures and any stage of development thereof to insure consistency with the City's adopted Capital Improvements Plan and other applicable regulations.*
9. *A waiver of the right of remonstrance by the applicant to the formation of a Local Improvement District (LID) for streets, utilities and/or other public purposes.*
10. *Modify the proposed development in order to prevent congestion of streets and/or to facilitate transportation.*
11. *Condition the issuance of an occupancy permit upon the installation of landscaping or upon a reasonable scheduling for completion of the installation of landscaping. In the latter event, a posting of a bond or other security in an amount equal to one hundred ten percent (110%) of the cost of the landscaping and installation may be required.*
12. *A dedication of property for streets, pathways, and bicycle paths in accordance with adopted Facilities Master Plans or such other streets necessary to provide proper development of adjacent properties.*

Response: The applicant acknowledges that the Development Review Board may impose other requirements or restrictions, including but not limited to those specified above. However, given the nature of the proposed manufacturing/warehouse/distribution use, the applicant believes it is unnecessary to impose special restrictions or conditions of approval on the development.

(.04) The Planning Director and Development Review Board shall, in making their determination of compliance in attaching conditions, consider the effects of this action on availability and cost. The provisions of this section shall not be used in such a manner that additional conditions, either singularly or cumulatively, have the effect of unnecessarily increasing the cost of development. However, consideration of these factors shall not prevent the Board from imposing conditions of approval necessary to meet the minimum requirements of the Comprehensive Plan and Code.

Response: The applicant submits that the application is suitable for approval as proposed; however, recognizing the DRB's authority to impose conditions of approval where appropriate, the applicant requests the opportunity to negotiate cost-effective approaches for meeting the minimum requirements of the Comprehensive Plan and Code as required by this Section.

(.05) The Planning Director, Development Review Board, or on appeal, the City Council, may as a condition of approval for any development for which an application is submitted, require that portions of

the tract or tracts under consideration be set aside, improved, conveyed or dedicated for the following uses:

A. Recreational Facilities: The Director, Board, or Council, as the case may be, may require that suitable area for parks or playgrounds be set aside, improved or permanently reserved for the owners, residents, employees or patrons of the development consistent with adopted Park standards and Parks and Recreation Master Plan.

B. Open Space Area: Whenever private and/or common open space area is provided, the City shall require that an association of owners or tenants be established which shall adopt such Articles of Incorporation, By-Laws or other appropriate agreement, and shall adopt and impose such Declaration of Covenants and Restrictions on such open space areas and/or common areas that are acceptable to the Development Review Board. Said association shall be formed and continued for the purpose of maintaining such open space area. Such an association, if required, may undertake other functions. It shall be created in such a manner that owners of property shall automatically be members and shall be subject to assessments levied to maintain said open space area for the purposes intended. The period of existence of such association shall be not less than twenty (20) years and it shall continue thereafter and until a majority vote of the members shall terminate it, and the City Council formally votes to accept such termination.

C. Easements: Easements necessary to the orderly extension of public utilities, and the protection of open space, may be required as a condition of approval. When required, such easements must meet the requirements of the City Attorney prior to recordation.

Response: The applicant acknowledges that the Planning Director and Development Review Board have this authority. However, establishment of recreational facilities or open space areas would be inconsistent with the City's planned use of this property for industrial development. The applicant will provide public utility easements adjacent to abutting public streets as necessary, as depicted in the R-series drawing sheets in Attachment 6. This standard is met.

(.06) Nothing in this Code shall prevent the owner of a site that is less than two (2) acres in size from filing an application to rezone and develop the site as a Planned Development. Smaller properties may or may not be suitable for such development, depending upon their particular sizes, shapes, locations, and the nature of the proposed development, but Planned Developments shall be encouraged at any appropriate location.

Response: The subject property is larger than two acres. This standard does not apply.

(.07) Density Transfers. In order to protect significant open space or resource areas, the Development Review Board may authorize the transfer of development densities from one portion of a proposed development to another. Such transfers may go to adjoining properties, provided that those properties are considered to be part of the total development under consideration as a unit.

Response: The applicant is not proposing a density transfer. This standard does not apply.

(.08) Wetland Mitigation and other mitigation for lost or damaged resources. The Development Review Board may, after considering the testimony of experts in the field, allow for the replacement of resource areas with newly created or enhanced resource areas. The Board may specify the ratio of lost to created and/or enhanced areas after making findings based on information in the record. As much as possible, mitigation areas shall replicate the beneficial values of the lost or damaged resource areas.

Response: The subject property does not contain significant resources such as wetlands, so the proposed development will not contribute to loss of wetlands or other resource areas.

(.09) Habitat-Friendly Development Practices. To the extent practicable, development and construction activities of any lot shall consider the use of habitat-friendly development practices, which include:

A. *Minimizing grading, removal of native vegetation, disturbance and removal of native soils, and impervious area;*

B. *Minimizing adverse hydrological impacts on water resources, such as using the practices described in Part (a) of Table NR-2 in Section 4.139.03, unless their use is prohibited by an applicable and required state or federal permit, such as a permit required under the federal Clean Water Act, 33 U.S.C. §§1251 et seq., or the federal Safe Drinking Water Act, 42 U.S.C. §§300f et seq., and including conditions or plans required by such permit;*

C. *Minimizing impacts on wildlife corridors and fish passage, such as by using the practices described in Part (b) of Table NR-2 in Section 4.139.03; and*

D. *Using the practices described in Part (c) of Table NR-2 in Section 4.139.03.*

Response: Based on the submitted materials, including retention of the group of ten mature Douglas fir trees and specification of dense plantings of native species in landscape islands, the proposal complies with applicable standards. Grading is necessary to provide a flat site for industrial use, which is the City's long-planned utilization of the area; however, to the extent feasible, native vegetation and soils will be left undisturbed. To avoid adverse impacts on water resources, the on-site stormwater management system is designed to treat surface water runoff before allowing it to infiltrate in six on-site surface water rain gardens, some of which are augmented by rock chambers or Underground Infiltration Chambers (UICs) within the site to achieve sufficient infiltration to meet applicable City standards. The site is not within a wildlife corridor. To the extent feasible, for an industrial development project, the applicant can implement some of the Design and Construction Practices listed in Table NR-2 in the construction process. Examples from that table include (gray text indicates non-applicable items):

Table NR-2: Habitat-Friendly Development Practices
Part (A) Design and Construction Practices to Minimize Hydrologic Impacts
1. Amend disturbed soils to original or higher level of porosity to regain infiltration and stormwater storage capacity.
2. Use pervious paving materials for residential driveways, parking lots and walkways.
3. Incorporate stormwater management in road right-of ways.
4. Landscape with rain gardens to provide on-lot detention, filtering of rainwater and groundwater re-charge.
5. Use green roofs for runoff reduction, energy savings, improved air quality, and enhanced aesthetics.
6. Disconnect downspouts from roofs and direct the flow to vegetated infiltration/filtration areas such as rain gardens.
7. Retain rooftop runoff in a rain barrel for later on-lot use in lawn and garden watering.
8. Use multi-functional open drainage systems in lieu of more conventional curb and gutter systems.
9. Use bioretention cells as rain gardens in landscaped parking lot islands to reduce runoff volume and filter pollutants.
10. Apply a treatment train approach to provide multiple opportunities for storm water treatment and reduce the possibility of system failure.
11. Reduce sidewalk width and grade them such that they drain to the front yard of a residential lot or retention area.
12. Reduce impervious impacts of residential driveways by narrowing widths and moving access to the rear of the site.
13. Use shared driveways.
14. Reduce width of residential streets, depending on traffic and parking needs.
15. Reduce street length, primarily in residential areas, by encouraging clustering and using curvilinear designs.

16. Reduce cul-de-sac radii and use pervious vegetated islands in center to minimize impervious effects, and allow them to be utilized for truck maneuvering/loading to reduce need for wide loading areas on site.
16. Minimize car spaces and stall dimensions, reduce parking ratios, and use shared parking facilities and structured parking.
17. Minimize the number of steam crossings and place crossing perpendicular to stream channel, if possible.
18. Allow narrow street right-of-ways through stream corridors whenever possible to reduce adverse impacts of transportation corridors.
Part (B) Design and Construction Practices to Minimize Impacts on Wildlife Corridors and Fish Passage
1. Carefully integrate fencing into the landscape to guide animals toward animal crossings under, over, or around transportation corridors.
2. Use bridge crossings rather than culverts, wherever possible.
3. If culverts are utilized, install slab, arch or box type culverts, preferably using bottomless designs that more closely mimic stream bottom habitat.
4. Design stream crossings for fish passage with shelves and other design features to facilitate terrestrial wildlife passage.
5. Extend vegetative cover through the wildlife crossing in the migratory route, along with sheltering areas.
Part (C) Miscellaneous Other Habitat Friendly Design and Construction Practices
1. Use native vegetation throughout the development.
2. Locate landscaping adjacent to SROZ.
3. Reduce light spill-off into SROZ areas from development.
4. Preserve and maintain existing trees and tree canopy coverage, and plant trees, where appropriate, to maximize future tree canopy coverage.

See in particular the landscaping plans in the L-series sheets in Attachment 6.

Section 4.134. Coffee Creek Industrial Design Overlay District

(.01) Purpose. The Coffee Creek Industrial Design Overlay District (Coffee Creek DOD) is an overlay district within the Planned Development Industrial - Regionally Significant Industrial Area (RSIA) Zone Section 4.135.5. The purpose of this Coffee Creek DOD is to implement the Coffee Creek Industrial Area Master Plan (2007) by establishing standards for street design and connectivity, site design and circulation, building form, and building architecture and landscape for all development located within the master plan area. These standards are intended to result in:

A. An industrial district featuring cohesive and high-quality site, landscape, and building design that is well integrated with adjacent streetscapes and other public spaces.

Response: The proposed development features a high-quality, Class A speculative industrial building and site designed to meet the needs of warehousing/distribution and manufacturing tenants (capacity for one or two) seeking to locate in Wilsonville's desirable Coffee Creek Industrial Area. The proposed site plan responds to existing site features/opportunities, including east and west frontages on two Addressing Streets, by orienting the building and access/circulation to separate tractor-trailer operations from employee and visitor interaction to the extent it is feasible to do so. Tractor-trailer parking and loading operations will be screened from the public right-of-way along Grahams Ferry Road with landscaping and fencing and accessed via a separate driveway access on the southern Supporting Street. The primary building façade will face Garden Acres Road, with high-quality entryway and office design features visible

to the public right-of-way, to establish a sense of place for visitors and employees, complemented by landscaping, lighting, and wayside development, connecting the site to the public right-of-way.

This site-sensitive approach is consistent with this and other Purpose statements of the Coffee Creek DOD, because it provides a functional facility for the types of employment desired in the District while providing a landscape design that forms a site-sensitive, naturalistic, park-like streetscape environments along the two public rights of way. For most passers-by along Grahams Ferry Road, the landscaping and fencing will obscure views of the truck maneuvering/dock area along the southwest portion of the building and site. The northwest corner of the building, a portion not used for truck loading, will be partially visible from Grahams Ferry Road, allowing truck drivers approaching the facility from the north to identify the site. On the east side of the building, landscaping along Garden Acres Road and within the site will highlight and focus attention on the building's office areas, located at the building's southeast (Primary Building Entrance) and northeast corners. Notably, the group of ten mature Douglas Fir trees will be preserved to maintain and continue the naturalistic landscape of the surrounding area.

The two driveways on the southern Supporting Street will contribute to safer and smoother operations on the Addressing Streets, limiting interactions between truck and automobile traffic compared to a shared access point: The western driveway will serve the truck loading area, and the eastern driveway will support on-site parking near the southern office bump-out.

Pedestrian access, circulation, and points of interest, including visual relationships to integrated surface water quality treatment features, are integrated into the landscape design along the street edge. Well-defined walkways provide pedestrian access between the public sidewalk and each of the building's two office entrances.

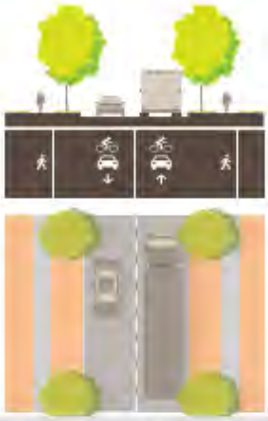
These combined features all contribute to the build-out of the Coffee Creek DOD consistent with this Purpose statement and the others listed below. The Applicant has responded below to all of the applicable standards that apply in the Coffee Creek DOD; however, implementing this particular development plan does require approval of waivers under Guidelines in the Coffee Creek Pattern Book, for those site features whose design approach needs to differ somewhat from the standards. In those cases, the Applicant presents the case for approval pursuant to a waiver based on satisfaction of the applicable Guidelines.

C. A multi-modal transportation network accommodating pedestrian, bicyclists, transit riders, motorists, and freight in the context of a modern light industrial district.

Response: The project, including street- and other public works improvements, is designed to meet the transportation network standards for Grahams Ferry Road and Garden Acres Road as prescribed in the Wilsonville Light Industrial Pattern Book (see image below). The design plans for proposed improvements are found in the R-series of civil engineering drawings in Attachment 6.

Grahams Ferry Rd

Type	Minor Arterial
Role in Network	Freight and Bike Route
Design Speed	Under 30 mph
Right-of-Way Easement	110 feet
Curb-to-Curb Width	82 feet
Travel Lanes (number)	4
Travel Lane Width	10-12 feet
Center Turn Lane Width	14 feet
Parking Lane Width	0
Bike Facilities Width	10 feet Buffered Bike Lane
Sidewalk Width	6 feet each side
Planting Strip Width	8 feet



Garden Acres Rd

Type	Minor Arterial
Role in Network	
Design Speed	Under 25 mph
Right-of-Way Easement	52 feet
Curb-to-Curb Width	24 feet
Travel Lanes (number)	2
Travel Lane Width	10-11 feet
Center Turn Lane Width	NA
Parking Lane Width	0
Bike Facilities Width	Cycle track
Sidewalk Width	6 feet each side
Planting Strip Width	8 feet

The proposal includes a 6' public sidewalk along the Grahams Ferry Street frontage. Within the public right-of-way, a 7' corridor with a planter strip and stormwater management facilities separates the 6' sidewalk from the paved Grahams Ferry Road street surface. Garden Acres Road includes a 5' sidewalk, a 4.5' planter strip/stormwater management facilities corridor, 7' bike lane, and 4' planter strip separated from the street surface. The right-of-way landscaping is complemented by on-site landscaping islands with dense plantings and pedestrian amenity features, including a pedestrian wayside with a seating area adjacent to Garden Acres Road, that will give both the Grahams Ferry and Garden Acres Road corridors a naturalistic appearance and partially obscure the proposed building. See Attachment 6, Sheets L1.10 and L5.11 for details.

Pedestrians can access the building along four internal pathways, one between the Garden Acres Road sidewalk and the Primary Building Entrance near the southeast corner of the site, a second at the northeast corner of the site, a third between the Grahams Ferry Road sidewalk and the northwest corner of the building and north entrance, and a fourth from the Supporting Street sidewalk to the Primary Building Entrance; the last requires a staircase to ascend to the walkway at the finish floor elevation. These pathways are aligned to connect between the public sidewalks

and building entrances at the two office corners. Where it is necessary to cross vehicular drive aisles, the proposed alignments will provide safe, visible locations outside the central truck maneuvering/dock apron area.

This standard is met.

C. Preservation of trees and natural features.

Response: The middle part of the site contains open pasture. There are multiple buildings for residential and agricultural use in the western part of the property:

The eastern portion of the site contains a section of unharvested agricultural trees that are exempt from preservation requirements and will be removed. A group of ten mature Douglas fir trees near the northeast corner of the property has been identified for preservation in the Tree Preservation Plan (Attachment 7). The proposed site plan organizes site access/circulation and

locates the building and other features to preserve those trees, and also locates the Wayside adjacent to the stand, to provide a naturalistic, park-like adjacent feature. This standard is met.

D. Minimization of adverse impacts to adjacent properties from development that detracts from the character and appearance of the area.

Response: The site has industrial zoning and the use is allowed. The proposed development will meet the required buffers and screening, thereby minimizing impacts on adjacent properties. This standard is met.

E. Minimization of the off-site visibility of vehicular parking, circulation and loading areas.

Response: Visibility of the site's development will be minimized to the extent feasible given use and site constraints. Vehicle parking is concentrated on the east side of the building along the frontage on SW Garden Acres Road, which will be partially obscured with naturalistic park-like landscaping. A separate pod provides a total of 22 parking spaces, two of which are ADA spaces, located close to the north office entrance. The loading area on the west side is screened by dense plantings and fencing adjacent to SW Grahams Ferry Road. This standard is met.

F. Creation of a pleasant and functional industrial district for employees and visitors.

Response: The proposed landscaping, wayside, pedestrian pathway, and placement of parking predominantly on the sides of the building will contribute, at the site level, to creating a pleasant and functional industrial district. This standard is met.

G. A predictable and timely process for reviewing light industrial development applications.

Response: This provision provides procedural guidance for implementation and requires no evidence from the applicant.

(.02) Applicability. The Coffee Creek DOD shall apply to all properties within the Coffee Creek Industrial Area Master Plan as shown in the Regulating Plan (Figure CC-1). The provisions of this section shall apply to:

A. All new building construction.
B. Any exterior modifications to existing, non-residential buildings, subject to Section 4.134 (.03).
C. All development of site improvements including but not limited to new paved parking lots, outdoor storage, display areas, signs, and landscaping.
D. All building expansions greater than 1,250 square feet.

Response: The proposal is for the construction of a new building and site improvements. This standard applies.

(.03) Exceptions. This section does not apply to the following:

A. Maintenance of the exterior of an existing industrial/employment structure, such as painting to the approved color palette, reroofing, or residing with the same or similar materials.
B. Interior remodeling.
C. Maintenance of existing dwellings and accessory buildings.
D. Maintenance of agricultural buildings.

Response: The proposal does not include any activities subject to these exceptions. This standard does not apply.

(.04) Uses that Are Typically Permitted. The uses permitted shall be governed by Section 4.135.5 (.03).

Response: The proposed use is permitted by Section 4.135.5(.03). See details of compliance in the response to Section 4.135 of this narrative. This standard is met.

(.05) Prohibited Uses. The uses prohibited shall be governed by Section 4.135.5 (.04).
Response: The range of proposed uses are those typically permitted. No prohibited uses are proposed.

(.06) Overview of Coffee Creek DOD Standards.

A. Section 4.134 (.09) Regulating Plan. The Regulating Plan organizes all existing and future streets, drives, and shared-use paths within the Coffee Creek Industrial Area into a hierarchy of Addressing Streets, Supporting Streets and Through Connections.

B. Section 4.134 (.10) Connectivity Standards.

1. New Supporting Streets and Through Connections are required within the Coffee Creek DOD to meet Connectivity Requirements as shown on Figure CC-4.

Response: In accordance with Figure CC-1, a Required Supporting Street is proposed along the south boundary as an access easement providing connection between Grahams Ferry Road and Garden Acres Road, satisfying the requirements of Figure CC-4 and this standard.

2. The Street Types specify the cross sections for each of the street and shared-use path types within the Regulating Plan. These cross section specifications apply to both existing and proposed new streets. A range of cross sections for Supporting Streets and Through Connections is permitted and detailed in Figures CC-2 and CC-3.

Response: The project will include dedication and improvements along the property's frontages on SW Grahams Ferry Road and Garden Acres Road to meet Addressing Street requirements. The Required Supporting Street will be partially improved according to standards determined by Staff; its design supports an ultimate 32' curb-to-curb width, within the 24-54' range of Supporting Street Standards in Figure CC-2. There is no required Through Street for this site/location. This standard is met.

C. Section 4.134 (.11) Development Standards Table.

1. The Development Standards Table provides an overview of all applicable development standards. The development standards for any given parcel are determined by the existing or future street or shared-use path type on which the parcel fronts, as detailed in Table CC-1.

Response: The development standards Table CC-1 below provides a summary of compliance with the development standards. The responses in the table also highlight those standards for which the applicant is requesting waivers. This standard is met.

2. Areas bounded by new Supporting Streets and Through Connections are designated as Parcels and are required to comply with Development Standards governing site design, building orientation and frontage. The development standards for site design, building façade and landscape design are intended to work in tandem with the street types to create a cohesive and unified public realm.

Response: The subject property is adjacent to (bounded by) Addressing Streets and a Required Supporting Street. This application package demonstrates compliance with the appropriate development standards in that context, including waiver requests as needed. This standard is met.

3. *Adjustments to Development Standards may be granted by the Planning Director for quantifiable provisions, as noted in Tables CC-1 though CC-4, if the Planning Director finds that the adjusted Development Standard will perform as well as the Development Standard.*

Response: Adjustments are sought as noted in the responses to Tables CC-1 through CC-4 below.

D. Coffee Creek DOD Pattern Book. The Coffee Creek DOD Pattern Book provides supplemental design guidelines, which are intended to allow more flexibility in design than the Development Standards while satisfying the purpose of the Coffee Creek DOD.

Response: When applying for a waiver to a development standard, the applicant has relied on the Coffee Creek DOD Pattern Book's design guidelines to demonstrate how the purposes of the Coffee DOD are satisfied.

(.07) Review Process. Development applications shall follow the application review process described in:

A. Section 4.197 Zone Changes and Amendments.
B. Section 4.198 Comprehensive Plan Changes.
C. Section 4.700 Annexation and Urban Growth Boundary Amendments
D. Section 4.140 Planned Development Regulations.

Response: This narrative addresses applicable provisions of Sections 4.197, 4.700, and 4.140. As no Comprehensive Plan Change is necessary or requested, Section 4.198 has not been addressed. This standard is met.

(.08) Waivers. The Development Review Board may waive standards as listed in Section 4.134 (.11), consistent with the provisions of Section 4.118 (.03).

A. The following standards shall not be waived, unless there is substantial evidence in the whole record to support a finding that the intent and purpose of the standards will be met in alternative ways:
1. Required minimum building height as provided in Section 4.134 (.11) Table CC-4;
2. Parking location and design along addressing streets in Section 4.134 (.11) Table CC-3; and
3. Parcel pedestrian access as listed in Section 4.134 (.11) Table CC-3.

Response: The applicant is not proposing a waiver from building height or parcel pedestrian access requirements. The applicant is proposing waivers with respect to parking location and design along addressing streets, supported by substantial evidence (in Section III.D below) that the project meets the intent and purpose of the standards in alternative ways. This provision is satisfied.

B. In addition to meeting the purposes and objectives of Section 4.140, any waivers granted in the Coffee Creek DOD must be found to be consistent with the intent of the Coffee Creek DOD Pattern Book.

Response: When applying for a waiver to a development standard, the applicant has relied on the Coffee Creek DOD Pattern Book's design guidelines to satisfy the purpose of the Coffee DOD. Further discussion is included in Section III.D of this narrative. This standard is met.

(.09) Coffee Creek DOD Regulating Plan, Figure CC-1.

A. Components of the Regulating Plan Map

1. *Addressing Streets. Existing and planned streets within the Regulating Plan Area are called Addressing Streets and include Cahalin Road, Day Road, Clutter Street, Grahams Ferry Road, Garden Acres Road, and "Future" Street.*
2. *Overlay District. Land area identified within the Coffee Creek DOD on Figure CC-1 is subject to additional Connectivity Standards as detailed in Figure CC-4 and Table CC-1.*

Response: SW Grahams Ferry Road and Garden Acres Road serve as the Addressing Streets for the site; SW Cahalin Road is not designated as an Addressing Street in this location. The development proposal includes proposed construction of street improvements along the property frontages consistent with that designation. Additional Connectivity Standards will be met with the development of the Required Supporting Street as detailed in Figure CC-4 and Table CC-1. This standard is met.

(.10) Coffee Creek Connectivity Standards

A. Street Types, Figure CC-1. Within the land area bounded by Addressing Streets, connectivity shall be provided through new streets or private drives and shared use paths. The location, alignment, and cross-section of required streets or private drives and shared-use paths is flexible, as long as they comply with spacing and minimum cross section standards. New connections may be one of the following types:

1. *Supporting Streets. Supporting Streets are new public streets or public easements. They shall meet the development standards set out in Figure CC-2.*
    a. *A Required Supporting Street is one that intersects with an Addressing Street as shown on Figure CC-1. The exact location and design of these connections will be determined at the time of development review.*

b. *Planned Intersections are locations where Existing and Planned Addressing Streets intersect with required Supporting Streets, and Planned Pathways, as generally shown in Figure CC-1.*

Figure CC-1 - Regulating Plan

2. *Through Connections. Through Connections are new public streets or public easements with multi-use paths, or streets or public easements that combine characteristics of streets and multi-use paths. They shall meet the Development Standards set out in Figure CC-3.*

Response: This site is bounded on the east and west by two Addressing Streets, but its accesses are limited due to intersection spacing requirements. Pursuant to this standard, Figure CC-1 and Figure CC-2, the applicant will construct a southern Supporting Street within an easement along the southern boundary of this site, meeting the minimum driveway spacing and curb-to-curb distance requirements on that frontage, as well as creating the planned intersection at Garden Acres Road and the Supporting Street.

B. *Planned Pathways are multi-use paths or pedestrian connections that are planned in the Transportation Systems Plan to occur in the location generally shown in Figure CC-1. A Planned Pathway may be employed to meet required connectivity, if it complies with Through Connection Standards for Connection Spacing and Connection Type, see Figure CC-6.*

Response: The Subject Property is not at a location where a pathway or other pedestrian connection is planned. No pedestrian connection construction is required (other than street frontage improvements as discussed above).

C. Maximum Connection Spacing.

1. Addressing Streets. When intersecting with an Addressing Street, new Supporting Streets and Through Connections shall meet maximum spacing standards as set out in Table CC-1.

2. Internal Supporting Streets and Through Connections. See Figure CC-4 and Table CC-1.

Response: The proposed Supporting Street is in the proper alignment and spacing as required by the City's Transportation Systems Plan (TSP) and identified in Figure CC-1. This standard is met.

D. Required Connectivity Master Plan. Connectivity Master Plans are required for all development within the Coffee Creek DOD. Development proposals shall show conceptually how the Connectivity Requirements will be met. In addition, the Connectivity Master Plan should generally indicate how parking, driveways, walkways, waysides, etc., will relate or connect to adjacent parcels.

Response: The site plan (Sheet C1.10 of Attachment 6) provides the information required to understand how the proposed development plan meets applicable connectivity requirements. Because this project is the first proposal in this immediate area submitted under the Coffee Creek Industrial Design Overlay District regulations, there are no previously approved driveways, walkways, waysides or other features in the surrounding vicinity.

(.11) Development Standards Table. Areas bounded by Addressing Streets, Supporting Streets and Through Connections shall be designated as a Parcel and subject to the Development Standards in Tables CC-1 through CC-4.

Table CC-1: Street Design and Connectivity			
	Addressing Streets	***Supporting Streets***	***Through Connections***
General	*Development Standards within this table are not adjustable.*		
Connection Spacing	*Not applicable, Addressing Streets exist or are planned*	*600 feet, maximum, centerline to centerline. Supporting Streets and Through Connections shall intersect with Garden Acres Road as shown on Figure CC-1, Regulating Plan; or if the Addressing Street is Day Road, no less than 1,000 feet apart, centerline to centerline.*	
Connection Type	*Addressing Streets are Day Road, Grahams Ferry Road, Cahalin Road, Garden Acres Road, Clutter Street, and "Future" Street.*	*Supporting Streets are those meeting Specifications, Figure CC-2. A Required Supporting Street is one that intersects with an Addressing Street. The*	*Through Connections are those meeting Specifications, Figure CC-3. Through Connections may be multimodal or used exclusively for*

Table CC-1: Street Design and Connectivity			
	Addressing Streets	***Supporting Streets***	***Through Connections***
		exact location and design of these connections will be determined at the time of development review.	*bicycle and pedestrian access.*
Response: SW Grahams Ferry Road and Garden Acres Road are Addressing Streets. A Supporting Street is proposed according to Figure CC-1 and Figure CC-2.			
Connection Hierarchy and Primary Frontage	*If one of the streets or connections bounding a parcel is an Addressing Street, the Addressing Street shall be the Primary Frontage.* *If none of the bounding streets or connections is an Addressing Street, a Supporting Street shall be the Primary Frontage.* *See Figure CC-5.*		
Response: The site double-fronts two Addressing Streets. The applicant has designed the site for Garden Acres Road as the primary frontage, with the building facing east.			

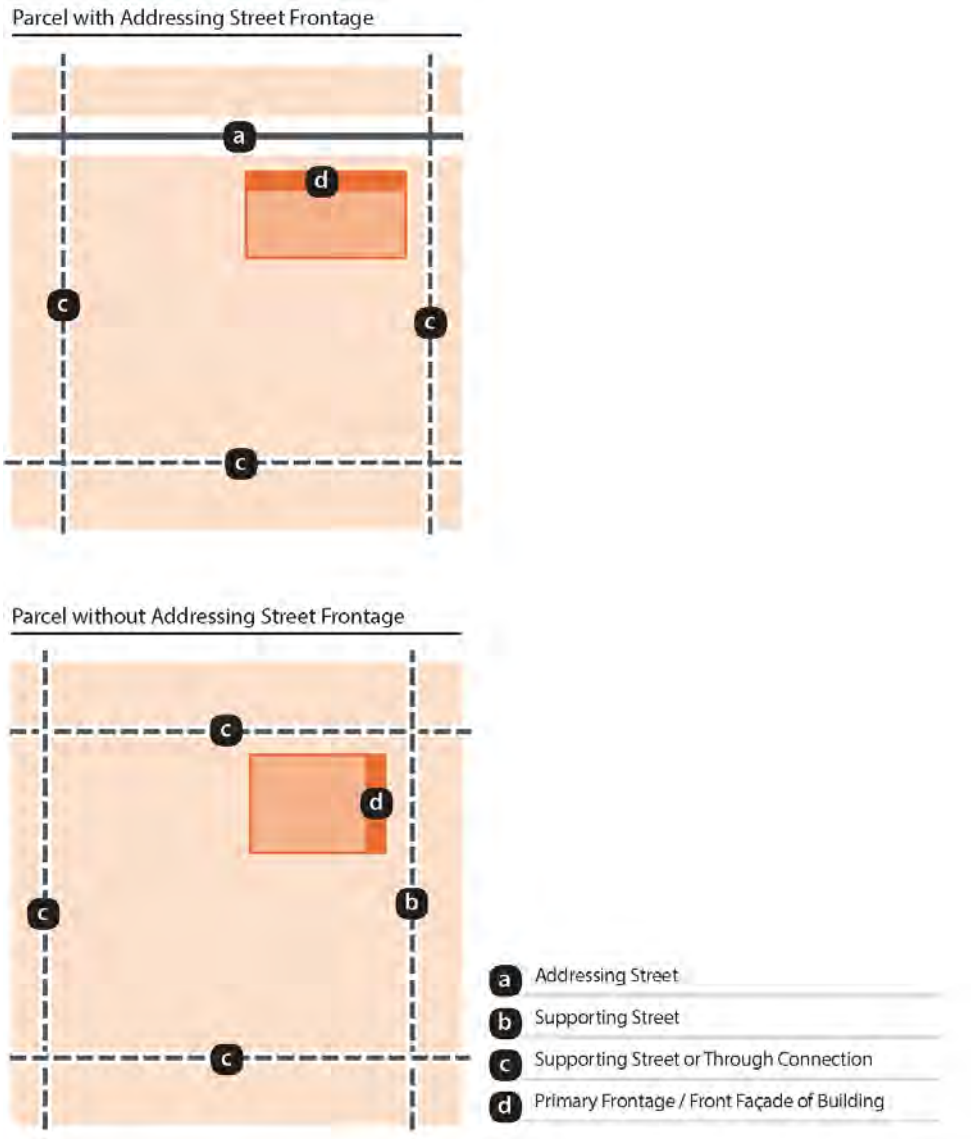


Figure CC-5 - Connection Hierarchy and Primary Frontage

Table CC-2: District-Wide Planning and Landscaping			
	Addressing Streets	***Supporting Streets***	***Through Connections***
General	*The following provisions apply:* • *Section 4.176 for landscaping standards* • *Section 4.610.10 for tree removal, relocation or replacement.* • *Section 4.610.10 (.01) C. for consideration of development alternatives to preserve wooded areas & trees.*		

Response: The project's planting plan satisfies or exceeds Section 4.176 for landscaping standards along the SW Grahams Ferry Road and Garden Acres Road frontages (Addressing Streets) using the alternative design guidelines provided by the Coffee Creek Light Industrial Pattern Book, as detailed in Table CC-3.6 Plantings below. The new Required Supporting Street will meet the planting requirements for Low Screen (Section 4.176(.02)C) as shown in the Landscape Plans (L-Series Sheets in Attachment 6).

The applicant's plan for compliance with Section 4.610.10 for tree removal, relocation, and replacement is provided in Section 4.600 below.

Table CC-3: Site Design			
	Addressing Streets	***Supporting Streets***	***Through Connections***
1. Parcel Access			
General	*Unless noted otherwise below, the following provisions apply:* • *Section 4.177 (.02) for street design;* • *Section 4.177 (.03) to (.10) for sidewalks, bike facilities, pathways, transit improvements, access drives & intersection spacing.* *The following Development Standards are adjustable:* • *Parcel Driveway Spacing: 20%* • *Parcel Driveway Width: 10%*		
Parcel Driveway Access	*Not applicable*	*Limited by connection spacing standards* *Parcel Driveway Access may be employed to meet required connectivity, if it complies with Supporting Street Standards for Connection Spacing and Connection Type, see Figure CC-6.* *Subject to approval by City Engineer*	*Limited by connection standards for motorized vehicle access.* *Parcel Driveway Access may be employed to meet required connectivity, if it complies with Through Connection Standards for Connection Spacing and Connection Type, see Figure CC-6.* *Subject to approval by City Engineer*
Parcel Driveway Spacing	*Not applicable*	*150 feet, minimum* *See Figure CC-6*	*150 feet, minimum* *See Figure CC-6*
Parcel Driveway Width	*Not applicable*	*24 feet, maximum or complies with Supporting Street Standards*	*24 feet, maximum or complies with Through Connection Standards*
Response: Two driveways are proposed on the southern Supporting Street. Each of the driveways is designed with a location, width, and configuration suitable to accommodate turning movements by all types of vehicles anticipated at this facility, including semi tractor-trailer rigs. Waiver request Number 1			

Table CC-3: Site Design			
	Addressing Streets	***Supporting Streets***	***Through Connections***
addresses this aspect of the proposal; findings are provided below in the Waivers section. With approval of the requested waiver, the project complies.			
2. Parcel Pedestrian Access			
General	*Unless noted otherwise below, the following provisions apply:* • *Section 4.154 (.01) for separated & direct pedestrian connections between parking, entrances, street right-of-way & open space* • *Section 4.167 (.01) for points of access*		
Parcel Pedestrian Access Spacing	*No restriction*		
Parcel Pedestrian Access Width	*8 feet wide minimum*		
Parcel Pedestrian Access to Transit	*Provide separated & direct pedestrian connections between transit stops and parking, entrances, street right-of-way & open space.*		
Response: Walkways are provided between the public sidewalks and main building entrances at office areas located on the east and north sides of the building. Their routing avoids conflict with driveways and the truck dock maneuvering area, and provides drive aisle crossings at locations – such as near the entrances where feasible – that have good visibility for safety.			
3. Parcel Frontage			
Parcel Frontage, Defined	*Parcel Frontage shall be defined by the linear distance between centerlines of the perpendicular Supporting Streets and Through-Parcel Connections. Where Parcel Frontage occurs on a curved segment of a street, Parcel Frontage shall be defined as the linear dimension of the Chord.*		
Primary Frontage, Defined	*The Primary Frontage is the Parcel Frontage on an Addressing Street. If the parcel is not bounded by Addressing Streets, it is the Parcel Frontage on a Supporting Street.* *See Figure CC-5.*		
Parcel Frontage Occupied by a Building	*A minimum of 100 feet of the Primary Frontage shall be occupied by a building.* *The maximum Primary Frontage occupied by a building shall be limited only by required side yard setbacks.*	*No minimum*	

Table CC-3: Site Design			
	Addressing Streets	***Supporting Streets***	***Through Connections***
Response: The site has two Addressing Streets, on its east and west sides, with Garden Acres Road designated as the Primary Frontage. The proposed building is sited with its long axis parallel to the Addressing Street. Its front (primary) façade exceeds 100 feet and is designed to create a strong visual relationship with Garden Acres Road (Primary Frontage on the Addressing Street), together with the dense landscaping and pedestrian wayside in the foreground, near the building's northeast corner. The north wall of the proposed building extends practically the full available width of the Subject Property, except to the extent needed to provide landscaping and emergency access, parking, and circulation around the whole building. The proposed plan complies with these requirements.			
4. Parking Location and Design			
General	*Unless noted otherwise below, the following provisions apply:* • *Section 4.155 (03) Minimum and Maximum Off-Street Parking Requirements* • *Section 4.155 (04) Bicycle Parking* • *Section 4.155 (06) Carpool and Vanpool Parking Requirements* • *Section 4.176 for Parking Perimeter Screening and Landscaping - permits the parking landscaping and screening standards as multiple options* *The following Development Standards are adjustable:* • *Parking Location and Extent: up to 20 spaces permitted on an Addressing Street*		
Response: The proposed 71 stalls currently shown in the site plan satisfy the minimum requirement for a mixed-use tenant scenario with up to 20,700 SF of manufacturing use and the remaining 127,579 SF of the building in the warehousing category.			
Parking Location and Extent	*Limited to one double-loaded bay of parking, 16 spaces, maximum, designated for short-term (1 hour or less), visitor, and disabled parking only between right-of-way of Addressing Street and building.*	*Parking is permitted between right-of-way of Supporting Street and building.*	*Parking is permitted between right-of-way of Through Connection and building.*
Response: The parking area near the southeast office entrance, generally between the Primary Building Entrance and Garden Acres Road, an Addressing Street, provides 49 of the site's 71 proposed parking spaces. Waiver request Number 2 addresses this aspect of the proposal. With approval of the requested waiver, the project complies.			
Parking Setback	*20 feet minimum from the right-of-way of an Addressing Street.*	*15 feet minimum from the right-of-way of a Supporting Street.*	*10 feet minimum from the right-of-way of a Through Connection.*

Table CC-3: Site Design			
	Addressing Streets	***Supporting Streets***	***Through Connections***
Response: The eastern spaces in the parking area near the Primary Building Entrance (southeast), between the building and Garden Acres Road, an Addressing Street, are set back less than 20 feet from the right-of-way line. Waiver request Number 3 addresses this aspect of the proposal. With approval of the requested waiver, the project complies.			
Parking Lot Sidewalks	*Where off-street parking areas are designed for motor vehicles to overhang beyond curbs, sidewalks adjacent to the curbs shall be increased to a minimum of seven (7) feet in depth.*	*Where off-street parking areas are designed for motor vehicles to overhang beyond curbs, planted areas adjacent to the curbs shall be increased to a minimum of nine (9) feet in depth.*	
Response: Walkways where vehicles may overhang curbs will be at least seven (7) feet wide, in compliance with this standard.			
Parking Perimeter Screening and Landscaping	*Screen parking area from view from Addressing Streets and Supporting Streets by means of one or more of the following:* *a. General Landscape Standard, Section 4.176 (.02) C.* *b. Low Berm Standard, Section 4.176 (.02) E., except within 50 feet of a perpendicular Supporting Street or Through Connection as measured from the centerline.*		*Screen parking area from view from Through Connections by means of* *a. Low Screen Landscape Standard, Section 4.176 (.02) D., or* *b. High Screen Landscaping Standard, Section 4.176 (.02) F., or* *c. High Wall Standard, Section 4.176 (.02) G., or* *d. Partially Sight-obscuring Fence Standard, Section 4.176 (.02) I.*
Response: The proposed project includes dense landscape plantings to screen parking areas from view from Addressing Streets, except low screening is proposed where high screening would conflict with the Design Standard requiring a direct line of sight to the Primary Building Entrance. To meet the requirement, tree and shrub plantings are proposed within the 10' PUE adjacent to both Addressing Streets, Garden Acres Road and Grahams Ferry Road. The Supporting Street will meet the requirements of Low and High Screen Landscape Standards, Section 4.176(.02)D. Please refer to specific plantings as shown in the Landscape Plan (L-Series sheets in Attachment 6).			

Table CC-3: Site Design			
	Addressing Streets	***Supporting Streets***	***Through Connections***
The applicant has prepared Landscaping Plans (see L-series sheets in Attachment 6) that comply with the alternative design guidelines provided in the Coffee Creek Light Industrial Pattern Book, which meet or exceed the General Landscape Standard along the Addressing Street frontages. Coffee Creek Light Industrial Pattern Book *Section C.2 – Parking Location and Design* *2.6 Planting: Design and install new landscapes with plantings grouped in natural, irregular masses to establish and support a continuous, integrated, and natural district-wide appearance.* *Landscapes and plant materials shall be maintained throughout the year.* **Response:** Landscaping Plans (L-Series Sheets in Attachment 6) provide plantings grouped in naturalistic masses, including the use of tall-growing shrubs for screening, to integrate streetscape landscaping with site plantings, creating a continuous natural appearance that visually obscures the parking and loading areas from Addressing Streets, except where low screening is preferable in order to provide a direct view of the Primary Building Entrance. Perspective renderings in Attachment 5 illustrate the screening effect of the proposed plantings. This meets and exceeds the intent of the General Landscape Standard, Section 4.176. With meeting the alternative design guidelines provided in the Coffee Creek Light Industrial Pattern Book for Addressing Streets and Low Screen Landscape Standard (Section 4.176(.02)D) for Supporting Streets, this section of the Coffee Creek Industrial DOD standard is met.			
Off-Street Loading Berth	*One loading berth is permitted on the front façade of a building facing an Addressing Street. The maximum dimensions for a loading are 16 feet wide and 18 feet tall. A clear space 35 feet, minimum is required in front of the loading berth.* *The floor level of the loading berth shall match the main floor level of the primary building. No elevated loading docks or recessed truck wells are permitted.* *Access to a Loading Berth facing an Addressing Street may cross over, but shall not interrupt or*	*No limitation. Shall meet minimum standards in Section 4.155 (.05).*	

Table CC-3: Site Design			
	Addressing Streets	***Supporting Streets***	***Through Connections***
	alter, a required pedestrian path or sidewalk. All transitions necessary to accommodate changes in grade between access aisles and the loading berth shall be integrated into adjacent site or landscape areas. *Architectural design of a loading berth on an Addressing Street shall be visually integrated with the scale, materials, colors, and other design elements of the building.*		
Response: The front façade of the building faces Garden Acres Road and does not propose loading berths on the east elevation. At the rear of the building (west side, facing Grahams Ferry Road), pedestrian crossings of the access occur at the site perimeter, where the sidewalk crosses the driveway entrance on the southern Supporting Street, and near the northwest building corner where good visibility for safety can be achieved. The project complies with this standard.			
Carpool and Vanpool Parking	*No limitation*		
5. Grading and Retaining Walls			
General	*The following Development Standards are adjustable:* • *Retaining Wall Design: 20%*		
Maximum height	*Where site topography requires adjustments to natural grades, landscape retaining walls shall be 48 inches tall maximum.* *Where the grade differential is greater than 30 inches, retaining walls may be stepped.*		
Required Materials	*Materials for retaining walls shall be unpainted cast-in-place, exposed-aggregate, or board-formed concrete; brick masonry; stone masonry; or industrial-grade, weathering steel plate.*		
Retaining Wall Design	*Retaining walls longer than 50 linear feet shall introduce a 5-foot, minimum horizontal offset to reduce their apparent mass.*		

Table CC-3: Site Design			
	Addressing Streets	***Supporting Streets***	***Through Connections***
Response: One of the design challenges at this site is to accommodate a large flat-floor building on an irregular site with an overall slope downhill to the south and existing roads' vertical profiles on the east and west. To match existing grades, retaining walls are needed in some areas, and at some points the necessary wall height exceeds the 4.0' (48 -inch) maximum height limitation and the allowed range for a +20% adjustment (up to 4.8 feet). The specific locations where retaining walls exceed those height limits are provided on the Grading Plan, Sheet C1.20 of Attachment 6. Waiver request Number 4 addresses this aspect of the proposal. With approval of the requested waiver, the project complies.			
6. Planting			
General	*Unless noted otherwise below, the following provisions apply:* • *Section 4.176 Landscaping and Screening Standards*		
Landscaping Standards Permitted	*General Landscape Standard, Section 4.176 (.02) C.* *Low Berm Standard, Section 4.176 (.02) E., except within 50 feet of a perpendicular Supporting Street or Through Connection as measured from the centerline*	*General Landscape Standard, Section 4.176 (.02) C.* *Low Screen Landscape Standard, Section 4.176 (.02) D.* *Screen loading areas with High Screen Landscaping Standard, Section 4.176 (.02) F., and High Wall Standard, Section 4.176 (.02) G.*	
Response: The proposed project includes dense landscape plantings to screen the building, loading, parking and waste enclosure areas from view from Addressing Streets, except low screening is proposed where high screening would conflict with the Design Standard requiring a direct line of sight to the Primary Building Entrance. To meet the requirement, tree and shrub plantings are proposed within the 10' PUE adjacent to both Addressing Streets, Garden Acres Road and Grahams Ferry Road. The Supporting Street will meet the requirements of Low and High Screen Landscape Standards, Section 4.176(.02)D. Please refer to specific plantings as shown in the Landscape Plan (L-Series sheets in Attachment 6). The applicant has prepared Landscaping Plans (see L-series sheets in Attachment 6) that comply with the alternative design guidelines provided in the Coffee Creek Light Industrial Pattern Book, which meet or exceed the General Landscape Standard along the Addressing Street frontages. <u>Coffee Creek Light Industrial Pattern Book</u> Section A.2 – Addressing Streets *2.1 Park-Like Character: Design Addressing Streets to establish and support a park-like character of the public realm. Addressing Streets shall provide continuous sidewalks on both sides of the street that protect the pedestrian with a planting strip landscaped with shade trees. Addressing* *Streets may also include a planted central median.*		

Table CC-3: Site Design			
	Addressing Streets	***Supporting Streets***	***Through Connections***
	Response: The proposed planting plan includes trees and shrubs within the 10' PUEs adjacent to the site's two Addressing Streets. Landscaping Plans (L-Series Sheets in Attachment 6) provide plantings grouped in naturalistic masses, including the use of large, tree-like shrubbery. Together with other plantings, those shrubs will integrate streetscape landscaping with site plantings, creating a continuous natural, park-like appearance that visually obscures the parking and loading areas from Addressing Streets. *2.3 Prominent address: Design Addressing Streets to serve as the "front door" or "address" for new buildings and development. New Addressing Streets shall include sidewalks on both sides that provide safe, continuous access for pedestrians to all abutting sections of the primary street network of Addressing Streets. Unless interrupted by another Addressing Street or a Supporting Street, the sidewalks shall be protected by a continuous landscape strip planted with shade trees.* **Response:** Garden Acres Road is the Addressing Street serving as the "front door" to the site and building, with a driveway coming from the Supporting Street that will be flanked by low screen landscaping and a landscaped water quality treatment facility, providing a viewpoint of the front façade framed by natural plantings. A sidewalk along the Garden Acres Road right-of-way is flanked by landscaping strips on either side, providing protection for pedestrians from the Addressing Street to the east and parking to the west. An ADA-accessible pedestrian connection to the Primary Building Entrance is provided via a pedestrian pathway near the middle of the southeastern parking lot. *2.4 Enclosed public realm: Orient building massing, form, architecture, and programmatic function along Addressing Streets to help define the public realm, create a distinctive enclosure of the public realm, and support the sense of place in Coffee Creek.* **Response:** For both Addressing Streets, the use of natural, park-like landscaping will enhance the public realm by framing views of the building's front façade from Garden Acres Road on the east side, and limiting visibility of the loading area on the west side of the building from Grahams Ferry Road. Dense tree and shrub plantings adjacent to the sidewalks will help to enclose the public realm, using landscaping to separating parking/loading areas from the rights-of-way, while creating visual corridors to the front façade of the building from points in the Garden Acres Road right-of-way, along the sidewalk, bike path, and the vehicular travel lanes. The wayside, also an element of the public realm, is integrated into the preserved stand of ten mature trees adjacent to Garden Acres Road near the northeast corner of the site. The applicant has provided perspective renderings of the proposed plantings in Attachment 5. This meets and exceeds the intent of the General Landscape Standard, Section 4.176.		
7. Location and Screening of Utilities and Services			
General	*Unless noted otherwise below, the following provisions apply:*		

Table CC-3: Site Design			
	Addressing Streets	***Supporting Streets***	***Through Connections***
	• *Sections 4.179 and 4.430. Mixed Solid Waste and Recyclables Storage in New Multi-Unit Residential and Non-Residential Buildings*		
Location and Visibility	*Site and building service, equipment, and outdoor storage of garbage, recycling, or landscape maintenance tools and equipment is not permitted*	*Site and building service, utility equipment, and outdoor storage of garbage, recycling, or landscape maintenance tools and equipment is not permitted within the setback*	*No limitation*
Required Screening	*Not permitted*	*High Screen Landscaping Standard, Section 4.176 (.02) F. and/ or High Wall Standard, Section 4.176 (.02) G.*	

Response: A receptacle for garbage and recycling is proposed at the opposite side of the Primary Building Facade, on the west side of the site. This application includes a Waiver request to allow the trash enclosure to be located adjacent to an Addressing Street (Grahams Ferry Road), behind landscape screening and fencing. The applicant has provided correspondence from Republic Services supporting the proposed configuration. See Attachment 9. Perspective renderings of the landscape character on the Grahams Ferry Road frontage are included in Attachment 5.

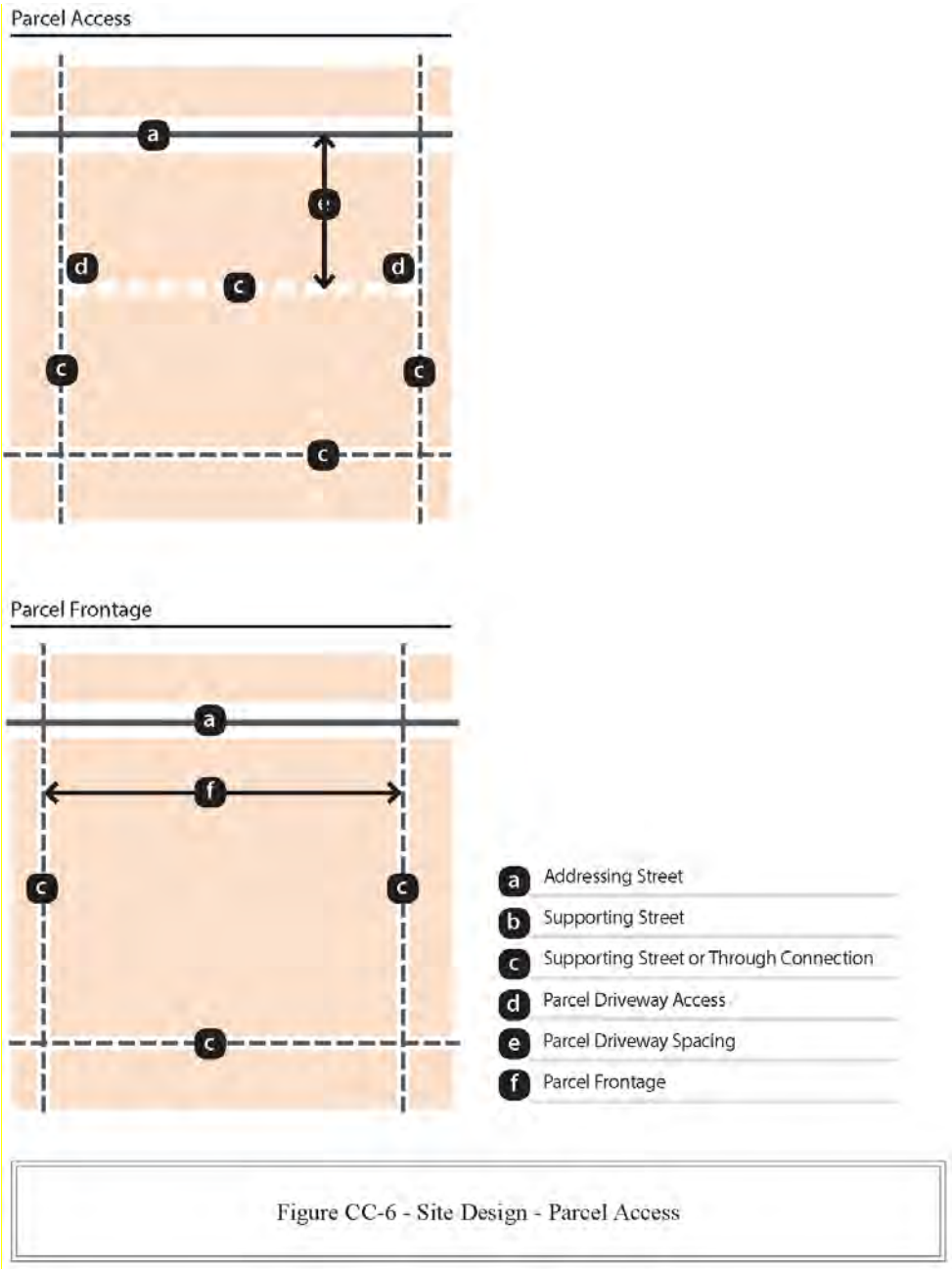


Figure CC-6 - Site Design - Parcel Access

Table CC-4: Building Design			
	Addressing Streets	***Supporting Streets***	***Through Connections***
1. Building Orientation			
Front Façade	*Buildings shall have one designated front façade and two designated side façades.* *If one of the streets or connections bounding a parcel is an Addressing Street, the front façade of the building shall face the Addressing Street.*		

	If two of the streets or connections bounding a parcel are Addressing Streets, the front façade of the building may face either Addressing Street, except when one of the Addressing Streets is Day Road. In that case, the front façade must face Day Road. *If none of the bounding streets or connections is an Addressing Street, the front façade of the building shall face a Supporting Street.* *See Figure CC-5.*
Response: The front façade of the building faces east toward the Addressing Street, SW Garden Acres Road. Side façades are on the north and south sides of the building.	
Length of Front Façade	*A minimum of 100 feet of the Primary Frontage shall be occupied by a building.* *The maximum Primary Frontage occupied by a building shall be limited only by required side yard setbacks.*
Response: The building is sited with its long axis parallel to Garden Acres Road, an Addressing Street; moreover, its front (primary) façade exceeds 100 feet and is designed to create a strong visual relationship with the street, together with the dense landscaping in the foreground. The proposed site plan and building design comply with these provisions.	
Articulation of Front Façade	*Applies to a Front Façade longer than 175 feet that has more than 5,250 square feet of street-facing façade area:* *At least 10% of the street-facing façade of a building facing an Addressing Street must be divided into façade planes that are offset by at least 2 feet from the rest of the façade. Façade area used to meet this standard may be recessed behind, or project out from, the primary façade plane.*
Response: The front façade of the building is longer than 175 feet and has horizontal offsets that comply with this standard. See architectural plan and elevation drawings, the A series of drawing sheets in Attachment 6.	
2. Primary Building Entrance	
General	*The following Development Standards are adjustable:* • *Required Canopy: 10%* • *Transparency: 20%*
Response: The proposed Primary Building Entrance is at the southeastern office area; a second office entrance at the northeastern office area will accommodate a potential second building tenant. Both entrance areas are designed to meet the required horizontal dimensions for canopy coverage (i.e., width and depth) as well as the transparency requirement, without adjustment. (A waiver, discussed below, is requested to allow a lower canopy height.)	
Accessible Entrance	*The Primary Building Entrance shall be visible from, and accessible to, an Addressing Street (or a Supporting Street if there is no Addressing Street frontage). A continuous pedestrian pathway shall connect from the sidewalk of an Addressing Street to the Primary Building Entrance with a safe, direct and convenient path of travel that is free from hazards and provides a reasonably*

	smooth and consistent surface consistent with the requirements of Americans with Disabilities Act (ADA). *The Primary Building Entrance shall be 15 feet wide, minimum and 15 feet tall, minimum.*	
Response: The southeastern path from the sidewalk in Garden Acres Road crosses the vehicular drive aisle for the parking area, which is free from heavy truck traffic, at a location with good visibility for pedestrian safety; it connects to an ADA-compliant sidewalk ramp beside the building, extending south to the Primary Building Entrance. Pedestrian pathways extend from the public sidewalks along SW Garden Acres Road and the proposed Supporting Street to both of the office endcaps on the front façade. Dense landscape screening along the Garden Acres Road frontage is reduced between the pedestrian path from the Garden Acres Road sidewalk and the Supporting Street to the south in order to provide direct views of the Primary Building Entrance. This application includes a waiver request with respect to the entrance canopy height standard. See discussion for Waiver Number 4 below.		
Location	*150 feet, maximum from right-of-way of an Addressing Street, see Figure CC-7.*	*150 feet, maximum from right-of-way of a Supporting Street, if there is no Addressing Street Frontage, see Figure CC-7.*
Response: The Primary Building Entrance, near the southeast building corner, is within 150 feet from Garden Acres Road, an Addressing Street.		
Visibility	*Direct line of sight from an Addressing Street to the Primary Building Entrance.*	
Response: The Primary Building Entrance is visible from points along the Garden Acres Road frontage, particularly near the proposed Supporting Street's intersection with Garden Acres Road at points between the pedestrian path connections to the sidewalks. The landscape screening is reduced in this area to provide a direct line-of-sight relationship between the sidewalk and the building entrance, to satisfy this requirement.		
Accessibility	*Safe, direct, and convenient path from adjacent public sidewalk.*	
Response: From the sidewalk in Garden Acres Road, two proposed paths provide reasonably direct connections to building entrances – one is adjacent to the north façade, and the other provides an ADA-accessible route from the sidewalk to the Primary Building Entrance near the southeast corner of the building, facing Garden Acres Road. The northeastern path runs adjacent to the landscaped area from the right-of-way to the building, without needing to cross a vehicular drive aisle; therefore, it is a safe pedestrian pathway from the public sidewalk. The required Wayside is just south of this pathway. The southeastern path from the sidewalk in Garden Acres Road crosses the vehicular drive aisle for the main parking area, which is free from heavy truck traffic, at a location with good visibility for pedestrian safety. It connects to an ADA-compliant sidewalk ramp beside the building, extending south to the Primary Building Entrance. Both these paths provide accessible, safe, direct, and convenient access from the public sidewalk. A third path extends from the sidewalk in Grahams Ferry Road to a path along the north building wall to the north building entrance. This path provides pedestrian access to a transit stop to the north on Grahams Ferry Road.		

At the south, a fourth path extends from the Supporting Street's sidewalk to the Primary Building Entrance; however, its location on the west side of the easterly driveway requires a relatively steep slope and a staircase to make the walk-up connection to the Primary Building Entrance. As a result, it is not a feasible location for an ADA-compliant access route, but it is safe, direct, and convenient for other pedestrians.	
Required Canopy	*Protect the Primary Building Entrance with a canopy with a minimum vertical clearance of 15 feet and an all-weather protection zone that is 8 feet deep, minimum and 15 feet wide, minimum.*
Response: Canopies over the recessed main entry doorways will cover the minimum 8' by 15' horizontal area at the Primary Building Entrance and the secondary office entrance locations; however, to integrate with the proportioning of the first floor level at the office bump-outs, a canopy height of 12' is proposed for both entrances. The applicant proposes to install floor-to ceiling glazing of both main entrance doors of the office corner areas using commercially-available retail window/door units, which are available and cost-effective at the 12' height. Providing taller glazed units would not only increase costs significantly, it would also diverge from the proposed panelization of the building, which uses the 12' level above grade to align panel joints/reveals with the top of the ground-floor window/door openings to achieve visual coherence. Within the office areas, the proposed ceiling height will match the exterior 12' window height dimension, creating a strong visual interior-exterior consistency at the principal entrances and windows. Finally, the cantilevered eyebrow canopies that extend over the entrances are designed to complement and reinforce the 12' horizontal panel height dimension/interior ceiling relationship. To do so, the office entrance canopies need to be at a 12' height rather than the 15' height standard. Conversely, setting the canopies at a 15' height would make them misalign with the exterior panelization, the doorway height and the interior ceiling height, making the building take on a less coherent form and appearance. For these reasons, this application includes a waiver request with respect to the vertical clearance requirement. See discussion in the Waiver Number 5 section below.	
Transparency	*Walls and doors of the Primary Building Entrance shall be a minimum of 65% transparent.*
Response: Glazing, including doors, at the office entrances complies with this requirement.	
Lighting	*The interior and exterior of the Primary Building Entrance shall be illuminated to extend the visual connection between the sidewalk and the building interior from day to night. Pathway lighting connecting the Primary Building Entrance to the adjacent sidewalk on an Addressing Street shall be scaled to the needs of the pedestrian.* *Comply with Outdoor Lighting, Section 4.199*
Response: The proposed lighting plan complies with this standard. See Lighting Plan sheets in Attachment 6 and lighting fixtures information in Attachment 10.	
3. Overall Building Massing	
General	*The following Development Standards are adjustable:* • *Required Minimum Height: 10%* • *Ground Floor Height: 10%*

	• *Base, Body, and Top Dimensions: 10%* • *Base Design: 10%* • *Top Design: 10%*		
Response: The proposed building elevations meet the requirements for Overall Building Massing without the need for adjustments.			
Front Setback	*30 feet, minimum, except as provided below*	*30 feet maximum*	*30 feet maximum*
Response: The front building setback exceeds the minimum 30' requirement.			
Allowance of Primary Building Entrance	*Where the Primary Building Entrance is located on an Addressing Street it may extend into the required front yard setback by 15 feet maximum provided that:* *a. It has a two-story massing with a minimum height of 24 feet;* *b. The Parcel Frontage on the Addressing Street is limited to 100 feet;* *c. The building extension is 65% transparent, minimum;* *d. The entrance is protected with a weather-protecting canopy with a minimum vertical clearance of 15 feet; and* *e. The standards for site design and accessibility are met.*	*Not applicable*	*Not applicable*
Response: Not applicable; no extension into the minimum front setback is requested.			
Required Minimum Height	*30 feet minimum.*		
Response: Proposed building height is 46' at the office corner parapets. This standard is met.			

Ground Floor Height	*The Ground Floor height shall measure 15 feet, minimum from finished floor to finished ceiling (or 17.5 feet from finished floor to any exposed structural member).*
Response: The proposed building is not a multi-story building and its industrial use areas exceed 15 feet in height; however, the design for ceiling height within the accessory office areas is intended to match the exterior panelization scheme and the canopy height at about 12', for a consistent transition between exterior and interior areas. This application includes a waiver request with respect to this standard. See discussion for Waiver Number 6 below.	
Base, Body, and Top Dimensions	*Buildings elevations shall be composed of a clearly demarcated base, body and top.* *a. For Buildings 30 feet in height (unless lower by adjustment):* *i. The base shall be 30 inches, minimum.* *ii. The body shall be equal to or greater than 75% of the overall height of the building.* *iii. The top of the building shall be 18 inches, minimum.* *b. For Buildings between 30 feet and 5 stories in height:* *i. The base shall be 30 inches, minimum; 2 stories, maximum.* *ii. The body shall be equal to or greater than 75% of the overall height of the building.* *iii. The top of the building shall be 18 inches, minimum.* *c. For Buildings greater than 6 stories in height:* *i. The base shall be 1 story, minimum, 3 stories, maximum.* *ii. The body shall be equal to or greater than 75% of the overall height of the building.* *iii. The top of the building shall be 18 inches, minimum.*
Response: The proposed building's height is 46 feet, making it subject to subparagraph b (less than 5 stories). The front façade design uses a dark-colored pediment about three (3) feet high, with a corresponding window muntin at that level through the glazed office bump-outs, to establish a base that exceeds the 30-inch minimum. That base characteristic wraps around the north and south sides of the building, as well as around the western corners, but it does not extend all the way across the truck loading docks (where it would often be obscured by docked trailers anyway). (See Sheet A2.10 in Attachment 6 and materials/colors images in Attachment 12.) This complies with subparagraph b.i. The body height calculates to more than 75% of the overall height of the building, complying with subparagraph b.ii. The cornice cap at the top of the wall is formed by a dark band at the roof line extending all the way around the building, accentuated by a taller parapet wall rising above it at the office corner bump-outs. This configuration adds visual interest at the main entrance locations while meeting the minimum 18" requirement to satisfy subparagraph b.iii for the building as a whole. The proposed building design complies with these requirements.	
Base Design	*The design of the building Base shall:* *a. Use a material with a distinctive appearance, easily distinguished from the building Body expressed by a change in material, a change in texture, a change in color or finish;*

	b. Create a change in surface position where the Base projects beyond the Body of the building by 1 -1/2 inches, minimum; and/ or *c. Low Berm Landscape Standard, Section 4.176 (.02) E.*
Response: A distinctive, darker color and a reveal at the 3' level, with aligned muntins in the office glazed office window bays, will distinguish the base from the body of the building. At the base level, some portions of the building façade will have landscaping at the base of the building wall, consistent with subparagraph c. Where the pedestrian path abuts the building wall at the Primary Building Entrance, decorative metal screen panels sized to match the reveal pattern of the concrete wall panels will protrude a minimum of 1.5 inches from the wall surface to create a change in surface position, consistent with subparagraphs a and b.	
Top Design	*Building Tops define the skyline.* *The design of the Building Top shall:* *a. Use a material with a distinctive appearance, easily distinguished from the building Body expressed by a change in material, a change in texture, a change in color or finish; and/ or* *b. Create a change in surface position where the Top projects beyond, or recesses behind, the Body of the building by 1 -1/2 inches, minimum.*
Response: The cornice cap at the top of the wall is formed by a dark band at the roof line extending all the way around the building, accentuated by a taller parapet wall rising above it at the office corner bump-outs. This configuration adds visual interest at the main entrance locations while clearly defining the top of the building.	
Required Screening of Roof-mounted Equipment	*Screen roof-mounted equipment with architectural enclosures using the materials and design of the building Body and/ or the building Top. No roof-mounted equipment shall be visible from an Addressing Street or Supporting Street.*
Response: The height of the cornice cap/parapet wall will screen rooftop mechanical equipment. See diagrams of visual cutoff angles in Details 3 & 4 on Sheet A3.10 in Attachment 6. The structural design of the roof provides tenants with flexibility to install rooftop mechanical equipment at locations meeting their needs. Specific proposed locations and specifications for such equipment will be incorporated in tenant improvement plans. The height of the parapet wall is designed to effectively screen units from view, based on typical dimensions/sizes of equipment suitable for this type of industrial building.	

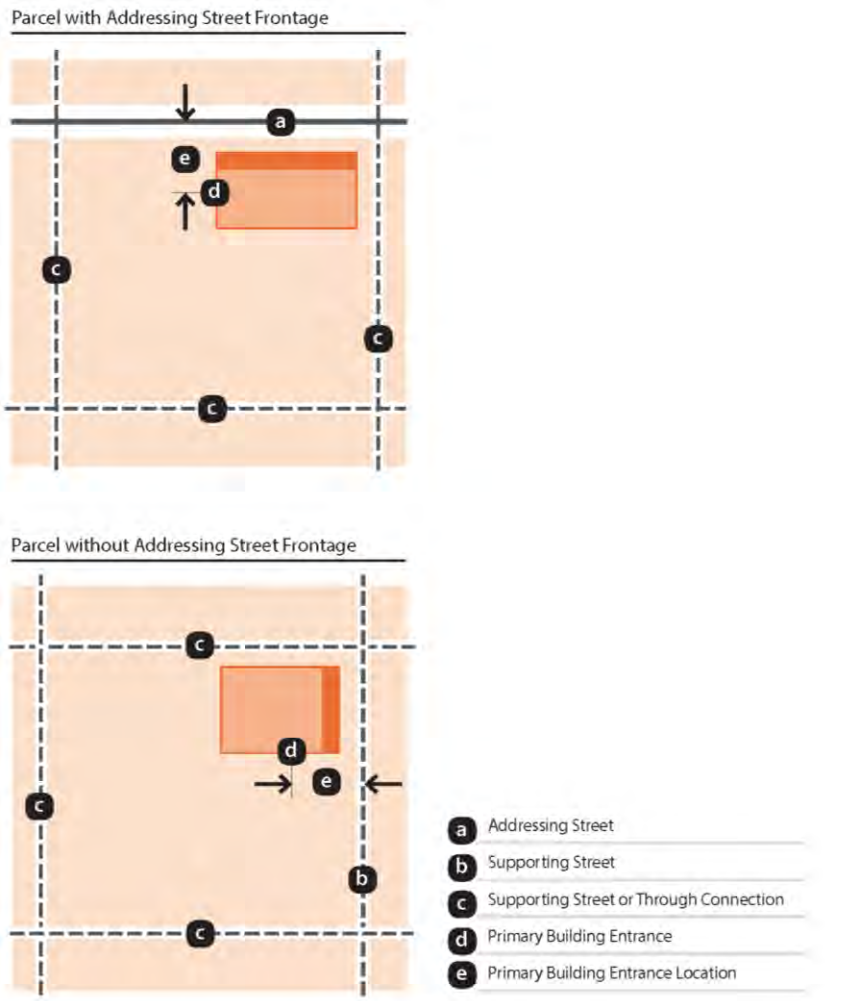


Figure CC-7 - Building Design - Primary Building Entrance

(.12) Waysides.

B. Applicability. All projects in the Coffee Creek Master Plan Area shall provide waysides according to the standards in Table CC-5.

Response: The site is located in the Coffee Creek Master Plan Area. This section applies.

C. General. The following development standards apply to all Waysides:

1. Required Wayside Area is exclusive of required landscape screening.

2. Required Minimum Dimension of 20 feet (either width or depth).

Response: The proposed wayside is exclusive of the required landscape screening (but integrated within it) and has at least one minimum dimension of 20 feet. The Wayside forms a plaza set diagonally between the Garden Acres Road sidewalk and the path to the north office entrance; its northeast edge is approximately 24 feet long and its southwest edge is approximately 45 feet long, with an enlarged square area with benches at its center. Please refer to the detailed description in the response to subsection D.1 immediately below.

D. Criteria. Waysides shall meet the following criteria:

1. *Perimeter Landscaping. In addition to the minimum size and dimensions, landscape three sides of the Industrial Wayside to a depth of 20 feet, minimum according to Section 4.176 (.02). Permitted screening includes: Section 4.176 (.02) D. Low Screen Landscaping Standard; Section 4.176 (.02) E. Low Berm Standard; or Section 4.176 (.02) E. High Screen Landscaping Standard. Perimeter landscaping shall not obscure visual access to the Industrial Wayside. Unscreened surface parking lots, chain link fencing, or service yards are prohibited adjacent to Industrial Waysides.*

Response: The industrial wayside is proposed as a triangular plaza adjacent to Garden Acres Road, between Cahalin Road and the stand of ten Douglas fir trees to be conserved on the east side of the building. Generally flat conditions at that location will provide ADA-accessibility. The location close to the north building entrance and office area will make the outdoor plaza attractive and useful not only for pedestrians passing by, but will probably also be used by employees who work in the building as well.

The Wayside is adjacent to the Garden Acres Road public sidewalk, with compliant landscaping perimeter on its other three sides: a stormwater treatment/infiltration pond is to the north, separating the Wayside from Cahalin Road; dense landscaping is located along the southwest edge of the Wayside, between it and the building to the west, approximately 28 feet from the edge of the Wayside; and the stand of ten mature Douglas firs is to the south.

The plantings are designed to visually define and enclose the Wayside, partially screening the building consistent with the standards in Section 4.176(.02).

Perimeter landscaping does not obscure views of the Wayside because it is prominently located directly adjacent to the Garden Acres Road sidewalk.

The Wayside is not located near an unscreened parking lot, chain-link fence, or service yard.

The proposal complies with the standards of this section.

2. *Visibility. Industrial Waysides shall be visible from and accessible to Addressing Streets.*

Response: The Industrial Wayside is directly adjacent to and visible from SW Garden Acres Road, which is an Addressing Street.

3. *Accessible Pathway. A paved walking surface, width: 5 feet, minimum, meeting ADA standards is required to connect Industrial Wayside with Addressing Street.*

Response: As shown on Sheet L1.10, a paved surface meeting the required width connects the Wayside to Garden Acres Road , which is an Addressing Street.

4. *Accessible Surface. Industrial Waysides shall have an accessible surface, 100 square feet, minimum; dimensions 10 feet, minimum meeting ADA standards.*

Response: As shown on Sheet L1.10, the plaza area provides a square area more than ten feet wide between the benches in both the north-south and east-west dimensions, satisfying this requirement.

5. *Required Amenities.*

a. *Seating. Outdoor seating shall be provided. Publicly accessible plazas, courtyards, and pocket parks shall include at least one linear foot of seating per each 40 square feet of plaza, courtyard or pocket park space on site. Outdoor seating shall be in the form of:*
   1. *Free standing outdoor benches consistent with the standards; or*
   2. *Seating incorporated into low walls, berms, or raised planters.*
b. *Landscaping. The landscaping must be planted and maintained according to Section 4.176 (.02) C.*
c. *Lighting.*
d. *Recycling/ Waste Receptacle. Locate waste and recycling stations nearest to the accessible path and away from stormwater facilities.*

Response: Benches with a 90-degree angle provide seating facing different directions, for partial privacy and to frame different views, while playing with the angular theme of the plaza design. The landscape area meets or exceeds a 20-foot perimeter on its sides, with a path/plaza and storm treatment/infiltration pond to its north, the stand of ten Douglas fir trees to its south, and the adjacent Garden Acres Road public sidewalk on its east side, to which it is closely related to provide an inviting configuration. Illumination will be provided by street lighting in Garden Acres Road, together with illuminated bollards within the plaza itself. (See detail on Sheet 5.11 in Attachment 6.) A recycling/waste receptacle is located near the southeast corner of the central square in the center of the plaza. (See Sheet L1.10 in Attachment 6.)

6. *Installation and Maintenance. Industrial Waysides shall be programmed, planned, constructed, and maintained at the expense of the applicant. The landscaping must be planted and maintained according to Section 4.176 (.07). Recycling, waste receptacles, and pet waste stations shall be serviced at an acceptable professional interval to prevent being over filled or creating unsanitary or visually messy appearances.*

Response: The applicant acknowledges these responsibilities and intends not to fall by the Wayside in fulfilling them.

7. *Solar Access. Exposure to sunlight. Southern exposure is encouraged. Design facilities to permit direct sunlight to enter the Industrial Wayside and strike the required accessible surface between the hours of 10:00 am and 2:00 pm local time.*

Response: Because the Wayside is located within the northeast landscape island on the west side of SW Garden Acres Road, the plantings that surround and form it must strike a balance between competing objectives: preserving the group of existing Douglas fir trees; forming a dense, naturalistic screen along SW Garden Acres Road; and providing solar access to the Wayside. Responding to this challenging context, the Wayside is located near the north side of the group of ten fir trees, adjacent to the pedestrian path between the office entrance and the sidewalk Garden Acres Road sidewalk. This location integrates the Wayside with the defined pedestrian routes as well as the preserved group of trees, and helps maintain landscape screening of the parking area farther to the south along Garden Acres Road. The mature Douglas firs will provide the Wayside with comfortable midday shade during the summer months.

8. *Lighting. Lighting for Industrial Waysides is required to permit reasonable use, utility, security, and nighttime safety. Lighting installed in Industrial Waysides shall conform to the requirements of Section 4.199. All outside lighting shall be so*

arranged and shielded so as not to shine into adjacent areas and to prevent any undue glare or reflection and any nuisance, inconvenience, and hazardous interference of any kind on adjoining streets or property.

Response: Illumination will be provided by Garden Acres Road street lighting, together with bollard lighting for safety within the Wayside plaza itself. (See detail on Sheet 5.11 in Attachment 6.)

E. Optional Amenities include the following:

1. *Picnic tables and benches. Locate picnic tables and benches on the Accessible Surface;*
2. *Arbors or trellises;*
3. *Drinking Fountains. Locate drinking fountains and benches on the Accessible Surface;*
4. *Sculpture and other works of art;*
5. *Bicycle repair stations;*
6. *Exercise stations; or*
7. *Pet waste stations. Locate pet waste stations nearest to the accessible path and away from stormwater facilities.*

Response: Multiple benches with a 90-degree angular form are included, to allow people to sit facing various directions. (See detail on Sheet 5.11 in Attachment 6.)

***Table CC-5: Waysides* (excerpt)**			
Parcel Area	***Required Wayside Area***	***Number of Waysides***	***Enhanced Transit Plaza ‡***
Greater than 5.0 acres, less than or equal to 8.0 acres	*400 square feet, minimum*	*One*	*Not permitted*
Greater than 8.0 acres, less than or equal to 13.0 acres	*600 square feet, minimum*	*One*	*Not permitted*
Response: The site contains 7.57 acres after right-of-way dedications, so these provisions require one Wayside containing at least 400 square feet. The proposed Wayside is designed in the form of an approximately 500 SF triangular plaza on the south side of the pedestrian path between the north building entrance and the west sidewalk of Garden Acres Road, just north of the preserved stand of ten mature Douglas fir trees.			

‡ *In the future when SMART serves Coffee Creek, Industrial Waysides may comply with the standards for Enhanced Transit Plazas, as follows:*

**Up to 400 square feet of the space requirement for Industrial Waysides may be satisfied by installation of an enhanced transit stop. An enhanced transit stop must provide weather protection, paved surface, and seating, as approved by SMART Transit.*

***Up to 800 square feet of the space requirement for Industrial Waysides may be satisfied by installation of an enhanced transit stop, provided parcel fronts on two or more Addressing Streets. An enhanced transit stop must provide weather protection, paved surface, and seating, as approved by SMART Transit.*

****For Parcel Frontage greater than 1,500 feet, and area greater than 51.0 acres, up to fifty percent of the space requirement for Industrial Waysides may be satisfied by restoration of wetlands, riparian zones, or other habitat because of the significant passive recreation opportunities provided.*

(.13) Signs.

A. Applicability. PDI Zone requirements of Section 4.156.01 through 4.156.11 apply to the Coffee Creek DOD with the following modifications and adjustments.

B. General.

1. Site Frontage as described in Section 4.156.08 is the Primary Frontage.

2. Monument-style signs are required. Pole-style freestanding signs are not permitted.

3. Maximum area for signs on buildings is based on linear length (in feet) of the façade adjacent to the Primary Frontage.

4. Directional and Wayfinding Signs shall be placed at the intersection of Supporting Streets and Through Connections.

Response: The proposed complement of site signage includes one monument sign, located in the southeastern landscape area near the new Supporting Street/Garden Acres intersection, and up to two wall-mounted signs to identify building tenants, located high on the building façades near the doorways at the northeast and southeast corners of the office areas, for visibility from Garden Acres Road.

The proposed sign area for the monument sign is up to 80 square feet.

The proposed combined sign area for wall signs is a total of up to 264 square feet of wall-mounted signs, to be allocated between the two potential signage locations on the basis of the relative share occupancy of space along the building's front façade length. Please see detailed discussion and calculations below in Section III.F, Class C Sign Permit.

Section 4.135.5. Planned Development Industrial – Regionally Significant Industrial Area

(.02) The PDI-RSIA Zone shall be governed by Section 4.140, Planned Development Regulations, and as otherwise set forth in this Code.

Response: Responses to Section 4.140 and other applicable sections of the Code are provided in this narrative. This standard is met.

(.03) Uses that are typically permitted:

A. Wholesale houses, storage units, and warehouses.

B. Laboratories, storage buildings, warehouses, and cold storage plants.

C. Assembly of electrical equipment, including the manufacture of small parts.

D. The light manufacturing, simple compounding or processing packaging, assembling and/or treatment of products, cosmetics, drugs, and food products, unless such use is inconsistent with air pollution, excess noise, or water pollution standards.

E. Office Complexes-Technology (as defined in Section 4.001).

F. Experimental, film or testing laboratories.

G. Storage and distribution of grain, livestock feed, provided dust and smell is effectively controlled.

H. Motor vehicle service facilities complementary or incidental to permitted uses.

I. Any use allowed in a PDC Zone or any other light industrial uses provided that any such use is compatible with industrial use and is planned and developed in a manner consistent with the purposes and objectives of Sections 4.130 to 4.140 and is subject to the following criteria:

1. Service Commercial (defined as professional services that cater to daily customers such as financial, insurance, real estate, legal, medical or dental offices) shall not exceed 3000 square feet of floor space in a single building or 20,000 square feet of combined floor area within a multiple building development.

2. *Office Use (as defined in Section 4.001) shall not exceed 20% of total floor area within a project site.*
3. *Retail uses not to exceed 3000 square feet of indoor and outdoor sales, service, or inventory storage area for a single building or 20,000 square feet of indoor and outdoor sales, service or inventory storage area for multiple buildings.*
4. *Combined uses under I.1 and 3. above shall not exceed a total of 3000 square feet of floor area in a single building or 20,000 square feet of combined floor area within a multi-building development.*

J. Residential uses shall not exceed 10% of total floor area.

K. Accessory uses, buildings and structures customarily incidental to any of the aforesaid principal permitted uses.

L. Temporary buildings or structures for uses incidental to construction work, which buildings or structures shall be removed upon completion or abandonment of the construction work.

M. Expansion of a building, structure or use approved prior to October 25, 2004 of up to 20% additional floor area and/or 10% additional land area.

N. Other similar uses which in the judgment of the Planning Director are consistent with the purpose of the PDI-RSIA Zone.

Response: The proposed project is a speculative industrial building and site development suitable for a wide range of tenants and uses consistent with the above list. The building's ceiling height and size are intended to be specifically suitable and attractive for a High-Cube Parcel Fulfillment Center Sort Warehouse tenant, which is a form of *wholesale houses, storage units, and warehouses* allowed under subparagraph A); however, many other economic activities in the list of uses allowed in the PDI-RSIA Zone could also find the site and building suitable for their needs, with appropriate tenant improvements within the shell building. Because the facility's tenants and land use activities are expected to change over its useful economic life, and because Planned Development Stage I modification or change of use procedures introduce delay and uncertainty, complicating and slowing the process of tenanting/re-tenanting the facility, the applicant requests approval for the full list of potential land uses in subparagraph A, with the exception of residential use under subparagraph J, which is not an intended use. This standard is met.

(.04) Prohibited uses.

A. Retail operations exceeding 3,000 square feet of area for sales, service area or storage area for retail inventory in a single building, or 20,000 square feet of sales, service or storage area for multiple buildings, except training facilities whose primary purpose is to provide training to meet industrial needs.

B. Any use or activity that violates the performance standards specified in Subsection 4.135.5(.06), below.

Response: This application does not request approval for any prohibited use. This standard is met.

(.05) Block and Access Standards. The PDI-RSIA Zone shall be subject to:

A. The same block and access standards as the PDC Zone [Section 4.131(.02) and (.03)] for properties located outside of the Coffee Creek Industrial Design Overlay District; or

B. The access and block size standards in Section 4.134 for those properties located within the Coffee Creek Industrial Design Overlay District.

Response: The subject property is in the Coffee Creek Design Overlay District and therefore subject to the Regulating Plan in Figure CC-1, which identifies Grahams Ferry Road and Garden Acres Road as an "Existing/Planned Addressing Street," and also identifies the site's south boundary as a "Required Supporting Street," to be constructed according to the Supporting Street standards. Construction of a Supporting Street within an access easement is proposed along the south property boundary. This standard is met.

(.06) Performance Standards. The following performance standards apply to all industrial properties and sites within the PDI-RSIA Zone, and are intended to minimize the potential adverse impacts of industrial activities on the general public and on other land uses or activities. They are not intended to prevent conflicts between different uses or activities that may occur on the same property or site.

A. All uses and operations except storage, off-street parking, loading and unloading shall be confined, contained and conducted wholly within completely enclosed buildings, unless outdoor activities have been approved as part of Stage II, Site Design or Administrative Review.

B. Vibration: Every use shall be so operated that the ground vibration inherently and recurrently generated from equipment other than vehicles is not perceptible without instruments at any boundary line of the property or site on which the use is located.

C. Emission of odorous gases or other odorous matter in quantities detectable at any time and at any point on any boundary line of the property or site on which the use is located are prohibited.

D. Any open storage shall comply with the provisions of Section 4.176 and this Section.

E. No building customarily used for night operation, such as a bakery, bottling and distribution plant or other similar use, shall have any opening, other than stationary windows or required fire exits, within one hundred (100) feet of any residential district and any space used for loading or unloading commercial vehicles in connection with such an operation shall not be within one hundred (100) feet of any residential district.

F. Heat and Glare.

1. Operations producing heat or glare shall be conducted entirely within an enclosed building.

2. Exterior lighting on private property shall be screened, baffled, or otherwise directed away from adjacent residential properties. This is not intended to apply to street lighting.

G. Dangerous Substances: Any use which involves the presence, storage or handling of any explosive, nuclear waste product or any other substance in a manner which would cause a health or safety hazard on any adjacent land use or site shall be prohibited.

H. Liquid and Solid Wastes:

1. Any storage of wastes which would attract rodents or insects or otherwise create a health hazard shall be prohibited.

2. Waste products which are stored outside shall be concealed from view from any property line by a sight-obscuring fence or planting as required by Section 4.176.

3. No connection with any public sewer shall be made or maintained in violation of applicable City or State standards.

4. No wastes conveyed shall be allowed to or permitted, caused to enter, or allowed to flow into any public sewer in violation of applicable City or State standards.

5. All drainage permitted to discharge into a street gutter, caused to enter or allowed to flow into any pond, lake, stream or other natural water course shall be limited to surface waters or waters having similar characteristics as determined by the City, County, and State Department of Environmental Quality.

6. All operations shall be conducted in conformance with the city's standards and ordinances applying to sanitary and storm sewer discharges.

I. Noise: Noise generated by the use, with the exception of traffic uses from automobiles, trucks and trains, shall not violate any applicable standards adopted by the Oregon Department of Environmental Quality and W.C. 6.204 governing noise control in the same or similar locations. [Amended by Ord. 631, 7/16/07]

J. Electrical Disturbances. Except for electrical facilities wherein the City is pre-empted by other governmental entities, electrical disturbances generated by uses within the PDI-RSIA Zone which interfere with the normal operation of equipment or instruments within the PDI-RSIA Zone are prohibited. Electrical disturbances which routinely cause interference with normal activity in abutting residential uses are also prohibited.

K. Discharge Standards: There shall be no emission of smoke, fallout, fly ash, dust, vapors, gases or other forms of air pollution that may cause a nuisance or injury to human, plant or animal life or to property. Plans for construction and operation shall be subject to the recommendations and regulations of the State Department of Environmental Quality. All measurements of air pollution shall be by the procedures and with equipment approved by the State Department of Environmental Quality or equivalent and acceptable methods of measurement approved by the City. Persons responsible for a suspected source of air pollution upon request of the City shall provide quantitative and qualitative information regarding the discharge that will adequately and accurately describe operation conditions.

L. Open burning is prohibited.

Response: These provisions (A through L) are performance standards with which future tenants will be required to comply in the occupancy and use of the property on an ongoing basis. This application does not include a request for exemption from any of the above standards. Based on the submitted materials, the proposal complies with applicable standards and it will be feasible for future tenants to maintain compliance over time.

M. Storage.

1. Outdoor storage must be maintained in an orderly manner at all times.

2. Outdoor storage areas shall be gravel surfaced or better and shall be sufficient for the materials being handled and stored. If a gravel surface is not sufficient to meet the performance standards for the use, the area shall be suitably paved.

3. Any open storage that would otherwise be visible at the property line shall be concealed from view at the abutting property line by a sight obscuring fence or planting not less than 6' in height.

Response: These provisions are not applicable because the proposed development does not include any areas designated for use as outdoor storage.

N. Landscaping.

1. Unused property, or property designated for expansion or other future use shall be landscaped and maintained as approved by the Development Review Board. Landscaping for unused property disturbed during construction shall include such materials as plantings of ornamental shrubs, lawns, native plants, and mowed, seeded fieldgrass.

2. Contiguous unused areas of undisturbed fieldgrass may be maintained in their existing state. Large stands of invasive weeds such as Himalayan blackberry, English ivy, cherry laurel, reed canary grass or other identified invasive species shall be removed and/or mowed at least annually to reduce fire hazard. These unused areas, located with a phased development project or a future expansion cannot be included in the area calculated to meet the landscape requirements for the initial phase(s) of the development.

3. Unused property shall not be left with disturbed soils that are subject to siltation and erosion. Any disturbed soil shall be seeded for complete erosion cover germination and shall be subject to applicable erosion control standards.

Response: These provisions are not applicable because the proposed development does not include any surplus "unused" area or property reserved for future expansion.

(.07) Other Standards.

A. Lot Size:

1. Parcels less than 50 acres in size at the time of adoption of this amended Section: Land divisions may occur in conformance with an approved Master Plan consistent with the requirements of this section. No lot size limit, save and except as shall be consistent with the other provisions of this code.

Response: The site is smaller than 50 acres but no land division is proposed. This provision is not applicable.

2. Parcels 50 acres or greater in size existing on October 25, 2004 may be divided into any number of parcels or lots pursuant to an approved Master Plan provided that at least one lot or parcel of at least 50 acres in size remains. Provided further however, at least forty percent (40%) of the lot or parcel so created has been developed or planned for industrial uses and associated accessory uses and no portion has been developed or planned for the uses listed in Section 4.135.5(03)(I.)(1.) through (3).

Response: The parcel is smaller than 50 acres. This standard does not apply.

3. Uses not subject to the foregoing lot size provisions:

a. Public facilities and services

b. Separation of a lot or parcel in order to protect a natural resource, to provide a public amenity, or to implement a remediation plan for a site identified by DEQ pursuant to ORS 465.225.

c. Separation of a lot or parcel containing a nonconforming use from the remainder of the site in order to improve the utility of the remainder site for the intended industrial uses

d. Separation for the purposes of financing when the new lot or parcel is consistent with the approved Master Plan.

e. Division of lots or parcels consistent with a Master Plan approved by the City prior to July 1, 2004.

Response: The applicant is not proposing any of these uses or seeking approval pursuant to this Section. These provisions do not apply.

B. Maximum Lot Coverage. No limit save and except as shall be consistent with the other provisions of this code.

Response: The proposed site plan satisfies minimum requirements for site landscaping and other factors limiting site coverage.

C. Front Yard Setback. Thirty (30) feet. Structures on corner or through lots shall observe the minimum front yard setback on both streets. Setbacks shall also be maintained from the planned rights-of-way shown on any adopted City street plan.

Response: The proposed building is set back more than 30 feet from the front property line, which is at the Garden Acres Road (east) frontage.

D. Rear and Side Yard Setback. Thirty (30) feet. Structures on corner or through lots shall observe the minimum rear and side yard setback on both streets. Setbacks shall also be maintained from the planned rights-of-way shown on any adopted City street plan.

Response: The proposed building is set back more than 30 feet from the side and rear property lines. The Supporting Street required by the Coffee Creek Regulating Plan (Figure CC-1) will be constructed in an easement along the south property boundary rather than in a public right-of-way.

E. No setback is required when rear or side yards abut a railroad siding.
Response: Not applicable; the property does not abut a railroad siding.

F. Corner Vision. Corner lots shall have no lot obstruction to exceed the vision clearance standards of Section 4.177.
Response: The southwest, northeast, and southeast property corners are identified intersections. Landscape plantings and maintenance practices at these locations will ensure that adequate sight distances are maintained for safe operations at these intersections.

G. Off-street Parking and Loading. As required in Section 4.155.
Response: Parking and loading meet minimum requirements; see detailed responses below in Section 4.155. This application includes a Waiver request for parking located within 30 feet of the eastern property boundary.

H. Signs. As required in Sections 4.156.01 through 4.156.11.
Response: Signage locations and sizes/proportions are proposed for approval as part of this integrated submittal. See the applicable responses below.

Section 4.140. Planned Development Regulations

(.02) Lot Qualification.

A. Planned Development may be established on lots which are suitable for and of a size to be planned and developed in a manner consistent with the purposes and objectives of Section 4.140.

B. Any site designated for development in the Comprehensive Plan may be developed as a Planned Development, provided that it is zoned "PD." All sites which are greater than two (2) acres in size, and designated in the Comprehensive Plan for commercial, residential, or industrial use shall be developed as Planned Developments, unless approved for other uses permitted by the Development Code. Smaller sites may also be developed through the City's PD procedures, provided that the location, size, lot configuration, topography, open space and natural vegetation of the site warrant such development.

Response: The site exceeds two acres and is designated Industrial in the Comprehensive Plan; it is therefore designated for a planned development. This standard applies.

(.03) Ownership.

A. The tract or tracts of land included in a proposed Planned Development must be in one (1) ownership or control or the subject of a joint application by the owners of all the property included. The holder of a written option to purchase, with written authorization by the owner to make applications, shall be deemed the owner of such land for the purposes of Section 4.140.

B. Unless otherwise provided as a condition for approval of a Planned Development permit, the permittee may divide and transfer units or parcels of any development. The transferee shall use and maintain each such unit or parcel in strict conformance with the approval permit and development plan.

Response: The site is a single lot with a joint application by the applicant (purchaser) and all the owners of the property (sellers). The applicant controls the property pursuant to a purchase and sale agreement, and will become the sole owner when the transaction is closed. This standard is met.

(.04) Professional Design.

A. The applicant for all proposed Planned Developments shall certify that the professional services of the appropriate professionals have been utilized in the planning process for development.

B. Appropriate professionals shall include, but not be limited to the following to provide the elements of the planning process set out in Section 4.139:

1. An architect licensed by the State of Oregon;

2. A landscape architect registered by the State of Oregon;

3. An urban planner holding full membership in the American Institute of Certified Planners, or a professional planner with prior experience representing clients before the Development Review Board, Planning Commission, or City Council; or

4. A registered engineer or a land surveyor licensed by the State of Oregon.

C. One of the professional consultants chosen by the applicant from either 1, 2, or 3, above, shall be designated to be responsible for conferring with the planning staff with respect to the concept and details of the plan.

D. The selection of the professional coordinator of the design team will not limit the owner or the developer in consulting with the planning staff.

Response: The applicant certifies that appropriate professionals have been utilized including Oregon-licensed/registered architects, landscape architects, an AICP planner, and professional engineer. More particularly, the design team leadership includes the following Mackenzie staff:

- Architect/Project Manager: Scott Moore, AIA
- Landscape Architect: Nicole Ferreira, RLA
- Planner: Lee Leighton, AICP
- Civil Engineer: Nicole Burrell, PE

This standard is met.

(.05) Planned Development Permit Process.

A. All parcels of land exceeding two (2) acres in size that are to be used for residential, commercial or industrial development, shall, prior to the issuance of any building permit:

1. Be zoned for planned development;

2. Obtain a planned development permit; and

3. Obtain Development Review Board, or, on appeal, City Council approval.

B. Zone change and amendment to the zoning map are governed by the applicable provisions of the Zoning Sections, inclusive of Section 4.197

C. Development Review Board approval is governed by Sections 4.400 to 4.450

D. All planned developments require a planned development permit. The planned development permit review and approval process consists of the following multiple stages, the last two or three of which can be combined at the request of the applicant:

1. Pre-application conference with Planning Department;

2. Preliminary (Stage I) review by the Development Review Board. When a zone change is necessary, application for such change shall be made simultaneously with an application for preliminary approval to the Board; and

3. Final (Stage II) review by the Development Review Board

4. *In the case of a zone change and zone boundary amendment, City Council approval is required to authorize a Stage I preliminary plan.*

Response: The site meets the criteria for a planned development, and with this application the applicant is simultaneously applying for a Zone Map Amendment, Stage I & II Planned Development Review, Site Design Review including waivers, Type C Tree Plan Review, and Class C Sign Permit. These provisions allow applicants to combine approval requests in this manner. These provisions are satisfied.

(.06) Staff Report:

A. The planning staff shall prepare a report of its findings and conclusions as to whether the use contemplated is consistent with the land use designated on the Comprehensive Plan. If there is a disagreement as to whether the use contemplated is consistent, the applicant, by request, or the staff, may take the preliminary information provided to the Development Review Board for a use interpretation.

B. The applicant may proceed to apply for Stage I - Preliminary Approval - upon determination by either staff or the Development Review Board that the use contemplated is consistent with the Comprehensive Plan.

Response: The applicant is requesting both Stage I and Stage II approvals as part of this application, and requests prompt review of the complete application package.

(.07) Preliminary Approval (Stage One):

A. Applications for preliminary approval for planned developments shall:

1. *Be made by the owner of all affected property or the owner's authorized agent; and*
2. *Be filed on a form prescribed by the City Planning Department and filed with said Department.*
3. *Set forth the professional coordinator and professional design team as provided in subsection (.04), above.*
4. *State whether the development will include mixed land uses, and if so, what uses and in what proportions and locations.*

Response: This application package includes the required information to meet these evidence requirements.

B. The application shall include conceptual and quantitatively accurate representations of the entire development sufficient to judge the scope, size, and impact of the development on the community; and, in addition to the requirements set forth in Section 4.035, shall be accompanied by the following information:

1. *A boundary survey or a certified boundary description by a registered engineer or licensed surveyor.*
2. *Topographic information as set forth in Section 4.035*
3. *A tabulation of the land area to be devoted to various uses, and a calculation of the average residential density per net acre.*
4. *A stage development schedule demonstrating that the developer intends receive Stage II approval within two (2) years of receiving Stage I approval, and to commence construction within two (2) years after the approval of the final development plan, and will proceed diligently to completion; unless a phased development schedule has been approved; in which case adherence to that schedule shall be considered to constitute diligent pursuit of project completion.*
5. *A commitment by the applicant to provide in the Final Approval (Stage II) a performance bond or other acceptable security for the capital improvements required by the project.*

6. *If it is proposed that the final development plan will be executed in stages, a schedule thereof shall be provided.*
7. *Statement of anticipated waivers from any of the applicable site development standards.*

Response: This application package meets the criteria listed above. Regarding items 1-3, Civil Engineer Nicole Burrell supervised the preparation of the C-series and R-series drawing sheets in Attachment 6, which provide the required data. Regarding item 4, the applicant has submitted for concurrent approval of Stage I and Stage II Planned Development requests, together with Site Design Review and related requests, to allow full development of the project in a single phase, to commence within two years following approvals. Regarding item 5, the applicant will provide acceptable form(s) of surety prior to construction of public works elements. Item 6 is not applicable because a single phase of construction is proposed. Regarding item 7, this application package includes requests for six waivers, which are discussed in detail in Section D below.

C. An application for a Stage I approval shall be considered by the Development Review Board as follows:

1. *A public hearing as provided in Section 4.013.*
2. *After such hearing, the Board shall determine whether the proposal conforms to the permit criteria set forth in this Code, and may approve or disapprove the application and the accompanying preliminary development plan or require such changes therein or impose such conditions of approval as are in its judgment, necessary to ensure conformity to said criteria and regulations. In so doing, the Board may, in its discretion, authorize submission of the final development plan in stages, corresponding to different units or elements of the development. It shall do so only upon evidence assuring completion of the entire development in accordance with the preliminary development plan and stage development schedule.*
3. *A final decision on a complete application and preliminary plan shall be rendered within one hundred and twenty (120) days after the application is deemed complete unless a continuance is agreed upon by the applicant and the appropriate City decision-making body.*
4. *The determination of the Development Review Board shall become final at the end of the appeal period for the decision, unless appealed to the City Council in accordance with Section 4.022 of this Code.*

Response: This provision provides procedural guidance for implementation and requires no evidence within the applicant's narrative.

(.09) Final Approval (Stage Two):
[Note: Outline Number is incorrect.]

A. Unless an extension has been granted by the Development Review Board, within two (2) years after the approval or modified approval of a preliminary development plan (Stage I), the applicant shall file with the City Planning Department a final plan for the entire development or when submission in stages has been authorized pursuant to Section 4.035 for the first unit of the development, a public hearing shall be held on each such application as provided in Section 4.013.

B. After such hearing, the Development Review Board shall determine whether the proposal conforms to the permit criteria set forth in this Code, and shall approve, conditionally approve, or disapprove the application.

C. *The final plan shall conform in all major respects with the approved preliminary development plan, and shall include all information included in the preliminary plan plus the following:*
   1. *The location of water, sewerage and drainage facilities;*
   2. *Preliminary building and landscaping plans and elevations, sufficient to indicate the general character of the development;*
   3. *The general type and location of signs;*
   4. *Topographic information as set forth in Section 4.035;*
   5. *A map indicating the types and locations of all proposed uses; and*
   6. *A grading plan.*

D. *The final plan shall be sufficiently detailed to indicate fully the ultimate operation and appearance of the development or phase of development. However, Site Design Review is a separate and more detailed review of proposed design features, subject to the standards of Section 4.400.*

Response: The applicant is requesting approval of both Stage I and Stage II approval, together with Site Design Review, as part of this application. Accordingly, the final plan provides sufficient information regarding conformance with both the preliminary development plan and Site Design Review. This standard is met.

E. *Copies of legal documents required by the Development Review Board for dedication or reservation of public facilities, or for the creation of a non-profit homeowner's association, shall also be submitted.*

Response: As the applicant is requesting both Stage I and Stage II approvals as part of this application, the Development Review Board has not yet required dedication or reservation of public facilities. The proposed development does not anticipate locating any public utility facilities outside the adjacent public rights-of-way, and there is no reason to form a homeowner's association or other entity to support this development. This standard does not apply.

F. *Within thirty (30) days after the filing of the final development plan, the Planning staff shall forward such development plan and the original application to the Tualatin Valley Fire and Rescue District, if applicable, and other agencies involved for review of public improvements, including streets, sewers and drainage. The Development Review Board shall not act on a final development plan until it has first received a report from the agencies or until more than thirty (30) days have elapsed since the plan and application were sent to the agencies, whichever is the shorter period.*

Response: This provision provides procedural guidance for implementation and requires no evidence from the applicant.

G. *Upon receipt of the final development plan, the Development Review Board shall conduct a public hearing and examine such plan and determine:*
   1. *Whether it conforms to all applicable criteria and standards; and*
   2. *Whether it conforms in all substantial respects to the preliminary approval; or*
   3. *Require such changes in the proposed development or impose such conditions of approval as are in its judgment necessary to insure conformity to the applicable criteria and standards.*

H. *If the Development Review Board permits the applicant to revise the plan, it shall be resubmitted as a final development plan within sixty (60) days. If the Board approves, disapproves or grants such permission to resubmit, the decision of the Board shall become final at the end of the appeal period for the decision, unless appealed to the City Council, in accordance with Sections 4.022 of this Code.*

Response: As the applicant is requesting both Stage I and Stage II approvals as part of this application, the final development plan is integrally consistent with the preliminary development plan. Therefore, the applicant does not need to revise the final plan to comply with a prior Stage I approval. The applicant's narrative and accompanying plans and reports demonstrate conformance with applicable approval standards for the Planned Development and Site Design Review. This standard is met.

I. All Stage II Site Development plan approvals shall expire two years after their approval date, if substantial development has not occurred on the property prior to that time. Provided, however, that the Development Review Board may extend these expiration times for up to three (3) additional periods of not more than one (1) year each. Applicants seeking time extensions shall make their requests in writing at least thirty (30) days in advance of the expiration date. Requests for time extensions shall only be granted upon (1) a showing that the applicant has in good faith attempted to develop or market the property in the preceding year or that development can be expected to occur within the next year, and (2) payment of any and all Supplemental Street SDCs applicable to the development. Upon such payment, the development shall have vested traffic generation rights under 4.140 (.10), provided however, that if the Stage II approval should expire, the vested right to use trips is terminated upon City repayment, without interest, of Supplemental Street SDCs. For purposes of this Ordinance, "substantial development" is deemed to have occurred if the required building permits or public works permits have been issued for the development, and the development has been diligently pursued, including the completion of all conditions of approval established for the permit. [Amended by Ord 561, adopted 12/15/03.]

Response: The applicant intends to construct the proposed building in one implementation phase promptly after land use approval, and well within the allotted time period. To that end, the applicant is requesting both Stage I and Stage II approvals, together with Site Design Review and other land use requests, as part of this consolidated application. This standard is met.

J. A planned development permit may be granted by the Development Review Board only if it is found that the development conforms to all the following criteria, as well as to the Planned Development Regulations in Section 4.140:

1. The location, design, size and uses, both separately and as a whole, are consistent with the Comprehensive Plan, and with any other applicable plan, development map or Ordinance adopted by the City Council.

Response: The City of Wilsonville has worked for many years to plan and prepare for light industrial development in the Coffee Creek Regionally Significant Industrial Area (RSIA). As documented in the applicant's submitted materials, the proposed speculative development for warehousing, light manufacturing, or other tenants with supporting office areas, whose land use activities are consistent with the list in WDO Section 4.135.5(.03), is consistent with the planned economic uses/activities as well as the forms of development that all of the City's planning work has been designed to foster and support. Significantly, this project will be among the first development proposals to realize the benefits of the planning work.

2. That the location, design, size and uses are such that traffic generated by the development at the most probable used intersection(s) can be accommodated safely and without congestion in excess of Level of Service D, as defined in the Highway Capacity Manual published by the National Highway Research Board, on existing or immediately planned arterial or collector streets and will, in the case

of commercial or industrial developments, avoid traversing local streets. Immediately planned arterial and collector streets are those listed in the City's adopted Capital Improvement Program, for which funding has been approved or committed, and that are scheduled for completion within two years of occupancy of the development or four year if they are an associated crossing, interchange, or approach street improvement to Interstate 5.

a. In determining levels of Service D, the City shall hire a traffic engineer at the applicant's expense who shall prepare a written report containing the following minimum information for consideration by the Development Review Board:

i. An estimate of the amount of traffic generated by the proposed development, the likely routes of travel of the estimated generated traffic, and the source(s) of information of the estimate of the traffic generated and the likely routes of travel; [Added by Ord. 561, adopted 12/15/03.]

ii. What impact the estimate generated traffic will have on existing level of service including traffic generated by (1) the development itself, (2) all existing developments, (3) Stage II developments approved but not yet built, and (4) all developments that have vested traffic generation rights under section 4.140(.10), through the most probable used intersection(s), including state and county intersections, at the time of peak level of traffic. This analysis shall be conducted for each direction of travel if backup from other intersections will interfere with intersection operations. [Amended by Ord 561, adopted 12/15/03.]

b. The following are exempt from meeting the Level of Service D criteria standard:

i. A planned development or expansion thereof which generates three (3) new p.m. peak hour traffic trips or less;

ii. A planned development or expansion thereof which provides an essential governmental service.

c. Traffic generated by development exempted under this subsection on or after Ordinance No. 463 was enacted shall not be counted in determining levels of service for any future applicant. [Added by Ord 561, adopted 12/15/03.]

d. Exemptions under 'b' of this subsection shall not exempt the development or expansion from payment of system development charges or other applicable regulations. [Added by Ord 561, adopted 12/15/03.]

e. In no case will development be permitted that creates an aggregate level of traffic at LOS "F". ([Added by Ord 561, adopted 12/15/03.]

Response: The City's traffic engineering consulting firm, DKS Associates, prepared a Traffic Impact Study (TIS), included as Attachment 11. The analysis studied five intersections in the vicinity, Boones Ferry Road/Day Road, Grahams Ferry Road/Day Road, Boones Ferry Road/95th Avenue, I-5 SB Ramps/Elligsen Road, and I-5 NB Ramps/Elligsen Road; and concluded that all five will achieve Level of Service (LOS) D with the proposed development, which meets the minimum operating standard, LOS D. This standard is met.

3. *That the location, design, size and uses are such that the residents or establishments to be accommodated will be adequately served by existing or immediately planned facilities and services.*

Response: Frontage improvements and right-of-way dedications are proposed in both Grahams Ferry Road and Garden Acres Road, consistent with City design sections for those Arterial Streets. Improvements based on a special design section will be made in the Cahalin Road right-of-way along the site's north boundary, which is not identified as a Supporting Street or a Connecting Street in the Coffee Creek Regulating Plan (Figure CC-1). A new partial Supporting Street will be constructed in an easement along the south property boundary. These facilities will provide access to the site consistent with access spacing requirements that apply to the two Arterial Streets, and will also enable properties to the north and west to obtain access without adding driveways on the Arterials. The combination of existing facilities and construction as part of the proposed project will satisfy this requirement.

Utility services capable of serving the site are in place in Garden Acres Road. Extensions and connections will be made pursuant to Public Works standards and permitting.

The site's stormwater plan includes multiple treatment/infiltration rain gardens augmented by rock galleries and Underground Infiltration Chambers (UICs) to achieve 100% infiltration for both the 10-year and 25-year design storm events. This design for the on-site system avoids exacerbating an existing downstream capacity limitation in the City's system by discharging no flow to the City's storm drain line in Garden Acres Road in a 25-year design storm event.

For all the above reasons, the "*establishments to be accommodated will be adequately served by existing or immediately planned facilities and services*" as required by this standard. This standard is met.

K. *Mapping: Whenever a Planned Development permit has been granted, and so long as the permit is in effect, the boundary of the Planned Development shall be indicated on the Zoning Map of the City of Wilsonville as the appropriate "PD" Zone.*

Response: This provision provides procedural guidance to staff for implementation and requires no evidence from the applicant.

L. *Adherence to Approved Plan and Modification Thereof: The applicant shall agree in writing to be bound, for her/himself and her/his successors in interest, by the conditions prescribed for approval of a development. The approved final plan and stage development schedule shall control the issuance of all building permits and shall restrict the nature, location and design of all uses. Minor changes in an approved preliminary or final development plan may be approved by the Director of Planning if such changes are consistent with the purposes and general character of the development plan. All other modifications, including extension or revision of the stage development schedule, shall be processed in the same manner as the original application and shall be subject to the same procedural requirements.*

Response: The applicant fully intends to comply with the City's approval and intends to sign the necessary agreements. This standard is met.

M. *In the event of a failure to comply with the approved plan or any prescribed condition of approval, including failure to comply with the stage development schedule, the*

Development Review Board may, after notice and hearing, revoke a Planned Development permit. General economic conditions that affect all in a similar manner may be considered as a basis for an extension of a development schedule. The determination of the Board shall become final thirty (30) days after the date of decision unless appealed to the City Council.

Response: This provision provides procedural guidance for implementation and requires no evidence from the applicant. The applicant fully intends to comply with the City's approval.

(.10) Early Vesting of Traffic Generation. Applicants with Stage I or Master Plan approvals occurring after June 2, 2003 may apply to vest the right to use available transportation capacity at the intersections of Wilsonville Road with Boone's Ferry Road and with Town Center Loop West, and/or the I-5 interchange. Vesting for properties with such approvals shall occur upon execution of a vesting agreement satisfactory to the city, which agreement shall include a proposed development schedule or phasing plan and either provide for the payment of any and all Supplemental Street SDCs or provide other means of financing public improvements. Vesting for properties pending such approvals shall occur upon such agreement and the date the approvals are final.

The number of trips vested is subject to modification based upon updated traffic analysis associated with subsequent development approvals for the property. A reduction in vested trips shall attend repayment of vesting fees by the City. An increase in available vested trips shall occur upon payment of necessary vesting fees.

Vesting shall remain valid and run with the property, unless an approval that is necessary for vesting to occur is terminated or a vesting agreement is terminated. If the vested right to use certain trips is lost or terminated, as determined by the Community Development Director with the concurrence of City Council, such trips shall be made available to other development upon City repayment, without interest, of associated vesting fees.

Response: The applicant is not proposing to vest trips or utilize vested trips. This standard does not apply.

D. Site Design Review

Section 4.154. On-site Pedestrian Access and Circulation

(.01) On-site Pedestrian Access and Circulation

A. The purpose of this section is to implement the pedestrian access and connectivity policies of the Transportation System Plan. It is intended to provide for safe, reasonably direct, and convenient pedestrian access and circulation.

B. Standards. Development shall conform to all of the following standards:

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

2. Safe, Direct, and Convenient. Pathways within developments shall provide safe, reasonably direct, and convenient connections between primary building entrances and all adjacent parking areas, recreational areas/playgrounds, and public rights-of-way and crosswalks based on all of the following criteria:

a. Pedestrian pathways are designed primarily for pedestrian safety and convenience, meaning they are free from hazards and provide a reasonably smooth and consistent surface.

b. *The pathway is reasonably direct. A pathway is reasonably direct when it follows a route between destinations that does not involve a significant amount of unnecessary out-of-direction travel.*

c. *The pathway connects to all primary building entrances and is consistent with the Americans with Disabilities Act (ADA) requirements.*

d. *All parking lots larger than three acres in size shall provide an internal bicycle and pedestrian pathway pursuant to Section 4.155(.03)(B.)(3.)(d.).*

Response: As illustrated on sheet C1.10 of Attachment 6, a continuous pathway system will connect from the proposed public sidewalk improvements on SW Garden Acres Road. There will be three pedestrian paths to the building entrances: one from the Garden Acres Road sidewalk to the north office entrance; a second from the Garden Acres Road sidewalk, crossing through the parking area to the walkway along the east façade of the building and then south to the Primary Building Entrance; and a third on the west side of the eastern driveway on the southern Supporting Street. The southern path must climb too steeply to meet ADA requirements, but the northerly two, including the path to the Primary Building Entrance, will meet ADA requirements. The proposed pathways provide direct access to the building entrances. The parking area is less than three acres in size and therefore an internal bicycle and pedestrian pathway is not required. This standard is met.

3. *Vehicle/Pathway Separation. Except as required for crosswalks, per subsection 4, below, where a pathway abuts a driveway or street it shall be vertically or horizontally separated from the vehicular lane. For example, a pathway may be vertically raised six inches above the abutting travel lane, or horizontally separated by a row of bollards.*

Response: As illustrated on sheet C1.10 of Attachment 6, a portion of the eastern and northern sidewalks abuts the vehicle parking and maneuvering area in front of the east and north entrances of the building. These pathways will be elevated and separated from the paved travel way/parking surface by curbing. (See detail 2 on Sheet C5.10 of Attachment 6.) This standard is met.

4. *Crosswalks. Where a pathway crosses a parking area or driveway, it shall be clearly marked with contrasting paint or paving materials (e.g., pavers, light-color concrete inlay between asphalt, or similar contrast).*

Response: As illustrated by detail 8 on Sheet C1.10 of Attachment 6, the east walkway crosses a parking area. This crossing will be clearly marked using contrasting material (concrete) and striping. The standard is met.

5. *Pathway Width and Surface. Primary pathways shall be constructed of concrete, asphalt, brick/masonry pavers, or other durable surface, and not less than five (5) feet wide. Secondary pathways and pedestrian trails may have an alternative surface except as otherwise required by the ADA.*

6. *All pathways shall be clearly marked with appropriate standard signs.*

Response: Internal pathways will be constructed of concrete and have a minimum width of 6'. This standard is met.

Section 4.155. General Regulations - Parking, Loading and Bicycle Parking

(.02) General Provisions:

A. *The provision and maintenance of off-street parking spaces is a continuing obligation of the property owner. The standards set forth herein shall be considered by the Development Review Board as minimum criteria.*

1. *The Board shall have the authority to grant variances or planned development waivers to these standards in keeping with the purposes and objectives set forth in the Comprehensive Plan and this Code.*
2. *Waivers to the parking, loading, or bicycle parking standards shall only be issued upon a findings that the resulting development will have no significant adverse impact on the surrounding neighborhood, and the community, and that the development considered as a whole meets the purposes of this section.*

Response: The applicant acknowledges the continuing obligation to provide and maintain parking for site users. One of the requested waivers is to allow a total of 53 parking spaces (two of which are ADA-accessible) in a parking area between the building and Garden Acres Road, which is necessary to provide satisfactory parking capacity while complying with the site's limited access locations and other factors. (See detailed findings in the Waivers section below.) With approval of that waiver request, these standards are met.

B. *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 maneuvering area for the vehicles, as determined by the Planning Director.*

Response: As illustrated on Sheet C1.10 in Attachment 6, all parking spaces are proposed to be hard-surfaced as required, and off-street maneuvering space is provided in drive aisles that comply with the City's dimensional requirements. This standard is met.

C. *In cases of enlargement of a building or a change of use from that existing on the effective date of this Code, the number of parking spaces required shall be based on the additional floor area of the enlarged or additional building, or changed use, as set forth in this Section. Current development standards, including parking area landscaping and screening, shall apply only to the additional approved parking area.*

Response: No building enlargement or change of use is proposed; this is a proposal for a new building. This standard does not apply.

D. *In the event several uses occupy a single structure or parcel of land, the total requirement for off-street parking shall be the sum of the requirements of the several uses computed separately, except as modified by subsection "E," below.*

Response: The proposed building is a speculative project, so its tenant (or tenant mix) is not known at this time; however, based on an understanding of market demand for industrial space, the applicant anticipates that the building will be leased by tenants primarily for High Cube Fulfillment Center Sort Warehouse or warehouse/distribution use with capacity for up to about 20,700 square feet of manufacturing use. Parking has been provided to meet minimum requirements for both uses in that relationship of relative tenant shares. This standard is met.

E. *Owners of two (2) or more uses, structures, or parcels of land may utilize jointly the same parking area when the peak hours of operation do not overlap, provided satisfactory legal evidence is presented in the form of deeds, leases, or contracts securing full and permanent access to such parking areas for all the parties jointly using them.*

Response: The applicant does not propose to share parking with nearby uses. This standard does not apply.

F. Off-street parking spaces existing prior to the effective date of this Code may be included in the amount necessary to meet the requirements in case of subsequent enlargement of the building or use to which such spaces are necessary.

Response: The site will be completely redeveloped and no existing parking spaces will remain. This standard does not apply.

G. Off-Site Parking. Except for single-family dwellings, the vehicle parking spaces required by this Chapter may be located on another parcel of land, provided the parcel is within 500 feet of the use it serves and the DRB has approved the off-site parking through the Land Use Review. The distance from the parking area to the use shall be measured from the nearest parking space to the main building entrance, following a sidewalk or other pedestrian route. The right to use the off-site parking must be evidenced in the form of recorded deeds, easements, leases, or contracts securing full and permanent access to such parking areas for all the parties jointly using them.

Response: The applicant does not propose any off-site parking. This standard does not apply.

H. The conducting of any business activity shall not be permitted on the required parking spaces, unless a temporary use permit is approved pursuant to Section 4.163.

Response: The applicant is not requesting authorization to perform business activities within required parking spaces. This standard does not apply.

I. Where the boundary of a parking lot adjoins or is within a residential district, such parking lot shall be screened by a sight-obscuring fence or planting. The screening shall be continuous along that boundary and shall be at least six (6) feet in height.

Response: The parking areas are not adjoining or within a residential district, so this provision is not applicable.

J. Parking spaces along the boundaries of a parking lot shall be provided with a sturdy bumper guard or curb at least six (6) inches high and located far enough within the boundary to prevent any portion of a car within the lot from extending over the property line or interfering with required screening or sidewalks.

Response: As illustrated on Sheet C1.10 in Attachment 6, all parking spaces have a six-inch curb at the front to ensure adequate space for landscaping and sidewalks and to prevent vehicles from crossing the property line. This standard is met.

K. All areas used for parking and maneuvering of cars shall be surfaced with asphalt, concrete, or other surface, such as pervious materials (i. e. pavers, concrete, asphalt) that is found by the City's authorized representative to be suitable for the purpose. In all cases, suitable drainage, meeting standards set by the City's authorized representative, shall be provided. [Amended by Ord. # 674 11/16/09]

Response: As noted on Sheet C1.10 in Attachment 6, all parking and maneuvering areas are proposed to be paved. Sheet C1.30 illustrates the required stormwater management system. This standard is met.

L. Artificial lighting which may be provided shall be so limited or deflected as not to shine into adjoining structures or into the eyes of passers-by.

Response: As illustrated on Sheet C8.10 in Attachment 6, the applicant intends to comply using the prescriptive approach. This standard is met.

M. Off-street parking requirements for types of uses and structures not specifically listed in this Code shall be determined by the Development Review Board if an application is pending before the Board. Otherwise, the requirements shall be specified by the Planning Director, based upon consideration of comparable uses.

Response: Minimum parking standards for the proposed warehouse/distribution and manufacturing uses are listed in this Code. This standard does not apply.

N. Up to forty percent (40%) of the off-street spaces may be compact car spaces as identified in Section 4.001 - "Definitions," and shall be appropriately identified.

Response: As illustrated on Sheet C1.10 in Attachment 6, no compact parking spaces are proposed. This standard is met.

O. Where off-street parking areas are designed for motor vehicles to overhang beyond curbs, planting areas adjacent to said curbs shall be increased to a minimum of seven (7) feet in depth. This standard shall apply to a double row of parking, the net effect of which shall be to create a planted area that is a minimum of seven (7) feet in depth.

Response: Landscape islands and pedestrian walkways abutting parking spaces have been designed to provide adequate width to meet standards, assuming a two-foot bumper overhang. This standard is met.

(.03) Minimum and Maximum Off-Street Parking Requirements:

A. Parking and loading or delivery areas shall be designed with access and maneuvering area adequate to serve the functional needs of the site and shall:

1. Separate loading and delivery areas and circulation from customer and/or employee parking and pedestrian areas. Circulation patterns shall be clearly marked.

2. To the greatest extent possible, separate vehicle and pedestrian traffic.

Response: As illustrated on Sheet C1.10 in Attachment 6, parking areas are primarily proposed along the east and north boundaries of the site, while loading and delivery facilities are located to the west of the site, providing sufficient separation between trucks and passenger vehicles. Pedestrian pathways and crossings are provided from the public street and the parking areas to the primary building entrances at the office-area corners. This standard is met.

B. Parking and loading or delivery areas shall be landscaped to minimize the visual dominance of the parking or loading area, as follows:

1. Landscaping of at least ten percent (10%) of the parking area designed to be screened from view from the public right-of-way and adjacent properties. This landscaping shall be considered to be part of the fifteen percent (15%) total landscaping required in Section 4.176.03 for the site development.

Response: As illustrated on Sheets C.1.10 and L1.10 of Attachment 6, virtually all of the site's landscaping seeks to "*minimize the visual dominance of the parking or loading area*". As reported on Sheet C1.10 in Attachment 6, overall site landscaping of 57,173 SF is provided, or 17.3% of net site area after right-of-way dedication. Parking area landscaping is provided at 2,911 SF, which is 25.8% of the 11,294 SF of site area devoted to parking areas. Parking area landscape areas have also been counted as contributing to overall site landscaping, consistent with this provision. This standard is met.

2. Landscape tree planting areas shall be a minimum of eight (8) feet in width and length and spaced every eight (8) parking spaces or an equivalent aggregated amount.

a. *Trees shall be planted in a ratio of one (1) tree per eight (8) parking spaces or fraction thereof, except in parking areas of more than two hundred (200) spaces where a ratio of one (1) tree per six (six) spaces shall be applied as noted in subsection (.03)(B.)(3.). A landscape design that includes trees planted in areas based on an aggregated number of parking spaces must provide all area calculations.*

b. *Except for trees planted for screening, all deciduous interior parking lot trees must be suitably sized, located, and maintained to provide a branching minimum of seven (7) feet clearance at maturity.*

Response: As illustrated on Sheet L1.10 of Attachment 6, parking areas contain interior landscape tree planter islands at least eight feet in width and length, containing *Nyssa sylvatica* 'Wildfire' Black Gum species, with a mature growth height of 30 to 50 feet. This standard is met.

3. *Due to their large amount of impervious surface, new development with parking areas of more than two hundred (200) spaces that are located in any zone, and that may be viewed from the public right-of-way, shall be landscaped to the following additional standards:*

Response: As illustrated on Sheet C1.10 of Attachment 6, 71 parking spaces are proposed, which is fewer than 200 parking spaces. This standard does not apply.

C. *Off Street Parking shall be designed for safe and convenient access that meets ADA and ODOT standards. All parking areas which contain ten (10) or more parking spaces, shall for every fifty (50) standard spaces., provide one ADA-accessible parking space that is constructed to building code standards, Wilsonville Code 9.000.*

Response: As illustrated on Sheet C1.10 of Attachment 6, 71 parking spaces are proposed, and four accessible spaces are proposed to comply with provisions of the ADA and Oregon Structural Specialty Code. This standard is met.

D. *Where possible, parking areas shall be designed to connect with parking areas on adjacent sites so as to eliminate the necessity for any mode of travel of utilizing the public street for multiple accesses or cross movements. In addition, on-site parking shall be designed for efficient on-site circulation and parking.*

Response: As illustrated on Sheets C0.10 and C1.10 of Attachment 6, the site is not adjacent to other industrial or commercial uses that would provide opportunity for interconnecting parking areas. On-site parking and circulation utilize three access points: two southern driveways on the Supporting Street and the Cahalin Road-Garden Acres Road intersection at the north. At both the north and the south, abutting property owners will in the future be able to share access on those streets – Cahalin Road at the north and the Supporting Street at the south. Although this will not be shared parking, the resulting shared/consolidated access on the Addressing Streets is consistent with this provision. This standard is met.

E. *In all multi-family dwelling developments, there shall be sufficient areas established to provide for parking and storage of motorcycles, mopeds and bicycles. Such areas shall be clearly defined and reserved for the exclusive use of these vehicles.*

Response: No multi-family residences are proposed as part of this development. This standard does not apply.

F. On-street parking spaces, directly adjoining the frontage of and on the same side of the street as the subject property, may be counted towards meeting the minimum off-street parking standards.

Response: No on-street parking is proposed along the property's frontages. The applicant has not proposed to count on-street parking to satisfy the minimum parking standard. This standard does not apply.

G. Table 5 shall be used to determine the minimum and maximum parking standards for various land uses. The minimum number of required parking spaces shown on Tables 5 shall be determined by rounding to the nearest whole parking space. For example, a use containing 500 square feet, in an area where the standard is one space for each 400 square feet of floor area, is required to provide one off-street parking space. If the same use contained more than 600 square feet, a second parking space would be required. Structured parking and on-street parking are exempted from the parking maximums in Table 5.

Response: The building tenants are unknown at this time. However, based on understanding of market demand for industrial space, the applicant anticipates that the building will be leased primarily by warehouse/distribution use tenants, with up to approximately 20,700 SF of occupancy by manufacturing uses. Table 5 indicates that warehouse uses require between 0.3 spaces and 0.5 spaces per 1,000 SF, while manufacturing uses require at least 1.6 spaces per 1,000 SF but have no maximum limit. Based on the proposed building size of 148,279 SF and the anticipated mix of uses, the development is required to have at least 71 spaces, with no maximum limit. As illustrated on Sheet C1.10 of Attachment 6, the applicant is proposing 71 parking spaces. This standard is met.

H. Electrical Vehicle Charging Stations:

1. Parking spaces designed to accommodate and provide one or more electric vehicle charging stations on site may be counted towards meeting the minimum off-street parking standards.

2. Modification of existing parking spaces to accommodate electric vehicle charging stations on site is allowed outright.

Response: No electrical vehicle charging stations are proposed. This standard does not apply.

I. Motorcycle parking:

1. Motorcycle parking may substitute for up to 5 spaces or 5 percent of required automobile parking, whichever is less. For every 4 motorcycle parking spaces provided, the automobile parking requirement is reduced by one space.

2. Each motorcycle space must be at least 4 feet wide and 8 feet deep. Existing parking may be converted to take advantage of this provision.

Response: No motorcycle parking is proposed. This standard does not apply.

(.04) Bicycle Parking:

A. Required Bicycle Parking - General Provisions.

1. The required minimum number of bicycle parking spaces for each use category is shown in Table 5, Parking Standards.

2. Bicycle parking spaces are not required for accessory buildings. If a primary use is listed in Table 5, bicycle parking is not required for the accessory use.

3. When there are two or more primary uses on a site, the required bicycle parking for the site is the sum of the required bicycle parking for the individual primary uses.

4. *Bicycle parking space requirements may be waived by the Development Review Board per Section 4.118(.03)(A.)(9.) and (10.).*

TABLE 5: PARKING STANDARDS (excerpt) *Note: In considering proposed waivers to the following standards, the City will consider the potential uses of the site and not just the uses that are currently proposed. For waivers to exceed the maximum standards, applicants shall bear the burden of proving that Metro, State, and federal clean air standards will not be violated.*			
Use	***Parking Minimums***	***Parking Maximums***	***Bicycle Minimums***
f. Industrial			
1. Manufacturing establishment	*1.6 per 1000 sq. ft.*	*No Limit*	*1 per 10,000 sq. ft. Min. of 6*
2. Storage warehouse, wholesale establishment, rail or trucking freight terminal	*.3 per 1000 sq. ft.*	*.5 per 1000 sq. ft.*	*1 per 20,000 sq. ft. Min. of 2*

Response: The building tenants are unknown at this time. However, based on an understanding of market demand for industrial space, the applicant anticipates that the building will be leased primarily by High Cube Parcel Fulfillment Center Sort/Distribution or warehouse/distribution tenants with up to about 20,700 SF of manufacturing uses, forming the basis for the minimum required parking calculation. Table 5 indicates that warehouse uses require one bicycle parking space per 20,000 SF with a minimum of two spaces, while manufacturing uses require one bicycle parking space per 10,000 SF with a minimum of six spaces. Based on the proposed building size of 148,279 SF and the anticipated mix of uses, the development is required to have at least twelve (12) bicycle parking spaces. As illustrated on Sheets A1.11, A5.06, and C1.10 of Attachment 6, the applicant is providing a total of 12 bicycle spaces, which will either be split between the two office entrances, or located at the Primary Building Entrance in a single-tenant scenario. This standard is met.

B. Standards for Required Bicycle Parking

1. *Each space must be at least 2 feet by 6 feet in area and be accessible without moving another bicycle.*
2. *An aisle at least 5 feet wide shall be maintained behind all required bicycle parking to allow room for bicycle maneuvering. Where the bicycle parking is adjacent to a sidewalk, the maneuvering area may extend into the right-of-way.*
3. *When bicycle parking is provided in racks, there must be enough space between the rack and any obstructions to use the space properly.*
4. *Bicycle lockers or racks, when provided, shall be securely anchored.*
5. *Bicycle parking shall be located within 30 feet of the main entrance to the building or inside a building, in a location that is easily accessible for bicycles. For multi-tenant developments, with multiple business entrances, bicycle parking may be distributed on-site among more than one main entrance.*

Response: As illustrated on Sheets A1.11, A5.06 and C1.10 in Attachment 6, all required bicycle parking will be provided as interior spaces near one or both of the office entrances to the building, to comply with the design standards above. This standard will be met.

C. Long-term Bicycle Parking

1. *Long-term bicycle parking provides employees, students, residents, commuters, and others who generally stay at a site for several hours a weather-protected place to park bicycles.*
2. *For a proposed multi-family residential, retail, office, or institutional development, or for a park and ride or transit center, where six (6) or more bicycle parking spaces are required pursuant to Table 5, 50% of the bicycle parking shall be developed as long-term, secure spaces. Required long-term bicycle parking shall meet the following standards:*
    a. *All required spaces shall meet the standards in subsection (B.) above, and must be covered in one of the following ways: inside buildings, under roof overhangs or permanent awnings, in bicycle lockers, or within or under other structures.*
    b. *All spaces must be located in areas that are secure or monitored (e.g., visible to employees, monitored by security guards, or in public view).*
    c. *Spaces are not subject to the locational criterion of (B.)(5.).*

Response: The proposed use is industrial, not multi-family residential, retail, office, institutional, or a park and ride or transit center. Therefore, the long-term bicycle parking standards do not apply to this project.

(.05) Minimum Off-Street Loading Requirements:

A. Every building that is erected or structurally altered to increase the floor area, and which will require the receipt or distribution of materials or merchandise by truck or similar vehicle, shall provide off-street loading berths on the basis of minimum requirements as follows:

1. *Commercial, industrial, and public utility uses which have a gross floor area of 5,000 square feet or more, shall provide truck loading or unloading berths in accordance with the following tables:*

Square feet of Floor Area	*Number of Berths Required*
Less than 5,000	*0*
5,000 - 30,000	*1*
30,000 - 100,000	*2*
100,000 and over	*3*

2. *Restaurants, office buildings, hotels, motels, hospitals and institutions, schools and colleges, public buildings, recreation or entertainment facilities, and any similar use which has a gross floor area of 30,000 square feet or more, shall provide off-street truck loading or unloading berths in accordance with the following table:*

Square feet of Floor Area	*Number of Berths Required*
Less than 30,000	*0*
30,000 - 100,000	*1*
100,000 and over	*2*

3. *A loading berth shall contain space twelve (12) feet wide, thirty-five (35) feet long, and have a height clearance of fourteen (14) feet. Where the vehicles generally used for loading and unloading exceed these dimensions, the required length of these berths shall be increased to accommodate the larger vehicles.*

4. *If loading space has been provided in connection with an existing use or is added to an existing use, the loading space shall not be eliminated if elimination would result in less space than is required to adequately handle the needs of the particular use.*
5. *Off-street parking areas used to fulfill the requirements of this Ordinance shall not be used for loading and unloading operations except during periods of the day when not required to meet parking needs.*

Response: The proposed industrial building exceeds 100,000 SF. Per the table above, at least three loading berths are required. As depicted on Attachment 6 Sheet C1.10, the proposed building will provide 24 loading docks that meet or exceed the dimensional standards of criterion 3. The existing residential use will be eliminated as part of the development, and loading operations are not proposed within required off-street parking spaces. This standard is met.

B. Exceptions and Adjustments.

1. *The Planning Director or Development Review Board may approve a loading area adjacent to or within a street right-of-way where it finds that loading and unloading operations:*
   a. *Are short in duration (i.e., less than one hour);*
   b. *Are infrequent (less than three operations daily);*
   c. *Do not obstruct traffic during peak traffic hours;*
   d. *Do not interfere with emergency response services or bicycle and pedestrian facilities; and*
   e. *Are acceptable to the applicable roadway authority.*

Response: The applicant is not proposing to perform loading operations adjacent to or within the street. This standard does not apply.

(.06) Carpool and Vanpool Parking Requirements:

A. Carpool and vanpool parking spaces shall be identified for the following uses:

1. *New commercial and industrial developments with seventy-five (75) or more parking spaces,*
2. *New institutional or public assembly uses, and*
3. *Transit park-and-ride facilities with fifty (50) or more parking spaces.*

B. Of the total spaces available for employee, student, and commuter parking, at least five percent, but not fewer than two, shall be designated for exclusive carpool and vanpool parking.

C. Carpool and vanpool parking spaces shall be located closer to the main employee, student or commuter entrance than all other parking spaces with the exception of ADA parking spaces.

D. Required carpool/vanpool spaces shall be clearly marked "Reserved - Carpool/Vanpool Only."

Response: As illustrated on Attachment 6 Sheet C1.10, the proposed development will provide 71 parking spaces. Since this is lower than the threshold of 75 spaces., the carpool and vanpool provisions do not apply.

(.07) Parking Area Redevelopment. The number of parking spaces may be reduced by up to 10% of the minimum required parking spaces for that use when a portion of the existing parking area is modified to accommodate or provide transit-related amenities such as transit stops, pull-outs, shelters, and park and ride stations.

Response: The applicant is not proposing transit-related amenities. This standard does not apply.

Section 4.167. General Regulations - Access, Ingress and Egress

(.01) Each access onto streets or private drives shall be at defined points as approved by the City and shall be consistent with the public's health, safety and general welfare. Such defined points of access shall be approved at the time of issuance of a building permit if not previously determined in the development permit. [Amended by Ord. 682, 9/9/10]

Response: As illustrated on sheet C1.10 of Attachment 6, three access locations are proposed in order to provide adequate access to the site for trucks, passenger vehicles, and emergency vehicles. The applicant is seeking approval of the locations, configurations, and sizes of the three access points as part of this development permit. This standard is met.

Section 4.169. General Regulations – Double-Frontage Lots

(.01) Buildings on double frontage lots (i.e., through lots) and corner lots must meet the front yard setback for principal buildings on both streets or tracts with a private drive. [Amended by Ord. 682, 9/9/10]

Response: The site is a double-frontage lot because it has frontage both on SW Grahams Ferry Road and on SW Garden Acres Road. As illustrated on Sheet C1.10 of Attachment 6, the proposed building exceeds the minimum front setback of 30 feet along both rights-of-way. This standard is met.

(.02) Given that double-frontage lots tend to have one end that is regarded as a rear yard by the owner, the Development Review Board may establish special maintenance conditions to apply to such areas. Such conditions may include the requirement that the subject homeowners association, if any, be responsible for the on-going maintenance of the street frontage areas of double-frontage lots.

Response: The applicant proposes to establish the front of the development along the Garden Acres Road frontage and the rear along the Grahams Ferry Road frontage. No homeowners association is appropriate for this industrial property. The applicant intends to comply with all applicable landscaping and maintenance regulations. This standard is met.

Section 4.171. General Regulations - Protection of Natural Features and Other Resources

(.02) General Terrain Preparation:

- *A. All developments shall be planned, designed, constructed and maintained with maximum regard to natural terrain features and topography, especially hillside areas, floodplains, and other significant landforms.*
- *B. All grading, filling and excavating done in connection with any development shall be in accordance with the Uniform Building Code*
- *C. In addition to any permits required under the Uniform Building Code, all developments shall be planned, designed, constructed and maintained so as to:*
  - *1. Limit the extent of disturbance of soils and site by grading, excavation and other land alterations.*
  - *2. Avoid substantial probabilities of: (1) accelerated erosion; (2) pollution, contamination, or siltation of lakes, rivers, streams and wetlands; (3) damage to vegetation; (4) injury to wildlife and fish habitats.*
  - *3. Minimize the removal of trees and other native vegetation that stabilize hillsides, retain moisture, reduce erosion, siltation and nutrient runoff, and preserve the natural scenic character.*

Response: According to the Federal Emergency Management Agency's Flood Insurance Rate Map 41067C0608E, effective November 4, 2016, the subject property is not located in a regulated flood hazard area. As illustrated on Sheet C0.10 of Attachment 6, the site is relatively level, with a grade difference of approximately 13 feet over a length of approximately 650 feet (elevation 250 at the west and 237 at the southeast), equating to an average slope of 2 percent. Accordingly, steep slopes do not pose a

development challenge at this site. The applicant will seek City grading permits prior to any cut or fill operations, and the design engineer will utilize the recommendations of the geotechnical engineer to inform the grading design. Furthermore, the contractor will utilize appropriate erosion and sedimentation control measures to minimize erosion, as reviewed and permitted by the City and the Oregon Department of Environmental Quality.

Removal of on-site trees that are incompatible with the proposed site plan will not result in unstable slopes or other erosive impacts. As illustrated on Sheet C1.20, a large area in the northwestern part of the site is reserved for the protection and conservation of a stand of five mature Douglas fir trees. This standard is met.

(.03) Hillsides: All developments proposed on slopes greater than 25% shall be limited to the extent that:

- *A. An engineering geologic study approved by the City, establishes that the site is stable for the proposed development, and any conditions and recommendations based on the study are incorporated into the plans and construction of the development. The study shall include items specified under subsection 4.171(.07)(A.)(2.)(a-j):*
- *B. Slope stabilization and re-vegetation plans shall be included as part of the applicant's landscape plans.*
- *C. Buildings shall be clustered to reduce alteration of terrain and provide for preservation of natural features.*
- *D. Creation of building sites through mass pad grading and successive padding or terracing of building sites shall be avoided where feasible.*
- *E. Roads shall be of minimum width, with grades consistent with the City's Public Works Standards.*
- *F. Maintenance, including re-vegetation, of all grading areas is the responsibility of the developer, and shall occur through October 1 of the second growing season following receipt of Certificates of Occupancy unless a longer period is approved by the Development Review Board.*
- *G. The applicant shall obtain an erosion and sediment control permit from the City's Building and Environmental Services Division's.*

Response: As illustrated on Sheet C0.10 of Attachment 6, the site is relatively level, with a grade difference of approximately 13 feet over a length of approximately 650 feet, equating to an average slope of 2%. Since this slope is below 25%, these standards do not apply.

(.04) Trees and Wooded Areas.

- *A. All developments shall be planned, designed, constructed and maintained so that:*
  - *1. Existing vegetation is not disturbed, injured, or removed prior to site development and prior to an approved plan for circulation, parking and structure location.*
  - *2. Existing wooded areas, significant clumps/groves of trees and vegetation, and all trees with a diameter at breast height of six inches or greater shall be incorporated into the development plan and protected wherever feasible.*
  - *3. Existing trees are preserved within any right-of-way when such trees are suitably located, healthy, and when approved grading allows.*

Response: The contractor will not begin clearing operations until appropriate erosion and sedimentation control permits and grading permits have been issued by the City and the Oregon Department of Environmental Quality. As illustrated on Sheets C0.10 and C1.20 of Attachment 6, tree removal is being limited to the extent possible; smaller tree specimens that conflict with the development plan will be removed, but an area in the northeastern part of the site is set aside for protection and preservation of a group of ten mature Douglas fir trees located there. Widening/construction plans for SW Grahams Ferry Road, Garden Acres Road, new Supporting

Street, and Cahalin Road do not allow any of the trees currently within that improvement corridor to be retained. This standard is met.

B. Trees and woodland areas to be retained shall be protected during site preparation and construction according to City Public Works design specifications, by:

1. Avoiding disturbance of the roots by grading and/or compacting activity.

2. Providing for drainage and water and air filtration to the roots of trees which will be covered with impermeable surfaces.

3. Requiring, if necessary, the advisory expertise of a registered arborist/horticulturist both during and after site preparation.

4. Requiring, if necessary, a special maintenance, management program to insure survival of specific woodland areas of specimen trees or individual heritage status trees.

Response: As illustrated on Sheet C1.20 of Attachment 6, a group of ten Douglas fir trees is proposed to be retained in the northeast portion of the site. These trees will be protected during construction by implementing the recommendations of the arborist (Attachment 7). This standard is met.

(.05) High Voltage Powerline Easements and Rights of Way and Petroleum Pipeline Easements:

A. Due to the restrictions placed on these lands, no residential structures shall be allowed within high voltage powerline easements and rights of way and petroleum pipeline easements, and any development, particularly residential, adjacent to high voltage powerline easements and rights of way and petroleum pipeline easements shall be carefully reviewed.

B. Any proposed non-residential development within high voltage powerline easements and rights of way and petroleum pipeline easements shall be coordinated with and approved by the Bonneville Power Administration, Portland General Electric Company or other appropriate utility, depending on the easement or right-of-way ownership.

Response: The site does not have any powerline easements or rights-of-way, and similarly does not have any petroleum pipeline easements. This standard does not apply.

(.06) Hazards to Safety: Purpose:

A. To protect lives and property from natural or human-induced geologic or hydrologic hazards and disasters.

B. To protect lives and property from damage due to soil hazards.

C. To protect lives and property from forest and brush fires.

D. To avoid financial loss resulting from development in hazard areas.

Response: The applicant supports the City's desire to protect lives and property and minimize financial loss, and intends to comply with safety-related development standards and approval criteria. This standard is met.

(.07) Standards for Earth Movement Hazard Areas:

A. No development or grading shall be allowed in areas of land movement, slump or earth flow, and mud or debris flow, except under one of the following conditions:

1. Stabilization of the identified hazardous condition based on established and proven engineering techniques which ensure protection of public and private property. Appropriate conditions of approval may be attached by the City.

2. An engineering geologic study approved by the City establishing that the site is stable for the proposed use and development. The study shall include the following:

a. Index map.

b. Project description, to include: location; topography, drainage, vegetation; discussion of previous work; and discussion of field exploration methods.

c. Site geology, to include: site geologic map; description of bedrock and superficial materials including artificial fill; location of any faults, folds, etc.; and structural data including bedding, jointing, and shear zones.

d. Discussion and analysis of any slope stability problems.

e. Discussion of any off-site geologic conditions that may pose a potential hazard to the site or that may be affected by on-site development.

f. Suitability of site for proposed development from geologic standpoint.

g. Specific recommendations for cut slope stability, seepage and drainage control, or other design criteria to mitigate geologic hazards.

h. Supportive data, to include: cross sections showing subsurface structure; graphic logs of subsurface explorations; results of laboratory tests; and references.

i. Signature and certification number of engineering geologist registered in the State of Oregon.

j. Additional information or analyses as necessary to evaluate the site.

B. Vegetative cover shall be maintained or established for stability and erosion control purposes.

C. Diversion of stormwater into these areas shall be prohibited.

D. The principal source of information for determining earth movement hazards is the State Department of Geology and Mineral Industries (DOGAMI) Bulletin 99 and any subsequent bulletins and accompanying maps. Approved site specific engineering geologic studies shall be used to identify the extent and severity of the hazardous conditions on the site, and to update the earth movement hazards database.

Response: According to data from the Oregon Department of Geology and Minerals (DOGAMI)[4], the subject site is not located within a landslide hazard area, and there are no known active fault lines in the immediate vicinity. Furthermore, site-specific geotechnical investigation (Attachment 8) did not identify landslide potential. The contractor will not begin clearing operations until appropriate erosion and sedimentation control permits and grading permits have been issued by the City and the Oregon Department of Environmental Quality, to ensure that adequate measures will be in place to minimize erosion potential. The proposed stormwater system, illustrated on Sheet C1.30 of Attachment 6 and further described in Attachment 8, will collect on-site stormwater runoff, direct it through surface water quality treatment facilities to a storm control manhole, and finally discharge it to the existing public storm drain system in the SW Garden Acres Road right-of-way rather than to landslide-prone areas. This standard is met.

(.08) Standards for Soil Hazard Areas:

A. Appropriate siting and design safeguards shall insure structural stability and proper drainage of foundation and crawl space areas for development on land with any of the following soil conditions: wet or high water table; high shrink-swell capability; compressible or organic; and shallow depth-to-bedrock.

The principal source of information for determining soil hazards is the State DOGAMI Bulletin 99 and any subsequent bulletins and accompanying maps. Approved site-specific

[4] https://gis.dogami.oregon.gov/maps/hazvu/

soil studies shall be used to identify the extent and severity of the hazardous conditions on the site, and to update the soil hazards database accordingly.

Response: In Exhibit G of the Preliminary Storm Report (Attachment 8), the applicant has provided documentation of soil infiltration characteristics at the subject property, which vary significantly in different sub-areas. All construction will be based on recommendations by the consulting geological engineer to ensure structural stability. Based on the geological engineer's findings and recommendations, on-site storm drainage systems have been designed to treat and infiltrate stormwater using rain gardens, rock galleries and Underground Infiltration Chambers (UICs) to achieve 100% infiltration for both the 10-year and 25-year design storm events.

(.09) Historic Protection: Purpose: [detailed provisions omitted for brevity]

Response: The subject property has not been identified as containing or being adjacent to any significant historic, cultural, or archaeological resources. These provisions are not applicable.

(.10) Alteration and Development Criteria:

A. Demolition or alteration of any structure, or any change in any site or object which has been designated as a cultural resource, is prohibited unless it is determined:

1. In the case of a designated cultural resource, the proposed work would not detrimentally alter, destroy or adversely affect any exterior architectural or other identified feature; or

2. In the case of any property located within a historic district, the proposed construction, removal, rehabilitation, alteration, remodeling, excavation or exterior alteration conforms to any prescriptive standards as adopted by the City, and does not adversely affect the character of the district; or

3. In the case of construction of a new improvement, building or structure upon a cultural resource site, the exterior of such improvements will not adversely affect and will be compatible with the external appearance of existing designated improvements, buildings and structures on said site; or

4. That no reasonable use can be made of the property without such approval.

Response: These provisions are not applicable because the subject property is not a designated cultural resource site and is not within a historic district.

(.11) Cultural Resource Designation Criteria: A cultural resource may be designated and placed on the Cultural Resources Inventory if it meets the following criteria:

A. It exemplifies or reflects special elements of the City's cultural, social, economic, political, aesthetic, engineering or architectural history; or

B. It is identified with persons or events significant in local, state, or national history; or

C. It embodies distinctive characteristics of a style, type, period, or method of construction, or it is a valuable example of the use of indigenous materials or craftsmanship; or

D. It is representative of the notable work of a builder, designer, or architect.

Response: These provisions are not applicable because the subject property is not a designated cultural resource site, and it is not proposed for such designation.

Section 4.172. Flood Plain Regulations

Response: According to Flood Insurance Rate Map 41067C0608E, effective November 4, 2016, the subject property is not located in a regulated flood hazard area. These provisions are not applicable.

Section 4.175. Public Safety and Crime Prevention

(.01) All developments shall be designed to deter crime and insure public safety.

Response: Although the SW Grahams Ferry Road frontage is densely screened by landscaping and fencing, the proposed site plan is designed to provide visibility of active use parts of the building from points in SW Grahams Ferry Road, Garden Acres Road, the new Supporting Street, and Cahalin Road (in particular, at the Cahalin-Garden Acres Road intersection and the two southern driveways). This facilitates surveillance by law enforcement, and also enables citizens passing by on the public streets to observe activity within the site. Security fencing around the loading dock area and site lighting, including in parking/circulation areas and along pedestrian paths to office entrances, will contribute to safety during hours of darkness. This standard is met.

(.02) Addressing and directional signing shall be designed to assure identification of all buildings and structures by emergency response personnel, as well as the general public.
Response: The applicant will prepare and submit plans for address number signage and direction for internal circulation in conjunction with construction permit submittals.

(.03) Areas vulnerable to crime shall be designed to allow surveillance. Parking and loading areas shall be designed for access by police in the course of routine patrol duties.
Response: By locating docking areas where they can be surveilled from the Supporting Street, the proposed design facilitates routine surveillance by police without requiring them to enter and circulate within the secure area of the site. Parking areas, located on the north and east sides of the building, can be observed from points along Garden Acres Road and accessed by way of Cahalin Road or the eastern driveway on the Supporting Street. This standard is met.

(.04) Exterior lighting shall be designed and oriented to discourage crime.
Response: Site lighting will illuminate parking and activity areas, to enable public surveillance and thereby discourage crime.

Section 4.176. Landscaping, Screening, and Buffering
Note: the reader is encouraged to see Section 4.179, applying to screening and buffering of storage areas for solid waste and recyclables.

(.02) Landscaping and Screening Standards.

A. Subsections "C" through "I," below, state the different landscaping and screening standards to be applied throughout the City. The locations where the landscaping and screening are required and the depth of the landscaping and screening is stated in various places in the Code.

Response: The landscape plans in Attachment 6 have been designed to conform to the applicable landscaping and screening standards, as described in responses to subsections "C" through "I" below. This standard is met.

B. All landscaping and screening required by this Code must comply with all of the provisions of this Section, unless specifically waived or granted a Variance as otherwise provided in the Code. The landscaping standards are minimum requirements; higher standards can be substituted as long as fence and vegetation-height limitations are met. Where the standards set a minimum based on square footage or linear footage, they shall be interpreted as applying to each complete or partial increment of area or length (e.g., a landscaped area of between 800 and 1600 square feet shall have two trees if the standard calls for one tree per 800 square feet.

Response: The applicant's landscaping plan, in the L-series drawing sheets of Attachment 6, demonstrate compliance with the standards in this Section. Due to constrained dimensions of the somewhat irregular-shaped site, planting densities have been increased in perimeter

landscape areas to provide a high degree of visual screening along the abutting public rights-of-way (Garden Acres Road and Grahams Ferry Road) within a narrower planting strip width.

C. General Landscaping Standard.

1. Intent. The General Landscaping Standard is a landscape treatment for areas that are generally open. It is intended to be applied in situations where distance is used as the principal means of separating uses or developments and landscaping is required to enhance the intervening space. Landscaping may include a mixture of ground cover, evergreen and deciduous shrubs, and coniferous and deciduous trees.

2. Required materials. Shrubs and trees, other than street trees, may be grouped. Ground cover plants must fully cover the remainder of the landscaped area (see Figure 21: General Landscaping). The General Landscaping Standard has two different requirements for trees and shrubs:

a. Where the landscaped area is less than 30 feet deep, one tree is required for every 30 linear feet.

b. Where the landscaped area is 30 feet deep or greater, one tree is required for every 800 square feet and two high shrubs or three low shrubs are required for every 400 square feet.

Response: This standard is addressed in Section 4.134 Coffee Creek Industrial Design Overlay District (.11) Table CC-2 *General*.

D. Low Screen Landscaping Standard.

1. Intent. The Low Screen Landscaping Standard is a landscape treatment that uses a combination of distance and low screening to separate uses or developments. It is intended to be applied in situations where low screening is adequate to soften the impact of one use or development on another, or where visibility between areas is more important than a total visual screen. The Low Screen Landscaping Standard is usually applied along street lot lines or in the area separating parking lots from street rights-of-way.

2. Required materials. The Low Screen Landscaping Standard requires sufficient low shrubs to form a continuous screen three (3) feet high and 95% opaque, year-round. In addition, one tree is required for every 30 linear feet of landscaped area, or as otherwise required to provide a tree canopy over the landscaped area. Ground cover plants must fully cover the remainder of the landscaped area. A three (3) foot high masonry wall or a berm may be substituted for the shrubs, but the trees and ground cover plants are still required. When applied along street lot lines, the screen or wall is to be placed along the interior side of the landscaped area. (See Figure 22: Low Screen Landscaping).

Response: Plantings along the side lot lines, which abut other industrially-zoned properties and are therefore not considered visually sensitive boundaries, are designed in compliance with the Low Screen landscaping standard. This standard is addressed in Section 4.134 Coffee Creek Industrial Design Overlay District (.11) Table CC-3.4 *Parking Perimeter Screening and Landscaping.* The Supporting Street will meet the requirements of Low Screen Landscape Standard, Section 4.176(.02)D, as shown in the Landscape Plan (Attachment 6).

E. Low Berm Landscaping Standard.

1. Intent. The Low Berm Standard is intended to be applied in situations where moderate screening to reduce both visual and noise impacts is needed to protect

abutting uses or developments from one-another, and where it is desirable and practical to provide separation by both distance and sight- obscuring materials. This screening is most important where either, or both, of the abutting uses or developments can be expected to be particularly sensitive to noise or visual impacts.

2. *Required materials. The Low Berm Standard requires a berm at least two feet six inches (2' 6") high along the interior side of the landscaped area (see Figure 23: Low Berm Landscaping). If the berm is less than three (3) feet high, low shrubs meeting the Low Screen Landscaping Standard, above, are to be planted along the top of the berm, assuring that the screen is at least three (3) feet in height. In addition, one tree is required for every 30 linear feet of berm, or as otherwise required to provide a tree canopy over the landscaped area. Ground cover plants must fully cover the remainder of the landscaped area.*

Response: As discussed in Section 4.134 *Coffee Creek Industrial Design Overlay District*, the proposed project will not meet the standard for 4.176 (.02)E for screening parking areas from view from Addressing Streets. Both Addressing Streets have an adjacent 10' PUE limiting the required tree plantings (4.176(.02)C) within that landscape area of the PUE.

The applicant has prepared Landscaping Plans (see L-series sheets in Attachment 6) that comply with the alternative design guidelines provided in the Coffee Creek Light Industrial Pattern Book, which meet or exceed the General Landscape Standard along the Addressing Street frontages:

Coffee Creek Light Industrial Pattern Book

Section C.2 – Parking Location and Design

2.6 Planting: Design and install new landscapes with plantings grouped in natural, irregular masses to establish and support a continuous, integrated, and natural district-wide appearance.

Landscapes and plant materials shall be maintained throughout the year.

Response: Landscaping Plans (L-Series Sheets in Attachment 6) provide plantings grouped in naturalistic masses, including the use of tall-growing shrubs for screening in PUE corridors, to integrate streetscape landscaping with site plantings, creating a continuous natural appearance that visually obscures the parking and loading areas from Addressing Streets. This meets and exceeds the intent of the General Landscape Standard, Section 4.176.

With meeting the alternative design guidelines provided in the Coffee Creek Light Industrial Pattern Book for Addressing Streets, this standard is met.

F. High Screen Landscaping Standard.

1. *Intent. The High Screen Landscaping Standard is a landscape treatment that relies primarily on screening to separate uses or developments. It is intended to be applied in situations where visual separation is required.*
2. *Required materials. The High Screen Landscaping Standard requires sufficient high shrubs to form a continuous screen at least six (6) feet high and 95% opaque, year-round. In addition, one tree is required for every 30 linear feet of landscaped area, or as otherwise required to provide a tree canopy over the landscaped area. Ground cover plants must fully cover the remainder of the landscaped area. A six (6) foot high masonry wall or a berm may be substituted for the shrubs, but the trees and ground cover plants are still required. When applied along street lot*

lines, the screen or wall is to be placed along the interior side of the landscaped area. (See Figure 24: High Screen Landscaping).

Response: No side of the subject property requires High Screen landscaping. These provisions are not applicable.

G. High Wall Standard.

1. Intent. The High Wall Standard is intended to be applied in situations where extensive screening to reduce both visual and noise impacts is needed to protect abutting uses or developments from one-another. This screening is most important where either, or both, of the abutting uses or developments can be expected to be particularly sensitive to noise or visual impacts, or where there is little space for physical separation.

2. Required materials. The High Wall Standard requires a masonry wall at least six (6) feet high along the interior side of the landscaped area (see Figure 25: High Wall Landscaping). In addition, one tree is required for every 30 linear feet of wall, or as otherwise required to provide a tree canopy over the landscaped area. Ground cover plants must fully cover the remainder of the landscaped area.

Response: No side of the subject property requires High Wall landscaping. These provisions are not applicable.

I. High Berm Standard.

1. Intent. The High Berm Standard is intended to be applied in situations where extensive screening to reduce both visual and noise impacts is needed to protect abutting uses or developments from one-another, and where it is desirable and practical to provide separation by both distance and sight- obscuring materials. This screening is most important where either, or both, of the abutting uses or developments can be expected to be particularly sensitive to noise or visual impacts.

2. Required materials. The High Berm Standard requires a berm at least four (4) feet high along the interior side of the landscaped area (see Figure 26: High Berm Landscaping). If the berm is less than six (6) feet high, low shrubs meeting the Low Screen Landscaping Standard, above, are to be planted along the top of the berm, assuring that the screen is at least six (6) feet in height In addition, one tree is required for every 30 linear feet of berm, or as otherwise required to provide a tree canopy over the landscaped area. Ground cover plants must fully cover the remainder of the landscaped area.

Response: No side of the subject property requires High Berm landscaping. These provisions are not applicable.

J. Partially Sight-Obscuring Fence Standard.

1. Intent. The Partially Sight-Obscuring Fence Standard is intended to provide a tall, but not totally blocked, visual separation. The standard is applied where a low level of screening is adequate to soften the impact of one use or development on another, and where some visibility between abutting areas is preferred over a total visual screen. It can be applied in conjunction with landscape plantings or applied in areas where landscape plantings are not necessary and where nonresidential uses are involved.

2. Required materials. Partially Sight-Obscuring Fence Standard are to be at least six (6) feet high and at least 50% sight-obscuring. Fences may be made of wood

(other than plywood or particle-board), metal, bricks, masonry or other permanent materials (see Figure 27: Partially Sight-Obscuring Fence).

Response: No side of the subject property requires Partially Sight-Obscuring Fence screening. These provisions are not applicable.

K. Fully Sight-Obscuring Fence Standard.

1. Intent. The Fully Sight-Obscuring Fence Standard is intended to provide a totally blocked visual separation. The standard is applied where full visual screening is needed to reduce the impact of one use or development on another. It can be applied in conjunction with landscape plantings or applied in areas where landscape plantings are not necessary.

2. Required materials. Fully sight-obscuring fences are to be at least six (6) feet high and 100% sight-obscuring. Fences may be made of wood (other than plywood or particle-board), metal, bricks, masonry or other permanent materials (see Figure 28: Totally Sight-Obscuring Fence).

Response: No side of the subject property requires Fully Sight-Obscuring Fence screening. These provisions are not applicable. However, the applicant proposed to use 8' high chain link fencing with slats along the Grahams Ferry Road frontage, in combination with landscape screening, to fully obscure views of the truck dock area at the rear of the building.

(.03) Landscape Area. Not less than fifteen percent (15%) of the total lot area, shall be landscaped with vegetative plant materials. The ten percent (10%) parking area landscaping required by section 4.155.03(B)(1) is included in the fifteen percent (15%) total lot landscaping requirement. Landscaping shall be located in at least three separate and distinct areas of the lot, one of which must be in the contiguous frontage area. Planting areas shall be encouraged adjacent to structures. Landscaping shall be used to define, soften or screen the appearance of buildings and off-street parking areas. Materials to be installed shall achieve a balance between various plant forms, textures, and heights. The installation of native plant materials shall be used whenever practicable. (For recommendations refer to the Native Plant List maintained by the City of Wilsonville). [Amended by Ord. # 674 11/16/09]

Response: As reported on Sheet C1.10 in Attachment 6, overall site landscaping of 57,173 SF is provided, or 17.3% of net site area after right-of-way dedication. Parking area landscaping is provided at 2,911 SF, which is 25.8% of the 11,294 SF of site area devoted to parking areas. The landscape plan provides several distinct landscape areas, most of which are concentrated in the front yard, to screen the building, frame the public realm (Garden Acres Road corridor) punctuated by views into the site, provide the pedestrian Wayside, and protect and preserve the group of ten mature Douglas fir trees. These requirements are satisfied.

(.04) Buffering and Screening. Additional to the standards of this subsection, the requirements of the Section 4.137.5 (Screening and Buffering Overlay Zone) shall also be applied, where applicable.

A. All intensive or higher density developments shall be screened and buffered from less intense or lower density developments.

B. Activity areas on commercial and industrial sites shall be buffered and screened from adjacent residential areas. Multi-family developments shall be screened and buffered from single-family areas.

C. All exterior, roof and ground mounted, mechanical and utility equipment shall be screened from ground level off-site view from adjacent streets or properties.

D. All outdoor storage areas shall be screened from public view, unless visible storage has been approved for the site by the Development Review Board or Planning Director acting on a development permit.

E. In all cases other than for industrial uses in industrial zones, landscaping shall be designed to screen loading areas and docks, and truck parking.

F. In any zone any fence over six (6) feet high measured from soil surface at the outside of fenceline shall require Development Review Board approval.

Response: The subject property's location in the Coffee Creek Industrial Area, with industrially-zoned neighboring properties, does not require buffering and screening to protect adjacent sensitive uses (i.e., "*less intense or lower density developments"*). The building's parapet-roof design provides screening of rooftop mechanical equipment from view from adjacent streets or properties, consistent with subparagraph C. The site plan does not include any outdoor storage areas subject to subparagraph D. Subparagraph E is not applicable because the project is an industrial project in an industrial zone. To secure the loading area as well as screen truck operations from the Grahams Ferry Road right-of-way, 8' high chain link fencing with slats and access-control gates are proposed in the western (rear) and southwestern portions of the site.

(.05) Sight-Obscuring Fence or Planting. The use for which a sight-obscuring fence or planting is required shall not begin operation until the fence or planting is erected or in place and approved by the City. A temporary occupancy permit may be issued upon a posting of a bond or other security equal to one hundred ten percent (110%) of the cost of such fence or planting and its installation. (See Sections 4.400 to 4.470 for additional requirements.)

Response: The subject property's location in the Coffee Creek Industrial Area, with industrially-zoned neighboring properties, does not require sight-obscuring fencing or plantings for the anticipated light industrial and warehousing uses. This provision is not applicable to this proposal; however, the applicant proposes an 8'-tall chain link fence with slats and gates for security and privacy around the loading area, as shown on the site plan.

(.06) Plant Materials.

A. Shrubs and Ground Cover. All required ground cover plants and shrubs must be of sufficient size and number to meet these standards within three (3) years of planting. Non-horticultural plastic sheeting or other impermeable surface shall not be placed under mulch. Native topsoil shall be preserved and reused to the extent feasible. Surface mulch or bark dust are to be fully raked into soil of appropriate depth, sufficient to control erosion, and are confined to areas around plantings. Areas exhibiting only surface mulch, compost or barkdust are not to be used as substitutes for plant areas.

1. Shrubs. All shrubs shall be well branched and typical of their type as described in current AAN Standards and shall be equal to or better than 2-gallon containers and 10" to 12" spread.

2. Ground cover. Shall be equal to or better than the following depending on the type of plant materials used: gallon containers spaced at 4 feet on center minimum, 4" pot spaced 2 feet on center minimum, 2-1/4" pots spaced at 18 inch on center minimum. No bare root planting shall be permitted. Ground cover shall be sufficient to cover at least 80% of the bare soil in required landscape areas within three (3) years of planting. Where wildflower seeds are designated for use as a ground cover, the City may require annual re-seeding as necessary.

3. Turf or lawn in non-residential developments. Shall not be used to cover more than ten percent (10%) of the landscaped area, unless specifically approved based on a finding that, due to site conditions and availability of water, a larger percentage of turf or lawn area is appropriate. Use of lawn fertilizer shall be discouraged. Irrigation drainage runoff from lawns shall be retained within lawn areas.

4. *Plant materials under trees or large shrubs. Appropriate plant materials shall be installed beneath the canopies of trees and large shrubs to avoid the appearance of bare ground in those locations.*
5. *Integrate compost-amended topsoil in all areas to be landscaped, including lawns, to help detain runoff, reduce irrigation and fertilizer needs, and create a sustainable, low-maintenance landscape.*

Response: Detailed instructions for landscape plants, materials, and installation are provided in the Landscaping Plan (L-series sheets in Attachment 6). The specifications have been prepared in compliance with these and other City of Wilsonville requirements.

B. Trees. All trees shall be well-branched and typical of their type as described in current American Association of Nurserymen (AAN) Standards and shall be balled and burlapped. The trees shall be grouped as follows:

1. *Primary trees which define, outline or enclose major spaces, such as Oak, Maple, Linden, and Seedless Ash, shall be a minimum of 2" caliper.*
2. *Secondary trees which define, outline or enclose interior areas, such as Columnar Red Maple, Flowering Pear, Flame Ash, and Honeylocust, shall be a minimum of 1-3/4" to 2" caliper.*
3. *Accent trees which, are used to add color, variation and accent to architectural features, such as Flowering Pear and Kousa Dogwood, shall be 1-3/4" minimum caliper.*
4. *Large conifer trees such as Douglas Fir or Deodar Cedar shall be installed at a minimum height of eight (8) feet.*
5. *Medium-sized conifers such as Shore Pine, Western Red Cedar or Mountain Hemlock shall be installed at a minimum height of five to six (5 to 6) feet.*

Response: Detailed specifications for landscape plants, materials, and installation are provided in the Landscaping Plan (L-series sheets in Attachment 6). The specifications have been prepared in compliance with these requirements.

C. Where a proposed development includes buildings larger than twenty-four (24) feet in height or greater than 50,000 square feet in footprint area, the Planning Director or the Development Review Board, as applicable, may require larger or more mature plant materials:

1. *At maturity, proposed trees shall be at least one-half the height of the building to which they are closest, and building walls longer than 50 feet shall require tree groups located no more than fifty (50) feet on center, to break up the length and height of the façade.*
2. *Either fully branched deciduous or evergreen trees may be specified depending upon the desired results. Where solar access is to be preserved, only solar- friendly deciduous trees are to be used. Where year-round sight obscuring is the highest priority, evergreen trees are to be used.*
3. *The following standards are to be applied:*
    a. *Deciduous trees:*
        i. *Minimum height of ten (10) feet; and*
        ii. *Minimum trunk diameter (caliper) of 2 inches (measured at four and one-half [4 1/2] feet above grade).*
    b. *Evergreen trees: Minimum height of twelve (12) feet.*

Response: Detailed specifications for landscape plants, materials, and installation are provided in the Landscaping Plan (L-series sheets in Attachment 6). The specifications have been prepared in compliance with these requirements.

D. Street Trees. In order to provide a diversity of species, the Development Review Board may require a mix of street trees throughout a development. Unless the Board waives the requirement for reasons supported by a finding in the record, different types of street trees shall be required for adjoining blocks in a development.

1. All trees shall be standard base grafted, well branched and typical of their type as described in current AAN Standards and shall be balled and burlapped (b&b). Street trees shall be planted at sizes in accordance with the following standards:

a. Arterial streets - 3" minimum caliper

b. Collector streets - 2" minimum caliper.

c. Local streets or residential private access drives - 1-3/4" minimum caliper.

d. Accent or median tree -1-3/4" minimum caliper.

2. The following trees and varieties thereof are considered satisfactory street trees in most circumstances; however, other varieties and species are encouraged and will be considered:

a. Trees over 50 feet mature height: Quercus garryana (Native Oregon White Oak), Quercus rubra borealis (Red Oak), Acer Macrophylum (Native Big Leaf Maple), Acer nigrum (Green Column Black Maple), Fraxinus americanus (White Ash), Fraxinus pennsylvannica 'Marshall' (Marshall Seedless Green Ash), Quercus coccinea (Scarlet Oak), Quercus pulustris (Pin Oak), Tilia americana (American Linden).

b. Trees under 50 feet mature height: Acer rubrum (Red Sunset Maple), Cornus nuttallii (NativePacific Dogwood), Gleditsia triacanthos (Honey Locust), Pyrus calleryana 'Bradford' (Bradford Pear), Tilia cordata (Little Leaf Linden), Fraxinus oxycarpa (Flame Ash).

c. Other street tree species. Other species may be specified for use in certain situations. For instance, evergreen species may be specified where year-round color is desirable and no adverse effect on solar access is anticipated. Water-loving species may be specified in low locations where wet soil conditions are anticipated.

Response: Detailed specifications for landscape plants, materials, and installation are provided in the Landscaping Plan (L-series sheets in Attachment 6). The specifications have been prepared with the intent to satisfy the Coffee Creek Light Industrial Pattern Book, as detailed in the response to Section 4.134 *Coffee Creek Industrial Design Overlay District* CC-3.4.

Along the Supporting Street, a special street tree planting configuration is proposed because, to provide enough surface area for the storm planters to have adequate infiltration capacity to meet City standards, the number of street trees that can be planted between the curb and sidewalk is limited to eight. An additional eight street trees will be planted on the north side of the sidewalk along the pedestrian corridor, to form a tree-lined pedestrian walkway. More particularly, between the curb and sidewalk, Milky Way Dogwood / Cornus kousa 'Milky Way' and Ruby Vase Persian Ironwood / Parrotia persica 'Ruby Vase' are specified for compatibility with the 4.5’ width dimension available in the planter strip. October Glory Maple / Acer rubrum 'October Glory' and Zelkova serrata 'Village Green', which are larger species, will be planted on the north side of the sidewalk. The combined canopy characteristics will provide shade cover on both the north and south sides along the length of the sidewalk, as well as shading portions of the supporting street as trees mature. (See L-Series Sheets in Attachment 6, Drawing Set.)

E. Types of Plant Species.

1. Existing landscaping or native vegetation may be used to meet these standards, if protected and maintained during the construction phase of the development

and if the plant species do not include any that have been listed by the City as prohibited. The existing native and non-native vegetation to be incorporated into the landscaping shall be identified.

2. *Selection of plant materials. Landscape materials shall be selected and sited to produce hardy and drought-tolerant landscaping. Selection shall be based on soil characteristics, maintenance requirements, exposure to sun and wind, slope and contours of the site, and compatibility with other vegetation that will remain on the site. Suggested species lists for street trees, shrubs and groundcovers shall be provided by the City of Wilsonville.*
3. *Prohibited plant materials. The City may establish a list of plants that are prohibited in landscaped areas. Plants may be prohibited because they are potentially damaging to sidewalks, roads, underground utilities, drainage improvements, or foundations, or because they are known to be invasive to native vegetation.*

Response: Detailed specifications for landscape plants, materials, and installation are provided in the Landscaping Plan (L-series sheets in Attachment 6). The specifications have been prepared in compliance with these requirements.

F. Tree Credit.

Existing trees that are in good health as certified by an arborist and are not disturbed during construction may count for landscaping tree credit as follows (measured at four and one-half feet above grade and rounded to the nearest inch):

Existing trunk diameter	*Number of Tree Credits*
18 to 24 inches in diameter	*3 tree credits*
25 to 31 inches in diameter	*4 tree credits*
32 inches or greater	*5 tree credits*

1. *It shall be the responsibility of the owner to use reasonable care to maintain preserved trees. Trees preserved under this section may only be removed if an application for removal permit under Section 4.610.10(01)(H) has been approved. Required mitigation for removal shall be replacement with the number of trees credited to the preserved and removed tree.*
2. *Within five years of occupancy and upon notice from the City, the property owner shall replace any preserved tree that cannot be maintained due to disease or damage, or hazard or nuisance as defined in Chapter 6 of this code. The notice shall be based on complete information provided by an arborist Replacement with the number of trees credited shall occur within one (1) growing season of notice.*

G. Exceeding Standards. Landscape materials that exceed the minimum standards of this Section are encouraged, provided that height and vision clearance requirements are met.

H. Compliance with Standards. The burden of proof is on the applicant to show that proposed landscaping materials will comply with the purposes and standards of this Section.

Response: The arborist's report (Attachment 7) provides recommendations for the preservation of the group of ten mature Douglas fir trees in the northeastern portion of the site. Conservation of those ten trees provides a total of 27 Tree Credits in accordance with subsection F, as summarized in the table below:

Common Name & Scientific Name	Tree No.	DBH	Tree Credits
Douglas-fir ***Pseudotsuga menziesii***	125	8"	0
	126	7"	0

	265	25”	4
	266	25”	4
	267	18”	3
	2266	34”	5
	2267	31”	4
	2269	22”	3
	2270	26”	4
	2271	22”	3
Retained Trees Count, DBH, and Tree Credits	**10**	**218”**	**27**

Please see also the applicant’s response to Section 4.620.00(.02) (basis for determining replacement of trees proposed for removal) in this report.

(.07) Installation and Maintenance.

A. Installation. Plant materials shall be installed to current industry standards and shall be properly staked to assure survival. Support devices (guy wires, etc.) shall not be allowed to interfere with normal pedestrian or vehicular movement.

B. Maintenance. Maintenance of landscaped areas is the on-going responsibility of the property owner. Any landscaping installed to meet the requirements of this Code, or any condition of approval established by a City decision-making body acting on an application, shall be continuously maintained in a healthy, vital and acceptable manner. Plants that die are to be replaced in kind, within one growing season, unless appropriate substitute species are approved by the City. Failure to maintain landscaping as required in this Section shall constitute a violation of this Code for which appropriate legal remedies, including the revocation of any applicable land development permits, may result.

C. Irrigation. The intent of this standard is to assure that plants will survive the critical establishment period when they are most vulnerable due to a lack of watering and also to assure that water is not wasted through unnecessary or inefficient irrigation. Approved irrigation system plans shall specify one of the following:

1. A permanent, built-in, irrigation system with an automatic controller. Either a spray or drip irrigation system, or a combination of the two, may be specified.

2. A permanent or temporary system designed by a landscape architect licensed to practice in the State of Oregon, sufficient to assure that the plants will become established and drought-tolerant.

3. Other irrigation system specified by a licensed professional in the field of landscape architecture or irrigation system design.

4. A temporary permit issued for a period of one year, after which an inspection shall be conducted to assure that the plants have become established. Any plants that have died, or that appear to the Planning Director to not be thriving, shall be appropriately replaced within one growing season. An inspection fee and a maintenance bond or other security sufficient to cover all costs of replacing the plant materials shall be provided, to the satisfaction of the Community Development Director. Additionally, the applicant shall provide the City with a written license or easement to enter the property and cause any failing plant materials to be replaced.

D. Protection. All required landscape areas, including all trees and shrubs, shall be protected from potential damage by conflicting uses or activities including vehicle parking and the storage of materials.

Response: The landscaping plan (L-series sheets in Attachment 6) demonstrates the feasibility of installing landscape materials in compliance with these requirements. Compliance can be assured through imposition of a condition of approval.

(.08) Landscaping on Corner Lots. All landscaping on corner lots shall meet the vision clearance standards of Section 4.177. If high screening would ordinarily be required by this Code, low screening shall be substituted within vision clearance areas. Taller screening may be required outside of the vision clearance area to mitigate for the reduced height within it.
Response: The project site is considered a corner lot at three of the four property corners. The landscaping plan (L-series sheets in Attachment 6) demonstrates the feasibility of installing landscape materials in compliance with these requirements. Compliance can be assured through imposition of a condition of approval.

(.09) Landscape Plans. Landscape plans shall be submitted showing all existing and proposed landscape areas. Plans must be drawn to scale and show the type, installation size, number and placement of materials. Plans shall include a plant material list. Plants are to be identified by both their scientific and common names. The condition of any existing plants and the proposed method of irrigation are also to be indicated. Landscape plans shall divide all landscape areas into the following categories based on projected water consumption for irrigation:

- *A. High water usage areas (+/- two (2) inches per week): small convoluted lawns, lawns under existing trees, annual and perennial flower beds, and temperamental shrubs;*
- *B. Moderate water usage areas (+/- one (1) inch per week): large lawn areas, average water-using shrubs, and trees;*
- *C. Low water usage areas (Less than one (1) inch per week, or gallons per hour): seeded fieldgrass, swales, native plantings, drought-tolerant shrubs, and ornamental grasses or drip irrigated areas.*
- *D. Interim or unique water usage areas: areas with temporary seeding, aquatic plants, erosion control areas, areas with temporary irrigation systems, and areas with special water–saving features or water harvesting irrigation capabilities.*

These categories shall be noted in general on the plan and on the plant material list.
Response: As indicated in the planting plan (L-series sheets of Attachment 6), all landscape areas of the site fall into category C, Low water usage areas. The proposed plant palette is 95% native and 100% drought tolerant once established.

(.10) Completion of Landscaping. The installation of plant materials may be deferred for a period of time specified by the Board or Planning Director acting on an application, in order to avoid hot summer or cold winter periods, or in response to water shortages.

In these cases, a temporary permit shall be issued, following the same procedures specified in subsection (.07)(C)(3), above, regarding temporary irrigation systems. No final Certificate of Occupancy shall be granted until an adequate bond or other security is posted for the completion of the landscaping, and the City is given written authorization to enter the property and install the required landscaping, in the event that the required landscaping has not been installed. The form of such written authorization shall be submitted to the City Attorney for review.
Response: This application does not request deferral of plant material installation; however, depending on the seasonality of construction, the applicant may work with City staff to utilize these provisions to plant at the appropriate time(s), as allowed under this provision.

(.11) Street Trees Not Typically Part of Site Landscaping. Street trees are not subject to the requirements of this Section and are not counted toward the required standards of this Section. Except, however, that the Development Review Board may, by granting a waiver or variance, allow for special landscaping within

the right-of-way to compensate for a lack of appropriate on-site locations for landscaping. See subsection (.06), above, regarding street trees.

Response: Based on the submitted materials, the proposal complies with applicable standards.

(.12) Mitigation and Restoration Plantings. A mitigation plan is to be approved by the City's Development Review Board before the destruction, damage, or removal of any existing native plants. Plantings intended to mitigate the loss of native vegetation are subject to the following standards. Where these standards conflict with other requirements of this Code, the standards of this Section shall take precedence. The desired effect of this section is to preserve existing native vegetation.

- *A. Plant Sources. Plant materials are to be native and are subject to approval by the City. They are to be non-clonal in origin; seed source is to be as local as possible, and plants must be nursery propagated or taken from a pre-approved transplantation area. All of these requirements are to be addressed in any proposed mitigation plan.*
- *B. Plant Materials. The mitigation plan shall specify the types and installation sizes of plant materials to be used for restoration. Practices such as the use of pesticides, fungicides, and fertilizers shall not be employed in mitigation areas unless specifically authorized and approved.*
- *C. Installation. Install native plants in suitable soil conditions. Plant materials are to be supported only when necessary because of extreme winds at the site. Where support is necessary, all stakes, guy wires or other measures are to be removed as soon as the plants can support themselves. Protect from animal and fowl predation and foraging until establishment.*
- *D. Irrigation. Permanent irrigation systems are generally not appropriate in restoration situations, and manual or temporary watering of new plantings is often necessary. The mitigation plan shall specify the method and frequency of manual watering, including any that may be necessary after the first growing season.*
- *E. Monitoring and Reporting. Monitoring of native landscape areas is the on-going responsibility of the property owner. Plants that die are to be replaced in kind and quantity within one year. Written proof of the survival of all plants shall be required to be submitted to the City's Planning Department one year after the planting is completed.*

Response: The subject property is an existing residential site that does not contain an established native plant community, with the exception of the group of ten mature Douglas fir trees to be preserved. Tree removal will be through a Type C Tree Permit with tree replacement and mitigation payments, addressed below. These provisions are not applicable.

Figure 21: General Landscaping

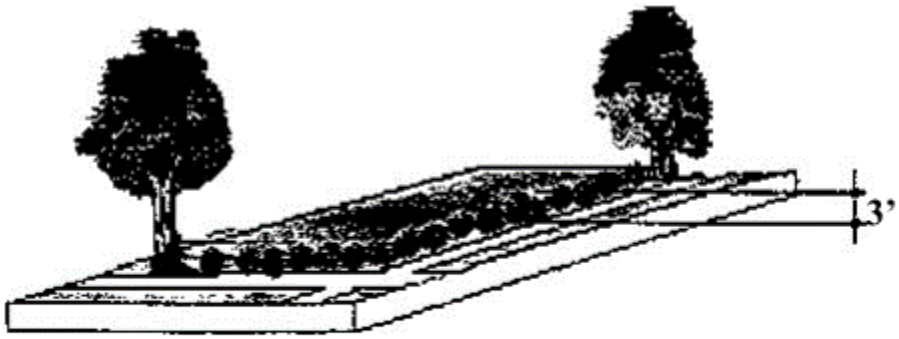


Figure 22: Low Screen Landscaping

Figure 23: Low Berm Landscaping

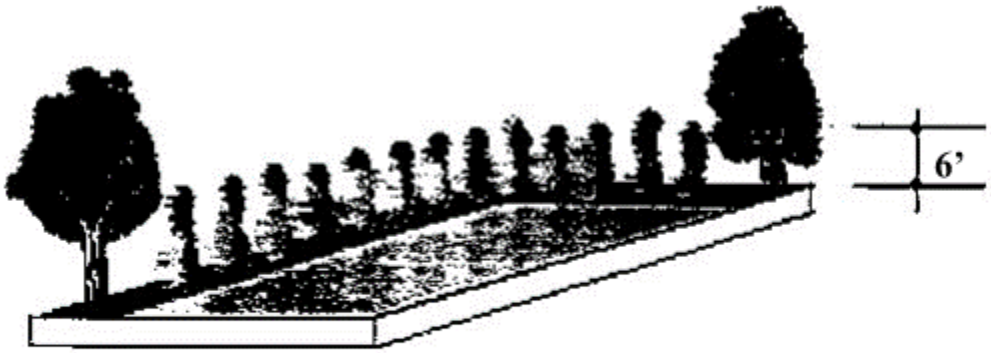


Figure 24: High Screen Landscaping

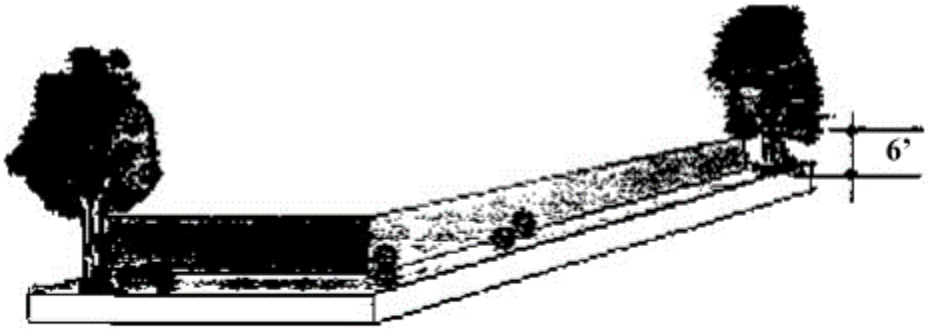


Figure 25: High Wall Landscaping

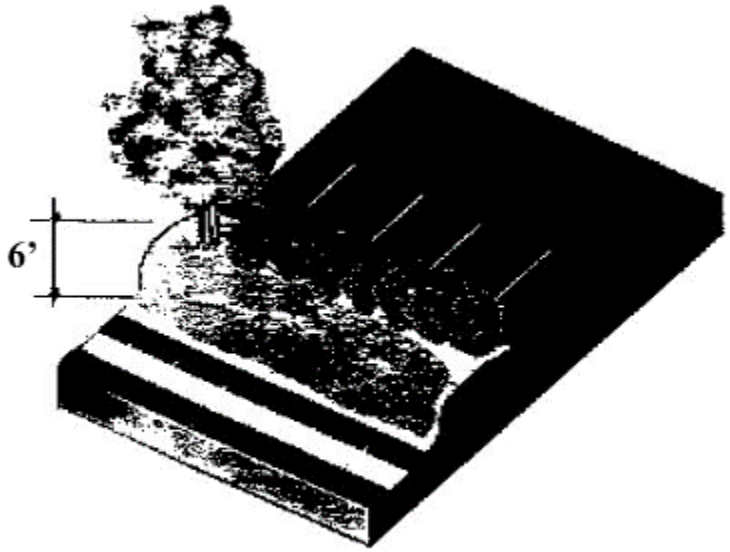


Figure 26: High Berm Landscaping

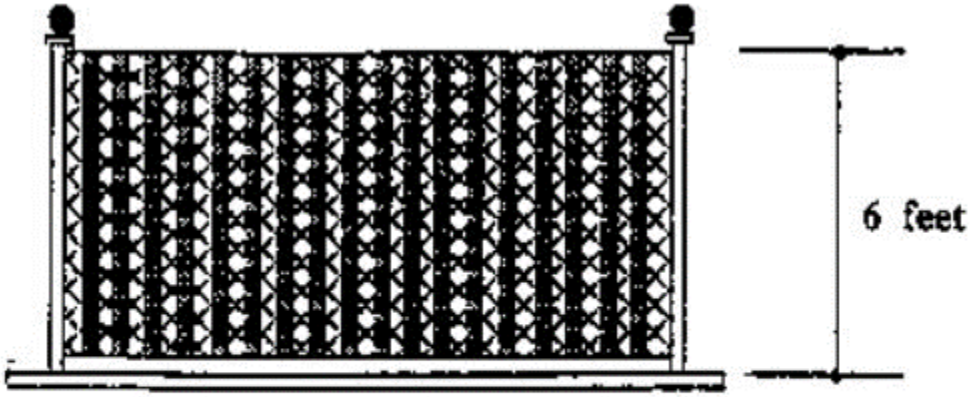


Figure 27: Partially Sight-Obscuring Fence

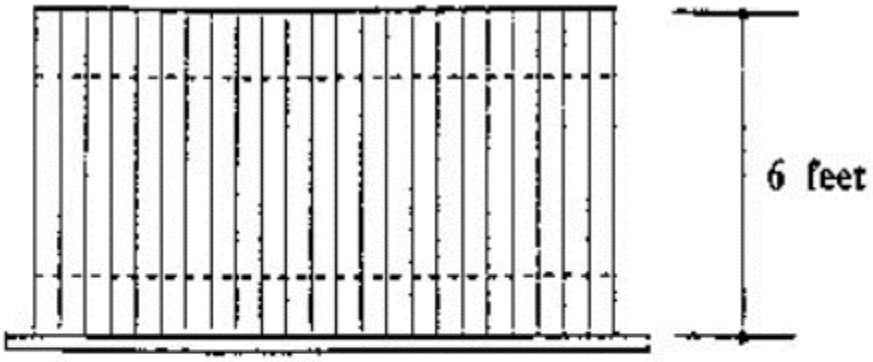


Figure 28: Totally Sight-Obscuring Fence

TREE CLEARANCES

The Landscaping Graphics

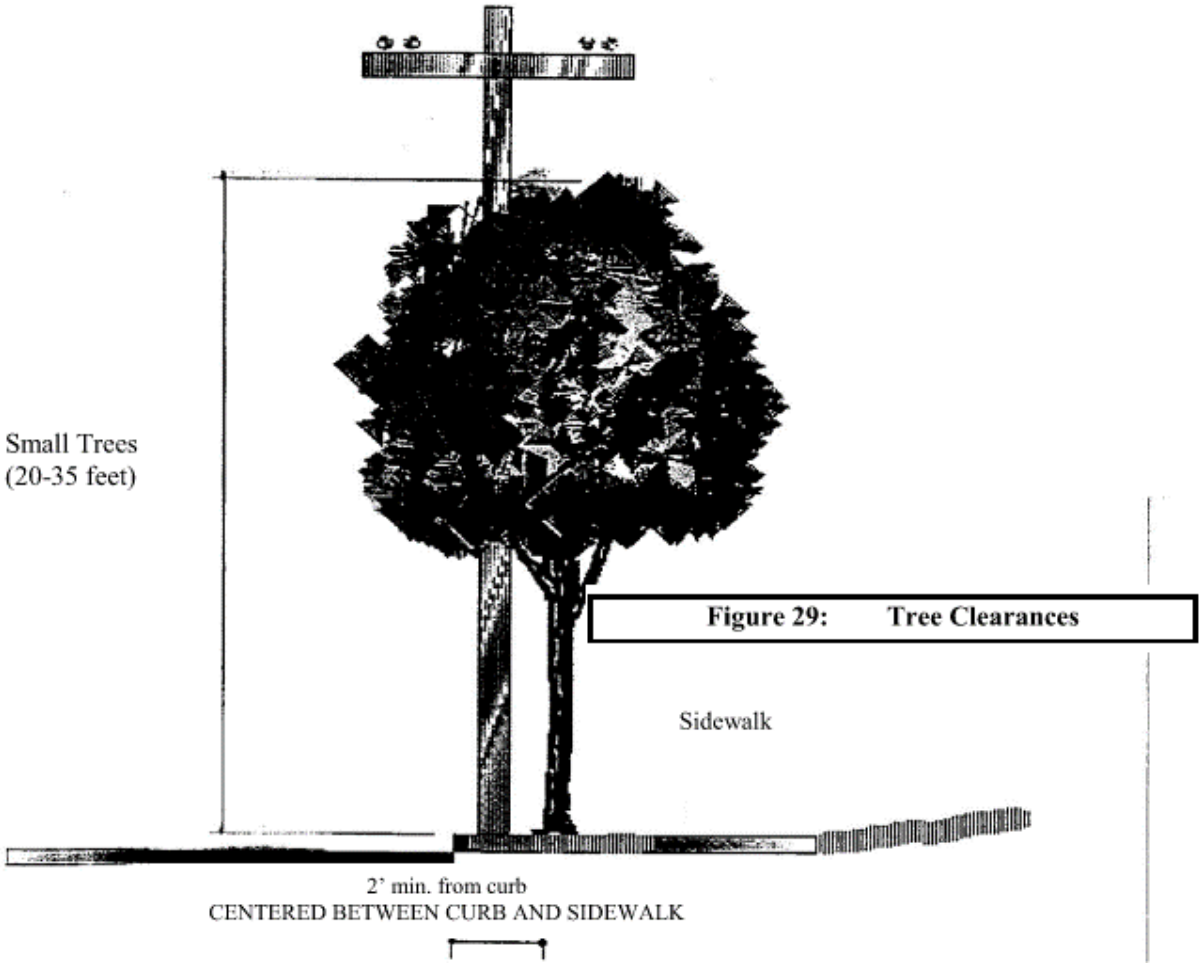


Figure 29: Tree Clearances

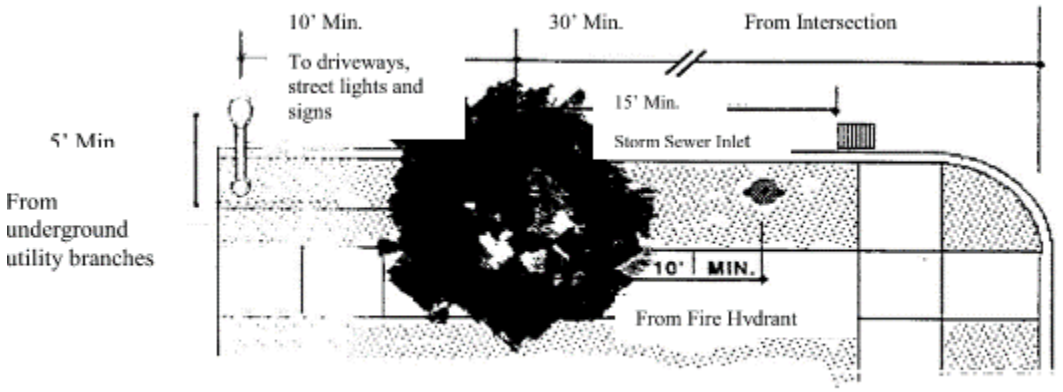


Figure 30: Tree Clearances

Section 4.177. Street Improvement Standards

This section contains the City's requirements and standards for pedestrian, bicycle, and transit facility improvements to public streets, or within public easements. The purpose of this section is to ensure that development, including redevelopment, provides transportation facilities that are safe, convenient, and adequate in rough proportion to their impacts.

(.01) Development and related public facility improvements shall comply with the standards in this section, the Wilsonville Public Works Standards, and the Transportation System Plan, in rough proportion to the potential impacts of the development. Such improvements shall be constructed at the time of development or as provided by Section 4.140, except as modified or waived by the City Engineer for reasons of safety or traffic operations.

Response: As noted above, the applicant proposes to construct improvements in SW Garden Acres Road, SW Grahams Ferry Road, and SW Cahalin Road along the full length of the property frontages, as well as constructing a Supporting Street within an easement along the south property boundary. Existing utility services previously constructed in Garden Acres Road are capable of serving the property; any additions, extensions, or connections will be constructed subject to Public Works Permit process to ensure compliance with applicable standards. See the R-series sheets in Attachment 6. This provision is satisfied.

(.02) Street Design Standards.

A. All street improvements and intersections shall provide for the continuation of streets through specific developments to adjoining properties or subdivisions.

1. Development shall be required to provide existing or future connections to adjacent sites through the use of access easements where applicable. Such easements shall be required in addition to required public street dedications as required in Section 4.236(.04).

Response: The subject property's location is adjacent to two Addressing Street rights-of-way (Grahams Ferry Road and Garden Acres Road) that will be improved to their ultimate right-of-way design for each half-street section, ensuring future connection to adjoining properties along these streets. The project application also includes the construction of a Supporting Street in an easement along the south boundary to connect to the two Addressing Streets and provide access in the future for the property to the south. Cahalin Road will be constructed to provide access to the subject property as well as provide future access to the site to the north.

B. The City Engineer shall make the final determination regarding right-of-way and street element widths using the ranges provided in Chapter 3 of the Transportation System Plan and the additional street design standards in the Public Works Standards.

Response: The applicant's consultant team has coordinated directly with the City's Development Engineering Manager and has designed the right-of-way and street improvements on the R-series sheets in Attachment 6 based on his direction. This standard is met.

C. Rights-of-way.

1. Prior to issuance of a Certificate of Occupancy Building permits or as a part of the recordation of a final plat, the City shall require dedication of rights-of-way in accordance with the Transportation System Plan. All dedications shall be recorded with the County Assessor's Office.

2. The City shall also require a waiver of remonstrance against formation of a local improvement district, and all non-remonstrances shall be recorded in the County Recorder's Office as well as the City's Lien Docket, prior to issuance of a Certificate of Occupancy Building Permit or as a part of the recordation of a final plat.

3. In order to allow for potential future widening, a special setback requirement shall be maintained adjacent to all arterial streets. The minimum setback shall be 55 feet from the centerline or 25 feet from the right-of-way designated on the Master Plan, whichever is greater.

Response: The applicant proposes to dedicate public right-of-way to widen and construct the east side of Grahams Ferry Road and west side of Garden Acres Road consistent with future construction to meet the applicable minor arterial design section and lane configuration, as agreed upon with Staff. No additional dedication is needed in Cahalin Road. The Supporting Street will be in an easement and will not be a dedicated right-of-way. This standard is met.

D. Dead-end Streets. New dead-end streets or cul-de-sacs shall not exceed 200 feet in length, unless the adjoining land contains barriers such as existing buildings, railroads or freeways, or environmental constraints such as steep slopes, or major streams or rivers, that prevent future street extension and connection. A central landscaped island with rainwater management and infiltration are encouraged in cul-de-sac design. No more than 25 dwelling units shall take access to a new dead-end or cul-de-sac street unless it is determined that the traffic impacts on adjacent streets will not exceed those from a development of 25 or fewer units. All other dimensional standards of dead-end streets shall be governed by the Public Works Standards. Notification that the street is planned for future extension shall be posted on the dead-end street. [Amended by Ord. # 674 11/16/09]

Response: No new dead-end or cul-de-sac street is proposed as part of this project. This standard does not apply.

E. Corner or clear vision area.

1. A clear vision area which meets the Public Works Standards shall be maintained on each corner of property at the intersection of any two streets, a street and a railroad or a street and a driveway. However, the following items shall be exempt from meeting this requirement:

a. Light and utility poles with a diameter less than 12 inches.

b. Trees less than 6" d.b.h., approved as a part of the Stage II Site Design, or administrative review.

c. Except as allowed by b., above, an existing tree, trimmed to the trunk, 10 feet above the curb.

d. Official warning or street sign.

e. Natural contours where the natural elevations are such that there can be no cross-visibility at the intersection and necessary excavation would result in an unreasonable hardship on the property owner or deteriorate the quality of the site.

Response: Landscape plantings at the two proposed driveways are designed to provide adequate visibility in both directions for safe operations. Landscape maintenance practices will ensure visibility on an ongoing basis.

F. Vertical clearance - a minimum clearance of 12 feet above the pavement surface shall be maintained over all streets and access drives.

Response: As illustrated on the L-series sheets in Attachment 6, no structural elements are proposed over streets and drives. Trees planted in proximity to streets will be trimmed to provide adequate vertical clearance as required. This standard is met.

G. Interim improvement standard. It is anticipated that all existing streets, except those in new subdivisions, will require complete reconstruction to support urban level traffic volumes. However, in most cases, existing and short-term projected traffic volumes do not warrant improvements to full Master Plan standards. Therefore, unless otherwise specified by the Development Review Board, the following interim standards shall apply.

1. Arterials - 24 foot paved, with standard sub-base. Asphalt overlays are generally considered unacceptable, but may be considered as an interim improvement based on the recommendations of the City Engineer, regarding adequate structural quality to support an overlay.

2. Half-streets are generally considered unacceptable. However, where the Development Review Board finds it essential to allow for reasonable development, a half-street may be approved. Whenever a half-street improvement is approved, it shall conform to the requirements in the Public Works Standards:

3. When considered appropriate in conjunction with other anticipated or scheduled street improvements, the City Engineer may approve street improvements with a single asphalt lift. However, adequate provision must be made for interim storm drainage, pavement transitions at seams and the scheduling of the second lift through the Capital Improvements Plan.

[Amended by Ord. 610, 5/1/06]

Response: The applicant has worked closely with City of Wilsonville Engineering staff to come up with interim improvement plans for SW Grahams Ferry Road and Garden Acres Road. The plan includes improvements on the east side of Grahams Ferry Road and the west side of Garden Acres Road meeting the applicable minor arterial standard, which will safely accommodate traffic immediately as well as set the stage for similar improvements on the opposite sides of those streets as further development occurs. Similarly, neighboring properties will be able to obtain access from the north side of Cahalin Road or the south side of the new Supporting Street when development of those properties occurs in the future. This approach is appropriate because (1) the applicant does not control the properties across the streets and cannot dedicate additional right-of-way from them, (2) those properties are not included in this development application, and (3) it is feasible to design an interim configuration that meets the Public Works Standards and provides sufficient operational capacity to serve until the full street configurations can be constructed in the future. The applicant therefore requests approval of the proposed public streets improvement plan, as described in the R-series sheets in Attachment 6, pursuant to subparagraph 2.

(.03) Sidewalks. Sidewalks shall be provided on the public street frontage of all development. Sidewalks shall generally be constructed within the dedicated public right-of-way, but may be located outside of the right-of-way within a public easement with the approval of the City Engineer.

A. Sidewalk widths shall include a minimum through zone of at least five feet. The through zone may be reduced pursuant to variance procedures in Section 4.196, a waiver pursuant to Section 4.118, or by authority of the City Engineer for reasons of traffic operations, efficiency, or safety.

B. Within a Planned Development, the Development Review Board may approve a sidewalk on only one side. If the sidewalk is permitted on just one side of the street, the owners will be required to sign an agreement to an assessment in the future to construct the other sidewalk if the City Council decides it is necessary.

Response: As illustrated on the Sheet R1.10 in Attachment 6, the applicant is proposing a 6' sidewalk along the east side of Grahams Ferry Road, 5' sidewalk along the west side of Garden Acres Road, and 6' sidewalk along the north side of the new Supporting Street. A 6' pedestrian access pathway that runs parallel to the Cahalin Road improvement provides pedestrian access from Cahalin Road to the north side of the building. This standard is met.

(.04) Bicycle Facilities. Bicycle facilities shall be provided to implement the Transportation System Plan, and may include on-street and off-street bike lanes, shared lanes, bike boulevards, and cycle tracks. The design of on-street bicycle facilities will vary according to the functional classification and the average daily traffic of the facility.

Response: Improvements in the west side of Garden Acres Road (along the property's east frontage) include construction of a separate bicycle path located between the curb and the sidewalk, separated by landscape strips on both sides. Improvements in Grahams Ferry Road will include additional pavement width and curb at ultimate line and grade to accommodate full improvements over time; however, the City Engineer has proposed a special interim lane configuration and striping plan to provide a southbound left turn lane at the Supporting Street. This requirement is met.

(.05) Multiuse Pathways. Pathways may be in addition to, or in lieu of, a public street. Paths that are in addition to a public street shall generally run parallel to that street, and shall be designed in accordance with the Public Works Standards or as specified by the City Engineer. Paths that are in lieu of a public street shall be considered in areas only where no other public street connection options are feasible, and are subject to the following standards.

A. Paths shall be located to provide a reasonably direct connection between likely pedestrian and bicyclist destinations. Additional standards relating to entry points, maximum length, visibility, and path lighting are provided in the Public Works Standards.

B. To ensure ongoing access to and maintenance of pedestrian/bicycle paths, the City Engineer will require dedication of the path to the public and acceptance of the path by the City as public right-of-way; or creation of a public access easement over the path.

Response: No multiuse pathways are proposed as part of this development, as the abutting roadways will accommodate motor vehicles, cyclists will use shared lanes, striped bike lanes, or the separate bike path on Garden Acres Road, the sidewalks will accommodate pedestrians, and the property is not situated where an off-street pedestrian pathway is warranted to meet pedestrian access needs. This standard does not apply.

(.06) Transit Improvements

Development on sites that are adjacent to or incorporate major transit streets shall provide improvements as described in this section to any bus stop located along the site's frontage, unless waived by the City Engineer for reasons of safety or traffic operations. Transit facilities include bus stops, shelters, and related

facilities. Required transit facility improvements may include the dedication of land or the provision of a public easement.

- *A. Development shall at a minimum provide:*
  - *1. Reasonably direct pedestrian connections, as defined by Section 4.154, between building entrances and the transit facility and between buildings on the site and streets adjoining transit stops.*
  - *2. Improvements at major transit stops. Improvements may include intersection or mid-block traffic management improvements to allow for pedestrian crossings at major transit stops.*
- *B. Developments generating an average of 49 or more pm peak hour trips shall provide bus stop improvements per the Public Works Standards. Required improvements may include provision of benches, shelters, pedestrian lighting; or provision of an easement or dedication of land for transit facilities.*
- *C. In addition to the requirements of 4.177(.06)(A.)(2.), development generating more than 199 pm peak hour trips on major transit streets shall provide a bus pullout, curb extension, and intersection or mid-block traffic management improvements to allow for pedestrian crossings at major transit stops.*
- *D. In addition to the requirement s of 4.177(.06)(A.) and (B.), development generating more than 500 pm peak-hour trips on major transit streets shall provide on-site circulation to accommodate transit service*

Response: These provisions are not applicable because the proposed development is not adjacent to a major transit facility.

(.07) Residential Private Access Drives. Residential Private Access Drives shall meet the following standards:

- *A. Residential Private Access Drives shall provide primary vehicular access to no more than four (4) dwelling units, excluding accessory dwelling units.*
- *B. The design and construction of a Residential Private Access Drive shall ensure a useful lifespan and structural maintenance schedule comparable, as determined by the City Engineer or City's Authorized Representative, to a local street constructed in conformance to current public works standards.*
  - *1. The design of residential private access drives shall be stamped by a professional engineer registered in the state of Oregon and shall be approved by the City Engineer or City's Authorized Representative to ensure the above requirement is met.*
  - *2. Prior to issuing a certificate of occupancy for any residential dwelling unit whose primary vehicular access is from a Residential Private Access Drive the City Engineer or City's Authorized Representative shall certify construction of the Residential Private Access Drive substantially conforms the design approved by the City Engineer or City's Authorized Representative.*
- *C. Residential Private Access Drives shall be named for addressing purposes. All Residential Private Access Drives shall use the suffix "Lane", i.e. SW Oakview Lane.*
- *D. Residential Private Access Drives shall meet or exceed the standards for access drives and travel lanes established in Subsection (.08) of this Section.*
  [Amended by Ord. 682, 9/1/10]

Response: The proposed development is industrial, not residential. This standard does not apply.

(.08). Access Drive and Driveway Approach Development Standards.

- *A. An access drive to any proposed development shall be designed to provide a clear travel lane free from any obstructions.*

Response: The three proposed driveways are located to allow safe turning movements to and from the site, and to minimize conflicting movements within the site as well. Large semi-tractor-trailer rig movements are concentrated near the southwestern driveway, and passenger vehicle movements occur primarily at the eastern driveway and the Cahalin Road intersection at the northeast property corner. For safety, pedestrian paths are separated from the entrance/exit driveway corridors where feasible. This provision is met.

B. Access drive travel lanes shall be constructed with a hard surface capable of carrying a 23-ton load.

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

D. Secondary or emergency access lanes may be improved to a minimum 12 feet with an all-weather surface as approved by the Fire District. All fire lanes shall be dedicated easements.

Response: The proposed site plan demonstrates feasibility to comply with these structural and emergency access requirements. Detailed specifications will be included in plans submitted for site construction.

E. Minimum access requirements shall be adjusted commensurate with the intended function of the site based on vehicle types and traffic generation.

Response: The three-access-point configuration, including proposed driveway widths, is appropriate to accommodate the anticipated mix of vehicles at the site, based on its intended use for warehousing/distribution and light manufacturing activities.

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

Response The two driveway approaches are from the Supporting Street, and the northeast access is the Cahalin Road intersection with Garden Acres Road. No direct driveway access is proposed on either Grahams Ferry Road or Garden Acres Roads, which are Minor Arterial streets as well as Addressing Streets. This standard is met.

G. The City may limit the number or location of connections to a street, or impose access restrictions where the roadway authority requires mitigation to alleviate safety or traffic operations concerns.

Response: The three-access-point configuration is appropriate for this project because it is the best approach available for minimizing conflicts between different user groups (trucks/passenger cars/pedestrians). For example, because the building is designed to accommodate two potential tenants with separate office spaces at the north and south, having a single driveway would require some passenger vehicle trips (employees and site visitors) to either traverse the truck maneuvering area or travel all the way around the back of the building to reach their destination. The DKS Traffic Impact Study (Attachment 11) supports the proposed three-access configuration.

H. The City may require a driveway to extend to one or more edges of a parcel and be designed to allow for future extension and inter-parcel circulation as adjacent properties develop. The City may also require the owner(s) of the subject site to record an access

easement for future joint use of the approach and driveway as the adjacent property(ies) develop(s).

Response: Realigning driveways to the property corners is inappropriate at this site because the site is essentially bounded on all sides by rights-of-way or access easements, where shared driveways with adjacent parcels are not feasible. Notably, the applicant is constructing a Supporting Street within an easement along the south property boundary, which the neighboring property to the south will be able to use to provide access in the future as industrial development occurs.

I. Driveways shall accommodate all projected vehicular traffic on-site without vehicles stacking or backing up onto a street.

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

Response: The driveways and internal circulation are configured to allow exiting vehicles to queue as necessary within the site without congesting incoming vehicle movements. This provision is satisfied with the approval of the Waiver 1 request, which will allow the western driveway to widen to 50' to facilitate efficient truck turns in and out of the site to avoid congestion of vehicle movements. The site includes no drive-up, drive-through, or vehicle storage or service areas. These provisions are met.

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

Response: The proposed driveway widths have been based on movement patterns and turning radii associated with the anticipated mix of vehicles, to minimize potential for conflicting movements within the public rights-of-way.

L. As it deems necessary for pedestrian safety, the City, in consultation with the roadway authority, may require traffic-calming features, such as speed tables, textured driveway surfaces, curb extensions, signage or traffic control devices, or other features, be installed on or in the vicinity of a site.

Response: The DKS TIS for the project does not identify any need for traffic-calming features to be installed in public streets in the vicinity and none are proposed.

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

Response: The three proposed driveways are located to allow safe turning movements to and from the site, and to minimize conflicting movements within the site as well. Large semi-tractor-trailer rig movements will use the southwestern driveway with a modified driveway width (with the approval of Waiver request #1) and the Cahalin Road-Garden Acres Road intersection to access the docking/loading area. Passenger vehicle movements occur primarily at the east driveway, with some shared circulation along with trucks in Cahalin Road near the Garden Acres Road intersection. Pedestrian paths are separated from the entrance/exit driveway corridors for safety where it is feasible to do so. Driveway widths are designed to allow turning movements by large vehicles without conflicting movements in the public street. This provision is met.

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

Response: This provision is not applicable because its proposed driveways will not cross an existing culvert or drainage ditch. See R-series sheets in Attachment 6 for details.

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

Response: Following land use approval, the applicant will provide construction plans that comply with this requirement.

P. Unless constrained by topography, natural resources, rail lines, freeways, existing or planned or approved development, or easements or covenants, driveways proposed as part of a residential or mixed-use development shall meet local street spacing standards and shall be constructed to align with existing or planned streets, if the driveway.

1. Intersects with a public street that is controlled, or is to be controlled in the planning period, by a traffic signal;

2. Intersects with an existing or planned arterial or collector street; or

3. Would be an extension of an existing or planned local street, or of another major driveway.

Response: This provision is not applicable because the proposed project is not a residential or mixed-use development.

(.09) Minimum street intersection spacing standards.

A. New streets shall intersect at existing street intersections so that centerlines are not offset. Where existing streets adjacent to a proposed development do not align properly, conditions shall be imposed on the development to provide for proper alignment.

B. Minimum intersection spacing standards are provided in Transportation System Plan Table 3-2.

Response: The access plan relies on the new Supporting Street and the Cahalin Road – Garden Acres Road intersection because those locations are consistent with intersection/access spacing requirements on both Grahams Ferry Road and Garden Acres Road, both of which are Minor Arterial streets. Improvement plans (R-series, sheet xx) provide the detailed plans for these new intersections in accordance with this standard.

(.10) Exceptions and Adjustments. The City may approve adjustments to the spacing standards of subsections (.08) and (.09) above through a Class II process, or as a waiver per Section 4.118(.03)(A.), where an existing connection to a City street does not meet the standards of the roadway authority, the proposed development moves in the direction of code compliance, and mitigation measures alleviate all traffic operations and safety concerns. Mitigation measures may include consolidated access (removal of one access), joint use driveways (more than one property uses same access), directional limitations (e.g.,

Response: This provision is not applicable because a waiver to street spacing is not needed.

Section 4.179. Mixed Solid Waste and Recyclables Storage in New Multi-Unit Residential and Non-Residential Buildings

(.01) All site plans for multi-unit residential and non-residential buildings submitted to the Wilsonville Development Review Board for approval shall include adequate storage space for mixed solid waste and source separated recyclables. [Amended by Ordinance No. 538, 2/21/02.]

Response: As shown on Sheets C1.32 and A5.06 of Attachment 6, solid waste and recyclables storage facilities are proposed at the western boundary of the site, with sufficient linear approach area and turning radii for service vehicles. Correspondence from Republic Services in Attachment 9 confirms the trash hauler's assessment that the waste facilities are appropriate for the proposed use, noting that frequency of service can be increased to up to five days per week if necessary to provide service as required by future building tenants. This standard is met.

(.02) The floor area of an interior or exterior storage area shall be excluded from the calculation of building floor area for purposes of determining minimum storage requirements.
Response: The area of the waste storage facilities has not been included in the computation of floor area requiring waste storage. This standard is met.

(.03) The storage area requirement shall be based on the predominant use(s) of the building. If a building has more than one of the uses listed herein and that use occupies 20 percent or less of the floor area of the building, the floor area occupied by that use shall be counted toward the floor area of the predominant use(s). If a building has more than one of the uses listed herein and that use occupies more than 20 percent of the floor area of the building, then the storage area requirement for the whole building shall be the sum of the requirement for the area of each use.
Response: The building is proposed to have industrial uses, consisting primarily of warehouse and distribution with up to 20,700 SF of manufacturing use occupancy. While there will be incidental office area, it falls below the 20% threshold and the waste storage areas are thus computed based on those industrial use categories. The applicant's method of calculation complies with this provision.

(.04) Storage areas for multiple uses on a single site may be combined and shared.
Response: As shown on Sheet A5.06 of Attachment 6, the applicant is proposing a single waste storage area. This standard is met.

(.05) The specific requirements are based on an assumed storage height of four feet for solid waste/recyclables. Vertical storage higher than four feet but no higher than seven feet may be used to accommodate the same volume of storage in a reduced floor space. Where vertical or stacked storage is proposed, the site plan shall include drawings to illustrate the layout of the storage area and dimensions for the containers.
Response: The applicant is proposing to use waste bins not exceeding seven feet in height, consistent with these standards, to accommodate anticipated waste volume in a smaller space.

(.06) The specific requirements for storage area are as follows:
- *A. Multi-unit residential buildings containing five-ten units shall provide a minimum storage area of 50 square feet. Buildings containing more than ten residential units shall provide an additional five square feet per unit for each unit above ten.*
- *B. Non-residential buildings shall provide a minimum storage area of ten square feet, plus:*
  - *1. Office: Four square feet per 1,000 square feet gross floor area (GFA);*
  - *2. Retail: Ten square feet per 1,000 square feet GFA;*
  - *3. Wholesale/Warehouse/Manufacturing: Six square feet per 1,000 square feet GFA; and*
  - *4. Other: Four square feet per 1,000 square feet GFA.*

Response: Based on the proposed 148,279 SF of warehouse/distribution and manufacturing use, this standard would require an area of 889 SF for waste storage; however, based on the applicant's knowledge of warehouse/distribution operations, this area would be much larger than needed to accommodate most users. Accordingly, the applicant is proposing an exterior waste storage enclosure at the western boundary of the site (rear of the building) containing an area of 210 SF. The proposed waste enclosure location and configuration have been reviewed and approved by the trash hauler, Republic Services,

anticipating service at frequency of up to five days per week (see Attachment 9). The proposed development complies.

(.07) The applicant shall work with the City's franchised garbage hauler to ensure that site plans provide adequate access for the hauler's equipment and that storage area is adequate for the anticipated volumes, level of service and any other special circumstances which may result in the storage area exceeding its capacity. The hauler shall notify the City by letter of their review of site plans and make recommendations for changes in those plans pursuant to the other provisions of this section.
Response: Attachment 9 is a letter from the trash hauler agreeing that the waste storage facility is appropriate for the proposed warehouse/distribution and manufacturing use, and that adequate circulation is available on site. This standard is met.

(.08) Existing multi-unit residential and non-residential developments wishing to retrofit their structures to include storage areas for mixed solid waste and recycling may have their site plans reviewed and approved through the Class I Administrative Review process, according to the provisions of Section 4.035. Site plans for retrofitting existing developments must conform to all requirements of this Section, "Mixed Solid Waste and Recyclables Storage In New Multi-Unit Residential and Non-Residential Buildings," and 4.430, "Location, Design and Access Standards for Mixed Solid Waste and Recycling Areas," of the Wilsonville City Code.
Response: The applicant is not proposing to retrofit existing solid waste facilities. This standard does not apply.

(.09) When applicable, the applicant must comply with Wilsonville Code Section 8.010. [Added by Ordinance #837 – August 5, 2019]
Response: Wilsonville Code Section 8.010 states in its entirety that "The regulation of disposal and hauling, including both hauler and customer requirements, for solid waste, recycling, yard debris, organic materials, and other materials shall be adopted by City ordinance." The applicant intends to comply with the applicable standards set by the City and the hauler.

Section 4.180. Exceptions and Modifications - Projections into Required Yards

(.01) Certain non-structural architectural features are permitted to project into required yards or courts, without requiring the approval of a Variance or Reduced Setback Agreement, as follows:

- *A. Into any required yard:*
  - *1. Architectural features may project into the required yard not more than two (2) inches for each foot of required setback.*
  - *2. Open, unenclosed fire escapes may project a distance not exceeding forty-eight (48) inches.*
- *B. Into any required yard, adjoining a street or tract with a private drive: [Amended by Ord. 682, 9/9/10]*
  - *1. Architectural features may project a distance not exceeding forty (40) inches.*
  - *2. An uncovered porch, terrace, or patio extending no more than two and one-half (2 1/2) feet above the finished elevation may extend within three (3) feet of an interior side lot line, or within ten (10) feet of a front lot line or of an exterior side lot line.*

Response: As illustrated on Sheet C1.10 in Attachment 6, the proposed structure complies with the required setbacks; no projections into setbacks are proposed. This standard does not apply.

Section 4.181. Exceptions & Modifications - Height Limits
Except as stipulated in Sections 4.800 through 4.804, height limitations specified elsewhere in this Code shall not apply to barns, silos or other farm buildings or structures on farms; to church spires; belfries; cupolas; and domes;

monuments; water towers; windmills; chimneys; smokestacks; fire and hose towers; flag poles; above-ground electric transmission, distribution, communication and signal lines, towers and poles; and properly screened mechanical and elevator structures.

Response: As shown on Sheet A2.10 in Attachment 6, the proposed building will have a height of 46' at the top of the parapet, which complies with the minimum 30' requirement. The Coffee Creek Industrial Design Overlay does not impose a maximum height. This height measurement excludes any future mechanical equipment. None of the other structure types noted above are proposed as part of this development. This standard is met.

Section 4.182. Exceptions and Modifications - Setback Modifications

In any residential zone where the average depth of at least two (2) existing front yards on adjoining lots or within one hundred fifty (150) feet of the lot in question and within the same block front is less or greater than the minimum or maximum front yard depth prescribed elsewhere in this Code, the required depth of the front yard on such lot shall be modified. In such case, the front yard depth shall not be less than the average depth, nor more than the greater depth, of existing front yards on at least two (2) adjoining lots within one hundred and fifty (150) feet. In the case of a corner lot, the depth of the front yard may be reduced to that of the lot immediately adjoining, provided, however, that the depth of a front yard on any corner lot shall be at least ten (10) feet.

Response: This site is not in a residential zone. This standard does not apply.

Section 4.191. Non-Conforming Site Conditions

(.01) A property with non-conforming site conditions that is in use may continue to be used.

(.02) If a property with non-conforming site conditions is abandoned, as defined herein, for a period of eighteen (18) months, it may not again be used unless brought into conformity with the requirements of this ordinance. Except, however, that an abandoned property with non-conforming site conditions may be re-occupied if a Variance is approved per the requirements of Section 4.196.

(.03) Normal maintenance of a property with non-conforming site conditions is permitted, provided that the site conditions do not become even less conforming as a result.

(.04) Any application for a change of occupancy, as determined by the City's Building Official, or any application for discretionary review by the City shall justify conditions of approval that will bring the site into conformity with site improvement standards.

(.05) A structure with non-conforming site conditions may be expanded or enlarged, provided that there is a proportional decrease in the non-conforming site conditions. For example, an application to expand the floor area of a building by 10%, on a site that has 20% shortage of required parking, will be permitted, provided that at least a 10% increase in parking is also provided.

Response: The site is currently operating as personal residences. When the proposed development is constructed, the existing use will cease to operate on this site and the entire site will be developed to meet current development requirements. No non-conforming site conditions will remain.

Section 4.192. Non-Conforming Lots

(.01) A non-conforming lot may be used for any purpose allowed by zoning, provided that any structure built or located upon a non-conforming lot must meet all of the lot development standards of the zone, or be approved through the Variance procedures of Section 4.196. Except, however, if the non-conforming lot is contiguous to other property under legal control of the same owner or owners, no variance shall be granted for a structure or use that could be accommodated on that contiguous lot, or combination of lots, without a Variance.

(.02) A lot line adjustment between nonconforming lots may be approved where either:

A. *Both lots involved in the adjustment will be conforming to zoning standards as a result of the adjustment; or*

B. *The Planning Director or Development Review Board finds, based on information in the record, that each of the lots involved in the adjustment will be suitable for development as allowed in the zone, as a result of the adjustment.*

Response: The property is a conforming lot. These standards do not apply.

Section 4.199 Outdoor Lighting

Section 4.199.20. Applicability.

(.01) This Ordinance is applicable to:

A. *Installation of new exterior lighting systems in public facility, commercial, industrial and multi-family housing projects with common areas.*

B. *Major additions or modifications (as defined in this Section) to existing exterior lighting systems in public facility, commercial, industrial and multi-family housing projects with common areas.*

Response: The proposed development is for an industrial building; therefore, this section applies.

(.02) Exemption. The following luminaires and lighting systems are EXEMPT from these requirements:

A. *Interior lighting.*

B. *Internally illuminated signs.*

C. *Externally illuminated signs.*

D. *Temporary lighting for theatrical, television, and performance areas.*

E. *Lighting in swimming pools and other water features governed by Article 680 of the National Electrical Code.*

F. *Building Code required exit path lighting.*

G. *Lighting specifically for stairs and ramps.*

H. *Temporary and seasonal lighting provided that individual lamps are 10 watts or less.*

I. *Lighting required and/or regulated by the City (i.e. construction related activities), Federal Aviation Administration, U.S. Coast Guard or other Federal or State agency.*

J. *Single-family residential lighting.*

K. *Code Required Signs.*

L. *American flag.*

M. *Landscape lighting.*

N. *Lights approved by the City through an Administrative Review Temporary Use Permit process.*

O. *Public street lights.*

P. *ATM security lighting.*

Q. *Those "Exceptions" listed in the "Exterior Lighting Power Allowance" provisions of the Oregon Energy Efficiency Specialty Code.*

Response: The applicant is seeking approval of those lighting systems which do not fall into the exemptions listed above.

Section 4.199.30. Lighting Overlay Zones.

(.01) The designated Lighting Zone as indicated on the Lighting Overlay Zone Map for a commercial, industrial, multi-family or public facility parcel or project shall determine the limitations for lighting systems and fixtures as specified in this Ordinance.

A. *Property may contain more than one lighting zone depending on site conditions and natural resource characteristics.*

Response: As illustrated in Figure 30 (in Section 4.199.60 below), this site and neighboring properties on all sides are entirely in Lighting Zone LZ 2. This standard is met.

(.02) The Lighting Zones shall be:

A. LZ 1. Developed areas in City and State parks, recreation areas, SROZ wetland and wildlife habitat areas; developed areas in natural settings; sensitive night environments; and rural areas. This zone is intended to be the default condition for rural areas within the City.

B. LZ 2. Low-density suburban neighborhoods and suburban commercial districts, industrial parks and districts. This zone is intended to be the default condition for the majority of the City.

C. LZ 3. Medium to high-density suburban neighborhoods and districts, major shopping and commercial districts as depicted on the Lighting Overlay Zone Map.

D. LZ 4. Reserved for limited applications with special lighting requirements. This zone is appropriate for users who have unique site or operating circumstances that warrant additional light. This zone shall not be applied to residential or agricultural areas.

[Section 4.199.30(.02) amended by Ord. 688, 11/15/10]

Response: Based on the descriptions above, this site is in Lighting Zone LZ 2 (as confirmed by the City's Lighting Overlay Zones map).

(.03) Modification of Lighting Zones.

A. The City Council may modify the designated Lighting Zones of one or more parcels if the City Council finds that the original Lighting Zone was in error, a change in circumstances has occurred warranting the change since the designation was established or the purposes of this section are better served.

B. The Development Review Board (DRB) may modify the designated Lighting Zones as part of the Stage II, Site Design Review Process if the DRB finds that the original Lighting Zone was in error, or a change in circumstances has occurred warranting the change since the designation was established or the purposes of this section are better served.

C. This ordinance establishes a Lighting Overlay Zone Map. The Planning Division shall maintain the current Lighting Overlay Zone Map.

Response: The applicant is not seeking any modifications from the City's Lighting Overlay Zones map. This standard does not apply.

Section 4.199.40. Lighting Systems Standards for Approval.

(.01) Non-Residential Uses and Common Residential Areas.

A. All outdoor lighting shall comply with either the Prescriptive Option or the Performance Option below.

Response: The applicant is utilizing the Prescriptive Option for outdoor lighting.

B. Prescriptive Option. If the lighting is to comply with this Prescriptive Option, the installed lighting shall meet all of the following requirements according to the designated Lighting Zone.

1. The maximum luminaire lamp wattage and shielding shall comply with Table 7.

2. Except for those exemptions listed in Section 4.199.20(.02), the exterior lighting for the site shall comply with the Oregon Energy Efficiency Specialty Code, Exterior Lighting.

3. The maximum pole or mounting height shall be consistent with Table 8.

4. Each luminaire shall be set back from all property lines at least 3 times the mounting height of the luminaire:

a. *Exception 1: If the subject property abuts a property with the same base and lighting zone, no setback from the common lot lines is required.*

b. *Exception 2: If the subject property abuts a property which is zoned (base and lighting) other than the subject parcel, the luminaire shall be setback three times the mounting height of the luminaire, measured from the abutting parcel's setback line. (Any variance or waiver to the abutting property's setback shall not be considered in the distance calculation).*

c. *Exception 3: If the luminaire is used for the purpose of street, parking lot or public utility easement illumination and is located less than 3 mounting heights from the property line, the luminaire shall include a house side shield to protect adjoining property.*

d. *Exception 4: If the subject property includes an exterior column, wall or abutment within 25 feet of the property line, a luminaire partly shielded or better and not exceeding 60 lamp watts may be mounted onto the exterior column, wall or abutment or under or within an overhang or canopy attached thereto.*

e. *Exception 5: Lighting adjacent to SROZ areas shall be set back 3 times the mounting height of the luminaire, or shall employ a house side shield to protect the natural resource area.*

Response: Sheet C8.10 in Attachment 6 shows proposed locations for bollard lights, shielded site lights, and shielded wall packs that comply with the Prescriptive Option. Manufacturers' data sheets for typical fixtures are provided in Attachment 10. The subject property is in Lighting Overlay Zone 2 and surrounding properties are in Industrial land use designations. The applicant believes this situation falls within the intended meaning of Exception 1. This requirement is met.

C. *Performance Option. If the lighting is to comply with the Performance Option, the proposed lighting design shall be submitted by the applicant for approval by the City meeting all of the following:*

1. *The weighted average percentage of direct uplight lumens shall be less than the allowed amount per Table 9.*

2. *The maximum light level at any property line shall be less than the values in Table 9, as evidenced by a complete photometric analysis including horizontal illuminance of the site and vertical illuminance on the plane facing the site up to the mounting height of the luminaire mounted highest above grade. The Building Official or designee may accept a photometric test report, demonstration or sample, or other satisfactory confirmation that the luminaire meets the shielding requirements of Table 7. Luminaires shall not be mounted so as to permit aiming or use in any way other than the manner maintaining the shielding classification required herein:*

a. *Exception 1. If the property line abuts a public right-of-way, including a sidewalk or street, the analysis may be performed across the street at the adjacent property line to the right-of-way.*

b. *Exception 2. If, in the opinion of the Building Official or designee, compliance is impractical due to unique site circumstances such as lot size or shape, topography, or size or shape of building, which are circumstances not typical of the general conditions of the surrounding area. The Building Official may impose conditions of approval to avoid light trespass to the maximum extent possible and minimize any additional negative impacts resulting to abutting and adjacent parcels, as*

well as public rights-of-way, based on best lighting practices and available lighting technology.

3. The maximum pole or mounting height shall comply with Table 8.

Response: The applicant is utilizing the prescriptive option rather than the performance option. This standard does not apply.

D. Curfew. All prescriptive or performance based exterior lighting systems shall be controlled by automatic device(s) or system(s) that:

1. Initiate operation at dusk and either extinguish lighting one hour after close or at the curfew times according to Table 10; or

2. Reduce lighting intensity one hour after close or at the curfew time to not more than 50% of the requirements set forth in the Oregon Energy Efficiency Specialty Code unless waived by the DRB due to special circumstances; and

3. Extinguish or reduce lighting consistent with 1. and 2. above on Holidays.

The following are exceptions to curfew:

a. Exception 1: Building Code required lighting.

b. Exception 2: Lighting for pedestrian ramps, steps and stairs.

c. Exception 3: Businesses that operate continuously or periodically after curfew.

Response: It is feasible for the applicant to install an automatic device or system meeting these requirements; compliance can be assured through an appropriate condition of approval.

(.02) Special Permit for Specific Lighting Fixtures and Systems and When Exceeding Lighting Requirements.

A. This section is intended to apply to situations where more than normal foot candles are required due to a unique circumstance or use or where it is absolutely essential to perform the proposed activities after dark. All special permits shall be reviewed by the DRB.

B. Upon issuance of a special permit by the Development Review Board (DRB), lighting systems not complying with the technical requirements of this Ordinance may be installed, maintained, and replaced for lighting that exceeds the maximums permitted by this Ordinance. This section is intended to be applied to uses such as sports lighting systems including but not limited to, sport fields and stadiums, such as baseball and football field lighting, tennis court lighting, swimming pool area lighting and prisons; other very intense lighting defined as having a light source exceeding 200,000 lumens or an intensity in any direction of more than 2,000,000 candelas; building façade lighting of portions of buildings over two stories high; and public monuments.

C. To obtain such a permit, applicants shall demonstrate that the proposed lighting installation:

1. Is within Lighting Zone 3 or above.

2. Has been designed to minimize obtrusive light and artificial sky glow, supported by a signed statement from a registered civil or electrical engineer describing the mitigation measures. Such statement shall be accompanied by calculations indicating the light trespass levels (horizontal and vertical at ground level) at the property line.

3. Will not create excessive glare, sky glow, or light trespass beyond that which can be reasonably expected by application of best lighting practices, and available technology.

4. Provides appropriate lighting curfew hours based on the use and the surrounding areas.

D. The DRB may impose conditions of approval to mitigate any negative impacts resulting to the abutting parcel, based on best lighting practices and available lighting technology.

E. The City may charge a review fee and may, at the Building Official's option, employ the services of a qualified professional civil or electrical engineer to review such submittals and the cost thereof shall be an additional fee charged to the applicant.

Response: The applicant is not seeking approval of a special permit for lighting. This standard does not apply.

Section 4.199.50. Submittal Requirements.

(.01) Applicants shall submit the following information as part of DRB review or administrative review of new commercial, industrial, multi-family or public facility projects:

A. A statement regarding which of the lighting methods will be utilized, prescriptive or performance, and a map depicting the lighting zone(s) for the property.

B. A site lighting plan that clearly indicates intended lighting by type and location. For adjustable luminaires, the aiming angles or coordinates shall be shown.

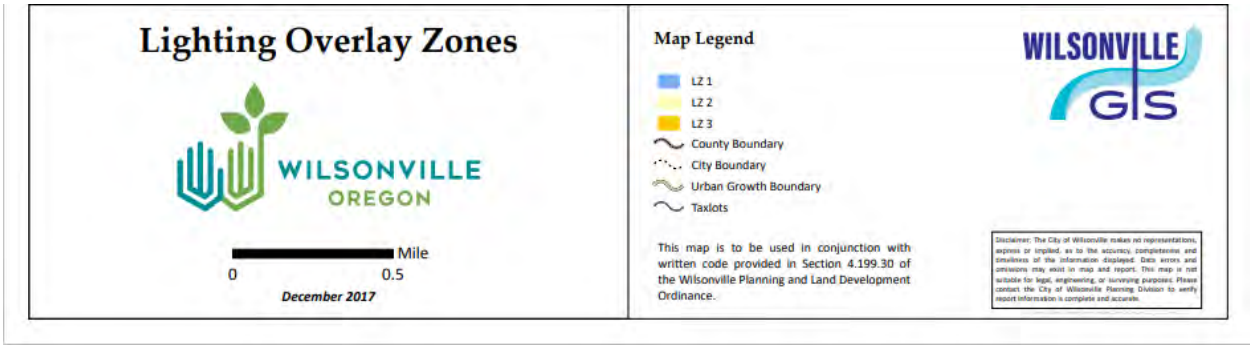
C. For each luminaire type, Drawings, cut sheets or other documents containing specifications for the intended lighting including but not limited to, luminaire description, mounting, mounting height, lamp type and manufacturer, lamp watts, ballast, optical system/distribution, and accessories such as shields.

D. Calculations demonstrating compliance with Oregon Energy Efficiency Specialty Code, Exterior Lighting, as modified by Section 4.199.40(.01)(B.)(2.) [Amended by Ord. 688, 11/15/10]

E. Lighting plans shall be coordinated with landscaping plans so that pole lights and trees are not placed in conflict with one another. The location of lights shall be shown on the landscape plan. Generally, pole lights should not be placed within one pole length of landscape and parking lot trees.

F. Applicants shall identify the hours of lighting curfew.

Response: The applicant proposes to comply using the Prescriptive Method. The property, identified by a blue star in the excerpt from the City's Lighting Overlay Zones Map below, and surrounding sites are all in Lighting Overlay Zone 2 (LZ 2).



Sheet P-SL-2 in Attachment 6 shows proposed locations for lighting fixtures, and luminaire specifications (manufacturers' data sheets for typical fixtures) are provided in Attachment 10. Lighting locations have been coordinated with the landscape planting plan to avoid conflicts. In Lighting Overlay Zone 2, the lighting curfew time is 10:00 PM (2200 hours).

The [OR Energy Code] for outdoor illumination establishes maximum energy use figures for building exterior areas, expressed in Watts per Square Foot (W/SF), with reference to Table 9.4.2 Individual Lighting Power Allowances for Building Exteriors [ANSI/ASHRAE/IES Standard 90.1-2019 (I-P)]. For buildings in Zones 1 through 4, those maximum energy consumption standards allow a range between 0.03 W/SF and 0.08 W/SF for Uncovered Parking Areas, and between 0.03 and 0.04 W/SF for Landscaping Areas. The lighting fixture specifications in the lighting plan sheet and manufacturer's data sheets demonstrate that the lighting plan complies with this requirement.

Based on this analysis, power consumption per unit area for the proposed development is only 54% of the lowest allowed power consumption rate per unit of area. This requirement is satisfied.

(.02) In addition to the above submittal requirements, Applicants using the Prescriptive Method shall submit the following information as part of the permit set plan review:

A. A site lighting plan (items 1 A - F, above) which indicates for each luminaire the 3 mounting height line to demonstrate compliance with the setback requirements. For luminaires mounted within 3 mounting heights of the property line the compliance exception or special shielding requirements shall be clearly indicated.

Response: Sheet C8.10 provides a Site Lighting Plan. Mounting heights of fixtures are indicated by "MH" notations on the photometric plan. Pole-mounted fixtures are at 25' above grade; wall-mounted fixtures are at 28' above the building's finish floor elevation (FFE), to maintain a consistent level on all sides of the building. Notably, all the neighboring properties are designated Industrial and are also in the same Lighting Overlay Zone, LZ 2, as the subject property. Luminaire setbacks and other design factors are subject to the Exceptions in Section 4.199.40(.01)B.4.

(.03) In addition to the above submittal requirements, Applicants using the Performance Method shall submit the following information as part of the permit set plan review:

A. Site plan showing horizontal isocandle lines, or the output of a point-by-point computer calculation of the horizontal illumination of the site, showing property lines and light levels immediately off of the subject property.

B. For each side of the property, the output of a point-by-point vertical footcandle calculation showing illumination in the vertical plane at the property line from grade to at least 10 feet higher than the height of the tallest pole.

C. Lighting plans shall be prepared by a qualified licensed engineer.

Response: The applicant is utilizing the prescriptive option rather than the performance option. This standard does not apply.

(.04) In addition to the above applicable submittal requirements, Applicants for Special Permits shall submit the following to the DRB for review:

A. Tabulation of International Engineering Society of North America (IESNA) lighting recommendations for each task including area illuminated, recommended illumination level, actual maintained illumination level, and luminaires used specifically to achieve the indicated criteria.

B. Lighting plans shall be prepared by a qualified licensed engineer.

Response: The applicant is not seeking approval of a special permit for lighting. This standard does not apply.

(.05) For all calculations, the following light loss factors shall be used unless an alternative is specifically approved by the City:

Metal halide	*0.6*
High pressure sodium	*0.8*
Compact fluorescent	*0.7*
Full size fluorescent	*0.75*
Incandescent	*0.9*
Halogen	*0.95*
Other	*As approved*

Response: The applicant understands these factors to apply to implementation of the Performance Method, which is not used in this application.

Section 4.199.60. Major Additions or Modifications to Pre-Existing Sites.

(01.) Major Additions. If a major addition occurs on a property, all of the luminaires on the site shall comply with the requirements of this Section. For purposes of this sub-section, the following are considered to be major additions:

A. Additions of 50 percent or more in terms of additional dwelling units, gross floor area, seating capacity, or parking spaces, either with a single addition or with cumulative additions after July 2, 2008.

B. Modification or replacement of 50 percent or more of the outdoor lighting luminaries' within a 5-year timeframe existing as of July 2, 2008.

Response: The applicant has submitted requests for a new development, not a major addition. This standard does not apply.

Table 7: Maximum Wattage And Required Shielding				
Lighting Zone	**Fully Shielded**	**Shielded**	**Partly Shielded**	**Unshielded**
LZ 1	70	20	13	Low voltage landscape lighting 50 watts or less
LZ 2	100	35	39	Low voltage landscape lighting 50 watts or less
LZ 3	250	100	70	Landscape and facade lighting 100 watts or less; ornamental lighting on private drives of 39 watts and less
LZ 4	450	150	150	Landscape and facade lighting 250 watts or less; ornamental lights on private drives and lanterns 70 watts or less; marquee lighting not employing medium based lamps

[Table 7 amended by Ord. 682, 9/9/10; Ord. 688, 11/15/10]

Table 8: Maximum Lighting Mounting Height In Feet			
Lighting Zone	**Lighting for private drives, driveways, parking, bus stops and other transit facilities**	**Lighting for walkways, bikeways, plazas and other pedestrian areas**	**All other lighting**
LZ 0	20	8	4
LZ 1	25	12	4
LZ 2	40	18	8
LZ 3	40	18	16
LZ 4	Height limit to be determined by Special Use Permit Only		

Lighting mounted onto buildings or other structures shall not exceed a mounting height greater than 4 feet higher than the tallest part of the building or structure at the place where the lighting is installed, nor higher than 33.33 percent of the horizontal distance of the light from the nearest property line, whichever is less.

Table 9: Performance Method			
Lighting Zone	**Maximum percentage of direct uplight lumens**	**Maximum Light Level at Property Line**	
		Horizontal plane at grade (foot candles - fc)	**Vertical plane facing the site in question, from grade to mounting height of highest mounted luminaire (foot candles – fc)**
LZ 0	0	0.01 fc	0.02 fc
LZ 1	1%	0.05 fc	0.1 fc
LZ 2	5%	0.2 fc	0.4 fc
LZ 3	10%	0.4 fc	0.8 fc
LZ 4	20%	0.8 fc	1.6 fc

Table 10: Curfew	
Lighting Zone	***Curfew Time***
LZ 0	*8:00 PM (2000 hours)*
LZ 1	
LZ 2	*10:00 PM (2200 hours)*
LZ 3	*Midnight (2400 hours)*
LZ 4	

[Tables, above, renumbered by Ord. 688, 11/15/10]

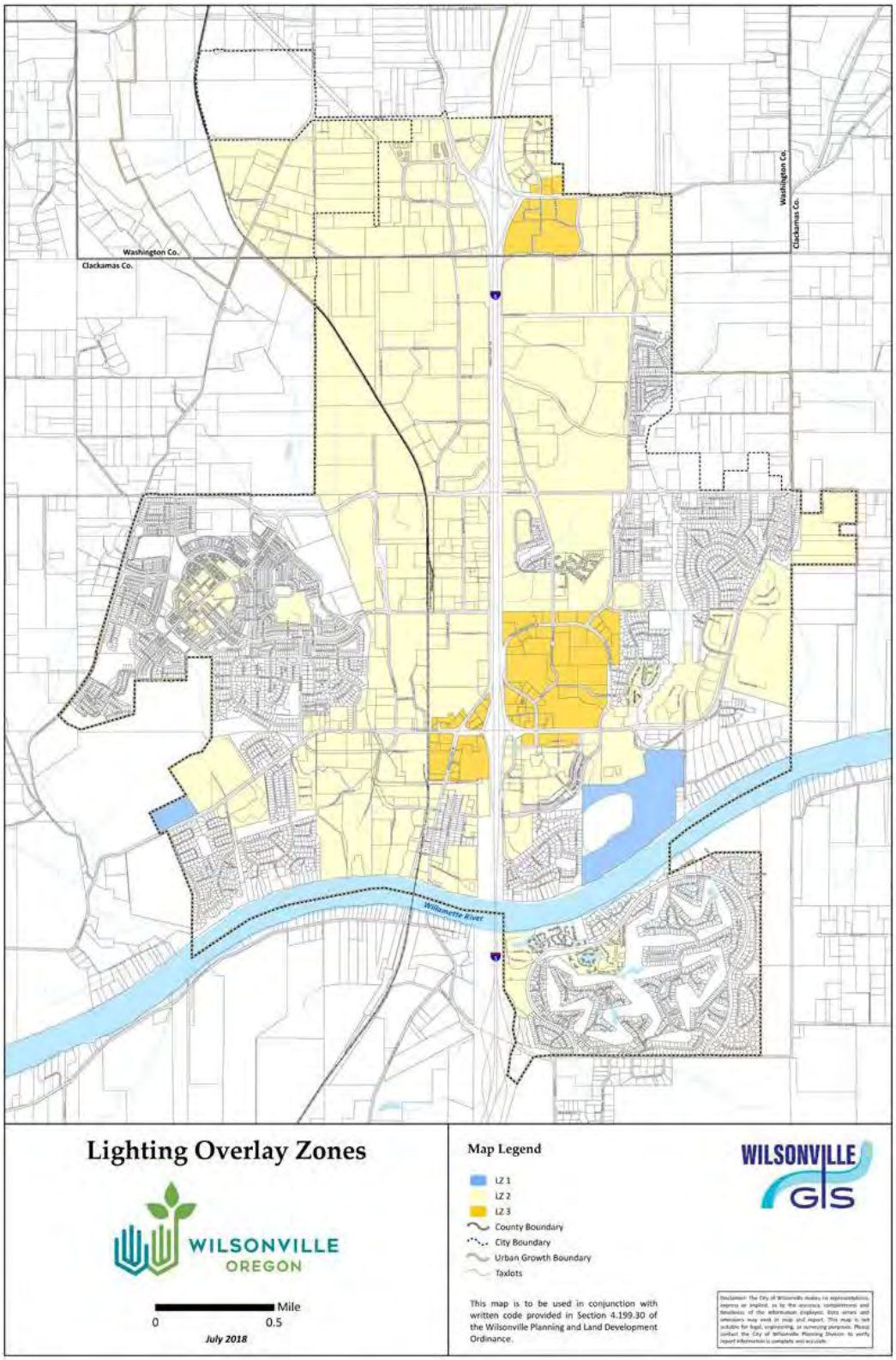


Figure 30: Lighting Overlay Zone Map
[Amended by Ord. 821 adopted 7/2/2018]

[Section 4.199 – 4.199.60 added by Ord. No. 649, adopted 6/2/08]

UNDERGROUND UTILITIES

Section 4.300. General

(.01) The City Council deems it reasonable and necessary in order to accomplish the orderly and desirable development of land within the corporate limits of the City, to require the underground installation of utilities in all new developments.

(.02) After the effective date of this Code, the approval of any development of land within the City will be upon the express condition that all new utility lines, including but not limited to those required for power, communication, street lighting, gas, cable television services and related facilities, shall be placed underground.

(.03) The construction of underground utilities shall be subject to the City's Public Works Standards and shall meet applicable requirements for erosion control and other environmental protection.

Section 4.310. Exceptions

Section 4.300 of this Code shall not apply to surface-mounted transformers, surface-mounted connection boxes, wireless communication facilities, and meter cabinets and other appurtenances which are reasonably necessary to be placed above ground, or to temporary utility service facilities during construction, or to high capacity electric and communication feeder lines, or to utility transmission lines operating at 50,000 volts or more.

Response: The applicant's proposed development plans include installation of underground utilities as prescribed by these provisions. These requirements are met.

Section 4.320. Requirements

(.01) The developer or subdivider shall be responsible for and make all necessary arrangements with the serving utility to provide the underground services (including cost of rearranging any existing overhead facilities). All such underground facilities as described shall be constructed in compliance with the rules and regulations of the Public Utility Commission of the State of Oregon relating to the installation and safety of underground lines, plant, system, equipment and apparatus.

(.02) The location of the buried facilities shall conform to standards supplied to the subdivider by the City. The City also reserves the right to approve location of all surface-mounted transformers.

(.03) Interior easements (back lot lines) will only be used for storm or sanitary sewers, and front easements will be used for other utilities unless different locations are approved by the City Engineer. Easements satisfactory to the serving utilities shall be provided by the developer and shall be set forth on the plat.

Response: Proposed utility system extensions and alignments have been prepared in consultation with City staff and service providers. The submitted plans demonstrate the feasibility of achieving compliance. Detailed plans will be submitted for permitting prior to construction. A condition(s) of approval can assure compliance in the permitting and construction process.

SITE DESIGN REVIEW

Section 4.400. Purpose

(.01) Excessive uniformity, inappropriateness or poor design of the exterior appearance of structures and signs and the lack of proper attention to site development and landscaping in the business, commercial, industrial and certain residential areas of the City hinders the harmonious development of the City, impairs the desirability of residence, investment or occupation in the City, limits the opportunity to

attain the optimum use in value and improvements, adversely affects the stability and value of property, produces degeneration of property in such areas and with attendant deterioration of conditions affecting the peace, health and welfare, and destroys a proper relationship between the taxable value of property and the cost of municipal services therefor.

(.02) The City Council declares that the purposes and objectives of site development requirements and the site design review procedure are to:

- *A. Assure that Site Development Plans are designed in a manner that insures proper functioning of the site and maintains a high quality visual environment.*
- *B. Encourage originality, flexibility and innovation in site planning and development, including the architecture, landscaping and graphic design of said development;*
- *C. Discourage monotonous, drab, unsightly, dreary and inharmonious developments;*
- *D. Conserve the City's natural beauty and visual character and charm by assuring that structures, signs and other improvements are properly related to their sites, and to surrounding sites and structures, with due regard to the aesthetic qualities of the natural terrain and landscaping, and that proper attention is given to exterior appearances of structures, signs and other improvements;*
- *E. Protect and enhance the City's appeal and thus support and stimulate business and industry and promote the desirability of investment and occupancy in business, commercial and industrial purposes;*
- *F. Stabilize and improve property values and prevent blighted areas and, thus, increase tax revenues;*
- *G. Insure that adequate public facilities are available to serve development as it occurs and that proper attention is given to site planning and development so as to not adversely impact the orderly, efficient and economic provision of public facilities and services.*
- *H. Achieve the beneficial influence of pleasant environments for living and working on behavioral patterns and, thus, decrease the cost of governmental services and reduce opportunities for crime through careful consideration of physical design and site layout under defensible space guidelines that clearly define all areas as either public, semi-private, or private, provide clear identity of structures and opportunities for easy surveillance of the site that maximize resident control of behavior -- particularly crime;*
- *I. Foster civic pride and community spirit so as to improve the quality and quantity of citizen participation in local government and in community growth, change and improvements;*
- *J. Sustain the comfort, health, tranquility and contentment of residents and attract new residents by reason of the City's favorable environment and, thus, to promote and protect the peace, health and welfare of the City.*

Response: The applicant's submitted plans in Attachment 6 respond to applicable development standards, including the Coffee Creek Pattern Book. The plans demonstrate that the proposed development will function properly and will contribute to producing the high-quality visual environment desired in the Coffee Creek Industrial area. The proposed development plan reflects the appropriate consideration the applicant's design team has given to all the above purposes and objectives of the Site Design Review process. For most design issues, the project straightforwardly satisfies the standards the City has adopted to implement the above purposes and objectives; however, the application includes six waiver requests for which the applicant has provided appropriate findings of compliance with the intent of the regulations (in a separate subsection D below).

Section 4.420. Jurisdiction and Powers of the Board

(.01) Application of Section. Except for single-family or two-family dwellings in any residential zoning district, and in the Village zone, row houses or apartments, no Building Permit shall be issued for a new

building or major exterior remodeling of an existing building, and no Sign Permit, except as permitted in Sections 4.156.02 and 4.156.05, shall be issued for the erection or construction of a sign relating to such new building or major remodeling, until the plans, drawings, sketches and other documents required for a Sign Permit application have been reviewed and approved by the Board.
Response: The applicant is requesting DRB approval of the proposed signage, as discussed further in the responses to Section 4.156, below. This standard is met.

(.02) Development in Accord with Plans. Construction, site development and landscaping shall be carried out in substantial accord with the plans, drawings, sketches and other documents approved by the Board, unless altered with Board approval. Nothing in this subsection shall be construed to prevent ordinary repair, maintenance and replacement of any part of the building or landscaping which does not involve a substantial change from the purpose of Section 4.400. If the Board objects to such proposed changes, they shall be subject to the procedures and requirements of the site design review process applicable to new proposals.
Response: The applicant intends to construct a project that aligns with the general form and design depicted in the accompanying plans, subject to possible minor alterations that may arise during preparation of construction drawings for permit review. This standard is met.

(.03) Variances. The Board may authorize variances from the site development requirements, based upon the procedures, standards and criteria listed in Section 4.196. Variances shall be considered in conjunction with the site design review process.
Response: This application does not include any request for a Variance.

Section 4.421. Criteria and Application of Design Standards

(.01) The following standards shall be utilized by the Board in reviewing the plans, drawings, sketches and other documents required for Site Design Review. These standards are intended to provide a frame of reference for the applicant in the development of site and building plans as well as a method of review for the Board. These standards shall not be regarded as inflexible requirements. They are not intended to discourage creativity, invention and innovation. The specifications of one or more particular architectural styles is not included in these standards. (Even in the Boones Ferry Overlay Zone, a range of architectural styles will be encouraged.)

A. Preservation of Landscape. The landscape shall be preserved in its natural state, insofar as practicable, by minimizing tree and soils removal, and any grade changes shall be in keeping with the general appearance of neighboring developed areas.

Response: The proposed development site is not in a natural state; the property has been in residential use for a period of several decades. The site's generally flat topography, sloping generally downhill to the southeast, is not distinctive. Notably, however, within the northeast quadrant of the property there is a distinctive group of mature Douglas fir trees. The applicant has made significant adaptations of the proposed development plan in order to incorporate a significant open space area for the conservation and retention of those trees. This standard is met.

B. Relation of Proposed Buildings to Environment. Proposed structures shall be located and designed to assure harmony with the natural environment, including protection of steep slopes, vegetation and other naturally sensitive areas for wildlife habitat and shall provide proper buffering from less intensive uses in accordance with Sections 4.171 and 4.139 and 4.139.5. The achievement of such relationship may include the enclosure of space in conjunction with other existing buildings or other proposed buildings and the creation of

focal points with respect to avenues of approach, street access or relationships to natural features such as vegetation or topography.

Response: As noted above, the site's principal environmental feature is the group of ten mature Douglas fir trees that will be protected and retained in the northeastern part of the site. Additionally, the site plan achieves harmony with the natural environment by providing dense landscape plantings to create a naturalistic character along the SW Grahams Ferry Road and Garden Acres Road corridors, providing a pedestrian Wayside adjacent to the street, and visually screening the proposed building. This standard is met.

C. *Drives, Parking and Circulation. With respect to vehicular and pedestrian circulation, including walkways, interior drives and parking, special attention shall be given to location and number of access points, general interior circulation, separation of pedestrian and vehicular traffic, and arrangement of parking areas that are safe and convenient and, insofar as practicable, do not detract from the design of proposed buildings and structures and the neighboring properties.*

Response: The applicant's proposed access configuration achieves efficient access and circulation while minimizing conflicting movements among the different vehicle types that will access the site (semi tractor-trailer rigs, delivery vans, passenger vehicles), pedestrians, and cyclists. Concentrating large truck maneuvering and docking in the central part of the site, on a loop between the southwest driveway and the Cahalin Road-Garden Acres Road intersection at the northeast, limits the extent of combined truck and passenger vehicle circulation, keeping passenger vehicles close to office entrances and parking areas, away from the loading area. Pedestrian walkways are separated from vehicular driveways for safety, crossing drive aisles at the sidewalk where feasible, or at locations with good visibility near the building's two office entrances. These standards are met.

D. *Surface Water Drainage. Special attention shall be given to proper site surface drainage so that removal of surface waters will not adversely affect neighboring properties of the public storm drainage system.*

Response: The proposed plans (see Attachment 6) include site grading for positive on-site drainage to surface facilities for water quality treatment and on-site infiltration, with no discharge to the public system in SW Garden Acres Road in either a 10-year or a 25-year design storm event. The proposed design responds to direction from City staff indicating that a downstream capacity limitation would require storm discharge to the public storm drain system to be limited to 2.24 cubic feet per second (cfs) in a 25-year design storm event by infiltrating 100% of predicted 25-year design storm event flows within the property (i.e., with zero discharge to the City's storm line). This standard is met.

E. *Utility Service. Any utility installations above ground shall be located so as to have a harmonious relation to neighboring properties and site. The proposed method of sanitary and storm sewage disposal from all buildings shall be indicated.*

Response: Utility service plans, including installation of underground utility facilities, are provided in the C- (on-site) and R-series drawing sheets in Attachment 6. Utility service connections will be made underground.

F. *Advertising Features. In addition to the requirements of the City's sign regulations, the following criteria should be included: the size, location, design, color, texture, lighting and materials of all exterior signs and outdoor advertising structures or features shall not detract from the design of proposed buildings and structures and the surrounding properties.*

Response: This application incorporates the locations, general configurations, and sizing of a proposed monument sign and wall signage to identify future building tenants, as part of the overall composition and project design. This requirement is met in a way that will set the stage for future tenants to obtain over-the-counter permits to install tenant-specific compliant signs in the future.

G. Special Features. Exposed storage areas, exposed machinery installations, surface areas, truck loading areas, utility buildings and structures and similar accessory areas and structures shall be subject to such setbacks, screen plantings or other screening methods as shall be required to prevent their being incongruous with the existing or contemplated environment and its surrounding properties. Standards for screening and buffering are contained in Section 4.176.

Response: As noted above and discussed in detail under other Section headings, materials in Attachment 6 including the site plan and in particular the landscape planting plan, show how a dense landscaping and fence treatment along the SW Grahams Ferry Road frontage will effectively screen views from the public realm into the truck loading area. Perspective rendering drawings in Attachment 5 also provide representative images to characterize future build-out conditions. No outdoor storage area or exposed machinery installation is proposed. The submitted materials meet this requirement.

(.02) The standards of review outlined in Sections (a) through (g) above shall also apply to all accessory buildings, structures, exterior signs and other site features, however related to the major buildings or structures.

Response: The submitted plans include all features of the proposed development project, which meet the standards in Sections (a) through (g).

(.03) The Board shall also be guided by the purpose of Section 4.400, and such objectives shall serve as additional criteria and standards.

Response: The applicant has responded to the Purpose statements in Section 4.400 above.

(.04) Conditional application. The Planning Director, Planning Commission, Development Review Board or City Council may, as a Condition of Approval for a zone change, subdivision, land partition, variance, conditional use, or other land use action, require conformance to the site development standards set forth in this Section.

Response: The applicant is seeking Site Design Review approval as part of this application package, so these approval standards are already applicable. This standard does not apply.

(.05) The Board may attach certain development or use conditions in granting an approval that are determined necessary to insure the proper and efficient functioning of the development, consistent with the intent of the Comprehensive Plan, allowed densities and the requirements of this Code. In making this determination of compliance and attaching conditions, the Board shall, however, consider the effects of this action on the availability and cost of needed housing. The provisions of this section shall not be used in such a manner that additional conditions either singularly or accumulatively have the effect of unnecessarily increasing the cost of housing or effectively excluding a needed housing type.

Response: The applicant recognizes the DRB's authority to impose conditions of approval necessary to ensure conformance to adopted Code standards. However, the proposed use and development are consistent with the subject property's proposed PDI-RSIA zoning and compatible with the adjoining industrial designation. For these reasons, no imposition of additional conditions over and above Code standards is necessary or warranted to meet the intent of the Comprehensive Plan or to protect the best

interests of the surrounding properties and neighborhoods, the City as a whole, and the intent of this Code. This criterion is met without additional conditions.

(.06) The Board or Planning Director may require that certain paints or colors of materials be used in approving applications. Such requirements shall only be applied when site development or other land use applications are being reviewed by the City.

- *A. Where the conditions of approval for a development permit specify that certain paints or colors of materials be used, the use of those paints or colors shall be binding upon the applicant. No Certificate of Occupancy shall be granted until compliance with such conditions has been verified.*
- *B. Subsequent changes to the color of a structure shall not be subject to City review unless the conditions of approval under which the original colors were set included a condition requiring a subsequent review before the colors could be changed.*

Response: The applicant requests DRB approval of the general color scheme illustrated in Attachment 5 – Perspective Renderings and Attachment 12, Colors and Materials Board (Images). However, to allow flexibility to tailor final color selections to best meet the intent of the proposal while responding to the site's real-world natural daylight conditions, and in recognition of the DRB's discretion provided by this standard, the applicant requests that the DRB not impose conditions mandating use of those specific colors. This standard is met.

Section 4.430. Location, Design and Access Standards for Mixed Solid Waste and Recycling Areas

(.01) The following locations, design and access standards for mixed solid waste and recycling storage areas shall be applicable to the requirements of Section 4.179 of the Wilsonville City Code.

Response: The proposed trash enclosure meets the requirements of Section 4.179 of the Wilsonville City Code. The applicant's responses to individual criteria are provided in this narrative under Section 4.179.

(.02) Location Standards:

- *A. To encourage its use, the storage area for source separated recyclables shall be co-located with the storage area for residual mixed solid waste.*
- *B. Indoor and outdoor storage areas shall comply with Uniform Building and Fire Code requirements.*
- *C. Storage area space requirements can be satisfied with a single location or multiple locations and can combine with both interior and exterior locations.*
- *D. Exterior storage areas can be located within interior side yard or rear yard areas. Minimum setback shall be three (3) feet. Exterior storage areas shall not be located within a required front yard setback, including double frontage lots.*
- *E. Exterior storage areas shall be located in central and visible locations on a site to enhance security for users.*
- *F. Exterior storage areas can be located in a parking area if the proposed use provides at least the minimum number of parking spaces required for the use after deducting the area used for storage. Storage areas shall be appropriately screened according to the provisions of Section 4.430 (.03), below.*
- *G. The storage area shall be accessible for collection vehicles and located so that the storage area will not obstruct pedestrian or vehicle traffic movement on the site or on public streets adjacent to the site.*

Response: The proposal includes a single storage area for recyclables and mixed solid waste. The storage area complies with Uniform Building and Fire Code requirements; see details in Attachment 6, Sheet A5.1. The storage area is not located in a setback or in a parking area. The storage area is in a visible location. The trash hauler, Republic Services, has provided a letter (Attachment 9) stating "The trash and recycle

enclosure design location and traffic pattern plans sent 12/10/2021 will allow access for our trucks to safely service this location."

(.03) Design Standards.

A. The dimensions of the storage area shall accommodate containers consistent with current methods of local collection.

B. Storage containers shall meet Uniform Fire Code standards and be made of or covered with waterproof materials or situated in a covered area.

C. Exterior storage areas shall be enclosed by a sight obscuring fence, wall or hedge at least six (6) feet in height. Gate openings for haulers shall be a minimum of ten (10) feet wide and shall be capable of being secured in a closed or open position. In no case shall exterior storage areas be located in conflict with the vision clearance requirements of Section 4.177.

D. Storage area(s) and containers shall be clearly labeled to indicate the type of materials accepted.

Response: The design of the storage area was provided to Republic Services who is the local hauler for review. They have provided their approval of the storage area. Storage containers will meet Uniform Fire Code standards and be clearly labeled to indicate the type of materials. Individual storage containers will be covered. The storage area will be enclosed by tilt up concrete walls. See storage area details on Sheet A5.30 of Attachment 6. These standards are met.

(.04) Access Standards.

A. Access to storage areas can be limited for security reasons. However, the storage area shall be accessible to users at convenient times of the day and to collect service personnel on the day and approximate time they are scheduled to provide collection service.

B. Storage areas shall be designed to be easily accessible to collection trucks and equipment, considering paving, grade and vehicle access. A minimum of ten (10) feet horizontal clearance and eight feet of vertical clearance is required if the storage area is covered.

C. Storage areas shall be accessible to collection vehicles without requiring backing out of a driveway onto a public street. If only a single access point is available to the storage area, adequate turning radius shall be provided to allow collection vehicles to safely exit the site in a forward motion.

Response: The storage area will be accessible to users and to collection personnel. The location and design of the storage area was provided for review to the trash hauler, Republic Services. Republic Services has provided a letter dated February 7, 2022 (Attachment 9), stating:

> We have reviewed your design plan site access and flow pattern sent 12/10/2021 and determined that it is adequate for our trucks to navigate the site and service the trash and recycle enclosure….
>
> The trash and recycle enclosure will not have a roof and no vertical overhead obstructions. Your enclosure dimensions of 20' Ft. wide X 10'Ft. deep with two swinging gates that open a minimum of 120 degrees and are equipped with wind pins to secure gates in the closed and open positions will accommodate the storage and access of side by side 8-yard containers (one of each) for trash and recycle disposal which should be adequate for this development with the potential daily service frequency of 5 days per week. The transition from the enclosure to the driveway is level with a smooth transition with no obstructions.

Section 4.440. Procedure

(.01) Submission of Documents. A prospective applicant for a building or other permit who is subject to site design review shall submit to the Planning Department, in addition to the requirements of Section 4.035, the following:

- *A. A site plan, drawn to scale, showing the proposed layout of all structures and other improvements including, where appropriate, driveways, pedestrian walks, landscaped areas, fences, walls, off-street parking and loading areas, and railroad tracks. The site plan shall indicate the location of entrances and exits and direction of traffic flow into and out of off-street parking and loading areas, the location of each parking space and each loading berth and areas of turning and maneuvering vehicles. The site plan shall indicate how utility service and drainage are to be provided.*
- *B. A Landscape Plan, drawn to scale, showing the location and design of landscaped areas, the variety and sizes of trees and plant materials to be planted on the site, the location and design of landscaped areas, the varieties, by scientific and common name, and sizes of trees and plant materials to be retained or planted on the site, other pertinent landscape features, and irrigation systems required to maintain trees and plant materials. An inventory, drawn at the same scale as the Site Plan, of existing trees of 4" caliper or more is required. However, when large areas of trees are proposed to be retained undisturbed, only a survey identifying the location and size of all perimeter trees in the mass in necessary.*
- *C. Architectural drawings or sketches, drawn to scale, including floor plans, in sufficient detail to permit computation of yard requirements and showing all elevations of the proposed structures and other improvements as they will appear on completion of construction. Floor plans shall also be provided in sufficient detail to permit computation of yard requirements based on the relationship of indoor versus outdoor living area, and to evaluate the floor plan's effect on the exterior design of the building through the placement and configuration of windows and doors.*
- *D. A Color Board displaying specifications as to type, color, and texture of exterior surfaces of proposed structures. Also, a phased development schedule if the development is constructed in stages.*
- *E. A sign Plan, drawn to scale, showing the location, size, design, material, color and methods of illumination of all exterior signs.*
- *F. The required application fee.*

Response: The required documents listed above have been included in this application package as Attachment 6, with the exception of the fee which was paid separately. This standard is met.

(.02) As soon as possible after the preparation of a staff report, a public hearing shall be scheduled before the Development Review Board. In accordance with the procedures set forth in Section 4.010(2) and 4.012, the Development Review Board shall review and approve, approve with conditions, or deny the proposed architectural, site development, landscaping or sign plans of the applicant. If the Board finds that additional information or time are necessary to render a decision, the matter may be continued to a date certain. The applicant shall be immediately notified in writing of any such continuation or delay together with the scheduled date of review.

Response: This provision provides procedural guidance for implementation and requires no evidence within the applicant's narrative.

Section 4.441. Effective Date of Decisions
A decision of the Board shall become effective fourteen (14) calendar days after the date of the decision, unless the decision is appealed to, or called up by, the Council. If the decision of the Board is appealed to, or called up by, the City Council, the decision of the Council shall become effective immediately.
Response: This provision provides procedural guidance for implementation and requires no evidence from the applicant.

Section 4.442. Time Limit on Approval
Site design review approval shall be void after two (2) years unless a building permit has been issued and substantial development pursuant thereto has taken place; or an extension is granted by motion of the Board.
Response: The applicant intends to seek a building permit and begin construction within the timeframes outlined by Code. This standard is met.

Section 4.443. Preliminary Consideration
An applicant may request preliminary consideration by the Board of general plans prior to seeking a building permit. When seeking preliminary consideration, the applicant shall submit a site plan showing the proposed structures, improvements and parking, together with a general description of the plans. The Board shall approve or reject all or part of the applicant's general plan within the normal time requirements of a formal application. Preliminary approval shall be deemed to be approval of the final plan to the extent that the final design contains the characteristics of the preliminary design.
Response: The applicant has submitted for concurrent Stage I and Stage II Planned Development Review pursuant to this Section.

Section 4.450. Installation of Landscaping

(.01) All landscaping required by this section and approved by the Board shall be installed prior to issuance of occupancy permits, unless security equal to one hundred and ten percent (110%) of the cost of the landscaping as determined by the Planning Director is filed with the City assuring such installation within six (6) months of occupancy. "Security" is cash, certified check, time certificates of deposit, assignment of a savings account or such other assurance of completion as shall meet with the approval of the City Attorney. In such cases the developer shall also provide written authorization, to the satisfaction of the City Attorney, for the City or its designees to enter the property and complete the landscaping as approved. If the installation of the landscaping is not completed within the six-month period, or within an extension of time authorized by the Board, the security may be used by the City to complete the installation. Upon completion of the installation, any portion of the remaining security deposited with the City shall be returned to the applicant.

(.02) Action by the City approving a proposed landscape plan shall be binding upon the applicant. Substitution of plant materials, irrigation systems, or other aspects of an approved landscape plan shall not be made without official action of the Planning Director or Development Review Board, as specified in this Code.

(.03) All landscaping shall be continually maintained, including necessary watering, weeding, pruning, and replacing, in a substantially similar manner as originally approved by the Board, unless altered with Board approval.

(.04) If a property owner wishes to add landscaping for an existing development, in an effort to beautify the property, the Landscape Standards set forth in Section 4.176 shall not apply and no Plan approval or permit shall be required. If the owner wishes to modify or remove landscaping that has been accepted or approved through the City's development review process, that removal or modification must first be approved through the procedures of Section 4.010.

Response: The applicant acknowledges the City's authority under these provisions to require installation and maintenance of landscape features in accordance with construction plans after approval, and applicant accepts responsibility for care, maintenance, and procedures for approval of non-additive modifications to landscape features.

E. Waivers

This application includes requests for **waivers** from specific Code standards. Most (5 of 6) are eligible for approval under Guidelines in the Coffee Creek Industrial Design Overlay District Pattern Book, pursuant to WDO Section 4.134(.08)B; however, Waiver #2, a request to provide vehicle parking between the proposed building and SW Garden Acres Road (an Addressing Street), is subject to the additional evidence requirements of WDO Section 4.134(.08)A.

The applicable approval criteria for waivers are found in Section 4.134.(.08) and referenced other Sections of the WDO:

WDO 4.134(.08) Waivers. The Development Review Board may waive standards as listed in Section 4.134 (.11), consistent with the provisions of Section 4.118 (.03).

A. The following standards shall not be waived, unless there is substantial evidence in the whole record to support a finding that the intent and purpose of the standards will be met in alternative ways:

1. Required minimum building height as provided in Section 4.134 (.11) Table CC-4;

2. Parking location and design along addressing streets in Section 4.134 (.11) Table CC-3; and

3. Parcel pedestrian access as listed in Section 4.134 (.11) Table CC-3.

B. In addition to meeting the purposes and objectives of Section 4.140, any waivers granted in the Coffee Creek DOD must be found to be consistent with the intent of the Coffee Creek DOD Pattern Book.

Section 4.140. Planned Development Regulations.

(.01) Purpose.

A. The provisions of Section 4.140 shall be known as the Planned Development Regulations. The purposes of these regulations are to encourage the development of tracts of land sufficiently large to allow for comprehensive master planning, and to provide flexibility in the application of certain regulations in a manner consistent with the intent of the Comprehensive Plan and general provisions of the zoning regulations and to encourage a harmonious variety of uses through mixed use design within specific developments thereby promoting the economy of shared public services and facilities and a variety of complimentary activities consistent with the land use designation on the Comprehensive Plan and the creation of an attractive, healthful, efficient and stable environment for living, shopping or working.

B. It is the further purpose of the following Section:

1. To take advantage of advances in technology, architectural design, and functional land use design:

2. To recognize the problems of population density, distribution and circulation and to allow a deviation from rigid established patterns of land uses, but controlled by defined policies and objectives detailed in the comprehensive plan;

3. *To produce a comprehensive development equal to or better than that resulting from traditional lot land use development.*
4. *To permit flexibility of design in the placement and uses of buildings and open spaces, circulation facilities and off-street parking areas, and to more efficiently utilize potentials of sites characterized by special features of geography, topography, size or shape or characterized by problems of flood hazard, severe soil limitations, or other hazards;*
5. *To permit flexibility in the height of buildings while maintaining a ratio of site area to dwelling units that is consistent with the densities established by the Comprehensive Plan and the intent of the Plan to provide open space, outdoor living area and buffering of low-density development.*
6. *To allow development only where necessary and adequate services and facilities are available or provisions have been made to provide these services and facilities.*
7. *To permit mixed uses where it can clearly be demonstrated to be of benefit to the users and can be shown to be consistent with the intent of the Comprehensive Plan.*
8. *To allow flexibility and innovation in adapting to changes in the economic and technological climate.*

Response: In the context of this proposal for speculative industrial development of one roughly 8-acre site, consistent with its land use designation on the Comprehensive Plan Map, the most salient Purpose statement is #4, which allows flexibility in site design to respond to site-specific features and conditions at the project level. The other Purpose statements apply more broadly within the community at large, or concern flexibility not required for approval of this application (such as #5, allowing flexibility with respect to building height).

Each of the waivers requested by the Applicant is described below, followed by a discussion about why the proposed development is consistent with the intent of the Planned Development Regulations, and how the proposed alternative development approach is consistent with the intent of relevant elements of the Coffee Creek DOD Pattern Book.

Waiver 1. Parcel Driveway Width

A 50-foot-wide driveway is proposed along the new Supporting Street, which exceeds the maximum of 24 feet. The proposed configuration requires a waiver from the following applicable standards:

WDO Section 4.134(11.)/Table CC-3/1. Parcel Access/Parcel Driveway Width/Supporting Streets:

- *24 feet, maximum or complies with Supporting Street Standards.*

Response: The proposed site plan and building design do not comply with the standard because one driveway to the Required Supporting Street is wider than the maximum allowed 24'. This configuration is proposed for these reasons:

1. The 50' wide southwestern driveway is necessary to accommodate frequent semi tractor-trailer ingress/egress without movement conflicts, allowing efficient, simultaneous circulation.
2. A wider driveway could be accommodated along an Addressing Street, but at this location both Grahams Ferry Road and Garden Acres Road are subject to access spacing requirements that do not allow a driveway on either segment. Extensive site plan alternatives analysis and dialogue with Wilsonville Planning and Engineering staff led to the proposed access plan, with two driveways on the required Supporting Street along the south boundary of the site (proposed in

an easement within the site) and a third access by way of Cahalin Road along the north boundary of the site, intersecting Garden Acres Road at the site's northeast corner.

WDC Section 4.140. Planned Development Regulations.

The following responses address each of the requirements of Section 4.140 in regard to the waiver request:

B. It is the further purpose of the following Section:

1. To take advantage of advances in technology, architectural design, and functional land use design:

Response: The request for a larger parcel driveway width is in part response to the functionality of this unique site. For this site, with a land use designation of Planned Development Industrial – Regionally Significant Industrial Area (PDI-RSIA), to be developed for its best and highest use, the site must be able to accommodate heavy truck traffic. Due to access spacing restrictions on both Grahams Ferry Road and Garden Acres Road, site access is limited to two driveways from the southern Supporting Street and the Cahalin Road/Garden Acres Road intersection. The wide turning radii of large tractor-trailer units requires the southwestern driveway, which serves the loading dock area, to be substantially wider than a typical driveway on a Supporting Street, in order to accommodate truck turning movements.

2. To recognize the problems of population density, distribution and circulation and to allow a deviation from rigid established patterns of land uses, but controlled by defined policies and objectives detailed in the comprehensive plan;

Response: The applicant recognizes the need to construct the Supporting Street as required by the Coffee Creek Regulating Plan (Figure CC-1), but a deviation from rigid driveway width restriction is necessary to achieve acceptable circulation by the large vehicles the southwestern driveway is designed to serve. The flexibility to deviate from this land use standard better suits development of the site for industrial use by providing the ability to develop the site with safe and efficient truck ingress/egress.

3. To produce a comprehensive development equal to or better than that resulting from traditional lot land use development.

Response: The proposed site plan provides loop circulation for semi tractor-trailer rigs, giving them access to and from the dock area by way of either the adjacent southwest driveway or the Cahalin Road – Garden Acres Road intersection. Because most of the parking and circulation for passenger vehicles is located on the east side of the site, this configuration helps to segregate streams of traffic and reduce potential for conflicts between the vehicle types. A southwest driveway narrower than the requested 50' would have the effect of constraining movements by semi rigs, thereby creating undesirable traffic congestion effects. These arise because trucks will need to make wide turning movements within the Supporting Street, using all or most of the roadway including the travel lane in the opposite direction of the turning vehicle, or because trucks entering or leaving the site will need to queue in the travel lane of the street to wait for the narrow driveway to clear. In deviating from traditional lot land use development standards, the wider driveway allows the site to achieve the function efficiently, practically, and safely for its intended industrial use.

4. To permit flexibility of design in the placement and uses of buildings and open spaces, circulation facilities and off-street parking areas, and to more efficiently utilize potentials

of sites characterized by special features of geography, topography, size or shape or characterized by problems of flood hazard, severe soil limitations, or other hazards;

Response: Although the site does not have flood, soil, or other hazards, significant constraints affect its access and circulation. First, the City of Wilsonville's access spacing requirements on both Grahams Ferry Road and Garden Acres Road do not allow site driveways on either of those roadways. Second, the Coffee Creek Regulating Plan (Figure CC-1) requires a new Supporting Street along the property's south boundary. Third, the topography has enough overall slope – generally downhill from north to south – that significant grading and use of retaining walls is necessary to flatten the site enough to construct a large industrial building with a level concrete slab floor, while matching the existing grades on the four sides of the site. These factors resulted in elimination of several initial site plan options, until the applicant's design team developed the proposed site plan in consultation with Wilsonville staff. In this specific context, widening the southwest driveway to the Supporting Street to 50' allows the flexibility needed for the placement of the building and site features, such as employee parking and loading areas. Limiting the southwest driveway to the 24' maximum, or even 28.8' with an allowed +20% adjustment per Table CC-3.1, could restrict trucks to one-way circulation, substantially limiting flexibility for on-site loading operations. For all the above reasons, the site's economic potential is much more efficiently utilized by allowing the requested 50' width at the southwest driveway.

5. *To permit flexibility in the height of buildings while maintaining a ratio of site area to dwelling units that is consistent with the densities established by the Comprehensive Plan and the intent of the Plan to provide open space, outdoor living area and buffering of low-density development.*

Response: The proposed project is not a residential development. This purpose statement is not applicable.

6. *To allow development only where necessary and adequate services and facilities are available or provisions have been made to provide these services and facilities.*

Response: The proposed project has adequate access to necessary services and facilities for industrial development, and the proposed waiver does not impact the provision or efficacy of those existing services and facilities.

7. *To permit mixed uses where it can clearly be demonstrated to be of benefit to the users and can be shown to be consistent with the intent of the Comprehensive Plan.*

Response: The site can support a mix of industrial tenants consistent with the intent of the Comprehensive Plan and the list of allowed uses in the PD-RSIA Zone; however, this is not a mixed-use project in the sense of also accommodating commercial, residential, or institutional uses within the site. The site and building are designed for industrial use by one or two tenants, with warehouse/manufacturing space, ancillary office space, employee parking, and loading docks. Adequate truck maneuvering is essential for the end-user tenants to sustain efficient, safe, and practical operational functions consistent with the Comprehensive Plan designation of the site for industrial uses.

8. *To allow flexibility and innovation in adapting to changes in the economic and technological climate.*

Response: The site and speculative industrial building are designed to be flexible and capable of accommodating a variety of industrial tenants consistent with the property's PD-RSIA Zoning. Tenant needs will change over time along with economic needs of the community, but the need for larger truck access is expected to be consistent over time and among tenants. Creating a place with appropriate access, circulation, operational flexibility, and efficiency of operations will

ensure this site remains a valuable and productive asset for the City of Wilsonville's economic development within the Coffee Creek Industrial Design Overlay District.

The proposed configuration is consistent with the Intent Statement for Street Design and Connectivity, as well as numerous guidelines in the *Pattern Book – Design Guidelines for Coffee Creek Industrial Design Overlay District (the Pattern Book)*:

Section A-3.1 Role of Supporting Streets: *Supporting Streets are the flexible links between Addressing Streets and destinations throughout the Coffee Creek area. Supporting Streets may sometimes function as the "front door" or "address" for new buildings and development. In other contexts, Supporting Streets may be more utilitarian in service to the nature of their program and function. Supporting Streets can provide access to services and utilities. Their design expression may be simple and functional.*

Section A-3.4 Supporting Street as the primary access: *If the Supporting Street serves as the development's primary access street, it should be developed to the same standards as Addressing Streets and serve as the "front door" or "address" for new buildings and development.*

Response: The proposed building is clearly oriented to Garden Acres Road as its front, with its long axis parallel to that Addressing Street, and both of its office bump-outs, parking areas, and pedestrian paths from the sidewalk on the east side of the building. The southern Supporting Street in this case is the necessary utilitarian linkage for site access in compliance with the City's access spacing requirements. At the southwestern driveway, the 50'-wide driveway configuration is necessary for smooth and efficient truck operations, and to avoid congestion. Approving the requested Waiver will enable the Supporting Street, as well as the Addressing Streets it intersects, to perform its intended traffic capacity function.

Based on the above findings, Waiver 1 should be approved.

Waiver 2. Parking Location and Extent

Parking on Addressing Street exceeds the maximum 20 spaces allowed and intended use for visitor and ADA parking. The WDO's Waiver provisions allow compliance with discretionary guidelines in lieu of meeting prescriptive standards.

The proposed development requires a waiver from the following applicable standards:

WDO Chapter 4.134(11.)/Table CC-3/4. Parking Location and Design/Parking Location and Extent

Unless noted otherwise below, the following provisions apply:

- *Section 4.176 for Parking Perimeter Screening and Landscaping - permits the parking landscaping and screening standards as multiple options*

The following Development Standards are adjustable:

- *Parking Location and Extent: up to 20 spaces permitted on an Addressing Street*

WDO Chapter 4.134(11.)/Table CC-3/4. Parking Location and Extent/Addressing Street:

- *Limited to one double-loaded bay of parking, 16 spaces, maximum, designated for short-term (1 hour or less), visitor, and disabled parking only between right-of-way of Addressing Street and building.*

Response: The proposed site plan and building design do not comply with the standard because the eastern parking lot between the building and Addressing Street (Garden Acres Road) has more than the 20 spaces allowed with an adjustment. This configuration is proposed for these specific reasons:

1. The site is unique in that it has double-frontage on Addressing Streets, Garden Acres Road and Grahams Ferry Road, which are Minor Arterial streets with access spacing limitations that will not allow direct access driveways on either roadway. The limited options for site access significantly affect site design options.

2. To the extent it is feasible to do so, separation of heavy truck operations from employee and visitor parking is appropriate for safety and efficiency. The proposed site plan locates employee parking east and north of the building, and truck loading operations west of the building.

3. To meet other development standard requirements, the building is sited and oriented with its long axis parallel to the Addressing Streets. This orientation limits the space available for parking and loading areas in "side yards" or adjacent to Supporting or Through Streets.

Approval Criteria:

WDO 4.134(.08) Waivers. The Development Review Board may waive standards as listed in Section 4.134 (.11), consistent with the provisions of Section 4.118 (.03).

A. The following standards shall not be waived, unless there is substantial evidence in the whole record to support a finding that the intent and purpose of the standards will be met in alternative ways:
   1. Required minimum building height as provided in Section 4.134 (.11) Table CC-4;
   2. Parking location and design along addressing streets in Section 4.134 (.11) Table CC-3; and
   3. Parcel pedestrian access as listed in Section 4.134 (.11) Table CC-3.

B. In addition to meeting the purposes and objectives of Section 4.140, any waivers granted in the Coffee Creek DOD must be found to be consistent with the intent of the Coffee Creek DOD Pattern Book.

Response: The proposed parking location and design requires a Waiver. This application provides substantial evidence regarding the parking required for the proposed development and site constraints that make placement of parking in another location less suitable for the site. The proposed parking location meets the intent and purpose of the standards as demonstrated below.

WDC Section 4.140. Planned Development Regulations.

The following responses address each of the requirements of Section 4.140 in regard to the waiver request:

B. It is the further purpose of the following Section:
   1. To take advantage of advances in technology, architectural design, and functional land use design:

   Response: The request for a parking lot with more than 20 spaces between the building and Addressing Street is in part a response to the shape and context of this unique site. Development for industrial use consistent with the Planned Development Industrial – Regionally Significant Industrial Area (PDI-RSIA) zoning requires the site and building to accommodate heavy truck

traffic. Additionally, especially for potential tenants in the High-Cube Fulfillment Center Sort Warehouse industry, a large single-level building with a high number of dock doors is required. While this site is generally flat enough to be suitable, substantial grading including some retaining walls is needed for the building, circulation areas around it due to the static grades of the surrounding streets, loading docks whose grade elevation is four (4) feet below the finish floor of the building, and slopes to convey surface water runoff to stormwater treatment and detention ponds at the site perimeter. To provide a sufficient number and configuration of dock doors, the building's long axis is oriented north-south, with docks on the west side; the overall length of the building is the principal factor affecting the number of loading docks. To achieve an economically viable scale of operations, the building needs as much north/south distance as possible; as a result, providing parking north and south of the building would conflict directly with achieving tenants' critically important performance objectives.

By contrast, locating vehicle parking on the east side of the building is practical because that parking area and the southeast driveway will cluster most of the site's parking close to the Primary Building Entrance on the east (front) façade, near the office bump-out at the southeast building corner. The southeastern site location for that parking area and driveway separate most of the site's passenger vehicle movements from truck movements, reducing potential for conflicts. For these reasons, the proposed parking configuration takes advantage of advances in architectural design and functional land use design, consistent with this purpose statement.

2. *To recognize the problems of population density, distribution and circulation and to allow a deviation from rigid established patterns of land uses, but controlled by defined policies and objectives detailed in the comprehensive plan;*

Response: The applicant recognizes the City's desire to relegate most parking to the side and rear areas of industrial sites in the Coffee Creek Industrial Design Overlay District. But, as explained above, the specific configuration of this site brings that desire into direct conflict with the goal of achieving efficient design and functionality of sites and buildings to meet economic development and employment goals. At this site, the requested deviation from a rigid parking restriction is necessary to achieve acceptable building siting, grading, and ultimately performance for industrial use. Flexibility with respect to this development standard better suits development of the site for industrial use in the following specific ways:

1. It enables site development with safe and efficient truck ingress/egress to the west of the building, reducing traffic conflicts with passenger vehicle access, circulation and parking on the east;
2. It allows a building of sufficient size for efficient industrial use at the scale necessary for competitiveness in the traded-sector marketplace;
3. It is consistent with site planning designed to include preservation of a group of ten mature Douglas fir trees in the northeastern part of the site; and
4. It is consistent with achieving compliant treatment and on-site infiltration of stormwater on the site.

With the use of naturalistic plantings along Garden Acres Road, parking will be visually obscured from the public right-of-way, meeting the intent of the Coffee Creek Light Industrial Pattern Book and the objectives of the Comprehensive Plan. The proposed configuration therefore meets the objective in an acceptable alternative way.

3. *To produce a comprehensive development equal to or better than that resulting from traditional lot land use development.*

Response: The proposed site plan provides a 148,279 SF spec industrial building with a long north/south axis, which is the configuration that produces the maximum practicable building area. If this site was to be developed with employee passenger vehicle parking to the side or rear of the building (not along an Addressing Street), the building size on the critical length dimension would need to be reduced, in turn reducing dock capacity and curtailing the operational functionality of the property.

Notably, the proposed site plan provides loop circulation for semi tractor-trailer rigs, giving them access to and from the dock area by way of either the adjacent southwest driveway or the Cahalin Road – Garden Acres Road intersection. Because most of the parking and circulation for passenger vehicles is located on the east side of the site, this configuration helps to segregate streams of traffic and reduce potential for conflicts between the vehicle types.

Deviating from the prescriptive development standards to allow a higher number of parking spaces on the east side, between the primary door of the building and the Addressing Street, will allow the site and building to function efficiently, practically, and safely for its intended industrial use.

4. *To permit flexibility of design in the placement and uses of buildings and open spaces, circulation facilities and off-street parking areas, and to more efficiently utilize potentials of sites characterized by special features of geography, topography, size or shape or characterized by problems of flood hazard, severe soil limitations, or other hazards;*

Response: Although the site does not have flood, soil, or other hazard concerns, significant constraints affect siting, access, and circulation. First, the City of Wilsonville's access spacing requirements on both Grahams Ferry Road and Garden Acres Road do not allow site driveways on either of those roadways. Second, the Coffee Creek Regulating Plan (Figure CC-1) requires a new Supporting Street along the property's south boundary. Third, the topography has enough overall slope – generally downhill from north to south – that significant grading and use of retaining walls is necessary to flatten the site enough to construct a large industrial building with a level concrete slab floor, while matching the existing grades on the four sides of the site. These factors resulted in elimination of several initial site plan options, until the applicant's design team developed the proposed site plan in consultation with Wilsonville staff. In this specific context, siting employee parking south of the building would negatively affect the efficiency and economy of the building and operations, specifically by shortening the building's long-axis dimension and eliminating its loading dock capacity. For all the above reasons, the site's economic potential is much more efficiently utilized by allowing the requested higher number of parking spaces to be located between the front of the building and the Addressing Street.

5. *To permit flexibility in the height of buildings while maintaining a ratio of site area to dwelling units that is consistent with the densities established by the Comprehensive Plan and the intent of the Plan to provide open space, outdoor living area and buffering of low-density development.*

Response: The proposed project is not a residential development. This purpose statement is not applicable.

6. *To allow development only where necessary and adequate services and facilities are available or provisions have been made to provide these services and facilities.*

Response: The proposed project has adequate access to necessary services and facilities for industrial development, and the proposed waiver does not impact the provision or efficacy of those existing services and facilities.

7. To permit mixed uses where it can clearly be demonstrated to be of benefit to the users and can be shown to be consistent with the intent of the Comprehensive Plan.

Response: The site can support a mix of industrial tenants consistent with the intent of the Comprehensive Plan and the list of allowed uses in the PD-RSIA Zone; however, this is not a mixed-use project in the sense of also accommodating commercial, residential, or institutional uses within the site. The site and building are designed for industrial use by one or two tenants, with warehouse/manufacturing space, ancillary office space, employee parking, and loading docks. Achieving an adequate north-south building dimension, corresponding to the number of dock doors that can be provided, is essential for the industrial end-user tenants to sustain economically viable, efficient, safe, and practical operations consistent with the Comprehensive Plan designation of the site for industrial uses.

8. To allow flexibility and innovation in adapting to changes in the economic and technological climate.

Response: The site and building are designed to be flexible and capable of accommodating a variety of industrial tenants consistent with the property's PD-RSIA Zoning. Tenant needs will change over time along with economic needs of the community; creating a place with appropriate access, parking, circulation, operational flexibility, and efficiency of operations will ensure this site remains a valuable and productive asset for the City of Wilsonville's economic development within the Coffee Creek Industrial Design Overlay District.

For all the above reasons, the proposed site plan and parking configuration furthers the purposes of the regulation in an alternative way, and should be approved.

The proposed configuration is consistent with the Intent Statement for Street Design and Connectivity, as well as numerous guidelines in the *Pattern Book – Design Guidelines for Coffee Creek Industrial Design Overlay District (the Pattern Book)*:

Section C-2.1 Role of Supporting Streets: *Front yard surface parking on an Addressing Street*

Surface parking is permitted in the front yard setback for development along Addressing Streets and Supporting Streets with limitations. Design parking lots to result in an attractive and functional experience for staff and visitors arriving by car. To enhance the design quality of parking lots in front yards along Addressing Streets, consider increasing the quality of the materials used and treating the surface of the parking lot and walkway system as a plaza that connects to, and integrates with, the primary building entrance.

Response: The proposed building is oriented to Garden Acres Road as its front, with its long axis parallel to that Addressing Street, and both of its office bump-outs, parking areas and pedestrian paths from the sidewalk on the east side of the building. The location of the parking area east of the building is the result of a combination of City access management policies and site constraints affecting access, circulation, and building size and orientation. The applicant's planting plan will provide dense screening along the Garden Acres Road frontage, minimizing the visual impact of the proposed parking area along that roadway. Its design clusters parking in a single pod close to the Principal Building Entrance, while making the grade transition necessary between the Supporting Street at the south and the ADA-accessible walkway, which must be located north of the Primary Building Entrance to make the grade transitions work. Perimeter landscaping along Garden Acres Road is designed to screen the parking and the building, providing views

into the site at limited locations, such as the pedestrian walkway from the sidewalk to the building and the intersections at the north and south. These features will partially enclose the parking area and the walkway, making them function as the approach plaza surrounding the Primary Building Entrance. Approving the requested Waiver, allowing an increase in the number of parking spaces adjacent to Garden Acres Road, will enable the entire site to perform at its highest and best use in the PDI-RSIA zone.

Based on the above findings, Waiver 2 should be approved.

Waiver 3. Parking Setback

The easterly 31 parking spaces in the southeastern parking area are set back less than the required 20' along an Addressing Street.

The proposed development requires a waiver from the following applicable standards:

WDO Chapter 4.134(11.)/Table CC-3/4. Parking Location and Design /Parking Setback:20 feet minimum from the right-of-way of an Addressing Street.

WDC Section 4.140. Planned Development Regulations.

The following responses address each of the requirements of Section 4.140 in regard to the waiver request:

B. It is the further purpose of the following Section:

1. To take advantage of advances in technology, architectural design, and functional land use design:

Response: The request for a parking lot within a minimum setback requirement from the right-of-way of an Addressing Street is in part response to the functional needs of this uniquely constrained site, with roadways on all four sides. Due to access spacing restrictions on both Grahams Ferry Road and Garden Acres Road, site access is limited to two driveways from the southern Supporting Street and the Cahalin Road/Garden Acres Road intersection. Additionally, the nature of industrial buildings requires large, flat footprints to accommodate industrial uses and functionality. To achieve the maximum area for industrial use, the site needs extensive grading to flatten it out and achieve the widest possible east/west usable area.

Parking is proposed on the north side of the building, but that area cannot provide enough spaces to meet the building's requirement. In light of other factors (segregating access, circulation and parking for trucks and employee vehicles, site grading for maximum usable building area and drainage, sufficient dock capacity, and retention of a stand of ten mature Douglas fir trees, as discussed above), the east side of the site is the only other location suitable to meet the parking requirements.

The applicant engaged in extensive collaboration with City staff to explore alternative approaches for meeting circulation and parking needs; the proposed configuration, including the reduced parking setback from the Garden Acres Road property boundary, is the product of that effort. The applicant understands staff supports the concept as presented in this application. (See Attachment 17.)

2. *To recognize the problems of population density, distribution and circulation and to allow a deviation from rigid established patterns of land uses, but controlled by defined policies and objectives detailed in the comprehensive plan;*

Response: The applicant recognizes the City's desire to limit parking adjacent to Addressing Streets and provide adequate separation between the right-of-way and parking lot for aesthetics and pedestrian scale, but a deviation from a rigid parking setback requirement is necessary to achieve a feasible development plan for this unique site. Even though some spaces in the proposed east parking lot will be set back less than 20' from the Addressing Street, the proposed landscaping plans will provide adequate screening between the parking lot and the public right-of-way, using native, naturalistic dense plantings. To satisfy the design standard along the Garden Acres Road frontage, the proposed street improvements include a planter strip/stormwater management facility with plantings beside the curb, then a bicycle path, then a landscape strip including street trees, and then the public sidewalk. Within the site on the west side of the sidewalk, additional tree and shrub plantings are proposed. The visual result will be plantings at different levels and rhythms in three tiers, creating a visual sense of depth and a dense screen as viewed from the travel lanes in the street. Pedestrians will be sheltered by tree canopies on both sides of the sidewalk, creating a protected corridor separated from vehicles and bicycles, and screened from the site's parking area.

3. *To produce a comprehensive development equal to or better than that resulting from traditional lot land use development.*

Response: The proposed site plan provides a 148,279 SF speculative industrial building with a long north/south axis, which is the configuration that produces the maximum practicable building area. If this site was to be developed with employee passenger vehicle parking to the side or rear of the building (not along an Addressing Street) as dictated by the development standards, the building size would need to be reduced below an area that would be efficient and economically viable to construct and operate.

Additionally, the proposed site plan provides loop circulation for semi tractor-trailer rigs, giving them access to and from the dock area by way of either the adjacent southwest driveway or the Cahalin Road – Garden Acres Road intersection. Because most of the parking and circulation for passenger vehicles is located on the east side of the site, this configuration helps to segregate streams of traffic and reduce potential for conflicts between the vehicle types.

In deviating from traditional lot land use development standards, the location of the primary parking between the front of the building and the Addressing Street allows the site to achieve its desired function efficiently, practically, and safely for its intended industrial use.

4. *To permit flexibility of design in the placement and uses of buildings and open spaces, circulation facilities and off-street parking areas, and to more efficiently utilize potentials of sites characterized by special features of geography, topography, size or shape or characterized by problems of flood hazard, severe soil limitations, or other hazards;*

Response: Although the site does not have flood, soil, or other hazards, significant constraints affect access, circulation, and the siting of a large industrial building. First, the City of Wilsonville's access spacing requirements on both Grahams Ferry Road and Garden Acres Road do not allow site driveways on either of those roadways. Second, the Coffee Creek Regulating Plan (Figure CC-1) requires a new Supporting Street along the property's south boundary. Third, the topography has enough overall slope – generally downhill from north to south – that significant grading and use of retaining walls is necessary to flatten the site enough to construct a large industrial building with a level concrete slab floor, while matching the existing grades on the four sides of the site.

These factors resulted in elimination of several initial site plan options, until the applicant's design team developed the proposed site plan in consultation with Wilsonville staff. For all the above reasons, the site's economic potential is much more efficiently utilized by allowing the requested parking location between the front of the building and the Addressing Street, and allowing some of the parking to be located within 20' of the east property boundary. The proposed configuration is an alternative design solution responding to site constraints and the need to provide adequate spacing for practicable passenger vehicle circulation and parking.

5. *To permit flexibility in the height of buildings while maintaining a ratio of site area to dwelling units that is consistent with the densities established by the Comprehensive Plan and the intent of the Plan to provide open space, outdoor living area and buffering of low-density development.*

Response: The proposed project is not a residential development. This purpose statement is not applicable.

6. *To allow development only where necessary and adequate services and facilities are available or provisions have been made to provide these services and facilities.*

Response: The proposed project has adequate access to necessary services and facilities for industrial development, and the proposed waiver does not impact the provision or efficacy of those existing services and facilities.

7. *To permit mixed uses where it can clearly be demonstrated to be of benefit to the users and can be shown to be consistent with the intent of the Comprehensive Plan.*

Response: This purpose statement is not applicable because mixed-use development is not proposed. The site can support a mix of industrial tenants consistent with the intent of the Comprehensive Plan and the list of allowed uses in the PD-RSIA Zone; however, this is not a mixed-use project in the sense of also accommodating commercial, residential, or institutional uses within the site. The site and building are designed for industrial use by one or two tenants, with high cube fulfillment center sort warehouse/manufacturing space, ancillary office space, employee parking, and loading docks.

8. *To allow flexibility and innovation in adapting to changes in the economic and technological climate.*

Response: The site and spec industrial building are designed to be flexible and capable of accommodating a variety of industrial tenants consistent with the property's PD-RSIA Zoning. Tenant needs will change over time along with economic needs of the community; creating a place with appropriate access, parking, circulation, operational flexibility, and efficiency of operations will ensure this site remains a valuable and productive asset for the City of Wilsonville's economic development within the Coffee Creek Industrial Design Overlay District.

Additionally, the proposed configuration is consistent with the Intent Statement for Street Design and Connectivity, as well as numerous guidelines in the *Pattern Book – Design Guidelines for Coffee Creek Industrial Design Overlay District (the Pattern Book)*:

Section C-2.1 Role of Supporting Streets: *Front yard surface parking on an Addressing Street*

Surface parking is permitted in the front yard setback for development along Addressing Streets and Supporting Streets with limitations. Design parking lots to result in an attractive and functional experience for staff and visitors arriving by car. To enhance the design quality of parking lots in front yards along Addressing Streets, consider increasing the quality of the materials used and treating the surface of the

parking lot and walkway system as a plaza that connects to, and integrates with, the primary building entrance.

Response: The proposed building is oriented to Garden Acres Road as its front, with its long axis parallel to that Addressing Street, and both of its office bump-outs, parking areas, and pedestrian paths from the sidewalk on the east side of the building. The southern Supporting Street in this case is the necessary utilitarian linkage for site access in compliance with the City's access spacing requirements. The location of the parking area east of the building, partially within the 20' setback from an Addressing Street, is the result of site constraints affecting access, circulation, building size and orientation, stormwater management, and other factors. Its design clusters parking in a single pod close to the Primary Building Entrance, while making the grade transition necessary between the Supporting Street at the south and the ADA-accessible walkway, which must be located north of the Primary Building Entrance to make the grade transitions work. Perimeter landscaping along Garden Acres Road is designed to screen the parking and the building, providing views into the site at limited locations, such as the pedestrian walkway from the sidewalk to the building and the intersections at the north and south. These features will partially enclose the parking area and the walkway, making them function as the approach plaza surrounding the Primary Building Entrance. Approving the requested Waiver will enable the entire site to perform at its best and highest use in the PDI-RSIA.

The proposed parking setback from Garden Acres Road is the product of close collaboration between City staff and the applicant on how to meet access, circulation, and parking needs. The reduced parking setback is necessary, in combination with the waiver request for retaining walls, to obtain the necessary east-west dimension for the site's usable area. The applicant understands staff supports the concept as presented in this application. (See Attachment 17.)

Based on the above findings, Waiver 3 should be approved.

Waiver 4. Grading and Retaining Walls

Some segments of proposed retaining walls exceed the maximum height of 48" (4') or 4.8' with a 20% allowed adjustment. The Grading Plan (Sheet C1.20 of Attachment 6) includes callout notations at the points where the proposed retaining wall will be 4' or 4.8' above the abutting grade elevation (example: "H=4.8' TW" for a 4.8' height at the Top of Wall). [5]

The proposed development requires a waiver from the following applicable standards:

WDO Chapter 4.134(11.)/Table CC-3/5. Grading and Retaining Walls /Maximum Height: Where site topography requires adjustments to natural grades, landscape retaining walls shall be 48 inches tall maximum.

WDO Chapter 4.134(11.)/Table CC-3/5. Grading and Retaining Walls /Retaining Wall Design: Retaining walls longer than 50 linear feet shall introduce a 5-foot, minimum horizontal offset to reduce their apparent mass.

The following Development Standards are adjustable: Retaining Wall Design (20%)

Response: A waiver is necessary because:

[5] We use decimal feet in this discussion because a 20% increase applied to 48" is 57-19/32" +/-.

- A portion of the site adjacent to Grahams Ferry Road requires the use of a retaining wall that will exceed 4' in height over a span of approximately 104'; at the wall's highest point, it will be 4.72' above the abutting grade. This continuous wall within a narrow corridor is necessary because the pavement elevation at the dock doors needs to be four feet lower than the building's finish floor level. A Waiver is required for this segment's height and because the continuous wall will not have horizontal offsets due to space limitations.
- To match the building's finished floor elevation, the walkway adjacent to the Primary Building Entrance, near the southeast building corner, requires a wall exceeding 4' tall spanning approximately 52', and exceeding 4.8' in height for a distance of approximately 42'. At its highest point above the abutting parking lot drive aisle, at the southeast corner of the entryway pad at the Primary Building Entrance, this wall will be 7.03' above the adjacent grade. It's not clear whether this wall should technically be considered a retaining wall since it forms an extension of the building foundation in order to provide an exterior walkway matching the finish floor level. This wall is necessary to transition to the future shared access by way of the Supporting Street at the site's south boundary, due to the size and shape of the building and the drive aisle pavement grade transition needed to match existing grades at the perimeter of the site.

WDC Section 4.140. Planned Development Regulations.

The following responses address each of the requirements of Section 4.140 in regard to the waiver request:

B. It is the further purpose of the following Section:

1. To take advantage of advances in technology, architectural design, and functional land use design:

Response: The request for retaining walls over the maximum height of 4' and linear distance of 50' without a horizontal offset of 5' is a response to the functional requirements for this unique site. With a land use designation of Planned Development Industrial – Regionally Significant Industrial Area (PDI-RSIA), to achieve its highest and best use, the site must be able to accommodate heavy truck traffic. Due to access spacing restrictions on both Grahams Ferry Road and Garden Acres Road, site access is limited to two driveways from the southern Supporting Street and the Cahalin Road/Garden Acres Road intersection. Additionally, the nature of industrial buildings requires large, flat footprints to accommodate industrial uses and functionality.

Grading necessary to flatten the site for a large industrial building – and in particular to provide truck docks on the west side of the building with the pavement level four feet below the building's finish floor – results in having to make a significant grade transition at the west property line, adjacent to Graham's Ferry Road. Specifically, the site grading is designed to convey storm runoff away from the building at the surface level (that is, sheet-flowing over the pavement surface) into multiple rain gardens within the site. The rain gardens, augmented by rock galleries and Underground Infiltration Chambers (UICs), provide a combination of surface stormwater treatment and 100% infiltration of flows from 10-year and 25-year design storm events, limiting storm flows into the public storm drain system in order to avoid exacerbating an existing downstream capacity limitation in the City's system.

In order to convey runoff away from the west side of the building into storm ponds, the ponds must be lower than the pavement level – but the existing grade along Grahams Ferry Road is actually higher. Without a retaining wall to make that necessary vertical transition, grade slopes would be required, but their horizontal width is incompatible with fitting the building and the

access/circulation and trailer storage needed for the shipping dock area within the site's limited east-west dimension (between Grahams Ferry Road and Garden Acres Road).

Because the dock area/truck circulation apron pavement will be lower than Grahams Ferry Road, proposed landscaping and fencing (8' high chain-link security fence with slats) along the street edge will reduce visibility of the dock area from the public right-of-way.

The retaining wall adjacent to the eastern stormwater management pond is necessary to preserve the root zone of the ten Douglas fir trees to be retained immediately north of it. A sloping grade transition down to the level necessary to achieve gravity storm flows to the pond would compromise the root zone of one or more of the southern trees.

The wall supporting the pedestrian walkway near the south entrance is necessary due to the necessary drive aisle slope transition between the parking area, close to the finished floor elevation, and the driveway at the Supporting Street, which is several feet lower.

Based on the above facts, the proposed functional site design enables efficient development and economic use of the property for industrial employment, using an alternative design approach to achieve consistency with this Purpose statement.

2. *To recognize the problems of population density, distribution and circulation and to allow a deviation from rigid established patterns of land uses, but controlled by defined policies and objectives detailed in the comprehensive plan;*

Response: The applicant recognizes the City's desire to limit the size and scale of retaining walls for reasons such as aesthetics and human/pedestrian scale; however, a deviation from rigid retaining wall height and length restrictions, exceeding the allowed 20% adjustment allowed by the standards, is necessary at this specific site due to its limited east-west dimensions, intended use for industrial economic development, and the goal of protecting and preserving mature trees to the extent feasible. For the reasons explained just above in the response for purpose statement 1, flexibility is needed in site development to feasibly develop the property to meet the needs of industrial users at this site, given its constrained east-west dimension, the topography at its perimeter, and to achieve tree conservation. The proposed retaining walls are integral to an alternative site planning approach for efficient development and industrial use of the property, consistent with access requirements and aesthetic needs such as landscape screening and tree conservation.

3. *To produce a comprehensive development equal to or better than that resulting from traditional lot land use development.*

Response: As noted above, the site plan utilizes limited access locations to comply with the City's arterial access management requirements, it provides loop circulation for semi tractor-trailer rigs, it provides stormwater treatment and infiltration without exacerbating an existing downstream limitation on the City's storm drain system, and it conserves a stand of ten mature Douglas fir trees near the northeast corner of the site, locating an industrial Wayside immediately adjacent to that stand. Achieving these objectives while developing the property with a large industrial building and associated truck docking facilities could not be done if perimeter grade transitions had to be made using grading and slopes, or with multiple retaining walls with 5' lateral offsets, because their horizontal width would shorten critical east-west dimensions and compromise site capacity. The requested alternative – allowing some segments of retaining walls to exceed 4.0 feet or 4.8' – deviates just enough from traditional lot land use development standards to enable

the site to achieve its industrial use function efficiently, practically and safely, without compromising aesthetic goals.

4. *To permit flexibility of design in the placement and uses of buildings and open spaces, circulation facilities and off-street parking areas, and to more efficiently utilize potentials of sites characterized by special features of geography, topography, size or shape or characterized by problems of flood hazard, severe soil limitations, or other hazards;*

Response: Although the site does not have flood, soil, or other hazards, as discussed above, significant constraints affect its building siting, access, and circulation. The topography has enough overall slope – generally downhill from north to south – that significant grading and use of retaining walls is necessary to flatten the site enough to construct a large industrial building with a level concrete slab floor, while matching the existing grades on the four sides of the site and conserving the stand of ten Douglas fir trees near the northeast corner of the site. For all the above reasons, realizing the site's economic use potential is partially dependent on allowing the requested limited deviation from retaining wall height limitations.

5. *To permit flexibility in the height of buildings while maintaining a ratio of site area to dwelling units that is consistent with the densities established by the Comprehensive Plan and the intent of the Plan to provide open space, outdoor living area and buffering of low-density development.*

Response: The proposed project is not a residential development. This purpose statement is not applicable.

6. *To allow development only where necessary and adequate services and facilities are available or provisions have been made to provide these services and facilities.*

Response: The proposed project has adequate access to necessary services and facilities for industrial development, and the proposed waiver does not impact the provision or efficacy of those existing services and facilities.

7. *To permit mixed uses where it can clearly be demonstrated to be of benefit to the users and can be shown to be consistent with the intent of the Comprehensive Plan.*

Response: This is not a "mixed-use" proposal in the sense of accommodating commercial, residential, or institutional uses within the site along with industrial tenants; the proposed project is designed to support one or two industrial tenants consistent with the intent of the Comprehensive Plan and the list of allowed uses in the PD-RSIA Zone. The site and building are designed for industrial use, with warehouse/manufacturing space, ancillary office space, employee parking, and loading docks. The use of retaining walls to achieve the proposed site plan is essential for the end-user tenants to sustain economic, efficient, safe, and practical operational functions consistent with the Comprehensive Plan designation of the site for industrial uses.

8. *To allow flexibility and innovation in adapting to changes in the economic and technological climate.*

Response: The site and spec industrial building are designed to be flexible and capable of accommodating a variety of industrial tenants consistent with the property's PD-RSIA Zoning. Tenant needs will change over time along with economic needs of the community; creating a place with appropriate access, circulation, operational flexibility, and efficiency of operations will ensure this site remains a valuable and productive asset for the City of Wilsonville's economic development within the Coffee Creek Industrial Design Overlay District.

The proposed configuration is consistent with the Intent Statement for Street Design and Connectivity, as well as numerous guidelines in the *Pattern Book – Design Guidelines for Coffee Creek Industrial Design Overlay District (the Pattern Book)*:

Section B-2.5 Special Landscape Features: *Intentional aesthetic use of industrial materials*

Integrate the materials of industry at an industrial scale. This guideline may be accomplished by designing buildings, enclosures, and retaining walls with the simple, natural, unembellished materials common to industry. Use unfinished steel, raw aluminum, and plain concrete as the finish materials for the construction of site and building elements.
Response: The proposed retaining walls along Grahams Ferry Road and the northeast storm facility will be constructed of simple unembellished materials and will be integrated into the proposed landscape plantings. The exposed face of the wall along Grahams Ferry Road will face east, toward the truck loading dock area, so it will not be visible from the public right-of-way; shrub plantings at the street level and a fence with slats will obscure views into the loading area. The wall on the north side of the east stormwater management pond (to protect the Douglas fir trees' root zone) will face south, making it visible from Garden Acres Road; an appropriate surface treatment for that location will be applied, to integrate the retaining wall's appearance with the Wayside on the north side of the stand of trees. Similarly, the wall supporting the pedestrian walkway at the Primary Building Entrance will be visible from the adjacent drive aisle, and partially visible from points along Garden Acres Road; its surface will be designed for visual compatibility with the building's materials, colors, and panelized appearance. The use of materials and surface treatments for the retaining walls will be consistent with this objective.

Based on the above findings, Waiver 4 should be approved.

Waiver 5. Location, Screening and Size of Utilities and Services

The proposed trash enclosure is smaller than the Code standard, and its location adjacent to SW Grahams Ferry Road (Addressing Street) does not meet the standard. The proposed configuration requires a waiver from the following applicable standards:

WDO Section 4.134(11.)/Table CC-3/7. Location and Screening of Utilities and Services/Location and Visibility/Addressing Streets: [Adjacent to an Addressing Street…] *Site and building service, equipment, and outdoor storage of garbage, recycling, or landscape maintenance tools and equipment is not permitted.*

WDO Section 4.179 Mixed Solid Waste and Recyclables Storage in New Multi-Unit Residential and Non-Residential Buildings (.06) B.3*: The specific requirements for storage are as follows: Wholesale/Warehouse/Manufacturing: Six square feet per 1,000 square feet of GFA.*
Response: The proposed site plan and building design do not comply with the standard because a solid waste storage area is sited along Grahams Ferry Road (Addressing Street). Also, based on the standard calculation, the proposed building would be required to provide a solid waste storage area 890 SF in size, but the applicant proposes a 210 SF storage area. This configuration is proposed for these specific reasons:

1. The site has double-frontage on Addressing Streets and the proposed site plan orients the Primary Building Façade (front of the building) toward Garden Acres Road at the east. The rear of the building is on the west, adjacent to Grahams Ferry Road.

2. The proposed western location for the waste storage enclosure is proximate to the warehouse service doors, where solid waste can be efficiently transported from the building to the storage area.

3. The proposed western location for the waste storage enclosure is appropriate for safe and efficient solid waste collection by the service provider, limiting potential conflicting movements between solid waste trucks and passenger vehicles or pedestrian access pathways.

4. The applicant's experience as a lessor of industrial facilities suggests that contemporary tenants and operations are unlikely to require the volume of solid waste storage capacity assumed in the City's required minimum calculation. High Cube Fulfillment Center Sort Warehouse operations tend to generate less waste than other distribution warehouse uses. The applicant's proposal to provide 210 SF of waste storage area is based on industry metrics.

5. The waste hauler, Republic Services, is a local operation that is highly responsive to the needs of its customers. From an operational standpoint, frequency of collection service can be adjusted to ensure that waste will not accumulate at the site in any reasonable industrial tenanting scenario. Republic Services has provided a service provider letter indicating that daily (5 days per week) service can be provided to meet service needs at this location. (See Attachment 9.)

WDC Section 4.140. Planned Development Regulations.

The following responses address each of the requirements of Section 4.140 in regard to the waiver request:

B. It is the further purpose of the following Section:

1. To take advantage of advances in technology, architectural design, and functional land use design:

Response: The request to reduce the required size and locate the solid waste storage area between the building and an Addressing Street is in part a response to the shape and context of this unique site, as discussed above. To achieve an economically viable scale of operations, the building needs as much north/south distance as possible, and its dock doors are located at the west-facing rear of the building. Positioning a solid waste storage area north or south of the building would require access and circulation width dimensions (for maneuvering of collection vehicles) that would reduce the building's long north-south dimension, and therefore its number of truck loading dock doors – an essential capacity metric for tenants.

Locating the solid waste storage area adjacent to the loading area west of the building takes advantage of the wide truck maneuvering apron necessary at the truck docks to accommodate the hauler's collection vehicles. It also helps reduce potential for vehicular conflicts by separating solid waste collection truck movements from most of the site's passenger vehicle circulation, which is concentrated at the east. For these reasons, the proposed parking configuration takes advantage of advances in architectural design and functional land use design, consistent with this purpose statement.

2. To recognize the problems of population density, distribution and circulation and to allow a deviation from rigid established patterns of land uses, but controlled by defined policies and objectives detailed in the comprehensive plan;

Response: The applicant recognizes the City's desire to relegate solid waste storage areas away from high-visibility public rights-of-way (Addressing Streets). But, as explained above, the specific configuration of this site tends to bring that desire into direct conflict with the goal of achieving

efficient design and functionality of sites and buildings to meet economic development and employment goals.

At this site, the requested deviation from a rigid solid waste storage area requirement is appropriate to achieve acceptable building siting, grading, and ultimately performance for industrial use. Flexibility with respect to the waste storage size and location requirements will allow the waste enclosure to be efficiently located at the north end of the truck maneuvering court by the loading docks, where there is sufficient width for collection vehicles to operate.

Potential aesthetic impacts on the Grahams Ferry Road corridor will be limited by (1) the lower grade elevation of the pavement relative to Grahams Ferry Road (see discussion of retaining walls above), (2) naturalistic landscape screen plantings and an 8' high sight-obscuring fence along the west property boundary, and (3) the waste enclosure's location at the rear of the site, far from any viewpoints in other public rights-of-way. These design features ensure that the solid waste storage area will be visually obscured from the public right-of-way, meeting the intent of the Coffee Creek Light Industrial Pattern Book and the objectives of the Comprehensive Plan. The proposed configuration therefore meets the objective in an acceptable alternative way.

3. To produce a comprehensive development equal to or better than that resulting from traditional lot land use development.

Response: The proposed site plan orients the proposed spec industrial building with a long north/south axis, the configuration that produces the maximum practicable building area and the highest number of dock doors. Locating the waste storage area on the north or south, i.e., away from an Addressing Street, would reduce building size on the critical length dimension, in turn reducing dock capacity and curtailing the operational functionality of the property.

The proposed waste enclosure location takes advantage of the site plan's western loop circulation route for truck rigs, so waste collection trucks can use it for access to the solid waste storage area by way of either the adjacent southwest driveway or the Cahalin Road – Garden Acres Road intersection. Because most of the parking and circulation for passenger vehicles is located on the east side of the site, this configuration helps to segregate streams of traffic and reduce potential for conflicts between the vehicle types, including solid waste collection trucks.

Reducing the size of the waste enclosure allows site area to be used more efficiently for on-site trailer storage capacity. The frequency of collection service can be increased if necessary to meet the needs of some future user. The requested deviation from the prescriptive development standards will allow a solid waste storage area configuration that allow this site and building to function efficiently, practically, and safely for its intended industrial use.

4. To permit flexibility of design in the placement and uses of buildings and open spaces, circulation facilities and off-street parking areas, and to more efficiently utilize potentials of sites characterized by special features of geography, topography, size or shape or characterized by problems of flood hazard, severe soil limitations, or other hazards;

Response: As discussed above, although the site does not have flood, soil, or other hazards, significant constraints affect siting, access, and circulation. In this specific context, siting a solid waste storage area north or south of the building would negatively affect the efficiency and economy of the building and operations, specifically by shortening the building's long-axis dimension and reducing its loading dock capacity. The applicant's experience with High-Cube Fulfillment Center Sort Warehouse tenants suggests that a smaller waste enclosure will meet the needs of such a tenant (and other types of tenants can adjust frequency of service to meet needs).

For all the above reasons, the site's economic potential is much more efficiently utilized by allowing the requested solid waste storage area to be located in the loading area along the Addressing Street.

5. *To permit flexibility in the height of buildings while maintaining a ratio of site area to dwelling units that is consistent with the densities established by the Comprehensive Plan and the intent of the Plan to provide open space, outdoor living area and buffering of low-density development.*

Response: The proposed project is not a residential development. This purpose statement is not applicable.

6. *To allow development only where necessary and adequate services and facilities are available or provisions have been made to provide these services and facilities.*

Response: The proposed project has adequate access to necessary services and facilities for industrial development, and the proposed waiver does not impact the provision or efficacy of those existing services and facilities.

7. *To permit mixed uses where it can clearly be demonstrated to be of benefit to the users and can be shown to be consistent with the intent of the Comprehensive Plan.*

Response: The site can support a mix of industrial tenants consistent with the intent of the Comprehensive Plan and the list of allowed uses in the PD-RSIA Zone; however, this is not a mixed-use project in the sense of also accommodating commercial, residential, or institutional uses within the site.

8. *To allow flexibility and innovation in adapting to changes in the economic and technological climate.*

Response: The site and speculative industrial building are designed to be flexible and capable of accommodating a variety of industrial tenants consistent with the property's PD-RSIA Zoning. The waste enclosure can be shared in a two-tenant scenario. Tenant needs will change over time along with economic needs of the community; creating a place with appropriate access, parking, circulation, operational flexibility, and efficiency of operations will ensure this site remains a valuable and productive asset for the City of Wilsonville's economic development within the Coffee Creek Industrial Design Overlay District.

The applicant's design team has communicated with the franchise waste hauler, Republic Services, and Republic confirmed that the proposed configuration, size, location, and access/circulation are satisfactory (see letter from Republic Services in Attachment 9). If it happens that a future building tenant produces waste at a significantly higher rate than a High-Cube Fulfillment Center Sort Warehouse tenant would, they will be able to successfully utilize the proposed facility by increasing the frequency of service by Republic Services, whose facility is located just blocks away, at 10295 SW Ridder Road.

For all the above reasons, the proposed size and location of the waste enclosure furthers the purposes of the regulation in an alternative way, and should be approved.

The proposed building design is consistent with the Intent Statement for Location and Screening of Utilities and Services as well as related guidelines in the *Pattern Book – Design Guidelines for Coffee Creek Industrial Design Overall District (the Pattern Book):*

3. LOCATION AND SCREENING OF UTILITIES AND SERVICES

3.1 Geometry Organize above-grade services elements, such as transformers, with the geometry of the adjacent streets or nearby site elements and buildings.

3.2 Screening materials Walls used for screening may be constructed from stone, self-weathering sheet steel, or smooth-finished cast-in-place or board-formed concrete. Long extents of fencing should be modulated with the use of reveals and other techniques. Where required, service access gates and doors should be constructed of high-quality, durable materials that complement the design of screening walls and receive regular maintenance.

3.3 Native plant material Where appropriate, screening walls should be enhanced with native plant material to diminish the visual mass and integrate with the landscape.

Response: From the standpoint of screening, the proposed waste/recycling enclosure is screened from Grahams Ferry Road by landscaping, perimeter chain link security fencing with black slats, and a grade location approximately 5 to 6 feet lower than the adjacent road surface. The waste enclosure will be on the low (downhill), interior side of the retaining wall along the Grahams Ferry Road frontage. As a result, it will not be visible at all to pedestrians or motorists passing by on Grahams Ferry Road, consistent with the purpose of the screening requirements.

Based on the above findings, Waiver 5 should be approved.

Waiver 6. Primary Building Entrance and Overall Building Massing - Height of Entrance Canopy

and

Waiver 7. Primary Building Entrance and Overall Building Massing – Height of Office Interior

The canopy heights and ground floor ceiling heights do not meet the 15-foot minimum requirement. The proposed configuration requires waivers from the following applicable standards:

WDO Section 4.134(11.)/Table CC-4/2. Primary Building Entrance /Required Canopy: *Protect the Primary Building Entrance with a canopy with a minimum vertical clearance of 15 feet and an all-weather protection zone that is 8 feet deep, minimum and 15 feet wide, minimum.*

WDO Section 4.134(11.)/Table CC-4/3. Overall Building Massing/Ground Floor Height: *The Ground Floor height shall measure 15 feet, minimum from finished floor to finished ceiling (or 17.5 feet from finished floor to any exposed structural member).*

Provided Adjustments:
WDO Section 4.134(11.)/Table CC-4/3. Overall Building Massing/General:
The following Development Standards are adjustable:

- *Required Minimum Height: 10%*
- *Ground Floor Height: 10%*

Response: The proposed site plan and building design do not comply with the standard because the proposed Canopy and Ground Floor Height, which are proposed at 12 feet, are below the required 15-foot minimum dimension, even with a 10% adjustment. A joint discussion of the reasons is provided here because the proposed alignment of the features is designed to create a coherent building design with coherent interior-exterior transitions at the office entrances.

The 12-foot high joint configuration is proposed for these reasons:

1. In the building's "middle" section (i.e., between the "base" and the "top"), a panelization technique is used to add visual interest/rhythm with varying horizontal and vertical "panel" breaks (reveals) on the exterior surface of the building. Additionally, a horizontal color band, matching the color of the horizontal "base" and "top" elements, adds continuity, visual interest and proportioning to the tall building walls, to visually help define an exterior pedestrian level that does not feel outweighed by an upper level that appears significantly more massive.

2. The exterior glazing (windows and doorways) at the office bump-outs and entrances rises from exterior walkway grade to a height of twelve feet (12') above grade. This establishes a high view angle for people inside the space to be able to look upwards toward the sky, but it also does so efficiently: standard retail glazing and door products are available at the 12' height, but custom engineered curtain wall design would be necessary to produce a similar appearance at a 15' height.

3. The proposed interior ceiling height will align with the 12' glazing height. The resulting floor-to-ceiling appearance (from an interior perspective) will create a strong visual relationship between interior and exterior, because there will be no wall surface forming a visual barrier between the top of the window and the interior ceiling.

4. From the exterior, the 12' window height will create a human-scale relationship between the building and the exterior walkways that lead to the main entrances. The panelization discussed in #1 above is largely based on extending the rhythmic pattern established by the window openings and muntins – horizontal and vertical – to form an attractive and interesting grid-like visual pattern.

5. The primary building entrances are within 15' wide recesses, and the combination of the canopy projections from the wall and the recesses beneath them provide the required minimum 8' by 15' area at the doorways. However, to seamlessly extend and project the uniform ceiling/exterior window plane to the exterior, the bottoms of the canopies will be visually aligned with the 12' high window/ceiling level. Pedestrians will experience a consistent ceiling height as they enter or leave the building, rather than an abrupt change through the doorway; this contributes to an orderly sense of transition through that aperture.

6. More pragmatically, under windy rainy conditions, a 12' canopy will better protect people under the canopy from wind-blown rain than a canopy at the 15' level.

7. The canopies project horizontally from the building wall over the doorways, but they are also supported above by angled tie-backs to anchors in the wall surface. The 12' canopy height allows the tie-back anchors to be located within the color band, reducing the visual clutter associated with that hardware and maintaining a clean appearance.

8. The 12' high ceiling within the office bump-out areas contributes to energy efficiency because the volume of the space to be conditioned is smaller than if the ceiling were at the 15' level.

Based on the above findings, Waivers 6 and 7 should be approved.

WDC Section 4.140. Planned Development Regulations.

The following responses address each of the requirements of Section 4.140 in regard to the waiver request:

B. It is the further purpose of the following Section:

1. *To take advantage of advances in technology, architectural design, and functional land use design:*

Response: As explained above, the proposed building design creates an interior-exterior integration that reinforces human/pedestrian scale and a strong and cohesive interior-exterior relationship, using commercially available modular window and door units for efficiency. These design techniques take advantage of advances in building materials technology and architectural design, consistent with this purpose statement.

2. *To recognize the problems of population density, distribution and circulation and to allow a deviation from rigid established patterns of land uses, but controlled by defined policies and objectives detailed in the comprehensive plan;*

Response: The applicant recognizes the City's desire to encourage well-designed industrial buildings in the Coffee Creek Industrial Design Overlay District. As explained above, the specific design features of the proposal will create an industrial building with strong pedestrian scale characteristics that meet the intent of the City's comprehensive plan as well as the Coffee Creek Industrial District. At this site, the requested deviation from a rigid ground floor and canopy height is appropriate because the alternative approach presented by the applicant will achieve a coherent interior-exterior interface, as well as reduce the construction, maintenance, and operation costs of the building. Flexibility with respect to this development standard better suits development of the site for industrial use in the ways mentioned above. The proposed configuration therefore satisfies this purpose in an acceptable alternative way.

3. *To produce a comprehensive development equal to or better than that resulting from traditional lot land use development.*

Response: The proposed building provides a cohesive exterior elevation design that aligns with the intent of Coffee Creek Industrial Design Overlay District requirements to create a building that provides massing and architectural expression of design elements that define the scale, quality, and character of the built environment. Deviating from the traditional lot land use requirements, the particular design elements have been chosen in order to create a space that creates a cohesive relationship between interior space with exterior elevation design and site landscaping. Increasing the interior ceiling height to the 15' minimum requirement would be counter to the coherent set of relationships the design is seeking to integrate. Similarly, raising the height of the canopies would detract from the banded patterning and continuity of the exterior wall surface's panelization design, and reduce weather protection for pedestrian shelter at the primary building entryways. The requested deviations from the development standards will result in a coherent building that is equal to or better than one that satisfies the height requirements without achieving a comparable coherency.

4. *To permit flexibility of design in the placement and uses of buildings and open spaces, circulation facilities and off-street parking areas, and to more efficiently utilize potentials of sites characterized by special features of geography, topography, size or shape or characterized by problems of flood hazard, severe soil limitations, or other hazards;*

Response: Although the site does not have flood, soil, or other hazards, significant constraints affect siting, access, and circulation, as discussed above. In this specific context, raising the interior ceiling and canopy height would negatively affect the overall body massing, efficiency, and economy of the building and operations, specifically by breaking up the alignment of exterior glazing rising to the ceiling line and the cohesive panelization of the exterior elevations, increasing design and construction costs by requiring the use of custom engineered curtain wall designs, and

increasing the cost of operations by increasing the heating/cooling load associated with the volume of the space to be conditioned.

For all the above reasons, the site's economic potential is much more efficiently utilized by allowing the requested ground floor and canopy heights.

5. *To permit flexibility in the height of buildings while maintaining a ratio of site area to dwelling units that is consistent with the densities established by the Comprehensive Plan and the intent of the Plan to provide open space, outdoor living area and buffering of low-density development.*

Response: The proposed project is not a residential development. This purpose statement is not applicable.

6. *To allow development only where necessary and adequate services and facilities are available or provisions have been made to provide these services and facilities.*

Response: The proposed project has adequate access to necessary services and facilities for industrial development, and the proposed waiver does not impact the provision or efficacy of those existing services and facilities.

7. *To permit mixed uses where it can clearly be demonstrated to be of benefit to the users and can be shown to be consistent with the intent of the Comprehensive Plan.*

Response: The site can support a mix of industrial tenants consistent with the intent of the Comprehensive Plan and the list of allowed uses in the PD-RSIA Zone; however, this is not a mixed-use project in the sense of also accommodating commercial, residential, or institutional uses within the site. The site and building are designed for industrial use by one or two tenants, with High Cube Fulfillment Center Sort Warehouse/manufacturing space, ancillary office space, employee parking, and loading docks. Achieving a cohesive building design is essential for the industrial end-user tenant(s)s to sustain economically viable, efficient, safe, and practical operations consistent with the Comprehensive Plan designation of the site for industrial uses.

8. *To allow flexibility and innovation in adapting to changes in the economic and technological climate.*

Response: The site and speculative industrial building are designed to be flexible and capable of accommodating a variety of industrial tenants over time, consistent with the property's PD-RSIA Zoning. Tenant needs will change along with economic needs of the community; creating a building with strong architectural visual interest and human scale will ensure this site remains a valuable and productive asset for the City of Wilsonville's economic development within the Coffee Creek Industrial Design Overlay District.

For all the above reasons, the proposed building's interior ceiling height and exterior canopies should be permitted to align at the 12' level above the buildings finished floor area.

The proposed building design is consistent with the Intent Statement for Building Design as well as numerous guidelines in the *Pattern Book – Design Guidelines for Coffee Creek Industrial Design Overall District (the Pattern Book):*

Section D-1.3 Building Orientation and Entries: *Visual interest and human scale*

Locate the office and support spaces for warehouse and industrial buildings on the Addressing Street or Supporting Street instead of burying these functions in the interior of a large monolithic structure. The smaller-scale first floor can help soften the bulk of large buildings and add visual interest and a human scale to the public realm. This guideline may be accomplished by wrapping the high-bay industrial form with lower-scaled structures on the street; extending a discrete element of the building that contains these functions and giving this element a distinctive, contrasting architectural expression; or providing a visual break in the building mass and structure that creates an impression of two separate buildings.
Response: The proposed building is oriented to Garden Acres Road as its front, with its long axis parallel to that Addressing Street, and both of its office bump-outs, parking areas, and pedestrian paths from the sidewalk on the east side of the building. The overall building massing and elevation design, as discussed above, will create a distinctive industrial building with good human scale relationships, as intended by this Guideline. Approving the requested Waiver will enable the entire site to perform at its best and highest use in the PDI-RSIA.

F. Type C Tree Plan DRB review

Section 4.600.20. Applicability of Subchapter

(.01) The provisions of this subchapter apply to the United States and the State of Oregon, and to their agencies and subdivisions, including the City of Wilsonville, and to the employees and agents thereof.

(.02) By this subchapter, the City of Wilsonville regulates forest practices on all lands located within its urban growth boundary, as provided by ORS 527.722.

(.03) The provisions of this subchapter apply to all land within the City limits, including property designated as a Significant Resource Overlay Zone or other areas or trees designated as protected by the Comprehensive Plan, City zoning map, or any other law or ordinance; except that any tree activities in the Willamette River Greenway that are regulated by the provisions of WC 4.500 - 4.514 and requiring a conditional use permit shall be reviewed by the DRB under the application and review procedures set forth for Tree Removal Permits.
Response: Upon annexation, the subject site will be located within Wilsonville city limits. This section applies.

Section 4.600.30. Tree Removal Permit Required

(.01) Requirement Established. No person shall remove any tree without first obtaining a Tree Removal Permit (TRP) as required by this subchapter.

(.02) Tree Removal Permits will be reviewed according to the standards provided for in this subchapter, in addition to all other applicable requirements of Chapter 4.

(.03) Although tree activities in the Willamette River Greenway are governed by WC 4.500 - 4.514, the application materials required to apply for a conditional use shall be the same as those required for a Type B or C permit under this subchapter, along with any additional materials that may be required by the Planning Department. An application for a Tree Removal Permit under this section shall be reviewed by the Development Review Board.
Response: This application includes a request for a Type C Tree Removal Permit.

Section 4.600.40. Exceptions

(.01) Exception from requirement. Notwithstanding the requirement of WC 4.600.30(1), the following activities are allowed without a Tree Removal Permit, unless otherwise prohibited:

- *A. Agriculture, Commercial Tree Farm or Orchard. Tree removal or transplanting occurring during use of land for commercial purposes for agriculture, orchard(s), or tree farm(s), such as Christmas tree production.*
- *B. Emergencies. Actions made necessary by an emergency, such as tornado, windstorm, flood, freeze, utility damage or other like disasters, in order to prevent imminent injury or damage to persons or property or restore order and it is impractical due to circumstances to apply for a permit.*
  - *1. When an emergency has occurred, a Tree Removal Permit must be applied for within thirty (30) days following the emergency tree removal under the application procedures established in this subchapter.*
  - *2. In addition to complying with the permit application requirements of this subchapter, an applicant shall provide a photograph of any tree removed and a brief description of the conditions that necessitated emergency removal. Such photograph shall be supplied within seven days of application for a permit. Based on good cause shown arising out of the emergency, the Planning Director may waive any or all requirements of this section.*
  - *3. Where a Type A Permit is granted for emergency tree removal, the permitee is encouraged to apply to the City Tree Fund for replanting assistance.*
- *C. City utility or road work in utility or road easements, in utility or road right-of-ways, or in public lands. However, any trees removed in the course of utility work shall be mitigated in accordance with the standards of this subchapter.*
- *D. Nuisance abatement. The City is not required to apply for a Tree Removal Permit to undertake nuisance abatement as provided in WC 6.200 et seq. However, the owner of the property subject to nuisance abatement is subject to all the provisions of this subchapter in addition to the requirements of WC 6.200 et seq.*
- *E. The removal of filbert trees is exempt from the requirements of this subchapter.*
- *F. The Charbonneau District, including its golf course, is exempt from the requirements of WC 4.600.30(1) on the basis that by and through the current CC&R's of the Charbonneau Country Club, the homeowners' association complies with all requirements of WC 4.610.30(1)(C)(1). This exception has been based upon the Tree Maintenance and Protection Plan that has been submitted by the Charbonneau Country Club and approved by the Planning Director. Tree removal activities remain subject to all applicable standards of this subchapter. Unless authorized by the City, this exception does not include tree removal upon any public easements or public property within the district. In the event that the CC&R's are changed relative to the effect of the Tree Maintenance and Protection Plan, then the Planning Director shall review whether such effect is material, whether it can be mitigated, and if not, may disallow the exemption.*

Response: Agricultural trees on the site will be removed under exception A. The applicant has provided a detailed arborist's report and tree inventory (Attachment 7), which identifies and proposes for conservation a stand of ten mature Douglas fir trees adjacent to Garden Acres Road, near the northeast corner of the property.

Primarily to that south of that group, and at the south and west of the site, the arborist's report identifies a total of 302 trees as Agricultural Trees. (See Sheet L0.03 in Attachment 7.) That determination is based on these characteristics:

1. Walnut trees (south) and fruit trees (west) are regularly spaced on a grid and appear to have been pruned/maintained for nut/fruit harvesting.
2. Douglas fir trees (east) are also regularly spaced on a grid consistent with Christmas tree farming, and appear to have been partially harvested (or died off) over time.
3. Consistent age and approximate size range of each of the three agricultural tree cohorts/types.

Importantly from a long-term preservation perspective, trees for agricultural harvesting are planted for high commercial productivity and efficient harvesting over a specific period, rather than to achieve long-term natural resource benefits over an extended period. In normal operations, such trees are cut down or replaced once they reach a certain maturity (typically associated with declining productivity or higher maintenance costs). Without such regular culling and renewal, specimens are typically planted too close together to remain healthy if allowed to mature over an extended period.

In light of the above considerations, Exception A allows commercial operations to remove agricultural trees without requiring a permit and mitigation as they harvest commercial specimens, replace stock, or ultimately phase out agricultural/commercial tree farm operations and transition into a different use or redevelopment plan.

Because the Agricultural Trees were planted and maintained for commercial production, their removal at the time of urban redevelopment is a valid application of Exception A.

The applicant has proposed appropriate mitigation for removal of the trees that are not subject to an exception under this Section.

Section 4.600.50. Application For Tree Removal Permit

(.01) Application for Permit. A person seeking to remove one or more trees shall apply to the Director for a Tree Removal Permit for a Type A, B, C, or D permit, depending on the applicable standards as provided in this subchapter.

(A) An application for a tree removal permit that does not meet the requirements of Type A may be submitted as a Type B application.

(.02) Time of Application. Application for a Tree Removal Permit shall be made before removing or transplanting trees, except in emergency situations as provided in WC 4.600.40 (1)(B) above. Where the site is proposed for development necessitating siteplan or plat review, application for a Tree Removal Permit shall be made as part of the site development application as specified in this subchapter.

(.03) Fees. A person applying for a Tree Removal Permit shall pay a non-refundable application fee; as established by resolution of the City Council.

A. By submission of an application, the applicant shall be deemed to have authorized City representatives to have access to applicant's property as may be needed to verify the information provided, to observe site conditions, and if a permit is granted, to verify that terms and conditions of the permit are followed.

Response: The development proposal identifies a group of ten mature Douglas fir trees for preservation, and 174 on-site trees for removal. Proposed tree removal is shown on Sheet C0.10 and Sheet L0.02 of Attachment 6. The applicant is requesting a Type C tree removal permit.

Section 4.610.00. Application Review Procedure

(.01) The permit applicant shall provide complete information as required by this subchapter in order for the City to review the application.
Response: The applicant has submitted a complete application for the city's review.

(.02) Departmental Review. All applications for Tree Removal Permits must be deemed complete by the City Planning Department before being accepted for review. When all required information has been supplied, the Planning Department will verify whether the application is complete. Upon request of either the applicant or the City, the City may conduct a field inspection or review meeting. City departments involved in the review shall submit their report and recommendations to the Planning Director who shall forward them to the appropriate reviewing authority.
Response: The applicant acknowledges the procedure for the determination of completeness and Departmental Review.

(.03) Reviewing Authority.

B. Type C. Where the site is proposed for development necessitating site plan review or plat approval by the Development Review Board, the Development Review Board shall be responsible for granting or denying the application for a Tree Removal Permit, and that decision may be subject to affirmance, reversal or modification by the City Council, if subsequently reviewed by the Council. For site development applications subject to a Class II administrative review process in the Coffee Creek Industrial Design Overlay District, the Planning Director shall be responsible for the granting or denial of the Tree Removal Permit application.

Response: The proposed development is located within the Coffee Creek Industrial Design Overlay District. The applicant has requested consolidated review with a development proposal that requires action by the Development Review Board (DRB).

(.04) Notice. Before the granting of a Type C Tree Removal Permit, notice of the application shall be sent by regular mail to all owners within two hundred fifty feet (250') of the property where the trees are located as provided for in WC 4.010. The notice shall indicate where the application may be inspected and when a public hearing on the application will be held.
Response: This is procedural direction and requires no evidence from the applicant. A notice of application will be sent out to all owners within 250'.

(.05) Denial of Tree Removal Permit. Whenever an application for a Tree Removal Permit is denied, the permit applicant shall be notified, in writing, of the reasons for denial.
Response: This is procedural direction and requires no evidence from the applicant. The applicant understands they will be notified if the tree removal permit is denied.

(.06) Grant of a Tree Removal Permit. Whenever an application for a Type B, C or D Tree Removal Permit is granted, the reviewing authority shall:

A. Conditions. Attach to the granting of the permit any reasonable conditions considered necessary by the reviewing authority including, but not limited to, the recording of any plan or agreement approved under this subchapter, to ensure that the intent of this Chapter will be fulfilled and to minimize damage to, encroachment on or interference with natural resources and processes within wooded areas;

B. Completion of Operations. Fix a reasonable time to complete tree removal operations; and

C. Security. Require the Type C permit grantee to file with the City a cash or corporate surety bond or irrevocable bank letter of credit in an amount determined necessary by the City to ensure compliance with Tree Removal Permit conditions and this Chapter.

1. This requirement may be waived by the Planning Director if the tree removal must be completed before a plat is recorded, and the applicant has complied with WC 4.264(1) of this Code.

Response: The applicant acknowledges that the reviewing authority will apply conditions or other requirements when granting a Tree Removal Permit.

Section 4.610.10. Standards For Tree Removal, Relocation Or Replacement

(.01) Except where an application is exempt, or where otherwise noted, the following standards shall govern the review of an application for a Type A, B, C or D Tree Removal Permit:

A. Standard for the Significant Resource Overlay Zone. The standard for tree removal in the Significant Resource Overlay Zone shall be that removal or transplanting of any tree is not inconsistent with the purposes of this Chapter.

Response: The subject site is not located in a Significant Resource Overlay Zone; this standard does not apply.

B. Preservation and Conservation. No development application shall be denied solely because trees grow on the site. Nevertheless, tree preservation and conservation as a design principle shall be equal in concern and importance to other design principles.

Response: The site layout has been designed to preserve a group of ten mature Douglas fir trees near the northeast corner of the site while meeting the operational needs of prospective industrial tenants in wholesale/distribution and manufacturing businesses. See the Tree Protection and Mitigation Plan landscape sheet (L0.02 of Attachment 6) and the Arborist Report (Attachment 7) for details.

C. Developmental Alternatives. Preservation and conservation of wooded areas and trees shall be given careful consideration when there are feasible and reasonable location alternatives and design options on-site for proposed buildings, structures or other site improvements.

Response: Preservation and conservation of wooded areas and trees was given careful consideration in site planning and design. Based on the recommendations in the Arborist's report, several design changes were made to preserve ten mature Douglas fir trees located near the northeast corner of the parcel. For example, the proposed building is set back from the street frontage, and the eastern parking lot terminates south of the group of trees to protect root zones and preserve the trees. This standard is met.

D. Land Clearing. Where the proposed activity requires land clearing, the clearing shall be limited to designated street rights-of-way and areas necessary for the construction of buildings, structures or other site improvements.

Response: Clearing and grading on the site will be limited to the extent required for site improvements. Construction on the site will also adhere to the recommendations in the Arborist's report (Attachment 7) to protect trees during the construction process. See the Tree Protection and Mitigation Plan on Sheet L0.02 of Attachment 6. This standard is met.

E. Residential Development. Where the proposed activity involves residential development, residential units shall, to the extent reasonably feasible, be designed and constructed to blend into the natural setting of the landscape.

Response: The proposed development is not residential. This standard does not apply.

F. Compliance With Statutes and Ordinances. The proposed activity shall comply with all applicable statutes and ordinances.

Response: The applicant has submitted this application and narrative to show compliance with all applicable statutes and ordinances.

G. Relocation or Replacement. The proposed activity shall include necessary provisions for tree relocation or replacement, in accordance with WC 4.620.00, and the protection of those trees that are not to be removed, in accordance with WC 4.620.10.

Response: Per the Arborist's report (Attachment 7), no tree relocation is proposed; 174 non-exempt trees are subject to Code provisions for mitigation/replacement planting. Trees to remain on site and directly adjacent to the site are to be protected by measures as outlined in the Arborist's report.

H. Limitation. Tree removal or transplanting shall be limited to instances where the applicant has provided completed information as required by this Chapter and the reviewing authority determines that removal or transplanting is necessary based on the criteria of this subsection.

1. Necessary For Construction. Where the applicant has shown to the satisfaction of the reviewing authority that removal or transplanting is necessary for the construction of a building, structure or other site improvement, and that there is no feasible and reasonable location alternative or design option on-site for a proposed building, structure or other site improvement; or a tree is located too close to existing or proposed buildings or structures, or creates unsafe vision clearance.

2. Disease, Damage, or Nuisance, or Hazard. Where the tree is diseased, damaged, or in danger of falling, or presents a hazard as defined in WC 6.208, or is a nuisance as defined in WC 6.200 et seq., or creates unsafe vision clearance as defined in this Code.

(a) As a condition of approval of Stage II development, filbert trees must be removed if they are no longer commercially grown or maintained.

3. Interference. Where the tree interferes with the healthy growth of other trees, existing utility service or drainage, or utility work in a previously dedicated right-of-way, and it is not feasible to preserve the tree on site.

4. Other. Where the applicant shows that tree removal or transplanting is reasonable under the circumstances.

Response: Alternative site layouts were considered to preserve as many mature trees as feasible, while maintaining a functional site layout. Special considerations were made to preserve a group of ten mature Douglas firs in the northeastern part of the site. The trees proposed for removal per the Arborist's recommendations are either in poor health, non-native/invasive, or in conflict with proposed construction. More particularly, with respect to several trees in the vicinity of the ten Douglas firs identified for preservation, the Arborist's report (Attachment 7) recommends the removal of those specimens for the following specific reasons: [6]

[6] Staff also queried the applicant about some tree numbering discrepancies in the initial submittal:

#264: Not likely to survive building impacts. High hazard tree potential unless building is reduced by roughly 450 sf.

#268: At risk for wind throw, poor canopy development, hazard tree.

#270: At risk for wind throw, poor canopy development, hazard tree potential.

#274: At risk for wind throw, poor canopy and trunk development, hazard tree.

#2272: At risk for wind throw, poor canopy development, not likely to survive road expansion impacts, hazard tree potential.

#2275: At risk for wind throw, poor canopy development, hazard tree.

#2278: At risk for wind throw once trees at street are removed. Hazard tree.

#2279: Extensive rot. Hazard tree.

#2280: At risk for wind throw, poor canopy development, hazard tree.

#2282: At risk for wind throw, poor canopy development, hazard tree.

Attachment 16 provides a graphic associating the above notes with an excerpt from the tree inventory drawing, identifying the locations of the trees referenced above.

Based on the above evidence, these provisions are satisfied.

I. Additional Standards for Type C Permits.

1. Tree survey. For all site development applications reviewed under the provisions of Chapter 4 Planning and Zoning, the developer shall provide a Tree Survey before site development as required by WC 4.610.40, and provide a Tree Maintenance and Protection plan, unless specifically exempted by the Planning Director or DRB, prior to initiating site development.2. Platted Subdivisions. The recording of a final subdivision plat whose preliminary plat has been reviewed and approved after the effective date of Ordinance 464 by the City and that conforms with this subchapter shall include a Tree Survey and Maintenance and Protection Plan, as required by this subchapter, along with all other conditions of approval.

Tree #272: the surveyor added this tree in the revised Sheet V1.10. It was already accounted for in the arborist's inventory and the tree plan calculations.

Tree #306: A skip occurs in the inventory numbering system. No such tree exists.

Tree #2273: Survey field error (duplicate point shot). The arborist determined no such tree exists, and the point was removed from the existing conditions survey and the arborist's report.

3. *Utilities. The City Engineer shall cause utilities to be located and placed wherever reasonably possible to avoid adverse environmental consequences given the circumstances of existing locations, costs of placement and extensions, the public welfare, terrain, and preservation of natural resources. Mitigation and/or replacement of any removed trees shall be in accordance with the standards of this subchapter.*

Response: A Tree Survey and Tree Maintenance and Protection plan has been submitted as part of the arborist report. Sheet L0.02 of Attachment 7.

J. Exemption. Type D permit applications shall be exempt from review under standards D, E, H and I of this subsection.

Response: This application is not for a Type D permit; this exemption does not apply.

Section 4.610.40. Type C Permit

(.01) Approval to remove any trees on property as part of a site development application may be granted in a Type C permit. A Type C permit application shall be reviewed by the standards of this subchapter and all applicable review criteria of Chapter 4. Application of the standards of this section shall not result in a reduction of square footage or loss of density, but may require an applicant to modify plans to allow for buildings of greater height. If an applicant proposes to remove trees and submits a landscaping plan as part of a site development application, an application for a Tree Removal Permit shall be included. The Tree Removal Permit application will be reviewed in the Stage II development review process. The DRB shall review all Type C permits, with the exception of Class II development review applications located within the Coffee Creek Industrial Design Overlay District, where the Planning Director shall have review authority. Any plan changes made that affect trees after Stage II review of a development application shall be subject to review by the original approval authority. Where mitigation is required for tree removal, such mitigation may be considered as part of the landscaping requirements as set forth in this Chapter.

Tree removal shall not commence until approval of the required Stage II application and the expiration of the appeal period following that decision. If a decision approving a Type C permit is appealed, no trees shall be removed until the appeal has been settled.

Response: The applicant is requesting a Type C permit. These standards and procedure apply.

(.02) The applicant must provide ten copies of a Tree Maintenance and Protection Plan completed by an arborist that contains the following information: A. A plan, including a topographical survey bearing the stamp and signature of a qualified, registered professional containing all the following information:

1. *Property Dimensions. The shape and dimensions of the property, and the location of any existing and proposed structure or improvement.*
2. *Tree survey. The survey must include:*
   a. *An accurate drawing of the site based on accurate survey techniques at a minimum scale of one inch (1") equals one hundred feet (100') and which provides a) the location of all trees having six inches (6") or greater d.b.h. likely to be impacted, b) the spread of canopy of those trees, (c) the common and botanical name of those trees, and d) the approximate location and name of any other trees on the property.*
   b. *A description of the health and condition of all trees likely to be impacted on the site property. In addition, for trees in a present or proposed public street or road right-of-way that are described as unhealthy, the description shall include recommended actions to restore such trees to full health. Trees proposed to remain, to be transplanted or to be removed shall be so designated. All trees to*

remain on the site are to be designated with metal tags that are to remain in place throughout the development. Those tags shall be numbered, with the numbers keyed to the tree survey map that is provided with the application.

c. *Where a stand of twenty (20) or more contiguous trees exist on a site and the applicant does not propose to remove any of those trees, the required tree survey may be simplified to accurately show only the perimeter area of that stand of trees, including its drip line. Only those trees on the perimeter of the stand shall be tagged, as provided in "b," above.*

d. *All Oregon white oaks, native yews, and any species listed by either the state or federal government as rare or endangered shall be shown in the tree survey.*

3. *Tree Protection. A statement describing how trees intended to remain will be protected during development, and where protective barriers are necessary, that they will be erected before work starts. Barriers shall be sufficiently substantial to withstand nearby construction activities. Plastic tape or similar forms of markers do not constitute "barriers."*
4. *Easements and Setbacks. Location and dimension of existing and proposed easements, as well as all setbacks required by existing zoning requirements.*
5. *Grade Changes. Designation of grade changes proposed for the property that may impact trees.*
6. *Cost of Replacement. A cost estimate for the proposed tree replacement program with a detailed explanation including the number, size and species.*
7. *Tree Identification. A statement that all trees being retained will be identified by numbered metal tags, as specified in subsection "A," above in addition to clear identification on construction documents.*

Response: The Tree Maintenance and Protection Plan is part of the arborist report. See Attachment 7, and Sheet L0.02 of Attachment 6.

Section 4.620.00. Tree Relocation, Mitigation, Or Replacement

(.01) Requirement Established. A Type B or C Tree Removal Permit grantee shall replace or relocate each removed tree having six (6) inches or greater d.b.h. within one year of removal.

Response: Trees proposed for removal are subject to on-site replacement planting requirements. See Sheet L0.02 Tree Protection and Mitigation Plan in Attachment 6, which shows trees to be removed and location and species of mitigation trees. This standard is met.

(.02) Basis For Determining Replacement. The permit grantee shall replace removed trees on a basis of one (1) tree replanted for each tree removed. All replacement trees must measure two inches (2") or more in diameter. Alternatively, the Planning Director or Development Review Board may require the permit grantee to replace removed trees on a per caliper inch basis, based on a finding that the large size of the trees being removed justifies an increase in the replacement trees required. Except, however, that the Planning Director or Development Review Board may allow the use of replacement Oregon white oaks and other uniquely valuable trees with a smaller diameter.

Response: 174 non-exempt trees greater than 6" DBH are proposed for removal. No Oregon White Oaks or other uniquely valuable trees are proposed for removal. The proposed planting plan includes on-site tree plantings that exceed 174 specimens, which satisfies the mitigation requirement. (See L-Series Sheets in Attachment 6.) The replacement trees to be planted throughout the site, together with shrub plantings at site perimeter locations, and enhanced, dense landscape planting along the SW Grahams Ferry Road and Garden Acres Road frontages will create a naturalistic character. Therefore, these requirements are met.

The applicant further notes that Section 4.176(.06)F provides Tree Credits for conservation of large specimens; the applicant calculates that 27 Tree Credits accrue from the proposed protection and conservation of ten mature Douglas fir trees within the site, but as noted above, the proposed planting plan complies with the replanting requirement without relying on those Tree Credits.

(.03) Replacement Tree Requirements. A mitigation or replacement tree plan shall be reviewed by the City prior to planting and according to the standards of this subsection.

- *A. Replacement trees shall have shade potential or other characteristics comparable to the removed trees, shall be appropriately chosen for the site from an approved tree species list supplied by the City, and shall be state Department of Agriculture Nursery Grade No. 1 or better.*
- *B. Replacement trees must be staked, fertilized and mulched, and shall be guaranteed by the permit grantee or the grantee's successors-in-interest for two (2) years after the planting date.*
- *C. A "guaranteed" tree that dies or becomes diseased during that time shall be replaced.*
- *D. Diversity of tree species shall be encouraged where trees will be replaced, and diversity of species shall also be maintained where essential to preserving a wooded area or habitat.*

Response: Replacement trees with shade potential similar to the removed trees will be planted in landscape areas throughout the site and along the right-of-way frontages, and the number of trees to be planted exceeds the number of non-exempt trees requiring mitigation (174). Trees are to be staked, fertilized, mulched, and guaranteed. See L0.02 Tree preservation and Mitigation Plan, Attachment 6.

(.04) All trees to be planted shall consist of nursery stock that meets requirements of the American Association of Nurserymen (AAN) American Standards for Nursery Stock (ANSI Z60.1) for top grade.
Response: All trees will meet the ANSI Z60.1 standard. This standard will be met.

(.05) Replacement Tree Location.

- *A. City Review Required. The City shall review tree relocation or replacement plans in order to provide optimum enhancement, preservation and protection of wooded areas. To the extent feasible and desirable, trees shall be relocated or replaced on-site and within the same general area as trees removed.*
- *B. Relocation or Replacement Off-Site. When it is not feasible or desirable to relocate or replace trees on-site, relocation or replacement may be made at another location approved by the City.*

Response: It is feasible to replant more than the minimum requirement of 174 trees on-site. The mitigation trees will be planted in multiple areas within the site.

(.06) City Tree Fund. Where it is not feasible to relocate or replace trees on site or at another approved location in the City, the Tree Removal Permit grantee shall pay into the City Tree Fund, which fund is hereby created, an amount of money approximately the value as defined by this subchapter, of the replacement trees that would otherwise be required by this subchapter. The City shall use the City Tree Fund for the purpose of producing, maintaining and preserving wooded areas and heritage trees, and for planting trees within the City.

- *A. The City Tree Fund shall be used to offer trees at low cost on a first-come, first-serve basis to any Type A Permit grantee who requests a tree and registers with the City Tree Fund.*
- *B. In addition, and as funds allow, the City Tree Fund shall provide educational materials to assist with tree planting, mitigation, and relocation.*

Response: It is feasible to replant more than the minimum requirement of 174 trees on-site. The proposed planting plan achieves compliance without requiring a payment into the City Tree Fund.

(.07) Exception. Tree replacement may not be required for applicants in circumstances where the Director determines that there is good cause to not so require. Good cause shall be based on a consideration of preservation of natural resources, including preservation of mature trees and diversity of ages of trees. Other criteria shall include consideration of terrain, difficulty of replacement and impact on adjacent property.

Response: Above in the response to Section 4.600.40(.01), the applicant has provided evidence that a total of 302 trees are "Agricultural Trees" subject to Exception A of that Section. The applicant requests a determination by the Director that those Agricultural Trees should not be subject to the tree replacement requirement.

The proposal includes the preservation of a group of ten mature Douglas firs with DBHs ranging from 18" to 34", and it includes mitigation plantings for removal of non-Agricultural Trees as necessary to implement the proposed development plan. See the Arborist Report, Attachment 7, for more information on preserving high value trees and mitigation planting recommendations.

Section 4.620.10. Tree Protection During Construction

(.01) Where tree protection is required by a condition of development under Chapter 4 or by a Tree Maintenance and Protection Plan approved under this subchapter, the following standards apply:

- *A. All trees required to be protected must be clearly labeled as such.*
- *B. Placing Construction Materials Near Tree. No person may conduct any construction activity likely to be injurious to a tree designated to remain, including, but not limited to, placing solvents, building material, construction equipment, or depositing soil, or placing irrigated landscaping, within the drip line, unless a plan for such construction activity has been approved by the Planning Director or Development Review Board based upon the recommendations of an arborist.*
- *C. Attachments to Trees During Construction. Notwithstanding the requirement of WC 4.620.10(1)(A), no person shall attach any device or wire to any protected tree unless needed for tree protection.*
- *D. Protective Barrier. Before development, land clearing, filling or any land alteration for which a Tree Removal Permit is required, the developer shall erect and maintain suitable barriers as identified by an arborist to protect remaining trees. Protective barriers shall remain in place until the City authorizes their removal or issues a final certificate of occupancy, whichever occurs first. Barriers shall be sufficiently substantial to withstand nearby construction activities.*

  Plastic tape or similar forms of markers do not constitute "barriers." The most appropriate and protective barrier shall be utilized. Barriers are required for all trees designated to remain, except in the following cases:

  1. *Right-of-Ways and Easements. Street right-of-way and utility easements may be cordoned by placing stakes a minimum of fifty (50) feet apart and tying ribbon, plastic tape, rope, etc., from stake to stake along the outside perimeters of areas to be cleared.*
  2. *Any property area separate from the construction or land clearing area onto which no equipment will venture may also be cordoned off as described in paragraph (D) of this subsection, or by other reasonable means as approved by the reviewing authority.*

Response: Tree protection measures are specified in the Arborist's report, and will be implemented at the site. See the Arborist's Report, Attachment 7.

Section 4.620.20. Maintenance And Protection Standards

(.01) The following standards apply to all activities affecting trees, including, but not limited to, tree protection as required by a condition of approval on a site development application brought under this Chapter or as required by an approved Tree Maintenance and Protection Plan.

- *A. Pruning activities shall be guided by the most recent version of the ANSI 300 Standards for Tree, Shrub, and Other Woody Plant Maintenance. Information on these standards shall be available upon request from the Planning Department.*
- *B. Topping is prohibited.*
  - *1. Exception from this section may be granted under a Tree Removal Permit if necessary for utility work or public safety.*

Response: Maintenance and protection standards will follow ANSI 300 standards. This standard will be met.

Section 4.630.00. Appeal

(.01) The City shall not issue a Tree Removal Permit until approval has been granted by either the Planning Director or the DRB. Any applicant denied a Type A or B permit may appeal the decision as provided for in review of Class I Development Applications, or Class II Development Applications, whichever is applicable. Decisions by the Planning Director may be appealed to the DRB as provided in WC 4.022. Decisions by the DRB may be appealed to the City Council as provided in WC 4.022.
Response: The applicant acknowledges this process and their right to appeal a denied permit.

(.02) The City shall not issue a Tree Removal Permit approved by the Development Review Board until fifteen (15) calendar days have passed following the approval. The grant or denial of a Tree Removal Permit may be appealed to the City Council in the same manner as provided for in WC 4.022. An appeal must be filed in writing, within the fifteen (15) calendar day period following the decision being appealed. The timely filing of an appeal shall have the effect of suspending the issuance of a permit pending the outcome of the appeal. The City Council, upon review, may affirm, reverse or modify the decision rendered by the Development Review Board based upon the same standards of review specified for the DRB in the Wilsonville Code.
Response: The applicant acknowledges there is a 15-day appeal period between granting or denying a Tree Removal permit and issuance for an approved permit.

Section 4.630.10. Display Of Permit; Inspection

The Tree Removal Permit grantee shall conspicuously display the permit on-site. The permit grantee shall display the permit continuously while trees are being removed or replaced or while activities authorized under the permit are performed. The permit grantee shall allow City representatives to enter and inspect the premises at any reasonable time, and failure to allow inspection shall constitute a violation of this subchapter.
Response: The permit will be conspicuously displayed on the job site. This standard will be met.

Section 4.630.20. Variance For Hardship

Any person may apply for a variance of this subchapter as provided for in Section 4.196 of this Chapter.
Response: A variance is not requested.

Section 4.630.30. Severability

If any part of this ordinance is found by a court of competent jurisdiction to be invalid, that part shall be severable and the remainder of this ordinance shall not be affected.
Response: This provision requires no evidence from the applicant.

Section 4.640.00. Violation; Enforcement

(.01) The cutting, damaging, or removal of any individual tree without a permit as required by this ordinance constitutes a violation punishable as a separate infraction under WC 1.013. In addition, each violation of a condition or a violation of any requirement of this Chapter shall constitute a separate infraction.
Response: The tree removal plan shall be followed. This standard will be met.

(.02) Retroactive Permit. A person who removes a tree without obtaining a Type A or Type B permit may apply retroactively for a permit. In addition to all application requirements of this Chapter, the person must be able to demonstrate compliance withall requirements of this subchapter, in addition to paying a triple permit fee and a penalty per tree in an amount established by resolution of City Council. Mitigation requirements of this subchapter apply to all retroactive permits.
Response: Understood. This provision requires no evidence from the applicant.

(.03) Nuisance Abatement. Removal of a tree in violation of this Chapter is a nuisance and may be abated as provided in Sections 6.230 to 6.244, 6.250, and 6.260 of the Wilsonville Code.
Response: Understood. This provision requires no evidence from the applicant.

(.04) Withholding Certificate of Occupancy. The City Building Official has the authority to issue a stop-work order, withhold approval of a final plat, or withhold issuance of a certificate of occupancy, permits or inspections until the provisions of this Chapter, including any conditions attached to a Tree Removal Permit, have been fully met.
Response: Understood. This provision requires no evidence from the applicant.

(.05) Fines. Fines for a violation shall be imposed according to WC 1.012.
Response: Understood. This provision requires no evidence from the applicant.

(.06) Mitigation. The City shall require the property owner to replace illegally removed or damaged trees. The City may also require a combination of payment and tree replacement.

- *A. The City shall notify the property owner in writing that a violation has occurred and mitigation is required. Within thirty (30) days of the date of mailing of the notice, the property owner shall provide a mitigation plan to the City. The plan shall provide for replacement of a tree of similar species and size taking into account the suitability of the site and nursery stock availability.*
- *B. Replacement will be on an inch-for-inch basis computed by adding the total diameter measured at d.b.h. in inches of the illegally removed or damaged trees. The City may use any reasonable means to estimate the tree loss if destruction of the illegally removed or damaged trees prevents exact measurement. All replaced trees must be a minimum two-inch (2") caliper. If the mitigation requirements cannot be completed on the property, the City may require completion at another approved location. Alternatively, the City may require payment into the City Tree Fund of the value of the removed tree as established by the Planning Department.*

Response: This application is for a Type III Tree Removal permit. Details on which trees to be removed can be found in the Landscape plans (L-series sheets in Attachment 6) and the Arborist Report (Attachment 7). If additional trees need to be removed the applicant will modify or apply for a new permit. No trees will be removed illegally.

Section 4.640.10. Alternative Enforcement

(.01) In the event that a person commits more than one violation of WC 4.600.30 to WC 4.630.00, the following alternative sentence may be imposed:

- *A. If a person has gained money or property through the commission of an offense under this section, then upon conviction thereof, the court, in lieu of imposing a fine, may sentence the person to pay an amount, fixed by the court, not to exceed double the amount of the gain from the commission of the offense.*
- *B. "Gain" is defined as the amount of money or value of property derived from the commission of the violation, less the amount of money or value of property seized by or surrendered to the City. "Value" shall be the greater of the market value or replacement cost as determined by a licensed professional in the tree, nursery, or landscape field.*
- *C. Any fines collected by the City under this section shall accrue to the City Tree Fund.*

Response: Understood. This provision requires no evidence from the applicant.

Section 4.640.20. Responsibility For Enforcement.

Compliance with this Chapter shall be enforced by the City Attorney, the City Attorney's designee, and Clackamas County or Washington County law enforcement officers.
Response: This provision provides procedural guidance for implementation and requires no evidence from the applicant.

G. Class C Sign Permit

Section 4.156. Sign Regulations

Section 4.156.02. Sign Review Process and General Requirements.

(.01) Permit Required. Unless exempt under Section 4.156.05, no sign, permanent or temporary, shall be displayed or installed in the City without first obtaining a sign permit.
Response: This application includes a request for a Class III sign permit. Proposed signage includes one ground-mounted monument sign and building mounted signs over the primary entrances at the prominent office corners, one on the front (east) and one on the side (north) façade, allowing one or two signs for each of two potential tenants.

The applicant's intent is to have all future particular signs comply, through Class I or II review, with the City's applicable regulations regarding sign sizes (dependent in part on the size of future tenants' lease areas), locations, materials, illumination, and other characteristics.

For this Class III review, elevation drawings (Sheet A2.10 in Attachment 6) show approximate positions for potential future tenant signage on the north, east, and west walls, near the northeast and northwest building corners. These are basically icons to represent conceptual signage locations, with future permit issuance to be based on demonstration that each sign as well as the proposed full set of signs complies with applicable area limitations.

All wall signs will be made of discrete-element lettering and/or logo art with backlighting for night-time visibility. Internally-illuminated cabinet signs with single translucent face panels are not proposed.

(.02) Sign Permits and Master Sign Plans. Many properties in the City have signs pre-approved through a Master Sign Plan. For the majority of applications where a Master Sign Plan has been approved the applicant need not consult the sign requirements for the zone, but rather the Master Sign Plan, copies of which are available from the Planning Division. Signs conforming to a Master Sign Plan require only a Class I Sign Permit.
Response: This application is not applying for a Master Sign Plan, and no Master Sign Plan was previously approved for the site. This standard does not apply.

(.03) Classes of Sign Permits, Master Sign Plans, and Review Process. The City has three classes of sign permits for permanent signs: Class I, Class II, and Class III. In addition, non-residential developments with three or more tenants require a Master Sign Plan. Class I sign permits are reviewed through the Class I Administrative Review Process as outlined in Subsection 4.030(.01)(A.). Class II sign permits are reviewed through the Class II Administrative Review Process as outlined in Subsection 4.030 (.01)(B.). Class III Sign Permits and Master Sign Plans are reviewed by the Development Review Board (DRB) as outlined in Section 4.031.
Response: This application includes a request for a Class III sign permit.

(.06) Class III Sign Permit. Sign permit requests shall be processed as a Class III Sign Permit when associated with new development, except as noted in Subsection 4.156.02 (.05) C., or redevelopment requiring DRB review, and not requiring a Master Sign Plan; when a sign permit request is associated with a waiver or non-administrative variance; or when the sign permit request involves one or more freestanding or ground mounted signs greater than eight (8) feet in height in a new location. [Section 4.156.02 Section (.06) amended per Ordinance No. 812, 02/22/18]
Response: The applicant is requesting a Class III Sign Permit as part of this application. The applicant is proposing three signs: a ground-mounted monument sign located along Garden Acres Road near the southeast corner of the site, and up to two building mounted signs, one over each building entrance. See Sheet C1.10 for the location of the ground mounted sign, and Sheet A5.06 for sign details. Sheet A2.10 shows the sign locations on the building elevations. All sheets are located in Attachment 6.

A. Class III Sign Permit Submission Requirements: Ten (10) paper and electronic copies of the submission requirements for Class II Sign Permits plus information on any requested waivers or variances in addition to all required fees.
Response: This submittal package includes ten paper and an electronic copy.

B. Class III Sign Permit Review Criteria: The review criteria for Class II Sign Permits plus waiver or variance criteria when applicable.

> *Section 4.156.02.(.05)E. Class II Sign Permit Review Criteria: Class II Sign Permits shall satisfy the sign regulations for the applicable zoning district and the Site Design Review Criteria in Sections 4.400 through 4.421, as well as the following criteria:*
>
> 1. *The proposed signage is compatible with developments or uses permitted in the zone in terms of design, materials used, color schemes, proportionality, and location, so that it does not interfere with or detract from the visual appearance of surrounding development;*
> 2. *The proposed signage will not create a nuisance or result in a significant reduction in the value or usefulness of surrounding development; and*

3. *Special attention is paid to the interface between signs and other site elements including building architecture and landscaping, including trees.*

Response: The proposed signage plan includes identifying locations, and potential maximum sizes/proportions, for one monument sign near the northeast corner of the site and wall signs on the building, providing flexibility for the future accommodation of single- or dual-tenant occupancy. The sign locations and sizes are designed to be integrated with and to complement the form of the building, including its specific approach to expressing the base-middle-top concept. The sign sizes and locations form part of an integrated whole approach to composition of site elements, including the building, site circulation and parking areas, and landscaping features, particularly along the SW Garden Acres Road frontage, the public realm from which the front of the building will be visible to the public. As a result, the proposed signage plan satisfies the Class II Sign Permit Review Criteria cited above. No waiver or variance is requested with respect to signage. This requirement is met.

(.07) Master Sign Plans. A Master Sign Plan is required for non-residential developments with three (3) or more tenants. In creating a Master Sign Plan thought should be given to needs of initial tenants as well as the potential needs of future tenants. (…)

Response: The building is expected to have no more than two tenants and will therefore not require a Master Sign Plan.

(.08) Waivers and Variances. Waivers and variances are similar in that they allow deviation from requirements such as area, and height from ground. They differ in that waivers are granted by the DRB as part of a comprehensive review of the design and function of an entire site to bring about an improved design and variances are granted by either the Planning Director or DRB to relieve a specific hardship caused by the regulations.

A. *Waivers. The DRB may grant waivers for sign area, sign height from ground (no waiver shall be granted to allow signs to exceed thirty-five (35) feet in height), number of signs, or use of electronic changeable copy signs in order to better implement the purpose and objectives of the sign regulations as determined by making findings that all of the following criteria are met:*
   1. *The waiver will result in improved sign design, in regards to both aesthetics and functionality.*
   2. *The waiver will result in a sign or signs more compatible with and complementary to the overall design and architecture of a site, along with adjoining properties, surrounding areas, and the zoning district than signs allowed without the waiver.*
   3. *The waiver will result in a sign or signs that improve, or at least do not negatively impact, public safety, especially traffic safety.*
   4. *Sign content is not being considered when determining whether or not to grant a waiver.*

B. *Variances.*
   1. *Administrative Variance: In reviewing a Sign Permit the Planning Director may grant or deny a variance to relieve a hardship through the Class II Administrative Review process. Such a variance shall only be approved where the variance does not exceed twenty percent (20%) of area, height, or setback requirements. The Planning Director shall approve such a variance only upon finding that the application complies with all of the required variance criteria listed in Section 4.196.*
   2. *Other Variances: In addition to the authority of the Planning Director to issue administrative variances as noted above, the Development Review Board may authorize variances from sign requirements of the Code, subject to the standards and criteria listed in Section 4.196.*

Response: The applicant is not requesting a waiver or variance from the sign standards.

(.09) Temporary Sign Permits. Temporary sign permits shall be reviewed as follows:

- *A. 30 days and less- Class I Administrative Review*
- *B. 31 days up to 120 days- Class II Administrative Review*
- *C. Submission Requirements: Applications for a temporary sign permit shall include the following in addition to the required application fee:*
  - *1. Completed application form prescribed by the City and signed by the property owner or their authorized representative,*
  - *2. Two (2) copies of sign drawings or descriptions showing all materials, sign area and dimensions used to calculate areas, number of signs, location and placement of signs, and other details sufficient to judge the full scale of the sign or signs,*
  - *3. Information showing the proposed sign or signs conform with all applicable code requirements.*
- *D. Review Criteria: Temporary Sign Regulations in Section 4.156.09*
- *E. When a temporary sign permit request is submitted as part of the broader temporary use permit request of the same duration, the sign request shall not require an additional fee.*

Response: The applicant is not requesting a temporary sign permit.

(.10) Waiver of Documentation. The Planning Director may, in his or her discretion, waive an application document for Class I, Class II, and temporary sign permits where the required information has already been made available to the City, or where the Planning Director determines the information contained in an otherwise required document is not necessary to review the application.

Response: The application is for a Class III permit; a waiver is not requested or allowed.

Section 4.156.03. Sign Measurement

(.01) Sign Area:

- *A. Cabinet Signs and Similar: The area for signs enclosed by cabinet, frame, or other background (including lighted surface) not otherwise part of the architecture of a building or structure shall be the area of a shape drawn around the outer dimension of the cabinet, frame, or background.*
  - *1. If the cabinet, frame, or background is an irregular shape the signs perimeter shall be measured the same as an individual element sign under B. below.*
  - *2. The sign area does not include:*
    - *a. Foundations, supports, and other essential structures that are not designed to serve as a backdrop or border to the sign;*
    - *b. Architectural elements of a freestanding or ground mounted sign designed to match or complement the architectural design of buildings on the site not and otherwise meeting the definition of a sign;*
    - *c. A pole or other structural support, unless such pole or structural support is internally illuminated or otherwise so designed to constitute a display device.*
- *B. Individual Element Signs: The area for signs constructed of individual elements (letters, figures, etc.) attached to a building wall or similar surface or structure shall be the summed area of up to three squares, rectangles , circles, or triangles drawn around all sign elements.*
  - *1. The descender on the lower case letters "q, y, p g, or j." shall not be included in sign area when the letter otherwise matches the font of other letters in the sign,*

the descender is no more than 1/2 the cap height of the font, and the descender is no wider than the main body of the letter.

C. Round or Three-Dimensional Signs: The area of a round or three-dimensional sign shall be the maximum surface area visible from any one location on the ground measured the same as A. above except if the maximum surface area is an irregular shape the signs perimeter shall be measured the same as an individual element sign under B. above.

D. Awning or Marquee Signs: The area of signs incorporated into awnings or marquees shall be the area of the entire panel containing the sign measured the same as A. above unless it is clear that part of the panel contains no sign-related display or decoration, other than the background color of the awning.

E. Painted Wall Signs: The area of painted wall signs shall be determined as follows:

1. If individual elements are painted without a background it shall be calculated in the manner indicated in B. above.

2. If a background is painted it shall be calculated in the manner indicated in A. above.

F. Temporary Signs: The area of temporary signs including banners, lawn signs, and rigid signs shall be calculated in the manner indicated in A. above.

G. Unless otherwise specified, the sign area of a two-sided sign, with two matching sides, shall be considered to be the area of one side. For example, the sign area of a two-sided sign having thirty-two (32) square feet per sign face shall be considered to be thirty-two (32) square feet, unless this code specifies otherwise.

Response: Specific sign type will be chosen by the future tenants and approved through a Type I sign application that is not part of this application.

(.02) Sign Height above Ground.

A. The height above ground of a freestanding or ground-mounted sign is measured from the average grade directly below the sign to the highest point of the sign or sign structure except as follows:

1. A freestanding or ground mounted sign on a man-made base, including a graded earth mound, shall be measured from the grade of the nearest pavement or top of any pavement curb to the highest point of the sign or sign structure. In all cases signs on a berm shall be allowed to be eight (8) feet in height from the top of the berm.

2. A freestanding or ground mounted sign placed below the elevation of the right-of-way it fronts shall be measured from the lowest point in the right-of-way along the frontage to the highest point of the sign.

Response: One ground-mounted sign is proposed. The top of the sign will not exceed 8’ above finished grade. See sign details, Attachment 6, Sheet A5.06.

(.03) Sign Height and Length.

A. Height of a sign is the vertical distance between the lowest and highest points of the sign.

B. Length of a sign is the horizontal distance between the furthest left and right points of the sign.

Response: How the city determines sign height and length was used to calculate proposed sign height, width, and areas.

(.04) Final Determination of Sign Measurement. The Planning Director shall be responsible for determining the area, height above ground and height and length of a sign, subject to appeal as specified in Section 4.022. Applicants for sign plans and permits shall provide the dimensions needed to calculate the area, height above ground, height, and length.

Response: Sign size, height, and width dimensions are shown on the plans provided and described in this narrative.

Section 4.156.04. Non-Conforming Signs.

(.01) Non-Conforming Signs. Non-conforming signs, which may be non-conforming structures or non-conforming uses, are subject to the standards for non-conforming uses and non-conforming structures delineated in Sections 4.189 through 4.190. Except, however, that a non-conforming sign that is damaged beyond fifty percent (50%) of its value, as determined by the City Building Official, may only be reconstructed if the reconstructed sign meets all applicable zoning, structural, and electrical standards applicable at the time of reconstruction. Nothing in this Section is intended to impair any previously approved sign permit that has been issued by the City of Wilsonville, subject to state or federal law, or to require the removal of any sign that was legally erected or installed prior to the effective date of these regulations. In the event that a previously erected or installed sign no longer meets applicable City zoning standards it may remain in place, subject to the standards for non-conforming uses or nonconforming structures noted above. However, a sign that is required to be moved solely because of a public taking may be replaced on the site, and maintain its non-conforming status, subject to a Class II Sign Permit, provided the replacement sign is found to not increase in non-conformity to current code standards other than required setbacks.
Response: This application is for new development. This standard does not apply.

Section 4.156.05. Signs Exempt From Sign Permit Requirements.

(.01) The following signs are exempt from the permit requirements of this code and do not require sign permits. Unless otherwise specified, the area of the exempted signs shall not be included in the calculations of sign area permitted on a given site:

- *A. Traffic or other governmental or directional signs, as may be authorized by the City or other units of government having jurisdiction within the City.*
- *B. Signs installed by public utility companies indicating danger, or which serve as an aid to public safety, or which show the location of utilities or public facilities, including underground utilities.*
- *C. Flags displayed from permanently-located freestanding or wall-mounted flagpoles that are designed to allow raising and lowering of flags. One site may have up to two (2) exempt flags; no exempt flag may be more than thirty (30) feet in height.*

Response: The proposed signs do not fall into an exempt sign category.

(.02) Other Signs. No sign permit is necessary before placing, constructing or erecting the following signs. However, in all other particulars such signs shall conform to the requirements of applicable Building and Electrical Codes, as well as this Code.

- *A. Signs inside a building except for prohibited signs listed in Section 4.156.06.*
- *B. Name Plates and Announcements.*
  - *1. A sign identifying the name, street address, occupation and/or profession of the occupant of the premises in the aid of public health and safety. One name plate, not exceeding a total of three (3) square feet shall be allowed for each occupant. The name plate shall be affixed to the building.*
  - *2. Announcements posted on a given property (e.g., no smoking, no parking, rules of conduct, etc.) and not intended to be read from off-site, are permitted to be located as needed. Such announcements shall not be considered to be part of the sign allotment for the property.*

C. *Directional Signs. Designed for non-changing messages, directional signs facilitate the safe movement of the traveling public. Such signs are subject to the following standards and conditions:*
   1. *The sign area does not exceed three (3) square feet per sign face,*
   2. *The sign location is not within public rights-of-way and meets City vision clearance requirements;*
   3. *No sign lighting;*
   4. *No logo or a logo that does not exceed one (1) square foot in size; and*
   5. *No more than one (1) directional sign is located on the same tax lot.*

D. *Changes of Copy Only, where the graphics contained on an existing sign are changed, but the sign itself is not structurally altered, and no building or electrical permit is required.*

E. *Signs not visible from any off-site location.*

F. *Holiday lights and decorations, in place between November 15 and January 15.*

G. *Signs on scoreboards or ballfields located on public property.*

H. *One small decorative banner per dwelling unit placed on site, in residential zones.*

I. *Lawn Signs meeting the standards of Table S-1 and the following conditions:*
   1. *Such signs shall not be intentionally illuminated and shall not display movement.*
   2. *Such signs shall not obscure sight lines of the motoring public, obscure traffic or other government signs, or create a nuisance to the use or occupancy of any property.*
   3. *Lawn signs associated with temporary events may be posted no longer than sixty (60) days before the beginning of an event and must be removed at the event's completion.*
   4. *Lawn signs not associated with temporary events may be posted for one period of up to sixty (60) days in a calendar year.*
   5. *Such signs may be up to six (6) feet in height.*
   6. *Such signs may be one (1) or two (2) sided.*

J. *Rigid Signs meeting the standards of Table S-1 and the following conditions:*
   1. *Such signs shall not be intentionally illuminated and shall not display movement.*
   2. *Such signs shall not obscure sight lines of the motoring public, obscure traffic or other government signs, or create a nuisance to the use or occupancy of any property.*
   3. *Such signs may be up to six (6) feet in height, except signs on lots with an active construction project (active building permit), which may be up to ten (10) feet in height. (Note that signs exceeding six (6) feet in height typically require building permits.)*
   4. *Such signs may be one (1), two (2), or three (3) sided.*
   5. *On Residential and Agriculture zoned lots:*
      a. *A rigid sign not associated with an ongoing temporary event may be displayed for no more than sixty (60) days each calendar year.*
      b. *A rigid sign associated with an ongoing temporary event may be displayed for the duration of that event. Note: Section 4.156.06 (.01) Q. of this Code prohibits signs associated with temporary events to remain posted after the completion of the event.*
   6. *On Commercial, Industrial, or Public Facility zoned lots:*
      a. *A rigid sign not associated with an ongoing temporary event may be displayed for no more than ninety (90) days each calendar year.*
      b. *A rigid sign associated with an ongoing temporary event may be displayed for the duration of that temporary event. Note: Section 4.156.06(.01)(Q.)*

of this Code prohibits signs associated with temporary events to remain posted after the completion of the event.

c. A temporary event must have an end, marked by the occurrence of a specifically anticipated date or happening. A temporary event may not be a part of a broader, continuing event or of related, serial events. Temporary events shall not be defined by content, but may include isolated merchandise sales or discounts, or availability of real estate for sale or lease.

K. Signs allowed in Subsections 6.150 (1) and (2) Wilsonville Code for special events.

Response: The proposed signs do not fall into a class of signs for which no permits are required. The applicant is aware that the sign types listed above do not require a permit.

Section 4.156.06. Prohibited Signs

(.01) Prohibited Signs. The following signs are prohibited and shall not be placed within the City:

A. Search lights, strobe lights, and signs containing strobe lights or other flashing lights, unless specifically approved in a sign permit.

B. Obstructing signs, a sign or sign structure such that any portion of its surface or supports will interfere in any way with the free use of any fire escape, exit, hydrant, standpipe, or the exterior of any window; any sign projecting more than twelve (12) inches from a wall, except projecting signs that are specifically permitted through the provisions of this Code.

C. Changing image signs, including those within windows.

D. Changeable copy signs that use lighting changed digitally, unless specifically approved through a waiver process connected with a Class III Sign Permit or Master Sign Plan. In granting a waiver for a digital changeable copy signs the DRB shall ensure the following criteria will be met:

1. The sign shall be equipped with automatic dimming technology which automatically adjusts the sign's brightness in direct correlation with ambient light conditions and the sign owner shall ensure appropriate functioning of the dimming technology for the life of the sign.

2. The luminance of the sign shall not exceed five thousand (5000) candelas per square meter between sunrise and sunset, and five hundred (500) candelas per square meter between sunset and sunrise.

E. Roof signs - signs placed on the top of a building or attached to the building and projecting above the top of that building, unless specifically approved through the temporary sign permit procedures or the architectural design of a building makes the slope of the roof below the peak a practicable location of signs on a building and the general location of signs on the roof is approved by the DRB during Stage II Approval, as applicable, and Site Design Review.

F. Signs obstructing vision clearance areas.

G. Pennants, streamers, festoon lights, balloons, and other similar devices intended to be moved by the wind, unless specifically authorized in an approved sign permit.

H. Signs attached to trees, public sign posts, or public utility poles, other than those placed by appropriate government agencies or public utilities.

I. Signs using bare-bulb illumination or signs lighted so that the immediate source of illumination is visible, unless specifically authorized by the Development Review Board or City Council such as Digital Changeable Copy Signs. This is not intended to prohibit the use of neon or LED's as a source of illumination.

J. Signs that use flame as a source of light or that emit smoke or odors.

K. Any sign, including a window sign, which is an imitation of or resembles an official traffic sign or signal; and which may include display of words or graphics that are likely to cause confusion for the public, such as "STOP," "GO," "SLOW," "CAUTION," "DANGER," "WARNING," etc.

L. Any sign, including a window sign, which by reason of its size, location, movements, content, coloring or manner of illumination may be confused with, or construed as, a traffic control device, or which hides from view any traffic sign, signal, or device.

M. Portable signs, exceeding six (6) square feet of sign area per side, other than those on vehicles or trailers. The display of signs on a vehicle or trailer is prohibited where the vehicle or trailer is not fully operational for use on public roads or where the primary function of the vehicle or trailer is advertising. Examples where the primary function of the vehicle or trailer is advertising include mobile billboards such as those on which advertising space is rented, sold, or leased.

N. Signs located on public property in violation of Section 4.156.10.

O. Signs placed on private property without the property owner's permission.

P. Signs erected or installed in violation of standards prescribed by the City of Wilsonville, State of Oregon or the U.S. government.

Q. Signs associated with temporary events, after the temporary event is completed.

R. Any private signs, including window signs, with a luminance greater than five thousand (5000) candelas per square meter between sunrise and sunset and five hundred (500) candelas per square meter between sunset and sunrise.

S. Video Signs

Response: The proposed signs are not prohibited signs.

Section 4.156.06. Prohibited Signs. Section 4.156.07. Sign Regulations In Residential Zones.
Response: The site is not in a residential zone. These standards do not apply.

Section 4.156.08. Sign Regulations in the PDC, TC, PDI, and PF Zones.

(.01) Freestanding and Ground Mounted Signs:

A. One freestanding or ground mounted sign is allowed for the first two-hundred (200) linear feet of site frontage. One additional freestanding or ground mounted sign may be added for through and corner lots having at least two-hundred (200) feet of frontage on one street or right-of-way and one-hundred (100) feet on the other street or right-of-way.

Response: One ground-mounted frontage sign is allowed, and one is proposed. This standard is met.

B. The allowed height above ground of a freestanding or ground mounted sign is twenty (20) feet except as noted in 1-2 below.1. The maximum allowed height above ground for signs along the frontage of Interstate 5, and parallel contiguous portions of streets, as identified in Figure S-4, associated with multiple tenants or businesses may be increased by three (3) feet for each tenant space of ten thousand (10,000) square feet or more of gross floor area up to a maximum of thirty-five (35) feet.

2. The allowed height above ground for signs in the TC Zone, Old Town Overlay Zone, and PDI Zone is eight (8) feet, except those signs along the frontage of Interstate 5 and parallel contiguous portions of streets identified in Figure S-4.

Response: The site is located in the PDI-RSIA Zone and does not have I-5 frontage. Therefore, the sign can be up to 8' high. The proposed sign meets this standard. See sign details, Attachment 6, Sheet A5.06 and sign location sheet C1.10, Attachment 6.

C. The maximum allowed area for each freestanding or ground-mounted sign is determined based on gross floor area and number of tenant spaces:

1. For frontages along streets other than those indicated in 2 below sign area allowed is calculated as follows:

a. The sign area allowed for signs pertaining to a single tenant:

Gross Floor Area in a Single Building	***Maximum Allowed Sign Area***
Less than 11,000 sq. ft.	*32 sq. ft.*
11,000-25,999 sq. ft.	*32 sq. ft. + 2 sq. ft. per 1000 sq. ft. of floor area greater than 10,000 rounded down to the nearest 1,000 sq. ft.*
26,000 sq. ft. or more	*64 sq. ft.*

i. For PF (Public Facility) zoned properties adjacent to residential zoned land the maximum allowed area is thirty-two (32) square feet.

b. The maximum allowed sign area for signs pertaining to multiple tenants or businesses is thirty-two (32) square feet plus the following for each tenant space:

Gross Floor Area of Tenant Space	***Additional Allowed Sign Area for Tenant Space***
Less than 1,000 sq. ft.	*3 sq. ft.*
1,000-10,999 sq. ft.	*3 sq. ft. + 3 sq. ft. per 1,000 sq. ft. of floor area rounded down to the nearest 1,000 sq. ft.*
11,000 sq. ft. or more	*32 sq. ft.*

i. The total sign area shall not exceed two hundred (200) square feet, except in the TC Zone, Old Town Overlay Zone, and PDI Zone the total sign area shall not exceed eighty (80) square feet.

ii. Though the maximum allowed sign area is calculated based on number of tenant spaces and their size, the content of the sign and area used for different content is at the discretion of the sign owner, except for required addressing.

Response: The proposed building is anticipated to have up to two tenants, and each tenant's Gross Floor Area will exceed 11,000 SF. This should allow for 32 SF for the building + 32 SF for each of two tenants, which totals 96 square feet. However, since the site is in the PDI-RSIA zone, the sign shall not exceed 80 square feet. The proposed sign complies with this standard. See sign details on Sheet A5.06 of Attachment 6.

D. Pole or sign support placement shall be installed in a full vertical position.

Response: The sign will be placed on a concrete vertical base. See Sheet A5.06, Attachment 6. This standard is met.

E. Freestanding and ground mounted signs shall not extend into or above public rights-of-way, parking areas, or vehicle maneuvering areas.

Response: The sign is not located within a public right-of-way, parking area, or vehicle maneuvering area. See sign location is shown in Attachment 6, Sheet C1.10. This standard is met.

F. The location of free standing or ground mounted signs located adjacent to or near the Public Right-of-Way shall be in compliance with the City's Public Works Standards for sight distance clearance. Prior to construction, the location of the sign shall be approved by the City of Wilsonville Engineering Division.

Response: The sign has been placed to meet sight distance clearance requirements. See sign location in Attachment 6, Sheet C1.10. This standard is met.

G. Freestanding and ground mounted signs shall be designed to match or complement the architectural design of buildings on the site.

Response: Signage will match or complement the architectural design of the building. This standard is met.

H. For freestanding and ground mounted signs greater than eight (8) feet in height, the width of the sign shall not exceed the height.

Response: The sign is not greater than 8' in height. This standard is met.

I. Along street frontages in the TC Zone and Old Town Overlay Zone monument style signs are required.

Response: The site is not located in the TC Zone or Old Town Overlay Zone. This standard does not apply.

J. Freestanding and ground mounted signs shall be no further than fifteen (15) feet from the property line and no closer than two (2) feet from a sidewalk or other hard surface in the public right-of-way.

Response: The ground-mounted sign will be located near the southeast corner (intersection of the Supporting Street with Garden Acres Road), positioned to avoid obstructing intersection sight distance while meeting these distance requirements. See sign location in Attachment 6, Sheet C1.10. This standard is met.

K. Except for those signs fronting Interstate 5, freestanding and ground mounted signs shall include the address number of associated buildings unless otherwise approved in writing by the City and the Fire District.

Response: The ground-mounted sign will include the address number of the associated building. This standard will be met.

L. When a sign is designed based on the number of planned tenant spaces it shall remain a legal, conforming sign regardless of the change in the number of tenants or configuration of tenant spaces.

Response: The sign is designed based on the building having up to two tenants. The applicant acknowledges this provision.

(.02) Signs on Buildings.

A. Sign Eligible Facades: Building signs are allowed on a facade of a tenant space or single tenant building when one or more of the following criteria are met:

1. *The facade has one or more entrances open to the general public;*
2. *The facade faces a lot line with frontage on a street or private drive with a cross section similar to a public street, and no other buildings on the same lot obstruct the view of the building facade from the street or private drive; or*
3. *The facade is adjacent to the primary parking area for the building or tenant.*

Response: The proposed building is anticipated to have up to two tenants and the building design has two entrances. The Primary Building Entrance faces the Addressing Street (Garden Acres Road) on the east (front) façade near the southeast building corner; the other entrance is on the north (side) façade near the northeast building corner, facing SW Cahalin Road. It is expected that one or both entrances will be open to the general public. The length of the front façade of the building measures 447.5'. The parking areas are located adjacent to the building entrances. It is anticipated that each tenant will have their own sign.

B. Sign Area Allowed:

1. *The sign area allowed for all building signs on a sign eligible façade is shown in the table below:*

Linear Length of Façade (feet)	***Sign Area Allowed****
Less than 16	*Area equal to linear length*
16 to 24	*24 sq. ft.*
Greater than 24 to 32	*32 sq. ft.*
Greater than 32 to 36	*Area equal to linear length*
Greater than 36 to 72	*36 sq. ft.*
Greater than 72	*36 sq. ft. plus 12 sq. ft. for each 24 linear feet or portion thereof greater than 72 up to a maximum of 200 sq. ft.*

**Except as noted in 2. through 5. below*

2. *The sign area allowed for facades with a primary public entrance or with a frontage along a public street dominated by windows or glazing may be increased by transferring to the façade up to one half (1/2) the sign area allowed for adjacent facades up to fifty (50) square feet. In no case shall the allowed sign area exceed an area equal to the linear length of the façade.*
3. *The sign area allowed is increased as follows for signs at separate building entrances:*
    a. *For building entrances open to the general public located at least fifty (50) feet apart on the same facade, the sign area allowed is increased by fifty (50) percent up to fifty (50) square feet.*
    b. *For building entrances located less than fifty (50) feet apart on the same facades, the sign area allowed is increased by twenty (20) percent up to twenty (20) square feet.*
6. *Calculating linear length of a façade for the purpose of determining maximum sign area allowed. For facades of a single tenant building the length the facade*

measured at the building line, except as noted in a. and b. below. For multi-tenant buildings the width of the façade of the tenant space shall be measured from the centerline of the party walls or the outer extent of the exterior wall at the building line, as applicable, except as noted in a. and b. below. Applicants shall provide the dimensions needed to calculate the length. Each tenant space or single occupant building shall not be considered to have more than five (5) total facades.

a. If a façade is curvilinear, stepped, or otherwise not a straight line, the façade shall be measured by drawing a straight line between the edges of the façade as shown in the figure below.

b. For an "L" shaped tenant space or single tenant building the longest leg of the interior of the "L" shall be basis for measuring the length of the L-shaped facade. Sign area allowed based on the longest leg can be distributed between legs.

C. The length of individual tenant signs shall not exceed seventy-five (75) percent of the length of the facade of the tenant space.

D. The height of building signs shall be within a definable sign band, fascia, or architectural feature and allow a definable space between the sign and the top and bottom of the sign band, fascia, or architectural feature.

E. Types of signs permitted on buildings include wall flat, fascia, projecting, blade, marquee and awning signs. Roof-top signs are prohibited.

Response: The proposed building is anticipated to have up to two tenants. The building's front façade measures 504' in length. One entrance faces east, near the southwest building corner. The other faces north, near the northeast building corner; this orientation is preferable at the north because the entrance will face the adjacent parking area, rather than the stand of trees to be conserved, and will be more easily visible from the Garden Acres Road – Cahalin Road intersection. Wall sign locations are proposed over the entrances, to help guide people to the doorways (together with other identifying features such as canopies and landscaping). The two entrances are accessible to the public and separated by more than 50'. These characteristics will allow different potential combinations of wall signs that comply with this Section's standards; examples are characterized below in Table III-1:

Table III-1. Maximum Wall Sign Area Calculations (Typical)

Scenario	Share of Façade	Length of Façade Lin. Ft.	Maximum Wall Sign SF	Maximum Total Sign Area SF
Single-Tenant Occupancy	100%	504	200	250 *
Two-Tenant 20/80 Split	20%	100.8	60	260
	80%	403.2	200	
Two-Tenant 30/70 Split	30%	151.2	84	264
	70%	352.8	180	
Two-Tenant 40/60 Split	40%	201.6	108	264
	60%	302.4	156	
Two-Tenant 50/50 Split	50%	252	132	264
	50%	252	132	

* *For a single tenant with signs at both office entrances, an additional increase of up to 50 SF is applicable because the entrances are greater than 50' apart. [§4.156.08(.02)B.3.a]*

The calculations in Table III-1 are based on each tenant having a base sign of 36 SF, plus additional square footage for their length of frontage. Staff advised the applicant that only multiple signs of a single tenant are eligible for provisions in §4.156.08(.02)B.3.a allowing a sign area increase of 50% up to a maximum of 50 SF.

The building has primary parking areas on its east and north sides, proximate to the two office entrances. The eastern façade length is the front, at 504'. The northern side façade length is 305', making the north façade (adjacent to parking) eligible for signage of up to 156 SF, based on the following tabular calculation using the provisions of subsection 4.156(.02)A.3 and (.02)B:

Table III-2 Maximum Wall Sign Area Allowed per §4.156.08.(.02)B.1

Length of Façade, Lin. Ft.	Maximum Wall Sign SF
< 16	= linear length
16-24	24
> 24-32	32
> 32-36	= linear length
> 36-72	36
72 - <96	48
96 - <120	60
120 - <144	72
144 - <168	84
168 - <192	96
192 - <216	108
216 - <240	120
240 - <264	132
264 - <288	144
288 - <312	156
312 - <336	168
336 - <360	180
360 - <384	192
384 +	200

The proposed signage locations and maximum sizes comply with applicable Code requirements. Future tenants will be required to obtain Class I sign permits before installing signs, but that permitting can be completed quickly and efficiently when the proposed signs are compliant with this approved program.

(.03) Additional signs. Notwithstanding the signs allowed based on the site in (.01) and (.02) above, the following signs may be permitted, subject to standards and conditions in this Code:

A. *Directional Signs: In addition to exempt directional signs allowed under Subsection 4.156.05 (.02) C. freestanding or ground mounted directional signs six (6) square feet or less in area and four (4) feet or less in height:*
   1. *The signs shall be designed to match or complement the architectural design of buildings on the site;*
   2. *The signs shall only be placed at the intersection of internal circulation drives; and*
   3. *No more than one (1) sign shall be placed per intersection corner with no more than two (2) signs per intersection.*

B. *Planned Development Signs. Up to thirty (32) square feet of the allowed sign area for freestanding signs in a planned development may be used for a separate on-site monument sign or off-site monument sign on an adjacent parcel identifying the Planned Development project.*

C. *Blade Signs. To aid in pedestrian wayfinding, one (1) blade sign, not to exceed six (6) square feet, per facade eligible for building signs. Blade signs over pedestrian accessible areas shall provide a minimum of eight (8) feet of clearance from the ground.*

D. *Fuel or Service Station Price Signs. In addition to the freestanding or ground mounted signs allowed, changeable copy signs shall be allowed for the purpose of advertising fuel prices, subject to the following standards and conditions:*
   1. *The signs shall have a maximum of eleven (11) square feet in area per face per type of fuel sold and shall be permanently affixed to the building or a freestanding sign.*
   2. *The signs shall not be considered in calculating the sign area or number of signs allowed.*
   3. *Signs on fuel pumps shall be permitted, providing that they do not project beyond the outer edge of the pump in any direction.*

Response: No additional signs are proposed at this time, but future tenants may apply for additional signage.

Section 4.156.09. Temporary Signs In All Zones.

The following temporary signs may be permitted in addition to the permanent signs allowed in different zones and exempt temporary signs unless specifically prohibited in a master sign plan or other sign approval:

(.01) General Allowance. Except as noted in subsection (.02) below up to two (2) temporary signs not exceeding a combined total of twenty four (24) square feet may be permitted per lot or non-residential tenant. Such signs may be banners, rigid signs, lawn signs, portable signs, or other signs of similar construction.

(.02) Opening Banner for a New Business or Housing Development. A banner corresponding with the opening of a new business or housing development may be permitted, subject to the following standards and conditions:

A. *One such banner shall be allowed either from the date of issuance of Building Permits until four (4) weeks after issuance of Certificates of Occupancy, or if no Building Permit is issued, for four (4) weeks after occupancy of a new business.*

B. *Such banner may be two-sided but shall not exceed thirty-two (32) square feet per face.*

C. *Such signs shall not be permitted at the same time as general allowance signs in (.01) above.*

(.03) Annual Event Signs. Up to ten (10) lawn signs may be permitted to be located in the public right-of-way for up to fourteen (14) days if all of the following are met:

A. *Signs will not be located in the areas listed in Subsection 4.156.10 (.01) A. 4.*
B. *The applicant or event has not been issued a permit for and placed signs in the public right-of-way in the previous six (6) months;*
C. *Not more than one (1) other permit has been issued for lawn signs in the right-of-way during the time period the applicant is requesting;*
D. *The event to which the signs pertain is expected to attract two hundred fifty (250) or more people;*
E. *The request is not in addition to exempt lawn signs for large special events allowed for in Section 6.150; and*
F. *The applicant has indicated on a map the exact locations the signs will be placed and has submitted an application along with the required fee.*

(.04) Inflatable Signs. Inflatable signs may be permitted for a maximum of fifteen (15) days of display use in any calendar year subject to the following standards and conditions:

A. *Does not exceed ten (10) feet in overall height; and*
B. *If attached to a building in any manner, it meets applicable building code requirements including consideration of wind loads.*

Response: No additional signs are proposed at this time, but future tenants may apply for temporary signage.

Section 4.156.10. Signs on City and ODOT Right-Of-Way.
Response: No signs are proposed on City of ODOT Right-Of-Way. This standard does not apply.

Section 4.156.11. Sign Enforcement.
Response: This section provides direction for enforcement of sign regulations and requires no evidence submittal by applicant.

IV. CONCLUSION

Based on the information presented and discussed in this narrative and the attached supporting plans and documentation, this application meets applicable standards necessary for land use approval. The proposed development complies with all applicable standards of the Wilsonville Planning and Land Development Ordinance. The applicant respectfully requests approval by the City.

To the Council of the City of Wilsonville, Oregon

We, the undersigned Owner(s) of the property described below and/or elector(s) residing at the referenced location, hereby petition for, and give consent to, annexation of said property to the City of Wilsonville. We understand that the City will review this request in accordance with ORS Chapter 222 and applicable regional and local policies prior to approving or denying the request for annexation.

Signature	Printed Name	I am a			Address	Property Description				Date
		PO	RV	OV		T/S	Map	Tax Lot	Precinct #	
	Gary S. Rychlick as Trustee of the Eileen Rychlick Trust			X	25190 SW Grahams Ferry Road	3S103D		100	425	11/19/21
	Gary S. Rychlick as Trustee of the Eileen Rychlick Trust	X			25020 SW Grahams Ferry Road	3S103D		100	425	11/19/21
	Gary S. Rychlick an individual			X	25190 SW Grahams Ferry Road	3S103D		100	425	11/19/21
	Gary S. Rychlick an individual				25020 SW Grahams Ferry Road	3S103D		100	425	
	Susan M. Rychlick an individual	X			25190 SW Grahams Ferry Road	3S103D		100	425	11-19-21
	Susan M. Rychlick an individual				25020 SW Grahams Ferry Road	3S103D		100	425	

PO: Property Owner
RV: Registered Voter
OV: Property Owner & Registered Voter
T/S: Township & Section

6950 SW Hampton St., Ste. 170
Tigard, OR 97223-8330
Ph.: (503) 941-9585
Fax: (503) 941-9640
www.weddlesurveying.com

REGISTERED
PROFESSIONAL
LAND SURVEYOR

OREGON
JULY 25, 1995
MICHAEL D. RENNICK
2718

RENEWS: DECEMBER 31, 2022

December 3, 2021

Job No. 6155

LEGAL DESCRIPTION - ANNEXATION

EXHIBIT "A"

A tract of land for City Annexation purposes located in the SE 1/4 of Section 3, Township 3 South, Range 1 West, W.M., Washington County, Oregon, described as follows:

Being that tract of land described as Parcel I in Warranty Deed to the Eileen Rychlick Trust recorded 12/10/1998 as Document No. 98139844, a 50% interest of which was conveyed to Gary S. Rychlick and Susan M. Rychlick, in Warranty Deed recorded March 11, 2019 as Document No. 2019-013886, Washington County Deed Records, more particularly described as follows:

Beginning at the intersection of the Westerly right-of-way line of S.W. Garden Acres Road (20.00 feet from centerline) and the Southerly right-of-way line of S.W. Cahalin Road (20.00 feet from centerline), thence along said Southerly right-of-way line, North 88°18'06" West, 462.94 feet to a point on the Easterly right-of-way line of S.W. Grahams Ferry Road, 20.00 feet from centerline;

Thence leaving said Southerly right-of-way line along said Easterly right-of-way line, South 25°27'26" West, 604.87 feet to a point on the Northerly line of that tract of land described in Statutory Warranty Deed to JDF Properties, LLC, recorded July 1, 2019 as Document No. 2019-042152, said County Records;

Thence leaving said Easterly right-of-way line along said Northerly line and the Northerly line of that tract of land described in Statutory Warranty Deed to C & L Lang, LLC, recorded December 26, 2018 as Document No. 2018-086143, said County Records, South 81°17'56" East, 715.97 feet to the Westerly right-of-way line of said S.W. Garden Acres Road, 20.00 feet from centerline;

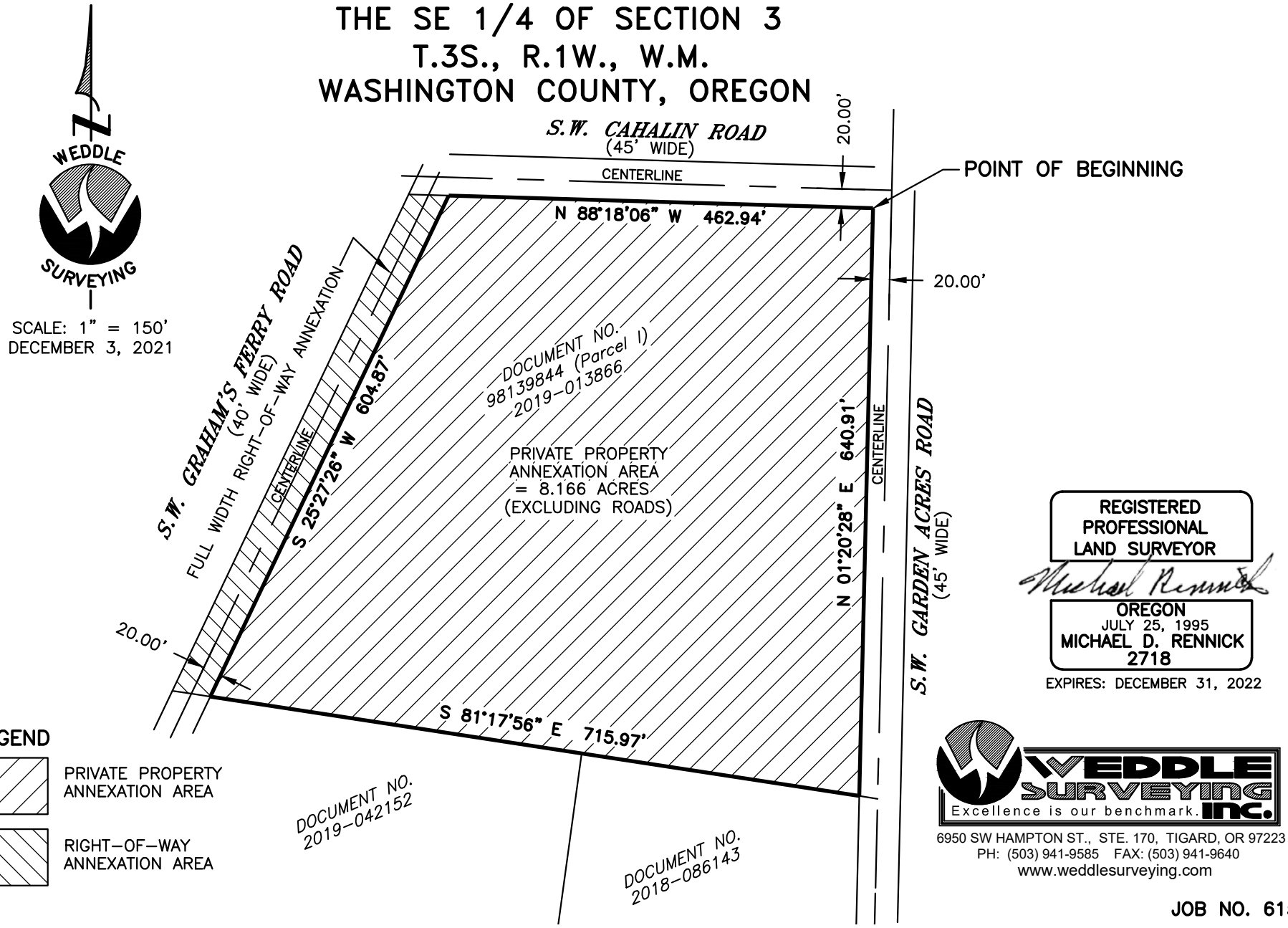
Thence along said Westerly right-of-way line, North 01°20'28" East, 640.91 feet to the Point of Beginning. Containing therein 8.166 acres, more or less.

TOGETHER WITH that portion of the full width right-of-way of SW Graham's Ferry Road abutting the Westerly line of the above described tract of land.

The Basis of Bearing for this description is per Survey No. 34147, Washington County Survey Records.

EXHIBIT "B"

A TRACT OF LAND LOCATED IN THE SE 1/4 OF SECTION 3 T.3S., R.1W., W.M. WASHINGTON COUNTY, OREGON



WEDDLE SURVEYING

SCALE: 1" = 150'
DECEMBER 3, 2021

LEGEND

- PRIVATE PROPERTY ANNEXATION AREA
- RIGHT-OF-WAY ANNEXATION AREA

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
JULY 25, 1995
MICHAEL D. RENNICK
2718

EXPIRES: DECEMBER 31, 2022

WEDDLE SURVEYING INC.
Excellence is our benchmark.
6950 SW HAMPTON ST., STE. 170, TIGARD, OR 97223
PH: (503) 941-9585 FAX: (503) 941-9640
www.weddlesurveying.com

JOB NO. 6151

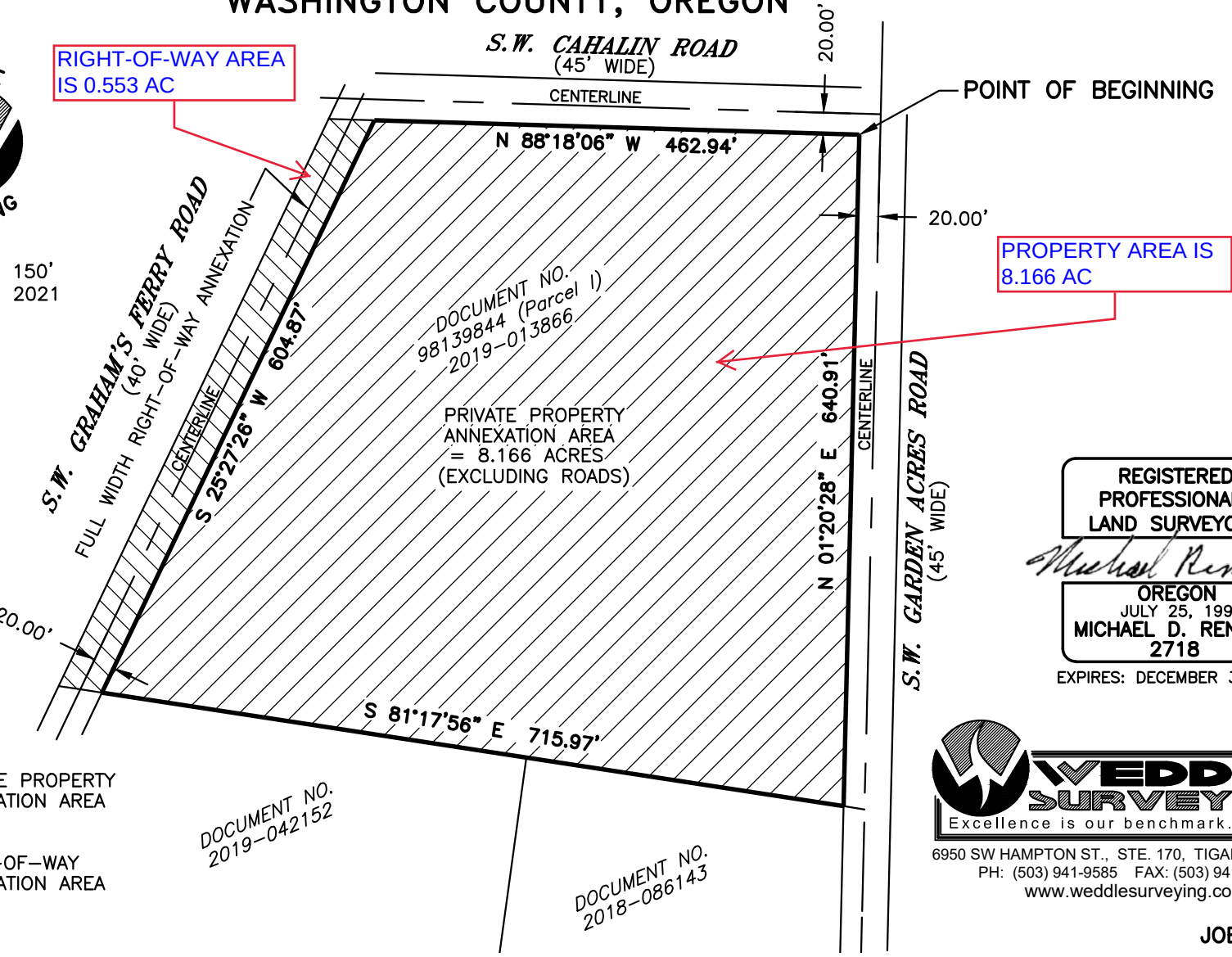
EXHIBIT "B"

A TRACT OF LAND LOCATED IN THE SE 1/4 OF SECTION 3 T.3S., R.1W., W.M. WASHINGTON COUNTY, OREGON

TOTAL ANNEXATION AREA IS 8.166 AC (PROPERTY) PLUS 0.553 AC (ROAD) = 8.719 ACRES

WEDDLE SURVEYING

SCALE: 1" = 150'
DECEMBER 3, 2021



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LEGEND

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The Basis of Bearing for this description is per Survey No. 34147, Washington County Survey Records.

ANNEXATION CERTIFIED

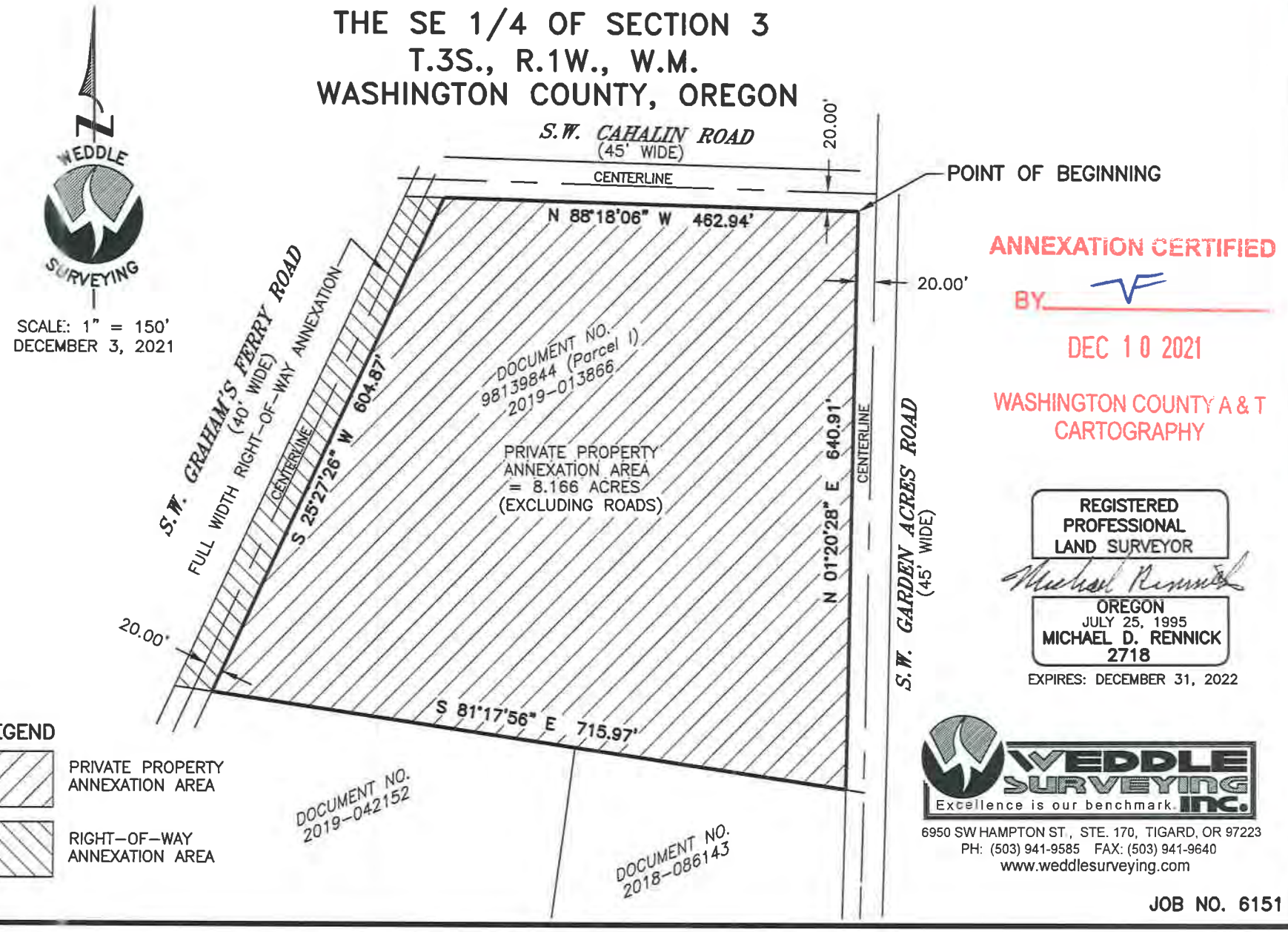
BY _____

DEC 10 2021

WASHINGTON COUNTY A & T
CARTOGRAPHY

EXHIBIT "B"

A TRACT OF LAND LOCATED IN THE SE 1/4 OF SECTION 3 T.3S., R.1W., W.M. WASHINGTON COUNTY, OREGON



SCALE: 1" = 150'
DECEMBER 3, 2021

ANNEXATION CERTIFIED
BY
DEC 10 2021
WASHINGTON COUNTY A & T
CARTOGRAPHY

REGISTERED
PROFESSIONAL
LAND SURVEYOR
OREGON
JULY 25, 1995
MICHAEL D. RENNICK
2718
EXPIRES: DECEMBER 31, 2022

LEGEND

- PRIVATE PROPERTY ANNEXATION AREA
- RIGHT-OF-WAY ANNEXATION AREA

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JOB NO. 6151

CERTIFICATION OF PROPERTY OWNERSHIP

FOR PETITION TO ANNEX TERRITORY INTO CITY OF WILSONVILLE

25190, 25020 SW Grahams Ferry Rd, Washington County, OR 97140
Address (See attached Legal Description)

3S103D 000100
Tax Map/Lot Numbers

I certify that Washington County Assessment records indicate that the territory proposed for annexation to the City of Wilsonville, as described in the attached legal description and map, is owned* by the following entities:

Lillian E. Rychlick as Trustee of the Eileen Rychlick Trust dated September 21, 1998 as to an undivided 50% interest and Gary S. Rychlick and Susan M. Rychlick as to an undivided 50% interest

*Owner means the owner of the title to real property or the contract purchaser of the real property.

TED FOSTER
Printed Name

GIS TECH
Title

Signature

12/10/21
Date

CARTOGRAPHY
Department

Washington County, Oregon
County

ANNEXATION CERTIFIED
BY
DEC 10 2021
WASHINGTON COUNTY A & T
CARTOGRAPHY

CERTIFICATION OF LEGAL DESCRIPTION AND MAP

FOR PETITION TO ANNEX TERRITORY INTO CITY OF WILSONVILLE

(100% PROPERTY OWNERSHIP METHOD)

25190, 25020 SW Grahams Ferry Rd, Washington County, OR 97140
Address (See attached Legal Description)

3S103D 000100
Tax Map/Lot Numbers

I certify that the attached legal description of property proposed for annexation into the City of Wilsonville (located on Assessor's Map 3S1 03D) has been checked by me and it is a true and exact description of the property under consideration, and the description corresponds to the attached map indicating the property under consideration.

TED FOSTER
Printed Name

GIS TECH
Title

Signature

12/10/21
Date

CARTOGRAPHY
Department

Washington County, Oregon
County

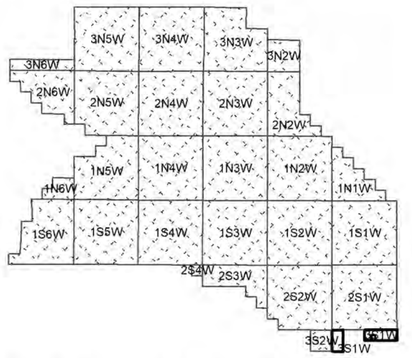
ANNEXATION CERTIFIED

BY

DEC 10 2021

WASHINGTON COUNTY A & T
CARTOGRAPHY

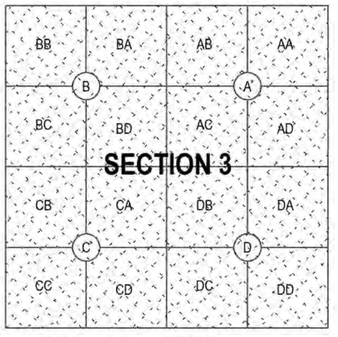
3S103D



WASHINGTON COUNTY OREGON
SE 1/4 SECTION 3 T3S R1W W.M.
SCALE 1" = 200'

36	31	32	33	34	35	36	31
1	6	5	4	3	2	1	6
12	7	8	9	10	11	12	7
13	18	17	16	15	14	13	18
24	19	20	21	22	23	24	19
25	30	29	28	27	26	25	30
36	31	32	33	34	35	36	31
1	6	5	4	3	2	1	6

FOR ADDITIONAL MAPS VISIT OUR WEBSITE AT
www.co.washington.or.us



Cancelled Taxlots For: 3S103D
1601,

Feet
0 100 200 400 600

Assessment
CARTOGRAPHY
Taxation

PLOT DATE: 7/28/2021
Rotation: 0
FOR ASSESSMENT PURPOSES ONLY - DO NOT RELY ON FOR OTHER USE

Map areas delineated by either gray shading or a cross-hatched pattern are for reference only and may not indicate the most current property boundaries. Please consult the appropriate map for the most current information.

WILSONVILLE
3S103D

Digmap

WASHINGTON COUNTY

OREGON

CERTIFICATION OF REGISTERED VOTERS FOR ANNEXATION PURPOSES*

I hereby certify that the attached petition for the annexation of the territory listed herein to the City of Wilsonville contains, as of the date listed, the following information:

2 Number of signatures on petition.

1 Number of active **registered voters** within the territory to be annexed.

1 Number of **VALID signatures of active registered voters** on the petition.

Tax lot number(s): 3S103D 000100

DIVISION: ELECTIONS

COUNTY: WASHINGTON

DATE: December 16, 2021

NAME: Lisa Power

TITLE: Elections Supervisor

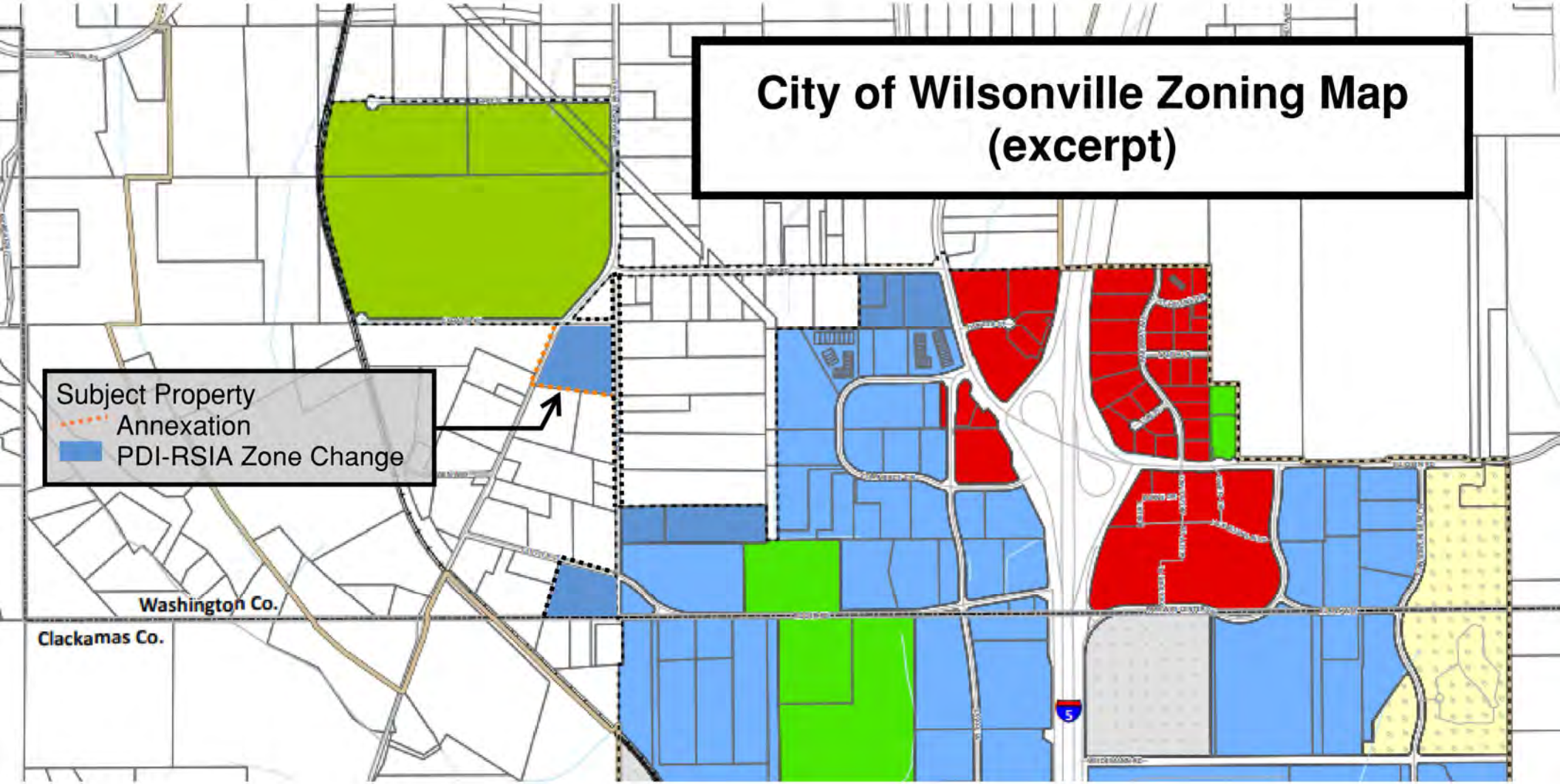
Lisa Power

(Signature of Election Official)

*This 'Certification of Registered Voters for Annexation Purposes' DOES NOT, in any way, make the determination if this petition meets the annexation requirements of the city/district listed.

Annexation certification sht rev2-032906

Department of Assessment & Taxation, Elections Division
2925 NE Aloclek Dr, Suite 170 MS 3; Hillsboro OR 97124-7523
Phone: (503) 846-5800 Fax: (503) 846-5810
Email: election@co.washington.or.us www.co.washington.or.us


City of Wilsonville Zoning Map
(excerpt)
Subject Property
Annexation
PDI-RSIA Zone Change
Washington Co.
Clackamas Co.
5

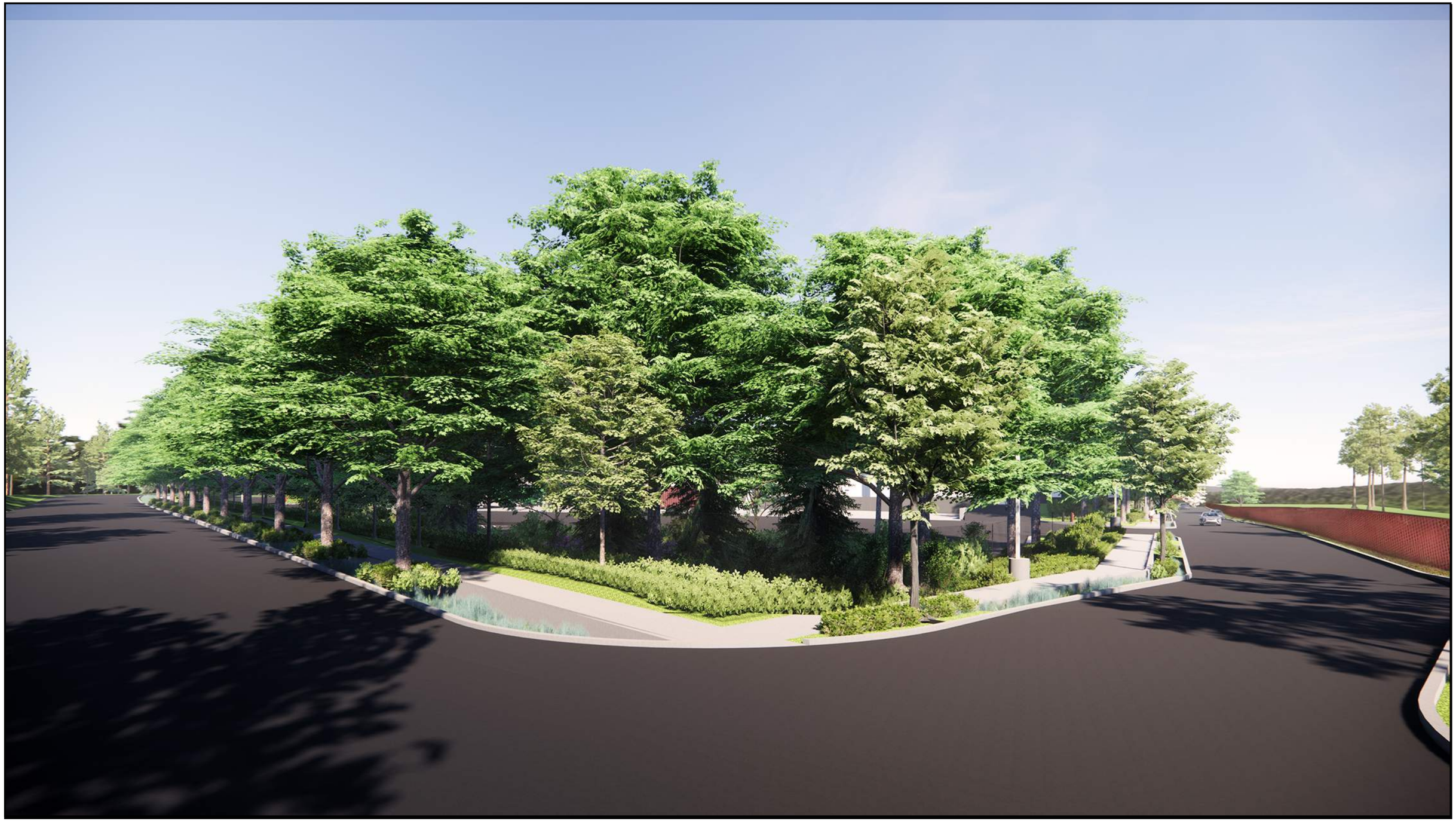
Southeast Main Building Entrance

MACKENZIE.

NE Driveway Entrance - Wayside and Plantings Along Garden Acres Road

Southwest Supporting Street (Grahams Ferry Road is at Left)

NE Wayside & Pedestrian Walkway from Garden Acres Rd to NE Entrance



TERAGAN & ASSOCIATES, INC.
ARBORICULTURAL CONSULTANTS

MEMORANDUM

DATE: May 9, 2022

TO: Chris Sanford (BTC III Grahams Ferry IC LLC)

FROM: Todd Prager, RCA #597, ISA Board Certified Master Arborist

RE: Updated Tree Removal and Protection Recommendations for Coffee Creek Industrial Development

Summary

This memorandum provides tree removal and protection recommendations for the Coffee Creek Industrial development. This report has been updated from my March 25, 2022 report to include the revised tree mitigation sheet L0.03 in Attachment 1.

Background

BTC III Grahams Ferry IC LLC is proposing to construct the Coffee Creek Industrial Development at Cahalin Road and Graham's Ferry Road in Wilsonville, Oregon. Excerpts from the landscape and civil plan sets with the existing trees to be retained and removed with the proposed development are provided in Attachment 1.

The assignment requested of our firm for this project was as follows:

1. Provide an assessment of the existing trees;
2. Provide recommendations for tree removal and retention based on the proposed site improvements; and
3. Provide protection recommendations for the trees to be retained.

This report has been updated from my March 25, 2022 report to include the revised tree mitigation sheet L0.03 in Attachment 1.

Tree Assessment

In May and June of 2021, our firm completed an assessment of the existing trees. The complete inventory data is provided in the tree inventory spreadsheet in Attachment 2. The data collected for each tree includes the tree number, species (common and scientific names), trunk diameter (DBH), crown radius, tree health condition, tree structural condition, pertinent comments, and treatment (remove or

retain). The tree numbers in the tree inventory in Attachment 2 correspond to the tree numbers on the landscape and civil plan sheets in Attachment 1.

Proposed Tree Removal

A typical minimum root protection zone allows encroachments no closer than a radius from a tree of .5 feet per inch of DBH if no more than 25 percent of the root protection zone area (estimated at one foot radius per inch of DBH) is impacted. Figure 1 illustrates this concept. This standard may need to be adjusted on a case-by-case basis due to tree health, species, root distribution, whether the tree will be impacted on multiple sides, and other factors.

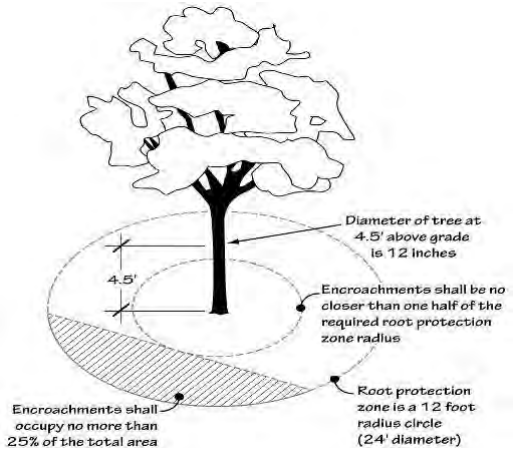


Figure 1: Typical minimum protection zone

Based on the proposed construction, grading, and utility footprint shown in Attachment 1, all onsite trees are proposed for removal except for 10 trees within the northeast corner of the site (trees 125, 126, 265, 266, 267, 2266, 2267, 2269, 2270, and 2271). All ten offsite trees are recommended for removal if approved by the neighboring property owners (trees 11, 16, 19, 22, 24, 25, 323.1, 323.1, 324,1 and 324.2).

Mitigation is required for the removal of non-orchard type and plantation (agricultural) tree species over 6-inch DBH that are not dead as detailed on sheet L0.03 in Attachment 1. The offsite trees in Washington County are not subject to mitigation requirements.

Based on these criteria, mitigation is required for 205 trees over 6-inch DBH to be removed at a minimum ratio of 1:1. The proposed landscape plan for the project includes 178, 2-inch caliper mitigation trees. Based on the proposed number of mitigation trees to be planted, a mitigation fee in lieu of planting 27 trees will be required.

Protection recommendations for the trees to be retained at the site are provided in the next section of this report.

Tree Protection Recommendations

The following recommendations apply to the trees to be retained:

- **Protection Fencing**: Establish tree protection fencing in the locations shown on the plan sheet redlines in Attachment 1. The intent of the tree protection fencing is to protect the minimum root protection zones detailed in Figure 1. Note that the tree protection fencing may be moved to allow construction access to the side of the proposed building following approval by the project arborist.
- **Property Line Trees:** Ten trees that are on or near the property line are recommended for removal due to construction impacts. The adjacent property owners will need to approve the removal of these trees: 11, 16, 19, 22, 24, 25,

323.1, 323.1, 324,1 and 324.2. If the owner does not approve their removal, adjustments to the proposed construction or grading will be required in coordination with the project arborist to adequately protect their crowns and/or root zones. If adjustments to the construction impacts are not possible, I recommend informing the neighbor of the potential tree impacts via certified letter so they are fully aware of the potential impacts and can make an informed decision about the trees.

- **Directional Felling** - Fell the trees to be removed away from the trees to be retained so they do not contact or otherwise damage the trunks or branches of the retained trees. No vehicles or heavy equipment should be permitted within the tree protection zones during tree removal operations.
- **Stump Removal** - The stumps of the trees to be removed from within the tree protection zones shall be retained or carefully stump ground so as not to disturb the root systems of the retained trees.
- **Periodic Risk Assessments:** The retained trees were previously protected within a stand of surrounding trees. The removal of adjacent trees will expose the retained trees to changes in wind forces which will increase their risk of windthrow. I recommend the project arborist conduct a tree risk assessment immediately following site clearing to identify trees that pose significant risks. For trees that pose significant risks, mitigation strategies for retaining them such as pruning or snag creation should be explored as recommended by the project arborist. Any recommended tree removal or snag creation will require the review and approval of the City of Wilsonville. Risk assessments should be conducted periodically throughout construction to document whether trees are adapting to the new site conditions and risks are mitigated appropriately with City approval.
- **Construction Access**: When accessing the sides of the building in the modified tree protection zone, soil compaction prevention such as the placement of steel plates is required to protect the root zones of the adjacent trees.
- **Onsite Supervision of Project Arborist**: The project arborist shall be onsite to oversee the retaining wall excavation and foundation construction within and adjacent to the tree protection zones of trees 265, 266, 267, 2266, 2267, and 2270.
- **Protect Crowns of Trees**: The crowns of the trees may extend beyond the tree protection fencing. Care will need to be taken to not contact or otherwise damage the crowns of the trees during construction activities. Any required pruning shall be completed by an ISA certified arborist consistent with ANSI A300 pruning standards as directed by the project arborist.
- **Sediment Fencing**: Sediment fencing shall be installed outside the protection zones of the trees to be retained to minimize root disturbances. If erosion control is required inside the root zones, straw wattles shall be used on the soil surface.

Attachment 3 includes additional recommendations to protect the trees during construction.

Conclusion

All onsite trees are proposed for removal except for 10 trees within the northeast corner of the site (trees 125, 126, 265, 266, 267, 2266, 2267, 2269, 2270, and 2271). All 10 offsite trees are recommended for removal if approved by the neighboring property owners (trees 11, 16, 19, 22, 24, 25, 323.1, 323.1, 324,1 and 324.2). The mitigation requirements for the project will be met through onsite replanting of 178 trees and a mitigation fee in lieu of planting 27 trees. The trees to be retained will be protected by adhering to the recommendations in this report.

Please contact me if you have questions, concerns, or need any additional information.

Sincerely,

Todd Prager

Todd Prager
ASCA Registered Consulting Arborist #597
ISA Board Certified Master Arborist, WE-6723B
ISA Qualified Tree Risk Assessor
AICP, American Planning Association

Attachment 1:	Landscape and Civil Plan Sets with Trees and Tree Protection
Attachment 2:	Tree Inventory
Attachment 3:	Additional Tree Protection Recommendations
Attachment 4:	Assumptions and Limiting Conditions

SHEET INDEX

ZONING COMPLIANCE

JURISDICTION	WILSONVILLE, OR
STORMWATER	WILSONVILLE (2015)
SITE AREA	329,877 SF (7.57 AC)
BUILDING AREA	148,279 SF (44.95%)
LANDSCAPE AREA (15% MIN)	56,800 SF (17.22%)
TOTAL PARKING LOT AREA	24,182 SF
PARKING LANDSCAPE (10% MIN)	3,522 SF (14.56%)

SECTION 4.176(.02)
C. GENERAL LANDSCAPING STANDARD
WHERE LANDSCAPE IS LESS THAN 30 FT DEEP, PROVIDE 1 TREE PER 800 SF AND 2 HIGH SHRUBS PER 400 SF. TREES AND SHRUBS MAY BE CLUSTERED.
D. LOW SCREEN LANDSCAPING STANDARD
ONE TREE PER 30 LF, 3-FT HT EVERGREEN HEDGE, AND GROUNDCOVER TO FULL COVERAGE. A 3-FT HIGH MASONRY WALL OR BERM MAY REPLACE THE SHRUBS.

SW GRAHAMS FERRY RD. FRONTAGE	626 LF
TREES REQUIRED (1 PER 30 LF)	21 TREES
PROVIDED	24 TREES
SW GARDEN ACRES RD. FRONTAGE	575 LF
TREES REQUIRED (1 PER 30 LF)	20 TREES
PROVIDED	22 TREES

E. LOW BERM LANDSCAPING STANDARD
2'-6" HIGH BERM MINIMUM AS MEASURED ON THE INTERIOR SIDE. IF BERM IS LESS THAN 3-FT, THEN 3-FT TALL EVERGREEN SHRUBS ARE TO BE PLANTED ATOP THE BERM. ONE TREE PER 30 LF AND GROUNDCOVER TO FULL COVERAGE.
F. HIGH SCREEN LANDSCAPING STANDARD
ONE TREE PER 30 LF, 6-FT HT EVERGREEN HEDGE, AND GROUNDCOVER TO FULL COVERAGE. A 3-FT HIGH MASONRY WALL OR BERM MAY REPLACE THE SHRUBS.

SECTION 4.176(.03)
LANDSCAPING AREA
NOT LESS THAN 15% OF TOTAL LOT AREA INCLUDING 10% OF PARKING AREA, SHALL BE LOCATED IN THREE SEPARATE AND DISTINCT AREAS OF THE LOT. LANDSCAPING IS PROVIDED ALONG THE FRONTAGE, THE FULL PERIMETER, WITHIN THE PARKING LOT, AND ADJACENT THE BUILDING.

SECTION 4.176(.04)
BUFFERING AND SCREENING
THIS IS AN INDUSTRIAL SITE THAT ABUTS INDUSTRIAL SITES, NO SCREENING IS REQUIRED FOR TRUCK LOADING AREAS AND DOCKS OR TRUCK PARKING.

SECTION 4.176(.06)
A. SHRUBS AND GROUNDCOVER
SHRUBS ARE 2-GAL OR BETTER. NATIVE TOPSOIL WILL BE STOCKPILED OFFSITE, REUSED, AND AMENDED WITH COMPOST. GROUNDCOVER IS SIZED TO PROVIDE AT LEAST 80% COVERAGE WITHIN 3 YEARS. TURF OR LAWN COVERS LESS THAN 10% OF LANDSCAPE AREA AND IRRIGATION DRAINAGE SHALL BE RETAINED WITHIN LAWN AREA.
B. TREES
PRIMARY TREES ARE 2-INCH CALIPER OR BETTER. SECONDARY TREES ARE 1.75 TO 2-INCH CALIPER OR BETTER. ACCENT TREES ARE 1.75-INCH CALIPER OR BETTER. LARGE CONIFER TREES ARE 8-FOOT TALL OR BETTER. MEDIUM CONIFER TREES ARE 5-FOOT TALL OR BETTER.

TABLE OF ABBREVIATIONS

ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MAX	MAXIMUM
		MIN	MINIMUM
B&B	BALL AND BURLAP	MIX	MIXTURE
CAL	CALIPER	NTS	NOT TO SCALE
CONC	CONCRETE	OC	ON CENTER
DEG	DEGREE	POC	POINT OF CONNECTION
DIA/Ø	DIAMETER	PVC	POLY VINYL CHLORIDE
DWGS	DRAWING	SCH	SCHEDULE
ELL	ELBOW	SF	SQUARE FOOT
EQ	EQUAL	SPEC	SPECIFICATION
FT	FEET/FOOT	TYP	TYPICAL
GAL	GALLON	X	TIMES
GALV	GALVANIZED		
H/HT	HEIGHT		

C. LARGER PLANT MATERIAL
PROPOSED DEVELOPMENT IS GREATER THAN 50,000 SF IN FOOTPRINT AREA AND LARGER THAN 24-FEET IN HEIGHT. AT MATURITY TREES WILL BE AT LEAST 50% THE HEIGHT OF THE BUILDING. DECIDUOUS TREES SHALL BE AT LEAST 10-FEET TALL AND 2-INCH CALIPER. EVERGREEN TREES MUST BE AT LEAST 12-FEET IN HEIGHT. LARGER PLANT MATERIAL HAS BEEN PROVIDED ALONG THE FRONTAGE.
D. STREET TREES
ARTERIAL TREES SHALL BE 3-INCH CALIPER.
E. TREE CREDITS
SEE TREE PLAN, SHEET L0.03.

SECTION 4.176(.07)
INSTALLATION AND MAINTENANCE
SEE PLANTING NOTES THIS SHEET. PLANT MATERIAL REQUIRED BY CODE SHALL BE CONTINUOUSLY MAINTAINED BY OWNER AND REPLACED IN KIND WITHIN ONE GROWING SEASON IF DEAD.

IRRIGATION
SEE IRRIGATION NOTES THIS SHEET. PERMANENT SYSTEM TO BE A DEFERRED SUBMITTAL PROVIDED BY LANDSCAPE CONTRACTOR.

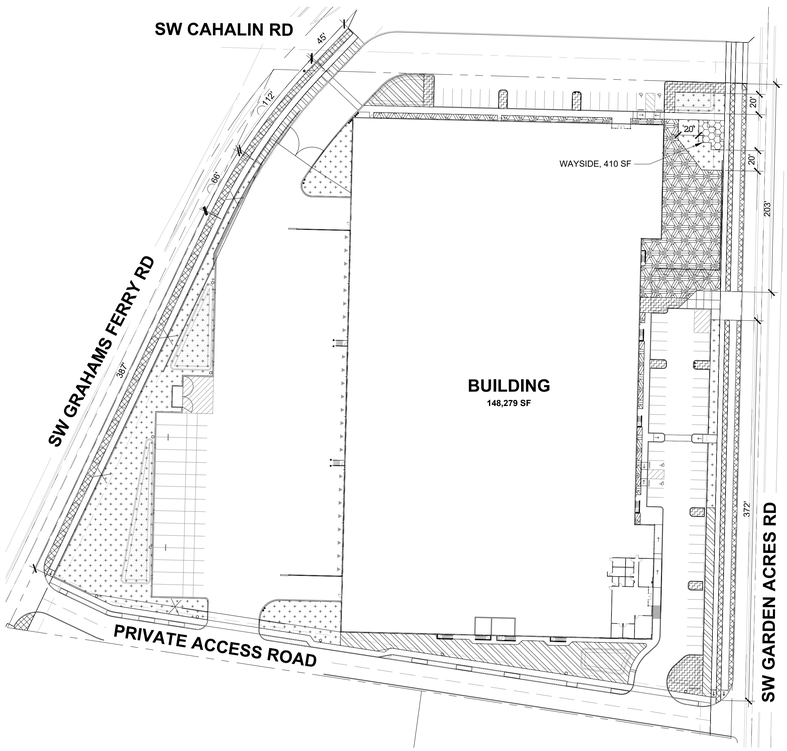
SECTION 4.176(.09)
PLANT MATERIAL LIST
SEE PLANT SCHEDULE THIS SHEET.

CONDITION OF EXISTING PLANTINGS
ONLY TREES ARE PROPOSED FOR RETENTION. SEE TABLE FOR RETAINED TREES ON L0.03 FOR CONDITION.

WATER USAGE
THE LANDSCAPE CONSISTS OF NATIVE AND DROUGHT TOLERANT PLANT MATERIAL. THE FULL SITE FALLS WITHIN THE LOW WATER USAGE CATEGORY C REQUIRING LESS THAN ONE INCH PER WEEK.

COFFEE CREEK DESIGN GUIDELINES

WAYSIDE ON ADDRESSING STREET	
WAYSIDE AREA (5 TO 8 ACRES) (400 SF MIN)	478 SF
BUFFER DEPTH ON 3 SIDES (20 LF MIN)	20 LF
AMENITIES	
SEATING (1 LF OF SEATING PER 40 SF)	12 LF REQUIRED
FREE STANDING BENCH	12 LF PROVIDED
LITTER BIN	YES
SITE LIGHTING	YES
PAVED WALKING SURFACE	6 FT WIDTH MIN



1 L0.01 **ZONING COMPLIANCE PLAN**

60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

LANDSCAPE NOTES

GENERAL

1. CONTRACTOR SHALL CONFIRM ALL EXISTING CONDITIONS PRIOR TO COMMENCING WORK.
2. CALL BEFORE YOU DIG. CONTRACTOR SHALL VERIFY INVERT ELEVATIONS OF ALL UNDERGROUND UTILITIES AND NOTIFY LANDSCAPE ARCHITECT IF THERE ARE ANY DISCREPANCIES WITH PLANTING ROOT ZONES. TO REQUEST LOCATES FOR PROPOSED EXCAVATION CALL 1-800-332-2344 (OR 811) IN OREGON.
3. NOTIFY THE OWNER OR OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES OR CONFLICTS WITH EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF ANY WORK.
4. LOCATION OF EXISTING TREES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.
5. DAMAGE TO EXISTING CONCRETE CURB, ASPHALT PAVING, OR OTHER STRUCTURE SHALL BE REPAIRED OR REPLACED TO PRE CONSTRUCTION CONDITIONS.
6. CONTRACTOR SHALL COORDINATE WITH THE OWNER ANY DISRUPTION TO VEHICULAR CIRCULATION PRIOR TO COMMENCEMENT OF ANY WORK.

TREE PROTECTION

BEFORE CONSTRUCTION BEGINS

1. NOTIFY ALL CONTRACTORS OF TREE PROTECTION PROCEDURES. FOR SUCCESSFUL TREE PROTECTION ON A CONSTRUCTION SITE, ALL CONTRACTORS MUST KNOW AND UNDERSTAND THE GOALS OF TREE PROTECTION.
   a. HOLD A TREE PROTECTION MEETING WITH ALL CONTRACTORS TO EXPLAIN THE GOALS OF TREE PROTECTION.
   b. HAVE ALL CONTRACTORS SIGN MEMORANDA OF UNDERSTANDING REGARDING THE GOALS OF TREE PROTECTION. THE MEMORANDA SHOULD INCLUDE A PENALTY FOR VIOLATING THE TREE PROTECTION PLAN. THE PENALTY SHOULD EQUAL THE RESULTING FINES ISSUED BY THE LOCAL JURISDICTION PLUS THE APPRAISED VALUE OF THE TREE(S) WITHIN THE VIOLATED TREE PROTECTION ZONE PER THE CURRENT TRUNK FORMULA METHOD AS OUTLINED IN THE CURRENT EDITION OF THE 'GUILD FOR PLANT APPRAISAL' BY THE COUNCIL OF TREE AND LANDSCAPE APPRAISERS. THE PENALTY SHOULD BE PAID TO THE OWNER OF THE PROPERTY.
2. FENCING
   a. TREE PROTECTION FENCING MAY BE SET AS SHOW ON THE TREE PLAN.
   b. THE FENCING SHOULD BE PUT IN PLACE BEFORE THE GROUND IS CLEARED TO PROTECT THE TREES AND THE SOIL AROUND THE TREE FROM DISTURBANCES.
   c. FENCING SHOULD CONSIST OF 4-FOOT HIGH STEEL FENCING ON CONCRETE BLOCKS OR OTHER ANCHORING DEVICES, OR 4-FOOT METAL FENCING SECURED TO THE GROUND WITH 6-FOOT METAL POSTS TO PREVENT IT FROM BEING MOVED BY CONTRACTORS, SAGGING, OR FALLING DOWN.
   d. FENCING SHOULD REMAIN IN THE POSITION THAT IS ESTABLISHED BY THE PROJECT ARBORIST AND NOT BE MOVED WITHOUT APPROVAL FROM THE PROJECT ARBORIST UNTIL FINAL PROJECT APPROVAL.
3. SIGNAGE
   a. ALL TREE PROTECTION FENCING SHOULD HAVE SIGNAGE AS FOLLOWS SO THAT ALL CONTRACTORS UNDERSTAND THE PURPOSE OF THE FENCING:

TREE PROTECTION ZONE

DO NOT REMOVE OR ADJUST THE LOCATION OF THIS TREE PROTECTION FENCING. UNAUTHORIZED ENCROACHMENT MAY RESULT IN FINES.

Please contact the project arborist if alterations to the location of the tree protection fencing are necessary.

(Insert project arborist contact information here)

   b. SIGNAGE SHOULD BE PLACED EVERY 75-FEET OR LESS.

DURING CONSTRUCTION

1. PROTECTION GUIDELINES WITHIN THE TREE PROTECTION ZONES:
   a. NO NEW BUILDINGS; GRADE CHANGES OR CUT AND FILL, DURING OR AFTER CONSTRUCTION; NEW IMPERVIOUS SURFACES; OR UTILITY OR DRAINAGE FILED PLACEMENT SHOULD BE ALLOWED WITHIN THE TREE PROTECTION ZONES.
   b. NO TRAFFIC SHOULD BE ALLOWED WITHIN THE TREE PROTECTION ZONES. THIS INCLUDES BUT IS NOT LIMITED TO VEHICLE, HEAVY EQUIPMENT, OR EVEN REPEATED FOOT TRAFFIC.
   c. NO STORAGE OF MATERIALS INCLUDING BUT NOT LIMITED TO SOIL, CONSTRUCTION MATERIALS, OR WASTE FROM THE SITE SHOULD BE PERMITTED WITHIN THE TREE PROTECTION ZONES. WASTE INCLUDES BUT IS NOT LIMITED TO CONCRETE WASH OUT, GASOLINE, DIESEL, PAINT, CLEANER, THINNERS, ETC.
   d. CONSTRUCTION TRAILERS SHOULD NOT BE PARKED/PLACED WITHIN THE TREE PROTECTION ZONES.
   e. NO VEHICLES SHOULD BE ALLOWED TO PARK WITHIN THE TREE PROTECTION ZONES.
   f. NO OTHER ACTIVITIES SHOULD BE ALLOWED THAT WILL CAUSE SOIL COMPACTIONS WITHIN THE TREE PROTECTION ZONES.
2. THE TREES SHOULD BE PROTECTED FROM ANY CUTTING, SKINNING, OR BREAKING OF BRANCHES, TRUNKS OR WOODY ROOTS.
3. THE PROJECT ARBORIST SHOULD BE NOTIFIED PRIOR TO THE CUTTING OF WOODY ROOTS FROM TREES THAT ARE TO BE RETAINED TO EVALUATE AND OVERSEE THE PROPER CUTTING OF ROOTS WITH SHARP CUTTING TOOLS. CUT ROOTS SHOULD BE IMMEDIATELY COVERED WITH SOIL OR MULCH TO PREVENT THEM FROM DRYING OUT.
4. TREES THAT HAVE WOODY ROOTS CUT SHOULD BE PROVIDED SUPPLEMENTAL WATER DURING THE SUMMER MONTHS.
5. ANY NECESSARY PASSAGE OF UTILITIES WITHIN THE TREE PROTECTION ZONES SHOULD BE BY MEANS OF TUNNELING UNDER WOODY ROOTS BY HAND DIGGING OR BORING WITH OVERSIGHT BY THE PROJECT ARBORIST.
6. ANY DEVIATION FROM THE RECOMMENDATIONS IN THIS SECTION SHOULD RECEIVE PRIOR APPROVAL FROM THE PROJECT ARBORIST.

AFTER CONSTRUCTION

1. CAREFULLY LANDSCAPE THE AREAS WITHIN THE TREE PROTECTION ZONES. DO NOT ALLOW TRENCHING FOR IRRIGATION OR OTHER UTILITIES WITHIN THE TREE PROTECTION ZONES.
2. CAREFULLY PLANT NEW PLANTS WITHIN THE TREE PROTECTION ZONES. AVOID CUTTING THE WOODY ROOTS OF TREES THAT ARE RETAINED.
3. DO NOT INSTALL PERMANENT IRRIGATION WITHIN THE TREE PROTECTION ZONES UNLESS IT IS DRIP IRRIGATION TO SUPPORT A SPECIFIC PLANTING OR THE IRRIGATION IS APPROVED BY THE PROJECT ARBORIST.
4. PROVIDE ADEQUATE DRAINAGE WITHIN THE TREE PROTECTION ZONES AND DO NOT ALTER SOIL HYDROLOGY SIGNIFICANTLY FROM EXISTING CONDITIONS FOR THE TREES TO BE RETAINED.
5. PROVIDE FOR THE ONGOING INSPECTION AND TREATMENT OF INSECT AND DISEASE POPULATIONS THAT CAN DAMAGE THE RETAINED TREES AND PLANTS.
6. THE RETAINED TREES MAY NEED TO BE FERTILIZED IF RECOMMENDED BY THE PROJECT ARBORIST.
7. ANY DEVIATION FROM THE RECOMMENDATIONS IN THIS SECTION SHOULD RECEIVE PRIOR APPROVAL FROM THE PROJECT ARBORIST.

PLANTING

1. ALL EXISTING TREES, PLANTS, AND ROOTS SHALL BE PROTECTED FROM DAMAGE FROM ANY CONSTRUCTION PREPARATION, REMOVAL OR INSTALLATION ACTIVITIES WITHIN AND ADJACENT TO PROJECT LIMITS.
2. SHRUBS ADJACENT TO PARKING AREAS SHALL BE PLANTED 2 FT MINIMUM AWAY FROM THE BACK OF CURB. SHRUBS AND GROUNDCOVER ALONG OTHER PAVEMENT EDGES SHALL BE PLANTED A MINIMUM OF ONE HALF THEIR ON CENTER SPACING AWAY FROM PAVEMENT EDGE.
3. ALL PLANT MATERIAL SHALL BE HEALTHY NURSERY STOCK, WELL BRANCHED AND ROOTED, FULL FOLIAGE, FREE FROM INSECTS, DISEASES, WEEDS, WEED ROT, INJURIES AND DEFECTS WITH NO LESS THAN MINIMUMS SPECIFIED IN AMERICAN STANDARDS FOR NURSERY STOCK, ANSI Z60.1-2004.
4. TREES IN THE RIGHT OF WAY SHALL BE TALL ENOUGH TO BE LIMBED UP TO AT LEAST 8 FT ABOVE DRIVE SURFACE GRADE WHILE MAINTAINING ENOUGH BRANCHES TO SUPPORT HEALTHY GROWTH.
5. DO NOT PLANT TREES ABOVE WATERLINES, UTILITIES, OR OTHER UNDERGROUND PIPING.
6. IF DISTURBANCE IS NECESSARY AROUND EXISTING TREES, CONTRACTOR SHALL PROTECT THE CROWN AND ALL WORK WITHIN THE TREE DRIPZONE SHALL BE LIMITED TO THE USE OF HAND TOOLS AND MANUAL EQUIPMENT ONLY.
7. REPLACE, REPAIR AND RESTORE DISTURBED LANDSCAPE AREAS DUE TO GRADING, TRENCHING OR OTHER REASONS TO PRE-CONSTRUCTION CONDITION AND PROVIDE MATERIAL APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE.
8. EXISTING AREAS PROPOSED FOR NEW PLANT MATERIAL SHALL BE CLEARED AND LEGALLY DISPOSED UNLESS SO NOTED. HAND GRUBBING OF INVASIVE PLANT MATERIAL WITHIN THE ROOT PROTECTION ZONE
9. A SOILS ANALYSIS, BY AN INDEPENDENT SOILS TESTING LABORATORY RECOGNIZED BY THE STATE DEPARTMENT OF AGRICULTURE, SHALL BE USED TO RECOMMEND AN APPROPRIATE PLANTING SOIL AND/OR SPECIFIED SOIL AMENDMENTS.
10. TOPSOIL SHALL BE AMENDED AS RECOMMENDED BY AN INDEPENDENT SOILS TESTING LABORATORY AND AS OUTLINED IN THE SPECIFICATION.
11. ALL LANDSCAPED AREAS SHALL BE COVERED BY A LAYER OF ORGANIC MULCH TO A MINIMUM DEPTH OF 2-INCHES.

IRRIGATION

1. UNLESS OTHERWISE INDICATED, ALL NEW LANDSCAPE AREAS TO BE IRRIGATED WITH A FULLY AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. PROVIDE LOOP SYSTEM FOR OPTIMUM EFFICIENCY.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS (IRRIGATION PLANS) TO LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION. DRAWINGS TO INDICATE HEAD TYPE, GALLONS PER MINUTE, LATERAL LINES, AND BE AT MINIMUM SCALE OF 1"=20'
3. CONTRACTOR TO DETERMINE STATIC WATER PRESSURE AT THE P.O.C. PRIOR TO PREPARING SHOP DRAWINGS.
4. CONTRACTOR SHALL ESTABLISH MINIMUM PRESSURE AND MAXIMUM DEMAND REQUIREMENTS FOR IRRIGATION SYSTEM DESIGN, AND PROVIDE INFORMATION IN AN IRRIGATION SCHEDULE.
5. IRRIGATION SYSTEM AS DESIGNED AND INSTALLED SHALL PERFORM WITHIN THE TOLERANCES AND SPECIFICATIONS OF THE SPECIFIED MANUFACTURERS.
6. SYSTEM SHALL BE DESIGNED TO SUPPLY MANUFACTURER'S SPECIFIED MINIMUM OPERATING PRESSURE TO FARTHEST EMITTER FROM WATER METER.
7. SYSTEM SHALL PROVIDE HEAD TO HEAD COVERAGE WITHOUT OVERSPRAY ONTO BUILDING, FENCES, SIDEWALKS, PARKING AREAS, OR OTHER NON-VEGETATED SURFACES.
8. ALL IRRIGATION PIPE MATERIAL AND INSTALLATION SHALL CONFORM TO APPLICABLE CODE FOR PIPING AND COMPONENT REQUIREMENTS.
9. PROVIDE SLEEVING AT ALL AREAS WHERE PIPE TRAVELS UNDER CONCRETE OR HARD SURFACING.
10. VALVES SHALL BE WIRED AND INSTALLED PER MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES AND CONNECTED TO THE IRRIGATION CONTROLLER.
11. REFER TO CIVIL DETAILS AND DETAILS ON L5.11 FOR POINT OF CONNECTION AND BACKFLOW PREVENTION INFORMATION.
12. MAINLINE LAYOUT IS DIAGRAMMATIC ONLY.
13. CONTROLLER TO BE MOUNTED ON BUILDING EXTERIOR. GENERAL CONTRACTOR TO COORDINATE LOCATION WITH OWNER'S REPRESENTATIVE.
14. ZONE THE FOLLOWING AREAS SEPARATELY: TEMPORARY AREAS, PERMANENT LANDSCAPE AREAS, AND TREES.
15. QUICK COUPLERS TO BE PLACED EVERY 200 LINEAR FEET MAX.
16. IRRIGATION SHALL BE WINTERIZED THROUGH LOW PRESSURE, HIGH VOLUME AIR BLOWOUT CONNECTION THROUGH QUICK COUPLER.
17. THE SYSTEM SHALL BE GRAVITY DRAINED. THE CONTRACTOR SHALL PROVIDE APPROPRIATE MANUAL DRAINS AT LOW POINTS.

ZONING COMPLIANCE LEGEND

- GENERAL LANDSCAPE
- LOW SCREEN
- HIGH SCREEN
- PARKING
- RIGHT OF WAY
- WAYSIDE
- STORMWATER

PLANT SCHEDULE - PUBLIC (FOR REFERENCE ONLY)

STREET TREES	BOTANICAL / COMMON NAME
	ACER RUBRUM 'FRANKSRED' TM *OCTOBER GLORY RED MAPLE*
	AMELANCHIER ALNIFOLIA *SERVICEBERRY*
	CORNUS KOUSA 'MILKY WAY' *MILKY WAY KOUSA DOGWOOD*
	LAGERSTROEMIA INDICA X FAURIEI 'NATCHEZ' *NATCHEZ CRAPE MYRTLE*
	NYSSA SYLVATICA 'WILDFIRE' *WILDFIRE TUPELO*
	PARROTIA PERSICA 'INGE'S RUBY VASE' TM *RUBY VASE PERSIAN PARROTIA*
	TILIA TOMENTOSA 'STERLING' *STERLING SILVER LINDEN*
	ZELKOVA SERRATA 'VILLAGE GREEN' *VILLAGE GREEN SAWLEAF ZELKOVA*
SHRUBS	BOTANICAL / COMMON NAME
	GAULTHERIA SHALLON *SALAL*
	SPIRAEA BETULIFOLIA 'TOR' *BIRCHLEAF SPIREA*
	VACCINIUM OVATUM 'SCARLET OVATION' *SCARLET OVATION EVERGREEN HUCKLEBERRY*
	VIBURNUM TINUS 'COMPACTUM' *SPRING BOUQUET VIBURNUM*
PERENNIALS	BOTANICAL / COMMON NAME
	POLYSTICHUM MUNITUM *WESTERN SWORD FERN*
STORMWATER SHRUBS	BOTANICAL / COMMON NAME
	SPIRAEA BETULIFOLIA 'TOR' *BIRCHLEAF SPIREA*
	SYMPHORICARPOS ALBUS *COMMON WHITE SNOWBERRY*
GROUND COVERS	BOTANICAL / COMMON NAME
	ARCTOSTAPHYLOS UVA-URSI *KINNIKINNICK*
	STORMWATER FACILITY – PLANTER
STORMWATER PLANTING	BOTANICAL / COMMON NAME
	CAREX DENSA *DENSE SEDGE*
	JUNCUS PATENS *CALIFORNIA GRAY RUSH*

PLANT SCHEDULE - PRIVATE

TREES	BOTANICAL / COMMON NAME	SIZE		QTY
	AMELANCHIER ALNIFOLIA *SERVICEBERRY* *SINGLE STEM*	2" CAL., B&B		7
	CALOCEDRUS DECURRENS *INCENSE CEDAR* *MATURE (100' H X 30' W) SECONDARY TREE*	12–14' HT. MIN. B&B		17
	CORNUS NUTTALII X FLORIDA 'EDDIE'S WHITE WONDER' *EDDIE'S WHITE WONDER DOGWOOD* *MATURE (35' H X 20' W)* *ACCENT TREE*	2" CAL. B&B, 10' HT. MIN.		9
	EXISTING TREE *TO REMAIN*	– – –		10
	FRANGULA PURSHIANA *CASCARA* *MATURE (25' H X 20' W)* *ACCENT TREE*	2" CAL. B&B, 10' HT. MIN.		5
	FRAXINUS PENNSYLVANICA 'MARSHALL'S SEEDLESS' *MARSHALL'S SEEDLESS ASH* *MATURE (100' H X 100' W) PRIMARY TREE*	2" CAL., B&B 10' HT. MIN.		19
	SYMPLOCLADUS DIDICA 'ESPRESSO' *KENTUCKY COFFEETREE* *MATURE (50' H X 35' W) MEDIUM TREE*	2" CAL. B&B		8
	NYSSA SYLVATICA 'WILDFIRE' *BLACK GUM* *MATURE (45' H X 30' W) PRIMARY TREE*	2" CAL., B&B 10' HT. MIN.		5
	PSEUDOTSUGA MENZIESII *DOUGLAS FIR* *MATURE (200' H X 30' W) PRIMARY TREE*	12–14' HT. MIN. B&B		3
	QUERCUS X 'CRIMSCHMIDT' TM *CRIMSON SPIRE OAK* *MATURE (45' H X 15'W) ACCENT TREE*	2" CAL., B&B 10' HT. MIN.		8
	TILIA TOMENTOSA 'STERLING' *STERLING SILVER LINDEN*	2" CAL. B&B		3
	ULMUS X 'MORTON GLOSSY' TM *TRIUMPH ELM* *MATURE (55' H X 35' W) MEDIUM TREE*	2" CAL. B&B		13
STORMWATER TREES	BOTANICAL / COMMON NAME	SIZE		QTY
	CORNUS NUTTALII *PACIFIC DOGWOOD* *MATURE (20' H X 20' W)*	2" CAL., B&B 10' HT. MIN.		14
	FRAXINUS LATIFOLIA *OREGON ASH* *MATURE (30' H X 35' W)*	2" CAL. B&B, 10' HT. MIN.		8
SHRUBS	BOTANICAL / COMMON NAME	SIZE	SPACING	QTY
	ACER CIRCINATUM 'BURGUNDY JEWEL' *BURGUNDY JEWEL VINE MAPLE*	3 GAL.	72" o.c.	7
	ARBUTUS UNEDO 'COMPACTA' *DWARF STRAWBERRY TREE*	30" HT. MIN.	72" o.c.	36
	CORNUS SERICEA *RED TWIG DOGWOOD*	2 GAL. 24" HT. MIN.	48" o.c.	6
	CORNUS SERICEA 'KELSEYI' *KELSEYI DWARF REDTWIG DOGWOOD*	2 GAL. 12" HT. MIN.	24" o.c.	57
	GAULTHERIA SHALLON *SEALAL*	2 GAL. 12" HT. MIN.	36" o.c.	452
	HOLODISCUS DISCOLOR *OCEAN–SPRAY*	3 GAL. 30" HT. MIN.	48" o.c.	47
	MAHONIA AQUIFOLIUM *OREGON GRAPE*	3 GAL. 24" HT. MIN.	48" o.c.	117
	MAHONIA AQUIFOLIUM 'COMPACTA' *COMPACT OREGON GRAPE*	2 GAL. 12" HT. MIN.	36" o.c.	22
	MYRICA CALIFORNICA *PACIFIC WAX MYRTLE*	2 GAL. 24" HT. MIN.	72" o.c.	21
	RIBES SANGUINEUM *RED FLOWERING CURRANT*	3 GAL. 24" HT. MIN.	48" o.c.	94
	ROSA NUTKANA *NOOTKA ROSE*	30" HT. MIN.	48" o.c.	59
	SPIRAEA BETULIFOLIA 'TOR' *BIRCHLEAF SPIREA*	2 GAL. 12" HT. MIN.	30" o.c.	230
	SPIRAEA DOUGLASII *WESTERN SPIREA* *(3–4' H X 3' W) NATIVE*	30" HT. MIN.	48" o.c.	37
	SYMPHORICARPOS ALBUS *COMMON WHITE SNOWBERRY*	2 GAL. 12" HT. MIN.	36" o.c.	129
	VACCINIUM OVATUM 'SCARLET OVATION' *SCARLET OVATION EVERGREEN HUCKLEBERRY* *MATURE (3' X 3')*	2 GAL. 12" HT. MIN.	36" o.c.	461
	VIBURNUM TINUS *LAURUSTINUS*	5 GAL. 24" HT. MIN.	48" o.c.	26
	VIBURNUM TINUS 'COMPACTUM' *SPRING BOUQUET VIBURNUM*	5 GAL. 24" HT. MIN.	36" o.c.	10
PERENNIALS	BOTANICAL / COMMON NAME	SIZE	SPACING	QTY
	POLYSTICHUM MUNITUM *WESTERN SWORD FERN*	1 GAL.	24" o.c.	455
	PTERIDIUM AQUILINUM *WESTERN BRACKENFERN*	1 GAL.	24" o.c.	146
	SALVIA X SUPERBA 'CARADONNA' *CARADONNA SAGE*	1 GAL.	24" o.c.	219
STORMWATER SHRUBS	BOTANICAL / COMMON NAME	SIZE	SPACING	QTY
	ACER CIRCINATUM *VINE MAPLE*	30" HT. MIN.	72" o.c.	3
	CORNUS SERICEA *RED TWIG DOGWOOD*	30" HT. MIN.	48" o.c.	178
	HOLODISCUS DISCOLOR *OCEAN–SPRAY*	30" HT. MIN.	48" o.c.	8
	MAHONIA AQUIFOLIUM *OREGON GRAPE*	2 GAL. 24" HT. MIN.	36" o.c.	85
	PHYSOCARPUS CAPITATUS *PACIFIC NINEBARK*	2 GAL.	36" o.c.	33
	POLYSTICHUM MUNITUM *WESTERN SWORD FERN*	1 GAL.	24" o.c.	54
	RIBES SANGUINEUM *RED FLOWERING CURRANT*	30" HT. MIN.	48" o.c.	31
	ROSA NUTKANA *NOOTKA ROSE*	30" HT. MIN.	48" o.c.	197
	SPIRAEA BETULIFOLIA 'TOR' *BIRCHLEAF SPIREA*	1 GAL.	24" o.c.	145
	SPIRAEA DOUGLASII *WESTERN SPIREA*	30" HT. MIN.	48" o.c.	12
	SYMPHORICARPOS ALBUS *COMMON WHITE SNOWBERRY*	1 GAL.	36" o.c.	19
GROUND COVERS	BOTANICAL / COMMON NAME	SIZE	SPACING	QTY
	ARCTOSTAPHYLOS UVA–URSI *KINNIKINNICK*	1 GAL.	24" o.c.	9,075 SF
	BOUTELOUA GRACILIS 'BLONDE AMBITION' *BLONDE AMBITION BLUE GRAMA*	1 GAL.	24" o.c.	667 SF
	DICENTRA FORMOSA *WESTERN BLEEDING–HEART*	4" POT	12" o.c.	186 SF
	GAULTHERIA SHALLON *SALAL*	1 GAL.		2,132 SF
	ROCK MULCH MAINTENANCE BAND *1"–2" ROUND ROCK*	– – –		1,230 SF
	SEED MIX KNEE HIGH / LOW PROFILE MIX *SUNMARK SEEDS*	5 OZ / 1000 SF		6,935 SF
	SEED MIX NATIVE UNDERSTORY *PROTIME SEEDS*	5 OZ / 1000 SF		6,238 SF
STORMWATER PLANTING	BOTANICAL / COMMON NAME	SIZE	SPACING	QTY
	CAREX DENSA *DENSE SEDGE*	1 GAL.		385 SF
	JUNCUS PATENS *CALIFORNIA GRAY RUSH*	1 GAL.	12" o.c.	411 SF
	STORMWATER FACILITY – GROUND COVER *SEE SCHEDULE L0.03*	– – –		2,115 SF

*ALL TREES HAVE BEEN UPSIZED ABOVE CODE MINIMUM TO 2" CALIPER TO MEET THE REQUIREMENT FOR MITIGATION TREES

NOTE:
PLANT QUANTITIES INDICATED ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. CONTRACTOR IS RESPONSIBLE FOR PROVIDING PLANTS IN QUANTITIES AND LOCATIONS ON DRAWINGS.

May 9, 2022
Page 5 of 5

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
GENERAL LANDSCAPE NOTES

DRAWN BY: SKA, LJM

CHECKED BY: NRF

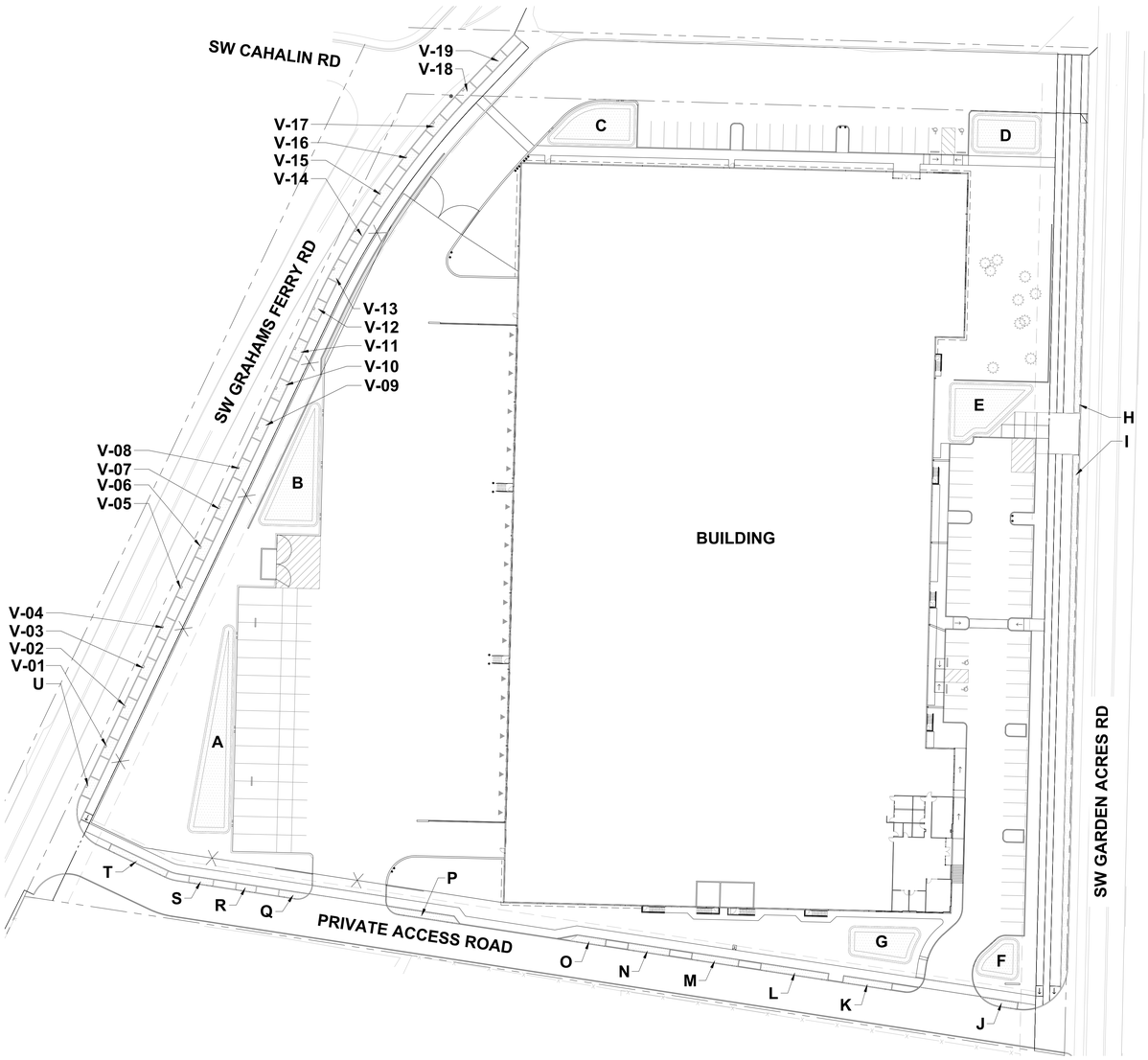
SHEET
L0.01
Attachment 1

JOB NO. **2210157.00**

PERMIT SET 04/14/22

STORMWATER FACILITY PLANTING NOTES

1. PLANTING SCHEDULE: CONTAINERIZED STOCK SHALL BE INSTALLED ONLY FROM FEBRUARY 1 THROUGH MAY 1 AND OCTOBER 1 THROUGH NOVEMBER 15. BARE ROOT STOCK SHALL BE INSTALLED ONLY FROM DECEMBER 15 THROUGH APRIL 15. SEEDING SHALL OCCUR ONLY BETWEEN MARCH 1 THROUGH MAY 15 AND SEPTEMBER 1 THROUGH OCTOBER 15.
2. EROSION CONTROL: GRADING, SOIL PREPARATION, AND SEEDING SHALL BE PERFORMED DURING OPTIMAL WEATHER CONDITIONS AND AT LOW FLOW LEVELS TO MINIMIZE SEDIMENT IMPACTS. BIODEGRADABLE FABRICS SUCH AS BURLAP MAY BE USED TO SECURE PLANT PLUGS IN PLACE AND TO DISCOURAGE FLOATING UPON INUNDATION. NO PLASTIC MESH THAT CAN ENTANGLE WILDLIFE IS PERMITTED.
3. GROWING MEDIUM INSTALLATION:
   - 3.1. PROTECT GROWING MEDIUM FROM ALL SOURCES OF CONTAMINATION, INCLUDING WEED SEEDS, WHILE AT THE SUPPLIER, IN CONVEYANCE, AND AT THE PROJECT SITE.
   - 3.2. PLACE MEDIUM IN LOOSE LIFTS, NOT TO EXCEED 8-INCHES AND EACH LIFT SHALL BE COMPACTED WITH A WATER-FILLED LANDSCAPE ROLLER. THE MATERIAL SHALL NOT OTHERWISE BE MECHANICALLY COMPACTED.
   - 3.3. WEATHER PERMITTING, PLANTS SHALL BE INSTALLED AS SOON AS POSSIBLE AFTER PLACING AND GRADING THE GROWING MEDIUM IN ORDER TO MINIMIZE EROSION AND FURTHER COMPACTION.
   - 3.4. TEMPORARY EROSION CONTROL MEASURES ARE REQUIRED UNTIL PERMANENT STABILIZATION MEASURES ARE FUNCTIONAL, INCLUDING PROTECTION OF OVERFLOW STRUCTURES.
   - 3.5. IN ALL CASES, THE FACILITY MUST BE PROTECTED FROM FOOT AND EQUIPMENT TRAFFIC THAT IS UNRELATED TO THE CONSTRUCTION OF THE FACILITY. TEMPORARY FENCING OR WALKWAYS SHOULD BE INSTALLED AS NEEDED TO KEEP WORKERS, PEDESTRIANS, AND EQUIPMENT OUT OF THE FACILITY. UNDER NO CIRCUMSTANCES SHOULD MATERIALS AND EQUIPMENT BE STORED IN THE FACILITY.
   - 3.6. STORMWATER MANAGEMENT FACILITIES SHALL BE KEPT CLEAN AND SHALL NOT BE USED AS EROSION AND SEDIMENT CONTROL STRUCTURES DURING CONSTRUCTION.
   - 3.7. PLACEMENT OF THE GROWING MEDIUM WILL NOT BE ALLOWED WHEN THE GROUND IS FROZEN OR SATURATED OR WHEN THE WEATHER IS DETERMINED TO BE TOO WET.
4. MULCHING FOR STORMWATER FACILITIES SHALL BE PER SECTION A.3.7. USE OF MULCH IN FREQUENTLY INUNDATED AREAS SHALL BE LIMITIED TO AVOID ANY POSSIBLE WATER QUALITY IMPACTS INCLUDING THE LEACHING OF TANNINS AND NUTRIENTS, ANFD THE MIGRATION OF MULCH INTO WATER WAYS. MULCHES SHALL BE STABLE AND INERT MATTER OF SUFFICIENT MASS AND DENSITY THAT IT WILL NOT FLOAT IN STANDARD FLOWS. MULCH COVER SHOULD BE MAINTAINED THROUGHOUT THE LIFE OF THE FACILITY WITH MINIMUM THICKNESS OF 2-INCHES IN DEPTH.
5. PLANT PROTECTION FROM WILDLIFE: DEPENDING ON SITE CONDITIONS, APPROPRIATE MEASURES SHALL BE TAKEN TO LIMIT WILDLIFE-RELATED DAMAGE. IF BEAVERS OR NUTRIA ARE PRESENT, PROTECT THE MAIN STEM OF ALL TREES WITHIN 100' OF THE EDGE OF WATER WITH 36" OF WIRE MESH.
6. FERTILIZER SHOULD GENERALLY BE AVOIDED IN STORMWATER FACILITIES. FERTILIZE ALL PLANTS DURING ESTABLISHMENT AS NEEDED WITH SLOW RELEASE, ORGANIC (LOW YIELD) MATERIAL.
7. IRRIGATION: A CITY APPROVED IRRIGATION SYSTEM MAY BE USED DURING THE 2-YEAR ESTABLISHMENT PERIOD. WATERING SHALL BE AT A RATE TO MAINTAIN ALL PLANTINGS IN A HEALTHY THRIVING CONDITION DURING ESTABLISHMENT. OTHER IRRIGATION TECHNIQUES, SUCH AS DEEP WATERING, MAY BE ALLOWED WITH PRIOR APPROVAL BY THE CITY'S AUTHORIZED REPRESENTATIVE.
8. MAINTENANCE: CHECK FOR WEEDS REGULARLY. CHECK MULCH REGULARLY AND MAINTAIN EVEN COVERAGE. REPLANT BARE PATCHES AS NECESSARY TO COMPLY WITH THE FACILITY'S COVERAGE REQUIREMENTS AND MAINTENANCE PLAN. IMPLEMENT ALL OF THE REQUIRED MAINTENANCE ACTIVITIES LISTED IN THE CITY OF WILSONVILLE VEGETATED STORMWATER MANAGEMENT FACILITY DETAILS.



1 L0.02 **STORMWATER FACILITY KEY PLAN**

50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

STORMWATER FACILITY PLANT SCHEDULES

PER CITY OF WILSONVILLE 2015 STORMWATER STORMWATER AND SURFACE WATER DESIGN & CONSTRUCTION STANDARDS - SECTION 3 - PUBLIC WORKS STANDARDS (2015)

PROVIDE AT LEAST 50% EVERGREEN PLANTS AND AT LEAST 2 SPECIES OF HERBACEOUS AND SMALL SHRUBS/GROUNDCOVER PLANT COMMUNITIES.

MOIST (ZONE A) VEGETATION TYPE	QUANTITY	SIZE
GROUNDCOVER PLANTS	115/100 SF	#1 CONTAINER
SMALL SHRUBS	3/100 SF	#1 CONTAINER
LARGE SHRUBS / SMALL TREES	4/100 SF	30" HEIGHT

DRY (ZONE B) VEGETATION TYPE	QUANTITY	SIZE
GROUNDCOVER PLANTS	115/100 SF	#1 CONTAINER
SMALL SHRUBS	3/100 SF	#1 CONTAINER
LARGE SHRUBS / SMALL TREES	4/100 SF	30" HEIGHT
TREE (DECIDUOUS) OR	1/100 SF	1" CALIPER
TREE (EVERGREEN)	1/100 SF	6' HEIGHT

PLANT LIST				FACILITIES A-G (PRIVATE)													
				A		B		C		D		E		F		G	
PLANT NAME	SIZE	SPACING	EVER-GREEN	ZONE A	ZONE B	ZONE A	ZONE B	ZONE A	ZONE B	ZONE A	ZONE B	ZONE A	ZONE B	ZONE A	ZONE B	ZONE A	ZONE B
				2,307 SF	312 SF	1,852 SF	215 SF	1,288 SF	154 SF	1,099 SF	136 SF	1,424 SF	166 SF	549 SF	93 SF	919 SF	125 SF
REQUIRED GROUND COVER PLANTS (115 PER 100 SF)				2,653	359	1230	248	1482	177	1,264	157	1,638	191	632	107	1,057	148
ARCTOSTAPHYLOS UVA-URSI / KINNIKINNICK	#1	12" OC	YES		180				59				191				74
CAREX DENSA / DENSE SEDGE	#1	12" OC	YES	664	179	1,065	124	741		316	79	546		183	54	265	74
ELEOCHARIS OVATA / OVATE SPIKE RUSH	#1	12" OC	YES	663		1,065		741		316	78	546		183	53	264	
ELYMUS GLAUCUS / BLUE WILD RYE	#1	12" OC	YES	663			124		59	316						264	
JUNCUS PATENS / SPREADING RUSH	#1	12" OC	YES	663					59	316		546		183		264	
REQUIRED SMALL SHRUBS (3 PER 100 SF)				70	10	56	7	39	5	33	5	43	5	17	3	28	4
CORNUS S. 'KELSYII' / DWARF REDTWIG DOGWOOD	#1	AS SHOWN	NO														
MAHONIA AQUIFOLIUM / OREGON GRAPE	#2	AS SHOWN	YES			13	7	27		33	5						
PHYSOCARPUS CAPITATUS / PACIFIC NINEBARK	#2	AS SHOWN	NO	18		15											
POLYSTICHUM MUNITUM / WESTERN SWORD FERN	#1	AS SHOWN	YES		10			12	5			22	3				
SPIREA B. 'TOR' / BIRCHLEAF SPIREA	#1	AS SHOWN	NO	62		28						21	2		3	28	6
SYMPHORICARPOS ALBUS / COMMON WHITE SNOWBERRY	#1	AS SHOWN	NO											17			
REQUIRED LARGE SHRUBS / SMALL TREES (4 PER 100 SF)				92	12	74	9	52	7	44	6	57	7	22	4	37	6
ACER CIRCINATUM / VINE MAPLE	30" HT	AS SHOWN	NO				2										
CORNUS SERCIA / RED TWIG DOGWOOD	30" HT	AS SHOWN	NO	36	2	29		26		22		33		6		22	2
HOLODISCUS DISCOLOR / OCEAN SPRAY	30" HT	AS SHOWN	NO	4												4	
RIBES SANGUINEUM / RED FLOWERING CURRANT	30" HT	AS SHOWN	NO	24	3												4
ROSA NUTKANA / NOOTKA ROSE	30" HT	AS SHOWN	NO	26	7	35	7	26	7	22	6	24	7	16	3	11	
SPIREA DOUGLASII / WESTERN SPIREA	30" HT	AS SHOWN	NO	2		10											
REQUIRED TREES (1 PER 100 SF)				0	3	0	3	0	2	0	2	0	2	0	1	0	2
CORNUS NUTTALII / EDDIE'S WHITE WONDER DOGWOOD	2" CAL	AS SHOWN	NO	2	3			3		2	2		2				1
FRAXINUS LATIFOLIA / OREGON ASH	2" CAL	AS SHOWN	NO	2	1		3					1					1
TOTAL PLANTS IN FACILITY				3,214		2,527		1,765		1,513		1,944		785		1,282	
TOTAL EVERGREEN PLANTS				3,022		2,385		1,703		1,459		1,854		739		1,205	
% EVERGREEN IN FACILITY				94.0%		94.4%		96.5%		96.4%		95.4%		94.1%		94.0%	

PLANT LIST				FACILITIES H-V (PUBLIC)													
				H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V*
PLANT NAME	SIZE	SPACING	EVER-GREEN	ZONE A	ZONE A	ZONE A	ZONE A	ZONE A	ZONE A	ZONE A	ZONE A	ZONE A	ZONE A	ZONE A	ZONE A	ZONE A	ZONE A	ZONE A
				789 SF	1,433 SF	85 SF	132 SF	183 SF	126 SF	112 SF	86 SF	181 SF	69 SF	54 SF	65 SF	169 SF	89 SF	91 SF
REQUIRED GROUND COVER PLANTS (115 PER 100 SF)				908	1,648	98	152	211	145	129	99	209	80	63	75	195	103	105
CAREX DENSA / DENSE SEDGE	#1	12" OC	YES	227	412	98	50	127	145	129		105	80		75	98	53	55
ELEOCHARIS OVATA / OVATE SPIKE RUSH	#1	12" OC	YES	227	412													
ELYMUS GLAUCUS / BLUE WILD RYE	#1	12" OC	YES	227	412													
JUNCUS PATENS / SPREADING RUSH	#1	12" OC	YES	227	412		102	84			99	104		63		97	50	50
REQUIRED SMALL SHRUBS (3 PER 100 SF)				24	43	3	4	6	4	4	3	6	3	2	2	6	3	3
SPIREA B. 'TOR' / BIRCHLEAF SPIREA	#1	AS SHOWN	NO		43									2	3			
SYMPHORICARPOS ALBUS / COMMON WHITE SNOWBERRY	#1	AS SHOWN	NO	25		3	4	6	4	4	3	6	3			6	3	3
REQUIRED SMALL SHRUB IN LIEU OF LARGE SHRUB (4 PER 100 SF)				32	58	4	6	8	5	5	4	8	3	3	3	7	4	4
SPIREA B. 'TOR' / BIRCHLEAF SPIREA	#1	AS SHOWN	NO	33	8	4	6	8	5	5	4	8	3	3	3	7	4	4
SYMPHORICARPOS ALBUS / COMMON WHITE SNOWBERRY	#1	AS SHOWN	NO		50													
TOTAL PLANTS IN FACILITY				964	1,750	105	162	225	155	138	106	222	85	67	81	207	110	112
TOTAL EVERGREEN PLANTS				908	1,648	98	152	211	145	129	99	209	80	63	75	195	103	105
% EVERGREEN IN FACILITY				94.2%	94.2%	93.5%	93.8%	93.9%	93.8%	93.7%	93.5%	93.9%	93.3%	93.1%	93.3%	93.9%	93.5%	93.6%

*FACILITIES V-01 THROUGH V-19 HAVE THE SAME SQUARE FOOTAGE. THE PLANT SPECIES AND QUANTITY LISTED FOR FOR FACILITY V APPLIES INDIVIDUALLY TO EACH OF THE 19 PLANTERS (V-01 THROUGH V-19).

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
STORMWATER PLANT SCHEDULE AND NOTES

DRAWN BY: SKA, LJM

CHECKED BY: NRF

SHEET
L0.02
Attachment 1

JOB NO. **2210157.00**

PERMIT SET 04/14/22

1 L0.03 MITIGATION TREE PLAN

30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

PLANT LEGEND

- WESTERN RED CEDAR
- DOUGLAS FIR
- GIANT SEQUOIA
- GRAND FIR
- BLUE SPRUCE
- SPRUCE
- PINE
- NORWAY MAPLE
- SILK TREE
- ENGLISH WALNUT
- EDIBLE FIG
- PEAR
- COMMON PLUM
- APPLE
- CHERRY
- SWEET CHERRY

MITIGATION REQUIREMENTS

REPLACE LIVING TREES 6-INCH IN DBH OR LARGER WITH A 2-INCH CALIPER TREE OR LARGER OF SIMILAR MATURE CANOPY SIZE AND STRUCTURE.

TOTAL TREES REQUIRING MITIGATION	**205**
TOTAL MITIGATION TREES IN PLAN	**178**
TOTAL TREES REQUIRING FEE IN LIEU	**27**

TREE CREDITS (SECTION 4.176.06.F)

DBH IS 18-24"	3 TREE CREDITS
DBH IS 25-31"	4 TREE CREDITS
DBH IS 32" OR GREATER	5 TREE CREDITS

FOR FULL LIST OF TREES TO BE REMOVED SEE ARBORIST REPORT ATTACHMENT 3

TREES TO BE RETAINED		DBH	CREDITS	CONDITION
125	DOUGLAS-FIR / PSEUDOTSUGA MENZIESII	8"	0	GOOD
126	DOUGLAS-FIR / PSEUDOTSUGA MENZIESII	7"	0	GOOD
265	DOUGLAS-FIR / PSEUDOTSUGA MENZIESII	25"	4	GOOD
266	DOUGLAS-FIR / PSEUDOTSUGA MENZIESII	25"	4	GOOD
267	DOUGLAS-FIR / PSEUDOTSUGA MENZIESII	18"	3	FAIR
2266	DOUGLAS-FIR / PSEUDOTSUGA MENZIESII	34"	5	GOOD
2267	DOUGLAS-FIR / PSEUDOTSUGA MENZIESII	31"	4	GOOD
2269	DOUGLAS-FIR / PSEUDOTSUGA MENZIESII	22"	3	FAIR
2270	DOUGLAS-FIR / PSEUDOTSUGA MENZIESII	26"	4	GOOD
2271	DOUGLAS-FIR / PSEUDOTSUGA MENZIESII	22"	3	GOOD
TOTAL TREE CREDITS			**30 TREES**	

TREE DATA

ALL TREES (534 TREES)	QTY	RETAIN	REMOVE	MITIGATION REQ
AGRICULTURAL TREES **	304	2	302	0
DEAD TREES (NON-AG)	13	0	13	0
OFF SITE - WASHINGTON COUNTY ***	4	0	4	0
TREES SUBJECT TO MITIGATION	213	8	205	205
TOTAL	534	10	524	205

**AGRICULTURAL TREES ARE NOT SUBJECT TO MITIGATION REQUIREMENTS.
***REMOVAL OF ANY OFFSITE TREE IS CONTINGENT UPON AGREEMENT WITH NEIGHBOR. OFFSITE TREES (QTY 4) IN WASHINGTON COUNTY ARE NOT SUBJECT TO CITY OF WILSONVILLE MITIGATION REQUIREMENTS.

LEGEND

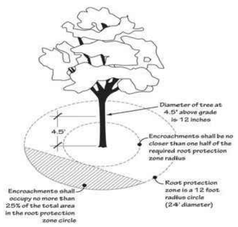
- AGRICULTURAL TREE
- OFFSITE PRIVATE TREE

TREE PROTECTION NOTES

SEE G0.01 FOR PROJECT ARBORIST CONTACT INFORMATION.

1. PROTECTION FENCING: ESTABLISH TREE PROTECTION FENCING IN THE LOCATIONS SHOWN. THE INTENT OF THE TREE PROTECTION FENCING IS TO PROTECT THE MINIMUM ROOT PROTECTION ZONES DETAILED IN FIGURE 1. NOTE THAT THE TREE PROTECTION FENCING MAY BE MOVED TO ALLOW CONSTRUCTION ACCESS TO THE SIDE OF THE PROPOSED BUILDING FOLLOWING APPROVAL BY THE PROJECT ARBORIST.
2. PROPERTY LINE TREES: TEN TREES THAT ARE ON OR NEAR THE PROPERTY LINE ARE RECOMMENDED FOR REMOVAL DUE TO CONSTRUCTION IMPACTS. THE ADJACENT PROPERTY OWNERS WILL NEED TO APPROVE THE REMOVAL OF THESE TREES: 11, 16, 19, 22, 24, 25, 323.1, 323.1, 324,1 AND 324.2. IF THE OWNER DOES NOT APPROVE THEIR REMOVAL, ADJUSTMENTS TO THE PROPOSED CONSTRUCTION OR GRADING WILL BE REQUIRED IN COORDINATION WITH THE PROJECT ARBORIST TO ADEQUATELY PROTECT THEIR CROWNS AND/OR ROOT ZONES. IF ADJUSTMENTS TO THE CONSTRUCTION IMPACTS ARE NOT POSSIBLE, THE ARBORIST RECOMMENDS INFORMING THE NEIGHBOR OF THE POTENTIAL TREE IMPACTS VIA CERTIFIED LETTER SO THEY ARE FULLY AWARE OF THE POTENTIAL IMPACTS AND CAN MAKE AN INFORMED DECISION ABOUT THE TREES.
3. DIRECTIONAL FELLING - FELL THE TREES TO BE REMOVED AWAY FROM THE TREES TO BE RETAINED SO THEY DO NOT CONTACT OR OTHERWISE DAMAGE THE TRUNKS OR BRANCHES OF THE RETAINED TREES. NO VEHICLES OR HEAVY EQUIPMENT SHOULD BE PERMITTED WITHIN THE TREE PROTECTION ZONES DURING TREE REMOVAL OPERATIONS.
4. STUMP REMOVAL - THE STUMPS OF THE TREES TO BE REMOVED FROM WITHIN THE TREE PROTECTION ZONES SHALL BE RETAINED OR CAREFULLY STUMP GROUND SO AS NOT TO DISTURB THE ROOT SYSTEMS OF THE RETAINED TREES.
5. PERIODIC RISK ASSESSMENTS: CONDUCT RISK ASSESSMENTS PERIODICALLY THROUGHOUT CONSTRUCTION TO DOCUMENT WHETHER TREES ARE ADAPTING TO THE NEW SITE CONDITIONS AND RISKS ARE MITIGATED APPROPRIATELY WITH CITY APPROVAL.
6. CONSTRUCTION ACCESS: WHEN ACCESSING THE SIDES OF THE BUILDING IN THE MODIFIED TREE PROTECTION ZONE, SOIL COMPACTION PREVENTION SUCH AS THE PLACEMENT OF STEEL PLATES IS REQUIRED TO PROTECT THE ROOT ZONES OF THE ADJACENT TREES.
7. ONSITE SUPERVISION OF PROJECT ARBORIST: THE PROJECT ARBORIST SHALL BE ONSITE TO OVERSEE THE RETAINING WALL EXCAVATION AND FOUNDATION CONSTRUCTION WITHIN AND ADJACENT TO THE TREE PROTECTION ZONES OF TREES 265, 266, 267, 2266, 2267, AND 2270.
8. PROTECT CROWNS OF TREES: THE CROWNS OF THE TREES MAY EXTEND BEYOND THE TREE PROTECTION FENCING. CARE WILL NEED TO BE TAKEN TO NOT CONTACT OR OTHERWISE DAMAGE THE CROWNS OF THE TREES DURING CONSTRUCTION ACTIVITIES. ANY REQUIRED PRUNING SHALL BE COMPLETED BY AN ISA CERTIFIED ARBORIST CONSISTENT WITH ANSI A300 PRUNING STANDARDS AS DIRECTED BY THE PROJECT ARBORIST.
9. SEDIMENT FENCING: SEDIMENT FENCING SHALL BE INSTALLED OUTSIDE THE PROTECTION ZONES OF THE TREES TO BE RETAINED TO MINIMIZE ROOT DISTURBANCES. IF EROSION CONTROL IS REQUIRED INSIDE THE ROOT ZONES, STRAW WATTLES SHALL BE USED ON THE SOIL SURFACE.

THE RETAINED TREES WERE PREVIOUSLY PROTECTED WITHIN A STAND OF SURROUNDING TREES. THE REMOVAL OF ADJACENT TREES WILL EXPOSE THE RETAINED TREES TO CHANGES IN WIND FORCES WHICH WILL INCREASE THEIR RISK OF WINDTHROW. THE PROJECT ARBORIST SHALL CONDUCT A TREE RISK ASSESSMENT IMMEDIATELY FOLLOWING SITE CLEARING TO IDENTIFY TREES THAT POSE SIGNIFICANT RISKS. FOR TREES THAT POSE SIGNIFICANT RISKS, CONSULT PROJECT ARBORIST FOR RETENTION STRATEGIES, SUCH AS PRUNING OR SNAG CREATION. ANY RECOMMENDED TREE REMOVAL OR SNAG CREATION REQUIRES REVIEW AND APPROVAL OF THE CITY OF WILSONVILLE.



2 L0.03 ROOT PROTECTION ZONE

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
MITIGATION TREE PLAN

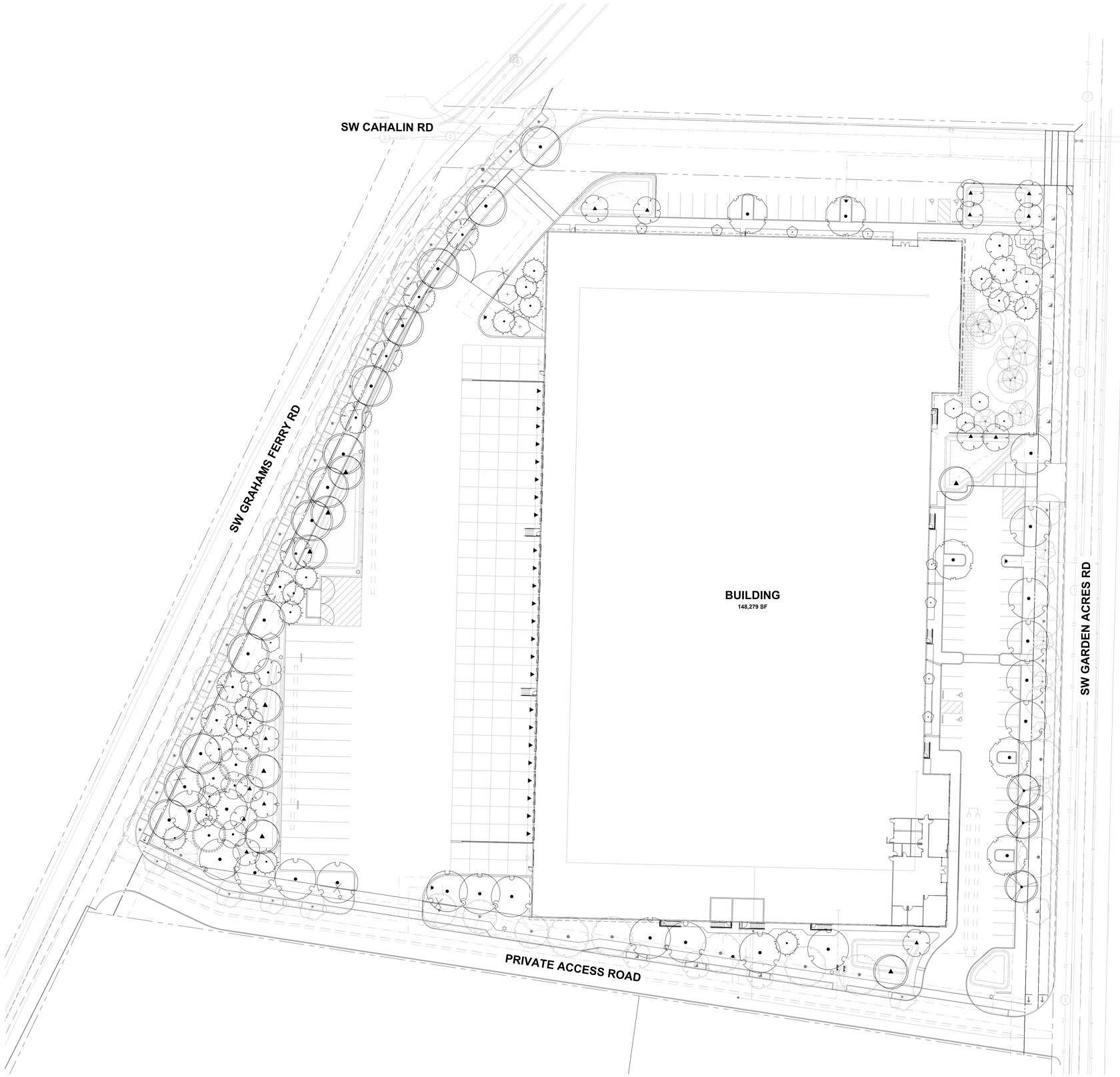
DRAWN BY: SKA, LJM

CHECKED BY: NRF

SHEET
L0.03
Attachment 1

JOB NO. **2210157.00**

PERMIT SET 04/14/22



PRIVATE TREE LEGEND

TREES	BOTANICAL / COMMON NAME	SIZE	QTY
	AMELANCHIER ALNIFOLIA SERVICEBERRY SINGLE STEM	2" CAL., B&B	8
	CALOCEDRUS DECURRENS INCENSE CEDAR MATURE (100' H X 30' W) SECONDARY TREE	12-14' HT. MIN. B&B	17
	CORNUS NUTTALII X FLORIDA 'EDDIE'S WHITE WONDER' EDDIE'S WHITE WONDER DOGWOOD MATURE (35' H X 20' W) ACCENT TREE	2" CAL. B&B, 10' HT. MIN.	9
	EXISTING TREE TO REMAIN	---	10
	FRANGULA PURSHIANA CASCARA MATURE (25' H X 20' W) ACCENT TREE	2" CAL. B&B, 10' HT. MIN.	5
	FRAXINUS PENNSYLVANICA 'MARSHALL'S SEEDLESS' MARSHALL'S SEEDLESS ASH MATURE (100' H X 100' W) PRIMARY TREE	2" CAL., B&B 10' HT. MIN.	19
	GYMNOCLADUS DIOICA 'ESPRESSO' KENTUCKY COFFEETREE MATURE (50' H X 35' W) MEDIUM TREE	2" CAL. B&B	8
	NYSSA SYLVATICA 'WILDFIRE' BLACK GUM MATURE (45' H X 30' W) PRIMARY TREE	2" CAL., B&B 10' HT. MIN.	5
	PSEUDOTSUGA MENZIESII DOUGLAS FIR MATURE (200' H X 30' W) PRIMARY TREE	12-14' HT. MIN. B&B	3
	QUERCUS X 'CRIMSCHMIDT' TM CRIMSON SPIRE OAK MATURE (45' H X 15'W) ACCENT TREE	2" CAL., B&B 10' HT. MIN.	8
	TILIA TOMENTOSA 'STERLING' STERLING SILVER LINDEN	2" CAL. B&B	3
	ULMUS X 'MORTON GLOSSY' TM TRIUMPH ELM MATURE (55' H X 35' W) MEDIUM TREE	2" CAL. B&B	13
STORMWATER TREES	BOTANICAL / COMMON NAME	SIZE	QTY
	CORNUS NUTTALLII PACIFIC DOGWOOD MATURE (20' H X 20' W)	2" CAL., B&B 10' HT. MIN.	14
	FRAXINUS LATIFOLIA OREGON ASH MATURE (30 'H X 35' W)	2" CAL. B&B, 10' HT. MIN.	8

PUBLIC TREE LEGEND

STREET TREES	BOTANICAL / COMMON NAME	SIZE	QTY
	ACER RUBRUM 'PNI 0268' TM OCTOBER GLORY RED MAPLE	3" CAL., B&B, 10' HT. MIN.	13
	AMELANCHIER ALNIFOLIA SERVICEBERRY	3" CAL. B&B	6
	CORNUS KOUSA 'MILKY WAY' MILKY WAY KOUSA DOGWOOD	3" CAL. B&B	6
	LAGERSTROEMIA INDICA X FAURIEI 'NATCHEZ' NATCHEZ CRAPE MYRTLE	3" CAL. B&B	5
	NYSSA SYLVATICA 'WILDFIRE' WILDFIRE TUPELO	3" CAL., B&B, 10' HT. MIN.	12
	PARROTIA PERSICA 'INGE'S RUBY VASE' TM RUBY VASE PERSIAN PARROTIA	3" CAL., B&B, 10' HT. MIN.	5
	TILIA TOMENTOSA 'STERLING' STERLING SILVER LINDEN	3" CAL. B&B	4
	ZELKOVA SERRATA 'VILLAGE GREEN' VILLAGE GREEN SAWLEAF ZELKOVA	3" CAL. B&B	7

1 L1.10 TREE PLAN

30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

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SHEET TITLE:
TREE PLAN

DRAWN BY: SKA, LJM

CHECKED BY: NRF

SHEET
L1.10
Attachment 1

JOB NO. **2210157.00**

PERMIT SET 04/14/22

PLANT KEY LEGEND

TREES	BOTANICAL / COMMON NAME
	AMELANCHIER ALNIFOLIA SERVICEBERRY
	CALOCEDRUS DECURRENS INCENSE CEDAR
	CORNUS NUTTALII X FLORIDA 'EDDIE'S WHITE WO EDDIE'S WHITE WONDER DOGWOOD
	EXISTING TREE TO REMAIN
	FRANGULA PURSHIANA CASCARA
	GYMNOCLADUS DIOICA 'ESPRESSO' KENTUCKY COFFEETREE
	NYSSA SYLVATICA 'WILDFIRE' BLACK GUM
	QUERCUS X 'CRIMSCHMIDT' TM CRIMSON SPIRE OAK
	ULMUS X 'MORTON GLOSSY' TM TRIUMPH ELM

STORMWATER TREES	BOTANICAL / COMMON NAME
	CORNUS NUTTALLII PACIFIC DOGWOOD

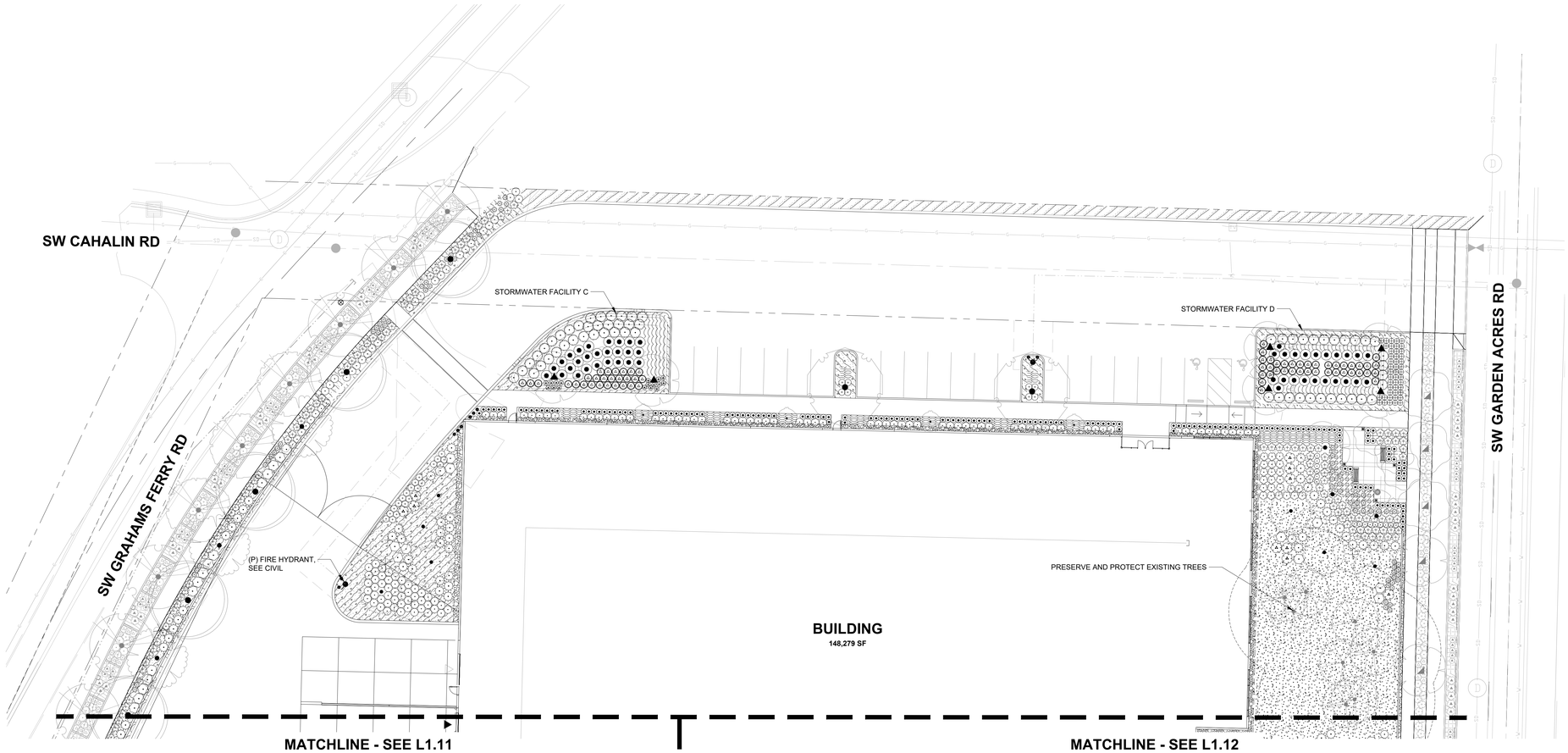
SHRUBS	BOTANICAL / COMMON NAME
	CORNUS SERICEA 'KELSEYI' KELSEYI DWARF REDTWIG DOGWOOD
	GAULTHERIA SHALLON SALAL
	HOLODISCUS DISCOLOR OCEAN-SPRAY
	MAHONIA AQUIFOLIUM OREGON GRAPE
	RIBES SANGUINEUM RED FLOWERING CURRANT
	SPIRAEA BETULIFOLIA 'TOR' BIRCHLEAF SPIREA
	SYMPHORICARPOS ALBUS COMMON WHITE SNOWBERRY
	VACCINIUM OVATUM 'SCARLET OVATION' SCARLET OVATION EVERGREEN HUCKLEBERRY
	VIBURNUM TINUS LAURUSTINUS

PERENNIALS	BOTANICAL / COMMON NAME
	POLYSTICHUM MUNITUM WESTERN SWORD FERN
	PTERIDIUM AQUILINUM WESTERN BRACKENFERN
	SALVIA X SUPERBA 'CARADONNA' CARADONNA SAGE

STORMWATER SHRUBS	BOTANICAL / COMMON NAME
	CORNUS SERICEA RED TWIG DOGWOOD
	MAHONIA AQUIFOLIUM OREGON GRAPE
	POLYSTICHUM MUNITUM WESTERN SWORD FERN
	ROSA NUTKANA NOOTKA ROSE
	SPIRAEA BETULIFOLIA 'TOR' BIRCHLEAF SPIREA

GROUND COVERS	BOTANICAL / COMMON NAME
	ARCTOSTAPHYLOS UVA-URSI KINNIKINNICK
	BOUTELOUA GRACILIS 'BLONDE AMBITION' BLONDE AMBITION BLUE GRAMA
	DICENTRA FORMOSA WESTERN BLEEDING-HEART
	GAULTHERIA SHALLON SALAL
	ROCK MULCH MAINTENANCE BAND 1"-2" ROUND ROCK
	SEED MIX NATIVE UNDERSTORY SEEDS
	SEED MIX POLLINATOR MEADOW MIX SUNMARK SEEDS

STORMWATER PLANTING	BOTANICAL / COMMON NAME
	STORMWATER FACILITY - GROUND COVER

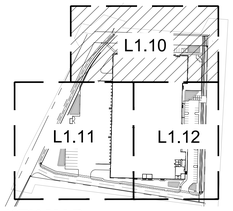


1 L1.11 PLANTING PLAN NORTH

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

REFERENCE NOTES

1. PLANT SIZE, SPACING, AND QUANTITY, SEE PLANT SCHEDULE L0.01
2. AVOID PLANTING WITHIN DEFINED ACCESS ZONE OF PROPOSED UTILITY BOXES.
3. COORDINATE SHRUB LAYOUT WITH EXISTING UTILITIES, REPORT CONFLICTS TO LANDSCAPE ARCHITECT.



KEY MAP
SCALE: NTS

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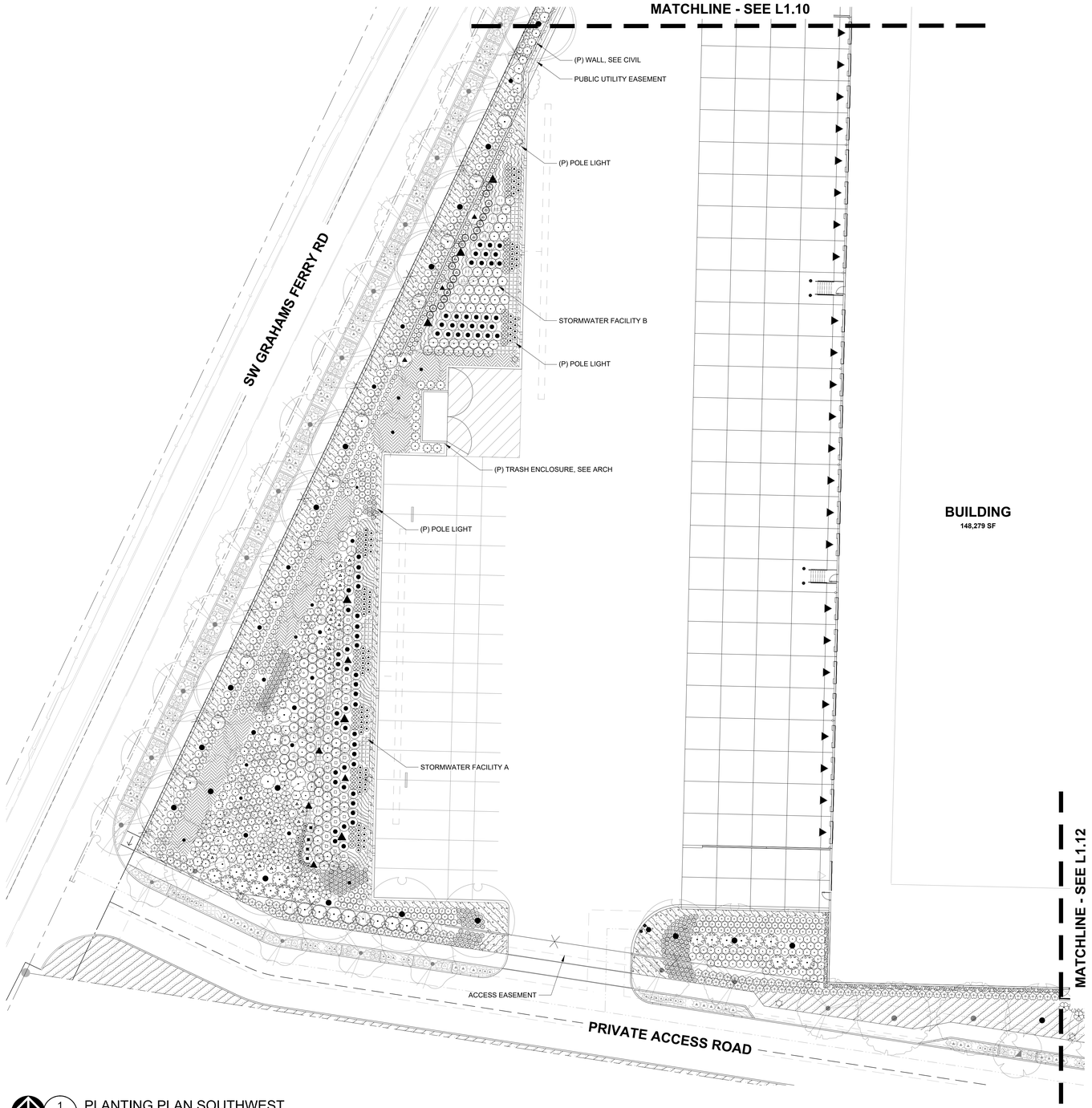
SHEET TITLE:
PLANTING PLAN NORTH

DRAWN BY: SKA, LJM
CHECKED BY: NRF

SHEET
L1.11
Attachment 1

JOB NO. **2210157.00**

PERMIT SET 04/14/22



1 L1.12 PLANTING PLAN SOUTHWEST

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PLANT KEY LEGEND

TREES	BOTANICAL / COMMON NAME
	AMELANCHIER ALNIFOLIA SERVICEBERRY
	CALOCEDRUS DECURRENS INCENSE CEDAR
	CORNUS NUTTALII X FLORIDA 'EDDIE'S WHITE WONDEF EDDIE'S WHITE WONDER DOGWOOD
	FRANGULA PURSHIANA CASCARA
	FRAXINUS PENNSYLVANICA 'MARSHALL'S SEEDLESS' MARSHALL'S SEEDLESS ASH
	GYMNOCLADUS DIOICA 'ESPRESSO' KENTUCKY COFFEETREE
	PSEUDOTSUGA MENZIESII DOUGLAS FIR
	ULMUS X 'MORTON GLOSSY' TM TRIUMPH ELM

STORMWATER TREES	BOTANICAL / COMMON NAME
	CORNUS NUTTALLII PACIFIC DOGWOOD
	FRAXINUS LATIFOLIA OREGON ASH

SHRUBS	BOTANICAL / COMMON NAME
	ACER CIRCINATUM 'BURGUNDY JEWEL' BURGUNDY JEWEL VINE MAPLE
	ARBUTUS UNEDO 'COMPACTA' DWARF STRAWBERRY TREE
	CORNUS SERICEA RED TWIG DOGWOOD
	GAULTHERIA SHALLON SALAL
	HOLODISCUS DISCOLOR OCEAN-SPRAY
	MAHONIA AQUIFOLIUM OREGON GRAPE
	MYRICA CALIFORNICA PACIFIC WAX MYRTLE
	RIBES SANGUINEUM RED FLOWERING CURRANT
	ROSA NUTKANA NOOTKA ROSE
	SPIRAEA BETULIFOLIA 'TOR' BIRCHLEAF SPIREA
	SPIRAEA DOUGLASII WESTERN SPIREA
	SYMPHORICARPOS ALBUS COMMON WHITE SNOWBERRY
	VACCINIUM OVATUM 'SCARLET OVATION' SCARLET OVATION EVERGREEN HUCKLEBERRY
	VIBURNUM TINUS LAURUSTINUS

PERENNIALS	BOTANICAL / COMMON NAME
	POLYSTICHUM MUNITUM WESTERN SWORD FERN
	PTERIDIUM AQUILINUM WESTERN BRACKENFERN

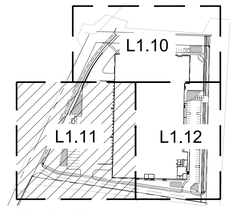
STORMWATER SHRUBS	BOTANICAL / COMMON NAME
	ACER CIRCINATUM VINE MAPLE
	CORNUS SERICEA RED TWIG DOGWOOD
	HOLODISCUS DISCOLOR OCEAN-SPRAY
	MAHONIA AQUIFOLIUM OREGON GRAPE
	PHYSOCARPUS CAPITATUS PACIFIC NINEBARK
	POLYSTICHUM MUNITUM WESTERN SWORD FERN
	RIBES SANGUINEUM RED FLOWERING CURRANT
	ROSA NUTKANA NOOTKA ROSE
	SPIRAEA BETULIFOLIA 'TOR' BIRCHLEAF SPIREA
	SPIRAEA DOUGLASII WESTERN SPIREA

GROUND COVERS	BOTANICAL / COMMON NAME
	ARCTOSTAPHYLOS UVA-URSI KINNIKINNICK
	GAULTHERIA SHALLON SALAL
	ROCK MULCH MAINTENANCE BAND 1"-2" ROUND ROCK
	SEED MIX POLLINATOR MEADOW MIX SUNMARK SEEDS

STORMWATER PLANTING	BOTANICAL / COMMON NAME
	CAREX DENSA DENSE SEDGE
	STORMWATER FACILITY - GROUND COVER

REFERENCE NOTES

1. PLANT SIZE, SPACING, AND QUANTITY, SEE PLANT SCHEDULE L0.01
2. AVOID PLANTING WITHIN DEFINED ACCESS ZONE OF PROPOSED UTILITY BOXES.
3. COORDINATE SHRUB LAYOUT WITH EXISTING UTILITIES, REPORT CONFLICTS TO LANDSCAPE ARCHITECT.



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SHEET TITLE:
PLANTING PLAN SOUTHWEST

DRAWN BY: SKA, LJM

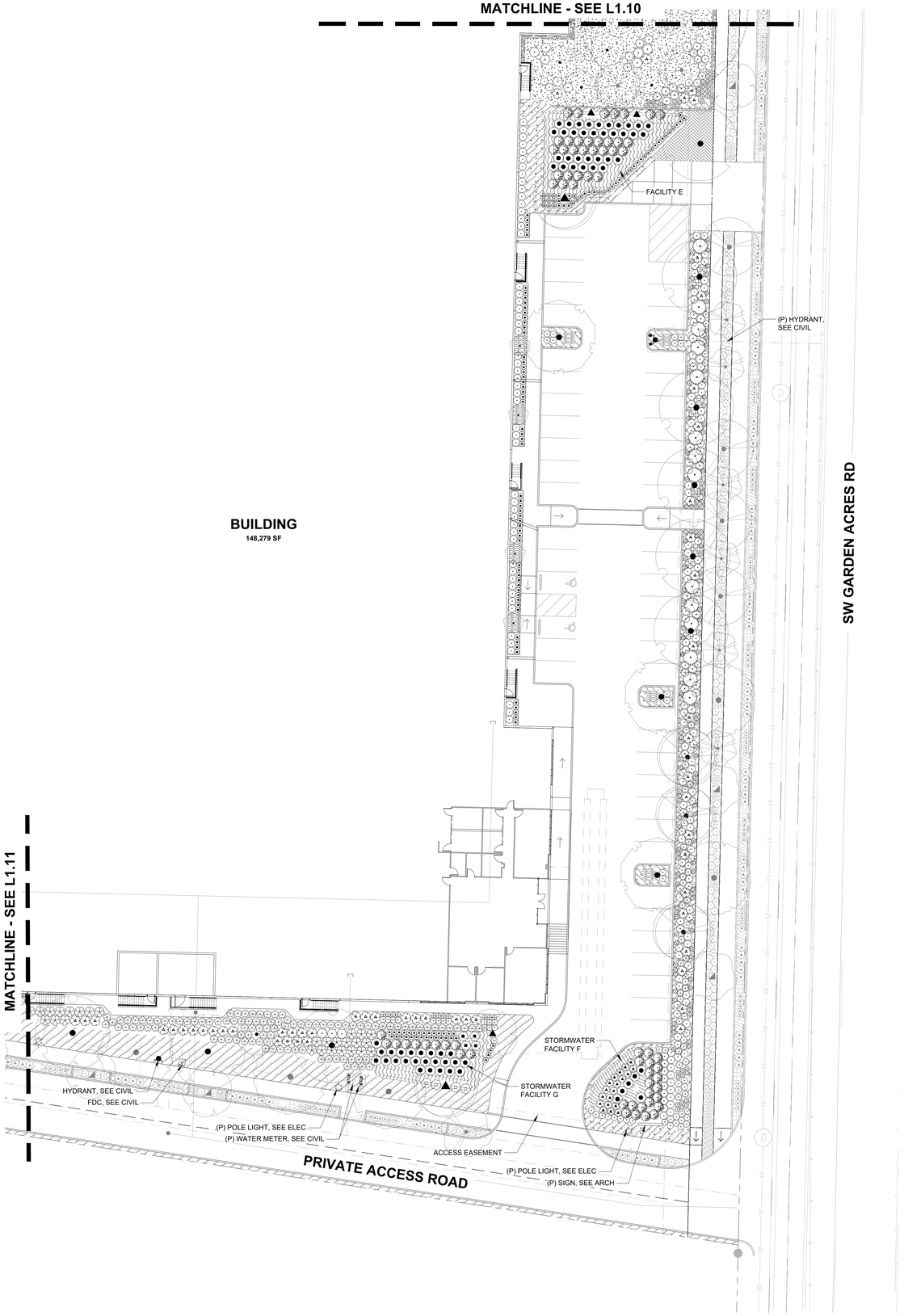
CHECKED BY: NRF

SHEET
L1.12

Attachment 1

JOB NO. 2210157.00

PERMIT SET 04/14/22



1 L1.13 PLANTING PLAN SOUTHEAST

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PLANT KEY LEGEND

TREES	BOTANICAL / COMMON NAME
	AMELANCHIER ALNIFOLIA SERVICEBERRY
	CALOCEDRUS DECURRENS INCENSE CEDAR
	CORNUS NUTTALLII X FLORIDA 'EDDIE'S WHITE WONDER' EDDIE'S WHITE WONDER DOGWOOD
	EXISTING TREE TO REMAIN
	FRANGULA PURSHIANA CASCARA
	FRAXINUS PENNSYLVANICA 'MARSHALL'S SEEDLESS' MARSHALL'S SEEDLESS ASH
	GYMNOCLADUS DIOICA 'ESPRESSO' KENTUCKY COFFEETREE
	NYSSA SYLVATICA 'WILDFIRE' BLACK GUM
	PSEUDOTSUGA MENZIESII DOUGLAS FIR
	QUERCUS X 'CRIMSCHMIDT' TM CRIMSON SPIRE OAK
	TILIA TOMENTOSA 'STERLING' STERLING SILVER LINDEN
	ULMUS X 'MORTON GLOSSY' TM TRIUMPH ELM

STORMWATER TREES	BOTANICAL / COMMON NAME
	CORNUS NUTTALLII PACIFIC DOGWOOD
	FRAXINUS LATIFOLIA OREGON ASH

SHRUBS	BOTANICAL / COMMON NAME
	ACER CIRCINATUM 'BURGUNDY JEWEL' BURGUNDY JEWEL VINE MAPLE
	ARBUTUS UNEDO 'COMPACTA' DWARF STRAWBERRY TREE
	CORNUS SERICEA RED TWIG DOGWOOD
	CORNUS SERICEA 'KELSEYI' KELSEYI DWARF REDTWIG DOGWOOD
	GAULTHERIA SHALLON SALAL
	HOLODISCUS DISCOLOR OCEAN-SPRAY
	MAHONIA AQUIFOLIUM OREGON GRAPE
	MAHONIA AQUIFOLIUM 'COMPACTA' COMPACT OREGON GRAPE
	MYRICA CALIFORNICA PACIFIC WAX MYRTLE
	RIBES SANGUINEUM RED FLOWERING CURRANT
	ROSA NUTKANA NOOTKA ROSE
	SPIRAEA BETULIFOLIA 'TOR' BIRCHLEAF SPIREA
	SPIRAEA DOUGLASII WESTERN SPIREA
	SYMPHORICARPOS ALBUS COMMON WHITE SNOWBERRY
	VACCINIUM OVATUM 'SCARLET OVATION' SCARLET OVATION EVERGREEN HUCKLEBERRY
	VIBURNUM TINUS LAURUSTINUS
	VIBURNUM TINUS 'COMPACTUM' SPRING BOUQUET VIBURNUM

PERENNIALS	BOTANICAL / COMMON NAME
	POLYSTICHUM MUNITUM WESTERN SWORD FERN
	PTERIDIUM AQUILINUM WESTERN BRACKENFERN
	SALVIA X SUPERBA 'CARADONNA' CARADONNA SAGE

STORMWATER SHRUBS	BOTANICAL / COMMON NAME
	ACER CIRCINATUM VINE MAPLE
	CORNUS SERICEA RED TWIG DOGWOOD
	HOLODISCUS DISCOLOR OCEAN-SPRAY
	MAHONIA AQUIFOLIUM OREGON GRAPE
	PHYSOCARPUS CAPITATUS PACIFIC NINEBARK
	POLYSTICHUM MUNITUM WESTERN SWORD FERN
	RIBES SANGUINEUM RED FLOWERING CURRANT
	ROSA NUTKANA NOOTKA ROSE
	SPIRAEA BETULIFOLIA 'TOR' BIRCHLEAF SPIREA
	SPIRAEA DOUGLASII WESTERN SPIREA
	SYMPHORICARPOS ALBUS COMMON WHITE SNOWBERRY

GROUND COVERS	BOTANICAL / COMMON NAME
	ARCTOSTAPHYLOS UVA-URSI KINNIKINNICK
	BOUTELOUA GRACILIS 'BLONDE AMBITION' BLONDE AMBITION BLUE GRAMA
	DICENTRA FORMOSA WESTERN BLEEDING-HEART
	GAULTHERIA SHALLON SALAL
	ROCK MULCH MAINTENANCE BAND 1"-2" ROUND ROCK
	SEED MIX NATIVE UNDERSTORY SEEDS
	SEED MIX POLLINATOR MEADOW MIX SUNMARK SEEDS

STORMWATER PLANTING	BOTANICAL / COMMON NAME
	CAREX DENSA DENSE SEDGE
	JUNCUS PATENS CALIFORNIA GRAY RUSH
	STORMWATER FACILITY - GROUND COVER

REFERENCE NOTES

1. PLANT SIZE, SPACING, AND QUANTITY, SEE PLANT SCHEDULE L0.01
2. AVOID PLANTING WITHIN DEFINED ACCESS ZONE OF PROPOSED UTILITY BOXES.
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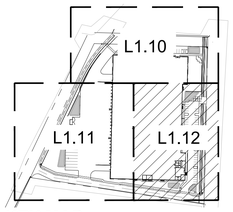

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Delta	Issued As	Issue Date

SHEET TITLE:
PLANTING PLAN SOUTHEAST

DRAWN BY: SKA, LJM

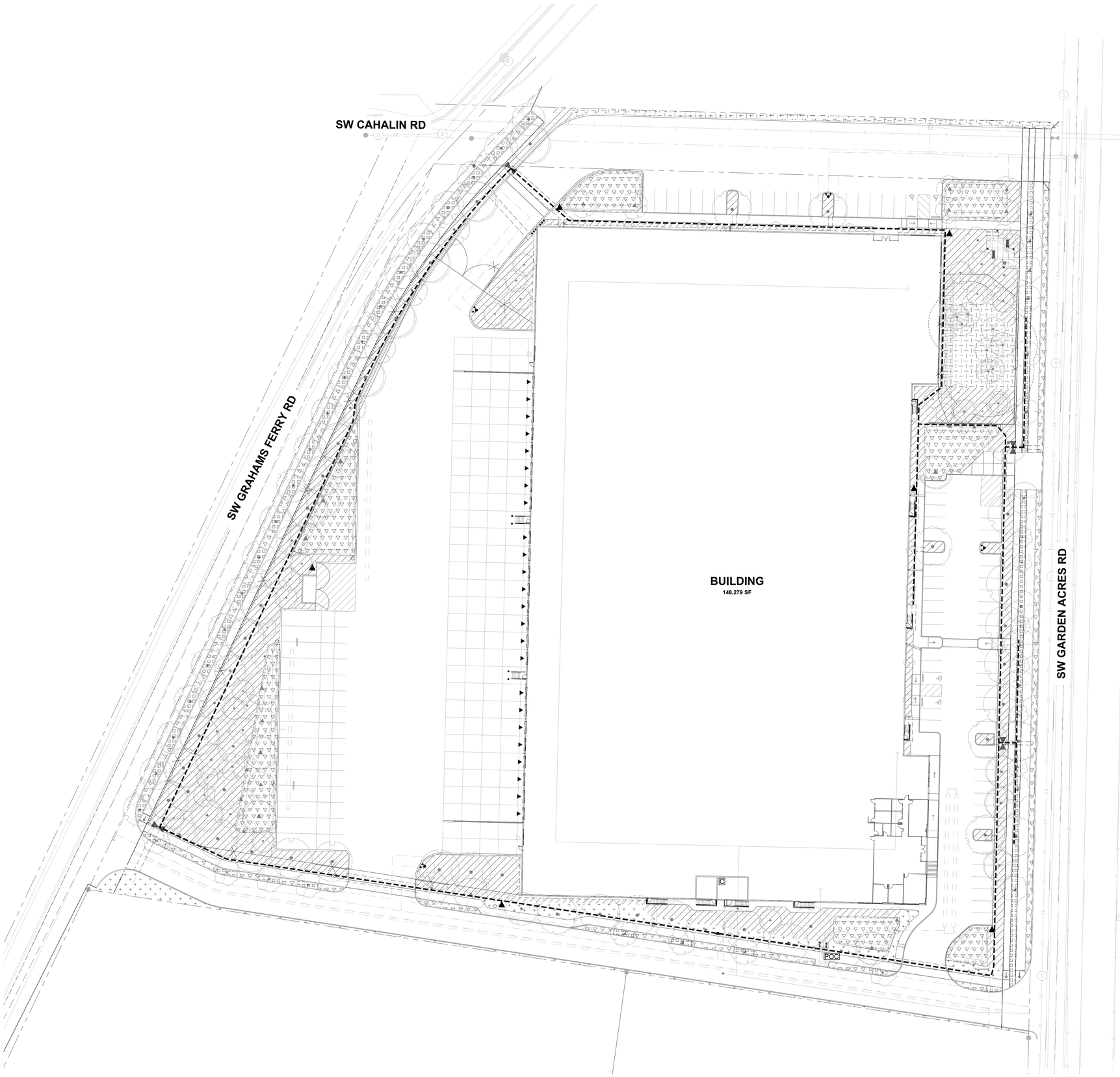
CHECKED BY: NRF

SHEET
L1.13

Attachment 1

JOB NO. 2210157.00

PERMIT SET 04/14/22



IRRIGATION LEGEND

POC	POINT OF CONNECTION, INCLUDE DOUBLE CHECK BACKFLOW PREVENTOR, MASTER VALVE AND FLOW SENSOR - SEE DETAIL ON L5.11
C	IRRIGATION CONTROLLER
	GATE VALVE
	QUICK COUPLER AT 150' (INTERVALS MAX)
	MAINLINE SLEEVE- DIAMETER AT LEAST TWICE DIAMETER OF PIPE BEING SLEEVED
	MAINLINE-SCHEDULE 40 PVC
	SHRUB AND GROUNDCOVER DRIP AREA
	STORMWATER AREA - ZONE SEPARATELY
	TEMPORARY IRRIGATED AREA - ZONE SEPARATELY
	RIGHT-OF-WAY - ZONE SEPARATELY
	MEADOW AREA - ZONE SEPARATELY

1 L1.20 IRRIGATION PLAN

30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

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IRRIGATION PLAN

DRAWN BY: SKA, LJM

CHECKED BY: NRF

SHEET
L1.20

Attachment 1

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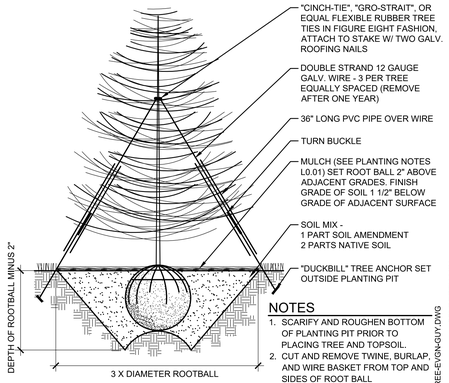


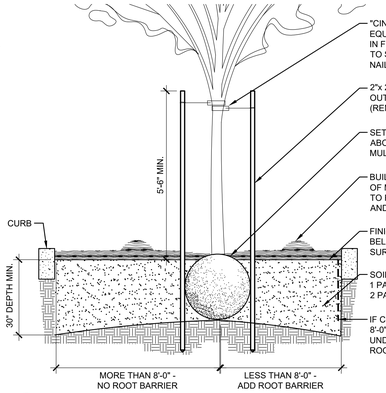
NOTES

1. SCARIFY AND ROUGHEN BOTTOM OF PLANTING PIT PRIOR TO PLACING TREE AND TOPSOIL.
2. CUT AND REMOVE TWINE, BURLAP AND WIRE BASKET FROM TOP AND SIDES OF ROOT BALL

1 EVERGREEN TREE PLANTING DETAIL

SCALE: NTS

LS-DETL-TREE-EVGN-GUY.DWG



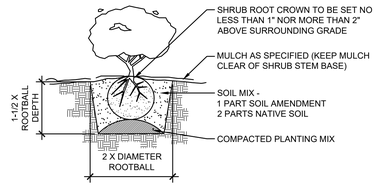
2 DECIDUOUS TREE PLANTING DETAIL

SCALE: NTS

LS-DETL-TREE-EVGN-GUY.DWG

NOTES

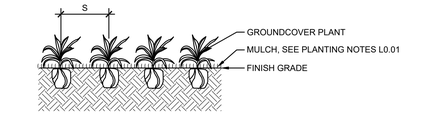
1. PLANT ALL TREES AT LEAST 32 INCHES FROM THE END OF HEAD-IN PARKING SPACES TO PREVENT DAMAGE FROM CAR OVERHANGS.
2. ALL ROOTS MUST BE COMPLETELY COVERED. BACKFILL SHOULD BE THOROUGHLY WATERED AS IT IS PLACED AROUND THE ROOTS.
3. SCARIFY AND ROUGHEN BOTTOM OF PLANTING PIT PRIOR TO PLACING TREE AND TOPSOIL. SLOPE BOTTOM TO DRAIN TO SIDES.
4. THE ENTIRE WIDTH OF THE PLANTING ISLAND SHALL CONTAIN ONLY SOIL/COMPOST PLANTING MIX AND BE FREE OF ALL DEBRIS INCLUDING GARBAGE, CONCRETE, GRAVEL OR OTHER FOREIGN MATERIALS.
5. ALL TREES SHALL CONFORM TO MOST RECENT ANSI Z60.1 AMERICAN STANDARD FOR NURSERY STOCK. FIRST LIMBS OF DECIDUOUS TREES IN PARKING LOTS AND ALONG STREETS AND SIDEWALKS SHALL BE 5 FEET ABOVE GROUND OR HIGHER.
6. EXCAVATE HOLE INTO PREPARED SOIL TO ONE INCH LESS THAN HEIGHT OF ROOTBALL AND TWO TIMES THE WIDTH OF THE ROOTBALL. TAMP BOTTOM OF PIT UNDER ROOTBALL THOROUGHLY TO KEEP TREE FROM SETTLING. BUTTRESS AT THE BOTTOM OF THE PIT NO LESS THAN THREE FEET WIDE IF NEEDED TO REINFORCE LATERAL SUPPORT.
7. DO NOT DAMAGE THE ROOTBALL WHEN PLANTING. REMOVE ALL WIRE, STRING AND BURLAP FROM TOP AND SIDES OF ROOTBALL ONLY AFTER PLACING IN THE HOLE.
8. SET TREE STRAIGHT ON TAMPED SOIL.
9. BACKFILL HOLE WITH APPROVED PLANTING MEDIUM MIX TO HALF DEPTH. TAMP SOIL TO STABILIZE ROOTBALL. FINISH BACKFILLING AND TAMP AGAIN.
10. STAKE TREES OUTSIDE OF ROOTBALL AND PARALLEL TO PLANTING ISLAND CURBS WITH TREE STAKES. USE ONE INCH HEAVY CHAINLOCK TREE TIES OR SIMILAR. REMOVE AFTER ONE YEAR.
11. WATER IMMEDIATELY AND THOROUGHLY, TWICE PER WEEK DURING THE FIRST MONTH, THEN ONCE PER WEEK THROUGH THE REMAINDER OF THE DRY SEASON. WATER A MINIMUM OF ONCE PER MONTH DURING THE SECOND SUMMER SEASON.
12. ALL PLANTING BEDS CONTAINING TREES AND SHRUBS AND SURFACE DRAINAGE SHALL BE PREPARED SIMILAR TO THIS LANDSCAPE TREE PLANTING AND DRAINAGE DETAIL.



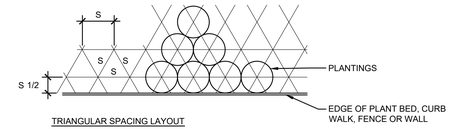
3 SHRUB PLANTING

SCALE: NTS

LS-DETL-SHRB.DWG



PLANTING SECTION



TRIANGULAR SPACING LAYOUT

NOTES

1. TILL SOIL SO THAT THERE ARE NO CLODS OR CLUMPS LARGER THAN 1 1/2" DIAMETER

4 GROUNDCOVER PLANTING

SCALE: NTS

LS-DETL-GCVR.DWG

TREE PROTECTION MEASURES

UNLESS OTHERWISE INDICATED FOR REMOVAL ALL TREES SHALL RECEIVE PROTECTIVE MEASURES FOR THE DURATION OF THE PROJECT IN ACCORDANCE WITH THE CITY REQUIREMENTS.

6' HIGH MINIMUM CHAIN-LINK FENCING, SHALL BE ERECTED AND MAINTAINED. FENCING SHALL BE INSTALLED AS INDICATED ON THIS PLAN. IN AREAS WHERE ROOT ZONE ENCROACHMENT IS UNAVOIDABLE ADJUSTMENTS OF FENCING LOCATION SHALL BE COORDINATED WITH A CERTIFIED ARBORIST PRIOR TO START OF WORK.

NO ACTIVITY MAY BE CONDUCTED WITHIN ANY DESIGNATED TREE PROTECTION AREA INCLUDING BUT NOT LIMITED TO PARKING EQUIPMENT, PLACING SOLVENTS, STORING MATERIALS AND SOIL DEPOSITS, DUMPING CONCRETE WASHOUT, OR OTHER DEBRIS, OR ANY EXCAVATION OR COMPACTION WORK.

DURING CONSTRUCTION NO OBJECTS SHALL BE ATTACHED TO ANY TREE DESIGNATED TO BE RETAINED AND PROTECTED.

FENCE SHALL REMAIN IN PLACE UNTIL THE COMPLETION OF CONSTRUCTION ACTIVITIES. MOVEMENT OR REMOVAL OF THE FENCE REQUIRES APPROVAL BY THE ARBORIST AND/OR THE CITY'S AUTHORIZED REPRESENTATIVE.

EXCAVATION / TRENCHING AROUND TREES

PROPOSED TRENCHING AND EXCAVATION AROUND TREES SHALL BE COORDINATED WITH CONSULTING ARBORIST.

WHERE TRENCHING IS REQUIRED WITHIN CRITICAL ROOT ZONE, TUNNEL UNDER OR AROUND ROOTS BY HAND DIGGING OR BORING. DO NOT CUT MAIN LATERAL ROOTS OR TAP ROOTS. CLEANLY CUT/SEVER SMALLER ROOTS. RELOCATE ROOTS IN BACKFILL AREAS WHEREVER POSSIBLE.

DO NOT ALLOW EXPOSED ROOTS TO DRY OUT BEFORE PERMANENT BACKFILL IS PLACED, PROVIDE TEMPORARY EARTH COVER, OR PACK WITH PEAT MOSS AND WRAP WITH BURLAP. WATER AND MAINTAIN IN MOIST CONDITION UNTIL RELOCATED AND COVERED WITH BACKFILL.

5 TREE PROTECTION

SCALE: NTS

NOTES

1. INSTALL ROOT BARRIER PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
2. INSTALL ROOT BARRIER WHERE CENTER OF ROOT BALL IS WITHIN 8' OF PAVEMENT.

6 ROOT BARRIER DETAIL

SCALE: NTS

NOTES

1. REMOVE ALL ROCK, DEBRIS AND OTHER FOREIGN MATTER OVER 1" IN DIAMETER FROM TOP 12" OF SOIL.
2. RIP AND TILL SUBGRADE TO 6" DEEP (MIN.) PRIOR TO INSTALLING TOPSOIL AND TILL INTERFACE OF SUBGRADE AND TOPSOIL.
3. TILL TOPSOIL AND SOIL AMENDMENTS TO A MIN. 12" DEPTH.
4. SUBMIT SAMPLE OF MULCH & TOPSOIL FOR ACCEPTANCE PRIOR TO PLACEMENT.

7 SOIL PREPARATION

SCALE: NTS

LS-DETL-PLNT-SOIL.DWG

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:

PLANTING DETAILS

DRAWN BY: SKA, LJM

CHECKED BY: NRF

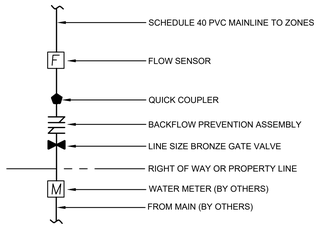
SHEET

L5.10

Attachment 1

JOB NO. **2210157.00**

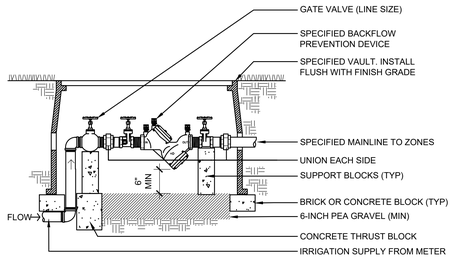
PERMIT SET 04/14/22



LI-DETL-GEN-POC.DWG

1 POINT OF CONNECTION

SCALE: NTS



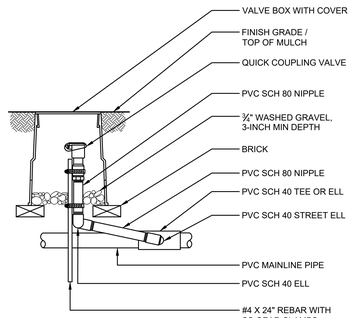
NOTE:
INSTALL BACKFLOW PREVENTOR PER CODE AND REQUIREMENTS OF PREVAILING JURISDICTIONS.

LI-DETL-VALV-DCHK.DWG

2 DOUBLE CHECK VALVE

BACKFLOW PREVENTOR (BELOW GRADE)

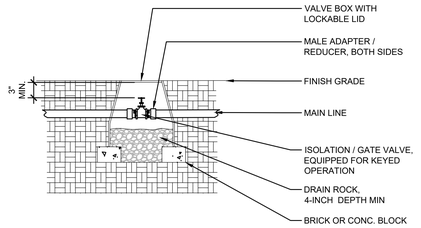
SCALE: NTS



LI-DETL-VALV-QCUP.DWG

3 QUICK COUPLER VALVE

SCALE: NTS

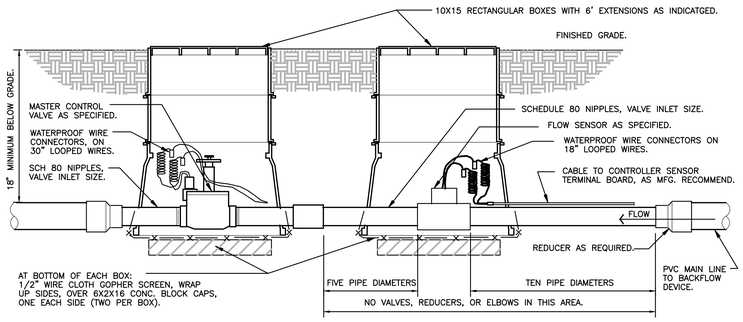


NOTES:
1. SCH 80 ADAPTER AND FITTINGS TO BE SAME SIZE AS ISOLATION VALVE

LI-DETL-06-VALV-GATE-ISOL.DWG

4 ISOLATION / GATE VALVE

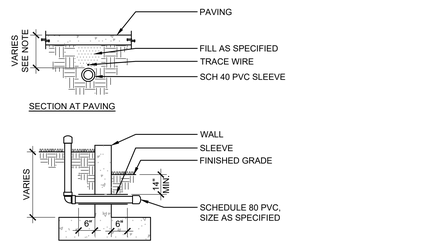
SCALE: NTS



5 MASTER VALVE/FLOW SENSOR ASSEMBLY

1 1/2" = 1'-0"

FX-IR-FX-MAST-56



SECTION AT PAVING

SECTION AT WALLS

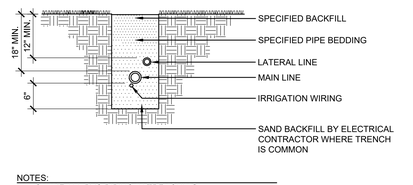
MIN DEPTH OF PIPE	
MAINLINE	18"
LATERAL AT PAVING	14"
AT DRIVING SURFACE	24"

NOTES:
1. SLEEVES TO BE TWICE DIAMETER OF LINE OR LINES PASSING THROUGH.
2. EXTEND IRRIGATION SLEEVE 6-INCHES BEYOND EDGE OF PAVING, EACH SIDE.
3. INSTALL SLEEVES AT SAME TIME AS WALL OR PAVING INSTALLATION.
4. INSTALL PIPE IN SLEEVE BEFORE BACKFILLING AND CAP BOTH ENDS WITHOUT GLUE.

LI-DETL-GEN-SLEEVE.DWG

6 IRRIGATION SLEEVES

SCALE: NTS

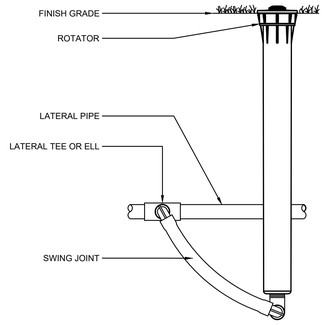


NOTES:
1. SNAKE ALL PVC PIPING IN TRENCHING
2. TIE LOOSE 3 FT LOOP IN ALL IRRIGATION WIRING AT CHANGES IN DIRECTION GREATER THAN 30 DEGREES. UNTIE AFTER ALL CONNECTIONS HAVE BEEN MADE.
3. WHERE ELECTRICAL WIRING DOES NOT SHARE COMMON TRENCH, OVER EXCAVATE TRENCH 2 INCHES MIN AND BACKFILL WITH SPECIFIED BEDDING MATERIAL.
4. LOCATE ALL WIRING NOT IN COMMON TRENCHES ACCURATELY ON RECORD DRAWINGS.

LI-DETL-GEN-TRENCH.DWG

7 IRRIGATION TRENCHING (TYP)

SCALE: NTS

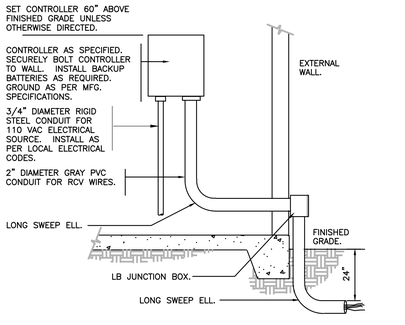


LI-DETL-HEAD-SPRAY-MT.DWG

8 MULTI-TRAJECTORY SPRAY HEAD

DETAIL-SUBTITLE

SCALE: NTS



9 INTERIOR WALL MOUNT CONTROLLER

1" = 1'-0"

FX-IR-FX-CONT-21

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
IRRIGATION DETAILS

DRAWN BY: SKA, LJM

CHECKED BY: NRF

SHEET

L5.11

Attachment 1

JOB NO. **2210157.00**

PERMIT SET 04/14/22

211 North Lindbergh Blvd.
St. Louis, MO 63141
800.231.1327 tel.| 314.754.0835 fax
specify@anovafurnishings.com
anovafurnishings.com

RCPAF6 — Alliance Recycled Plastic Flat Bench

6' flat bench with recycled plastic seat planks and steel frame and end legs

Material
The 6' flat bench is composed of .38" steel plate formed legs and .125" thick steel frame, with 1.5" x 3.5" (2" x 4" nominal dimensions) recycled plastic planks for the seat. The bench is 73.00" long and will support 200 lbs per linear foot. The recycled plastic planks are impervious to moisture and corrosion, do not require the application of sealants or preservatives, and will never need painting or staining throughout the product's life.
The bench is designed to be portable for flexibility in placement or surface mounted using predrilled .5" diameter holes in feet to prevent movement. Mounting hardware is not included.

Finish
Fade-resistant, powder coated steel components feature a state-of-the art primer proven to prevent rusting. Treated components exceed the industry standard by 34% in testing by independent sources.

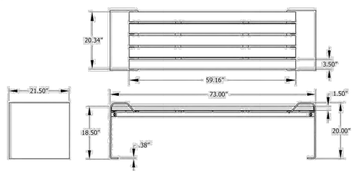
Color
See website or sales representative for color choices.

Assembly
Some assembly is required. Stainless steel assembly hardware is included.

Maintenance
The product is virtually maintenance-free and requires only periodic cleaning with a sponge and a solution of mild detergent and water to remove surface dirt. Do not clean with solvent or petroleum base products.

Warranty
20-year limited structural warranty on recycled plastic from the date of purchase. See full details on multi-year warranties for components at www.anovafurnishings.com/warranty.aspx.

Replacement Parts
Replacement End Leg R-S632
(For Left or Right Orientation)



SHIPPING INFORMATION

Unit Weight	Unit Shipping Wt. UPS	Unit Shipping Wt. Truck (1+ Units)	Unit Ship Size	Max Units Per Pallet	Pallet Size/Wt. (33" x 48")	Total No. Pkgs.	Shipping Class
212 lbs.	N/A	236 lbs./unit	14 cu. ft.	2	100 lbs.	4	100

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1 BENCH
SCALE: NTS

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LEX33 — Exposition Receptacle/Recycler with Side Door

33-gallon steel slat receptacle with side door, bonnet top, plastic liner, rubber feet and optional decals (when specified)

Material
The receptacle is 42.11" tall and is composed of heavy-duty, 7-gauge steel front and back panels and 12-gauge steel side panels with a .75" gap horizontal slotted pattern. The receptacle features a built-in bonnet top with 7.63" tall by 23.30" wide front and back openings and 5.08" tall by 18" wide openings on the sides. The front door panel opens on a continuous geared hinge and comes standard with a tamper-resistant cam lock and set of two keys; also available with a keyless thumb-turn cam lock.
Optional decals are available: "Bottles/Cans" with recycling logo, "Mixed Recycling" with recycling logo, "Paper" with recycling logo or "Trash" decal—custom decals also available. Specify black or white lettering. Decal placement will be centered at the top of the door. Decals will be factory installed and must be specified at the time of order.
The receptacle is designed to be portable for flexibility in placement or surface mounted using pre-drilled holes inside base to prevent movement. The rubber feet are adjustable to assist in leveling the receptacle. The reusable plastic liner is made of high-density polyethylene. Mounting hardware is not included.

Finish
Fade-resistant, powder coated steel is protected by a state-of-the-art primer proven to prevent rusting. Treated components exceed the industry standard by 34% in testing by independent sources.

Color
See website or sales representative for color choices.

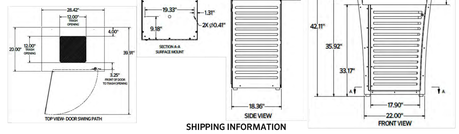
Assembly
The receptacle ships fully assembled and ready for use.

Maintenance
The product is virtually maintenance-free and requires only periodic cleaning with a sponge and a mild detergent and water solution to remove surface dirt. Do not clean with solvent or petroleum base products.

Warranty
20-year limited structural warranty with 7-year finish warranty against fading; 3-year finish warranty on powder coated steel components against rusting, peeling, chipping, cracking, mold, mildew and defects in materials and/or workmanship. See full details on multi-year warranties for components at www.anovafurnishings.com/warranty.

Replacement Parts

Black Plastic Liner	R-DOM2005
Trash Decal White	DEC2000
Trash Decal Black	DEC2002
Paper Decal w/Logo White	DEC2004
Paper Decal w/Logo Black	DEC2006
Bottles/Cans w/Logo White	DEC2008
Bottles/Cans w/Logo Black	DEC2010
Mixed Recycling w/Logo White	DEC5000
Mixed Recycling w/Logo Black	DEC5002



SHIPPING INFORMATION

Unit Weight	Unit Shipping Wt. UPS	Unit Shipping Wt. Truck (1+ Units)	Unit Ship Size w/Pallet	Max Units Per Pallet	Pallet Size/Wt. (32" x 48")	Total No. Pkgs.	Shipping Class
155 lbs.	N/A	168 lbs./unit	42.10 cu. ft.	1	50 lbs.	1	150

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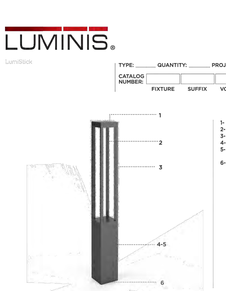
2 LITTER BIN
SCALE: NTS

LUMINIS®
LumiStick

LQ627 SERIES
Lumiquad - LED
6" BOLLARD

TYPE: _____ QUANTITY: _____ PROJECT: _____

CATALOG NUMBER:								
	FIXTURE	SUFFIX	VOLTAGE	FINISH	OPTION	OPTION	OPTION	OPTION



1- Heavy cast aluminum top cover.
2- Optical system assembly.
3- 4x extruded aluminum struts.
4- Cast aluminum driver housing.
5- 6" (152mm) x 6" (152mm) extruded aluminum square body.
6- Cast aluminum mounting base.

LQ627

MATERIALS
Lumiquad bollard is made of corrosion resistant 356 aluminum alloy with a copper (Cu) content of less than 0.1%.

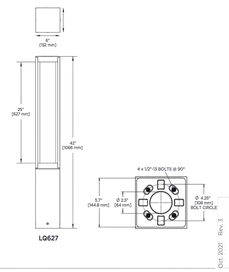
ELECTRICAL
DRIVER Standard driver is 0-10V dimming-ready (dims to 10%) with: 120-277 multi-volt compatibility (50-60Hz), operating temperatures of -40ºC/-40ºF to 55ºC/131ºF, output over voltage protection, output over current protection, output short circuit protection with auto-recovery.
LED 3000K/3500K/4000K CCT with 80 CRI.
Optional true amber LED for turtle sensitive areas.
Wavelengths: 585nm to 597nm.

LIFE
60,000hrs $L_{70}B_{10}$ (based on IESNA TM-21 Test Method and LM-80 data).
Up to 70,000hrs $L_{70}B_{10}$ (calculated projection from LM-80 data).

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

CERTIFICATION
Tested to UL1598 and CSA 22.2 #250. ETL listed wet location.
Photometric testing performed by an independent laboratory in accordance with IES LM-79-08 standards at 25ºC. Lumen depreciation in accordance with IESNA LM80 standards. Rated IP65.

MOUNTING
Mounts with a set of 4 x 1/2"-13 x 18" lg. galvanized anchor bolts.



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Oct. 2021 Rev. 3

3 LIGHTED BOLLARD
LUMINIS-LUMIQUAD LIGHTED BOLLARD
SCALE: NTS

157-0.01.DWG

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SHEET TITLE:
SITE FURNISHING DETAILS

DRAWN BY: SKA, LJM

CHECKED BY: NRF

SHEET
L5.12
Attachment 1

JOB NO. **2210157.00**

PERMIT SET 04/14/22

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
1	giant sequoia	*Sequoiadendron giganteum*	18	9	good	good		remove
2	giant sequoia	*Sequoiadendron giganteum*	17	10	good	fair	moderately one sided	remove
3	western redcedar	*Thuja plicata*	10	13	fair	fair	topped for overhead high voltage	remove
4	western redcedar	*Thuja plicata*	9	12	poor	poor	suppressed, dieback	remove
5	Douglas-fir	*Pseudotsuga menziesii*	13	9	good	fair	moderately one sided	remove
6	western redcedar	*Thuja plicata*	6	4	fair	fair	suppressed	remove
7	western redcedar	*Thuja plicata*	6	8	fair	fair	suppressed	remove
8	Douglas-fir	*Pseudotsuga menziesii*	15	9	good	fair	one sided, side pruned for overhead high voltage	remove
9	spruce	*Picea sp.*	9	7	good	fair	one sided	remove
10	Douglas-fir	*Pseudotsuga menziesii*	12	9	good	fair	one sided	remove
11	spruce	*Picea sp.*	9	5	good	fair	one sided, overtopped by adjacent trees	remove
12	Douglas-fir	*Pseudotsuga menziesii*	13	8	good	fair	one sided	remove
13	western redcedar	*Thuja plicata*	6	0	very poor	very poor	dead	remove
14	western redcedar	*Thuja plicata*	12	8	good	fair	moderately one sided	remove
15	western redcedar	*Thuja plicata*	7	8	good	fair	one sided	remove
16	spruce	*Picea sp.*	7	0	very poor	very poor	dead, overtopped by adjacent trees	remove
17	Douglas-fir	*Pseudotsuga menziesii*	15	8	good	fair	moderately one sided	remove
18	Douglas-fir	*Pseudotsuga menziesii*	12	10	poor	poor	lost top at 25', extensive branch failures	remove
19	spruce	*Picea sp.*	6	0	very poor	very poor	dead, overtopped by adjacent trees	remove
20	Douglas-fir	*Pseudotsuga menziesii*	10	7	good	fair	one sided	remove
21	Norway maple	*Acer platanoides*	7	16	good	fair	codominant at 5' with included bark, one sided, overextended leaders	remove
22	grand fir	*Abies grandis*	10	10	good	fair	exposed and girdling roots	remove
23	western redcedar	*Thuja plicata*	6	8	poor	poor	top dieback	remove
24	western redcedar	*Thuja plicata*	26,25,16,10	21	good	fair	multiple leaders at ground level	remove
25	western redcedar	*Thuja plicata*	29	20	good	fair	multiple leaders at 4'	remove
26	pear	*Pyrus sp.*	21	17	fair	fair	not maintained for fruit production	remove
27	English walnut	*Juglans regia*	16	26	good	fair	part of walnut orchard	remove
28	English walnut	*Juglans regia*	20	30	good	fair	part of walnut orchard	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
29	English walnut	*Juglans regia*	19	23	good	fair	part of walnut orchard	remove
30	English walnut	*Juglans regia*	11	25	good	fair	part of walnut orchard	remove
31	English walnut	*Juglans regia*	19	29	good	fair	part of walnut orchard	remove
32	English walnut	*Juglans regia*	18	24	good	fair	part of walnut orchard	remove
33	English walnut	*Juglans regia*	13	16	fair	fair	part of walnut orchard, multiple branch failures	remove
34	English walnut	*Juglans regia*	16	18	good	fair	part of walnut orchard, partially uprooted	remove
35	English walnut	*Juglans regia*	21	25	good	fair	part of walnut orchard	remove
36	English walnut	*Juglans regia*	11	18	good	fair	part of walnut orchard	remove
37	English walnut	*Juglans regia*	16	22	good	fair	part of walnut orchard	remove
38	English walnut	*Juglans regia*	21	24	good	fair	part of walnut orchard	remove
39	English walnut	*Juglans regia*	15	20	fair	fair	part of walnut orchard, multiple branch failures	remove
40	English walnut	*Juglans regia*	15	21	fair	fair	part of walnut orchard, moderate dieback	remove
41	English walnut	*Juglans regia*	22	24	good	fair	part of walnut orchard	remove
42	English walnut	*Juglans regia*	14	16	fair	fair	part of walnut orchard, moderate dieback	remove
43	English walnut	*Juglans regia*	19	19	good	fair	part of walnut orchard	remove
44	English walnut	*Juglans regia*	12	19	good	fair	part of walnut orchard, moderate dieback	remove
45	English walnut	*Juglans regia*	14	21	fair	fair	part of walnut orchard, moderate dieback	remove
46	English walnut	*Juglans regia*	16	24	fair	fair	part of walnut orchard, moderate dieback	remove
47	English walnut	*Juglans regia*	16	22	fair	fair	part of walnut orchard, moderate dieback	remove
48	English walnut	*Juglans regia*	15	21	poor	poor	part of walnut orchard, significant dieback	remove
49	English walnut	*Juglans regia*	15	20	fair	fair	part of walnut orchard, moderate dieback	remove
50	English walnut	*Juglans regia*	18	22	poor	poor	part of walnut orchard, significant dieback	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
51	English walnut	*Juglans regia*	14	18	poor	poor	part of walnut orchard, significant dieback	remove
52	English walnut	*Juglans regia*	17	22	poor	poor	part of walnut orchard, extensive branch failures	remove
53	English walnut	*Juglans regia*	21	25	poor	poor	part of walnut orchard, significant dieback	remove
54	English walnut	*Juglans regia*	12	13	poor	poor	part of walnut orchard, significant dieback	remove
55	English walnut	*Juglans regia*	15	20	fair	fair	part of walnut orchard, moderate dieback	remove
56	English walnut	*Juglans regia*	14	17	poor	poor	part of walnut orchard, branch failures and significant dieback	remove
57	English walnut	*Juglans regia*	18	23	fair	fair	part of walnut orchard, moderate dieback	remove
60	English walnut	*Juglans regia*	14	22	fair	fair	part of walnut orchard, moderate dieback	remove
61	English walnut	*Juglans regia*	19	25	good	fair	part of walnut orchard	remove
62	English walnut	*Juglans regia*	17	29	good	fair	part of walnut orchard	remove
63	Douglas-fir	*Pseudotsuga menziesii*	6	7	fair	fair	wound at lower trunk	remove
64	Douglas-fir	*Pseudotsuga menziesii*	7	7	good	fair	one sided	remove
65	Douglas-fir	*Pseudotsuga menziesii*	6	7	good	fair	one sided	remove
66	Douglas-fir	*Pseudotsuga menziesii*	7	9	good	fair	one sided	remove
67	Douglas-fir	*Pseudotsuga menziesii*	6	8	good	fair	one sided	remove
68	Douglas-fir	*Pseudotsuga menziesii*	6	12	good	fair	33% live crown ratio (lcr)	remove
69	Douglas-fir	*Pseudotsuga menziesii*	6	6	good	fair	one sided	remove
70	sweet cherry	*Prunus avium*	15	16	good	fair	codominant at 7'	remove
71	Douglas-fir	*Pseudotsuga menziesii*	6	6	good	fair	one sided	remove
72	sweet cherry	*Prunus avium*	6	11	good	good		remove
73	Douglas-fir	*Pseudotsuga menziesii*	12	15	fair	fair	extensive branch failures	remove
74	Douglas-fir	*Pseudotsuga menziesii*	9	10	fair	fair	one sided	remove
75	Douglas-fir	*Pseudotsuga menziesii*	12	5	fair	poor	15% lcr	remove
76	Douglas-fir	*Pseudotsuga menziesii*	10	7	fair	poor	25% lcr	remove
77	Douglas-fir	*Pseudotsuga menziesii*	7	4	fair	poor	15% lcr	remove
78	Douglas-fir	*Pseudotsuga menziesii*	11	10	good	fair	65% lcr	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
79	Douglas-fir	*Pseudotsuga menziesii*	8	4	fair	poor	15% lcr	remove
80	Douglas-fir	*Pseudotsuga menziesii*	13	10	good	fair	65% lcr	remove
81	Douglas-fir	*Pseudotsuga menziesii*	15	20	good	fair	moderately one sided	remove
82	Douglas-fir	*Pseudotsuga menziesii*	12	12	fair	poor	33% lcr	remove
83	Douglas-fir	*Pseudotsuga menziesii*	6	5	fair	poor	25% lcr	remove
84	Douglas-fir	*Pseudotsuga menziesii*	9	9	fair	poor	33% lcr	remove
85	Douglas-fir	*Pseudotsuga menziesii*	11	3	fair	poor	10% lcr	remove
86	Douglas-fir	*Pseudotsuga menziesii*	9	10	fair	poor	33% lcr	remove
87	Douglas-fir	*Pseudotsuga menziesii*	10	8	fair	poor	33% lcr	remove
88	Douglas-fir	*Pseudotsuga menziesii*	6	4	fair	poor	10% lcr	remove
89	Douglas-fir	*Pseudotsuga menziesii*	10	15	fair	fair	one sided, marginal trunk taper	remove
90	Douglas-fir	*Pseudotsuga menziesii*	12	13	fair	poor	33% lcr	remove
91	Douglas-fir	*Pseudotsuga menziesii*	10	13	fair	fair	35% lcr	remove
92	Douglas-fir	*Pseudotsuga menziesii*	9	15	fair	fair	45% lcr	remove
93	Douglas-fir	*Pseudotsuga menziesii*	6	4	fair	poor	15% lcr	remove
94	Douglas-fir	*Pseudotsuga menziesii*	15	15	good	fair	moderately one sided	remove
95	Douglas-fir	*Pseudotsuga menziesii*	10	6	fair	poor	33% lcr	remove
96	Douglas-fir	*Pseudotsuga menziesii*	12	10	fair	fair	one sided	remove
97	Douglas-fir	*Pseudotsuga menziesii*	14	15	good	fair	one sided	remove
98	Douglas-fir	*Pseudotsuga menziesii*	7	0	very poor	very poor	dead	remove
99	Douglas-fir	*Pseudotsuga menziesii*	10	8	fair	fair	40% lcr	remove
100	Douglas-fir	*Pseudotsuga menziesii*	9	7	fair	poor	25% lcr	remove
101	Douglas-fir	*Pseudotsuga menziesii*	8	7	fair	poor	33% lcr	remove
102	Douglas-fir	*Pseudotsuga menziesii*	9	9	fair	poor	33% lcr	remove
103	Douglas-fir	*Pseudotsuga menziesii*	6	5	fair	poor	25% lcr	remove
104	Douglas-fir	*Pseudotsuga menziesii*	11	12	good	fair	moderately one sided	remove
105	Douglas-fir	*Pseudotsuga menziesii*	11	12	fair	fair	60% lcr	remove
106	Douglas-fir	*Pseudotsuga menziesii*	9	10	fair	poor	33% lcr	remove
107	Douglas-fir	*Pseudotsuga menziesii*	11	8	fair	poor	33% lcr	remove
108	Douglas-fir	*Pseudotsuga menziesii*	9	10	fair	poor	25% lcr	remove
109	Douglas-fir	*Pseudotsuga menziesii*	8	6	fair	poor	25% lcr	remove
110	Douglas-fir	*Pseudotsuga menziesii*	9	5	fair	poor	25% lcr	remove
111	Douglas-fir	*Pseudotsuga menziesii*	11	6	fair	poor	25% lcr	remove
112	Douglas-fir	*Pseudotsuga menziesii*	9	8	fair	poor	25% lcr	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
113	Douglas-fir	*Pseudotsuga menziesii*	8	9	fair	fair	one sided	remove
114	Douglas-fir	*Pseudotsuga menziesii*	10	10	fair	poor	33% lcr	remove
115	Douglas-fir	*Pseudotsuga menziesii*	10	6	fair	poor	25% lcr	remove
116	Douglas-fir	*Pseudotsuga menziesii*	8	6	fair	poor	25% lcr	remove
117	Douglas-fir	*Pseudotsuga menziesii*	11	6	fair	poor	25% lcr	remove
118	Douglas-fir	*Pseudotsuga menziesii*	8	5	fair	poor	25% lcr	remove
119	Douglas-fir	*Pseudotsuga menziesii*	7	7	fair	poor	25% lcr	remove
120	Douglas-fir	*Pseudotsuga menziesii*	10	10	fair	poor	25% lcr	remove
121	Douglas-fir	*Pseudotsuga menziesii*	12	15	good	fair	60% lcr	remove
122	Douglas-fir	*Pseudotsuga menziesii*	12	13	fair	fair	irregular crown due to competition with adjacent trees	remove
123	Douglas-fir	*Pseudotsuga menziesii*	9	10	fair	poor	33% lcr	remove
124	Douglas-fir	*Pseudotsuga menziesii*	12	16	good	fair	moderately one sided	remove
125	Douglas-fir	*Pseudotsuga menziesii*	8	10	good	good		retain
126	Douglas-fir	*Pseudotsuga menziesii*	7	8	good	good		retain
127	Douglas-fir	*Pseudotsuga menziesii*	12	12	good	fair	one sided	remove
128	Douglas-fir	*Pseudotsuga menziesii*	13	15	good	fair	60% lcr	remove
129	Douglas-fir	*Pseudotsuga menziesii*	13	13	good	fair	50% lcr	remove
130	Douglas-fir	*Pseudotsuga menziesii*	11	12	good	fair	40% lcr	remove
131	Douglas-fir	*Pseudotsuga menziesii*	9	8	fair	fair	50% lcr, one sided	remove
132	Douglas-fir	*Pseudotsuga menziesii*	12	15	fair	fair	50% lcr, one sided	remove
133	Douglas-fir	*Pseudotsuga menziesii*	10	15	fair	fair	40% lcr, one sided, moderately suppressed	remove
134	Douglas-fir	*Pseudotsuga menziesii*	12	15	good	fair	60% lcr	remove
135	Douglas-fir	*Pseudotsuga menziesii*	11	12	good	fair	60% lcr	remove
136	Douglas-fir	*Pseudotsuga menziesii*	10	10	fair	fair	one sided, 40% lcr, codominant at 15'	remove
137	Douglas-fir	*Pseudotsuga menziesii*	7	4	fair	poor	10% lcr	remove
138	Douglas-fir	*Pseudotsuga menziesii*	10	15	fair	fair	40% lcr	remove
139	Douglas-fir	*Pseudotsuga menziesii*	9	10	fair	fair	40% lcr, moderately suppressed	remove
140	Douglas-fir	*Pseudotsuga menziesii*	11	16	fair	fair	40% lcr, moderately suppressed	remove
141	Douglas-fir	*Pseudotsuga menziesii*	13	15	fair	fair	40% lcr	remove
142	Douglas-fir	*Pseudotsuga menziesii*	12	15	good	fair	one sided, 60% lcr	remove
143	Douglas-fir	*Pseudotsuga menziesii*	10	10	good	fair	one sided	remove
144	Douglas-fir	*Pseudotsuga menziesii*	13	18	good	fair	one sided	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
145	Douglas-fir	*Pseudotsuga menziesii*	15	16	good	fair	60%	remove
146	Douglas-fir	*Pseudotsuga menziesii*	11	12	good	fair	40% lcr	remove
147	Douglas-fir	*Pseudotsuga menziesii*	12	13	fair	fair	significant branch failures	remove
148	Douglas-fir	*Pseudotsuga menziesii*	12	13	good	fair	60% lcr	remove
149	Douglas-fir	*Pseudotsuga menziesii*	11	14	good	fair	one sided	remove
150	Douglas-fir	*Pseudotsuga menziesii*	7	5	fair	poor	25% lcr	remove
151	Douglas-fir	*Pseudotsuga menziesii*	11	15	good	fair	one sided	remove
152	Douglas-fir	*Pseudotsuga menziesii*	10	15	good	fair	one sided	remove
153	Douglas-fir	*Pseudotsuga menziesii*	10	13	good	fair	one sided	remove
154	Douglas-fir	*Pseudotsuga menziesii*	6	10	good	fair	one sided	remove
155	Douglas-fir	*Pseudotsuga menziesii*	7	8	fair	fair	one sided, top broke out	remove
156	Douglas-fir	*Pseudotsuga menziesii*	12	14	good	fair	one sided	remove
157	Douglas-fir	*Pseudotsuga menziesii*	11	8	fair	fair	one sided, 50% lcr, moderately suppressed	remove
158	Douglas-fir	*Pseudotsuga menziesii*	14	15	good	fair	60% lcr	remove
159	Douglas-fir	*Pseudotsuga menziesii*	12	13	good	fair	one sided, 60% lcr	remove
160	Douglas-fir	*Pseudotsuga menziesii*	9	7	fair	fair	50% lcr	remove
161	Douglas-fir	*Pseudotsuga menziesii*	11	13	good	fair	one sided, codominant at 20'	remove
162	Douglas-fir	*Pseudotsuga menziesii*	9	6	fair	poor	25% lcr	remove
163	Douglas-fir	*Pseudotsuga menziesii*	10	12	good	fair	one sided, 60% lcr	remove
164	Douglas-fir	*Pseudotsuga menziesii*	12	12	fair	poor	33% lcr	remove
165	Douglas-fir	*Pseudotsuga menziesii*	11	16	good	fair	one sided	remove
166	Douglas-fir	*Pseudotsuga menziesii*	9	12	good	fair	one sided, overtopped by adjacent trees, moderately suppressed	remove
167	Douglas-fir	*Pseudotsuga menziesii*	14	12	good	fair	moderately one sided	remove
168	Douglas-fir	*Pseudotsuga menziesii*	6	8	fair	fair	50% lcr	remove
169	Douglas-fir	*Pseudotsuga menziesii*	7	12	good	fair	moderately one sided	remove
170	Douglas-fir	*Pseudotsuga menziesii*	12	15	poor	poor	declining	remove
171	Douglas-fir	*Pseudotsuga menziesii*	8	7	good	fair	60% lcr, moderately one sided	remove
172	Douglas-fir	*Pseudotsuga menziesii*	7	6	good	fair	60% lcr, moderately one sided	remove
173	Douglas-fir	*Pseudotsuga menziesii*	6	6	good	fair	one sided	remove
174	Douglas-fir	*Pseudotsuga menziesii*	7	10	good	fair	one sided	remove
175	Douglas-fir	*Pseudotsuga menziesii*	10	12	good	fair	one sided	remove
176	Douglas-fir	*Pseudotsuga menziesii*	11	13	good	fair	40% lcr, one sided	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
177	Douglas-fir	*Pseudotsuga menziesii*	6	5	fair	fair	50% lcr	remove
178	Douglas-fir	*Pseudotsuga menziesii*	12	18	fair	fair	irregular crown due to competition with adjacent trees	remove
179	Douglas-fir	*Pseudotsuga menziesii*	10	12	fair	fair	50% lcr	remove
180	Douglas-fir	*Pseudotsuga menziesii*	9	12	fair	fair	one sided, previously failed at 10' with new top	remove
181	Douglas-fir	*Pseudotsuga menziesii*	12	12	good	fair	one sided	remove
182	Douglas-fir	*Pseudotsuga menziesii*	11	15	fair	fair	one sided, moderately suppressed	remove
183	Douglas-fir	*Pseudotsuga menziesii*	14	12	fair	fair	one sided, recent branch failures	remove
184	Douglas-fir	*Pseudotsuga menziesii*	6	6	fair	fair	one sided, damage from recent tree failure	remove
185	Douglas-fir	*Pseudotsuga menziesii*	16	16	fair	fair	recent branch failures	remove
186	Douglas-fir	*Pseudotsuga menziesii*	11	13	good	fair	moderately one sided	remove
187	Douglas-fir	*Pseudotsuga menziesii*	10	12	good	fair	one sided	remove
188	Douglas-fir	*Pseudotsuga menziesii*	10	10	good	fair	one sided	remove
189	Douglas-fir	*Pseudotsuga menziesii*	9	7	fair	poor	33% lcr	remove
190	Douglas-fir	*Pseudotsuga menziesii*	15	20	fair	fair	one sided, history of branch failures	remove
191	Douglas-fir	*Pseudotsuga menziesii*	11	12	good	fair	one sided	remove
192	Douglas-fir	*Pseudotsuga menziesii*	9	12	good	fair	one sided	remove
193	Douglas-fir	*Pseudotsuga menziesii*	13	18	good	fair	one sided	remove
194	Douglas-fir	*Pseudotsuga menziesii*	7	10	good	fair	one sided	remove
195	Douglas-fir	*Pseudotsuga menziesii*	6	8	good	fair	one sided	remove
196	Douglas-fir	*Pseudotsuga menziesii*	14	14	good	fair	one sided	remove
197	Douglas-fir	*Pseudotsuga menziesii*	8	0	very poor	very poor	dead	remove
198	Douglas-fir	*Pseudotsuga menziesii*	6	8	good	fair	one sided	remove
199	Douglas-fir	*Pseudotsuga menziesii*	8	10	good	fair	one sided	remove
200	Douglas-fir	*Pseudotsuga menziesii*	12	13	good	fair	moderately one sided	remove
201	Douglas-fir	*Pseudotsuga menziesii*	12	10	fair	fair	recent branch failures, moderately one sided	remove
202	Douglas-fir	*Pseudotsuga menziesii*	7	6	fair	fair	40% lcr	remove
203	Douglas-fir	*Pseudotsuga menziesii*	16	20	good	fair	one sided, recent branch failures	remove
204	Douglas-fir	*Pseudotsuga menziesii*	14	20	good	fair	one sided, recent branch failures	remove
205	Douglas-fir	*Pseudotsuga menziesii*	11	15	good	fair	moderately one sided	remove
206	Douglas-fir	*Pseudotsuga menziesii*	15	12	fair	fair	significant branch failures	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
207	Douglas-fir	*Pseudotsuga menziesii*	9	12	good	fair	moderately one sided	remove
208	Douglas-fir	*Pseudotsuga menziesii*	12	15	fair	fair	recent branch failures, moderately one sided	remove
209	Douglas-fir	*Pseudotsuga menziesii*	12	15	fair	fair	moderately thin crown, moderately one sided	remove
210	Douglas-fir	*Pseudotsuga menziesii*	14	16	good	fair	moderately one sided	remove
211	Douglas-fir	*Pseudotsuga menziesii*	7	6	good	fair	one sided	remove
212	Douglas-fir	*Pseudotsuga menziesii*	9	10	good	fair	moderately one sided	remove
213	Douglas-fir	*Pseudotsuga menziesii*	15	16	fair	fair	one sided, recent branch failures	remove
214	Douglas-fir	*Pseudotsuga menziesii*	9	10	good	fair	one sided	remove
215	Douglas-fir	*Pseudotsuga menziesii*	7	8	good	fair	one sided	remove
216	Douglas-fir	*Pseudotsuga menziesii*	8	12	good	good		remove
217	Douglas-fir	*Pseudotsuga menziesii*	13	15	good	good		remove
218	Douglas-fir	*Pseudotsuga menziesii*	8	9	good	fair	moderately one sided	remove
219	Douglas-fir	*Pseudotsuga menziesii*	8	6	fair	fair	40% lcr	remove
220	Douglas-fir	*Pseudotsuga menziesii*	8	7	good	fair	one sided	remove
221	Douglas-fir	*Pseudotsuga menziesii*	7	7	good	fair	one sided	remove
222	Douglas-fir	*Pseudotsuga menziesii*	9	12	good	fair	moderately one sided	remove
223	Douglas-fir	*Pseudotsuga menziesii*	13	15	good	fair	moderately one sided	remove
224	Douglas-fir	*Pseudotsuga menziesii*	12	15	good	fair	moderately one sided	remove
225	Douglas-fir	*Pseudotsuga menziesii*	16	18	good	fair	moderately one sided	remove
226	Douglas-fir	*Pseudotsuga menziesii*	13	15	fair	fair	one sided, recent branch failures	remove
227	Douglas-fir	*Pseudotsuga menziesii*	13	15	good	fair	moderately one sided	remove
228	Douglas-fir	*Pseudotsuga menziesii*	10	12	fair	fair	one sided, moderately suppressed	remove
229	Douglas-fir	*Pseudotsuga menziesii*	16	16	good	fair	moderately one sided, codominant at 7'	remove
230	Douglas-fir	*Pseudotsuga menziesii*	14	18	good	fair	moderately one sided	remove
231	Douglas-fir	*Pseudotsuga menziesii*	12	15	good	fair	moderately one sided, codominant at 15'	remove
232	Douglas-fir	*Pseudotsuga menziesii*	14	15	good	fair	moderately one sided, codominant at 15'	remove
233	Douglas-fir	*Pseudotsuga menziesii*	8	10	good	fair	one sided	remove
234	Douglas-fir	*Pseudotsuga menziesii*	16	10	fair	fair	codominant at 3' with included bark, 35% lcr	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
235	Douglas-fir	*Pseudotsuga menziesii*	11	12	fair	fair	irregular crown due to competition with adjacent trees	remove
236	Douglas-fir	*Pseudotsuga menziesii*	14	18	good	fair	moderately one sided	remove
237	Douglas-fir	*Pseudotsuga menziesii*	11	13	good	fair	moderately one sided	remove
238	Douglas-fir	*Pseudotsuga menziesii*	10	15	good	fair	one sided	remove
239	Douglas-fir	*Pseudotsuga menziesii*	18	18	good	fair	moderately one sided	remove
240	Douglas-fir	*Pseudotsuga menziesii*	14	15	good	fair	moderately one sided	remove
241	Douglas-fir	*Pseudotsuga menziesii*	7	8	good	fair	one sided	remove
242	Douglas-fir	*Pseudotsuga menziesii*	16	18	good	fair	moderately one sided	remove
243	Douglas-fir	*Pseudotsuga menziesii*	13	13	good	fair	moderately one sided	remove
244	Douglas-fir	*Pseudotsuga menziesii*	14	15	poor	poor	top dieback and branch failures	remove
245	Douglas-fir	*Pseudotsuga menziesii*	16	16	good	fair	one sided	remove
246	Douglas-fir	*Pseudotsuga menziesii*	12	13	good	fair	one sided	remove
247	Douglas-fir	*Pseudotsuga menziesii*	15	14	fair	fair	irregular crown due to competition with adjacent trees	remove
248	Douglas-fir	*Pseudotsuga menziesii*	17	16	fair	fair	one sided, recent branch failures	remove
249	Douglas-fir	*Pseudotsuga menziesii*	14	16	good	fair	one sided	remove
250	Douglas-fir	*Pseudotsuga menziesii*	13	15	good	fair	one sided	remove
251	Douglas-fir	*Pseudotsuga menziesii*	9	10	good	fair	one sided	remove
252	Douglas-fir	*Pseudotsuga menziesii*	16	20	good	fair	moderately one sided	remove
253	Douglas-fir	*Pseudotsuga menziesii*	12	10	good	good		remove
254	Douglas-fir	*Pseudotsuga menziesii*	7	7	fair	fair	one sided, overtopped by adjacent trees	remove
255	Douglas-fir	*Pseudotsuga menziesii*	17	18	good	fair	multiple leaders at 8'	remove
256	Douglas-fir	*Pseudotsuga menziesii*	13	12	good	fair	one sided	remove
257	Douglas-fir	*Pseudotsuga menziesii*	14	16	good	fair	one sided, codominant at 10'	remove
258	Douglas-fir	*Pseudotsuga menziesii*	9	10	good	fair	one sided	remove
259	Douglas-fir	*Pseudotsuga menziesii*	11	10	good	fair	moderately one sided	remove
260	Douglas-fir	*Pseudotsuga menziesii*	16	17	good	fair	one sided	remove
261	Douglas-fir	*Pseudotsuga menziesii*	14	16	fair	fair	recent branch failures	remove
262	Douglas-fir	*Pseudotsuga menziesii*	14	15	fair	fair	recent branch failures, one sided	remove
263	Douglas-fir	*Pseudotsuga menziesii*	13	15	good	fair	moderately one sided	remove
264	Douglas-fir	*Pseudotsuga menziesii*	45	30	good	fair	one sided	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
265	Douglas-fir	*Pseudotsuga menziesii*	25	20	good	fair	one sided, bowed trunk, marginal trunk taper	retain
266	Douglas-fir	*Pseudotsuga menziesii*	25	20	good	fair	moderately one sided, marginal trunk taper	retain
267	Douglas-fir	*Pseudotsuga menziesii*	18	15	fair	fair	one sided, marginal trunk taper, bowed trunk, moderately suppressed	retain
268	Douglas-fir	*Pseudotsuga menziesii*	26	25	good	fair	60% lcr	remove
269	Douglas-fir	*Pseudotsuga menziesii*	9	10	fair	fair	overtopped by adjacent trees, suppressed	remove
270	Douglas-fir	*Pseudotsuga menziesii*	43	33	fair	fair	irregular crown due to competition with adjacent trees	remove
271	Douglas-fir	*Pseudotsuga menziesii*	19	22	good	fair	moderately one sided	remove
272	Douglas-fir	*Pseudotsuga menziesii*	31	25	good	fair	bowed trunk	remove
273	Douglas-fir	*Pseudotsuga menziesii*	26	25	good	fair	40% lcr	remove
274	Douglas-fir	*Pseudotsuga menziesii*	23	20	good	fair	one sided, bowed trunk, marginal trunk taper	remove
275	Douglas-fir	*Pseudotsuga menziesii*	15	15	good	fair	moderately suppressed, overtopped by adjacent trees	remove
276	Douglas-fir	*Pseudotsuga menziesii*	17	15	fair	poor	crown extension suppressed by adjacent trees, poor trunk taper	remove
277	Douglas-fir	*Pseudotsuga menziesii*	12	0	very poor	very poor	dead	remove
278	Douglas-fir	*Pseudotsuga menziesii*	17	17	good	fair	marginal trunk taper, moderately thin crown	remove
279	Douglas-fir	*Pseudotsuga menziesii*	6	0	very poor	very poor	dead	remove
280	Douglas-fir	*Pseudotsuga menziesii*	28	25	good	fair	moderately one sided, bowed trunk, marginal trunk taper	remove
281	Douglas-fir	*Pseudotsuga menziesii*	16	10	good	fair	overtopped by adjacent trees, moderately suppressed	remove
282	Douglas-fir	*Pseudotsuga menziesii*	24	25	good	fair	one sided, bowed trunk, marginal trunk taper	remove
283	Douglas-fir	*Pseudotsuga menziesii*	8	0	very poor	very poor	dead	remove
284	Douglas-fir	*Pseudotsuga menziesii*	10	0	very poor	very poor	dead	remove
285	Douglas-fir	*Pseudotsuga menziesii*	17	15	good	fair	one sided, marginal trunk taper	remove
286	Douglas-fir	*Pseudotsuga menziesii*	15	18	good	fair	one sided, marginal trunk taper	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
287	Douglas-fir	*Pseudotsuga menziesii*	28	25	good	fair	one sided	remove
288	Douglas-fir	*Pseudotsuga menziesii*	29	30	good	fair	one sided	remove
289	Douglas-fir	*Pseudotsuga menziesii*	41	35	good	fair	moderately one sided	remove
290	Douglas-fir	*Pseudotsuga menziesii*	38	28	good	fair	one sided	remove
291	Douglas-fir	*Pseudotsuga menziesii*	28	20	good	fair	moderately one sided	remove
292	Douglas-fir	*Pseudotsuga menziesii*	28	22	fair	fair	moderately thin crown, potentially embedded wire at 10'	remove
293	Douglas-fir	*Pseudotsuga menziesii*	11	15	fair	fair	moderately suppressed	remove
294	Douglas-fir	*Pseudotsuga menziesii*	20	15	good	fair	one sided, leans south, marginal trunk taper	remove
295	Douglas-fir	*Pseudotsuga menziesii*	25	8	fair	fair	one sided, moderately thin crown	remove
296	Douglas-fir	*Pseudotsuga menziesii*	27	27	good	fair	one sided	remove
297	Douglas-fir	*Pseudotsuga menziesii*	6	8	poor	poor	suppressed	remove
298	Douglas-fir	*Pseudotsuga menziesii*	20	15	fair	fair	crown extension suppressed by adjacent trees, marginal trunk taper	remove
299	Douglas-fir	*Pseudotsuga menziesii*	22	10	fair	poor	poor trunk taper	remove
300	Douglas-fir	*Pseudotsuga menziesii*	12	15	good	fair	overtopped by adjacent trees, moderately suppressed	remove
301	Douglas-fir	*Pseudotsuga menziesii*	19	25	good	fair	one sided, irregular crown due to competition with adjacent trees, marginal trunk taper	remove
302	Douglas-fir	*Pseudotsuga menziesii*	19	12	good	fair	one sided, marginal trunk taper	remove
303	Douglas-fir	*Pseudotsuga menziesii*	21	10	fair	poor	crown extension suppressed by adjacent trees, poor trunk taper	remove
304	Douglas-fir	*Pseudotsuga menziesii*	27	22	good	fair	moderately one sided	remove
305	Douglas-fir	*Pseudotsuga menziesii*	38	28	good	fair	irregular crown due to competition with adjacent trees	remove
307	Douglas-fir	*Pseudotsuga menziesii*	50	40	good	fair	moderately one sided	remove
308	Douglas-fir	*Pseudotsuga menziesii*	25	22	good	fair	moderately one sided, marginal trunk taper	remove
309	Douglas-fir	*Pseudotsuga menziesii*	38	35	good	fair	moderately one sided	remove
310	Douglas-fir	*Pseudotsuga menziesii*	52	40	good	good		remove
311	Douglas-fir	*Pseudotsuga menziesii*	46	35	good	fair	one sided	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
312	Douglas-fir	*Pseudotsuga menziesii*	7	7	fair	fair	overtopped by adjacent trees, moderately suppressed	remove
313	Douglas-fir	*Pseudotsuga menziesii*	21	12	fair	poor	poor trunk taper	remove
314	Douglas-fir	*Pseudotsuga menziesii*	35	21	good	fair	moderately one sided	remove
315	Douglas-fir	*Pseudotsuga menziesii*	25	22	fair	fair	one sided, overextended branches	remove
316	Douglas-fir	*Pseudotsuga menziesii*	12	0	very poor	very poor	dead	remove
317	Douglas-fir	*Pseudotsuga menziesii*	27	20	fair	fair	one sided, overextended branches	remove
318	Douglas-fir	*Pseudotsuga menziesii*	41	25	fair	fair	one sided, irregular crown due to competition with adjacent trees	remove
319	Douglas-fir	*Pseudotsuga menziesii*	19	16	fair	fair	overtopped by adjacent trees, moderately suppressed	remove
320	Douglas-fir	*Pseudotsuga menziesii*	12	10	poor	poor	suppressed	remove
321	Douglas-fir	*Pseudotsuga menziesii*	45	30	good	fair	moderately one sided	remove
322	Douglas-fir	*Pseudotsuga menziesii*	23	22	fair	fair	thin crown	remove
323	Douglas-fir	*Pseudotsuga menziesii*	58	30	good	fair	codominant at 3' with included bark	remove
323.1	Douglas-fir	*Pseudotsuga menziesii*	30	20	good	fair	side pruned for overhead high voltage lines, extensive ivy, offsite, added by arborist in approximate location, size estimated	remove
323.2	Douglas-fir	*Pseudotsuga menziesii*	14	14	poor	poor	topped for overhead high voltage lines, smothered by ivy, aoffsite, added by arborist in approximate location, size estimated	remove
324	sweet cherry	*Prunus avium*	11,10,8	27	fair	fair	multiple leaders at ground level, branch dieback	remove
324.1	Douglas-fir	*Pseudotsuga menziesii*	22	10	poor	poor	branch dieback, topped for overhead power, offsite, added by arborist in approximate location, size estimated	remove
324.2	Douglas-fir	*Pseudotsuga menziesii*	22	15	fair	fair	branch dieback, side pruned for overhead power, offsite, added by arborist in approximate location, size estimated	remove
325	sweet cherry	*Prunus avium*	8	21	fair	fair	significant lean north	remove
326	sweet cherry	*Prunus avium*	11	7	poor	poor	lost top at 20'	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
327	Douglas-fir	*Pseudotsuga menziesii*	15	15	good	good		remove
328	Douglas-fir	*Pseudotsuga menziesii*	26	20	good	fair	one sided	remove
329	Douglas-fir	*Pseudotsuga menziesii*	50	27	good	fair	moderately one sided	remove
330	Douglas-fir	*Pseudotsuga menziesii*	39	22	good	fair	moderately one sided	remove
331	Douglas-fir	*Pseudotsuga menziesii*	47	25	good	fair	moderately one sided	remove
332	Douglas-fir	*Pseudotsuga menziesii*	39	25	good	fair	moderately one sided	remove
333	Douglas-fir	*Pseudotsuga menziesii*	38	25	good	fair	moderately one sided	remove
334	Douglas-fir	*Pseudotsuga menziesii*	41	33	fair	fair	one sided, irregular crown due to competition with adjacent trees	remove
335	Douglas-fir	*Pseudotsuga menziesii*	34	25	good	fair	one sided	remove
336	Douglas-fir	*Pseudotsuga menziesii*	37	25	good	fair	one sided	remove
337	Douglas-fir	*Pseudotsuga menziesii*	46	25	good	fair	one sided	remove
338	Douglas-fir	*Pseudotsuga menziesii*	30	18	good	fair	crown extension suppressed by adjacent trees	remove
339	Douglas-fir	*Pseudotsuga menziesii*	45	32	good	fair	one sided	remove
340	Douglas-fir	*Pseudotsuga menziesii*	52	33	good	fair	moderately one sided	remove
341	Douglas-fir	*Pseudotsuga menziesii*	54	30	good	fair	moderately one sided, swollen lower trunk	remove
342	Douglas-fir	*Pseudotsuga menziesii*	30	25	good	fair	one sided	remove
343	Douglas-fir	*Pseudotsuga menziesii*	26	22	fair	fair	one sided, irregular crown due to competition with adjacent trees	remove
344	Douglas-fir	*Pseudotsuga menziesii*	33	25	good	fair	one sided	remove
345	Douglas-fir	*Pseudotsuga menziesii*	51	28	good	fair	one sided	remove
346	Douglas-fir	*Pseudotsuga menziesii*	42	28	good	fair	one sided	remove
347	Douglas-fir	*Pseudotsuga menziesii*	39	22	good	fair	moderately one sided	remove
348	Douglas-fir	*Pseudotsuga menziesii*	45	25	good	fair	multiple leaders at top of crown	remove
349	blue spruce	*Picea pungens*	11	11	good	fair	multiple leaders at 6'	remove
350	edible fig	*Ficus carica*	15	6	good	good	maintained for fruit production	remove
351	blue spruce	*Picea pungens*	9	9	fair	fair	topped at 15' for overhead high voltage	remove
352	blue spruce	*Picea pungens*	7	7	fair	fair	topped at 15' for overhead high voltage	remove
353	blue spruce	*Picea pungens*	6	0	very poor	very poor	dead	remove
354	blue spruce	*Picea pungens*	10	10	fair	fair	topped at 15' for overhead high voltage	remove
355	grand fir	*Abies grandis*	7	8	fair	fair	topped at 15' for overhead high voltage	remove
356	grand fir	*Abies grandis*	7	8	good	fair	moderately one sided	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
357	blue spruce	*Picea pungens*	6	7	good	fair	one sided	remove
358	blue spruce	*Picea pungens*	10	10	fair	fair	one sided, codominant at 7', topped at 15' for overhead high voltage	remove
359	blue spruce	*Picea pungens*	9	8	fair	fair	topped at 15' for overhead high voltage	remove
360	blue spruce	*Picea pungens*	7	5	poor	poor	significant dieback	remove
361	blue spruce	*Picea pungens*	7	6	fair	fair	one sided, topped at 15' for overhead high voltage	remove
362	blue spruce	*Picea pungens*	8	6	poor	poor	one sided, topped at 15' for overhead high voltage, branch failures	remove
363	blue spruce	*Picea pungens*	6	0	very poor	very poor	dead	remove
364	blue spruce	*Picea pungens*	8	6	fair	poor	partially uprooted, one sided	remove
365	blue spruce	*Picea pungens*	6	3	poor	poor	suppressed	remove
366	blue spruce	*Picea pungens*	7	4	poor	poor	suppressed	remove
367	blue spruce	*Picea pungens*	8	5	fair	poor	topped at 15' for overhead high voltage	remove
368	blue spruce	*Picea pungens*	10	7	fair	fair	sided pruned for overhead high voltage	remove
369	blue spruce	*Picea pungens*	8	5	fair	fair	one sided	remove
370	blue spruce	*Picea pungens*	8	8	fair	fair	one sided, side pruned for overhead high voltage	remove
371	blue spruce	*Picea pungens*	8	6	fair	fair	multiple leaders at 6', lower branch dieback	remove
372	blue spruce	*Picea pungens*	7	7	fair	fair	topped at 15' for overhead high voltage	remove
373	blue spruce	*Picea pungens*	8	4	fair	fair	lower branch dieback	remove
374	blue spruce	*Picea pungens*	8	6	fair	fair	lower branch dieback, topped at 15' for overhead high voltage	remove
375	blue spruce	*Picea pungens*	8	7	fair	fair	lower branch dieback, topped at 15' for overhead high voltage	remove
376	blue spruce	*Picea pungens*	7	4	fair	fair	lower branch dieback	remove
377	blue spruce	*Picea pungens*	8	4	fair	fair	lower branch dieback, topped at 15' for overhead high voltage	remove
378	blue spruce	*Picea pungens*	8	8	fair	fair	one sided, topped at 15' for overhead high voltage	remove
379	blue spruce	*Picea pungens*	7	5	fair	fair	lower branch dieback, topped at 15' for overhead high voltage	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
380	blue spruce	*Picea pungens*	9	7	fair	fair	lower branch dieback, topped at 15' for overhead high voltage	remove
381	blue spruce	*Picea pungens*	8	6	fair	fair	one sided	remove
382	blue spruce	*Picea pungens*	6	7	fair	fair	one sided, topped at 15' for overhead high voltage	remove
383	blue spruce	*Picea pungens*	7	6	fair	fair	one sided, topped at 15' for overhead high voltage	remove
384	blue spruce	*Picea pungens*	10	8	fair	fair	lower branch dieback	remove
385	pine	*Pinus sp.*	7	3	fair	fair	lower branch dieback	remove
386	blue spruce	*Picea pungens*	7	8	fair	fair	one sided, topped at 15' for overhead high voltage	remove
387	blue spruce	*Picea pungens*	6	3	fair	fair	lower branch dieback, topped at 15' for overhead high voltage	remove
388	blue spruce	*Picea pungens*	10	5	fair	fair	lower branch dieback	remove
389	blue spruce	*Picea pungens*	12	5	fair	poor	codominant at 2', south stem failed	remove
390	blue spruce	*Picea pungens*	9	6	fair	fair	one sided, topped at 15' for overhead high voltage	remove
391	blue spruce	*Picea pungens*	7	6	fair	fair	one sided, codominant at 6'	remove
392	blue spruce	*Picea pungens*	8	6	fair	fair	one sided	remove
393	common plum	*Prunus cerasifera*	11	8	good	fair	three leaders:8,6,4; inclusion; water sprouts	remove
394	apple	*Malus domestica*	6	8	good	fair	dead and crossing branches; diameter at 2.5' AGL; trunk damage on N side; good wound wood	remove
395	apple	*Malus domestica*	8	10	good	fair	diameter at 2.5' AGL; splits into three leaders at 4' AGL; crossing branches	remove
396	Douglas-fir	*Pseudotsuga menziesii*	6	5	good	good		remove
397	Douglas-fir	*Pseudotsuga menziesii*	7	5	good	good	suppressed lower canopy	remove
398	Douglas-fir	*Pseudotsuga menziesii*	6	5	good	good	suppressed lower canopy	remove
399	Douglas-fir	*Pseudotsuga menziesii*	7	8	good	good	suppressed lower canopy	remove
400	Douglas-fir	*Pseudotsuga menziesii*	7	8	good	good	suppressed lower canopy	remove
401	Douglas-fir	*Pseudotsuga menziesii*	8	8	good	good	suppressed lower canopy	remove
402	Douglas-fir	*Pseudotsuga menziesii*	8	10	good	good	suppressed lower canopy; fallen tree to the NW	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
403	Douglas-fir	*Pseudotsuga menziesii*	7	8	good	good	suppressed lower canopy	remove
404	Douglas-fir	*Pseudotsuga menziesii*	7	8	good	good	suppressed lower canopy	remove
405	Douglas-fir	*Pseudotsuga menziesii*	6	8	good	good		remove
406	Douglas-fir	*Pseudotsuga menziesii*	6	5	good	good	suppressed lower canopy; inside planted stand	remove
407	Douglas-fir	*Pseudotsuga menziesii*	6	5	good	good	suppressed lower canopy; inside planted stand; telephone pole is west	remove
408	English walnut	*Juglans regia*	23	23	good	good	diameter at 0.5' AGL; Three leaders ~15" each; canopy spreading	remove
409	pear	*Pyrus sp.*	8	5	good	fair	three leaders at 3' AGL; structured for fruit production	remove
410	apple	*Malus domestica*	8,8	10	fair	poor	50% trunk hollow; structured for fruit production; codominant leaders at 3' AGL.	remove
411	apple	*Malus domestica*	15	15	fair	fair	multiple trunks; structured for fruit production; missing bark; sapsuckers.	remove
412	cherry	*Prunus sp.*	19	5	poor	very poor	diameter at 1.75' AGL; decaying trunk; two dead leaders.	remove
413	cherry	*Prunus sp.*	12	5	good	good	diameter at 2.5' AGL.	remove
414	apple	*Malus domestica*	9	8	good	fair	diameter at 4'; structured for fruit production..	remove
415	cherry	*Prunus sp.*	16	10	good	fair	diameter at 2.25'; structure pruned for fruit production.	remove
416	apple	*Malus domestica*	6	5	fair	fair	diameter at 2' AGL; suppressed.	remove
417	cherry	*Prunus sp.*	13	13	good	good	diameter at 1.5' AGL.	remove
418	Douglas-fir	*Pseudotsuga menziesii*	55	20	poor	very poor	lightning strike damage; lost top; crack along entire trunk	remove
419	Douglas-fir	*Pseudotsuga menziesii*	56	30	good	good		remove
420	grand fir	*Abies grandis*	11	10	good	good	E of 411	remove
421	grand fir	*Abies grandis*	14	15	good	good		remove
422	grand fir	*Abies grandis*	11	13	good	good		remove
423	Douglas-fir	*Pseudotsuga menziesii*	49	30	good	good	stockpiling of soil and debris against trunk S of tree	remove
424	grand fir	*Abies grandis*	11	13	very poor	very poor	stockpiling of soil and debris to the E	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
425	grand fir	*Abies grandis*	8	10	good	good	stockpiling of soil and debris to the E	remove
426	Douglas-fir	*Pseudotsuga menziesii*	46	25	good	good	hangers; dead branches; stockpiling of soil and debris to N	remove
427	western redcedar	*Thuja plicata*	34	23	good	good		remove
428	western redcedar	*Thuja plicata*	41	28	good	good		remove
429	western redcedar	*Thuja plicata*	35	20	good	fair	trunk imbedded into garage	remove
430	western redcedar	*Thuja plicata*	38	25	good	good		remove
431	English walnut	*Juglans regia*	23	23	good	good	diameter at 2.5' AGL; three leaders at 5'	remove
432	pear	*Pyrus sp.*	13	10	good	good		remove
433	Norway maple	*Acer platanoides*	13	13	good	good		remove
434	common plum	*Prunus cerasifera*	15	5	poor	very poor	growing in laurel hedge; decaying trunk; leaning into hedge, unable to accurately measure	remove
435	silk tree	*Albizia julibrissin*	23	15	good	good	diameter at 3.5' AGL	remove
1843	Douglas-fir	*Pseudotsuga menziesii*	13	13	good	fair	moderately one sided	remove
1844	Douglas-fir	*Pseudotsuga menziesii*	13	9	good	fair	one sided	remove
1845	Douglas-fir	*Pseudotsuga menziesii*	8	7	fair	poor	25% lcr, poor trunk taper	remove
1846	Douglas-fir	*Pseudotsuga menziesii*	14	11	good	fair	one sided	remove
1847	Douglas-fir	*Pseudotsuga menziesii*	5	4	fair	poor	15% lcr, poor trunk taper	remove
1848	Douglas-fir	*Pseudotsuga menziesii*	7	10	fair	fair	moderately suppressed	remove
1849	Douglas-fir	*Pseudotsuga menziesii*	10	9	good	fair	one sided	remove
1850	Douglas-fir	*Pseudotsuga menziesii*	7	5	fair	poor	25% lcr, poor trunk taper	remove
1851	Douglas-fir	*Pseudotsuga menziesii*	12	9	good	fair	one sided	remove
1852	Douglas-fir	*Pseudotsuga menziesii*	10	11	good	fair	40% lcr	remove
1853	Douglas-fir	*Pseudotsuga menziesii*	5	5	fair	fair	overtopped by adjacent trees, moderately suppressed	remove
1853	Douglas-fir	*Pseudotsuga menziesii*	14	10	good	fair	one sided	remove
1855	Douglas-fir	*Pseudotsuga menziesii*	10	10	good	fair	one sided	remove
1857	Douglas-fir	*Pseudotsuga menziesii*	9	9	good	fair	one sided	remove
1858	Douglas-fir	*Pseudotsuga menziesii*	9	8	good	poor	25% lcr, poor trunk taper	remove
1859	Douglas-fir	*Pseudotsuga menziesii*	11	9	good	fair	one sided	remove
1860	Douglas-fir	*Pseudotsuga menziesii*	11	15	good	fair	50% lcr	remove
1861	Douglas-fir	*Pseudotsuga menziesii*	7	15	good	fair	one sided	remove
1862	Douglas-fir	*Pseudotsuga menziesii*	9	10	fair	fair	one sided, moderately suppressed	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
1863	Douglas-fir	*Pseudotsuga menziesii*	10	12	good	fair	one sided	remove
1864	Douglas-fir	*Pseudotsuga menziesii*	7	12	fair	fair	one sided, moderately suppressed	remove
1865	Douglas-fir	*Pseudotsuga menziesii*	10	12	good	fair	one sided	remove
1866	Douglas-fir	*Pseudotsuga menziesii*	7	7	fair	fair	one sided, moderately suppressed	remove
1866.1	Douglas-fir	*Pseudotsuga menziesii*	8	8	fair	fair	40% lcr, marginal trunk taper	remove
1866.2	Douglas-fir	*Pseudotsuga menziesii*	14	16	good	fair	one sided	remove
1866.3	Douglas-fir	*Pseudotsuga menziesii*	11	5	fair	poor	25% lcr, marginal trunk taper	remove
1867	Douglas-fir	*Pseudotsuga menziesii*	10	10	good	fair	one sided	remove
1867.1	Douglas-fir	*Pseudotsuga menziesii*	6	8	good	fair	one sided	remove
1873	Douglas-fir	*Pseudotsuga menziesii*	7	5	fair	poor	25% lcr, poor trunk taper	remove
1874	Douglas-fir	*Pseudotsuga menziesii*	13	15	poor	poor	extensive branch failures	remove
1874.1	Douglas-fir	*Pseudotsuga menziesii*	8	7	good	fair	one sided, marginal trunk taper	remove
1874.2	Douglas-fir	*Pseudotsuga menziesii*	11	10	good	fair	moderately one sided, marginal trunk taper	remove
1875	Douglas-fir	*Pseudotsuga menziesii*	11	8	fair	fair	50% lcr, marginal trunk taper	remove
1876	Douglas-fir	*Pseudotsuga menziesii*	10	10	good	fair	one sided	remove
1877	Douglas-fir	*Pseudotsuga menziesii*	13	15	good	fair	one sided	remove
1878	Douglas-fir	*Pseudotsuga menziesii*	10	10	good	fair	one sided	remove
1878.1	Douglas-fir	*Pseudotsuga menziesii*	6	4	fair	poor	25% lcr, poor trunk taper	remove
1878.2	Douglas-fir	*Pseudotsuga menziesii*	6	5	fair	poor	25% lcr, poor trunk taper	remove
1880	Douglas-fir	*Pseudotsuga menziesii*	6	6	good	fair	one sided, marginal trunk taper	remove
1880.1	Douglas-fir	*Pseudotsuga menziesii*	8	10	good	fair	one sided, marginal trunk taper	remove
1881	Douglas-fir	*Pseudotsuga menziesii*	8	8	good	fair	high crown, marginal trunk taper	remove
1882	Douglas-fir	*Pseudotsuga menziesii*	14	10	good	fair	one sided	remove
1883	Douglas-fir	*Pseudotsuga menziesii*	13	15	good	fair	60% lcr	remove
1884	Douglas-fir	*Pseudotsuga menziesii*	13	10	good	fair	60% lcr	remove
1884.1	Douglas-fir	*Pseudotsuga menziesii*	19	15	good	fair	one sided, marginal trunk taper	remove
1886	Douglas-fir	*Pseudotsuga menziesii*	8	8	good	fair	one sided	remove
1886.1	Douglas-fir	*Pseudotsuga menziesii*	7	8	fair	fair	one sided, branch dieback	remove
1887	Douglas-fir	*Pseudotsuga menziesii*	13	13	good	good		remove
1889	blue spruce	*Picea pungens*	9	7	fair	fair	one sided, dieback	remove
1890	blue spruce	*Picea pungens*	8	6	poor	poor	one sided, top failure, multiple leaders	remove
1891	blue spruce	*Picea pungens*	7	6	fair	fair	one sided, multiple leaders	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
1892	blue spruce	*Picea pungens*	7	8	fair	fair	one sided, overtopped by adjacent trees, multiple leaders	remove
1893	Douglas-fir	*Pseudotsuga menziesii*	18	20	good	fair	one sided	remove
1895	blue spruce	*Picea pungens*	8	0	very poor	very poor	dead	remove
1896	Douglas-fir	*Pseudotsuga menziesii*	14	16	good	good		remove
1897	blue spruce	*Picea pungens*	8	6	poor	poor	overtopped by adjacent trees	remove
1898	Douglas-fir	*Pseudotsuga menziesii*	13	21	good	fair	one sided	remove
1899	blue spruce	*Picea pungens*	8	8	good	fair	one sided, multiple leaders at lower trunk	remove
1900	blue spruce	*Picea pungens*	6	8	poor	poor	overtopped by adjacent trees, lost top	remove
1901	Douglas-fir	*Pseudotsuga menziesii*	18	21	fair	fair	extensive branch failures	remove
1902	blue spruce	*Picea pungens*	8	13	good	fair	one sided	remove
1904	Douglas-fir	*Pseudotsuga menziesii*	15	16	good	good		remove
1906	spruce	*Picea sp.*	8	6	fair	fair	one sided, codominant at 7'	remove
1907	spruce	*Picea sp.*	6	6	fair	fair	one sided, multiple leaders at 7'	remove
1909	spruce	*Picea sp.*	6	6	fair	fair	one sided, codominant at 7'	remove
1910	spruce	*Picea pungens*	6	0	very poor	very poor	dead	remove
1911	spruce	*Picea sp.*	6	5	very poor	very poor	fallen over	remove
1912	blue spruce	*Picea pungens*	7	6	good	fair	one sided	remove
2013	sweet cherry	*Prunus avium*	14	27	good	fair	multiple leaders	remove
2254	Douglas-fir	*Pseudotsuga menziesii*	21	18	fair	poor	overtopped by adjacent trees, one sided, lost top at 20'	remove
2255	Douglas-fir	*Pseudotsuga menziesii*	36	30	good	fair	moderately one sided	remove
2256	Douglas-fir	*Pseudotsuga menziesii*	10	10	fair	fair	overtopped by adjacent trees, suppressed	remove
2257	Douglas-fir	*Pseudotsuga menziesii*	36	33	good	fair	one sided	remove
2258	Douglas-fir	*Pseudotsuga menziesii*	18	10	fair	fair	one sided, moderately suppressed	remove
2259	Douglas-fir	*Pseudotsuga menziesii*	24	15	fair	fair	one sided, moderately suppressed	remove
2260	Douglas-fir	*Pseudotsuga menziesii*	11	15	fair	fair	one sided	remove
2261	Douglas-fir	*Pseudotsuga menziesii*	28	26	fair	fair	one sided	remove
2262	Douglas-fir	*Pseudotsuga menziesii*	15	10	fair	fair	moderately suppressed	remove
2263	Douglas-fir	*Pseudotsuga menziesii*	10	10	fair	poor	suppressed	remove
2264	Douglas-fir	*Pseudotsuga menziesii*	26	30	fair	fair	irregular crown due to competition with adjacent trees	remove

Attachment 2

Tree No.	Common Name	Scientific Name	DBH[1]	C-Rad[2]	Condition[3]	Structure	Comments	Treatment
2265	Douglas-fir	*Pseudotsuga menziesii*	40	30	good	fair	moderately one sided	remove
2266	Douglas-fir	*Pseudotsuga menziesii*	34	25	good	fair	one sided	retain
2267	Douglas-fir	*Pseudotsuga menziesii*	31	20	good	fair	one sided, bowed lower trunk	retain
2268	Douglas-fir	*Pseudotsuga menziesii*	12	0	very poor	very poor	dead	remove
2269	Douglas-fir	*Pseudotsuga menziesii*	22	16	fair	fair	one sided, overextended branches at upper trunk	retain
2270	Douglas-fir	*Pseudotsuga menziesii*	26	24	good	fair	one sided	retain
2271	Douglas-fir	*Pseudotsuga menziesii*	22	10	good	fair	bowed trunk, one sided, marginal trunk taper	retain
2272	Douglas-fir	*Pseudotsuga menziesii*	23	20	fair	fair	moderately one sided, moderate dieback	remove
2274	Douglas-fir	*Pseudotsuga menziesii*	12	12	poor	poor	suppressed	remove
2275	Douglas-fir	*Pseudotsuga menziesii*	27	25	fair	fair	irregular crown due to competition with adjacent trees	remove
2276	Douglas-fir	*Pseudotsuga menziesii*	9	0	very poor	very poor	dead	remove
2277	Douglas-fir	*Pseudotsuga menziesii*	10	10	poor	poor	suppressed, extensive *Porodaedalea conks* along trunk	remove
2278	Douglas-fir	*Pseudotsuga menziesii*	24	15	fair	fair	crown extension suppressed by adjacent trees	remove
2279	Douglas-fir	*Pseudotsuga menziesii*	28	15	fair	poor	extensive *Porodaedalea conks* along trunk	remove
2280	Douglas-fir	*Pseudotsuga menziesii*	26	25	good	fair	one sided, crown extension suppressed by adjacent trees	remove
2281	Douglas-fir	*Pseudotsuga menziesii*	8	7	poor	poor	suppressed	remove
2282	Douglas-fir	*Pseudotsuga menziesii*	24	20	fair	fair	moderately thin crown	remove
2283	Douglas-fir	*Pseudotsuga menziesii*	10	0	very poor	very poor	dead	remove

[1]**DBH** is the trunk diameter in inches measured per International Society of Arboriculture (ISA) standards. DBH was estimated for trees on neighboring property.

[2]**C-Rad** is the approximate crown radius in feet. C-Rad was estimated for trees on private property.

[3]**Condition and Structure** ratings range from very poor, poor, fair, to good. Note that the conditions and structures for trees on neighboring property are estimated based on the visible parts of the trees.

Attachment 3
Tree Protection Recommendations

Before Construction Begins

1. Notify all contractors of tree protection procedures. For successful tree protection on a construction site, all contractors must know and understand the goals of tree protection.
    a. Hold a tree protection meeting with all contractors to explain the goals of tree protection.
    c. Have all contractors sign memoranda of understanding regarding the goals of tree protection. The memoranda should include a penalty for violating the tree protection plan. The penalty should equal the resulting fines issued by the local jurisdiction plus the appraised value of the tree(s) within the violated tree protection zone per the current Trunk Formula Method as outlined in the current edition of the ***Guide for Plant Appraisal*** by the Council of Tree & Landscape Appraisers. The penalty should be paid to the owner of the property.
2. Fencing
    a. Tree protection fencing may be set as shown in Attachment 1.
    b. The fencing should be put in place before the ground is cleared to protect the trees and the soil around the trees from disturbances.
    c. Fencing should be established by the project arborist based on the needs of the trees to be protected and to facilitate construction.
    d. Fencing should consist of 4-foot high steel fencing on concrete blocks or other anchoring devices, or 4-foot metal fencing secured to the ground with 6-foot metal posts to prevent it from being moved by contractors, sagging, or falling down.
    e. Fencing should remain in the position that is established by the project arborist and not be moved without approval from the project arborist until final project approval.
3. Signage
    a. All tree protection fencing should have signage as follows so that all contractors understand the purpose of the fencing:

> **TREE PROTECTION ZONE**
>
> **DO NOT REMOVE OR ADJUST THE LOCATION OF THIS TREE PROTECTION FENCING**
> **UNAUTHORIZED ENCROACHMENT MAY RESULT IN FINES**
>
> Please contact the project arborist if alterations to the location of the tree protection fencing are necessary.
>
> Todd Prager, Project Arborist, Teragan & Associates, 971-295-4835

    b. Signage should be placed every 75-feet or less.

During Construction

1. Protection Guidelines Within the Tree Protection Zones:
    a. No new buildings; grade change or cut and fill, during or after construction; new impervious surfaces; or utility or drainage field placement should be allowed within the tree protection zones.
    b. No traffic should be allowed within the tree protection zones. This includes but is not limited to vehicle, heavy equipment, or even repeated foot traffic.
    c. No storage of materials including but not limiting to soil, construction material, or waste from the site should be permitted within the tree protection zones. Waste includes but is not limited to concrete wash out, gasoline, diesel, paint, cleaner, thinners, etc.
    d. Construction trailers should not be parked/placed within the tree protection zones.
    e. No vehicles should be allowed to park within the tree protection zones.
    f. No other activities should be allowed that will cause soil compaction within the tree protection zones.
2. The trees should be protected from any cutting, skinning or breaking of branches, trunks or woody roots.
3. The project arborist should be notified prior to the cutting of woody roots from trees that are to be retained to evaluate and oversee the proper cutting of roots with sharp cutting tools. Cut roots should be immediately covered with soil or mulch to prevent them from drying out.
4. Trees that have woody roots cut should be provided supplemental water during the summer months.
5. Any necessary passage of utilities through the tree protection zones should be by means of tunneling under woody roots by hand digging or boring with oversight by the project arborist.
6. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

After Construction

1. Carefully landscape the areas within the tree protection zones. Do not allow trenching for irrigation or other utilities within the tree protection zones.
2. Carefully plant new plants within the tree protection zones. Avoid cutting the woody roots of trees that are retained.
3. Do not install permanent irrigation within the tree protection zones unless it is drip irrigation to support a specific planting or the irrigation is approved by the project arborist.
4. Provide adequate drainage within the tree protection zones and do not alter soil hydrology significantly from existing conditions for the trees to be retained.
5. Provide for the ongoing inspection and treatment of insect and disease populations that can damage the retained trees and plants.
6. The retained trees may need to be fertilized if recommended by the project arborist.
7. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

Attachment 4
Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. The information provided by BTC III Grahams Ferry IC LLC and their consultants was the basis of the information provided in this report.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
4. Loss or alteration of any part of this delivered report invalidates the entire report.
5. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
6. The consultant's role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.
7. The purpose of this report is to:
    - Provide an assessment of the existing trees;
    - Provide recommendations for tree removal and retention based on the proposed site improvements; and
    - Provide protection recommendations for the trees to be retained.

MACKENZIE.

DESIGN DRIVEN | CLIENT FOCUSED

PRELIMINARY STORMWATER REPORT

To
City of Wilsonville

For
BTC III Grahams Ferry IC LLC

Submitted
March 23, 2022

Project Number
2210157.00

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Since 1960

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I. PROJECT OVERVIEW AND DESCRIPTION

This report documents the stormwater management calculations and design approach carried out by Mackenzie to manage stormwater runoff for the proposed Black Creek Group: Coffee Creek Industrial project compliant with applicable code(s). The proposed Black Creek Group: Coffee Creek Industrial project (referred to as the "project site" or "site" throughout the report) is located between SW Graham's Ferry Road and SW Garden Acres Road, south of the undeveloped SW Cahalin Road right of way in Wilsonville, Oregon, refer to Figure 1.

Existing Conditions

The existing property is bounded to the north by the unimproved SW Cahalin Road, SW Graham's Ferry Road to the west and SW Garden Acres Road to the east, and an existing property to the south. It has two residential homes located off SW Graham's Ferry Road. The remainder of the property is a mixture of open space and dense trees around the perimeter. The arborist report states the property has historically been used a Christmas tree farm, but the remaining trees are too large for retail sale.

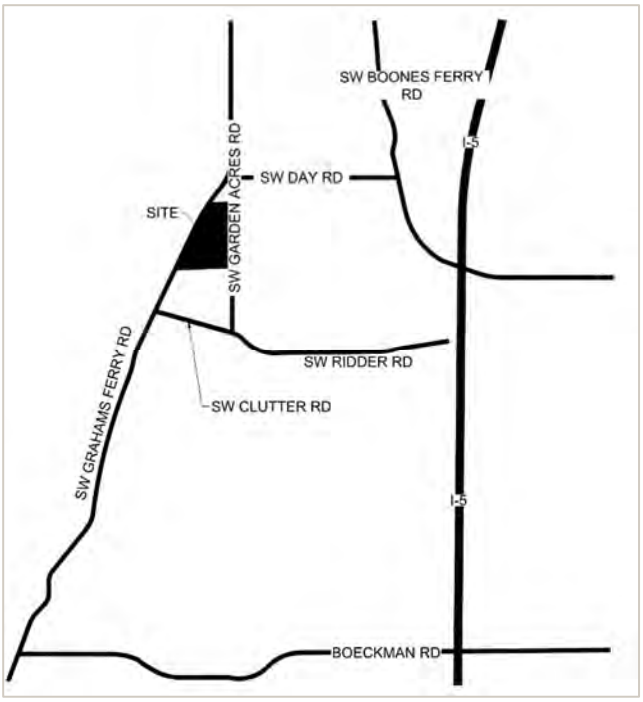


Figure 1: Vicinity Map

The existing ground slopes naturally from SW Graham's Ferry Road towards SW Garden Acres with the high point on the site in the northwest corner and the low point in the southeast corner. The difference between these two points is approximately 14'. The existing runoff either infiltrates on site or enters SW Garden Acres at the southeast corner of the property and enters the public storm system.

SW Graham's Ferry Road will be required to be partially improved to half of the full 77' future right of way width. SW Cahalin Road will remain as part of the public right of way but not be improved as a public street and instead be used as a shared drive aisle between the site and the undeveloped property to the north. SW Garden Acres adjacent to the site's frontage was partially constructed in 2019. The site will be required to finish the remaining quarter street improvement along the Garden Acres frontage. The 2019

improvements constructed public water, sanitary sewer, and storm drain and provided laterals for the site.

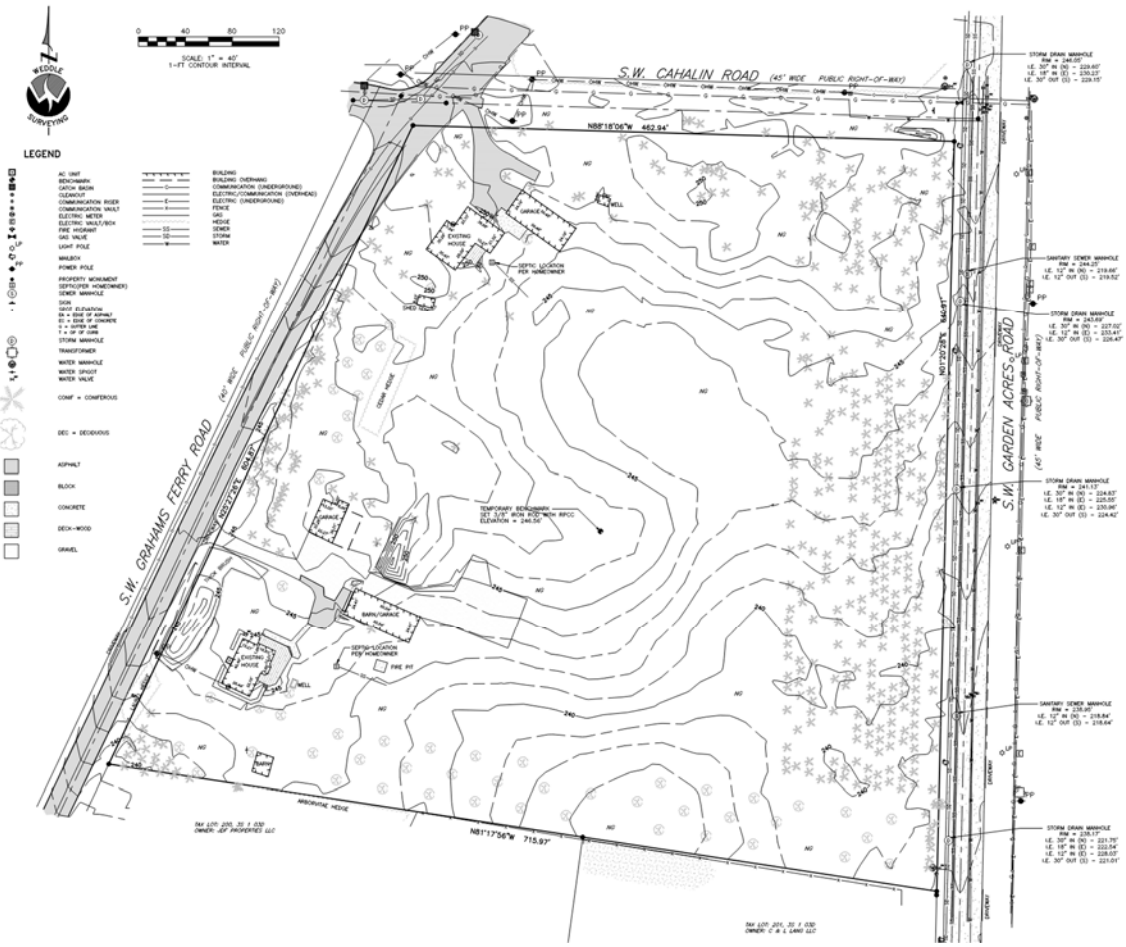
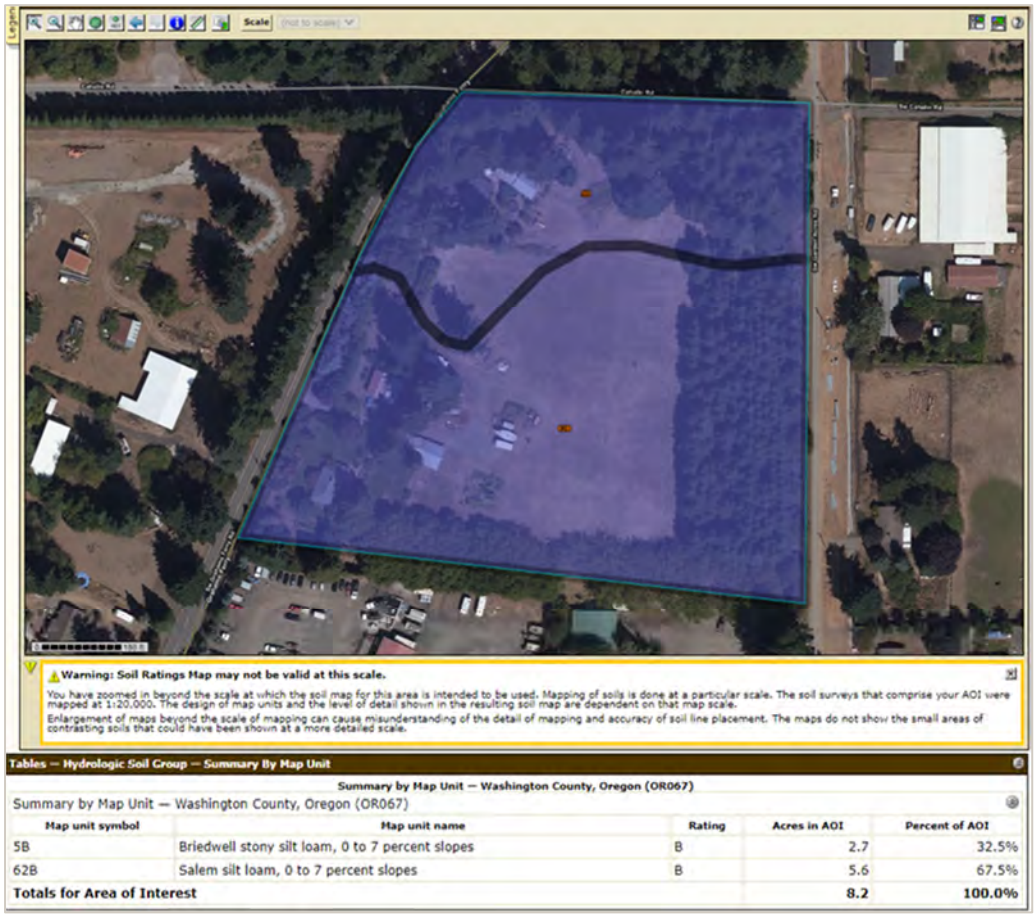


Figure 2: Existing Conditions Survey

Soil Conditions

Per the USDA Web Soil Survey, the existing soil is primarily Salem silt loam (67.5% of the property) and the remainder consists of Briedwell stony silt loam (32.5% of the property), see Figure 3 for their locations across the site. Both types of soil are identified as Hydrologic Soil Group B for the purposes of relating to the Discharge Management Area (DMA) Soil Group in the BMP Sizing Tool.



Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5B	Briedwell stony silt loam, 0 to 7 percent slopes	B	2.7	32.5%
62B	Salem silt loam, 0 to 7 percent slopes	B	5.6	67.5%
Totals for Area of Interest			**8.2**	**100.0%**

Figure 3: Web Soil Survey Map

Hydrologic Analysis (Existing)

The hydrologic analysis of the existing conditions was performed using the Water Environment Services (WES) BMP Sizing Tool. For the purposes of hydrologic modeling, the WES BMP Sizing Tool models the historical vegetation which existed onsite prior to development. All subbasin areas are defined as grass and more information can be found in the Appendix.

Proposed Improvements

The property will be developed for industrial use. An approximate 148,279 square foot (footprint) manufacturing and warehousing building with integral truck docks (approximately 26 docks), cicrulation drive aisles and parking, an exterior trash enclosure, associated utility services to the building and site, and landscaping.

Public street frontage improvements will be provided along Garden Acres and Grahams Ferry Roads. Cahalin Road, although in a publicly owned right of way, will be developed but not follow public standards. Stormwater runoff from Cahalin will be treated with privately owned facilities. The southern supporting street will be designed to public standards but is a privately owned street with a 40’ access easement. The southern supporting street will capture stormwater runoff and treat and infiltrate using privately owned facilities. Grahams Ferry and Garden Acres are publicly owned rights of way with publicly owned

stormwater facilities. No trees will be planted in any stormwater planter facility whether publicly or privately owned.

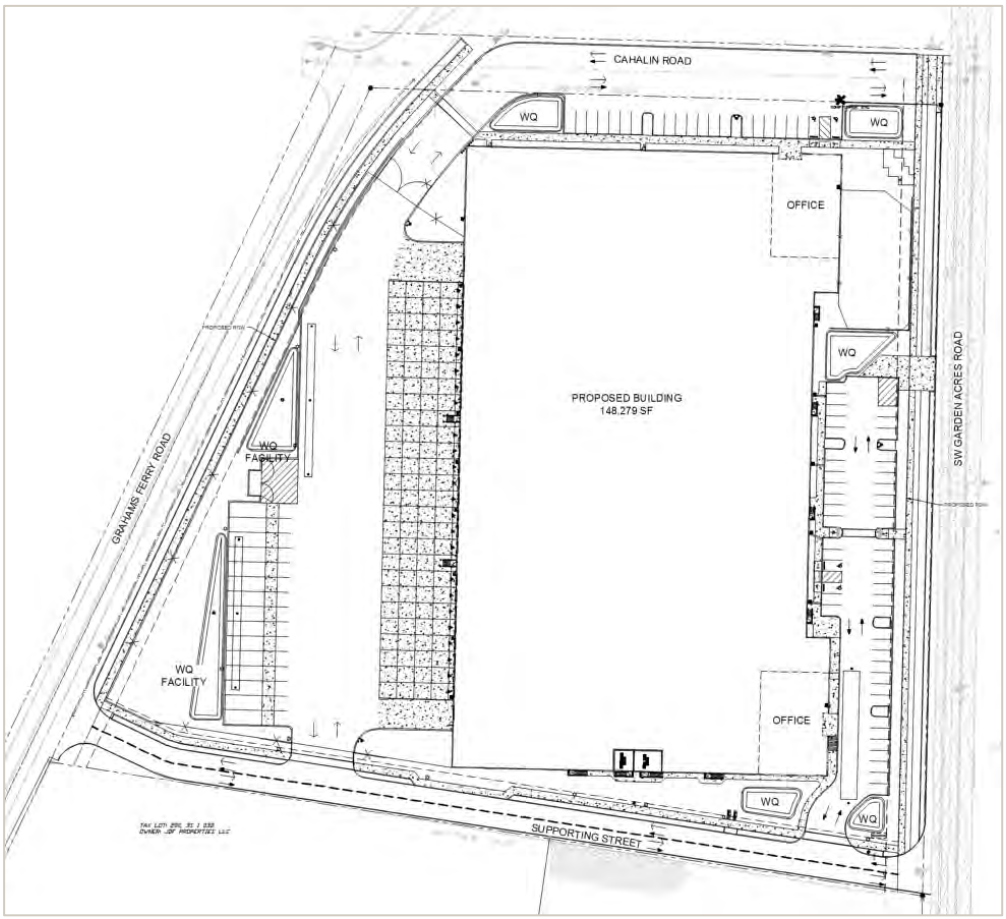


Figure 4: Site Plan

Refer to the Appendix for a map of the Drainage Management Areas (DMA) that provide a breakdown of impervious and pervious areas within each DMA.

The proposed grading mimics the predevelopment grading with the southeast corner of the site being the low spot. In the predevelopment state there is an existing ridge in the southwest corner directing runoff to the southwest while the remainder of the site drains to the southeast corner. During high rain events, the overflow land release will follow those existing conditions with stormwater entering both the Grahams Ferry and SW Garden Acres Road rights of way. The general slope of the basin which both Grahams Ferry and Garden Acres is a part of slopes to the south and eventually enters the greenspace of Coffee Lake Wetlands approximately 0.75 miles due south of the project site.

II. BASIS OF DESIGN

The Basis of Design for Stormwater Quality and Flow Control, as determined by the City of Wilsonville's Stormwater and Surface Water Design Standards, Section 3 of the Public Works Standards, is as follows:

- Use of LID facilities to the Maximum Extent Practicable
- A factor of safety of 2 shall be applied to open pit falling head infiltration test rates and the maximum design infiltration rate is 20 inches per hour
- Water quality facilities shall be designed to capture and treat 80% of the average annual runoff volume to the Maximum Extent Practicable (MEP) with the goal of 70% total suspended soils (TSS) removal. In this context, MEP means less effective treatment may not be substituted when it is practicable to provide more effective treatment. This treatment volume equates to a design storm of 1.0 inch over 24 hours.
    - Treatment calculations shall be carried out using the BMP Sizing Tool
- The duration of peak flow rates from post-development conditions shall be less than or equal to the duration of peak flow rates from pre-development conditions for all peak flows between 42% of the 2-year storm peak flow rate up to the 10-year peak flow rate.
    - The Santa Barbara Urban Hydrograph (SBUH) is the primary acceptable unit hydrograph method
- Onsite retention of the 10-year design storm is assumed to satisfy both water quality and flow control requirements

III. ANALYSIS

Methodology

The stormwater management strategy takes advantage of the high infiltration rates found on site. The geotechnical engineer used open pit falling head test method. The design infiltration rate applied a 2.0 factor of safety with a maximum of 20 inches per hour. The intent across the site is to infiltrate more than the 10-year storm event. Precipitation rates can be found in Table 1.

Table 1: Precipitation Rates	
Storm Event	**24-HR Precipitation (inches)**
2-year	2.50
5-year	3.00
10-year	3.45
25-year	3.90
50-year	4.25
100-year	4.50

Water Quality

In order to meet the goals of the Low Impact Development, infiltrating rain gardens have been selected as the proposed BMP to provide water quality treatment for this private site. The stormwater rain gardens are dispersed throughout the site at strategic location to capture the runoff. Privately owned stormwater planters are designed along the South Supporting Street to provide water quality treatment for the privately owned street.

The public rights of way (Grahams Ferry and Garden Acres) utilize stormwater planters to achieve treatment requirements.

Refer to the DMA Map and WES BMP Sizing Report in the Appendix for facility sizes, types, and impervious area that are conveyed to each facility for both the private and public runoff.

Water Quantity & Flow Control

As noted in the Water Quality section, infiltrating rain gardens and stormwater planters have been selected as the proposed BMP for the private site. The rain gardens either have rock galleries or are connected to an infiltration trench to hold and infiltrate at least the 10-year storm event. In order to alleviate the downstream deficiencies many of the rain gardens infiltrate the 25-year storm event as well, see Downstream Analysis section for more information. Refer to the DMA Map and Hydraflow calculations in the Appendix for facility sizes, location of the infiltration trenches, and impervious area that are conveyed to each private facility.

There is no public storm pipe available in Grahams Ferry Road. Therefore, the publicly owned stormwater planters along Grahams Ferry are flow-in/flow-out stormwater planters. These stormwater planters have not been lined and therefore infiltration is expected but not formally calculated and determined. Conversely there is a public storm pipe available in Garden Acres and the publicly owned stormwater planters along Garden Acre have been designed for treatment (as previously discussed) and detention. Similar to the stormwater planters along Grahams Ferry, the stormwater planters along Garden Acres will not be lined and therefore infiltration is expected. Refer to the DMA Map and WES BMP Sizing Report in the Appendix for public facilities.

Conveyance

The proposed infiltrating stormwater facilities fully infiltrate the 25-year event. The 25-year storm event per the City of Wilsonville 2015 Stormwater & Surface Water Design & Construction Standards is the design standard for any underground conveyance piping. Since there is no need for conveyance at the 25-year event, no undergrounding piping to the public stormwater mains are proposed.

Emergency overland flow for any storm larger than the 25-year event has been described in the Proposed Improvement section of this report.

Downstream Analysis

A downstream analysis was conducted as part of the 2019 Garden Acres Road project. The Stormwater Management Report dated April 2019 and prepared by Harper Houf Peterson Righellis, Inc was provided by the City of Wilsonville (referred to as “HHPR Report”). The HHPR Report determined the outfall to Coffee Lake Wetland via the basin’s outfall pipe was undersized, see Appendix for extracted Drainage Basin Study from the HHPR Report.

The drainage basin is approximately 163 acres, as outlined in Figure 5, and from the HHPR Report, the complete build out of the entire drainage basin which assumes 85% impervious and 15% pervious will generate 102.70 cfs during the 25-year storm event. The HHPR Report recommends sizing increases to the drainage basin and calculates a 106.56 cfs capacity for the basin’s proposed 48” outflow pipe for the 25-year storm event.

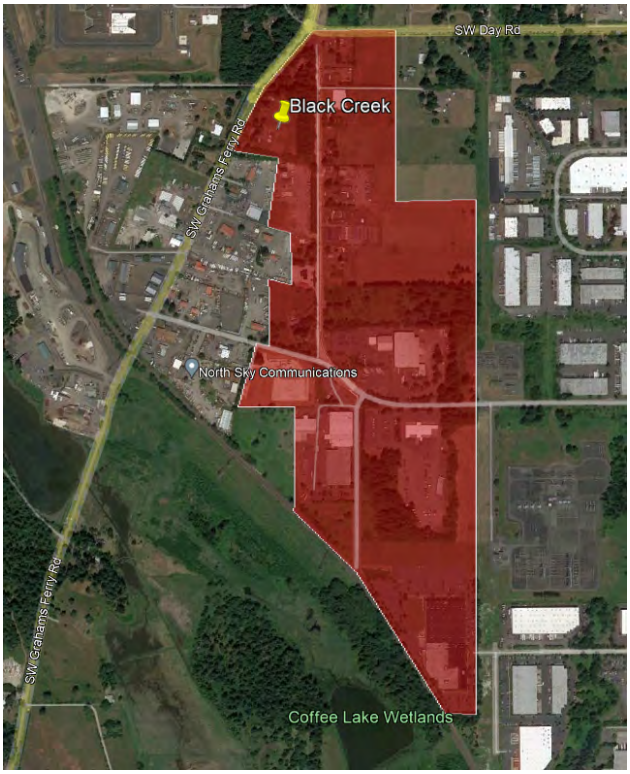


Figure 5: Coffee Lake Wetland Outfall Tributary Area

Using the Manning's equation on the existing 30" pipe and assuming a slope of 0.55%, yields a current capacity of 30.30 cfs. Comparing the recommended upgrade capacity to the current capacity reveals the system is unable to convey 75.8 cfs generated by the entire basin.

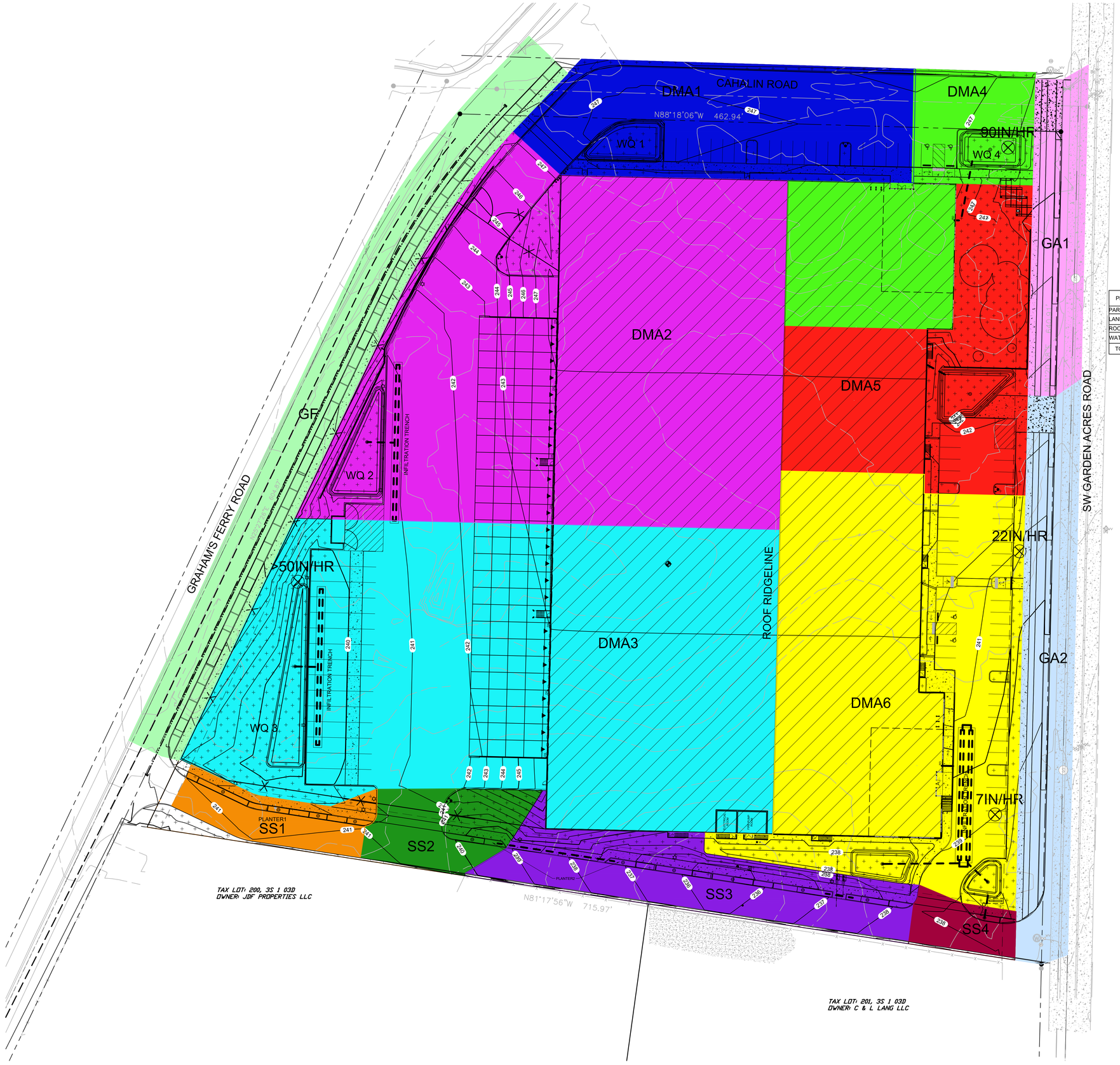
The project site after dedication is 7.57 acres and therefore 4.64% of the basin. If the entire basin needs to reduce runoff by 75.86 cfs and the project site is 4.64% of the basin, then the project site is responsible to reduce runoff from the 25-year storm by 3.52 cfs.

The undetained, post development 25-year peak runoff rate as calculated using the SBUH is 5.84cfs and applying the project site's reduction amount concludes the site shall not release more than 2.32 cfs during the 25-year storm event.

The infiltrating stormwater facilities are capable of fully capturing the 25-year storm event and therefore nothing is released from the site during the 25-year event. Calculations reflecting no discharge from the site can be found in the Hydraflow calculations for the 25-year event located in the Appendix.

APPENDIX A

DRAINAGE MANAGEMENT AREA MAP



1 EXB1

30 0 15 30 60 120

(IN FEET)
1 inch = **30** ft.

DRAINAGE MANAGEMENT AREA DATA

	AREA (SF)	AREA (AC)
TOTAL PROPERTY AREA	329,877	7.57
SITE BUILDING AREA	148,209	3.40
SITE PAVED AREA	114,795	2.64
SITE LANDSCAPE AREA	34,012	0.78
SITE WATER QUALITY AREA	16,653	0.38
TOTAL	321,216	7.37

PRIVATE SITE	DMA1 (SF)	DMA2 (SF)	DMA3 (SF)	DMA4 (SF)	DMA5 (SF)	DMA6 (SF)	SS 1 (SF)	SS 2 (SF)	SS 3 (SF)	SS 4 (SF)	TOTAL (SF)
PARKING	19,861	29,076	37,522	5,629	4,243	18,464	4,683	4,605	10,495	2,889	114,795
LANDSCAPE	3,851	5,965	7,058	1,538	10,675	4,925	493	2,022	4,726	168	34,012
ROOF	0	47,160	41,124	14,536	12,302	33,087	0	0	0	0	148,209
WATER QUALITY	1,512	2,892	6,400	1,102	1,590	3,157	356	181	639	81	16,653
TOTAL	25,224	85,093	92,104	22,805	28,810	59,633	5,532	6,808	15,860	3,138	313,669

PUBLIC ROADS	GA ROW1 (SF)	GA ROW2 (SF)	GF ROW (SF)	TOTAL (SF)
PARKING	7,955	14,243	21,164	43,362
LANDSCAPE	918	1,681	2,350	4,949
ROOF	0	0	0	0
WATER QUALITY	990	1,800	2,237	5,027
TOTAL	9,863	17,724	25,751	53,338

LEGEND

- ROOF AREA
- LANDSCAPE/PERVIOUS AREA
- PAVEMENT/IMPERVIOUS AREA
- APPROXIMATE LOCATION OF INFILTRATION TESTS AND INFILTRATION RATES AS REPORTED BY NV5

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Project

BTC III GRAHAMS FERRY IC LLC

REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:

DRAINAGE MANAGEMENT AREAS STORMWATER BASIN MAP

DRAWN BY: SAO

CHECKED BY: NKB

SHEET

EXB1

JOB NO. **2210157.00**

LU SUBMITTAL - 03/23/2022

APPENDIX B

WES BMP SIZING TOOL REPORT

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	BCG
Project Type	Industrial
Location	
Stormwater Management Area	11290
Project Applicant	
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
ROOF3	41,124	Grass	Roofs	B	WQ3
LAND3	7,058	Grass	LandscapeBsoil	B	WQ3
PARK3	37,522	Grass	ConventionalConcrete	B	WQ3
ROOF2	47,160	Grass	Roofs	B	WQ2
LAND2	5,965	Grass	LandscapeBsoil	B	WQ2
PARK2	29,076	Grass	ConventionalConcrete	B	WQ2
ROOF1	1	Grass	Roofs	B	WQ1
LAND1	3,851	Grass	LandscapeBsoil	B	WQ1
PARK1	19,861	Grass	ConventionalConcrete	B	WQ1
PARK4	5,629	Grass	ConventionalConcrete	B	WQ4
LAND4	1,538	Grass	LandscapeBsoil	B	WQ4
ROOF4	14,536	Grass	Roofs	B	WQ4
PARK5	4,243	Grass	ConventionalConcrete	B	WQ5
LAND5	10,675	Grass	LandscapeBsoil	B	WQ5
ROOF5	12,302	Grass	Roofs	B	WQ5
PARK6	18,464	Grass	ConventionalConcrete	B	WQ6
LAND6	4,925	Grass	LandscapeBsoil	B	WQ6
ROOF6	33,087	Grass	Roofs	B	WQ6

LID Facility Sizing Details

LID ID	Design Criteria	BMP Type	Facility Soil Type	Minimum Area (sq-ft)	Planned Areas (sq-ft)	Orifice Diameter (in)
WQ5	WaterQuality	Rain Garden - Infiltration	A1	296.2	1,590.0	0.0
WQ4	WaterQuality	Rain Garden - Infiltration	A1	309.4	1,102.0	0.0
WQ3	WaterQuality	Rain Garden - Infiltration	A1	1,211.5	6,400.0	0.0
WQ2	WaterQuality	Rain Garden - Infiltration	A1	1,170.4	2,892.0	0.0
WQ1	WaterQuality	Rain Garden - Infiltration	A1	315.3	1,512.0	0.0
WQ6	WaterQuality	Rain Garden - Infiltration	A1	795.4	3,157.0	0.0

Pond Sizing Details

1. FCWQT = Flow control and water quality treatment, WQT = Water quality treatment only

2. Depth is measured from the bottom of the facility and includes the three feet of media (drain rock, separation layer and growing media).

3. Maximum volume of the facility. Includes the volume occupied by the media at the bottom of the facility.

4. Maximum water storage volume of the facility. Includes water storage in the three feet of soil media assuming a 40 percent porosity.

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Garden Acres & Graham's Ferry
Project Type	Industrial
Location	
Stormwater Management Area	0
Project Applicant	
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
GAPave1	7,955	Grass	ConventionalConcrete	B	GA WQ1
GALand1	918	Grass	LandscapeBsoil	B	GA WQ1
GAPave2	14,243	Grass	ConventionalConcrete	B	GA WQ2
GALand2	1,681	Grass	LandscapeBsoil	B	GA WQ2
GF Land	2,350	Grass	Grass	B	GF WQ
GF Pave	21,164	Grass	ConventionalConcrete	B	GF WQ
SS Pave1	4,683	Grass	ConventionalConcrete	B	SS1
SS Land1	493	Grass	LandscapeBsoil	B	SS1
SS Pave2	4,553	Grass	ConventionalConcrete	B	SS2
SS Land2	2,022	Grass	LandscapeBsoil	B	SS2
SS Pave3	10,495	Grass	ConventionalConcrete	B	SS3
SS Land3	4,726	Grass	LandscapeBsoil	B	SS3
SS Pave4	2,889	Grass	ConventionalConcrete	B	SS4
SS Land4	168	Grass	LandscapeBsoil	B	SS4

LID Facility Sizing Details

LID ID	Design Criteria	BMP Type	Facility Soil Type	Minimum Area (sq-ft)	Planned Areas (sq-ft)	Orifice Diameter (in)
GA WQ1	FlowControlAndTreatment	Stormwater Planter - Infiltration	A1	658.4	990.0	0.0
GA WQ2	FlowControlAndTreatment	Stormwater Planter - Infiltration	A1	1,179.8	1,800.0	0.0
GF WQ	WaterQuality	Stormwater Planter - Infiltration	A1	327.7	2,237.0	0.0
SS1	WaterQuality	Stormwater Planter - Infiltration	A1	72.5	356.0	0.0
SS2	WaterQuality	Stormwater Planter - Infiltration	A1	77.4	181.0	0.0
SS3	WaterQuality	Stormwater Planter - Infiltration	A1	178.7	639.0	0.0
SS4	WaterQuality	Stormwater Planter - Infiltration	A1	44.1	81.0	0.0

Pond Sizing Details

1. FCWQT = Flow control and water quality treatment, WQT = Water quality treatment only

2. Depth is measured from the bottom of the facility and includes the three feet of media (drain rock, separation layer and growing media).

3. Maximum volume of the facility. Includes the volume occupied by the media at the bottom of the facility.

4. Maximum water storage volume of the facility. Includes water storage in the three feet of soil media assuming a 40 percent porosity.

APPENDIX C

HYDRAFLOW CALCULATIONS

MACKENZIE.

P 503.224.9560 ▪ F 503.228.1285 ▪ W MCKNZE.COM
RiverEast Center, 1515 SE Water Avenue, #100, Portland, OR 97214

Portland, Oregon ▪ Vancouver, Washington ▪ Seattle, Washington

MEMORANDUM

DATE:	March 9, 2022
TO:	**Amy Pepper**
FROM:	Nicole Burrell, PE
PROJECT NAME:	Black Creek Group Coffee Creek Spec Industrial
PROJECT #:	2210157.00
SUBJECT:	**Stormwater Management Software Request**

As a follow up to meetings between Mackenzie and Wilsonville Engineering staff, staff requested correspondence requesting the use of different software in addition to the City's BMP Tool for stormwater management.

The project located between Graham's Ferry Road, Cahalin Road, Garden Acres Road, and the southern supporting street proposes to treat and fully infiltrate the 10-year storm. Treatment of runoff will use the BMP Tool to size the footprint of the facilities selecting either a rain garden or stormwater planter approach. Infiltration will occur either below the surface treatment in a rock gallery or be directed to an underground injection control facility (UIC) in the form of an infiltration trench. DEQ approval of the UIC will be required.

The BMP Tool is a facility sizing tool focused on addressing hydromodification utilizing continuous simulation flow modeling. For sites with high infiltration rates, pre-development flow offsite is relatively low, so utilizing the BMP tool causes facilities to be quite large to simulate that pre-development flow. When the site can infiltrate the 10-year storm event, the City allows use of other engineering methods to size the infiltration facility. The City of Portland has a long history of utilizing UICs; therefore, the project requests using the Portland approved Hydraflow software which models the Santa Barbara Urban Hydrograph (SBUH) for the infiltration portion of the design.

The public right of way stormwater planter design for Graham's Ferry Road and Garden Acres Road will use only the BMP Tool. Graham's Ferry Road will utilize the treatment only function and Garden Acres Road will utilize the treatment and flow control function of the software. The infiltration rates for the stormwater planters along both those streets will be set at 2"/hr.

Public street trees will not be placed within the stormwater planters.

APPROVED
By Amy Pepper at 12:57 pm, Mar 11, 2022

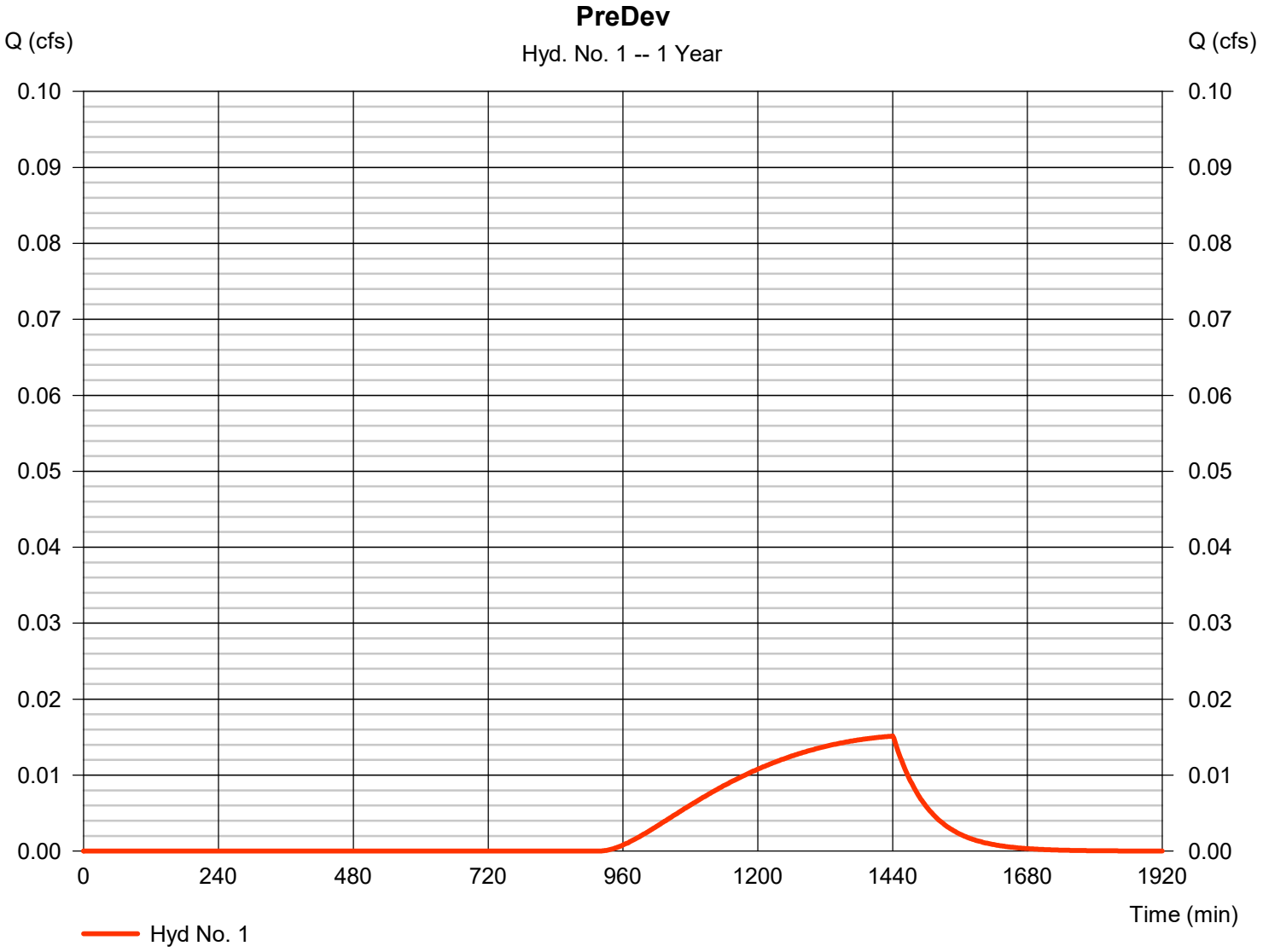
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Wednesday, 03 / 23 / 2022

Hyd. No. 1

PreDev

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.015 cfs
Storm frequency	= 1 yrs	Time to peak	= 1440 min
Time interval	= 2 min	Hyd. volume	= 338 cuft
Drainage area	= 7.750 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 62.20 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



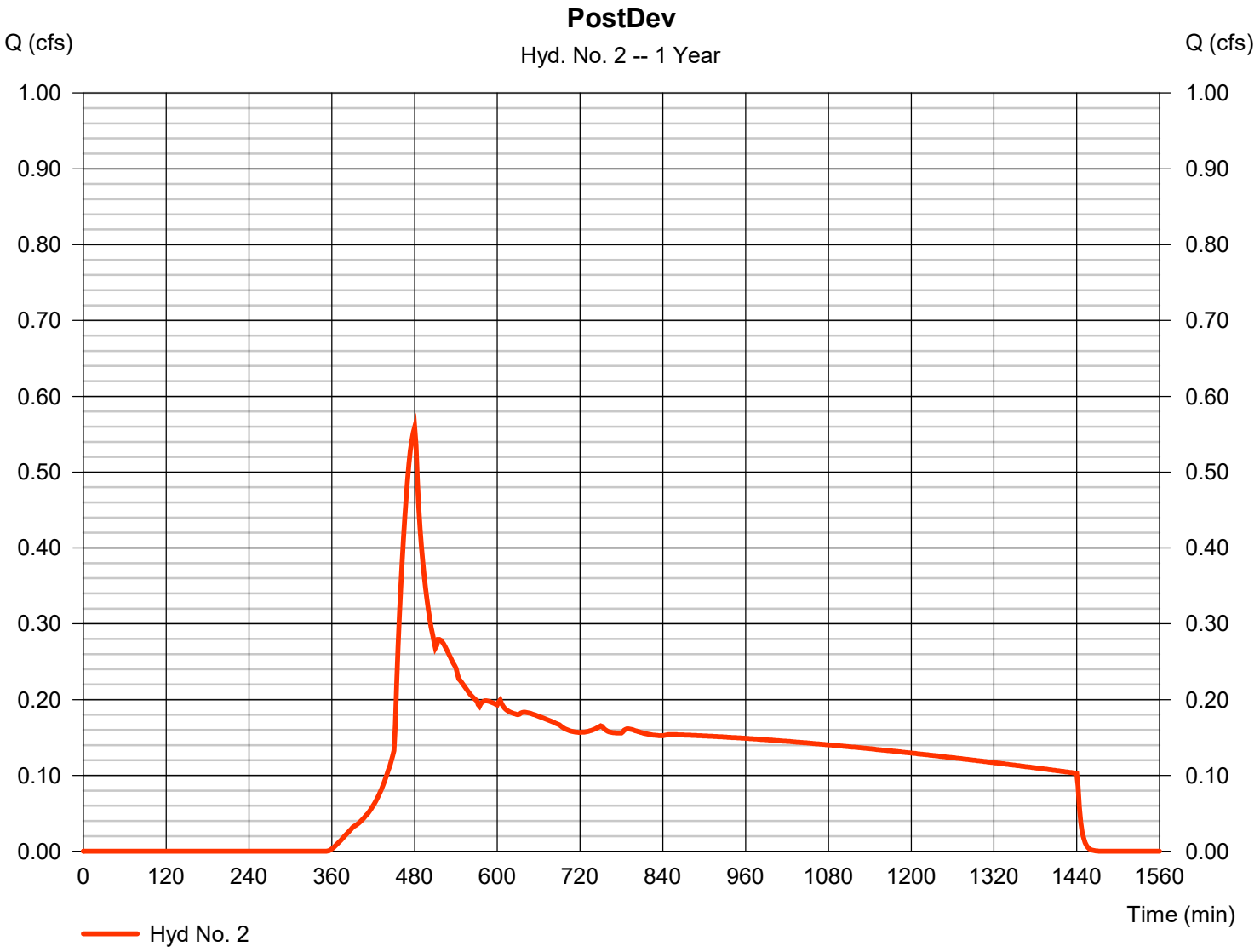
Hydrograph Report

Hyd. No. 2

PostDev

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.559 cfs
Storm frequency	= 1 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 10,107 cuft
Drainage area	= 7.750 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(1.460 x 61) + (6.290 x 98)] / 7.750



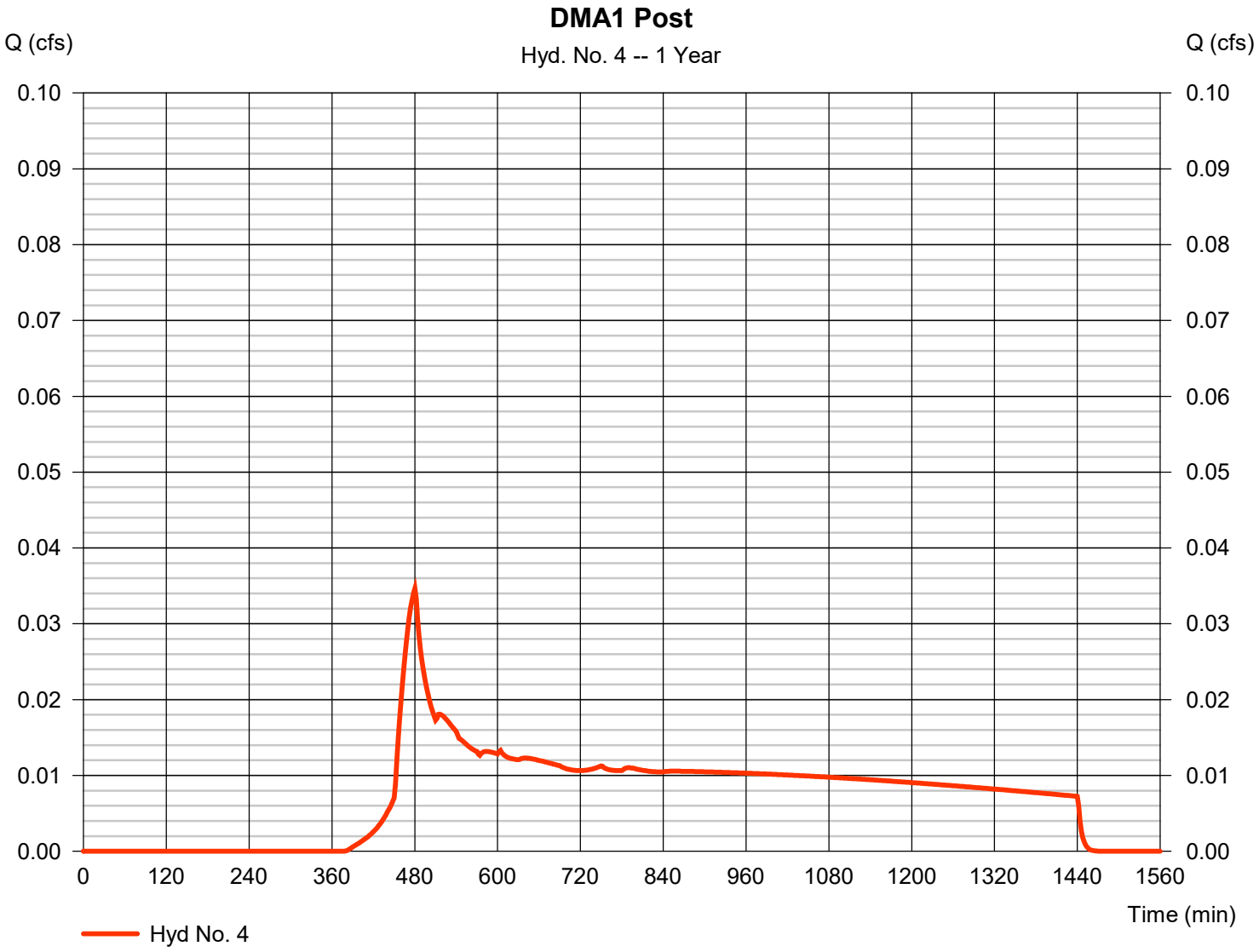
Hydrograph Report

Hyd. No. 4

DMA1 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.035 cfs
Storm frequency	=	1 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	674 cuft
Drainage area	=	0.580 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.460 x 98) + (0.120 x 61)] / 0.580



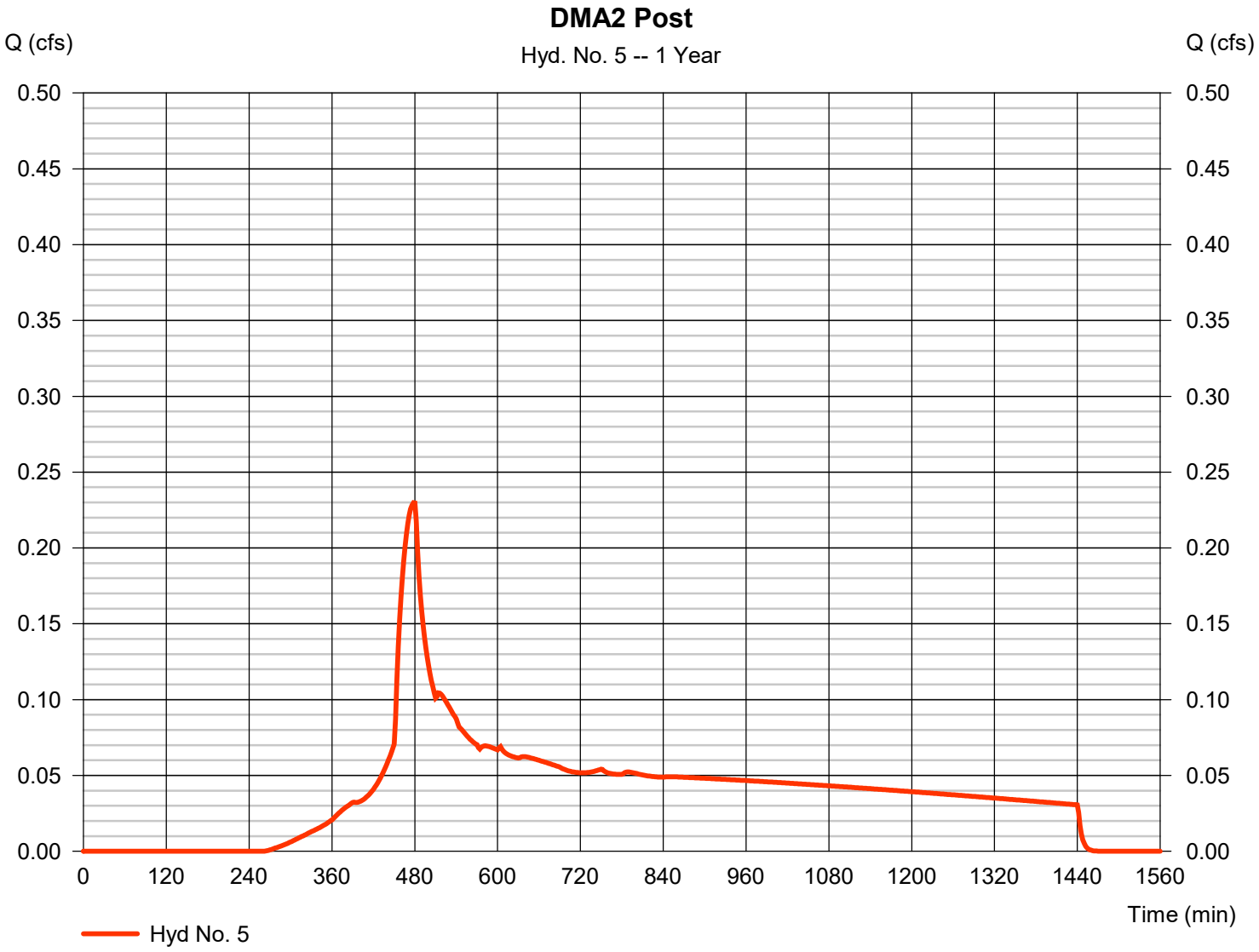
Hydrograph Report

Hyd. No. 5

DMA2 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.230 cfs
Storm frequency	=	1 yrs	Time to peak	=	478 min
Time interval	=	2 min	Hyd. volume	=	3,566 cuft
Drainage area	=	1.950 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.750 x 98) + (0.200 x 61)] / 1.950



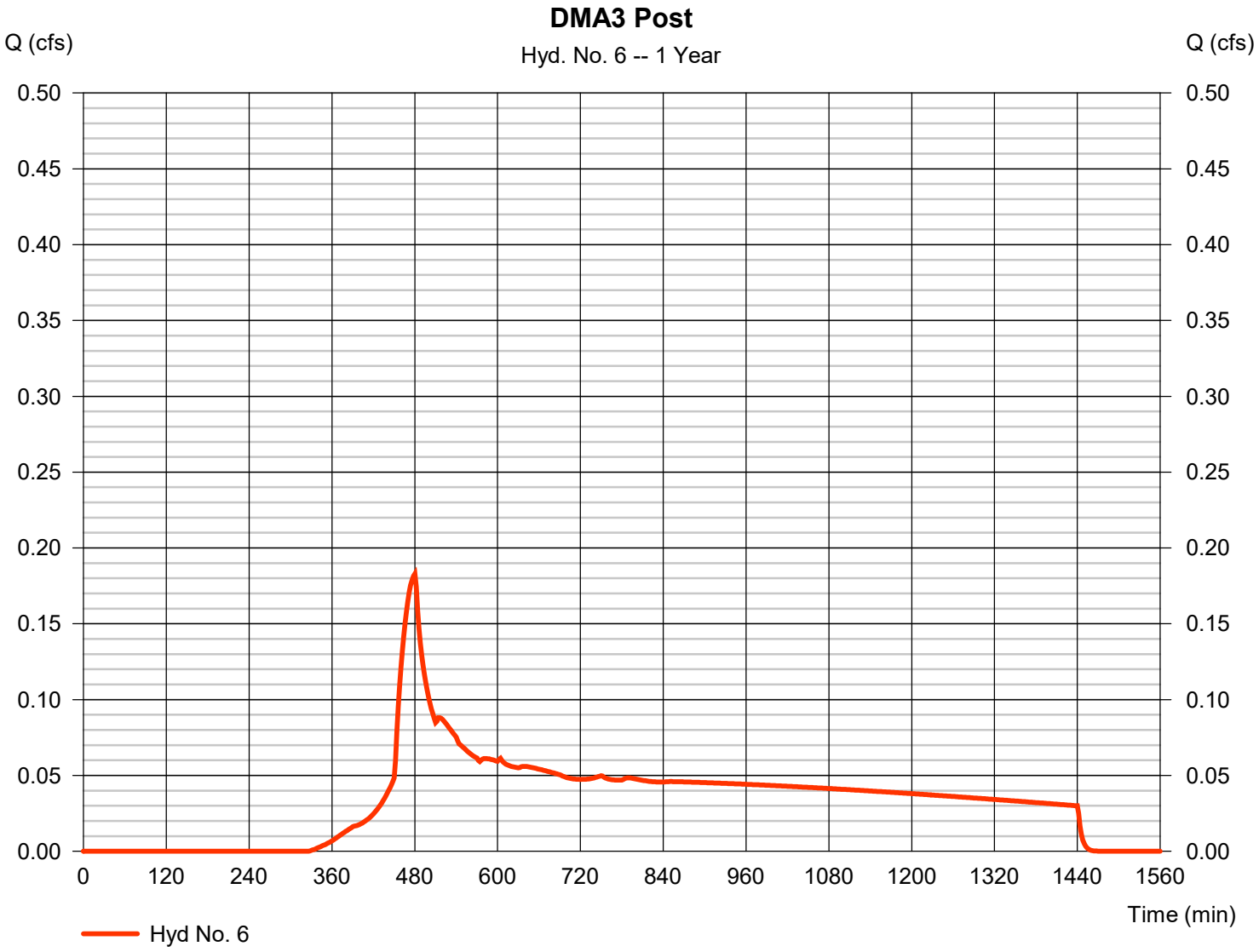
Hydrograph Report

Hyd. No. 6

DMA3 Post

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.183 cfs
Storm frequency	= 1 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 3,112 cuft
Drainage area	= 2.130 ac	Curve number	= 92*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(1.810 x 98) + (0.320 x 61)] / 2.130



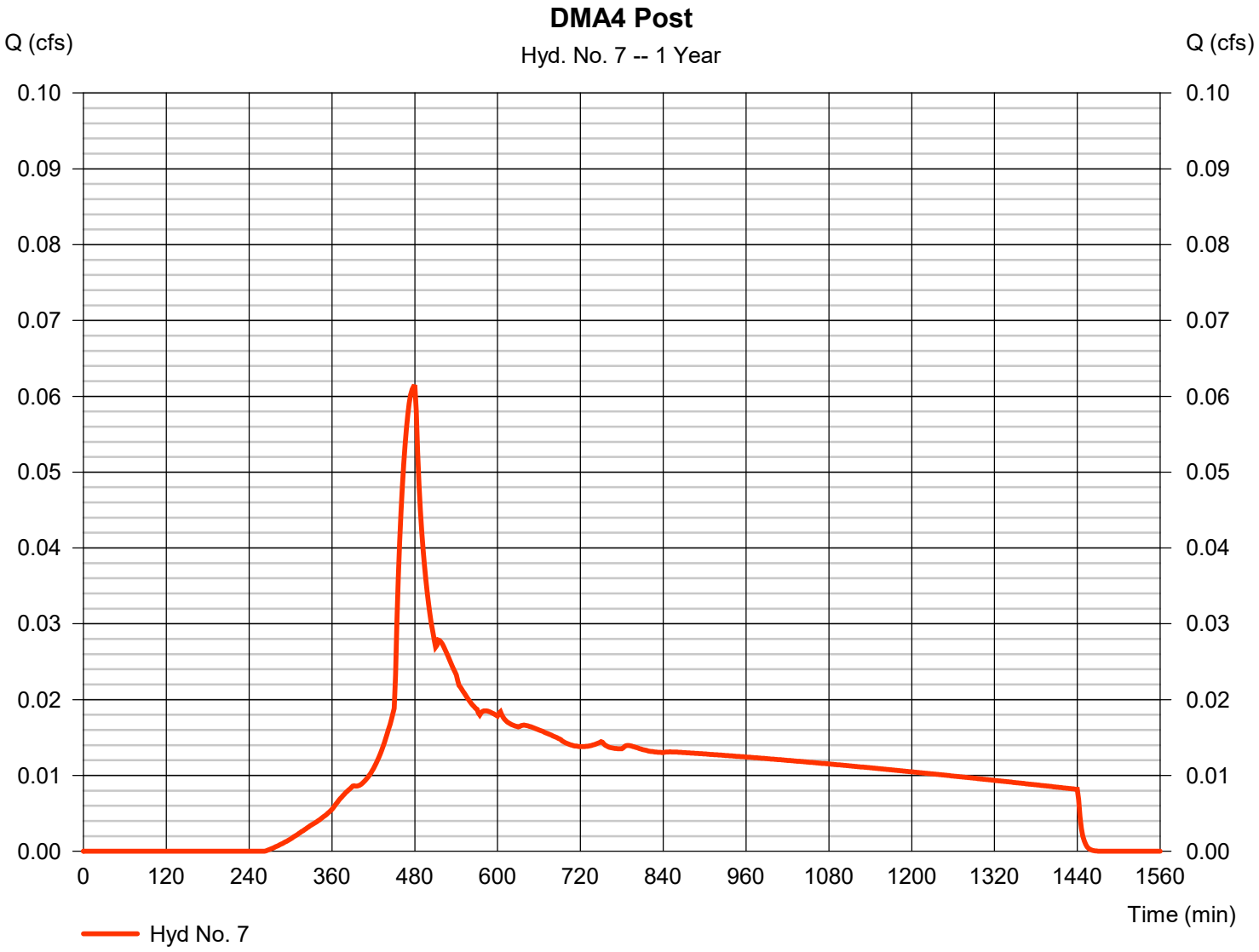
Hydrograph Report

Hyd. No. 7

DMA4 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.061 cfs
Storm frequency	=	1 yrs	Time to peak	=	478 min
Time interval	=	2 min	Hyd. volume	=	951 cuft
Drainage area	=	0.520 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.460 x 98) + (0.060 x 61)] / 0.520



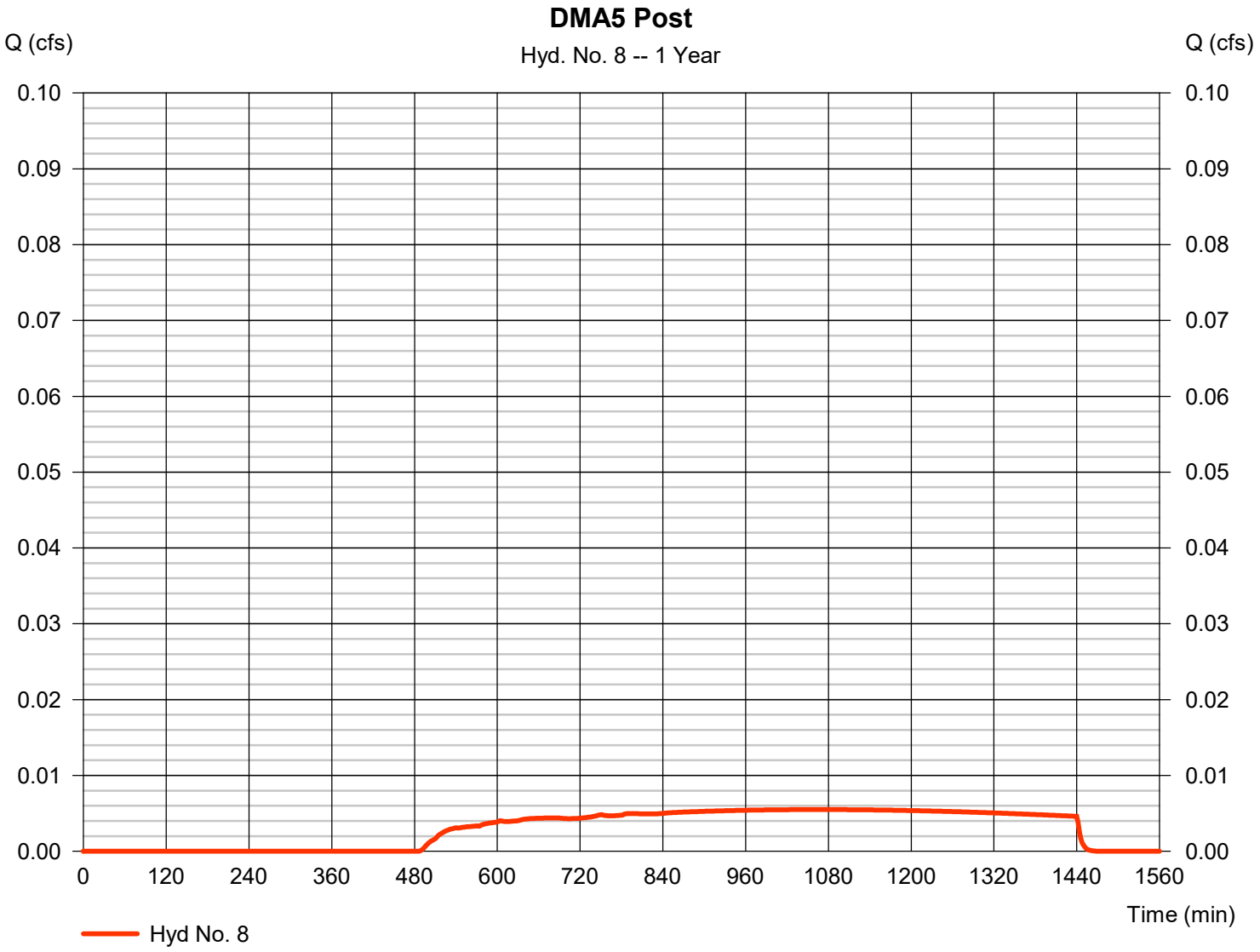
Hydrograph Report

Hyd. No. 8

DMA5 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.006 cfs
Storm frequency	=	1 yrs	Time to peak	=	1064 min
Time interval	=	2 min	Hyd. volume	=	274 cuft
Drainage area	=	0.660 ac	Curve number	=	82*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.380 x 98) + (0.280 x 61)] / 0.660



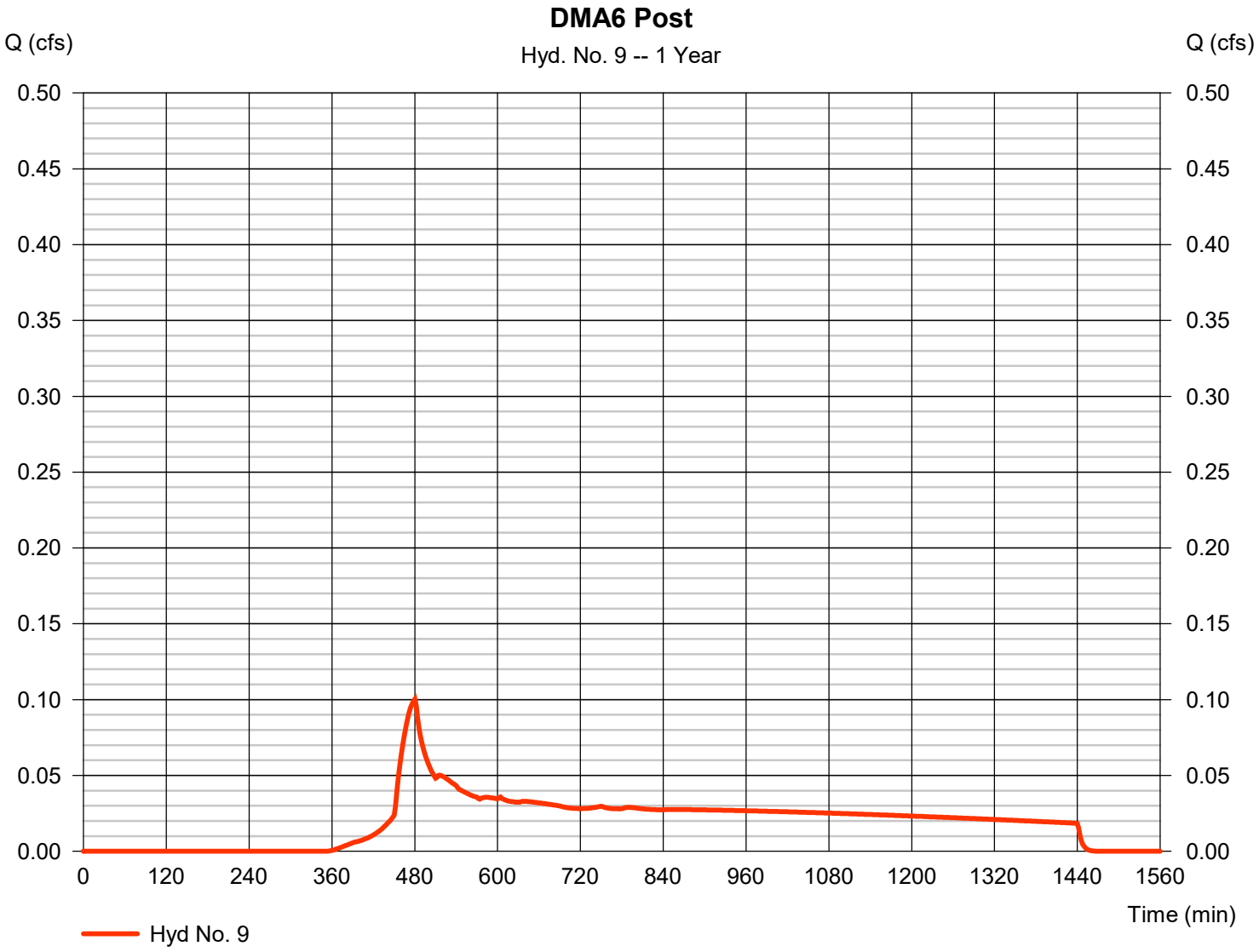
Hydrograph Report

Hyd. No. 9

DMA6 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.100 cfs
Storm frequency	=	1 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	1,813 cuft
Drainage area	=	1.390 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.120 x 98) + (0.270 x 61)] / 1.390



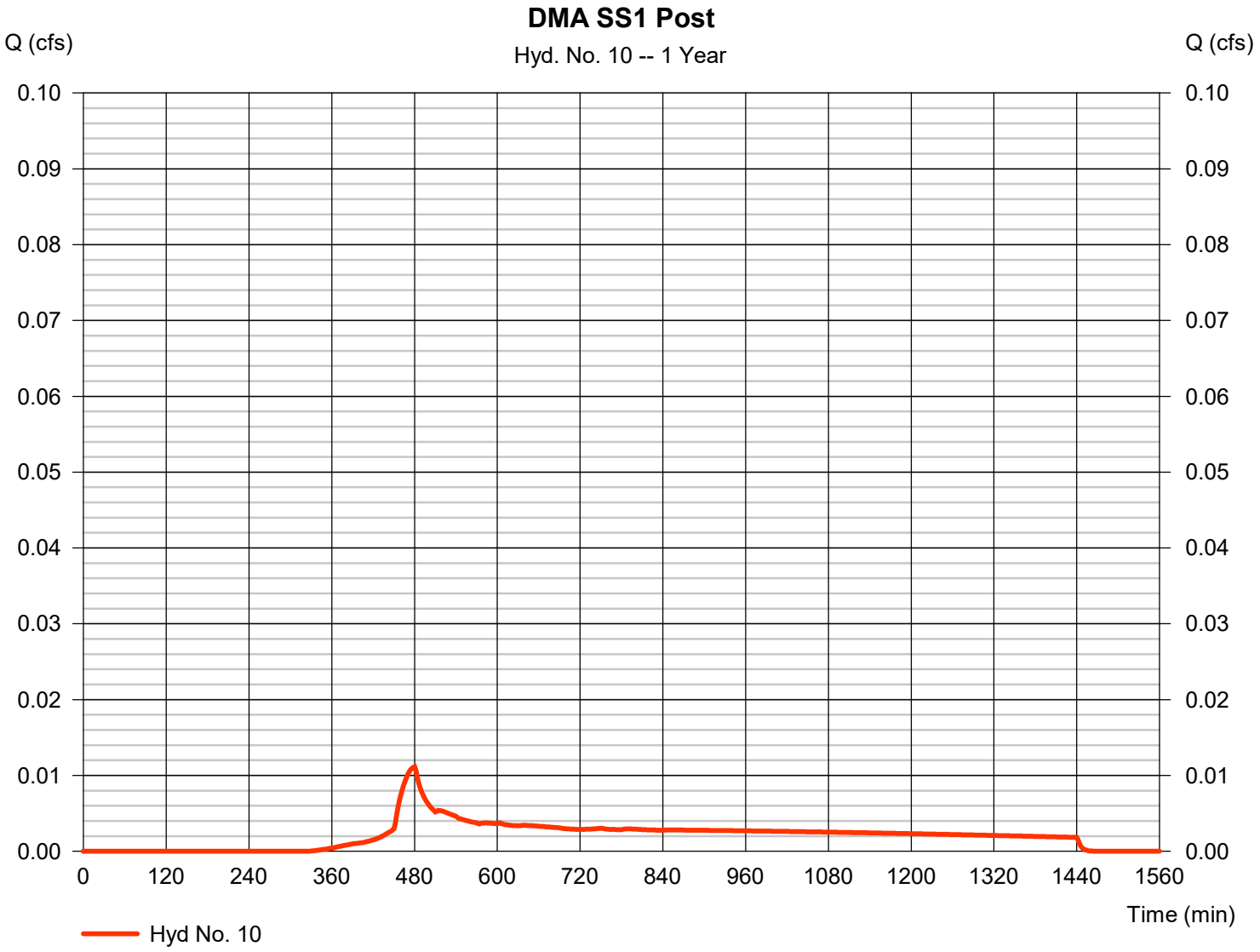
Hydrograph Report

Hyd. No. 10

DMA SS1 Post

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.011 cfs
Storm frequency	= 1 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 190 cuft
Drainage area	= 0.130 ac	Curve number	= 92*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(0.110 x 98) + (0.020 x 61)] / 0.130



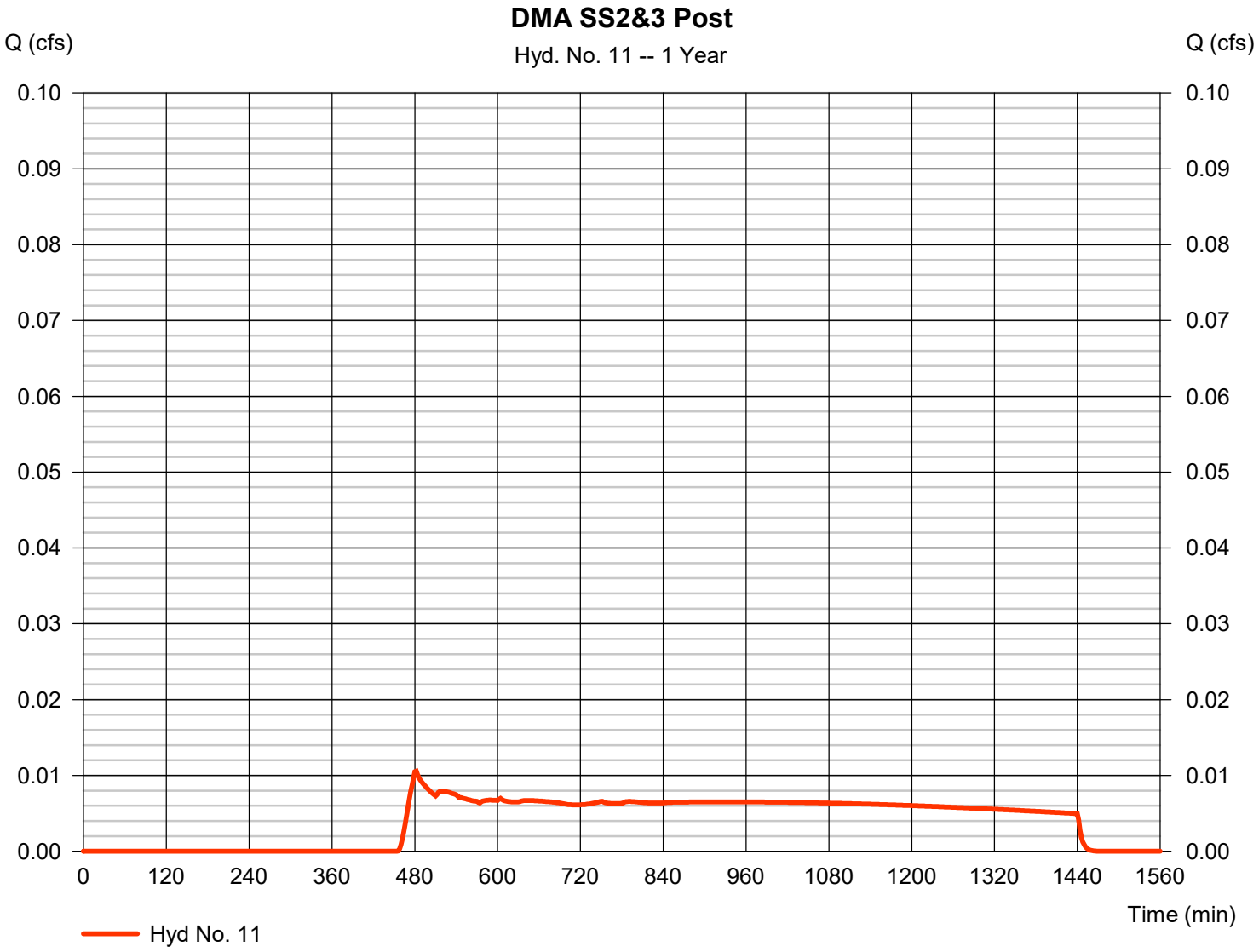
Hydrograph Report

Hyd. No. 11

DMA SS2&3 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.011 cfs
Storm frequency	=	1 yrs	Time to peak	=	482 min
Time interval	=	2 min	Hyd. volume	=	373 cuft
Drainage area	=	0.520 ac	Curve number	=	86*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.350 x 98) + (0.170 x 61)] / 0.520



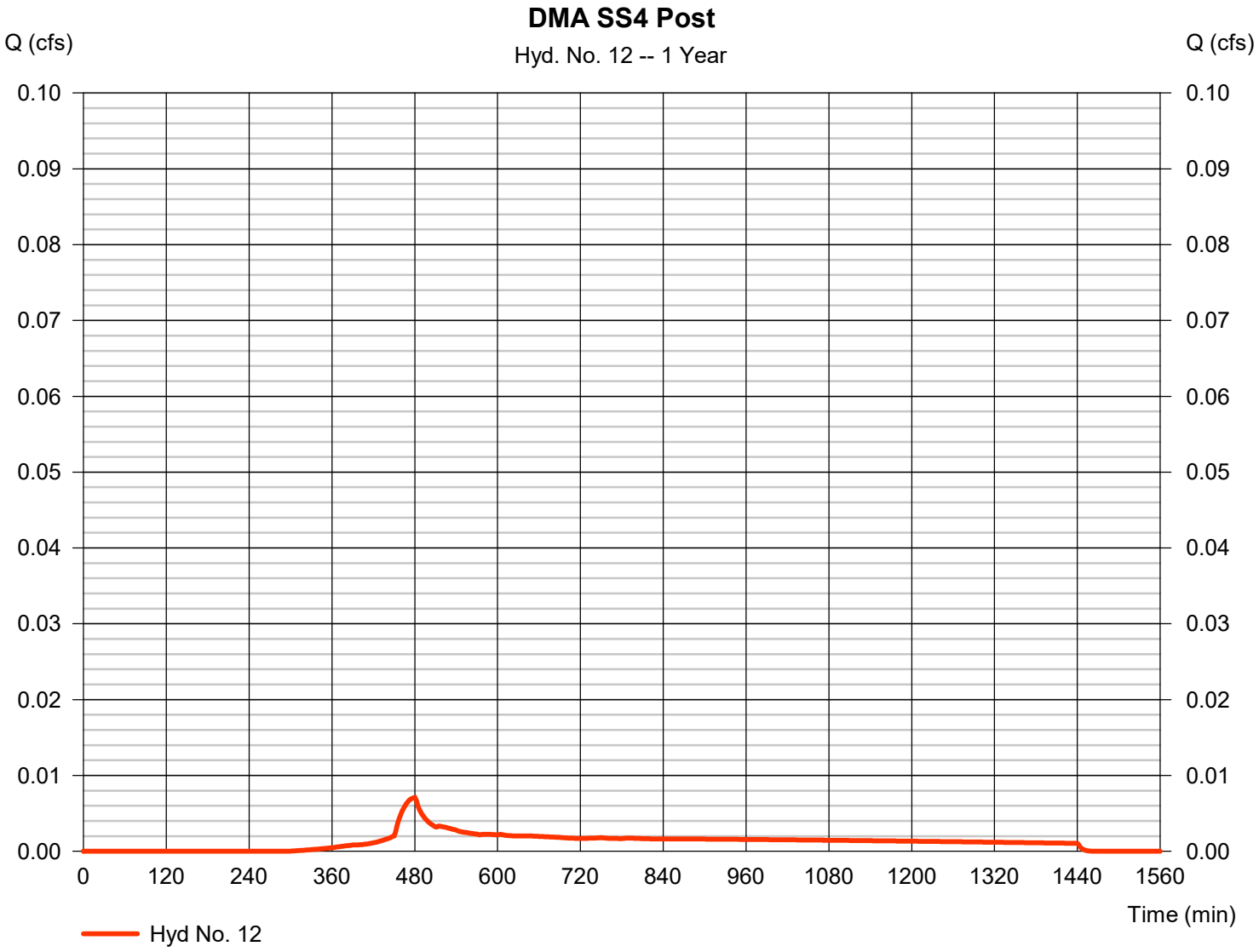
Hydrograph Report

Hyd. No. 12

DMA SS4 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.007 cfs
Storm frequency	=	1 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	114 cuft
Drainage area	=	0.070 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.010 x 61) + (0.060 x 98)] / 0.070

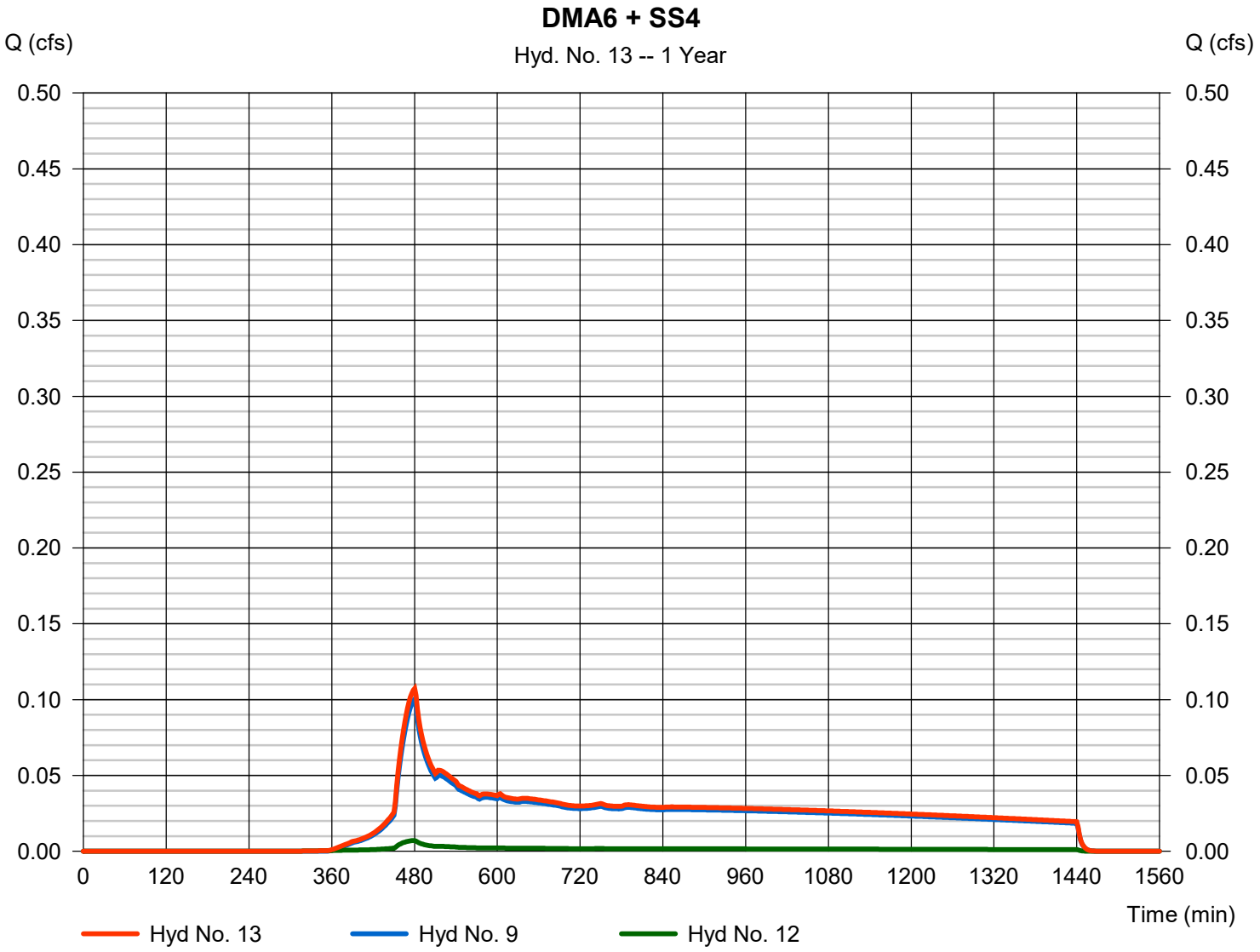


Hydrograph Report

Hyd. No. 13

DMA6 + SS4

Hydrograph type	= Combine	Peak discharge	= 0.107 cfs
Storm frequency	= 1 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 1,927 cuft
Inflow hyds.	= 9, 12	Contrib. drain. area	= 1.460 ac



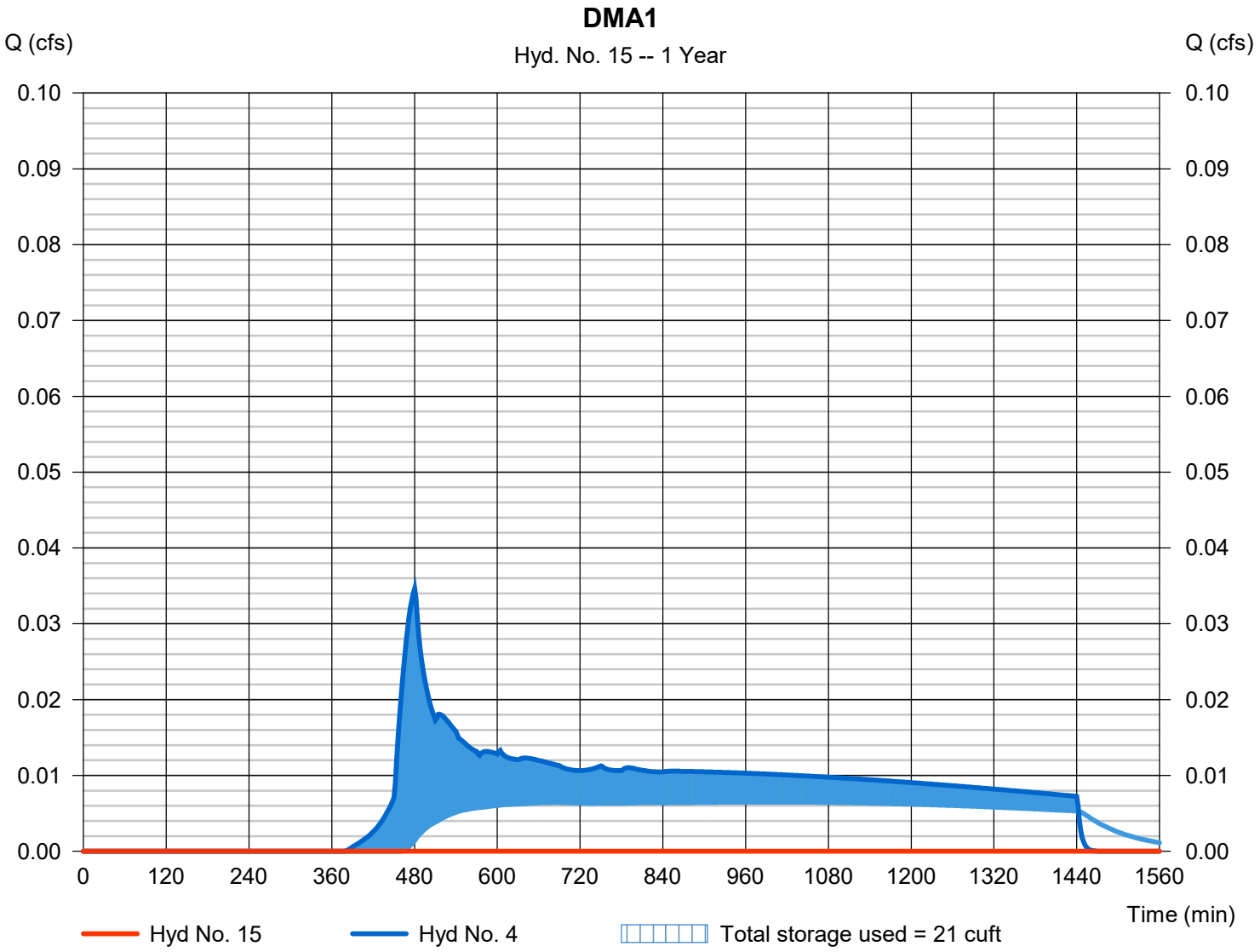
Hydrograph Report

Hyd. No. 15

DMA1

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	1 yrs	Time to peak	=	n/a
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	4 - DMA1 Post	Max. Elevation	=	100.07 ft
Reservoir name	=	DMA1	Max. Storage	=	21 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



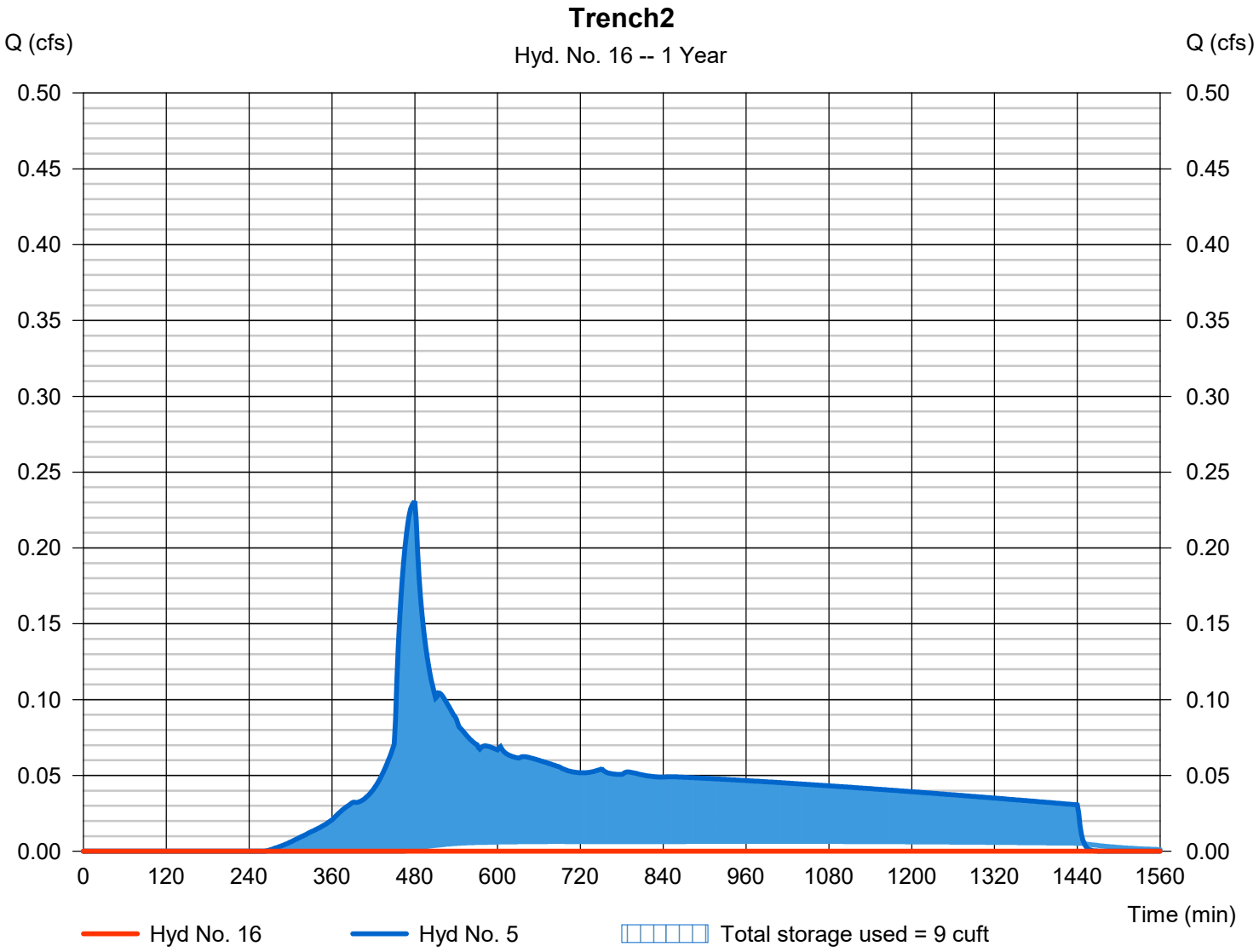
Hydrograph Report

Hyd. No. 16

Trench2

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	1 yrs	Time to peak	=	456 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	5 - DMA2 Post	Max. Elevation	=	98.03 ft
Reservoir name	=	Trench2	Max. Storage	=	9 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



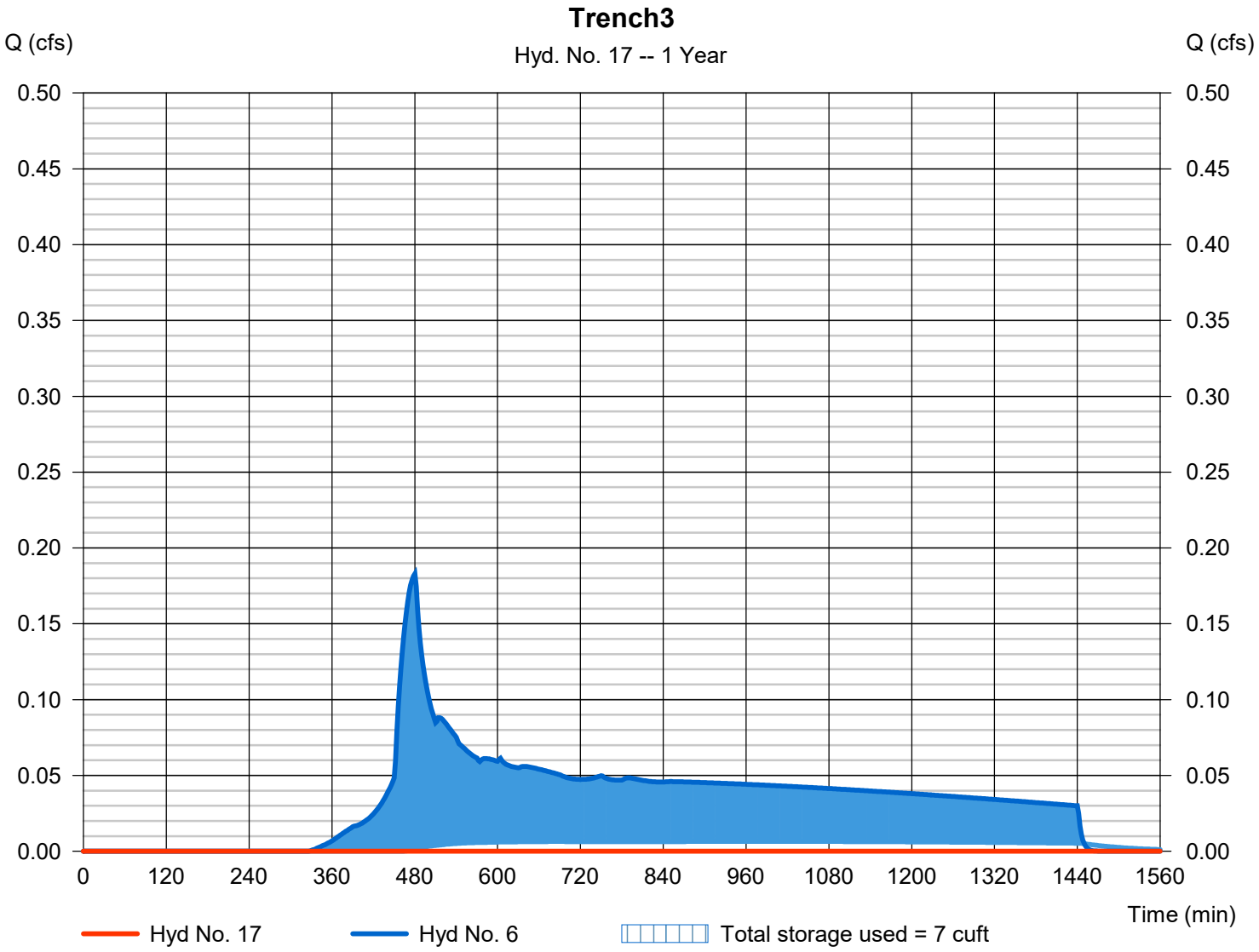
Hydrograph Report

Hyd. No. 17

Trench3

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	1 yrs	Time to peak	=	470 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	6 - DMA3 Post	Max. Elevation	=	98.03 ft
Reservoir name	=	Trench3	Max. Storage	=	7 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



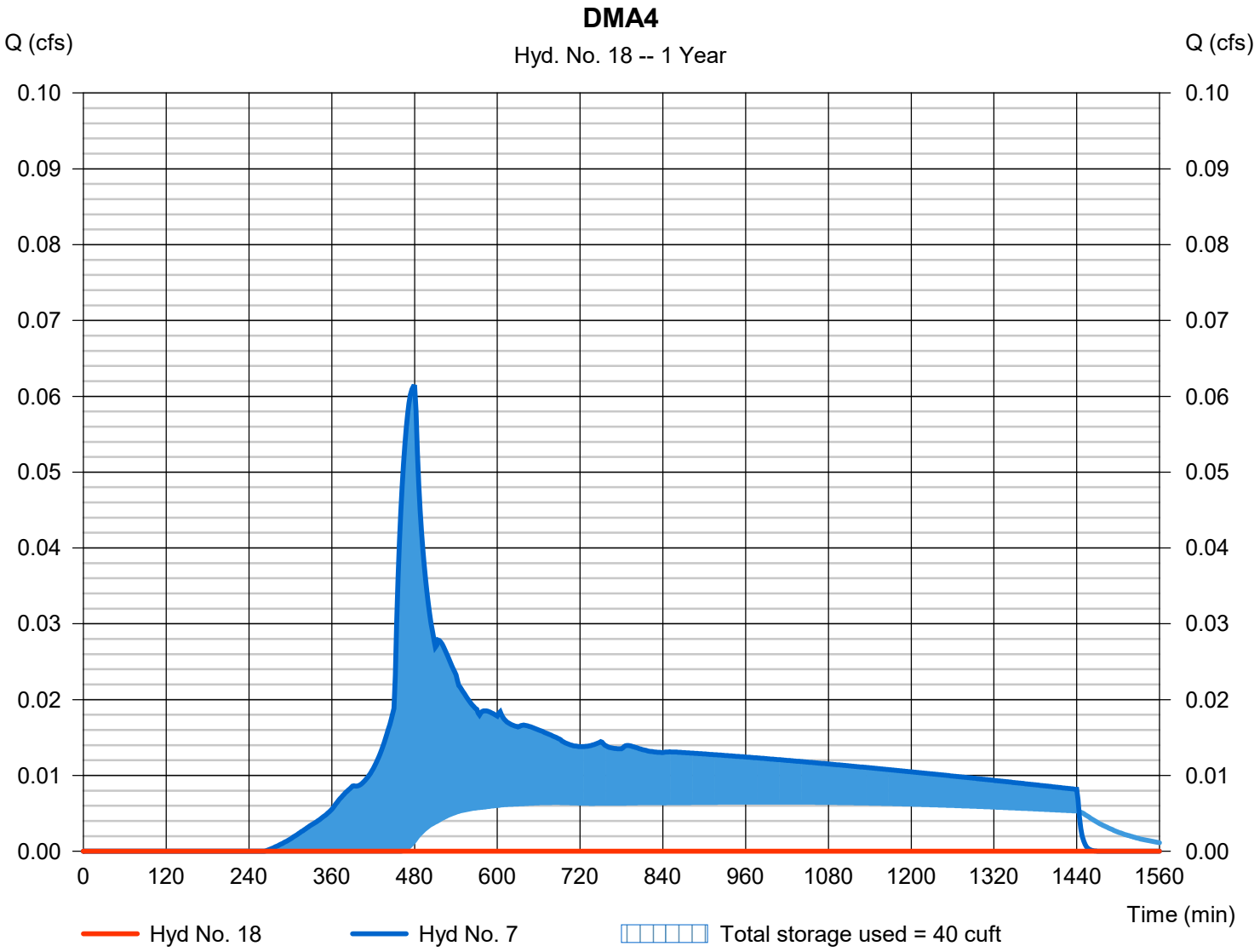
Hydrograph Report

Hyd. No. 18

DMA4

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	1 yrs	Time to peak	=	502 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	7 - DMA4 Post	Max. Elevation	=	400.18 ft
Reservoir name	=	DMA4	Max. Storage	=	40 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



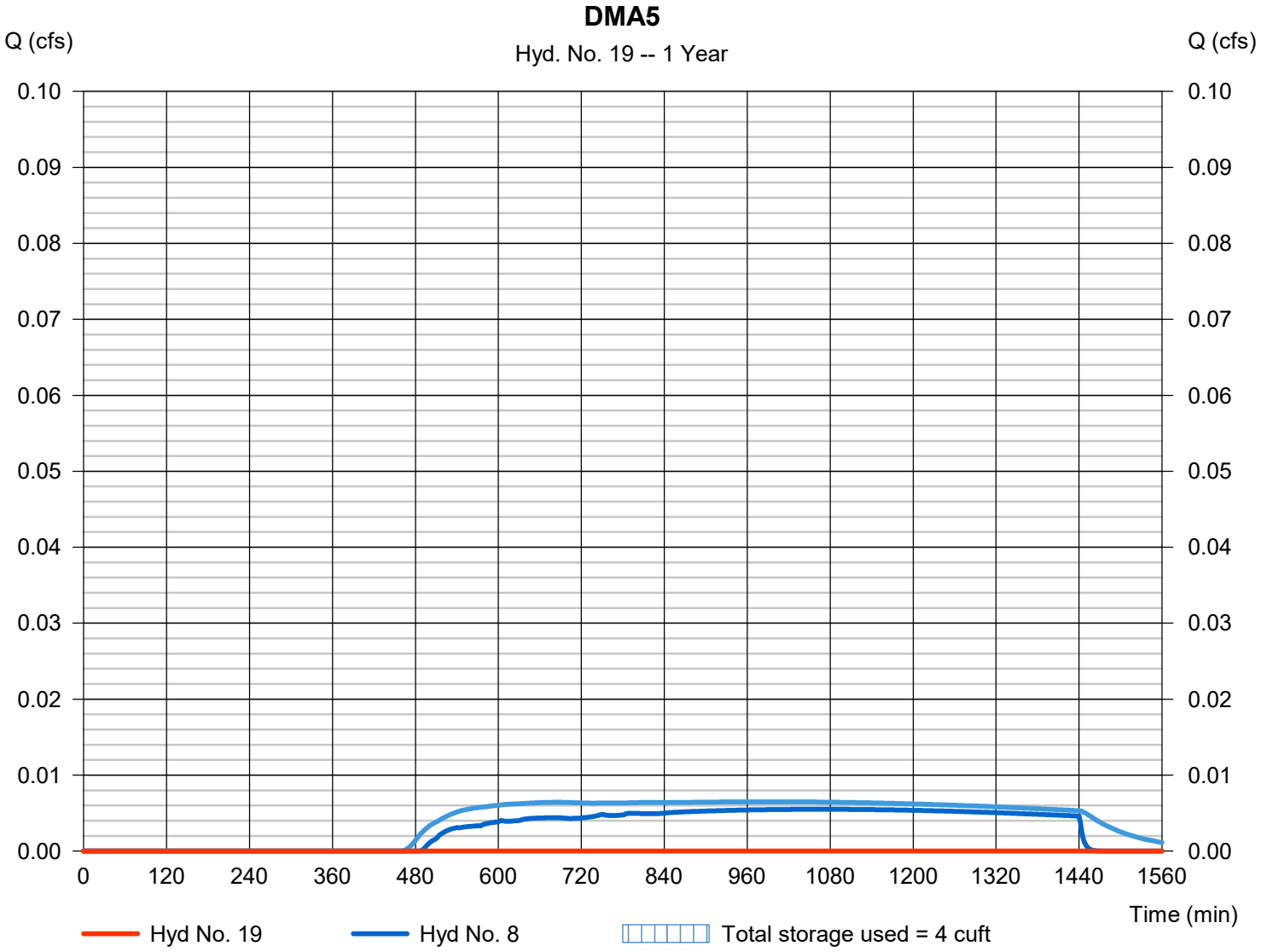
Hydrograph Report

Hyd. No. 19

DMA5

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	1 yrs	Time to peak	=	n/a
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	8 - DMA5 Post	Max. Elevation	=	500.01 ft
Reservoir name	=	DMA5	Max. Storage	=	4 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



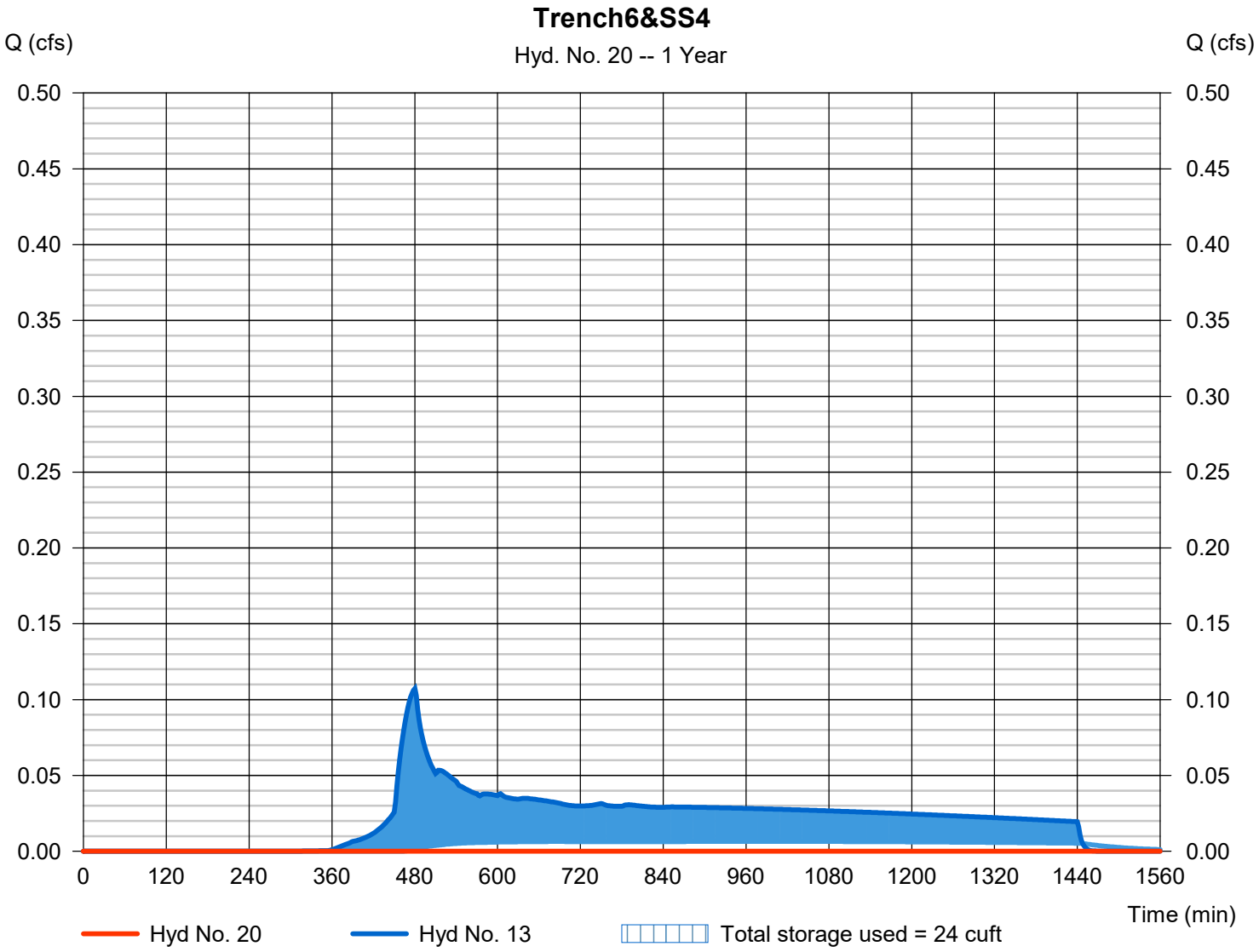
Hydrograph Report

Hyd. No. 20

Trench6&SS4

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	1 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	13 - DMA6 + SS4	Max. Elevation	=	98.05 ft
Reservoir name	=	Trench6	Max. Storage	=	24 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



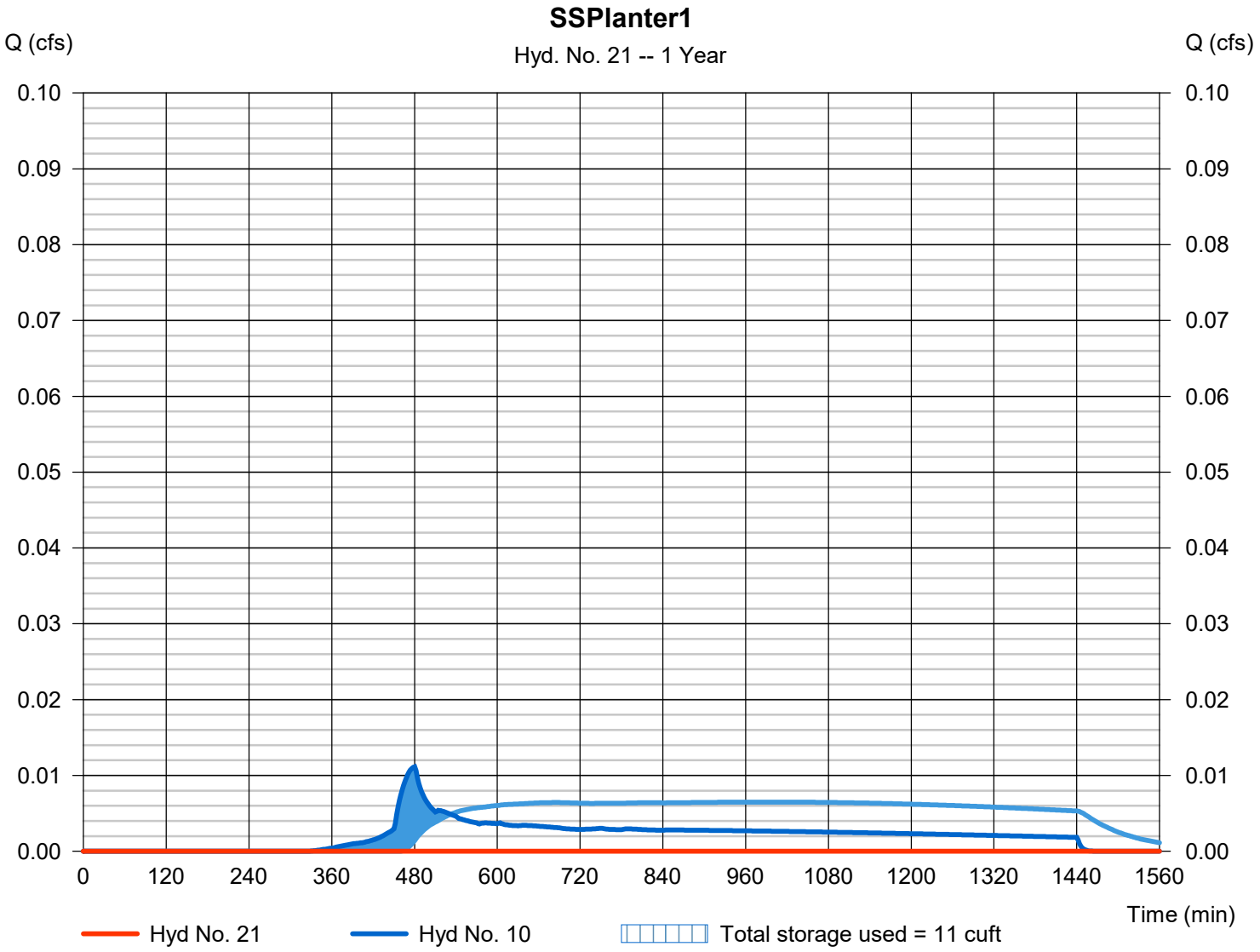
Hydrograph Report

Hyd. No. 21

SSPlanter1

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	1 yrs	Time to peak	=	470 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	10 - DMA SS1 Post	Max. Elevation	=	100.08 ft
Reservoir name	=	Planter1	Max. Storage	=	11 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



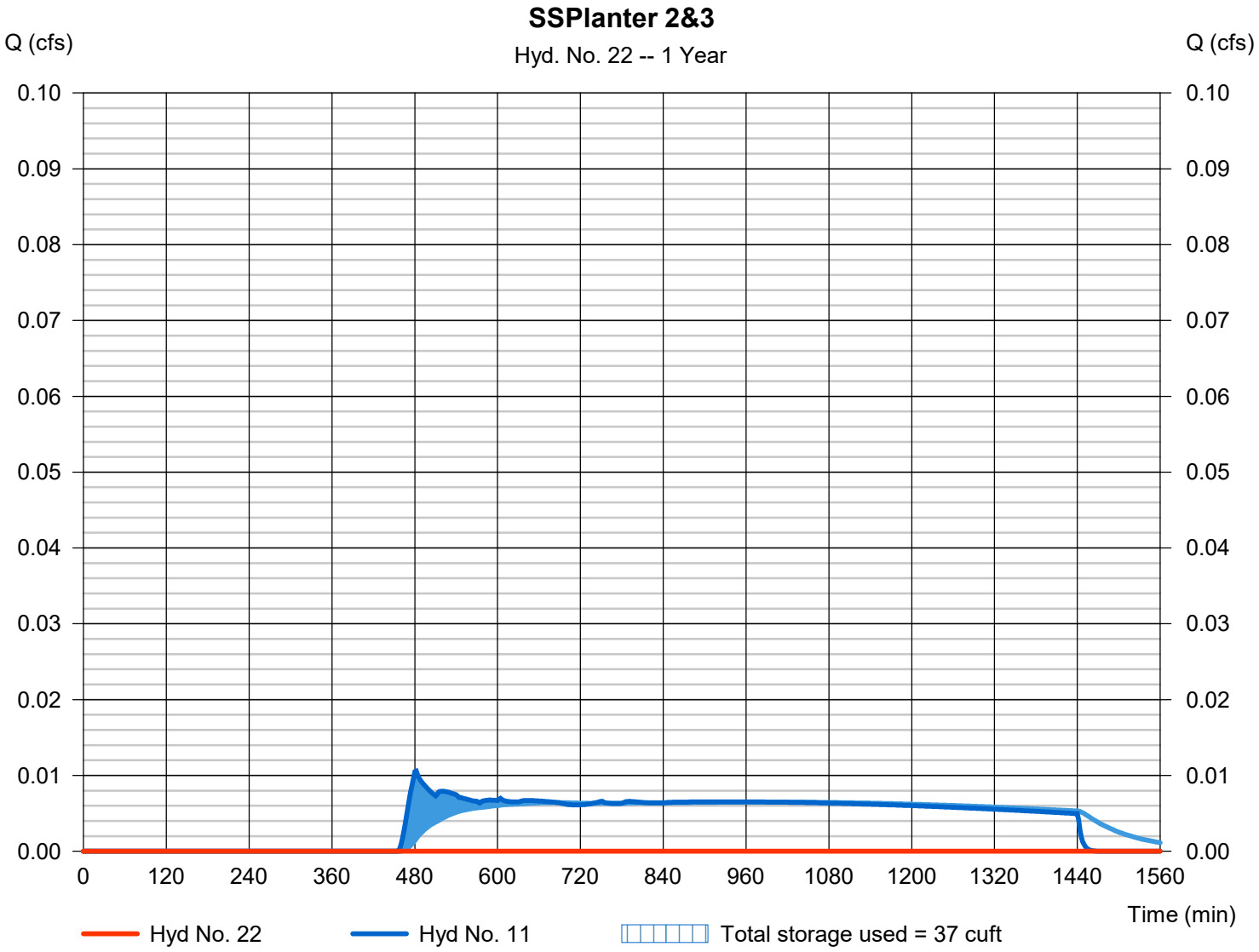
Hydrograph Report

Hyd. No. 22

SSPlanter 2&3

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 11 - DMA SS2&3 Post	Max. Elevation	= 100.11 ft
Reservoir name	= Planter2	Max. Storage	= 37 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

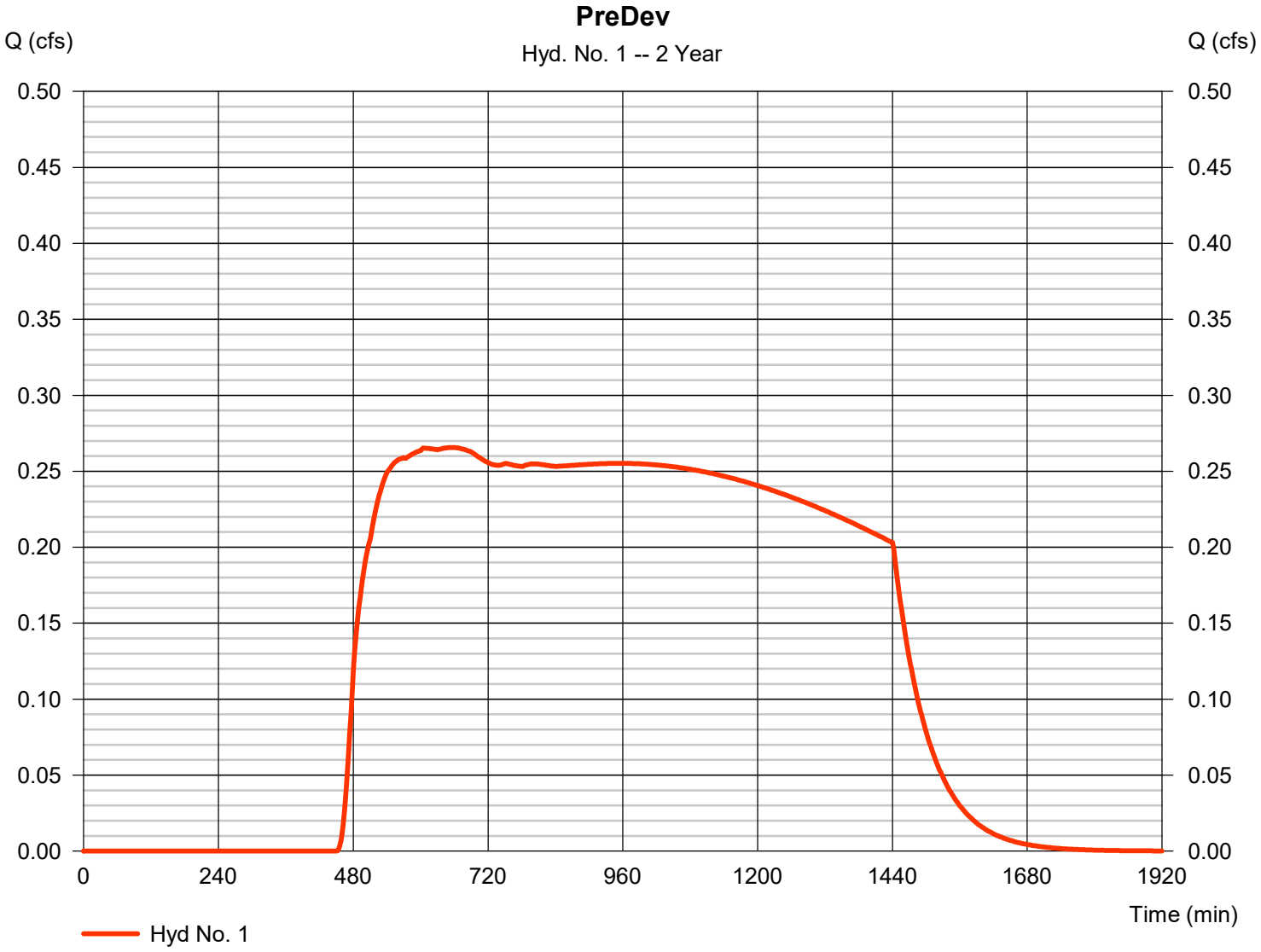


Hydrograph Report

Hyd. No. 1

PreDev

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.266 cfs
Storm frequency	=	2 yrs	Time to peak	=	656 min
Time interval	=	2 min	Hyd. volume	=	14,871 cuft
Drainage area	=	7.750 ac	Curve number	=	72
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	62.20 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



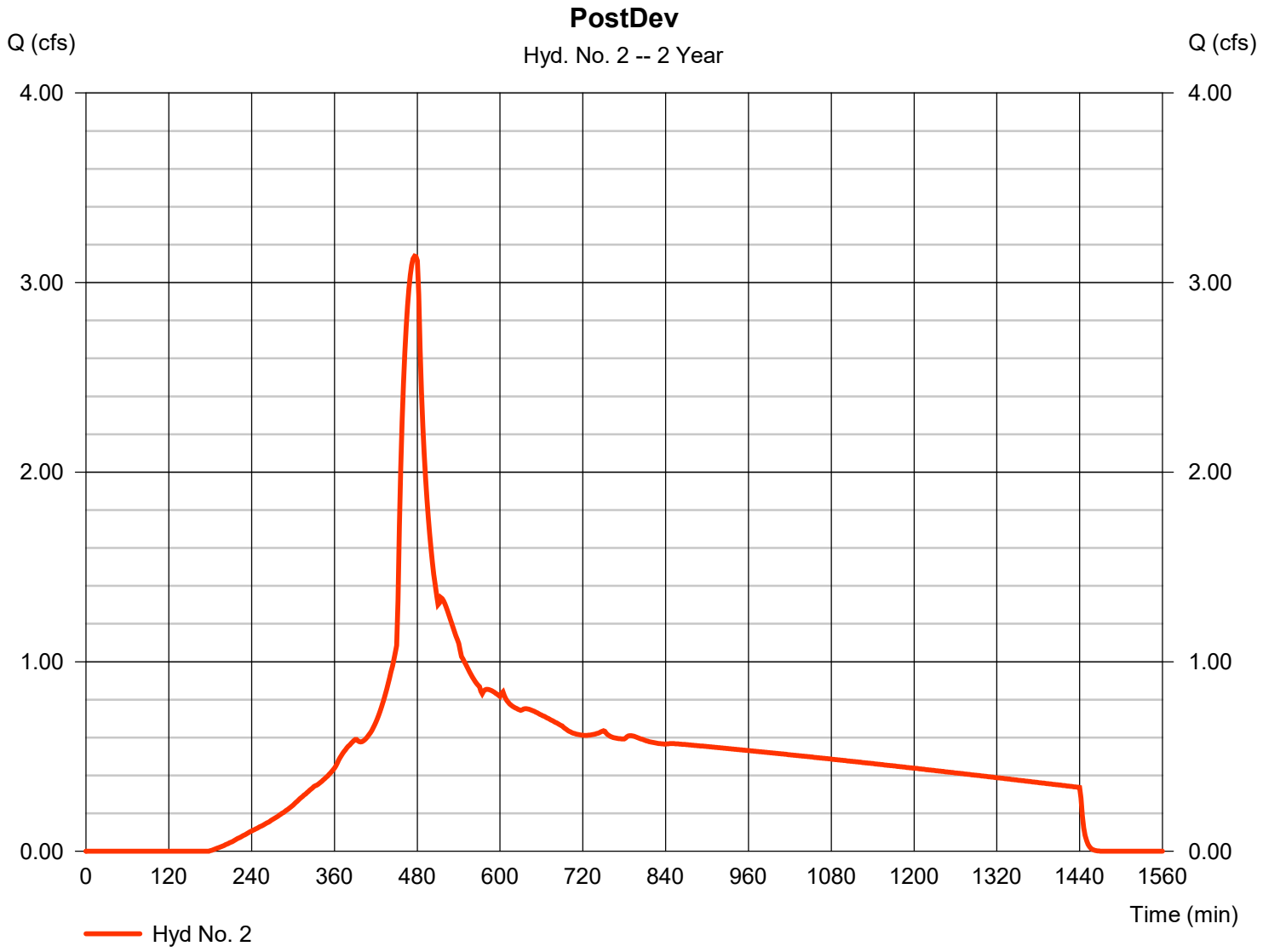
Hydrograph Report

Hyd. No. 2

PostDev

Hydrograph type	=	SBUH Runoff	Peak discharge	=	3.140 cfs
Storm frequency	=	2 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	45,304 cuft
Drainage area	=	7.750 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.460 x 61) + (6.290 x 98)] / 7.750



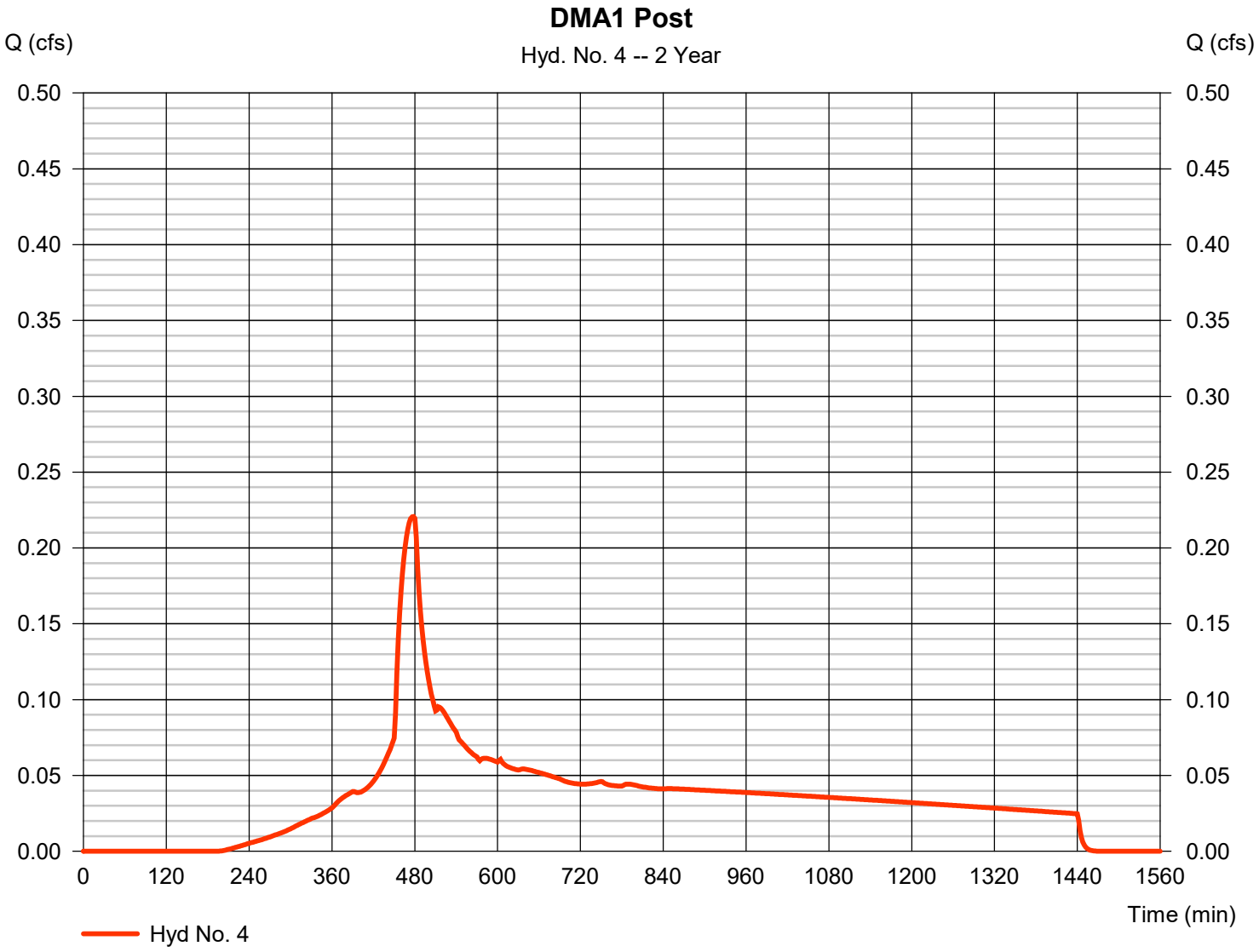
Hydrograph Report

Hyd. No. 4

DMA1 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.221 cfs
Storm frequency	=	2 yrs	Time to peak	=	478 min
Time interval	=	2 min	Hyd. volume	=	3,223 cuft
Drainage area	=	0.580 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.460 x 98) + (0.120 x 61)] / 0.580



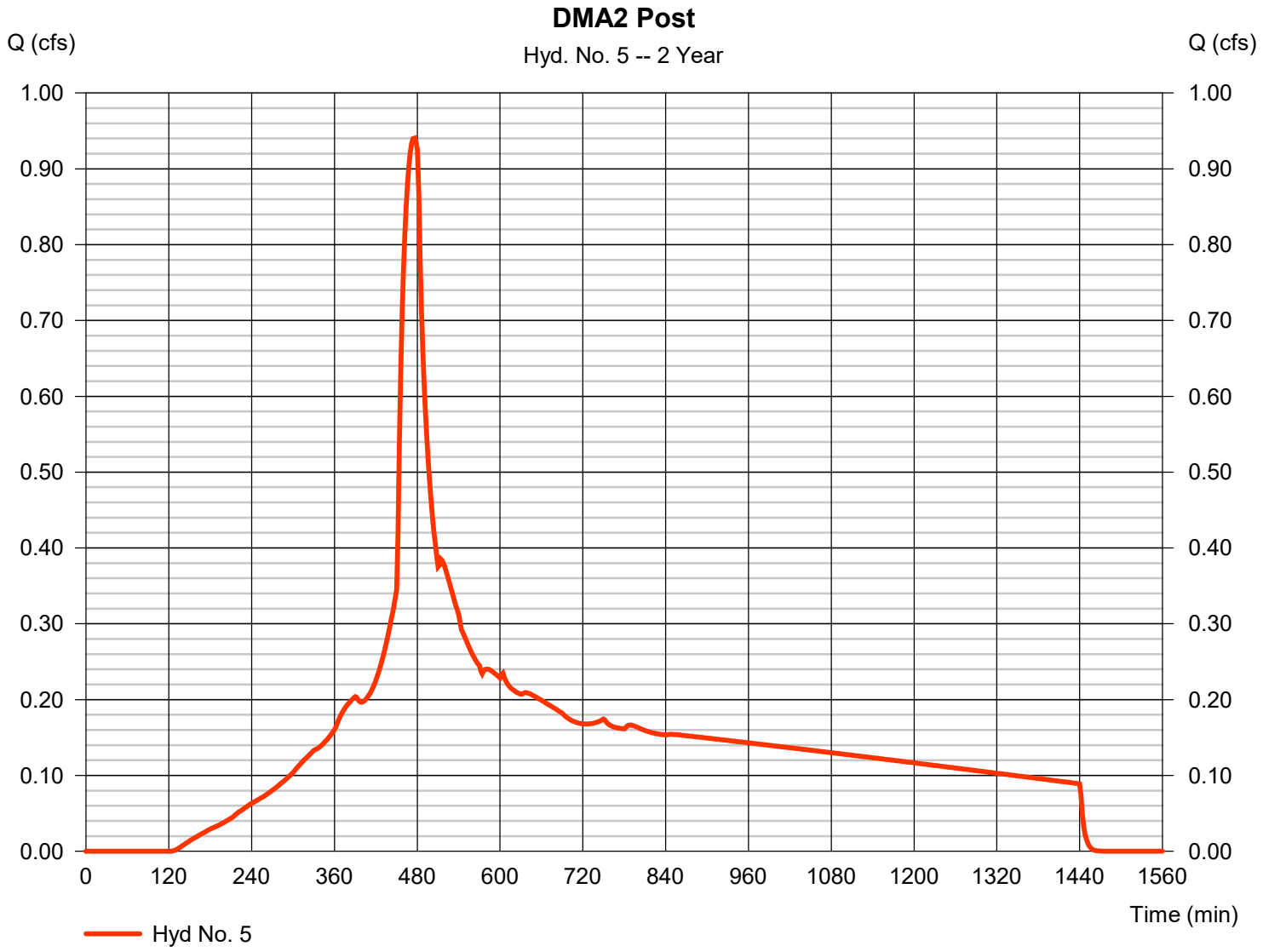
Hydrograph Report

Hyd. No. 5

DMA2 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.940 cfs
Storm frequency	=	2 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	13,232 cuft
Drainage area	=	1.950 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.750 x 98) + (0.200 x 61)] / 1.950



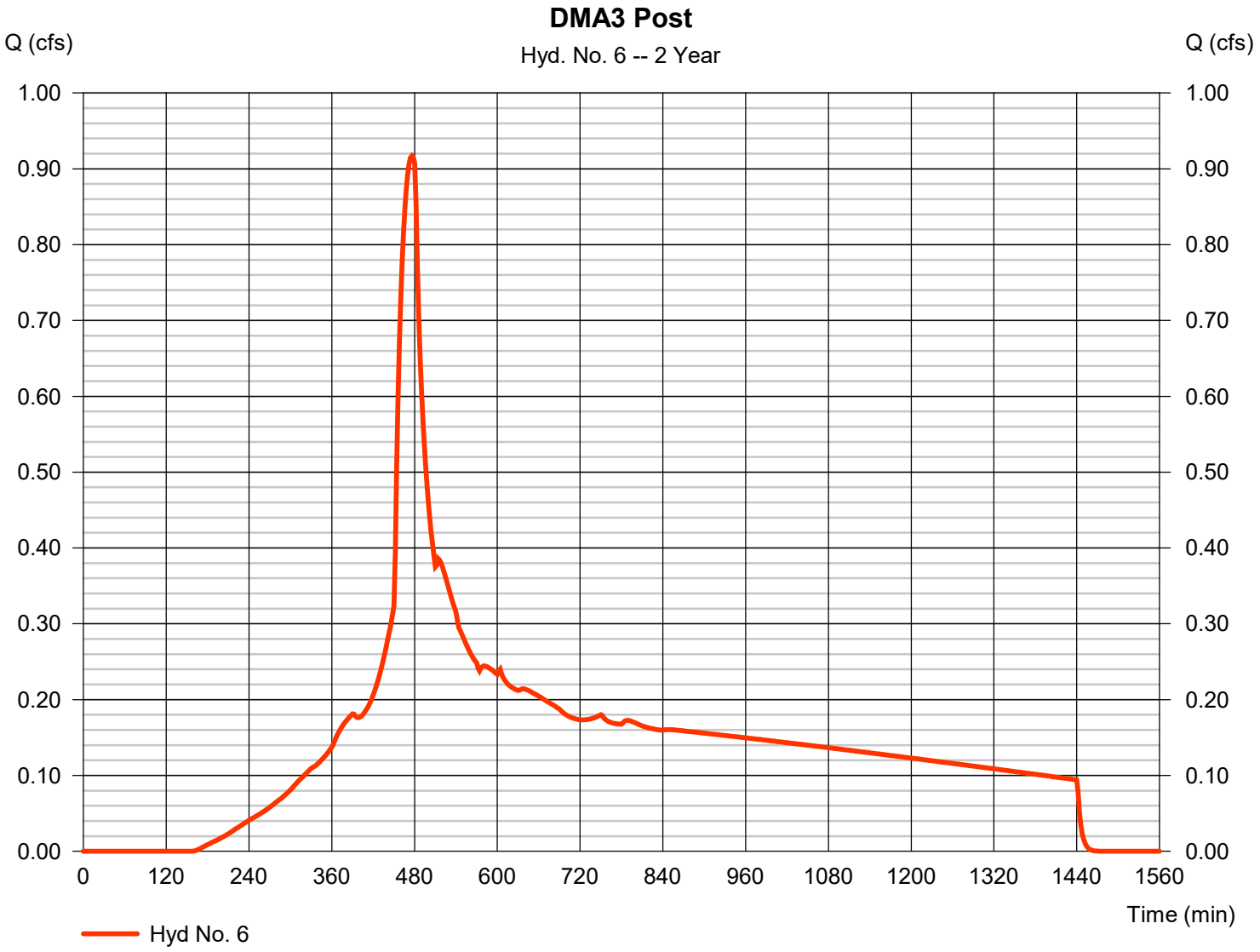
Hydrograph Report

Hyd. No. 6

DMA3 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.917 cfs
Storm frequency	=	2 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	13,091 cuft
Drainage area	=	2.130 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.810 x 98) + (0.320 x 61)] / 2.130



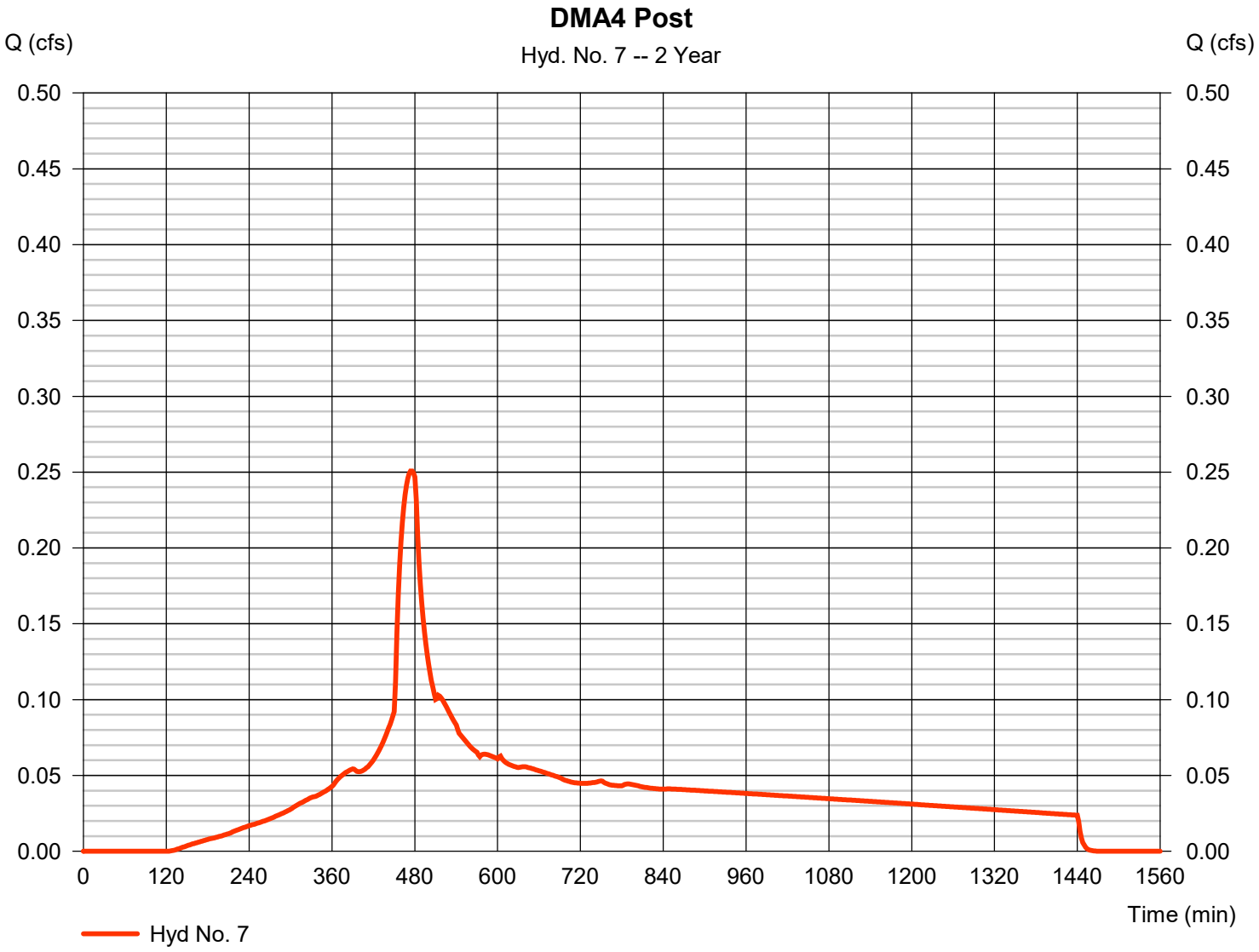
Hydrograph Report

Hyd. No. 7

DMA4 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.251 cfs
Storm frequency	=	2 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	3,529 cuft
Drainage area	=	0.520 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.460 x 98) + (0.060 x 61)] / 0.520



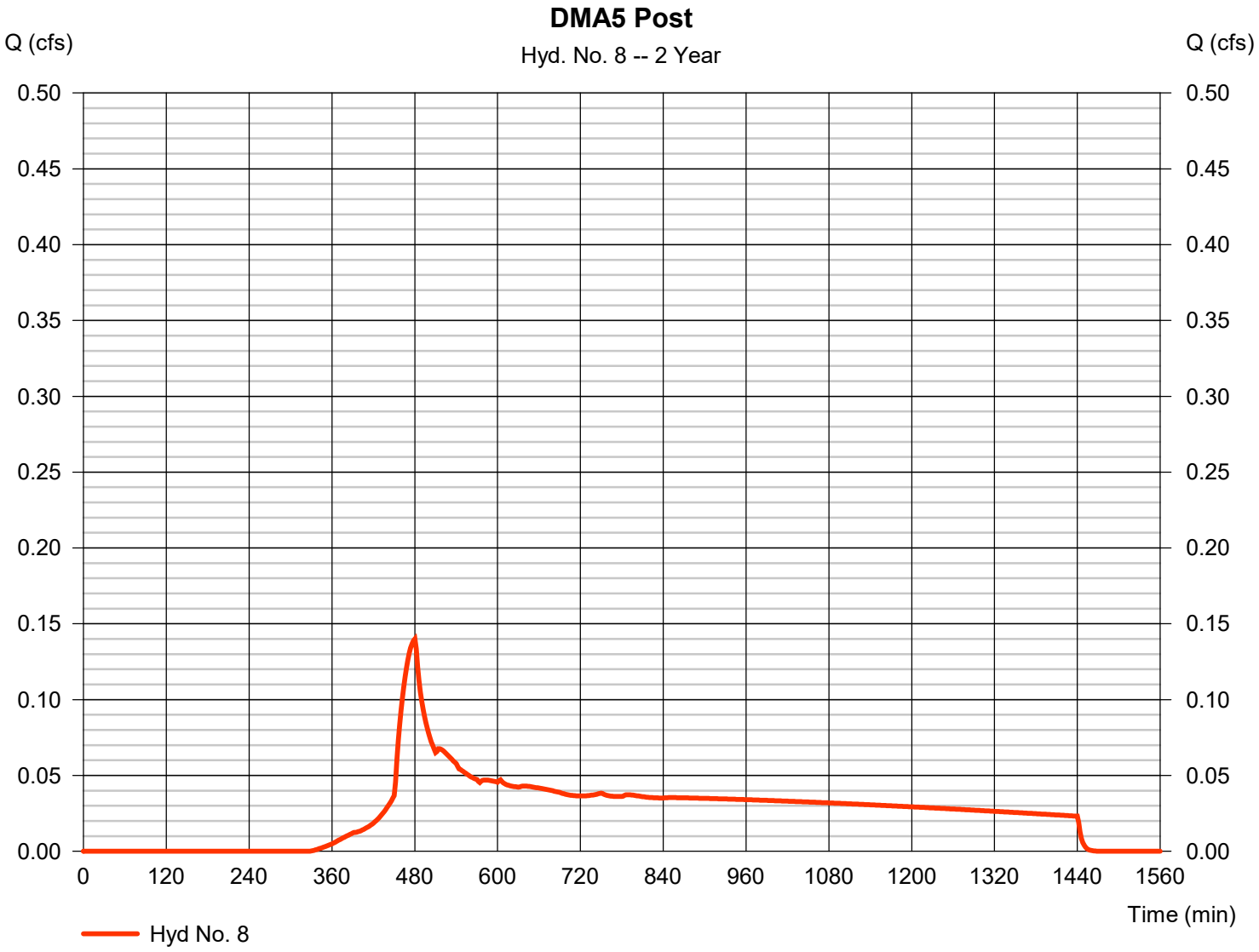
Hydrograph Report

Hyd. No. 8

DMA5 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.140 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	2,391 cuft
Drainage area	=	0.660 ac	Curve number	=	82*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.380 x 98) + (0.280 x 61)] / 0.660



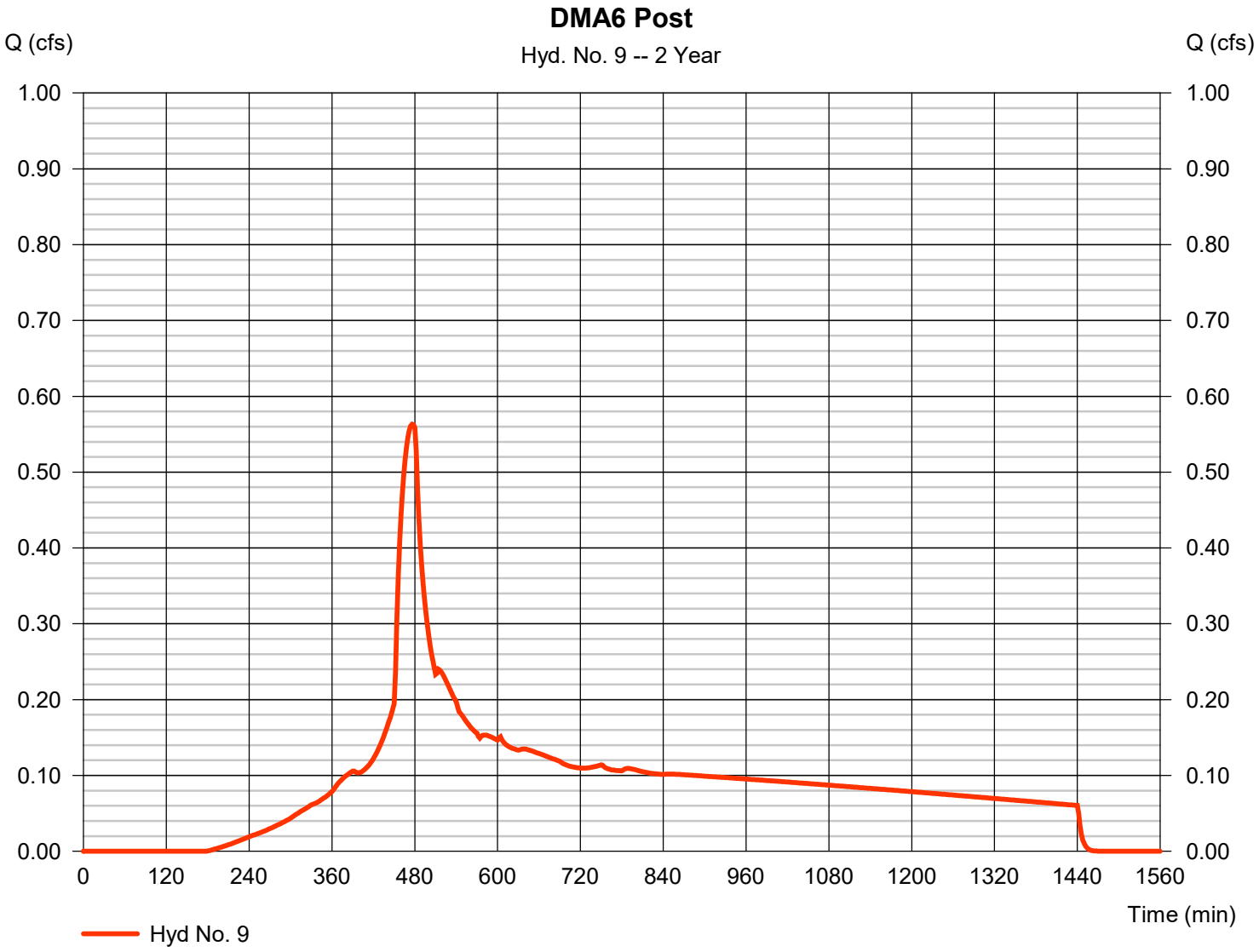
Hydrograph Report

Hyd. No. 9

DMA6 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.563 cfs
Storm frequency	=	2 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	8,126 cuft
Drainage area	=	1.390 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.120 x 98) + (0.270 x 61)] / 1.390



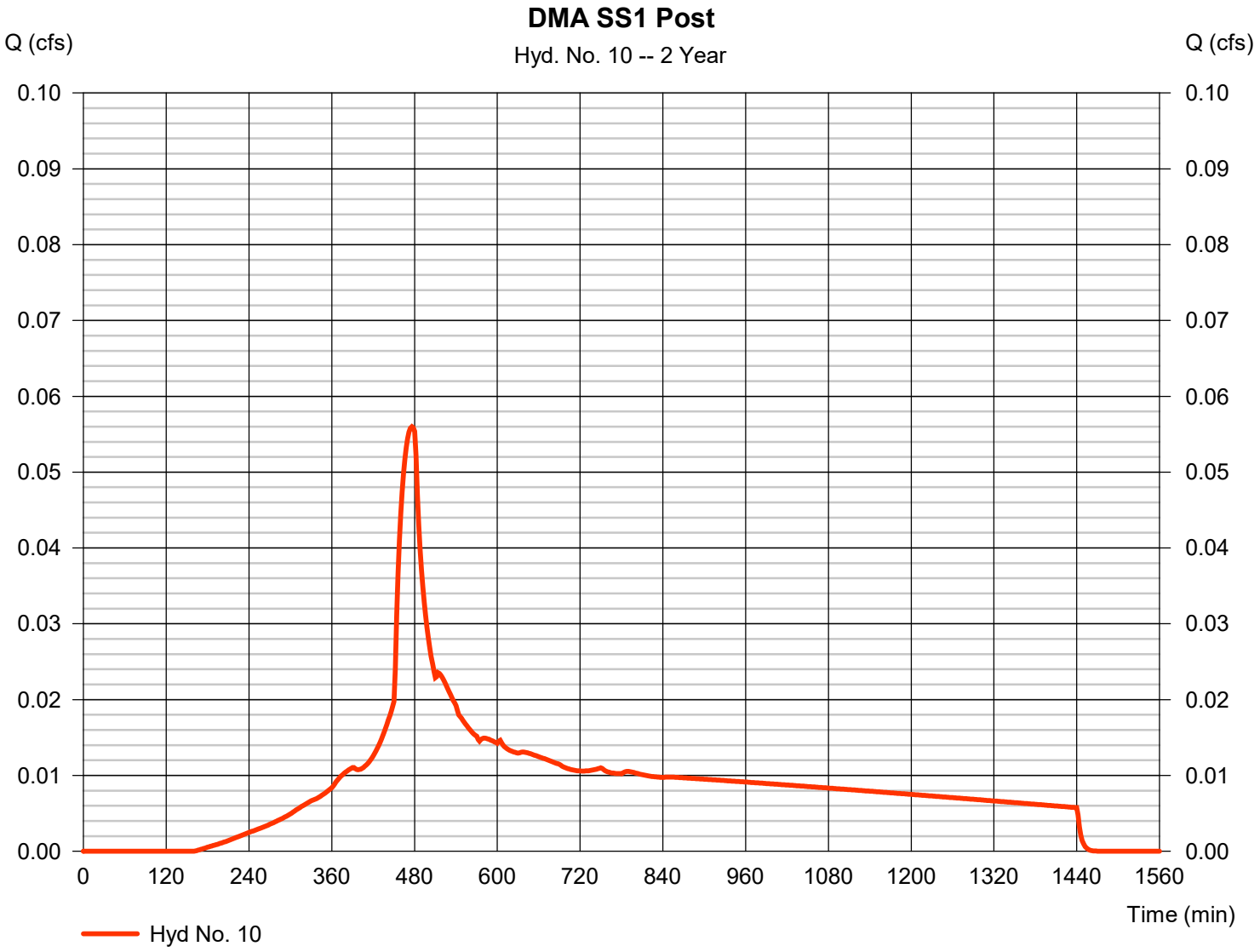
Hydrograph Report

Hyd. No. 10

DMA SS1 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.056 cfs
Storm frequency	=	2 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	799 cuft
Drainage area	=	0.130 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.110 x 98) + (0.020 x 61)] / 0.130



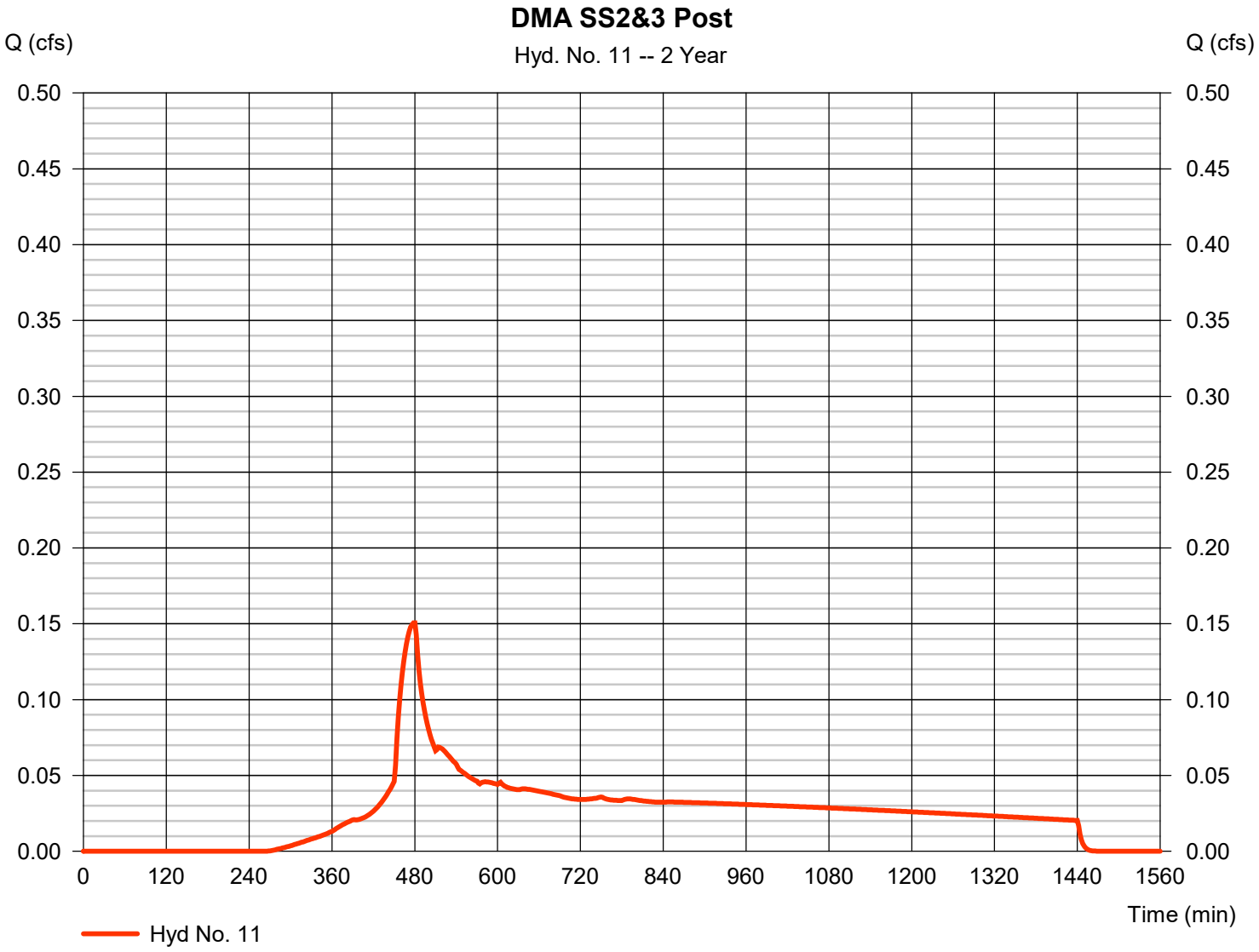
Hydrograph Report

Hyd. No. 11

DMA SS2&3 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.151 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	2,347 cuft
Drainage area	=	0.520 ac	Curve number	=	86*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.350 x 98) + (0.170 x 61)] / 0.520



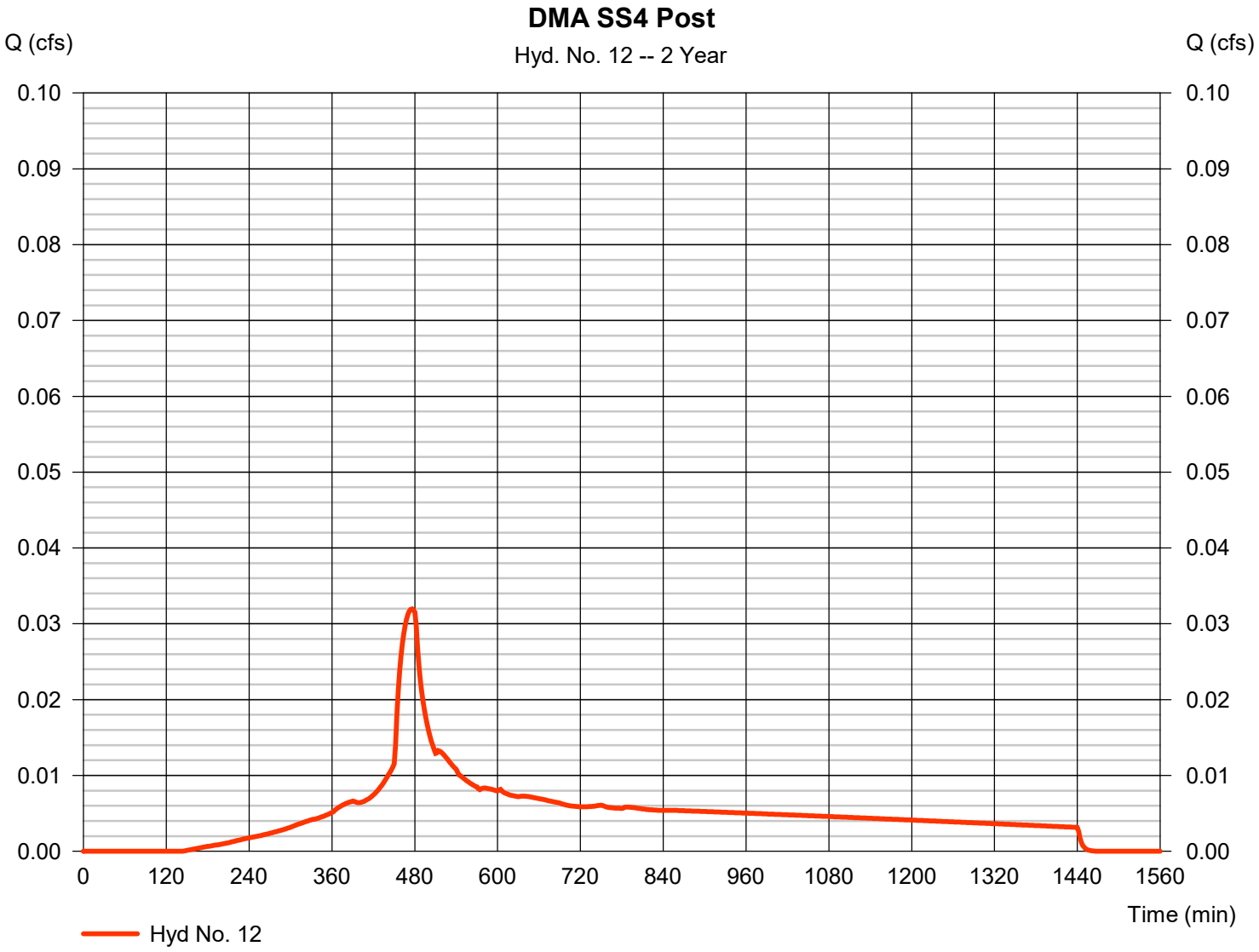
Hydrograph Report

Hyd. No. 12

DMA SS4 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.032 cfs
Storm frequency	=	2 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	452 cuft
Drainage area	=	0.070 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.010 x 61) + (0.060 x 98)] / 0.070

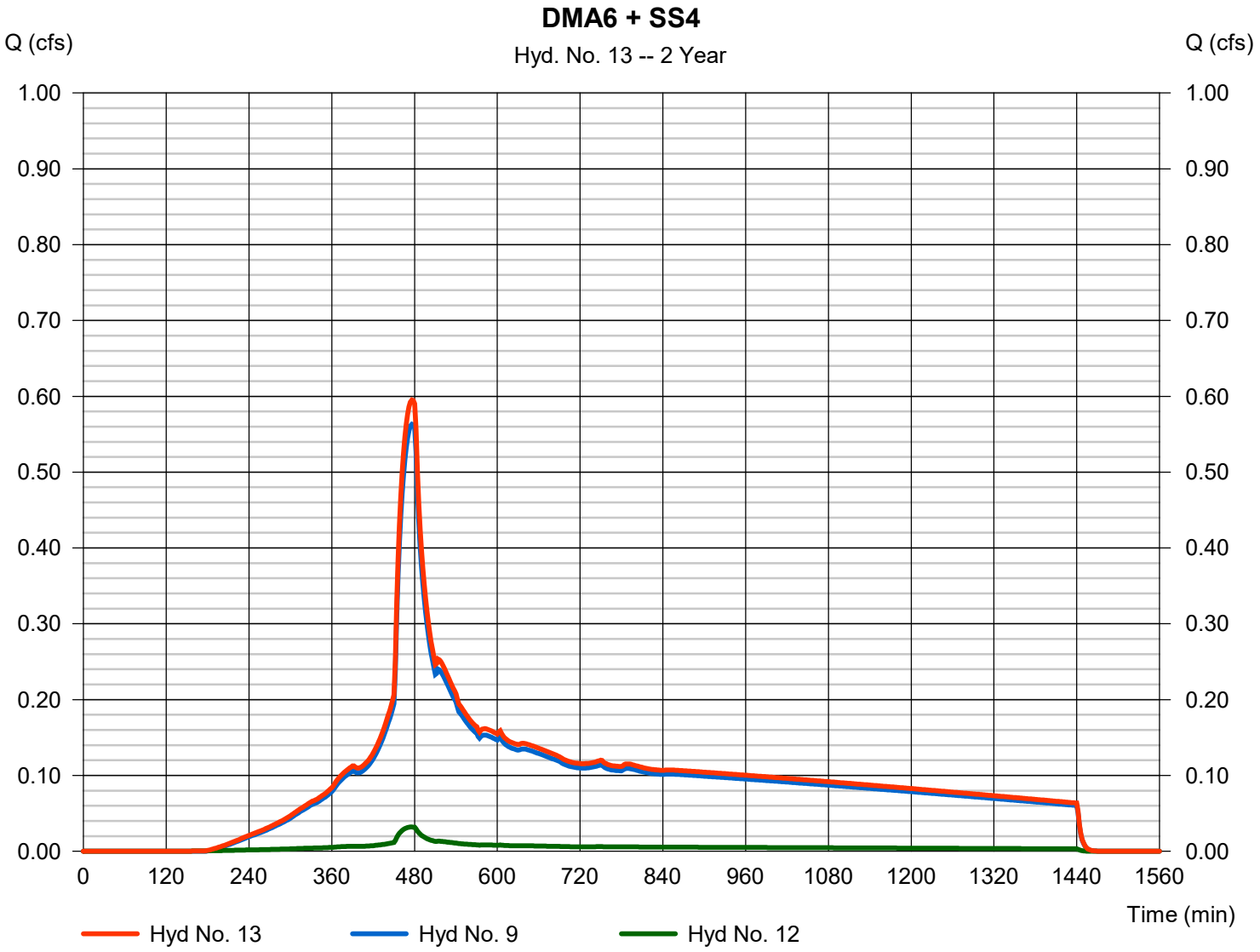


Hydrograph Report

Hyd. No. 13

DMA6 + SS4

Hydrograph type	= Combine	Peak discharge	= 0.595 cfs
Storm frequency	= 2 yrs	Time to peak	= 476 min
Time interval	= 2 min	Hyd. volume	= 8,578 cuft
Inflow hyds.	= 9, 12	Contrib. drain. area	= 1.460 ac



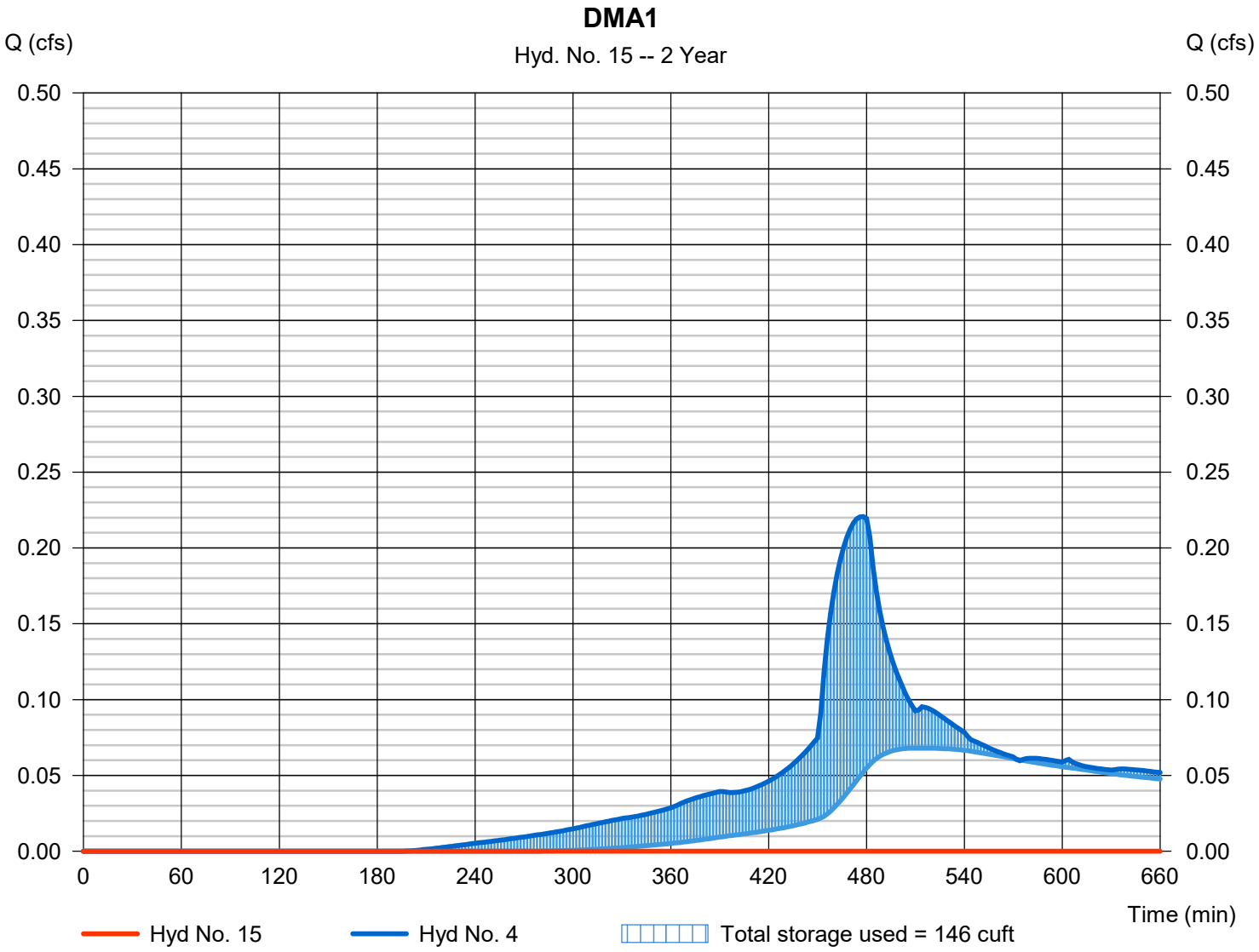
Hydrograph Report

Hyd. No. 15

DMA1

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	462 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	4 - DMA1 Post	Max. Elevation	=	100.45 ft
Reservoir name	=	DMA1	Max. Storage	=	146 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



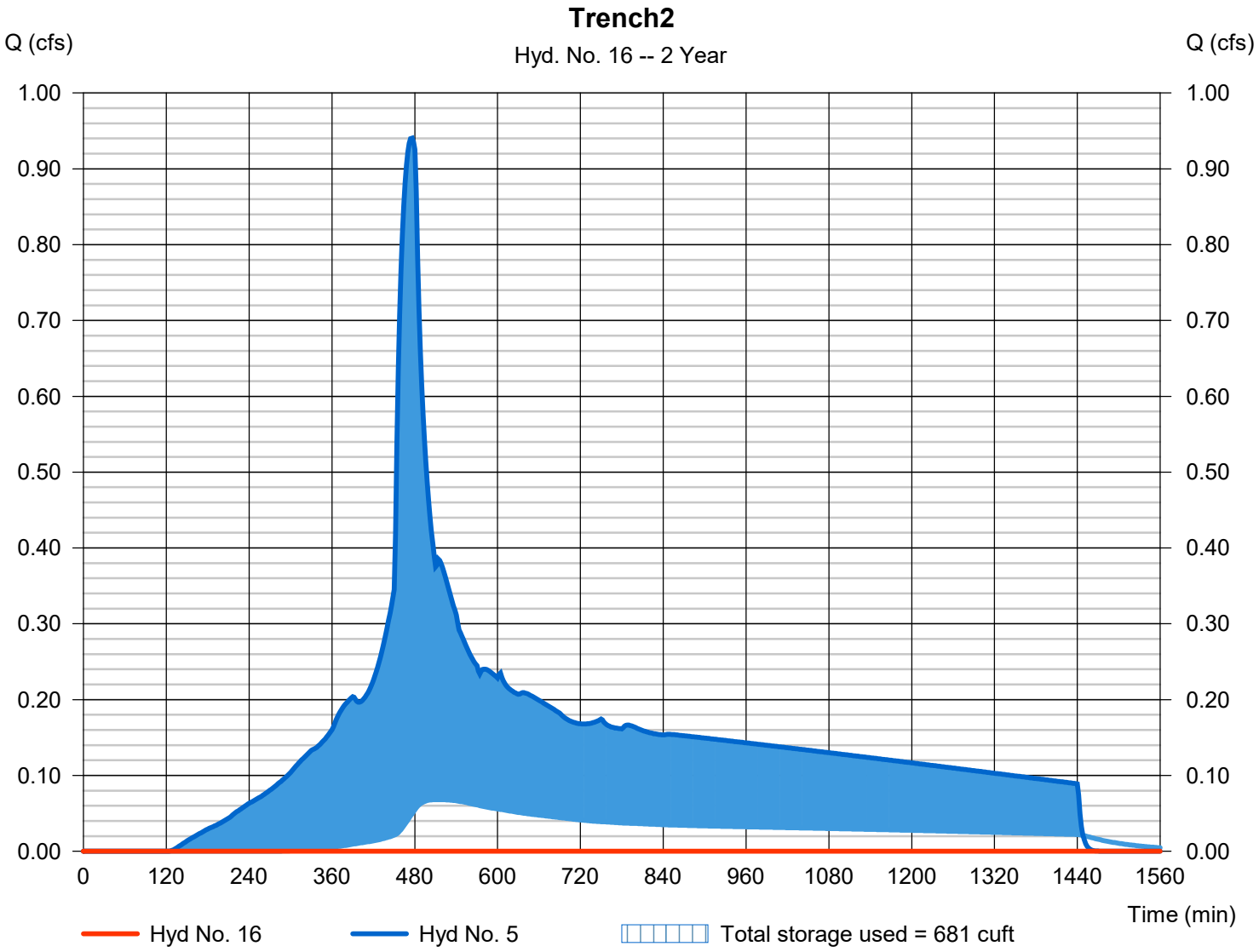
Hydrograph Report

Hyd. No. 16

Trench2

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	436 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	5 - DMA2 Post	Max. Elevation	=	100.35 ft
Reservoir name	=	Trench2	Max. Storage	=	681 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



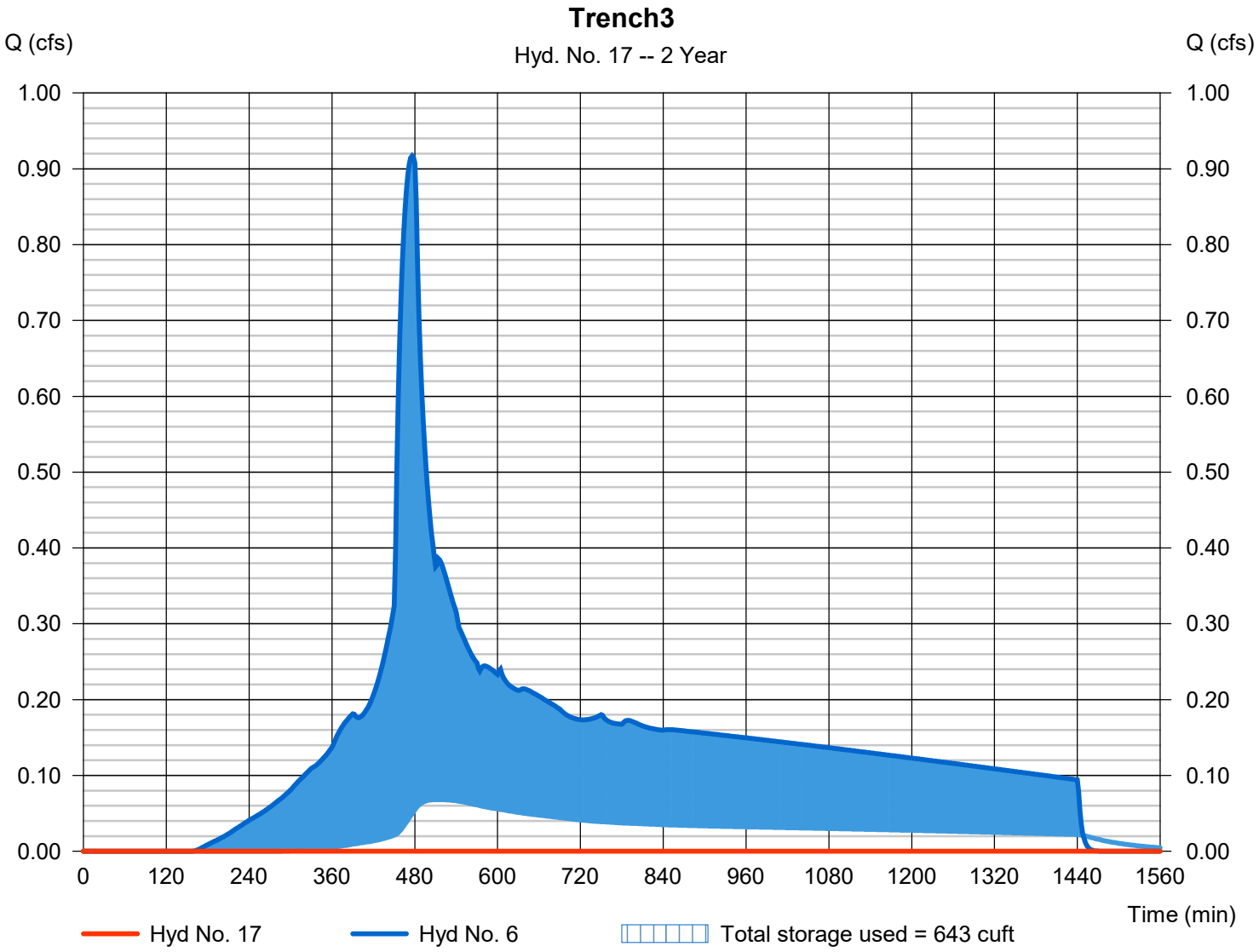
Hydrograph Report

Hyd. No. 17

Trench3

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	444 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	6 - DMA3 Post	Max. Elevation	=	100.27 ft
Reservoir name	=	Trench3	Max. Storage	=	643 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



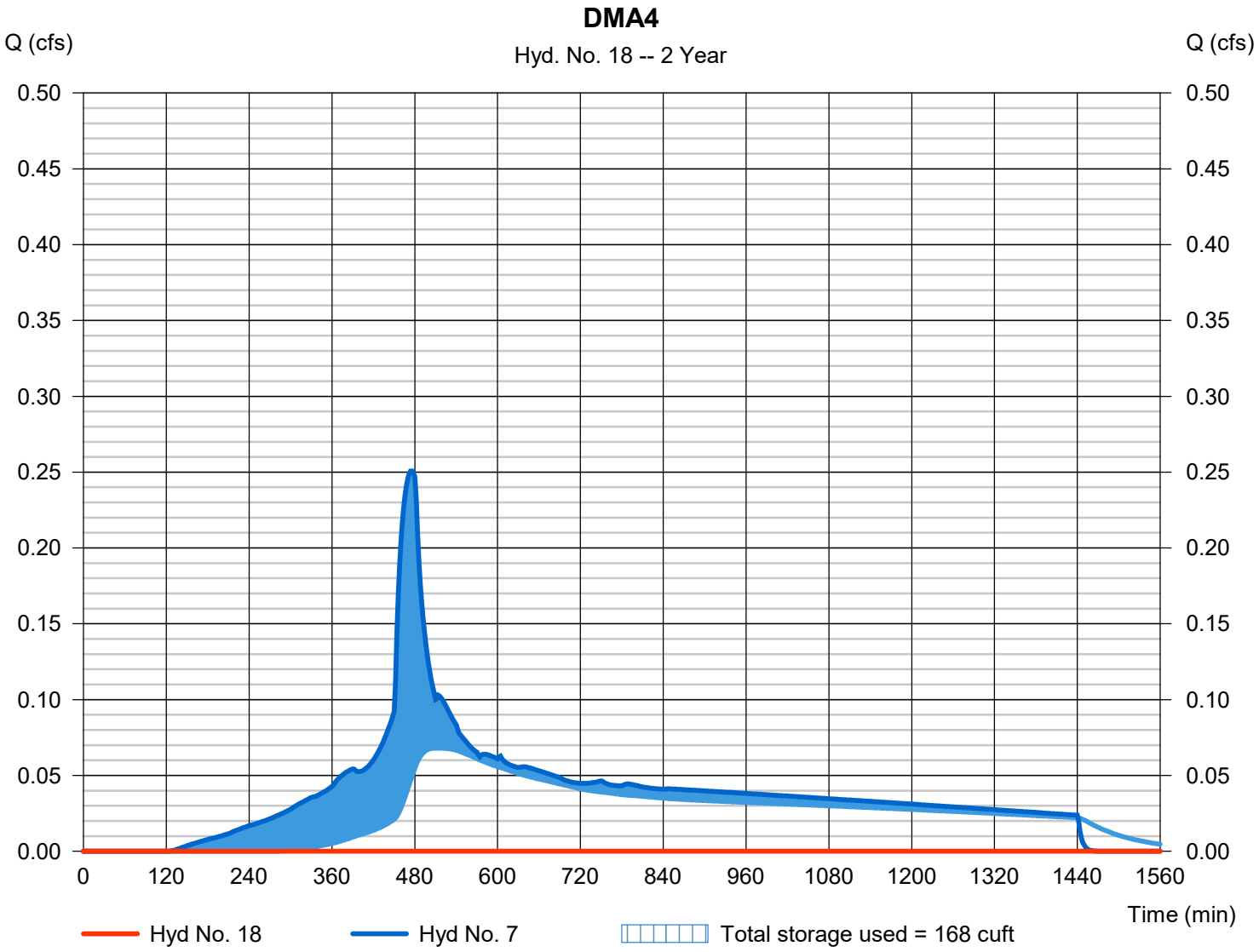
Hydrograph Report

Hyd. No. 18

DMA4

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	488 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	7 - DMA4 Post	Max. Elevation	=	400.75 ft
Reservoir name	=	DMA4	Max. Storage	=	168 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



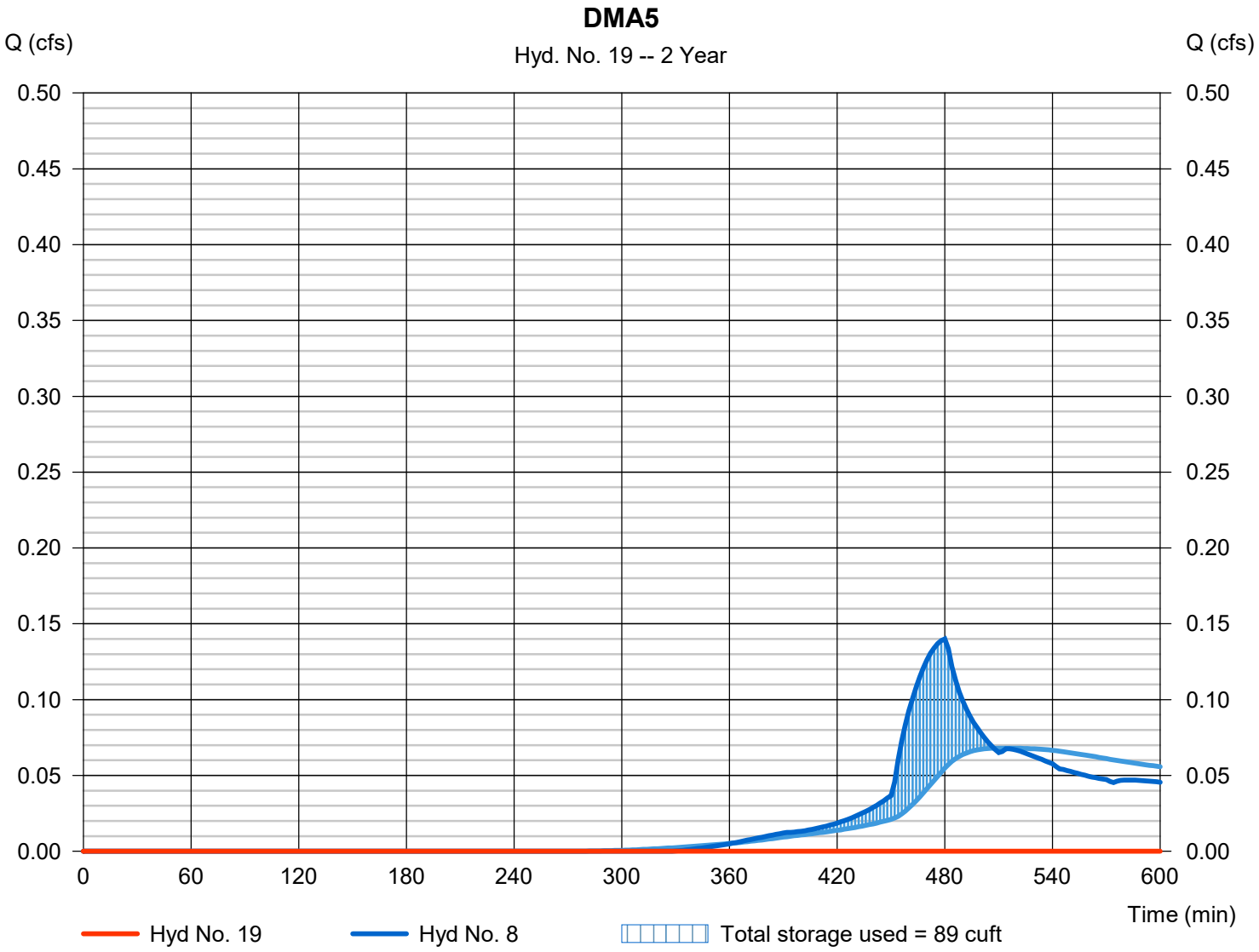
Hydrograph Report

Hyd. No. 19

DMA5

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	8 - DMA5 Post	Max. Elevation	=	500.26 ft
Reservoir name	=	DMA5	Max. Storage	=	89 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



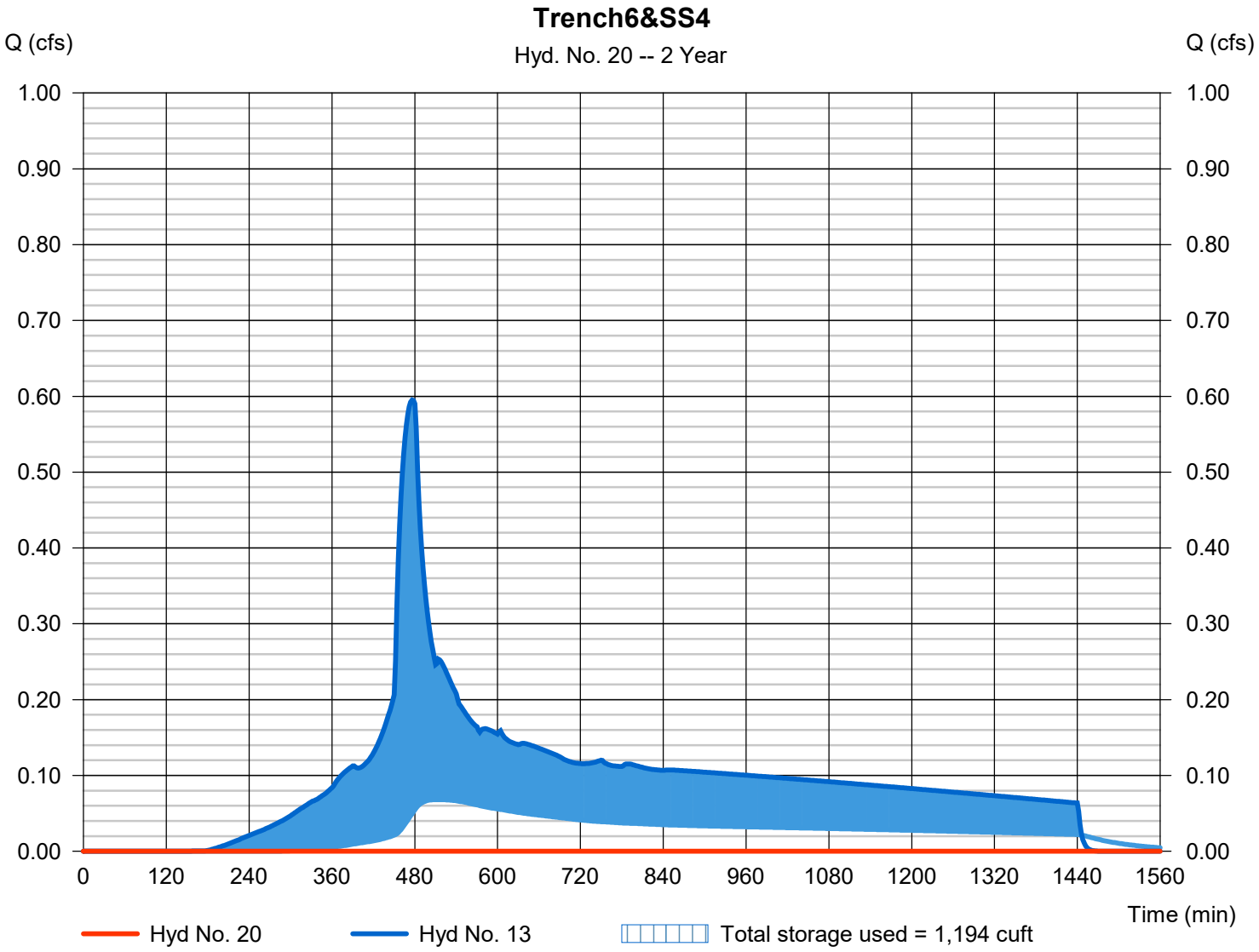
Hydrograph Report

Hyd. No. 20

Trench6&SS4

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	340 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	13 - DMA6 + SS4	Max. Elevation	=	100.39 ft
Reservoir name	=	Trench6	Max. Storage	=	1,194 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



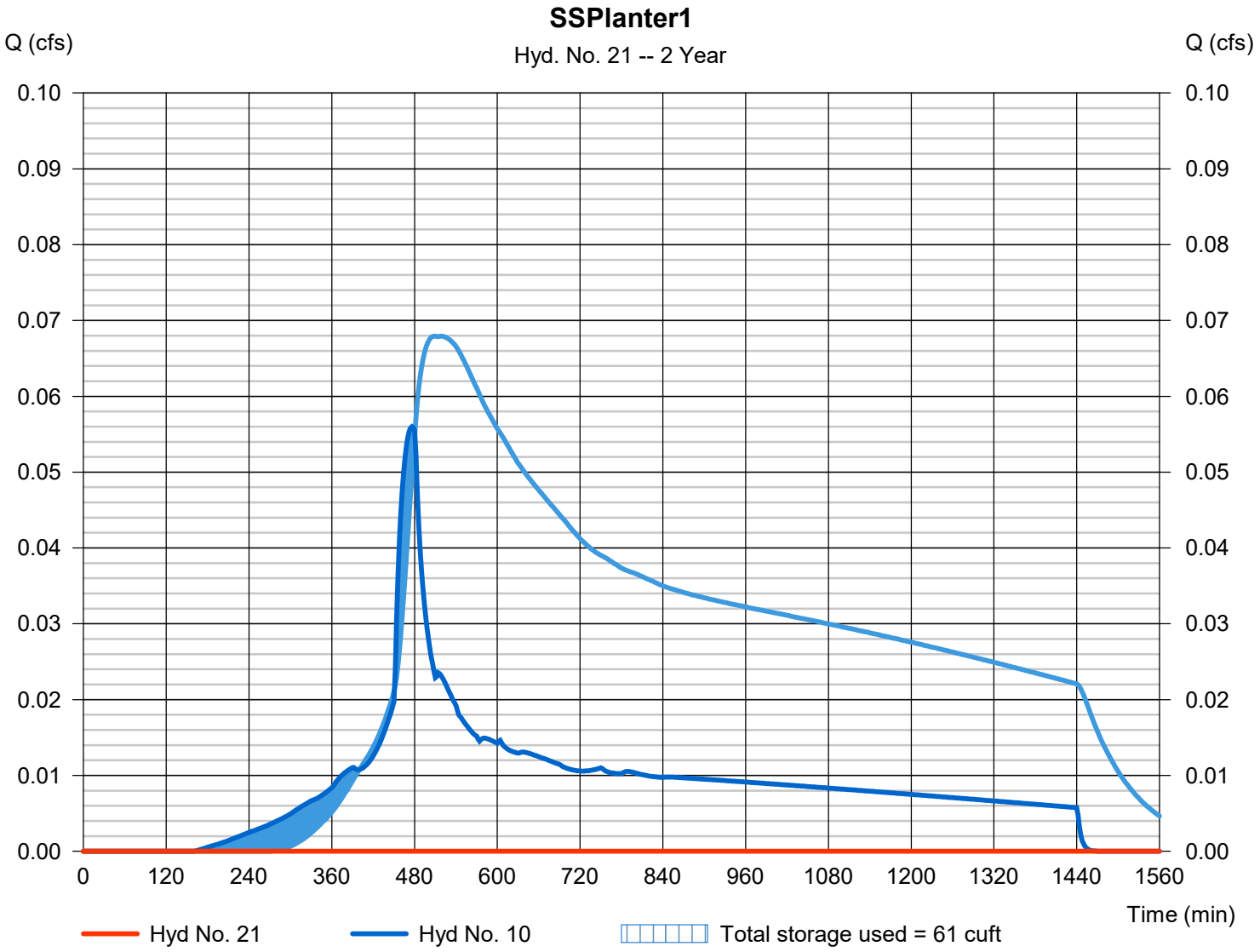
Hydrograph Report

Hyd. No. 21

SSPlanter1

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	486 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	10 - DMA SS1 Post	Max. Elevation	=	100.43 ft
Reservoir name	=	Planter1	Max. Storage	=	61 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



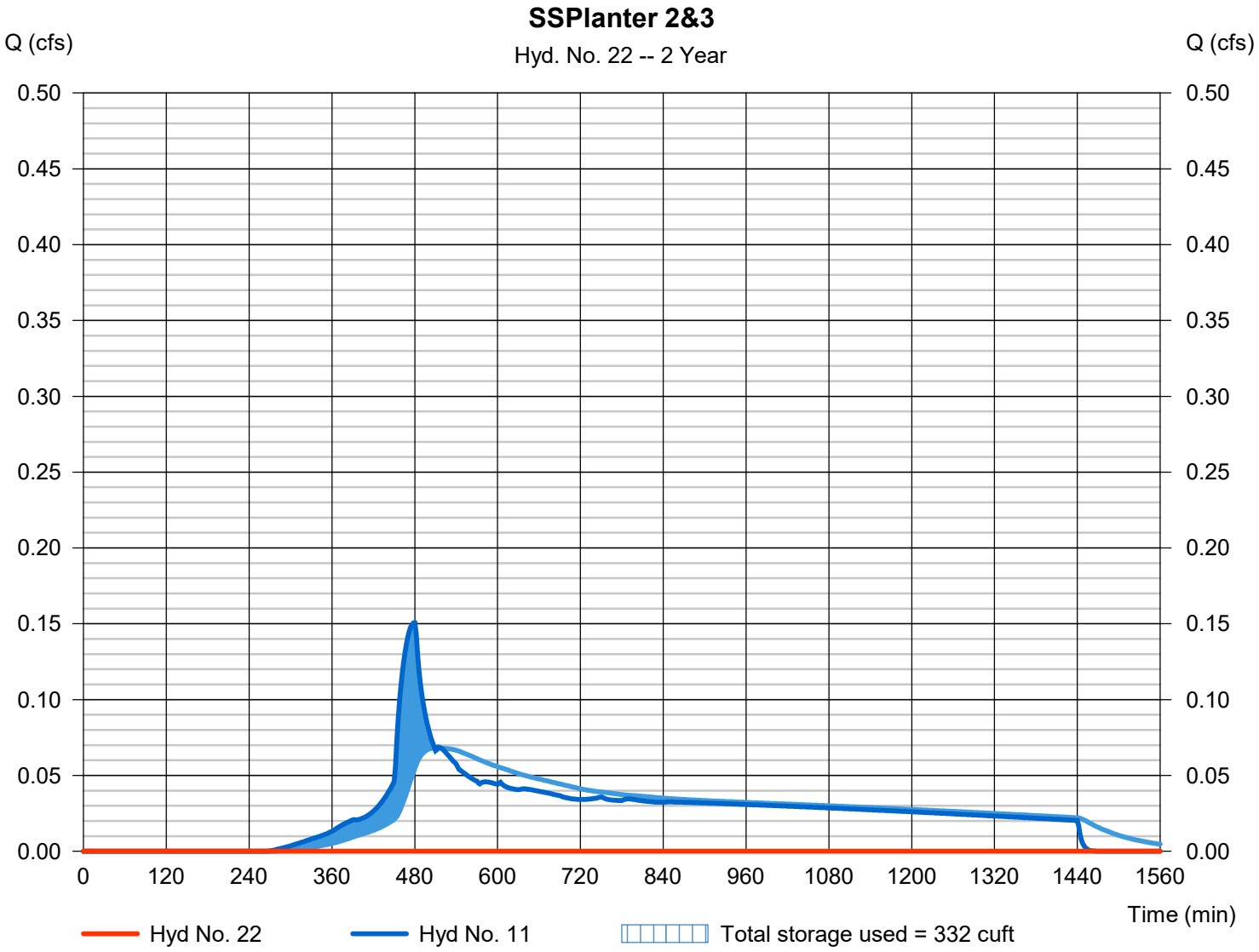
Hydrograph Report

Hyd. No. 22

SSPlanter 2&3

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	590 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	11 - DMA SS2&3 Post	Max. Elevation	=	100.97 ft
Reservoir name	=	Planter2	Max. Storage	=	332 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

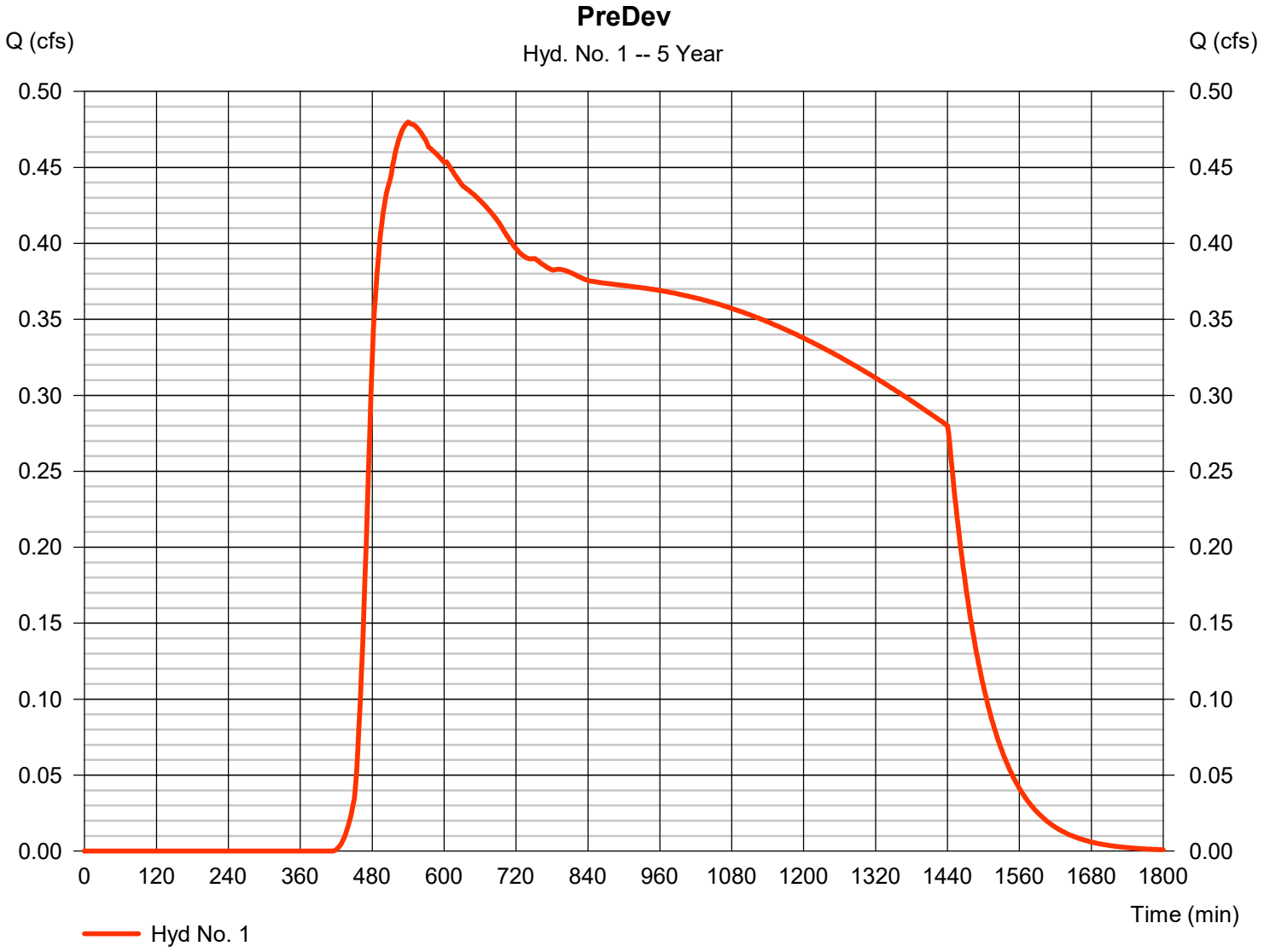


Hydrograph Report

Hyd. No. 1

PreDev

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.480 cfs
Storm frequency	=	5 yrs	Time to peak	=	540 min
Time interval	=	2 min	Hyd. volume	=	22,733 cuft
Drainage area	=	7.750 ac	Curve number	=	72
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	62.20 min
Total precip.	=	3.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



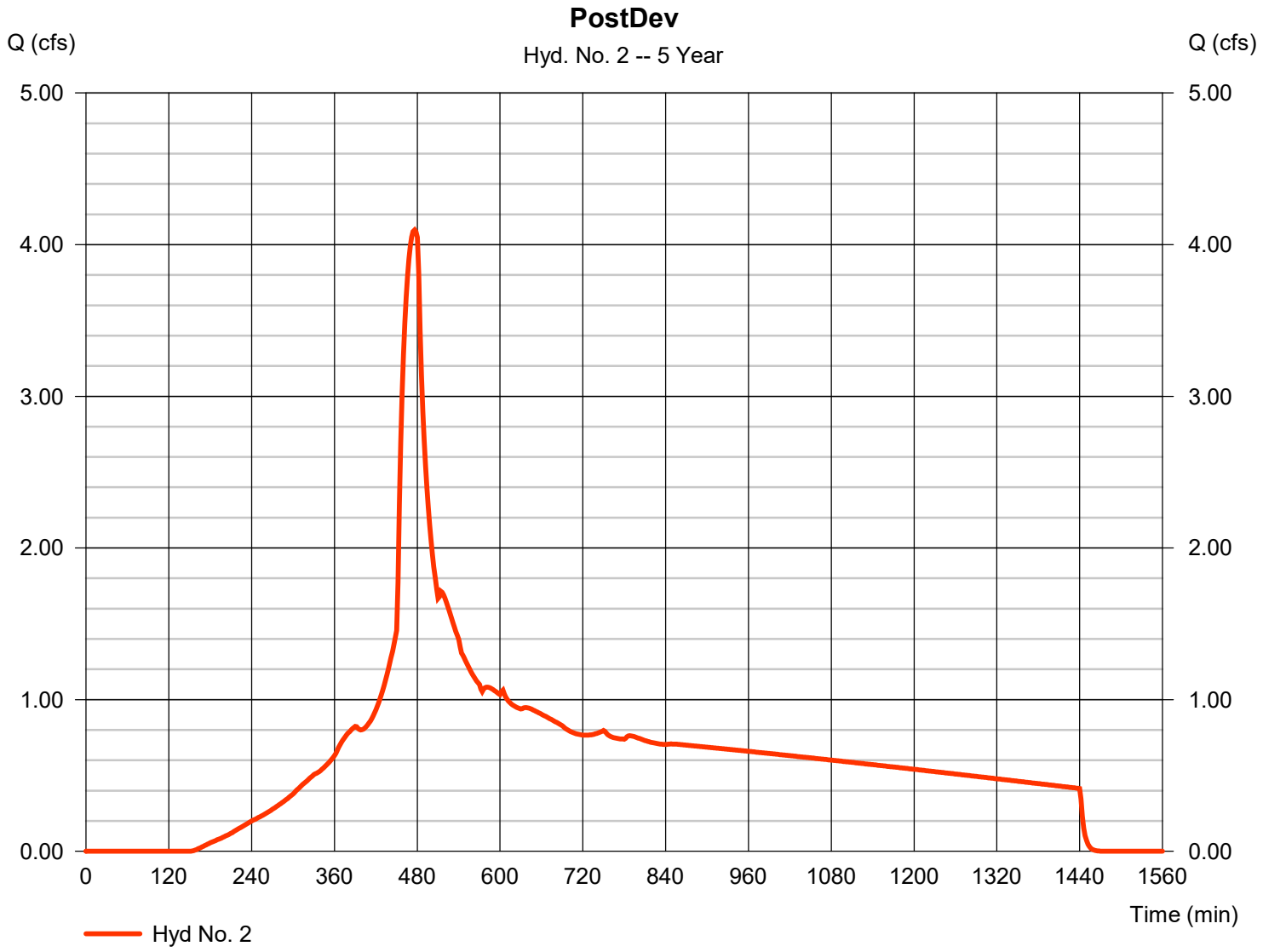
Hydrograph Report

Hyd. No. 2

PostDev

Hydrograph type	=	SBUH Runoff	Peak discharge	=	4.097 cfs
Storm frequency	=	5 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	58,268 cuft
Drainage area	=	7.750 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.460 x 61) + (6.290 x 98)] / 7.750



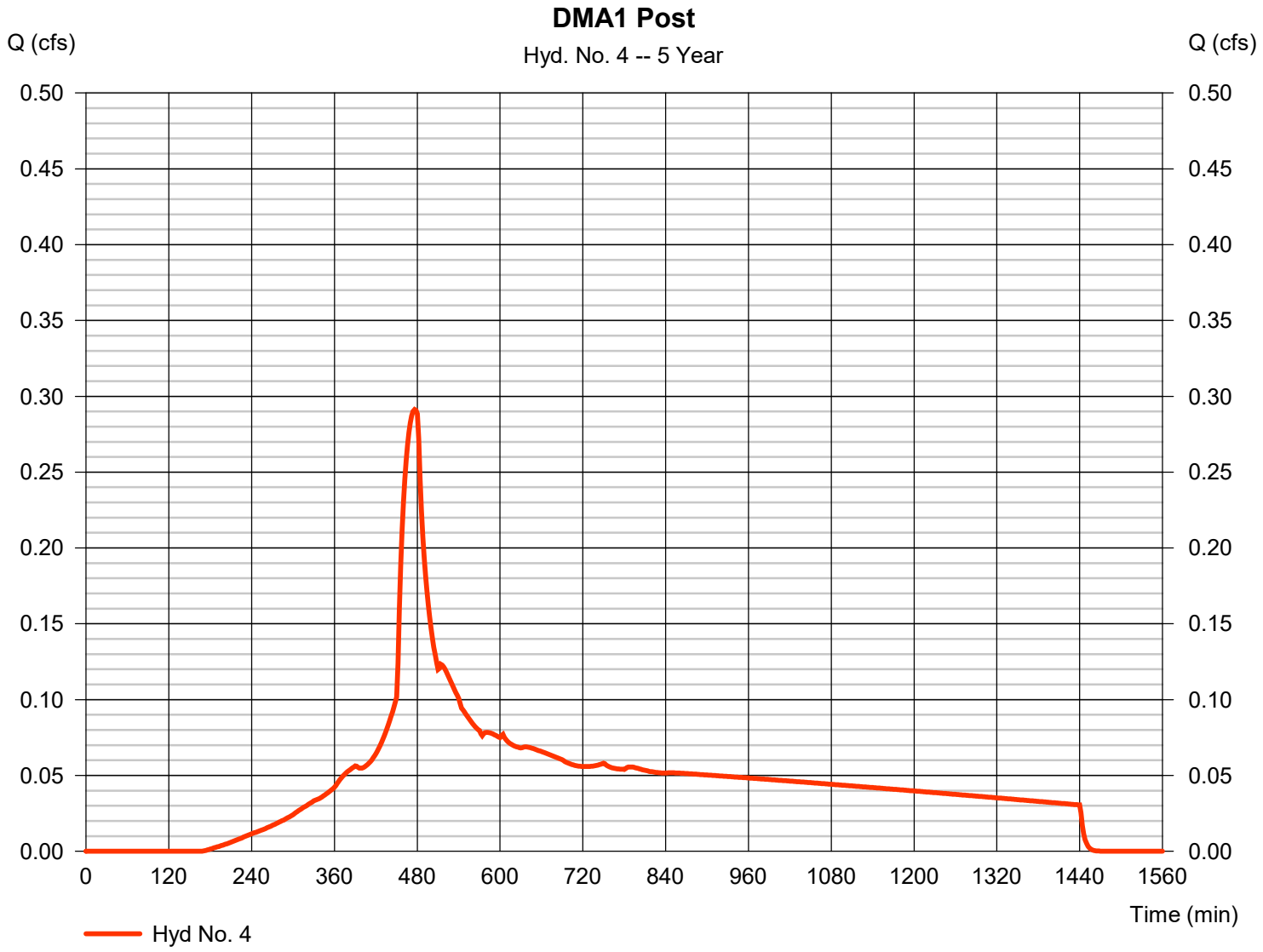
Hydrograph Report

Hyd. No. 4

DMA1 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.291 cfs
Storm frequency	=	5 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	4,177 cuft
Drainage area	=	0.580 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.460 x 98) + (0.120 x 61)] / 0.580



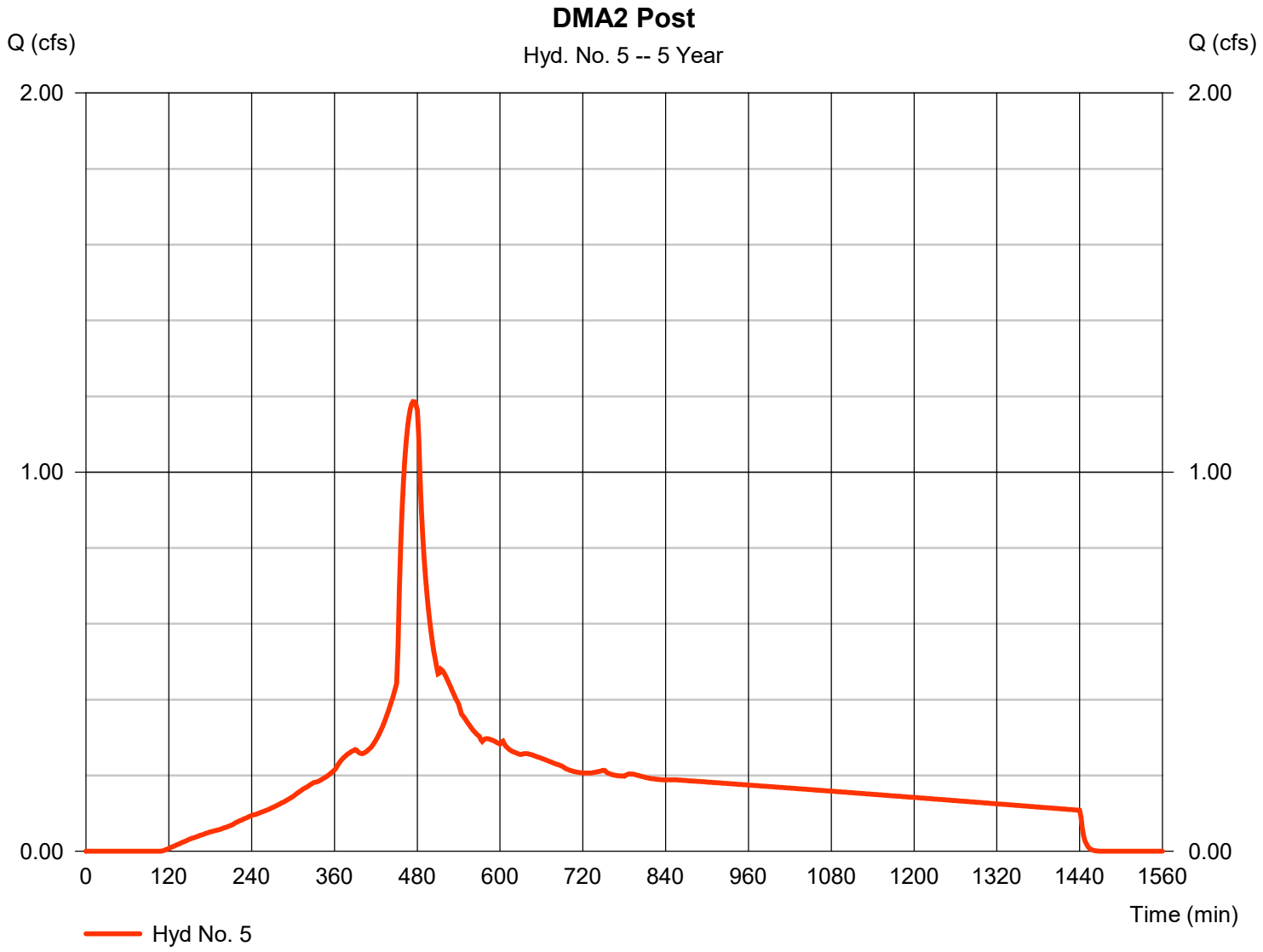
Hydrograph Report

Hyd. No. 5

DMA2 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.186 cfs
Storm frequency	=	5 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	16,635 cuft
Drainage area	=	1.950 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.750 x 98) + (0.200 x 61)] / 1.950



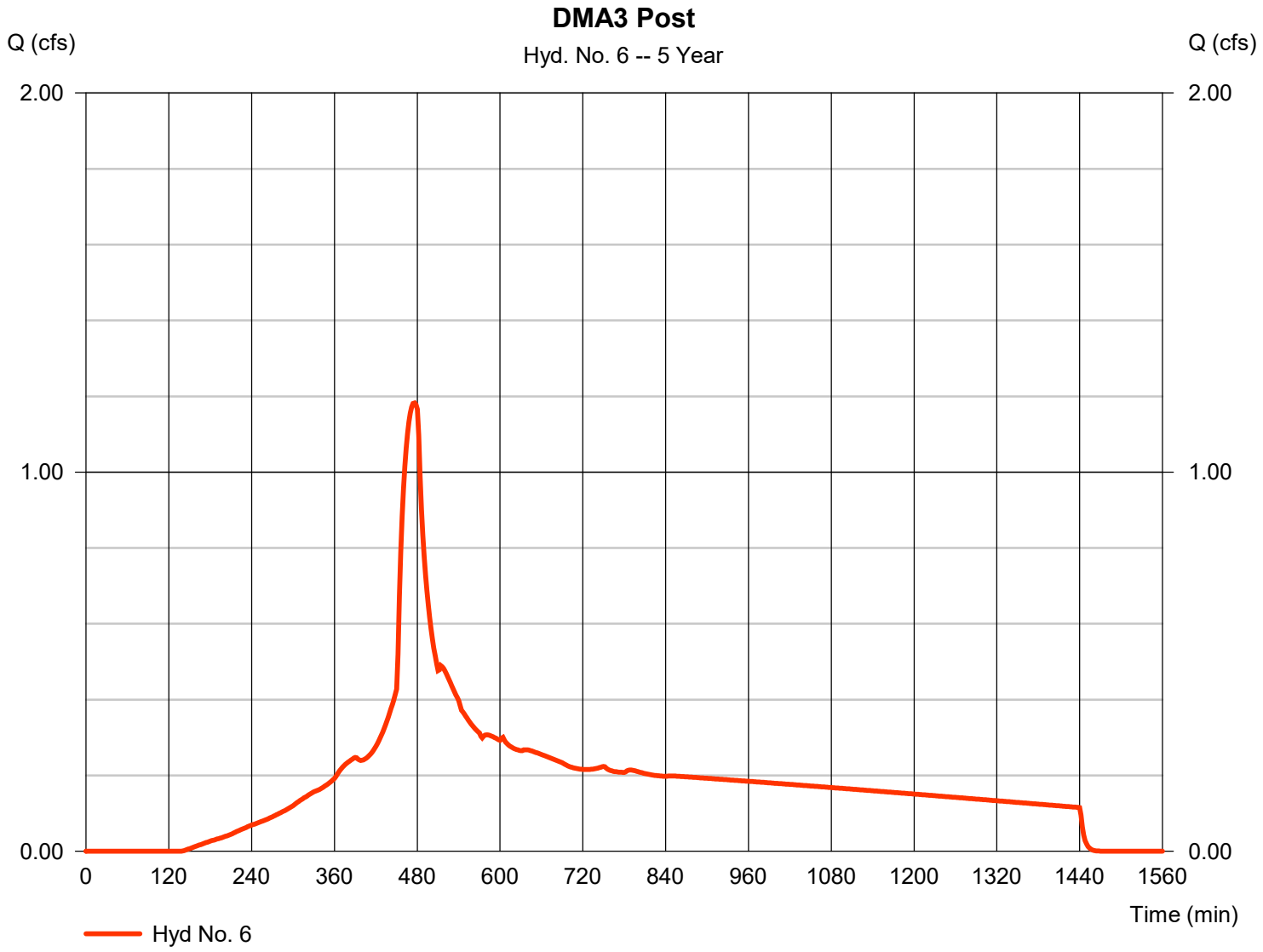
Hydrograph Report

Hyd. No. 6

DMA3 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.183 cfs
Storm frequency	=	5 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	16,710 cuft
Drainage area	=	2.130 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.810 x 98) + (0.320 x 61)] / 2.130



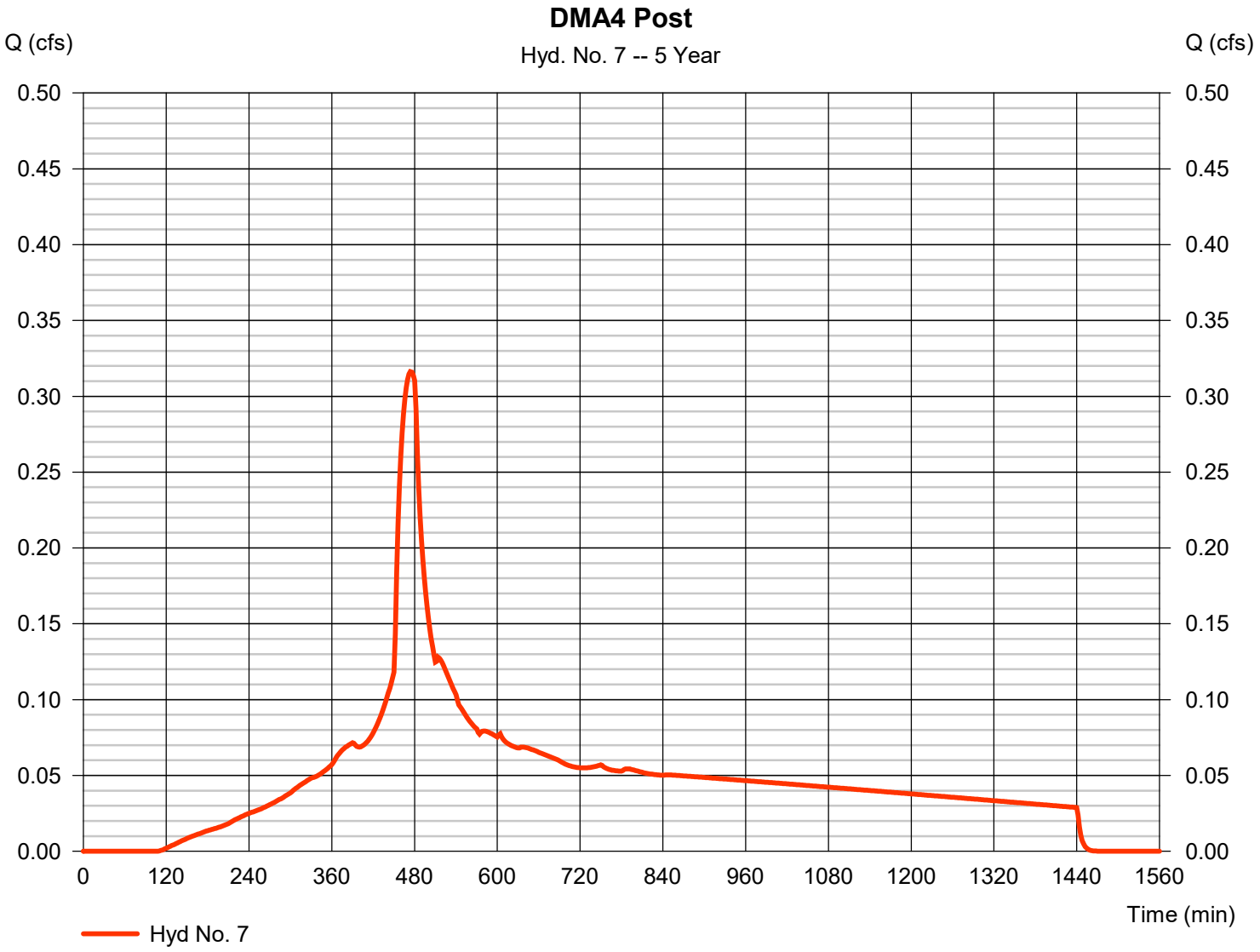
Hydrograph Report

Hyd. No. 7

DMA4 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.316 cfs
Storm frequency	=	5 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	4,436 cuft
Drainage area	=	0.520 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.460 x 98) + (0.060 x 61)] / 0.520



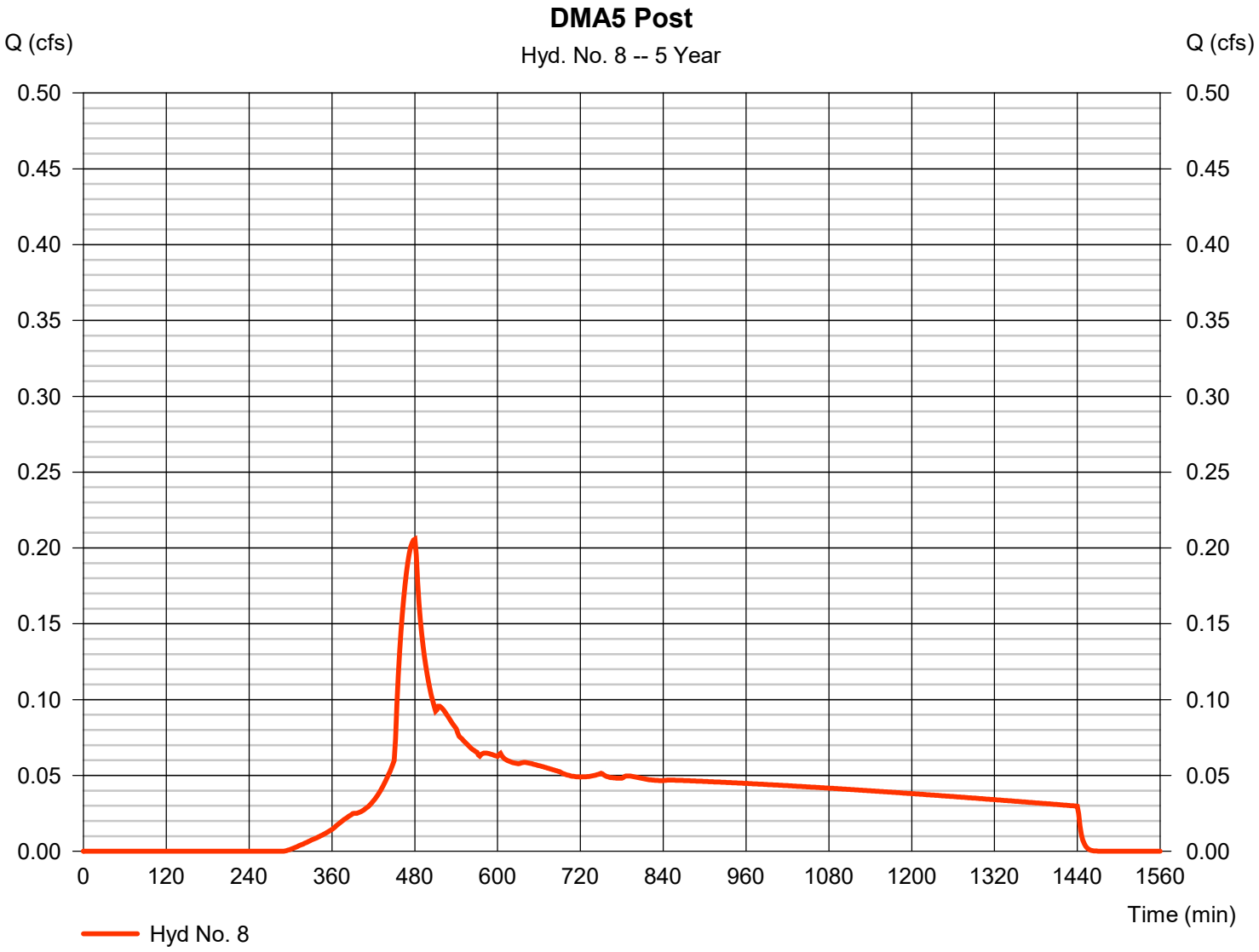
Hydrograph Report

Hyd. No. 8

DMA5 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.206 cfs
Storm frequency	=	5 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	3,304 cuft
Drainage area	=	0.660 ac	Curve number	=	82*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.380 x 98) + (0.280 x 61)] / 0.660



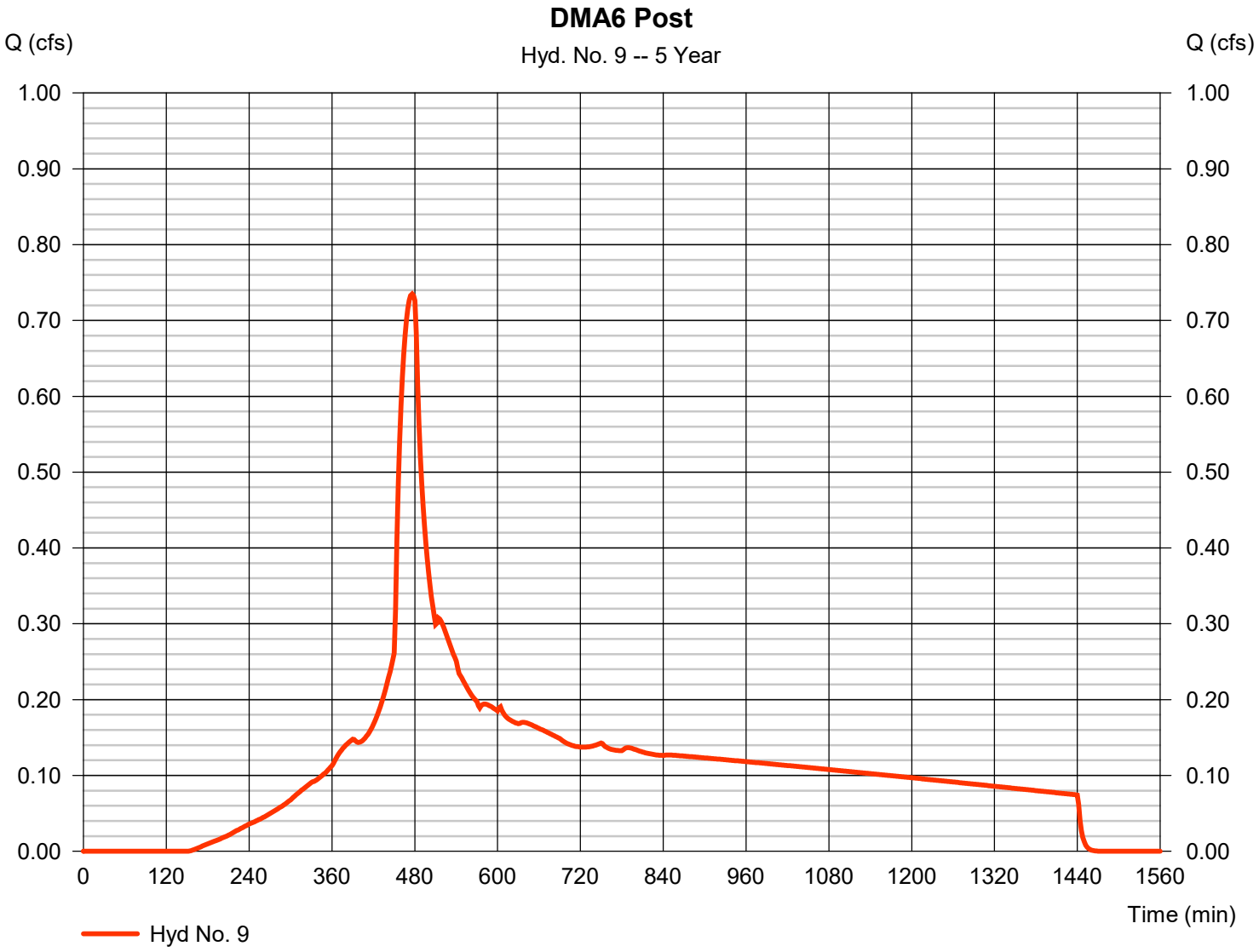
Hydrograph Report

Hyd. No. 9

DMA6 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.735 cfs
Storm frequency	=	5 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	10,451 cuft
Drainage area	=	1.390 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.120 x 98) + (0.270 x 61)] / 1.390



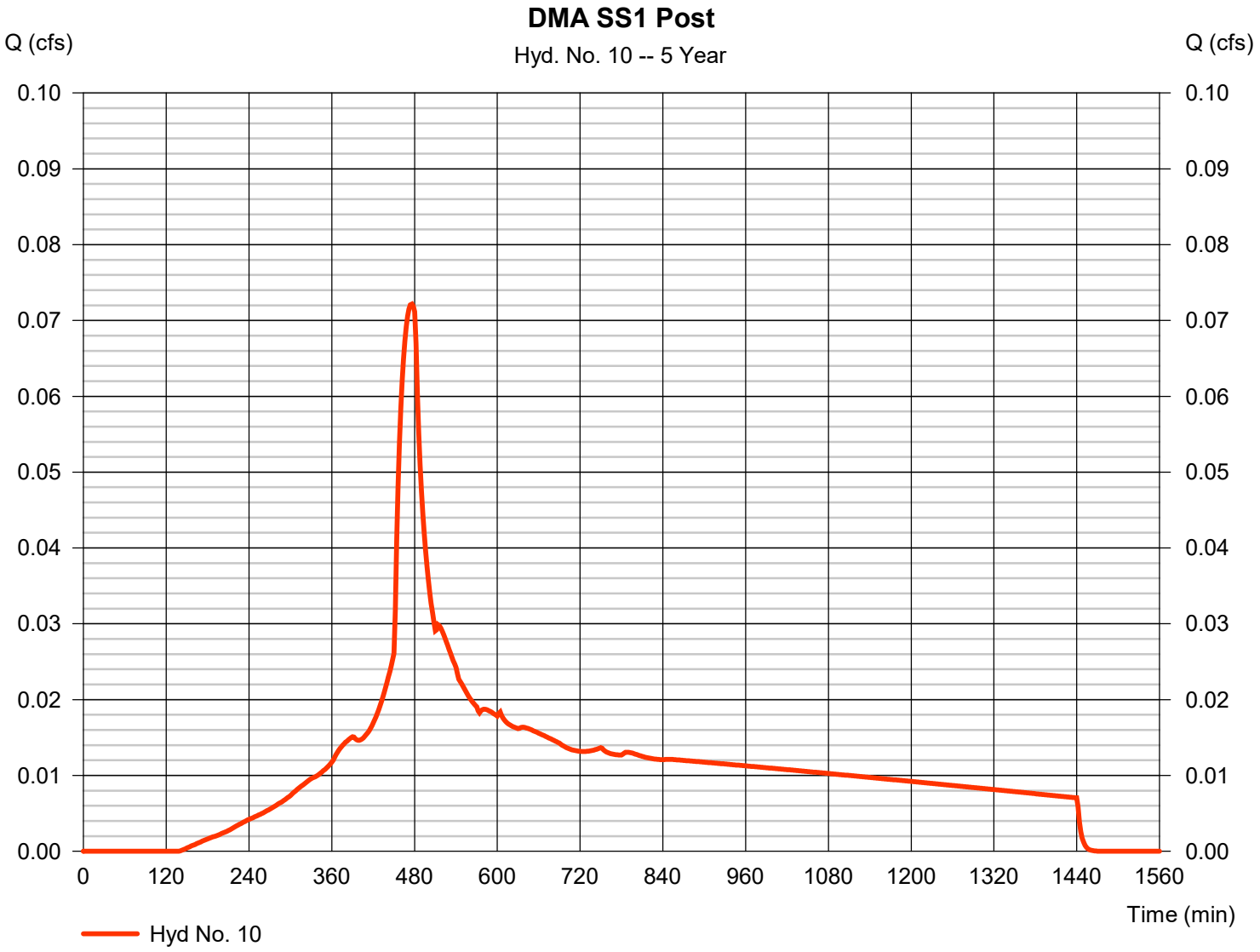
Hydrograph Report

Hyd. No. 10

DMA SS1 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.072 cfs
Storm frequency	=	5 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	1,020 cuft
Drainage area	=	0.130 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.110 x 98) + (0.020 x 61)] / 0.130



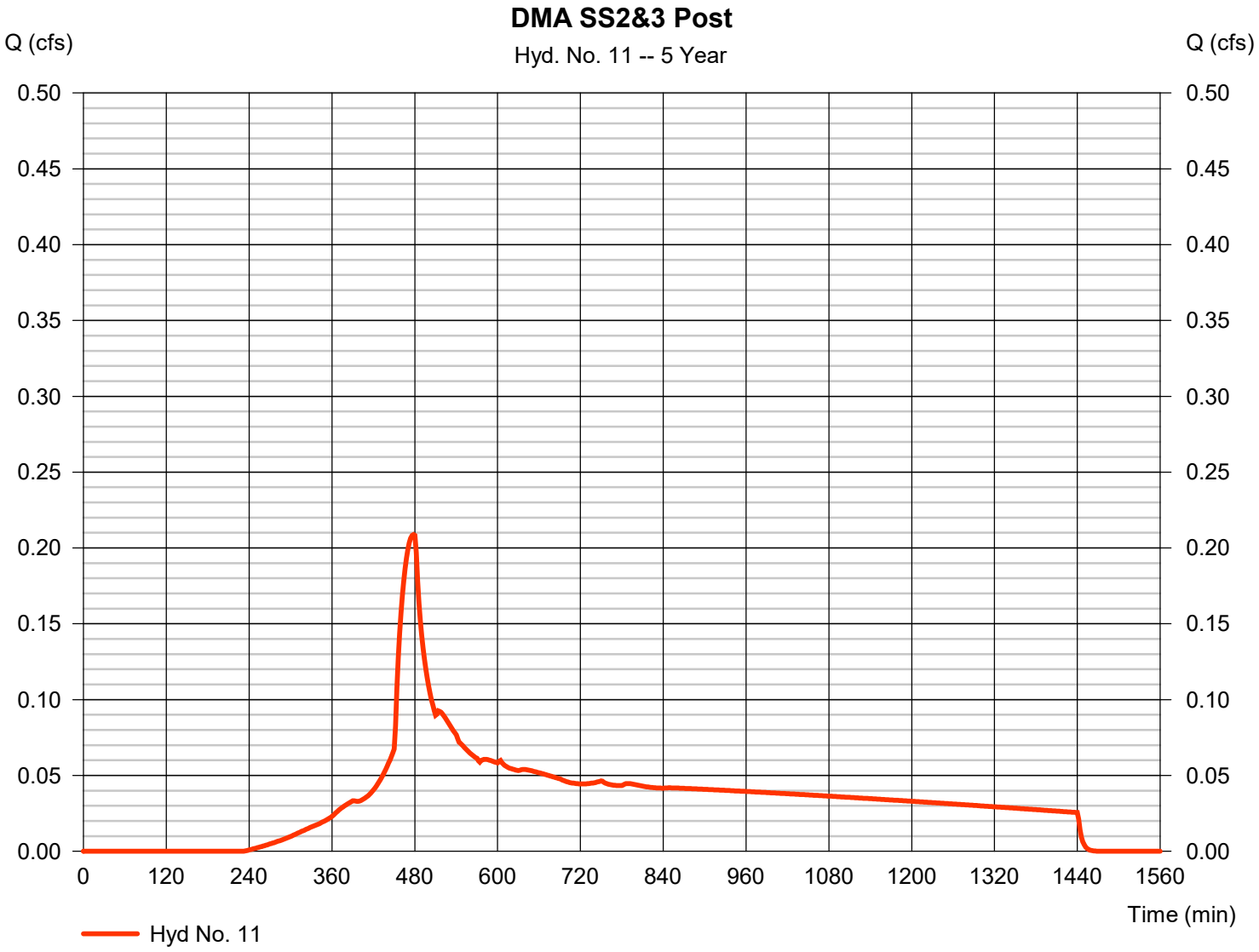
Hydrograph Report

Hyd. No. 11

DMA SS2&3 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.209 cfs
Storm frequency	=	5 yrs	Time to peak	=	478 min
Time interval	=	2 min	Hyd. volume	=	3,138 cuft
Drainage area	=	0.520 ac	Curve number	=	86*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.350 x 98) + (0.170 x 61)] / 0.520



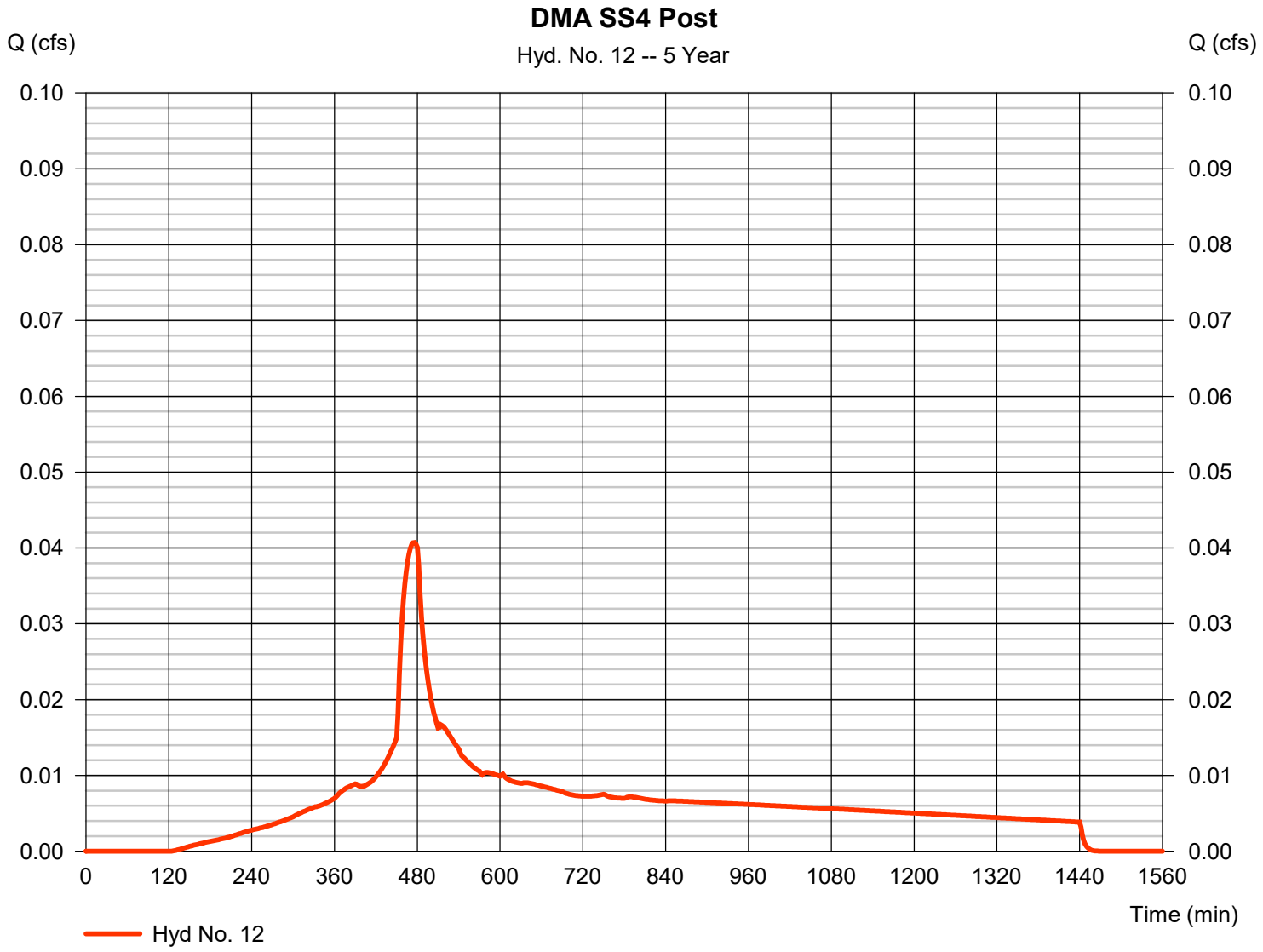
Hydrograph Report

Hyd. No. 12

DMA SS4 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.041 cfs
Storm frequency	=	5 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	573 cuft
Drainage area	=	0.070 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.010 x 61) + (0.060 x 98)] / 0.070

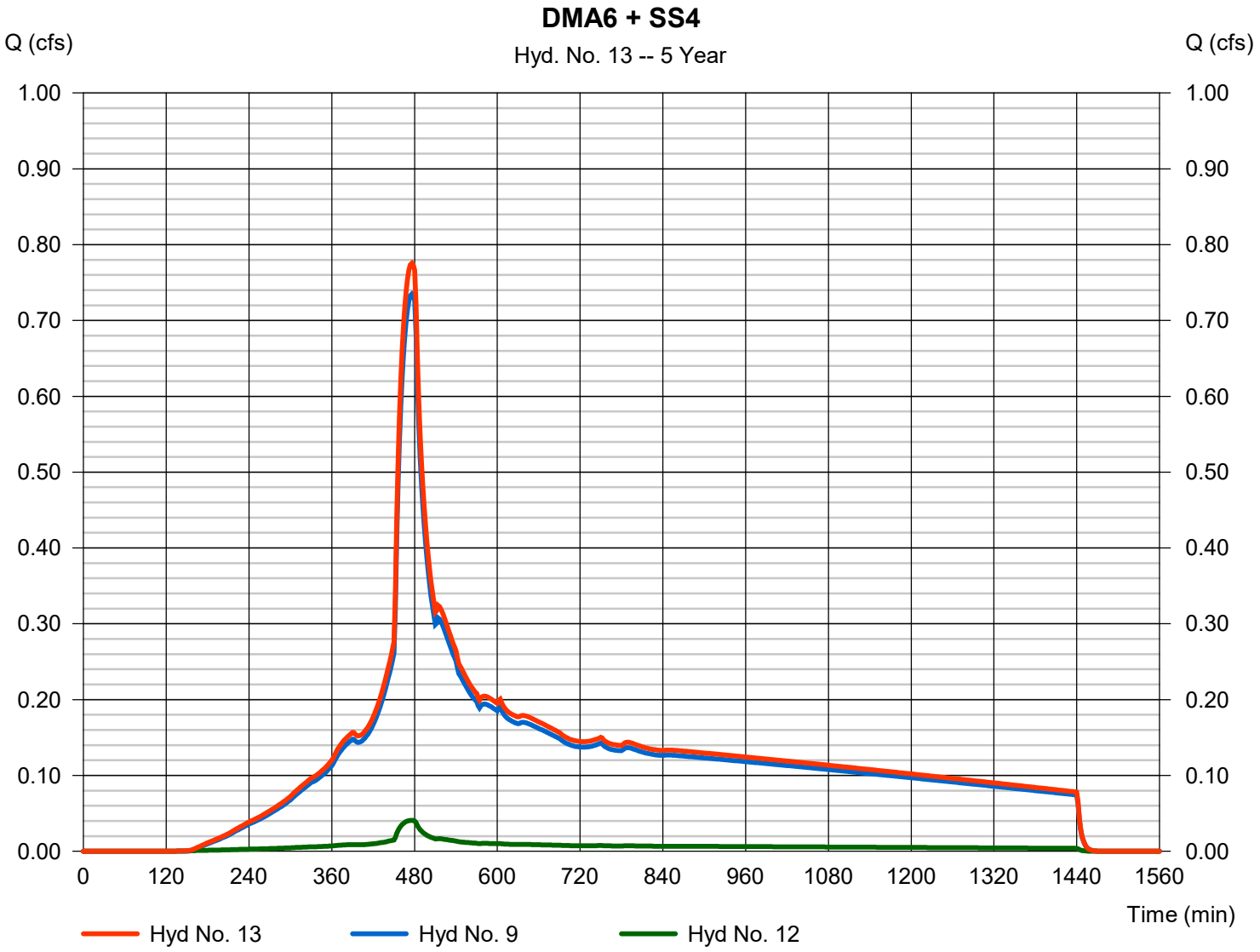


Hydrograph Report

Hyd. No. 13

DMA6 + SS4

Hydrograph type	= Combine	Peak discharge	= 0.776 cfs
Storm frequency	= 5 yrs	Time to peak	= 476 min
Time interval	= 2 min	Hyd. volume	= 11,023 cuft
Inflow hyds.	= 9, 12	Contrib. drain. area	= 1.460 ac



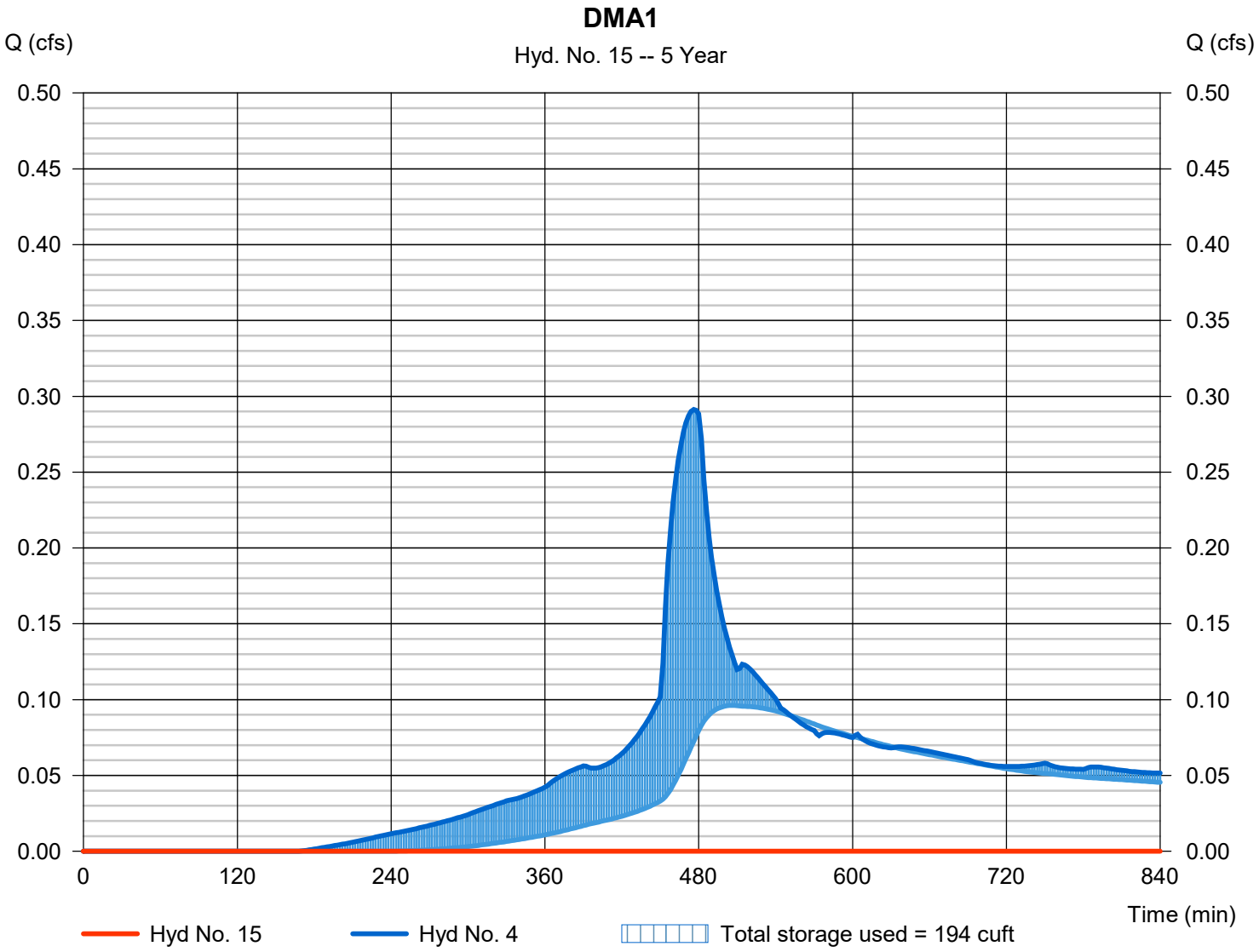
Hydrograph Report

Hyd. No. 15

DMA1

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	5 yrs	Time to peak	=	492 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	4 - DMA1 Post	Max. Elevation	=	100.60 ft
Reservoir name	=	DMA1	Max. Storage	=	194 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



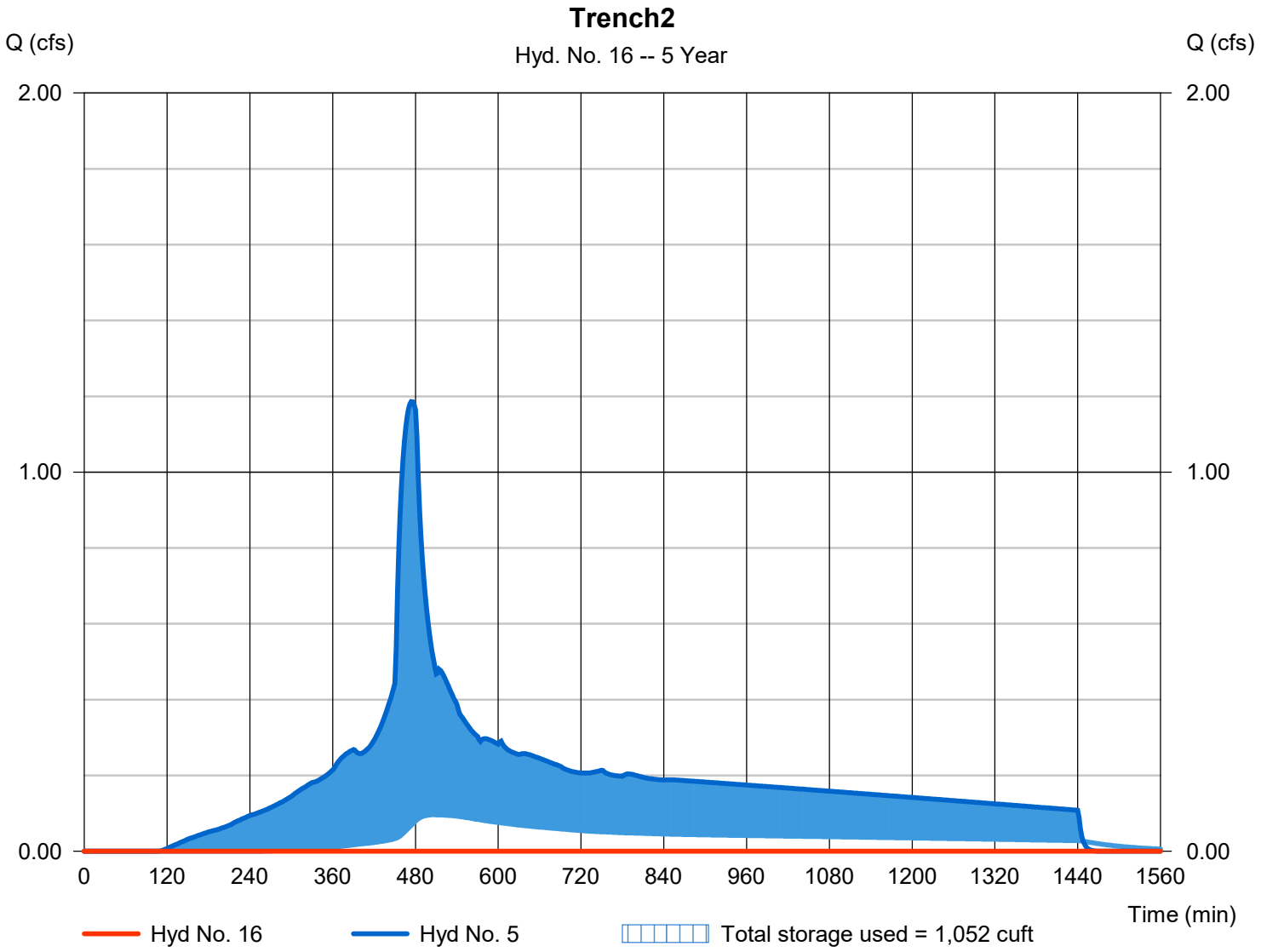
Hydrograph Report

Hyd. No. 16

Trench2

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	5 yrs	Time to peak	=	384 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	5 - DMA2 Post	Max. Elevation	=	101.19 ft
Reservoir name	=	Trench2	Max. Storage	=	1,052 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



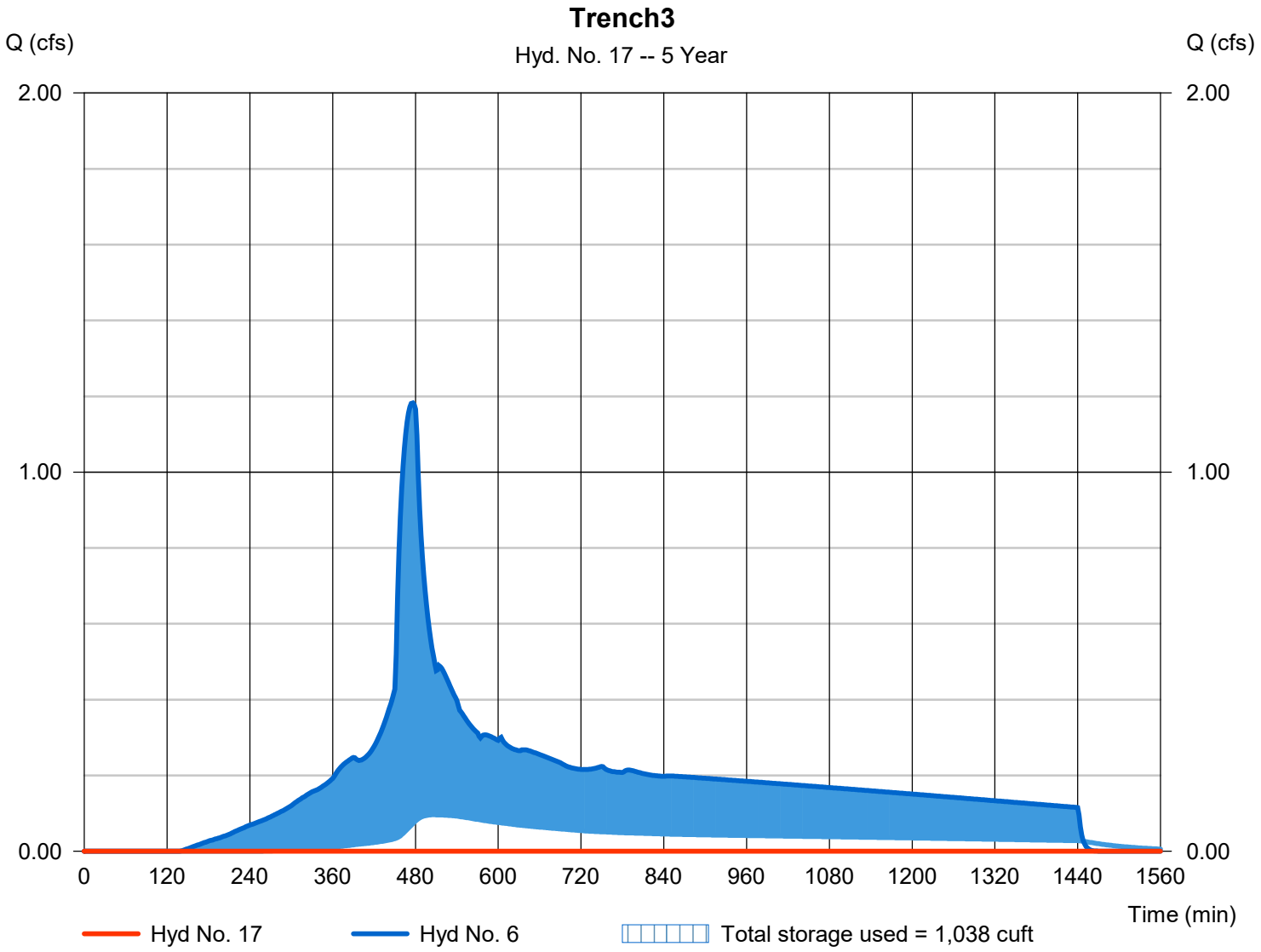
Hydrograph Report

Hyd. No. 17

Trench3

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	5 yrs	Time to peak	=	410 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	6 - DMA3 Post	Max. Elevation	=	101.16 ft
Reservoir name	=	Trench3	Max. Storage	=	1,038 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



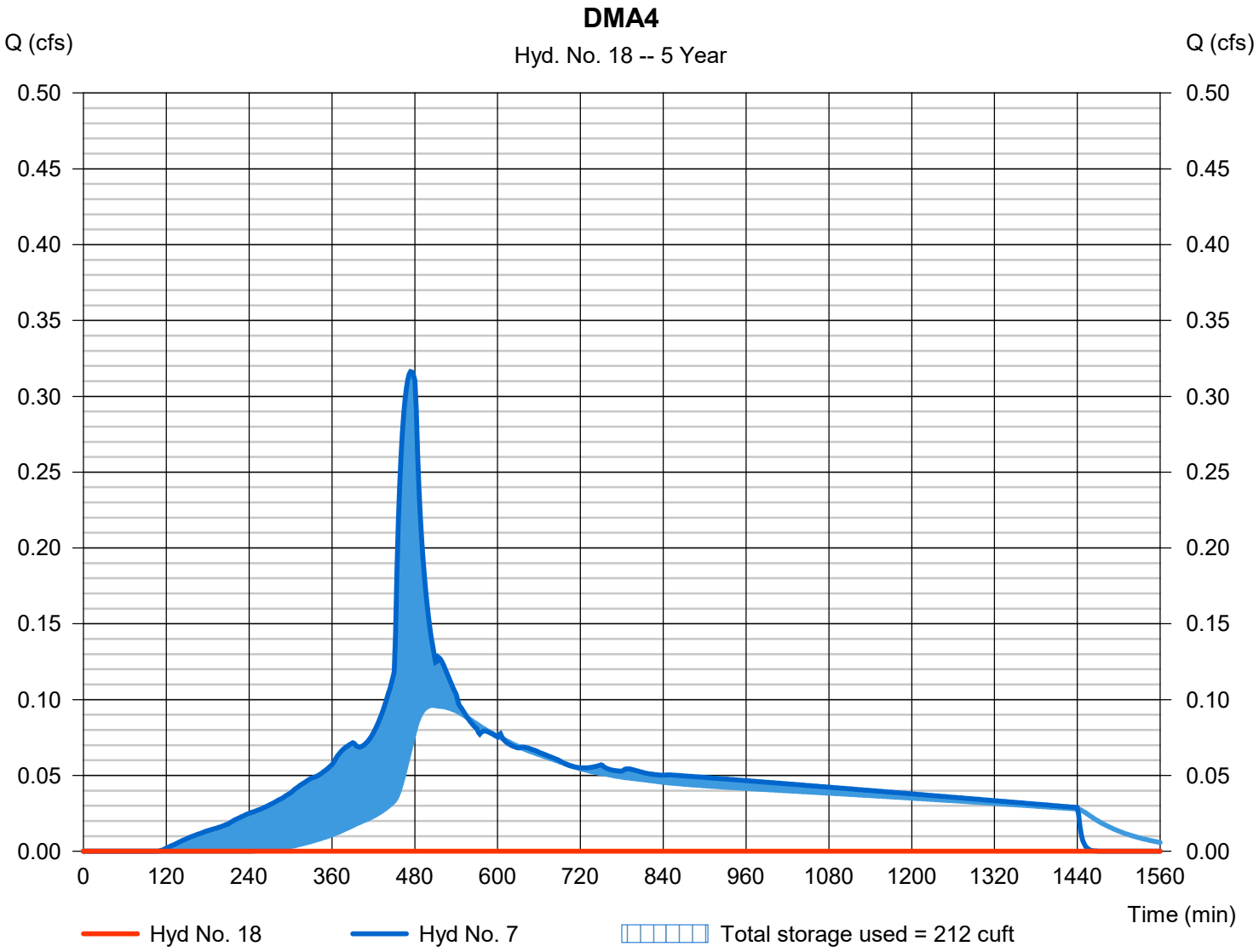
Hydrograph Report

Hyd. No. 18

DMA4

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	5 yrs	Time to peak	=	470 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	7 - DMA4 Post	Max. Elevation	=	400.95 ft
Reservoir name	=	DMA4	Max. Storage	=	212 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



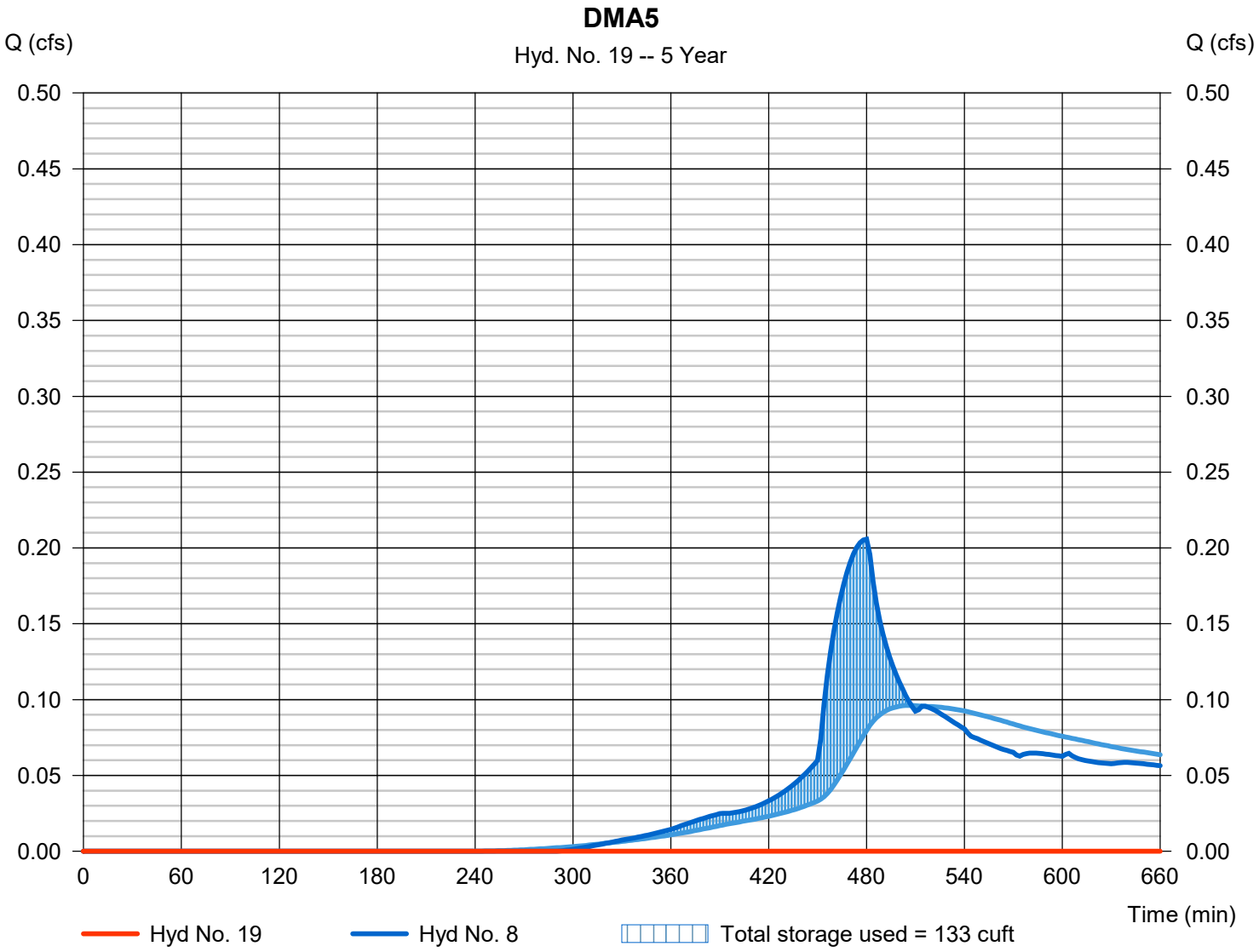
Hydrograph Report

Hyd. No. 19

DMA5

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	5 yrs	Time to peak	=	484 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	8 - DMA5 Post	Max. Elevation	=	500.39 ft
Reservoir name	=	DMA5	Max. Storage	=	133 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



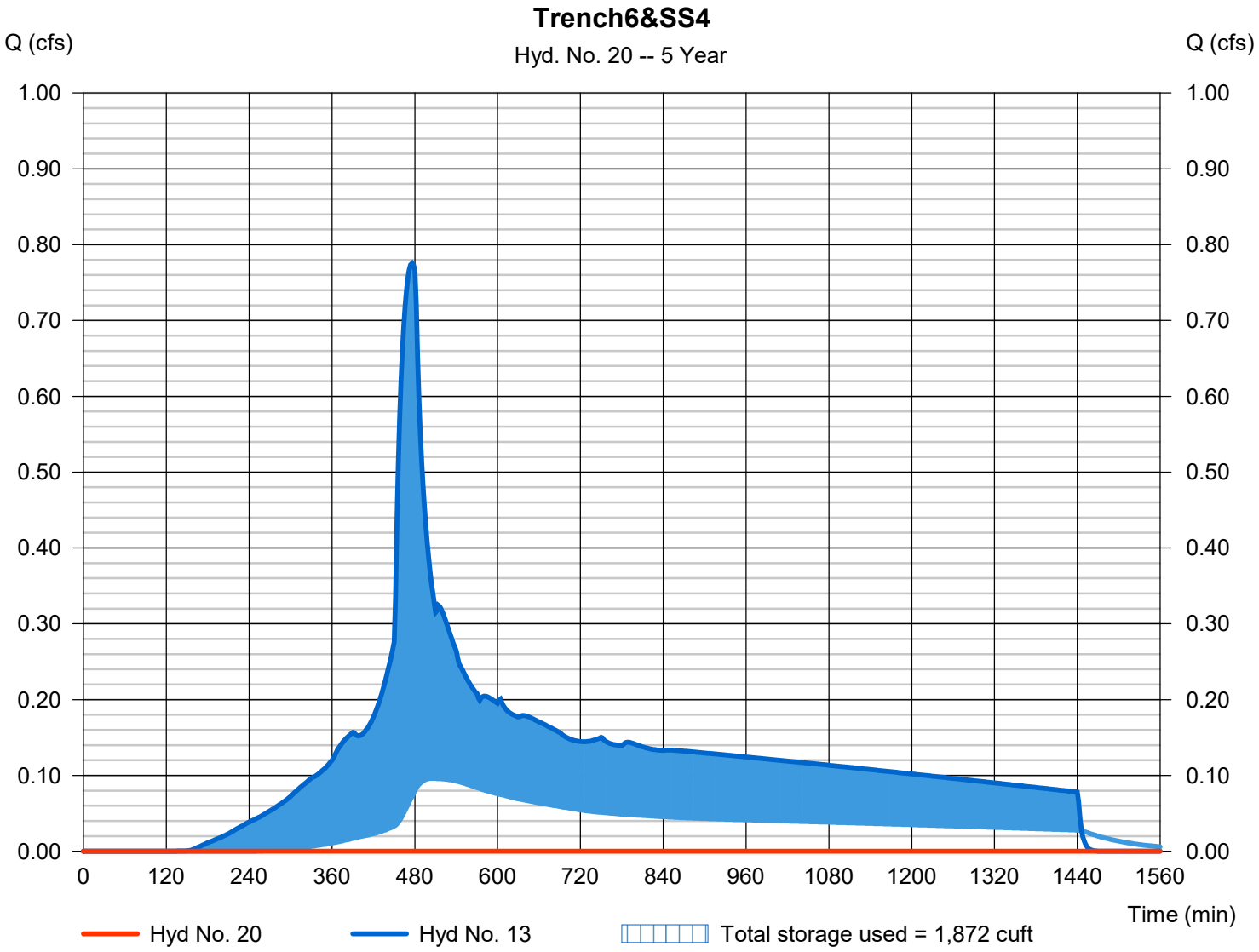
Hydrograph Report

Hyd. No. 20

Trench6&SS4

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	5 yrs	Time to peak	=	290 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	13 - DMA6 + SS4	Max. Elevation	=	101.27 ft
Reservoir name	=	Trench6	Max. Storage	=	1,872 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



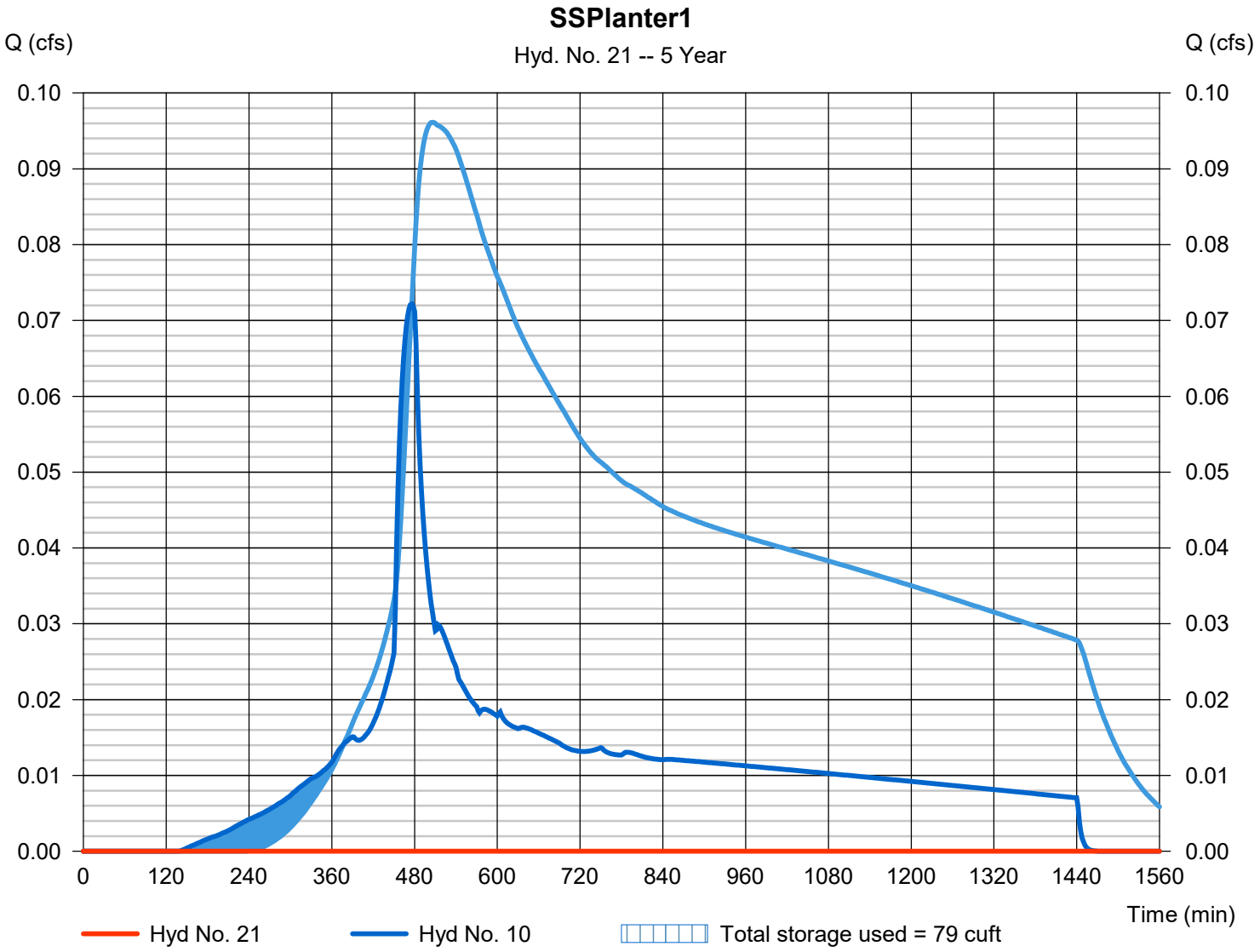
Hydrograph Report

Hyd. No. 21

SSPlanter1

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	5 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	10 - DMA SS1 Post	Max. Elevation	=	100.56 ft
Reservoir name	=	Planter1	Max. Storage	=	79 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



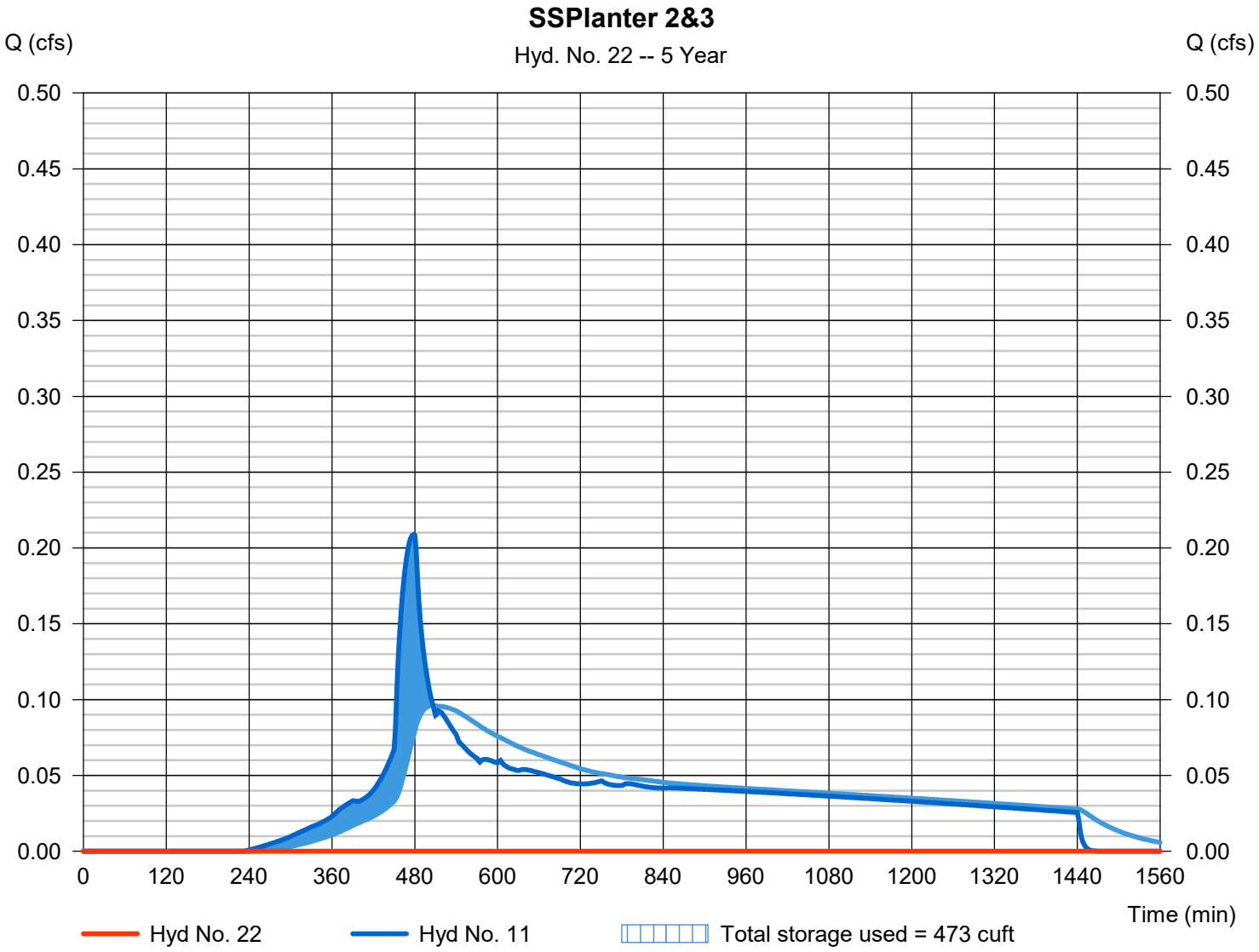
Hydrograph Report

Hyd. No. 22

SSPlanter 2&3

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 5 yrs	Time to peak	= 504 min
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 11 - DMA SS2&3 Post	Max. Elevation	= 101.38 ft
Reservoir name	= Planter2	Max. Storage	= 473 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

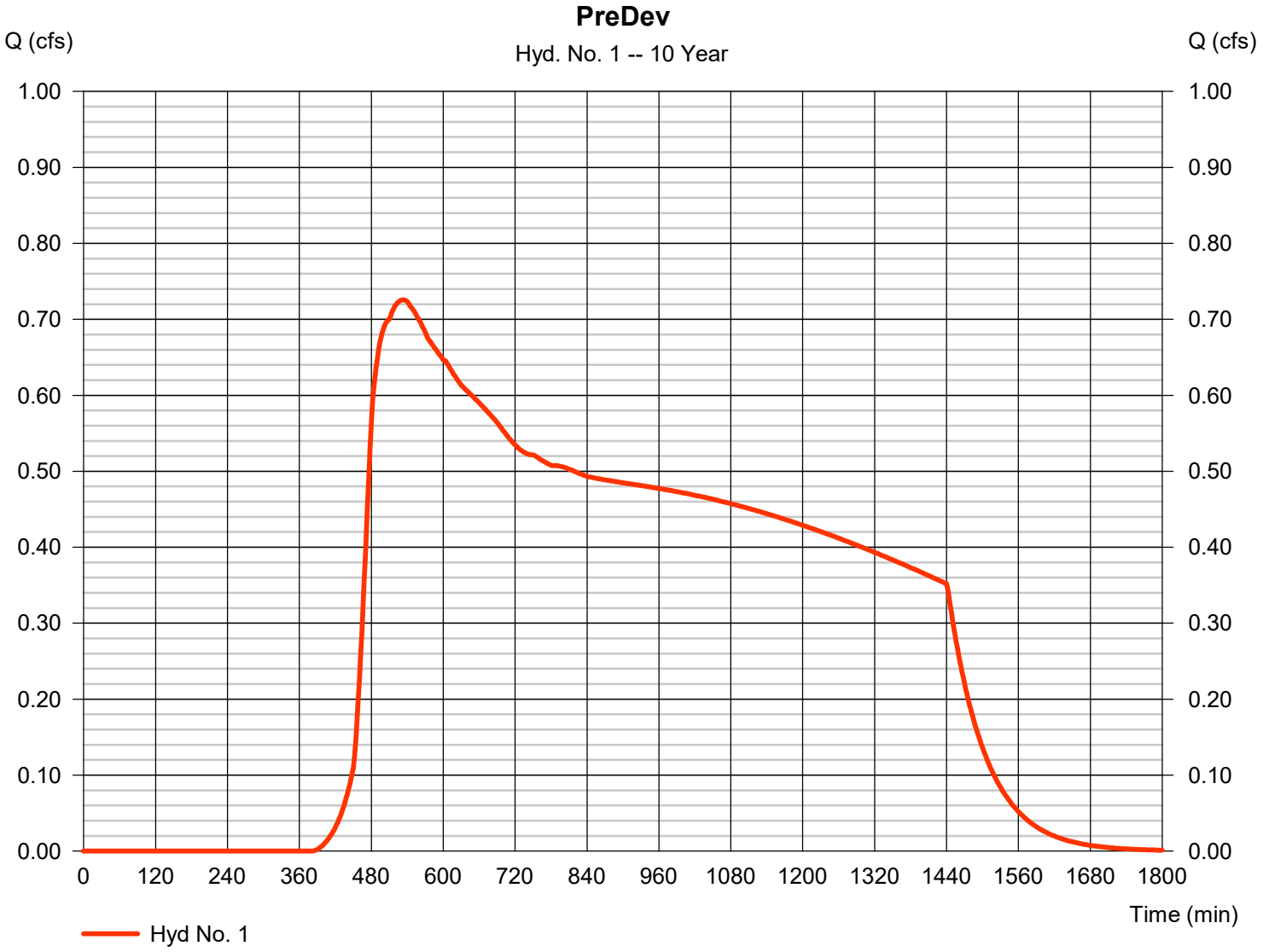


Hydrograph Report

Hyd. No. 1

PreDev

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.726 cfs
Storm frequency	=	10 yrs	Time to peak	=	532 min
Time interval	=	2 min	Hyd. volume	=	30,618 cuft
Drainage area	=	7.750 ac	Curve number	=	72
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	62.20 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



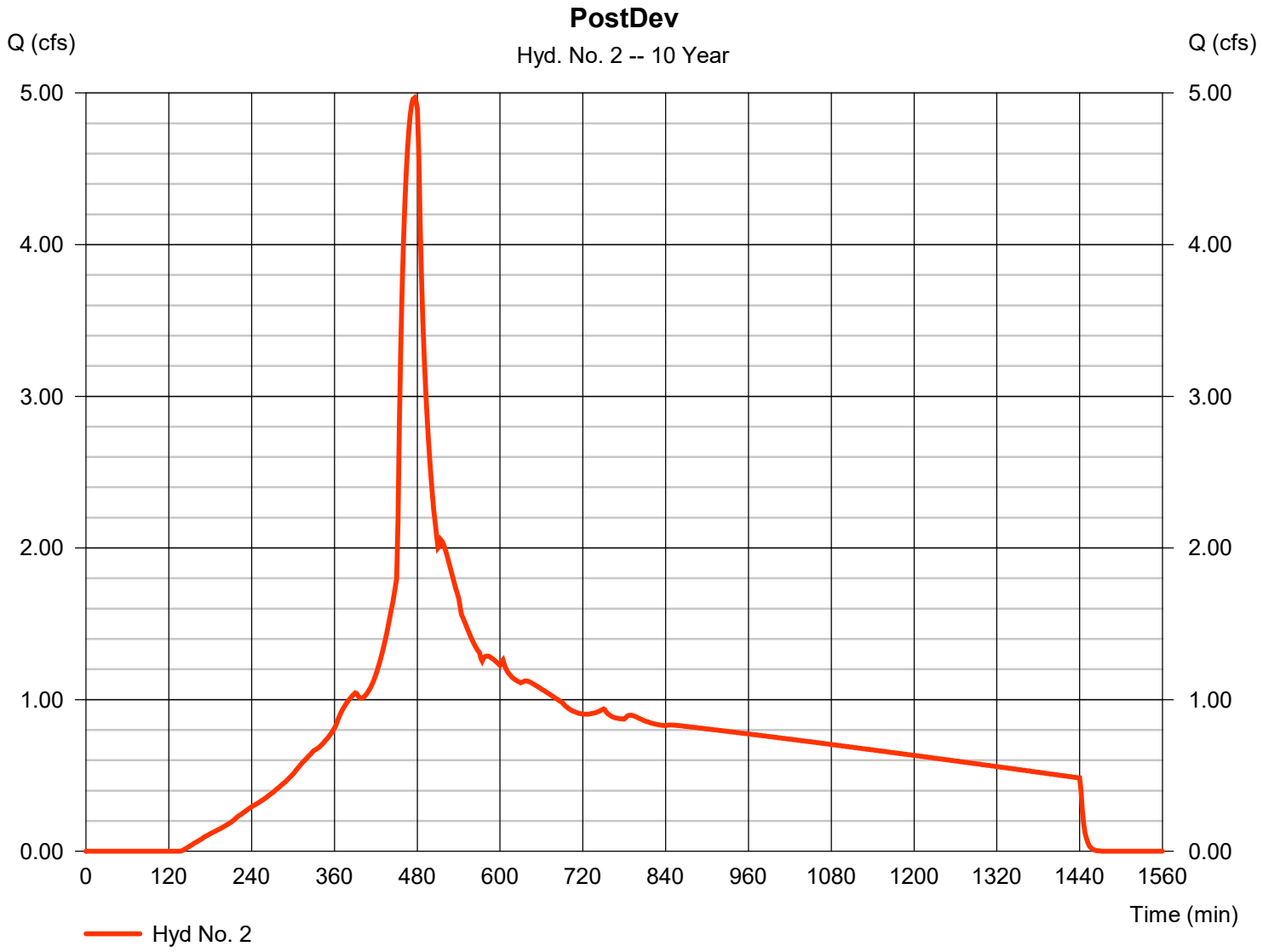
Hydrograph Report

Hyd. No. 2

PostDev

Hydrograph type	= SBUH Runoff	Peak discharge	= 4.968 cfs
Storm frequency	= 10 yrs	Time to peak	= 476 min
Time interval	= 2 min	Hyd. volume	= 70,157 cuft
Drainage area	= 7.750 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(1.460 x 61) + (6.290 x 98)] / 7.750



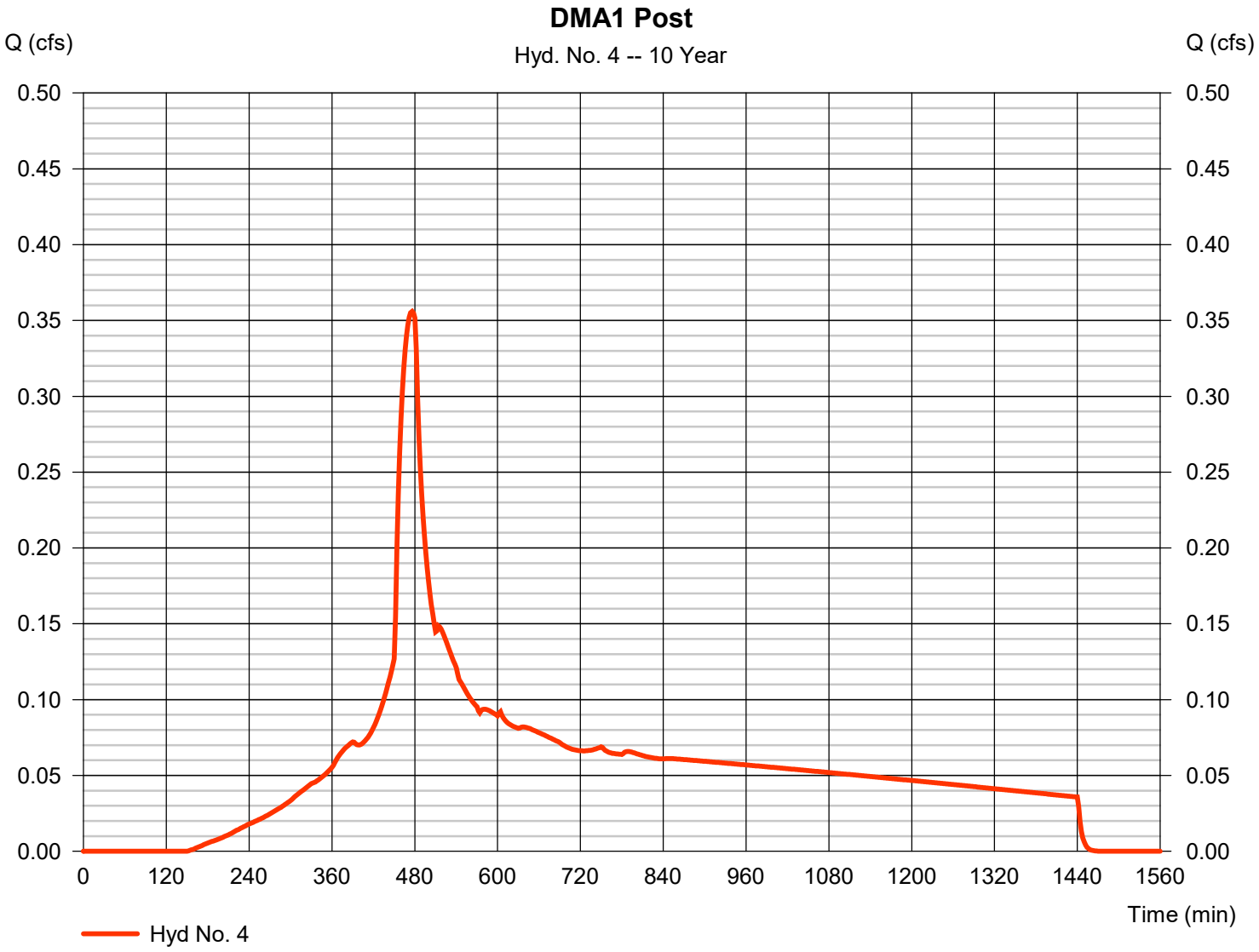
Hydrograph Report

Hyd. No. 4

DMA1 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.356 cfs
Storm frequency	=	10 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	5,055 cuft
Drainage area	=	0.580 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.460 x 98) + (0.120 x 61)] / 0.580



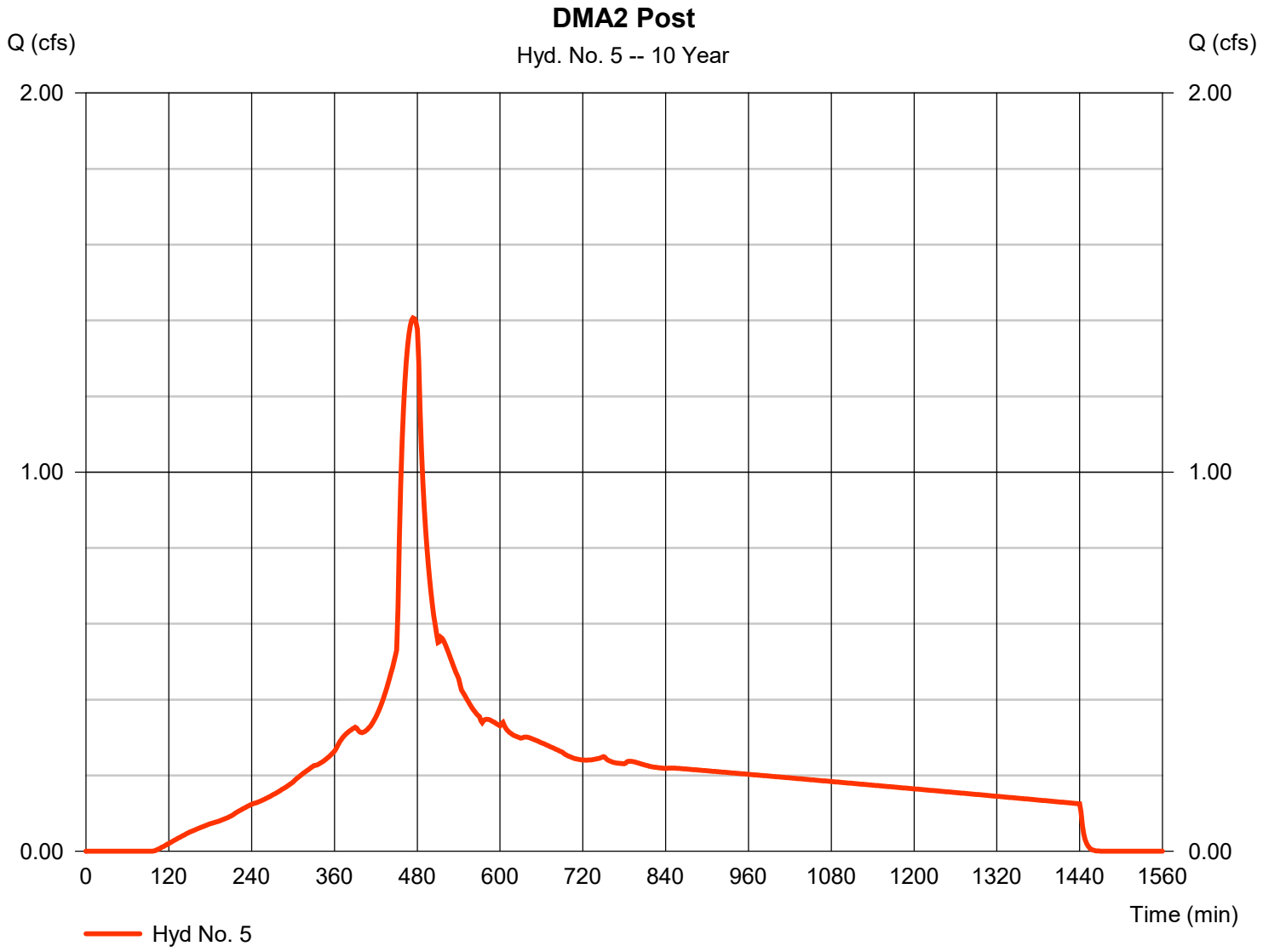
Hydrograph Report

Hyd. No. 5

DMA2 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.407 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	19,727 cuft
Drainage area	=	1.950 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.750 x 98) + (0.200 x 61)] / 1.950



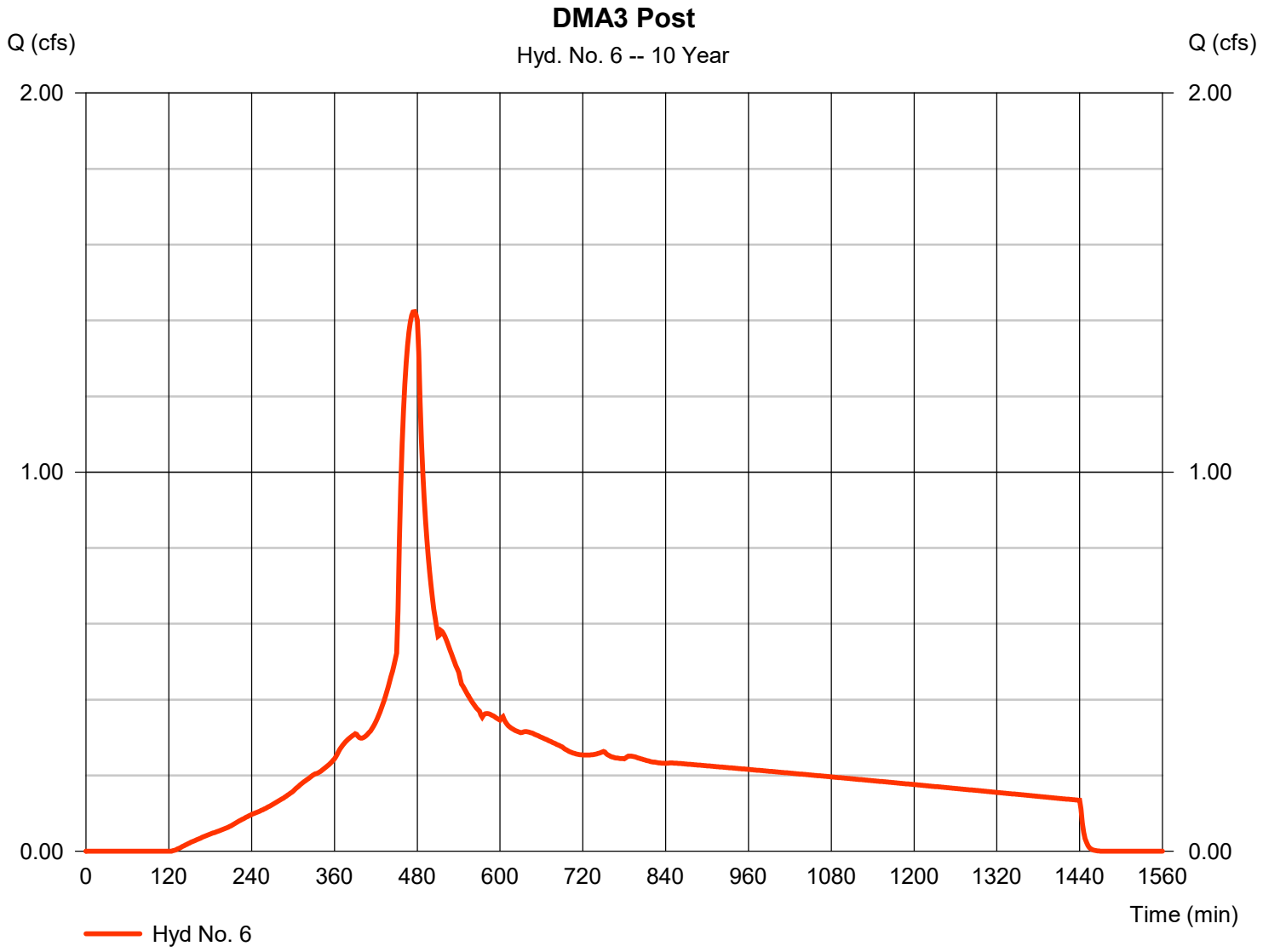
Hydrograph Report

Hyd. No. 6

DMA3 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.423 cfs
Storm frequency	=	10 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	20,017 cuft
Drainage area	=	2.130 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.810 x 98) + (0.320 x 61)] / 2.130



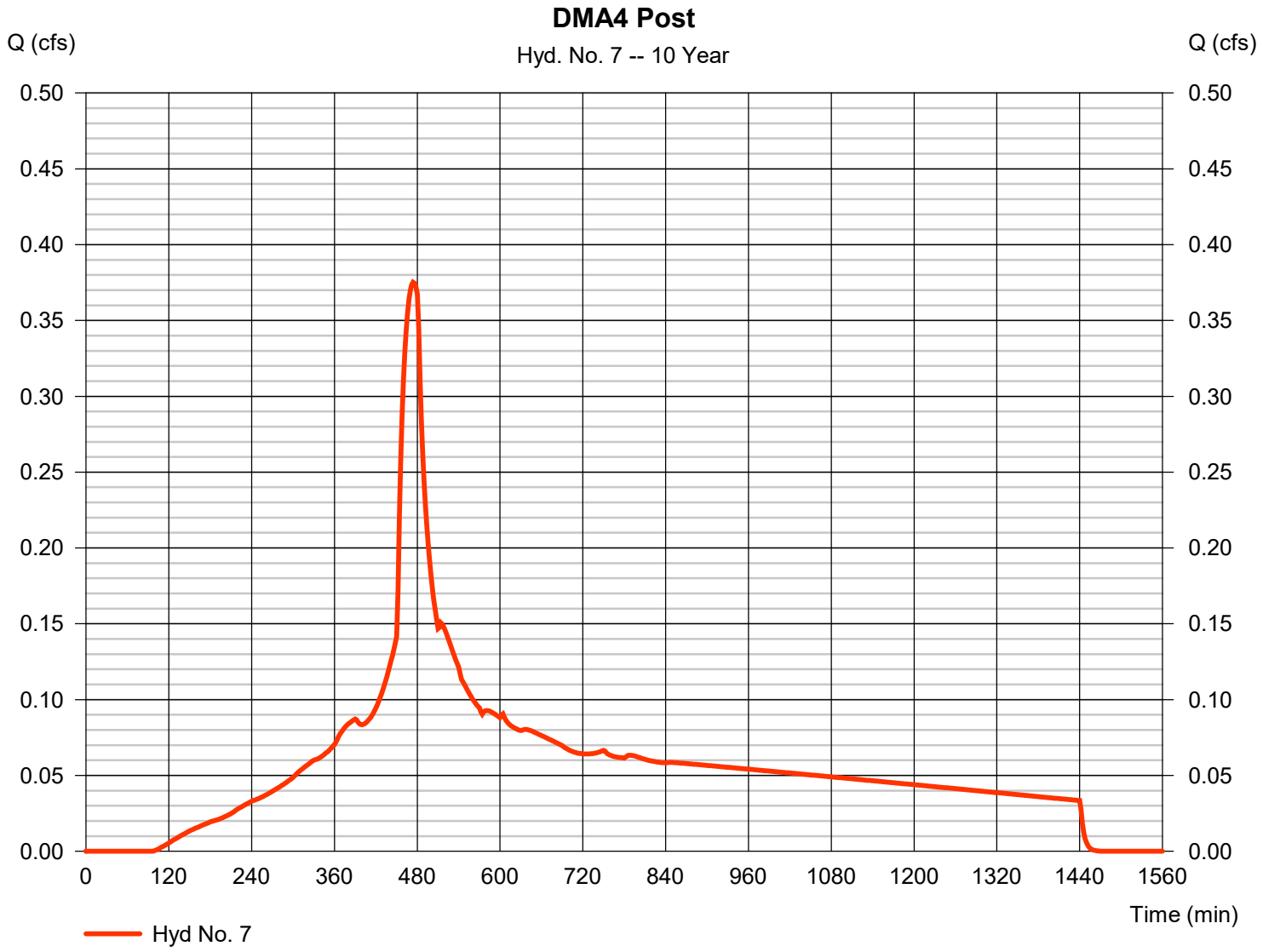
Hydrograph Report

Hyd. No. 7

DMA4 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.375 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	5,261 cuft
Drainage area	=	0.520 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.460 x 98) + (0.060 x 61)] / 0.520



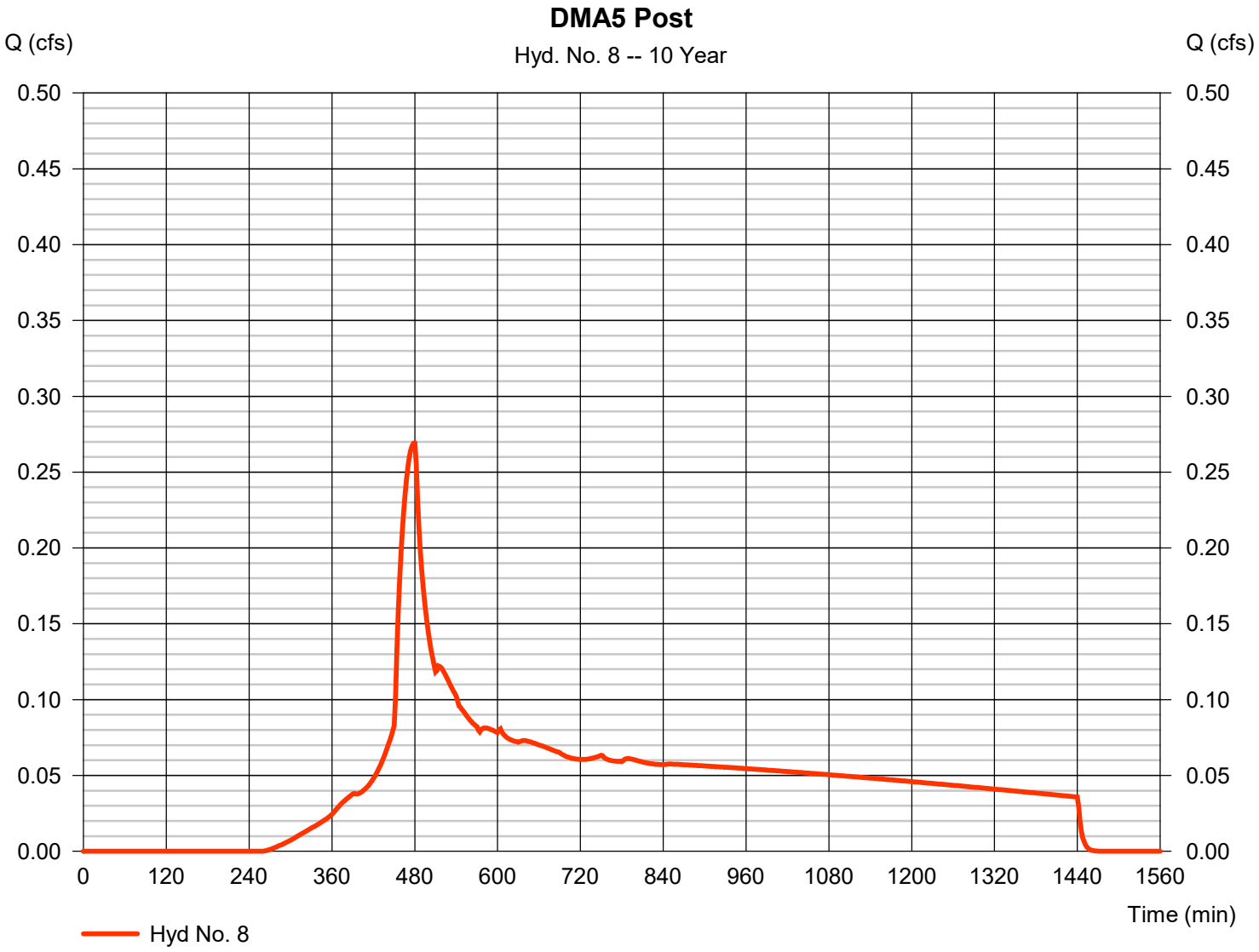
Hydrograph Report

Hyd. No. 8

DMA5 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.269 cfs
Storm frequency	=	10 yrs	Time to peak	=	478 min
Time interval	=	2 min	Hyd. volume	=	4,172 cuft
Drainage area	=	0.660 ac	Curve number	=	82*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.380 x 98) + (0.280 x 61)] / 0.660



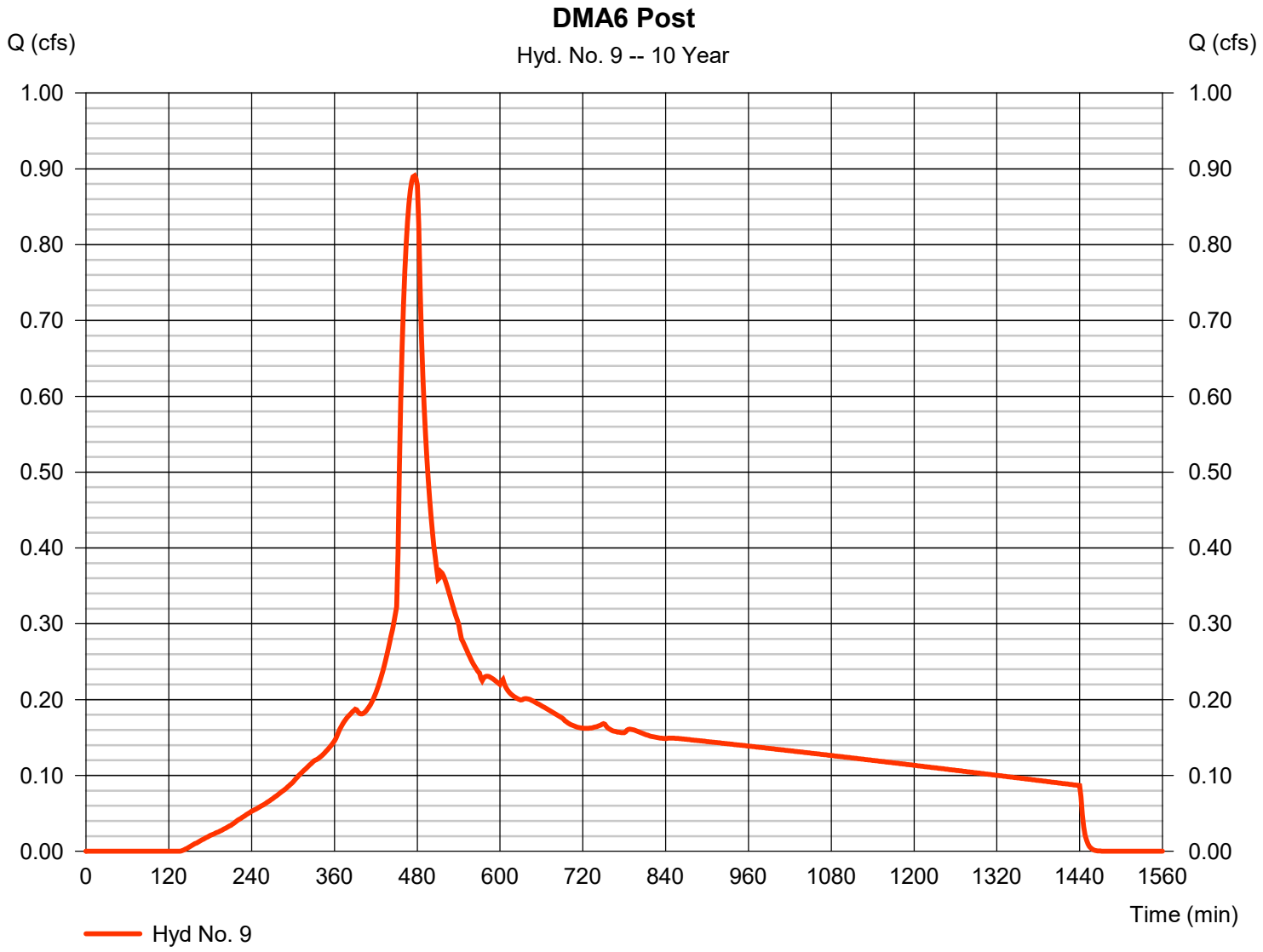
Hydrograph Report

Hyd. No. 9

DMA6 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.891 cfs
Storm frequency	=	10 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	12,583 cuft
Drainage area	=	1.390 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.120 x 98) + (0.270 x 61)] / 1.390



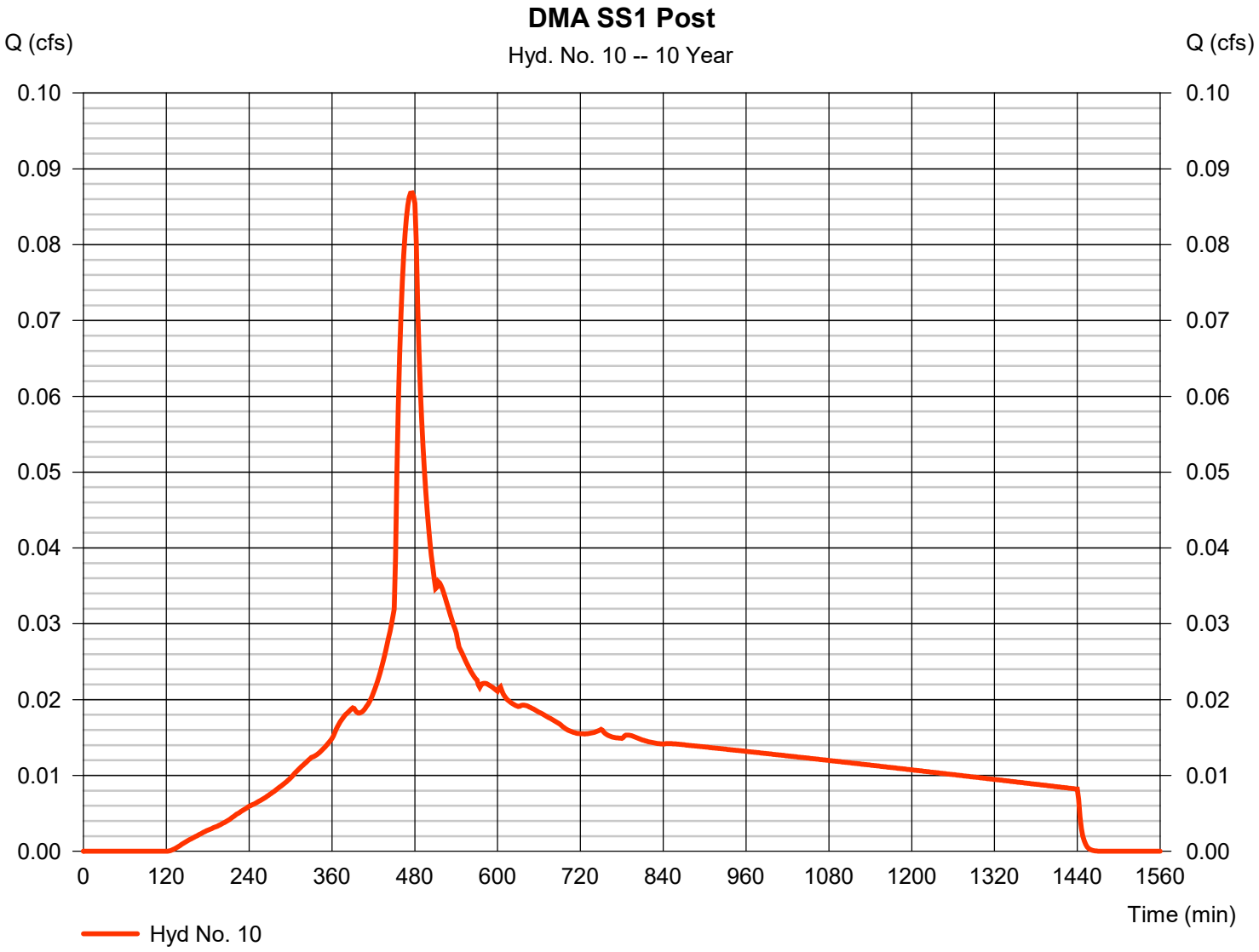
Hydrograph Report

Hyd. No. 10

DMA SS1 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.087 cfs
Storm frequency	=	10 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	1,222 cuft
Drainage area	=	0.130 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.110 x 98) + (0.020 x 61)] / 0.130



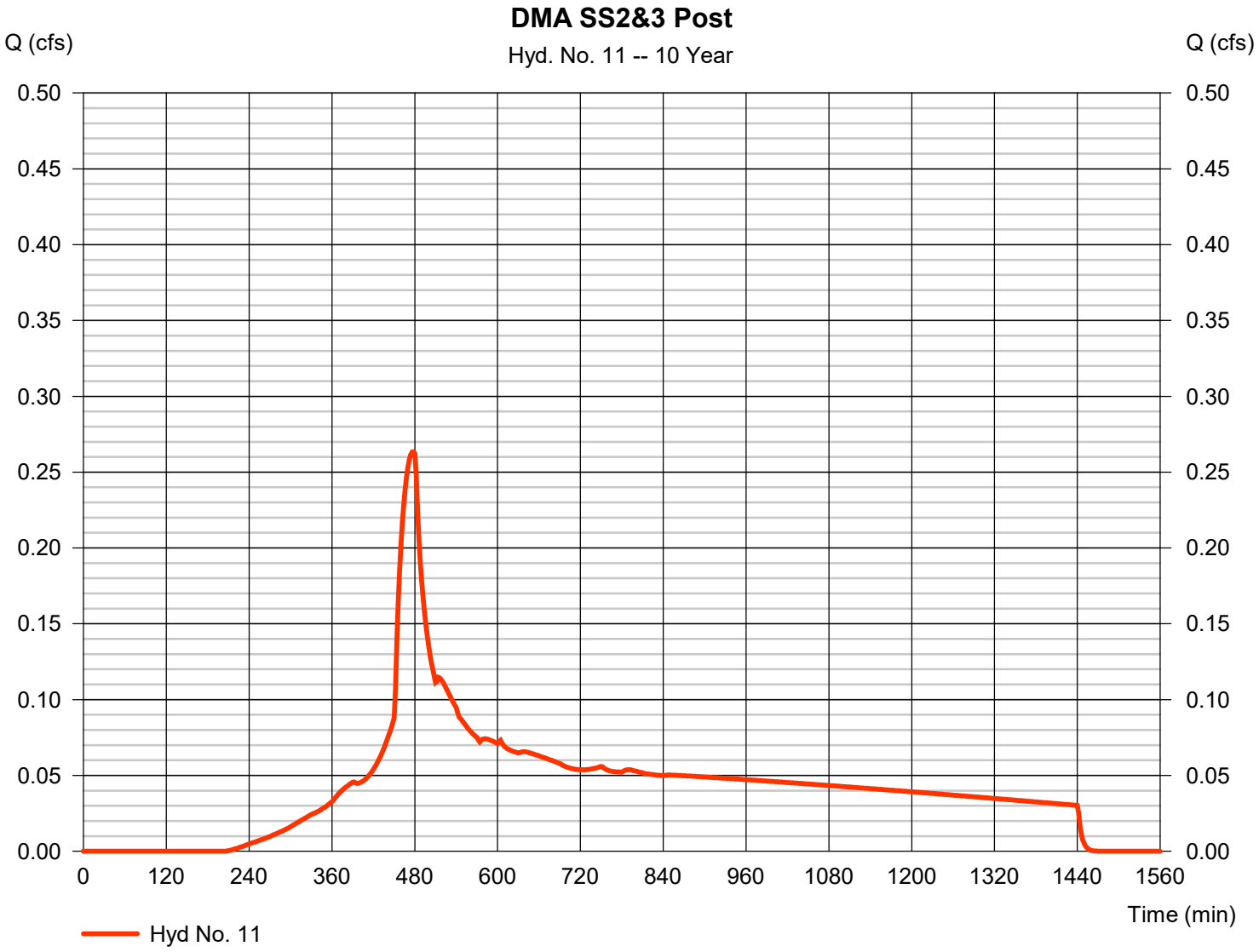
Hydrograph Report

Hyd. No. 11

DMA SS2&3 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.263 cfs
Storm frequency	=	10 yrs	Time to peak	=	478 min
Time interval	=	2 min	Hyd. volume	=	3,877 cuft
Drainage area	=	0.520 ac	Curve number	=	86*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.350 x 98) + (0.170 x 61)] / 0.520



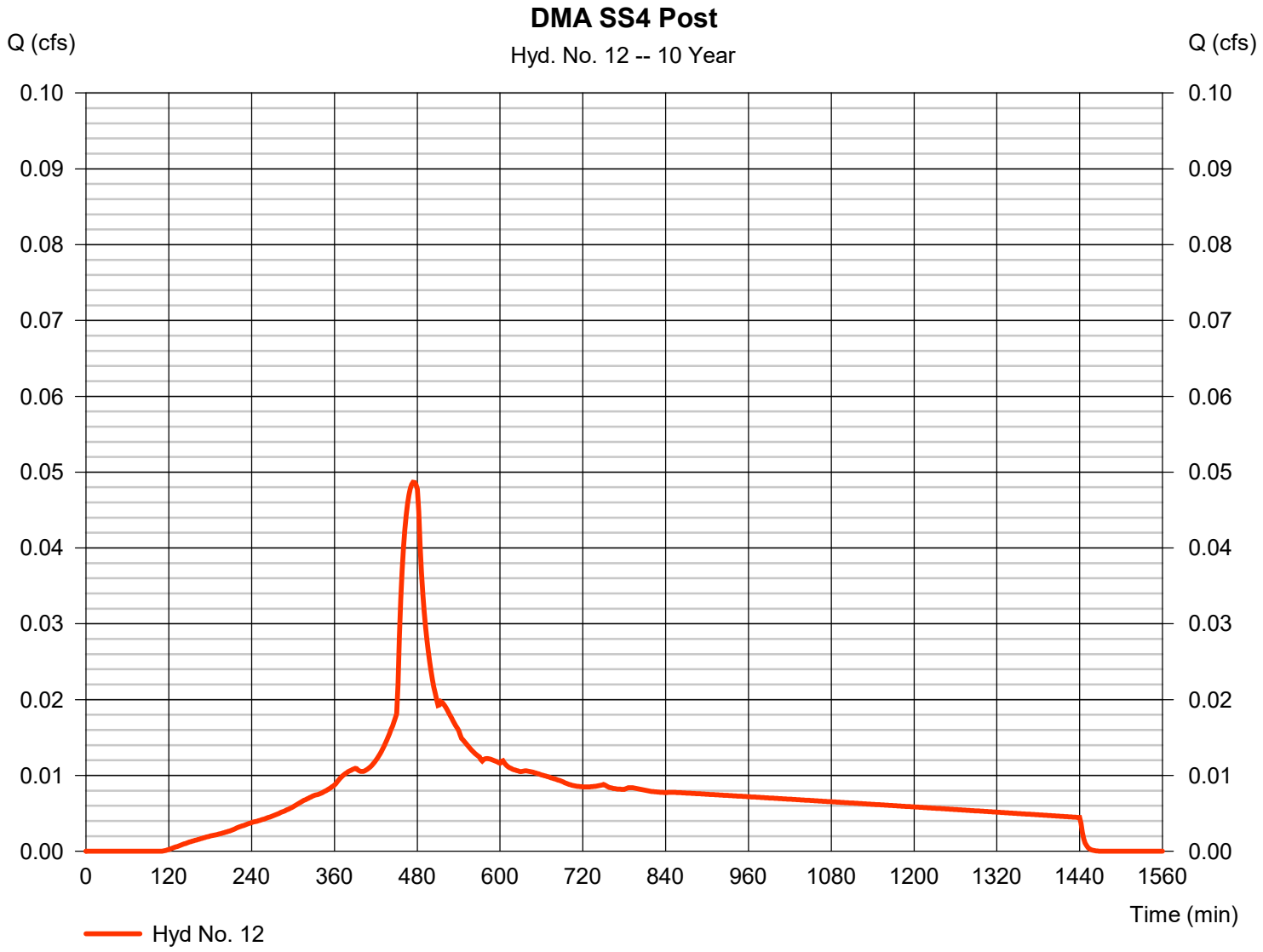
Hydrograph Report

Hyd. No. 12

DMA SS4 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.049 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	683 cuft
Drainage area	=	0.070 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.010 x 61) + (0.060 x 98)] / 0.070

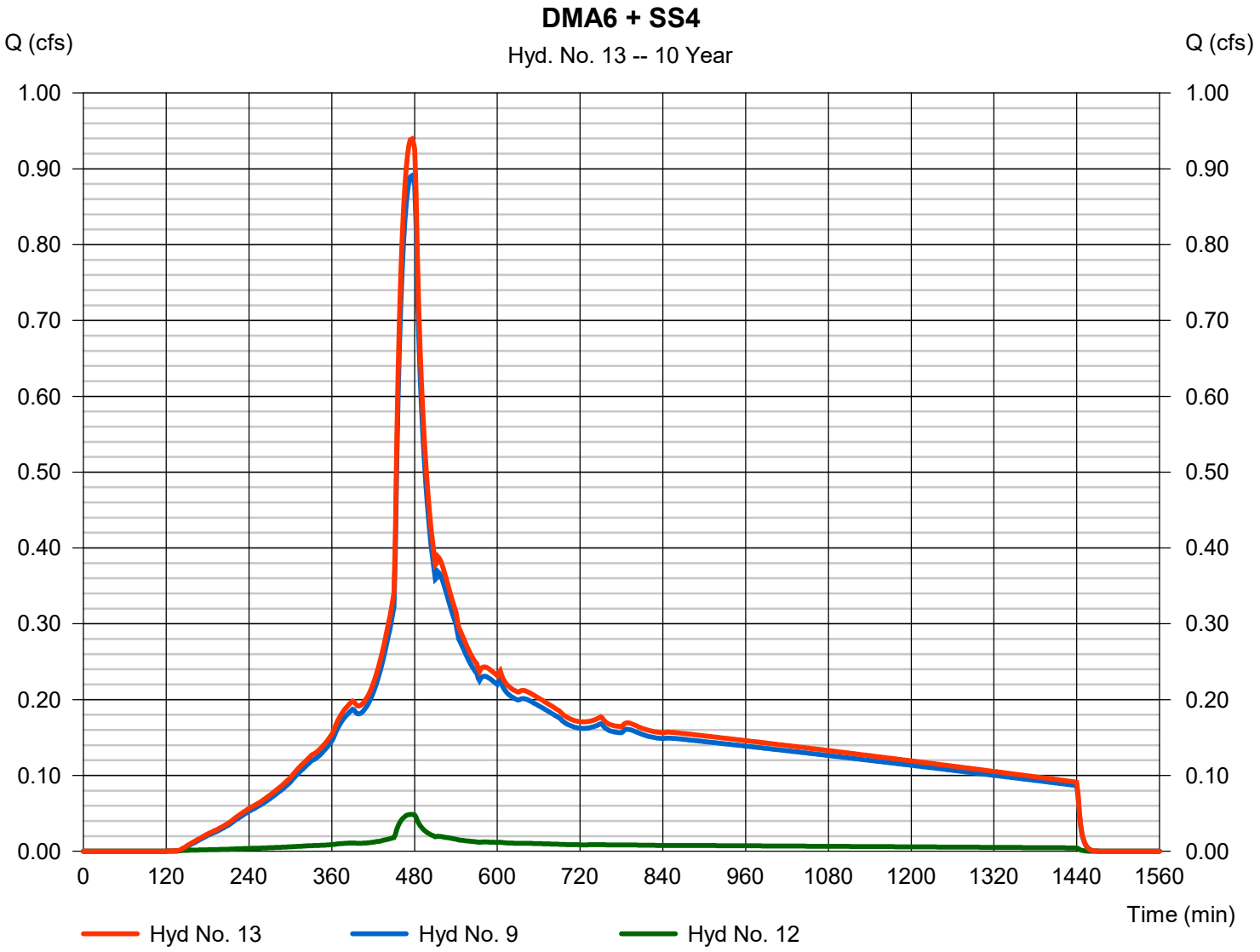


Hydrograph Report

Hyd. No. 13

DMA6 + SS4

Hydrograph type	= Combine	Peak discharge	= 0.940 cfs
Storm frequency	= 10 yrs	Time to peak	= 476 min
Time interval	= 2 min	Hyd. volume	= 13,266 cuft
Inflow hyds.	= 9, 12	Contrib. drain. area	= 1.460 ac



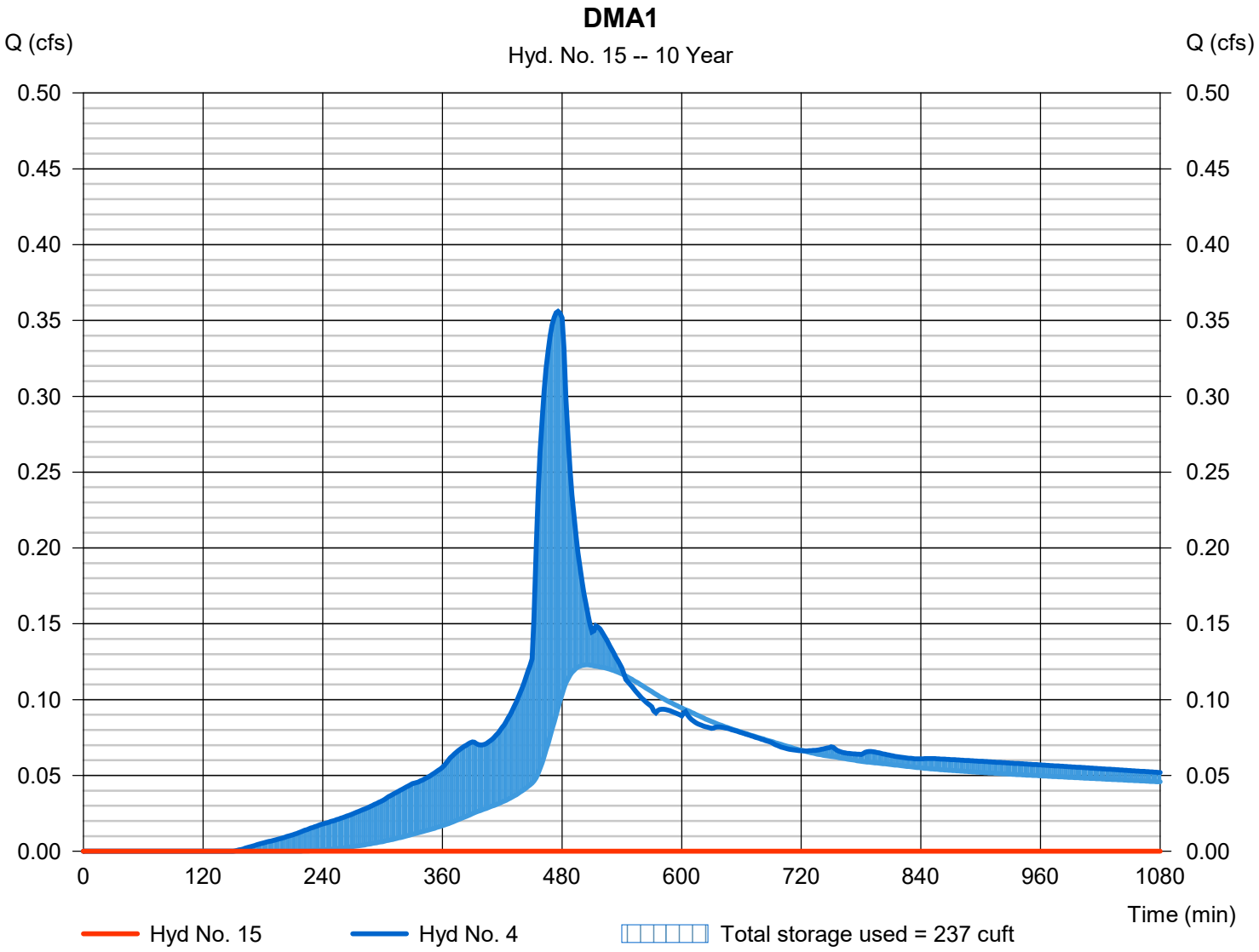
Hydrograph Report

Hyd. No. 15

DMA1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 462 min
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - DMA1 Post	Max. Elevation	= 100.73 ft
Reservoir name	= DMA1	Max. Storage	= 237 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



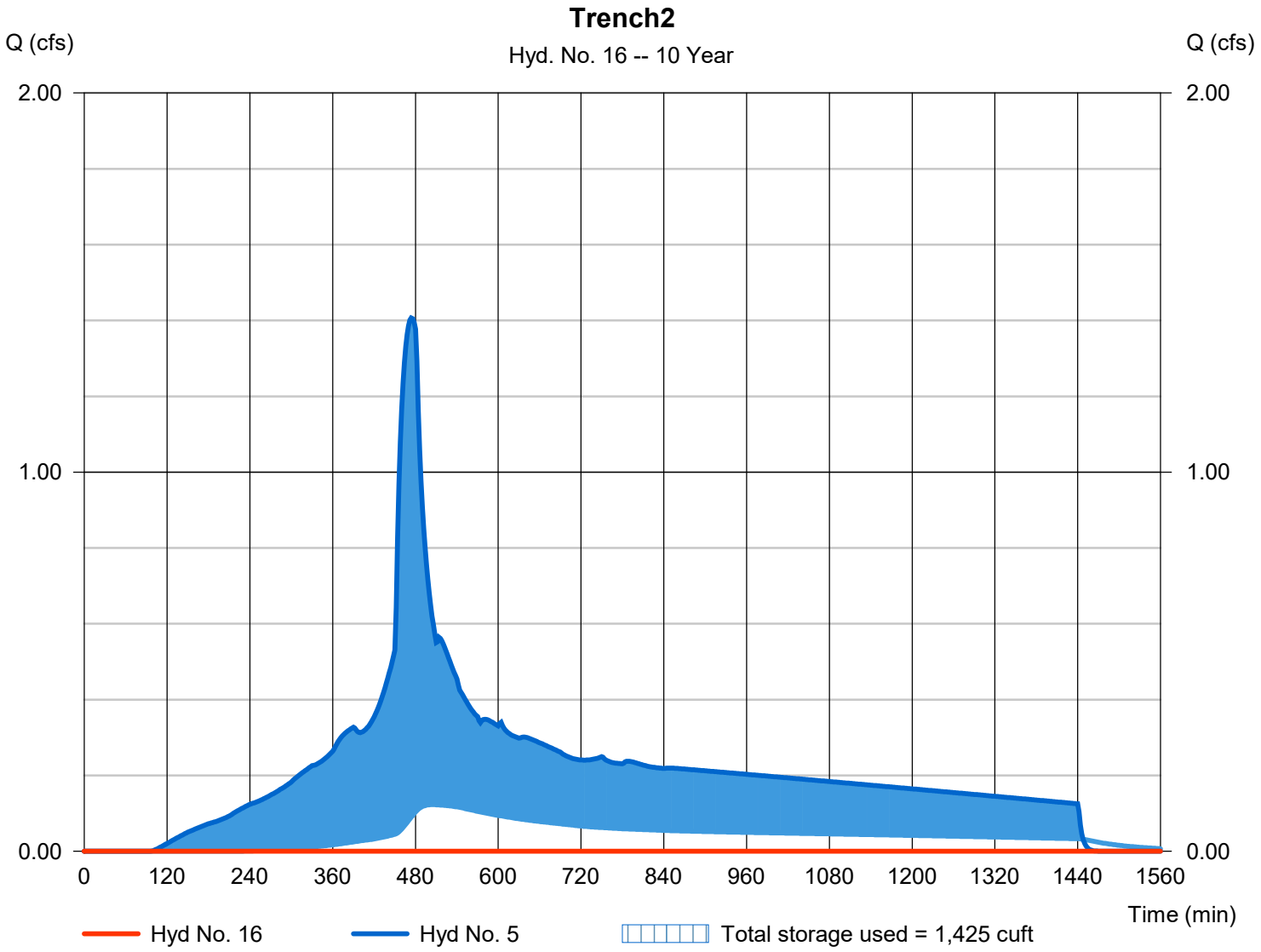
Hydrograph Report

Hyd. No. 16

Trench2

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	10 yrs	Time to peak	=	358 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	5 - DMA2 Post	Max. Elevation	=	102.02 ft
Reservoir name	=	Trench2	Max. Storage	=	1,425 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



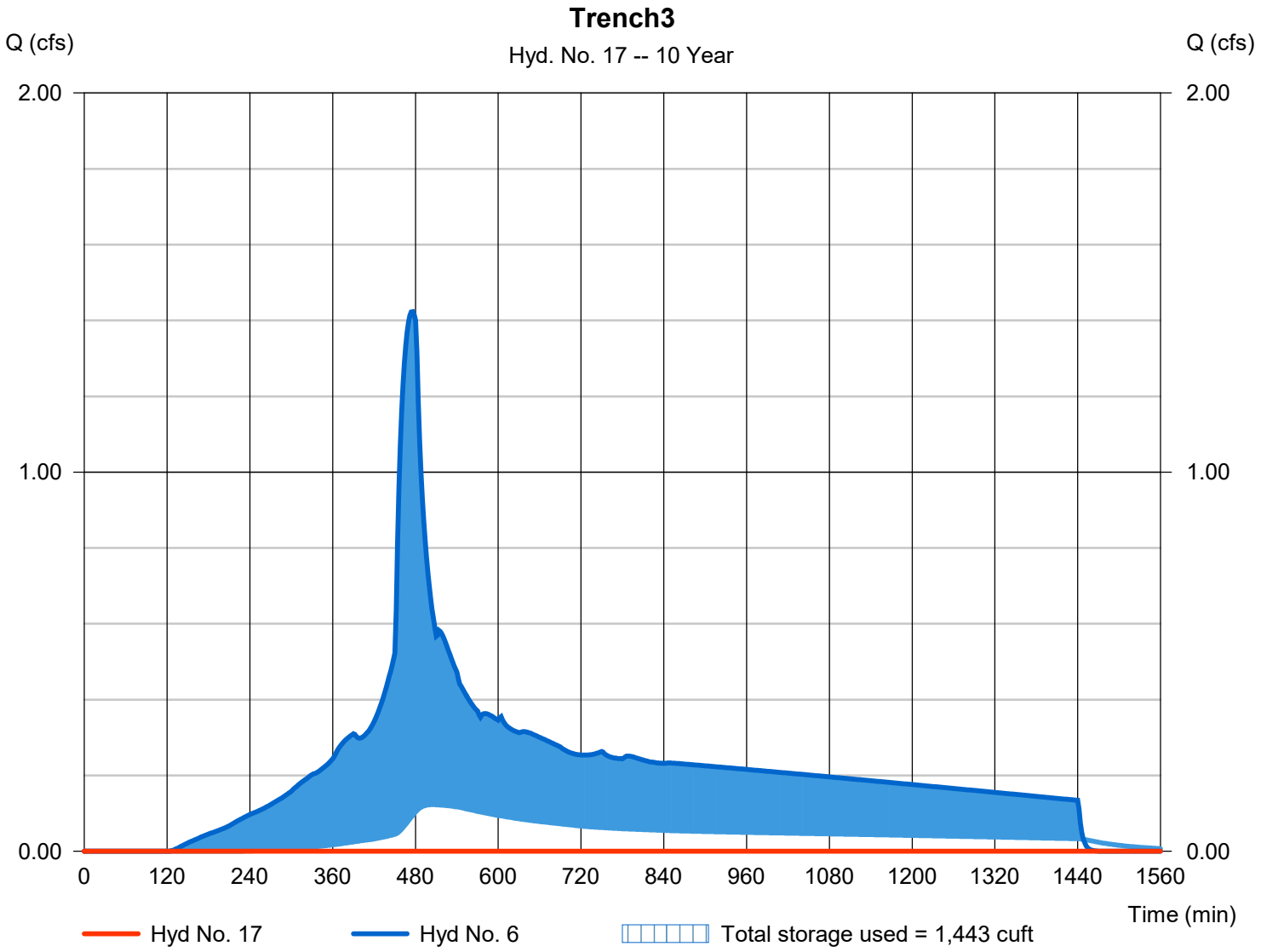
Hydrograph Report

Hyd. No. 17

Trench3

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	10 yrs	Time to peak	=	364 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	6 - DMA3 Post	Max. Elevation	=	102.06 ft
Reservoir name	=	Trench3	Max. Storage	=	1,443 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



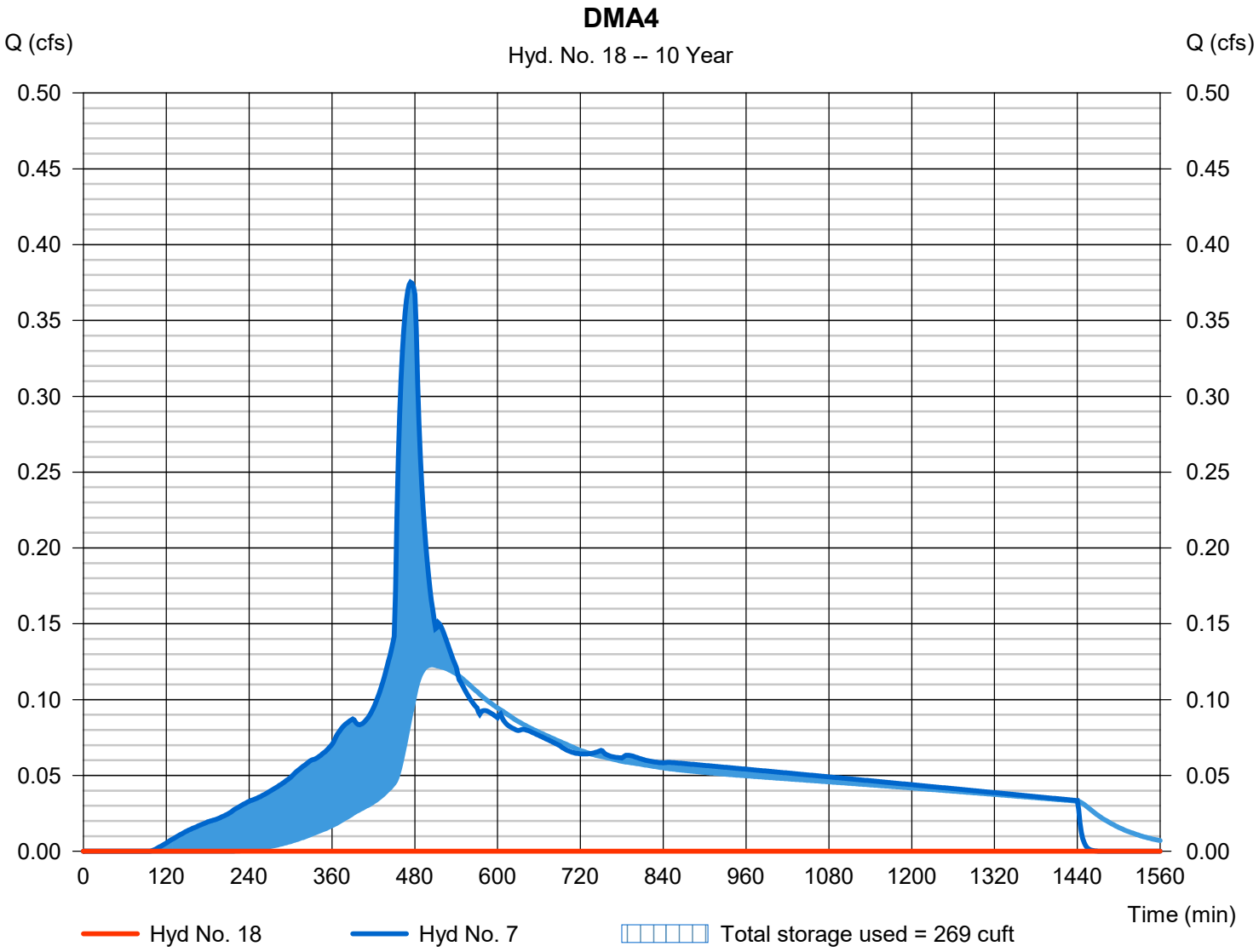
Hydrograph Report

Hyd. No. 18

DMA4

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	10 yrs	Time to peak	=	410 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	7 - DMA4 Post	Max. Elevation	=	401.21 ft
Reservoir name	=	DMA4	Max. Storage	=	269 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



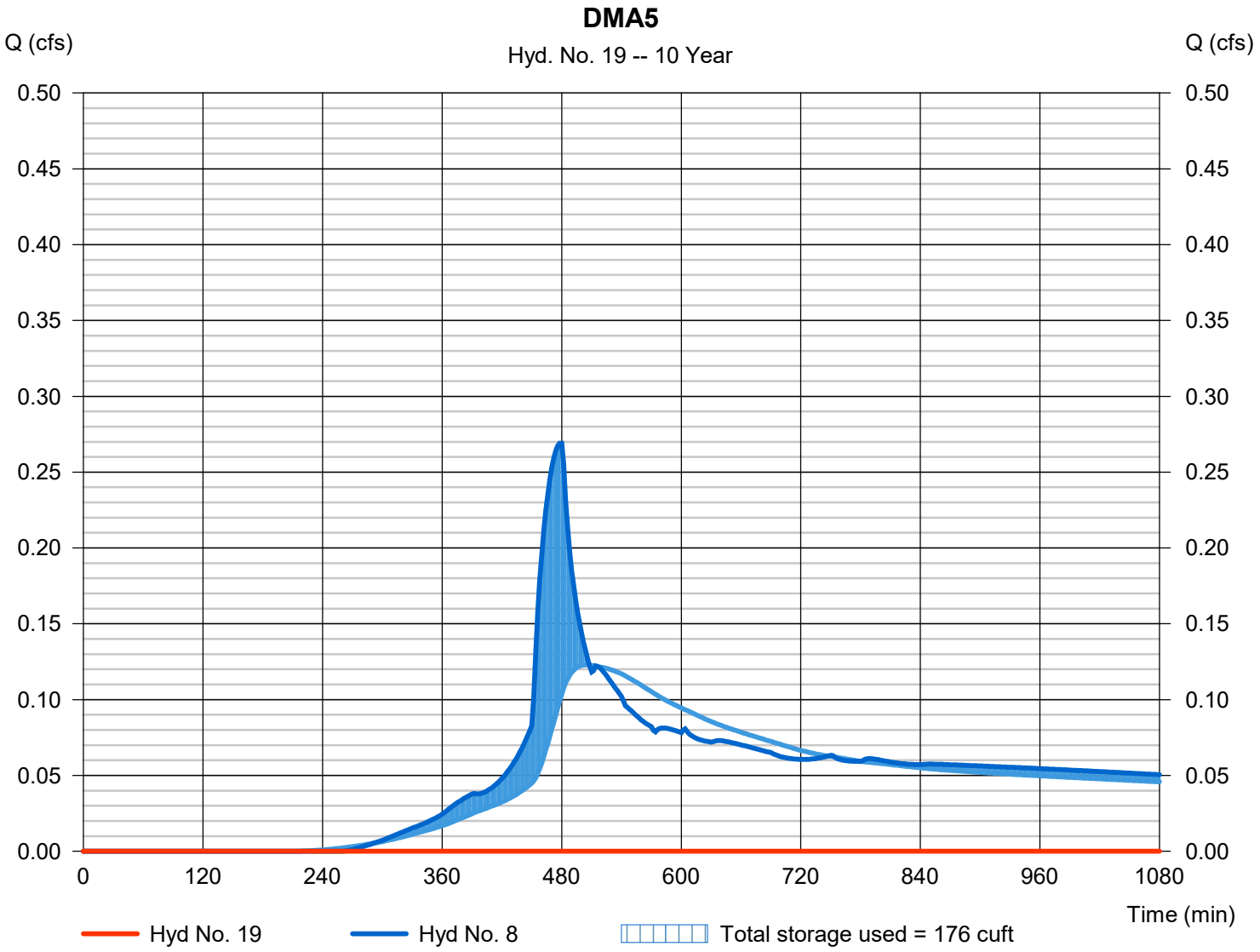
Hydrograph Report

Hyd. No. 19

DMA5

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	8 - DMA5 Post	Max. Elevation	=	500.52 ft
Reservoir name	=	DMA5	Max. Storage	=	176 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



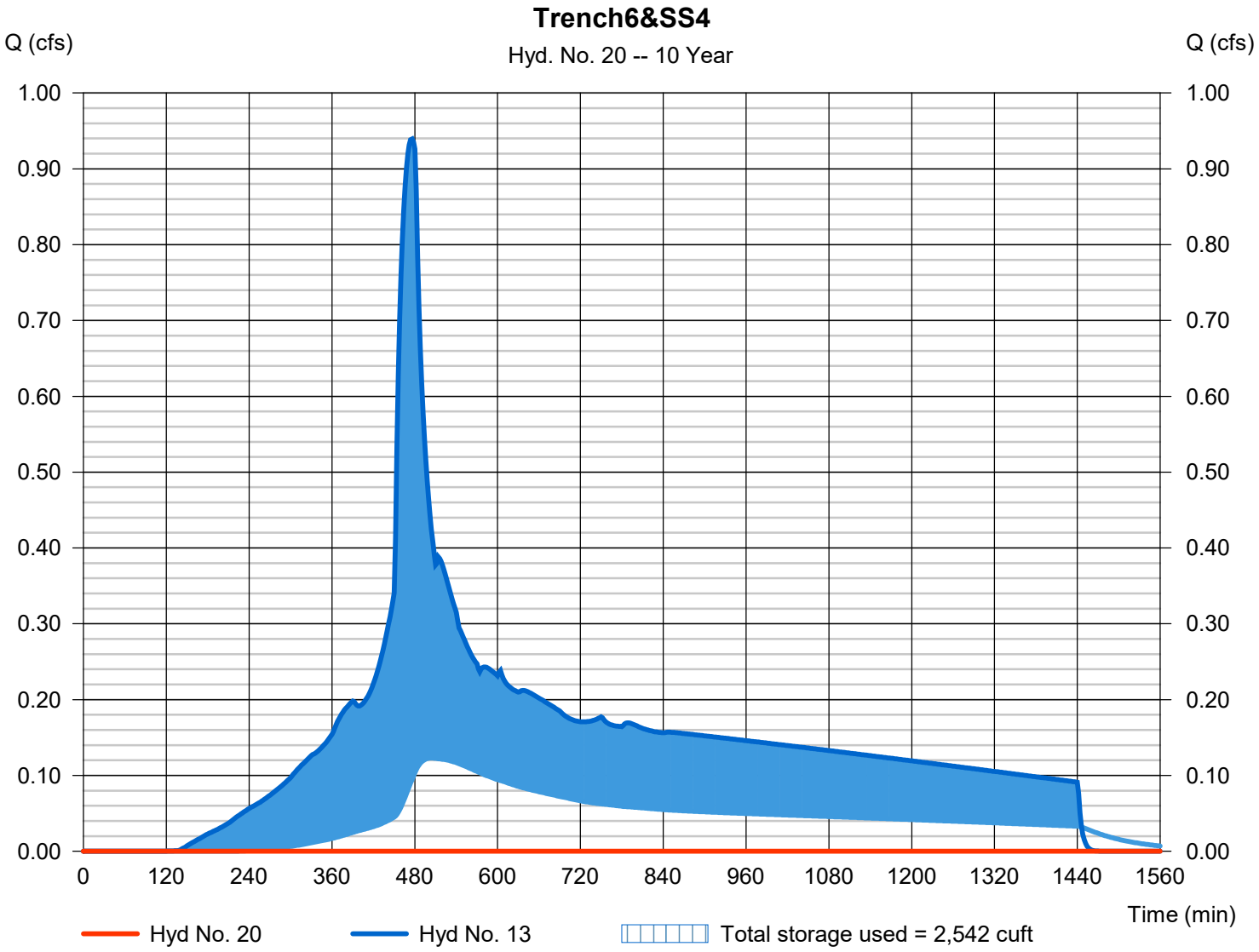
Hydrograph Report

Hyd. No. 20

Trench6&SS4

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	10 yrs	Time to peak	=	266 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	13 - DMA6 + SS4	Max. Elevation	=	102.16 ft
Reservoir name	=	Trench6	Max. Storage	=	2,542 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



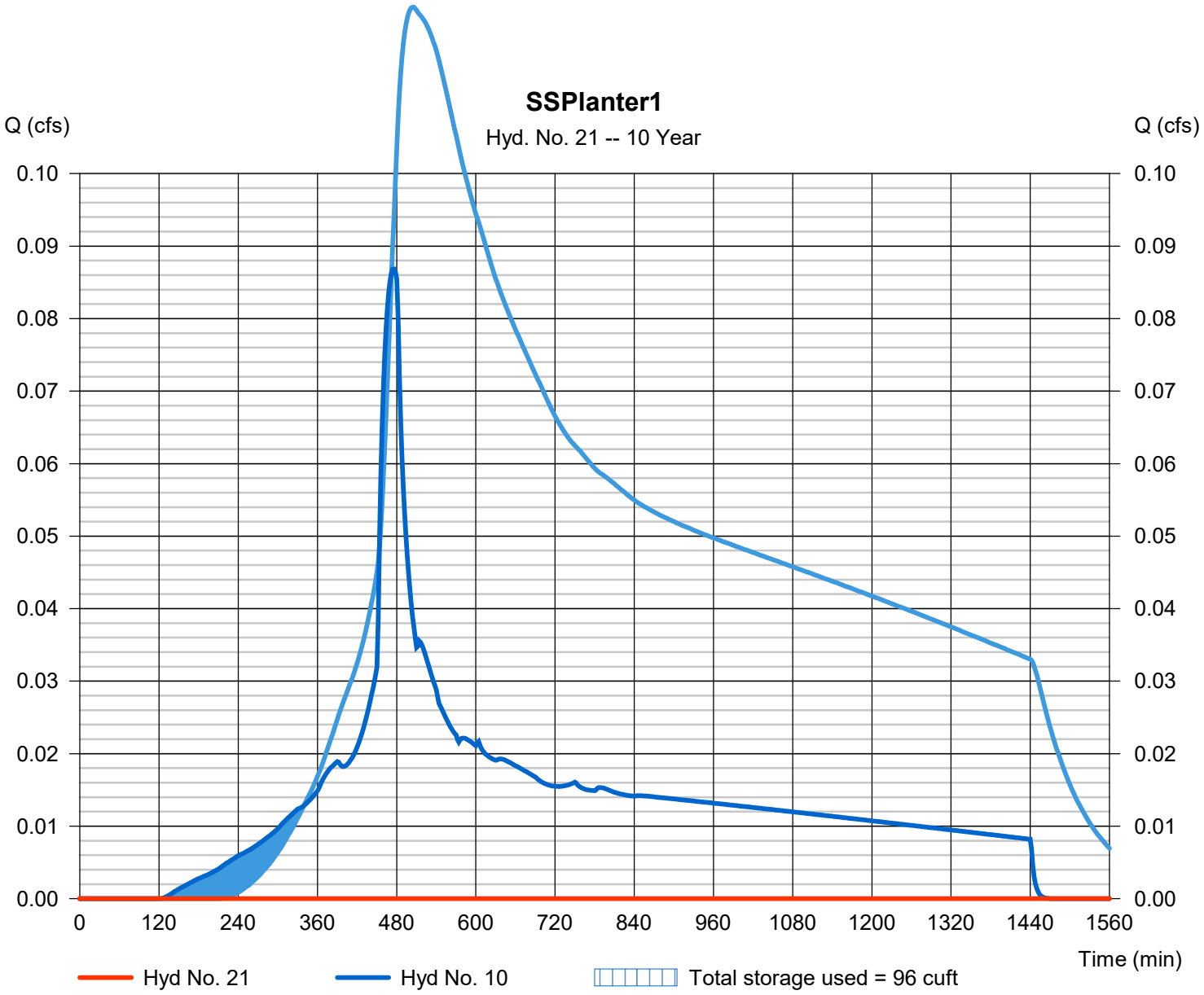
Hydrograph Report

Hyd. No. 21

SSPlanter1

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	10 yrs	Time to peak	=	514 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	10 - DMA SS1 Post	Max. Elevation	=	100.67 ft
Reservoir name	=	Planter1	Max. Storage	=	96 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



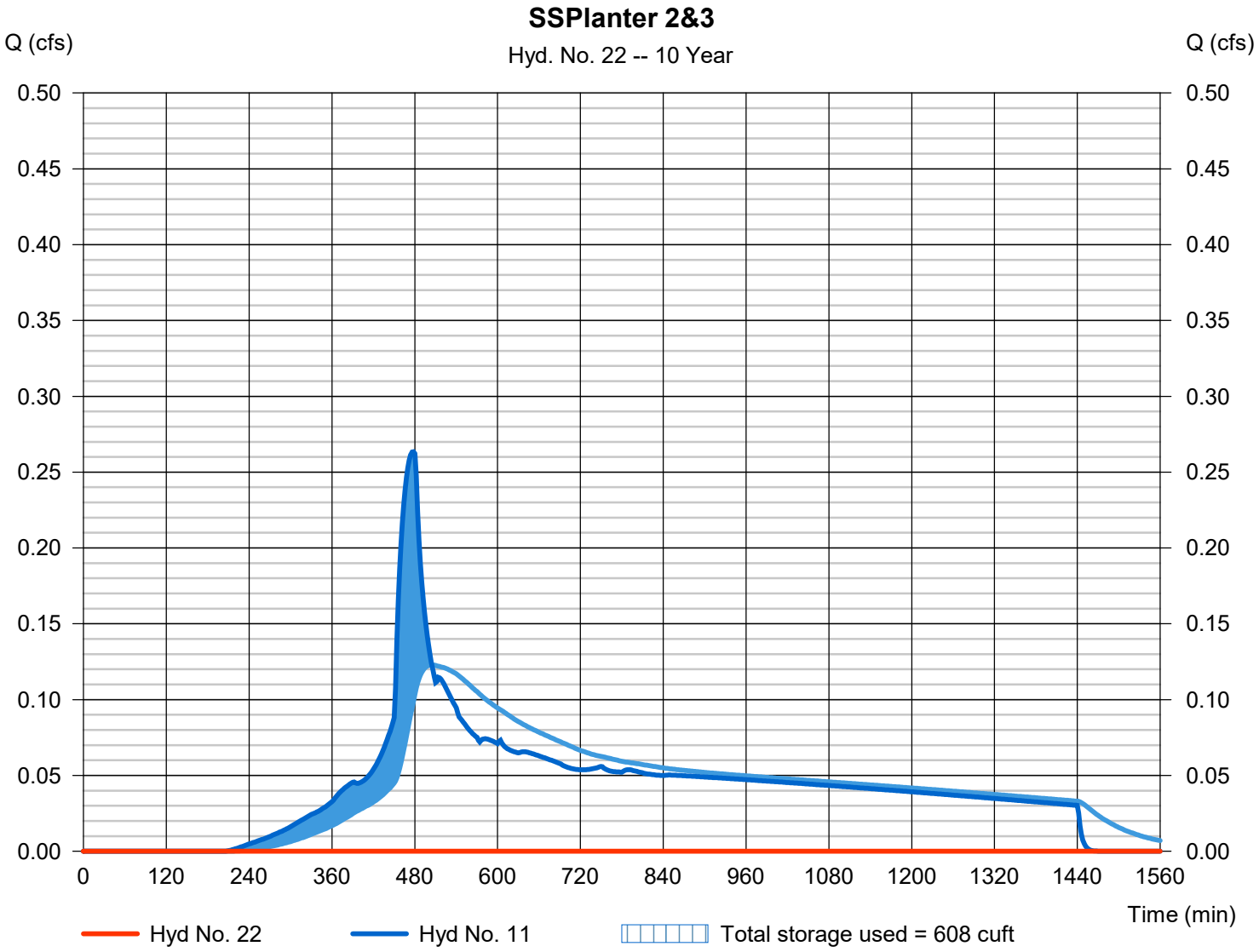
Hydrograph Report

Hyd. No. 22

SSPlanter 2&3

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	10 yrs	Time to peak	=	698 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	11 - DMA SS2&3 Post	Max. Elevation	=	101.78 ft
Reservoir name	=	Planter2	Max. Storage	=	608 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

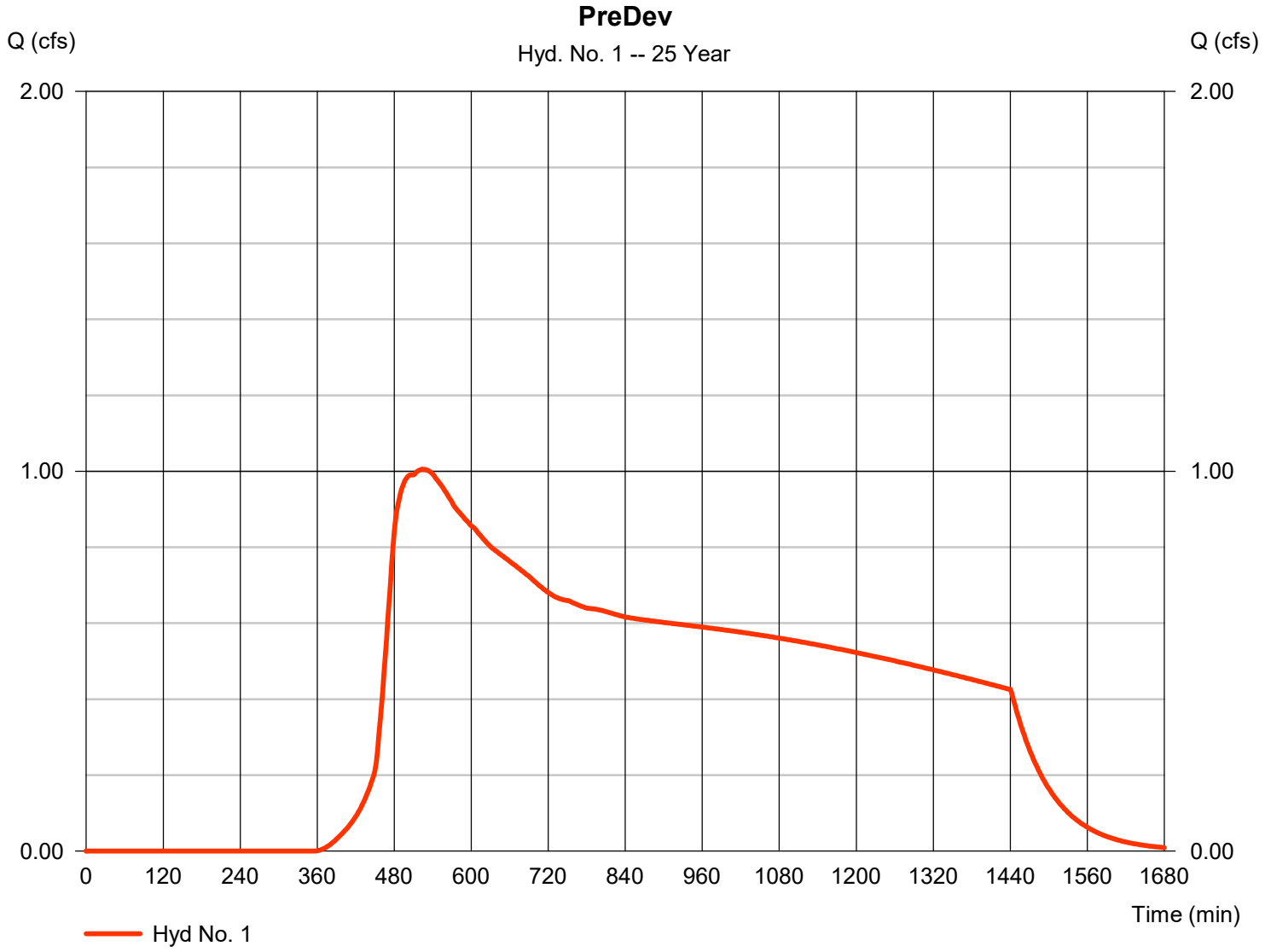


Hydrograph Report

Hyd. No. 1

PreDev

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.005 cfs
Storm frequency	=	25 yrs	Time to peak	=	524 min
Time interval	=	2 min	Hyd. volume	=	39,115 cuft
Drainage area	=	7.750 ac	Curve number	=	72
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	62.20 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



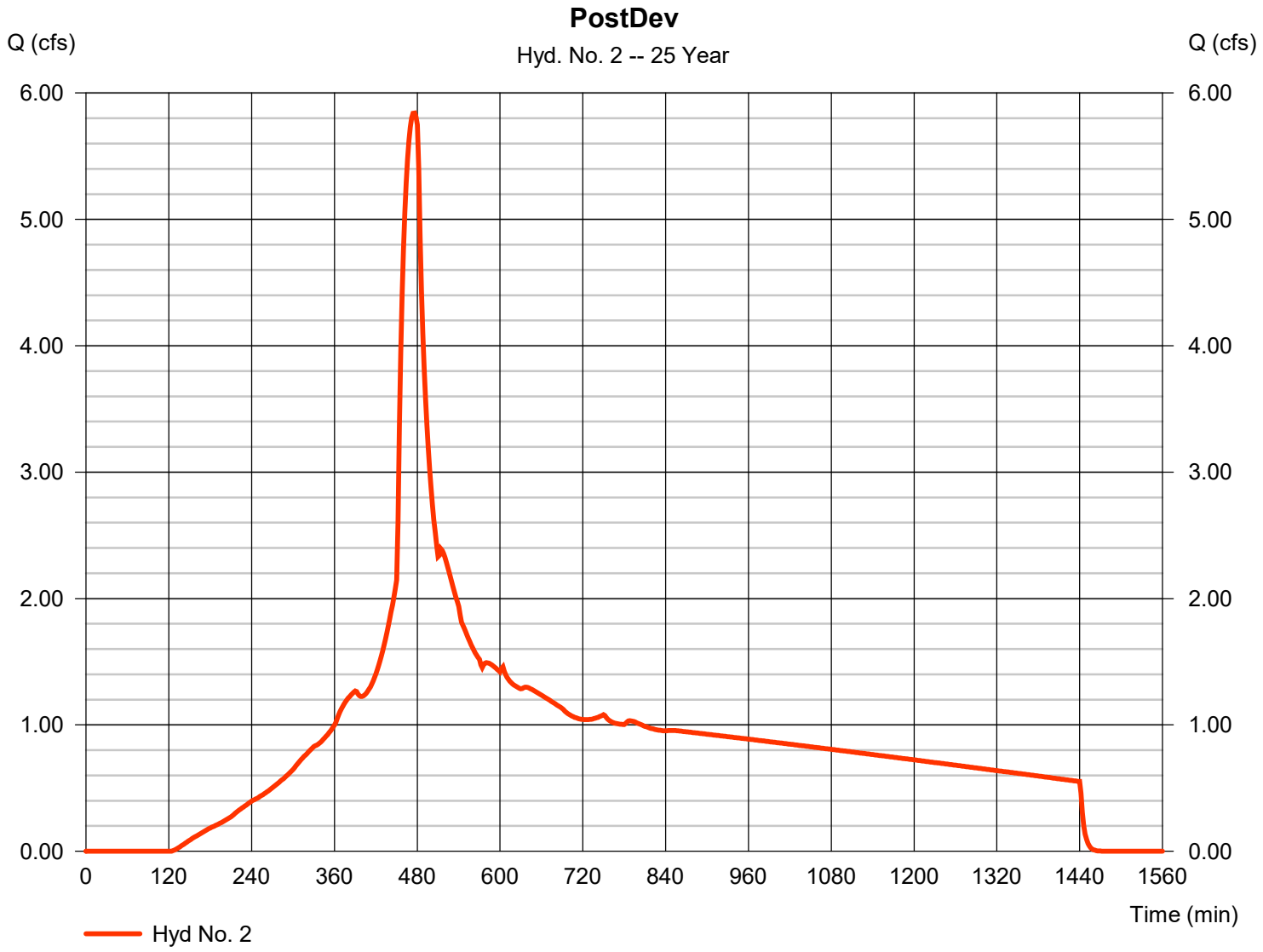
Hydrograph Report

Hyd. No. 2

PostDev

Hydrograph type	=	SBUH Runoff	Peak discharge	=	5.842 cfs
Storm frequency	=	25 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	82,194 cuft
Drainage area	=	7.750 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.460 x 61) + (6.290 x 98)] / 7.750



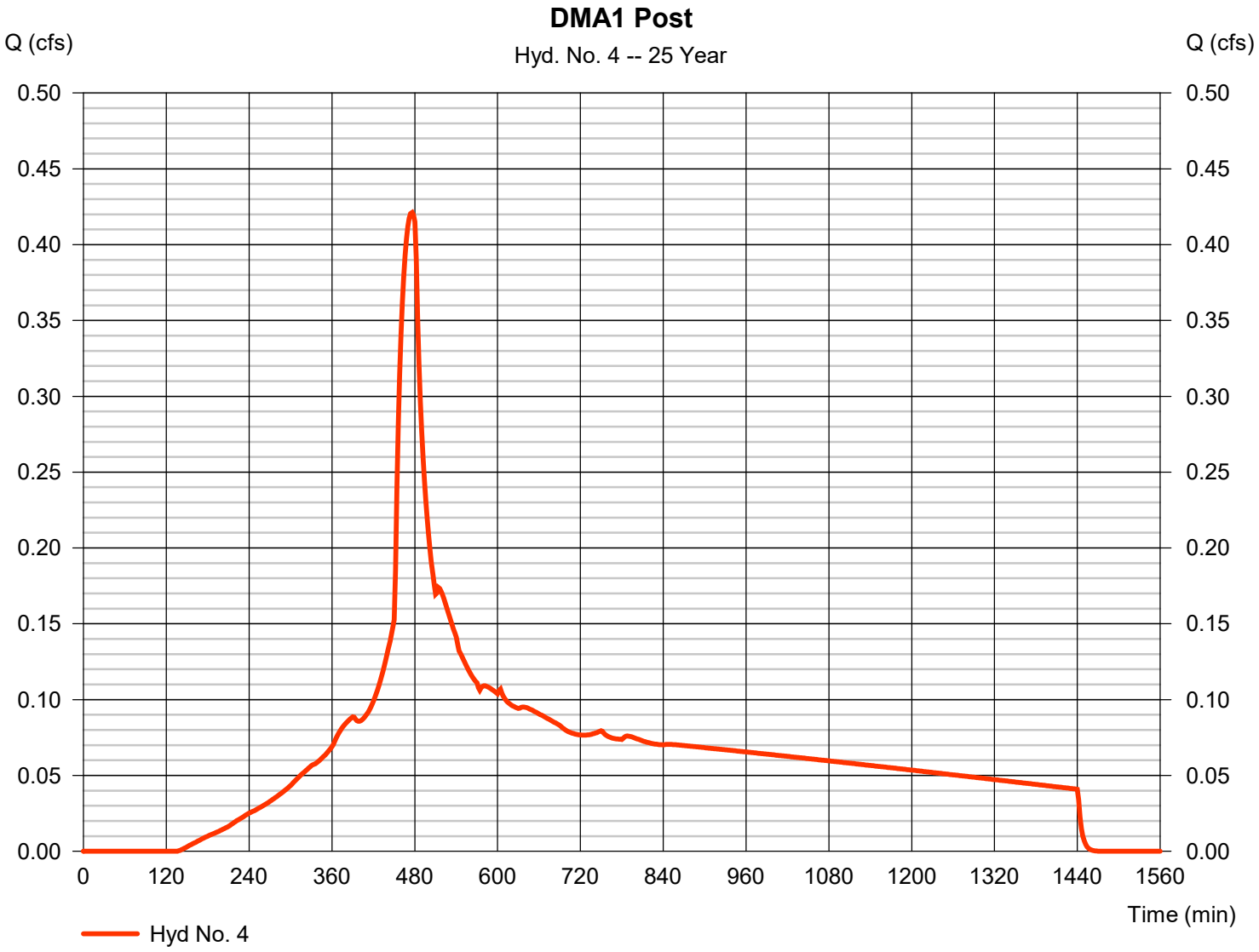
Hydrograph Report

Hyd. No. 4

DMA1 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.421 cfs
Storm frequency	=	25 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	5,947 cuft
Drainage area	=	0.580 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.460 x 98) + (0.120 x 61)] / 0.580



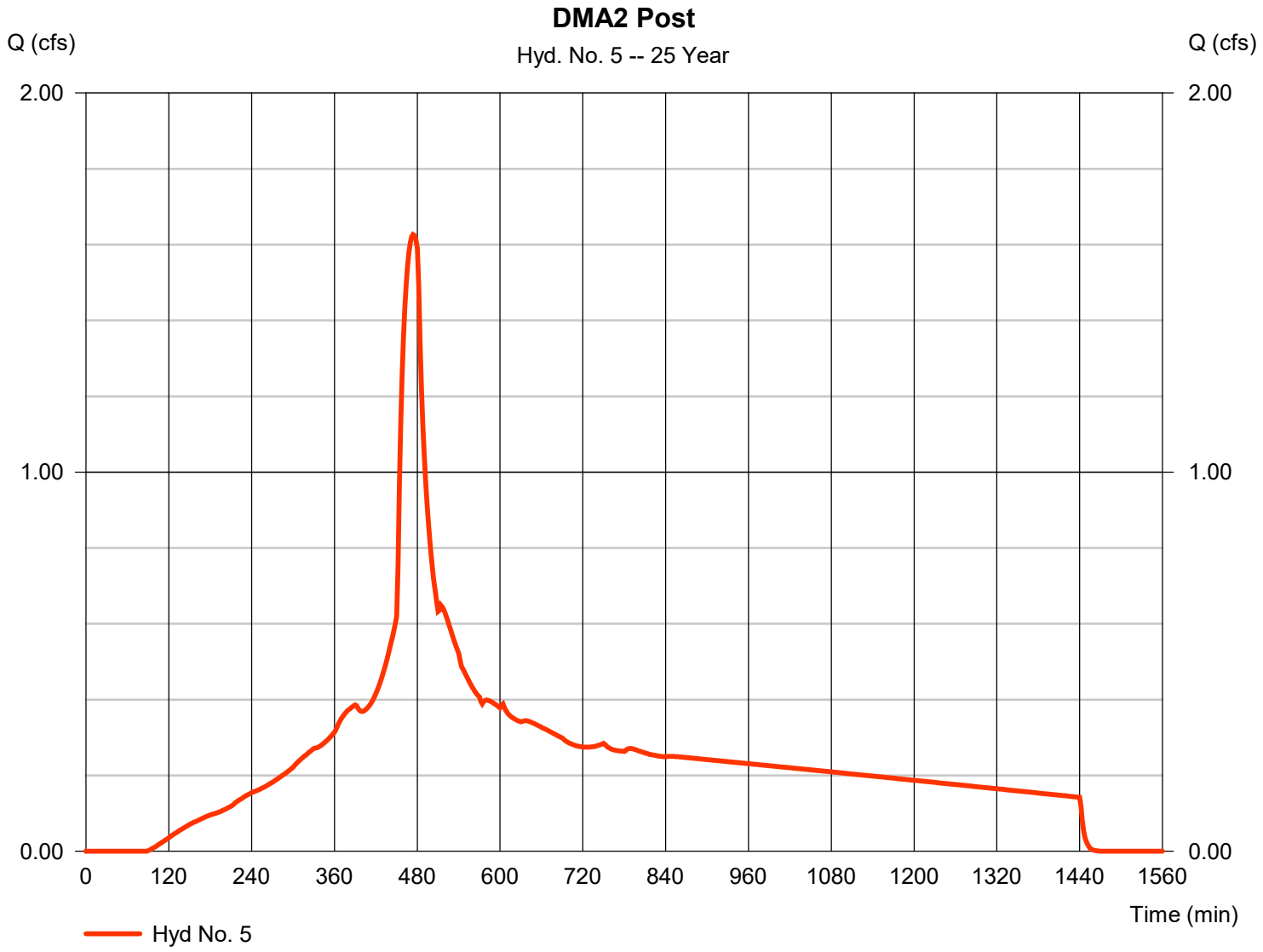
Hydrograph Report

Hyd. No. 5

DMA2 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.627 cfs
Storm frequency	=	25 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	22,838 cuft
Drainage area	=	1.950 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.750 x 98) + (0.200 x 61)] / 1.950



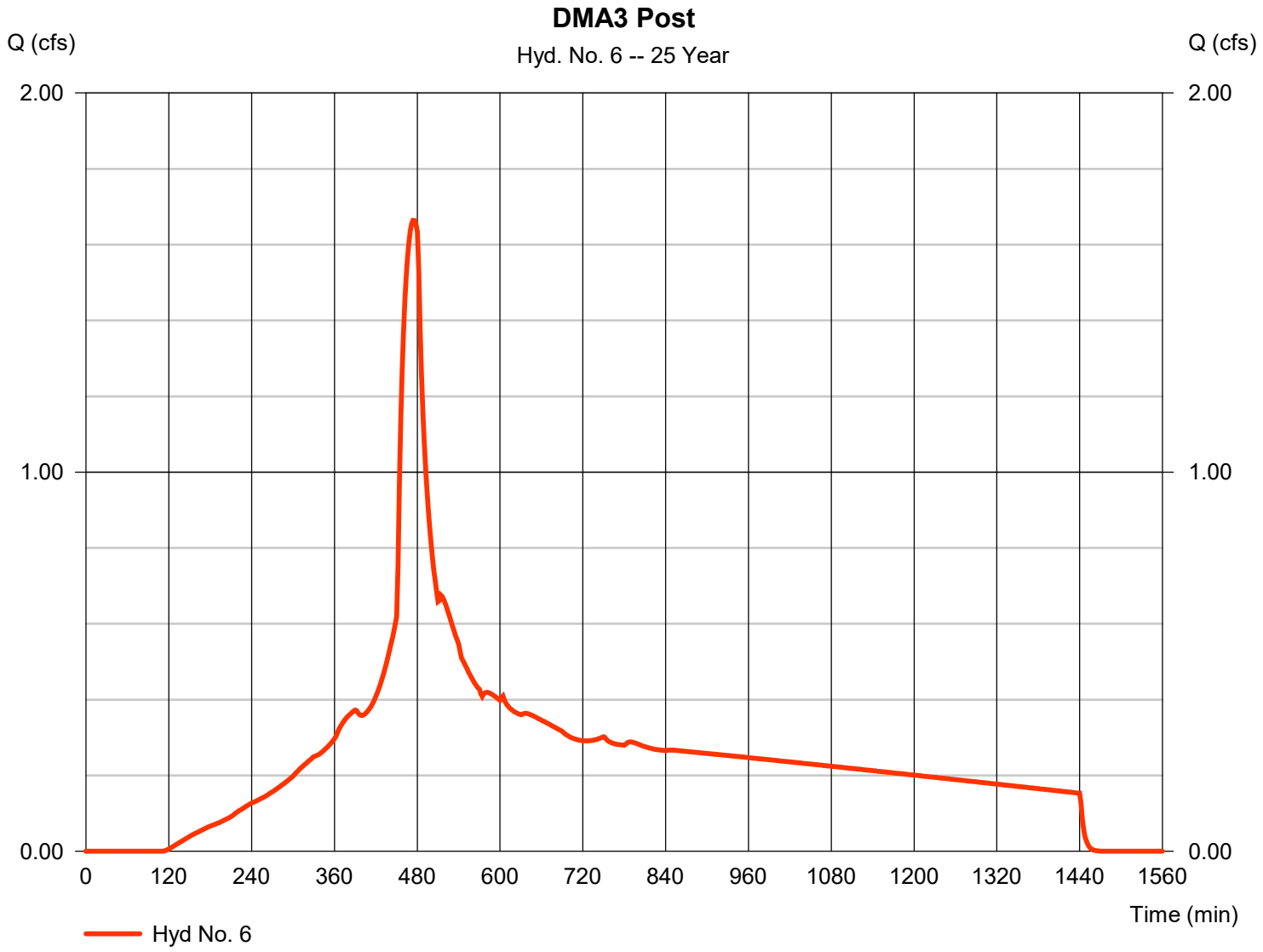
Hydrograph Report

Hyd. No. 6

DMA3 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.664 cfs
Storm frequency	=	25 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	23,359 cuft
Drainage area	=	2.130 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.810 x 98) + (0.320 x 61)] / 2.130



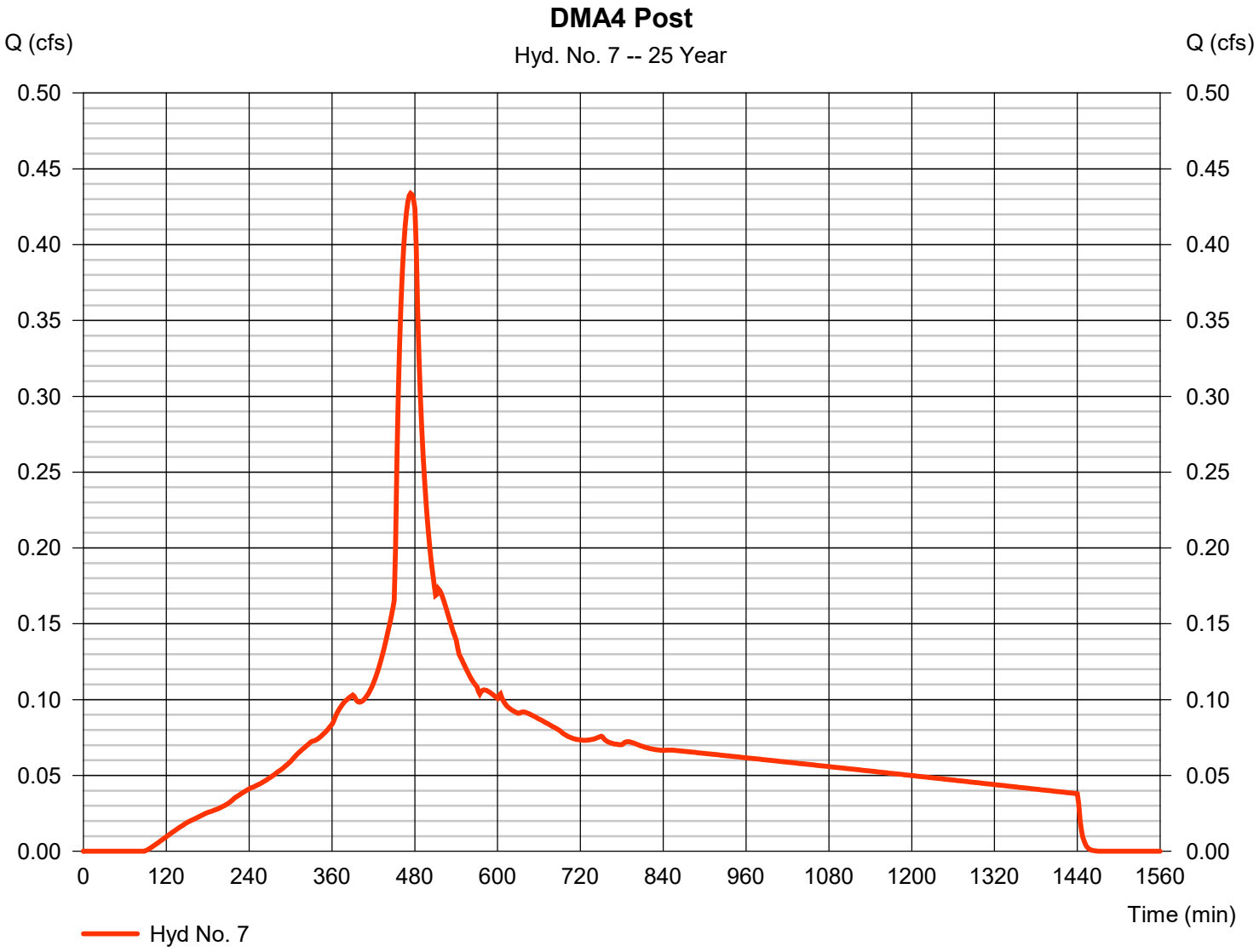
Hydrograph Report

Hyd. No. 7

DMA4 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.434 cfs
Storm frequency	=	25 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	6,090 cuft
Drainage area	=	0.520 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.460 x 98) + (0.060 x 61)] / 0.520



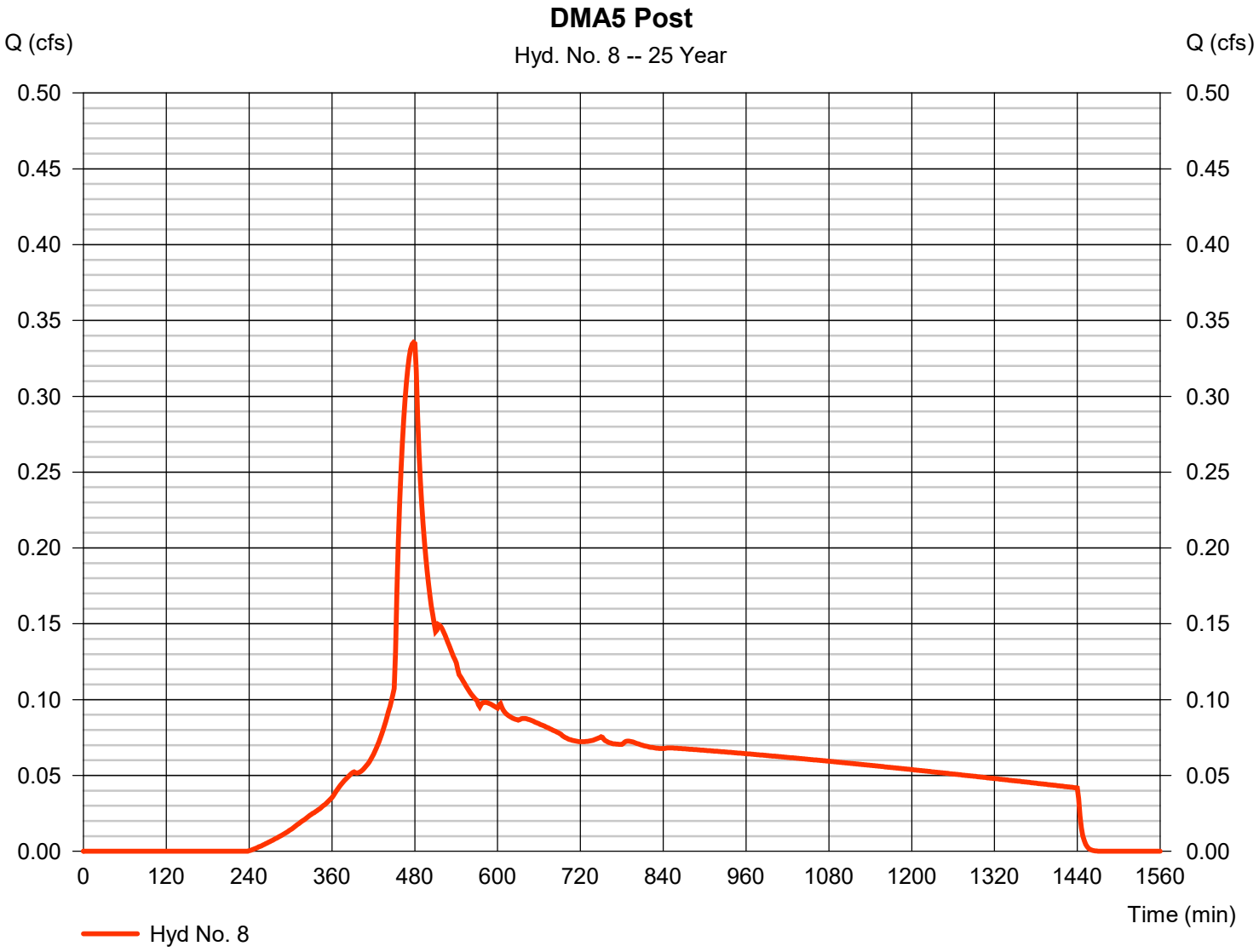
Hydrograph Report

Hyd. No. 8

DMA5 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.336 cfs
Storm frequency	=	25 yrs	Time to peak	=	478 min
Time interval	=	2 min	Hyd. volume	=	5,074 cuft
Drainage area	=	0.660 ac	Curve number	=	82*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.380 x 98) + (0.280 x 61)] / 0.660



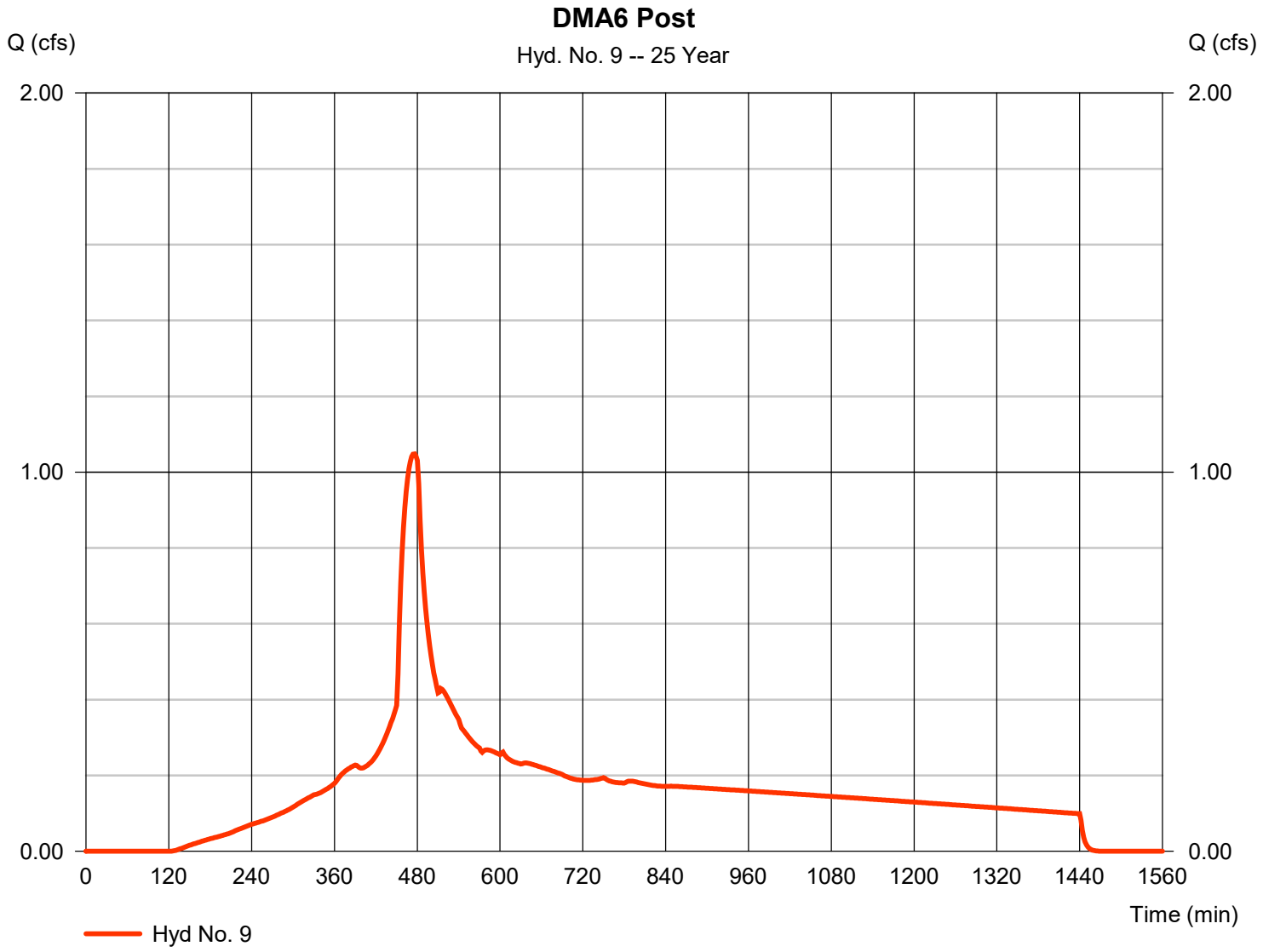
Hydrograph Report

Hyd. No. 9

DMA6 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.048 cfs
Storm frequency	=	25 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	14,742 cuft
Drainage area	=	1.390 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.120 x 98) + (0.270 x 61)] / 1.390



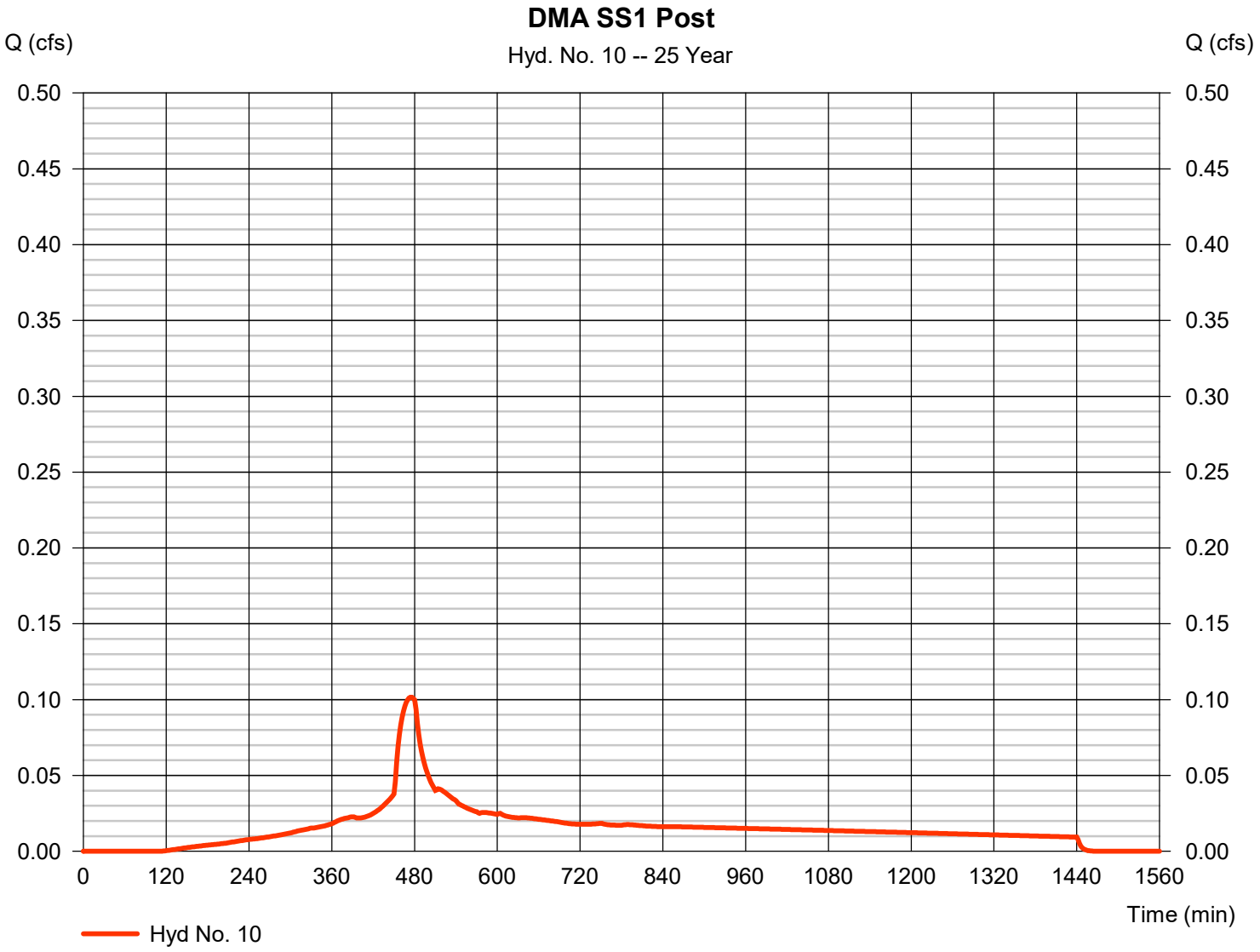
Hydrograph Report

Hyd. No. 10

DMA SS1 Post

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.102 cfs
Storm frequency	= 25 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 1,426 cuft
Drainage area	= 0.130 ac	Curve number	= 92*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(0.110 x 98) + (0.020 x 61)] / 0.130



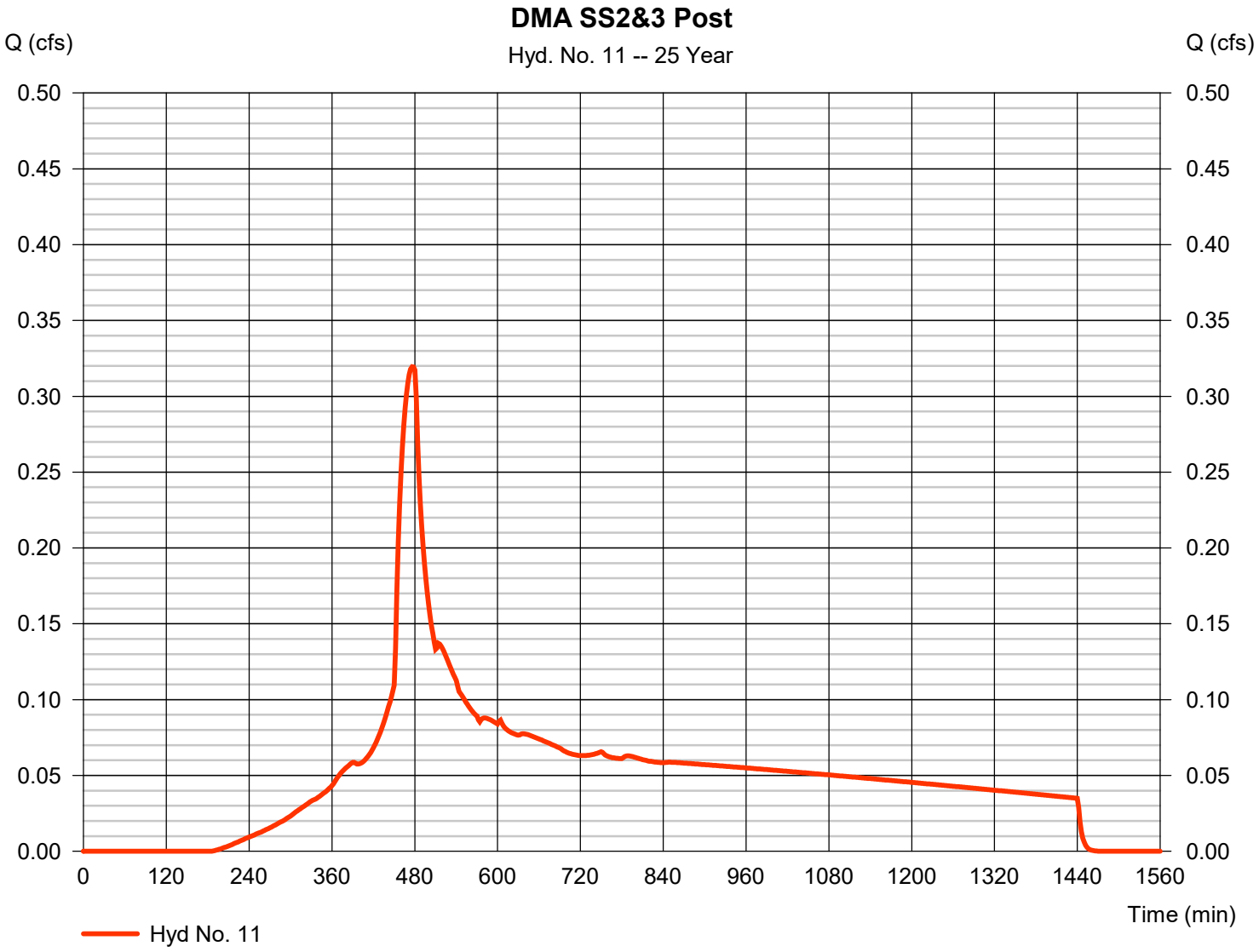
Hydrograph Report

Hyd. No. 11

DMA SS2&3 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.320 cfs
Storm frequency	=	25 yrs	Time to peak	=	476 min
Time interval	=	2 min	Hyd. volume	=	4,636 cuft
Drainage area	=	0.520 ac	Curve number	=	86*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.350 x 98) + (0.170 x 61)] / 0.520



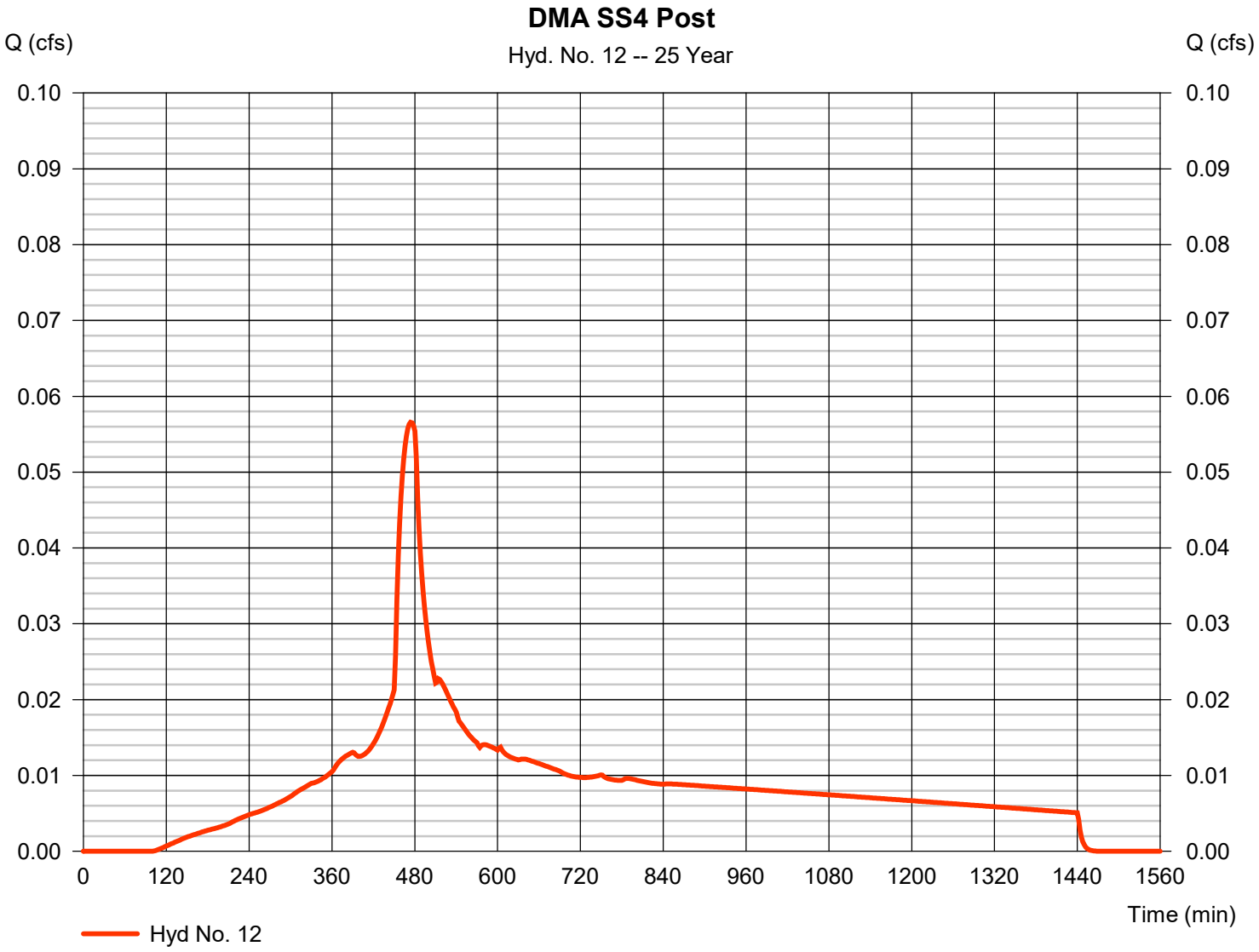
Hydrograph Report

Hyd. No. 12

DMA SS4 Post

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.057 cfs
Storm frequency	=	25 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	793 cuft
Drainage area	=	0.070 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.010 x 61) + (0.060 x 98)] / 0.070

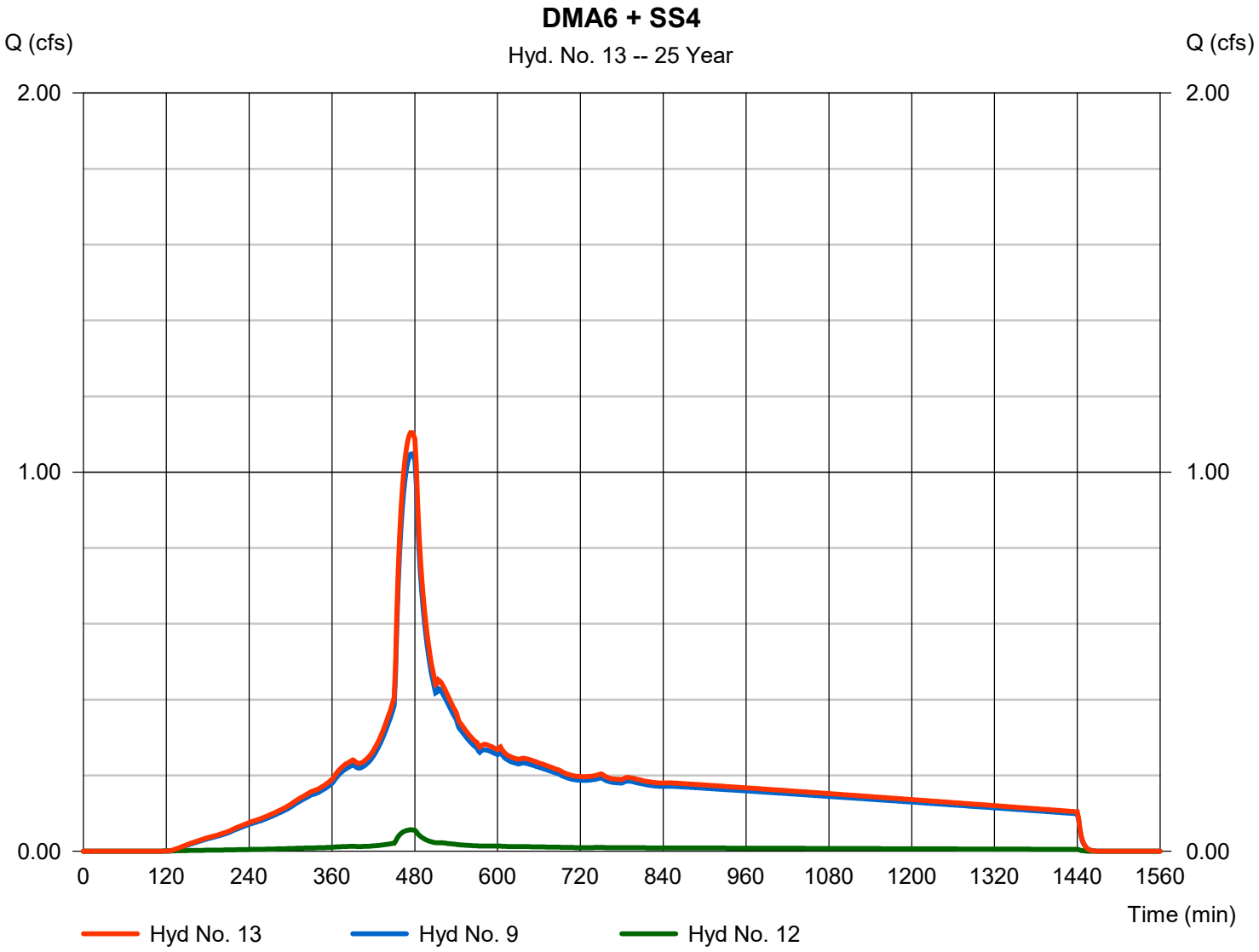


Hydrograph Report

Hyd. No. 13

DMA6 + SS4

Hydrograph type	= Combine	Peak discharge	= 1.104 cfs
Storm frequency	= 25 yrs	Time to peak	= 476 min
Time interval	= 2 min	Hyd. volume	= 15,535 cuft
Inflow hyds.	= 9, 12	Contrib. drain. area	= 1.460 ac



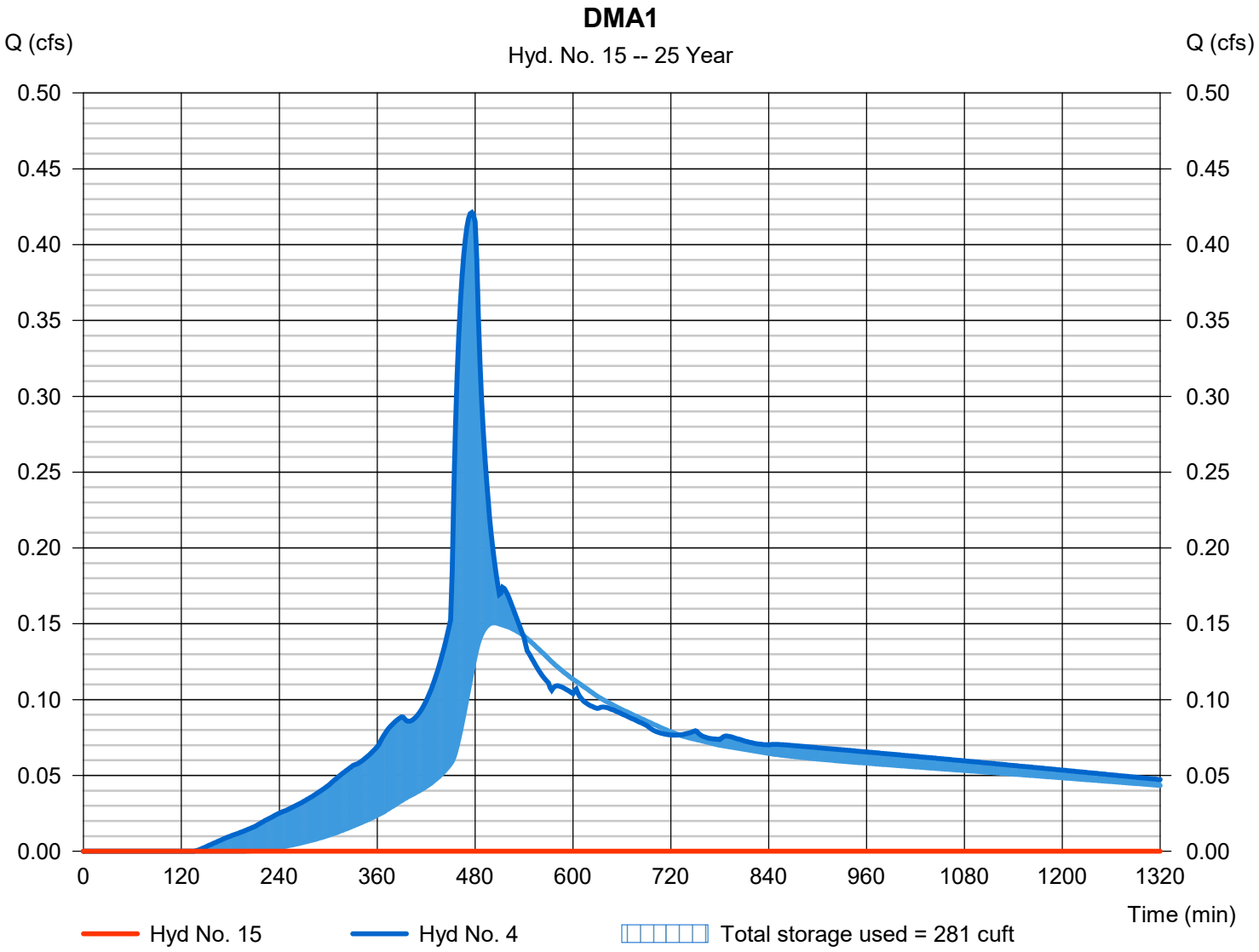
Hydrograph Report

Hyd. No. 15

DMA1

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	25 yrs	Time to peak	=	498 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	4 - DMA1 Post	Max. Elevation	=	100.86 ft
Reservoir name	=	DMA1	Max. Storage	=	281 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



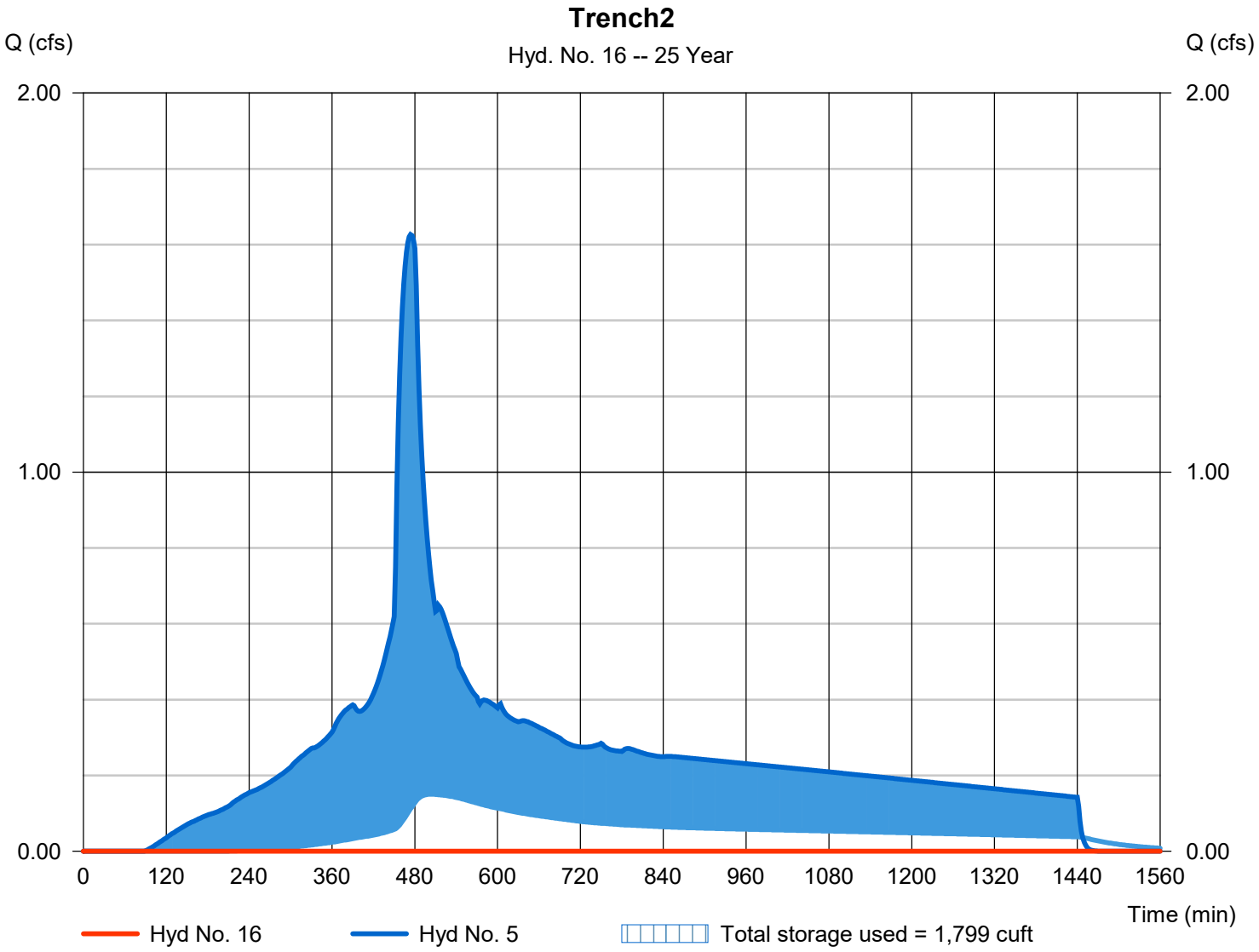
Hydrograph Report

Hyd. No. 16

Trench2

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	25 yrs	Time to peak	=	320 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	5 - DMA2 Post	Max. Elevation	=	103.19 ft
Reservoir name	=	Trench2	Max. Storage	=	1,799 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



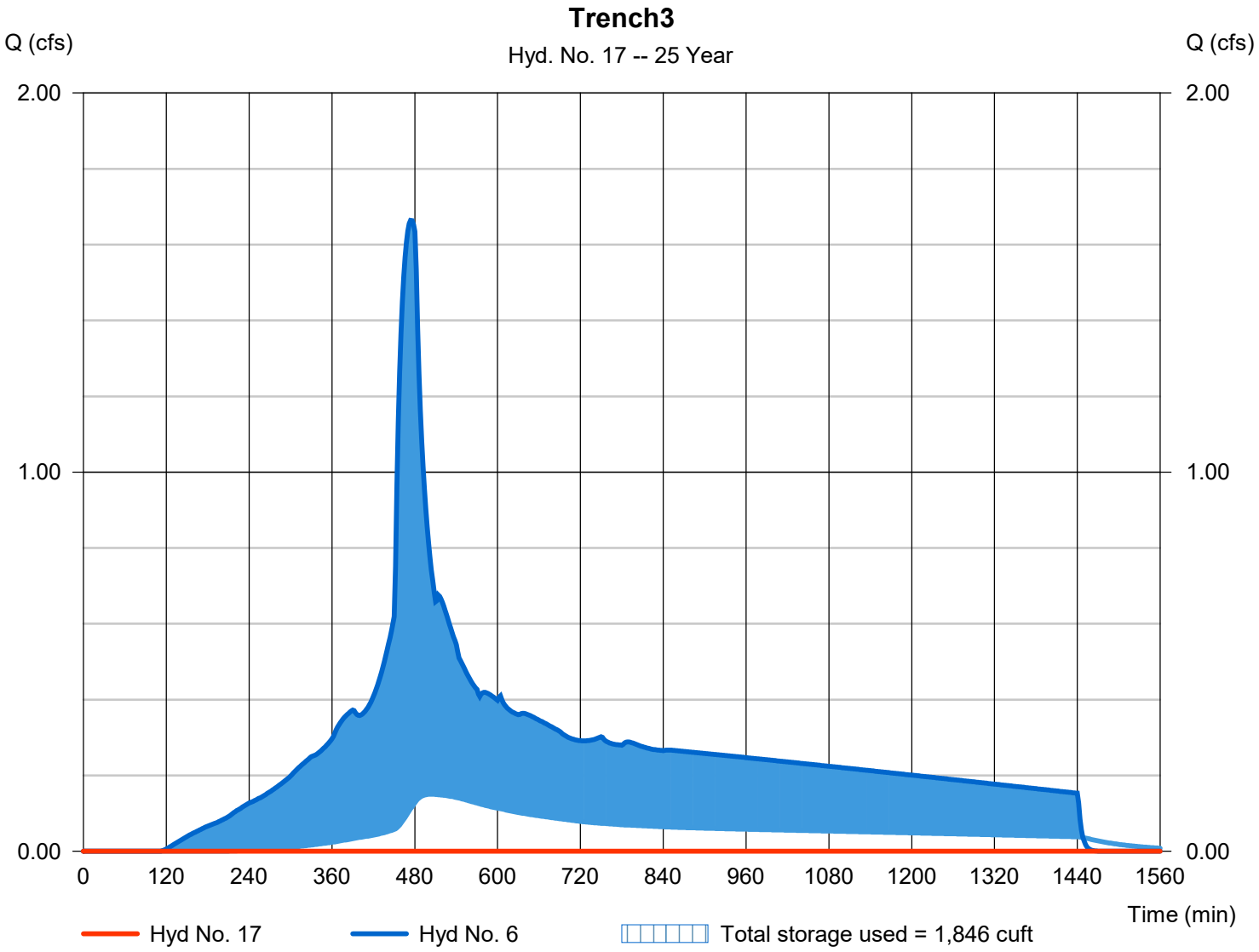
Hydrograph Report

Hyd. No. 17

Trench3

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	25 yrs	Time to peak	=	332 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	6 - DMA3 Post	Max. Elevation	=	103.36 ft
Reservoir name	=	Trench3	Max. Storage	=	1,846 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



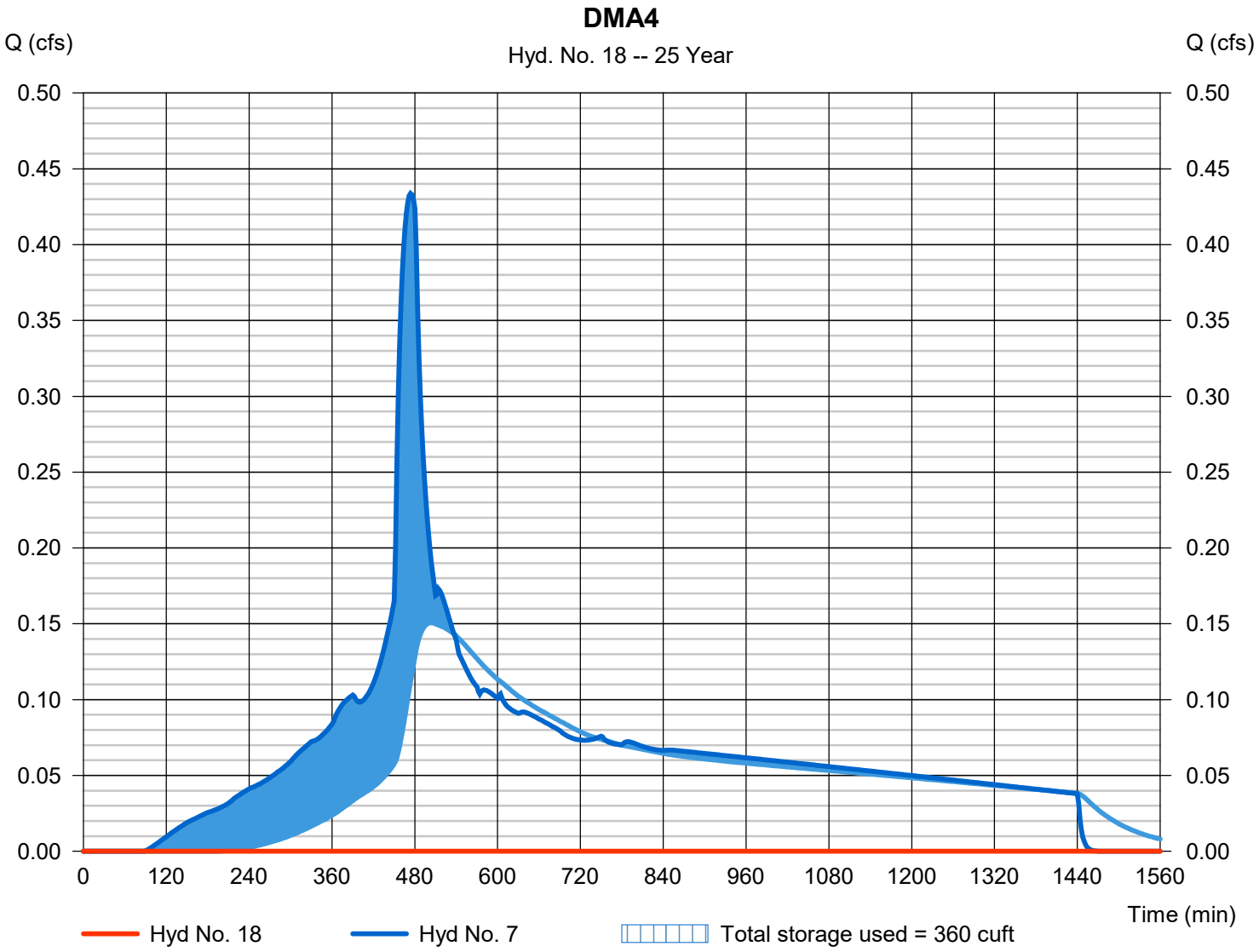
Hydrograph Report

Hyd. No. 18

DMA4

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	25 yrs	Time to peak	=	522 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	7 - DMA4 Post	Max. Elevation	=	401.62 ft
Reservoir name	=	DMA4	Max. Storage	=	360 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



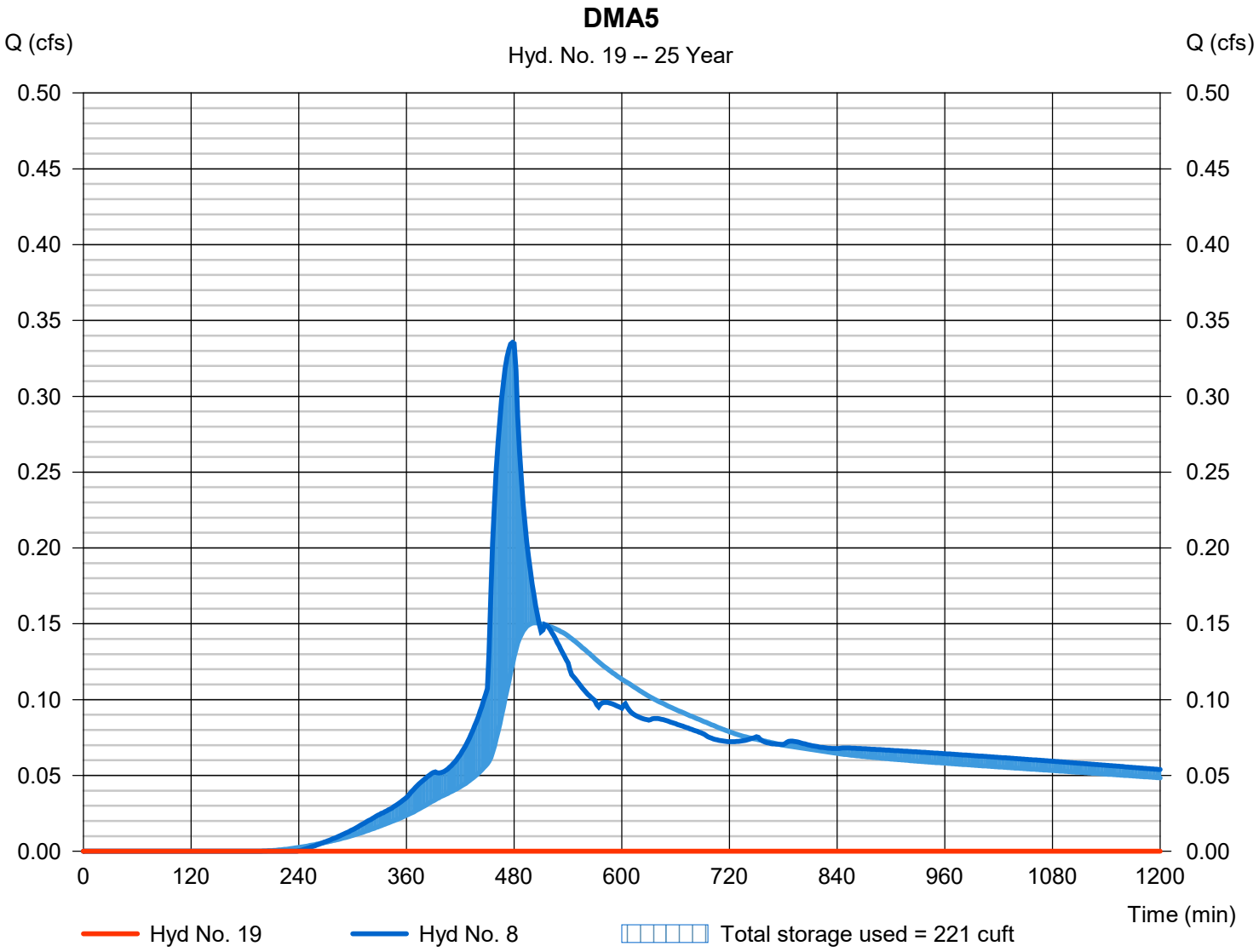
Hydrograph Report

Hyd. No. 19

DMA5

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	25 yrs	Time to peak	=	472 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	8 - DMA5 Post	Max. Elevation	=	500.65 ft
Reservoir name	=	DMA5	Max. Storage	=	221 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



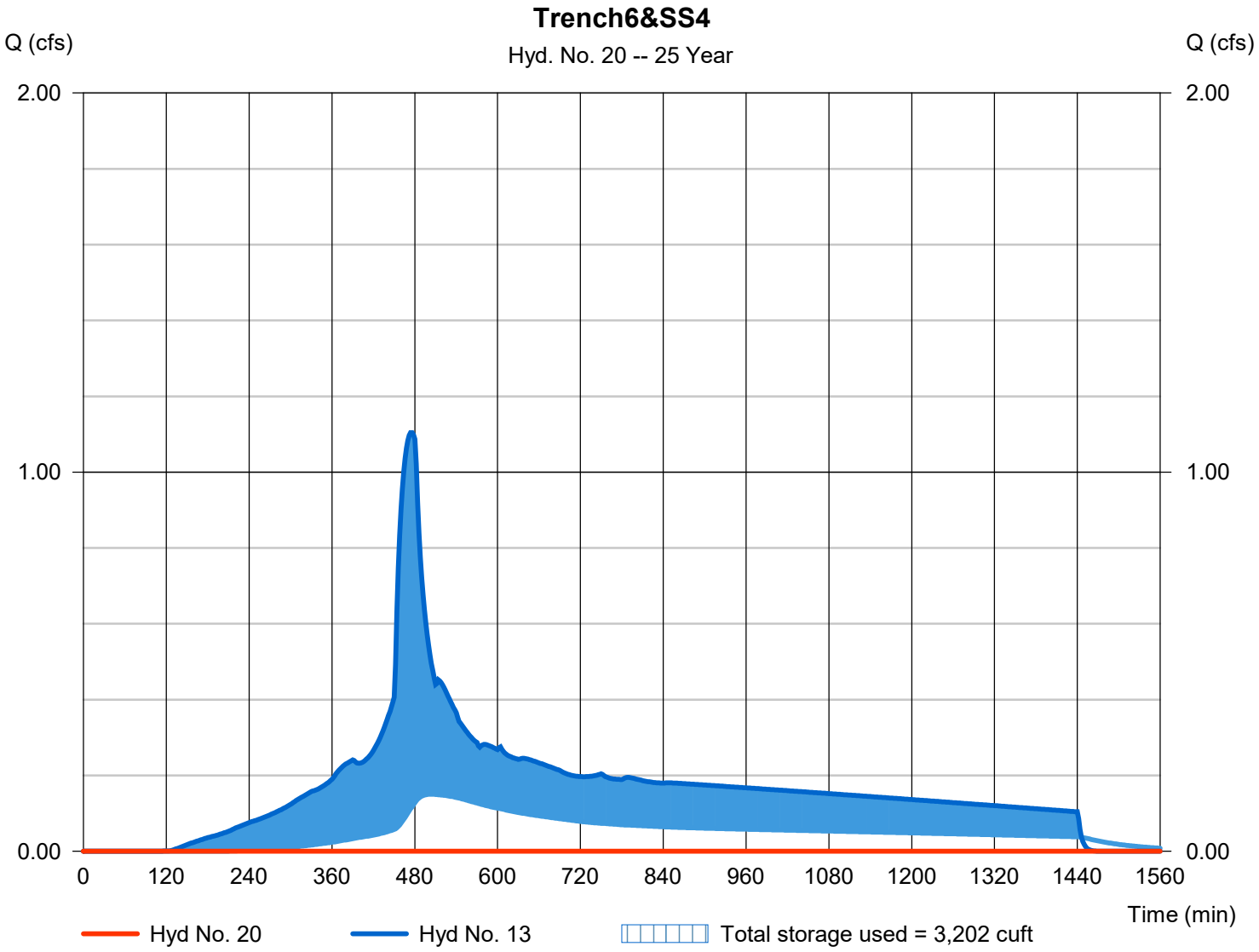
Hydrograph Report

Hyd. No. 20

Trench6&SS4

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	25 yrs	Time to peak	=	230 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	13 - DMA6 + SS4	Max. Elevation	=	103.43 ft
Reservoir name	=	Trench6	Max. Storage	=	3,202 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



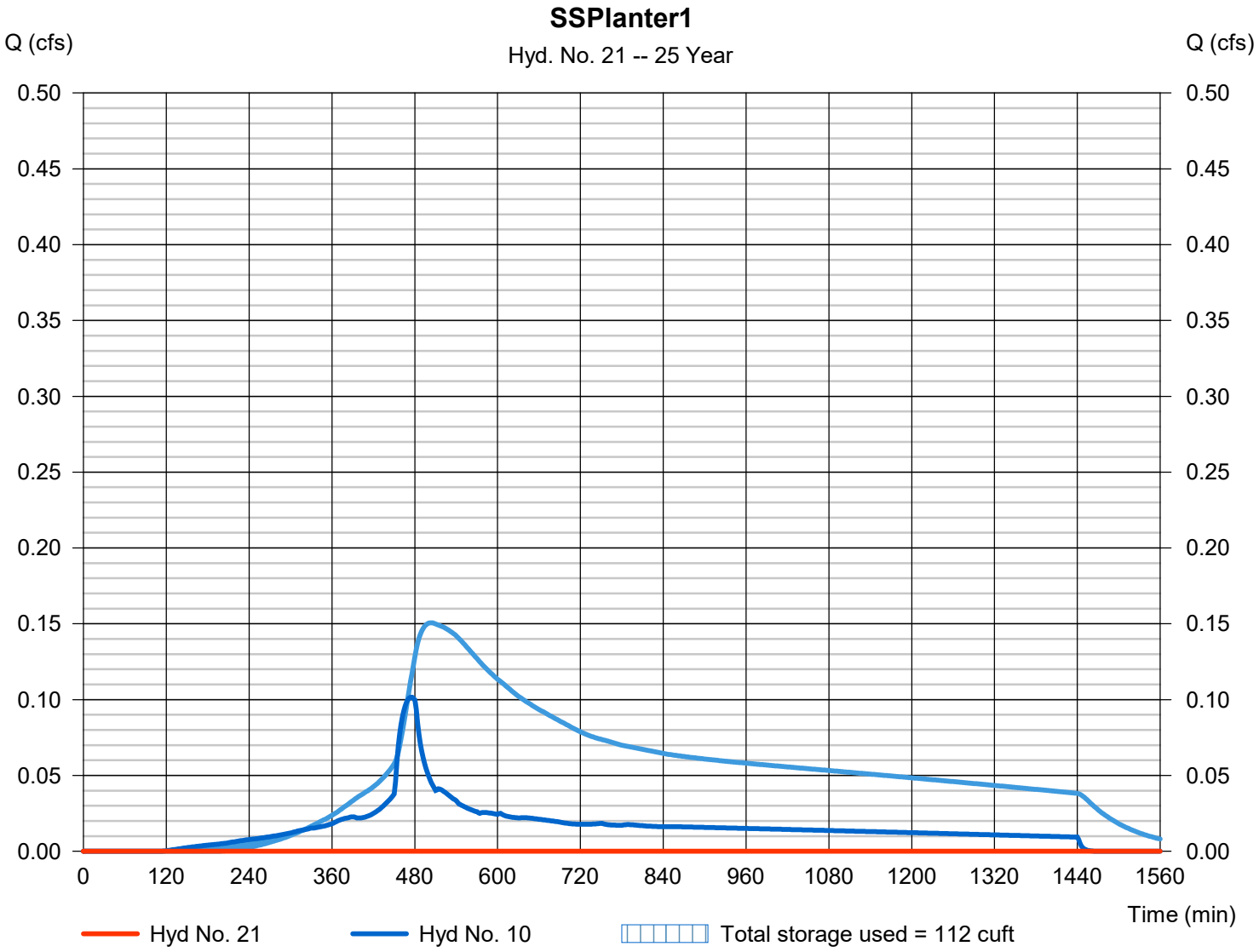
Hydrograph Report

Hyd. No. 21

SSPlanter1

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	25 yrs	Time to peak	=	554 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	10 - DMA SS1 Post	Max. Elevation	=	100.79 ft
Reservoir name	=	Planter1	Max. Storage	=	112 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

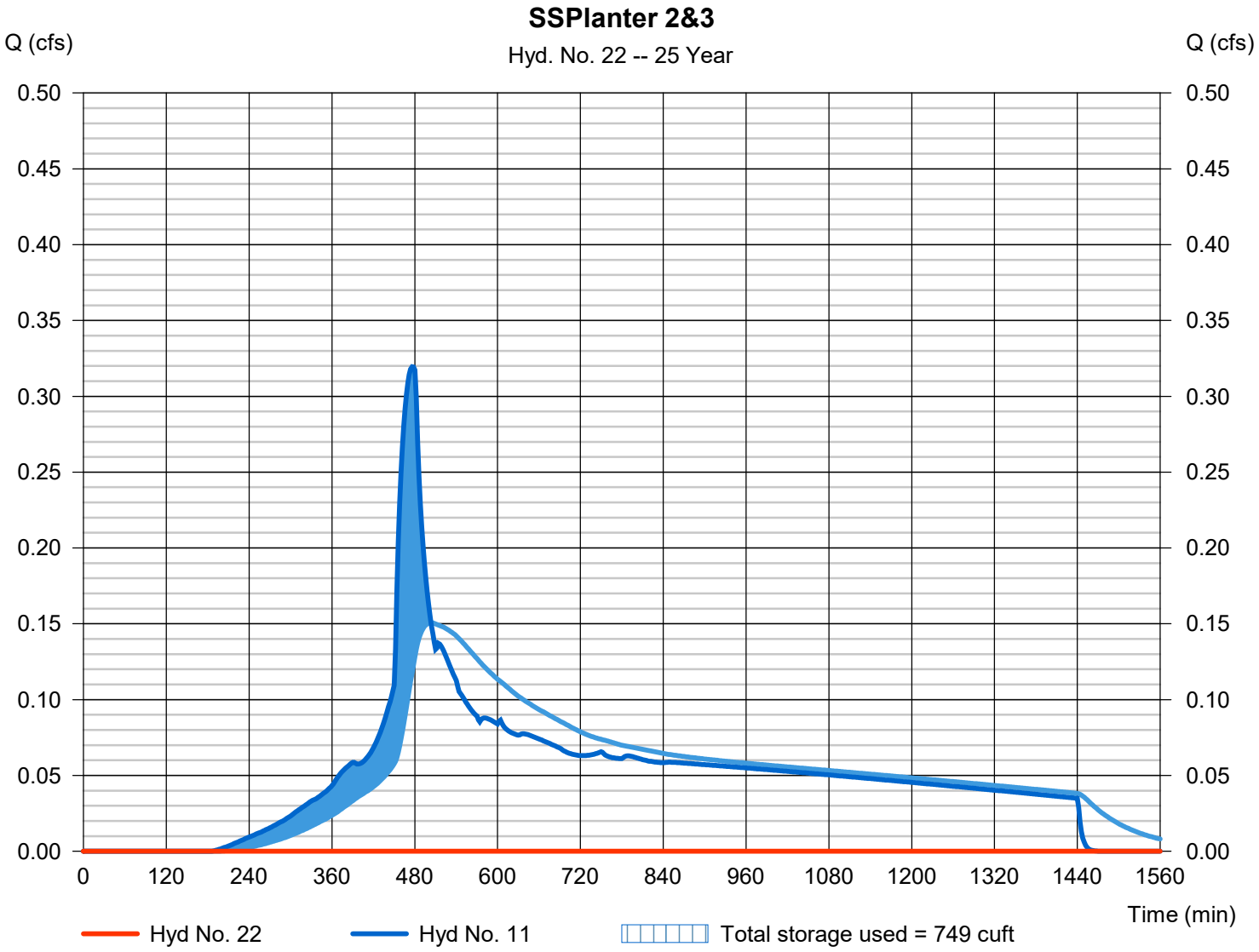
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Wednesday, 03 / 23 / 2022

Hyd. No. 22

SSPlanter 2&3

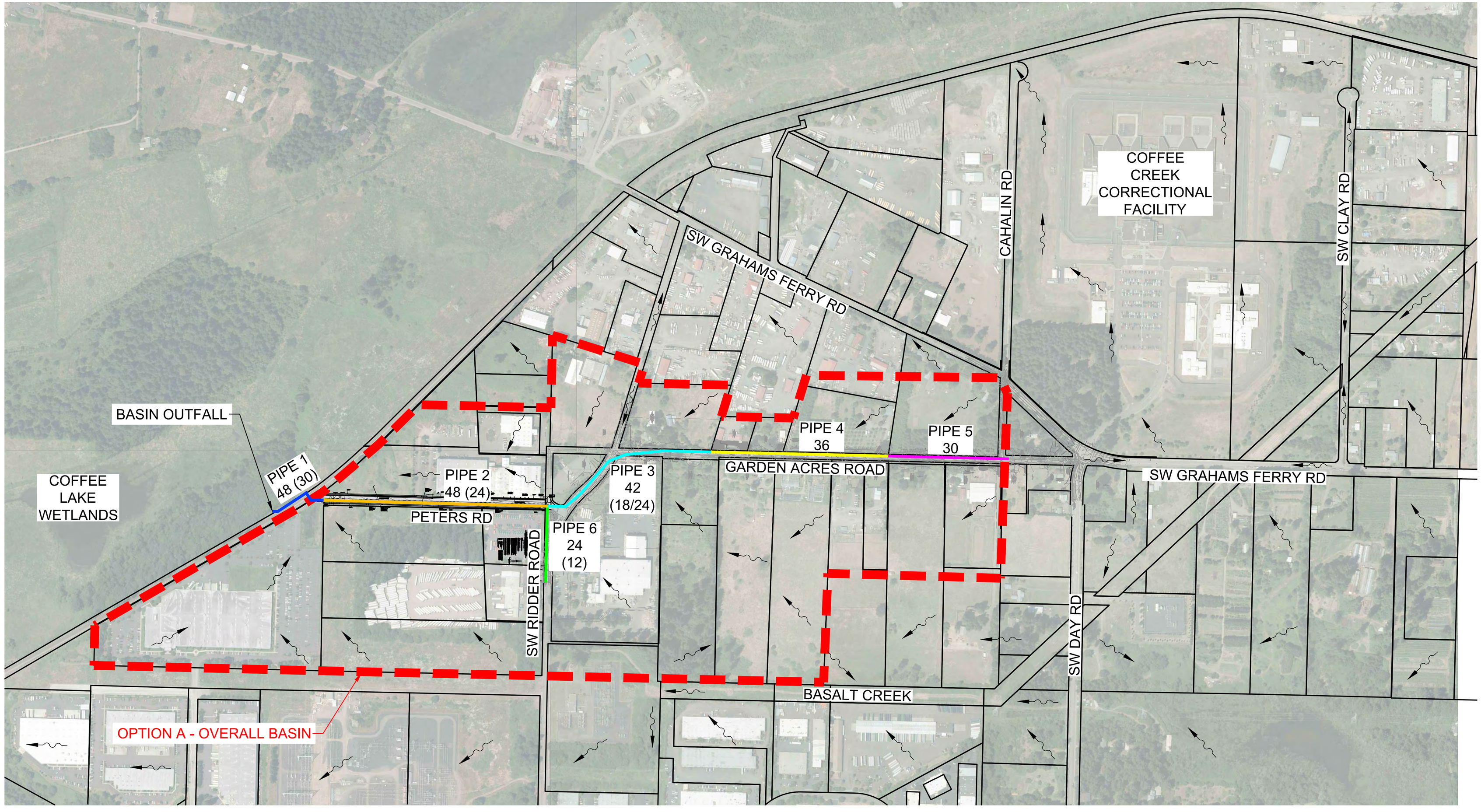
Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= 502 min
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 11 - DMA SS2&3 Post	Max. Elevation	= 102.19 ft
Reservoir name	= Planter2	Max. Storage	= 749 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



APPENDIX D

HHPR DRAINAGE BASIN STUDY FOR GARDEN ACRES



NOTES:

1.) FUTURE DEVELOPMENT DRAINAGE BASIN IS ASSUMED TO BE 85% IMPERVIOUS/15% PERVIOUS AREA.
2.) HYDROLOGIC SOIL GROUP (PER NRCS DATA) IS ASSUMED TO BE 75% GROUP B/25% GROUP C.
3.) PER ASSUMPTIONS IN NOTES 1 AND 2, CURVE NUMBER WAS CALCULATED TO BE 93 FOR OVERALL BASIN.
4.) UNDETAINED APPROACH ASSUMES TYPICAL DEVELOPED SITE DESIGN WITH LANDSCAPE/HARDSCAPE SHEET FLOW WITH NO DETENTION

LEGEND:

FLOW DIRECTION

DRAINAGE BASIN BOUNDARY

PIPE X
P
(E)

(X) PIPE SEGMENT NUMBER
(P) PROPOSED PIPE SIZE
(E) EXISTING PIPE SIZE (IF PIPE AVAILABLE)

0 150 300 600
SCALE: 1" = 300'

DATE	NO.	DESCRIPTION

REVISIONS

DESIGNED: HHPR
DRAWN: HHPR
CHECKED: DML
DATE: FEBRUARY 2018

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

DRAINAGE BASIN STUDY - OPTION A / UNDETAINED
GARDEN ACRES ROAD
WILSONVILLE, OREGON

SHEET NO. A4
JOB NO. WSV-12

P:\WSV (City of Wilsonville)\WSV-12 (Garden Acres Road)\WSV12-DWG\EXHIBITS\Drainage Basin Exhibits \WSV12_Drainage Basin Map - Option A Undetained.dwg

REPORT OF GEOTECHNICAL ENGINEERING SERVICES

Garden Acres Road Industrial Building
25190 SW Grahams Ferry Road
Wilsonville, Oregon

For
BTC Acquisitions LLC
July 16, 2021

Project: BlackCreek-1-01

NV5

July 16, 2021

BTC III Acquisitions LLC
4675 MacArthur Court, Suite 625
Newport Beach, CA 92660

Attention: Chris Sanford

Report of Geotechnical Engineering Services
Garden Acres Road Industrial Building
25190 SW Grahams Ferry Road
Wilsonville, Oregon
Project: BlackCreek-1-01

NV5 is pleased to present this report of geotechnical engineering services for the proposed new industrial building project located at 25190 SW Grahams Ferry Road in Wilsonville, Oregon. Our services have been provided in accordance with our proposal dated April 18, 2021.

We appreciate the opportunity to be of service to you. Please contact us if you have questions regarding this report.

Sincerely,

NV5

Shawn M. Dimke, P.E., G.E.
Principal Engineer

cc: Kim Schoenfelder, KGIP (via email only)

SMD:kt
Attachments
Document ID: BlackCreek-1-01-071621-geor.docx

EXECUTIVE SUMMARY

We understand a new concrete tilt-up building with paved parking/driveway areas will be constructed at the site. The following provides a summary of pertinent geotechnical considerations. The report should be referenced for a thorough description of the subsurface conditions and geotechnical recommendations.

- Field infiltration testing indicates that the on-site gravel soil has high permeability and on-site stormwater disposal in the gravel soil is feasible. Considering the potential for perched groundwater on the underlying decomposed basalt at the site, we recommend assuming a design groundwater level of at least 3 feet above the depth where silt or clay decomposed basalt was encountered at test pit TP-5 and CPT probes CPT-1 and CPT-2 or above the maximum depths explored for the test pits, which did not encounter the underlying silt or clay decomposed basalt. Accordingly, we recommend assuming a design ground water depth of 12 feet BGS (3 feet above the maximum depth explored) near test pit TP-2 where the infiltration tests were conducted.

- Refusal on boulders was encountered using a Case 580 backhoe with a toothed bucket in test pits TP-7 and TP-10 at depths of 8 feet and 10 feet BGS, respectively. Excavation in the native gravel should be possible with conventional earthwork equipment but can be difficult and result in enlarged trenches due to the presence of cobbles and boulders. In addition, steep excavation cuts in the gravel soil will be prone to slight to severe raveling and caving.

- Foundation loads can be supported on shallow foundations established on undisturbed native soil or structural fill over undisturbed native soil designed using an allowable bearing pressure of 3,000 psf. The allowable bearing pressures can be increased to 4,000 psf for foundations bearing on the gravel unit or on granular pads that extend down to the gravel unit or have a thickness of at least 2 feet. Gravel was typically encountered at or near the ground surface but ranged up to 7 feet BGS in test pit TP-5 near the southeast corner of the site

- The silty, clayey, and fine-grained soil present at the ground surface is easily disturbed during the wet season. If not carefully executed, site earthwork can create soft areas and moderate repair costs can result. Subgrade protection is essential and may include placing 12 to 18 inches of granular material over subgrade for staging and haul road areas or cement amending the subgrade and covering it with a thinner layer of crushed rock.

- The silty, clayey, and fine-grained soil present at the ground surface can be sensitive to small changes in moisture content and difficult, if not impossible, to adequately compact during wet weather or when the moisture content of the soil is more than a couple of percent above the optimum required for compaction. Depending on the time of year, significant drying will likely be required before using on-site silty, clayey, and fine-grained soil as structural fill. Accordingly, the on-site silty, clayey, and fine-grained soil can typically only be placed as structural fill during dry summer months. Large equipment with high energy will be needed to adequately compact gravel soil containing cobbles.

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ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
AC	asphalt concrete
ACP	Asphalt Concrete Pavement
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
BGS	below ground surface
CPT	cone penetration test
CRBG	Columbia River Basalt Group
DCP	dynamic cone penetrometer
ESAL	equivalent single-axle load
g	gravitational acceleration (32.2 feet/second^2)
H:V	horizontal to vertical
IBC	International Building Code
MCE	maximum considered earthquake
OSHA	Occupational Safety and Health Administration
OSSC	Oregon Standard Specifications for Construction (2021)
pcf	pounds per cubic foot
pci	pounds per cubic inch
PG	performance grade
psf	pounds per square foot
psi	pounds per square inch
TI	Traffic Index
µm	micrometer

1.0 INTRODUCTION

NV5 is pleased to present this report of geotechnical engineering services for the proposed new industrial building project located at 25190 SW Grahams Ferry Road in Wilsonville, Oregon. Figure 1 shows the site relative to existing physical features and streets. Figure 2 shows the approximate exploration locations relative to proposed improvements. Acronyms and abbreviations used herein are defined above, immediately following the Table of Contents.

1.1 PROJECT UNDERSTANDING

KG Investments provided us with preliminary project information and Mackenzie provided us with a preliminary site plan. We understand a 151,480-square-foot industrial building will be constructed with loading docks along the western side and associated driveways, parking, and utilities. We anticipate the building will be a concrete tilt-up structure. Structural loads have not been determined at the time of this report. Based on our experience with similar projects, we assume maximum column and wall loads of approximately 120 kips and 5 kips per foot, respectively. We anticipate maximum distributed floor loads will generally be less than 300 psf. We understand the right-of-way for SW Cahalin Road along the northern edge of the site has been or will be vacated. A water quality/infiltration swale is proposed in the southwestern portion of the site. Cuts and fills are expected to be less than 5 feet each based on the relatively flat existing grades at the site.

2.0 PURPOSE AND SCOPE

The purpose of our services was to provide geotechnical engineering recommendations for the proposed development. The specific scope of our services is summarized as follows:

- Reviewed readily available geotechnical reports, geologic mapping, and aerial photographs for the site and vicinity.
- Coordinated utility locates, site access, and subconsultant services for the subsurface exploration.
- Conducted the following explorations and field testing:
  - Excavated 11 test pits to depths between 8 and 15 feet BGS.
  - Conducted DCP testing near three of the test pit explorations to estimate subgrade resilient modulus for pavement design.
  - Conducted two infiltration tests.
  - Advanced two CPT probes to practical refusal at depths of 46.1 to 49.2 feet BGS. A pore pressure dissipation test was conducted in each of the CPT probes and shear wave velocity measurements were obtained at 2-meter intervals in one of the CPT probes.
- Collected undisturbed and disturbed soil samples for laboratory testing and maintained a log of soil and groundwater conditions encountered in each exploration.
- Performed the following laboratory tests on select soil samples:
  - Twenty-six moisture content determinations
  - Five fines content determinations
  - One Atterberg limits test

- Provided recommendations for site preparation, grading and drainage, stripping depths, fill type for imported material, compaction criteria, trench excavation and backfill, use of on-site soil, and wet/dry weather earthwork.
- Provided recommendations for design and construction of shallow spread foundations, including allowable design bearing pressure, minimum footing depth and width, passive resistance capacity, and coefficient of friction.
- Provided recommendations for preparation of floor slab subgrade.
- Recommended design criteria for retaining walls, including lateral earth pressures, backfill, compaction, and drainage.
- Provided infiltration test results and recommendations for design infiltration rates.
- Provided recommendations for managing identified groundwater conditions that may affect the performance of structures.
- Provided recommendations for new AC pavement for on-site parking/driveway areas for typical traffic loads based on our experience with similar projects.
- Provided recommendations for subsurface drainage of foundations and roadways, as necessary.
- Provided recommendations for IBC seismic coefficients and evaluated the risk of liquefaction at the site.
- Prepared this geotechnical engineering report that presents our findings, conclusions, and recommendations.

3.0 SITE CONDITIONS

3.1 GEOLOGIC SETTING

3.1.1 Regional Setting

The site is located in the Tualatin Basin physiographic province, which is a northwest-southeast trending, pull-apart sub-basin of the Willamette Valley (Wilson, 1998). The Tualatin Basin is separated from adjacent sub-basins of the Willamette Valley by slightly folded and faulted basalt flows of the CRBG, which forms topographic divides between adjacent basins (Popowski, 1997). The Coast Range and Chehalem Mountains bound the Tualatin Basin to the west and south, and the Tualatin Mountains (Portland Hills) bound the Portland Basin to the north and east. The region has undergone large-scale and localized tectonic activity, which has contributed to form the hills and valleys in the Willamette Valley.

3.1.2 Site Geology

The surface geologic unit is mapped as Pleistocene Age (15,500 to 13,000 years before present) catastrophic Missoula flood deposits, which consist of poorly consolidated, fine- to coarse-grained gravel, sand, silt, and clay. The Missoula flood deposits resulted from a series of catastrophic late Pleistocene glacial outburst floods. During this time interval, enormous floods would periodically flow across eastern Washington and down the Columbia River Valley caused by failures of a glacial ice dam that impounded a large lake located in southwestern Montana (Lake Missoula).

In the general vicinity of the site, the Missoula flood waters were large enough to overtop the pre-existing topographic divide between the Tualatin Valley and Willamette Valley near Sherwood, Oregon. High velocity flood waters carved deep channels into the CRBG in the area, creating

what is known as the Tonquin Scablands (Wilson, 1998). In places, the flood waters removed decomposed and weathered basalt and eventually down cut and entrenched into less weathered material. Madin (1990) divides these flood deposits into a coarse facies dominated by gravel and sand and a fine facies consisting of sand and silt. The flood deposits are generally thin and lap onto the weathered surface of the CRBG.

Underlying the flood deposits is the middle Miocene Age (20 million to 10 million years before present) CRBG. The CRBG represents the oldest geologic unit encountered at the site and forms many of the topographic highlands within the Tualatin Valley (Wilson, 1998), and the CRBG is up to 1,000 feet thick within the Tualatin Valley (Schlicker and Deacon, 1967) with individual flows ranging between 10 and 100 feet thick. The CRBG is composed of a series of basalt flows erupted from linear vent systems in southeastern Washington that flowed down the course of the ancestral Columbia River until reaching the Pacific Ocean. Some of these lava flows ponded and cooled in the northern Willamette Valley, resulting in a stacked series of basalt units. Sediments deposited on the surface of an individual basalt flow would be covered by subsequent flows, resulting in a stacked sequence of basalt flows and sedimentary interbeds. These thick flows were subsequently folded and faulted by compressional tectonics in the region.

A hiatus between lava flow emplacements can create conditions of deep weathering of the basalt, resulting in a breakdown of the rock minerals to clay components forming a soil horizon (saprolite). The hiatus periods may have resulted in thick sections of severely weathered basalt and deposition of sedimentary interbeds between basalt flow units. Where the CRBG was exposed for an extensive period of time, the rock is decomposed to form a thick, lateritic soil consisting of clayey gravel or clayey sand containing cobbles and boulders.

3.2 SURFACE CONDITIONS

The site is located east of SW Grahams Ferry Road and west of SW Garden Acres Road, south of the intersections with SW Cahalin Road. The site is surrounded by a mix of residential and industrial properties and is currently developed with two single-family residences with associated ancillary structures that are accessed off SW Garden Acres Road. One residence is in the northwestern portion of the site and one is in the southwestern portion of the site. The center portion of the site is an agricultural field that is surrounded by deciduous trees on the south, mid-size fir trees on the east, large fir trees on the north, and a mix of trees and shrubs on the west. The site slopes very gently from north to south with elevations ranging from 250 to 237 feet based on Google Earth.

3.3 SUBSURFACE CONDITIONS

3.3.1 General

We explored subsurface conditions at the site by excavating 11 test pits (TP-1 through TP-11) to depths of between 8 and 15 feet BGS and advancing 2 CPT probes (CPT-1 and CPT-2) to depths of 46.1 and 49.2 feet BGS, respectively. Figure 2 shows the approximate exploration locations. A description of the exploration and laboratory testing programs, the test pit logs, and the results of laboratory testing are presented in Appendix A. The results of the CPT probes are presented in Appendix B. DCP testing was performed at three test pit locations (TP-1, TP-9, and TP-11) and

the results and resilient moduli estimates are presented in Appendix C. The results of prior explorations completed in SW Garden Acres Road bordering the east side of the site are presented in Appendix D.

Based on the results of our explorations, the subsurface conditions at the site generally consist of silty or clayey gravel with cobbles and boulders. Silty sand or silt was encountered overlying the gravel to depths of 2.5 feet and 7 feet BGS in test pits TP-2 and TP-5, respectively. The gravel is generally underlain by decomposed basalt consisting of medium stiff to very stiff silt and clay at depths of 10 to 11 feet BGS in CPT probes CPT-1 and CPT-2 and test pit TP-5. The depths which gravel was encountered at each of our explorations are provided on Figure 2. CPT probes CPT-1 and CPT-2 were pushed to refusal presumably on more competent decomposed or weathered basalt at depths of 46.1 and 49.2 feet BGS, respectively.

A 2- to 6-inch-thick root zone and 6- to 16-inch-thick topsoil or tilled zone were encountered in most of the explorations. The following presents more detailed information on the soil units.

3.3.2 Silty Sand and Silt

Silty sand or silt was encountered at the ground surface to 2.5 and 7 feet BGS in test pits TP-2 and TP-5, respectively. The silty sand is medium dense and the silt is stiff. The tested moisture content of the silt ranged from 18 to 20 percent at the time of our explorations.

3.3.3 Gravel

Silty or clayey gravel was encountered from the ground surface or below the silt and silty sand, where present, to the depths explored in all the test pits, except TP-5 where the gravel only extended to 10 feet BGS. The gravel unit contains varying proportion of boulders, cobbles, sand, silt, and clay. Refusal on boulders was encountered using a Case 580 backhoe with a toothed bucket in test pits TP-7 and TP-10 at depths of 8 and 10 feet BGS, respectively. The gravel particles are generally subrounded to angular. Laboratory testing indicates the moisture content of the gravel was between 5 and 30 percent at the time of our explorations. Fines contents (silt and clay particles) in select samples of the gravel soil ranged from 27 to 39 percent.

3.3.4 Silt and Clay (Decomposed Basalt)

Medium stiff silt residual soil (from decomposed basalt) was encountered in test pit TP-5 from 10 feet BGS to the depth explored of 15 feet BGS. Silt and clay interpreted as decomposed basalt was also encountered in CPT probes CPT-1 and CPT-2 below depths of 11 and 10 feet BGS, respectively. The silt and clay consistency varies from medium stiff to hard with the stiffness increasing with depth based on the CPT probes. An Atterberg limits test indicates the silt exhibits high plasticity. The tested moisture content of the high plasticity silt ranged from 46 to 53 percent at the time of our explorations.

3.3.5 Groundwater

Groundwater was not encountered in any of the test pit explorations. Perched groundwater has been observed on decomposed basalt soils at shallow depths near the site and should be expected to perch on the underlying decomposed basalt soil at the site. Pore pressure dissipation tests indicate groundwater depths of 10.2 and 20.8 feet BGS in CPT probes CPT-1

and CPT-2, respectively, at the time of our explorations. The depth to groundwater may fluctuate in response to prolonged rainfall, seasonal changes, changes in surface topography, and other factors not observed during this study.

3.4 INFILTRATION TESTING

We understand that on-site infiltration is being considered for stormwater disposal. Infiltration testing was performed at two depths in one test pit (TP-2) to assist in design/evaluation of stormwater disposal facilities. Water was added to the open pits but drained too quickly to obtain falling head infiltration measurements. To estimate the infiltration rates, we measured the total volume of water placed in the excavation, recorded the time to fully infiltrate, and estimated the infiltration area. The final test results are summarized in Table 1. Due to limitations of the testing in the gravel soil, we have reported a maximum rate of 50 inches per hour.

Table 1. Infiltration Test Results

Location	Depth (feet BGS)	Soil Type at Test Depth	Measured Infiltration Rate (inches per hour)	Fines Content[1] (percent)
TP-2	4	Clayey Gravel with Sand and Cobbles	>50	27
TP-2	8	Clayey Gravel with Sand, Cobbles, and Boulders	>50	28

1. particles finer than 75 µm by dry weight

4.0 DESIGN RECOMMENDATIONS

4.1 SEISMIC CONSIDERATIONS

Based on our explorations and shear wave velocity testing, the design parameters in Table 2 can be used to compute seismic base shear forces, provided the structure will be designed using the applicable provisions of ASCE 7-16.

Table 2. Seismic Design Parameters

Parameter	Short Period (T_s = 0.2 second)	1 Second Period (T_1 = 1.0 second)
MCE Spectral Acceleration, S	S_s = 0.826 g	S_1 = 0.386 g
Site Class	C	
Site Coefficient, F	F_a = 1.200	F_v = 1.500
Adjusted Spectral Acceleration, S_M	S_{MS} = 0.991 g	S_{M1} = 0.579 g
Design Spectral Response Acceleration Parameters, S_D	S_{DS} = 0.661 g	S_{D1} = 0.386 g

Based on the results of our explorations and anticipated groundwater depth, there is a low risk of liquefaction at the site during design-level earthquakes.

4.2 FOUNDATION SUPPORT

4.2.1 General

Based on the results of our explorations and analysis, the proposed building can be supported by conventional shallow footings bearing on undisturbed native soil or structural fill placed over undisturbed native soil. Continuous wall and isolated spread footings should be at least 16 and 20 inches wide, respectively. The bottom of exterior column or continuous footings should be at least 18 inches below the lowest adjacent exterior grade. The bottom of interior footings should be established at least 12 inches below the base of the slab.

4.2.2 Bearing Capacity

Column and continuous footings established on undisturbed native soil or structural fill over undisturbed native soil and prepared as recommended should be sized based on an allowable bearing pressure of 3,000 psf. The allowable bearing pressures can be increased to 4,000 psf for foundations bearing on the gravel unit or on granular pads that extend down to the gravel unit or have a thickness of at least 2 feet. Gravel was typically encountered at or near the ground surface as shown on Figure 2 but ranged up to 7 feet BGS in test pit TP-5 near the southeastern corner of the site. Granular pads should consist of imported granular material and should extend 6 inches beyond the footing extents for each foot below the foundation subgrade. The weight of the footing and overlying backfill can be ignored in calculating footing sizes. The recommended allowable bearing pressure applies to the total of dead plus long-term live loads and can be increased by one-half for short-term loads such as those resulting from wind or seismic forces.

4.2.3 Settlement

Based on our analysis and experience with similar soil, total post-construction consolidation-induced settlement under static conditions should be less than 1 inch, with differential settlement of less than ½ inch between footings.

4.2.4 Resistance to Sliding

Lateral loads on foundations can be resisted by passive earth pressure on the sides of the structure and by friction on the base of the foundation. Our analysis indicates that the available passive earth pressure for footings confined by on-site soil and structural fill is 350 pcf, modeled as an equivalent fluid pressure. Typically, the movement required to develop the available passive resistance may be relatively large; therefore, we recommend using a reduced passive pressure of 275 pcf equivalent fluid pressure. Adjacent floor slabs, pavement, or the upper 12-inch depth of adjacent, unpaved areas should not be considered when calculating passive resistance. In addition, in order to rely on passive resistance, a minimum of 10 feet of horizontal clearance must exist between the face of the footings and any adjacent downslopes.

For foundations in contact with native soil, a coefficient of friction equal to 0.35 should be used when calculating resistance to sliding. This value can be increased to 0.45 for foundations established on the native gravel or at least 4 inches of imported granular soil.

4.2.5 Foundation Subgrade Evaluation

We recommend all foundation and floor slab subgrades be evaluated by the project geotechnical engineer or their representative to confirm suitable bearing conditions and determine if unsuitable subgrade exists. Observations should be made prior to the placement of any fill to confirm that all loose or soft material, organic material, undocumented fill, prior topsoil zones, and softened subgrades (if present) have been removed. Unsuitable soil should be removed to the extent recommended by the field representative based on their observations. If subgrade surfaces are disturbed due to the removal of oversize cobbles and boulders, we recommend placing and compacting a leveling course of imported granular material at the surface.

Foundation-bearing surfaces should not be exposed to standing water. Should water infiltrate and pool in the excavation, the water and any damaged subgrade should be removed before placing reinforcing steel or concrete.

4.3 FLOOR SLABS

Satisfactory subgrade support for building floor slabs supporting floor loads up to 300 psf is achievable, provided the subgrade is prepared in accordance with this report. We recommend a minimum 6-inch-thick layer of aggregate base be placed and compacted over the prepared soil subgrade. Imported granular material placed beneath building floor slabs should meet the requirements in the "Aggregate Base Rock" and "Fill Placement and Compaction" sections. A subgrade reaction modulus of 150 pci can be used to design floor slabs that bear on the native soil.

The near-surface native soil is generally silty or clayey and will tend to maintain high moisture content. In areas where moisture-sensitive floor slab and flooring will be installed, the installation of a vapor barrier is warranted in order to reduce the potential for moisture transmission through and efflorescence growth on the slab and flooring. In addition, 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.

4.4 INFILTRATION SYSTEMS

We understand stormwater may be infiltrated on site. Infiltration systems can be designed using the rates shown in Table 1. Groundwater is expected to perch on the decomposed basalt silt and clay soil that was observed underlying the gravel unit at depths of 10 to 11 feet BGS in three of our explorations (CPT-1, CPT-2, and TP-5) and may be slightly deeper than the depths explored in our other test pits. Considering the potential for perched groundwater, we recommend assuming a design groundwater level of at least 3 feet above the depth where silt or clay was encountered or above the maximum depths explored for the test pits that did not encounter the underlying silt or clay decomposed basalt. Accordingly, we recommend assuming a design groundwater depth of 12 feet BGS (3 feet above the maximum depth explored) near test pit TP-2 where the infiltration tests were conducted.

The infiltration rates shown in Table 1 are short-term field rates and factors of safety have not been applied for the type of infiltration system being considered. Appropriate correction factors should be applied by the project civil engineer to determine long-term infiltration parameters. Without additional testing, from a geotechnical perspective, we recommend a minimum factor of safety of at least 2 be applied to the field infiltration values presented in Table 1 to account for soil variability with depth. The infiltration system design engineer should determine and apply appropriate remaining correction factor values or factors of safety to account for the degree of in-system filtration, system maintenance, vegetation, potential for siltation, etc.

The infiltration flow rate of a disposal system will diminish over time as suspended solids and precipitates in the stormwater slowly clog the void spaces between the soil particles. Eventually the system may fail and need to be replaced or repaired. We recommend the system include an overflow that is connected to a suitable discharge point such as the storm sewer. Finally, stormwater infiltration systems will cause localized high groundwater levels; therefore, they should not be located near basement walls, retaining walls, or other embedded structures unless these are specifically designed to account for the resulting hydrostatic pressure. During construction of the infiltration system, we recommend retaining NV5 to observe that subsurface conditions are consistent with those encountered in our explorations and observe infiltration rates are compatible with design rates.

4.5 RETAINING STRUCTURES

4.5.1 Assumptions

Our 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 8 feet in height, (3) the backfill is drained and consists of imported granular materials, 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.

4.5.2 Wall Design Parameters

For unrestrained retaining walls, an active equivalent fluid pressure of 35 pcf should be used for design. Where retaining walls are restrained from rotation (such as basement walls), an equivalent fluid pressure of 55 pcf should be used for design. A superimposed seismic lateral

force should be calculated based on a dynamic force of $7H^2$ pounds per lineal foot of wall (where H is the height of the wall in feet) and applied as a distributed load with the centroid located at a distance of 0.6H from the base of the wall.

If surcharges (e.g., retained slopes, structure foundations, vehicles, steep slopes, terraced walls, etc.) are located within a horizontal distance from the back of a wall equal to the height of the wall, additional pressures will need to be accounted for in the wall design. Our office should be contacted for appropriate wall surcharges based on the actual magnitude and configuration of the applied loads. The base of the wall footing excavations should extend a minimum of 12 inches below the lowest adjacent grade. The wall footings should be designed in accordance with the "Foundation Support" section.

4.5.3 Wall Drainage and Backfill

The above design parameters have been provided assuming back-of-wall drains will be installed to prevent buildup of hydrostatic pressures behind all walls. If a drainage system is not installed, our office should be contacted for revised design forces.

Backfill material placed behind retaining walls and extending a horizontal distance of ½H (where H is the height of the retaining wall) should consist of select granular wall backfill meeting the requirements described in the "Structural Fill" section. Alternatively, the native soil can be used as backfill material, provided a minimum 1-foot-wide column of angular drain rock wrapped in a geotextile is placed against the wall and the native soil can be adequately moisture conditioned for compaction. The rock column should extend from the perforated drainpipe to within approximately 1 foot of the ground surface. The angular drain rock should meet the requirements provided in the "Structural Fill" section. All wall backfill should be placed and compacted as recommended for select granular wall backfill in the "Structural Fill" section.

Perforated collector pipes should be placed at the base of the granular backfill behind the walls. The pipe should be embedded in a minimum 1-foot-wide zone of angular drain rock. The drain rock should meet specifications provided in the "Structural Fill" section. The drain rock should be wrapped in a drainage geotextile fabric meeting the requirements in the "Geotextile Fabric" section. The collector pipes should discharge at an appropriate location away from the base of the wall. Unless measures are taken to prevent backflow into the drainage system of the wall, the discharge pipe should not be tied directly into stormwater drain systems.

Settlement of up to 1 percent of the wall height commonly occurs immediately adjacent to the wall as the wall rotates and develops active lateral earth pressures. Consequently, we recommend that construction of flatwork adjacent to retaining walls be postponed at least four weeks after backfilling of the wall, unless survey data indicates that settlement is complete prior to that time.

4.6 PAVEMENT DESIGN

Pavement should be installed on prepared subgrade or new engineered fill prepared in conformance with the "Construction" section. Our pavement recommendations are based on the following assumptions:

- The top 12 inches of soil subgrade below the pavement section is compacted to at least 92 percent of its maximum density, per ASTM D1557, or observations indicate that it is in a firm, unyielding condition.
- Resilient moduli of 6,000 psi for on-site subgrade soil based on DCP testing and resilient moduli of 20,000 psi for aggregate base rock.
- Initial and terminal serviceability indices of 4.2 and 2.5, respectively.
- Reliability of 75 percent and standard deviation of 0.45.
- Structural coefficients of 0.42 and 0.10 for the AC and aggregate base rock, respectively.
- A 20-year design life.

If any of these assumptions vary from project design values, our office should be contacted with the appropriate information so that the pavement designs can be revised. Our pavement design recommendations based on the requested TI levels are summarized in Table 3. The design team should select the most appropriate design traffic level. This may vary for different roads within the development. All of the recommended pavement sections with subgrades prepared as recommended are suitable to support an occasional 80,000-pound fire truck.

Table 3. Pavement Section Thickness

Traffic Levels		Pavement Section Thicknesses on On-Site Subgrade[1] (inches)		Pavement Section Thicknesses on Cement-Amended Subgrade[2] (inches)	
TI	ESAL	AC	Base Rock	AC	Base Rock
5	7,200	2.5	6.0	2.5	4.0
7	121,000	3.0	11.0	3.0	4.0
8	372,000	4.5	11.0	4.5	4.0

1. All thicknesses are intended to be the minimum acceptable values.
2. Compressive strength of cement-amended soil should be at least 100 psi.

Table 3 includes the option for cement amending the subgrade. If the soil subgrade is cement amended to a minimum depth of 12 inches, the pavement thicknesses on cement-amended subgrade may be used. These sections assume the subgrade is cement amended as discussed in the "Materials" section and has a minimum seven-day compressive strength of 100 psi. We recommend assuming a minimum cement ratio of 5 percent by dry weight. In addition, to prevent strength loss during curing, cement-amended soil should be allowed to cure for at least four days prior to construction traffic or placing the base rock. Lastly, the amended subgrade should be protected with a minimum of 4 inches of base rock prior to construction traffic access.

The AC and aggregate base should meet the specifications and be placed as recommended in the "Materials" section. Aggregate base contaminated with soil during construction should be removed and replaced before paving.

4.7 DRAINAGE

Where possible, the finished ground surface around the building should be sloped away from the structure at a minimum 2 percent gradient for a distance of at least 5 feet. Downspouts or roof scuppers should discharge into a storm drain system that carries the collected water to an appropriate stormwater system. Trapped planter areas should not be created adjacent to the building without providing means for positive drainage (e.g., swales or catch basins). Embedded walls should include drainage, as discussed in the "Retaining Structures" section.

4.8 PERMANENT SLOPES

Permanent cut and fill slopes should not exceed 2H:1V. Slopes within stormwater facilities should not exceed 3H:1V. Access roads and pavement should be located at least 5 feet from the top of cut and fill slopes. The setback should be increased to 10 feet for buildings. The slopes should be planted with appropriate vegetation to provide protection against erosion as soon as possible after grading. Surface water runoff should be collected and directed away from slopes to prevent water from running down the face of the slope.

5.0 CONSTRUCTION

5.1 SITE PREPARATION

5.1.1 Demolition

Demolition should include complete removal of existing structures and pavement within 5 feet of areas to receive new pavement, buildings, retaining walls, or engineered fills. Underground utility lines, vaults, or tanks encountered in areas of new improvements should be completely removed or grouted full if left in place. Old basement/crawlspace areas or voids resulting from removal of improvements or loose soil in utility lines should be backfilled with compacted structural fill, as discussed in the "Structural Fill" section. The bottom of such excavations should be excavated to expose a firm subgrade before filling and their sides sloped at a minimum of 1H:1V to allow for more uniform compaction at the edges of the excavations.

Material generated during demolition should be transported off site for disposal or stockpiled in areas designated by the owner. In general, this material will not be suitable for re-use as engineered fill.

5.1.2 Grubbing and Stripping

Trees and shrubs should be removed from development 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 that soil disturbed during grubbing operations be removed to expose firm, undisturbed subgrade. The resulting excavations should be backfilled with structural fill.

The existing topsoil zone should be stripped and removed from all fill areas. Based on our explorations, the average depth of stripping will be approximately 4 inches, although greater stripping depths may be required to remove localized zones of loose or organic soil. The actual stripping depth should be based on field observations at the time of construction. Stripped material should be transported off site for disposal or used in landscaped areas.

5.1.3 Subgrade Evaluation

A member of our geotechnical staff should observe exposed structural subgrades and foundation excavations after stripping and site cutting have been completed to determine if there are additional areas of unsuitable or unstable soil. Our representative should observe a proof roll of structural fill, pavement, and slab subgrades with a fully loaded dump truck or similar heavy, rubber tire construction equipment to identify soft, loose, or unsuitable areas. In areas not accessible to proof rolling equipment, the subgrade should be evaluated by probing. Areas identified as soft, unstable, or otherwise unsuitable should be over-excavated and replaced with compacted material recommended for structural fill. Areas that appear too wet or soft to support proof rolling or compaction equipment should be evaluated by probing and prepared in accordance with the "Subgrade Protection" section.

5.1.4 Compacting Test Pit Locations

The test pit excavations were backfilled using the relatively minimal compactive effort of the excavator bucket. Soft spots can be expected at these locations. We recommend that this relatively uncompacted soil be removed from the test pits to a depth of 3 feet below finished subgrade. If a test pit is located within 10 feet of a footing, we recommend full-depth removal of the uncompacted soil. The resulting excavation should be brought back to grade with structural fill.

5.2 SUBGRADE PROTECTION

The silty, clayey, and fine-grained soil present at the ground surface on this site is easily disturbed. If not carefully executed, site preparation, utility trench work, and roadway excavation can create extensive soft areas and significant repair costs can result. Earthwork planning, regardless of the time of year, should include considerations for minimizing subgrade disturbance.

If construction occurs during the wet season, or if the moisture content of the surficial soil is more than a couple percentage points above optimum, site stripping and cutting may need to be accomplished using track-mounted equipment. Likewise, the use of granular haul roads and staging areas will be necessary for support of construction traffic during the rainy season or when the moisture content of the surficial soil is more than a few percentage points above optimum. The base rock thickness for pavement areas is intended to support post-construction design traffic loads and may not support construction traffic or paving equipment when the subgrade soil is wet. Accordingly, if construction is planned for periods when the subgrade soil is wet, staging and haul roads with increased thicknesses of base rock will be required.

The size of staging and haul road areas, as well as the required thickness of granular material, will vary with the contractor's sequencing of a project and exposure to construction equipment. Based on our experience, between 12 and 18 inches of imported granular material is generally required in staging areas and between 18 and 24 inches in haul roads areas. Stabilization material may be used as a substitute, provided the top 4 inches of material consists of imported granular material. The actual thickness will depend on the contractor's means and methods and, accordingly, should be the contractor's responsibility. In addition, a geotextile fabric can be placed as a barrier between fine-grained subgrades and imported granular material in areas of

repeated construction traffic, such as site entrances. The imported granular material, stabilization material, and geotextile fabric should meet the specifications in the "Materials" section.

As an alternative to thickened crushed rock sections, the subgrade can be cement amended to provide wet weather protection from construction traffic. The cement-amended subgrade should be covered by at least 4 inches of granular fill material. This recommendation is based on an assumed minimum unconfined compressive strength of 100 psi for subgrade amended to a depth of 12 to 16 inches. The actual thickness of the amended material and imported granular material will depend on the contractor's means and methods and, accordingly, should be the contractor's responsibility. Cement amendment is discussed in the "Materials" section.

5.3 EXCAVATION

Excavation in the on-site soil should generally be possible with conventional earthwork equipment. Excavation in the native gravel can be difficult due to the presence of cobbles and boulders. In addition, steep excavation cuts in the gravel soil will be prone to slight to severe raveling and caving.

5.3.1 Trenches and Shoring

Open excavation techniques may be used to excavate trenches, provided the walls of the excavation are cut at a slope of 1H:1V in the silt/clay soil and 1.5H:1V in the gravel soil and groundwater seepage is not present. In lieu of large and open cuts, approved temporary shoring may be used for excavation support. A wide variety of shoring and dewatering systems are available. Consequently, we recommend that the contractor be responsible for selecting the appropriate shoring and dewatering systems.

If box shoring is used, it should be understood that box shoring is a safety feature used to protect workers and does not prevent caving. If excavations are left open for extended periods of time, caving of the sidewalls will occur. The presence of caved material will limit the ability to properly backfill and compact the trenches. The contractor should be prepared to fill voids between the box shoring and the sidewalls of the trenches with sand or gravel before caving occurs.

If shoring is used, we recommend that the type and design of the shoring system be the responsibility of the contractor, who is in the best position to choose a system that fits the overall plan of operation.

5.3.2 Temporary Dewatering

We anticipate sumps located within a trench excavation will likely be sufficient to remove accumulated water, depending on the amount and persistence of water seepage and the length of time the trench is left open. Flow rates for dewatering are likely to vary depending on location, soil type, and the season during which the excavation occurs. Dewatering systems should be capable of adapting to variable flows. If groundwater and fine-grained soil are present in the base of the utility trench excavation, we recommend over-excavating the trench by 12 to 18 inches and placing trench stabilization material in the base.

5.3.3 Safety

All excavations should be made in accordance with applicable OSHA requirements and regulations of the state, county, and local jurisdiction. While this report describes certain approaches to excavation and dewatering, the contract documents should specify that the contractor is responsible for selecting excavation and dewatering methods, monitoring the excavations for safety, and providing shoring (as required) to protect personnel and adjacent structural elements.

5.4 MATERIALS

5.4.1 Structural Fill

5.4.1.1 General

Fill should be placed on subgrade that has been prepared in conformance with the "Site Preparation" section. A variety of material may be used as structural fill at the site. However, all material used as structural fill should be free of organic material or other unsuitable material and should meet the specifications provided in OSSC 00330 (Earthwork), OSSC 00400 (Drainage and Sewers), and OSSC 02600 (Aggregates), depending on the application. A brief characterization of some of the acceptable materials and our recommendations for their use as structural fill are provided below. Fill should be compacted as described in the "Fill Placement and Compaction" section.

5.4.1.2 On-Site Soil

The on-site material should generally be suitable for use as general structural fill, provided it is properly moisture conditioned; free of debris, organic material, and particles over 8 inches in diameter; and meets the specifications provided in OSSC 00330.12 (Borrow Material). Laboratory testing indicates that the on-site silt/clay soil was generally above optimum moisture content at the time of exploration. Significant moisture conditioning (drying) will be required to use on-site silt/clay soil for structural fill. Accordingly, extended dry weather will be required to adequately condition and place the silt/clay soil as structural fill. It will be difficult, if not impossible, to adequately compact silt/clay soil during the rainy season or during prolonged periods of rainfall unless it is cement amended. In general, silt/clay soil should only be used as structural fill during the dry summer months.

The gravel unit contains varying proportions of clay, silt, cobbles, and boulders. Portions of the gravel containing more than approximately 10 percent silt/clay particles will be difficult to compact during periods of wet weather. Boulders and cobbles over 8 inches in diameter should be removed if the material is used as structural fill. Large equipment with high energy will be needed to adequately compact gravel soil containing cobbles.

5.4.1.3 Imported Granular Material

Imported granular material used as structural fill should be pit- or quarry-run rock, crushed rock, or crushed gravel and sand and should meet the specifications provided in OSSC 00330.14 (Selected Granular Backfill) or OSSC 00330.15 (Selected Stone Backfill). The imported granular material should also be angular, should be fairly well graded between coarse and fine material, should have less than 5 percent by dry weight passing the U.S. Standard No. 200 sieve, and should have at least two fractured faces.

5.4.1.4 Stabilization Material

Stabilization material used in staging or haul road areas, in trenches, or for other applications should consist of 4- or 6-inch-minus pit- or quarry-run rock, crushed rock, or crushed gravel and sand and should meet the specifications provided in OSSC 00330.15 (Selected Stone Backfill). The material should have a maximum particle size of 6 inches, should have less than 5 percent by dry weight passing the U.S. Standard No. 4 sieve, and should have at least two mechanically fractured faces. The material should be free of organic material and other deleterious material. Stabilization material should be placed in lifts between 12 and 24 inches thick and compacted to a firm condition.

5.4.1.5 Trench Backfill

Trench backfill placed beneath, adjacent to, and for at least 12 inches above utility lines (i.e., the pipe zone) should consist of well-graded granular material with a maximum particle size of 1½ inches and less than 10 percent by dry weight passing the U.S. Standard No. 200 sieve and should meet the specifications provided in OSSC 00405.13 (Pipe Zone Material). Within roadway alignments, the remainder of the trench backfill up to the subgrade elevation should consist of well-graded granular material with a maximum particle size of 2½ inches and less than 10 percent by dry weight passing the U.S. Standard No. 200 sieve and should meet the specifications provided in OSSC 00405.14 (Trench Backfill; Class B, C, or D).

Outside of structural improvement areas (e.g., roadway alignments or building pads) trench backfill placed above the pipe zone may consist of general fill material that is free of organic material and material over 6 inches in diameter and meets the specifications provided in OSSC 00405.14 (Trench Backfill; Class A, B, C, or D).

5.4.1.6 Drain Rock

Drain rock should consist of angular, granular material with a maximum particle size of 2 inches and should meet the specifications provided in OSSC 00430.11 (Granular Drain Backfill Material). The material should be free of roots, organic material, and other unsuitable material; should have less than 2 percent by dry weight passing the U.S. Standard No. 200 sieve (washed analysis); and should have at least two mechanically fractured faces. Drain rock should be compacted to a well-keyed, firm condition.

5.4.1.7 Aggregate Base Rock

Imported granular material used as base rock for building floor slabs and pavement should consist of ¾- or 1½-inch-minus material (depending on the application) and meet the requirements in OSSC 00641 (Aggregate Subbase, Base, and Shoulders). The aggregate should have at least two mechanically fractured faces. In addition, the aggregate should have less than 5 percent by dry weight passing the U.S. Standard No. 200 sieve.

5.4.1.8 Retaining Wall Select Backfill

Backfill material placed behind retaining walls and extending a horizontal distance of ½H (where H is the height of the retaining wall) should consist of select granular material that meets the specifications provided in OSSC 00510.12 (Granular Wall Backfill) or OSSC 00510.13 (Granular

Structure Backfill). We recommend the select granular wall backfill be separated from general fill, native soil, and/or topsoil using a geotextile fabric that meets the specifications provided below for drainage geotextiles.

The backfill should be placed and compacted as recommended for structural fill, with the exception of backfill placed immediately adjacent to walls. Backfill adjacent to walls should be compacted to a lesser standard to reduce the potential for generation of excessive pressure on the walls.

5.4.2 Geotextile Fabric

5.4.2.1 Subgrade Geotextile

Subgrade geotextile should conform to OSSC Table 02320-1 and OSSC 00350 (Geosynthetic Installation). A minimum initial aggregate base lift of 6 inches is required over geotextiles.

5.4.2.2 Drainage Geotextile

Drainage geotextile should conform to Type 2 material of OSSC Table 02320-1 and OSSC 00350 (Geosynthetic Installation). A minimum initial aggregate base lift of 6 inches is required over geotextiles.

5.4.3 AC

5.4.3.1 ACP

On-site AC should be Level 2, ½-inch, dense ACP according to OSSC 00745 (Asphalt Concrete Pavement – Statistical Acceptance) and compacted to 91 percent of the maximum specific gravity of the mix, as determined by AASHTO T 209. The minimum and maximum lift thicknesses are 2.0 and 3.5 inches, respectively, for ½-inch ACP. Asphalt binder should be performance graded and conform to PG 64-22 or better.

5.4.3.2 Cold Weather Paving Considerations

In general, AC paving is not recommended during the cold weather (temperatures less than 40 degrees Fahrenheit). Compacting under these conditions can result in low compaction and premature pavement distress.

Each AC mix design has a recommended compaction temperature range that is specific for the particular AC binder used. In colder temperatures, it is more difficult to maintain the temperature of the AC mix as it can lose heat while stored in the delivery truck, as it is placed, and in the time between placement and compaction. In Oregon, the AC surface temperature during paving should be at least 40 degrees Fahrenheit for lift thickness greater than 2.5 inches and at least 50 degrees Fahrenheit for lift thickness between 2.0 and 2.5 inches.

If paving activities must take place during cold-weather construction as defined above, the project team should be consulted and a site meeting should be held to discuss ways to lessen low compaction risks.

5.4.4 Cement Amendment

5.4.4.1 General

The contractor should be aware that the presence of gravel and cobbles could make it difficult to cement amend and may cause damage to tilling equipment. The contractor is responsible for selection of adequate equipment and any damage to equipment that may be caused by the subgrade materials. The oversized materials generally need to be removed prior to amendment with the specialty tilling equipment used in cement amendment. Efforts to remove oversized materials should be conducted so they do not damage the subgrade below the cement amendment depth.

As an alternative to the use of imported granular material for wet weather structural fill, an experienced contractor may be able to amend the on-site soil with portland cement to obtain suitable support properties. Successful use of soil amendment depends on the use of correct mixing techniques, soil moisture content, and amendment quantities. Cement amendment should not be used if runoff during construction cannot be directed away from adjacent wetlands.

5.4.4.2 Subbase Stabilization

Successful use of soil amendment depends on use of correct techniques and equipment, soil moisture content, and the amount of cement added to the soil. The recommended percentage of cement is based on soil moisture contents at the time of placing the structural fill. Based on our experience, 5 percent cement by weight of dry soil is generally satisfactory when the soil moisture content does not exceed approximately 25 percent. If the soil moisture content is in the range of 25 to 35 percent, 6 to 9 percent by weight of dry soil is recommended. It is difficult to accurately predict field performance due to the variability in soil response to cement amendment. The amount of cement added to the soil may need to be adjusted based on field observations and performance. Moreover, depending on the time of year and moisture content levels during amendment, water may need to be applied during tilling to appropriately condition the soil moisture content. The amount of cement used during amendment should be based on an assumed soil dry unit weight of 110 pcf. For preliminary design purposes, we recommend a minimum of 5 percent cement. It is not possible to amend soil during heavy or continuous rainfall. Work should be completed during suitable conditions

We recommend cement-spreading equipment be equipped with balloon tires to reduce rutting and disturbance of the fine-grained soil. A static sheepsfoot or segmented pad roller with a minimum static weight of 40,000 pounds should be used for initial compaction of the fine-grained soil. A smooth-drum roller with a minimum applied linear force of 700 pounds per inch should be used for final compaction. The amended soil should be compacted to at least 92 percent of the achievable dry density at the moisture content of the material, as defined in ASTM D1557.

A minimum curing time of four days is required between amendment and construction traffic access. Construction traffic should not be allowed on unprotected, cement-amended subgrade. To protect the cement-amended surfaces from abrasion or damage, the finished surface should be covered with 4 to 6 inches of imported granular material.

Amendment depths for building/pavement, haul roads, and staging areas are typically on the order of 12, 16, and 12 inches, respectively. The crushed rock typically becomes contaminated with soil during construction. Contaminated base rock should be removed and replaced with clean rock in pavement areas. The actual thickness of the amended material and imported granular material for haul roads and staging areas will depend on the anticipated traffic, as well as the contractor's means and methods and, accordingly, should be the contractor's responsibility. Cement amending should not be attempted when air temperature is below 40 degrees Fahrenheit or during moderate to heavy precipitation. Cement should not be placed when the ground surface is saturated or standing water exists.

5.4.4.3 Cement-Amended Structural Fill

On-site silt/clay soil that is not suitable for structural fill due to high moisture content may be amended and placed as fill over a subgrade prepared in conformance with the "Site Preparation" section. The cement ratio for general cement-amended fill can generally be reduced by 1 percent (by dry weight). Typically, a minimum curing of four days is required between amendment and construction traffic access. Consecutive lifts of fill may be amended immediately after the previous lift has been amended and compacted (e.g., the four-day wait period does not apply). However, where the final lift of fill is a building or roadway subgrade, the four-day wait period is in effect for the final lift of cement-amended soil.

5.4.4.4 Other Considerations

Portland cement-amended soil is hard and has low permeability. This soil does not drain well and it is not suitable for planting. Future planted areas should not be cement amended, if practical, or accommodations should be made for drainage and planting. Moreover, cement amending soil within building areas must be done carefully to avoid trapping water under floor slabs. We should be contacted if this approach is considered. Cement amendment should not be used if runoff during construction cannot be directed away from adjacent wetlands (if any). Cement-amended runoff should be collected, monitored, and treated in accordance with Oregon Department of Environmental Quality requirements prior to being discharged.

5.4.4.5 Specification Recommendations

We recommend that the following comments be included in the specifications for the project:

- In general, cement amendment is not recommended during the cold weather (temperatures less than 40 degrees Fahrenheit) or during rainfall.
- Mixing Equipment
  - Use a pulverizer/mixer capable of uniformly mixing the cement into the soil to the design depth. Blade mixing will not be allowed.
  - Pulverize the soil-cement mixture such that 100 percent by dry weight passes a 1-inch sieve and a minimum of 70 percent passes a No. 4 sieve, exclusive of gravel or stone retained on these sieves. If water is required, the pulverizer should be equipped to inject water to a tolerance of ¼ gallon per square foot of surface area.

- Use machinery that will not disturb the subgrade, such as using low-pressure "balloon" tires on the pulverizer/mixer vehicle. If subgrade is disturbed, the tilling/amendment depth shall extend the full depth of the disturbance.
- Multiple "passes" of the tiller may be required to adequately blend the cement and soil mixture.

- Spreading Equipment
  - Use a spreader capable of distributing the cement uniformly on the ground to within 5 percent variance of the specified application rate.
  - Use machinery that will not disturb the subgrade, such as using low-pressure "balloon" tires on the spreader vehicle. If subgrade is disturbed, the tilling/amendment depth shall extend the full depth of the disturbance.
- Compaction Equipment
  - Use a static, sheepsfoot or segmented pad roller with a minimum static weight of 40,000 pounds for initial compaction of fine-grained soil (silt and clay) or an alternate approved by the geotechnical engineer.

5.5 FILL PLACEMENT AND COMPACTION

Fill soil should be compacted at a moisture content that is within 3 percent of optimum. The maximum allowable moisture content varies with the soil gradation and should be evaluated during construction. Fill and backfill material should be placed in uniform, horizontal lifts and compacted with appropriate equipment. The maximum lift thickness will vary depending on the material and compaction equipment used but should generally not exceed the loose thicknesses provided in Table 4. Fill material should be compacted in accordance with the compaction criteria provided in Table 5.

Due to the relatively high proportion of cobbles in the on-site gravel soil, we recommend this material be compacted with large compaction equipment with high energy. NV5 should be consulted to determine if the proposed compaction equipment will be sufficient to compact the gravel soil. It may not be possible to evaluate material containing cobbles with a nuclear density gauge. In this case, NV5 should evaluate compaction based on the contractor's selected means and methods and observing proof rolls for every lift of fill with loaded dump trucks.

Table 4. Recommended Uncompacted Lift Thickness

Compaction Equipment	Recommended Uncompacted Lift Thickness (inches)		
	Silty/Clayey Soil	Granular and Crushed Rock Maximum Particle Size ≤ 1½ Inches	Crushed Rock Maximum Particle Size > 1½ Inches
Hand Tools: Plate Compactor and Jumping Jack	4 to 8	4 to 8	Not Recommended
Rubber Tire Equipment	6 to 8	10 to 12	6 to 8
Light Roller	8 to 10	10 to 12	8 to 10
Heavy Roller	10 to 12	12 to 18	12 to 16
Hoe Pack Equipment	12 to 16	18 to 24	18 to 24

The table above is based on our experience and is intended to serve only as a guideline. The information provided in this table should not be included in the project specifications.

Table 5. Compaction Criteria

Fill Type	Compaction Requirements in Structural Zones		
	Percent Maximum Dry Density Determined by ASTM D1557		
	0 to 2 Feet Below Subgrade (percent)	Greater Than 2 Feet Below Subgrade (percent)	Pipe Zone (percent)
Area Fill (Granular)	95	95	----
Area Fill (Fine Grained)	92	92	----
Aggregate Bases	95	95	----
Trench Backfill[1,2]	95	92	90[1,2]
Retaining Wall Backfill	95[3]	92[3]	----

1. Trench backfill above the pipe zone in non-structural areas should be compacted to 85 percent.
2. Or as recommended by the pipe manufacturer.
3. Should be reduced to 90 percent within a horizontal distance of 3 feet from the retaining wall.

5.6 EROSION CONTROL

The fine-grained soil at this site is eroded easily by wind and water; therefore, erosion control measures should be carefully planned and in place before construction begins. Measures that can be employed to reduce erosion include the use of silt fences, hay bales, buffer zones of natural growth, sedimentation ponds, and granular haul roads. All erosion control methods should be in accordance with local jurisdiction standards. During earthwork at the site, the contractor should be responsible for temporary drainage of surface water as necessary to prevent standing water and/or erosion at the working surface.

6.0 OBSERVATION OF CONSTRUCTION

Satisfactory earthwork and foundation performance depend to a large degree on the quality of construction. Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions often requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated. In addition, sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications.

7.0 LIMITATIONS

We have prepared this report for use by BTC III Acquisitions LLC, KGIP, and members of the design and construction team for the proposed project. The data and report can be used for estimating purposes, but our report, conclusions, and interpretations should not be construed as a warranty of the subsurface conditions and are not applicable to other sites.

Soil explorations indicate soil conditions only at specific locations and only to the depths penetrated. The soil explorations do not necessarily reflect soil strata or water level variations that may exist between exploration locations. If subsurface conditions differing from those described are noted during the course of excavation and construction, re-evaluation will be necessary. In addition, if design changes are made, we should be retained to review our conclusions and recommendations and to provide a written evaluation or modification.

The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in this report for consideration in design.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

♦ ♦ ♦

We appreciate the opportunity to be of continued service to you. Please call if you have questions concerning this report or if we can provide additional services.

Sincerely,

NV5

Shawn M. Dimke, P.E., G.E.
Principal Engineer

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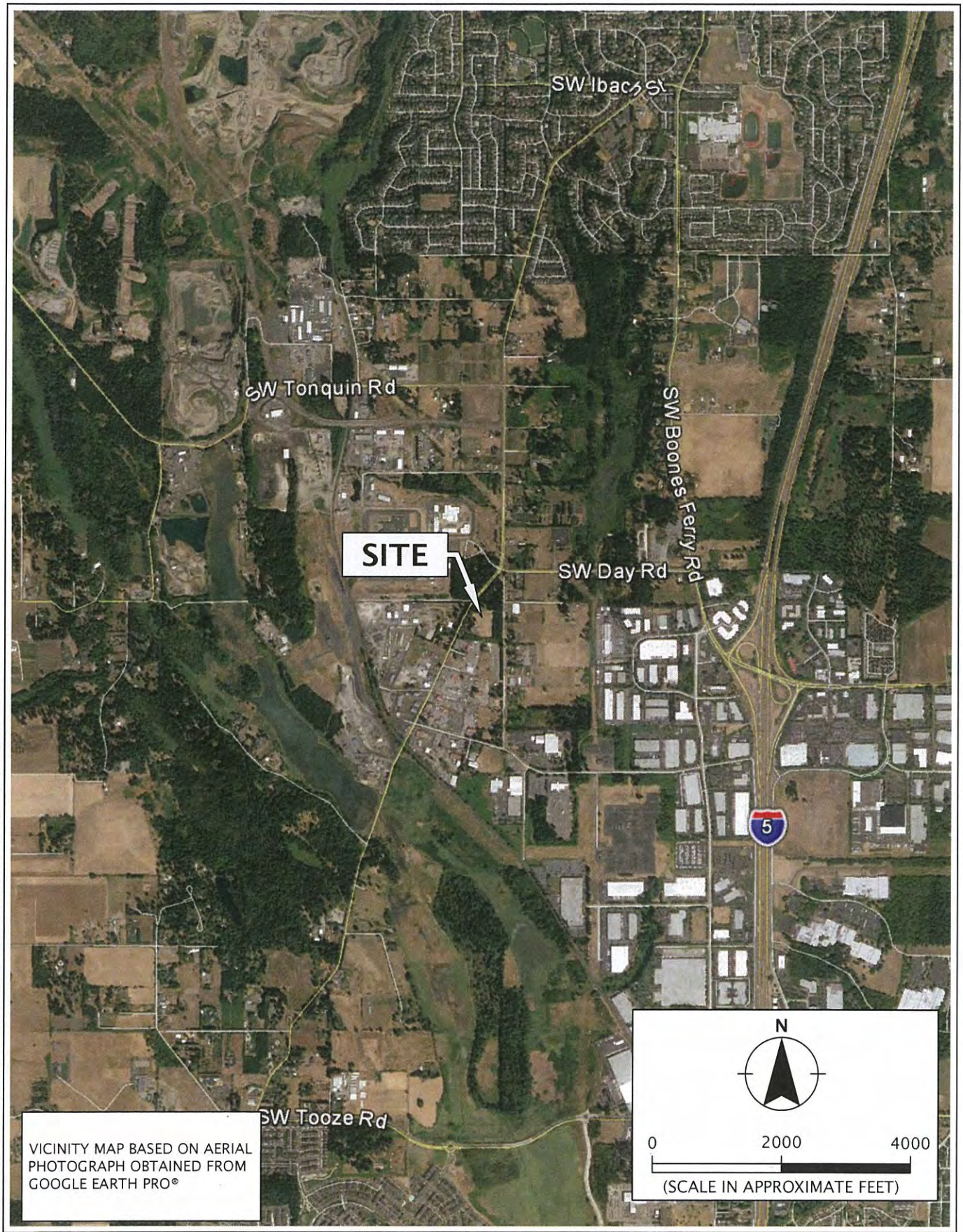
FIGURES



VICINITY MAP BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO®

NV5	BLACKCREEK-1-01	**VICINITY MAP**
	JULY 2021	GARDEN ACRES ROAD INDUSTRIAL BUILDING WILSONVILLE, OR — **FIGURE 1**

Printed By: aday | Print Date: 7/16/2021 12:20:07 PM
File Name: J:\A-D\BlackCreek\BlackCreek-1\BlackCreek-1-01\Figures\CAD\BlackCreek-1-01-VM01.dwg | Layout: FIGURE 1

LEGEND:

TP-1	TEST PIT
CPT-1	CPT
(0 - >10)	GRAVEL DEPTHS (FEET BGS)
B-1	BORING (GEODESIGN, NOVEMBER 2017)
B-04	BORING (MCMILLEN JACOBS, 2017)
C-04	CPT (MCMILLEN JACOBS, JULY 2017)

N

0 80 160

(SCALE IN FEET)

NOTES:

1. SITE PLAN BASED ON DRAWING PROVIDED BY MACKENZIE.
2. AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO ON JUNE 16, 2021.

SITE PLAN

GARDEN ACRES ROAD INDUSTRIAL BUILDING
WILSONVILLE, OR

FIGURE 2

BLACKCREEK-1-01

JULY 2021

NV5

APPENDIX A

APPENDIX A

FIELD EXPLORATIONS

GENERAL

We explored subsurface conditions at the site by excavating 11 test pits (TP-1 through TP-11) to depths between 8 and 15 feet BGS and advancing 2 CPT probes (CPT-1 and CPT-2) to depths of 46.1 and 49.2 feet BGS, respectively. The test pits were excavated by Dan J. Fischer Excavating, Inc. of Forest Gove, Oregon, on June 4, 2021 using a CASE 580 backhoe. The explorations were completed under the supervision of NV5 personnel. The exploration logs are presented in this appendix. The CPT logs are presented in Appendix B.

The locations of the explorations were determined in the field by pacing from existing site features. This information should be considered accurate to the degree implied by the method used.

SOIL SAMPLING

Representative grab samples were collected from the base and sides of the test pits. Sampling methods and intervals are shown on the exploration logs.

SOIL CLASSIFICATION

The soil samples were classified in accordance with the "Exploration Key" (Table A-1) and "Soil Classification System" (Table A-2), which are presented in this appendix. The exploration logs indicate the depths at which the soils or their characteristics change, although the change actually could be gradual. If the change occurred between sample locations, the depth was interpreted. Classifications are shown on the exploration logs.

LABORATORY TESTING

CLASSIFICATION

The soil samples were classified in the laboratory to confirm field classifications. The laboratory classifications are shown on the exploration logs if those classifications differed from the field classifications.

MOISTURE CONTENT

The natural moisture content of select soil samples was determined in general accordance with ASTM D2216. The natural moisture content is a ratio of the weight of the water to soil in a test sample and is expressed as a percentage. The test results are presented in this appendix.

PARTICLE-SIZE ANALYSIS

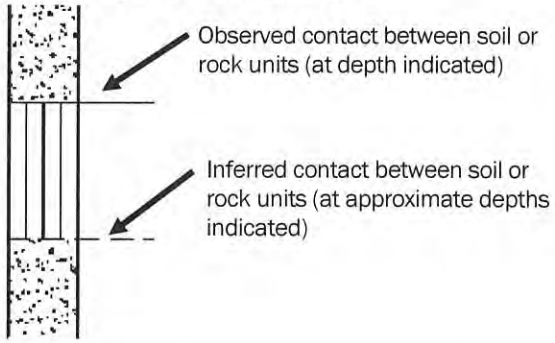
We completed particle-size analysis on select soil samples in order to determine the particle size distribution. The tests determined percent fines (passing the U.S. Standard No. 200 sieve) in general accordance with ASTM C117 or ASTM D1140. The test results are presented in this appendix.

ATTERBERG LIMITS

The plastic limit and liquid limit (Atterberg limits) of a select soil sample were determined in general accordance with ASTM D4318. The Atterberg limits and the plasticity index were completed to aid in the classification of the soil and evaluation of liquefaction susceptibility. The plastic limit is defined as the moisture content (in percent) where the soil becomes brittle. The liquid limit is defined as the moisture content where the soil begins to act similar to a liquid. The plasticity index is the difference between the liquid and plastic limits. The test results are presented in this appendix.

SYMBOL	SAMPLING DESCRIPTION
	Location of sample collected in general accordance with ASTM D1586 using Standard Penetration Test (SPT) with recovery
	Location of sample collected using thin-wall Shelby tube or Geoprobe® sampler in general accordance with ASTM D1587 with recovery
	Location of sample collected using Dames & Moore sampler and 300-pound hammer or pushed with recovery
	Location of sample collected using Dames & Moore sampler and 140-pound hammer or pushed with recovery
	Location of sample collected using 3-inch-outside diameter California split-spoon sampler and 140-pound hammer with recovery
	Location of grab sample
	Rock coring interval
	Water level during drilling
	Water level taken on date shown

Graphic Log of Soil and Rock Types



GEOTECHNICAL TESTING EXPLANATIONS

ATT	Atterberg Limits	P	Pushed Sample
CBR	California Bearing Ratio	PP	Pocket Penetrometer
CON	Consolidation	P200	Percent Passing U.S. Standard No. 200 Sieve
DD	Dry Density		
DS	Direct Shear	RES	Resilient Modulus
HYD	Hydrometer Gradation	SIEV	Sieve Gradation
MC	Moisture Content	TOR	Torvane
MD	Moisture-Density Relationship	UC	Unconfined Compressive Strength
NP	Non-Plastic	VS	Vane Shear
OC	Organic Content	kPa	Kilopascal

ENVIRONMENTAL TESTING EXPLANATIONS

CA	Sample Submitted for Chemical Analysis	ND	Not Detected
P	Pushed Sample	NS	No Visible Sheen
PID	Photoionization Detector Headspace Analysis	SS	Slight Sheen
		MS	Moderate Sheen
ppm	Parts per Million	HS	Heavy Sheen

RELATIVE DENSITY - COARSE-GRAINED SOIL

Relative Density	Standard Penetration Test (SPT) Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)
Very loose	0 - 4	0 - 11	0 - 4
Loose	4 - 10	11 - 26	4 - 10
Medium dense	10 - 30	26 - 74	10 - 30
Dense	30 - 50	74 - 120	30 - 47
Very dense	More than 50	More than 120	More than 47

CONSISTENCY - FINE-GRAINED SOIL

Consistency	Standard Penetration Test (SPT) Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)	Unconfined Compressive Strength (tsf)
Very soft	Less than 2	Less than 3	Less than 2	Less than 0.25
Soft	2 - 4	3 - 6	2 - 5	0.25 - 0.50
Medium stiff	4 - 8	6 - 12	5 - 9	0.50 - 1.0
Stiff	8 - 15	12 - 25	9 - 19	1.0 - 2.0
Very stiff	15 - 30	25 - 65	19 - 31	2.0 - 4.0
Hard	More than 30	More than 65	More than 31	More than 4.0

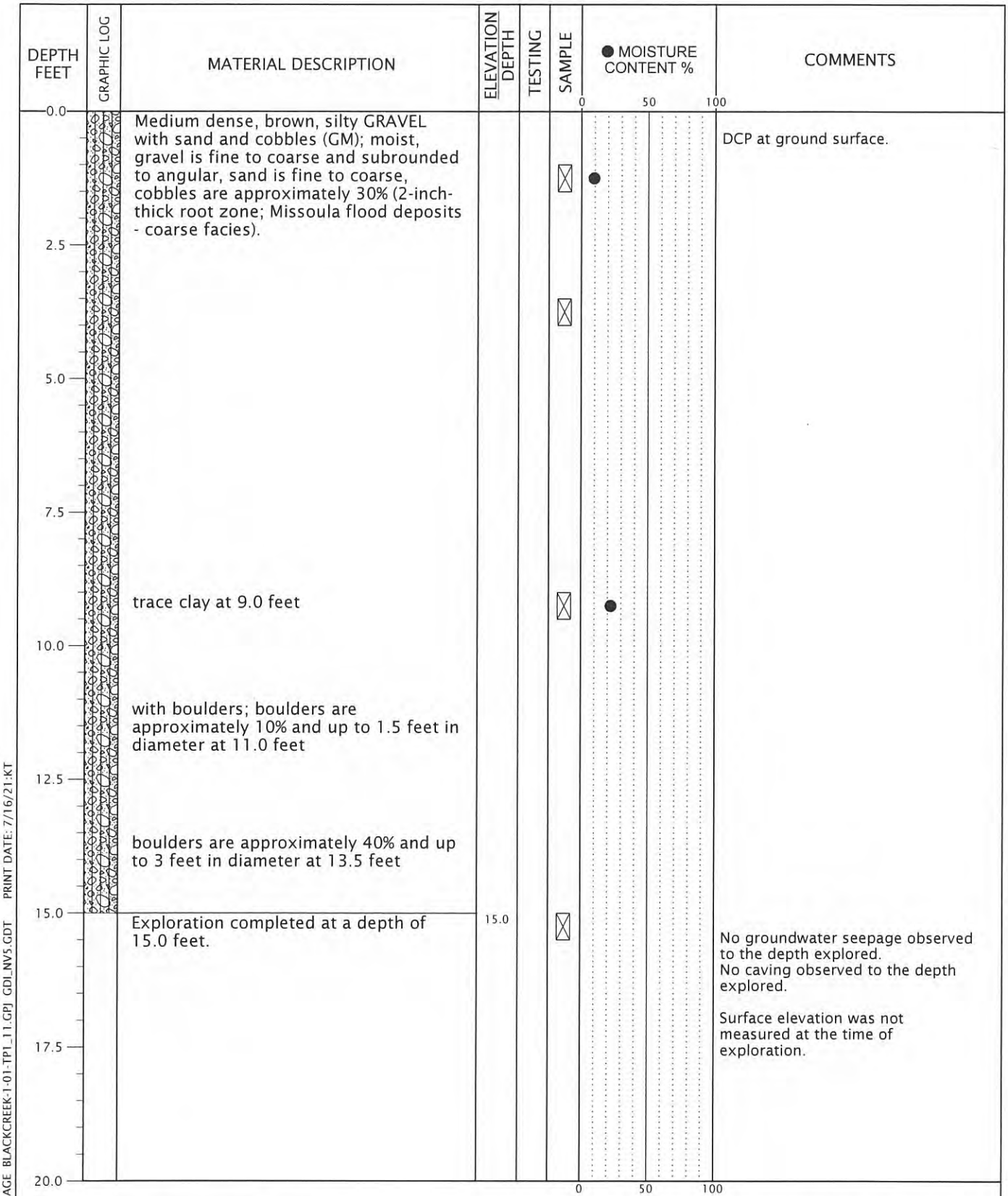
PRIMARY SOIL DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOIL (more than 50% retained on No. 200 sieve)	GRAVEL (more than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (< 5% fines)	GW or GP	GRAVEL
		GRAVEL WITH FINES (≥ 5% and ≤ 12% fines)	GW-GM or GP-GM	GRAVEL with silt
			GW-GC or GP-GC	GRAVEL with clay
		GRAVEL WITH FINES (> 12% fines)	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND (50% or more of coarse fraction passing No. 4 sieve)	CLEAN SAND (<5% fines)	SW or SP	SAND
		SAND WITH FINES (≥ 5% and ≤ 12% fines)	SW-SM or SP-SM	SAND with silt
			SW-SC or SP-SC	SAND with clay
		SAND WITH FINES (> 12% fines)	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOIL (50% or more passing No. 200 sieve)	SILT AND CLAY	Liquid limit less than 50	ML	SILT
			CL	CLAY
			CL-ML	silty CLAY
			OL	ORGANIC SILT or ORGANIC CLAY
		Liquid limit 50 or greater	MH	SILT
			CH	CLAY
			OH	ORGANIC SILT or ORGANIC CLAY
HIGHLY ORGANIC SOIL			PT	PEAT

MOISTURE CLASSIFICATION		ADDITIONAL CONSTITUENTS					
		Secondary granular components or other materials such as organics, man-made debris, etc.					
			Silt and Clay In:			Sand and Gravel In:	
Term	Field Test	Percent	Fine-Grained Soil	Coarse-Grained Soil	Percent	Fine-Grained Soil	Coarse-Grained Soil
dry	very low moisture, dry to touch						
moist	damp, without visible moisture	< 5	trace	trace	< 5	trace	trace
		5 - 12	minor	with	5 - 15	minor	minor
wet	visible free water, usually saturated	> 12	some	silty/clayey	15 - 30	with	with
					> 30	sandy/gravelly	Indicate %

NV5

SOIL CLASSIFICATION SYSTEM

TABLE A-2

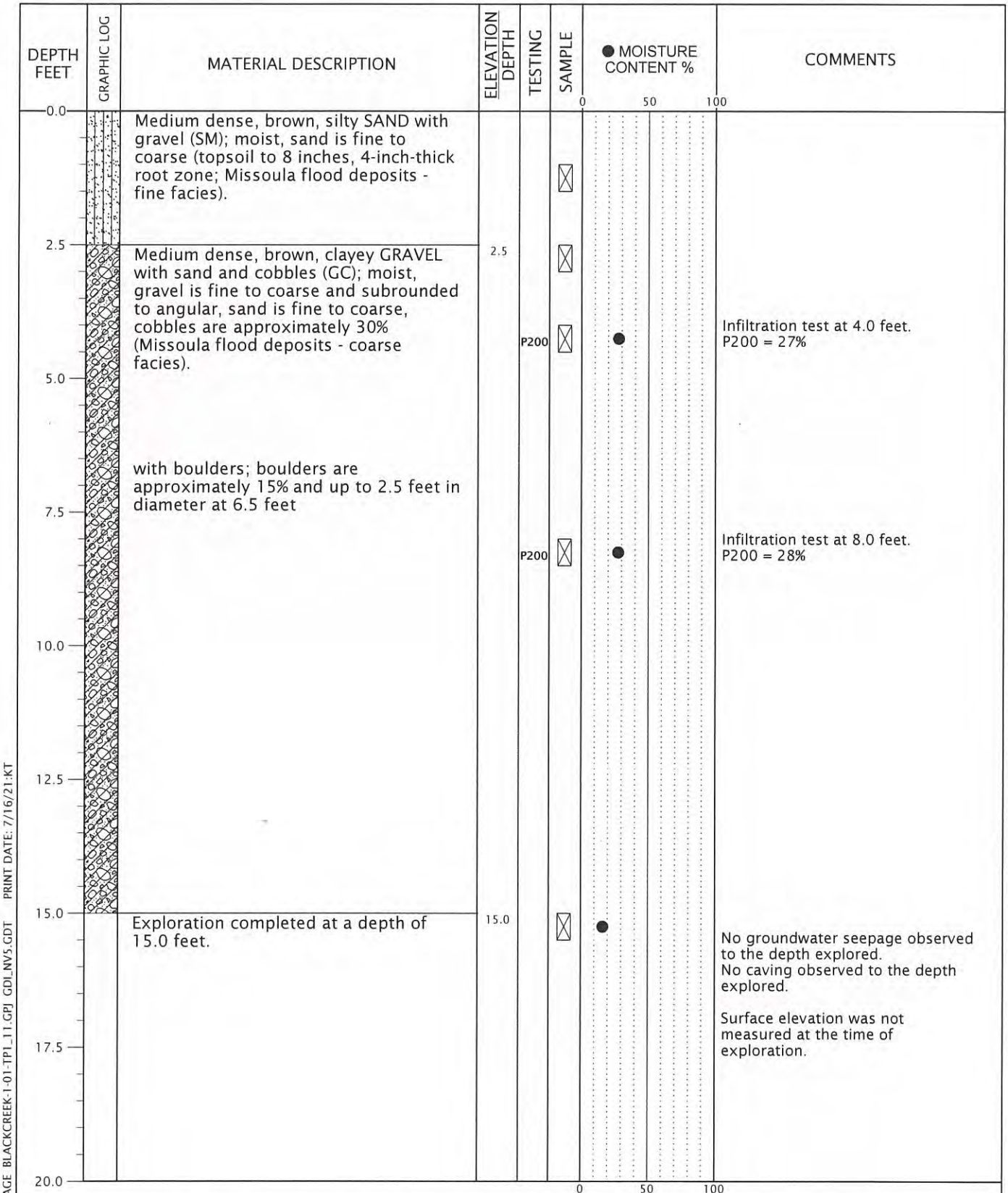


EXCAVATED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: L. Gose COMPLETED: 06/04/21

EXCAVATION METHOD: backhoe (see document text)

NV5	BLACKCREEK-1-01	**TEST PIT TP-1**	
	JULY 2021	GARDEN ACRES ROAD INDUSTRIAL BUILDING WILSONVILLE, OR	**FIGURE A-1**

TEST PIT LOG - NV5 - 1 PER PAGE BLACKCREEK-1-01-TP1_11.GPJ GDI_NV5.GDT PRINT DATE: 7/16/21:KT



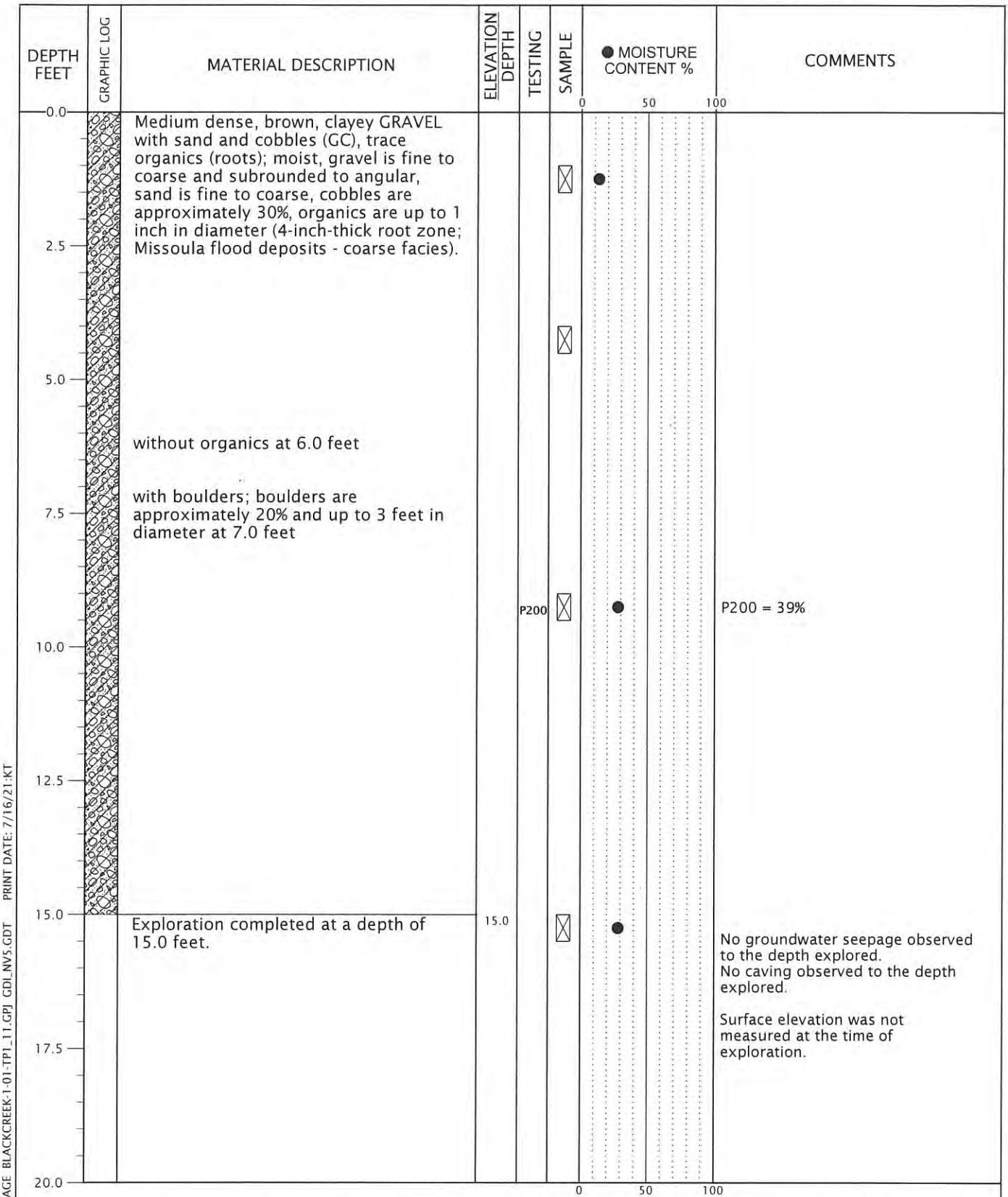
EXCAVATED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: L. Gose COMPLETED: 06/04/21

EXCAVATION METHOD: backhoe (see document text)

NV5	BLACKCREEK-1-01	**TEST PIT TP-2**
	JULY 2021	GARDEN ACRES ROAD INDUSTRIAL BUILDING WILSONVILLE, OR

FIGURE A-2

TEST PIT LOG - NV5 - 1 PER PAGE BLACKCREEK-1-01-TP1_11.GPJ GDI_NV5.GDT PRINT DATE: 7/16/21:KT



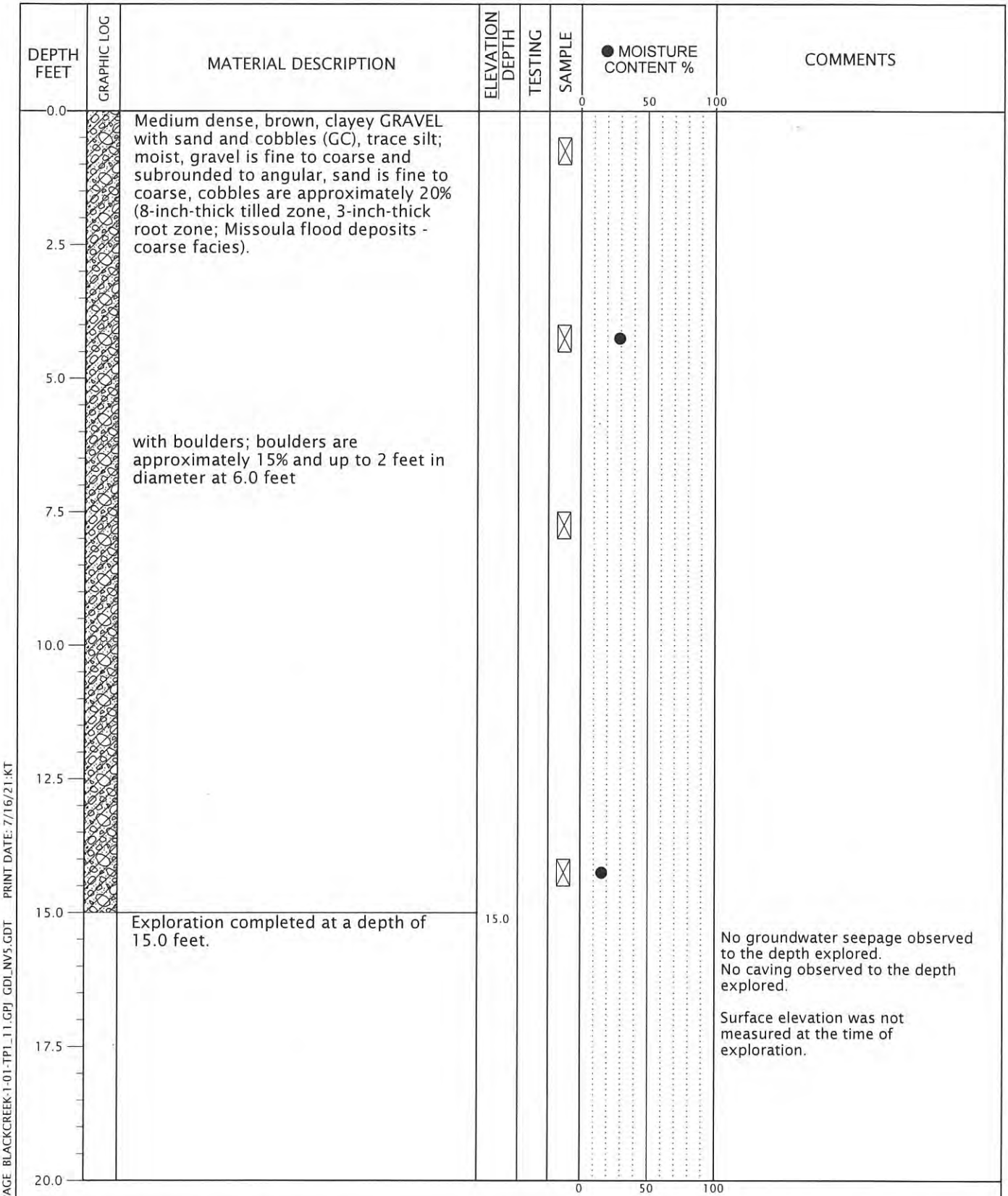
EXCAVATED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: L. Gose COMPLETED: 06/04/21

EXCAVATION METHOD: backhoe (see document text)

NV5	BLACKCREEK-1-01	**TEST PIT TP-3**
	JULY 2021	GARDEN ACRES ROAD INDUSTRIAL BUILDING WILSONVILLE, OR

FIGURE A-3

TEST PIT LOG - NV5 - 1 PER PAGE BLACKCREEK-1-01-TP1_11.GPJ GDI_NV5.GDT PRINT DATE: 7/16/21:KT

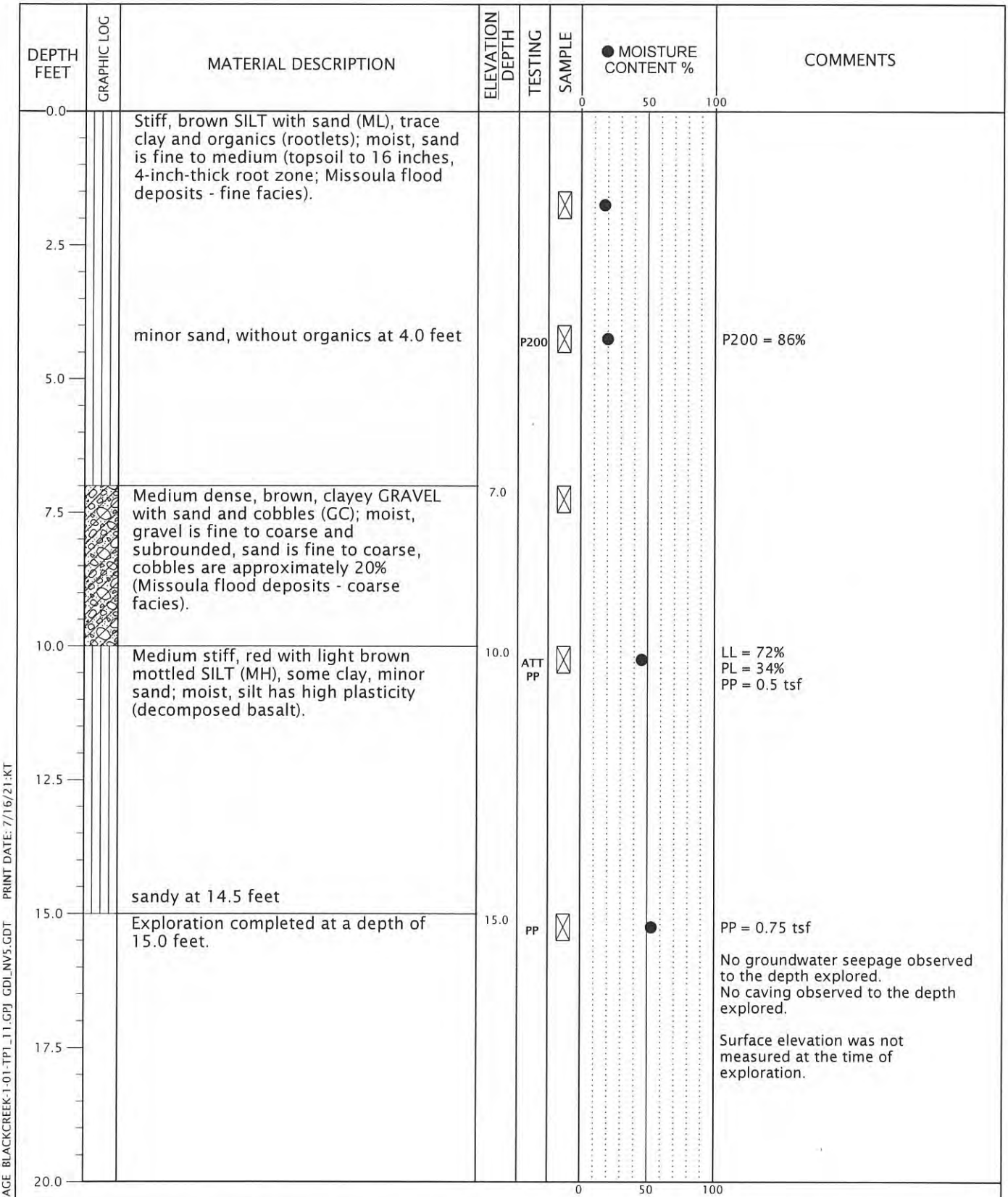


EXCAVATED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: L. Gose COMPLETED: 06/04/21

EXCAVATION METHOD: backhoe (see document text)

NV5	BLACKCREEK-1-01	**TEST PIT TP-4**	
	JULY 2021	GARDEN ACRES ROAD INDUSTRIAL BUILDING WILSONVILLE, OR	**FIGURE A-4**

TEST PIT LOG - NV5 - 1 PER PAGE BLACKCREEK-1-01-TP1_11.GPJ GDI_NV5.GDT PRINT DATE: 7/16/21:KT



EXCAVATED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: L. Gose COMPLETED: 06/04/21

EXCAVATION METHOD: backhoe (see document text)

NV5

BLACKCREEK-1-01

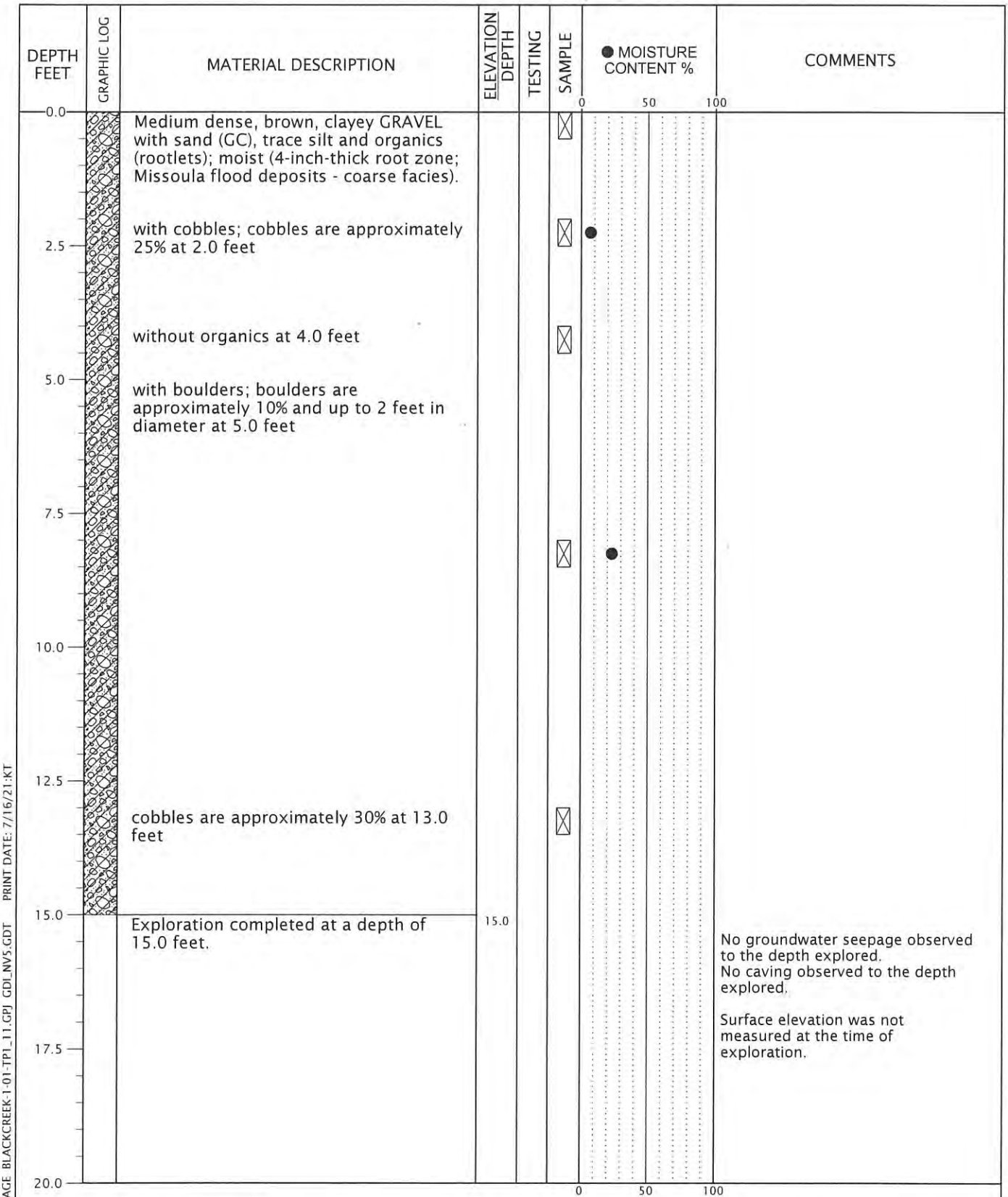
TEST PIT TP-5

JULY 2021

GARDEN ACRES ROAD INDUSTRIAL BUILDING
WILSONVILLE, OR

FIGURE A-5

TEST PIT LOG - NV5 - 1 PER PAGE BLACKCREEK-1-01-TP1_11.GPJ GDI_NV5.GDT PRINT DATE: 7/16/21:KT



TEST PIT LOG - NV5 - 1 PER PAGE BLACKCREEK-1-01-TP1_11.GPJ GDI_NV5.GDT PRINT DATE: 7/16/21-KT

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT % (0 / 50 / 100)	COMMENTS
0.0		Medium dense, brown, clayey GRAVEL with sand and cobbles (GC), trace silt; moist, gravel is fine to coarse and subrounded to angular, sand is fine to coarse, cobbles are approximately 30% (topsoil to 6 inches, 4-inch-thick root zone; Missoula flood deposits - coarse facies).			☒		
2.5							
					☒	●	
5.0		with boulders; boulders are approximately 15% and up to 2.5 feet in diameter at 4.5 feet					
7.5							
		Exploration terminated at a depth of 8.0 feet due to refusal on boulders.	8.0		☒		No groundwater seepage observed to the depth explored. No caving observed to the depth explored. Surface elevation was not measured at the time of exploration.
10.0							
12.5							
15.0							
17.5							
20.0						0 / 50 / 100	

EXCAVATED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: L. Gose COMPLETED: 06/04/21

EXCAVATION METHOD: backhoe (see document text)

NV5

BLACKCREEK-1-01

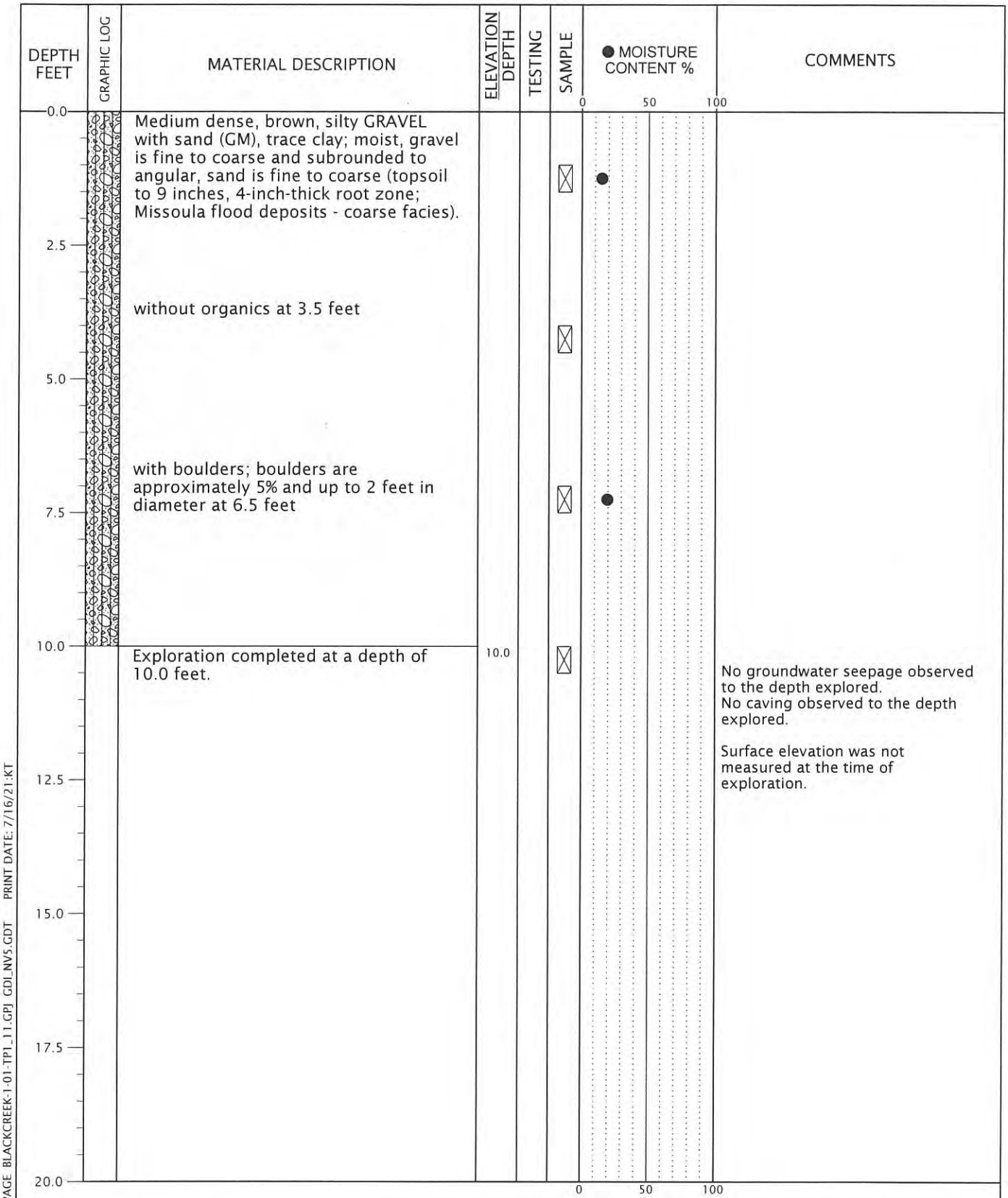
TEST PIT TP-7

JULY 2021

GARDEN ACRES ROAD INDUSTRIAL BUILDING
WILSONVILLE, OR

FIGURE A-7

TEST PIT LOG - NV5 - 1 PER PAGE BLACKCREEK-1-01-TP1_11.GPJ GDL_NV5.GDT PRINT DATE: 7/16/21:KT



TEST PIT LOG - NV5 - 1 PER PAGE BLACKCREEK-1-01-TP1_11.GPJ GDI_NV5.GDT PRINT DATE: 7/16/21:KT

NV5

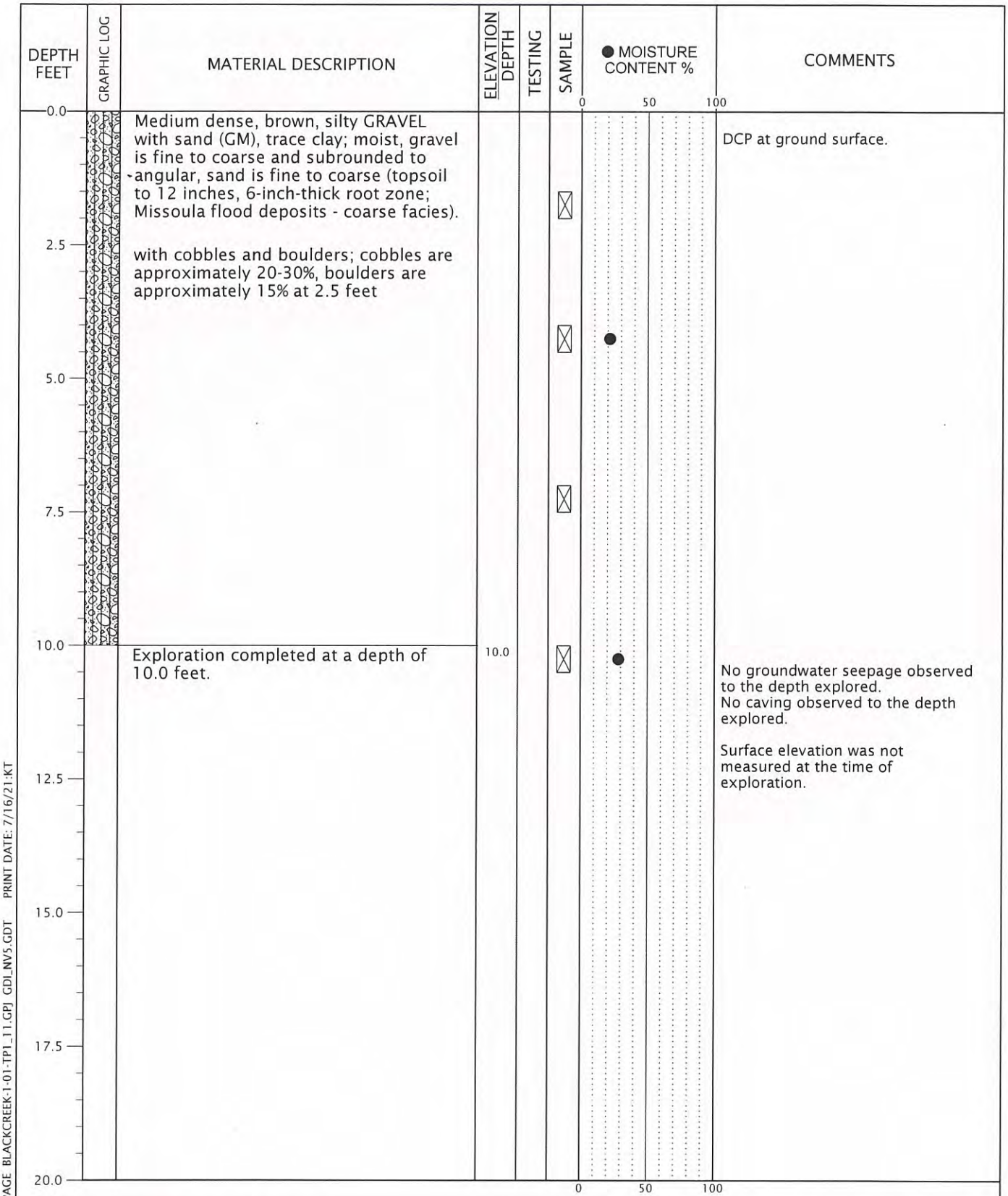
BLACKCREEK-1-01

TEST PIT TP-8

JULY 2021

GARDEN ACRES ROAD INDUSTRIAL BUILDING
WILSONVILLE, OR

FIGURE A-8



EXCAVATED BY: Dan J. Fischer Excavating, Inc.

LOGGED BY: L. Gose

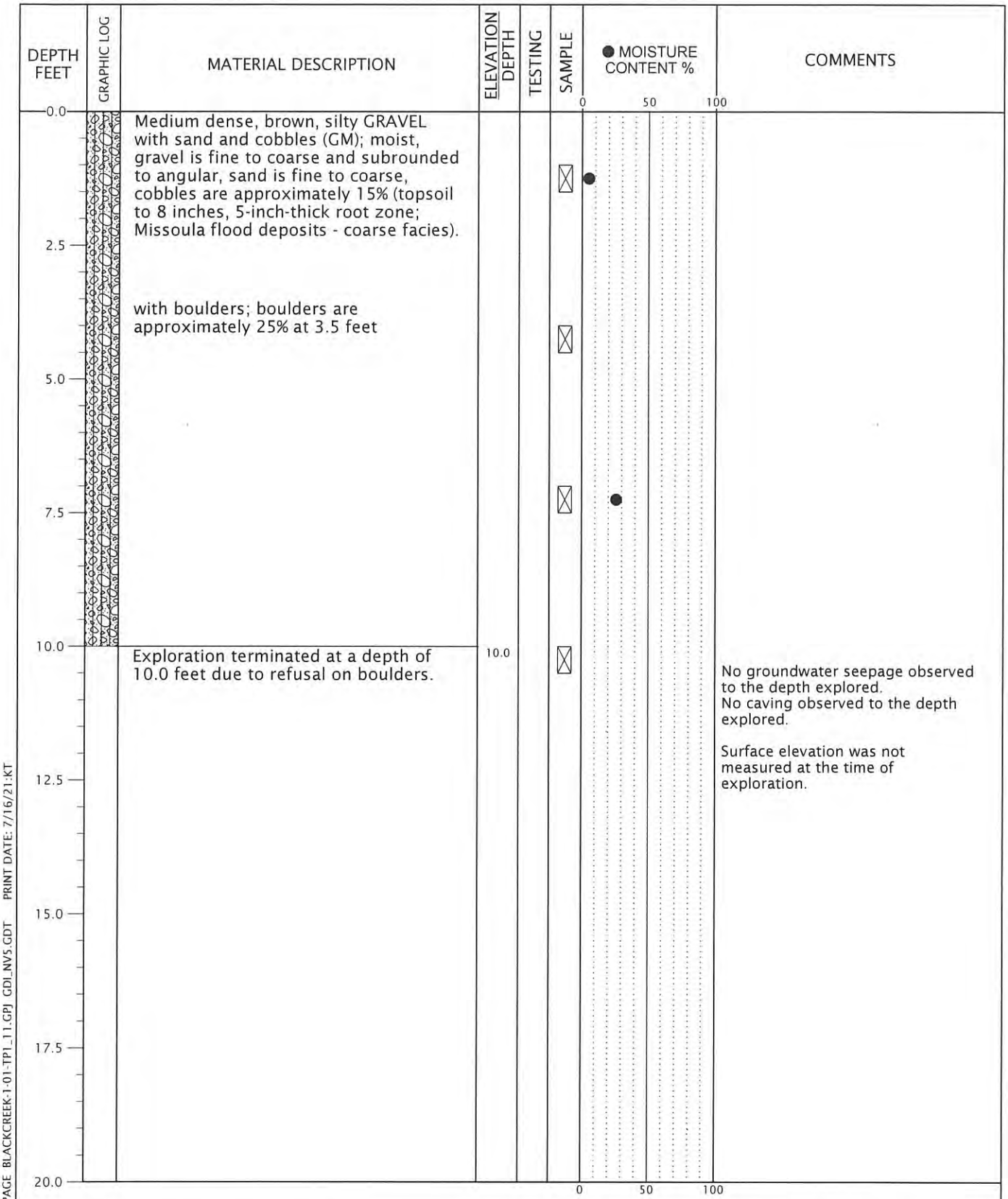
COMPLETED: 06/04/21

EXCAVATION METHOD: backhoe (see document text)

NV5	BLACKCREEK-1-01	**TEST PIT TP-9**
	JULY 2021	GARDEN ACRES ROAD INDUSTRIAL BUILDING WILSONVILLE, OR

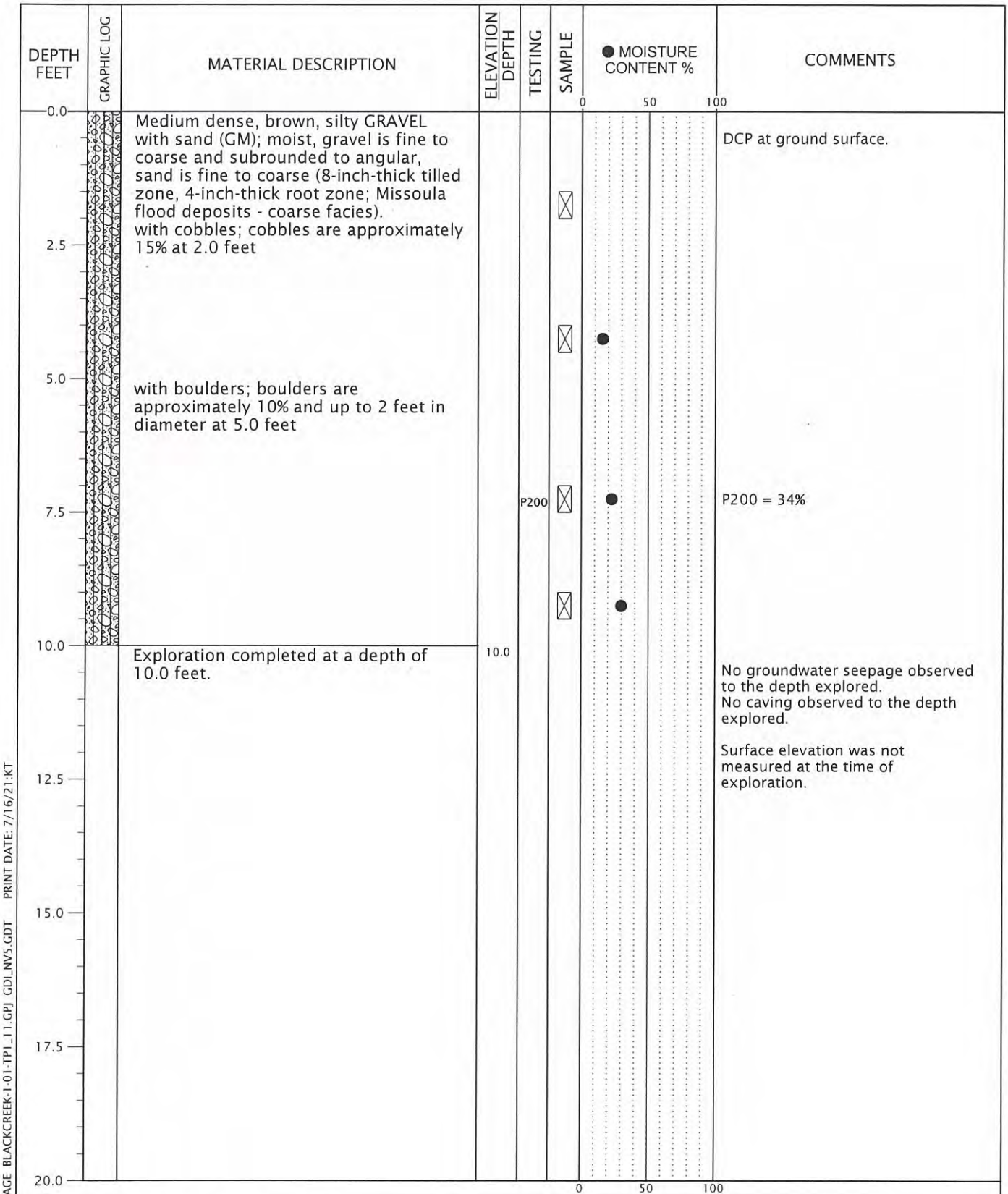
FIGURE A-9

TEST PIT LOG - NV5 - 1 PER PAGE BLACKCREEK-1-01-TP1_11.GPJ GDI_NV5.GDT PRINT DATE: 7/16/21:KT



TEST PIT LOG - NV5 - 1 PER PAGE BLACKCREEK-1-01-TP1_11.GPJ GDI_NV5.GDT PRINT DATE: 7/16/21:KT

NV5	BLACKCREEK-1-01	**TEST PIT TP-10**
	JULY 2021	GARDEN ACRES ROAD INDUSTRIAL BUILDING WILSONVILLE, OR
		FIGURE A-10



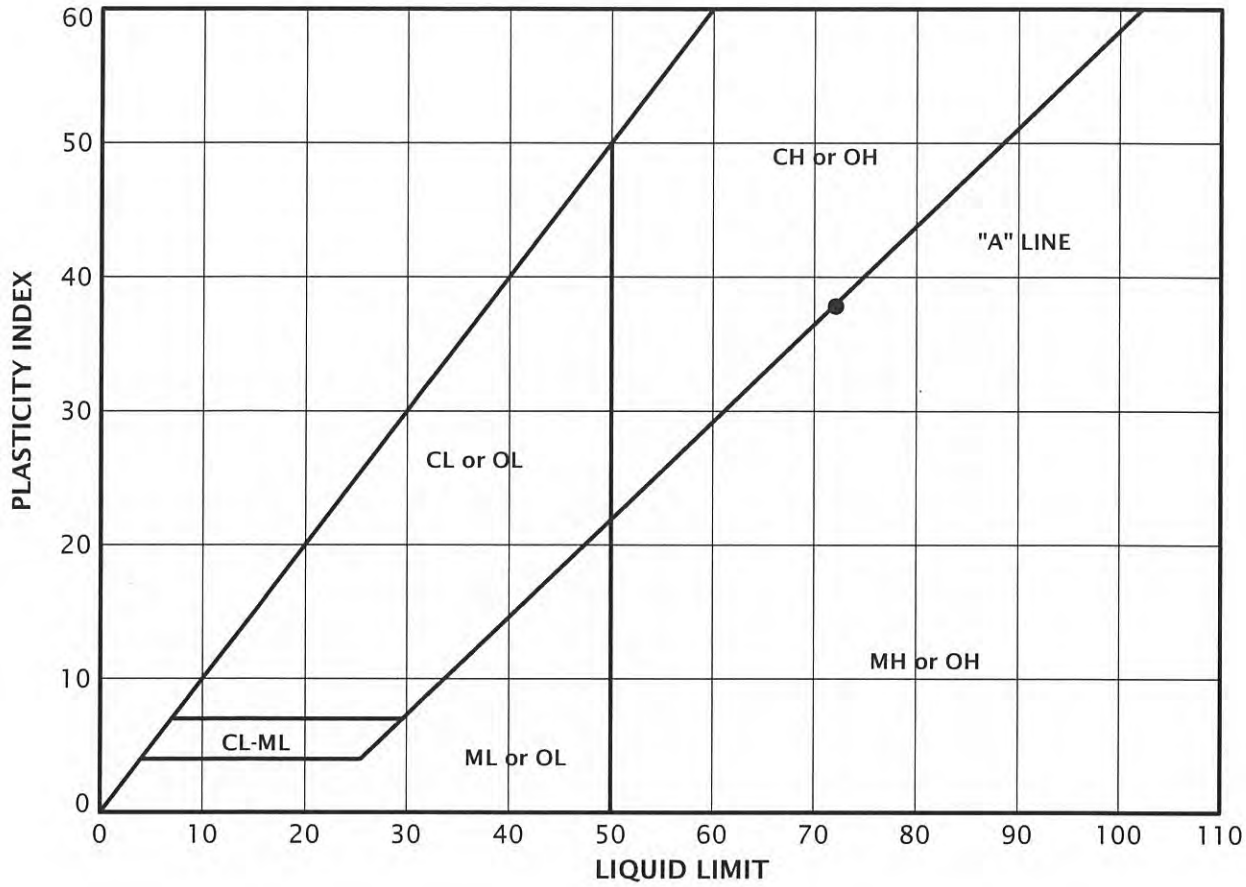
EXCAVATED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: L. Gose COMPLETED: 06/04/21

EXCAVATION METHOD: backhoe (see document text)

NV5	BLACKCREEK-1-01	**TEST PIT TP-11**
	JULY 2021	GARDEN ACRES ROAD INDUSTRIAL BUILDING WILSONVILLE, OR

FIGURE A-11

TEST PIT LOG - NV5 - 1 PER PAGE BLACKCREEK-1-01-TP1_11.GPJ GDI_NV5.GDT PRINT DATE: 7/16/21 KT



KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
●	TP-5	10.0	46	72	34	38

N|V|5	BLACKCREEK-1-01	ATTERBERG LIMITS TEST RESULTS	
	JULY 2021	GARDEN ACRES ROAD INDUSTRIAL BUILDING WILSONVILLE, OR	FIGURE A-12

SAMPLE INFORMATION			MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	SIEVE			ATTERBERG LIMITS		
EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	ELEVATION (FEET)			GRAVEL (PERCENT)	SAND (PERCENT)	P200 (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
TP-1	1.0		9							
TP-1	9.0		22							
TP-2	4.0		28				27			
TP-2	8.0		27				28			
TP-2	15.0		16							
TP-3	1.0		13							
TP-3	9.0		28				39			
TP-3	15.0		28							
TP-4	4.0		29							
TP-4	14.0		16							
TP-5	1.5		18							
TP-5	4.0		20				86			
TP-5	10.0		46					72	34	38
TP-5	15.0		53							
TP-6	2.0		7							
TP-6	8.0		23							
TP-7	4.0		15							
TP-8	1.0		15							
TP-8	7.0		20							
TP-9	4.0		22							
TP-9	10.0		28							
TP-10	1.0		5							
TP-10	7.0		26							
TP-11	4.0		16							
TP-11	7.0		23				34			
TP-11	9.0		30							

NV5

BLACKCREEK-1-01

JULY 2021

SUMMARY OF LABORATORY DATA

GARDEN ACRES ROAD INDUSTRIAL BUILDING
WILSONVILLE, OR

FIGURE A-13

LAB SUMMARY - GDI-NV5 BLACKCREEK-1-01-TP1_11.GPJ GDI_NV5.GDT PRINT DATE: 7/14/21 KT

APPENDIX B

APPENDIX B

CONE PENETROMETER TESTING

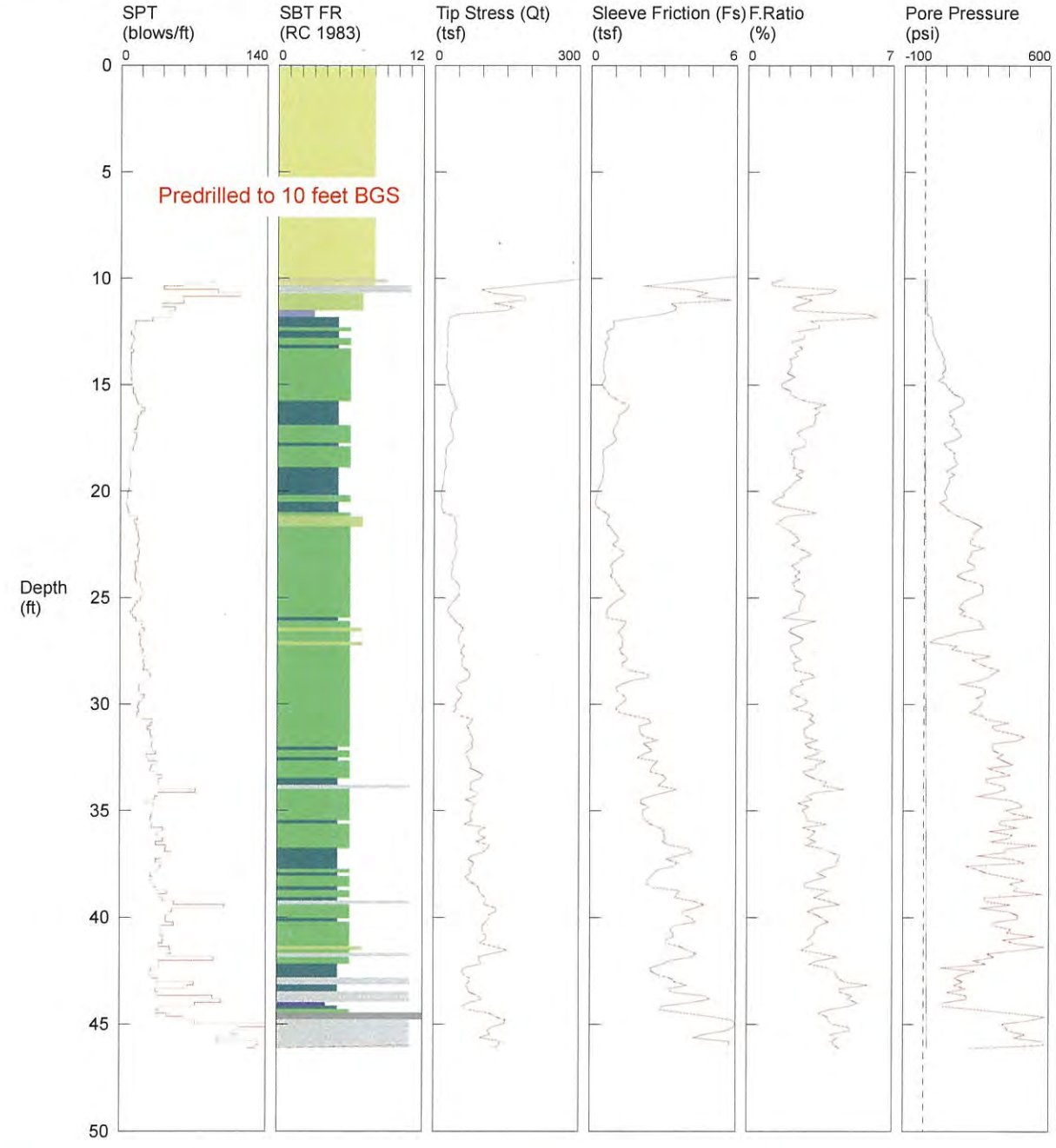
We explored subsurface conditions at the site by advancing two CPT probes (CPT-1 and CPT-2) to refusal at depths of 46.1 and 49.2 feet BGS, respectively. CPT-1 was predrilled using a Geoprobe® to a depth of 10 feet BGS to penetrate shallower gravel after refusal was initially reached at 5.1 feet BGS during an initial attempt. The CPT probes were performed in general accordance with ASTM D5778 by Oregon Geotechnical Explorations of Keizer, Oregon, on June 4, 2021. The results of the CPT probes completed for this project are presented in this appendix.

The locations of the explorations were determined in the field by pacing from existing site features. This information should be considered accurate to the degree implied by the method used.

The CPT is an in-situ test that provides characterizes subsurface stratigraphy. The testing includes advancing a 35.6-millimeter-diameter cone equipped with a load cell and a friction sleeve through the soil profile. The cone is advanced at a rate of approximately 2 centimeters per second. Tip resistance, sleeve friction, and pore pressure are typically recorded at 0.1-meter intervals. Shear wave velocity tests were completed for CPT-1 at 2-meter intervals.

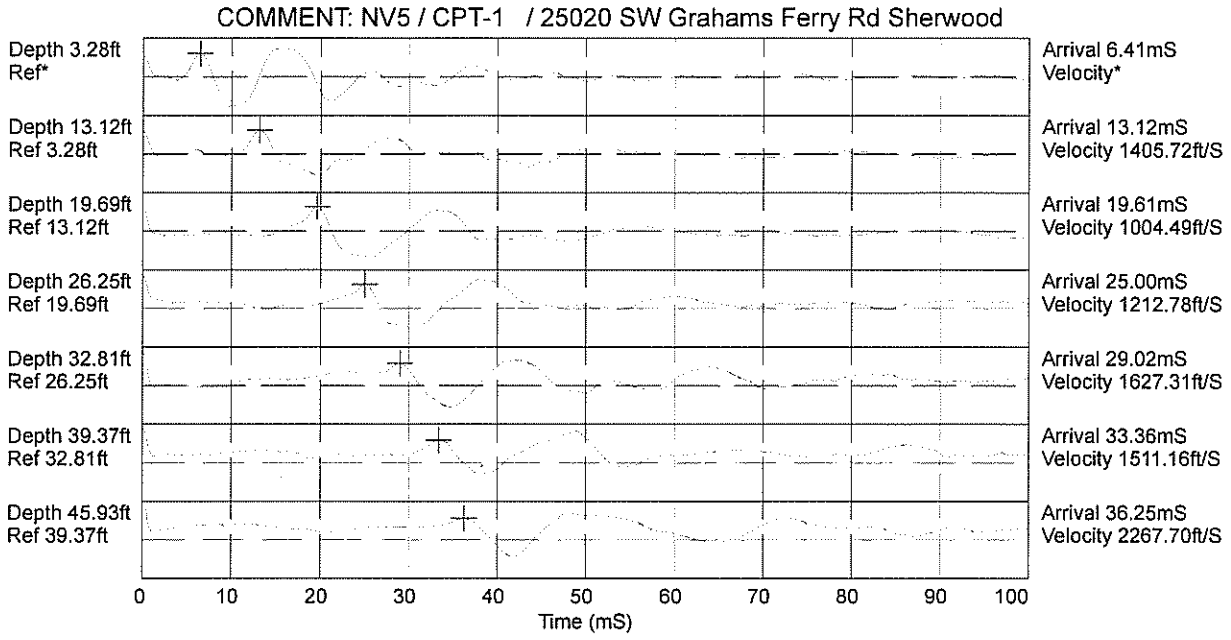
NV5 / CPT-1 / 25020 SW Grahams Ferry Rd Sherwood

OPERATOR: OGE DMM
CONE ID: DDG1586
HOLE NUMBER: CPT-1a
TEST DATE: 6/4/2021 9:05:52 AM
TOTAL DEPTH: 46.096 ft



1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

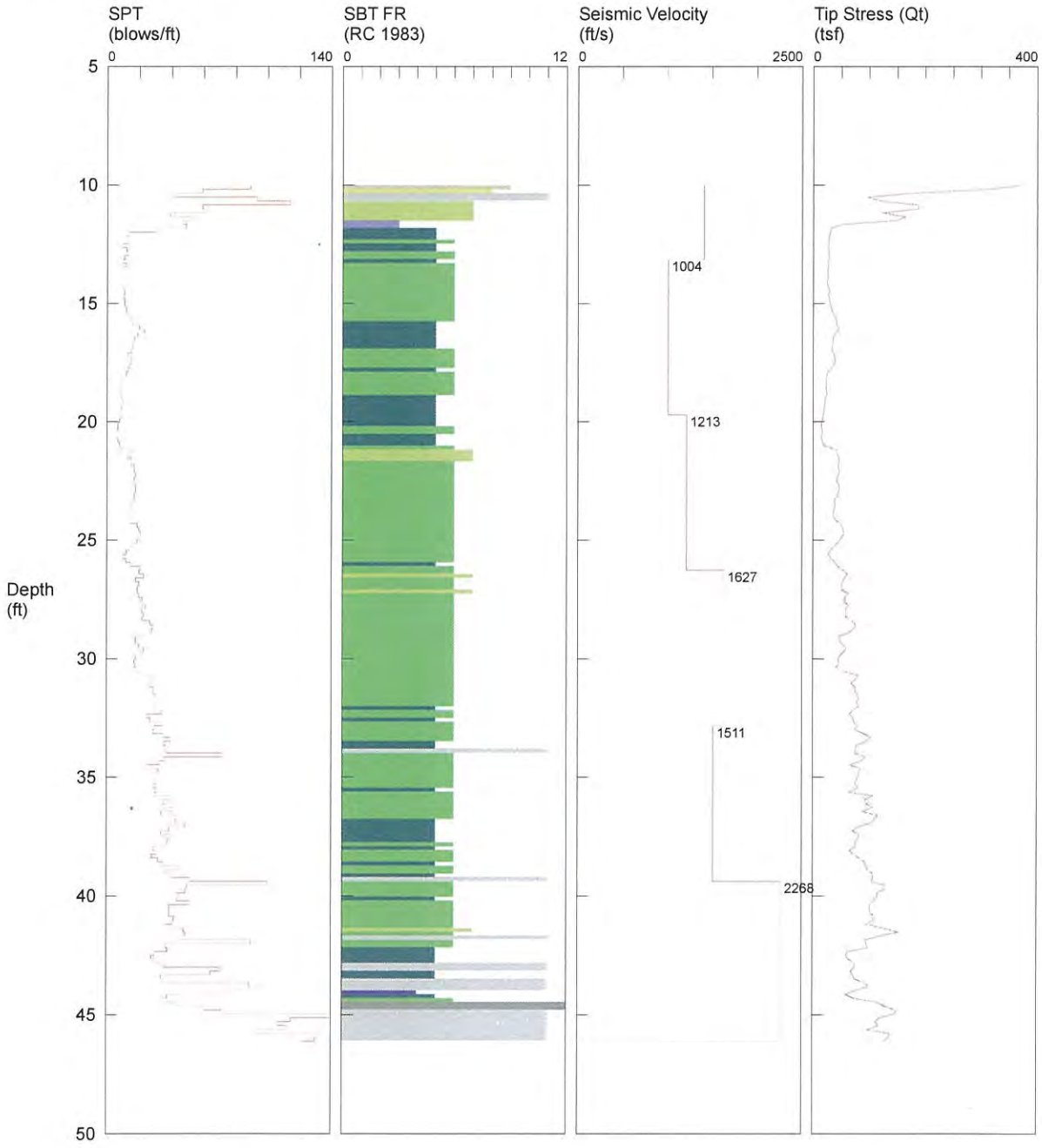
*SBT/SPT CORRELATION: UBC-1983



Hammer to Rod String Distance (ft): 1.97
* = Not Determined

NV5 / CPT-1 / 25020 SW Grahams Ferry Rd Sherwood

OPERATOR: OGE DMM
CONE ID: DDG1586
HOLE NUMBER: CPT-1a
TEST DATE: 6/4/2021 9:05:52 AM
TOTAL DEPTH: 46.096 ft

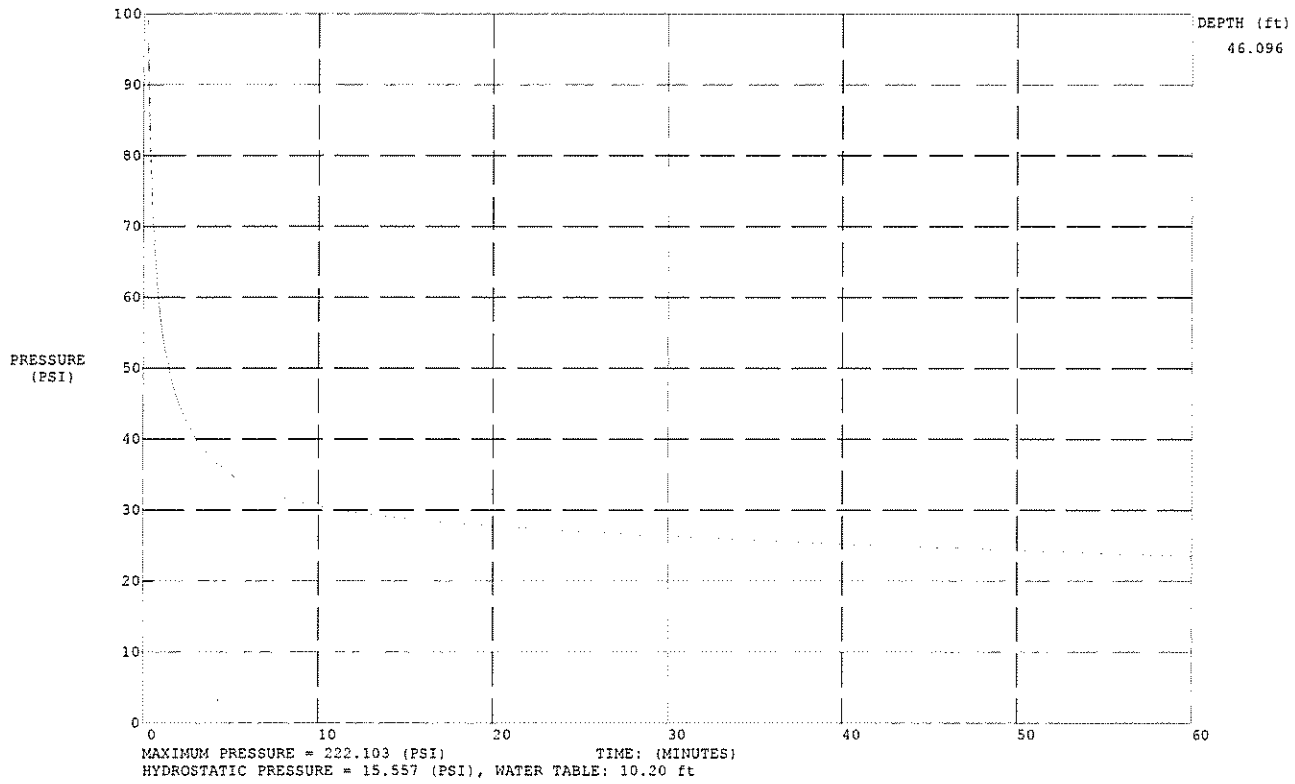


1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

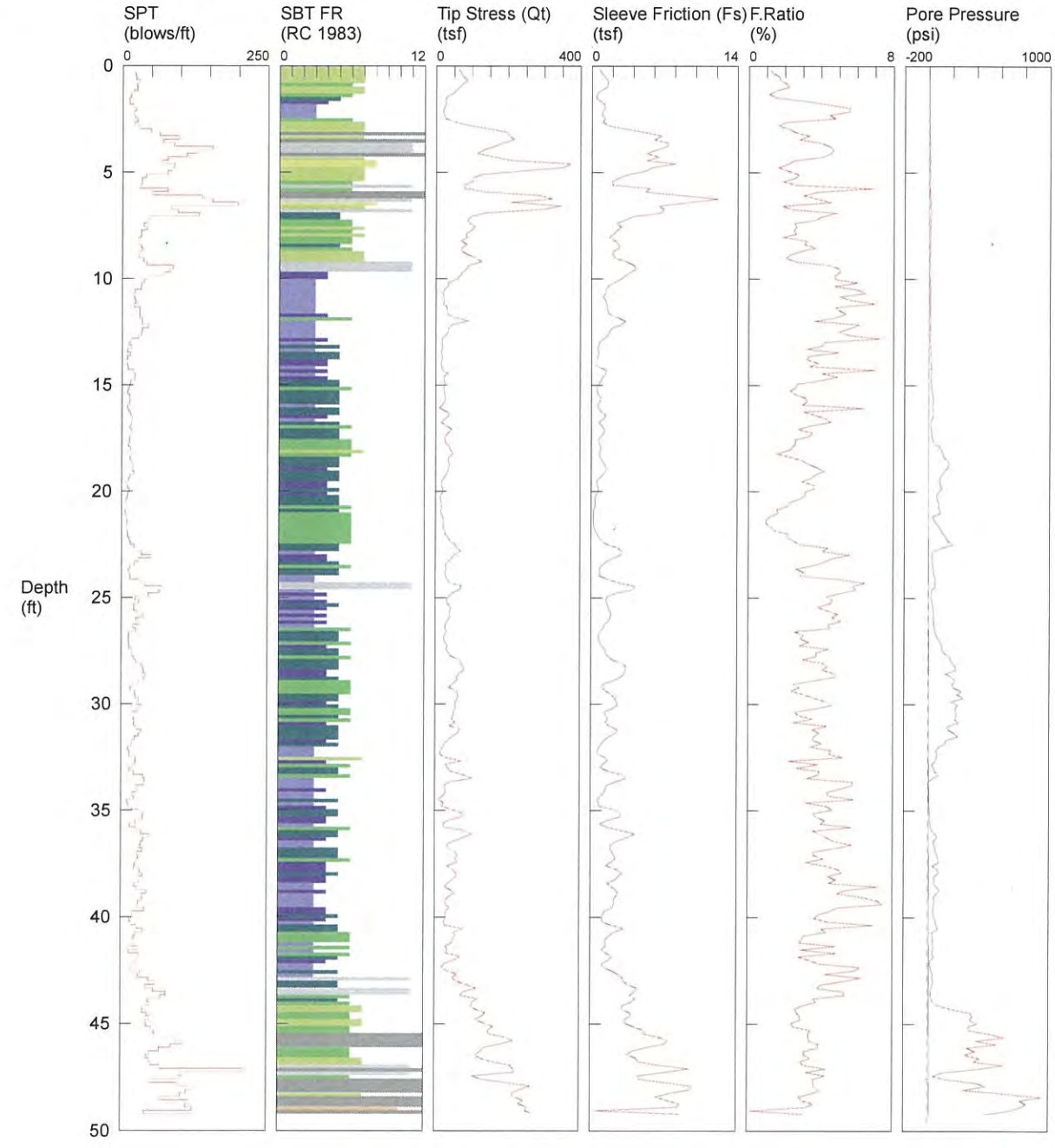
COMMENT: NV5 / CPT-1 / 25020 SW Grahams Ferry Rd Sherwood

TEST DATE: 6/4/2021 9:05:52 AM



NV5 / CPT-2 / 25020 SW Grahams Ferry Rd Sherwood

OPERATOR: OGE DMM
CONE ID: DDG1586
HOLE NUMBER: CPT-2
TEST DATE: 6/4/2021 10:58:50 AM
TOTAL DEPTH: 49.213 ft

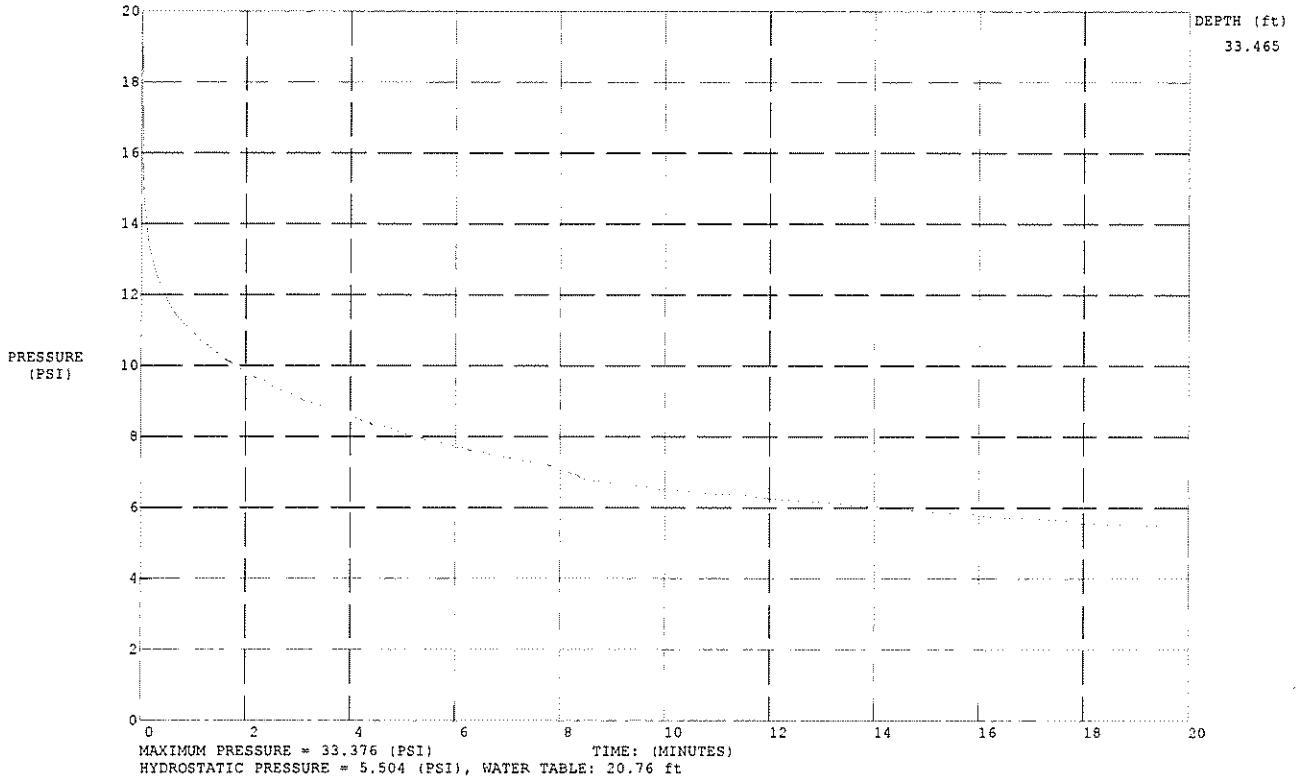


1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

COMMENT: NV5 / CPT-2 / 25020 SW Grahams Ferry Rd Sherwood

TEST DATE: 6/4/2021 10:58:50 AM



APPENDIX C

APPENDIX C

DCP TESTING

DCP DATA

NV5 performed DCP testing of the native subgrade soil at three test pit locations, TP-1, TP-9, and TP-11 (shown on Figure 2). Testing was conducted in general accordance with ASTM D6951. We recorded penetration depth of the cone for each blow of the hammer and terminated testing at the end of rod length. We summarized the data by plotting depth of penetration versus blow count. Plots of the summarized DCP test data are presented in this appendix.

RESILIENT MODULUS ESTIMATION

Using the summarized DCP test data, we visually assessed where slopes of the data are relatively constant and at which depths they change significantly. We used the equation shown on the data sheets to estimate the resilient modulus of the subgrade using a correction factor of $C_f = 0.35$ for the subgrade soil.

DYNAMIC CONE PENETROMETER RESULTS - EXPLORATION TP-1

Layer	Layer Type and Location	Slope (mm/blow)	C_f	M_R (psi)
1	Subgrade below AC and aggregate base	10.3	0.35	6,900
2		---	---	---
3		---	---	---
Equivalent subgrade modulus based on Odemark's Method of Equivalent Thickness				---

$M_R = C_f \times 49023 \times S^{-0.39}$

M_R = resilient modulus (pounds per square inch)

C_f = conversion coefficient

S = slope (millimeters per blow)

References:

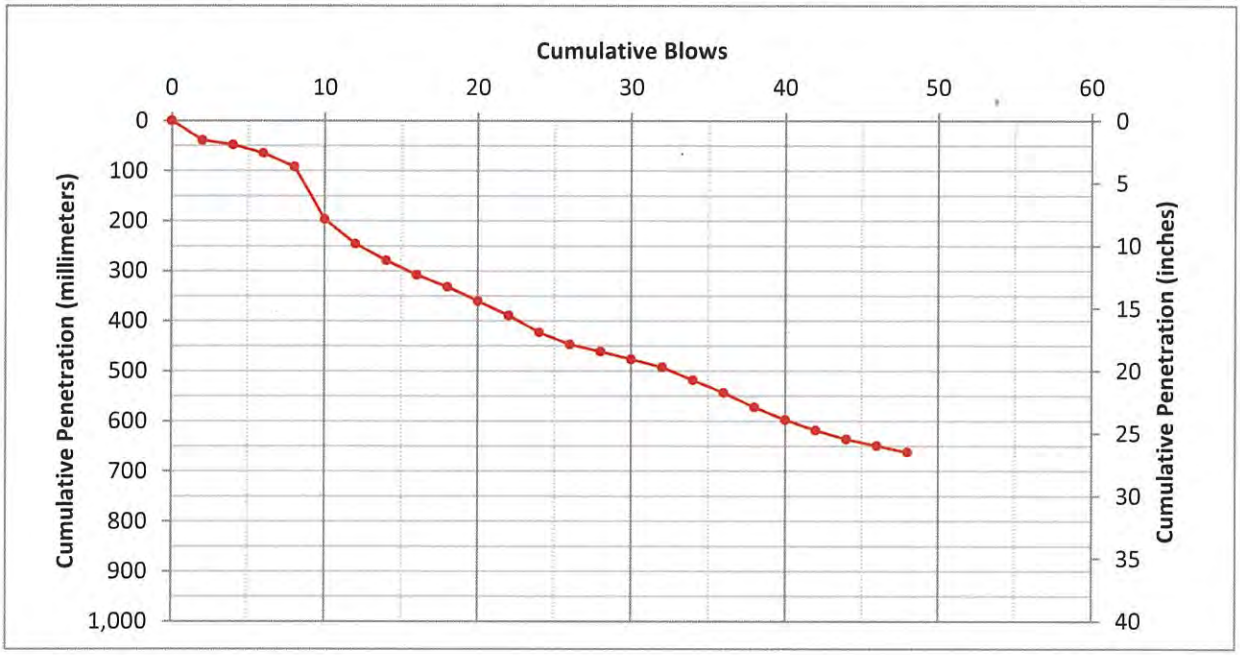
ODOT Pavement Design Guide, Pavement Services Unit, Oregon Department of Transportation, April 2011.

Jianzhou Chen, Mustaque Hossain, and Todd M. LaTorella, "Use of Falling Weight Deflectometer and Dynamic Cone Penetrometer in Pavement Evaluation," Paper No. 99-1007, Transportation Research Record 1655, pp 145-151, Transporation Research Board, Washington, D.C., 1999.

Per Ullidtz, *Modelling Flexible Pavement Response and Performance*, Tech Univ. of Denmark Polytekn, 1998.

DYNAMIC CONE PENETROMETER RESULTS - EXPLORATION TP-9

Layer	Layer Type and Location	Slope (mm/blow)	C_f	M_R (psi)
1	Subgrade below AC and aggregate base	13.9	0.35	6,160
2		—	—	—
3		—	—	—
Equivalent subgrade modulus based on Odemark's Method of Equivalent Thickness				—



$M_R = C_f \times 49023 \times S^{-0.39}$

M_R = resilient modulus (pounds per square inch)

C_f = conversion coefficient

S = slope (millimeters per blow)

References:

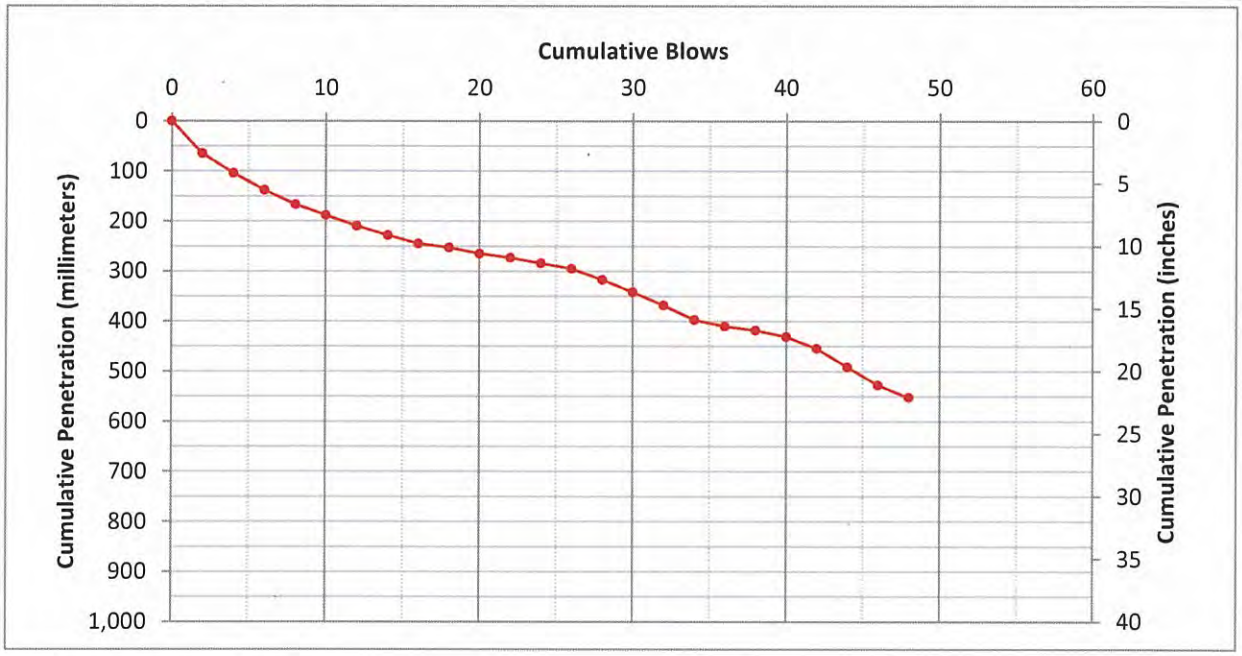
ODOT Pavement Design Guide, Pavement Services Unit, Oregon Department of Transportation, April 2011.

Jianzhou Chen, Mustaque Hossain, and Todd M. LaTorella, "Use of Falling Weight Deflectometer and Dynamic Cone Penetrometer in Pavement Evaluation," Paper No. 99-1007, Transportation Research Record 1655, pp 145-151, Transporation Research Board, Washington, D.C., 1999.

Per Ullidtz, *Modelling Flexible Pavement Response and Performance* , Tech Univ. of Denmark Polytekn, 1998.

DYNAMIC CONE PENETROMETER RESULTS - EXPLORATION TP-11

Layer	Layer Type and Location	Slope (mm/blow)	C_f	M_R (psi)
1	Subgrade below AC and aggregate base	9.6	0.35	7,110
2		---	---	---
3		---	---	---
Equivalent subgrade modulus based on Odemark's Method of Equivalent Thickness				---



$M_R = C_f \times 49023 \times S^{-0.39}$

M_R = resilient modulus (pounds per square inch)

C_f = conversion coefficient

S = slope (millimeters per blow)

References:

ODOT Pavement Design Guide, Pavement Services Unit, Oregon Department of Transportation, April 2011.

Jianzhou Chen, Mustaque Hossain, and Todd M. LaTorella, "Use of Falling Weight Deflectometer and Dynamic Cone Penetrometer in Pavement Evaluation," Paper No. 99-1007, Transportation Research Record 1655, pp 145-151, Transporation Research Board, Washington, D.C., 1999.

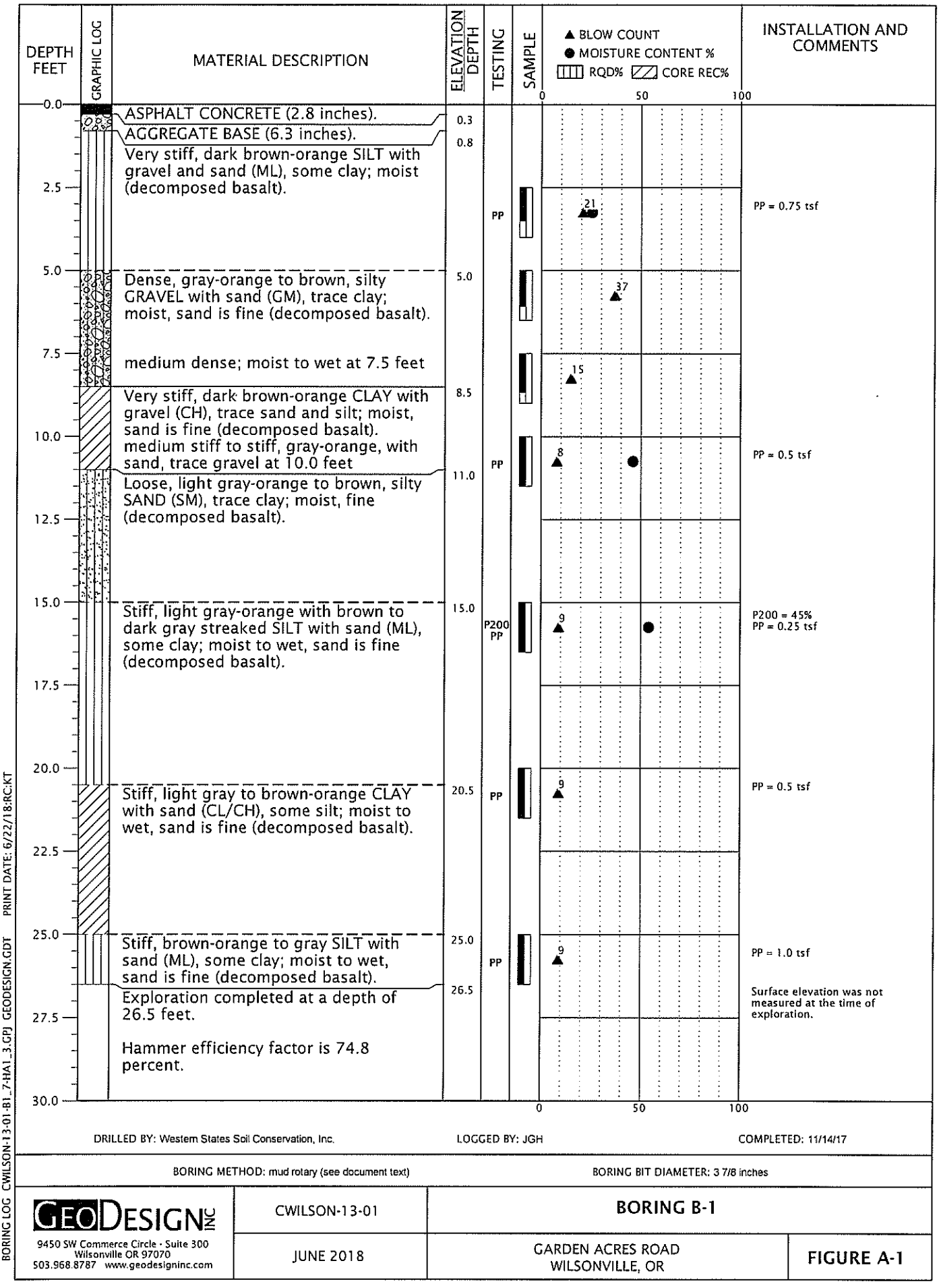
Per Ullidtz, *Modelling Flexible Pavement Response and Performance* , Tech Univ. of Denmark Polytekn, 1998.

APPENDIX D

APPENDIX D

PRIOR EXPLORATIONS NEAR THE SITE IN SW GARDEN ACRES ROAD

In 2017 NV5 (formerly GeoDesign, Inc.) completed two borings (B-2 and B-3) and McMillen Jacobs Associates completed one boring (B-04) and one CPT probe (C-04) near the site in SW Garden Acres Road. The approximate locations of the prior explorations near the site are shown on Figure 2 and the exploration logs are presented in this appendix.



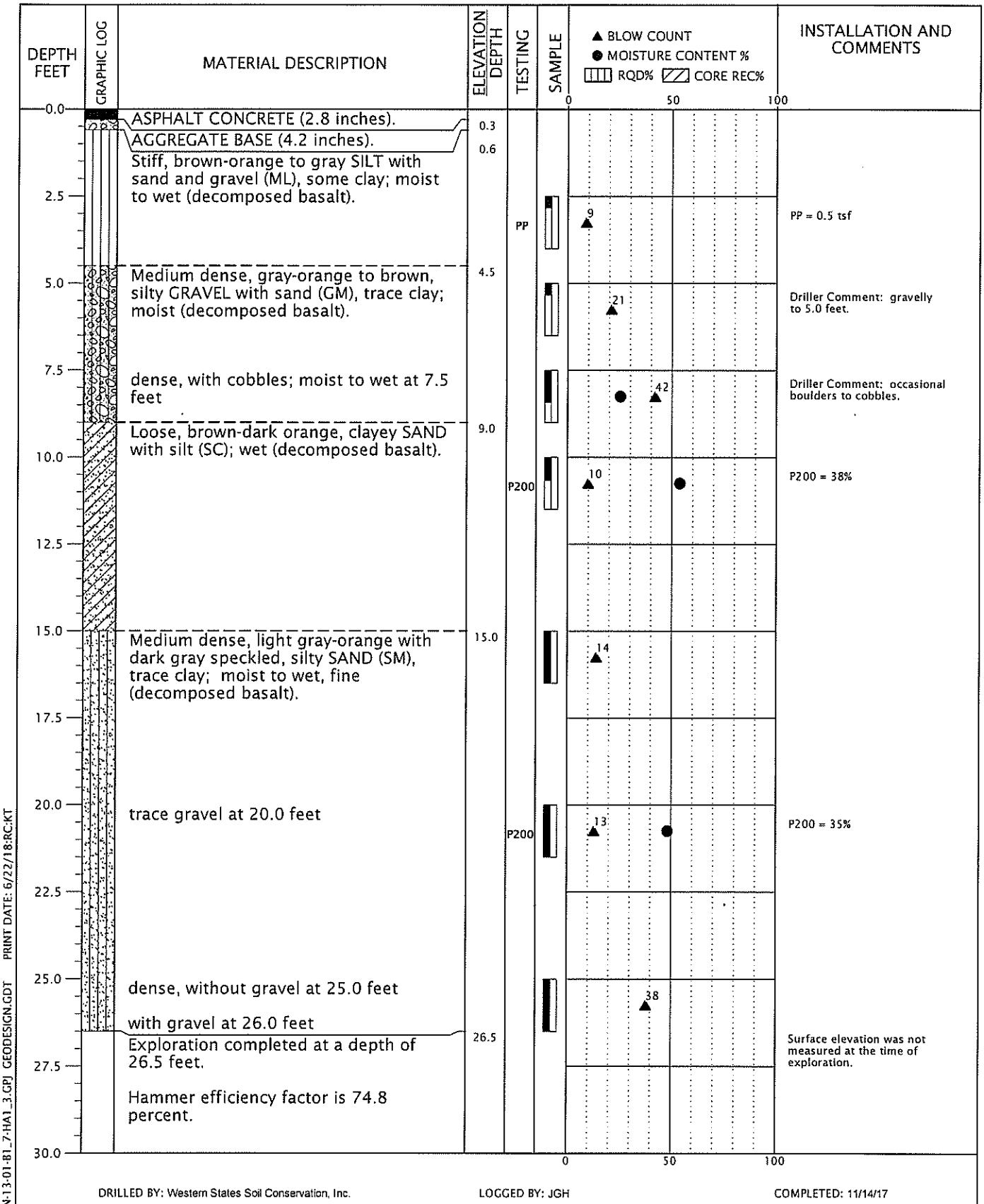
DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: JGH COMPLETED: 11/14/17

BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 3 7/8 inches

BORING LOG CWILSON-13-01-B1_7-HA1_3.GPJ GEODESIGN.GDT PRINT DATE: 6/22/18:RC:KT

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

CWILSON-13-01	**BORING B-1**	
JUNE 2018	GARDEN ACRES ROAD WILSONVILLE, OR	**FIGURE A-1**



DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: JGH COMPLETED: 11/14/17

BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 3 7/8 inches

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

CWILSON-13-01

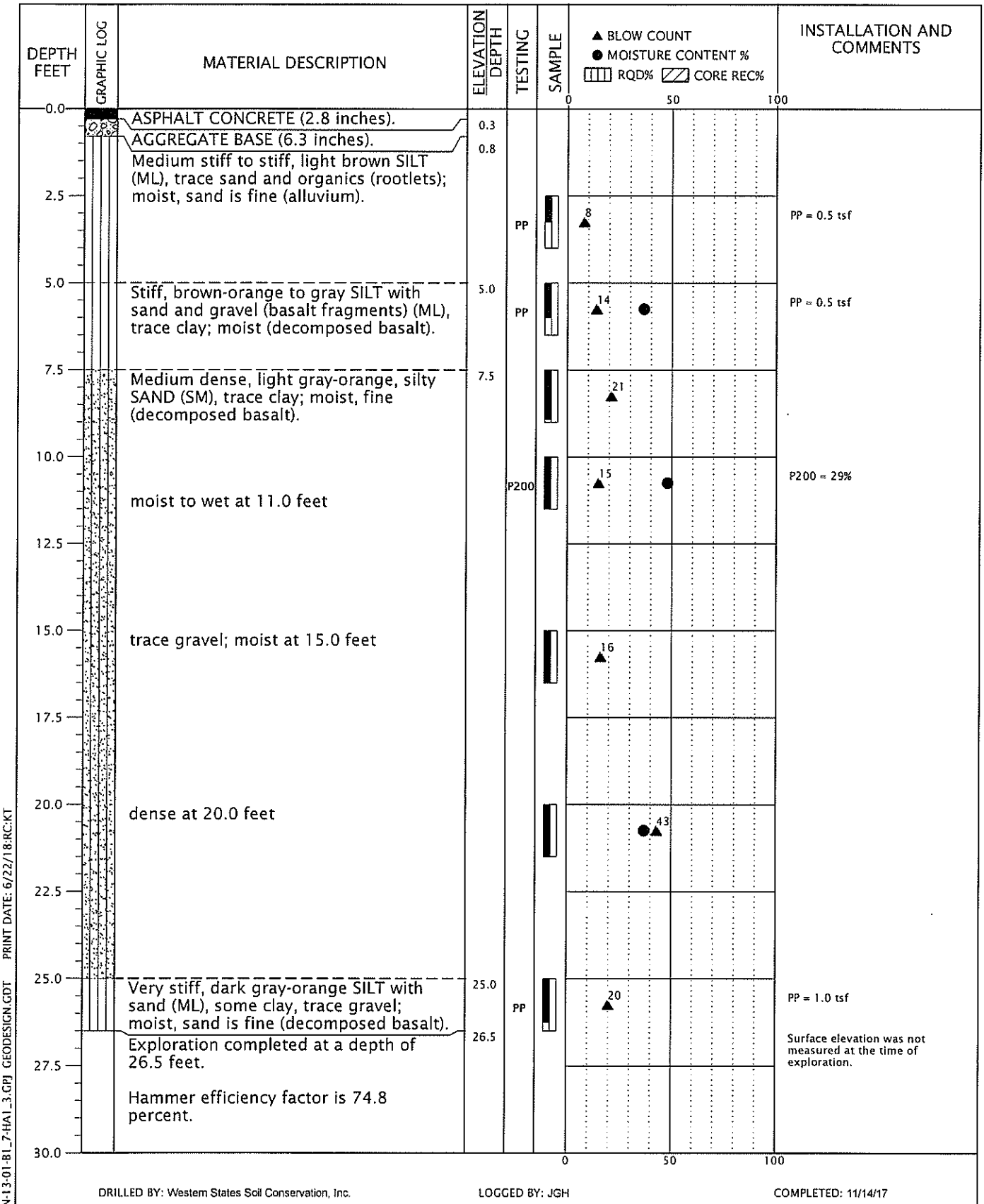
BORING B-2

JUNE 2018

GARDEN ACRES ROAD
WILSONVILLE, OR

FIGURE A-2

BORING LOG CWILSON-13-01-B1_7-HA1_3.GPJ GEODESIGN.GDT PRINT DATE: 6/22/18:RC:KT



DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: JGH COMPLETED: 11/14/17

BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 3 7/8 inches

BORING LOG CWILSON-13-01-B1_7-HA1_3.GPJ GEODESIGN.GDT PRINT DATE: 6/22/18:RC:KT

GEODESIGN INC
9450 SW Commerce Circle - Suite 300
Wilsonville OR 97070
503.968.8787 www.geodesigninc.com

CWILSON-13-01

BORING B-3

JUNE 2018

GARDEN ACRES ROAD
WILSONVILLE, OR

FIGURE A-3

Project: PLM_1.0
Project Location: Wilsonville, OR
Project Number: 5678.0

Log of Boring PLM_1.2_B-04

Date(s) Drilled: 07/12/2017 - 12/07/2017	Geotechnical Consultant: McMillen Jacobs Associates	Logged By: Julia Irizarry	Checked By: Kim Elliott
Drilling Method/ Rig Type: Mud rotary/CME 75	Drilling Contractor: Hard Core Drilling, Inc.	Total Depth of Borehole: 25.0 ft	
Hole Diameter: 4.00 in	Hammer Weight/Drop (lb/in.)/Type: 140 lb / 30 in / Automatic	Ground Surface Elevation/Datum: 236.0 ft	
Location: Wilsonville, SW Garden Acres Rd	Coordinates: 7615448.75 E, 617667.03 N	Elevation Source:	

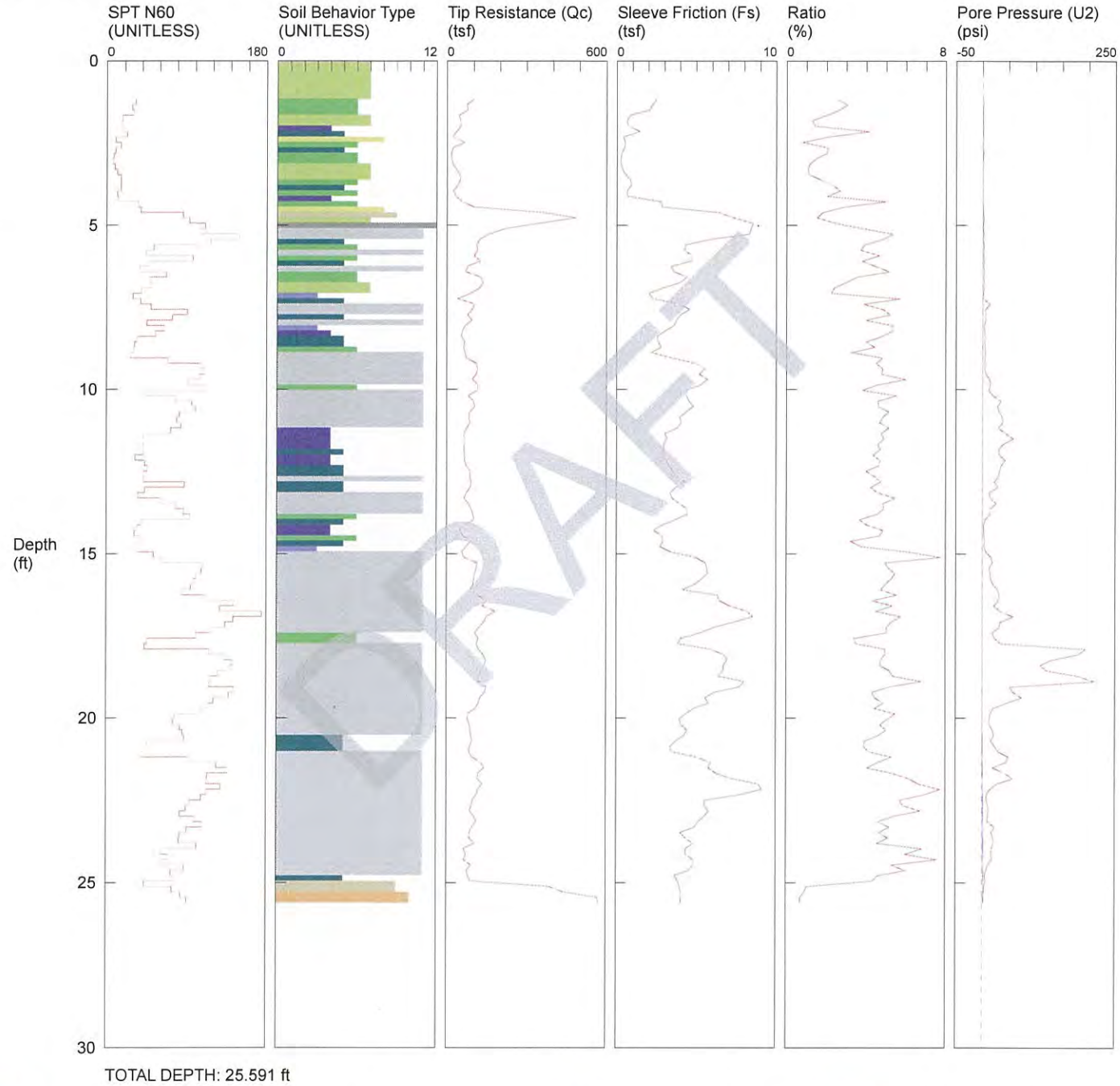
ELEV. (FT) / WATER LEVEL / DEPTH (FT)	SAMPLE TYPE	RECOVERY (%)	SAMPLE #	BLOW COUNTS	PENETRATION RESISTANCE BLOWS/FT (BLOWS/FT 20 40 60 80; MC; LL/PL)	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	BACKFILL INFORMATION	REMARKS AND TESTS
								Asphalt Concrete (Fill)		
								Very stiff, sandy SILT with gravel, (ML), gray and dark brown with red-orange mottles, moist, low to medium plasticity and low to medium toughness fines, angular to subangular fine to coarse gravel, fine to coarse sand, very slightly micaceous. (Missoula Flood Deposits Fine-grained Facies)		
231 5		87	S1	8-14-9 (N=23)			ML	*At 5.0 ft. color grades to light brown with light orange and black mottles.*		
226 10		100	S2	4-8-7 (N=15)				*At 10.0 ft. grades to stiff.*		
		100	S3	4-4-6 (N=10)				Stiff to very stiff, sandy SILT with gravel, (ML), light brown with light orange and black mottles, wet, low to none plasticity and low to medium toughness fines, fine to coarse sand, angular to subangular fine to coarse gravel, rapid dilatancy. (Missoula Flood Deposits Fine-grained Facies)		
221 15		100	S4	5-5-4 (N=9)			ML			At 15.0 ft. sieve analysis performed.
		100	S5	7-8-11 (N=19)				*At 17.5 ft. grades to very stiff.*		
216 20		100	S6	50/5" (Refusal)				*From 19.0 to 20.5 lens of hard, SILT with sand, (ML), light gray and red-brown with white and black mottles, low plasticity and medium toughness fines, trace fine gravel, fine to coarse sand, slow dilatancy.*		At 20.0 ft. sieve analysis performed.
							GC	Very dense, clayey GRAVEL with boulders and cobbles, (GC), light gray and red-brown mottles with white and black, moist, low plasticity, angular to subangular fine to coarse gravel. (Missoula Flood Deposits Gravel Facies)		
211 25		0	S7	50/0" (Refusal)						Borehole completed at 25ft. below ground surface (bgs).

McMILLEN JACOBS ASSOCIATES

Boring PLM_1.2_B-04

McMillen Jacobs / PLM1.2-C-04 / Garden Acres Sherwood

TEST DATE: 7/13/2017 9:12:21 AM
HOLE NUMBER: PLM1.2-C-04
CONE ID: DDG1415
LOCATION: 17107 / McMillen Jacobs / PLM1.2-C-04 / Garden Acres Sherwood
JOB NUMBER: 17107 / McMillen Jacobs / PLM1.2-C-04 / Garden Acres Sherwood
CUSTOMER: 17107 / McMillen Jacobs / PLM1.2-C-04 / GTEST DATE: 7/13/2017 9:12:21 AM
OPERATOR: OGE TAJ
TOTAL DEPTH: 25.591 ft

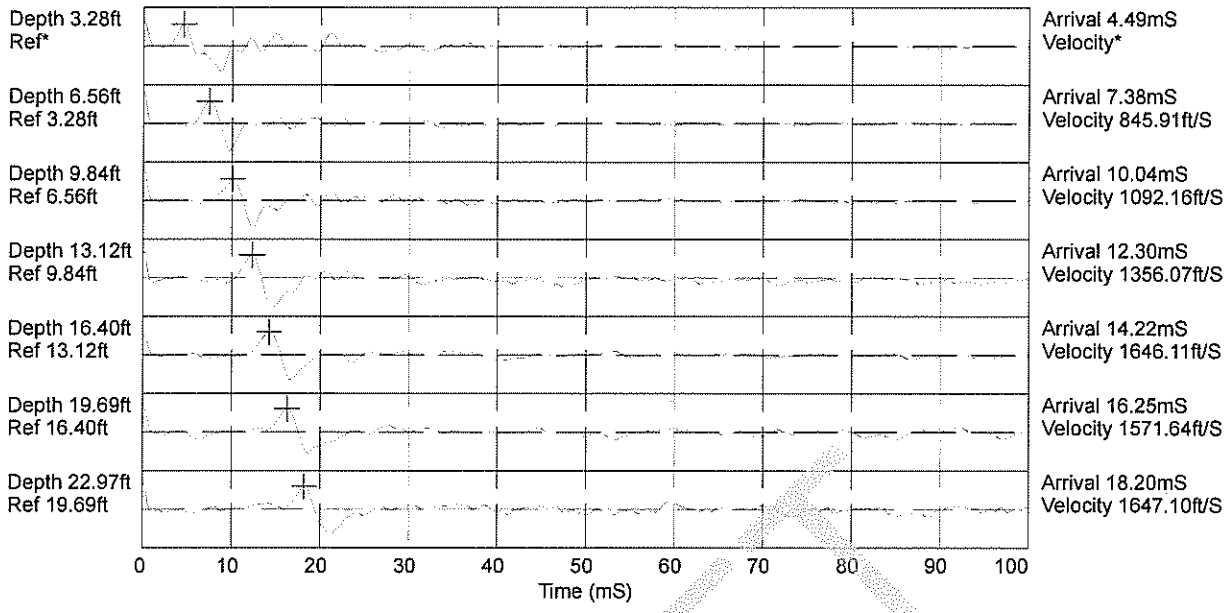


TOTAL DEPTH: 25.591 ft

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

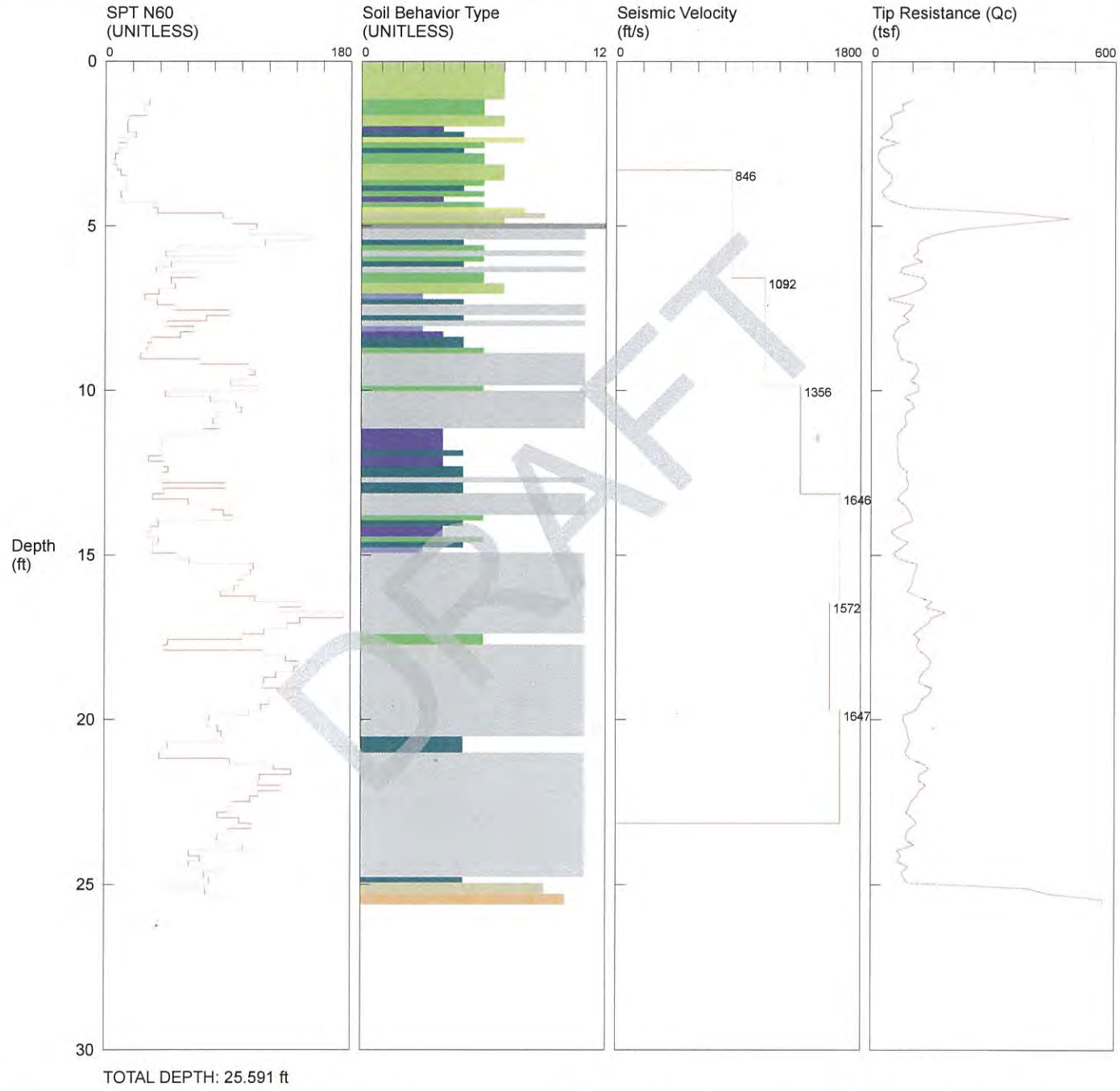
COMMENT: 17107 / McMillen Jacobs / C-04 / Garden Acres Wilsonville



Hammer to Rod String Distance (ft): 4.27
* = Not Determined

McMillen Jacobs / PLM1.2-C-04 / Garden Acres Sherwood

TEST DATE: 7/13/2017 9:12:21 AM
HOLE NUMBER: PLM1.2-C-04
CONE ID: DDG1415
LOCATION: 17107 / McMillen Jacobs / PLM1.2-C-04 / Garden Acres Sherwood
JOB NUMBER: 17107 / McMillen Jacobs / PLM1.2-C-04 / Garden Acres Sherwood
CUSTOMER: 17107 / McMillen Jacobs / PLM1.2-C-04 / GTEST DATE: 7/13/2017 9:12:21 AM
OPERATOR: OGE TAJ
TOTAL DEPTH: 25.591 ft



TOTAL DEPTH: 25.591 ft

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

NV5

Delivering Solutions
Improving Lives

ADDENDUM TRANSMITTAL

To:	Chris Sanford	From:	Shawn M. Dimke, P.E., G.E.
Company:	BTC III Acquisitions LLC	Date:	August 5, 2021
Address:	4675 MacArthur Court, Suite 625 Newport Beach, CA 92660		

cc:	Kim Schoenfelder, KGIP (via email only) Scott Moore, Mackenzie (via email only)

Project No.:	BlackCreek-1-01
RE:	Garden Acres Road Industrial Building

Original File Name	Date	Document Title
BlackCreek-1-01-071621-geor	7/16/21	Report of Geotechnical Engineering Services; Garden Acres Road Industrial Building; 25190 SW Grahams Ferry Road; Wilsonville, Oregon

Addendum Number	Date	Description
1	8/5/21	Additional Infiltration Testing (attached)

kt
Attachment
One copy submitted (via email only)
Document ID: BlackCreek-1-01-080521-geoat-1.docx

MEMORANDUM

To:	Chris Sanford	From:	Shawn M. Dimke, P.E., G.E.
Company:	BTC III Acquisitions LLC	Date:	August x, 2021
Address:	4675 MacArthur Court, Suite 625 Newport Beach, CA 92660		

cc:	Kim Schoenfelder, KGIP (via email only) Scott Moore, Mackenzie (via email only)

Project No.:	BlackCreek-1-01
RE:	Addendum 1 Additional Infiltration Testing Garden Acres Road Industrial Building 25190 SW Grahams Ferry Road Wilsonville, Oregon

INTRODUCTION

NV5 is pleased to submit this addendum to our report of geotechnical engineering services for the proposed new industrial building project located at 25190 SW Grahams Ferry Road in Wilsonville, Oregon.[1] Since the report was prepared, the proposed site layout and locations of the stormwater ponds/swales changed to along the eastern portion of the site as shown on the updated Figure 2. Our additional services included the following:

- Excavated three additional test pits (TP-12 through TP-14) to a depth of 9 feet below ground surface (BGS).
- Performed infiltrations tests in each of the additional test pits at 4 feet BGS.
- Collect disturbed and undisturbed soil samples for laboratory testing at select depths from the explorations.
- Classified the material encountered and prepared a detailed log of each exploration.
- Performed the following laboratory tests on select samples collected from the explorations:
  - Three natural moisture content determinations
  - Three particle-size analyses
- Prepared this addendum providing the results of our additional explorations, additional infiltration test results, and infiltration recommendations.

[1] NV5, 2021. *Report of Geotechnical Engineering Services; Garden Acres Road Industrial Building; 25190 SW Grahams Ferry Road; Wilsonville, Oregon*, dated July 16, 2021. Project: BlackCreek-1-01

MEMORANDUM

SUBSURFACE CONDITIONS

The locations of our test pits, including our additional test pits (TP-12 through TP-14), are shown on the updated Figure 2. Logs of the additional test pits are attached. Subsurface conditions in test pits TP-12 through TP-14 generally consist of medium dense, silty gravel with varying proportions of boulders, cobbles, sand, and clay to the depths explored. Boulders were also encountered at 7 feet BGS in test pit TP-14. Groundwater was not encountered to the depth explored.

INFILTRATION SYSTEMS

Infiltration testing was performed using the open pit method in the additional test pits at a depth of 4 feet BGS. The unfactored results of the field infiltration rate and pertinent laboratory testing are summarized in Table 1.

Table 1. Infiltration Testing Summary

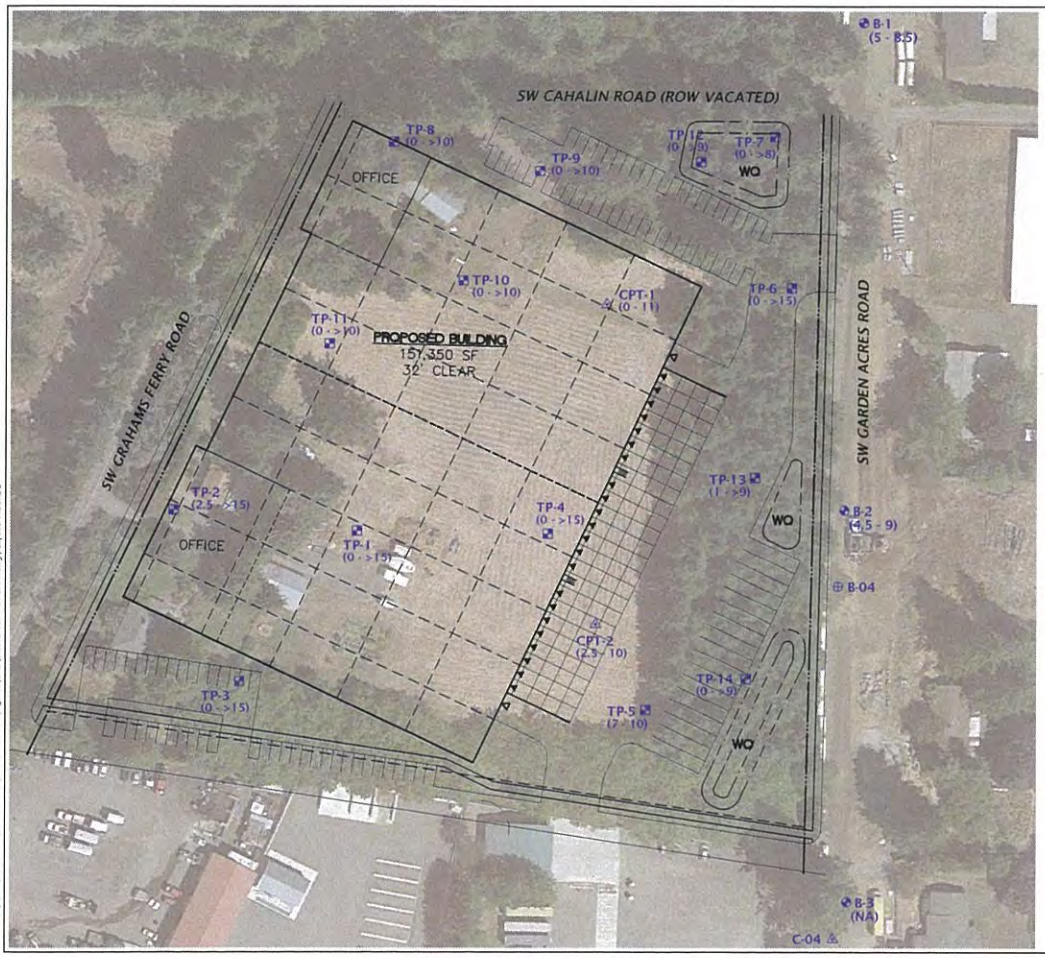
Location	Depth (feet BGS)	Observed Infiltration Rate[1] (inches per hour)	Soil Type at Test Depth	Percent Passing U.S. Standard No. 200 Sieve
TP-12	4	90	Medium dense, silty GRAVEL with sand and cobbles, trace clay	33
TP-13	4	22	Medium dense, silty GRAVEL with sand and cobbles, trace clay	43
TP-14	4	7	Medium dense, silty GRAVEL with cobbles, trace clay	22

1. The in-situ infiltration rate observed in the field

Based on the underlying decomposed basalt encountered in areas at the site and the potential for perched groundwater, we recommend assuming a design groundwater level of 12 feet BGS near test pits TP-12 and TP-13 and a design groundwater elevation of 9 feet BGS near test pit TP-14 without obtaining further groundwater observations. Recommendations for infiltration systems and correction factors for field rates are provided in our geotechnical report.

SMD:kt
Attachments
One copy submitted (via email only)
Document ID: BlackCreek-1-01-080521-geoa-1.docx

FIGURES



LEGEND:

TP-1	TEST PIT
CPT-1	CPT
(0 - >10)	GRAVEL DEPTHS (FEET BGS)
B-1	BORING (GEODESIGN, NOVEMBER 2017)
B-04	BORING (MCMILLEN JACOBS, 2017)
C-04	CPT (MCMILLEN JACOBS, JULY 2017)

N

0 80 160

(SCALE IN FEET)

NOTES:

1. SITE PLAN BASED ON DRAWING PROVIDED BY MACKENZIE.
2. AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO ON JUNE 16, 2021.

SITE PLAN

GARDEN ACRES ROAD INDUSTRIAL BUILDING
WILSONVILLE, OR

BLACKCREEK-1-01

AUGUST 2021

FIGURE 2

NV5

Printed By: adey | Print Date: 8/4/2021 8:50:18 AM
File Name: J:\A D\BlackCreek\BlackCreek-1-01\Reports\CAD\BlackCreek-1-01-SP01.dwg | Layout: FIGURE 2

ATTACHMENT

MEMORANDUM

ATTACHMENT

ADDITIONAL FIELD EXPLORATIONS

GENERAL

We further explored subsurface conditions at the site by excavating three test pits (TP-12 through TP-14) to a depth of 9 feet BGS. The test pits were excavated by Dan J. Fischer Excavating, Inc. of Forest Grove, Oregon, on July 26, 2021 using a CASE 580 backhoe. The explorations were completed under the supervision of NV5 personnel. The exploration logs are presented in this attachment.

The locations of the explorations were determined in the field by pacing from existing site features. This information should be considered accurate to the degree implied by the method used.

SOIL SAMPLING

Representative grab samples were collected from the base and sides of the test pits. Sampling methods and intervals are shown on the exploration logs.

SOIL CLASSIFICATION

The soil samples were classified in the field in accordance with the "Exploration Key" (Table A-1) and "Soil Classification System" (Table A-2), which are presented in this attachment. The exploration logs indicate the depths at which the soil characteristics change, although the change actually could be gradual. If the change occurred between sample locations, the depth was interpreted. Classifications are shown on the exploration logs.

LABORATORY TESTING

CLASSIFICATION

The soil samples were classified in the laboratory to confirm field classifications. The laboratory classifications are shown on the exploration logs if those classifications differed from the field classifications.

MOISTURE CONTENT

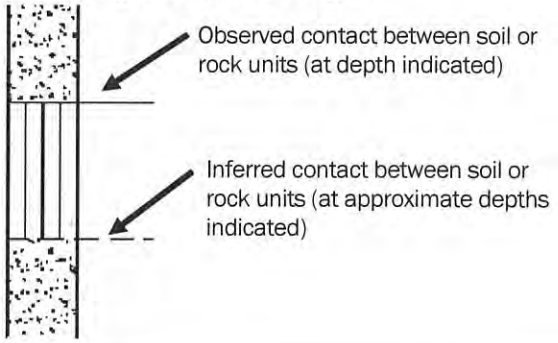
We determined the natural moisture content of select soil samples in general accordance with ASTM D2216. The natural moisture content is a ratio of the weight of the water to the dry weight of soil in a test sample expressed as a percentage. The test results are presented in this attachment.

PARTICLE-SIZE ANALYSIS

Particle-size analysis was performed on select soil samples in general accordance with ASTM C117 or ASTM D1140 (percent passing the U.S. Standard No. 200 sieve). This test determines the fraction of the soil particles in a sample that are finer than 75 micrometers expressed as a percentage of the sample's dry weight. The test results are presented in this attachment.

SYMBOL	SAMPLING DESCRIPTION
	Location of sample collected in general accordance with ASTM D1586 using Standard Penetration Test (SPT) with recovery
	Location of sample collected using thin-wall Shelby tube or Geoprobe® sampler in general accordance with ASTM D1587 with recovery
	Location of sample collected using Dames & Moore sampler and 300-pound hammer or pushed with recovery
	Location of sample collected using Dames & Moore sampler and 140-pound hammer or pushed with recovery
	Location of sample collected using 3-inch-outside diameter California split-spoon sampler and 140-pound hammer with recovery
	Location of grab sample
	Rock coring interval
	Water level during drilling
	Water level taken on date shown

Graphic Log of Soil and Rock Types



GEOTECHNICAL TESTING EXPLANATIONS

ATT	Atterberg Limits	P	Pushed Sample
CBR	California Bearing Ratio	PP	Pocket Penetrometer
CON	Consolidation	P200	Percent Passing U.S. Standard No. 200 Sieve
DD	Dry Density		
DS	Direct Shear	RES	Resilient Modulus
HYD	Hydrometer Gradation	SIEV	Sieve Gradation
MC	Moisture Content	TOR	Torvane
MD	Moisture-Density Relationship	UC	Unconfined Compressive Strength
NP	Non-Plastic	VS	Vane Shear
OC	Organic Content	kPa	Kilopascal

ENVIRONMENTAL TESTING EXPLANATIONS

CA	Sample Submitted for Chemical Analysis	ND	Not Detected
P	Pushed Sample	NS	No Visible Sheen
PID	Photoionization Detector Headspace Analysis	SS	Slight Sheen
		MS	Moderate Sheen
ppm	Parts per Million	HS	Heavy Sheen

NV5	**EXPLORATION KEY**	**TABLE A-1**

RELATIVE DENSITY - COARSE-GRAINED SOIL			
Relative Density	**Standard Penetration Test (SPT) Resistance**	**Dames & Moore Sampler (140-pound hammer)**	**Dames & Moore Sampler (300-pound hammer)**
Very loose	0 – 4	0 – 11	0 – 4
Loose	4 – 10	11 – 26	4 – 10
Medium dense	10 – 30	26 – 74	10 – 30
Dense	30 – 50	74 – 120	30 – 47
Very dense	More than 50	More than 120	More than 47

CONSISTENCY - FINE-GRAINED SOIL				
Consistency	**Standard Penetration Test (SPT) Resistance**	**Dames & Moore Sampler (140-pound hammer)**	**Dames & Moore Sampler (300-pound hammer)**	**Unconfined Compressive Strength (tsf)**
Very soft	Less than 2	Less than 3	Less than 2	Less than 0.25
Soft	2 – 4	3 – 6	2 – 5	0.25 – 0.50
Medium stiff	4 – 8	6 – 12	5 – 9	0.50 – 1.0
Stiff	8 – 15	12 – 25	9 – 19	1.0 – 2.0
Very stiff	15 – 30	25 – 65	19 – 31	2.0 – 4.0
Hard	More than 30	More than 65	More than 31	More than 4.0

PRIMARY SOIL DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOIL (more than 50% retained on No. 200 sieve)	GRAVEL (more than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (< 5% fines)	GW or GP	GRAVEL
		GRAVEL WITH FINES (≥ 5% and ≤ 12% fines)	GW-GM or GP-GM	GRAVEL with silt
			GW-GC or GP-GC	GRAVEL with clay
		GRAVEL WITH FINES (> 12% fines)	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND (50% or more of coarse fraction passing No. 4 sieve)	CLEAN SAND (<5% fines)	SW or SP	SAND
		SAND WITH FINES (≥ 5% and ≤ 12% fines)	SW-SM or SP-SM	SAND with silt
			SW-SC or SP-SC	SAND with clay
		SAND WITH FINES (> 12% fines)	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOIL (50% or more passing No. 200 sieve)	SILT AND CLAY	Liquid limit less than 50	ML	SILT
			CL	CLAY
			CL-ML	silty CLAY
			OL	ORGANIC SILT or ORGANIC CLAY
		Liquid limit 50 or greater	MH	SILT
			CH	CLAY
			OH	ORGANIC SILT or ORGANIC CLAY
HIGHLY ORGANIC SOIL			PT	PEAT

MOISTURE CLASSIFICATION		ADDITIONAL CONSTITUENTS					
		Secondary granular components or other materials such as organics, man-made debris, etc.					
Term	**Field Test**	**Percent**	**Silt and Clay In:**		**Percent**	**Sand and Gravel In:**	
			Fine-Grained Soil	**Coarse-Grained Soil**		**Fine-Grained Soil**	**Coarse-Grained Soil**
dry	very low moisture, dry to touch	< 5	trace	trace	< 5	trace	trace
moist	damp, without visible moisture	5 – 12	minor	with	5 – 15	minor	minor
wet	visible free water, usually saturated	> 12	some	silty/clayey	15 – 30	with	with
					> 30	sandy/gravelly	Indicate %

NV5

SOIL CLASSIFICATION SYSTEM

TABLE A-2

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT (%)	COMMENTS
TP-12						0 50 100	
0.0		Medium dense, brown, silty GRAVEL with sand and cobbles (GM), trace clay and organics (roots); dry to moist, gravel is fine to coarse and subrounded to subangular, cobbles are approximately 10% (topsoil to 6 inches, 3-inch-thick root zone; Missoula flood deposits - coarse facies).					
2.5		without organics; moist, cobbles are approximately 25% at 3.0 feet		P200	☒	●	Infiltration test at 4.0 feet. P200 = 33% Minor caving observed at 5.0 feet.
5.0							
7.5		gravel is subrounded to angular at 7.0 feet					
		Exploration completed at a depth of 9.0 feet.	9.0				No groundwater seepage observed to the depth explored. Surface elevation was not measured at the time of exploration.
10.0							
12.5							
TP-13						0 50 100	
0.0		Loose, brown, silty SAND (SM), trace organics (roots); dry (topsoil to 6 inches, 3-inch-thick root zone).	1.0				
2.5		Medium dense, brown, silty GRAVEL with sand and cobbles (GM), trace clay and organics (roots); moist, gravel is fine to coarse and subrounded to angular, cobbles are approximately 20% (Missoula flood deposits - coarse facies).		P200	☒	●	Infiltration test at 4.0 feet. P200 = 43%
5.0							
7.5		cobbles are approximately 35% at 6.0 feet					
		Exploration completed at a depth of 9.0 feet.	9.0				No groundwater seepage observed to the depth explored. No caving observed to the depth explored. Surface elevation was not measured at the time of exploration.
10.0							
12.5							
						0 50 100	

EXCAVATED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: J. Martinez COMPLETED: 07/26/21

EXCAVATION METHOD: backhoe (see document text)

NV5	BLACKCREEK-1-01	**TEST PIT**
	AUGUST 2021	GARDEN ACRES ROAD INDUSTRIAL BUILDING WILSONVILLE, OR
		FIGURE A-1

TEST PIT LOG - NV5 - 2 PER PAGE BLACKCREEK-1-01-TP12_14.GPJ GDI_NV5.GDT PRINT DATE: 8/4/21:KT

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT (%)	COMMENTS
TP-14						0 50 100	
0.0		Loose to medium dense, brown, silty GRAVEL (GM), trace clay and organics (roots); dry to moist, gravel is fine to coarse and subrounded (topsoil to 6 inches, 4-inch-thick root zone; Missoula flood deposits - coarse facies).					
2.5		medium dense, with cobbles; moist, gravel is subrounded to subangular, cobbles are approximately 10% at 1.5 feet		P200	☒	●	Infiltration test at 4.0 feet. P200 = 22%
5.0							Boulder (2 feet in diameter) at 6.0 feet.
7.5		with boulders; boulders are approximately 40% at 7.0 feet					Minor caving observed at 7.0 feet. Boulder (2 feet in diameter) at 7.5 feet.
		Exploration completed at a depth of 9.0 feet.	9.0				No groundwater seepage observed to the depth explored.
10.0							Surface elevation was not measured at the time of exploration.
12.5							
						0 50 100	

EXCAVATED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: J. Martinez COMPLETED: 07/26/21

EXCAVATION METHOD: backhoe (see document text)

NV5	BLACKCREEK-1-01	**TEST PIT**	
	AUGUST 2021	GARDEN ACRES ROAD INDUSTRIAL BUILDING WILSONVILLE, OR	**FIGURE A-2**

TEST PIT LOG - NV5 - 2 PER PAGE BLACKCREEK-1-01-TP12_14.GPJ GDI_NV5.GDT PRINT DATE: 8/4/21:KT

SAMPLE INFORMATION			MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	SIEVE			ATTERBERG LIMITS		
EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	ELEVATION (FEET)			GRAVEL (PERCENT)	SAND (PERCENT)	P200 (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
TP-12	4.0		32				33			
TP-13	4.0		36				43			
TP-14	4.0		29				22			

LAB SUMMARY - GDI-NV5 BLACKCREEK-1-01-TP12_14.GPJ GDI_NV5.GDT PRINT DATE: 8/4/21:KT

NV5	BLACKCREEK-1-01	**SUMMARY OF LABORATORY DATA**	
	AUGUST 2021	GARDEN ACRES ROAD INDUSTRIAL BUILDING WILSONVILLE, OR	**FIGURE A-3**

REPUBLIC SERVICES

February 7, 2022

Aaron Carpenter

Re: McKenzie Architecture
25109/25020 SW Grahams Ferry Rd.
Sherwood, OR 97140

Dear Aaron,

Thank you, for sending us the preliminary site plans for this proposed development in Sherwood OR.

My Company: Republic Services of Clackamas and Washington Counties has the franchise agreement to service this area with Washington County. We will provide complete commercial waste removal and recycling services as needed on a weekly basis for this location

We have reviewed your design plan site access and flow pattern sent 12/10/2021 and determined that it is adequate for our trucks to navigate the site and service the trash and recycle enclosure.

The trash and recycle enclosure will not have a roof and no vertical overhead obstructions. Your enclosure dimensions of 20' Ft. wide X 10'Ft. deep with two swinging gates that open a minimum of 120 degrees and are equipped with wind pins to secure gates in the closed and open positions will accommodate the storage and access of side by side 8-yard containers (one of each) for trash and recycle disposal which should be adequate for this development with the potential daily service frequency of 5 days per week. The transition from the enclosure to the driveway is level with a smooth transition with no obstructions.

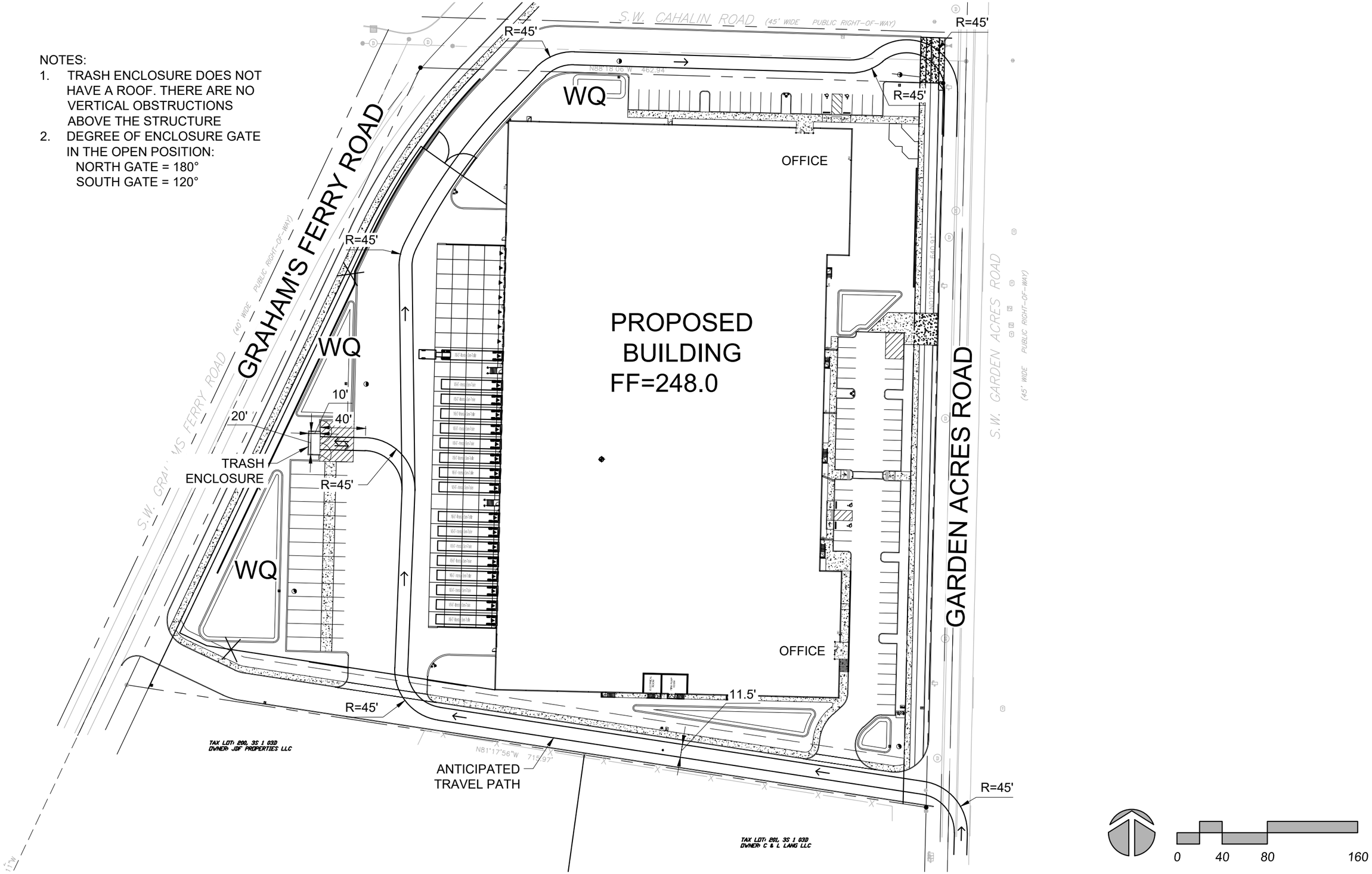
Thanks Aaron, for your help and concerns for our services prior to this project being developed.

Sincerely,

Kelly Herrod
Operations Supervisor
Republic Services Inc.

NOTES:

1. TRASH ENCLOSURE DOES NOT HAVE A ROOF. THERE ARE NO VERTICAL OBSTRUCTIONS ABOVE THE STRUCTURE
2. DEGREE OF ENCLOSURE GATE IN THE OPEN POSITION:
   NORTH GATE = 180°
   SOUTH GATE = 120°



TURTLE & HUGHES

POWERING A BETTER TOMORROW

WILSONVILLE
BLACK CREEK
SUBMITTALS
12/20/2021

TURTLE & HUGHES
POWERING A BETTER TOMORROW

INDEX

Project		**Catalog #**	GLEON SA3C 740 U T4FT HSS	**Type**	A
Prepared by		**Notes**		**Date**	

McGraw-Edison

GLEON Galleon

Area / Site Luminaire

Product Features

LumenSafe Technology

Light ARchitect™

Product Certifications

Interactive Menu

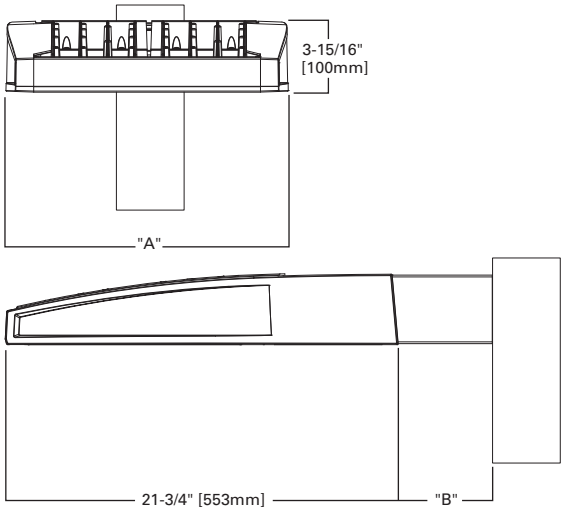
Quick Facts

- Lumen packages range from 4,200 - 80,800 (34W - 640W)
- Efficacy up to 156 lumens per watt
- Options to meet Buy American and other domestic preference requirements

Connected Systems

- WaveLinx
- Enlighted

Dimensional Details



Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Extended Arm Length [1]	"B" Quick Mount Arm Length	"B" Quick Mount Extended Arm Length
1-4	15-1/2"	7"	10"	10-5/8"	16-9/16"
5-6	21-5/8"	7"	10"	10-5/8"	16-9/16"
7-8	27-5/8"	7"	13"	10-5/8"	--
9-10	33-3/4"	7"	16"	--	--

NOTES:
For arm selection requirements and additional line art, see Mounting Details section.

NOTES:
1. Visit https://www.designlights.org/search/ to confirm qualification. Not all product variations are DLC qualified.
2. IDA Certified for 3000K CCT and warmer only.

Ordering Information

SAMPLE NUMBER: **GLEON-SA4C-740-U-T4FT-GM**

Product Family [1, 2]	Light Engine		Color Temperature	Voltage	Distribution	Mounting	Finish
	Configuration	Drive Current					
GLEON=Galleon **BAA-GLEON**=Galleon, Buy American Act Compliant [35] **TAA-GLEON**=Galleon, Trade Agreements Act Compliant [35]	**SA1**=1 Square **SA2**=2 Squares **SA3**=3 Squares **SA4**=4 Squares **SA5**=5 Squares [4] **SA6**=6 Squares **SA7**=7 Squares [5] **SA8**=8 Squares [5] **SA9**=9 Squares [6] **SA0**=10 Squares [6]	**A**=600mA **B**=800mA **C**=1000mA **D**=1200mA [16]	**722**=70CRI, 2200K **727**=70CRI, 2700K **730**=70CRI, 3000K **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K **760**=70CRI, 6000K **827**=80CRI, 2700K **830**=80CRI, 3000K **AMB**=Amber, 590nm [14, 16]	**U**=120-277V **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V [7, 8] **9**=347V [7]	**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	**[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] **QML**=Quick Mount Arm (Standard Length, Large) [37] **QMEA**=Quick Mount Arm (Extended Length) [12]	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White **RALXX**=Custom Color

Options (Add as Suffix)	Controls and Systems Options (Add as Suffix)	Accessories (Order Separately)[36]
DIM=External 0-10V Dimming Leads [19, 20] **F**=Single Fuse (120, 277 or 347V Specify Voltage) **FF**=Double Fuse (208, 240 or 480V Specify Voltage) **20K**=Series 20kV UL 1449 Surge Protective Device **2L**=Two Circuits [17, 18] **HA**=50°C High Ambient **HSS**=Installed House Side Shield [28] **GRSBK**=Glare Reducing Shield, Black [23] **GRSWH**=Glare Reducing Shield, White [23] **LCF**=Light Square Trim Painted to Match Housing [27] **MT**=Installed Mesh Top **TH**=Tool-less Door Hardware **CC**=Coastal Construction finish [3] **L90**=Optics Rotated 90° Left **R90**=Optics Rotated 90° Right **CE**=CE Marking [29] **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] **DALI**=DALI Drivers	**BPC**=Button Type Photocontrol **PR**=NEMA 3-PIN Photocontrol Receptacle **PR7**=NEMA 7-PIN Photocontrol Receptacle [21] **SPB2**=Dimming Occupancy Sensor with Bluetooth Interface, 8' - 20' Mounting [34] **SPB4**=Dimming Occupancy Sensor with Bluetooth Interface, 21' - 40' Mounting [34] **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/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/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] **ZW**=WaveLinx Module and 4-PIN Receptacle **ZD**=WaveLinx Module with DALI driver and 4-PIN Receptacle **SWPD4XX**=WaveLinx Sensor Only, 7'-15' [13, 32, 33] **SWPD5XX**=WaveLinx Sensor Only, 15'-40' [13, 32, 33] **WOBXX**=WaveLinx Sensor with Bluetooth, 7'-15' [13, 32] **WOFXX**=WaveLinx Sensor with Bluetooth, 15'-40' [13, 32] **LWR-LW**=Enlighted Sensor, 8'–16' Mounting Height [26] **LWR-LN**=Enlighted Sensor, 16'–40' Mounting Height [26] **DIM10-MS/DIM-L08**=Synapse Occupancy Sensor (<8' Mounting) [19] **DIM10-MS/DIM-L20**=Synapse Occupancy Sensor (9'-20' Mounting) [19] **DIM10-MS/DIM-L40**=Synapse Occupancy Sensor (21'-40' Mounting) [19]	**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] **LS/GRSBK**=Glare Reducing Shield, Black [23, 30] **LS/GRSWH**=Glare Reducing Shield, White [23, 30] **LS/PFS**=Perimeter Shield, Black [15] **WOLC-7P-10A**=WaveLinx Outdoor Control Module [19, 31] **SWPD4-XX**=Wavelinx Wireless Sensor, 7'–15' Mounting Height [13, 19, 32, 33] **SWPD5-XX**=Wavelinx Wireless Sensor, 15'–40' Mounting Height [13, 19, 32, 33]

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. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654. Not available with TH option.
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. 480V must utilize Wye system only. 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. Requires ZW or ZD receptacle.
14. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose drive current A; supplied at 500mA drive current only. Available with 5WQ, 5MQ, SL2, SL3 and SL4 distributions. Can be used with HSS option.
15. Set of 4 pcs. One set required per Light Square.
16. Not available with HA option.
17. 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in SA2 through SA4 requires a larger housing, normally used for SA5 or SA6. 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 Enlighted 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 BPC photocontrol or the PR7 or PR photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information.
23. Not for use with T4FT, T4W or SL4 optics. See IES files for details.
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 Cooper Lighting Solutions for more information.
25. Replace X with number of Light Squares operating in low output mode.
26. Enlighted wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities.
27. Not available with house side shield (HSS).
28. Not for use with 5NQ, 5MQ, 5WQ or RW optics. A black trim plate is used when HSS is selected.
29. CE is not available with the LWR, MS, MS/X, MS/DIM, BPC, PR or PR7 options. Available in 120-277V only.
30. One required for each Light Square.
31. Requires PR7.
32. Replace XX with sensor color (WH, BZ or BK.)
33. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
34. Smart device with mobile application required to change system defaults. See controls section for details.
35. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
36. For BAA or TAA requirements, Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.
37. Available for 7-10 squares.

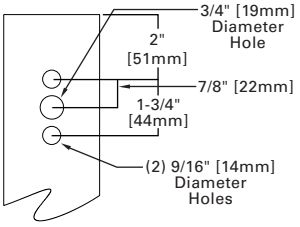
LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology LumenSafe Technology	**D**=Standard Dome Camera **H**=Hi-Res Dome Camera **Z**=Remote PTZ Camera	**C**=Cellular, No SIM **A**=Cellular, AT&T **V**=Cellular, Verizon **S**=Cellular, Sprint	**R**=Cellular, Rogers **W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

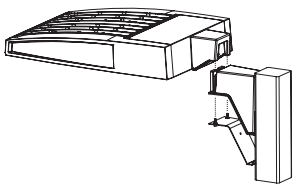
Mounting Details

Standard Arm (Drilling Pattern)

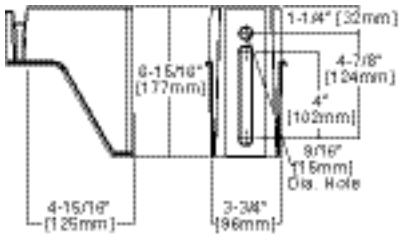
TYPE "N"



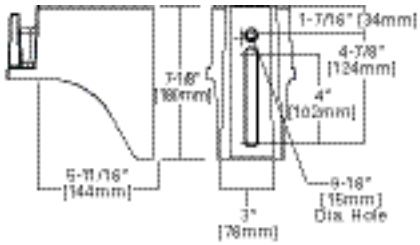
Quick Mount Arm (Includes fixture adapter)



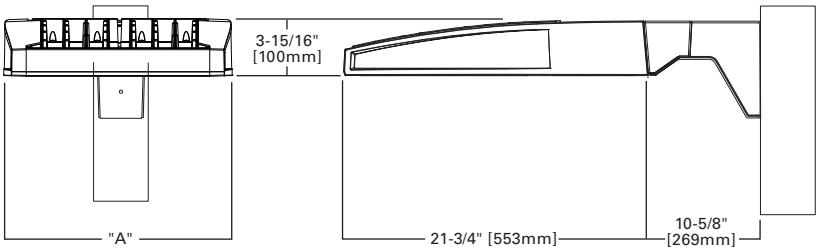
QM and QMEA Pole Mount



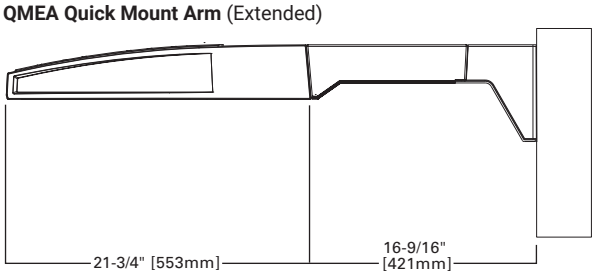
QML Pole Mount



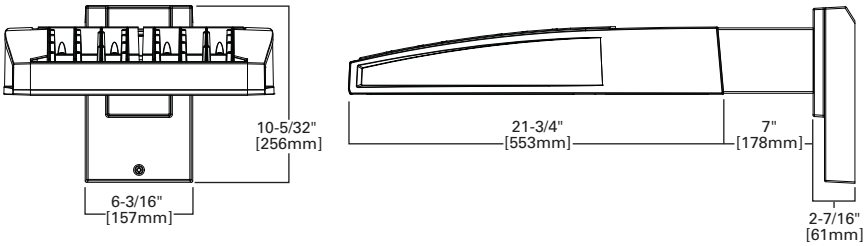
QM Quick Mount Arm (Standard)



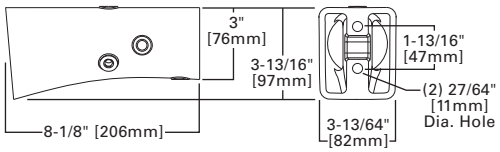
QMEA Quick Mount Arm (Extended)



Standard Wall Mount

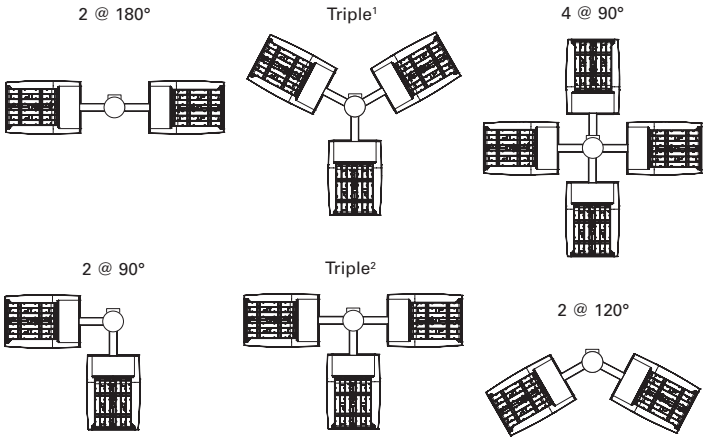


Mast Arm Mount



Arm Mounting Requirements

Number of Light Squares	Standard Arm @ 90° Apart	Standard Arm @ 120° Apart	Quick Mount Arm @ 90° Apart	Quick Mount Arm @ 120° Apart
1	Standard	Standard	QM Extended	Quick Mount
2	Standard	Standard	QM Extended	Quick Mount
3	Standard	Standard	QM Extended	Quick Mount
4	Standard	Standard	QM Extended	Quick Mount
5	Extended	Standard	QM Extended	Quick Mount
6	Extended	Standard	QM Extended	Quick Mount
7	Extended	Extended	--	Quick Mount
8	Extended	Extended	--	Quick Mount
9	Extended	Extended	--	--
10	Extended	Extended	--	--



NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. **2** Round poles are 3 @ 90°. **3** Shown with 4 square configurations.

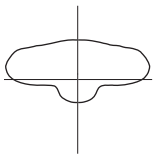
Fixture Weights and EPAs

Number of Light Squares	Weight with Standard and Extended Arm (lbs.)	EPA with Standard and Extended Arm (Sq. Ft.)	Weight with QM Arm (lbs.)	EPA with QM Arm (Sq. Ft.)	Weight with QML (lbs.)	EPA with QML (Sq. Ft.)	Weight with QMEA (lbs.)	EPA with QMEA (Sq. Ft.)
1-4	33	0.96	35	1.11	--	--	38	1.11
5-6	44	1.00	46	1.11	--	--	49	1.11
7-8	54	1.07	56	1.11	58	1.11	--	--
9-10	63	1.12	--	--	67	1.11	--	--

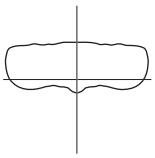
Optical Distributions

Asymmetric Area Distributions

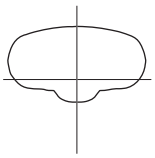
T2 (Type II)



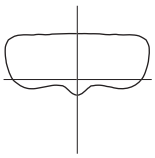
SL2 (Type II with Spill Control)



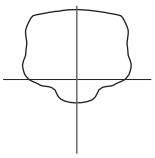
T3 (Type III)



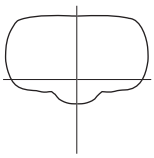
SL3 (Type III with Spill Control)



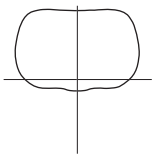
T4FT (Type IV Forward Throw)



T4W (Type IV Wide)

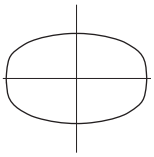


SL4 (Type IV with Spill Control)

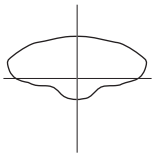


Asymmetric Roadway Distributions

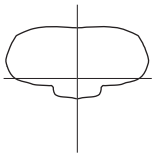
RW (Rectangular Wide Type I)



T2R (Type II Roadway)

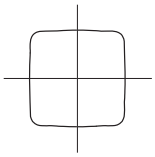


T3R (Type III Roadway)

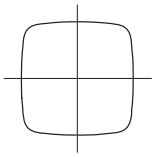


Symmetric Distributions

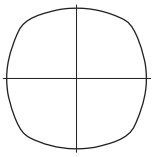
5NQ (Type V Square Narrow)



5MQ (Type V Square Medium)

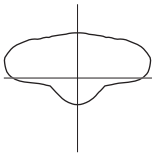


5WQ (Type V Square Wide)

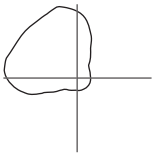


Specialized Distributions

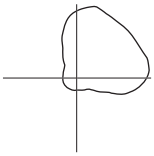
AFL (Automotive Frontline)



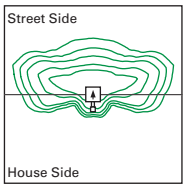
SLL (90° Spill Light Eliminator Left)



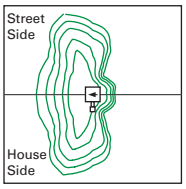
SLR (90° Spill Light Eliminator Right)



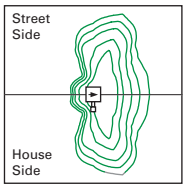
Rotated Optics



Standard



Optics Rotated Left @ 90° [L90]



Optics Rotated Right @ 90° [R90]

Product Specifications

Construction

- Extruded aluminum driver enclosure
- Heavy-wall, die-cast aluminum end caps
- Die-cast aluminum heat sinks
- Patent pending interlocking housing and heat sink

Optics

- Patented, high-efficiency injection-molded AccuLED Optics technology
- 16 optical distributions
- 3 shielding options including HSS, GRS and PFS
- IDA Certified (3000K CCT and warmer only)

Electrical

- LED drivers are mounted to removable tray assembly for ease of maintenance
- Standard with 0-10V dimming
- Standard with Cooper Lighting Solutions proprietary circuit module designed to withstand 10kV of transient line surge
- Suitable for operation in -40°C to 40°C ambient environments. Optional 50°C high ambient (HA) configuration.

Mounting

- Standard extruded arm includes internal bolt guides and round pole adapter
- Extended arms (EA and QMEA) may be required in 90° or 120° pole mount configurations, see arm mounting requirements table
- Mast arm (MA) factory installed
- Wall mount (WM) option available
- Quick mount arm (QM and QMEA) includes pole adapter and factory installed fixture mount for fast installation to square or round poles

Finish

- Super housing durable TGIC polyester powder coat paint, 2.5 mil nominal thickness
- Heat sink is powder coated black
- RAL and custom color matches available
- Coastal Construction (CC) option available

Warranty

- Five year warranty

Energy and Performance Data

Lumen Maintenance (TM-21)

Drive Current	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 hours**
Up to 1A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.7%	98.3%	98.1%	97.4%	> 1.9M
	50°C	98.2%	97.2%	96.8%	95.2%	> 851,000
1.2A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.5%	97.9%	97.7%	96.7%	> 1.3M

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, explaining proper use of IES TM-21 and LM-80.

Lumen Multiplier

Ambient Temperature	Lumen Multiplier
0ºC	1.02
10ºC	1.01
25ºC	1.00
40ºC	0.99
50ºC	0.97

View GLEON IES files

Nominal Power Lumens (1.2A)

Supplemental Performance Guide**

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 Lumens	7,972	15,580	23,245	30,714	38,056	45,541	53,857	61,024	68,072	75,366
	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
	Lumens per Watt	119	121	122	119	119	119	120	119	118	118
T2R	4000K Lumens	8,462	16,539	24,680	32,609	40,401	48,348	57,176	64,783	72,266	80,010
	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
	Lumens per Watt	126	128	129	126	126	127	128	127	126	125
T3	4000K Lumens	8,125	15,879	23,693	31,307	38,787	46,417	54,893	62,197	69,381	76,818
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	122	123	122	121	120
T3R	4000K Lumens	8,306	16,232	24,220	32,001	39,651	47,447	56,114	63,580	70,924	78,523
	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
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
T4FT	4000K Lumens	8,173	15,970	23,831	31,488	39,014	46,686	55,212	62,558	69,783	77,261
	BUG Rating	B1-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	122	124	125	122	122	122	123	122	121	121
T4W	4000K Lumens	8,067	15,764	23,522	31,080	38,510	46,082	54,499	61,751	68,881	76,263
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B5-U0-G5
	Lumens per Watt	120	122	123	120	120	121	122	121	120	119
SL2	4000K Lumens	7,958	15,552	23,206	30,662	37,989	45,462	53,763	60,920	67,952	75,235
	BUG Rating	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	121	121	119	119	119	120	119	118	118
SL3	4000K Lumens	8,124	15,877	23,690	31,302	38,784	46,410	54,885	62,189	69,372	76,805
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	121	123	122	121	120
SL4	4000K Lumens	7,719	15,085	22,510	29,741	36,850	44,097	52,148	59,089	65,913	72,977
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	115	117	118	115	115	115	116	116	115	114
5NQ	4000K Lumens	8,380	16,375	24,436	32,287	40,003	47,870	56,610	64,144	71,552	79,221
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	125	127	128	125	125	125	126	126	124	124
5MQ	4000K Lumens	8,534	16,676	24,885	32,881	40,739	48,752	57,653	65,326	72,868	80,679
	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
	Lumens per Watt	127	129	130	127	127	128	129	128	127	126
5WQ	4000K Lumens	8,556	16,723	24,951	32,968	40,847	48,881	57,808	65,499	73,063	80,894
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	128	130	131	128	128	128	129	128	127	126
SLL/ SLR	4000K Lumens	7,140	13,951	20,817	27,506	34,081	40,783	48,231	54,649	60,959	67,492
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	107	108	109	107	107	107	108	107	106	105
RW	4000K Lumens	8,304	16,228	24,215	31,994	39,641	47,437	56,100	63,566	70,907	78,504
	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
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
AFL	4000K Lumens	8,335	16,287	24,302	32,110	39,784	47,610	56,303	63,796	71,163	78,790
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G5
	Lumens per Watt	124	126	127	124	124	125	126	125	124	123

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (1A)

Supplemental Performance Guide**

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 Lumens	7,267	14,201	21,190	28,000	34,692	41,515	49,096	55,627	62,053	68,703
	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
	Lumens per Watt	123	126	128	124	124	125	126	125	124	123
T2R	4000K Lumens	7,715	15,077	22,497	29,725	36,829	44,073	52,122	59,056	65,876	72,937
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	133	136	132	132	132	133	133	131	131
T3	4000K Lumens	7,408	14,475	21,598	28,539	35,358	42,313	50,039	56,698	63,246	70,024
	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
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
T3R	4000K Lumens	7,571	14,798	22,078	29,172	36,145	43,253	51,153	57,959	64,653	71,581
	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
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
T4FT	4000K Lumens	7,451	14,559	21,725	28,703	35,564	42,558	50,330	57,027	63,613	70,430
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	129	131	128	127	128	129	128	127	126
T4W	4000K Lumens	7,354	14,371	21,442	28,333	35,105	42,007	49,681	56,291	62,792	69,521
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	127	129	126	126	126	127	126	125	125
SL2	4000K Lumens	7,254	14,178	21,155	27,951	34,631	41,443	49,011	55,533	61,944	68,584
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	125	127	124	124	124	125	125	124	123
SL3	4000K Lumens	7,406	14,474	21,596	28,534	35,355	42,307	50,033	56,690	63,237	70,014
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
SL4	4000K Lumens	7,037	13,751	20,519	27,112	33,592	40,198	47,538	53,864	60,087	66,524
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	119	122	124	120	120	121	122	121	120	119
5NQ	4000K Lumens	7,640	14,928	22,275	29,431	36,465	43,637	51,606	58,472	65,226	72,218
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	129	132	134	131	131	131	132	131	130	129
5MQ	4000K Lumens	7,779	15,203	22,684	29,973	37,137	44,441	52,555	59,549	66,427	73,545
	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
	Lumens per Watt	132	135	137	133	133	133	134	134	133	132
5WQ	4000K Lumens	7,800	15,243	22,744	30,052	37,236	44,560	52,697	59,708	66,603	73,742
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	132	135	137	134	133	134	135	134	133	132
SLL/ SLR	4000K Lumens	6,510	12,719	18,977	25,075	31,067	37,176	43,967	49,817	55,569	61,525
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	110	113	114	111	111	112	112	112	111	110
RW	4000K Lumens	7,570	14,793	22,073	29,165	36,137	43,243	51,140	57,945	64,637	71,564
	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-G4	B5-U0-G5
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
AFL	4000K Lumens	7,598	14,847	22,154	29,272	36,267	43,400	51,326	58,156	64,872	71,824
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G4
	Lumens per Watt	129	131	133	130	130	130	131	131	129	129

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (800mA)

Supplemental Performance Guide**

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 Lumens	5,871	11,474	17,121	22,622	28,029	33,542	39,667	44,944	50,134	55,508
	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
	Lumens per Watt	133	135	138	132	133	135	134	135	134	132
T2R	4000K Lumens	6,233	12,181	18,176	24,016	29,756	35,608	42,111	47,714	53,224	58,929
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	142	143	147	140	142	143	143	143	142	141
T3	4000K Lumens	5,986	11,695	17,450	23,057	28,568	34,186	40,430	45,809	51,099	56,576
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
T3R	4000K Lumens	6,117	11,955	17,838	23,569	29,203	34,946	41,328	46,827	52,235	57,832
	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
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
T4FT	4000K Lumens	6,019	11,763	17,551	23,190	28,734	34,384	40,663	46,074	51,396	56,904
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	137	138	142	136	137	138	138	138	137	136
T4W	4000K Lumens	5,942	11,610	17,324	22,891	28,363	33,940	40,138	45,480	50,732	56,169
	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
	Lumens per Watt	135	137	140	134	135	136	136	136	136	134
SL2	4000K Lumens	5,862	11,454	17,091	22,583	27,980	33,484	39,598	44,867	50,048	55,411
	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
	Lumens per Watt	133	135	138	132	133	134	134	134	134	132
SL3	4000K Lumens	5,985	11,694	17,447	23,053	28,565	34,182	40,424	45,804	51,092	56,568
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
SL4	4000K Lumens	5,685	11,111	16,577	21,905	27,140	32,478	38,409	43,520	48,546	53,748
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	129	131	134	128	129	130	130	130	130	128
5NQ	4000K Lumens	6,172	12,061	17,997	23,778	29,462	35,256	41,694	47,242	52,699	58,347
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	140	142	145	139	140	142	141	141	141	139
5MQ	4000K Lumens	6,285	12,283	18,328	24,217	30,004	35,907	42,462	48,112	53,669	59,421
	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
	Lumens per Watt	143	145	148	142	143	144	144	144	144	142
5WQ	4000K Lumens	6,303	12,317	18,377	24,281	30,085	36,001	42,575	48,241	53,812	59,579
	BUG Rating	B3-U0-G1	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
	Lumens per Watt	143	145	148	142	143	145	144	144	144	142
SLL/ SLR	4000K Lumens	5,260	10,276	15,332	20,259	25,101	30,037	35,522	40,249	44,898	49,708
	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	B3-U0-G5	B3-U0-G5
	Lumens per Watt	120	121	124	118	120	121	120	121	120	119
RW	4000K Lumens	6,116	11,952	17,834	23,563	29,196	34,938	41,317	46,817	52,224	57,819
	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
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
AFL	4000K Lumens	6,139	11,996	17,899	23,650	29,302	35,064	41,468	46,987	52,412	58,030
	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
	Lumens per Watt	140	141	144	138	140	141	141	141	140	138

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Nominal Power Lumens (600mA)

Supplemental Performance Guide**

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 Lumens	4,787	9,357	13,961	18,448	22,856	27,353	32,347	36,651	40,884	45,265
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	141	142	145	143	141	142	143	143	141	140
T2R	4000K Lumens	5,083	9,934	14,822	19,585	24,266	29,038	34,341	38,911	43,404	48,055
	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
	Lumens per Watt	150	151	154	152	150	150	152	151	150	149
T3	4000K Lumens	4,880	9,537	14,231	18,803	23,296	27,878	32,970	37,358	41,671	46,137
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	144	145	148	146	144	144	146	145	144	143
T3R	4000K Lumens	4,988	9,749	14,547	19,220	23,814	28,497	33,703	38,188	42,598	47,162
	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
	Lumens per Watt	147	148	152	149	147	148	149	149	147	146
T4FT	4000K Lumens	4,909	9,591	14,312	18,911	23,432	28,040	33,161	37,574	41,913	46,404
	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	B4-U0-G5
	Lumens per Watt	144	145	149	147	145	145	147	146	145	144
T4W	4000K Lumens	4,845	9,468	14,128	18,668	23,130	27,678	32,732	37,088	41,371	45,805
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	143	143	147	145	143	143	145	144	143	142
SL2	4000K Lumens	4,779	9,341	13,937	18,416	22,818	27,305	32,292	36,589	40,813	45,188
	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
	Lumens per Watt	141	142	145	143	141	141	143	142	141	140
SL3	4000K Lumens	4,879	9,536	14,229	18,800	23,294	27,874	32,965	37,351	41,666	46,130
	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
	Lumens per Watt	144	144	148	146	144	144	146	145	144	143
SL4	4000K Lumens	4,637	9,059	13,519	17,863	22,132	26,486	31,322	35,490	39,589	43,831
	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
	Lumens per Watt	136	137	141	138	137	137	139	138	137	136
5NQ	4000K Lumens	5,033	9,835	14,676	19,392	24,026	28,751	34,002	38,526	42,975	47,581
	BUG Rating	B2-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	B5-U0-G3
	Lumens per Watt	148	149	153	150	148	149	150	150	148	147
5MQ	4000K Lumens	5,126	10,015	14,946	19,747	24,468	29,281	34,628	39,236	43,766	48,457
	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
	Lumens per Watt	151	152	156	153	151	152	153	153	151	150
5WQ	4000K Lumens	5,139	10,043	14,985	19,801	24,533	29,359	34,721	39,339	43,883	48,586
	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
	Lumens per Watt	151	152	156	153	151	152	154	153	151	150
SLL/ SLR	4000K Lumens	4,289	8,380	12,502	16,520	20,469	24,494	28,967	32,823	36,613	40,537
	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
	Lumens per Watt	126	127	130	128	126	127	128	128	126	126
RW	4000K Lumens	4,987	9,746	14,543	19,215	23,808	28,491	33,695	38,178	42,587	47,151
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	147	148	151	149	147	148	149	149	147	146
AFL	4000K Lumens	5,007	9,782	14,597	19,285	23,896	28,594	33,817	38,317	42,742	47,322
	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
	Lumens per Watt	147	148	152	149	148	148	150	149	147	147

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Control Options

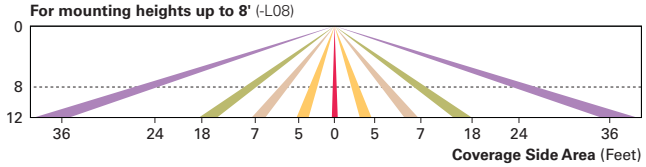
0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (BPC, PR and PR7)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) 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 PR7 receptacle.

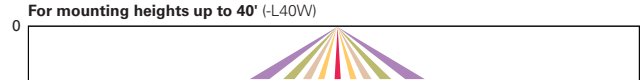
After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the 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 (SPB, MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are 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. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM occupancy sensors require the FSIR-100 programming tool to adjust factory defaults.

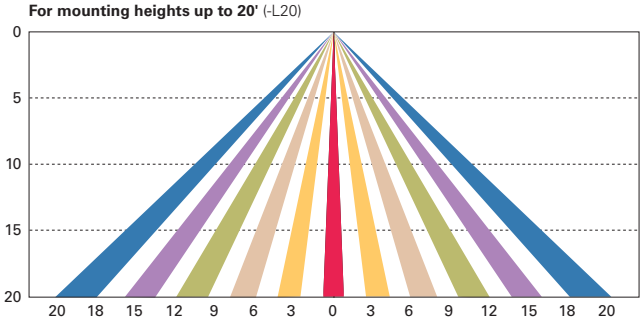
For mounting heights up to 8' (-L08)



For mounting heights up to 40' (-L40W)

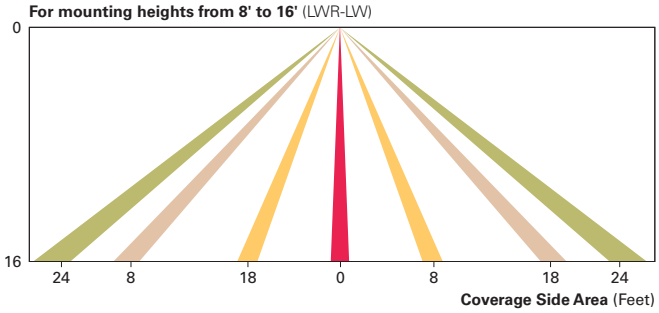


For mounting heights up to 20' (-L20)

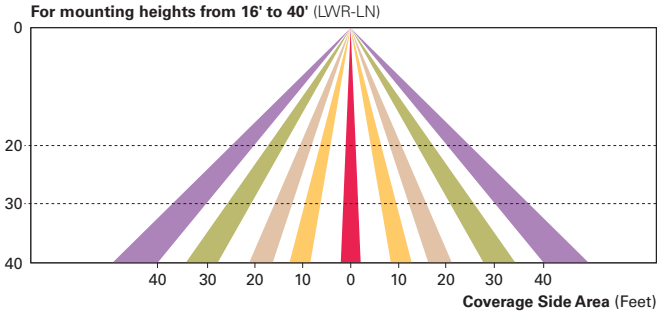


Enlighted Wireless Control and Monitoring System (LWR-LW and LWR-LN)
Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy 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)
Cooper Lighting Solutions 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.

Synapse (DIM10)
SimplySNAP integrated wireless controls system by Synapse. Includes factory installed DIM10 Synapse control module and MS/DC motion sensor; requires additional Synapse system components for operation. Contact Synapse at www.synapsewireless.com for product support, warranty and terms and conditions.

Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

Project		**Catalog #**	GLEON SA3C 740 U SLR HSS	**Type**	A1
Prepared by		**Notes**		**Date**	

McGraw-Edison

GLEON Galleon

Area / Site Luminaire

Product Features

LumenSafe Technology

Light ARchitect™

Product Certifications

Interactive Menu

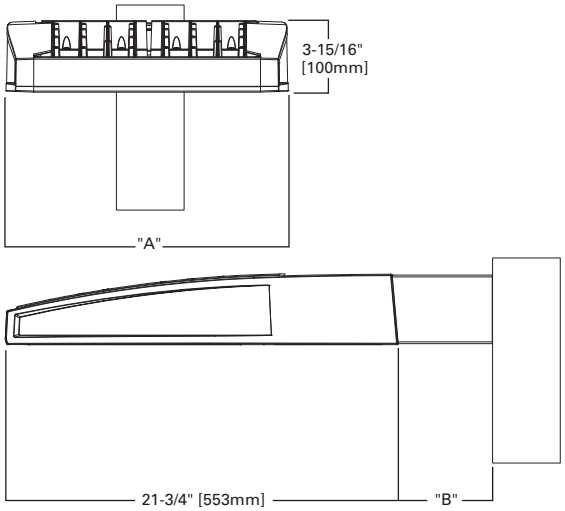
Quick Facts

- Lumen packages range from 4,200 - 80,800 (34W - 640W)
- Efficacy up to 156 lumens per watt
- Options to meet Buy American and other domestic preference requirements

Connected Systems

- WaveLinx
- Enlighted

Dimensional Details



Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Extended Arm Length [1]	"B" Quick Mount Arm Length	"B" Quick Mount Extended Arm Length
1-4	15-1/2"	7"	10"	10-5/8"	16-9/16"
5-6	21-5/8"	7"	10"	10-5/8"	16-9/16"
7-8	27-5/8"	7"	13"	10-5/8"	--
9-10	33-3/4"	7"	16"	--	--

NOTES:
For arm selection requirements and additional line art, see Mounting Details section.

NOTES:
1. Visit https://www.designlights.org/search/ to confirm qualification. Not all product variations are DLC qualified.
2. IDA Certified for 3000K CCT and warmer only.

Ordering Information

SAMPLE NUMBER: **GLEON-SA4C-740-U-T4FT-GM**

Product Family [1, 2]	Light Engine		Color Temperature	Voltage	Distribution	Mounting	Finish
	Configuration	Drive Current					
GLEON=Galleon **BAA-GLEON**=Galleon, Buy American Act Compliant [35] **TAA-GLEON**=Galleon, Trade Agreements Act Compliant [35]	**SA1**=1 Square **SA2**=2 Squares **SA3**=3 Squares **SA4**=4 Squares **SA5**=5 Squares [4] **SA6**=6 Squares **SA7**=7 Squares [5] **SA8**=8 Squares [5] **SA9**=9 Squares [6] **SA0**=10 Squares [6]	**A**=600mA **B**=800mA **C**=1000mA **D**=1200mA [16]	**722**=70CRI, 2200K **727**=70CRI, 2700K **730**=70CRI, 3000K **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K **760**=70CRI, 6000K **827**=80CRI, 2700K **830**=80CRI, 3000K **AMB**=Amber, 590nm [14, 16]	**U**=120-277V **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V [7, 8] **9**=347V [7]	**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	**[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] **QML**=Quick Mount Arm (Standard Length, Large) [37] **QMEA**=Quick Mount Arm (Extended Length) [12]	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White **RALXX**=Custom Color

Options (Add as Suffix)	Controls and Systems Options (Add as Suffix)	Accessories (Order Separately)[36]
DIM=External 0-10V Dimming Leads [19, 20] **F**=Single Fuse (120, 277 or 347V Specify Voltage) **FF**=Double Fuse (208, 240 or 480V Specify Voltage) **20K**=Series 20kV UL 1449 Surge Protective Device **2L**=Two Circuits [17, 18] **HA**=50°C High Ambient **HSS**=Installed House Side Shield [28] **GRSBK**=Glare Reducing Shield, Black [23] **GRSWH**=Glare Reducing Shield, White [23] **LCF**=Light Square Trim Painted to Match Housing [27] **MT**=Installed Mesh Top **TH**=Tool-less Door Hardware **CC**=Coastal Construction finish [3] **L90**=Optics Rotated 90° Left **R90**=Optics Rotated 90° Right **CE**=CE Marking [29] **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] **DALI**=DALI Drivers	**BPC**=Button Type Photocontrol **PR**=NEMA 3-PIN Photocontrol Receptacle **PR7**=NEMA 7-PIN Photocontrol Receptacle [21] **SPB2**=Dimming Occupancy Sensor with Bluetooth Interface, 8' - 20' Mounting [34] **SPB4**=Dimming Occupancy Sensor with Bluetooth Interface, 21' - 40' Mounting [34] **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/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/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] **ZW**=WaveLinx Module and 4-PIN Receptacle **ZD**=WaveLinx Module with DALI driver and 4-PIN Receptacle **SWPD4XX**=WaveLinx Sensor Only, 7'-15' [13, 32, 33] **SWPD5XX**=WaveLinx Sensor Only, 15'-40' [13, 32, 33] **WOBXX**=WaveLinx Sensor with Bluetooth, 7'-15' [13, 32] **WOFXX**=WaveLinx Sensor with Bluetooth, 15'-40' [13, 32] **LWR-LW**=Enlighted Sensor, 8'–16' Mounting Height [26] **LWR-LN**=Enlighted Sensor, 16'–40' Mounting Height [26] **DIM10-MS/DIM-L08**=Synapse Occupancy Sensor (<8' Mounting) [19] **DIM10-MS/DIM-L20**=Synapse Occupancy Sensor (9'-20' Mounting) [19] **DIM10-MS/DIM-L40**=Synapse Occupancy Sensor (21'-40' Mounting) [19]	**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] **LS/GRSBK**=Glare Reducing Shield, Black [23, 30] **LS/GRSWH**=Glare Reducing Shield, White [23, 30] **LS/PFS**=Perimeter Shield, Black [15] **WOLC-7P-10A**=WaveLinx Outdoor Control Module [19, 31] **SWPD4-XX**=Wavelinx Wireless Sensor, 7'–15' Mounting Height [13, 19, 32, 33] **SWPD5-XX**=Wavelinx Wireless Sensor, 15'–40' Mounting Height [13, 19, 32, 33]

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. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654. Not available with TH option.
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. 480V must utilize Wye system only. 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. Requires ZW or ZD receptacle.
14. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose drive current A; supplied at 500mA drive current only. Available with 5WQ, 5MQ, SL2, SL3 and SL4 distributions. Can be used with HSS option.
15. Set of 4 pcs. One set required per Light Square.
16. Not available with HA option.
17. 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in SA2 through SA4 requires a larger housing, normally used for SA5 or SA6. 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 Enlighted 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 BPC photocontrol or the PR7 or PR photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information.
23. Not for use with T4FT, T4W or SL4 optics. See IES files for details.
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 Cooper Lighting Solutions for more information.
25. Replace X with number of Light Squares operating in low output mode.
26. Enlighted wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities.
27. Not available with house side shield (HSS).
28. Not for use with 5NQ, 5MQ, 5WQ or RW optics. A black trim plate is used when HSS is selected.
29. CE is not available with the LWR, MS, MS/X, MS/DIM, BPC, PR or PR7 options. Available in 120-277V only.
30. One required for each Light Square.
31. Requires PR7.
32. Replace XX with sensor color (WH, BZ or BK.)
33. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
34. Smart device with mobile application required to change system defaults. See controls section for details.
35. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
36. For BAA or TAA requirements, Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.
37. Available for 7-10 squares.

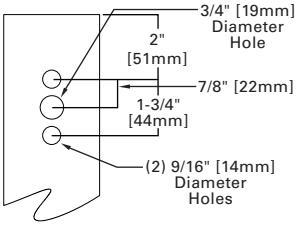
LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology LumenSafe Technology	**D**=Standard Dome Camera **H**=Hi-Res Dome Camera **Z**=Remote PTZ Camera	**C**=Cellular, No SIM **A**=Cellular, AT&T **V**=Cellular, Verizon **S**=Cellular, Sprint	**R**=Cellular, Rogers **W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

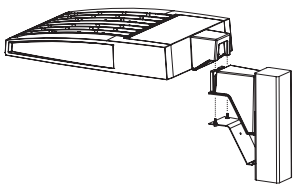
Mounting Details

Standard Arm (Drilling Pattern)

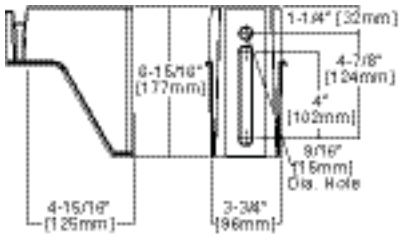
TYPE "N"



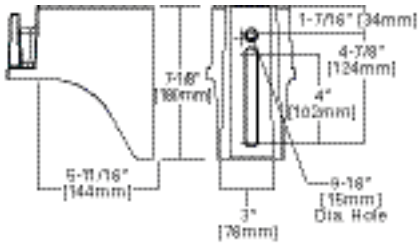
Quick Mount Arm (Includes fixture adapter)



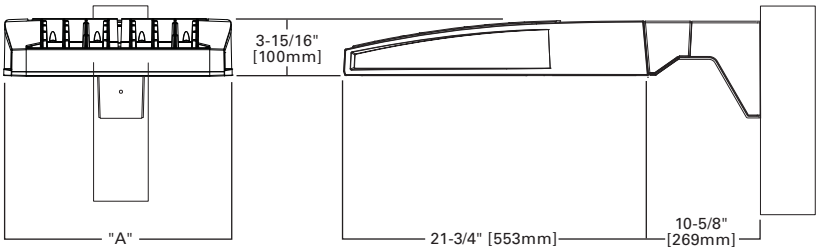
QM and QMEA Pole Mount



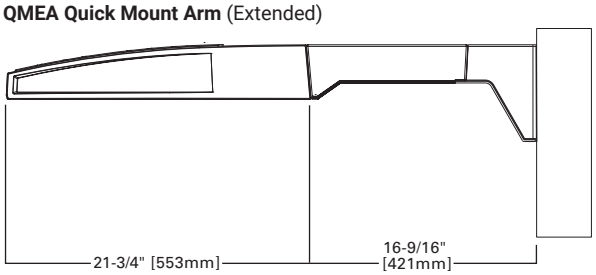
QML Pole Mount



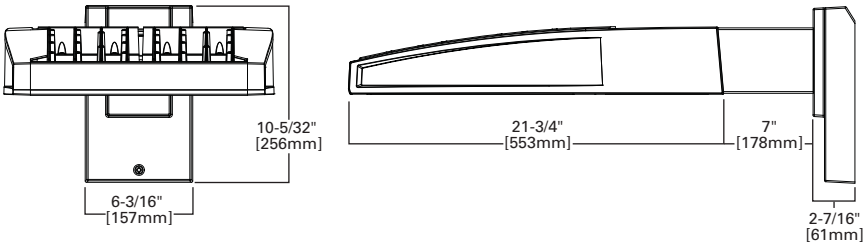
QM Quick Mount Arm (Standard)



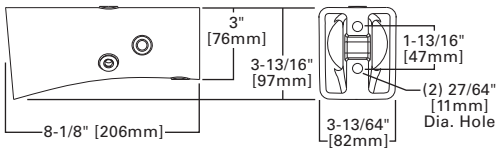
QMEA Quick Mount Arm (Extended)



Standard Wall Mount

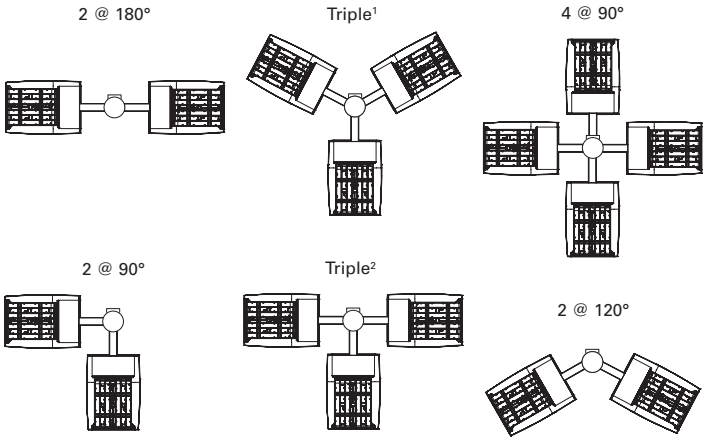


Mast Arm Mount



Arm Mounting Requirements

Number of Light Squares	Standard Arm @ 90° Apart	Standard Arm @ 120° Apart	Quick Mount Arm @ 90° Apart	Quick Mount Arm @ 120° Apart
1	Standard	Standard	QM Extended	Quick Mount
2	Standard	Standard	QM Extended	Quick Mount
3	Standard	Standard	QM Extended	Quick Mount
4	Standard	Standard	QM Extended	Quick Mount
5	Extended	Standard	QM Extended	Quick Mount
6	Extended	Standard	QM Extended	Quick Mount
7	Extended	Extended	--	Quick Mount
8	Extended	Extended	--	Quick Mount
9	Extended	Extended	--	--
10	Extended	Extended	--	--



NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. **2** Round poles are 3 @ 90°. **3** Shown with 4 square configurations.

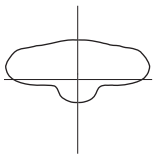
Fixture Weights and EPAs

Number of Light Squares	Weight with Standard and Extended Arm (lbs.)	EPA with Standard and Extended Arm (Sq. Ft.)	Weight with QM Arm (lbs.)	EPA with QM Arm (Sq. Ft.)	Weight with QML (lbs.)	EPA with QML (Sq. Ft.)	Weight with QMEA (lbs.)	EPA with QMEA (Sq. Ft.)
1-4	33	0.96	35	1.11	--	--	38	1.11
5-6	44	1.00	46	1.11	--	--	49	1.11
7-8	54	1.07	56	1.11	58	1.11	--	--
9-10	63	1.12	--	--	67	1.11	--	--

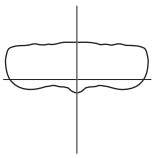
Optical Distributions

Asymmetric Area Distributions

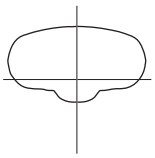
T2 (Type II)



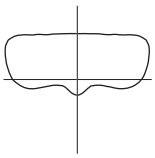
SL2 (Type II with Spill Control)



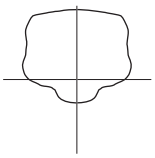
T3 (Type III)



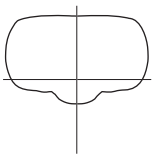
SL3 (Type III with Spill Control)



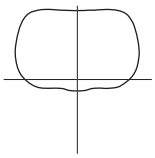
T4FT (Type IV Forward Throw)



T4W (Type IV Wide)

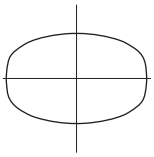


SL4 (Type IV with Spill Control)

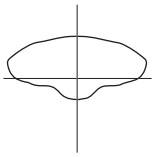


Asymmetric Roadway Distributions

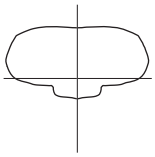
RW (Rectangular Wide Type I)



T2R (Type II Roadway)

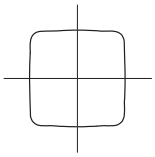


T3R (Type III Roadway)

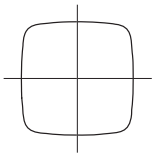


Symmetric Distributions

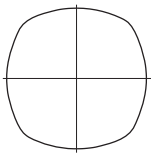
5NQ (Type V Square Narrow)



5MQ (Type V Square Medium)

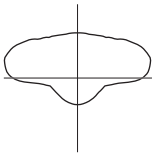


5WQ (Type V Square Wide)

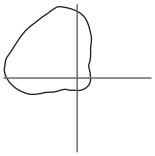


Specialized Distributions

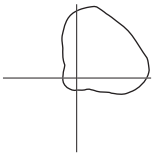
AFL (Automotive Frontline)



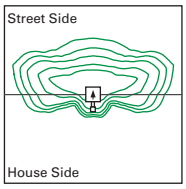
SLL (90° Spill Light Eliminator Left)



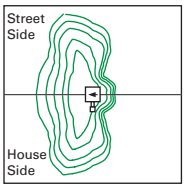
SLR (90° Spill Light Eliminator Right)



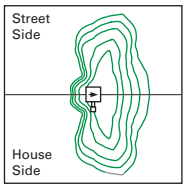
Rotated Optics



Standard



Optics Rotated Left @ 90° [L90]



Optics Rotated Right @ 90° [R90]

Product Specifications

Construction

- Extruded aluminum driver enclosure
- Heavy-wall, die-cast aluminum end caps
- Die-cast aluminum heat sinks
- Patent pending interlocking housing and heat sink

Optics

- Patented, high-efficiency injection-molded AccuLED Optics technology
- 16 optical distributions
- 3 shielding options including HSS, GRS and PFS
- IDA Certified (3000K CCT and warmer only)

Electrical

- LED drivers are mounted to removable tray assembly for ease of maintenance
- Standard with 0-10V dimming
- Standard with Cooper Lighting Solutions proprietary circuit module designed to withstand 10kV of transient line surge
- Suitable for operation in -40°C to 40°C ambient environments. Optional 50°C high ambient (HA) configuration.

Mounting

- Standard extruded arm includes internal bolt guides and round pole adapter
- Extended arms (EA and QMEA) may be required in 90° or 120° pole mount configurations, see arm mounting requirements table
- Mast arm (MA) factory installed
- Wall mount (WM) option available
- Quick mount arm (QM and QMEA) includes pole adapter and factory installed fixture mount for fast installation to square or round poles

Finish

- Super housing durable TGIC polyester powder coat paint, 2.5 mil nominal thickness
- Heat sink is powder coated black
- RAL and custom color matches available
- Coastal Construction (CC) option available

Warranty

- Five year warranty

Energy and Performance Data

Lumen Maintenance (TM-21)

Drive Current	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 hours**
Up to 1A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.7%	98.3%	98.1%	97.4%	> 1.9M
	50°C	98.2%	97.2%	96.8%	95.2%	> 851,000
1.2A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.5%	97.9%	97.7%	96.7%	> 1.3M

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, explaining proper use of IES TM-21 and LM-80.

Lumen Multiplier

Ambient Temperature	Lumen Multiplier
0ºC	1.02
10ºC	1.01
25ºC	1.00
40ºC	0.99
50ºC	0.97

View GLEON IES files

Nominal Power Lumens (1.2A)

Supplemental Performance Guide**

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 Lumens	7,972	15,580	23,245	30,714	38,056	45,541	53,857	61,024	68,072	75,366
	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
	Lumens per Watt	119	121	122	119	119	119	120	119	118	118
T2R	4000K Lumens	8,462	16,539	24,680	32,609	40,401	48,348	57,176	64,783	72,266	80,010
	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
	Lumens per Watt	126	128	129	126	126	127	128	127	126	125
T3	4000K Lumens	8,125	15,879	23,693	31,307	38,787	46,417	54,893	62,197	69,381	76,818
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	122	123	122	121	120
T3R	4000K Lumens	8,306	16,232	24,220	32,001	39,651	47,447	56,114	63,580	70,924	78,523
	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
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
T4FT	4000K Lumens	8,173	15,970	23,831	31,488	39,014	46,686	55,212	62,558	69,783	77,261
	BUG Rating	B1-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	122	124	125	122	122	122	123	122	121	121
T4W	4000K Lumens	8,067	15,764	23,522	31,080	38,510	46,082	54,499	61,751	68,881	76,263
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B5-U0-G5
	Lumens per Watt	120	122	123	120	120	121	122	121	120	119
SL2	4000K Lumens	7,958	15,552	23,206	30,662	37,989	45,462	53,763	60,920	67,952	75,235
	BUG Rating	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	121	121	119	119	119	120	119	118	118
SL3	4000K Lumens	8,124	15,877	23,690	31,302	38,784	46,410	54,885	62,189	69,372	76,805
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	121	123	122	121	120
SL4	4000K Lumens	7,719	15,085	22,510	29,741	36,850	44,097	52,148	59,089	65,913	72,977
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	115	117	118	115	115	115	116	116	115	114
5NQ	4000K Lumens	8,380	16,375	24,436	32,287	40,003	47,870	56,610	64,144	71,552	79,221
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	125	127	128	125	125	125	126	126	124	124
5MQ	4000K Lumens	8,534	16,676	24,885	32,881	40,739	48,752	57,653	65,326	72,868	80,679
	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
	Lumens per Watt	127	129	130	127	127	128	129	128	127	126
5WQ	4000K Lumens	8,556	16,723	24,951	32,968	40,847	48,881	57,808	65,499	73,063	80,894
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	128	130	131	128	128	128	129	128	127	126
SLL/ SLR	4000K Lumens	7,140	13,951	20,817	27,506	34,081	40,783	48,231	54,649	60,959	67,492
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	107	108	109	107	107	107	108	107	106	105
RW	4000K Lumens	8,304	16,228	24,215	31,994	39,641	47,437	56,100	63,566	70,907	78,504
	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
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
AFL	4000K Lumens	8,335	16,287	24,302	32,110	39,784	47,610	56,303	63,796	71,163	78,790
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G5
	Lumens per Watt	124	126	127	124	124	125	126	125	124	123

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (1A)

Supplemental Performance Guide**

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 Lumens	7,267	14,201	21,190	28,000	34,692	41,515	49,096	55,627	62,053	68,703
	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
	Lumens per Watt	123	126	128	124	124	125	126	125	124	123
T2R	4000K Lumens	7,715	15,077	22,497	29,725	36,829	44,073	52,122	59,056	65,876	72,937
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	133	136	132	132	132	133	133	131	131
T3	4000K Lumens	7,408	14,475	21,598	28,539	35,358	42,313	50,039	56,698	63,246	70,024
	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
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
T3R	4000K Lumens	7,571	14,798	22,078	29,172	36,145	43,253	51,153	57,959	64,653	71,581
	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
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
T4FT	4000K Lumens	7,451	14,559	21,725	28,703	35,564	42,558	50,330	57,027	63,613	70,430
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	129	131	128	127	128	129	128	127	126
T4W	4000K Lumens	7,354	14,371	21,442	28,333	35,105	42,007	49,681	56,291	62,792	69,521
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	127	129	126	126	126	127	126	125	125
SL2	4000K Lumens	7,254	14,178	21,155	27,951	34,631	41,443	49,011	55,533	61,944	68,584
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	125	127	124	124	124	125	125	124	123
SL3	4000K Lumens	7,406	14,474	21,596	28,534	35,355	42,307	50,033	56,690	63,237	70,014
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
SL4	4000K Lumens	7,037	13,751	20,519	27,112	33,592	40,198	47,538	53,864	60,087	66,524
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	119	122	124	120	120	121	122	121	120	119
5NQ	4000K Lumens	7,640	14,928	22,275	29,431	36,465	43,637	51,606	58,472	65,226	72,218
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	129	132	134	131	131	131	132	131	130	129
5MQ	4000K Lumens	7,779	15,203	22,684	29,973	37,137	44,441	52,555	59,549	66,427	73,545
	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
	Lumens per Watt	132	135	137	133	133	133	134	134	133	132
5WQ	4000K Lumens	7,800	15,243	22,744	30,052	37,236	44,560	52,697	59,708	66,603	73,742
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	132	135	137	134	133	134	135	134	133	132
SLL/ SLR	4000K Lumens	6,510	12,719	18,977	25,075	31,067	37,176	43,967	49,817	55,569	61,525
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	110	113	114	111	111	112	112	112	111	110
RW	4000K Lumens	7,570	14,793	22,073	29,165	36,137	43,243	51,140	57,945	64,637	71,564
	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-G4	B5-U0-G5
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
AFL	4000K Lumens	7,598	14,847	22,154	29,272	36,267	43,400	51,326	58,156	64,872	71,824
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G4
	Lumens per Watt	129	131	133	130	130	130	131	131	129	129

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (800mA)

Supplemental Performance Guide**

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 Lumens	5,871	11,474	17,121	22,622	28,029	33,542	39,667	44,944	50,134	55,508
	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
	Lumens per Watt	133	135	138	132	133	135	134	135	134	132
T2R	4000K Lumens	6,233	12,181	18,176	24,016	29,756	35,608	42,111	47,714	53,224	58,929
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	142	143	147	140	142	143	143	143	142	141
T3	4000K Lumens	5,986	11,695	17,450	23,057	28,568	34,186	40,430	45,809	51,099	56,576
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
T3R	4000K Lumens	6,117	11,955	17,838	23,569	29,203	34,946	41,328	46,827	52,235	57,832
	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
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
T4FT	4000K Lumens	6,019	11,763	17,551	23,190	28,734	34,384	40,663	46,074	51,396	56,904
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	137	138	142	136	137	138	138	138	137	136
T4W	4000K Lumens	5,942	11,610	17,324	22,891	28,363	33,940	40,138	45,480	50,732	56,169
	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
	Lumens per Watt	135	137	140	134	135	136	136	136	136	134
SL2	4000K Lumens	5,862	11,454	17,091	22,583	27,980	33,484	39,598	44,867	50,048	55,411
	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
	Lumens per Watt	133	135	138	132	133	134	134	134	134	132
SL3	4000K Lumens	5,985	11,694	17,447	23,053	28,565	34,182	40,424	45,804	51,092	56,568
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
SL4	4000K Lumens	5,685	11,111	16,577	21,905	27,140	32,478	38,409	43,520	48,546	53,748
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	129	131	134	128	129	130	130	130	130	128
5NQ	4000K Lumens	6,172	12,061	17,997	23,778	29,462	35,256	41,694	47,242	52,699	58,347
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	140	142	145	139	140	142	141	141	141	139
5MQ	4000K Lumens	6,285	12,283	18,328	24,217	30,004	35,907	42,462	48,112	53,669	59,421
	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
	Lumens per Watt	143	145	148	142	143	144	144	144	144	142
5WQ	4000K Lumens	6,303	12,317	18,377	24,281	30,085	36,001	42,575	48,241	53,812	59,579
	BUG Rating	B3-U0-G1	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
	Lumens per Watt	143	145	148	142	143	145	144	144	144	142
SLL/ SLR	4000K Lumens	5,260	10,276	15,332	20,259	25,101	30,037	35,522	40,249	44,898	49,708
	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	B3-U0-G5	B3-U0-G5
	Lumens per Watt	120	121	124	118	120	121	120	121	120	119
RW	4000K Lumens	6,116	11,952	17,834	23,563	29,196	34,938	41,317	46,817	52,224	57,819
	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
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
AFL	4000K Lumens	6,139	11,996	17,899	23,650	29,302	35,064	41,468	46,987	52,412	58,030
	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
	Lumens per Watt	140	141	144	138	140	141	141	141	140	138

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Nominal Power Lumens (600mA)

Supplemental Performance Guide**

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 Lumens	4,787	9,357	13,961	18,448	22,856	27,353	32,347	36,651	40,884	45,265
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	141	142	145	143	141	142	143	143	141	140
T2R	4000K Lumens	5,083	9,934	14,822	19,585	24,266	29,038	34,341	38,911	43,404	48,055
	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
	Lumens per Watt	150	151	154	152	150	150	152	151	150	149
T3	4000K Lumens	4,880	9,537	14,231	18,803	23,296	27,878	32,970	37,358	41,671	46,137
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	144	145	148	146	144	144	146	145	144	143
T3R	4000K Lumens	4,988	9,749	14,547	19,220	23,814	28,497	33,703	38,188	42,598	47,162
	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
	Lumens per Watt	147	148	152	149	147	148	149	149	147	146
T4FT	4000K Lumens	4,909	9,591	14,312	18,911	23,432	28,040	33,161	37,574	41,913	46,404
	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	B4-U0-G5
	Lumens per Watt	144	145	149	147	145	145	147	146	145	144
T4W	4000K Lumens	4,845	9,468	14,128	18,668	23,130	27,678	32,732	37,088	41,371	45,805
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	143	143	147	145	143	143	145	144	143	142
SL2	4000K Lumens	4,779	9,341	13,937	18,416	22,818	27,305	32,292	36,589	40,813	45,188
	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
	Lumens per Watt	141	142	145	143	141	141	143	142	141	140
SL3	4000K Lumens	4,879	9,536	14,229	18,800	23,294	27,874	32,965	37,351	41,666	46,130
	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
	Lumens per Watt	144	144	148	146	144	144	146	145	144	143
SL4	4000K Lumens	4,637	9,059	13,519	17,863	22,132	26,486	31,322	35,490	39,589	43,831
	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
	Lumens per Watt	136	137	141	138	137	137	139	138	137	136
5NQ	4000K Lumens	5,033	9,835	14,676	19,392	24,026	28,751	34,002	38,526	42,975	47,581
	BUG Rating	B2-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	B5-U0-G3
	Lumens per Watt	148	149	153	150	148	149	150	150	148	147
5MQ	4000K Lumens	5,126	10,015	14,946	19,747	24,468	29,281	34,628	39,236	43,766	48,457
	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
	Lumens per Watt	151	152	156	153	151	152	153	153	151	150
5WQ	4000K Lumens	5,139	10,043	14,985	19,801	24,533	29,359	34,721	39,339	43,883	48,586
	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
	Lumens per Watt	151	152	156	153	151	152	154	153	151	150
SLL/ SLR	4000K Lumens	4,289	8,380	12,502	16,520	20,469	24,494	28,967	32,823	36,613	40,537
	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
	Lumens per Watt	126	127	130	128	126	127	128	128	126	126
RW	4000K Lumens	4,987	9,746	14,543	19,215	23,808	28,491	33,695	38,178	42,587	47,151
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	147	148	151	149	147	148	149	149	147	146
AFL	4000K Lumens	5,007	9,782	14,597	19,285	23,896	28,594	33,817	38,317	42,742	47,322
	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
	Lumens per Watt	147	148	152	149	148	148	150	149	147	147

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Control Options

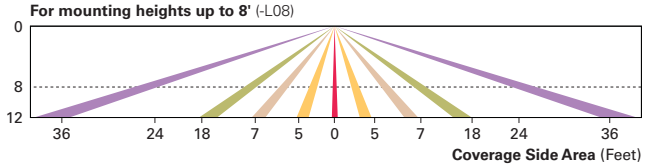
0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (BPC, PR and PR7)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) 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 PR7 receptacle.

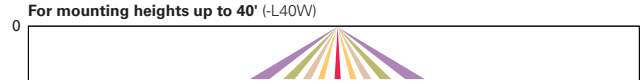
After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the 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 (SPB, MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are 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. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM occupancy sensors require the FSIR-100 programming tool to adjust factory defaults.

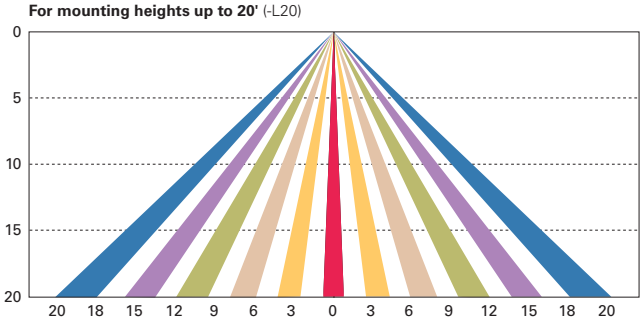
For mounting heights up to 8' (-L08)



For mounting heights up to 40' (-L40W)

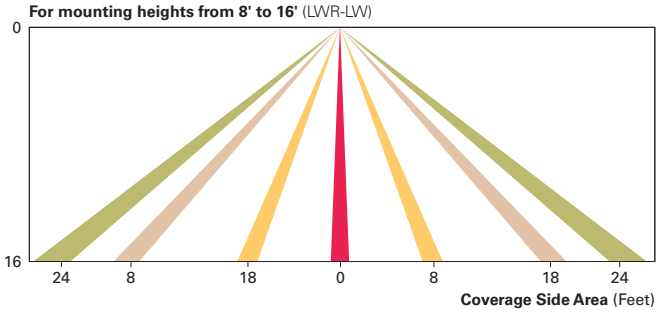


For mounting heights up to 20' (-L20)

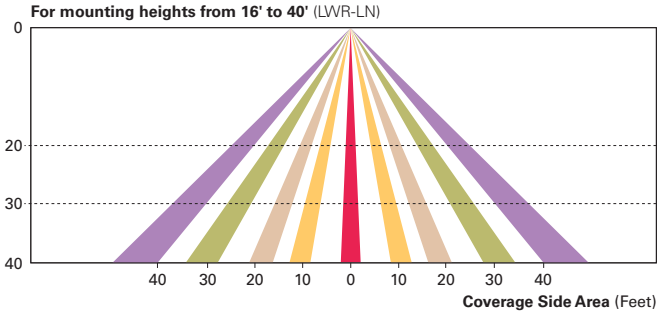


Enlighted Wireless Control and Monitoring System (LWR-LW and LWR-LN)
Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy 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)
Cooper Lighting Solutions 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.

Synapse (DIM10)
SimplySNAP integrated wireless controls system by Synapse. Includes factory installed DIM10 Synapse control module and MS/DC motion sensor; requires additional Synapse system components for operation. Contact Synapse at www.synapsewireless.com for product support, warranty and terms and conditions.

Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

Project		**Catalog #**	GLEON SA2C 740 U T2R	**Type**	A2
Prepared by		**Notes**		**Date**	

McGraw-Edison

GLEON Galleon

Area / Site Luminaire

Product Features

LumenSafe Technology

Light ARchitect™

Product Certifications

Interactive Menu

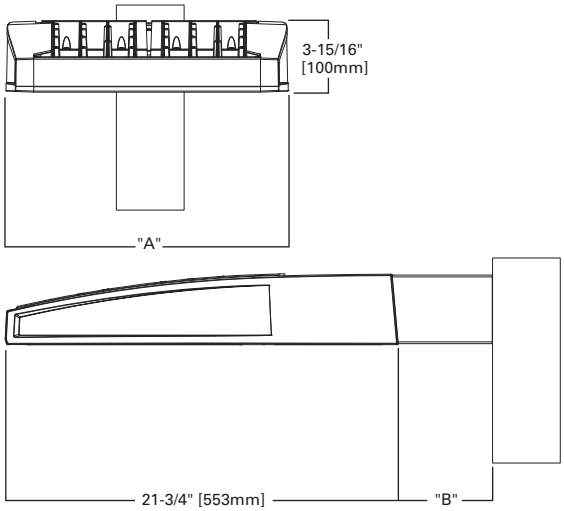
Quick Facts

- Lumen packages range from 4,200 - 80,800 (34W - 640W)
- Efficacy up to 156 lumens per watt
- Options to meet Buy American and other domestic preference requirements

Connected Systems

- WaveLinx
- Enlighted

Dimensional Details



Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Extended Arm Length [1]	"B" Quick Mount Arm Length	"B" Quick Mount Extended Arm Length
1-4	15-1/2"	7"	10"	10-5/8"	16-9/16"
5-6	21-5/8"	7"	10"	10-5/8"	16-9/16"
7-8	27-5/8"	7"	13"	10-5/8"	--
9-10	33-3/4"	7"	16"	--	--

NOTES:
For arm selection requirements and additional line art, see Mounting Details section.

NOTES:
1. Visit https://www.designlights.org/search/ to confirm qualification. Not all product variations are DLC qualified.
2. IDA Certified for 3000K CCT and warmer only.

Ordering Information

SAMPLE NUMBER: **GLEON-SA4C-740-U-T4FT-GM**

Product Family [1, 2]	Light Engine		Color Temperature	Voltage	Distribution	Mounting	Finish
	Configuration	Drive Current					
GLEON=Galleon **BAA-GLEON**=Galleon, Buy American Act Compliant [35] **TAA-GLEON**=Galleon, Trade Agreements Act Compliant [35]	**SA1**=1 Square **SA2**=2 Squares **SA3**=3 Squares **SA4**=4 Squares **SA5**=5 Squares [4] **SA6**=6 Squares **SA7**=7 Squares [5] **SA8**=8 Squares [5] **SA9**=9 Squares [6] **SA0**=10 Squares [6]	**A**=600mA **B**=800mA **C**=1000mA **D**=1200mA [16]	**722**=70CRI, 2200K **727**=70CRI, 2700K **730**=70CRI, 3000K **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K **760**=70CRI, 6000K **827**=80CRI, 2700K **830**=80CRI, 3000K **AMB**=Amber, 590nm [14, 16]	**U**=120-277V **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V [7, 8] **9**=347V [7]	**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	**[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] **QML**=Quick Mount Arm (Standard Length, Large) [37] **QMEA**=Quick Mount Arm (Extended Length) [12]	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White **RALXX**=Custom Color

Options (Add as Suffix)	Controls and Systems Options (Add as Suffix)	Accessories (Order Separately)[35]
DIM=External 0-10V Dimming Leads [19, 20] **F**=Single Fuse (120, 277 or 347V Specify Voltage) **FF**=Double Fuse (208, 240 or 480V Specify Voltage) **20K**=Series 20kV UL 1449 Surge Protective Device **2L**=Two Circuits [17, 18] **HA**=50°C High Ambient **HSS**=Installed House Side Shield [28] **GRSBK**=Glare Reducing Shield, Black [23] **GRSWH**=Glare Reducing Shield, White [23] **LCF**=Light Square Trim Painted to Match Housing [27] **MT**=Installed Mesh Top **TH**=Tool-less Door Hardware **CC**=Coastal Construction finish [3] **L90**=Optics Rotated 90° Left **R90**=Optics Rotated 90° Right **CE**=CE Marking [29] **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] **DALI**=DALI Drivers	**BPC**=Button Type Photocontrol **PR**=NEMA 3-PIN Photocontrol Receptacle **PR7**=NEMA 7-PIN Photocontrol Receptacle [21] **SPB2**=Dimming Occupancy Sensor with Bluetooth Interface, 8' - 20' Mounting [34] **SPB4**=Dimming Occupancy Sensor with Bluetooth Interface, 21' - 40' Mounting [34] **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/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/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] **ZW**=WaveLinx Module and 4-PIN Receptacle **ZD**=WaveLinx Module with DALI driver and 4-PIN Receptacle **SWPD4XX**=WaveLinx Sensor Only, 7'-15' [13, 32, 33] **SWPD5XX**=WaveLinx Sensor Only, 15'-40' [13, 32, 33] **WOBXX**=WaveLinx Sensor with Bluetooth, 7'-15' [13, 32] **WOFXX**=WaveLinx Sensor with Bluetooth, 15'-40' [13, 32] **LWR-LW**=Enlighted Sensor, 8'–16' Mounting Height [26] **LWR-LN**=Enlighted Sensor, 16'–40' Mounting Height [26] **DIM10-MS/DIM-L08**=Synapse Occupancy Sensor (<8' Mounting) [19] **DIM10-MS/DIM-L20**=Synapse Occupancy Sensor (9'-20' Mounting) [19] **DIM10-MS/DIM-L40**=Synapse Occupancy Sensor (21'-40' Mounting) [19]	**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] **LS/GRSBK**=Glare Reducing Shield, Black [23, 30] **LS/GRSWH**=Glare Reducing Shield, White [23, 30] **LS/PFS**=Perimeter Shield, Black [15] **WOLC-7P-10A**=WaveLinx Outdoor Control Module [19, 31] **SWPD4-XX**=Wavelinx Wireless Sensor, 7'–15' Mounting Height [13, 19, 32, 33] **SWPD5-XX**=Wavelinx Wireless Sensor, 15'–40' Mounting Height [13, 19, 32, 33]

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. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654. Not available with TH option.
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. 480V must utilize Wye system only. 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. Requires ZW or ZD receptacle.
14. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose drive current A; supplied at 500mA drive current only. Available with 5WQ, 5MQ, SL2, SL3 and SL4 distributions. Can be used with HSS option.
15. Set of 4 pcs. One set required per Light Square.
16. Not available with HA option.
17. 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in SA2 through SA4 requires a larger housing, normally used for SA5 or SA6. 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 Enlighted 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 BPC photocontrol or the PR7 or PR photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information.
23. Not for use with T4FT, T4W or SL4 optics. See IES files for details.
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 Cooper Lighting Solutions for more information.
25. Replace X with number of Light Squares operating in low output mode.
26. Enlighted wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities.
27. Not available with house side shield (HSS).
28. Not for use with 5NQ, 5MQ, 5WQ or RW optics. A black trim plate is used when HSS is selected.
29. CE is not available with the LWR, MS, MS/X, MS/DIM, BPC, PR or PR7 options. Available in 120-277V only.
30. One required for each Light Square.
31. Requires PR7.
32. Replace XX with sensor color (WH, BZ or BK.)
33. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
34. Smart device with mobile application required to change system defaults. See controls section for details.
35. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
36. For BAA or TAA requirements, Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.
37. Available for 7-10 squares.

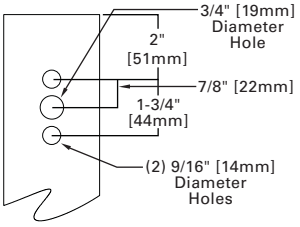
LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology LumenSafe Technology	**D**=Standard Dome Camera **H**=Hi-Res Dome Camera **Z**=Remote PTZ Camera	**C**=Cellular, No SIM **A**=Cellular, AT&T **V**=Cellular, Verizon **S**=Cellular, Sprint	**R**=Cellular, Rogers **W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

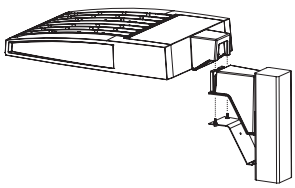
Mounting Details

Standard Arm (Drilling Pattern)

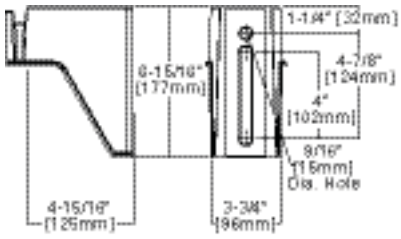
TYPE "N"



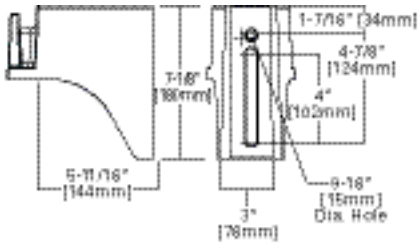
Quick Mount Arm (Includes fixture adapter)



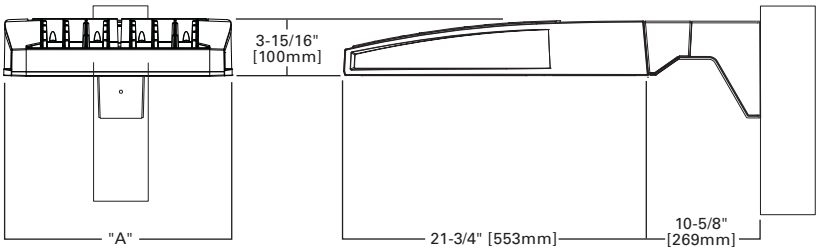
QM and QMEA Pole Mount



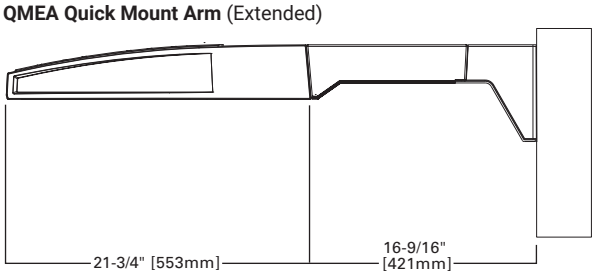
QML Pole Mount



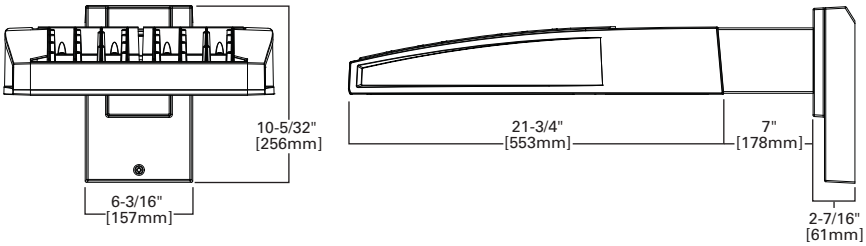
QM Quick Mount Arm (Standard)



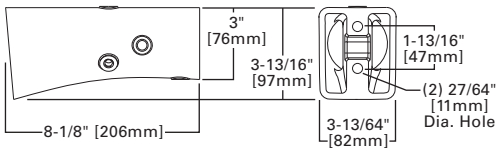
QMEA Quick Mount Arm (Extended)



Standard Wall Mount

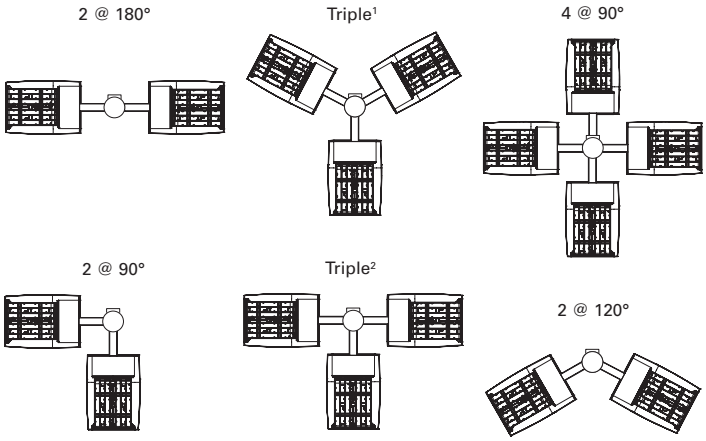


Mast Arm Mount



Arm Mounting Requirements

Number of Light Squares	Standard Arm @ 90° Apart	Standard Arm @ 120° Apart	Quick Mount Arm @ 90° Apart	Quick Mount Arm @ 120° Apart
1	Standard	Standard	QM Extended	Quick Mount
2	Standard	Standard	QM Extended	Quick Mount
3	Standard	Standard	QM Extended	Quick Mount
4	Standard	Standard	QM Extended	Quick Mount
5	Extended	Standard	QM Extended	Quick Mount
6	Extended	Standard	QM Extended	Quick Mount
7	Extended	Extended	--	Quick Mount
8	Extended	Extended	--	Quick Mount
9	Extended	Extended	--	--
10	Extended	Extended	--	--



NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. **2** Round poles are 3 @ 90°. **3** Shown with 4 square configurations.

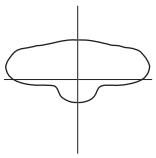
Fixture Weights and EPAs

Number of Light Squares	Weight with Standard and Extended Arm (lbs.)	EPA with Standard and Extended Arm (Sq. Ft.)	Weight with QM Arm (lbs.)	EPA with QM Arm (Sq. Ft.)	Weight with QML (lbs.)	EPA with QML (Sq. Ft.)	Weight with QMEA (lbs.)	EPA with QMEA (Sq. Ft.)
1-4	33	0.96	35	1.11	--	--	38	1.11
5-6	44	1.00	46	1.11	--	--	49	1.11
7-8	54	1.07	56	1.11	58	1.11	--	--
9-10	63	1.12	--	--	67	1.11	--	--

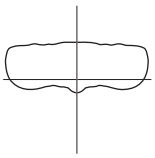
Optical Distributions

Asymmetric Area Distributions

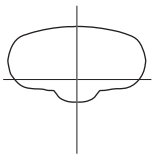
T2 (Type II)



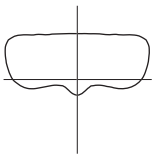
SL2 (Type II with Spill Control)



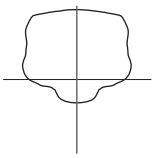
T3 (Type III)



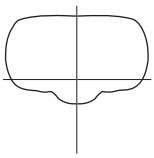
SL3 (Type III with Spill Control)



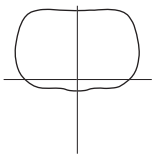
T4FT (Type IV Forward Throw)



T4W (Type IV Wide)

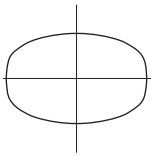


SL4 (Type IV with Spill Control)

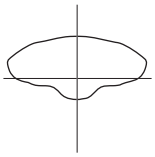


Asymmetric Roadway Distributions

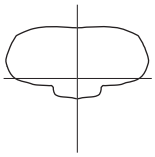
RW (Rectangular Wide Type I)



T2R (Type II Roadway)

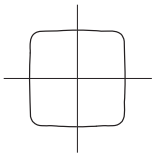


T3R (Type III Roadway)

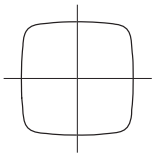


Symmetric Distributions

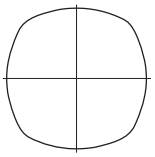
5NQ (Type V Square Narrow)



5MQ (Type V Square Medium)

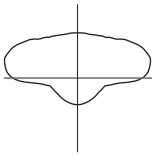


5WQ (Type V Square Wide)

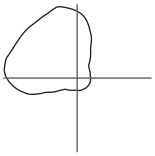


Specialized Distributions

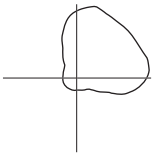
AFL (Automotive Frontline)



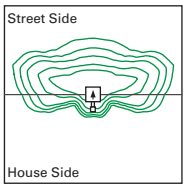
SLL (90° Spill Light Eliminator Left)



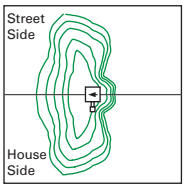
SLR (90° Spill Light Eliminator Right)



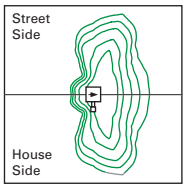
Rotated Optics



Standard



Optics Rotated Left @ 90° [L90]



Optics Rotated Right @ 90° [R90]

Product Specifications

Construction

- Extruded aluminum driver enclosure
- Heavy-wall, die-cast aluminum end caps
- Die-cast aluminum heat sinks
- Patent pending interlocking housing and heat sink

Optics

- Patented, high-efficiency injection-molded AccuLED Optics technology
- 16 optical distributions
- 3 shielding options including HSS, GRS and PFS
- IDA Certified (3000K CCT and warmer only)

Electrical

- LED drivers are mounted to removable tray assembly for ease of maintenance
- Standard with 0-10V dimming
- Standard with Cooper Lighting Solutions proprietary circuit module designed to withstand 10kV of transient line surge
- Suitable for operation in -40°C to 40°C ambient environments. Optional 50°C high ambient (HA) configuration.

Mounting

- Standard extruded arm includes internal bolt guides and round pole adapter
- Extended arms (EA and QMEA) may be required in 90° or 120° pole mount configurations, see arm mounting requirements table
- Mast arm (MA) factory installed
- Wall mount (WM) option available
- Quick mount arm (QM and QMEA) includes pole adapter and factory installed fixture mount for fast installation to square or round poles

Finish

- Super housing durable TGIC polyester powder coat paint, 2.5 mil nominal thickness
- Heat sink is powder coated black
- RAL and custom color matches available
- Coastal Construction (CC) option available

Warranty

- Five year warranty

Energy and Performance Data

Lumen Maintenance (TM-21)

Drive Current	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 hours**
Up to 1A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.7%	98.3%	98.1%	97.4%	> 1.9M
	50°C	98.2%	97.2%	96.8%	95.2%	> 851,000
1.2A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.5%	97.9%	97.7%	96.7%	> 1.3M

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, explaining proper use of IES TM-21 and LM-80.

Lumen Multiplier

Ambient Temperature	Lumen Multiplier
0ºC	1.02
10ºC	1.01
25ºC	1.00
40ºC	0.99
50ºC	0.97

View GLEON IES files

Nominal Power Lumens (1.2A)

Supplemental Performance Guide**

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 Lumens	7,972	15,580	23,245	30,714	38,056	45,541	53,857	61,024	68,072	75,366
	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
	Lumens per Watt	119	121	122	119	119	119	120	119	118	118
T2R	4000K Lumens	8,462	16,539	24,680	32,609	40,401	48,348	57,176	64,783	72,266	80,010
	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
	Lumens per Watt	126	128	129	126	126	127	128	127	126	125
T3	4000K Lumens	8,125	15,879	23,693	31,307	38,787	46,417	54,893	62,197	69,381	76,818
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	122	123	122	121	120
T3R	4000K Lumens	8,306	16,232	24,220	32,001	39,651	47,447	56,114	63,580	70,924	78,523
	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
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
T4FT	4000K Lumens	8,173	15,970	23,831	31,488	39,014	46,686	55,212	62,558	69,783	77,261
	BUG Rating	B1-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	122	124	125	122	122	122	123	122	121	121
T4W	4000K Lumens	8,067	15,764	23,522	31,080	38,510	46,082	54,499	61,751	68,881	76,263
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B5-U0-G5
	Lumens per Watt	120	122	123	120	120	121	122	121	120	119
SL2	4000K Lumens	7,958	15,552	23,206	30,662	37,989	45,462	53,763	60,920	67,952	75,235
	BUG Rating	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	121	121	119	119	119	120	119	118	118
SL3	4000K Lumens	8,124	15,877	23,690	31,302	38,784	46,410	54,885	62,189	69,372	76,805
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	121	123	122	121	120
SL4	4000K Lumens	7,719	15,085	22,510	29,741	36,850	44,097	52,148	59,089	65,913	72,977
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	115	117	118	115	115	115	116	116	115	114
5NQ	4000K Lumens	8,380	16,375	24,436	32,287	40,003	47,870	56,610	64,144	71,552	79,221
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	125	127	128	125	125	125	126	126	124	124
5MQ	4000K Lumens	8,534	16,676	24,885	32,881	40,739	48,752	57,653	65,326	72,868	80,679
	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
	Lumens per Watt	127	129	130	127	127	128	129	128	127	126
5WQ	4000K Lumens	8,556	16,723	24,951	32,968	40,847	48,881	57,808	65,499	73,063	80,894
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	128	130	131	128	128	128	129	128	127	126
SLL/ SLR	4000K Lumens	7,140	13,951	20,817	27,506	34,081	40,783	48,231	54,649	60,959	67,492
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	107	108	109	107	107	107	108	107	106	105
RW	4000K Lumens	8,304	16,228	24,215	31,994	39,641	47,437	56,100	63,566	70,907	78,504
	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
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
AFL	4000K Lumens	8,335	16,287	24,302	32,110	39,784	47,610	56,303	63,796	71,163	78,790
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G5
	Lumens per Watt	124	126	127	124	124	125	126	125	124	123

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (1A)

Supplemental Performance Guide**

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 Lumens	7,267	14,201	21,190	28,000	34,692	41,515	49,096	55,627	62,053	68,703
	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
	Lumens per Watt	123	126	128	124	124	125	126	125	124	123
T2R	4000K Lumens	7,715	15,077	22,497	29,725	36,829	44,073	52,122	59,056	65,876	72,937
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	133	136	132	132	132	133	133	131	131
T3	4000K Lumens	7,408	14,475	21,598	28,539	35,358	42,313	50,039	56,698	63,246	70,024
	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
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
T3R	4000K Lumens	7,571	14,798	22,078	29,172	36,145	43,253	51,153	57,959	64,653	71,581
	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
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
T4FT	4000K Lumens	7,451	14,559	21,725	28,703	35,564	42,558	50,330	57,027	63,613	70,430
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	129	131	128	127	128	129	128	127	126
T4W	4000K Lumens	7,354	14,371	21,442	28,333	35,105	42,007	49,681	56,291	62,792	69,521
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	127	129	126	126	126	127	126	125	125
SL2	4000K Lumens	7,254	14,178	21,155	27,951	34,631	41,443	49,011	55,533	61,944	68,584
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	125	127	124	124	124	125	125	124	123
SL3	4000K Lumens	7,406	14,474	21,596	28,534	35,355	42,307	50,033	56,690	63,237	70,014
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
SL4	4000K Lumens	7,037	13,751	20,519	27,112	33,592	40,198	47,538	53,864	60,087	66,524
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	119	122	124	120	120	121	122	121	120	119
5NQ	4000K Lumens	7,640	14,928	22,275	29,431	36,465	43,637	51,606	58,472	65,226	72,218
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	129	132	134	131	131	131	132	131	130	129
5MQ	4000K Lumens	7,779	15,203	22,684	29,973	37,137	44,441	52,555	59,549	66,427	73,545
	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
	Lumens per Watt	132	135	137	133	133	133	134	134	133	132
5WQ	4000K Lumens	7,800	15,243	22,744	30,052	37,236	44,560	52,697	59,708	66,603	73,742
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	132	135	137	134	133	134	135	134	133	132
SLL/ SLR	4000K Lumens	6,510	12,719	18,977	25,075	31,067	37,176	43,967	49,817	55,569	61,525
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	110	113	114	111	111	112	112	112	111	110
RW	4000K Lumens	7,570	14,793	22,073	29,165	36,137	43,243	51,140	57,945	64,637	71,564
	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-G4	B5-U0-G5
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
AFL	4000K Lumens	7,598	14,847	22,154	29,272	36,267	43,400	51,326	58,156	64,872	71,824
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G4
	Lumens per Watt	129	131	133	130	130	130	131	131	129	129

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (800mA)

Supplemental Performance Guide**

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 Lumens	5,871	11,474	17,121	22,622	28,029	33,542	39,667	44,944	50,134	55,508
	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
	Lumens per Watt	133	135	138	132	133	135	134	135	134	132
T2R	4000K Lumens	6,233	12,181	18,176	24,016	29,756	35,608	42,111	47,714	53,224	58,929
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	142	143	147	140	142	143	143	143	142	141
T3	4000K Lumens	5,986	11,695	17,450	23,057	28,568	34,186	40,430	45,809	51,099	56,576
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
T3R	4000K Lumens	6,117	11,955	17,838	23,569	29,203	34,946	41,328	46,827	52,235	57,832
	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
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
T4FT	4000K Lumens	6,019	11,763	17,551	23,190	28,734	34,384	40,663	46,074	51,396	56,904
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	137	138	142	136	137	138	138	138	137	136
T4W	4000K Lumens	5,942	11,610	17,324	22,891	28,363	33,940	40,138	45,480	50,732	56,169
	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
	Lumens per Watt	135	137	140	134	135	136	136	136	136	134
SL2	4000K Lumens	5,862	11,454	17,091	22,583	27,980	33,484	39,598	44,867	50,048	55,411
	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
	Lumens per Watt	133	135	138	132	133	134	134	134	134	132
SL3	4000K Lumens	5,985	11,694	17,447	23,053	28,565	34,182	40,424	45,804	51,092	56,568
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
SL4	4000K Lumens	5,685	11,111	16,577	21,905	27,140	32,478	38,409	43,520	48,546	53,748
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	129	131	134	128	129	130	130	130	130	128
5NQ	4000K Lumens	6,172	12,061	17,997	23,778	29,462	35,256	41,694	47,242	52,699	58,347
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	140	142	145	139	140	142	141	141	141	139
5MQ	4000K Lumens	6,285	12,283	18,328	24,217	30,004	35,907	42,462	48,112	53,669	59,421
	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
	Lumens per Watt	143	145	148	142	143	144	144	144	144	142
5WQ	4000K Lumens	6,303	12,317	18,377	24,281	30,085	36,001	42,575	48,241	53,812	59,579
	BUG Rating	B3-U0-G1	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
	Lumens per Watt	143	145	148	142	143	145	144	144	144	142
SLL/ SLR	4000K Lumens	5,260	10,276	15,332	20,259	25,101	30,037	35,522	40,249	44,898	49,708
	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	B3-U0-G5	B3-U0-G5
	Lumens per Watt	120	121	124	118	120	121	120	121	120	119
RW	4000K Lumens	6,116	11,952	17,834	23,563	29,196	34,938	41,317	46,817	52,224	57,819
	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
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
AFL	4000K Lumens	6,139	11,996	17,899	23,650	29,302	35,064	41,468	46,987	52,412	58,030
	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
	Lumens per Watt	140	141	144	138	140	141	141	141	140	138

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Nominal Power Lumens (600mA)

Supplemental Performance Guide**

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 Lumens	4,787	9,357	13,961	18,448	22,856	27,353	32,347	36,651	40,884	45,265
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	141	142	145	143	141	142	143	143	141	140
T2R	4000K Lumens	5,083	9,934	14,822	19,585	24,266	29,038	34,341	38,911	43,404	48,055
	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
	Lumens per Watt	150	151	154	152	150	150	152	151	150	149
T3	4000K Lumens	4,880	9,537	14,231	18,803	23,296	27,878	32,970	37,358	41,671	46,137
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	144	145	148	146	144	144	146	145	144	143
T3R	4000K Lumens	4,988	9,749	14,547	19,220	23,814	28,497	33,703	38,188	42,598	47,162
	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
	Lumens per Watt	147	148	152	149	147	148	149	149	147	146
T4FT	4000K Lumens	4,909	9,591	14,312	18,911	23,432	28,040	33,161	37,574	41,913	46,404
	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	B4-U0-G5
	Lumens per Watt	144	145	149	147	145	145	147	146	145	144
T4W	4000K Lumens	4,845	9,468	14,128	18,668	23,130	27,678	32,732	37,088	41,371	45,805
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	143	143	147	145	143	143	145	144	143	142
SL2	4000K Lumens	4,779	9,341	13,937	18,416	22,818	27,305	32,292	36,589	40,813	45,188
	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
	Lumens per Watt	141	142	145	143	141	141	143	142	141	140
SL3	4000K Lumens	4,879	9,536	14,229	18,800	23,294	27,874	32,965	37,351	41,666	46,130
	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
	Lumens per Watt	144	144	148	146	144	144	146	145	144	143
SL4	4000K Lumens	4,637	9,059	13,519	17,863	22,132	26,486	31,322	35,490	39,589	43,831
	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
	Lumens per Watt	136	137	141	138	137	137	139	138	137	136
5NQ	4000K Lumens	5,033	9,835	14,676	19,392	24,026	28,751	34,002	38,526	42,975	47,581
	BUG Rating	B2-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	B5-U0-G3
	Lumens per Watt	148	149	153	150	148	149	150	150	148	147
5MQ	4000K Lumens	5,126	10,015	14,946	19,747	24,468	29,281	34,628	39,236	43,766	48,457
	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
	Lumens per Watt	151	152	156	153	151	152	153	153	151	150
5WQ	4000K Lumens	5,139	10,043	14,985	19,801	24,533	29,359	34,721	39,339	43,883	48,586
	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
	Lumens per Watt	151	152	156	153	151	152	154	153	151	150
SLL/ SLR	4000K Lumens	4,289	8,380	12,502	16,520	20,469	24,494	28,967	32,823	36,613	40,537
	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
	Lumens per Watt	126	127	130	128	126	127	128	128	126	126
RW	4000K Lumens	4,987	9,746	14,543	19,215	23,808	28,491	33,695	38,178	42,587	47,151
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	147	148	151	149	147	148	149	149	147	146
AFL	4000K Lumens	5,007	9,782	14,597	19,285	23,896	28,594	33,817	38,317	42,742	47,322
	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
	Lumens per Watt	147	148	152	149	148	148	150	149	147	147

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Control Options

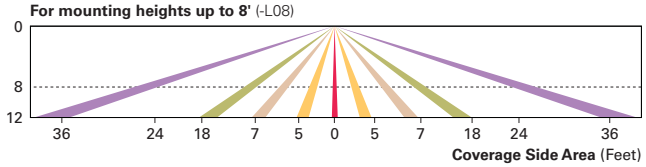
0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (BPC, PR and PR7)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) 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 PR7 receptacle.

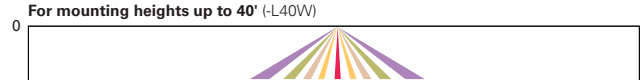
After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the 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 (SPB, MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are 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. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM occupancy sensors require the FSIR-100 programming tool to adjust factory defaults.

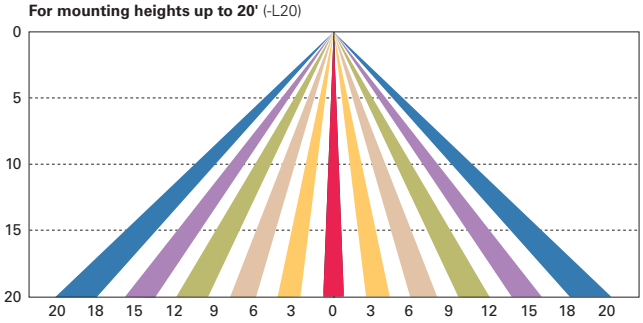
For mounting heights up to 8' (-L08)



For mounting heights up to 40' (-L40W)

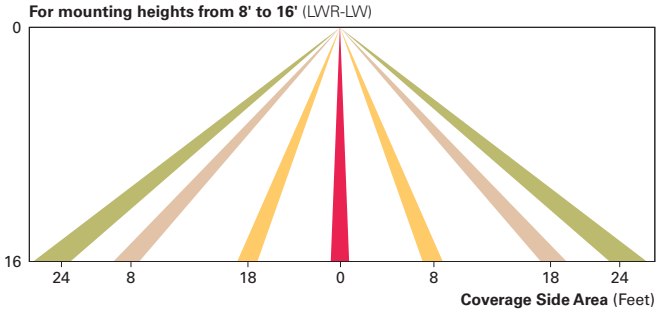


For mounting heights up to 20' (-L20)

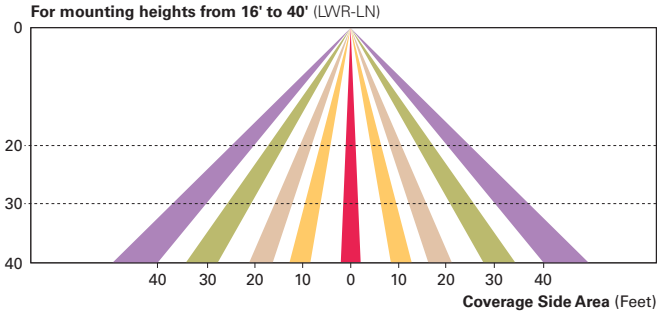


Enlighted Wireless Control and Monitoring System (LWR-LW and LWR-LN)
Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy 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)
Cooper Lighting Solutions 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.

Synapse (DIM10)
SimplySNAP integrated wireless controls system by Synapse. Includes factory installed DIM10 Synapse control module and MS/DC motion sensor; requires additional Synapse system components for operation. Contact Synapse at www.synapsewireless.com for product support, warranty and terms and conditions.

Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

Project		**Catalog #**	GLEON SA3C 740 U T4FT WM	**Type**	W
Prepared by		**Notes**		**Date**	

McGraw-Edison

GLEON Galleon

Area / Site Luminaire

Product Features

LumenSafe Technology

Light ARchitect™

Product Certifications

Interactive Menu

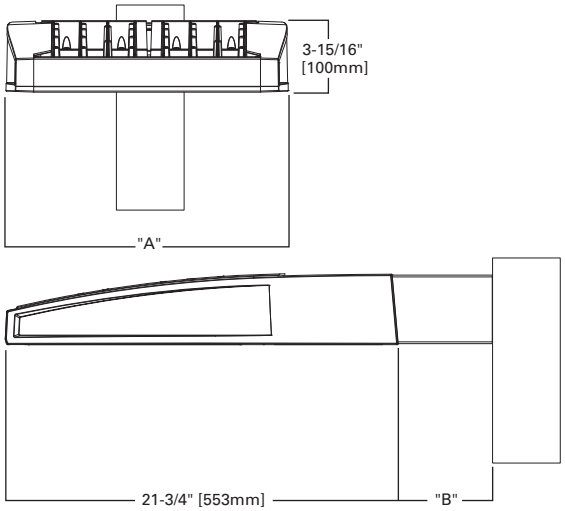
Quick Facts

- Lumen packages range from 4,200 - 80,800 (34W - 640W)
- Efficacy up to 156 lumens per watt
- Options to meet Buy American and other domestic preference requirements

Connected Systems

- WaveLinx
- Enlighted

Dimensional Details



Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Extended Arm Length [1]	"B" Quick Mount Arm Length	"B" Quick Mount Extended Arm Length
1-4	15-1/2"	7"	10"	10-5/8"	16-9/16"
5-6	21-5/8"	7"	10"	10-5/8"	16-9/16"
7-8	27-5/8"	7"	13"	10-5/8"	--
9-10	33-3/4"	7"	16"	--	--

NOTES:
For arm selection requirements and additional line art, see Mounting Details section.

NOTES:
1. Visit https://www.designlights.org/search/ to confirm qualification. Not all product variations are DLC qualified.
2. IDA Certified for 3000K CCT and warmer only.

Ordering Information

SAMPLE NUMBER: **GLEON-SA4C-740-U-T4FT-GM**

Product Family [1, 2]	Light Engine		Color Temperature	Voltage	Distribution	Mounting	Finish
	Configuration	Drive Current					
GLEON=Galleon **BAA-GLEON**=Galleon, Buy American Act Compliant [35] **TAA-GLEON**=Galleon, Trade Agreements Act Compliant [35]	**SA1**=1 Square **SA2**=2 Squares **SA3**=3 Squares **SA4**=4 Squares **SA5**=5 Squares [4] **SA6**=6 Squares **SA7**=7 Squares [5] **SA8**=8 Squares [5] **SA9**=9 Squares [6] **SA0**=10 Squares [6]	**A**=600mA **B**=800mA **C**=1000mA **D**=1200mA [16]	**722**=70CRI, 2200K **727**=70CRI, 2700K **730**=70CRI, 3000K **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K **760**=70CRI, 6000K **827**=80CRI, 2700K **830**=80CRI, 3000K **AMB**=Amber, 590nm [14, 16]	**U**=120-277V **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V [7, 8] **9**=347V [7]	**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	**[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] **QML**=Quick Mount Arm (Standard Length, Large) [37] **QMEA**=Quick Mount Arm (Extended Length) [12]	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White **RALXX**=Custom Color

Options (Add as Suffix)	Controls and Systems Options (Add as Suffix)	Accessories (Order Separately)[36]
DIM=External 0-10V Dimming Leads [19, 20] **F**=Single Fuse (120, 277 or 347V Specify Voltage) **FF**=Double Fuse (208, 240 or 480V Specify Voltage) **20K**=Series 20kV UL 1449 Surge Protective Device **2L**=Two Circuits [17, 18] **HA**=50°C High Ambient **HSS**=Installed House Side Shield [28] **GRSBK**=Glare Reducing Shield, Black [23] **GRSWH**=Glare Reducing Shield, White [23] **LCF**=Light Square Trim Painted to Match Housing [27] **MT**=Installed Mesh Top **TH**=Tool-less Door Hardware **CC**=Coastal Construction finish [3] **L90**=Optics Rotated 90° Left **R90**=Optics Rotated 90° Right **CE**=CE Marking [29] **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] **DALI**=DALI Drivers	**BPC**=Button Type Photocontrol **PR**=NEMA 3-PIN Photocontrol Receptacle **PR7**=NEMA 7-PIN Photocontrol Receptacle [21] **SPB2**=Dimming Occupancy Sensor with Bluetooth Interface, 8' - 20' Mounting [34] **SPB4**=Dimming Occupancy Sensor with Bluetooth Interface, 21' - 40' Mounting [34] **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/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/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] **ZW**=WaveLinx Module and 4-PIN Receptacle **ZD**=WaveLinx Module with DALI driver and 4-PIN Receptacle **SWPD4XX**=WaveLinx Sensor Only, 7'-15' [13, 32, 33] **SWPD5XX**=WaveLinx Sensor Only, 15'-40' [13, 32, 33] **WOBXX**=WaveLinx Sensor with Bluetooth, 7'-15' [13, 32] **WOFXX**=WaveLinx Sensor with Bluetooth, 15'-40' [13, 32] **LWR-LW**=Enlighted Sensor, 8'–16' Mounting Height [26] **LWR-LN**=Enlighted Sensor, 16'–40' Mounting Height [26] **DIM10-MS/DIM-L08**=Synapse Occupancy Sensor (<8' Mounting) [19] **DIM10-MS/DIM-L20**=Synapse Occupancy Sensor (9'-20' Mounting) [19] **DIM10-MS/DIM-L40**=Synapse Occupancy Sensor (21'-40' Mounting) [19]	**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] **LS/GRSBK**=Glare Reducing Shield, Black [23, 30] **LS/GRSWH**=Glare Reducing Shield, White [23, 30] **LS/PFS**=Perimeter Shield, Black [15] **WOLC-7P-10A**=WaveLinx Outdoor Control Module [19, 31] **SWPD4-XX**=Wavelinx Wireless Sensor, 7'–15' Mounting Height [13, 19, 32, 33] **SWPD5-XX**=Wavelinx Wireless Sensor, 15'–40' Mounting Height [13, 19, 32, 33]

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. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654. Not available with TH option.
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. 480V must utilize Wye system only. 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. Requires ZW or ZD receptacle.
14. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose drive current A; supplied at 500mA drive current only. Available with 5WQ, 5MQ, SL2, SL3 and SL4 distributions. Can be used with HSS option.
15. Set of 4 pcs. One set required per Light Square.
16. Not available with HA option.
17. 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in SA2 through SA4 requires a larger housing, normally used for SA5 or SA6. 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 Enlighted 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 BPC photocontrol or the PR7 or PR photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information.
23. Not for use with T4FT, T4W or SL4 optics. See IES files for details.
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 Cooper Lighting Solutions for more information.
25. Replace X with number of Light Squares operating in low output mode.
26. Enlighted wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities.
27. Not available with house side shield (HSS).
28. Not for use with 5NQ, 5MQ, 5WQ or RW optics. A black trim plate is used when HSS is selected.
29. CE is not available with the LWR, MS, MS/X, MS/DIM, BPC, PR or PR7 options. Available in 120-277V only.
30. One required for each Light Square.
31. Requires PR7.
32. Replace XX with sensor color (WH, BZ or BK.)
33. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
34. Smart device with mobile application required to change system defaults. See controls section for details.
35. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
36. For BAA or TAA requirements, Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.
37. Available for 7-10 squares.

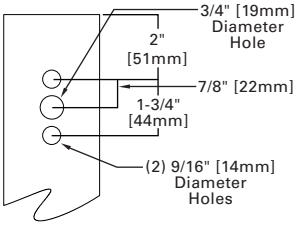
LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology	**D**=Standard Dome Camera **H**=Hi-Res Dome Camera **Z**=Remote PTZ Camera	**C**=Cellular, No SIM **A**=Cellular, AT&T **V**=Cellular, Verizon **S**=Cellular, Sprint	**R**=Cellular, Rogers **W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

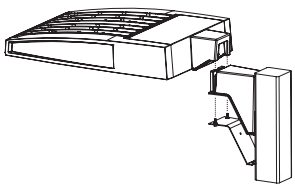
Mounting Details

Standard Arm (Drilling Pattern)

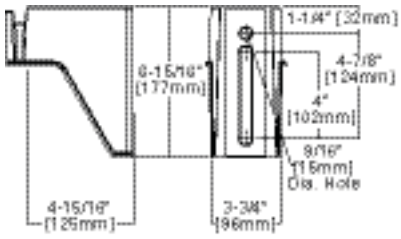
TYPE "N"



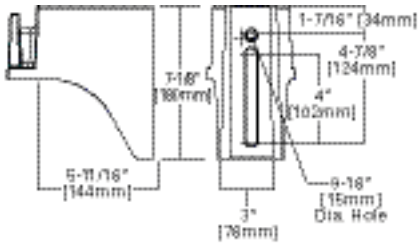
Quick Mount Arm (Includes fixture adapter)



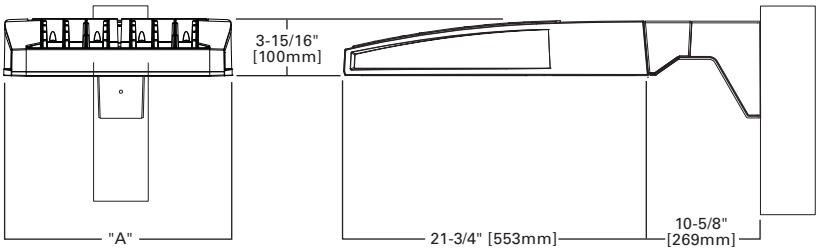
QM and QMEA Pole Mount



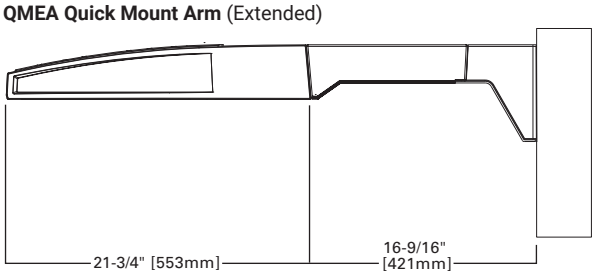
QML Pole Mount



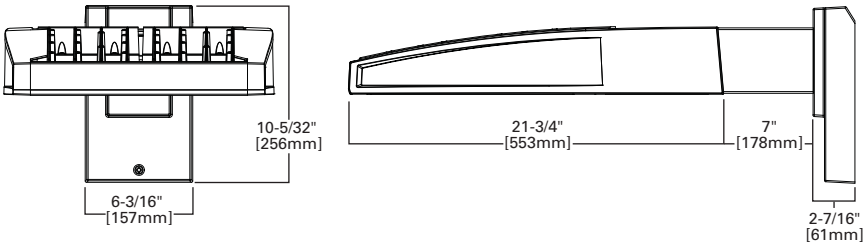
QM Quick Mount Arm (Standard)



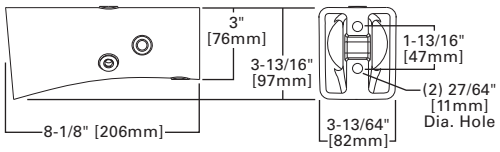
QMEA Quick Mount Arm (Extended)



Standard Wall Mount

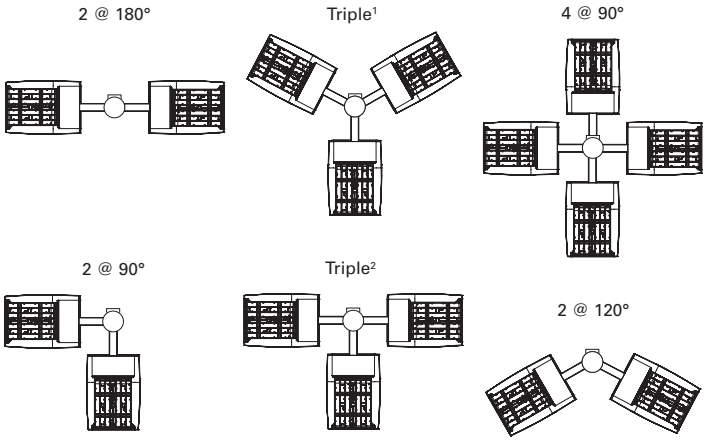


Mast Arm Mount



Arm Mounting Requirements

Number of Light Squares	Standard Arm @ 90° Apart	Standard Arm @ 120° Apart	Quick Mount Arm @ 90° Apart	Quick Mount Arm @ 120° Apart
1	Standard	Standard	QM Extended	Quick Mount
2	Standard	Standard	QM Extended	Quick Mount
3	Standard	Standard	QM Extended	Quick Mount
4	Standard	Standard	QM Extended	Quick Mount
5	Extended	Standard	QM Extended	Quick Mount
6	Extended	Standard	QM Extended	Quick Mount
7	Extended	Extended	--	Quick Mount
8	Extended	Extended	--	Quick Mount
9	Extended	Extended	--	--
10	Extended	Extended	--	--



NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. **2** Round poles are 3 @ 90°. **3** Shown with 4 square configurations.

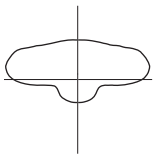
Fixture Weights and EPAs

Number of Light Squares	Weight with Standard and Extended Arm (lbs.)	EPA with Standard and Extended Arm (Sq. Ft.)	Weight with QM Arm (lbs.)	EPA with QM Arm (Sq. Ft.)	Weight with QML (lbs.)	EPA with QML (Sq. Ft.)	Weight with QMEA (lbs.)	EPA with QMEA (Sq. Ft.)
1-4	33	0.96	35	1.11	--	--	38	1.11
5-6	44	1.00	46	1.11	--	--	49	1.11
7-8	54	1.07	56	1.11	58	1.11	--	--
9-10	63	1.12	--	--	67	1.11	--	--

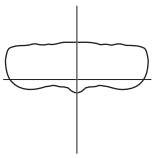
Optical Distributions

Asymmetric Area Distributions

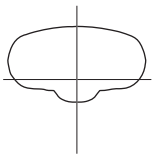
T2 (Type II)



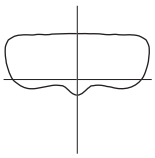
SL2 (Type II with Spill Control)



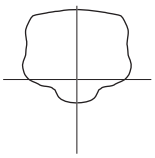
T3 (Type III)



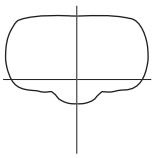
SL3 (Type III with Spill Control)



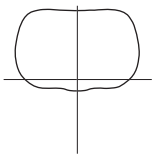
T4FT (Type IV Forward Throw)



T4W (Type IV Wide)

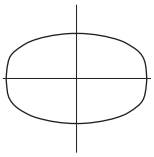


SL4 (Type IV with Spill Control)

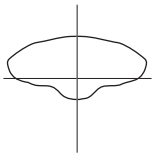


Asymmetric Roadway Distributions

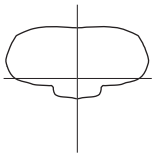
RW (Rectangular Wide Type I)



T2R (Type II Roadway)

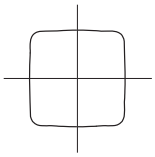


T3R (Type III Roadway)

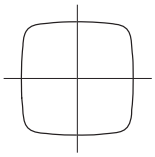


Symmetric Distributions

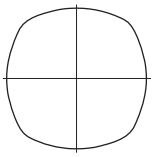
5NQ (Type V Square Narrow)



5MQ (Type V Square Medium)

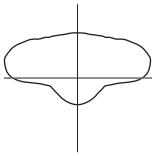


5WQ (Type V Square Wide)

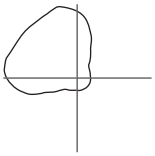


Specialized Distributions

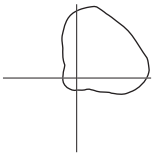
AFL (Automotive Frontline)



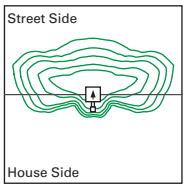
SLL (90° Spill Light Eliminator Left)



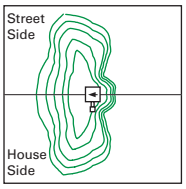
SLR (90° Spill Light Eliminator Right)



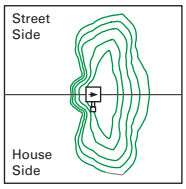
Rotated Optics



Standard



Optics Rotated Left @ 90° [L90]



Optics Rotated Right @ 90° [R90]

Product Specifications

Construction

- Extruded aluminum driver enclosure
- Heavy-wall, die-cast aluminum end caps
- Die-cast aluminum heat sinks
- Patent pending interlocking housing and heat sink

Optics

- Patented, high-efficiency injection-molded AccuLED Optics technology
- 16 optical distributions
- 3 shielding options including HSS, GRS and PFS
- IDA Certified (3000K CCT and warmer only)

Electrical

- LED drivers are mounted to removable tray assembly for ease of maintenance
- Standard with 0-10V dimming
- Standard with Cooper Lighting Solutions proprietary circuit module designed to withstand 10kV of transient line surge
- Suitable for operation in -40°C to 40°C ambient environments. Optional 50°C high ambient (HA) configuration.

Mounting

- Standard extruded arm includes internal bolt guides and round pole adapter
- Extended arms (EA and QMEA) may be required in 90° or 120° pole mount configurations, see arm mounting requirements table
- Mast arm (MA) factory installed
- Wall mount (WM) option available
- Quick mount arm (QM and QMEA) includes pole adapter and factory installed fixture mount for fast installation to square or round poles

Finish

- Super housing durable TGIC polyester powder coat paint, 2.5 mil nominal thickness
- Heat sink is powder coated black
- RAL and custom color matches available
- Coastal Construction (CC) option available

Warranty

- Five year warranty

Energy and Performance Data

Lumen Maintenance (TM-21)

Drive Current	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 hours**
Up to 1A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.7%	98.3%	98.1%	97.4%	> 1.9M
	50°C	98.2%	97.2%	96.8%	95.2%	> 851,000
1.2A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.5%	97.9%	97.7%	96.7%	> 1.3M

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, explaining proper use of IES TM-21 and LM-80.

Lumen Multiplier

Ambient Temperature	Lumen Multiplier
0ºC	1.02
10ºC	1.01
25ºC	1.00
40ºC	0.99
50ºC	0.97

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Nominal Power Lumens (1.2A)

Supplemental Performance Guide**

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 Lumens	7,972	15,580	23,245	30,714	38,056	45,541	53,857	61,024	68,072	75,366
	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
	Lumens per Watt	119	121	122	119	119	119	120	119	118	118
T2R	4000K Lumens	8,462	16,539	24,680	32,609	40,401	48,348	57,176	64,783	72,266	80,010
	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
	Lumens per Watt	126	128	129	126	126	127	128	127	126	125
T3	4000K Lumens	8,125	15,879	23,693	31,307	38,787	46,417	54,893	62,197	69,381	76,818
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	122	123	122	121	120
T3R	4000K Lumens	8,306	16,232	24,220	32,001	39,651	47,447	56,114	63,580	70,924	78,523
	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
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
T4FT	4000K Lumens	8,173	15,970	23,831	31,488	39,014	46,686	55,212	62,558	69,783	77,261
	BUG Rating	B1-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	122	124	125	122	122	122	123	122	121	121
T4W	4000K Lumens	8,067	15,764	23,522	31,080	38,510	46,082	54,499	61,751	68,881	76,263
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B5-U0-G5
	Lumens per Watt	120	122	123	120	120	121	122	121	120	119
SL2	4000K Lumens	7,958	15,552	23,206	30,662	37,989	45,462	53,763	60,920	67,952	75,235
	BUG Rating	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	121	121	119	119	119	120	119	118	118
SL3	4000K Lumens	8,124	15,877	23,690	31,302	38,784	46,410	54,885	62,189	69,372	76,805
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	121	123	122	121	120
SL4	4000K Lumens	7,719	15,085	22,510	29,741	36,850	44,097	52,148	59,089	65,913	72,977
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	115	117	118	115	115	115	116	116	115	114
5NQ	4000K Lumens	8,380	16,375	24,436	32,287	40,003	47,870	56,610	64,144	71,552	79,221
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	125	127	128	125	125	125	126	126	124	124
5MQ	4000K Lumens	8,534	16,676	24,885	32,881	40,739	48,752	57,653	65,326	72,868	80,679
	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
	Lumens per Watt	127	129	130	127	127	128	129	128	127	126
5WQ	4000K Lumens	8,556	16,723	24,951	32,968	40,847	48,881	57,808	65,499	73,063	80,894
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	128	130	131	128	128	128	129	128	127	126
SLL/ SLR	4000K Lumens	7,140	13,951	20,817	27,506	34,081	40,783	48,231	54,649	60,959	67,492
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	107	108	109	107	107	107	108	107	106	105
RW	4000K Lumens	8,304	16,228	24,215	31,994	39,641	47,437	56,100	63,566	70,907	78,504
	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
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
AFL	4000K Lumens	8,335	16,287	24,302	32,110	39,784	47,610	56,303	63,796	71,163	78,790
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G5
	Lumens per Watt	124	126	127	124	124	125	126	125	124	123

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (1A)

Supplemental Performance Guide**

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 Lumens	7,267	14,201	21,190	28,000	34,692	41,515	49,096	55,627	62,053	68,703
	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
	Lumens per Watt	123	126	128	124	124	125	126	125	124	123
T2R	4000K Lumens	7,715	15,077	22,497	29,725	36,829	44,073	52,122	59,056	65,876	72,937
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	133	136	132	132	132	133	133	131	131
T3	4000K Lumens	7,408	14,475	21,598	28,539	35,358	42,313	50,039	56,698	63,246	70,024
	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
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
T3R	4000K Lumens	7,571	14,798	22,078	29,172	36,145	43,253	51,153	57,959	64,653	71,581
	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
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
T4FT	4000K Lumens	7,451	14,559	21,725	28,703	35,564	42,558	50,330	57,027	63,613	70,430
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	129	131	128	127	128	129	128	127	126
T4W	4000K Lumens	7,354	14,371	21,442	28,333	35,105	42,007	49,681	56,291	62,792	69,521
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	127	129	126	126	126	127	126	125	125
SL2	4000K Lumens	7,254	14,178	21,155	27,951	34,631	41,443	49,011	55,533	61,944	68,584
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	125	127	124	124	124	125	125	124	123
SL3	4000K Lumens	7,406	14,474	21,596	28,534	35,355	42,307	50,033	56,690	63,237	70,014
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
SL4	4000K Lumens	7,037	13,751	20,519	27,112	33,592	40,198	47,538	53,864	60,087	66,524
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	119	122	124	120	120	121	122	121	120	119
5NQ	4000K Lumens	7,640	14,928	22,275	29,431	36,465	43,637	51,606	58,472	65,226	72,218
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	129	132	134	131	131	131	132	131	130	129
5MQ	4000K Lumens	7,779	15,203	22,684	29,973	37,137	44,441	52,555	59,549	66,427	73,545
	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
	Lumens per Watt	132	135	137	133	133	133	134	134	133	132
5WQ	4000K Lumens	7,800	15,243	22,744	30,052	37,236	44,560	52,697	59,708	66,603	73,742
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	132	135	137	134	133	134	135	134	133	132
SLL/ SLR	4000K Lumens	6,510	12,719	18,977	25,075	31,067	37,176	43,967	49,817	55,569	61,525
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	110	113	114	111	111	112	112	112	111	110
RW	4000K Lumens	7,570	14,793	22,073	29,165	36,137	43,243	51,140	57,945	64,637	71,564
	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-G4	B5-U0-G5
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
AFL	4000K Lumens	7,598	14,847	22,154	29,272	36,267	43,400	51,326	58,156	64,872	71,824
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G4
	Lumens per Watt	129	131	133	130	130	130	131	131	129	129

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (800mA)

Supplemental Performance Guide**

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 Lumens	5,871	11,474	17,121	22,622	28,029	33,542	39,667	44,944	50,134	55,508
	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
	Lumens per Watt	133	135	138	132	133	135	134	135	134	132
T2R	4000K Lumens	6,233	12,181	18,176	24,016	29,756	35,608	42,111	47,714	53,224	58,929
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	142	143	147	140	142	143	143	143	142	141
T3	4000K Lumens	5,986	11,695	17,450	23,057	28,568	34,186	40,430	45,809	51,099	56,576
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
T3R	4000K Lumens	6,117	11,955	17,838	23,569	29,203	34,946	41,328	46,827	52,235	57,832
	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
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
T4FT	4000K Lumens	6,019	11,763	17,551	23,190	28,734	34,384	40,663	46,074	51,396	56,904
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	137	138	142	136	137	138	138	138	137	136
T4W	4000K Lumens	5,942	11,610	17,324	22,891	28,363	33,940	40,138	45,480	50,732	56,169
	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
	Lumens per Watt	135	137	140	134	135	136	136	136	136	134
SL2	4000K Lumens	5,862	11,454	17,091	22,583	27,980	33,484	39,598	44,867	50,048	55,411
	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
	Lumens per Watt	133	135	138	132	133	134	134	134	134	132
SL3	4000K Lumens	5,985	11,694	17,447	23,053	28,565	34,182	40,424	45,804	51,092	56,568
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
SL4	4000K Lumens	5,685	11,111	16,577	21,905	27,140	32,478	38,409	43,520	48,546	53,748
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	129	131	134	128	129	130	130	130	130	128
5NQ	4000K Lumens	6,172	12,061	17,997	23,778	29,462	35,256	41,694	47,242	52,699	58,347
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	140	142	145	139	140	142	141	141	141	139
5MQ	4000K Lumens	6,285	12,283	18,328	24,217	30,004	35,907	42,462	48,112	53,669	59,421
	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
	Lumens per Watt	143	145	148	142	143	144	144	144	144	142
5WQ	4000K Lumens	6,303	12,317	18,377	24,281	30,085	36,001	42,575	48,241	53,812	59,579
	BUG Rating	B3-U0-G1	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
	Lumens per Watt	143	145	148	142	143	145	144	144	144	142
SLL/ SLR	4000K Lumens	5,260	10,276	15,332	20,259	25,101	30,037	35,522	40,249	44,898	49,708
	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	B3-U0-G5	B3-U0-G5
	Lumens per Watt	120	121	124	118	120	121	120	121	120	119
RW	4000K Lumens	6,116	11,952	17,834	23,563	29,196	34,938	41,317	46,817	52,224	57,819
	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
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
AFL	4000K Lumens	6,139	11,996	17,899	23,650	29,302	35,064	41,468	46,987	52,412	58,030
	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
	Lumens per Watt	140	141	144	138	140	141	141	141	140	138

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Nominal Power Lumens (600mA)

Supplemental Performance Guide**

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 Lumens	4,787	9,357	13,961	18,448	22,856	27,353	32,347	36,651	40,884	45,265
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	141	142	145	143	141	142	143	143	141	140
T2R	4000K Lumens	5,083	9,934	14,822	19,585	24,266	29,038	34,341	38,911	43,404	48,055
	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
	Lumens per Watt	150	151	154	152	150	150	152	151	150	149
T3	4000K Lumens	4,880	9,537	14,231	18,803	23,296	27,878	32,970	37,358	41,671	46,137
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	144	145	148	146	144	144	146	145	144	143
T3R	4000K Lumens	4,988	9,749	14,547	19,220	23,814	28,497	33,703	38,188	42,598	47,162
	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
	Lumens per Watt	147	148	152	149	147	148	149	149	147	146
T4FT	4000K Lumens	4,909	9,591	14,312	18,911	23,432	28,040	33,161	37,574	41,913	46,404
	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	B4-U0-G5
	Lumens per Watt	144	145	149	147	145	145	147	146	145	144
T4W	4000K Lumens	4,845	9,468	14,128	18,668	23,130	27,678	32,732	37,088	41,371	45,805
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	143	143	147	145	143	143	145	144	143	142
SL2	4000K Lumens	4,779	9,341	13,937	18,416	22,818	27,305	32,292	36,589	40,813	45,188
	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
	Lumens per Watt	141	142	145	143	141	141	143	142	141	140
SL3	4000K Lumens	4,879	9,536	14,229	18,800	23,294	27,874	32,965	37,351	41,666	46,130
	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
	Lumens per Watt	144	144	148	146	144	144	146	145	144	143
SL4	4000K Lumens	4,637	9,059	13,519	17,863	22,132	26,486	31,322	35,490	39,589	43,831
	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
	Lumens per Watt	136	137	141	138	137	137	139	138	137	136
5NQ	4000K Lumens	5,033	9,835	14,676	19,392	24,026	28,751	34,002	38,526	42,975	47,581
	BUG Rating	B2-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	B5-U0-G3
	Lumens per Watt	148	149	153	150	148	149	150	150	148	147
5MQ	4000K Lumens	5,126	10,015	14,946	19,747	24,468	29,281	34,628	39,236	43,766	48,457
	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
	Lumens per Watt	151	152	156	153	151	152	153	153	151	150
5WQ	4000K Lumens	5,139	10,043	14,985	19,801	24,533	29,359	34,721	39,339	43,883	48,586
	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
	Lumens per Watt	151	152	156	153	151	152	154	153	151	150
SLL/ SLR	4000K Lumens	4,289	8,380	12,502	16,520	20,469	24,494	28,967	32,823	36,613	40,537
	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
	Lumens per Watt	126	127	130	128	126	127	128	128	126	126
RW	4000K Lumens	4,987	9,746	14,543	19,215	23,808	28,491	33,695	38,178	42,587	47,151
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	147	148	151	149	147	148	149	149	147	146
AFL	4000K Lumens	5,007	9,782	14,597	19,285	23,896	28,594	33,817	38,317	42,742	47,322
	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
	Lumens per Watt	147	148	152	149	148	148	150	149	147	147

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Control Options

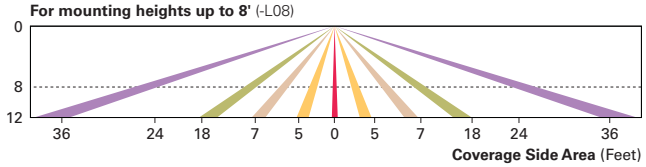
0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (BPC, PR and PR7)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) 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 PR7 receptacle.

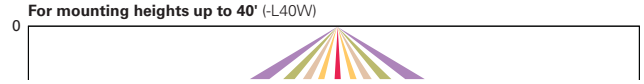
After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the 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 (SPB, MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are 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. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM occupancy sensors require the FSIR-100 programming tool to adjust factory defaults.

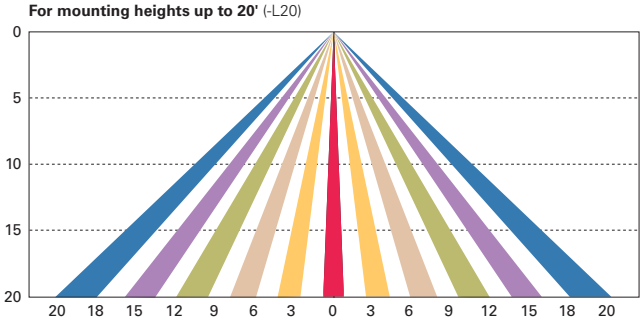
For mounting heights up to 8' (-L08)



For mounting heights up to 40' (-L40W)

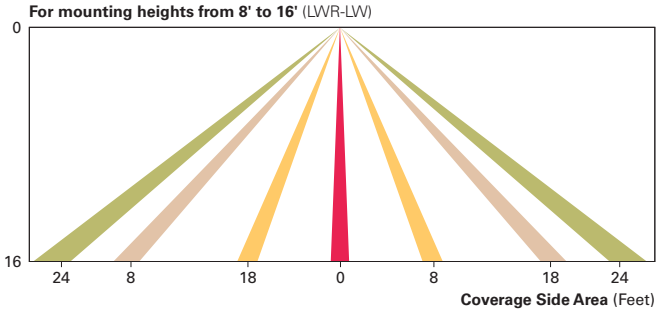


For mounting heights up to 20' (-L20)

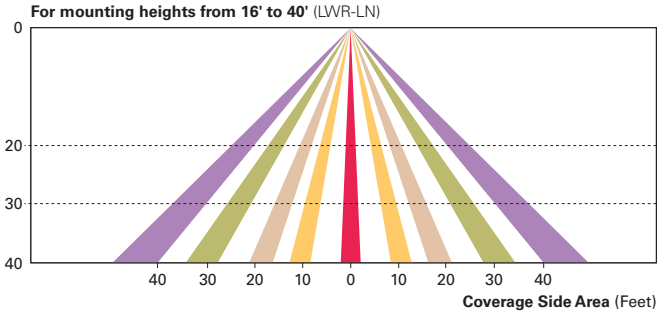


Enlighted Wireless Control and Monitoring System (LWR-LW and LWR-LN)
Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy 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)
Cooper Lighting Solutions 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.

Synapse (DIM10)
SimplySNAP integrated wireless controls system by Synapse. Includes factory installed DIM10 Synapse control module and MS/DC motion sensor; requires additional Synapse system components for operation. Contact Synapse at www.synapsewireless.com for product support, warranty and terms and conditions.

Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

Project		Catalog #	GLEON SA2C 740 U T2 WM	Type	W1
Prepared by		Notes		Date	

McGraw-Edison

GLEON Galleon

Area / Site Luminaire

Product Features

LumenSafe Technology

Light ARchitect™

Product Certifications

Interactive Menu

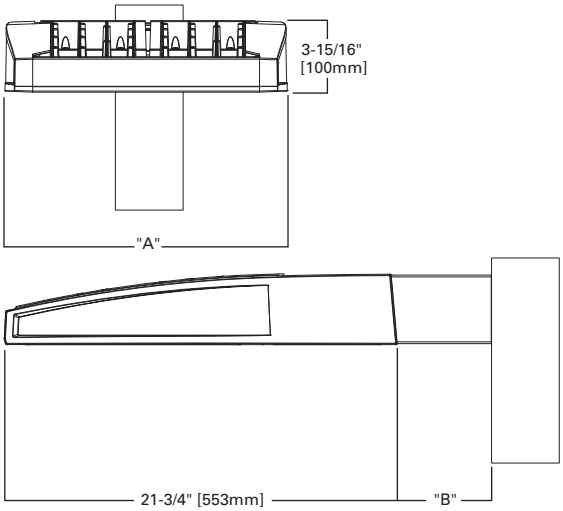
Quick Facts

- Lumen packages range from 4,200 - 80,800 (34W - 640W)
- Efficacy up to 156 lumens per watt
- Options to meet Buy American and other domestic preference requirements

Connected Systems

- WaveLinx
- Enlighted

Dimensional Details



Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Extended Arm Length [1]	"B" Quick Mount Arm Length	"B" Quick Mount Extended Arm Length
1-4	15-1/2"	7"	10"	10-5/8"	16-9/16"
5-6	21-5/8"	7"	10"	10-5/8"	16-9/16"
7-8	27-5/8"	7"	13"	10-5/8"	--
9-10	33-3/4"	7"	16"	--	--

NOTES:
For arm selection requirements and additional line art, see Mounting Details section.

NOTES:
1. Visit https://www.designlights.org/search/ to confirm qualification. Not all product variations are DLC qualified.
2. IDA Certified for 3000K CCT and warmer only.

Ordering Information

SAMPLE NUMBER: **GLEON-SA4C-740-U-T4FT-GM**

Product Family [1, 2]	Light Engine		Color Temperature	Voltage	Distribution	Mounting	Finish
	Configuration	Drive Current					
GLEON=Galleon **BAA-GLEON**=Galleon, Buy American Act Compliant [35] **TAA-GLEON**=Galleon, Trade Agreements Act Compliant [35]	**SA1**=1 Square **SA2**=2 Squares **SA3**=3 Squares **SA4**=4 Squares **SA5**=5 Squares [4] **SA6**=6 Squares **SA7**=7 Squares [5] **SA8**=8 Squares [5] **SA9**=9 Squares [6] **SA0**=10 Squares [6]	**A**=600mA **B**=800mA **C**=1000mA **D**=1200mA [16]	**722**=70CRI, 2200K **727**=70CRI, 2700K **730**=70CRI, 3000K **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K **760**=70CRI, 6000K **827**=80CRI, 2700K **830**=80CRI, 3000K **AMB**=Amber, 590nm [14, 16]	**U**=120-277V **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V [7, 8] **9**=347V [7]	**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	**[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] **QML**=Quick Mount Arm (Standard Length, Large) [37] **QMEA**=Quick Mount Arm (Extended Length) [12]	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White **RALXX**=Custom Color

Options (Add as Suffix)	Controls and Systems Options (Add as Suffix)	Accessories (Order Separately)[36]
DIM=External 0-10V Dimming Leads [19, 20] **F**=Single Fuse (120, 277 or 347V Specify Voltage) **FF**=Double Fuse (208, 240 or 480V Specify Voltage) **20K**=Series 20kV UL 1449 Surge Protective Device **2L**=Two Circuits [17, 18] **HA**=50°C High Ambient **HSS**=Installed House Side Shield [28] **GRSBK**=Glare Reducing Shield, Black [23] **GRSWH**=Glare Reducing Shield, White [23] **LCF**=Light Square Trim Painted to Match Housing [27] **MT**=Installed Mesh Top **TH**=Tool-less Door Hardware **CC**=Coastal Construction finish [3] **L90**=Optics Rotated 90° Left **R90**=Optics Rotated 90° Right **CE**=CE Marking [29] **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] **DALI**=DALI Drivers	**BPC**=Button Type Photocontrol **PR**=NEMA 3-PIN Photocontrol Receptacle **PR7**=NEMA 7-PIN Photocontrol Receptacle [21] **SPB2**=Dimming Occupancy Sensor with Bluetooth Interface, 8' - 20' Mounting [34] **SPB4**=Dimming Occupancy Sensor with Bluetooth Interface, 21' - 40' Mounting [34] **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/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/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] **ZW**=WaveLinx Module and 4-PIN Receptacle **ZD**=WaveLinx Module with DALI driver and 4-PIN Receptacle **SWPD4XX**=WaveLinx Sensor Only, 7'-15' [13, 32, 33] **SWPD5XX**=WaveLinx Sensor Only, 15'-40' [13, 32, 33] **WOBXX**=WaveLinx Sensor with Bluetooth, 7'-15' [13, 32] **WOFXX**=WaveLinx Sensor with Bluetooth, 15'-40' [13, 32] **LWR-LW**=Enlighted Sensor, 8'–16' Mounting Height [26] **LWR-LN**=Enlighted Sensor, 16'–40' Mounting Height [26] **DIM10-MS/DIM-L08**=Synapse Occupancy Sensor (<8' Mounting) [19] **DIM10-MS/DIM-L20**=Synapse Occupancy Sensor (9'-20' Mounting) [19] **DIM10-MS/DIM-L40**=Synapse Occupancy Sensor (21'-40' Mounting) [19]	**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] **LS/GRSBK**=Glare Reducing Shield, Black [23, 30] **LS/GRSWH**=Glare Reducing Shield, White [23, 30] **LS/PFS**=Perimeter Shield, Black [15] **WOLC-7P-10A**=WaveLinx Outdoor Control Module [19, 31] **SWPD4-XX**=Wavelinx Wireless Sensor, 7'–15' Mounting Height [13, 19, 32, 33] **SWPD5-XX**=Wavelinx Wireless Sensor, 15'–40' Mounting Height [13, 19, 32, 33]

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. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654. Not available with TH option.
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. 480V must utilize Wye system only. 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. Requires ZW or ZD receptacle.
14. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose drive current A; supplied at 500mA drive current only. Available with 5WQ, 5MQ, SL2, SL3 and SL4 distributions. Can be used with HSS option.
15. Set of 4 pcs. One set required per Light Square.
16. Not available with HA option.
17. 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in SA2 through SA4 requires a larger housing, normally used for SA5 or SA6. 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 Enlighted 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 BPC photocontrol or the PR7 or PR photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information.
23. Not for use with T4FT, T4W or SL4 optics. See IES files for details.
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 Cooper Lighting Solutions for more information.
25. Replace X with number of Light Squares operating in low output mode.
26. Enlighted wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities.
27. Not available with house side shield (HSS).
28. Not for use with 5NQ, 5MQ, 5WQ or RW optics. A black trim plate is used when HSS is selected.
29. CE is not available with the LWR, MS, MS/X, MS/DIM, BPC, PR or PR7 options. Available in 120-277V only.
30. One required for each Light Square.
31. Requires PR7.
32. Replace XX with sensor color (WH, BZ or BK.)
33. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
34. Smart device with mobile application required to change system defaults. See controls section for details.
35. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
36. For BAA or TAA requirements, Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.
37. Available for 7-10 squares.

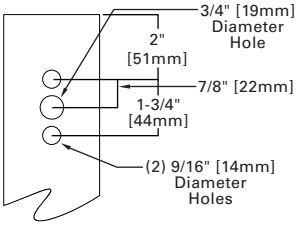
LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology	**D**=Standard Dome Camera **H**=Hi-Res Dome Camera **Z**=Remote PTZ Camera	**C**=Cellular, No SIM **A**=Cellular, AT&T **V**=Cellular, Verizon **S**=Cellular, Sprint	**R**=Cellular, Rogers **W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

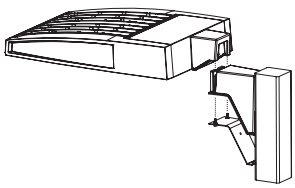
Mounting Details

Standard Arm (Drilling Pattern)

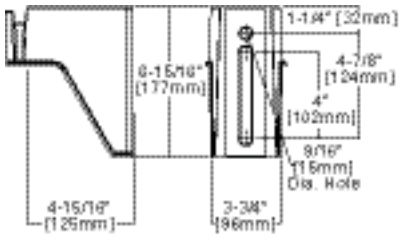
TYPE "N"



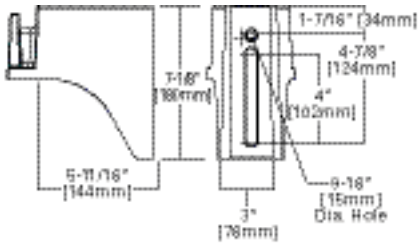
Quick Mount Arm (Includes fixture adapter)



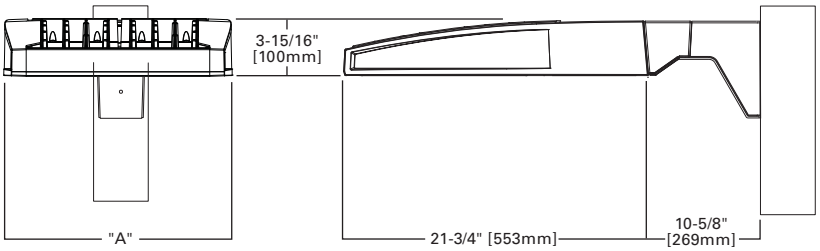
QM and QMEA Pole Mount



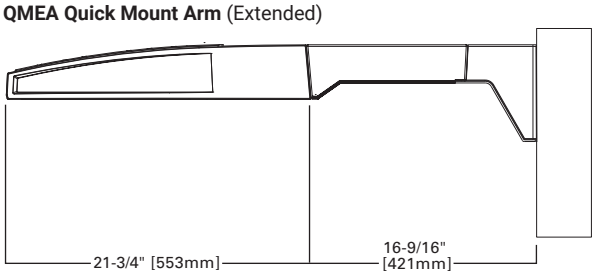
QML Pole Mount



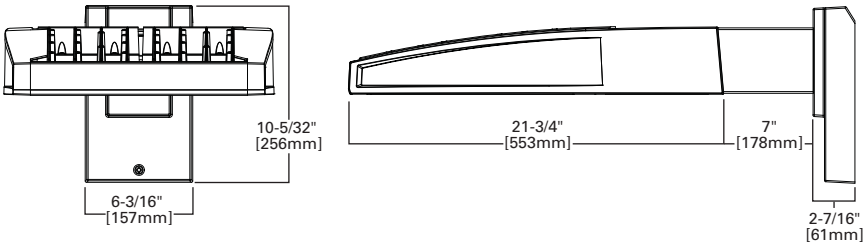
QM Quick Mount Arm (Standard)



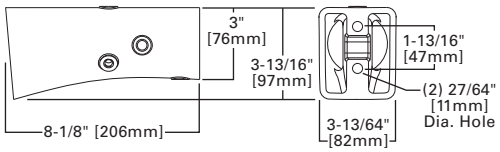
QMEA Quick Mount Arm (Extended)



Standard Wall Mount

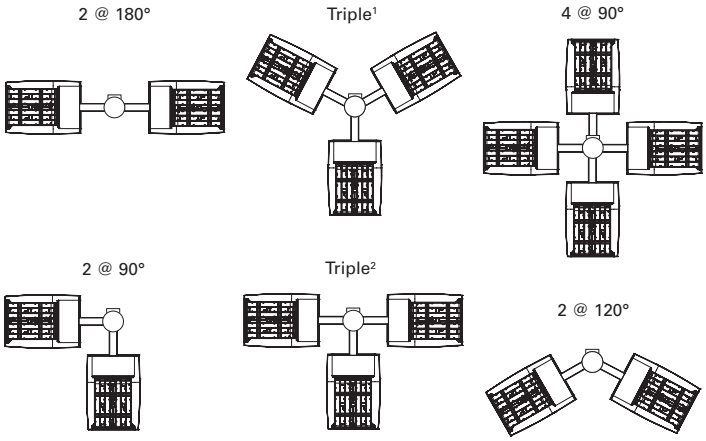


Mast Arm Mount



Arm Mounting Requirements

Number of Light Squares	Standard Arm @ 90° Apart	Standard Arm @ 120° Apart	Quick Mount Arm @ 90° Apart	Quick Mount Arm @ 120° Apart
1	Standard	Standard	QM Extended	Quick Mount
2	Standard	Standard	QM Extended	Quick Mount
3	Standard	Standard	QM Extended	Quick Mount
4	Standard	Standard	QM Extended	Quick Mount
5	Extended	Standard	QM Extended	Quick Mount
6	Extended	Standard	QM Extended	Quick Mount
7	Extended	Extended	--	Quick Mount
8	Extended	Extended	--	Quick Mount
9	Extended	Extended	--	--
10	Extended	Extended	--	--



NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. **2** Round poles are 3 @ 90°. **3** Shown with 4 square configurations.

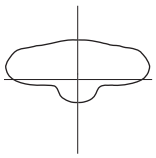
Fixture Weights and EPAs

Number of Light Squares	Weight with Standard and Extended Arm (lbs.)	EPA with Standard and Extended Arm (Sq. Ft.)	Weight with QM Arm (lbs.)	EPA with QM Arm (Sq. Ft.)	Weight with QML (lbs.)	EPA with QML (Sq. Ft.)	Weight with QMEA (lbs.)	EPA with QMEA (Sq. Ft.)
1-4	33	0.96	35	1.11	--	--	38	1.11
5-6	44	1.00	46	1.11	--	--	49	1.11
7-8	54	1.07	56	1.11	58	1.11	--	--
9-10	63	1.12	--	--	67	1.11	--	--

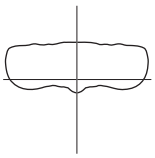
Optical Distributions

Asymmetric Area Distributions

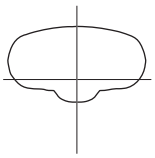
T2 (Type II)



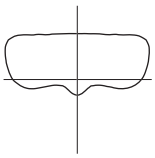
SL2 (Type II with Spill Control)



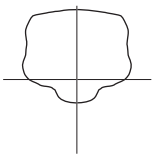
T3 (Type III)



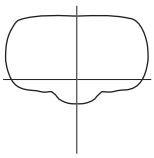
SL3 (Type III with Spill Control)



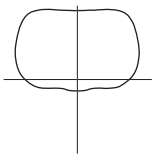
T4FT (Type IV Forward Throw)



T4W (Type IV Wide)

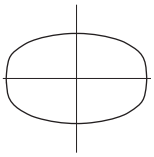


SL4 (Type IV with Spill Control)

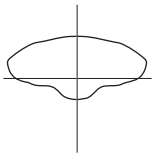


Asymmetric Roadway Distributions

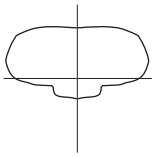
RW (Rectangular Wide Type I)



T2R (Type II Roadway)

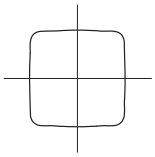


T3R (Type III Roadway)

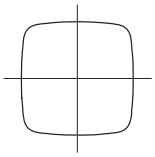


Symmetric Distributions

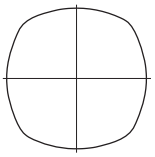
5NQ (Type V Square Narrow)



5MQ (Type V Square Medium)

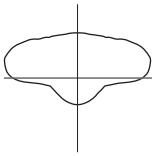


5WQ (Type V Square Wide)

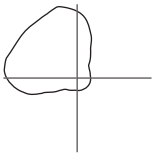


Specialized Distributions

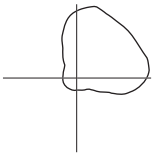
AFL (Automotive Frontline)



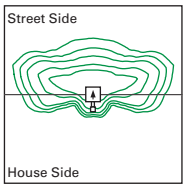
SLL (90° Spill Light Eliminator Left)



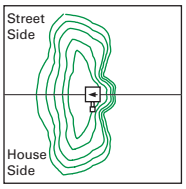
SLR (90° Spill Light Eliminator Right)



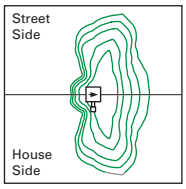
Rotated Optics



Standard



Optics Rotated Left @ 90° [L90]



Optics Rotated Right @ 90° [R90]

Product Specifications

Construction

- Extruded aluminum driver enclosure
- Heavy-wall, die-cast aluminum end caps
- Die-cast aluminum heat sinks
- Patent pending interlocking housing and heat sink

Optics

- Patented, high-efficiency injection-molded AccuLED Optics technology
- 16 optical distributions
- 3 shielding options including HSS, GRS and PFS
- IDA Certified (3000K CCT and warmer only)

Electrical

- LED drivers are mounted to removable tray assembly for ease of maintenance
- Standard with 0-10V dimming
- Standard with Cooper Lighting Solutions proprietary circuit module designed to withstand 10kV of transient line surge
- Suitable for operation in -40°C to 40°C ambient environments. Optional 50°C high ambient (HA) configuration.

Mounting

- Standard extruded arm includes internal bolt guides and round pole adapter
- Extended arms (EA and QMEA) may be required in 90° or 120° pole mount configurations, see arm mounting requirements table
- Mast arm (MA) factory installed
- Wall mount (WM) option available
- Quick mount arm (QM and QMEA) includes pole adapter and factory installed fixture mount for fast installation to square or round poles

Finish

- Super housing durable TGIC polyester powder coat paint, 2.5 mil nominal thickness
- Heat sink is powder coated black
- RAL and custom color matches available
- Coastal Construction (CC) option available

Warranty

- Five year warranty

Energy and Performance Data

Lumen Maintenance (TM-21)

Drive Current	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 hours**
Up to 1A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.7%	98.3%	98.1%	97.4%	> 1.9M
	50°C	98.2%	97.2%	96.8%	95.2%	> 851,000
1.2A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.5%	97.9%	97.7%	96.7%	> 1.3M

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, explaining proper use of IES TM-21 and LM-80.

Lumen Multiplier

Ambient Temperature	Lumen Multiplier
0ºC	1.02
10ºC	1.01
25ºC	1.00
40ºC	0.99
50ºC	0.97

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Nominal Power Lumens (1.2A)

Supplemental Performance Guide**

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 Lumens	7,972	15,580	23,245	30,714	38,056	45,541	53,857	61,024	68,072	75,366
	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
	Lumens per Watt	119	121	122	119	119	119	120	119	118	118
T2R	4000K Lumens	8,462	16,539	24,680	32,609	40,401	48,348	57,176	64,783	72,266	80,010
	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
	Lumens per Watt	126	128	129	126	126	127	128	127	126	125
T3	4000K Lumens	8,125	15,879	23,693	31,307	38,787	46,417	54,893	62,197	69,381	76,818
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	122	123	122	121	120
T3R	4000K Lumens	8,306	16,232	24,220	32,001	39,651	47,447	56,114	63,580	70,924	78,523
	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
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
T4FT	4000K Lumens	8,173	15,970	23,831	31,488	39,014	46,686	55,212	62,558	69,783	77,261
	BUG Rating	B1-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	122	124	125	122	122	122	123	122	121	121
T4W	4000K Lumens	8,067	15,764	23,522	31,080	38,510	46,082	54,499	61,751	68,881	76,263
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B5-U0-G5
	Lumens per Watt	120	122	123	120	120	121	122	121	120	119
SL2	4000K Lumens	7,958	15,552	23,206	30,662	37,989	45,462	53,763	60,920	67,952	75,235
	BUG Rating	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	121	121	119	119	119	120	119	118	118
SL3	4000K Lumens	8,124	15,877	23,690	31,302	38,784	46,410	54,885	62,189	69,372	76,805
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	121	123	122	121	120
SL4	4000K Lumens	7,719	15,085	22,510	29,741	36,850	44,097	52,148	59,089	65,913	72,977
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	115	117	118	115	115	115	116	116	115	114
5NQ	4000K Lumens	8,380	16,375	24,436	32,287	40,003	47,870	56,610	64,144	71,552	79,221
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	125	127	128	125	125	125	126	126	124	124
5MQ	4000K Lumens	8,534	16,676	24,885	32,881	40,739	48,752	57,653	65,326	72,868	80,679
	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
	Lumens per Watt	127	129	130	127	127	128	129	128	127	126
5WQ	4000K Lumens	8,556	16,723	24,951	32,968	40,847	48,881	57,808	65,499	73,063	80,894
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	128	130	131	128	128	128	129	128	127	126
SLL/ SLR	4000K Lumens	7,140	13,951	20,817	27,506	34,081	40,783	48,231	54,649	60,959	67,492
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	107	108	109	107	107	107	108	107	106	105
RW	4000K Lumens	8,304	16,228	24,215	31,994	39,641	47,437	56,100	63,566	70,907	78,504
	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
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
AFL	4000K Lumens	8,335	16,287	24,302	32,110	39,784	47,610	56,303	63,796	71,163	78,790
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G5
	Lumens per Watt	124	126	127	124	124	125	126	125	124	123

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (1A)

Supplemental Performance Guide**

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 Lumens	7,267	14,201	21,190	28,000	34,692	41,515	49,096	55,627	62,053	68,703
	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
	Lumens per Watt	123	126	128	124	124	125	126	125	124	123
T2R	4000K Lumens	7,715	15,077	22,497	29,725	36,829	44,073	52,122	59,056	65,876	72,937
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	133	136	132	132	132	133	133	131	131
T3	4000K Lumens	7,408	14,475	21,598	28,539	35,358	42,313	50,039	56,698	63,246	70,024
	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
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
T3R	4000K Lumens	7,571	14,798	22,078	29,172	36,145	43,253	51,153	57,959	64,653	71,581
	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
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
T4FT	4000K Lumens	7,451	14,559	21,725	28,703	35,564	42,558	50,330	57,027	63,613	70,430
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	129	131	128	127	128	129	128	127	126
T4W	4000K Lumens	7,354	14,371	21,442	28,333	35,105	42,007	49,681	56,291	62,792	69,521
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	127	129	126	126	126	127	126	125	125
SL2	4000K Lumens	7,254	14,178	21,155	27,951	34,631	41,443	49,011	55,533	61,944	68,584
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	125	127	124	124	124	125	125	124	123
SL3	4000K Lumens	7,406	14,474	21,596	28,534	35,355	42,307	50,033	56,690	63,237	70,014
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
SL4	4000K Lumens	7,037	13,751	20,519	27,112	33,592	40,198	47,538	53,864	60,087	66,524
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	119	122	124	120	120	121	122	121	120	119
5NQ	4000K Lumens	7,640	14,928	22,275	29,431	36,465	43,637	51,606	58,472	65,226	72,218
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	129	132	134	131	131	131	132	131	130	129
5MQ	4000K Lumens	7,779	15,203	22,684	29,973	37,137	44,441	52,555	59,549	66,427	73,545
	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
	Lumens per Watt	132	135	137	133	133	133	134	134	133	132
5WQ	4000K Lumens	7,800	15,243	22,744	30,052	37,236	44,560	52,697	59,708	66,603	73,742
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	132	135	137	134	133	134	135	134	133	132
SLL/ SLR	4000K Lumens	6,510	12,719	18,977	25,075	31,067	37,176	43,967	49,817	55,569	61,525
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	110	113	114	111	111	112	112	112	111	110
RW	4000K Lumens	7,570	14,793	22,073	29,165	36,137	43,243	51,140	57,945	64,637	71,564
	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-G4	B5-U0-G5
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
AFL	4000K Lumens	7,598	14,847	22,154	29,272	36,267	43,400	51,326	58,156	64,872	71,824
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G4
	Lumens per Watt	129	131	133	130	130	130	131	131	129	129

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (800mA)

Supplemental Performance Guide**

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 Lumens	5,871	11,474	17,121	22,622	28,029	33,542	39,667	44,944	50,134	55,508
	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
	Lumens per Watt	133	135	138	132	133	135	134	135	134	132
T2R	4000K Lumens	6,233	12,181	18,176	24,016	29,756	35,608	42,111	47,714	53,224	58,929
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	142	143	147	140	142	143	143	143	142	141
T3	4000K Lumens	5,986	11,695	17,450	23,057	28,568	34,186	40,430	45,809	51,099	56,576
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
T3R	4000K Lumens	6,117	11,955	17,838	23,569	29,203	34,946	41,328	46,827	52,235	57,832
	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
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
T4FT	4000K Lumens	6,019	11,763	17,551	23,190	28,734	34,384	40,663	46,074	51,396	56,904
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	137	138	142	136	137	138	138	138	137	136
T4W	4000K Lumens	5,942	11,610	17,324	22,891	28,363	33,940	40,138	45,480	50,732	56,169
	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
	Lumens per Watt	135	137	140	134	135	136	136	136	136	134
SL2	4000K Lumens	5,862	11,454	17,091	22,583	27,980	33,484	39,598	44,867	50,048	55,411
	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
	Lumens per Watt	133	135	138	132	133	134	134	134	134	132
SL3	4000K Lumens	5,985	11,694	17,447	23,053	28,565	34,182	40,424	45,804	51,092	56,568
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
SL4	4000K Lumens	5,685	11,111	16,577	21,905	27,140	32,478	38,409	43,520	48,546	53,748
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	129	131	134	128	129	130	130	130	130	128
5NQ	4000K Lumens	6,172	12,061	17,997	23,778	29,462	35,256	41,694	47,242	52,699	58,347
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	140	142	145	139	140	142	141	141	141	139
5MQ	4000K Lumens	6,285	12,283	18,328	24,217	30,004	35,907	42,462	48,112	53,669	59,421
	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
	Lumens per Watt	143	145	148	142	143	144	144	144	144	142
5WQ	4000K Lumens	6,303	12,317	18,377	24,281	30,085	36,001	42,575	48,241	53,812	59,579
	BUG Rating	B3-U0-G1	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
	Lumens per Watt	143	145	148	142	143	145	144	144	144	142
SLL/ SLR	4000K Lumens	5,260	10,276	15,332	20,259	25,101	30,037	35,522	40,249	44,898	49,708
	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	B3-U0-G5	B3-U0-G5
	Lumens per Watt	120	121	124	118	120	121	120	121	120	119
RW	4000K Lumens	6,116	11,952	17,834	23,563	29,196	34,938	41,317	46,817	52,224	57,819
	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
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
AFL	4000K Lumens	6,139	11,996	17,899	23,650	29,302	35,064	41,468	46,987	52,412	58,030
	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
	Lumens per Watt	140	141	144	138	140	141	141	141	140	138

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Nominal Power Lumens (600mA)

Supplemental Performance Guide**

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 Lumens	4,787	9,357	13,961	18,448	22,856	27,353	32,347	36,651	40,884	45,265
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	141	142	145	143	141	142	143	143	141	140
T2R	4000K Lumens	5,083	9,934	14,822	19,585	24,266	29,038	34,341	38,911	43,404	48,055
	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
	Lumens per Watt	150	151	154	152	150	150	152	151	150	149
T3	4000K Lumens	4,880	9,537	14,231	18,803	23,296	27,878	32,970	37,358	41,671	46,137
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	144	145	148	146	144	144	146	145	144	143
T3R	4000K Lumens	4,988	9,749	14,547	19,220	23,814	28,497	33,703	38,188	42,598	47,162
	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
	Lumens per Watt	147	148	152	149	147	148	149	149	147	146
T4FT	4000K Lumens	4,909	9,591	14,312	18,911	23,432	28,040	33,161	37,574	41,913	46,404
	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	B4-U0-G5
	Lumens per Watt	144	145	149	147	145	145	147	146	145	144
T4W	4000K Lumens	4,845	9,468	14,128	18,668	23,130	27,678	32,732	37,088	41,371	45,805
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	143	143	147	145	143	143	145	144	143	142
SL2	4000K Lumens	4,779	9,341	13,937	18,416	22,818	27,305	32,292	36,589	40,813	45,188
	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
	Lumens per Watt	141	142	145	143	141	141	143	142	141	140
SL3	4000K Lumens	4,879	9,536	14,229	18,800	23,294	27,874	32,965	37,351	41,666	46,130
	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
	Lumens per Watt	144	144	148	146	144	144	146	145	144	143
SL4	4000K Lumens	4,637	9,059	13,519	17,863	22,132	26,486	31,322	35,490	39,589	43,831
	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
	Lumens per Watt	136	137	141	138	137	137	139	138	137	136
5NQ	4000K Lumens	5,033	9,835	14,676	19,392	24,026	28,751	34,002	38,526	42,975	47,581
	BUG Rating	B2-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	B5-U0-G3
	Lumens per Watt	148	149	153	150	148	149	150	150	148	147
5MQ	4000K Lumens	5,126	10,015	14,946	19,747	24,468	29,281	34,628	39,236	43,766	48,457
	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
	Lumens per Watt	151	152	156	153	151	152	153	153	151	150
5WQ	4000K Lumens	5,139	10,043	14,985	19,801	24,533	29,359	34,721	39,339	43,883	48,586
	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
	Lumens per Watt	151	152	156	153	151	152	154	153	151	150
SLL/ SLR	4000K Lumens	4,289	8,380	12,502	16,520	20,469	24,494	28,967	32,823	36,613	40,537
	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
	Lumens per Watt	126	127	130	128	126	127	128	128	126	126
RW	4000K Lumens	4,987	9,746	14,543	19,215	23,808	28,491	33,695	38,178	42,587	47,151
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	147	148	151	149	147	148	149	149	147	146
AFL	4000K Lumens	5,007	9,782	14,597	19,285	23,896	28,594	33,817	38,317	42,742	47,322
	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
	Lumens per Watt	147	148	152	149	148	148	150	149	147	147

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Control Options

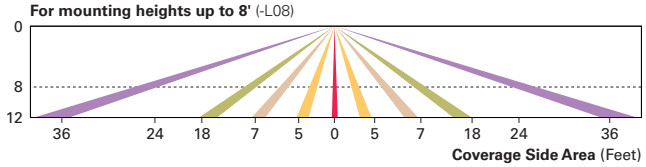
0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (BPC, PR and PR7)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) 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 PR7 receptacle.

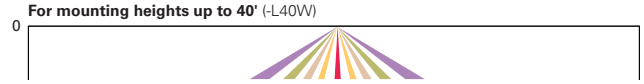
After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the 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 (SPB, MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are 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. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM occupancy sensors require the FSIR-100 programming tool to adjust factory defaults.

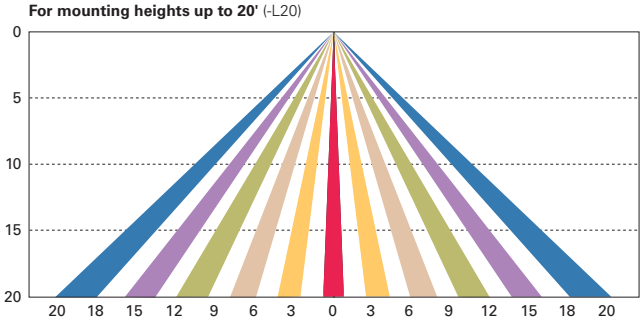
For mounting heights up to 8' (-L08)



For mounting heights up to 40' (-L40W)

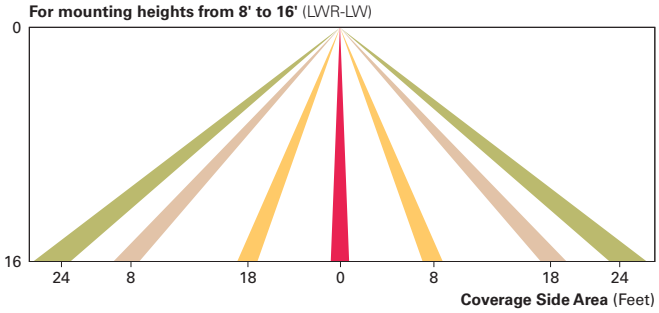


For mounting heights up to 20' (-L20)

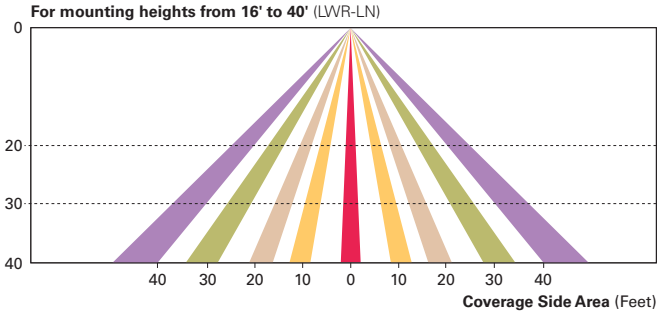


Enlighted Wireless Control and Monitoring System (LWR-LW and LWR-LN)
Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy 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)
Cooper Lighting Solutions 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.

Synapse (DIM10)
SimplySNAP integrated wireless controls system by Synapse. Includes factory installed DIM10 Synapse control module and MS/DC motion sensor; requires additional Synapse system components for operation. Contact Synapse at www.synapsewireless.com for product support, warranty and terms and conditions.

Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

Project		Catalog #	GLEON SA4C 740 U T4FT WM	Type	W2
Prepared by		Notes		Date	

McGraw-Edison

GLEON Galleon

Area / Site Luminaire

Product Features

LumenSafe Technology

Light ARchitect™

Product Certifications

Interactive Menu

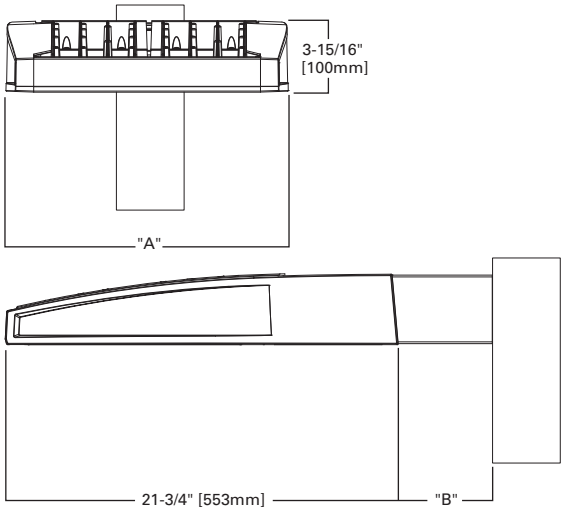
Quick Facts

- Lumen packages range from 4,200 - 80,800 (34W - 640W)
- Efficacy up to 156 lumens per watt
- Options to meet Buy American and other domestic preference requirements

Connected Systems

- WaveLinx
- Enlighted

Dimensional Details



Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Extended Arm Length [1]	"B" Quick Mount Arm Length	"B" Quick Mount Extended Arm Length
1-4	15-1/2"	7"	10"	10-5/8"	16-9/16"
5-6	21-5/8"	7"	10"	10-5/8"	16-9/16"
7-8	27-5/8"	7"	13"	10-5/8"	--
9-10	33-3/4"	7"	16"	--	--

NOTES:
For arm selection requirements and additional line art, see Mounting Details section.

NOTES:
1. Visit https://www.designlights.org/search/ to confirm qualification. Not all product variations are DLC qualified.
2. IDA Certified for 3000K CCT and warmer only.

Ordering Information

SAMPLE NUMBER: **GLEON-SA4C-740-U-T4FT-GM**

Product Family [1, 2]	Light Engine		Color Temperature	Voltage	Distribution	Mounting	Finish
	Configuration	Drive Current					
GLEON=Galleon **BAA-GLEON**=Galleon, Buy American Act Compliant [35] **TAA-GLEON**=Galleon, Trade Agreements Act Compliant [35]	**SA1**=1 Square **SA2**=2 Squares **SA3**=3 Squares **SA4**=4 Squares **SA5**=5 Squares [4] **SA6**=6 Squares **SA7**=7 Squares [5] **SA8**=8 Squares [5] **SA9**=9 Squares [6] **SA0**=10 Squares [6]	**A**=600mA **B**=800mA **C**=1000mA **D**=1200mA [16]	**722**=70CRI, 2200K **727**=70CRI, 2700K **730**=70CRI, 3000K **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K **760**=70CRI, 6000K **827**=80CRI, 2700K **830**=80CRI, 3000K **AMB**=Amber, 590nm [14, 16]	**U**=120-277V **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V [7, 8] **9**=347V [7]	**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	**[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] **QML**=Quick Mount Arm (Standard Length, Large) [37] **QMEA**=Quick Mount Arm (Extended Length) [12]	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White **RALXX**=Custom Color

Options (Add as Suffix)	Controls and Systems Options (Add as Suffix)	Accessories (Order Separately)[36]
DIM=External 0-10V Dimming Leads [19, 20] **F**=Single Fuse (120, 277 or 347V Specify Voltage) **FF**=Double Fuse (208, 240 or 480V Specify Voltage) **20K**=Series 20kV UL 1449 Surge Protective Device **2L**=Two Circuits [17, 18] **HA**=50°C High Ambient **HSS**=Installed House Side Shield [28] **GRSBK**=Glare Reducing Shield, Black [23] **GRSWH**=Glare Reducing Shield, White [23] **LCF**=Light Square Trim Painted to Match Housing [27] **MT**=Installed Mesh Top **TH**=Tool-less Door Hardware **CC**=Coastal Construction finish [3] **L90**=Optics Rotated 90° Left **R90**=Optics Rotated 90° Right **CE**=CE Marking [29] **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] **DALI**=DALI Drivers	**BPC**=Button Type Photocontrol **PR**=NEMA 3-PIN Photocontrol Receptacle **PR7**=NEMA 7-PIN Photocontrol Receptacle [21] **SPB2**=Dimming Occupancy Sensor with Bluetooth Interface, 8' - 20' Mounting [34] **SPB4**=Dimming Occupancy Sensor with Bluetooth Interface, 21' - 40' Mounting [34] **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/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/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] **ZW**=WaveLinx Module and 4-PIN Receptacle **ZD**=WaveLinx Module with DALI driver and 4-PIN Receptacle **SWPD4XX**=WaveLinx Sensor Only, 7'-15' [13, 32, 33] **SWPD5XX**=WaveLinx Sensor Only, 15'-40' [13, 32, 33] **WOBXX**=WaveLinx Sensor with Bluetooth, 7'-15' [13, 32] **WOFXX**=WaveLinx Sensor with Bluetooth, 15'-40' [13, 32] **LWR-LW**=Enlighted Sensor, 8'–16' Mounting Height [26] **LWR-LN**=Enlighted Sensor, 16'–40' Mounting Height [26] **DIM10-MS/DIM-L08**=Synapse Occupancy Sensor (<8' Mounting) [19] **DIM10-MS/DIM-L20**=Synapse Occupancy Sensor (9'-20' Mounting) [19] **DIM10-MS/DIM-L40**=Synapse Occupancy Sensor (21'-40' Mounting) [19]	**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] **LS/GRSBK**=Glare Reducing Shield, Black [23, 30] **LS/GRSWH**=Glare Reducing Shield, White [23, 30] **LS/PFS**=Perimeter Shield, Black [15] **WOLC-7P-10A**=WaveLinx Outdoor Control Module [19, 31] **SWPD4-XX**=Wavelinx Wireless Sensor, 7'–15' Mounting Height [13, 19, 32, 33] **SWPD5-XX**=Wavelinx Wireless Sensor, 15'–40' Mounting Height [13, 19, 32, 33]

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. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654. Not available with TH option.
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. 480V must utilize Wye system only. 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. Requires ZW or ZD receptacle.
14. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose drive current A; supplied at 500mA drive current only. Available with 5WQ, 5MQ, SL2, SL3 and SL4 distributions. Can be used with HSS option.
15. Set of 4 pcs. One set required per Light Square.
16. Not available with HA option.
17. 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in SA2 through SA4 requires a larger housing, normally used for SA5 or SA6. 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 Enlighted 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 BPC photocontrol or the PR7 or PR photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information.
23. Not for use with T4FT, T4W or SL4 optics. See IES files for details.
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 Cooper Lighting Solutions for more information.
25. Replace X with number of Light Squares operating in low output mode.
26. Enlighted wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities.
27. Not available with house side shield (HSS).
28. Not for use with 5NQ, 5MQ, 5WQ or RW optics. A black trim plate is used when HSS is selected.
29. CE is not available with the LWR, MS, MS/X, MS/DIM, BPC, PR or PR7 options. Available in 120-277V only.
30. One required for each Light Square.
31. Requires PR7.
32. Replace XX with sensor color (WH, BZ or BK.)
33. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
34. Smart device with mobile application required to change system defaults. See controls section for details.
35. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
36. For BAA or TAA requirements, Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.
37. Available for 7-10 squares.

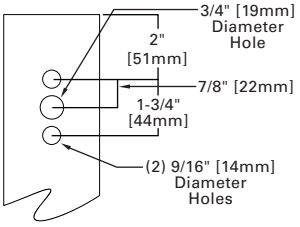
LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology	**D**=Standard Dome Camera **H**=Hi-Res Dome Camera **Z**=Remote PTZ Camera	**C**=Cellular, No SIM **A**=Cellular, AT&T **V**=Cellular, Verizon **S**=Cellular, Sprint	**R**=Cellular, Rogers **W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

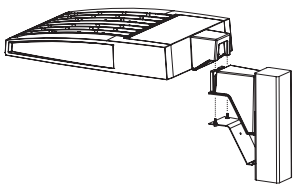
Mounting Details

Standard Arm (Drilling Pattern)

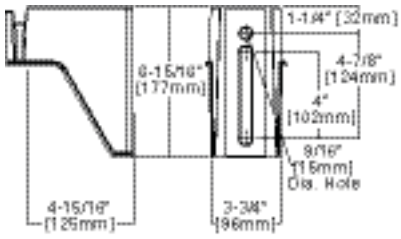
TYPE "N"



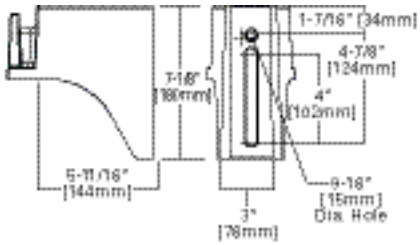
Quick Mount Arm (Includes fixture adapter)



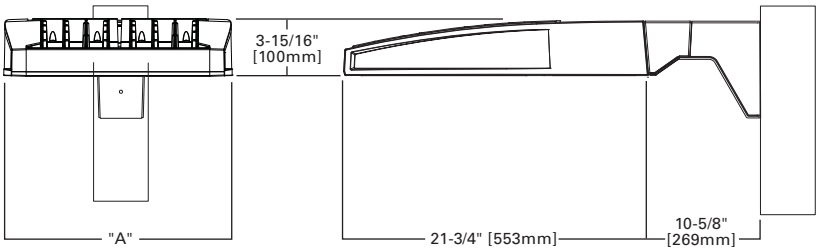
QM and QMEA Pole Mount



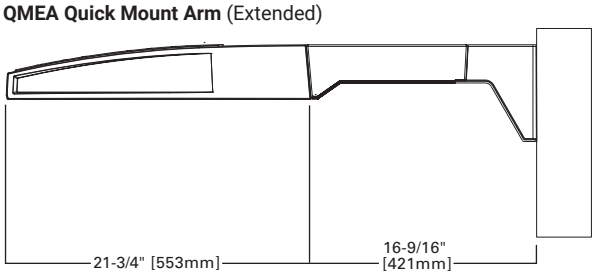
QML Pole Mount



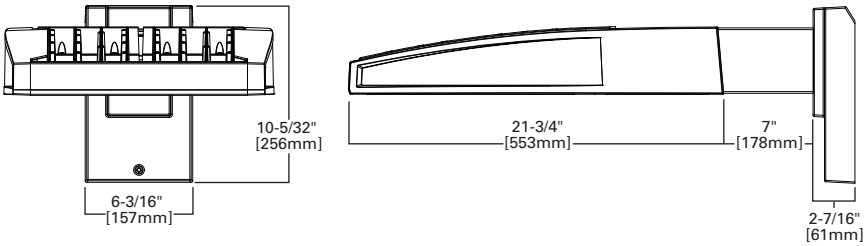
QM Quick Mount Arm (Standard)



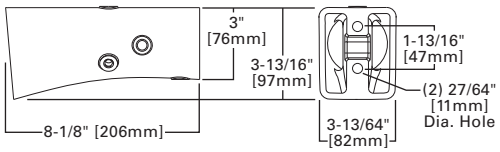
QMEA Quick Mount Arm (Extended)



Standard Wall Mount

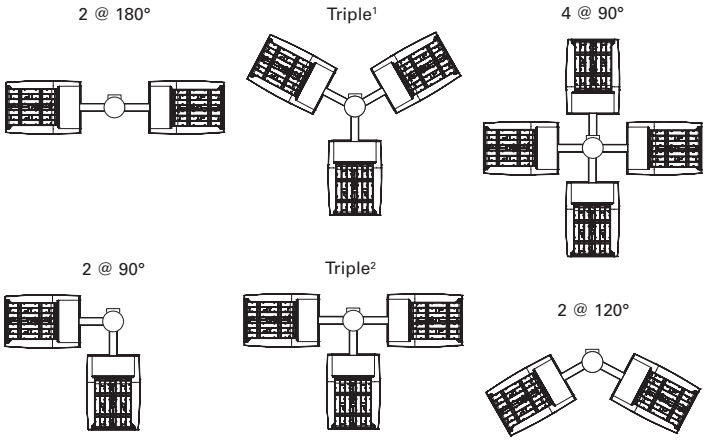


Mast Arm Mount



Arm Mounting Requirements

Number of Light Squares	Standard Arm @ 90° Apart	Standard Arm @ 120° Apart	Quick Mount Arm @ 90° Apart	Quick Mount Arm @ 120° Apart
1	Standard	Standard	QM Extended	Quick Mount
2	Standard	Standard	QM Extended	Quick Mount
3	Standard	Standard	QM Extended	Quick Mount
4	Standard	Standard	QM Extended	Quick Mount
5	Extended	Standard	QM Extended	Quick Mount
6	Extended	Standard	QM Extended	Quick Mount
7	Extended	Extended	--	Quick Mount
8	Extended	Extended	--	Quick Mount
9	Extended	Extended	--	--
10	Extended	Extended	--	--



NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. **2** Round poles are 3 @ 90°. **3** Shown with 4 square configurations.

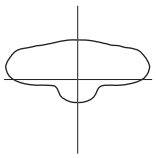
Fixture Weights and EPAs

Number of Light Squares	Weight with Standard and Extended Arm (lbs.)	EPA with Standard and Extended Arm (Sq. Ft.)	Weight with QM Arm (lbs.)	EPA with QM Arm (Sq. Ft.)	Weight with QML (lbs.)	EPA with QML (Sq. Ft.)	Weight with QMEA (lbs.)	EPA with QMEA (Sq. Ft.)
1-4	33	0.96	35	1.11	--	--	38	1.11
5-6	44	1.00	46	1.11	--	--	49	1.11
7-8	54	1.07	56	1.11	58	1.11	--	--
9-10	63	1.12	--	--	67	1.11	--	--

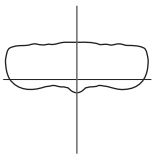
Optical Distributions

Asymmetric Area Distributions

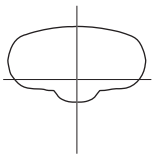
T2 (Type II)



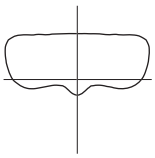
SL2 (Type II with Spill Control)



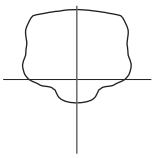
T3 (Type III)



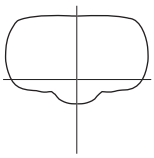
SL3 (Type III with Spill Control)



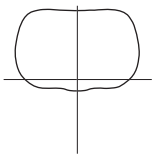
T4FT (Type IV Forward Throw)



T4W (Type IV Wide)

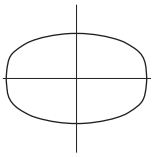


SL4 (Type IV with Spill Control)

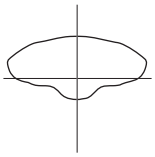


Asymmetric Roadway Distributions

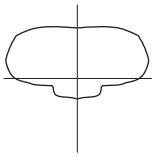
RW (Rectangular Wide Type I)



T2R (Type II Roadway)

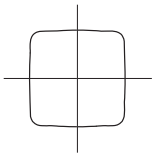


T3R (Type III Roadway)

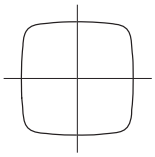


Symmetric Distributions

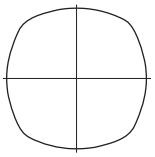
5NQ (Type V Square Narrow)



5MQ (Type V Square Medium)

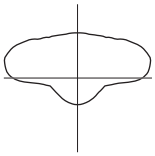


5WQ (Type V Square Wide)

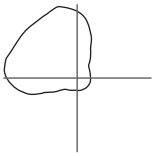


Specialized Distributions

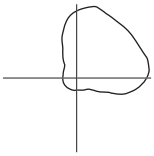
AFL (Automotive Frontline)



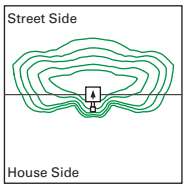
SLL (90° Spill Light Eliminator Left)



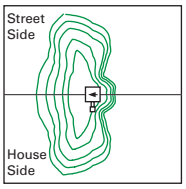
SLR (90° Spill Light Eliminator Right)



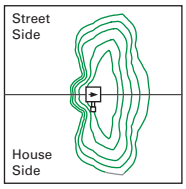
Rotated Optics



Standard



Optics Rotated Left @ 90° [L90]



Optics Rotated Right @ 90° [R90]

Product Specifications

Construction

- Extruded aluminum driver enclosure
- Heavy-wall, die-cast aluminum end caps
- Die-cast aluminum heat sinks
- Patent pending interlocking housing and heat sink

Optics

- Patented, high-efficiency injection-molded AccuLED Optics technology
- 16 optical distributions
- 3 shielding options including HSS, GRS and PFS
- IDA Certified (3000K CCT and warmer only)

Electrical

- LED drivers are mounted to removable tray assembly for ease of maintenance
- Standard with 0-10V dimming
- Standard with Cooper Lighting Solutions proprietary circuit module designed to withstand 10kV of transient line surge
- Suitable for operation in -40°C to 40°C ambient environments. Optional 50°C high ambient (HA) configuration.

Mounting

- Standard extruded arm includes internal bolt guides and round pole adapter
- Extended arms (EA and QMEA) may be required in 90° or 120° pole mount configurations, see arm mounting requirements table
- Mast arm (MA) factory installed
- Wall mount (WM) option available
- Quick mount arm (QM and QMEA) includes pole adapter and factory installed fixture mount for fast installation to square or round poles

Finish

- Super housing durable TGIC polyester powder coat paint, 2.5 mil nominal thickness
- Heat sink is powder coated black
- RAL and custom color matches available
- Coastal Construction (CC) option available

Warranty

- Five year warranty

Energy and Performance Data

Lumen Maintenance (TM-21)

Drive Current	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 hours**
Up to 1A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.7%	98.3%	98.1%	97.4%	> 1.9M
	50°C	98.2%	97.2%	96.8%	95.2%	> 851,000
1.2A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.5%	97.9%	97.7%	96.7%	> 1.3M

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, explaining proper use of IES TM-21 and LM-80.

Lumen Multiplier

Ambient Temperature	Lumen Multiplier
0ºC	1.02
10ºC	1.01
25ºC	1.00
40ºC	0.99
50ºC	0.97

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Nominal Power Lumens (1.2A)

Supplemental Performance Guide**

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 Lumens	7,972	15,580	23,245	30,714	38,056	45,541	53,857	61,024	68,072	75,366
	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
	Lumens per Watt	119	121	122	119	119	119	120	119	118	118
T2R	4000K Lumens	8,462	16,539	24,680	32,609	40,401	48,348	57,176	64,783	72,266	80,010
	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
	Lumens per Watt	126	128	129	126	126	127	128	127	126	125
T3	4000K Lumens	8,125	15,879	23,693	31,307	38,787	46,417	54,893	62,197	69,381	76,818
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	122	123	122	121	120
T3R	4000K Lumens	8,306	16,232	24,220	32,001	39,651	47,447	56,114	63,580	70,924	78,523
	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
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
T4FT	4000K Lumens	8,173	15,970	23,831	31,488	39,014	46,686	55,212	62,558	69,783	77,261
	BUG Rating	B1-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	122	124	125	122	122	122	123	122	121	121
T4W	4000K Lumens	8,067	15,764	23,522	31,080	38,510	46,082	54,499	61,751	68,881	76,263
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B5-U0-G5
	Lumens per Watt	120	122	123	120	120	121	122	121	120	119
SL2	4000K Lumens	7,958	15,552	23,206	30,662	37,989	45,462	53,763	60,920	67,952	75,235
	BUG Rating	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	121	121	119	119	119	120	119	118	118
SL3	4000K Lumens	8,124	15,877	23,690	31,302	38,784	46,410	54,885	62,189	69,372	76,805
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	121	123	122	121	120
SL4	4000K Lumens	7,719	15,085	22,510	29,741	36,850	44,097	52,148	59,089	65,913	72,977
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	115	117	118	115	115	115	116	116	115	114
5NQ	4000K Lumens	8,380	16,375	24,436	32,287	40,003	47,870	56,610	64,144	71,552	79,221
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	125	127	128	125	125	125	126	126	124	124
5MQ	4000K Lumens	8,534	16,676	24,885	32,881	40,739	48,752	57,653	65,326	72,868	80,679
	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
	Lumens per Watt	127	129	130	127	127	128	129	128	127	126
5WQ	4000K Lumens	8,556	16,723	24,951	32,968	40,847	48,881	57,808	65,499	73,063	80,894
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	128	130	131	128	128	128	129	128	127	126
SLL/ SLR	4000K Lumens	7,140	13,951	20,817	27,506	34,081	40,783	48,231	54,649	60,959	67,492
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	107	108	109	107	107	107	108	107	106	105
RW	4000K Lumens	8,304	16,228	24,215	31,994	39,641	47,437	56,100	63,566	70,907	78,504
	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
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
AFL	4000K Lumens	8,335	16,287	24,302	32,110	39,784	47,610	56,303	63,796	71,163	78,790
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G5
	Lumens per Watt	124	126	127	124	124	125	126	125	124	123

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (1A)

Supplemental Performance Guide**

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 Lumens	7,267	14,201	21,190	28,000	34,692	41,515	49,096	55,627	62,053	68,703
	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
	Lumens per Watt	123	126	128	124	124	125	126	125	124	123
T2R	4000K Lumens	7,715	15,077	22,497	29,725	36,829	44,073	52,122	59,056	65,876	72,937
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	133	136	132	132	132	133	133	131	131
T3	4000K Lumens	7,408	14,475	21,598	28,539	35,358	42,313	50,039	56,698	63,246	70,024
	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
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
T3R	4000K Lumens	7,571	14,798	22,078	29,172	36,145	43,253	51,153	57,959	64,653	71,581
	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
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
T4FT	4000K Lumens	7,451	14,559	21,725	28,703	35,564	42,558	50,330	57,027	63,613	70,430
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	129	131	128	127	128	129	128	127	126
T4W	4000K Lumens	7,354	14,371	21,442	28,333	35,105	42,007	49,681	56,291	62,792	69,521
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	127	129	126	126	126	127	126	125	125
SL2	4000K Lumens	7,254	14,178	21,155	27,951	34,631	41,443	49,011	55,533	61,944	68,584
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	125	127	124	124	124	125	125	124	123
SL3	4000K Lumens	7,406	14,474	21,596	28,534	35,355	42,307	50,033	56,690	63,237	70,014
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
SL4	4000K Lumens	7,037	13,751	20,519	27,112	33,592	40,198	47,538	53,864	60,087	66,524
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	119	122	124	120	120	121	122	121	120	119
5NQ	4000K Lumens	7,640	14,928	22,275	29,431	36,465	43,637	51,606	58,472	65,226	72,218
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	129	132	134	131	131	131	132	131	130	129
5MQ	4000K Lumens	7,779	15,203	22,684	29,973	37,137	44,441	52,555	59,549	66,427	73,545
	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
	Lumens per Watt	132	135	137	133	133	133	134	134	133	132
5WQ	4000K Lumens	7,800	15,243	22,744	30,052	37,236	44,560	52,697	59,708	66,603	73,742
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	132	135	137	134	133	134	135	134	133	132
SLL/ SLR	4000K Lumens	6,510	12,719	18,977	25,075	31,067	37,176	43,967	49,817	55,569	61,525
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	110	113	114	111	111	112	112	112	111	110
RW	4000K Lumens	7,570	14,793	22,073	29,165	36,137	43,243	51,140	57,945	64,637	71,564
	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-G4	B5-U0-G5
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
AFL	4000K Lumens	7,598	14,847	22,154	29,272	36,267	43,400	51,326	58,156	64,872	71,824
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G4
	Lumens per Watt	129	131	133	130	130	130	131	131	129	129

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (800mA)

Supplemental Performance Guide**

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 Lumens	5,871	11,474	17,121	22,622	28,029	33,542	39,667	44,944	50,134	55,508
	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
	Lumens per Watt	133	135	138	132	133	135	134	135	134	132
T2R	4000K Lumens	6,233	12,181	18,176	24,016	29,756	35,608	42,111	47,714	53,224	58,929
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	142	143	147	140	142	143	143	143	142	141
T3	4000K Lumens	5,986	11,695	17,450	23,057	28,568	34,186	40,430	45,809	51,099	56,576
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
T3R	4000K Lumens	6,117	11,955	17,838	23,569	29,203	34,946	41,328	46,827	52,235	57,832
	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
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
T4FT	4000K Lumens	6,019	11,763	17,551	23,190	28,734	34,384	40,663	46,074	51,396	56,904
	BUG Rating	B1-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	B4-U0-G5
	Lumens per Watt	137	138	142	136	137	138	138	138	137	136
T4W	4000K Lumens	5,942	11,610	17,324	22,891	28,363	33,940	40,138	45,480	50,732	56,169
	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
	Lumens per Watt	135	137	140	134	135	136	136	136	136	134
SL2	4000K Lumens	5,862	11,454	17,091	22,583	27,980	33,484	39,598	44,867	50,048	55,411
	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
	Lumens per Watt	133	135	138	132	133	134	134	134	134	132
SL3	4000K Lumens	5,985	11,694	17,447	23,053	28,565	34,182	40,424	45,804	51,092	56,568
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
SL4	4000K Lumens	5,685	11,111	16,577	21,905	27,140	32,478	38,409	43,520	48,546	53,748
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	129	131	134	128	129	130	130	130	130	128
5NQ	4000K Lumens	6,172	12,061	17,997	23,778	29,462	35,256	41,694	47,242	52,699	58,347
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	140	142	145	139	140	142	141	141	141	139
5MQ	4000K Lumens	6,285	12,283	18,328	24,217	30,004	35,907	42,462	48,112	53,669	59,421
	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
	Lumens per Watt	143	145	148	142	143	144	144	144	144	142
5WQ	4000K Lumens	6,303	12,317	18,377	24,281	30,085	36,001	42,575	48,241	53,812	59,579
	BUG Rating	B3-U0-G1	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
	Lumens per Watt	143	145	148	142	143	145	144	144	144	142
SLL/ SLR	4000K Lumens	5,260	10,276	15,332	20,259	25,101	30,037	35,522	40,249	44,898	49,708
	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	B3-U0-G5	B3-U0-G5
	Lumens per Watt	120	121	124	118	120	121	120	121	120	119
RW	4000K Lumens	6,116	11,952	17,834	23,563	29,196	34,938	41,317	46,817	52,224	57,819
	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
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
AFL	4000K Lumens	6,139	11,996	17,899	23,650	29,302	35,064	41,468	46,987	52,412	58,030
	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
	Lumens per Watt	140	141	144	138	140	141	141	141	140	138

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Nominal Power Lumens (600mA)

Supplemental Performance Guide**

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 Lumens	4,787	9,357	13,961	18,448	22,856	27,353	32,347	36,651	40,884	45,265
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	141	142	145	143	141	142	143	143	141	140
T2R	4000K Lumens	5,083	9,934	14,822	19,585	24,266	29,038	34,341	38,911	43,404	48,055
	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
	Lumens per Watt	150	151	154	152	150	150	152	151	150	149
T3	4000K Lumens	4,880	9,537	14,231	18,803	23,296	27,878	32,970	37,358	41,671	46,137
	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	B3-U0-G5	B4-U0-G5
	Lumens per Watt	144	145	148	146	144	144	146	145	144	143
T3R	4000K Lumens	4,988	9,749	14,547	19,220	23,814	28,497	33,703	38,188	42,598	47,162
	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
	Lumens per Watt	147	148	152	149	147	148	149	149	147	146
T4FT	4000K Lumens	4,909	9,591	14,312	18,911	23,432	28,040	33,161	37,574	41,913	46,404
	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	B4-U0-G5
	Lumens per Watt	144	145	149	147	145	145	147	146	145	144
T4W	4000K Lumens	4,845	9,468	14,128	18,668	23,130	27,678	32,732	37,088	41,371	45,805
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	143	143	147	145	143	143	145	144	143	142
SL2	4000K Lumens	4,779	9,341	13,937	18,416	22,818	27,305	32,292	36,589	40,813	45,188
	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
	Lumens per Watt	141	142	145	143	141	141	143	142	141	140
SL3	4000K Lumens	4,879	9,536	14,229	18,800	23,294	27,874	32,965	37,351	41,666	46,130
	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
	Lumens per Watt	144	144	148	146	144	144	146	145	144	143
SL4	4000K Lumens	4,637	9,059	13,519	17,863	22,132	26,486	31,322	35,490	39,589	43,831
	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
	Lumens per Watt	136	137	141	138	137	137	139	138	137	136
5NQ	4000K Lumens	5,033	9,835	14,676	19,392	24,026	28,751	34,002	38,526	42,975	47,581
	BUG Rating	B2-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	B5-U0-G3
	Lumens per Watt	148	149	153	150	148	149	150	150	148	147
5MQ	4000K Lumens	5,126	10,015	14,946	19,747	24,468	29,281	34,628	39,236	43,766	48,457
	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
	Lumens per Watt	151	152	156	153	151	152	153	153	151	150
5WQ	4000K Lumens	5,139	10,043	14,985	19,801	24,533	29,359	34,721	39,339	43,883	48,586
	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
	Lumens per Watt	151	152	156	153	151	152	154	153	151	150
SLL/ SLR	4000K Lumens	4,289	8,380	12,502	16,520	20,469	24,494	28,967	32,823	36,613	40,537
	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
	Lumens per Watt	126	127	130	128	126	127	128	128	126	126
RW	4000K Lumens	4,987	9,746	14,543	19,215	23,808	28,491	33,695	38,178	42,587	47,151
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	147	148	151	149	147	148	149	149	147	146
AFL	4000K Lumens	5,007	9,782	14,597	19,285	23,896	28,594	33,817	38,317	42,742	47,322
	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
	Lumens per Watt	147	148	152	149	148	148	150	149	147	147

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Control Options

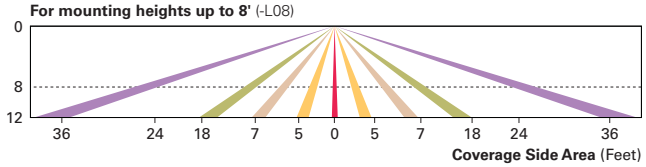
0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (BPC, PR and PR7)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) 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 PR7 receptacle.

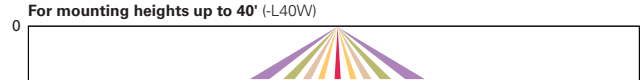
After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the 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 (SPB, MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are 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. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM occupancy sensors require the FSIR-100 programming tool to adjust factory defaults.

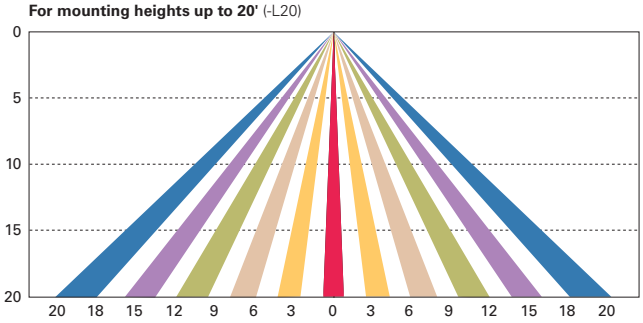
For mounting heights up to 8' (-L08)



For mounting heights up to 40' (-L40W)

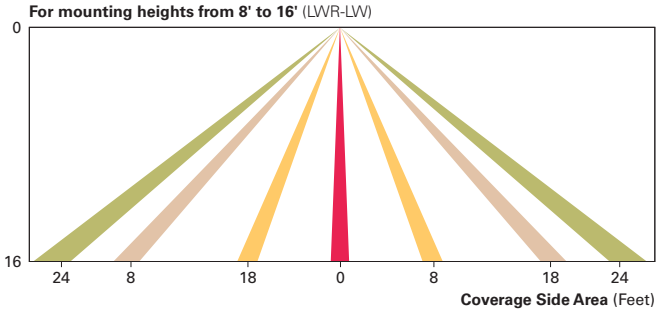


For mounting heights up to 20' (-L20)

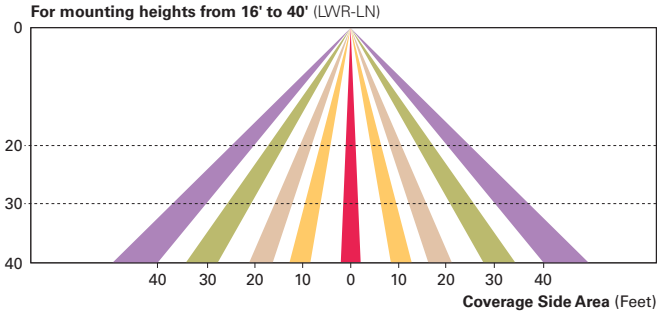


Enlighted Wireless Control and Monitoring System (LWR-LW and LWR-LN)
Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy 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)
Cooper Lighting Solutions 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.

Synapse (DIM10)
SimplySNAP integrated wireless controls system by Synapse. Includes factory installed DIM10 Synapse control module and MS/DC motion sensor; requires additional Synapse system components for operation. Contact Synapse at www.synapsewireless.com for product support, warranty and terms and conditions.

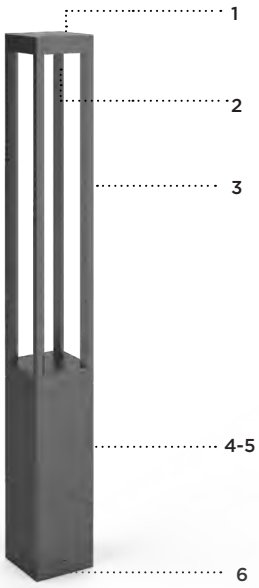
Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

LUMINIS®

LQ627 SERIES
Lumiquad - LED
6” BOLLARD

TYPE: _____ QUANTITY: _____ PROJECT: _____

CATALOG NUMBER:								
	FIXTURE	SUFFIX	VOLTAGE	FINISH	OPTION	OPTION	OPTION	OPTION



1- Heavy cast aluminum top cover.
2- Optical system assembly.
3- 4x extruded aluminum struts.
4- Cast aluminum driver housing.
5- 6” (152mm) x 6” (152mm) extruded aluminum square body.
6- Cast aluminum mounting base.

LQ627

MATERIALS
Lumiquad bollard is made of corrosion resistant 356 aluminum alloy with a copper (CU) content of less than 0.1%.

ELECTRICAL
DRIVER Standard driver is 0-10V dimming-ready (dims to 10%) with: 120-277 multi-volt compatibility (50-60Hz), operating temperatures of -40ºC/-40ºF to 55ºC/131ºF, output over voltage protection, output over current protection, output short circuit protection with auto-recovery.

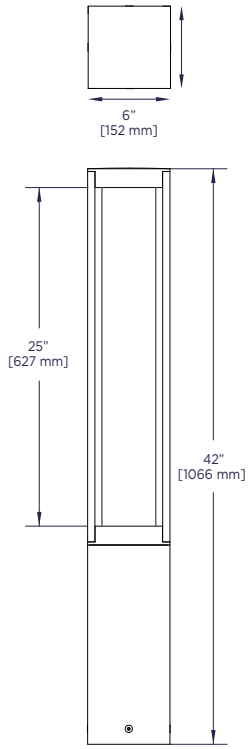
LED 3000K/3500K/4000K CCT with 80 CRI.
Optional true amber LED for turtle sensitive areas. Wavelengths: 585nm to 597nm.

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

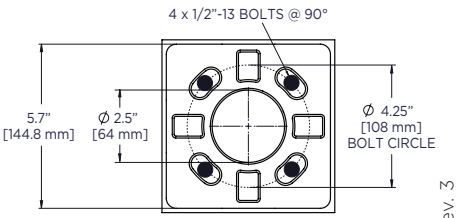
FINISH
Five-stage preparation process includes preheating of cast aluminum parts for air extraction. Polyester powder coating is applied through an electrostatic process, and oven cured for long term finish.

CERTIFICATION
Tested to UL1598 and CSA 22.2 #250. ETL listed wet location.
Photometric testing performed by an independent laboratory in accordance with IES LM-79-08 standards at 25ºC. Lumen depreciation in accordance with IESNA LM80 standards. Rated IP65.

MOUNTING
Mounts with a set of 4 x 1/2”-13 x 18” lg. galvanized anchor bolts.



LQ627



Oct. 2021 Rev. 3

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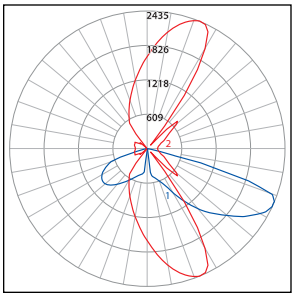
260 Labrosse, Pointe-Claire (QC) Canada H9R 5L5

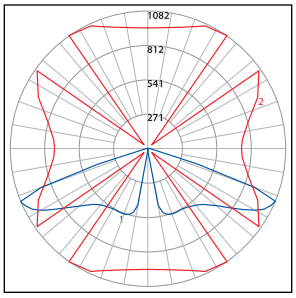
LUMINIS.COM

TYPICAL PHOTOMETRY SUMMARY



Descriptive Information

LQ627-L1L30-R2
Total Lms: 3251 Lumens
Total Input Watts: 31,1 W
Efficacy: 104,6 Lumens/Watt
BUG: B1-U0-G1
CCT/CRI: 4000K/80
Maximum Candela: 2407 @ 55°H/42.5°V



Descriptive Information

LQ627-L1L30-R5
Total Lms: 3146 Lumens
Total Input Watts: 35,8 W
Efficacy: 87,9 Lumens/Watt
BUG: B2-U0-G0
CCT/CRI: 4000K/80
Maximum Candela: 1063 @ 55°H/47.5°V

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

LUMINAIRE SELECTION

MODEL#

☐ **LQ627**

LED LIGHT SELECTION (4000K/80CRI)

	SUFFIX	DELIVERED LUMENS	INPUT WATTS
Type II	☐ L1L10-R2	1203	10
	☐ L1L20-R2	2081	19
	☐ L1L30-R2	3251	32
Type V	☐ L1L10-R5	1204	13
	☐ L1L20-R5	2134	23
	☐ L1L30-R5	3146	36

AMBER LED LIGHT SELECTION - TURTLE FRIENDLY
IDA - Dark Sky Approved

	SUFFIX	DELIVERED LUMENS	INPUT WATTS
Type II	☐ L1L2K2A-R2	420	12
Type V	☐ L1L2K2A-R5	406	12

VOLTAGE [1]

☐ 120V
☐ 277V

Optional
☐ 347V
☐ 480V

FINISH

STANDARD COLORS*

☐ **WHT** Snow white
☐ **BKT** Jet black
☐ **BZT** Bronze
☐ **MST** Matte silver
☐ **GRT** Titanium gray
☐ **DGT** Gun metal
☐ **CHT** Champagne
☐ **SGT** Steel gray
☐ **BGT** English cream

OPTIONAL COLORS

☐ **CS** Custom color
☐ **RAL** RAL# color

*Refer to color chart

OPTIONS

ELECTRICAL

☐ **FS** Fuse
☐ **SP** Surge protector 10KV
☐ **PH** Photocell
☐ **REML2-50** Remote mount battery backup (7W / 90 min.). Remote mount to 50FT. 12" square enclosure with access cover. [2]

FAUX WOOD COLORS [6]

☐ **ADG**	American douglas	☐ **MPL**	Maple
☐ **BRC**	Birch	☐ **OFL**	Oak
☐ **CHN**	Chestnut	☐ **RSW**	Rosewood
☐ **CRY**	Cherry	☐ **TEK**	Teak
☐ **KNP**	Knotty pine	☐ **WLN**	Walnut

ACCESSORIES

☐ **BLC1** Blockout shield (one side) [3]
☐ **BLC2** Blockout shield (two sides, installed at 90°) [4]
☐ **BLC3** Blockout shield (three sides) [4]
☐ **LVR** Glare control louvers provided with a 90° lens [5]

LIGHT

Alternate CCT °K LED (LCF: Lumen conversion factor)

☐ **K27** 2700K CCT 80 CRI (LCF: 0.91)
☐ **K3** 3000K CCT 80 CRI (LCF: 0.94)
☐ **K35** 3500K CCT 80 CRI (LCF: 0.98)
☐ **K4** 4000K CCT 80 CRI (LCF: 1.00)

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

NOTES
1- If no voltage is specified, luminaires are factory prewired by default for 120V. For other voltages, please specify with catalog number, or consult factory.
2- REML2-50 not compatible with PH (photocell).
3- BLC1 installed on back side when distribution Type II is selected.
4- BLC2 and BLC3 not available with distribution type II.
5- LVR cannot be combined with Blockout shield option.
6- Faux wood finish not applied to the fixture head or accessories.

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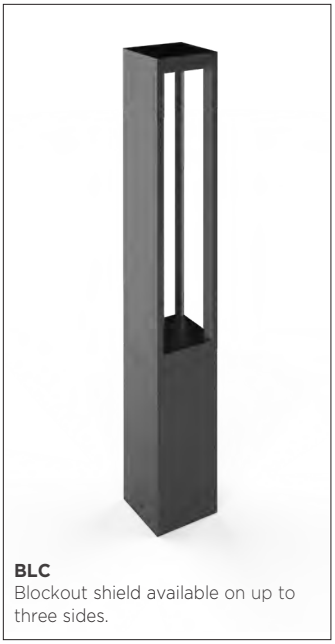
OPTIONS

ACCESSORIES



BLC
Blockout shield available on up to three sides.

LVR
Glare control louvers.

Table: Compliance with Section 4.199.50(.01)D:

4.199.50(.01)D. [Applicants shall submit] Calculations demonstrating compliance with Oregon Energy Efficiency Specialty Code, Exterior Lighting, as modified by Section 4.199.40(.01)(B.)(2.)

Shielded Fixture Type	Label	Count	Input Watts/Unit	Total Watts	Watts/Area (SF) (181,598 SF parking & landscape) See Note 1
Pole-Mounted GLEON SA3C 740 U T4FT HSS	A	5	166	830	0.005
Pole-Mounted GLEON SA2C 740 U T2R	A2	6	113	678	0.004
Wall-Mounted GLEON SA3C 740 U T4FT	W	9	166	1494	0.008
Wall-Mounted GLEON SA2C 740 U T2	W1	3	113	339	0.002
Wall-Mounted GLEON SA4C 740 U T4FT	W2	3	225	675	0.004
Total Proposed Fixtures and Consumption		**26**	-	**4016**	**0.022**
Allowable Maximum Range (Zones 1 – 4)	-	-	-	***12,224 Watts See Note 2***	***0.067 / SF See Note 2***
Proposed Power Consumption as % of Allowable Maximum Per Code	-	-	-	**33%**	**33%**

Notes:

1. Total Outdoor Illumination Area based on Site Plan (C1.10):

Subarea	SF	Max Watts/SF	Max Watts
Paved Areas	124,011		
Parking	24,182	0.08	1,935
Other (e.g., Access/Circulation/Dock)	99,829	0.08	7,986
Parking Landscape Area	3,522	0.04	141
Landscape Area	54,065	0.04	2,163
	181,598	0.067	**12,224**

2. For buildings in Zones 1 through 4, maximum energy consumption standards allow a range between 0.03 and 0.08 W/SF for Uncovered Parking Areas, and between 0.03 and 0.04 W/SF for Landscaping Areas.

COFFEE CREEK INDUSTRIAL DEVELOPMENT

TRANSPORTATION IMPACT STUDY

NOVEMBER 2021

PREPARED FOR:

WILSONVILLE
OREGON

PREPARED BY DKS ASSOCIATES

Scott Mansur, P.E., PTOE

Jenna Bogert, P.E.

DKS

117 COMMERCIAL STREET NE, SUITE 310, SALEM, OR 97301 • 503.391.8773 • DKSASSOCIATES.COM

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INTRODUCTION

This study evaluates the transportation impacts associated with the proposed Coffee Creek Industrial building to be located on 25020 Garden Acres Road in Wilsonville, Oregon. The project site is located in the Coffee Creek Industrial Design Overlay District (DOD). Based on the information provided by the City, the project will consist of a 148,500 square-foot industrial building.

The purpose of this transportation impact analysis is to identify potential mitigation measures needed to offset transportation impacts that the proposed development may have on the nearby transportation network. The impact analysis is focused on the study intersections, which were selected for evaluation in coordination with City staff. The intersections are listed below and shown in Figure 1.

1. Boones Ferry Road/Day Road
2. Grahams Ferry Road/Day Road
3. Boones Ferry Road/95th Ave
4. I-5 Southbound Ramps/Elligsen Road
5. I-5 Northbound Ramps/Elligsen Road

This chapter introduces the proposed development. Table 1 lists important characteristics of the study area and proposed project.

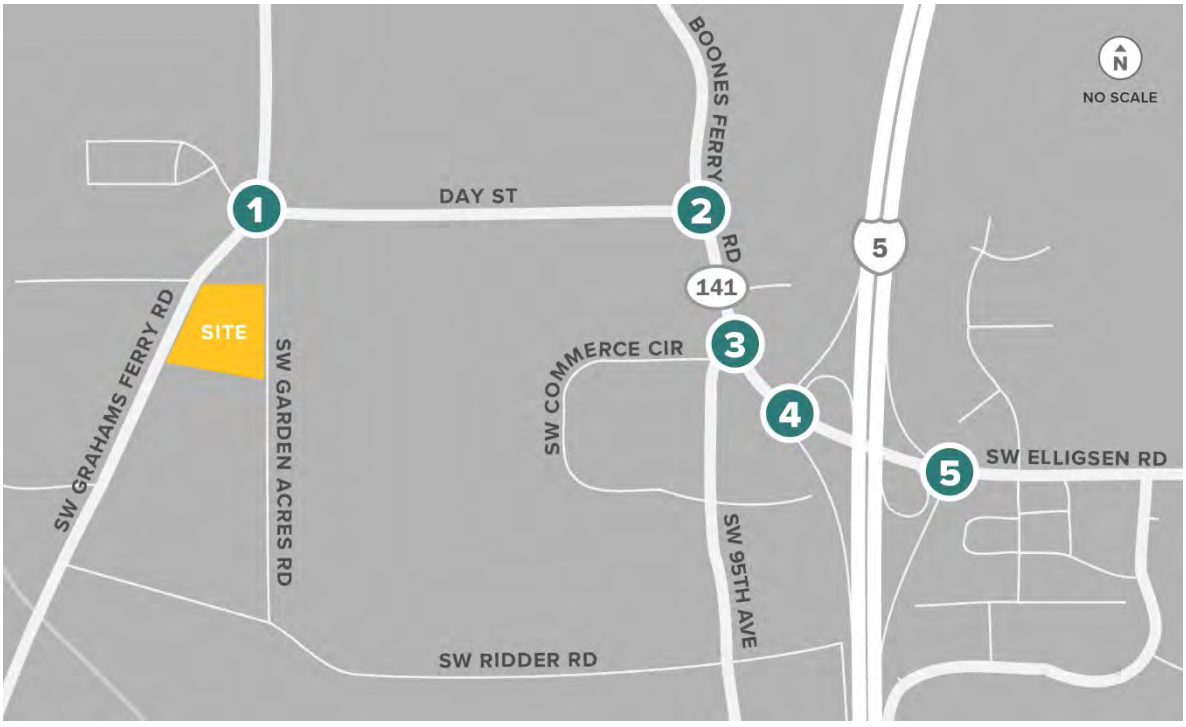


FIGURE 1: STUDY AREA

TABLE 1: STUDY AREA AND PROPOSED PROJECT CHARACTERISTICS

STUDY AREA	
NUMBER OF STUDY INTERSECTIONS	Five
ANALYSIS PERIODS	Weekday PM peak hour (one hour between 4pm – 6pm)
PROPOSED DEVELOPMENT	
SIZE AND LAND USE	148,500 square-foot industrial building
PROJECT TRIPS	178 total PM peak hour trips (69 in, 109 out)
VEHICLE ACCESS POINTS	Three full accesses to the site will be provided. One full driveway on Garden Acres Road and two via the Supporting Street on the south edge of the site, which will connect Garden Acres Road and Grahams Ferry Road.
OTHER TRANSPORTATION FACILITIES	
PEDESTRIAN AND BICYCLE FACILITIES	Sidewalks do not currently exist along Grahams Ferry Road or Garden Acres Road fronting the project site. There is an existing separated bicycle facility on the east side of Garden Acres Road.
TRANSIT FACILITIES	Bus stop for SMART Transit Route 5 is located on Grahams Ferry Road adjacent to the site

EXISTING CONDITIONS

This chapter provides documentation of existing study area conditions, including the study area roadway network, pedestrian and bicycle facilities, and existing traffic volumes and operations.

STUDY AREA ROADWAY NETWORK

Key roadways in the study area are summarized in Table 2 along with their existing roadway characteristics. The functional classifications for City of Wilsonville streets are provided in the City of Wilsonville Transportation System Plan (TSP).[1]

[1] Wilsonville Transportation System Plan, Amended November 16, 2020.

TABLE 2: STUDY AREA ROADWAY CHARACTERISTICS

ROADWAY	FUNCTIONAL CLASSIFICATION	LANES	POSTED SPEED	SIDEWALKS	BIKE FACILITIES	ON-STREET PARKING
DAY ROAD	Major Arterial	3	40 mph	South Side Only	Yes	No
GRAHAMS FERRY ROAD	Collector [a] *(currently Washington County jurisdiction along project frontage)*	2	45 mph	West Side Only, Cahalin Rd to Day Rd	No	No
BOONES FERRY ROAD	Major Arterial	3-4	35 mph [b] 45 mph [c]	Yes	Yes	No
ELLIGSEN ROAD	Major Arterial	4	35 mph	Yes	Yes	No
GARDEN ACRES ROAD	Minor Arterial	2	35 mph	East Side Only	Yes	No

[a] Functional classification south of Day Road.
[b] Posted speed limit on Boones Ferry Road is 35 mph south of Day Road.
[c] Posted speed limit on Boones Ferry Road is 45 mph north of Day Road.

BICYCLE AND PEDESTRIAN FACILITIES

There are existing marked bicycle lanes on Day Road, Boones Ferry Road, Elligsen Road, and Garden Acres Road (no bike facilities on Grahams Ferry Road). There are full or partial sidewalks on all study roadways.

PUBLIC TRANSIT SERVICE

South Metro Area Regional Transit (SMART) provides public transportation services within Wilsonville and outlying areas, including Canby, Salem, and the south end of Portland. There is one bus stop within ¼ mile of the project site that is serviced by Route 5. The bus stop is located at the intersection of Grahams Ferry Road/Day Road, approximately 500 feet from the project site.

Route 5 provides service between Wilsonville Transit Center and Commerce Circle. Service is provided Monday through Friday with headways of 30 mins between the hours of 5:15 am – 10 am and 3 pm – 7 pm.

PLANNED PROJECTS

The City of Wilsonville Transportation System Plan (TSP) has a list of Higher Priority projects which includes the recommended projects reasonably expected to be funded through 2035. These are the

highest priority solutions to meet the City's most important needs. The list includes the following projects that impact the key roadways near the proposed project site.[2]

- SI-07 – Add a second southbound right turn lane to the I-5 Exit Ramp at the Boones Ferry Road intersection.
- SI-08 – Improve operations at the Boones Ferry Road/95th Avenue intersection by removing the east private access approach. Pioneer Court access onto Boones Ferry Road will be right-on/right-out. Additional access will occur via a north-south local street connection between Pioneer Court, passing under the Day Road I-5 overcrossing approach, and a new west-east local street (north of Day Road) with full intersection access at Boones Ferry Road.
- RW-02 – Widen Day Road from Boones Ferry Road to Grahams Ferry Road to include additional travel lanes in both directions along with bike lanes and sidewalks; project includes improvements at the Day Road/Boones Ferry Road and Day Road/Grahams Ferry Road intersections.
- RW-04 – Widen Boones Ferry Road from Day Road to Basalt Creek Parkway to five lanes.
- RE-13 - Construct Java Road from Garden Acres Road to Grahams Ferry Road and install a signal at the Java Road/Grahams Ferry Road intersection and disconnect Clutter Street from Grahams Ferry Road.
- UU-08 – Upgrade Garden Acres Road to a three-lane collector with bicycle lanes and upgrade the Garden Acres Road/Day Road intersection to either a signal or a roundabout. Realign Ridder Road to Garden Acres Road. Close the existing Coffee Creek Correctional Facility driveway to Grahams Ferry Road and relocate the driveway to Cahalin Road.

The Long-term plan for Garden Acres Road will be to update it to a Minor Arterial through street. The traffic volumes will increase and the function of the road will significantly change once the extension and intersection improvements are completed as described in UU-08.

EXISTING TRAFFIC VOLUMES

Intersection turn movement count data was collected on two consecutive weekdays during the p.m. peak period (4:00-6:00 p.m.) at the five study intersections.

In July 2021, ODOT released their final COVID Monitoring Traffic Report, which indicated that statewide traffic levels were approximately back to "pre-COVID" levels (plus or minus 5%). Other local agencies in the area have anecdotally noted similar observations on the local street system. Additionally, the traffic counts were collected when Wilsonville schools were back to full-time, in-person attendance. Therefore, no COVID adjustment was applied to the traffic counts.

[2] Table 5-3/Figure 5-4 and Table 5-4/Figure 5-5, Wilsonville Transportation System Plan, Amended April 15, 2019.

Figure 1 shows the 2021 p.m. peak hour traffic volumes for the study intersections, along with the lane configurations and traffic control. The original two-hour traffic counts are included in the Appendix A.

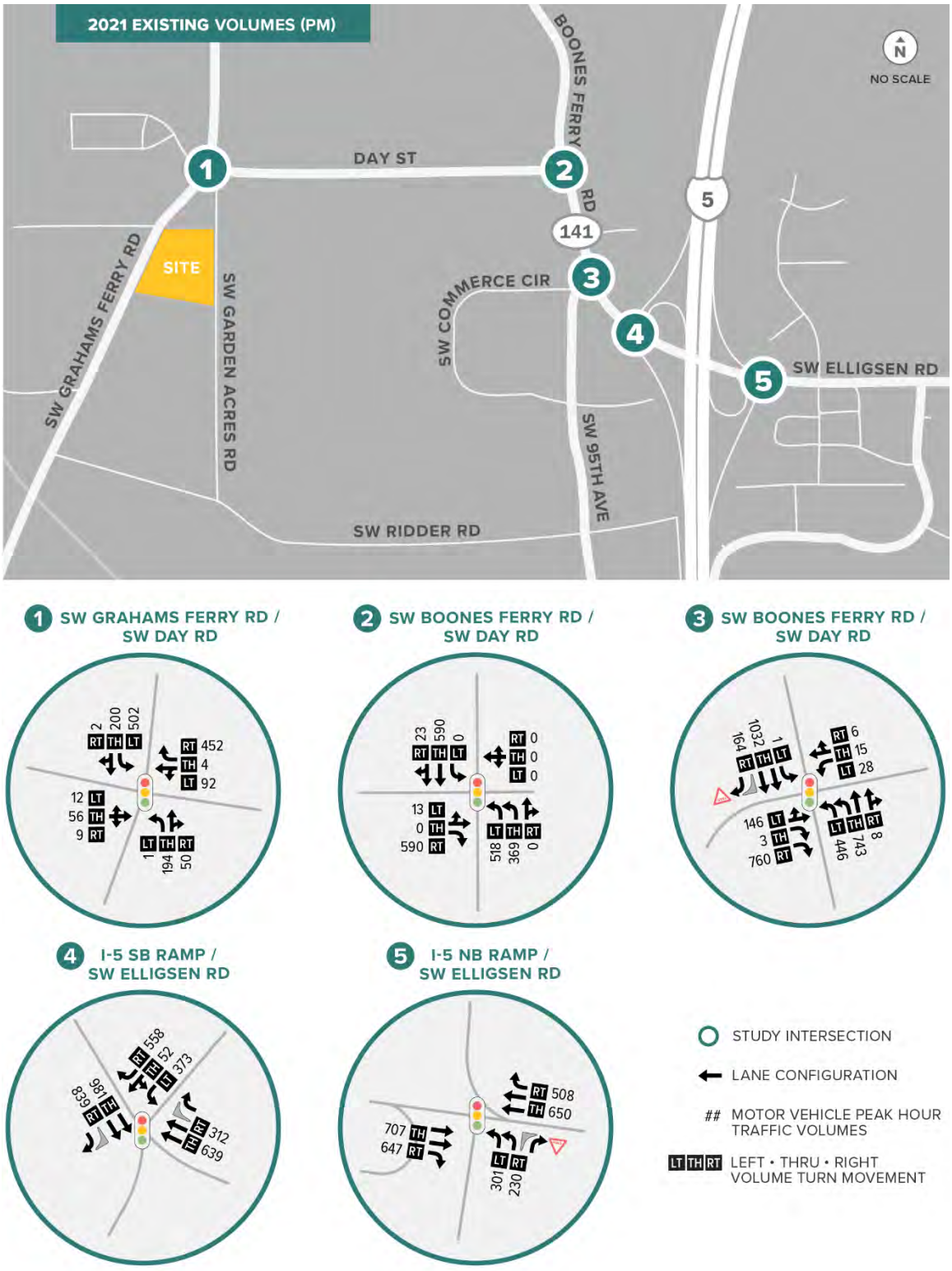


FIGURE 2: 2021 EXISTING TRAFFIC VOLUMES, LANE GEOMETRIES, AND TRAFFIC CONTROL

INTERSECTION PERFORMANCE MEASURES

Agency mobility standards often require intersections to meet level of service (LOS) or volume-to-capacity (V/C) intersection operation thresholds. Additional details about LOS and delay are provided in Appendix B.

- The intersection LOS is similar to a "report card" rating based upon average vehicle delay. Level of service A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. Level of service D and E are progressively worse operating conditions. Level of service F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.

- The volume-to-capacity (v/c) ratio represents the level of saturation of the intersection or individual movement. It is determined by dividing the peak hour traffic volume by the maximum hourly capacity of an intersection or turn movement. When the V/C ratio approaches 0.95, operations become unstable and small disruptions can cause the traffic flow to break down, resulting in the formation of excessive queues.

The City of Wilsonville requires study intersections on public streets to meet its minimum acceptable level of service (LOS) standard, which is LOS D for the overall intersection for the PM peak period.

The two intersections located at the I-5/Elligsen Road interchange are required to meet ODOT mobility targets, which are identified in the METRO Regional Transportation Plan (2018) and the Oregon Highway Plan, Table 7 (1999). For the I-5 corridor between the Marquam Bridge to Wilsonville, the PM peak hour target for the first and second hour is a v/c ratio equal to or less than 0.99.[3]

EXISTING INTERSECTION OPERATIONS

An analysis of the 2020 existing intersection operations was performed at the three study intersections to determine the current operating conditions of the study area. Intersection operations were analyzed for the PM peak hour using Highway Capacity Manual (HCM) 6th Edition methodology.[4] The volume to capacity (v/c) ratio, delay, and level of service (LOS) of each study intersection are listed in Table 3.

[3] Table 2.4, Regional Transportation Plan, METRO, December 6, 2018.

[4] Highway Capacity Manual, 6th Edition, Transportation Research Board, 2017.

TABLE 3: EXISTING 2020 STUDY INTERSECTION OPERATIONS

INTERSECTION	OPERATING STANDARD OR MOBILITY TARGET	PM PEAK HOUR		
		V/C	DELAY	LOS
SIGNALIZED				
BOONES FERRY ROAD / DAY ROAD	LOS D (City)	0.65	12.4	B
GRAHAMS FERRY ROAD / DAY ROAD	LOS D (City)	0.65	15.7	B
BOONES FERRY ROAD / 95TH AVE	LOS D (City)	0.69	20.3	C
I-5 SOUTHBOUND RAMPS / ELLIGSEN RD	v/c ≤ 0.99 (ODOT)	0.75	9.3	A
I-5 NORTHBOUND RAMPS / ELLIGSEN RD	v/c ≤ 0.99 (ODOT)	0.40	7.2	A

SIGNALIZED INTERSECTION:
Delay = Average Intersection Delay (secs)
v/c = Total Volume-to-Capacity Ratio
LOS = Total Level of Service

As shown, all study intersections meet the operating standard (LOS D) and ODOT mobility target for the existing conditions. The HCM reports are provided in Appendix C.

PROJECT IMPACTS

This chapter reviews the impacts that the proposed development may have on the study area transportation system. This analysis includes a site plan evaluation, trip generation and distribution estimates, and future year traffic volumes and operating conditions for the study intersections.

PROPOSED DEVELOPMENT

The proposed industrial development is located at 25020 Garden Acres Road in Wilsonville, Oregon. The project will consist of an industrial building of approximately 148,500 square-foot. The project site is located within the Coffee Creek Industrial Design Overlay District (DOD) and is required to meet the City's DOD standards in the Wilsonville Code Section 4.134. Per the code, a Supporting Street will be constructed along the south end of the site and connect to Garden Acres Road and Grahams Ferry Road.

FUTURE ANALYSIS SCENARIOS

Operating conditions were analyzed at the study intersections for the following traffic scenarios. The comparison of the following scenarios enables the assessment of project impacts:

- Existing + Stage II

- Existing + Project
- Existing + Stage II + Project

All future analysis scenarios assume the same traffic control as existing conditions. Stage II represents traffic from other developments that have Stage II approval or are under construction in Wilsonville.

TRIP GENERATION

Trip generation is the method used to estimate the number of vehicles added to site driveways and the adjacent roadway network by a development during a specified period (e.g., the PM peak hour). For this study, the Institute of Transportation Engineers (ITE) trip generation rates for High-Cube Fulfillment Center Warehouse - Sort (155) were used[5] at the request of the developer. Currently, a tenant has not been identified for the proposed site and so the developer requested to analyze the project site as a Fulfillment Center, which has a higher trip generation than other industrial land uses, such as manufacturing or warehousing. The total trip generation for the proposed development is shown in Table 4.

TABLE 4: VEHICLE TRIP GENERATION

LAND USE (ITE CODE)	SIZE [a]	PM PEAK TRIP RATE	PM PEAK TRIPS			DAILY TRIPS
			IN	OUT	TOTAL	
High-Cube Fulfillment Center Warehouse (155) (Sort)	148.5 KSF	1.20 trips per KSF	69	109	178	956

[a] KSF = 1,000 square feet

As shown, the proposed development is expected to generate a total 178 PM peak hour trips (69 in, 109 out). The project trips at the study intersections are shown in Figure 2 in the following section.

VEHICLE TRIP DISTRIBUTION

Vehicle trip distribution provides an estimation of where vehicles would be coming from and going to. It is given as a percentage at key gateways to the study area and is used to route project trips through the study intersections. Figure 2 shows the trip distribution for the proposed site. The trip distribution was based on the Wilsonville Travel Demand Model.[6]

[5] Trip Generation Manual, 11th Edition, Institute of Transportation Engineers, 2021.

[6] Select zone analysis for zone 4031 in 2035 Wilsonville Travel Demand Model.

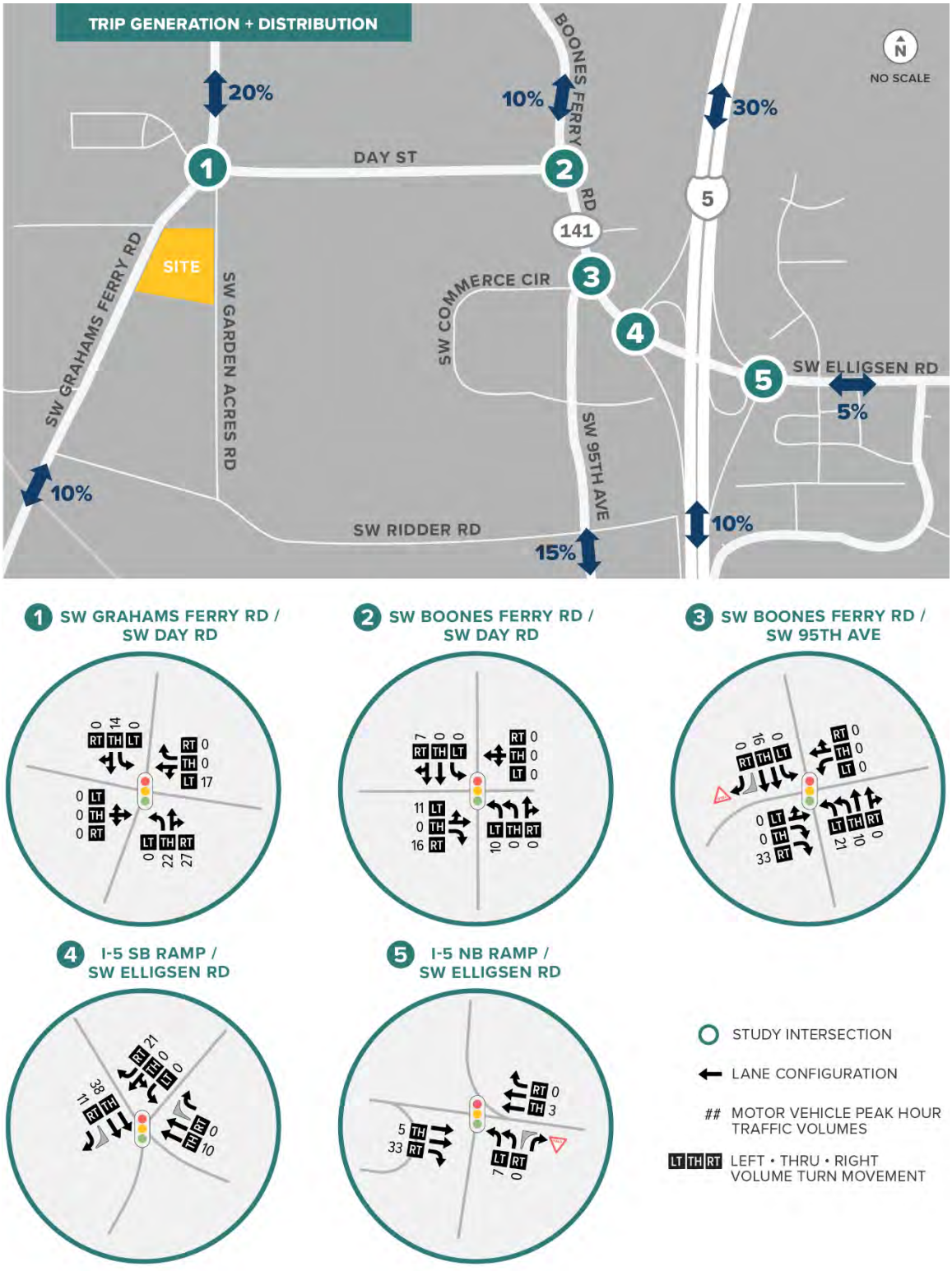


FIGURE 3: TRIP DISTRIBUTION AND PROJECT TRIPS

PROJECT TRIPS THROUGH CITY OF WILSONVILLE INTERCHANGE AREAS

The project trips through the two City of Wilsonville I-5 interchange areas were estimated based on the trip generation and distribution assumptions as discussed prior.

Approximately 5% of the project trips are expected to travel through the I-5/Wilsonville Road interchange area and 45% are expected to travel through the I-5/Elligsen Road interchange area; that is, the proposed development is expected to generate 9 new PM peak hour trips through the I-5/Wilsonville Road interchange area and 80 new PM peak hour trips through the I-5/Elligsen Road interchange area.

FUTURE TRAFFIC VOLUMES

Traffic volumes were estimated at the study intersections for the two future analysis scenarios. The future scenarios include various combinations of three types of traffic: Existing, Project, and Stage II. Stage II development trips are estimated based on the list of currently approved Stage II developments provided by City staff.[7] The Stage II list is included in Appendix D. Figure 3 shows the PM peak hour traffic volumes used to analyze the two future scenarios.

[7] Email from Daniel Pauly, City of Wilsonville, September 21, 2021.

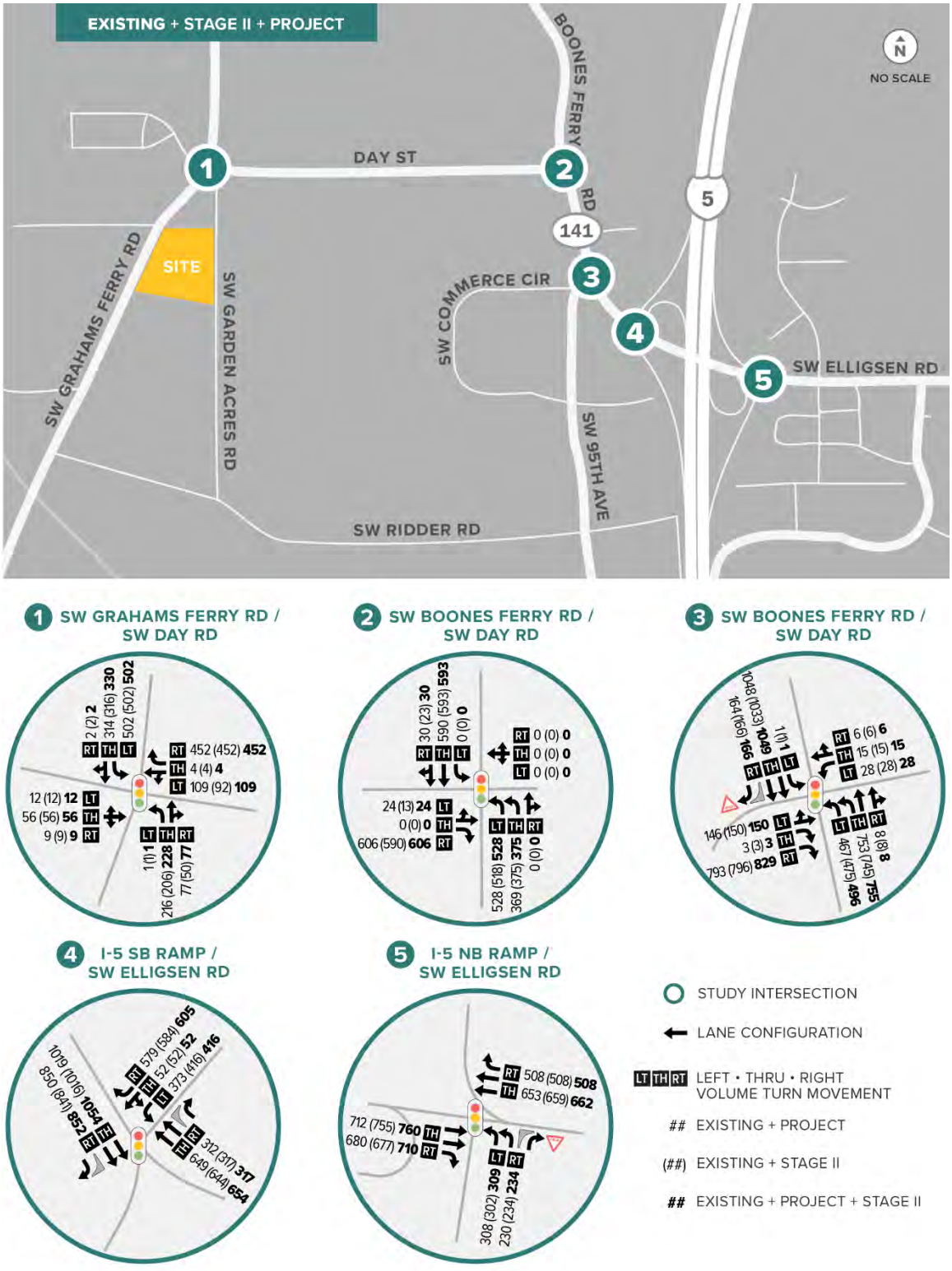


FIGURE 4: FUTURE PM PEAK HOUR TRAFFIC VOLUMES

FUTURE INTERSECTION OPERATIONS

Future operating conditions were analyzed based on the traffic volumes shown in Figure 3. The intersection operations for all future scenarios are shown in Table 5 for the five study intersections and the two new intersections of the Supporting Street with Grahams Ferry Road and Garden Acres Road. The HCM reports are provided in Appendices E – G.

TABLE 5: FUTURE INTERSECTION OPERATIONS

INTERSECTION	OPERATING STANDARD OR MOBILITY TARGET	EXISTING + PROJECT			EXISTING + STAGE II			EXISTING + STAGE II + PROJECT		
		V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS
SIGNALIZED										
BOONES FERRY ROAD / DAY ROAD	LOS D (City)	0.78	15.3	B	0.66	12.5	B	0.79	15.6	B
GRAHAMS FERRY ROAD / DAY ROAD	LOS D (City)	0.66	16.2	B	0.65	15.7	B	0.67	16.2	B
BOONES FERRY ROAD / 95TH AVE	LOS D (City)	0.71	20.6	C	0.71	20.6	C	0.73	20.9	C
I-5 SOUTHBOUND RAMPS / ELLIGSEN RD	v/c ≤ 0.99 (ODOT)	0.78	9.8	A	0.78	10.0	B	0.81	10.7	B
I-5 NORTHBOUND RAMPS / ELLIGSEN RD	v/c ≤ 0.99 (ODOT)	0.40	7.2	A	0.42	7.1	A	0.42	7.1	A
STOP-CONTROLLED										
GRAHAMS FERRY RD / SUPPORTING ST	LOS D (City)							0.10	11.4 WBL/R	B
GARDEN ACRES RD / SUPPORTING ST	LOS D (City)							0.04	8.6 EBL/R	A

SIGNALIZED INTERSECTION:
Delay = Average Intersection Delay (secs)
v/c = Total Volume-to-Capacity Ratio
LOS = Total Level of Service

UNSIGNALIZED INTERSECTION (STOP-CONTROLLED):
Delay = Critical Movement Delay (secs)
v/c = Critical Movement Volume-to-Capacity Ratio
LOS = Critical Levels of Service

As shown, the study intersections, including the new public intersections with the Supporting Street, are expected to meet the City's operating standard and ODOT mobility target under the future analysis scenarios.

Although the traffic volumes on Garden Acres Road are low today due to the lack of connectivity, the City's long-term plan for Garden Acres Road will be to update it to a minor arterial through street by connecting it to the Day Road/Grahams Road intersection. Once the extension and intersection improvements are completed as described in TSP project UU-08, the traffic volumes on Garden Acres Road are expected to increase and the function of the road will significantly change.

LEFT TURN LANE WARRANTS

DKS also evaluated the need for left-turn lanes on Garden Acres Road and Grahams Ferry Road at the Supporting Street intersections. Left-turn lanes were evaluated based on the *Existing + Stage II + Project* PM peak hour volumes as shown in Figure 5.

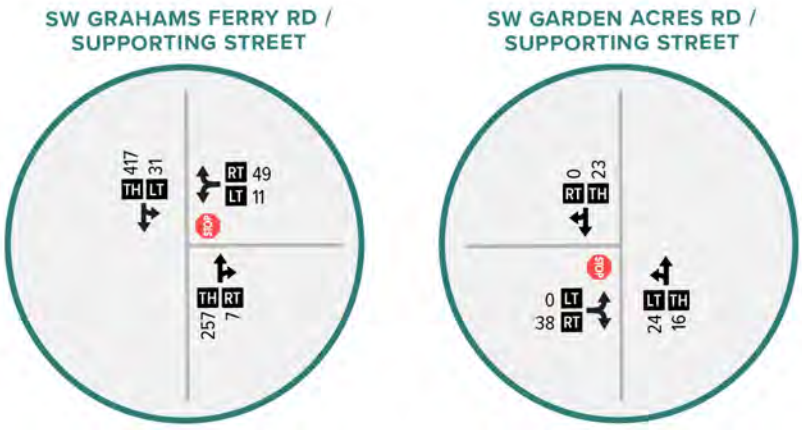


FIGURE 5: SUPPORTING STREET INTERSECTION PM PEAK HOUR TRAFFIC VOLUMES

Guidance for determining whether left-turn lanes at unsignalized intersections are warranted can be found in the ODOT Analysis Procedures Manual (APM).[8] The guidance provides three criteria to consider for left-turn lanes: Volume, Crash, and Special Case. If one or more of these criteria are met, a left-turn lane should be considered.

As shown in Table 6 below, the intersection of Grahams Ferry Road & Supporting Street does meet the volume criteria for a southbound left-turn lane on Grahams Ferry Road based on the *Existing + Stage II + Project* PM peak hour volumes. Refer to the appendix for the volume details.

TABLE 6: LEFT-TURN LANE CRITERIA

CRITERIA	GRAHAMS FERRY RD AT SUPPORTING STREET (SOUTHBOUND LEFT)	GARDEN ACRES ROAD AT SUPPORTING STREET (NORTHBOUND LEFT)	SBL ON GRAHAMS FERRY RD	NBL ON GARDEN ACRES RD
			CRITERION MET?	
VOLUME	Minimum of 10 left turns & based on volume of approaching and opposing vehicles [a]	Minimum of 10 left turns & based on volume of approaching and opposing vehicles [b]	**YES**	NO
CRASH	History of crashes susceptible to correction by a left-turn lane		NO	NO
SPECIAL CASE	Presence of railroad crossings, geometric constraints, non-traversable medians, other		NO	NO

[a] Grahams Ferry Road: 31 left turning vehicles per hour, 712 Opposing + Advancing vehicles per hour
[b] Garden Acres Road: 24 left turning vehicles per hour, 63 Opposing + Advancing vehicles per hour

[8] https://www.oregon.gov/odot/Planning/Documents/APMv2_Ch12.pdf

Based on the peak hour vehicle volumes and the left-turn lane guidance from ODOT, DKS recommends that a southbound left-turn pocket be installed on Grahams Ferry Road at the proposed Supporting Street intersection.

SITE REVIEW

The following sections discuss the site access and sight distance, pedestrian and bicycle facilities, and the parking for the proposed development. The site plan is provided in the appendix and shows a Supporting Street that will be constructed along the south end of the site and will provide access to the site.

SITE ACCESSES

Access is proposed at the north end of the site on Garden Acres Road as well as via the Supporting Street at the south end of the site. The required Supporting Street will connect Garden Acres Road and Grahams Ferry Road and shall be designed to the street standards provided in Wilsonville Code Section 4.134.

The site driveway on the northeast corner of the property will serve the north employee lot and the truck court. The Supporting Street will serve the south employee parking lot and provide access to the truck parking and loading bays on the west side of the building.

The proposed site driveway (northeast corner of site) on Garden Acres Road is required to meet the City's public works construction standards.[9] The access spacing standard for an access on a Minor Arterial is to be a minimum 600 feet. The approximate spacing between the northeast access on Garden Acres Road and the Supporting Street to the south is 635 feet, meeting the City's minimum standard.

SIGHT DISTANCE

With an assumed design speed of 40 miles per hour, the sight distance requirement along Garden Acres Road is 445 feet for vehicles turning left from the minor roadway and 385 feet for vehicles turning right from the minor roadway.[10] Preliminary sight distance was evaluated at the approximate site driveway location on Garden Acres Road and at the proposed Supporting Street intersection. Both were found to have sufficient sight distance to meet the stated requirements.

Preliminary sight distance was also evaluated at the proposed location of the Supporting Street intersection with Grahams Ferry Road. Existing trees and vegetation on the subject property (that will be removed during construction) currently blocks sight distance looking to the right from the Supporting Street intersection. It is recommended that a formal sight distance evaluation be

[9] Table 2.12 Public Works Construction Standards, City of Wilsonville, 2017.

[10] Table 9-7 and 9-9, A Policy on Geometric Design of Highways and Streets, 7th Edition, American Association of State Highway and Transportation Officials (AASHTO), 2018 with 2019 Errata.

performed at the proposed intersection once trees and vegetation are removed to determine whether sufficient sight distance is available to meet AASHTO requirements.

Prior to occupancy, sight distance at any new or modified access points will need to be verified, documented, and stamped by a registered professional Civil or Traffic Engineer licensed in the State of Oregon.

FRONTAGE IMPROVEMENTS

Based on the City's street cross-section design standards,[11] Garden Acres Road is required to have three travel lanes, sidewalks, planter strips, and bike lanes. The project sponsor will be required to build half-street improvements on Garden Acres Road along the project site frontage (approximately 630 feet) that meet the City's design standards for Garden Acres Road project cross section (see Appendix J).

As part of the project, Grahams Ferry Road fronting the project site will be annexed into City limits and become City jurisdiction. The classification will be a Minor Arterial and therefore, the project sponsor is required to build half-street improvements along the project frontage (approximately 600 feet) that meet the City's Minor Arterial standards.[12]

PEDESTRIAN AND BICYCLE FACILITIES

On-site, sufficient pathways are provided between the staff parking lots and the warehouse building. No additional pedestrian or bicycle improvements are recommended on-site.

PARKING

The proposed project is required to comply with the City code for the number of vehicular parking stalls and bicycle parking spaces that are provided on site.[13] Table 7 lists the vehicular and bicycle parking requirements for the project site. The parking requirements are based on the building use.

TABLE 7: VEHICLE AND BICYCLE PARKING REQUIREMENTS

LAND USE	SIZE (KSF)	MINIMUM RATE	MAXIMUM RATE	SPACES REQUIRED BY CODE		
				VEHICLE MINIMUM	VEHICLE MAXIMUM	BICYCLE MINIMUM
WAREHOUSE	148.5	0.3 stalls/KSF	0.5 stalls/KSF	45	74	7
PROPOSED NUMBER OF STALLS				**74**		**Not Shown**

[11] Wilsonville Transportation System Plan, Amended November 16, 2020.

[12] Exhibit #2, Washington County Road Design and Construction Standards, Adopted February 2011.

[13] Wilsonville Development Code, Section 4.155, Table 5, updated October 2019.

As shown above, 45 vehicular parking stalls are needed to meet the minimum code requirements for the project. The site plan proposes 74 vehicular parking stalls, meeting the requirements.

The City code requires a minimum of 7 bicycle parking spaces for the site. The site plan does not currently show bicycle parking. It is recommended that the final site plan show up to 7 bicycle parking spaces near the building entrance(s) in order to meet the City code requirement.

SUMMARY OF PROJECT IMPACTS

The key findings of the transportation impact study for the Coffee Creek Industrial development are discussed below.

- The proposed development includes the construction of an industrial building up to 148,500 square feet. The subject parcel is located within the Coffee Creek Industrial Design Overlay District.
- The proposed development is expected to generate up to 178 new PM peak hour trips (69 in, 109 out).
- Of those project trips, 9 new trips are expected to travel through the I-5/Wilsonville Road interchange area and 80 new trips are expected to travel through the I-5/Elligsen Road interchange area.
- The traffic operations at the five study intersections and the intersections of the proposed Supporting Street are expected to operate within the City's LOS D standard and ODOT's mobility target under *Existing + Stage II + Project* conditions.
- Based on the left-turn lane warrant evaluation, DKS recommends that a southbound left-turn pocket be installed on Grahams Ferry Road at the proposed Supporting Street intersection.
- Prior to occupancy, sight distance at the proposed project access points will need to be verified, documented, and stamped by a registered professional Civil or Traffic Engineer licensed in the State of Oregon.
- The project sponsor will be required to build half-street improvements on Garden Acres Road along the project site frontage (approximately 630 feet) that meet the City's cross section standard for the Garden Acres Road project (Appendix J). Half-street improvements will also be required on Grahams Ferry Road along the project site frontage (approximately 600 feet) that meet the City's Minor Arterial cross section standards.
- It is recommended that the final site plan show a minimum of 7 bicycle parking spaces near the building entrance(s) in order to meet the City code requirement.

APPENDIX

CONTENTS

APPENDIX A.

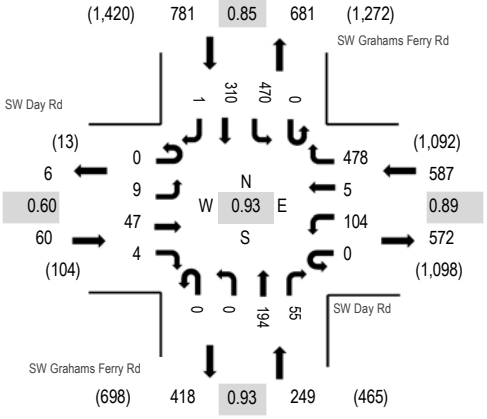
TRAFFIC COUNT DATA

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

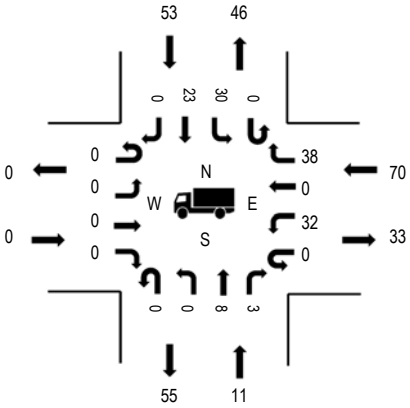
Location: 1 SW Grahams Ferry Rd & SW Day Rd PM
Date: Tuesday, September 21, 2021
Study Peak Hour: 04:10 PM - 05:10 PM
Peak 15-Minutes in Study Peak Hour: 04:35 PM - 04:50 PM

Study Peak Hour (for all study intersections)

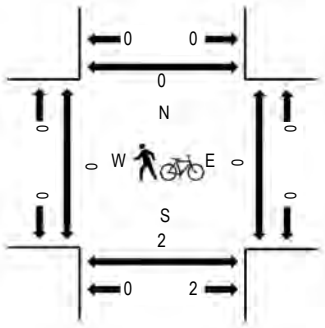
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.60
WB	11.9%	0.89
NB	4.4%	0.93
SB	6.8%	0.85
All	8.0%	0.93

Traffic Counts - Motorized Vehicles

Interval Start Time	SW Day Rd Eastbound				SW Day Rd Westbound				SW Grahams Ferry Rd Northbound				SW Grahams Ferry Rd Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	1	18	2	0	6	0	44	0	0	7	5	0	42	20	1	146	1,696
4:05 PM	0	2	4	0	0	5	0	30	0	0	15	4	0	32	25	0	117	1,660
4:10 PM	0	0	4	0	0	4	0	38	0	0	18	1	0	53	36	0	154	1,677
4:15 PM	0	0	6	0	0	5	1	38	0	0	14	3	0	34	31	0	132	1,661
4:20 PM	0	1	4	1	0	8	0	53	0	0	12	7	0	50	19	0	155	1,641
4:25 PM	0	2	8	0	0	6	0	42	0	0	22	9	0	36	15	0	140	1,630
4:30 PM	0	0	5	1	0	10	0	46	0	0	10	3	0	39	18	0	132	1,618
4:35 PM	0	1	8	0	0	8	1	41	0	0	19	3	0	39	27	0	147	1,600
4:40 PM	0	2	3	0	0	7	0	29	0	0	20	8	0	46	31	0	146	1,542
4:45 PM	0	1	2	0	0	19	1	41	0	0	9	6	0	41	35	1	156	1,510
4:50 PM	0	1	4	0	0	5	0	35	0	0	17	4	0	39	36	0	141	1,477
4:55 PM	0	0	1	1	0	14	1	40	0	0	18	3	0	32	20	0	130	1,433
5:00 PM	0	0	1	1	0	9	0	38	0	0	10	4	0	31	16	0	110	1,385
5:05 PM	0	1	1	0	0	9	1	37	0	0	25	4	0	30	26	0	134	
5:10 PM	0	1	1	1	0	4	0	43	0	0	11	4	0	46	27	0	138	
5:15 PM	0	0	0	0	0	6	1	32	0	0	20	7	0	27	19	0	112	
5:20 PM	0	0	1	1	0	5	1	35	0	0	20	3	0	56	22	0	144	
5:25 PM	0	0	1	0	0	6	0	41	0	1	17	6	0	36	20	0	128	
5:30 PM	0	0	3	1	0	7	0	37	0	0	12	7	0	32	15	0	114	
5:35 PM	0	0	0	0	0	1	0	32	0	0	7	6	0	25	18	0	89	
5:40 PM	0	0	1	0	0	2	0	44	0	0	17	3	0	34	13	0	114	
5:45 PM	0	1	3	0	0	11	0	44	0	0	8	7	0	39	9	1	123	
5:50 PM	0	0	1	0	0	10	0	30	0	0	6	3	0	39	8	0	97	
5:55 PM	0	0	0	1	0	7	2	19	0	0	15	5	0	25	8	0	82	
Count Total	0	14	80	10	0	174	9	909	0	1	349	115	0	903	514	3	3,081	
Peak Hour	0	9	47	4	0	104	5	478	0	0	194	55	0	470	310	1	1,677	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	1	11	9	21	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	5	7	7	19	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	3	6	9	18	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	1	7	7	15	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	2	5	4	11	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	8	4	12	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	1	7	4	12	4:30 PM	0	0	1	0	1	4:30 PM	0	0	0	0	0
4:35 PM	0	2	5	6	13	4:35 PM	0	0	0	0	0	4:35 PM	0	1	0	0	1
4:40 PM	0	0	1	3	4	4:40 PM	0	0	0	0	0	4:40 PM	0	1	0	0	1
4:45 PM	0	1	11	6	18	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	5	6	11	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	8	0	8	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	1	4	2	7	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	3	2	5	5:05 PM	0	0	0	1	1	5:05 PM	0	0	0	0	0
5:10 PM	0	0	5	2	7	5:10 PM	0	0	1	0	1	5:10 PM	0	0	0	0	0
5:15 PM	0	1	5	1	7	5:15 PM	0	1	0	0	1	5:15 PM	0	0	0	0	0
5:20 PM	0	0	2	1	3	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	2	2	4	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	1	4	2	7	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	1	2	3	6	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	1	3	2	6	5:40 PM	0	0	0	1	1	5:40 PM	0	0	0	0	0
5:45 PM	0	1	1	4	6	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	1	4	0	5	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	3	3	0	6	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	0	26	119	86	231	Count Total	0	1	2	2	5	Count Total	0	2	0	0	2
Peak Hour	0	11	70	53	134	Peak Hour	0	0	1	1	2	Peak Hour	0	2	0	0	2

ALL TRAFFIC DATA SERVICES
(303) 216-2439
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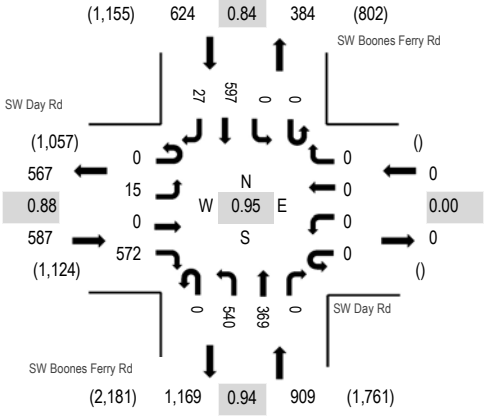
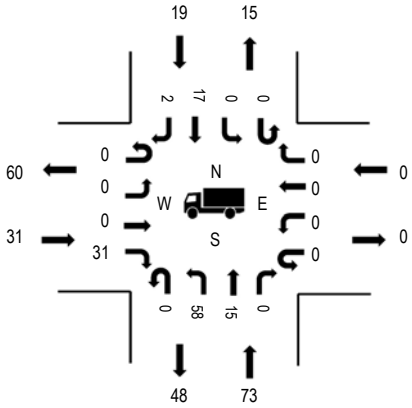
Location: 2 SW Boones Ferry Rd & SW Day Rd PM
Date: Tuesday, September 21, 2021
Study Peak Hour: 04:10 PM - 05:10 PM
Peak 15-Minutes in Study Peak Hour: 04:35 PM - 04:50 PM

Study Peak Hour (for all study intersections)

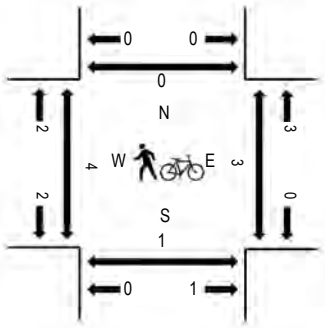
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	5.3%	0.88
WB	0.0%	0.00
NB	8.0%	0.94
SB	3.0%	0.84
All	5.8%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	SW Day Rd Eastbound				SW Day Rd Westbound				SW Boones Ferry Rd Northbound				SW Boones Ferry Rd Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	2	0	64	0	0	0	0	0	30	21	0	0	0	35	6	158	2,101
4:05 PM	0	1	0	50	0	0	0	0	0	43	23	0	0	0	44	4	165	2,100
4:10 PM	0	1	0	50	0	0	0	0	0	42	32	0	0	0	58	3	186	2,120
4:15 PM	0	1	0	47	0	0	0	0	0	37	32	0	0	0	63	2	182	2,094
4:20 PM	0	1	0	54	0	0	0	0	0	51	23	0	0	0	55	5	189	2,072
4:25 PM	0	1	0	60	0	0	0	0	0	53	28	0	0	0	32	4	178	2,064
4:30 PM	0	4	0	46	0	0	0	0	0	45	30	0	0	0	42	2	169	2,040
4:35 PM	0	0	0	50	0	0	0	0	0	46	37	0	0	0	41	2	176	2,026
4:40 PM	0	3	0	49	0	0	0	0	0	47	38	0	0	0	42	1	180	1,999
4:45 PM	0	0	0	48	0	0	0	0	0	31	31	0	0	0	68	1	179	1,999
4:50 PM	0	0	0	37	0	0	0	0	0	49	33	0	0	0	47	3	169	1,988
4:55 PM	0	2	0	60	0	0	0	0	0	38	18	0	0	0	51	1	170	1,973
5:00 PM	0	0	0	35	0	0	0	0	0	46	28	0	0	0	45	3	157	1,939
5:05 PM	0	2	0	36	0	0	0	0	0	55	39	0	0	0	53	0	185	
5:10 PM	0	1	0	46	0	0	0	0	0	39	30	0	0	0	40	4	160	
5:15 PM	0	2	0	35	0	0	0	0	0	34	33	0	0	0	54	2	160	
5:20 PM	0	0	0	54	0	0	0	0	0	43	33	0	0	0	45	6	181	
5:25 PM	0	1	0	50	0	0	0	0	0	40	25	0	0	0	35	3	154	
5:30 PM	0	0	0	40	0	0	0	0	0	41	43	0	0	0	31	0	155	
5:35 PM	0	2	0	29	0	0	0	0	0	35	34	0	0	0	48	1	149	
5:40 PM	0	3	0	36	0	0	0	0	0	53	40	0	0	0	46	2	180	
5:45 PM	0	1	0	46	0	0	0	0	0	35	44	0	0	0	39	3	168	
5:50 PM	0	5	0	39	0	0	0	0	0	33	41	0	0	0	35	1	154	
5:55 PM	0	2	0	28	0	0	0	0	0	28	31	0	0	0	43	4	136	
Count Total	0	35	0	1,089	0	0	0	0	0	994	767	0	0	0	1,092	63	4,040	
Peak Hour	0	15	0	572	0	0	0	0	0	540	369	0	0	0	597	27	2,120	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

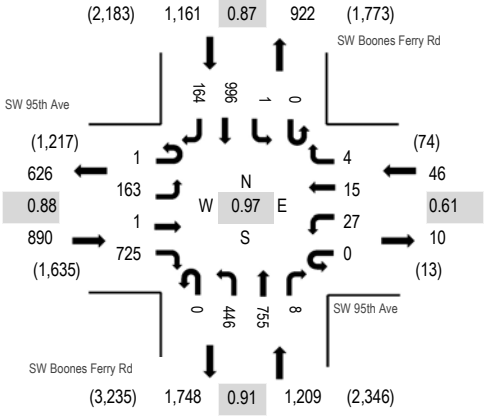
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	8	10	0	1	19	4:00 PM	0	1	0	0	1	4:00 PM	0	0	0	0	0
4:05 PM	3	7	0	1	11	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	3	7	0	2	12	4:10 PM	0	2	0	0	2	4:10 PM	0	0	1	0	1
4:15 PM	6	3	0	3	12	4:15 PM	0	2	0	1	3	4:15 PM	0	0	1	0	1
4:20 PM	1	5	0	2	8	4:20 PM	0	1	0	0	1	4:20 PM	0	0	0	0	0
4:25 PM	4	14	0	1	19	4:25 PM	0	0	0	1	1	4:25 PM	0	0	0	0	0
4:30 PM	3	5	0	0	8	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	2	3	0	1	6	4:35 PM	0	1	0	0	1	4:35 PM	0	0	1	0	1
4:40 PM	2	10	0	1	13	4:40 PM	0	1	0	0	1	4:40 PM	0	0	0	0	0
4:45 PM	2	5	0	3	10	4:45 PM	0	0	0	0	0	4:45 PM	2	1	0	0	3
4:50 PM	3	9	0	3	15	4:50 PM	0	0	0	1	1	4:50 PM	2	0	0	0	2
4:55 PM	2	3	0	1	6	4:55 PM	0	0	0	2	2	4:55 PM	0	0	0	0	0
5:00 PM	2	4	0	1	7	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	1	5	0	1	7	5:05 PM	0	0	0	1	1	5:05 PM	0	0	0	0	0
5:10 PM	1	5	0	0	6	5:10 PM	0	0	0	1	1	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1	5:15 PM	0	1	0	1	2	5:15 PM	0	0	0	0	0
5:20 PM	0	3	0	4	7	5:20 PM	0	1	0	0	1	5:20 PM	0	0	0	0	0
5:25 PM	2	1	0	1	4	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	2	5	0	0	7	5:30 PM	1	0	0	0	1	5:30 PM	0	0	0	0	0
5:35 PM	3	1	0	1	5	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	3	4	0	0	7	5:40 PM	0	1	0	0	1	5:40 PM	0	0	0	0	0
5:45 PM	3	2	0	1	6	5:45 PM	0	1	0	0	1	5:45 PM	0	0	0	0	0
5:50 PM	1	6	0	1	8	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	4	0	1	5	5:55 PM	0	2	0	0	2	5:55 PM	0	0	1	0	1
Count Total	57	121	0	31	209	Count Total	1	14	0	8	23	Count Total	4	1	4	0	9
Peak Hour	31	73	0	19	123	Peak Hour	0	7	0	6	13	Peak Hour	4	1	3	0	8

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

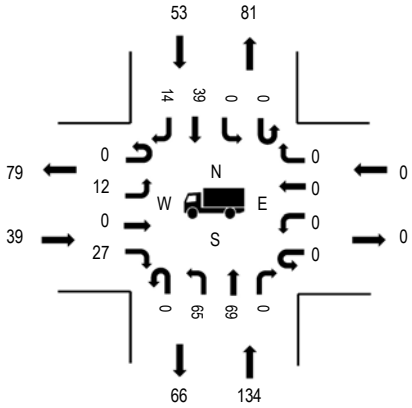
Location: 3 SW Boones Ferry Rd & SW 95th Ave PM
Date: Tuesday, September 21, 2021
Study Peak Hour: 04:10 PM - 05:10 PM
Peak 15-Minutes in Study Peak Hour: 04:35 PM - 04:50 PM

Study Peak Hour (for all study intersections)

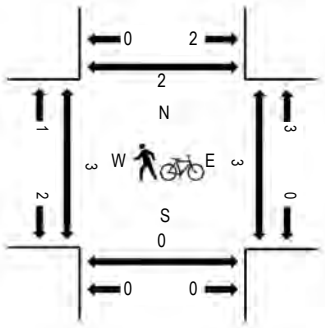
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.4%	0.88
WB	0.0%	0.61
NB	11.1%	0.91
SB	4.6%	0.87
All	6.8%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	SW 95th Ave Eastbound				SW 95th Ave Westbound				SW Boones Ferry Rd Northbound				SW Boones Ferry Rd Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	11	0	55	0	2	1	0	0	41	43	1	0	0	82	17	253	3,293
4:05 PM	0	10	0	85	0	2	2	0	0	41	55	1	0	0	81	10	287	3,298
4:10 PM	0	18	0	77	0	2	2	0	0	26	59	2	0	0	78	11	275	3,306
4:15 PM	0	11	0	56	0	3	0	0	0	36	74	1	0	0	103	18	302	3,295
4:20 PM	0	16	0	62	0	1	1	0	0	36	50	0	0	0	95	17	278	3,249
4:25 PM	0	13	0	39	0	0	1	1	0	34	67	1	0	0	83	17	256	3,216
4:30 PM	0	16	0	62	0	3	0	0	0	39	66	2	0	0	73	16	277	3,233
4:35 PM	0	15	0	91	0	5	1	1	0	43	78	1	0	0	59	10	304	3,174
4:40 PM	0	15	0	50	0	0	1	0	0	29	56	0	0	0	101	6	258	3,096
4:45 PM	1	13	0	67	0	2	0	0	0	44	61	0	0	0	71	12	271	3,095
4:50 PM	0	9	1	48	0	0	5	0	0	27	65	1	0	1	97	11	265	3,063
4:55 PM	0	10	0	44	0	3	1	1	0	48	52	0	0	0	89	19	267	3,006
5:00 PM	0	14	0	57	0	7	1	1	0	42	54	0	0	0	65	17	258	2,945
5:05 PM	0	13	0	72	0	1	2	0	0	42	73	0	0	0	82	10	295	
5:10 PM	0	17	0	77	0	3	0	0	0	38	51	0	0	0	73	5	264	
5:15 PM	0	14	0	54	0	1	1	0	0	44	47	0	0	0	85	10	256	
5:20 PM	0	10	0	48	0	1	0	0	0	39	68	0	0	0	65	14	245	
5:25 PM	0	8	0	46	0	5	1	1	0	39	69	0	0	0	88	16	273	
5:30 PM	0	10	0	45	0	2	0	0	0	21	63	0	0	0	67	10	218	
5:35 PM	0	14	1	37	0	1	0	0	0	38	60	0	0	0	63	12	226	
5:40 PM	0	9	0	41	0	1	0	0	0	42	80	0	0	0	64	20	257	
5:45 PM	0	18	0	28	0	1	0	0	0	31	70	0	0	0	78	13	239	
5:50 PM	0	15	0	44	0	1	0	0	0	33	54	0	0	0	47	14	208	
5:55 PM	0	8	0	40	0	1	1	0	0	22	46	0	0	0	73	15	206	
Count Total	1	307	2	1,325	0	48	21	5	0	875	1,461	10	0	1	1,862	320	6,238	
Peak Hour	1	163	1	725	0	27	15	4	0	446	755	8	0	1	996	164	3,306	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	6	11	0	9	26	4:00 PM	0	1	0	1	2	4:00 PM	0	0	1	0	1
4:05 PM	1	7	0	3	11	4:05 PM	0	1	0	0	1	4:05 PM	1	0	0	0	1
4:10 PM	7	11	0	5	23	4:10 PM	2	1	0	0	3	4:10 PM	0	0	1	1	2
4:15 PM	5	11	0	9	25	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	3	7	0	3	13	4:20 PM	0	1	0	0	1	4:20 PM	0	0	1	0	1
4:25 PM	4	17	0	6	27	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	2	13	0	5	20	4:30 PM	0	1	0	0	1	4:30 PM	0	0	1	0	1
4:35 PM	3	10	0	4	17	4:35 PM	0	2	0	0	2	4:35 PM	1	0	0	1	2
4:40 PM	2	11	0	3	16	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	5	12	0	3	20	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	3	13	0	6	22	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	1	5	0	4	10	4:55 PM	0	0	0	0	0	4:55 PM	1	0	0	0	1
5:00 PM	3	11	0	2	16	5:00 PM	0	0	0	1	1	5:00 PM	1	0	0	0	1
5:05 PM	1	13	0	3	17	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	2	11	0	0	13	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	4	0	2	6	5:15 PM	1	0	0	0	1	5:15 PM	1	0	0	0	1
5:20 PM	3	8	0	1	12	5:20 PM	1	0	0	0	1	5:20 PM	0	0	0	0	0
5:25 PM	4	7	0	3	14	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	3	5	0	3	11	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	3	6	0	4	13	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	2	7	0	4	13	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	3	6	0	3	12	5:45 PM	2	0	0	0	2	5:45 PM	0	0	0	0	0
5:50 PM	1	5	0	0	6	5:50 PM	0	0	0	0	0	5:50 PM	1	0	0	1	2
5:55 PM	3	7	0	3	13	5:55 PM	0	2	0	0	2	5:55 PM	0	0	2	0	2
Count Total	70	218	0	88	376	Count Total	6	9	0	2	17	Count Total	6	0	6	3	15
Peak Hour	39	134	0	53	226	Peak Hour	2	5	0	1	8	Peak Hour	3	0	3	2	8

ALL TRAFFIC DATA SERVICES
(303) 216-2439
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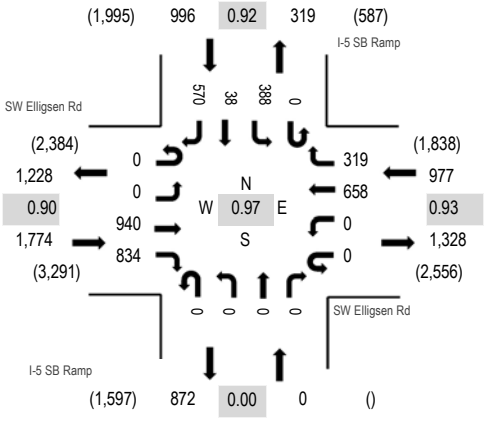
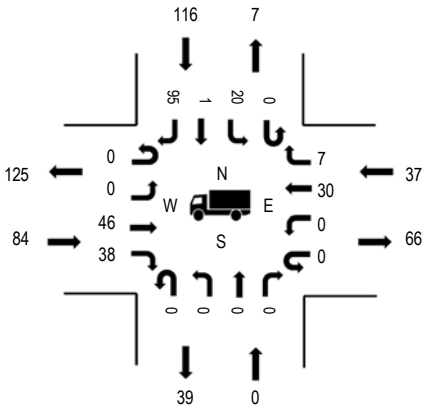
Location: 4 I-5 SB Ramp & SW Elligsen Rd PM
Date: Tuesday, September 21, 2021
Study Peak Hour: 04:10 PM - 05:10 PM
Peak 15-Minutes in Study Peak Hour: 04:35 PM - 04:50 PM

Study Peak Hour (for all study intersections)

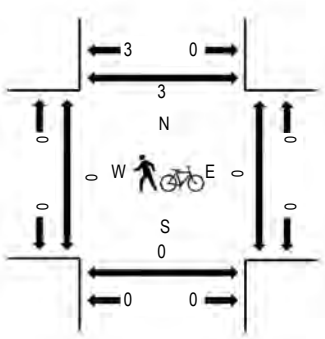
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.7%	0.90
WB	3.8%	0.93
NB	0.0%	0.00
SB	11.6%	0.92
All	6.3%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	SW Elligsen Rd Eastbound				SW Elligsen Rd Westbound				I-5 SB Ramp Northbound				I-5 SB Ramp Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	76	62	0	0	41	33	0	0	0	0	0	38	18	46	314	3,748
4:05 PM	0	0	103	73	0	0	50	23	0	0	0	0	0	33	4	50	336	3,740
4:10 PM	0	0	77	75	0	0	52	31	0	0	0	0	0	31	1	40	307	3,747
4:15 PM	0	0	98	73	0	0	74	33	0	0	0	0	0	27	3	35	343	3,739
4:20 PM	0	0	79	89	0	0	44	18	0	0	0	0	0	18	3	47	298	3,711
4:25 PM	0	0	69	61	0	0	40	19	0	0	0	0	0	36	1	62	288	3,687
4:30 PM	0	0	76	61	0	0	54	22	0	0	0	0	0	34	4	52	303	3,693
4:35 PM	0	0	99	59	0	0	66	26	0	0	0	0	0	26	4	47	327	3,669
4:40 PM	0	0	80	66	0	0	44	34	0	0	0	0	0	48	0	53	325	3,601
4:45 PM	0	0	77	71	0	0	55	24	0	0	0	0	0	37	2	48	314	3,568
4:50 PM	0	0	59	77	0	0	57	21	0	0	0	0	0	31	7	44	296	3,500
4:55 PM	0	0	75	67	0	0	53	26	0	0	0	0	0	27	2	47	297	3,438
5:00 PM	0	0	69	61	0	0	59	25	0	0	0	0	0	40	7	45	306	3,376
5:05 PM	0	0	82	74	0	0	60	40	0	0	0	0	0	33	4	50	343	
5:10 PM	0	0	95	61	0	0	49	25	0	0	0	0	0	29	6	34	299	
5:15 PM	0	0	74	72	0	0	45	28	0	0	0	0	0	37	7	52	315	
5:20 PM	0	0	55	61	0	0	55	29	0	0	0	0	0	27	1	46	274	
5:25 PM	0	0	58	76	0	0	50	11	0	0	0	0	0	38	2	59	294	
5:30 PM	0	0	66	61	0	0	61	30	0	0	0	0	0	24	0	37	279	
5:35 PM	0	0	57	47	0	0	62	18	0	0	0	0	0	32	0	43	259	
5:40 PM	0	0	70	40	0	0	60	13	0	0	0	0	0	53	0	56	292	
5:45 PM	0	0	60	46	0	0	43	17	0	0	0	0	0	32	0	48	246	
5:50 PM	0	0	58	39	0	0	38	13	0	0	0	0	0	34	0	52	234	
5:55 PM	0	0	58	49	0	0	39	28	0	0	0	0	0	21	0	40	235	
Count Total	0	0	1,770	1,521	0	0	1,251	587	0	0	0	0	0	786	76	1,133	7,124	
Peak Hour	0	0	940	834	0	0	658	319	0	0	0	0	0	388	38	570	3,747	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

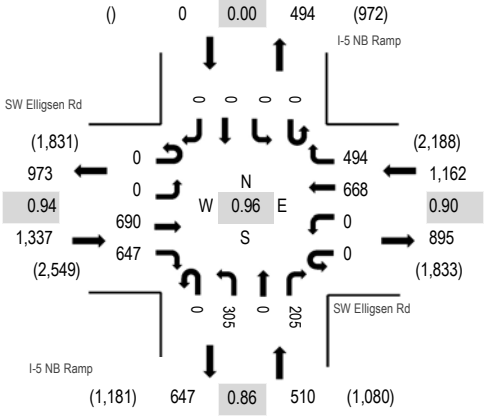
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	11	0	5	12	28	4:00 PM	0	0	1	0	1	4:00 PM	0	1	0	1	2
4:05 PM	3	0	0	7	10	4:05 PM	0	0	0	1	1	4:05 PM	0	0	0	0	0
4:10 PM	8	0	5	9	22	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	11	0	4	8	23	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	1	1
4:20 PM	5	0	5	9	19	4:20 PM	0	0	1	0	1	4:20 PM	0	0	0	0	0
4:25 PM	6	0	3	12	21	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	1	1
4:30 PM	7	0	4	8	19	4:30 PM	0	0	1	1	2	4:30 PM	0	0	0	1	1
4:35 PM	5	0	2	7	14	4:35 PM	0	0	1	0	1	4:35 PM	0	0	0	0	0
4:40 PM	4	0	1	14	19	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	9	0	3	12	24	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	12	0	4	9	25	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	9	0	0	8	17	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	4	0	3	9	16	5:00 PM	1	0	0	0	1	5:00 PM	0	0	0	0	0
5:05 PM	4	0	3	11	18	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	2	0	4	5	11	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	1	0	2	7	10	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	8	0	0	6	14	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	6	0	1	3	10	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	3	0	2	5	10	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	7	0	3	5	15	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	3	0	5	3	11	5:40 PM	0	0	1	0	1	5:40 PM	0	0	0	0	0
5:45 PM	6	0	0	8	14	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	1	4	5	5:50 PM	0	0	0	0	0	5:50 PM	0	1	0	0	1
5:55 PM	5	0	5	7	17	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	139	0	65	188	392	Count Total	1	0	5	2	8	Count Total	0	2	0	4	6
Peak Hour	84	0	37	116	237	Peak Hour	1	0	3	1	5	Peak Hour	0	0	0	3	3

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

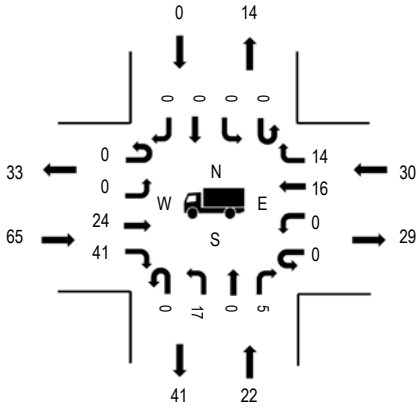
Location: 5 I-5 NB Ramp & SW Elligsen Rd PM
Date: Tuesday, September 21, 2021
Study Peak Hour: 04:10 PM - 05:10 PM
Peak 15-Minutes in Study Peak Hour: 04:35 PM - 04:50 PM

Study Peak Hour (for all study intersections)

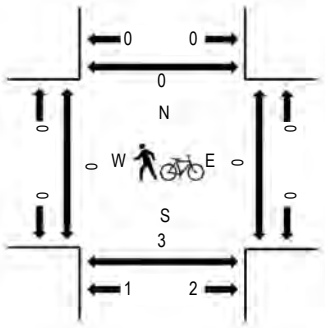
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.9%	0.94
WB	2.6%	0.90
NB	4.3%	0.86
SB	0.0%	0.00
All	3.9%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	SW Elligsen Rd Eastbound				SW Elligsen Rd Westbound				I-5 NB Ramp Northbound				I-5 NB Ramp Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	56	60	0	0	49	48	0	24	0	23	0	0	0	0	260	3,018
4:05 PM	0	0	58	71	0	0	47	43	0	26	0	33	0	0	0	0	278	2,998
4:10 PM	0	0	45	63	0	0	60	34	0	24	0	25	0	0	0	0	251	3,009
4:15 PM	0	0	58	70	0	0	65	49	0	40	0	20	0	0	0	0	302	3,015
4:20 PM	0	0	46	56	0	0	43	22	0	19	0	21	0	0	0	0	207	2,950
4:25 PM	0	0	59	44	0	0	39	44	0	20	0	13	0	0	0	0	219	2,981
4:30 PM	0	0	64	44	0	0	53	47	0	23	0	16	0	0	0	0	247	2,974
4:35 PM	0	0	57	67	0	0	63	42	0	29	0	14	0	0	0	0	272	2,972
4:40 PM	0	0	60	48	0	0	53	41	0	25	0	20	0	0	0	0	247	2,932
4:45 PM	0	0	66	59	0	0	63	40	0	17	0	18	0	0	0	0	263	2,931
4:50 PM	0	0	66	37	0	0	52	31	0	24	0	17	0	0	0	0	227	2,890
4:55 PM	0	0	54	49	0	0	57	42	0	24	0	19	0	0	0	0	245	2,838
5:00 PM	0	0	66	43	0	0	51	43	0	31	0	6	0	0	0	0	240	2,799
5:05 PM	0	0	49	67	0	0	69	59	0	29	0	16	0	0	0	0	289	
5:10 PM	0	0	57	57	0	0	54	55	0	21	0	13	0	0	0	0	257	
5:15 PM	0	0	52	42	0	0	46	43	0	26	0	28	0	0	0	0	237	
5:20 PM	0	0	50	43	0	0	59	38	0	25	0	23	0	0	0	0	238	
5:25 PM	0	0	56	39	0	0	41	39	0	20	0	17	0	0	0	0	212	
5:30 PM	0	0	54	43	0	0	54	34	0	36	0	24	0	0	0	0	245	
5:35 PM	0	0	53	42	0	0	49	41	0	32	0	15	0	0	0	0	232	
5:40 PM	0	0	79	42	0	0	42	32	0	29	0	22	0	0	0	0	246	
5:45 PM	0	0	60	31	0	0	36	42	0	24	0	29	0	0	0	0	222	
5:50 PM	0	0	50	34	0	0	26	31	0	25	0	9	0	0	0	0	175	
5:55 PM	0	0	53	30	0	0	45	32	0	22	0	24	0	0	0	0	206	
Count Total	0	0	1,368	1,181	0	0	1,216	972	0	615	0	465	0	0	0	0	5,817	
Peak Hour	0	0	690	647	0	0	668	494	0	305	0	205	0	0	0	0	3,009	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

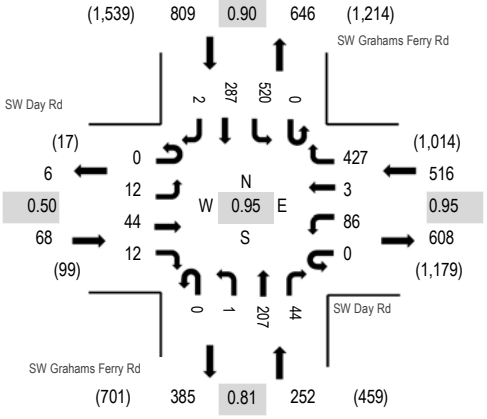
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	6	6	2	0	14	4:00 PM	0	0	1	0	1	4:00 PM	0	0	0	0	0
4:05 PM	2	2	2	0	6	4:05 PM	0	0	0	0	0	4:05 PM	0	1	0	0	1
4:10 PM	6	3	4	0	13	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	8	2	3	0	13	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	4	3	3	0	10	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	3	3	2	0	8	4:25 PM	0	0	0	0	0	4:25 PM	0	2	0	0	2
4:30 PM	5	3	4	0	12	4:30 PM	0	0	1	0	1	4:30 PM	0	0	0	0	0
4:35 PM	6	0	2	0	8	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	7	1	1	0	9	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	4	4	3	0	11	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	5	1	1	0	7	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	7	0	5	0	12	4:55 PM	0	0	0	0	0	4:55 PM	0	1	0	0	1
5:00 PM	3	1	2	0	6	5:00 PM	1	0	0	0	1	5:00 PM	0	0	0	0	0
5:05 PM	7	1	0	0	8	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	1	5	0	0	6	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	1	1	2	0	4	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	5	0	0	0	5	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	4	1	1	0	6	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	2	1	0	0	3	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	5	2	2	0	9	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	3	3	1	0	7	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	3	2	0	0	5	5:45 PM	0	0	0	0	0	5:45 PM	0	1	0	0	1
5:50 PM	1	1	0	0	2	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	3	3	3	0	9	5:55 PM	0	0	1	0	1	5:55 PM	0	0	0	0	0
Count Total	101	49	43	0	193	Count Total	1	0	3	0	4	Count Total	0	5	0	0	5
Peak Hour	65	22	30	0	117	Peak Hour	1	0	1	0	2	Peak Hour	0	3	0	0	3

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

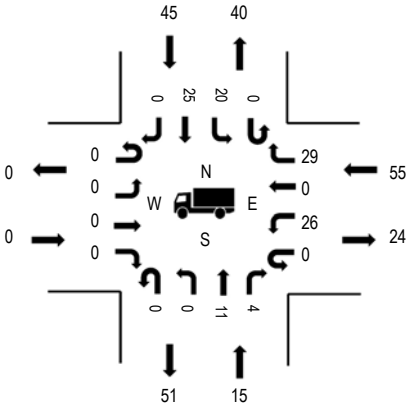
Location: 1 SW Grahams Ferry Rd & SW Day Rd PM
Date: Wednesday, September 22, 2021
Peak Hour: 04:05 PM - 05:05 PM
Peak 15-Minutes: 04:10 PM - 04:25 PM

Peak Hour

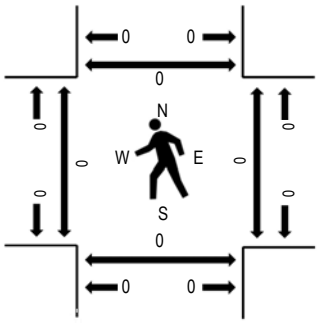
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.50
WB	10.7%	0.95
NB	6.0%	0.81
SB	5.6%	0.90
All	7.0%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	SW Day Rd Eastbound				SW Day Rd Westbound				SW Grahams Ferry Rd Northbound				SW Grahams Ferry Rd Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	14	0	0	5	0	45	0	0	12	3	0	33	19	0	131	1,639
4:05 PM	0	3	10	2	0	9	0	39	0	0	13	3	0	27	19	1	126	1,645
4:10 PM	0	3	7	2	0	4	0	29	0	0	16	0	0	53	27	0	141	1,634
4:15 PM	0	1	3	1	0	9	0	49	0	0	20	5	0	44	23	0	155	1,624
4:20 PM	0	1	2	1	0	9	1	35	0	0	17	4	0	45	21	0	136	1,607
4:25 PM	0	1	0	0	0	8	0	27	0	0	20	5	0	44	30	0	135	1,623
4:30 PM	0	2	6	1	0	5	0	38	0	0	14	6	0	41	20	1	134	1,615
4:35 PM	0	1	5	1	0	5	0	28	0	0	17	4	0	41	25	0	127	1,607
4:40 PM	0	0	5	0	0	10	1	42	0	0	21	2	0	45	26	0	152	1,601
4:45 PM	0	0	0	2	0	9	0	27	0	0	29	6	0	46	18	0	137	1,556
4:50 PM	0	0	2	2	0	3	1	37	0	0	18	3	0	43	23	0	132	1,523
4:55 PM	0	0	4	0	0	11	0	42	0	0	11	2	0	37	26	0	133	1,508
5:00 PM	0	0	0	0	0	4	0	34	0	1	11	4	0	54	29	0	137	1,472
5:05 PM	0	0	0	0	0	3	0	39	0	0	14	4	0	34	21	0	115	
5:10 PM	0	0	0	0	0	5	0	37	0	0	13	6	0	45	25	0	131	
5:15 PM	0	0	3	0	1	6	2	26	0	0	15	7	0	56	22	0	138	
5:20 PM	0	0	2	0	0	5	0	38	0	0	11	10	0	52	34	0	152	
5:25 PM	0	0	2	0	0	7	1	44	0	1	11	5	0	36	20	0	127	
5:30 PM	0	0	3	0	0	3	0	38	0	0	13	7	0	38	24	0	126	
5:35 PM	0	0	2	1	0	8	2	33	0	0	8	4	0	39	24	0	121	
5:40 PM	0	0	2	0	0	4	1	29	0	0	16	5	0	36	14	0	107	
5:45 PM	0	0	0	0	0	6	0	31	0	1	14	2	0	32	18	0	104	
5:50 PM	0	0	1	0	0	5	3	39	0	0	6	2	0	43	18	0	117	
5:55 PM	0	0	1	0	0	7	0	25	0	0	11	6	0	35	12	0	97	
Count Total	0	12	74	13	1	150	12	851	0	3	351	105	0	999	538	2	3,111	
Peak Hour	0	12	44	12	0	86	3	427	0	1	207	44	0	520	287	2	1,645	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

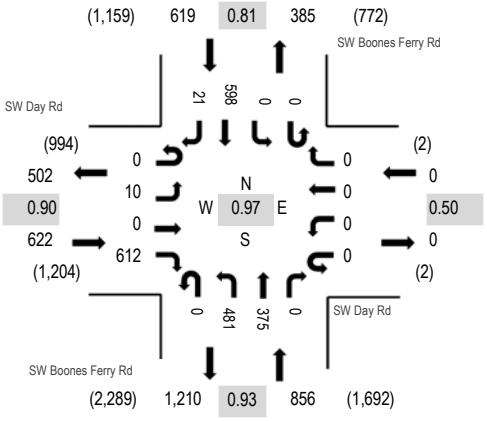
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	2	10	8	20	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	3	6	9	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	3	3	2	8	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	0	3	3	6	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	1	4	2	7	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	2	3	5	10	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	1	6	1	8	4:30 PM	0	0	0	1	1	4:30 PM	0	0	0	0	0
4:35 PM	0	2	4	4	10	4:35 PM	0	0	0	1	1	4:35 PM	0	0	0	0	0
4:40 PM	0	1	5	8	14	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	1	6	5	12	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	2	3	5	10	4:50 PM	0	0	0	1	1	4:50 PM	0	0	0	0	0
4:55 PM	0	1	11	2	14	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	1	4	2	7	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	1	3	1	5	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	3	4	7	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	2	2	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	3	2	5	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	5	4	9	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	1	1	0	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	1	1	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	1	3	1	5	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	2	3	5	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	1	1	3	5	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	2	2	4	8	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	0	23	88	78	189	Count Total	0	0	0	3	3	Count Total	0	0	0	0	0
Peak Hour	0	15	55	45	115	Peak Hour	0	0	0	3	3	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

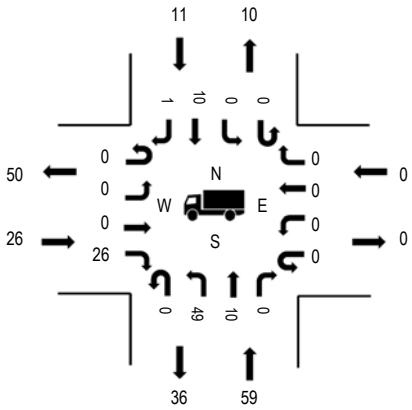
Location: 2 SW Boones Ferry Rd & SW Day Rd PM
Date: Wednesday, September 22, 2021
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:05 PM - 04:20 PM

Peak Hour

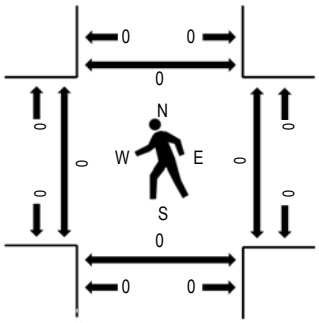
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.2%	0.90
WB	0.0%	0.50
NB	6.9%	0.93
SB	1.8%	0.81
All	4.6%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	SW Day Rd Eastbound				SW Day Rd Westbound				SW Boones Ferry Rd Northbound				SW Boones Ferry Rd Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	0	62	0	0	0	0	0	31	25	0	0	0	39	2	159	2,097
4:05 PM	0	1	0	47	0	0	0	0	0	49	31	0	0	0	52	3	183	2,085
4:10 PM	0	1	0	50	0	0	0	0	0	40	30	0	0	0	58	1	180	2,062
4:15 PM	0	1	0	40	0	0	0	0	0	32	28	0	0	0	74	3	178	2,054
4:20 PM	0	0	0	57	0	0	0	0	0	47	34	0	0	0	42	1	181	2,055
4:25 PM	0	2	0	53	0	0	0	0	0	35	39	0	0	0	38	3	170	2,040
4:30 PM	0	2	0	63	0	0	0	0	0	36	24	0	0	0	36	1	162	2,069
4:35 PM	0	1	0	50	0	0	0	0	0	44	38	0	0	0	44	1	178	2,064
4:40 PM	0	0	0	52	0	0	0	0	0	42	30	0	0	0	43	3	170	2,064
4:45 PM	0	1	0	48	0	0	0	0	0	37	33	0	0	0	55	0	174	2,041
4:50 PM	0	1	0	42	0	0	0	0	0	50	34	0	0	0	57	1	185	2,030
4:55 PM	0	0	0	48	0	0	0	0	0	38	29	0	0	0	60	2	177	1,986
5:00 PM	0	1	0	57	0	0	0	0	0	46	19	0	0	0	24	0	147	1,960
5:05 PM	0	0	0	39	0	0	0	0	0	43	35	0	0	0	38	5	160	
5:10 PM	0	0	0	55	0	0	1	0	0	44	28	1	0	0	41	2	172	
5:15 PM	0	1	0	61	0	0	0	0	0	31	31	0	0	0	55	0	179	
5:20 PM	0	4	0	43	0	0	0	0	0	32	26	0	0	0	59	2	166	
5:25 PM	0	2	0	57	0	0	0	0	0	54	38	0	0	0	46	2	199	
5:30 PM	0	0	0	43	0	0	0	0	0	34	35	0	0	0	43	2	157	
5:35 PM	0	2	0	45	0	0	0	0	0	37	37	0	0	0	53	4	178	
5:40 PM	0	1	0	49	0	0	0	0	0	33	22	0	0	0	42	0	147	
5:45 PM	0	4	0	30	0	0	0	0	0	52	30	0	0	0	46	1	163	
5:50 PM	0	2	0	44	0	0	0	0	1	30	38	0	0	0	24	2	141	
5:55 PM	0	3	0	39	0	0	0	1	0	32	27	0	0	1	45	3	151	
Count Total	0	30	0	1,174	0	0	1	1	1	949	741	1	0	1	1,114	44	4,057	
Peak Hour	0	10	0	612	0	0	0	0	0	481	375	0	0	0	598	21	2,097	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

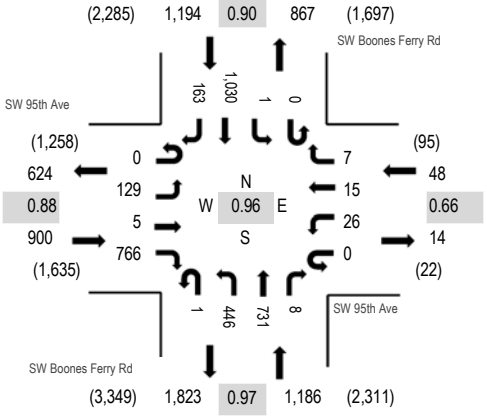
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	5	3	0	3	11	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	2	4	0	1	7	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	1	0	2	3	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	1	4	0	1	6	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	4	0	3	7	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	3	6	0	0	9	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	1	6	0	0	7	4:30 PM	0	2	0	0	2	4:30 PM	0	0	0	0	0
4:35 PM	0	3	0	0	3	4:35 PM	0	0	0	0	0	4:35 PM	0	0	1	0	1
4:40 PM	5	11	0	0	16	4:40 PM	0	2	0	0	2	4:40 PM	0	0	0	0	0
4:45 PM	4	2	0	0	6	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	3	7	0	1	11	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	2	8	0	0	10	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	2	2	0	0	4	5:00 PM	0	1	0	0	1	5:00 PM	0	0	0	0	0
5:05 PM	1	4	0	1	6	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	1	1	0	0	2	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	1	4	0	1	6	5:15 PM	0	1	0	0	1	5:15 PM	0	0	0	0	0
5:20 PM	1	4	0	1	6	5:20 PM	0	0	0	1	1	5:20 PM	0	0	0	0	0
5:25 PM	2	7	0	1	10	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	1	2	0	1	4	5:30 PM	1	0	0	1	2	5:30 PM	0	0	0	0	0
5:35 PM	1	3	0	0	4	5:35 PM	0	1	0	0	1	5:35 PM	0	0	0	0	0
5:40 PM	1	4	0	0	5	5:40 PM	0	0	0	1	1	5:40 PM	1	0	0	0	1
5:45 PM	1	1	0	2	4	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	2	6	0	0	8	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	4	2	0	1	7	5:55 PM	0	0	0	1	1	5:55 PM	0	0	0	0	0
Count Total	44	99	0	19	162	Count Total	1	7	0	4	12	Count Total	1	0	1	0	2
Peak Hour	26	59	0	11	96	Peak Hour	0	4	0	0	4	Peak Hour	0	0	1	0	1

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

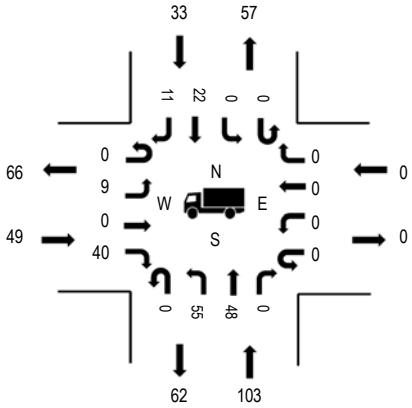
Location: 3 SW Boones Ferry Rd & SW 95th Ave PM
Date: Wednesday, September 22, 2021
Peak Hour: 04:05 PM - 05:05 PM
Peak 15-Minutes: 04:05 PM - 04:20 PM

Peak Hour

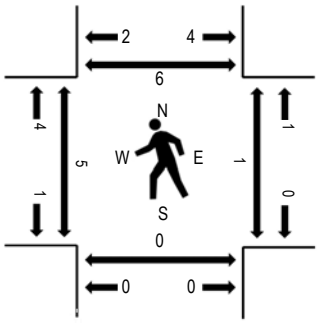
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	5.4%	0.88
WB	0.0%	0.66
NB	8.7%	0.97
SB	2.8%	0.90
All	5.6%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	SW 95th Ave Eastbound				SW 95th Ave Westbound				SW Boones Ferry Rd Northbound				SW Boones Ferry Rd Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	7	0	51	0	3	1	0	0	37	50	0	0	0	92	9	250	3,320
4:05 PM	0	16	3	75	0	1	4	0	0	47	58	0	0	0	74	19	297	3,328
4:10 PM	0	16	0	81	0	3	2	1	0	35	62	3	0	0	91	11	305	3,313
4:15 PM	0	7	0	50	0	1	2	0	0	40	60	0	0	0	87	20	267	3,266
4:20 PM	0	7	0	43	0	1	0	0	0	30	71	2	0	1	110	15	280	3,262
4:25 PM	0	10	0	52	0	4	0	0	0	35	66	0	0	0	77	17	261	3,242
4:30 PM	0	11	0	84	0	3	2	2	0	37	42	1	0	0	90	12	284	3,265
4:35 PM	0	10	0	76	0	1	0	2	0	47	77	0	0	0	83	5	301	3,205
4:40 PM	0	12	1	64	0	3	1	0	0	34	53	0	0	0	85	13	266	3,160
4:45 PM	0	11	0	68	0	1	1	0	0	19	64	1	0	0	90	10	265	3,138
4:50 PM	0	16	0	53	0	2	1	0	0	42	71	0	0	0	78	10	273	3,114
4:55 PM	0	9	0	57	0	3	1	0	1	38	58	1	0	0	87	16	271	3,058
5:00 PM	0	4	1	63	0	3	1	2	0	42	49	0	0	0	78	15	258	3,006
5:05 PM	0	24	1	71	0	5	2	2	0	29	56	1	0	0	78	13	282	
5:10 PM	0	16	0	63	0	4	4	0	0	34	47	2	0	0	77	11	258	
5:15 PM	0	9	0	53	0	4	0	0	0	38	56	1	0	0	84	18	263	
5:20 PM	0	21	0	52	0	2	5	0	0	34	51	0	0	0	81	14	260	
5:25 PM	0	13	0	41	0	3	0	1	0	37	73	0	0	0	96	20	284	
5:30 PM	0	9	0	40	0	0	0	1	0	33	50	2	0	0	76	13	224	
5:35 PM	0	7	0	44	0	1	0	1	0	38	65	0	0	0	83	17	256	
5:40 PM	0	7	0	45	0	3	0	0	0	41	51	0	0	0	83	14	244	
5:45 PM	0	17	0	39	0	1	0	0	1	49	64	0	0	0	59	11	241	
5:50 PM	0	15	0	44	0	3	0	0	0	45	44	0	0	0	53	13	217	
5:55 PM	0	18	0	28	0	1	0	0	0	40	55	1	0	0	62	14	219	
Count Total	0	292	6	1,337	0	56	27	12	2	901	1,393	15	0	1	1,954	330	6,326	
Peak Hour	0	129	5	766	0	26	15	7	1	446	731	8	0	1	1,030	163	3,328	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

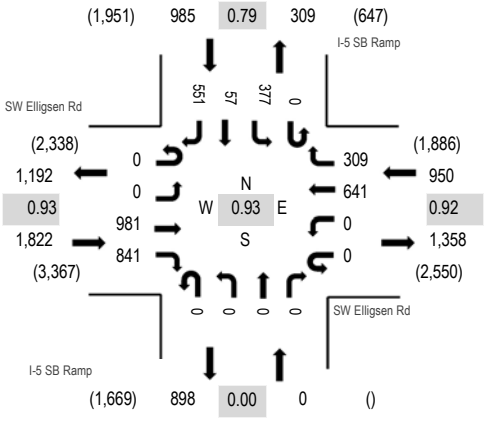
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	4	7	1	8	20	4:00 PM	0	0	0	0	0	4:00 PM	1	0	0	0	1
4:05 PM	5	4	0	4	13	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	2	10	0	1	13	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	4	11	0	1	16	4:15 PM	0	0	0	0	0	4:15 PM	1	0	0	0	1
4:20 PM	4	8	0	3	15	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	1	1
4:25 PM	5	6	0	3	14	4:25 PM	0	0	0	0	0	4:25 PM	0	0	1	2	3
4:30 PM	10	9	0	1	20	4:30 PM	2	0	0	0	2	4:30 PM	1	0	0	1	2
4:35 PM	3	11	0	0	14	4:35 PM	0	0	0	0	0	4:35 PM	2	0	0	0	2
4:40 PM	6	11	0	4	21	4:40 PM	1	0	0	0	1	4:40 PM	0	0	0	1	1
4:45 PM	3	4	0	6	13	4:45 PM	0	0	0	0	0	4:45 PM	1	0	0	1	2
4:50 PM	6	12	0	1	19	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	1	12	0	6	19	4:55 PM	0	1	0	0	1	4:55 PM	0	0	0	0	0
5:00 PM	0	5	0	3	8	5:00 PM	0	0	0	0	0	5:00 PM	1	0	0	0	1
5:05 PM	3	6	0	2	11	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	4	6	0	0	10	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	8	0	2	10	5:15 PM	1	0	0	0	1	5:15 PM	0	0	0	0	0
5:20 PM	4	13	0	0	17	5:20 PM	0	0	0	1	1	5:20 PM	0	0	0	0	0
5:25 PM	5	5	0	3	13	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	5	3	0	2	10	5:30 PM	1	0	0	0	1	5:30 PM	0	0	0	0	0
5:35 PM	4	9	0	2	15	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	5	5	1	1	12	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	6	5	0	2	13	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	6	8	0	2	16	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	1	1
5:55 PM	4	2	0	5	11	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	99	180	2	62	343	Count Total	5	1	0	1	7	Count Total	7	0	1	7	15
Peak Hour	49	103	0	33	185	Peak Hour	3	1	0	0	4	Peak Hour	6	0	1	6	13

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

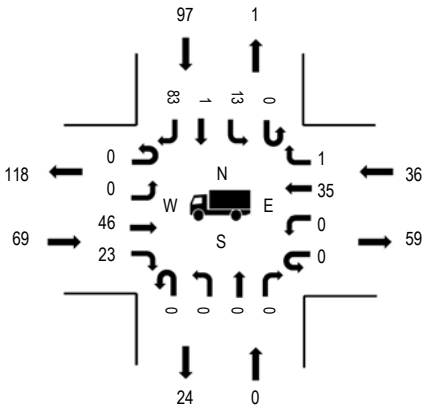
Location: 4 I-5 SB Ramp & SW Elligsen Rd PM
Date: Wednesday, September 22, 2021
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour

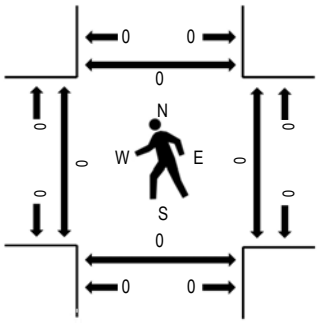
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	3.8%	0.93
WB	3.8%	0.92
NB	0.0%	0.00
SB	9.8%	0.79
All	5.4%	0.93

Traffic Counts - Motorized Vehicles

Interval Start Time	SW Elligsen Rd Eastbound				SW Elligsen Rd Westbound				I-5 SB Ramp Northbound				I-5 SB Ramp Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	74	72	0	0	41	26	0	0	0	0	0	47	8	53	321	3,757
4:05 PM	0	0	92	65	0	0	48	29	0	0	0	0	0	46	10	56	346	3,746
4:10 PM	0	0	97	77	0	0	55	23	0	0	0	0	0	37	13	43	345	3,709
4:15 PM	0	0	65	74	0	0	54	20	0	0	0	0	0	40	5	45	303	3,652
4:20 PM	0	0	76	71	0	0	60	31	0	0	0	0	0	24	8	50	320	3,655
4:25 PM	0	0	67	68	0	0	67	32	0	0	0	0	0	25	6	42	307	3,601
4:30 PM	0	0	108	61	0	0	50	28	0	0	0	0	0	34	0	37	318	3,622
4:35 PM	0	0	86	72	0	0	56	31	0	0	0	0	0	13	0	47	305	3,585
4:40 PM	0	0	86	78	0	0	40	31	0	0	0	0	0	25	1	54	315	3,573
4:45 PM	0	0	75	73	0	0	59	17	0	0	0	0	0	31	1	32	288	3,553
4:50 PM	0	0	71	63	0	0	53	23	0	0	0	0	0	32	3	54	299	3,538
4:55 PM	0	0	84	67	0	0	58	18	0	0	0	0	0	23	2	38	290	3,483
5:00 PM	0	0	78	75	0	0	48	31	0	0	0	0	0	26	6	46	310	3,447
5:05 PM	0	0	85	67	0	0	51	33	0	0	0	0	0	31	2	40	309	
5:10 PM	0	0	87	58	0	0	48	35	0	0	0	0	0	21	3	36	288	
5:15 PM	0	0	75	65	0	0	55	53	0	0	0	0	0	22	0	36	306	
5:20 PM	0	0	65	59	0	0	49	24	0	0	0	0	0	31	0	38	266	
5:25 PM	0	0	76	74	0	0	54	29	0	0	0	0	0	35	5	55	328	
5:30 PM	0	0	65	54	0	0	42	30	0	0	0	0	0	30	6	54	281	
5:35 PM	0	0	69	66	0	0	68	26	0	0	0	0	0	20	7	37	293	
5:40 PM	0	0	72	57	0	0	45	29	0	0	0	0	0	33	10	49	295	
5:45 PM	0	0	54	50	0	0	56	19	0	0	0	0	0	32	6	56	273	
5:50 PM	0	0	53	47	0	0	38	15	0	0	0	0	0	33	9	49	244	
5:55 PM	0	0	54	40	0	0	44	14	0	0	0	0	0	45	5	52	254	
Count Total	0	0	1,814	1,553	0	0	1,239	647	0	0	0	0	0	736	116	1,099	7,204	
Peak Hour	0	0	981	841	0	0	641	309	0	0	0	0	0	377	57	551	3,757	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

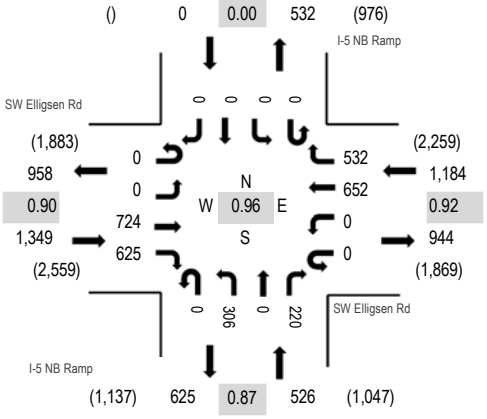
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	9	0	2	6	17	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	10	0	2	6	18	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	2	0	3	8	13	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	2	0	6	10	18	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	5	0	1	6	12	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	6	0	3	7	16	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	6	0	4	7	17	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	1	0	1	9	11	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	10	0	4	11	25	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	7	0	1	7	15	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	5	0	2	12	19	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	6	0	7	8	21	4:55 PM	0	0	1	0	1	4:55 PM	0	0	0	1	1
5:00 PM	4	0	1	7	12	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	2	0	3	3	8	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	4	0	2	7	13	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	2	6	8	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	3	0	4	10	17	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	7	0	2	4	13	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	4	0	2	5	11	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	4	0	5	5	14	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	7	0	2	2	11	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	7	0	1	6	14	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	9	0	3	7	19	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	5	0	3	7	15	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	125	0	66	166	357	Count Total	0	0	1	0	1	Count Total	0	0	0	1	1
Peak Hour	69	0	36	97	202	Peak Hour	0	0	1	0	1	Peak Hour	0	0	0	1	1

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

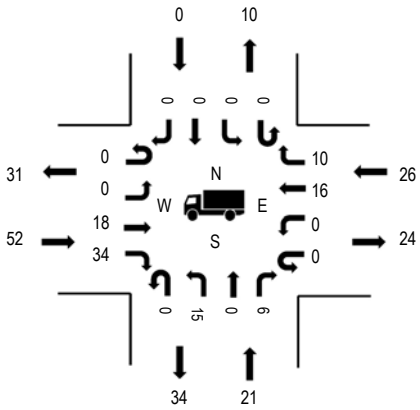
Location: 5 I-5 NB Ramp & SW Elligsen Rd PM
Date: Wednesday, September 22, 2021
Peak Hour: 04:05 PM - 05:05 PM
Peak 15-Minutes: 04:05 PM - 04:20 PM

Peak Hour

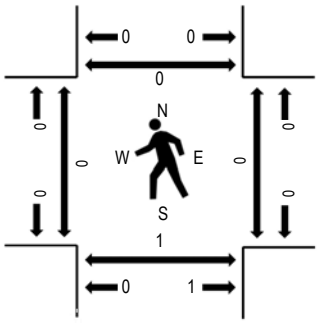
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	3.9%	0.90
WB	2.2%	0.92
NB	4.0%	0.87
SB	0.0%	0.00
All	3.2%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	SW Elligsen Rd Eastbound				SW Elligsen Rd Westbound				I-5 NB Ramp Northbound				I-5 NB Ramp Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	76	41	0	0	48	36	0	18	0	18	0	0	0	0	237	3,045
4:05 PM	0	0	76	54	0	0	51	49	0	25	0	21	0	0	0	0	276	3,059
4:10 PM	0	0	58	73	0	0	58	46	0	19	0	16	0	0	0	0	270	3,051
4:15 PM	0	0	70	43	0	0	49	47	0	23	0	16	0	0	0	0	248	3,023
4:20 PM	0	0	60	51	0	0	64	44	0	29	0	16	0	0	0	0	264	3,027
4:25 PM	0	0	53	40	0	0	62	39	0	37	0	22	0	0	0	0	253	3,006
4:30 PM	0	0	64	62	0	0	51	43	0	27	0	30	0	0	0	0	277	3,015
4:35 PM	0	0	42	65	0	0	65	46	0	23	0	17	0	0	0	0	258	2,977
4:40 PM	0	0	53	57	0	0	46	37	0	25	0	13	0	0	0	0	231	2,959
4:45 PM	0	0	59	43	0	0	48	39	0	27	0	17	0	0	0	0	233	2,971
4:50 PM	0	0	74	39	0	0	50	52	0	25	0	21	0	0	0	0	261	2,936
4:55 PM	0	0	58	52	0	0	48	38	0	28	0	13	0	0	0	0	237	2,862
5:00 PM	0	0	57	46	0	0	60	52	0	18	0	18	0	0	0	0	251	2,820
5:05 PM	0	0	58	61	0	0	66	48	0	19	0	16	0	0	0	0	268	
5:10 PM	0	0	52	49	0	0	61	42	0	21	0	17	0	0	0	0	242	
5:15 PM	0	0	51	39	0	0	72	33	0	38	0	19	0	0	0	0	252	
5:20 PM	0	0	59	41	0	0	48	42	0	25	0	28	0	0	0	0	243	
5:25 PM	0	0	66	54	0	0	64	37	0	18	0	23	0	0	0	0	262	
5:30 PM	0	0	63	40	0	0	50	49	0	23	0	14	0	0	0	0	239	
5:35 PM	0	0	48	41	0	0	53	42	0	41	0	15	0	0	0	0	240	
5:40 PM	0	0	67	42	0	0	51	37	0	23	0	23	0	0	0	0	243	
5:45 PM	0	0	47	28	0	0	51	27	0	24	0	21	0	0	0	0	198	
5:50 PM	0	0	55	40	0	0	37	22	0	16	0	17	0	0	0	0	187	
5:55 PM	0	0	56	36	0	0	30	29	0	28	0	16	0	0	0	0	195	
Count Total	0	0	1,422	1,137	0	0	1,283	976	0	600	0	447	0	0	0	0	5,865	
Peak Hour	0	0	724	625	0	0	652	532	0	306	0	220	0	0	0	0	3,059	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	7	1	2	0	10	4:00 PM	1	0	0	0	1	4:00 PM	0	0	0	0	0
4:05 PM	4	2	1	0	7	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	2	2	2	0	6	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	3	3	1	0	7	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	7	2	5	0	14	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	4	2	2	0	8	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	7	2	3	0	12	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	2	1	2	0	5	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	6	0	4	0	10	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	6	0	0	0	6	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	6	2	2	0	10	4:50 PM	0	0	0	0	0	4:50 PM	0	1	0	0	1
4:55 PM	4	5	2	0	11	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	1	0	2	0	3	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	4	3	1	0	8	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	3	0	1	0	4	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	1	4	1	0	6	5:15 PM	0	0	0	0	0	5:15 PM	0	1	0	0	1
5:20 PM	2	4	1	0	7	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	4	2	0	0	6	5:25 PM	0	0	1	0	1	5:25 PM	0	0	0	0	0
5:30 PM	7	1	2	0	10	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	5	3	3	0	11	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	4	2	1	0	7	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	3	1	1	0	5	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	4	2	2	0	8	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	3	2	5	0	10	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	99	46	46	0	191	Count Total	1	0	1	0	2	Count Total	0	2	0	0	2
Peak Hour	52	21	26	0	99	Peak Hour	0	0	0	0	0	Peak Hour	0	1	0	0	1

APPENDIX B

LOS DESCRIPTION

TRAFFIC LEVELS OF SERVICE

Analysis of traffic volumes is useful in understanding the general nature of traffic in an area, but by itself indicates neither the ability of the street network to carry additional traffic nor the quality of service afforded by the street facilities. For this, the concept of level of service has been developed to subjectively describe traffic performance. Level of service can be measured at intersections and along key roadway segments.

Levels of service categories are similar to report card ratings for traffic performance. Intersections are typically the controlling bottlenecks of traffic flow and the ability of a roadway system to carry traffic efficiently is generally diminished in their vicinities. Levels of Service A, B and C indicate conditions where traffic moves without significant delays over periods of peak travel demand. Level of service D and E are progressively worse peak hour operating conditions and F conditions represent where demand exceeds the capacity of an intersection. Most urban communities set level of service D as the minimum acceptable level of service for peak hour operation and plan for level of service C or better for all other times of the day. The Highway Capacity Manual provides level of service calculation methodology for both intersections and arterials[1]. The following two sections provide interpretations of the analysis approaches.

[1] *2000 Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2000, Chapter 16 and 17.

UNSIGNALIZED INTERSECTIONS (Two-Way Stop Controlled)

Unsignalized intersection level of service is reported for the major street and minor street (generally, left turn movements). The method assesses available and critical gaps in the traffic stream which make it possible for side street traffic to enter the main street flow. The 2010 Highway Capacity Manual describes the detailed methodology. It is not unusual for an intersection to experience level of service E or F conditions for the minor street left turn movement. It should be understood that, often, a poor level of service is experienced by only a few vehicles and the intersection as a whole operates acceptably.

Unsignalized intersection levels of service are described in the following table.

Level-of-Service Criteria: Automobile Mode

Control Delay (s/vehicle)	**LOS by Volume-to-Capacity Ratio**	
	***v/c* ≤ 1.0**	***v/c* > 1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole

SIGNALIZED INTERSECTIONS

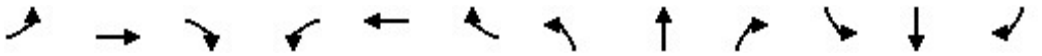
For signalized intersections, level of service is evaluated based upon average vehicle delay experienced by vehicles entering an intersection. Control delay (or signal delay) includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. In previous versions of this chapter of the HCM (1994 and earlier), delay included only stopped delay. As delay increases, the level of service decreases. Calculations for signalized and unsignalized intersections are different due to the variation in traffic control. The 2000 Highway Capacity Manual provides the basis for these calculations.

Level of Service	Delay (secs.)	Description
A	<10.00	**Free Flow/Insignificant Delays:** No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Most vehicles do not stop at all. Progression is extremely favorable and most vehicles arrive during the green phase.
B	10.1-20.0	**Stable Operation/Minimal Delays:** An occasional approach phase is fully utilized. Many drivers begin to feel somewhat restricted within platoons of vehicles. This level generally occurs with good progression, short cycle lengths, or both.
C	20.1-35.0	**Stable Operation/Acceptable Delays:** Major approach phases fully utilized. Most drivers feel somewhat restricted. Higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, and the number of vehicles stopping is significant.
D	35.1-55.0	**Approaching Unstable/Tolerable Delays:** The influence of congestion becomes more noticeable. Drivers may have to wait through more than one red signal indication. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. The proportion of vehicles not stopping declines, and individual cycle failures are noticeable.
E	55.1-80.0	**Unstable Operation/Significant Delays:** Volumes at or near capacity. Vehicles may wait though several signal cycles. Long queues form upstream from intersection. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are a frequent occurrence.
F	>80.0	**Forced Flow/Excessive Delays:** Represents jammed conditions. Queues may block upstream intersections. This level occurs when arrival flow rates exceed intersection capacity, and is considered to be unacceptable to most drivers. Poor progression, long cycle lengths, and v/c ratios approaching 1.0 may contribute to these high delay levels.

Source: *2000 Highway Capacity Manual*, Transportation Research Board, Washington D.C.

APPENDIX C

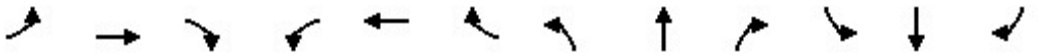
HCM REPORT – EXISTING CONDITIONS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	56	9	92	4	452	1	194	50	502	300	2
Future Volume (veh/h)	12	56	9	92	4	452	1	194	50	502	300	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.98
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	1900	1900	1900	1426	1900	1781	1900	1811	1796	1811	1781	1900
Adj Flow Rate, veh/h	13	60	3	98	4	60	1	206	41	534	319	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	32	0	8	0	6	7	6	8	0
Cap, veh/h	78	121	5	259	6	142	434	435	87	1039	1268	8
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.00	0.30	0.30	0.42	0.72	0.72
Sat Flow, veh/h	128	1279	58	1573	64	1502	1810	1467	292	1725	1768	11
Grp Volume(v), veh/h	76	0	0	102	0	60	1	0	247	534	0	321
Grp Sat Flow(s),veh/h/ln	1465	0	0	1637	0	1502	1810	0	1759	1725	0	1779
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	2.4	0.0	0.0	7.4	7.2	0.0	4.0
Cycle Q Clear(g_c), s	3.7	0.0	0.0	3.5	0.0	2.4	0.0	0.0	7.4	7.2	0.0	4.0
Prop In Lane	0.17		0.04	0.96		1.00	1.00		0.17	1.00		0.01
Lane Grp Cap(c), veh/h	204	0	0	265	0	142	434	0	522	1039	0	1276
V/C Ratio(X)	0.37	0.00	0.00	0.39	0.00	0.42	0.00	0.00	0.47	0.51	0.00	0.25
Avail Cap(c_a), veh/h	644	0	0	606	0	516	545	0	522	1039	0	1276
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	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.4	0.0	0.0	27.8	0.0	27.4	15.8	0.0	18.4	4.2	0.0	3.1
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.9	0.0	2.0	0.0	0.0	3.1	1.8	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.5	0.0	0.9	0.0	0.0	3.2	1.7	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.6	0.0	0.0	28.8	0.0	29.4	15.8	0.0	21.5	6.1	0.0	3.6
LnGrp LOS	C	A	A	C	A	C	B	A	C	A	A	A
Approach Vol, veh/h		76			162			248			855	
Approach Delay, s/veh		28.6			29.0			21.5			5.1	
Approach LOS		C			C			C			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	31.0	23.0		10.0	4.1	49.9		10.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	27.0	19.0		22.0	4.0	42.0		22.0				
Max Q Clear Time (g_c+I1), s	9.2	9.4		5.7	2.0	6.0		5.5				
Green Ext Time (p_c), s	1.7	0.9		0.3	0.0	2.1		0.6				

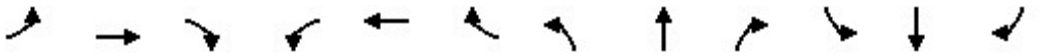
Intersection Summary												
HCM 6th Ctrl Delay			12.4									
HCM 6th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	0	590	0	0	0	518	369	0	0	590	23
Future Volume (veh/h)	13	0	590	0	0	0	518	369	0	0	590	23
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		0.98
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	1900	1900	1841	1900	1900	1900	1752	1841	1900	1900	1870	1811
Adj Flow Rate, veh/h	14	0	572	0	0	0	540	384	0	0	615	22
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	4	0	0	0	10	4	0	0	2	6
Cap, veh/h	137	0	921	0	90	0	1758	1613	0	2	1033	37
Arrive On Green	0.05	0.00	0.05	0.00	0.00	0.00	0.91	1.00	0.00	0.00	0.30	0.30
Sat Flow, veh/h	1440	0	1560	0	1900	0	3237	1841	0	1810	3497	125
Grp Volume(v), veh/h	14	0	572	0	0	0	540	384	0	0	312	325
Grp Sat Flow(s),veh/h/ln	1440	0	1560	0	1900	0	1618	1841	0	1810	1777	1845
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	15.8	15.8
Cycle Q Clear(g_c), s	1.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	15.8	15.8
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.07
Lane Grp Cap(c), veh/h	137	0	921	0	90	0	1758	1613	0	2	525	545
V/C Ratio(X)	0.10	0.00	0.62	0.00	0.00	0.00	0.31	0.24	0.00	0.00	0.60	0.60
Avail Cap(c_a), veh/h	288	0	1085	0	290	0	1758	1613	0	69	525	545
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	0.96	0.96	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	48.1	0.0	13.9	0.0	0.0	0.0	2.3	0.0	0.0	0.0	31.6	31.6
Incr Delay (d2), s/veh	0.3	0.0	0.8	0.0	0.0	0.0	0.1	0.3	0.0	0.0	4.9	4.8
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	0.4	0.0	8.4	0.0	0.0	0.0	0.6	0.1	0.0	0.0	7.3	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.4	0.0	14.7	0.0	0.0	0.0	2.4	0.3	0.0	0.0	36.5	36.4
LnGrp LOS	D	A	B	A	A	A	A	A	A	A	D	D
Approach Vol, veh/h		586			0			924			637	
Approach Delay, s/veh		15.5			0.0			1.6			36.5	
Approach LOS		B						A			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	96.0		9.0	61.0	35.0		9.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	73.0		16.0	46.0	31.0		16.0				
Max Q Clear Time (g_c+I1), s	0.0	2.0		3.0	4.3	17.8		0.0				
Green Ext Time (p_c), s	0.0	2.5		2.0	2.1	3.1		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		15.7	
HCM 6th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	3	760	28	15	6	446	743	8	1	1032	164
Future Volume (veh/h)	146	3	760	28	15	6	446	743	8	1	1032	164
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	1.00		0.98	1.00		0.98	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	1796	1900	1841	1900	1900	1900	1693	1781	1900	1900	1856	1781
Adj Flow Rate, veh/h	152	3	753	29	16	1	465	774	7	1	1075	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	0	4	0	0	0	14	8	0	0	3	8
Cap, veh/h	301	5	1210	116	310	19	851	2029	18	165	1444	
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.54	1.00	1.00	0.09	0.41	0.00
Sat Flow, veh/h	1329	26	2637	718	1767	110	3127	3436	31	1810	3526	1510
Grp Volume(v), veh/h	155	0	753	29	0	17	465	381	400	1	1075	0
Grp Sat Flow(s),veh/h/ln	1355	0	1318	718	0	1877	1564	1692	1775	1810	1763	1510
Q Serve(g_s), s	10.7	0.0	0.0	4.1	0.0	0.8	10.1	0.0	0.0	0.1	27.2	0.0
Cycle Q Clear(g_c), s	11.5	0.0	0.0	15.6	0.0	0.8	10.1	0.0	0.0	0.1	27.2	0.0
Prop In Lane	0.98		1.00	1.00		0.06	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	306	0	1210	116	0	329	851	999	1048	165	1444	
V/C Ratio(X)	0.51	0.00	0.62	0.25	0.00	0.05	0.55	0.38	0.38	0.01	0.74	
Avail Cap(c_a), veh/h	381	0	1350	154	0	429	851	999	1048	165	1444	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.73	0.73	0.73	0.77	0.77	0.00
Uniform Delay (d), s/veh	40.8	0.0	22.1	47.8	0.0	36.0	19.7	0.0	0.0	43.4	26.3	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.6	0.8	0.0	0.0	0.5	0.8	0.8	0.0	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	6.7	0.8	0.0	0.4	3.0	0.2	0.2	0.0	11.4	0.0
Unsig. Movement Delay, s/veh												15.50
LnGrp Delay(d),s/veh	41.8	0.0	22.7	48.6	0.0	36.1	20.2	0.8	0.8	43.4	29.1	15.5
LnGrp LOS	D	A	C	D	A	D	C	A	A	D	C	B
Approach Vol, veh/h		908			46			1246			1177	A
Approach Delay, s/veh		26.0			44.0			8.0			27.9	
Approach LOS		C			D			A			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	33.6	48.0		23.4	14.6	67.0		23.4				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	23.0	43.0		24.0	4.0	62.0		24.0				
Max Q Clear Time (g_c+I1), s	12.1	29.2		17.6	2.1	2.0		13.5				
Green Ext Time (p_c), s	1.7	4.7		0.1	0.0	8.9		3.0				

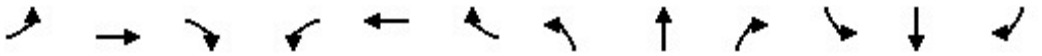
Intersection Summary		
HCM 6th Ctrl Delay		20.3
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

User approved changes to right turn type.

Unsignalized Delay for [SBR] is included in calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↰	↱
Traffic Volume (veh/h)	0	981	839	0	639	312	0	0	0	373	52	558
Future Volume (veh/h)	0	981	839	0	639	312	0	0	0	373	52	558
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1826	1841	0	1826	1870				1841	1856	1663
Adj Flow Rate, veh/h	0	1044	0	0	680	0				436	0	530
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	5	4	0	5	2				4	3	16
Cap, veh/h	0	1716		0	1716					1438	0	570
Arrive On Green	0.00	0.99	0.00	0.00	0.99	0.00				0.41	0.00	0.41
Sat Flow, veh/h	0	3561	1560	0	3561	1585				3506	0	1389
Grp Volume(v), veh/h	0	1044	0	0	680	0				436	0	530
Grp Sat Flow(s),veh/h/ln	0	1735	1560	0	1735	1585				1753	0	1389
Q Serve(g_s), s	0.0	0.9	0.0	0.0	0.4	0.0				8.8	0.0	38.2
Cycle Q Clear(g_c), s	0.0	0.9	0.0	0.0	0.4	0.0				8.8	0.0	38.2
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1716		0	1716					1438	0	570
V/C Ratio(X)	0.00	0.61		0.00	0.40					0.30	0.00	0.93
Avail Cap(c_a), veh/h	0	1716		0	1716					1803	0	714
HCM Platoon Ratio	1.00	2.00	2.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.68	0.00	0.00	0.93	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.3	0.0	0.0	0.3	0.0				20.9	0.0	29.5
Incr Delay (d2), s/veh	0.0	1.1	0.0	0.0	0.6	0.0				0.1	0.0	15.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.4	0.0	0.0	0.2	0.0				3.4	0.0	14.1
Unsig. Movement Delay, s/veh			1.20			0.30						
LnGrp Delay(d),s/veh	0.0	1.4	1.2	0.0	0.9	0.3				20.9	0.0	45.1
LnGrp LOS	A	A	A	A	A	A				C	A	D
Approach Vol, veh/h		1937	A		1012	A					966	
Approach Delay, s/veh		1.3			0.7						34.2	
Approach LOS		A			A						C	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		56.9		48.1		56.9						
Change Period (Y+Rc), s		5.0		5.0		5.0						
Max Green Setting (Gmax), s		41.0		54.0		41.0						
Max Q Clear Time (g_c+I1), s		2.9		40.2		2.4						
Green Ext Time (p_c), s		9.9		2.9		5.6						

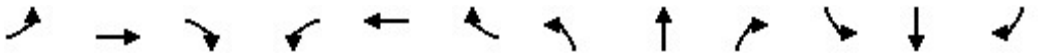
Intersection Summary												
HCM 6th Ctrl Delay			9.3									
HCM 6th LOS			A									

Notes

User approved volume balancing among the lanes for turning movement.

User approved changes to right turn type.

Unsignalized Delay for [EBR, WBR] is included in calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰↰		↱			
Traffic Volume (veh/h)	0	707	647	0	650	508	301	0	230	0	0	0
Future Volume (veh/h)	0	707	647	0	650	508	301	0	230	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	0	1856	1811	0	1870	1870	1811	0	1841			
Adj Flow Rate, veh/h	0	752	0	0	691	0	320	0	0			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	0	3	6	0	2	2	6	0	4			
Cap, veh/h	0	2780		0	2802		405	0				
Arrive On Green	0.00	1.00	0.00	0.00	0.79	0.00	0.12	0.00	0.00			
Sat Flow, veh/h	0	3618	1535	0	3647	1585	3346	0	1560			
Grp Volume(v), veh/h	0	752	0	0	691	0	320	0	0			
Grp Sat Flow(s),veh/h/ln	0	1763	1535	0	1777	1585	1673	0	1560			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	5.4	0.0	9.8	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	5.4	0.0	9.8	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2780		0	2802		405	0				
V/C Ratio(X)	0.00	0.27		0.00	0.25		0.79	0.00				
Avail Cap(c_a), veh/h	0	2780		0	2802		1291	0				
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.67	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	2.9	0.0	44.8	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0	2.2	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.0	1.4	0.0	4.0	0.0	0.0			
Unsig. Movement Delay, s/veh			0.80			0.60			42.30			
LnGrp Delay(d),s/veh	0.0	0.2	0.8	0.0	3.1	0.6	47.0	0.0	42.3			
LnGrp LOS	A	A	A	A	A	A	D	A	D			
Approach Vol, veh/h		1440	A		1231	A		415	A			
Approach Delay, s/veh		0.5			2.0			45.9				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		87.8				87.8		17.2				
Change Period (Y+Rc), s		5.0				5.0		4.5				
Max Green Setting (Gmax), s		55.0				55.0		40.5				
Max Q Clear Time (g_c+I1), s		2.0				7.4		11.8				
Green Ext Time (p_c), s		6.6				5.8		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	7.2
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, EBR, WBR] is included in calculations of the approach delay and intersection delay.

ID	Software/Method	Intersection	Control Type	LOS	Delay	V/C Ratio
1	Synchro HCM 6th Signal	Day Road & Grahams Ferry Rd	Signal	B	12.4	0.65
2	Synchro HCM 6th Signal	Boones Ferry Road & Day Road	Signal	B	15.7	0.65
3	Synchro HCM 6th Signal	Boones Ferry Road & 95th Avenue	Signal	C	20.3	0.69
4	Synchro HCM 6th Signal	I-5 SB On Ramp/I-5 SB Off Ramp & Boones Ferry Road/Sw Elligsen Rd	Signal	A	9.3	0.75
5	Synchro HCM 6th Signal	I-5 NB Off Ramp/I-5 NB Ramp & Sw Elligsen Rd/Elligsen Road	Signal	A	7.2	0.40

APPENDIX D

STAGE II LIST

Updated by D. Pauly 09.21.2021

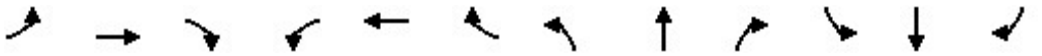
Stage II Approved									
Project	Land Use	Status	Size	Total PM Peak Trips	Trip Allocation Percentage		Net New (Primary + Diverted) PM Peak Hour Trips not yet active		
					Internal	Pass-By	In	Out	Total
Hydro-Temp: Recent agreement with the City, the project is vested and so are the traffic trips	Office/Flex-Space	Not built	60.8 KSF				44	46	90
Mercedes Benz (Phase 2)	Auto Dealership	Not built					20	26	46
Shredding Systems (SQFT does not including paint canopy and another canopy)	Industrial/Commercial	Under construction	66.8 KSF				20	46	66
Town Center Ph III *and trip dedication to Miller Paint store Uses marked with "*" have not been built and PM peak hr trip sum exceeds remaining vested trip level by 2 trips. It has yet to be determined how to allocate trips between remaining buildings.*	*High Turnover Restaurant (Pad 1)	Not built	7.5 KSF				24	17	47*
	Remaining Approved Total								47
Wilsonville Road Business Park Phase II	Phase 2 - office (2-story building on west parcel)	Partially Built	21.7 KSF				15	71	86
Frog Pond-Stafford Meadows (Phase 2 and 3a of 10/18 study)	Residential	Partially Built, 24 homes built and occupied	46 units				12	10	22
Frog Pond-Frog Pond Meadows (Phase 3B, 4A, 4B of 10/18 Study)	Residential	Partially Built, 3 homes built and occupied	74 units				44	27	71
Frog Pond Ridge	Residential	ruction, no homes built	71 units				43	28	71
Frog Pond-Morgan Farm	Residential	Partially Built, 38 homes built and occupied	80 units				28	14	42
Fir Avenue Commons	Residential	Partially Built, 2 homes built and occupied	10 units				6	2	8
Magnolia Townhomes	Residential	Under construction	6 units				3	2	5
Aspen Meadows II	Residential	Under construction, no homes sold and occupied	5 units				2	3	5
Canyon Creek III	Residential	Approved	5 units (traffic study was for 11)				2	3	5
Coffee Creek Logistics	Industrial/Commercial	Under construction	115K				16	41	57

Stage II Approved – Villebois													
Project	Phase	Status	Land Use					Total PM Peak Trips	Trip Allocation Percentage		Net New (Primary + Diverted) PM Peak Hour Trips not yet active		
			SF	Town.	Apt.	Retail	School		Internal	Pass-By	In	Out	Total
North (Entirety)	Residential	Partially built, 364 homes sold and occupied	466								65	37	102
Central	Residential	Partially Built, 735 homes (102 single family, 319 condo/row homes, 365 apartments) occupied	102	391	365	8.5 KSF					30	13	43
FOR REFERENCE SAP EAST			537	42									
CE SAP SOUTH (Includes PDP 7 Grande Pointe)		560											

Pending Projects for Which Traffic Analysis has been completed (except Villebois)										
Project	Land Use	Status	Size	Total PM Peak T	Trip Allocation Percentage			Net New (Primary) PM Peak Hour Trips		
					Internal	Pass-By	Diverted	In	Out	Total
PW Complex on Boberg	Public	under review	15,800 office, 17,900 warehouse					11	39	50
DAS North Valley Complex	Public/Industria	under review	174,700 sf					5	15	20
Frog Pond Crossing								19	9	28
Boones Ferry Gas Station/Conve	Commercail	under review	3,460 sf store, 12 g	240		134		53	53	106

APPENDIX E

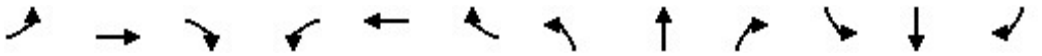
HCM REPORT – EXISTNG + PROJECT



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	56	9	109	4	452	1	216	77	502	314	2
Future Volume (veh/h)	12	56	9	109	4	452	1	216	77	502	314	2
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		0.98
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	1900	1900	1900	1426	1900	1781	1900	1811	1796	1811	1781	1900
Adj Flow Rate, veh/h	13	60	3	116	4	60	1	230	70	534	334	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	32	0	8	0	6	7	6	8	0
Cap, veh/h	73	186	8	260	7	224	404	371	113	924	1192	7
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.00	0.28	0.28	0.40	0.67	0.67
Sat Flow, veh/h	73	1248	54	1047	49	1505	1810	1333	406	1725	1769	11
Grp Volume(v), veh/h	76	0	0	120	0	60	1	0	300	534	0	336
Grp Sat Flow(s),veh/h/ln	1375	0	0	1096	0	1505	1810	0	1738	1725	0	1779
Q Serve(g_s), s	0.1	0.0	0.0	0.1	0.0	2.4	0.0	0.0	10.3	9.0	0.0	5.2
Cycle Q Clear(g_c), s	7.8	0.0	0.0	7.8	0.0	2.4	0.0	0.0	10.3	9.0	0.0	5.2
Prop In Lane	0.17		0.04	0.97		1.00	1.00		0.23	1.00		0.01
Lane Grp Cap(c), veh/h	267	0	0	267	0	224	404	0	485	924	0	1199
V/C Ratio(X)	0.28	0.00	0.00	0.45	0.00	0.27	0.00	0.00	0.62	0.58	0.00	0.28
Avail Cap(c_a), veh/h	574	0	0	506	0	486	508	0	485	924	0	1199
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	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.8	0.0	0.0	28.0	0.0	25.7	17.7	0.0	21.4	6.4	0.0	4.5
Incr Delay (d2), s/veh	0.6	0.0	0.0	1.2	0.0	0.6	0.0	0.0	5.8	2.6	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.9	0.0	0.9	0.0	0.0	4.7	2.8	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.3	0.0	0.0	29.2	0.0	26.3	17.7	0.0	27.3	9.1	0.0	5.1
LnGrp LOS	C	A	A	C	A	C	B	A	C	A	A	A
Approach Vol, veh/h		76			180			301			870	
Approach Delay, s/veh		26.3			28.2			27.2			7.5	
Approach LOS		C			C			C			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	31.0	23.0		14.2	4.1	49.9		14.2				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	27.0	19.0		22.0	4.0	42.0		22.0				
Max Q Clear Time (g_c+I1), s	11.0	12.3		9.8	2.0	7.2		9.8				
Green Ext Time (p_c), s	1.7	0.9		0.2	0.0	2.2		0.6				

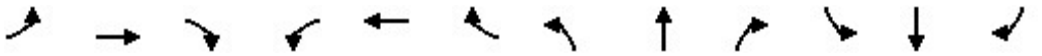
Intersection Summary												
HCM 6th Ctrl Delay			15.3									
HCM 6th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	0	606	0	0	0	528	369	0	0	590	30
Future Volume (veh/h)	24	0	606	0	0	0	528	369	0	0	590	30
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		0.98
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	1900	1900	1841	1900	1900	1900	1752	1841	1900	1900	1870	1811
Adj Flow Rate, veh/h	25	0	588	0	0	0	550	384	0	0	615	29
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	4	0	0	0	10	4	0	0	2	6
Cap, veh/h	148	0	921	0	105	0	1732	1599	0	2	1019	48
Arrive On Green	0.06	0.00	0.06	0.00	0.00	0.00	0.89	1.00	0.00	0.00	0.30	0.30
Sat Flow, veh/h	1440	0	1560	0	1900	0	3237	1841	0	1810	3452	163
Grp Volume(v), veh/h	25	0	588	0	0	0	550	384	0	0	316	328
Grp Sat Flow(s),veh/h/ln	1440	0	1560	0	1900	0	1618	1841	0	1810	1777	1838
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	16.0	16.1
Cycle Q Clear(g_c), s	1.8	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	16.0	16.1
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.09
Lane Grp Cap(c), veh/h	148	0	921	0	105	0	1732	1599	0	2	525	543
V/C Ratio(X)	0.17	0.00	0.64	0.00	0.00	0.00	0.32	0.24	0.00	0.00	0.60	0.60
Avail Cap(c_a), veh/h	288	0	1072	0	290	0	1732	1599	0	69	525	543
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	0.95	0.95	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	0.0	14.1	0.0	0.0	0.0	2.7	0.0	0.0	0.0	31.7	31.7
Incr Delay (d2), s/veh	0.5	0.0	1.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	5.1	4.9
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	0.6	0.0	8.8	0.0	0.0	0.0	0.7	0.2	0.0	0.0	7.4	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.2	0.0	15.1	0.0	0.0	0.0	2.8	0.3	0.0	0.0	36.8	36.7
LnGrp LOS	D	A	B	A	A	A	A	A	A	A	D	D
Approach Vol, veh/h		613			0			934			644	
Approach Delay, s/veh		16.5			0.0			1.8			36.7	
Approach LOS		B						A			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	95.2		9.8	60.2	35.0		9.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	73.0		16.0	46.0	31.0		16.0				
Max Q Clear Time (g_c+I1), s	0.0	2.0		3.8	4.6	18.1		0.0				
Green Ext Time (p_c), s	0.0	2.5		2.1	2.1	3.1		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		16.2	
HCM 6th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	3	793	28	15	6	467	753	8	1	1048	164
Future Volume (veh/h)	146	3	793	28	15	6	467	753	8	1	1048	164
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	1.00		0.98	1.00		0.98	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	1796	1900	1841	1900	1900	1900	1693	1781	1900	1900	1856	1781
Adj Flow Rate, veh/h	152	3	787	29	16	1	486	784	7	1	1092	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	0	4	0	0	0	14	8	0	0	3	8
Cap, veh/h	302	5	1210	115	312	19	848	2029	18	163	1444	
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.54	1.00	1.00	0.09	0.41	0.00
Sat Flow, veh/h	1330	26	2637	696	1767	110	3127	3437	31	1810	3526	1510
Grp Volume(v), veh/h	155	0	787	29	0	17	486	386	405	1	1092	0
Grp Sat Flow(s),veh/h/ln	1356	0	1319	696	0	1877	1564	1692	1775	1810	1763	1510
Q Serve(g_s), s	10.7	0.0	0.0	4.3	0.0	0.8	10.8	0.0	0.0	0.1	27.8	0.0
Cycle Q Clear(g_c), s	11.5	0.0	0.0	15.8	0.0	0.8	10.8	0.0	0.0	0.1	27.8	0.0
Prop In Lane	0.98		1.00	1.00		0.06	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	307	0	1210	115	0	331	848	999	1048	163	1444	
V/C Ratio(X)	0.50	0.00	0.65	0.25	0.00	0.05	0.57	0.39	0.39	0.01	0.76	
Avail Cap(c_a), veh/h	381	0	1348	151	0	429	848	999	1048	163	1444	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.71	0.71	0.71	0.76	0.76	0.00
Uniform Delay (d), s/veh	40.7	0.0	22.5	47.7	0.0	35.9	20.0	0.0	0.0	43.5	26.5	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.8	0.8	0.0	0.0	0.7	0.8	0.8	0.0	2.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	7.2	0.8	0.0	0.4	3.1	0.2	0.2	0.0	11.7	0.0
Unsig. Movement Delay, s/veh												15.50
LnGrp Delay(d),s/veh	41.7	0.0	23.3	48.6	0.0	36.0	20.6	0.8	0.8	43.5	29.4	15.5
LnGrp LOS	D	A	C	D	A	D	C	A	A	D	C	B
Approach Vol, veh/h		942			46			1277			1194	A
Approach Delay, s/veh		26.3			43.9			8.3			28.2	
Approach LOS		C			D			A			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	33.5	48.0		23.5	14.5	67.0		23.5				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	23.0	43.0		24.0	4.0	62.0		24.0				
Max Q Clear Time (g_c+I1), s	12.8	29.8		17.8	2.1	2.0		13.5				
Green Ext Time (p_c), s	1.7	4.7		0.1	0.0	9.1		3.1				

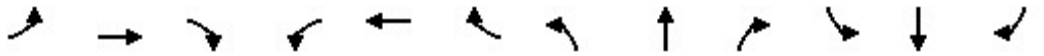
Intersection Summary		
HCM 6th Ctrl Delay		20.6
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

User approved changes to right turn type.

Unsignalized Delay for [SBR] is included in calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↰	↱
Traffic Volume (veh/h)	0	1019	850	0	649	312	0	0	0	373	52	579
Future Volume (veh/h)	0	1019	850	0	649	312	0	0	0	373	52	579
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1826	1841	0	1826	1870				1841	1856	1663
Adj Flow Rate, veh/h	0	1084	0	0	690	0				436	0	552
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	5	4	0	5	2				4	3	16
Cap, veh/h	0	1664		0	1664					1490	0	590
Arrive On Green	0.00	0.96	0.00	0.00	0.96	0.00				0.42	0.00	0.42
Sat Flow, veh/h	0	3561	1560	0	3561	1585				3506	0	1389
Grp Volume(v), veh/h	0	1084	0	0	690	0				436	0	552
Grp Sat Flow(s),veh/h/ln	0	1735	1560	0	1735	1585				1753	0	1389
Q Serve(g_s), s	0.0	3.5	0.0	0.0	1.4	0.0				8.6	0.0	39.8
Cycle Q Clear(g_c), s	0.0	3.5	0.0	0.0	1.4	0.0				8.6	0.0	39.8
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1664		0	1664					1490	0	590
V/C Ratio(X)	0.00	0.65		0.00	0.41					0.29	0.00	0.93
Avail Cap(c_a), veh/h	0	1664		0	1664					1803	0	715
HCM Platoon Ratio	1.00	2.00	2.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.65	0.00	0.00	0.93	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	1.2	0.0	0.0	1.1	0.0				19.8	0.0	28.8
Incr Delay (d2), s/veh	0.0	1.3	0.0	0.0	0.7	0.0				0.1	0.0	16.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.8	0.0	0.0	0.5	0.0				3.3	0.0	14.8
Unsig. Movement Delay, s/veh			1.20			0.30						
LnGrp Delay(d),s/veh	0.0	2.5	1.2	0.0	1.8	0.3				19.9	0.0	45.6
LnGrp LOS	A	A	A	A	A	A				B	A	D
Approach Vol, veh/h		1988	A		1022	A					988	
Approach Delay, s/veh		1.9			1.3						34.3	
Approach LOS		A			A						C	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		55.4		49.6		55.4						
Change Period (Y+Rc), s		5.0		5.0		5.0						
Max Green Setting (Gmax), s		41.0		54.0		41.0						
Max Q Clear Time (g_c+I1), s		5.5		41.8		3.4						
Green Ext Time (p_c), s		10.3		2.8		5.7						

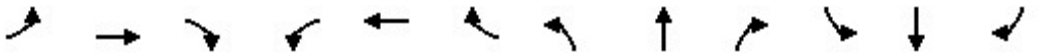
Intersection Summary												
HCM 6th Ctrl Delay			9.8									
HCM 6th LOS			A									

Notes

User approved volume balancing among the lanes for turning movement.

User approved changes to right turn type.

Unsignalized Delay for [EBR, WBR] is included in calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰↰		↱			
Traffic Volume (veh/h)	0	712	680	0	653	508	308	0	230	0	0	0
Future Volume (veh/h)	0	712	680	0	653	508	308	0	230	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	0	1856	1811	0	1870	1870	1811	0	1841			
Adj Flow Rate, veh/h	0	757	0	0	695	0	328	0	0			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	0	3	6	0	2	2	6	0	4			
Cap, veh/h	0	2771		0	2793		414	0				
Arrive On Green	0.00	1.00	0.00	0.00	0.79	0.00	0.12	0.00	0.00			
Sat Flow, veh/h	0	3618	1535	0	3647	1585	3346	0	1560			
Grp Volume(v), veh/h	0	757	0	0	695	0	328	0	0			
Grp Sat Flow(s),veh/h/ln	0	1763	1535	0	1777	1585	1673	0	1560			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	5.5	0.0	10.0	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	5.5	0.0	10.0	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2771		0	2793		414	0				
V/C Ratio(X)	0.00	0.27		0.00	0.25		0.79	0.00				
Avail Cap(c_a), veh/h	0	2771		0	2793		1291	0				
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.63	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	3.0	0.0	44.7	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0	2.1	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.0	1.4	0.0	4.1	0.0	0.0			
Unsig. Movement Delay, s/veh			0.80			0.60			42.30			
LnGrp Delay(d),s/veh	0.0	0.2	0.8	0.0	3.2	0.6	46.9	0.0	42.3			
LnGrp LOS	A	A	A	A	A	A	D	A	D			
Approach Vol, veh/h		1480	A		1235	A		423	A			
Approach Delay, s/veh		0.5			2.1			45.8				
Approach LOS		A			A			D				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		87.5				87.5		17.5				
Change Period (Y+Rc), s		5.0				5.0		4.5				
Max Green Setting (Gmax), s		55.0				55.0		40.5				
Max Q Clear Time (g_c+I1), s		2.0				7.5		12.0				
Green Ext Time (p_c), s		6.6				5.9		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	7.2
HCM 6th LOS	A

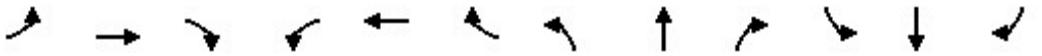
Notes

Unsignalized Delay for [NBR, EBR, WBR] is included in calculations of the approach delay and intersection delay.

ID	Software/Method	Intersection	Control Type	LOS	Delay	V/C Ratio
1	Synchro HCM 6th Signal	Day Road & Grahams Ferry Rd	Signal	B	15.3	0.78
2	Synchro HCM 6th Signal	Boones Ferry Road & Day Road	Signal	B	16.2	0.66
3	Synchro HCM 6th Signal	Boones Ferry Road & 95th Avenue	Signal	C	20.6	0.71
4	Synchro HCM 6th Signal	I-5 SB On Ramp/I-5 SB Off Ramp & Boones Ferry Road/Sw Elligsen Rd	Signal	A	9.8	0.78
5	Synchro HCM 6th Signal	I-5 NB Off Ramp/I-5 NB Ramp & Sw Elligsen Rd/Elligsen Road	Signal	A	7.2	0.40

APPENDIX F

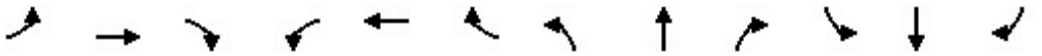
HCM REPORT – EXISTNG + STAGE II



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	56	9	92	4	452	1	206	50	502	316	2
Future Volume (veh/h)	12	56	9	92	4	452	1	206	50	502	316	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.98
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	1900	1900	1900	1426	1900	1781	1900	1811	1796	1811	1781	1900
Adj Flow Rate, veh/h	13	60	3	98	4	60	1	219	41	534	336	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	32	0	8	0	6	7	6	8	0
Cap, veh/h	78	121	5	259	6	142	429	440	82	1029	1269	8
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.00	0.30	0.30	0.42	0.72	0.72
Sat Flow, veh/h	128	1279	58	1573	64	1502	1810	1483	278	1725	1769	11
Grp Volume(v), veh/h	76	0	0	102	0	60	1	0	260	534	0	338
Grp Sat Flow(s),veh/h/ln	1465	0	0	1637	0	1502	1810	0	1761	1725	0	1779
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	2.4	0.0	0.0	7.8	7.2	0.0	4.2
Cycle Q Clear(g_c), s	3.7	0.0	0.0	3.5	0.0	2.4	0.0	0.0	7.8	7.2	0.0	4.2
Prop In Lane	0.17		0.04	0.96		1.00	1.00		0.16	1.00		0.01
Lane Grp Cap(c), veh/h	204	0	0	265	0	142	429	0	523	1029	0	1276
V/C Ratio(X)	0.37	0.00	0.00	0.39	0.00	0.42	0.00	0.00	0.50	0.52	0.00	0.26
Avail Cap(c_a), veh/h	644	0	0	606	0	516	540	0	523	1029	0	1276
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	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.4	0.0	0.0	27.8	0.0	27.4	15.8	0.0	18.6	4.4	0.0	3.2
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.9	0.0	2.0	0.0	0.0	3.4	1.9	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.5	0.0	0.9	0.0	0.0	3.4	1.7	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.6	0.0	0.0	28.8	0.0	29.4	15.8	0.0	21.9	6.3	0.0	3.7
LnGrp LOS	C	A	A	C	A	C	B	A	C	A	A	A
Approach Vol, veh/h		76			162			261			872	
Approach Delay, s/veh		28.6			29.0			21.9			5.3	
Approach LOS		C			C			C			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	31.0	23.0		10.0	4.1	49.9		10.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	27.0	19.0		22.0	4.0	42.0		22.0				
Max Q Clear Time (g_c+I1), s	9.2	9.8		5.7	2.0	6.2		5.5				
Green Ext Time (p_c), s	1.7	1.0		0.3	0.0	2.2		0.6				

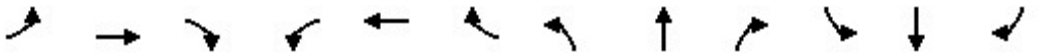
Intersection Summary												
HCM 6th Ctrl Delay			12.5									
HCM 6th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	0	590	0	0	0	518	375	0	0	593	23
Future Volume (veh/h)	13	0	590	0	0	0	518	375	0	0	593	23
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		0.98
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	1900	1900	1841	1900	1900	1900	1752	1841	1900	1900	1870	1811
Adj Flow Rate, veh/h	14	0	572	0	0	0	540	391	0	0	618	22
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	4	0	0	0	10	4	0	0	2	6
Cap, veh/h	137	0	921	0	90	0	1758	1613	0	2	1033	37
Arrive On Green	0.05	0.00	0.05	0.00	0.00	0.00	0.91	1.00	0.00	0.00	0.30	0.30
Sat Flow, veh/h	1440	0	1560	0	1900	0	3237	1841	0	1810	3498	124
Grp Volume(v), veh/h	14	0	572	0	0	0	540	391	0	0	314	326
Grp Sat Flow(s),veh/h/ln	1440	0	1560	0	1900	0	1618	1841	0	1810	1777	1846
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	15.9	15.9
Cycle Q Clear(g_c), s	1.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	15.9	15.9
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.07
Lane Grp Cap(c), veh/h	137	0	921	0	90	0	1758	1613	0	2	525	545
V/C Ratio(X)	0.10	0.00	0.62	0.00	0.00	0.00	0.31	0.24	0.00	0.00	0.60	0.60
Avail Cap(c_a), veh/h	288	0	1085	0	290	0	1758	1613	0	69	525	545
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	0.95	0.95	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	48.1	0.0	13.9	0.0	0.0	0.0	2.3	0.0	0.0	0.0	31.7	31.7
Incr Delay (d2), s/veh	0.3	0.0	0.8	0.0	0.0	0.0	0.1	0.3	0.0	0.0	5.0	4.8
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	0.4	0.0	8.4	0.0	0.0	0.0	0.6	0.2	0.0	0.0	7.4	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.4	0.0	14.7	0.0	0.0	0.0	2.4	0.3	0.0	0.0	36.6	36.5
LnGrp LOS	D	A	B	A	A	A	A	A	A	A	D	D
Approach Vol, veh/h		586			0			931			640	
Approach Delay, s/veh		15.5			0.0			1.5			36.6	
Approach LOS		B						A			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	96.0		9.0	61.0	35.0		9.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	73.0		16.0	46.0	31.0		16.0				
Max Q Clear Time (g_c+I1), s	0.0	2.0		3.0	4.3	17.9		0.0				
Green Ext Time (p_c), s	0.0	2.6		2.0	2.1	3.1		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		15.7	
HCM 6th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	3	796	28	15	6	475	745	8	1	1033	166
Future Volume (veh/h)	150	3	796	28	15	6	475	745	8	1	1033	166
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	1.00		0.98	1.00		0.98	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	1796	1900	1841	1900	1900	1900	1693	1781	1900	1900	1856	1781
Adj Flow Rate, veh/h	156	3	790	29	16	1	495	776	7	1	1076	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	0	4	0	0	0	14	8	0	0	3	8
Cap, veh/h	306	5	1210	115	316	20	841	2029	18	159	1444	
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.54	1.00	1.00	0.09	0.41	0.00
Sat Flow, veh/h	1331	26	2638	694	1767	110	3127	3436	31	1810	3526	1510
Grp Volume(v), veh/h	159	0	790	29	0	17	495	382	401	1	1076	0
Grp Sat Flow(s),veh/h/ln	1357	0	1319	694	0	1877	1564	1692	1775	1810	1763	1510
Q Serve(g_s), s	11.0	0.0	0.0	4.3	0.0	0.8	11.2	0.0	0.0	0.1	27.2	0.0
Cycle Q Clear(g_c), s	11.8	0.0	0.0	16.1	0.0	0.8	11.2	0.0	0.0	0.1	27.2	0.0
Prop In Lane	0.98		1.00	1.00		0.06	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	311	0	1210	115	0	336	841	999	1048	159	1444	
V/C Ratio(X)	0.51	0.00	0.65	0.25	0.00	0.05	0.59	0.38	0.38	0.01	0.75	
Avail Cap(c_a), veh/h	381	0	1341	149	0	429	841	999	1048	159	1444	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.70	0.70	0.70	0.77	0.77	0.00
Uniform Delay (d), s/veh	40.6	0.0	22.5	47.7	0.0	35.7	20.3	0.0	0.0	43.7	26.3	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.9	0.8	0.0	0.0	0.8	0.8	0.7	0.0	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	7.2	0.8	0.0	0.4	3.3	0.2	0.2	0.0	11.5	0.0
Unsig. Movement Delay, s/veh												15.50
LnGrp Delay(d),s/veh	41.6	0.0	23.4	48.6	0.0	35.8	21.1	0.8	0.7	43.7	29.1	15.5
LnGrp LOS	D	A	C	D	A	D	C	A	A	D	C	B
Approach Vol, veh/h		949			46			1278			1180	A
Approach Delay, s/veh		26.4			43.9			8.6			27.9	
Approach LOS		C			D			A			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	33.2	48.0		23.8	14.2	67.0		23.8				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	23.0	43.0		24.0	4.0	62.0		24.0				
Max Q Clear Time (g_c+I1), s	13.2	29.2		18.1	2.1	2.0		13.8				
Green Ext Time (p_c), s	1.7	4.7		0.1	0.0	9.0		3.1				

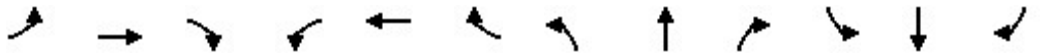
Intersection Summary			
HCM 6th Ctrl Delay		20.6	
HCM 6th LOS		C	

Notes

User approved pedestrian interval to be less than phase max green.

User approved changes to right turn type.

Unsignalized Delay for [SBR] is included in calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1016	841	0	644	317	0	0	0	416	52	584
Future Volume (veh/h)	0	1016	841	0	644	317	0	0	0	416	52	584
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1826	1841	0	1826	1870				1841	1856	1663
Adj Flow Rate, veh/h	0	1081	0	0	685	0				482	0	557
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	5	4	0	5	2				4	3	16
Cap, veh/h	0	1650		0	1650					1505	0	596
Arrive On Green	0.00	0.95	0.00	0.00	0.95	0.00				0.43	0.00	0.43
Sat Flow, veh/h	0	3561	1560	0	3561	1585				3506	0	1389
Grp Volume(v), veh/h	0	1081	0	0	685	0				482	0	557
Grp Sat Flow(s),veh/h/ln	0	1735	1560	0	1735	1585				1753	0	1389
Q Serve(g_s), s	0.0	4.2	0.0	0.0	1.7	0.0				9.6	0.0	40.1
Cycle Q Clear(g_c), s	0.0	4.2	0.0	0.0	1.7	0.0				9.6	0.0	40.1
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1650		0	1650					1505	0	596
V/C Ratio(X)	0.00	0.66		0.00	0.42					0.32	0.00	0.93
Avail Cap(c_a), veh/h	0	1650		0	1650					1803	0	715
HCM Platoon Ratio	1.00	2.00	2.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.66	0.00	0.00	0.93	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	1.4	0.0	0.0	1.4	0.0				19.8	0.0	28.6
Incr Delay (d2), s/veh	0.0	1.4	0.0	0.0	0.7	0.0				0.1	0.0	16.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.9	0.0	0.0	0.6	0.0				3.7	0.0	15.0
Unsig. Movement Delay, s/veh			1.20			0.30						
LnGrp Delay(d),s/veh	0.0	2.8	1.2	0.0	2.1	0.3				19.9	0.0	45.4
LnGrp LOS	A	A	A	A	A	A				B	A	D
Approach Vol, veh/h		1976	A		1022	A					1039	
Approach Delay, s/veh		2.1			1.5						33.6	
Approach LOS		A			A						C	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		54.9		50.1		54.9						
Change Period (Y+Rc), s		5.0		5.0		5.0						
Max Green Setting (Gmax), s		41.0		54.0		41.0						
Max Q Clear Time (g_c+I1), s		6.2		42.1		3.7						
Green Ext Time (p_c), s		10.2		3.0		5.7						

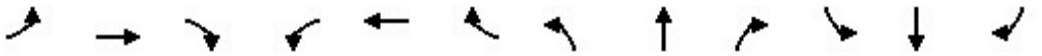
Intersection Summary												
HCM 6th Ctrl Delay			10.0									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

User approved changes to right turn type.

Unsignalized Delay for [EBR, WBR] is included in calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰↰		↱			
Traffic Volume (veh/h)	0	755	677	0	659	508	302	0	234	0	0	0
Future Volume (veh/h)	0	755	677	0	659	508	302	0	234	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	0	1856	1811	0	1870	1870	1811	0	1841			
Adj Flow Rate, veh/h	0	803	0	0	701	0	321	0	0			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	0	3	6	0	2	2	6	0	4			
Cap, veh/h	0	2779		0	2801		406	0				
Arrive On Green	0.00	1.00	0.00	0.00	0.79	0.00	0.12	0.00	0.00			
Sat Flow, veh/h	0	3618	1535	0	3647	1585	3346	0	1560			
Grp Volume(v), veh/h	0	803	0	0	701	0	321	0	0			
Grp Sat Flow(s),veh/h/ln	0	1763	1535	0	1777	1585	1673	0	1560			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	5.5	0.0	9.8	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	5.5	0.0	9.8	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2779		0	2801		406	0				
V/C Ratio(X)	0.00	0.29		0.00	0.25		0.79	0.00				
Avail Cap(c_a), veh/h	0	2779		0	2801		1291	0				
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.64	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	2.9	0.0	44.8	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0	2.2	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.0	1.4	0.0	4.0	0.0	0.0			
Unsig. Movement Delay, s/veh			0.80			0.60			42.30			
LnGrp Delay(d),s/veh	0.0	0.2	0.8	0.0	3.2	0.6	47.0	0.0	42.3			
LnGrp LOS	A	A	A	A	A	A	D	A	D			
Approach Vol, veh/h		1523	A		1241	A		420	A			
Approach Delay, s/veh		0.5			2.0			45.9				
Approach LOS		A			A			D				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		87.8				87.8		17.2				
Change Period (Y+Rc), s		5.0				5.0		4.5				
Max Green Setting (Gmax), s		55.0				55.0		40.5				
Max Q Clear Time (g_c+I1), s		2.0				7.5		11.8				
Green Ext Time (p_c), s		7.2				5.9		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	7.1
HCM 6th LOS	A

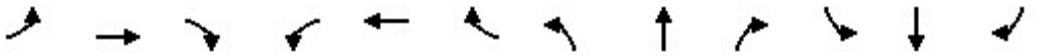
Notes

Unsignalized Delay for [NBR, EBR, WBR] is included in calculations of the approach delay and intersection delay.

ID	Software/Method	Intersection	Control Type	LOS	Delay	V/C Ratio
1	Synchro HCM 6th Signal	Day Road & Grahams Ferry Rd	Signal	B	12.5	0.66
2	Synchro HCM 6th Signal	Boones Ferry Road & Day Road	Signal	B	15.7	0.65
3	Synchro HCM 6th Signal	Boones Ferry Road & 95th Avenue	Signal	C	20.6	0.71
4	Synchro HCM 6th Signal	I-5 SB On Ramp/I-5 SB Off Ramp & Boones Ferry Road/Sw Elligsen Rd	Signal	B	10.0	0.78
5	Synchro HCM 6th Signal	I-5 NB Off Ramp/I-5 NB Ramp & Sw Elligsen Rd/Elligsen Road	Signal	A	7.1	0.42

APPENDIX G

HCM REPORT – EXISTNG + PROJECT + STAGE II



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	56	9	109	4	452	1	228	77	502	330	2
Future Volume (veh/h)	12	56	9	109	4	452	1	228	77	502	330	2
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		0.98
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	1900	1900	1900	1426	1900	1781	1900	1811	1796	1811	1781	1900
Adj Flow Rate, veh/h	13	60	3	116	4	60	1	243	70	534	351	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	32	0	8	0	6	7	6	8	0
Cap, veh/h	73	186	8	260	7	224	399	377	109	914	1192	7
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.00	0.28	0.28	0.40	0.67	0.67
Sat Flow, veh/h	73	1248	54	1047	49	1505	1810	1352	389	1725	1769	10
Grp Volume(v), veh/h	76	0	0	120	0	60	1	0	313	534	0	353
Grp Sat Flow(s),veh/h/ln	1375	0	0	1096	0	1505	1810	0	1741	1725	0	1779
Q Serve(g_s), s	0.1	0.0	0.0	0.1	0.0	2.4	0.0	0.0	10.8	9.0	0.0	5.5
Cycle Q Clear(g_c), s	7.8	0.0	0.0	7.8	0.0	2.4	0.0	0.0	10.8	9.0	0.0	5.5
Prop In Lane	0.17		0.04	0.97		1.00	1.00		0.22	1.00		0.01
Lane Grp Cap(c), veh/h	267	0	0	267	0	224	399	0	485	914	0	1199
V/C Ratio(X)	0.28	0.00	0.00	0.45	0.00	0.27	0.00	0.00	0.64	0.58	0.00	0.29
Avail Cap(c_a), veh/h	574	0	0	506	0	486	503	0	485	914	0	1199
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	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.8	0.0	0.0	28.0	0.0	25.7	17.7	0.0	21.6	6.6	0.0	4.5
Incr Delay (d2), s/veh	0.6	0.0	0.0	1.2	0.0	0.6	0.0	0.0	6.5	2.7	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.9	0.0	0.9	0.0	0.0	5.0	2.8	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.3	0.0	0.0	29.2	0.0	26.3	17.7	0.0	28.1	9.3	0.0	5.1
LnGrp LOS	C	A	A	C	A	C	B	A	C	A	A	A
Approach Vol, veh/h		76			180			314			887	
Approach Delay, s/veh		26.3			28.2			28.1			7.7	
Approach LOS		C			C			C			A	

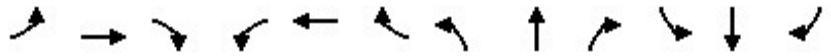
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	31.0	23.0		14.2	4.1	49.9		14.2				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	27.0	19.0		22.0	4.0	42.0		22.0				
Max Q Clear Time (g_c+I1), s	11.0	12.8		9.8	2.0	7.5		9.8				
Green Ext Time (p_c), s	1.7	0.9		0.2	0.0	2.3		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			15.6									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	0	606	0	0	0	528	375	0	0	593	30
Future Volume (veh/h)	24	0	606	0	0	0	528	375	0	0	593	30
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		0.98
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	1900	1900	1841	1900	1900	1900	1752	1841	1900	1900	1870	1811
Adj Flow Rate, veh/h	25	0	588	0	0	0	550	391	0	0	618	29
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	4	0	0	0	10	4	0	0	2	6
Cap, veh/h	148	0	921	0	105	0	1732	1599	0	2	1019	48
Arrive On Green	0.06	0.00	0.06	0.00	0.00	0.00	0.89	1.00	0.00	0.00	0.30	0.30
Sat Flow, veh/h	1440	0	1560	0	1900	0	3237	1841	0	1810	3453	162
Grp Volume(v), veh/h	25	0	588	0	0	0	550	391	0	0	318	329
Grp Sat Flow(s),veh/h/ln	1440	0	1560	0	1900	0	1618	1841	0	1810	1777	1838
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	16.1	16.2
Cycle Q Clear(g_c), s	1.8	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	16.1	16.2
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.09
Lane Grp Cap(c), veh/h	148	0	921	0	105	0	1732	1599	0	2	525	543
V/C Ratio(X)	0.17	0.00	0.64	0.00	0.00	0.00	0.32	0.24	0.00	0.00	0.61	0.61
Avail Cap(c_a), veh/h	288	0	1072	0	290	0	1732	1599	0	69	525	543
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	0.95	0.95	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	0.0	14.1	0.0	0.0	0.0	2.7	0.0	0.0	0.0	31.8	31.8
Incr Delay (d2), s/veh	0.5	0.0	1.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	5.1	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	8.8	0.0	0.0	0.0	0.7	0.2	0.0	0.0	7.5	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.2	0.0	15.1	0.0	0.0	0.0	2.8	0.3	0.0	0.0	36.9	36.7
LnGrp LOS	D	A	B	A	A	A	A	A	A	A	D	D
Approach Vol, veh/h		613			0			941			647	
Approach Delay, s/veh		16.5			0.0			1.8			36.8	
Approach LOS		B						A			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	95.2		9.8	60.2	35.0		9.8
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	4.0	73.0		16.0	46.0	31.0		16.0
Max Q Clear Time (g_c+I1), s	0.0	2.0		3.8	4.6	18.2		0.0
Green Ext Time (p_c), s	0.0	2.6		2.1	2.1	3.1		0.0

Intersection Summary	
HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	3	829	28	15	6	496	755	8	1	1049	166
Future Volume (veh/h)	150	3	829	28	15	6	496	755	8	1	1049	166
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	1.00		0.98	1.00		0.98	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	1796	1900	1841	1900	1900	1900	1693	1781	1900	1900	1856	1781
Adj Flow Rate, veh/h	156	3	825	29	16	1	517	786	7	1	1093	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	0	4	0	0	0	14	8	0	0	3	8
Cap, veh/h	307	5	1210	114	318	20	837	2029	18	157	1444	
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.54	1.00	1.00	0.09	0.41	0.00
Sat Flow, veh/h	1332	26	2638	672	1767	110	3127	3437	31	1810	3526	1510
Grp Volume(v), veh/h	159	0	825	29	0	17	517	387	406	1	1093	0
Grp Sat Flow(s),veh/h/ln	1357	0	1319	672	0	1877	1564	1692	1775	1810	1763	1510
Q Serve(g_s), s	11.0	0.0	0.0	4.4	0.0	0.8	12.0	0.0	0.0	0.1	27.9	0.0
Cycle Q Clear(g_c), s	11.8	0.0	0.0	16.2	0.0	0.8	12.0	0.0	0.0	0.1	27.9	0.0
Prop In Lane	0.98		1.00	1.00		0.06	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	312	0	1210	114	0	338	837	999	1048	157	1444	
V/C Ratio(X)	0.51	0.00	0.68	0.25	0.00	0.05	0.62	0.39	0.39	0.01	0.76	
Avail Cap(c_a), veh/h	381	0	1338	147	0	429	837	999	1048	157	1444	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.68	0.68	0.68	0.76	0.76	0.00
Uniform Delay (d), s/veh	40.5	0.0	22.9	47.7	0.0	35.6	20.7	0.0	0.0	43.8	26.5	0.0
Incr Delay (d2), s/veh	1.0	0.0	1.1	0.9	0.0	0.0	0.9	0.8	0.7	0.0	2.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	7.7	0.8	0.0	0.4	3.4	0.2	0.2	0.0	11.7	0.0
Unsig. Movement Delay, s/veh												15.50
LnGrp Delay(d),s/veh	41.5	0.0	24.0	48.5	0.0	35.7	21.6	0.8	0.7	43.8	29.4	15.5
LnGrp LOS	D	A	C	D	A	D	C	A	A	D	C	B
Approach Vol, veh/h		984			46			1310			1197	A
Approach Delay, s/veh		26.8			43.8			9.0			28.2	
Approach LOS		C			D			A			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.1	48.0		23.9	14.1	67.0		23.9
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	23.0	43.0		24.0	4.0	62.0		24.0
Max Q Clear Time (g_c+I1), s	14.0	29.9		18.2	2.1	2.0		13.8
Green Ext Time (p_c), s	1.7	4.6		0.1	0.0	9.1		3.2

Intersection Summary	
HCM 6th Ctrl Delay	20.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

User approved changes to right turn type.

Unsignalized Delay for [SBR] is included in calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱				↰	↰	↱
Traffic Volume (veh/h)	0	1054	852	0	654	317	0	0	0	416	52	605
Future Volume (veh/h)	0	1054	852	0	654	317	0	0	0	416	52	605
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1826	1841	0	1826	1870				1841	1856	1663
Adj Flow Rate, veh/h	0	1121	0	0	696	0				482	0	580
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	5	4	0	5	2				4	3	16
Cap, veh/h	0	1598		0	1598					1558	0	617
Arrive On Green	0.00	0.92	0.00	0.00	0.92	0.00				0.44	0.00	0.44
Sat Flow, veh/h	0	3561	1560	0	3561	1585				3506	0	1389
Grp Volume(v), veh/h	0	1121	0	0	696	0				482	0	580
Grp Sat Flow(s),veh/h/ln	0	1735	1560	0	1735	1585				1753	0	1389
Q Serve(g_s), s	0.0	7.6	0.0	0.0	2.8	0.0				9.3	0.0	41.8
Cycle Q Clear(g_c), s	0.0	7.6	0.0	0.0	2.8	0.0				9.3	0.0	41.8
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1598		0	1598					1558	0	617
V/C Ratio(X)	0.00	0.70		0.00	0.44					0.31	0.00	0.94
Avail Cap(c_a), veh/h	0	1598		0	1598					1803	0	715
HCM Platoon Ratio	1.00	2.00	2.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.63	0.00	0.00	0.93	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	2.5	0.0	0.0	2.3	0.0				18.8	0.0	27.8
Incr Delay (d2), s/veh	0.0	1.6	0.0	0.0	0.8	0.0				0.1	0.0	18.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.5	0.0	0.0	0.8	0.0				3.5	0.0	15.7
Unsig. Movement Delay, s/veh			1.20			0.30						
LnGrp Delay(d),s/veh	0.0	4.2	1.2	0.0	3.2	0.3				18.9	0.0	46.1
LnGrp LOS	A	A	A	A	A	A				B	A	D
Approach Vol, veh/h		2027	A		1033	A					1062	
Approach Delay, s/veh		2.9			2.2						33.7	
Approach LOS		A			A						C	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		53.4		51.6		53.4
Change Period (Y+Rc), s		5.0		5.0		5.0
Max Green Setting (Gmax), s		41.0		54.0		41.0
Max Q Clear Time (g_c+I1), s		9.6		43.8		4.8
Green Ext Time (p_c), s		10.4		2.8		5.7

Intersection Summary		
HCM 6th Ctrl Delay		10.7
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

User approved changes to right turn type.

Unsignalized Delay for [EBR, WBR] is included in calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑	↱	↰↰		↱			
Traffic Volume (veh/h)	0	760	710	0	662	508	309	0	234	0	0	0
Future Volume (veh/h)	0	760	710	0	662	508	309	0	234	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	0	1856	1811	0	1870	1870	1811	0	1841			
Adj Flow Rate, veh/h	0	809	0	0	704	0	329	0	0			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	0	3	6	0	2	2	6	0	4			
Cap, veh/h	0	2770		0	2792		415	0				
Arrive On Green	0.00	1.00	0.00	0.00	0.79	0.00	0.12	0.00	0.00			
Sat Flow, veh/h	0	3618	1535	0	3647	1585	3346	0	1560			
Grp Volume(v), veh/h	0	809	0	0	704	0	329	0	0			
Grp Sat Flow(s),veh/h/ln	0	1763	1535	0	1777	1585	1673	0	1560			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	5.6	0.0	10.0	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	5.6	0.0	10.0	0.0	0.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2770		0	2792		415	0				
V/C Ratio(X)	0.00	0.29		0.00	0.25		0.79	0.00				
Avail Cap(c_a), veh/h	0	2770		0	2792		1291	0				
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.60	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	3.0	0.0	44.7	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0	2.1	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.0	1.5	0.0	4.1	0.0	0.0			
Unsig. Movement Delay, s/veh			0.80			0.60			42.30			
LnGrp Delay(d),s/veh	0.0	0.2	0.8	0.0	3.2	0.6	46.8	0.0	42.3			
LnGrp LOS	A	A	A	A	A	A	D	A	D			
Approach Vol, veh/h		1564	A		1244	A		428	A			
Approach Delay, s/veh		0.5			2.1			45.8				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		87.5				87.5		17.5				
Change Period (Y+Rc), s		5.0				5.0		4.5				
Max Green Setting (Gmax), s		55.0				55.0		40.5				
Max Q Clear Time (g_c+I1), s		2.0				7.6		12.0				
Green Ext Time (p_c), s		7.2				6.0		1.0				

Intersection Summary		
HCM 6th Ctrl Delay		7.1
HCM 6th LOS		A

Notes

Unsignalized Delay for [NBR, EBR, WBR] is included in calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	49	257	7	31	417
Future Vol, veh/h	11	49	257	7	31	417
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	94	94	94	94	94	94
Heavy Vehicles, %	0	0	6	0	0	14
Mvmt Flow	12	52	273	7	33	444

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	787	277	0	0	280	0
Stage 1	277	-	-	-	-	-
Stage 2	510	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	363	767	-	-	1294	-
Stage 1	774	-	-	-	-	-
Stage 2	607	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	351	767	-	-	1294	-
Mov Cap-2 Maneuver	351	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	586	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	630	1294	-
HCM Lane V/C Ratio	-	-	0.101	0.025	-
HCM Control Delay (s)	-	-	11.4	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	38	24	16	23	0
Future Vol, veh/h	0	38	24	16	23	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	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	43	27	18	26	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	98	26	26	0	-	0
Stage 1	26	-	-	-	-	-
Stage 2	72	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	906	1056	1601	-	-	-
Stage 1	1002	-	-	-	-	-
Stage 2	956	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	891	1056	1601	-	-	-
Mov Cap-2 Maneuver	891	-	-	-	-	-
Stage 1	985	-	-	-	-	-
Stage 2	956	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	4.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1601	-	1056	-	-
HCM Lane V/C Ratio	0.017	-	0.04	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

ID	Software/Method	Intersection	Control Type	LOS	Delay	V/C Ratio
1	Synchro HCM 6th Signal	Day Road & Grahams Ferry Rd	Signal	B	15.6	0.79
2	Synchro HCM 6th Signal	Boones Ferry Road & Day Road	Signal	B	16.2	0.67
3	Synchro HCM 6th Signal	Boones Ferry Road & 95th Avenue	Signal	C	20.9	0.73
4	Synchro HCM 6th Signal	I-5 SB On Ramp/I-5 SB Off Ramp & Boones Ferry Road/Sw Elligsen Rd	Signal	B	10.7	0.81
5	Synchro HCM 6th Signal	I-5 NB Off Ramp/I-5 NB Ramp & Sw Elligsen Rd/Elligsen Road	Signal	A	7.1	0.42

APPENDIX H

LEFT TURN LANE WARRANT VOLUME CRITERIA

Left Turn Lane Evaluation Process

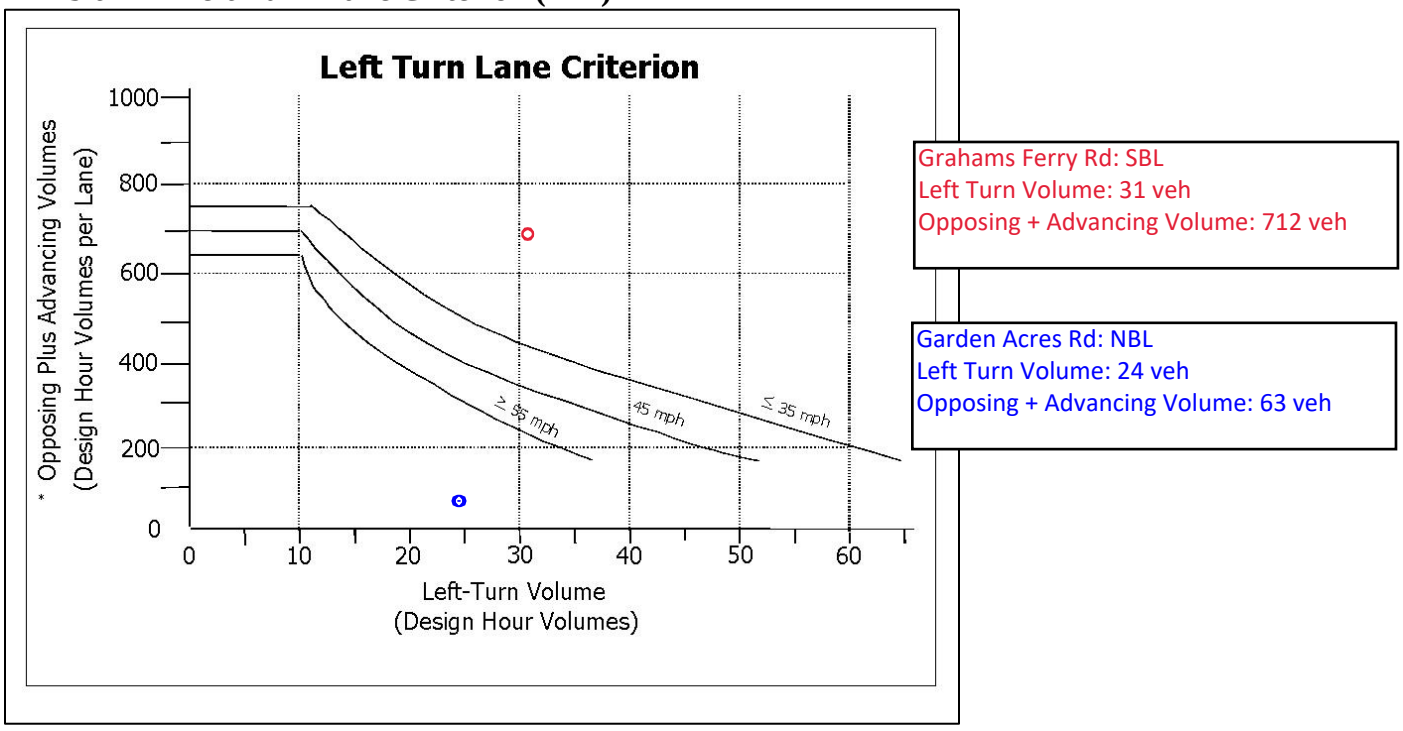
- A left turn lane should be installed, if criterion 1 (Volume) or 2 (Crash) or 3 (Special Cases) are met, unless a subsequent evaluation eliminate it as an option; and
- The Region Traffic Engineer must approve all proposed left turn lanes on state highways, regardless of funding source; and
- Left turn lane complies with Access Management Spacing Standards; and
- Left turn lane conforms to applicable local, regional and state plans.

Criterion 1: Vehicular Volume

The vehicular volume criterion is intended for application where the volume of intersecting traffic is the principal reason for considering installation of a left turn lane. The volume criterion is determined by the Texas Transportation Institute (TTI) curves in Exhibit 12-1.

The criterion is not met from zero to ten left turn vehicles per hour, but indicates that careful consideration be given to installing a left turn lane due to the increased potential for rear-end collisions in the through lanes. While the turn volumes are low, the adverse safety and operations impacts may require installation of a left turn. The final determination will be based on a field study.

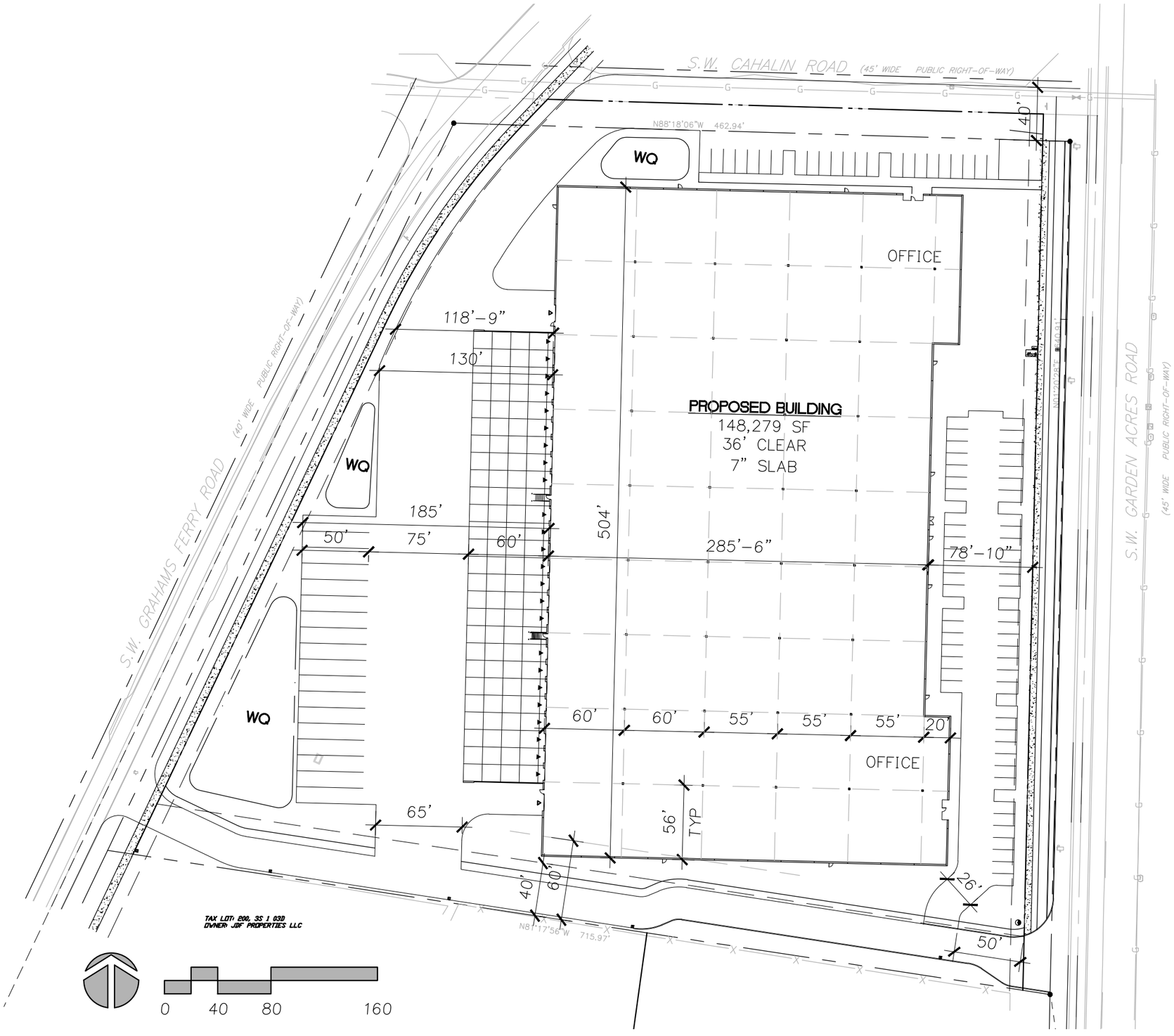
Exhibit 12-1 Left Turn Lane Criterion (TTI)



*(Advancing Volume/Number of Advancing Through Lanes) + (Opposing Volume/Number of Opposing Through Lanes)
Opposing left turns are not counted as opposing volumes

APPENDIX I

SITE PLAN



SITE DATA

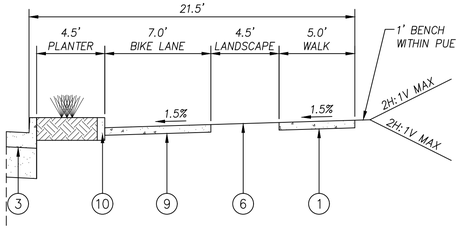
SITE AREA:	337,507 SF (7.75 AC)
BUILDING AREA:	148,279 SF
% COVERAGE:	43.9%
DOCK DOORS	24
DRIVE-IN DOORS	2
PARKING:	
AUTO:	78 SPACES (0.53/1000)
TRAILER:	18 SPACES (12'x50')

APPENDIX J

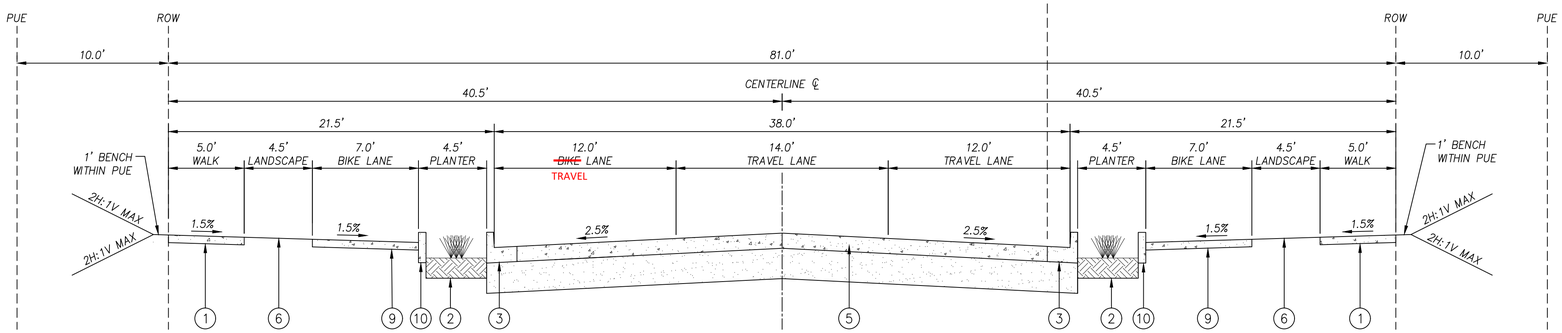
GARDEN ACRES ROAD PROJECT – CROSS SECTION

CONSTRUCTION NOTES

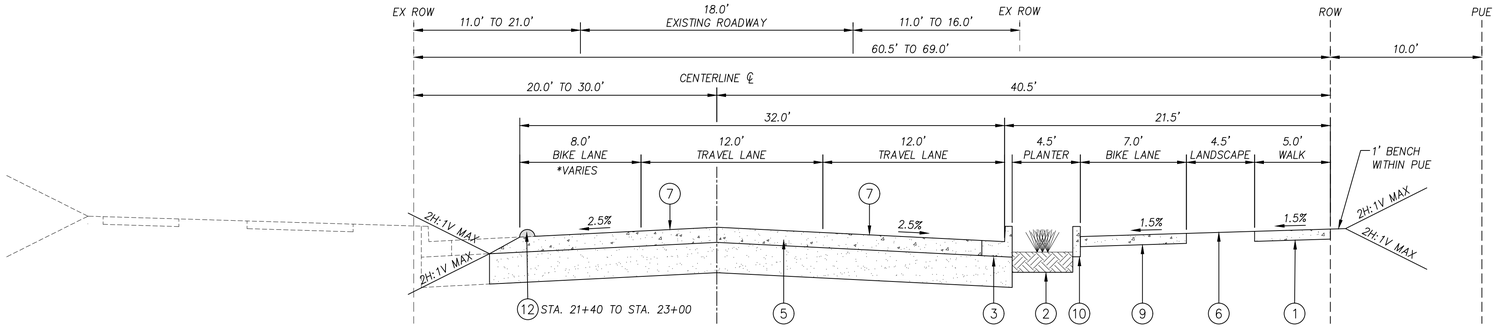
1. CONCRETE SIDEWALK SECTION
   4" P.C. CONCRETE (TYP. SEE DETAIL)
   2" AGGREGATE BASE (1"–0)
   ON COMPACTED SUBGRADE
   SEE DETAIL R–1075, SHEET D02
2. STORMWATER INFILTRATION PLANTER
   SEE ROADWAY PLANS FOR LOCATION OF STORMWATER FACILITIES WITHIN PLANTER. SEE SHEET D09 FOR DETAIL
3. CONCRETE STREET CURB AND GUTTER
   FOR STANDAR CURB AND GUTTER SEE DETAIL R–1060, SHEET D01
   FOR THICKENED CURB AND GUTTER AT STORMWATER PLANTERS SEE DETAIL ON SHEET D09
5. CONCRETE PAVEMENT SECTION
   8.5" CLASS 4000–3/4 PLAIN CONCRETE PAVEMENT
   2" 3/4"–0" AGGREGATE BASE
   6" 1–1/2"–0" AGGREGATE BASE
   GEOTEXTILE FABRIC
   12" COMPACTED SUBGRADE
   MAXIMUM 14–FOOT JOINT SPACING
   1 ¼ INCH, ROUNDED DOWELS, 18 INCHES LONG, 12 INCHES ON–CENTER
6. LANDSCAPE PLANTER STRIP
   SEE LANDSCAPE PLANS
7. CONSTRUCT CONCRETE PAVEMENT JOINTS PER DETAIL R–1180 ON SHEET D02. CONTRACTOR SHALL SUBMIT JOINTING PLAN PRIOR TO CONSTRUCTION FOR REVIEW AND APPROVAL.
9. CONCRETE BIKE LANE SECTION
   4" P.C. CONCRETE (TYP. SEE DETAIL).
   2" AGGREGATE BASE (1"–0)
   ON COMPACTED SUBGRADE
   (SEE DETAIL R–1075, SHEET D02)
   JOINTS ARE TO BE SAWN WHILE CONCRETE IS GREEN, NOT TOOLED DURING POUR.
10. 4" CONCRETE CURB
    FOR STANDARD 4" CURB SEE DETAIL ON SHEET D01.
    FOR THICKENED 4" PERIMETER CURB AT STORMWATER PLANTERS SEE DETAIL ON SHEET D09
12. TEMPORARY ASPHALT DRAINAGE CURB PER DETAIL ON SHEET D01.



GARDEN ACRES ROAD TYPICAL SECTION
NO STORMWATER PLANTER



GARDEN ACRES ROAD TYPICAL SECTION – FULL CONCRETE SECTION
STA. 16+24.53 TO STA. 19+57.41
NTS



GARDEN ACRES ROAD TYPICAL SECTION – 3/4" CONCRETE SECTION
*STA. 20+52.72 TO STA. 22+14.57
STA. 22+14.57 TO STA. 45+00.00
NTS

TYPICAL SECTIONS
GARDEN ACRES ROAD
WILSONVILLE, OREOGN

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

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 11, 2006
BENJAMIN R. BRAUN
70,863
EXPIRES: 12/31/19

DESIGNED:	BDJ	
DRAWN:	BDJ	
CHECKED:	BRA	
DATE:		4/19/2019

REVISIONS

NO.	DESCRIPTION	DATE

SHEET NO.
G03

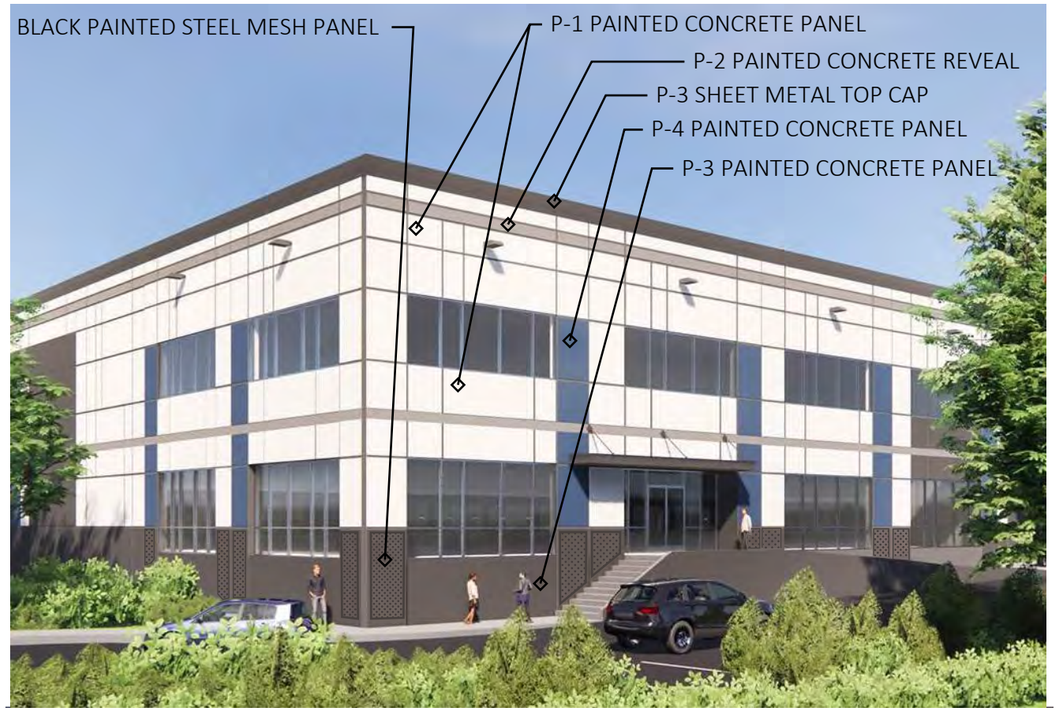
JOB NO.
WSV-12

CONSTRUCTION SET

P:\WSV (City of Wilsonville)\WSV-12 (Garden Acres Road)\WSV12-DWGS\SHEETS\ WSV12-2-G-Typical Sections.dwg

MACKENZIE.

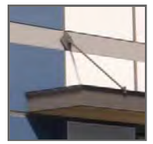
DESIGN DRIVEN I CLIENT FOCUSED



SE CORNER PERSPECTIVE

SW CORNER PERSPECTIVE

STOREFRONT:
CLEAR ANODIZED
ALUMINUM



CANOPY:
PAINTED STEEL CANOPY
(P-3)

GLAZING:
VISTACOOL PACIFICA
+ SOLARBAN 60

PAINTED CONCRETE/
CONCRETE REVEALS

DOCK DOORS:
FACTORY FINISH WHITE

P-4	P-1	P-2	P-3
SW 6243	**SW 7667**	**SW 7670**	**SW 7674**
Color Name: **DISTANCE** RGB **93/111/127**	Color Name: **ZIRCON** RGB **202/201/198**	Color Name: **GRAY SHINGLE** RGB **148/147/146**	Color Name: **PEPPERCORN** RGB **88/88/88**
Accent Small areas for pop of color	**Body**	**Trim** Large accent areas	**Dark Accent** Building base, unfinished metals, handrails, dock plates

Black Creek Group - Coffee Creek

MATERIALS BOARD | 02.10.22

FIRE CODE / LAND USE / BUILDING REVIEW APPLICATION

Tualatin Valley Fire & Rescue

North Operating Center
11945 SW 70th Avenue
Tigard, OR 97223
Phone: 503-649-8577

South Operating Center
8445 SW Elligsen Rd
Wilsonville, OR 97070
Phone: 503-649-8577

REV 6-30-20

Project Information

Applicant Name: Mackenzie ATTN: Lee Leighton
Address: 1515 SE Water St, STE 100
Phone: 971.346.3727
Email: lleighton@mcknze.com
Site Address: 25190, 25020 SW Grahams Ferry Rd
City: Wilsonville / Washington County
Map & Tax Lot #: 3S103D 000100
Business Name: BTC III Grahams Ferry IC LLC
Land Use/Building Jurisdiction: Wilsonville
Land Use/ Building Permit # Pending

Choose from: Beaverton, Tigard, Newberg, Tualatin, North Plains, West Linn, Wilsonville, Sherwood, Rivergrove, Durham, King City, Washington County, Clackamas County, Multnomah County, Yamhill County

Project Description

Annexation, Zone Map Amendment, Planned Development Stage I & II, Site Design Review and related development applications for a 148,254 sf single-building speculative industrial development consistent with the Coffee Creek Industrial Area Plan.

Permit/Review Type (check one):

☒ Land Use / Building Review - Service Provider Permit
☐ Emergency Radio Responder Coverage Install/Test
☐ LPG Tank (Greater than 2,000 gallons)
☐ Flammable or Combustible Liquid Tank Installation (Greater than 1,000 gallons)
  * Exception: Underground Storage Tanks (UST) are deferred to DEQ for regulation.
☐ Explosives Blasting (Blasting plan is required)
☐ Exterior Toxic, Pyrophoric or Corrosive Gas Installation (in excess of 810 cu.ft.)
☐ Tents or Temporary Membrane Structures (in excess of 10,000 square feet)
☐ Temporary Haunted House or similar
☐ OLCC Cannabis Extraction License Review
☐ Ceremonial Fire or Bonfire (For gathering, ceremony or other assembly)

For Fire Marshal's Office Use Only

TVFR Permit # 2021-0131
Permit Type: SPP-COW
Submittal Date: 12-10-21
Assigned To: DFM Arn
Due Date: 12-14-21
Fees Due: MERRC
Fees Paid: Ø

Approval/Inspection Conditions

(For Fire Marshal's Office Use Only)

This section is for application approval only

0450 — 12-13-21
Fire Marshal or Designee — Date

Conditions: If Mobile Emergency Radio (MERRC) option in chosen fees will need to be paid to TVFR prior to Building Permit.
Final Inspection Required

See Attached Conditions: ☒ Yes ☐ No
On Fire Service Plans

Site Inspection Required: ☒ Yes ☐ No

This section used when site inspection is required

Inspection Comments:

Final TVFR Approval Signature & Emp ID — Date

From: Arn, Jason S.
To: Kim Schoenfelder
Cc: Zach Desper - Black Creek Group (zach.desper@blackcreekgroup.com); Scott Moore; Ryan Weston; Nicole Burrell; lleighton@mcknze.com; Aaron Carpenter
Subject: RE: Black Creek Group - Graham"s Ferry Parcel - Wilsonville, OR
Date: Tuesday, March 1, 2022 12:36:35 PM
Attachments: image001.png
image002.png
image003.png
image004.png
157-C1.34-C1.34.pdf

Hi Kim,

The revised utility plan is acceptable to the Fire District.

Thank you,

Jason Arn | Deputy Fire Marshal CFI
Tualatin Valley Fire & Rescue
Direct: 503-259-1510
www.tvfr.com

From: Kim Schoenfelder <kschoenfelder@kgip.com>
Sent: Saturday, February 26, 2022 7:44 AM
To: Arn, Jason S. <Jason.Arn@tvfr.com>
Cc: Zach Desper - Black Creek Group (zach.desper@blackcreekgroup.com) <zach.desper@blackcreekgroup.com>; Scott Moore <SMoore@mcknze.com>; Ryan Weston <RWeston@mcknze.com>; Nicole Burrell <nburrell@mcknze.com>; lleighton@mcknze.com; Aaron Carpenter <ACarpenter@mcknze.com>
Subject: RE: Black Creek Group - Graham's Ferry Parcel - Wilsonville, OR

Morning Jason,

Hope you are having a great weekend.

Thanks for your help to date on the Grahams Ferry site in Wilsonville. I understand you and Amy at the City connected and discussed hydrant locations and City's desire to extend waterline in the south supporting street and Grahams Ferry and that all hydrants be fed from these public lines without onsite waterlines where possible.

We have revised the utility/fire plan to reflect City's direction and now need an updated service provider letter for City to keep our project moving forward.

Is this something you can issue quickly early next week?

Thank you in advance for any help you can provide.

Best to you!

Kim

Kim Schoenfelder | KGIP
Vice President
C: (503) 572-8128

SEATTLE | PORTLAND | BAY AREA

From: Arn, Jason S. <Jason.Arn@tvfr.com>
Sent: Tuesday, November 23, 2021 2:02 PM
To: Nicole Burrell <NBurrell@mcknze.com>; Kim Schoenfelder <kschoenfelder@kgip.com>; Carlson, Dan <carlson@ci.wilsonville.or.us>
Cc: Zach Desper - Black Creek Group (zach.desper@blackcreekgroup.com) <zach.desper@blackcreekgroup.com>; Scott Moore <SMoore@mcknze.com>; Ryan Weston <RWeston@mcknze.com>; Bateschell, Miranda <bateschell@ci.wilsonville.or.us>
Subject: RE: Black Creek Group - Graham's Ferry Parcel - Wilsonville, OR

Hi Nicole,

Yes, the attached site plan meets our fire access requirements. Here is a link to our commercial guide which has a mountable curb detail on page 23.

Thank you,

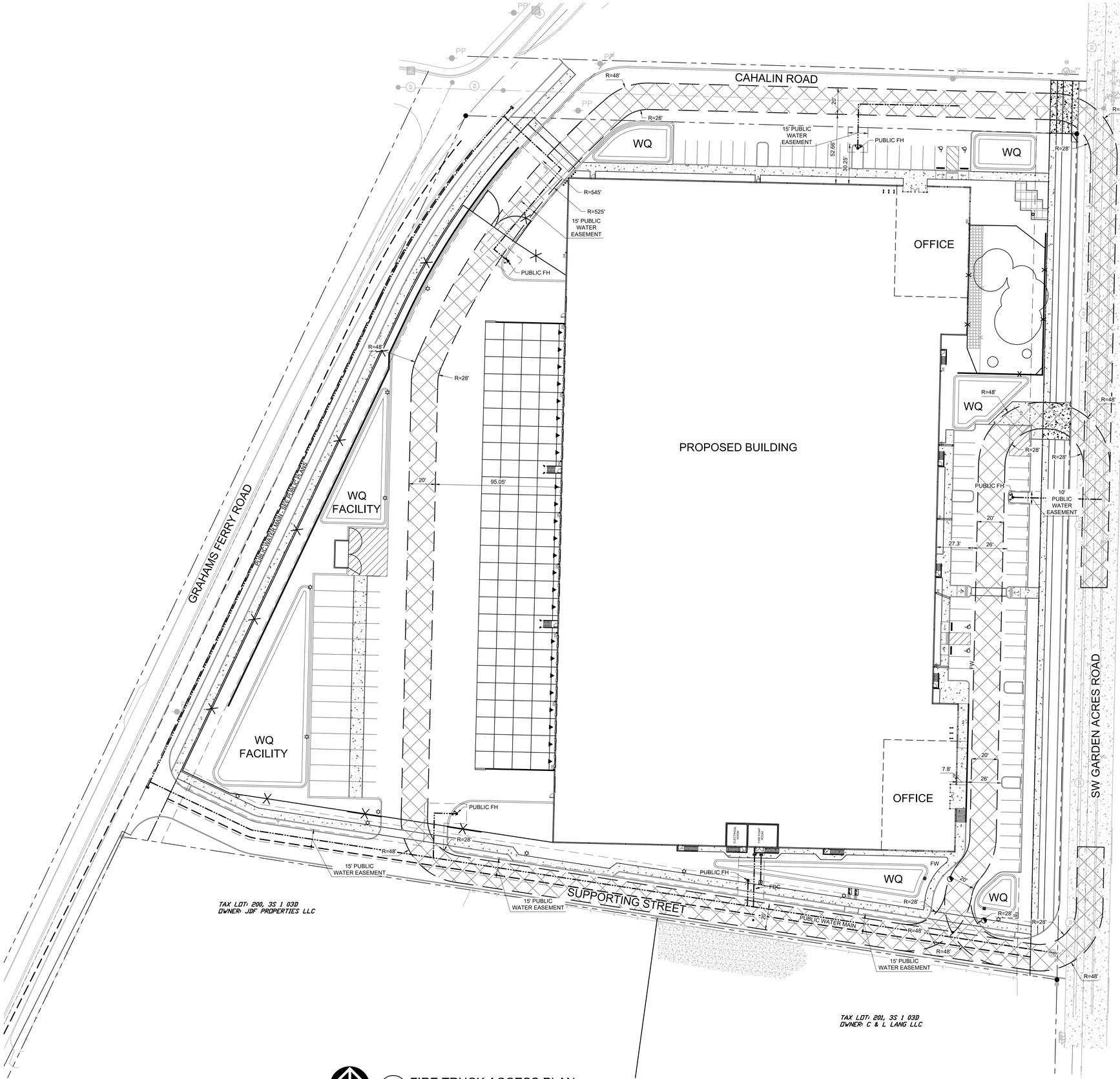
Jason Arn | Deputy Fire Marshal CFI
Tualatin Valley Fire & Rescue
Direct: 503-259-1510
www.tvfr.com

From: Nicole Burrell <NBurrell@mcknze.com>
Sent: Monday, November 22, 2021 10:37 AM
To: Kim Schoenfelder <kschoenfelder@kgip.com>; Arn, Jason S. <Jason.Arn@tvfr.com>; Carlson, Dan <carlson@ci.wilsonville.or.us>
Cc: Zach Desper - Black Creek Group (zach.desper@blackcreekgroup.com) <zach.desper@blackcreekgroup.com>; Scott Moore <SMoore@mcknze.com>; Ryan Weston <RWeston@mcknze.com>; Bateschell, Miranda <bateschell@ci.wilsonville.or.us>
Subject: RE: Black Creek Group - Graham's Ferry Parcel - Wilsonville, OR

Good Morning Jason,

We haven't fully flushed out the fire protection design but at least have started to tackle the aerial apparatus access. Is the attached acceptable for your truck and aerial apparatus access? We are still figuring out the FH locations and will be smoothing out the curb radiis where the truck jumps the curb.

Thank you,



1 C1.34 FIRE TRUCK ACCESS PLAN

1" = 30'

30 0 15 30 60 120

(IN FEET)

1 inch = **30** ft.

LEGEND

20' R=28' R=48' — FIRE TRUCK TURN GEOMETRY

PAINTED FIRE CURB

NOTES

1. FIRE DEPARTMENT ACCESS ROADS ON SITE ARE DESIGNED TO SUPPORT AN APPARATUS WEIGHING 75,000 LB. GROSS VEHICLE WEIGHT PER GEOTECHINICAL RECOMMENDATIONS
2. ALL FIRE DEPARTMENT ACCESS ROADS SHOWN ON PLANS HAVE A TURNING RADIUS OF 28 FEET (INSIDE) AND 48 FEET (OUTSIDE), UNLESS OTHERWISE NOTED
3. AVAILABLE FIRE FLOW PER "CITY OF WILSONVILLE - FLOW TEST" BY INTERFACE ENGINEERING DATED OCTOBER 1, 2021: 7878 GPM CALCULATED AT 20 PSI

TVF&R Tualatin Valley Fire & Rescue

APPROVED PLANS

APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.

Deputy Fire Marshal II

TVF&R Permitt # 2021-0131

Architecture ▪ Interiors
Planning ▪ Engineering

Portland, OR
503.224.9560
Vancouver, WA
360.695.7879
Seattle, WA
206.749.9993
www.mcknze.com

MACKENZIE.
DESIGN DRIVEN | CLIENT FOCUSED

Client

BTC III GRAHAMS FERRY IC LLC

Project

BTC III GRAHAMS FERRY IC LLC

REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:

FIRE TRUCK ACCESS PLAN

DRAWN BY: SAO

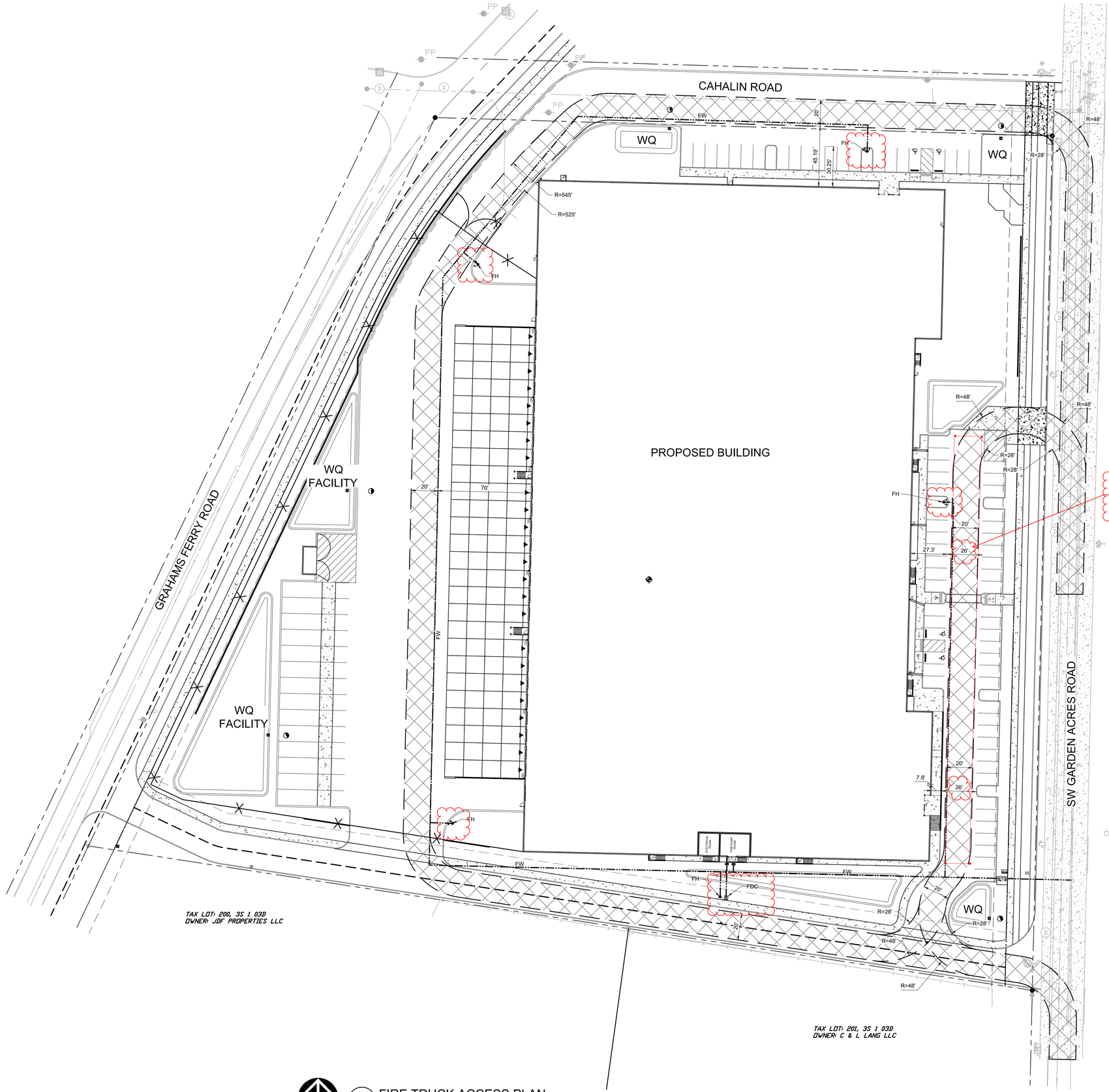
CHECKED BY: NKB

SHEET

C1.34

JOB NO. **2210157.00**

COMPLETENESS RESPONSE - 02/11/2022



1 C1.34 FIRE TRUCK ACCESS PLAN
1" = 40'

30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

LEGEND

20' R=28' R=48' — FIRE TRUCK TURN GEOMETRY

PAINTED FIRE CURB

NOTES

1. FIRE DEPARTMENT ACCESS ROADS ON SITE ARE DESIGNED TO SUPPORT AN APPARATUS WEIGHING 75,000 LB. GROSS VEHICLE WEIGHT PER GEOTECHINICAL RECOMMENDATIONS
2. ALL FIRE DEPARTMENT ACCESS ROADS SHOWN ON PLANS HAVE A TURNING RADIUS OF 28 FEET (INSIDE) AND 48 FEET (OUTSIDE), UNLESS OTHERWISE NOTED
3. AVAILABLE FIRE FLOW PER "CITY OF WILSONVILLE - FLOW TEST" BY INTERFACE ENGINEERING DATED OCTOBER 1, 2021: 7878 GPM CALCULATED AT 20 PSI

Tualatin Valley Fire & Rescue
APPROVED PLANS
APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.
Deputy Fire Marshal II
TVFR Permit # 2021-0131

FD Notes:

Building will be required to test for a Emergency Responder Radio Coverage or opt into our Mobile Emergency Radio program (MERRC). If the MERRC option is chosen, fees will need to be paid to TVF&R prior to the issuance of a Building Permit OFC 510.

Fire Lane markings to be determined OFC 503.3.

Fire department final inspection required OFC 107.2.

Exhibit FS-1

Architecture ▪ Interiors
Planning ▪ Engineering

Portland, OR
503.224.9560
Vancouver, WA
360.695.7879
Seattle, WA
206.749.9993
www.mcknze.com

MACKENZIE.
DESIGN DRIVEN | CLIENT FOCUSED

Client
BLACK CREEK GROUP

Project
COFFEE CREEK INDUSTRIAL

REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
FIRE TRUCK ACCESS PLAN

DRAWN BY: SAO
CHECKED BY: NKB
SHEET
C1.34
JOB NO. **2210157.00**

PROGRESS SET 12-10-2021

BCG SITE

Wilsonville, Oregon

LEGEND

- Site
- Tax Lots

NOTE:
DISTANCE MEASUREMENTS TO NEIGHBORING STRUCTURES ARE APPROXIMATE

0 50 100 200 Feet

N

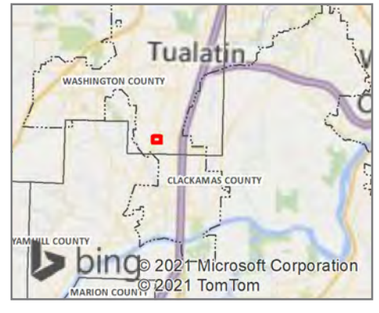
1 inch = 100 feet

SOURCE DATA:
Metro RLIS Lite Base Data, February 2021

GEOGRAPHIC PROJECTION:
NAD 83 HARN, Oregon North Lambert Conformal Conic

Date: 5/18/2021
File: Aerial

Map Created By: SHS
Project No: 2210157.00



MACKENZIE.
P 503.224.9560 • F 503.228.1285 • W MCKNZE.COM
RiverEast Center, 1515 SE Water Avenue, #100, Portland, OR 97214
Portland, Oregon • Vancouver, Washington • Seattle, Washington

August 13, 2021

Black Creek Group
c/o KG Investment Properties
Kim Schoenfelder
11225 SE 6th Street, Suite 215
Bellevue, WA 98004

Re: Availability of Public Utilities
Subject Property: 25020 SW Grahams Ferry Rd., Sherwood, OR 97140
TLID 3S103D000100

Mrs. Schoenfelder,

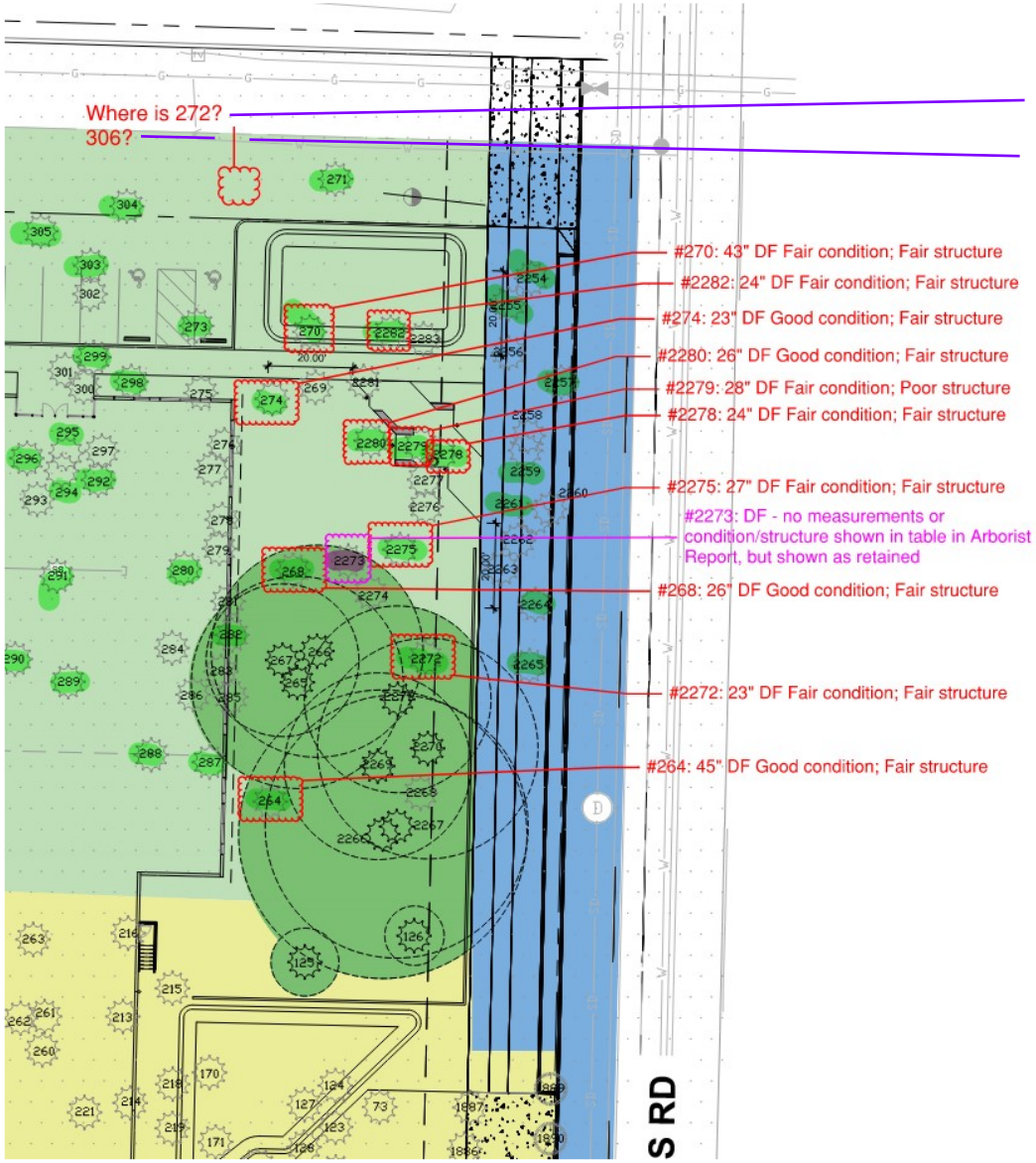
This letter is to provide notice that public sanitary sewer, stormwater, and water service is available within SW Garden Acres Road on the east side of the Subject Property. Furthermore, there is stormwater service available within SW Grahams Ferry Road to the northwest of the Subject Property.

When the Subject Property develops, adequate capacity within the City's nearby utility systems will need to be confirmed. If existing systems do not have capacity to provide the required service, upsizing of these systems by the developer may be required.

If you have any further questions, please feel free to contact me by phone at (503) 570-1538 or by email at palmer@ci.wilsonville.or.us.

Respectfully,

Matt Palmer, P.E.
Associate Engineer



Summary of Arborist's Report Findings (Tree Queries from Staff)

#272: The surveyor has added this tree in the revised Sheet V1.10. It was already accounted for in the arborist's inventory and the tree plan calculations.
#306 is a skip in the inventory numbering system. No tree exists.

#270: At risk for wind throw, poor canopy development, hazard tree potential.
#2282: At risk for wind throw, poor canopy development, hazard tree.
#274: At risk for wind throw, poor canopy and trunk development, hazard tree.
#2280: At risk for wind throw, poor canopy development, hazard tree.
#2279: Extensive rot. Hazard tree.
#2278: At risk for wind throw once trees at street are removed. Hazard tree.

#2275: At risk for wind throw, poor canopy development, hazard tree.
#2273: Survey error. Tree does not exist. Removed from inventory by arborist.

#268: At risk for wind throw, poor canopy development, hazard tree.

#2272: At risk for wind throw, poor canopy development, not likely to survive road expansion impacts, hazard tree potential.

#264: Not likely to survive building impacts. High hazard tree potential.

From: Zach Desper <zach.desper@blackcreekgroup.com>
Sent: Wednesday, October 13, 2021 2:48 PM
To: bateschell@ci.wilsonville.or.us
Cc: Kim Schoenfelder <kschoenfelder@kgip.com>
Subject: Coffee Creek Industrial Follow Up

Hi Miranda,

Thank you for your call on Friday to review challenges for the Black Creek Graham's Ferry site. It was a pleasure to speak with you! We really appreciate the collaborative approach and discussion about the site plan concerns.

Appreciate the feedback on trees and understand the City will not be looking for us to retain or mitigate the agricultural trees on the site, and that we should be able to rely on tree for tree mitigation vs. based on caliper for our development. Appreciate the early direction on this. Do you have a sense for the mitigation fee calculation? We know we will need to provide fee for a fair amount of trees to be removed that we will not have room to replace onsite. Understand the fee is based on cost to replant. We have seen the cost of tree and planting in the $200 - $250 per tree range based on our previous project history. Is this in the ballpark of what the City is thinking?

Per our discussion we have been tweaking the site plan as information/feedback has become available throughout our due diligence period and city meetings/discussions, and believe the latest site plan (attached), reviewed during our call, does a good job of meeting the various requirements while maintaining industrial building functionality within market standards. We appreciate your willingness to review with City staff and provide feedback by end of next week on the revised plan. The intent of the plan is to maintain some of the most valuable trees located in the NE Corner of the site and provide good truck maneuvering, office parking. We realize a waiver will be needed to place the vehicle parking between the building and Garden Acres and hope the City would be in a position to support this waiver.

Our team is still digesting the new information Chris forwarded from Kerry about a potential concern about potential downstream constraints in Tapman Creek and that we will probable need to retain more of our stormwater onsite that originally thought. If this is the case, the trees we are working hard to retain may be impacted to facilitate this stormwater capacity concern. We will of course come back to you once the Civil Engineering is complete to review findings and how they may impact trees and collaborate together on resolution, but wanted to get your early thoughts on this. We will do our best to retain as many trees as possible in the NE Corner.

Also appreciate your willingness to research the Cahalin ROW questions raised during our call and wait to hear from you on creative ways to address the concern of BCG relying on an outside party to approve a vacation that may derail the project if not obtained. We discussed two options 1) ROW remains and a supporting street is constructed to private standards vs. public, very similar to the supporting street on the southern end of the site, or 2) Possibility of City agreeing to process the street vacation directly. We would be open to discussing other options/solutions to resolve this concerns as well.

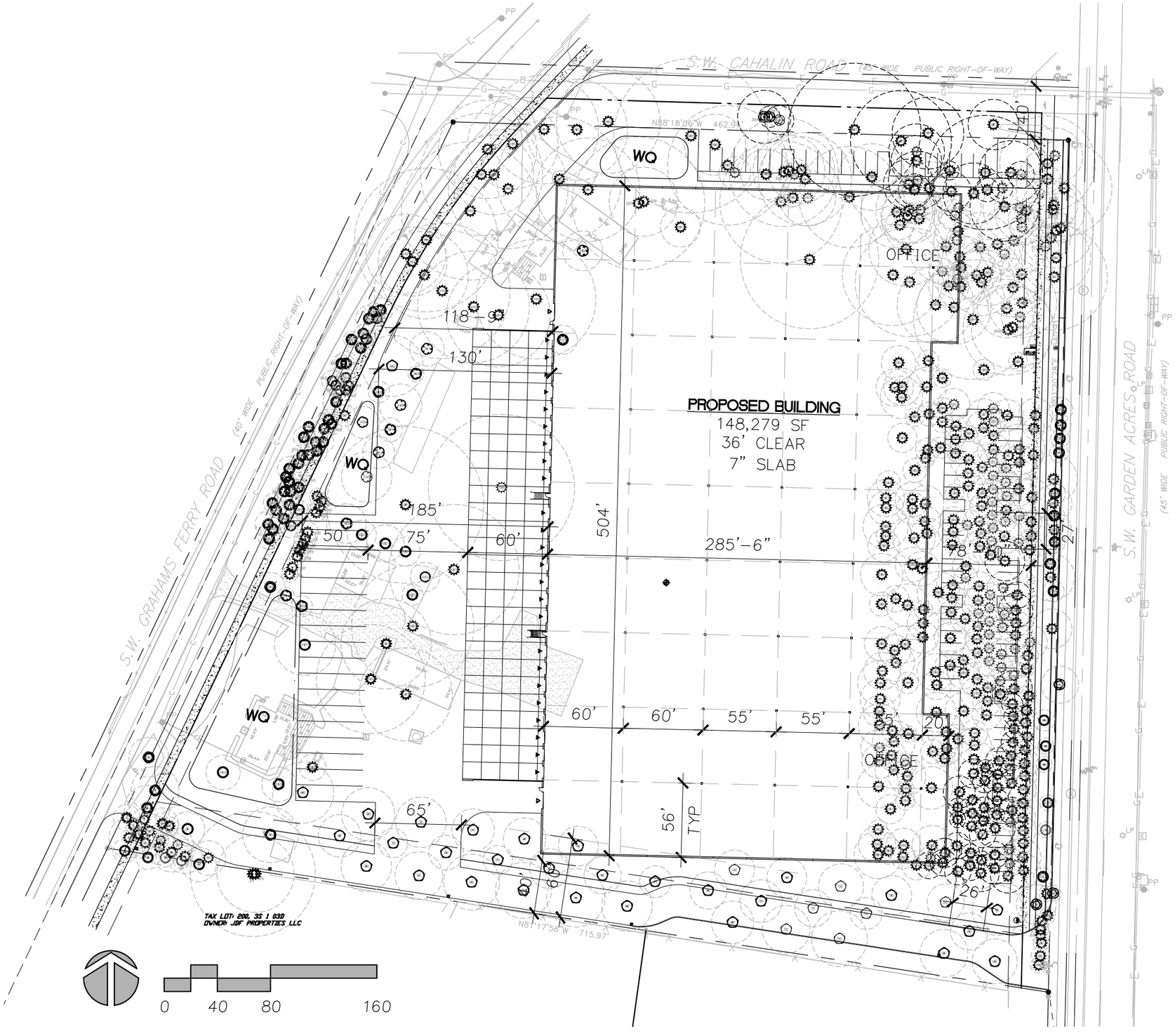
One additional item that we would like to speak with you about this Friday(10/15) is the Traffic Study. We understand that this is a Engineering item, but it would be extremely helpful for our group to understand the potential restrictions we could be facing for this project. Any help you could provide would be greatly appreciated.

Thank you again for your time and collaborative mindset. We look forward to hearing from you and working with you and your staff on this project through approvals.

Best to you!

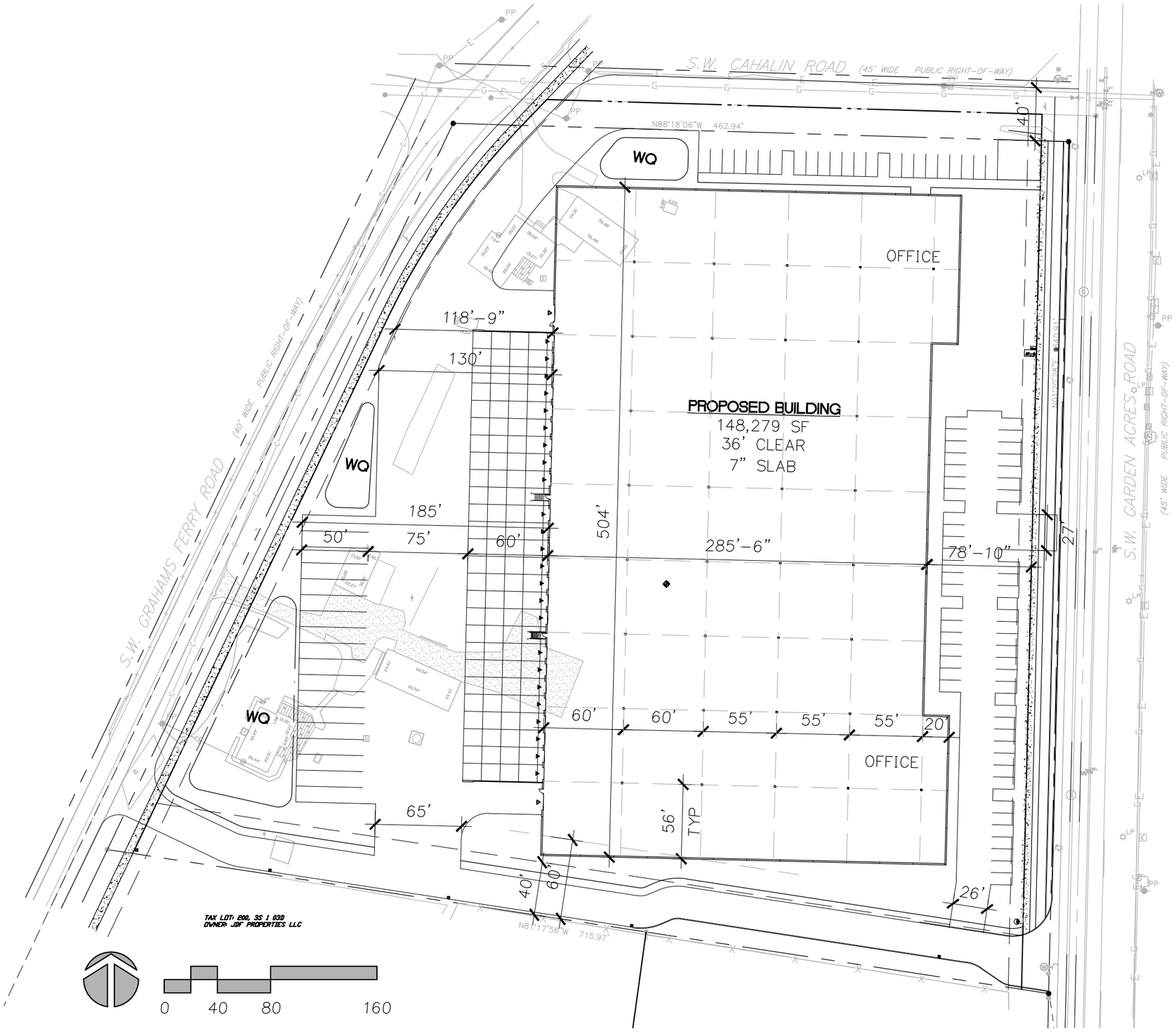
Zach and Kim

Zach Desper
Development
Black Creek Group
4675 MacArthur Court
Suite 625
Newport Beach, CA 92660
Direct: 949-892-4920
Mobile: 949-433-6916



SITE DATA

SITE AREA:	337,507 SF (7.75 AC)
BUILDING AREA:	148,279 SF
% COVERAGE:	43.9%
DOCK DOORS	24
DRIVE-IN DOORS	2
PARKING:	
AUTO:	74 SPACES (0.50/1000)
TRAILER:	18 SPACES (12'x50')



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