City of Yelm
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Willow Glenn IV
Staff Report

Project Number
LD 2023.0188

Applicant
Denny Balascio, Yelm Properties LLC
21709 96th Ave. W
Edmonds, WA 98020

Proposal
Subdivide 12.53 acres into 75 single-family residential lots

Public Hearing Date
9:30 a.m. May 16, 2024

Recommendation
Approval

PROPOSAL

The applicant proposes to subdivide a 12.53-acre parcel into 75 residential lots for single family dwellings. The property is zoned Moderate Density Residential (R-6), which allows between 3 to 6 dwelling units per gross acre of land.

PROPERTY CHARACTERISTICS

The property is located at 9819 Grove Rd SE and is located just south of Canal Road. The property is identified the Thurston County Assessor's Tax Parcel Number: 64303500100

Ariel and Parcel Boundary

The eastern portion of the site includes one single-family residence, two mobile homes, one barn, four sheds, and a well house.

Barn and sheds existing on the property looking west

Surrounding properties to the west and south are previous phases of the Willow Glenn subdivision of single-family homes. The properties to the immediate north were recently annexed into the City and have the same R-6 zoning. The properties to the east are unincorporated Thurston County; this land is within the Yelm Urban Growth Area and carries a 'future zoning' designation of High-Density Residential (R-16). Longmire Community Park is located to the north and Fort Stevens Elementary School is located to the south.

NOTICE OF APPLICATION AND PUBLIC HEARING

Notice of this application and preliminary SEPA determination of Nonsignificance was mailed to state and local agencies, property owners within 300 feet of the site on January 30th 2024, as well as published in the Nisqually Valley News on February 1st, 2024. No comments were received from nearby property owners or members of the public.

Existing Mobile Home, Notice of Hearing, Facing West

Notice of the date and time of the public hearing before the Hearing Examiner was provided as follows:

- Posted on the project site: April 29th, 2024
- Mailed to property owners within 300 feet of the site: April 29th, 2024
- Posted on the City of Yelm Website April 29th, 2024
- Published in the Nisqually Valley News: May 2nd, 2024.

STATE ENVIRONMENTAL POLICY ACT

The City of Yelm SEPA Responsible Official issued a Mitigated Determination of Non-Significance (MDNS) for the proposal on April 10, 2024. This determination is final and fulfills the City's responsibility for disclosure of potential significant environmental impacts.

Comments were received from the Washington State Department of Ecology (ECY), and Olympic Region Clean Air Agency. The

Taken Western Edge of Property, Facing East

Nisqually Indian Tribe responded with a letter of no concern, however the Nisqually Tribe must be notified if there are any Inadvertent Discoveries of Archaeological Resources/Human Burials. The full MDNS and the letters from ECY, ORCAA WSDOT and the Nisqually Indian Tribe are attached to this report.

The MDNS identified the following mitigation measures:

1. An asbestos survey be completed by a certified Asbestos Hazardous Emergency Response Act (AHERA) building inspector for the demolition of the existing structures. The existing structures include one single-family residence, two mobile homes, one barn, four sheds, and a well house. If asbestos is found during the survey, an ORCAA Asbestos Removal Notification must be completed and all asbestos containing material must be properly removed prior to the demolition. An ORCAA Demolition Notification must be submitted prior to the demolition of any structure that is 120 sq. ft or greater.
2. In addition to an asbestos abatement procedure, any hazardous or dangerous material or wastes are removed and appropriately managed prior to demolition.

CONCURRENCY / IMPACT FEES

The intent of the City's concurrency management program, as required by the Growth Management Act, is based on the maintenance of specified levels of service through capacity monitoring, allocation, and reservation procedures.

Concurrency describes the situation in which water, sewer and/or transportation facilities are available when the impacts of development occur. [Section 18.16.020 YMC]

Water:
The level of service for water infrastructure is the ability to provide potable water to the consumer for use and fire protection in accordance with adopted health and environmental regulations. [Section 18.16.030 YMC].

The State Subdivision Act, Chapter 58.17 RCW, requires that the City of Yelm make a written determination that appropriate provisions are made for potable water supplies as part of the preliminary land division process. The City of Yelm has the capacity to service the proposed subdivision.

The project is proposing to connect to the existing water main located at the end of Bourbon St SE.

The development is required to connect to and extend the main along all new proposed roadways within the subdivision, and to the northern property line along Grove Rd. The improvements required to serve the project will be specifically identified during civil plan review. This satisfies the requirement for concurrency with water infrastructure.

Any existing well(s) on the property must be decommissioned pursuant to Department of Ecology standards and any water rights associated with these wells shall be dedicated to the City of Yelm.

Sewer:
Concurrency with sewer infrastructure is achieved pursuant to Section 18.16.050 (C)(1) YMC when the project is within an area approved for sewer pursuant to the adopted sewer comprehensive plan for the city and, at the time of preliminary approval, the planned infrastructure identified in the six-year improvement program of the sewer system plan are sufficient to provide for the proposed land division and it is reasonably anticipated that the treatment plant has sufficient capacity to provide for the proposed land division.

The City's Sewer Comprehensive Plan identifies the property as being within the sewer service area and will need to connect to the City's S.T.E.P. sewer system. The project is proposing to connect to the sewer main on Bourbon St. SE.

The development is required to connect to and extend the main along all new proposed roadways within the subdivision, and to the northern property line along Grove Rd. SE. The improvements required to serve the project will be specifically identified during civil plan review. This satisfies the requirement for concurrency with sewer infrastructure.

Transportation and Access:

The project proposes site access from Grove Rd. SE, and Bourbon St. SE. with a future connection to Canal Road SE when the two properties to the north develop. These parcels are identified as Thurston County Tax Parcels 64300600102 and 64300600101. The project also includes a walking path that will connect to Greenleaf Loop SE.

Concurrency with transportation infrastructure is achieved pursuant to Section 18.16.050(B)(2) YMC. The applicant prepared a Traffic Impact Analysis (TIA) for this project due to its scale and high potential for impact to the Yelm transportation system, which is attached to this report. The TIA analyzed the effects that the proposed subdivision would have on nine nearby intersections, and all remain within the level of service standard. These intersections are identified as follows:

Table 5. PM Peak Hour Intersection Level of Service

				Base Year 2024		2025 Without Project		2025 With Project	
	Intersection	Control Type	LOS Standard	LOS (delay)	Worst V/C Ratio	LOS (delay)	Worst V/C Ratio	LOS (delay)	Worst V/C Ratio
1	Railway Road SE at Canal Rd SE	AWSC[2]	C	A (8.1)	0.24	A (8.1)	0.24	A (8.3)	0.26
2	Crystal Springs St/Edwards Street at Coates St SE	TWSC[1]	D	C (16.9)	0.45	C (17.3)	0.46	C (18.0)	0.48
3	1st Street NE/NW Rhoton Road at Railway Road	TWSC[1]	D	B (13.3)	0.21	B (14.0)	0.23	C (15.1)	0.29
4	Railway Road at Middle Street NW	TWSC[1]	C	A (9.5)	0.09	A (9.5)	0.09	A (9.7)	0.10
5	Stevens Street at 1st Street NE	AWSC[2]	D	C (19.8)	0.80	C (21.8)	0.83	D (25.6)	0.89
6	100th Way SE at Grove Road SE	TWSC[1]	C	A (9.7)	0.07	A (9.7)	0.07	B (10.4)	0.09
7	103rd Avenue SE at Grove Road SE	AWSC[2]	C	B (12.1)	0.52	B (13.3)	0.57	B (13.9)	0.60
8	Yelm Avenue at Grove Road SE	TWSC[1]	D	C (19.1)	0.04	C (22.9)	0.11	C (24.6)	0.14
9	Site Driveway at Grove Road SE	TWSC[1]	C	N/A	N/A	N/A	N/A	A (9.9)	0.04

1-Two-Way-Stop-Control
2-All-Way-Stop-Control

Frontage improvements are required as part of development. The developer has indicated that frontage improvements along Grove Rd SE will be installed to the City's adopted Neighborhood Collector standard and that internal streets will be constructed to adopted Local Access Residential standards.

Traffic Facility Charges are applied at the time of building permit issuance. These conditions satisfy the requirement for concurrency with transportation infrastructure.

Fire Protection:
Concurrency with fire protection is achieved pursuant to Section 18.16.090(C) by payment of impact fees at the time of construction. This fee is subject to change and is collected at the time of building permit issuance.

School:
Concurrency with school infrastructure is achieved pursuant to Section 18.16.090(B) YMC by payment of impact fees at the time of construction. This fee is subject to change and is collected at the time of building permit issuance.

CRITICAL AREAS

The Yelm Critical Areas Code, Chapter 18.21 YMC provides protection for wetlands, critical aquifer recharge areas, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat areas. No critical areas were identified on the site.

Aquifer Recharge*:*

All of Yelm is identified as a critical aquifer recharge area. Compliance with Federal, State, and County water source protection regulations and with the City's adopted stormwater regulations are required to protect the aquifer [Section 18.21.070 (C) YMC].

The stormwater system proposed is Oldcastle PerkFilter, which was designed using the guidelines and requirements established in the 2019 DOE Stormwater Management Manual for Western Washington (2019 SWMMWW) as required by the City of Yelm Municipal Code.

Wetlands*:*

No wetlands were identified on site.

Fish and Wildlife Habitat:

In April 2014, the U.S. Fish and Wildlife Service listed the Yelm subspecies of the Mazama Pocket Gopher as threatened under the Endangered Species Act. While the City of Yelm is not responsible for implementation or enforcement of the Endangered Species Act, it consults with the Service and provides notice to applicants that the pocket gopher is a federally protected species and a permit from the U.S. Fish and Wildlife Service may be required.

A Mazama Pocket Gopher and Regulated Prairie Absence Report was submitted with the preliminary subdivision application. This report found no evidence of MPG on the subject property.

ZONING & DESIGN STANDARDS

Zoning:

The R-6 zone is intended to provide space for single-family residences in a moderate-density configuration. The allowed density is between three and six dwelling units per acre [18.32.040(A) YMC] and there is no minimum lot size [18.32.040(B) YMC]. The proposed density of this subdivision is 6 units per acre, with lot sizes ranging from 0.1 acres to 0.25 acres.

Setbacks*:*

The setback requirements for the R-6 Zone are as follows:

- Front yard: 15 feet from a local access street, 25 feet from a collector street, and 35 feet from an arterial street
- Side yard: 5 feet
- Flanking yard: 15 feet
- Rear yard setback: 25 feet

The preliminary site plans satisfy setback requirements.

Street Lighting*:*

Adequate street lighting is necessary to provide safety to pedestrians, vehicles, and homeowners. The applicant shall submit a lighting plan during Civil Plan Review that meets all requirements of 18.59.050 YMC.

Parking*:*

Residential uses require two spaces per dwelling unit. This is typically achieved with a standard driveway approach. When applying for a building permit for each lot, the applicant shall show adequate parking for each single-family residence.

Water*:*

Chapter 13.04 YMC and Chapter 4 of the Development Guidelines establish requirements for connection to the City's water system. Water connections are based on Equivalent Residential Units (875 cubic feet of water consumption per month). Water connections are subject to final approval during Civil Plan Review.

The City implements a cross-connection and backflow control program pursuant to Title 43 RCW and Chapter 248-54 WAC. A backflow prevention device is required to protect Yelm's water system from cross-connections from any irrigation systems [13.04.220(D) YMC].

Fire hydrant locks are required to be installed and paid for by the applicant.

Sewer*:*

Chapter 13.08 YMC and Chapter 5 of the Development Guidelines establish requirements for connection to the City's sewer system. The property is located in the City of Yelm's STEP sewer system service area, and connection to the City sewer service is required. Sewer connections are based on Equivalent Residential Units (875 cubic feet of water consumption per month).

Reclaimed water:

Chapter 6 of the Development Guidelines establishes requirements for connection to the City's reclaimed water system. When a public reclaimed water utility is available, it must be used for irrigation of open space areas. Where public reclaimed water is not available within the City limits, connection is required if the subject property is within 200 feet of a public reclaimed water utility, as measured from the lot line closest to the existing reclaimed water utility.

The project will be required to connect to the reclaimed water utility for irrigation purposes if the reclaimed water utility becomes available before an application is submitted for Civil Plan Review.

Building Design:

Chapter 18.61 YMC establishes requirements for building design. All proposed buildings must adhere to the allowed materials and colors listed in 18.61.050 YMC. Building design is subject to review after the applicant has submitted a building permit application for each proposed residence.

Mailboxes:

New residential developments shall coordinate with the U.S. Postal Service for the location of mailboxes. Mailboxes shall be cluster box units (CBU) spaced throughout the development on local access residential and private streets only [18.59.080 YMC].

Transit: New residential developments shall coordinate with Intercity Transit to incorporate transit stops. Intercity Transit shall determine the type and location of new or upgraded stops [18.59.070 YMC].

Landscaping: Chapter 18.55 YMC establishes minimum requirements and standards for landscaping for new development projects. For residential subdivisions, a perimeter fence is a suitable alternative to perimeter landscaping. Submitted plans indicate a solid board fence along the perimeter of the development. Streetscape landscaping is required for the proposed internal access roads. Final landscaping plans that indicate conformance with 18.55.020(C) YMC Streetscapes shall be submitted during Civil Plan Review. Stormwater facility landscaping is required [18.55.020(E.2) YMC]. The site plan indicates a single underground stormwater facility on the west side of the property and under the area designated as open space. A detailed irrigation plan is required during Civil Plan Review.

Open Space:

Single-family residential subdivisions are required to include dedicated open space of at least 5% of the total gross area of the development. Areas dedicated to environmental protection or interpretation are suitable for the open space requirement, along with off-road trails [18.56.020(A) YMC]. The submitted site plan depicts a single open space tract with an open lawn play area, a perimeter walking path, a barbecue grill, and picnic tables. The submitted site plans meet the minimum requirements for open space area in terms of total land allocated and suitability of the proposed uses.

Subdivision Name and Addressing:

Prior to final subdivision approval, the applicant shall make a plat name reservation with the Thurston County Auditor. During Civil Plan Review, the applicant shall provide an addressing map for approval by the City of Yelm Building Official.

STAFF RECOMMENDATION

Section 18.14.050 YMC requires written findings prior to a decision on a preliminary subdivision. The applicant has established that the proposed subdivision adequately provides for the public health, safety, and general welfare; and for such open spaces, drainage ways, streets, sanitary wastes, parks and recreation, schools, and sidewalks; and that the public use and interest will be served by the subdivision of the property.

The Public Services Department recommends that the preliminary subdivision be approved. If the Hearing Examiner agrees that requirements have been met, the Department would recommend the following conditions be included with a preliminary approval:

1. The conditions of the Mitigated Determination of Nonsignificance associated with this project are hereby referenced and are considered conditions of this approval.
2. A lighting plan shall be submitted during Civil Plan Review.
3. Any proposed irrigation system shall incorporate a backflow prevention device and conform with the cross-connection and backflow control program as defined in 13.04.220(D) YMC. The final landscape plan shall be submitted during Civil Plan Review and include a detailed irrigation plan.
4. Plans submitted during Civil Plan Review shall include an addressing map for approval by the building official.
5. Plans submitted during Civil Plan Review shall include the proposed location and details for mailbox placement and these plans must conform to 18.59.080 YMC.
6. The applicant shall provide a performance assurance device in order to provide for maintenance of the required landscaping for this subdivision, until the homeowners' association becomes responsible for the landscaping maintenance. The performance assurance device shall be 150 percent of the anticipated cost to maintain the landscaping for three years.

7. Stormwater facilities shall be located in separate recorded tracts owned and maintained by the homeowners' association. The stormwater system shall be held in common by the homeowners' association and the homeowner's agreement shall include provision for the assessment of fees against individual lots for the maintenance and repair of the stormwater facilities.
8. SE Thurston Fire Authority has requested the proposed fire hydrant east of Bourbon Street be moved to the corner of Bourbon St. SE and "Road A". The exact location and provision of fire hydrants is finalized during Civil Plan Review. The applicant shall submit a fire hydrant plan that is subject to review and final approval during Civil Plan Review.
9. The applicant shall secure all necessary demolition permits prior to demolition of the current structures on the property.
10. If the reclaimed water utility becomes available before an application is submitted for Civil Plan Review, connection to the City's reclaimed water utility will be required. The reclaimed water line would need to be extended into the proposed subdivision along each of the proposed internal roads, and all open space tracts that will feature irrigation systems would need to utilize reclaimed water.
11. Chapter 2 "Transportation Details require travel lanes to be 11 feet wide. A traffic circle, Island or another traffic calming device on Bourbon St. SE will be required to narrow the travel lanes at the location of the current cul-de-sac. The traffic calming device will need to be approved by the Civil Review Engineer during Civil Plan Review.

LIST OF ATTACHMENTS

1. Willow Glenn IV Site Plan
2. Willow Glenn IV Landscaping Plans
3. Revised Traffic Impact Analysis
4. Fehr & Peers Review Letter
5. WSDOT Comment Letter
6. MDNS for Willow Glenn IV
7. Washington State Department of Ecology Comment Letter
8. Olympic Region Clean Air Agency Comment Letter
9. Nisqually Indian Tribe Comment Letter

SCJ ALLIANCE
CONSULTING SERVICES

April 5, 2024

Mr. Andrew Kollar
Assistant Planner
City of Yelm
106 Second ST SE
Yelm, Washington 98597

Re: Willow Glenn IV Preliminary Subdivision
Response to City Comments

Dear Andrew:

Thank you for providing the review comments letter dated February 13, 2024 and the marked up plan set for the Willow Glenn IV Preliminary Subdivision Submittal. The first review comments are repeated below with responses in *italics*. As discussed, we have updated the layout of the site to accommodate a street connection to Bourbon Street rather than to Greenleaf Loop. Plan sheets mentioned are part of the updated plan set submitted with this letter.

Review Letter Comments:

1. After further review and discussion with the SE Thurston Fire Authority, we will need the road and sidewalk to connect to Greenleaf Loop, in addition to the stub out to the property to the north.
   Response: Subsequent to this comment being issued it has been resolved to provide a street connection to Bourbon Street rather than Greenleaf Loop. The road and sidewalk have been connected to Bourbon Street. The roadway connection to Greenleaf Loop has been removed. A pedestrian connection remains to Greenleaf Loop.

2. Fire hydrants will need to be relocated, as shown in the attached document "Fire Hydrant Relocation" The locations are approximate.
   Response: The fire hydrants have been relocated per the "Fire Hydrant Relocation" sketch.

3. Please see the marked-up plan.
   Response: Comments from the marked-up plan set are found below.

4. Please provide:
   a. fire flow
      Response: This will be provided with Civil Plan Review.
   b. lighting plan
      Response: This will be provided with Civil Plan Review.
   c. monument plans and the detail,
      Response: A Preliminary Monument Plan has been created. It shows the City's detail for a cast-in-place monument. Please see sheet SP-02 in the enclosed plan set.

d. Signature Approval Block (leave room the electronic signature block (4" wide x 2" high) – All Sheets) by the time of submitting for the Civil Plan Review
Response: this space will be reserved on all sheets submitted for Civil Plan Review.

e. Please provide more information for existing/abandon well and septic.
Response: There is an existing well located on the site, the well house is shown on the survey by MTN2COAST included in the plan set. The well is to be abandoned by a licensed will driller per WAC 173-160-381.
Septic records from Thurston County for the parcel are enclosed with this letter. The records show a septic tank for the house and a septic tank for three mobile homes. The septic tank and drain field are located behind (south) of the trailers per the records. The septic tanks will be pumped and filled or removed and disposed of offsite. The drain fields will be removed where encountered and the material that is excavated will be disposed of. In correspondence with Thurston County, the County states they have jurisdiction over the abandonment of the existing septic system. A Master Application (enclosed) and Onsite Sewage System Abandonment Supplemental Application (enclosed) are to be submitted to Thurston County along with verification that the septic tanks have been pumped from the septic pumping contractor.

5. The Reclaimed Water is not shown on the plans
Response: There is no reclaimed water main near the site. Irrigation for open space and right of way landscape will be provided from the proposed potable water main running through the site.

Marked-up Plan Comments:

The sheets referenced are from a file received from you titled Willow Glenn IV Preliminary Subdivsion_MarkedUP(Drew).pdf. Updates are reflected in the plan set enclosed with this letter.

CV-01: The site map has been zoomed out to show more of the surrounding area. The north arrow has been moved.

EC-01: The scale bar will remain as-is per our correspondence. It does not mention a scale in inches in the event the plans are reproduced at something other than full scale.

SP-01: Bulbouts have been added at intersections where indicated per Dwg 2-8B On-Street Parking Detail. Street lighting plan in conformance with 2.40, Illumination, will be provide for Civil Plan Review.

SD-01: The Stormwater Infiltration Facility has been shifted to provide a 12' setback from the adjacent property line, which exceeds the requested 10' setback.

UT-01: Keyed note 3 has been expanded to include a blow-off valve should the property to the north not be developed before this project is. All sewer Carson boxes have been moved so that their center is 4' from the back of curb. Per correspondence with the City, the water main will not be connected to the existing water main in Greenleaf Loop. A connection to the existing water main in Bourbon Street is now shown. Setback distances have been confirmed. Additional valves have been added to the water main and sewer force main at the requested junctions. Fire hydrants have been relocated per the "Fire Hydrant Relocation" sketch. Reclaimed water has not been added, there is no reclaimed water main near the site.

If you have any questions regarding the above, please contact me directly at (360) 352-1465.

Respectfully,
SCJ Alliance

Dan Phillips
Project Engineer

Enclosures:

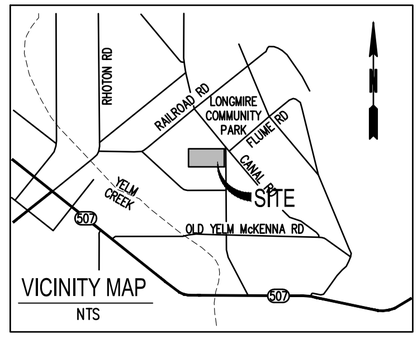
1. Updated Preliminary Plat Map (2 sheets)
2. Updated Preliminary Subdivison Plans (10 Sheets)
3. Onsite septic records from Thurston County (64303500100.TIF.pdf)
4. Thurston County Master Application
5. Thurston County Onsite Sewage Abandonment Supplemental Application
6. Thurston County Onsite Sewage System Abandonment Information Sheet

N:\Projects\5464 Yelm Property Development LLC\21-000363 Willow Glenn 4\Correspondence\To\Denny Balascio\2024-0223 Comment Response Letter\21-000363 Willow Glenn 4.docx

CURVE TABLE			
CURVE #	LENGTH	RADIUS	DELTA
C1	6.00	128.00	2°41'12"
C2	32.96	128.00	14°45'14"
C3	30.00	128.00	13°25'43"
C4	30.07	128.00	13°27'37"

CURVE TABLE			
CURVE #	LENGTH	RADIUS	DELTA
C5	30.87	128.00	13°49'08"
C6	30.00	128.00	13°25'43"
C7	30.00	128.00	13°25'43"
C8	11.16	128.00	4°59'39"

CURVE TABLE			
CURVE #	LENGTH	RADIUS	DELTA
C9	113.10	72.00	90°00'00"



VICINITY MAP
NTS

SITE INFORMATION

PARCEL NUMBER: 64303500100
SITE AREA: ±12.53

SITE ADDRESS: 9819 GROVE RD SE
YELM, WA 98597

ZONING: R-6 (MODERATE-DENSITY RESIDENTIAL)

SETBACKS:
- -FRONT YARD: 15' LOCAL ACCESS STREET
  25' COLLECTOR STREET
  35' ARTERIAL STREET
- -SIDE YARD: 5'
- -FLANKING YARD: 15'
- -REAR YARD: 25'

OWNER / APPLICANT

YELM PROPERTY DEVELOPMENT LLC
PO BOX 2950
YELM, WA 98597
PHONE: 206.715.4673
CONTACT: DENNY BALASCIO

LEGAL DESCRIPTION:

LOT 1 IN BLOCK 35 OF MCKENNA IRRIGATED TRACTS, AS PER PLAT RECORDED IN VOLUME 9 OF PLATS, PAGES 43 & 44, RECORDS OF THURSTON COUNTY, WASHINGTON; TOGETHER WITH THAT PART OF THE SOUTH HALF OF VACATED FLUME LANE ADJOINING SAID LOT ON THE NORTH. SUBJECT TO COVENANTS, CONDITIONS AND ENCUMBRANCES OF RECORD, IF ANY.

DATUM:

HORIZONTAL – WASHINGTON STATE PLANE COORDINATES, SOUTH ZONE, NAD 83/2011 BASED ON TIES TO THURSTON COUNTY MONUMENTS "YELM-2" AND "7656" USING GPS BASE AND ROVER.

VERTICAL – NAVD 88 BASED ON GPS TIES TO THURSTON COUNTY MONUMENT "YELM-2", PUBLISHED ELEVATION 337.96.

(X) MONUMENT NOTES

1. FOUND 3" BRASS MONUMENT WITH PUNCH IN METAL CASE MARKED "YELM-2".
2. FOUND 3" BRASS SURFACE MONUMENT WITH PUNCH MARKED "SKILLINGS CONNOLLY CONSULTING ENGINEERS LS 27192".
3. FOUND 5/8" REBAR WITH RED PLASTIC CAP MARKED "FOX LS27192".
4. FOUND 3" BRASS SURFACE MONUMENT WITHOUT PUNCH MARKED "SKILLINGS CONNOLLY CONSULTING ENGINEERING LS 29275".
5. FOUND 5/8" REBAR WITH SMASHED YELLOW PLASTIC CAP, MARKING ON CAP NOT LEGIBLE. MONUMENT TIED FOR THURSTON COUNTY MONUMENT 7656, SET BASED ON MCKENNA'S IRRIGATED TRACTS.
6. FOUND 5/8" REBAR WITH ORANGE PLASTIC CAP MARKED "JCG LS29275".

REVISIONS	DATE

JOB NO: 21-000363
DRAWN BY: N. ALTHAUSER
APPROVED BY: D. PHILLIPS
DATE: APRIL 2024

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 200, LACEY, WA 98516
P: 360.352.1465 F: 360.352.1509
SCJALLIANCE.COM

PRELIMINARY PLAT

WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:

DANIEL PATRICK PHILLIPS — STATE OF WASHINGTON — 21019143 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY

DRAWING NO:
PP-1
1 OF 2

Apr 05, 2024 12:47:47pm – User dan.phillips
N:\PROJECTS\5464 YELM PROPERTY DEVELOPMENT LLC\21-000363 WILLOW GLENN 4\CADD\21-000363_P_PLAT.DWG

64300600100
CRIST, TANYA
16841 CANAL RD SE

PROPERTY LINE (TYP.)

FLUME ROAD (VACATED) S88° 24' 27.31"E 1170.13'

MATCH LINE SEE SHEET PP-1

FLUME RD SE

CANAL ROAD SE

NORTH LINE OF SW 1/4 SECTION 20

N

0 50 100

SCALE IN FEET

ROAD 'B'

S88° 38' 41.19"E 533.82'

56' R.O.W.

40+00 L=161.01' R=102.50' Δ=90.00

PROPOSED 10' UTILITY EASEMENT (TYP.)

8' RIGHT-OF-WAY DEDICATION

GROVE ROAD SE

PROPOSED STREET LIGHT (TYP.)

64300100600
SMITH, VICTOR S & LYNDA A
16919 CANAL RD SE

ROAD 'A'

S88° 38' 41.19"E 898.37'

S88° 38' 41.19"E 155.69'

PROPOSED 10' UTILITY EASEMENT (TYP.)

PROPOSED STREET LIGHT (TYP.)

PROPOSED 10' UTILITY EASEMENT (TYP.)

MATCH LINE SEE SHEET PP-1

BOURBON ST SE

LOCUST CT SE

GREENLEAF AVE SE

S88°37'02"E 139.57'

S88°37'02"E 303.98'

S88°37'02"E 141.84'

S88°37'02"E 30.00'

ROW

CL

60'

56'

S88° 38' 41.19"E 1169.95'

N1°26'54"E 697.39'

84070008000
LINTAG, KAREN C
9933 BOURBON ST SE

84070008400
CAROLUS, DANIEL
9934 BOURBON ST SE

84070009000
CZERNIAK, DEREK & KATHRYN
9935 LOCUST CT SE

84070009100
SERRANO, PETER & TARA P
9936 LOCUST CT SE

84070009200
ORTEGA, HECTOR & KATTI
9942 LOCUST CT SE

MONUMENT NOTES

1. FOUND 3" BRASS MONUMENT WITH PUNCH IN METAL CASE MARKED "YELM-2".
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4. FOUND 3" BRASS SURFACE MONUMENT WITHOUT PUNCH MARKED "SKILLINGS CONNOLLY CONSULTING ENGINEERING LS 29275".
5. FOUND 5/8" REBAR WITH SMASHED YELLOW PLASTIC CAP, MARKING ON CAP NOT LEGIBLE. MONUMENT TIED FOR THURSTON COUNTY MONUMENT 7656, SET BASED ON MCKENNA'S IRRIGATED TRACTS.
6. FOUND 5/8" REBAR WITH ORANGE PLASTIC CAP MARKED "JCG LS29275".

CURVE TABLE			
CURVE #	LENGTH	RADIUS	DELTA
C10	38.77	128.00	17°21'19"
C11	30.75	128.00	13°45'49"
C12	30.00	128.00	13°25'43"
C13	30.07	128.00	13°27'35"
C14	29.97	128.00	13°24'48"
C15	35.51	128.00	15°53'35"
C16	6.00	128.00	2°41'12"
C17	104.45	72.00	83°06'58"

REVISIONS	DATE

JOB NO: 21-000363
DRAWN BY: N. ALTHAUSER
APPROVED BY: D. PHILLIPS
DATE: APRIL 2024

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 200, LACEY, WA 98516
P: 360.352.1465 F: 360.352.1509
SCJALLIANCE.COM

PRELIMINARY PLAT

WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:

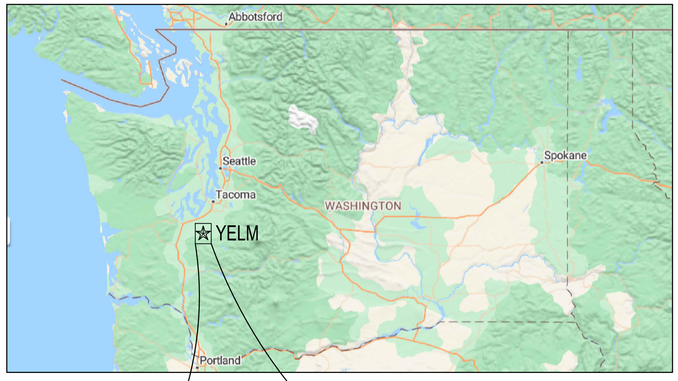
DANIEL PATRICK PHILLIPS
STATE OF WASHINGTON
21019143
REGISTERED
PROFESSIONAL ENGINEER
PRELIMINARY

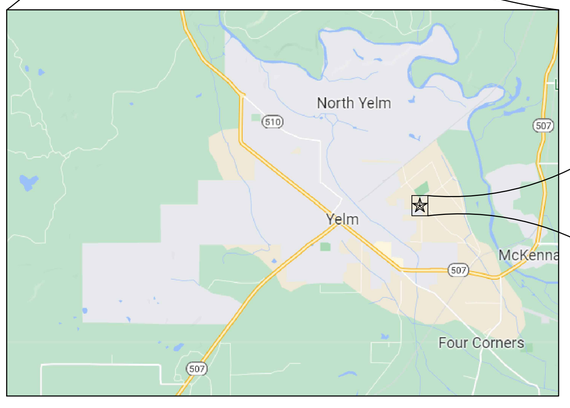
DRAWING NO:
PP-2
2 OF 2

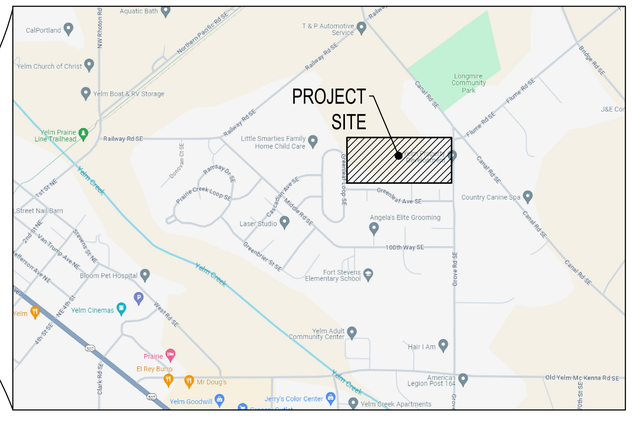
Apr 05, 2024 12:47:50pm – User don.phillips
N:\PROJECTS\5464 YELM PROPERTY DEVELOPMENT LLC\21-000363 WILLOW GLENN 4\CADD\21-000363_P_PLAT.DWG

SEC. 20, T 17 N., R 2 E., W.M.

WILLOW GLENN IV
PRELIMINARY SUBDIVISION DOCUMENTS
YELM, WA







NTS

A PORTION OF SEC 20, T 17 N., R 2 E., W.M.
YELM, WA

OWNER / APPLICANT
YELM PROPERTY DEVELOPMENT LLC
PO BOX 2950
YELM, WA 98597
PHONE: 206.715.4673
CONTACT: DENNY BALASCIO

CONSULTANTS
CIVIL:
SCJ ALLIANCE
8730 TALLON LANE NE, SUITE 200
LACEY, WA 98516
PHONE: 360.352.1465
CONTACT: DAN PHILLIPS, PE

LANDSCAPE:
SCJ ALLIANCE
8730 TALLON LANE NE, SUITE 200
LACEY, WA 98516
PHONE: 360.352.1465
CONTACT: JEFF GLANDER, PLA, ASLA

SURVEYOR:
MTN2COAST
2320 MOTTMAN RD SW, SUITE 106
TUMWATER, WA 98512
PHONE: 360.688.1949
CONTACT: GORDON BASSETT

GEOTECH:
MUD BAY GEOTECHNICAL SERVICES, LLC
1001 COOPER PT RD SW, SUITE 104
OLYMPIA, WA 98502
PHONE: 360.481.9784
CONTACT: CHRIS HEATHMAN, PE

SITE ADDRESS:
9819 GROVE RD SE
YELM, WA 98597

UTILITIES
WATER:
CITY OF YELM

SEWER:
CITY OF YELM

SITE INFORMATION
PARCEL NUMBER: 64303500100
ACRES: ±12.53

LEGAL DESCRIPTION:
LOT 1 IN BLOCK 35 OF MCKENNA IRRIGATED TRACTS, AS PER PLAT RECORDED IN VOLUME 9 OF PLATS, PAGES 43 & 44, RECORDS OF THURSTON COUNTY, WASHINGTON; TOGETHER WITH THAT PART OF THE SOUTH HALF OF VACATED FLUME LANE ADJOINING SAID LOT ON THE NORTH. SUBJECT TO COVENANTS, CONDITIONS AND ENCUMBRANCES OF RECORD, IF ANY.

DATUM:
HORIZONTAL – WASHINGTON STATE PLANE COORDINATES, SOUTH ZONE, NAD 83/2011 BASED ON TIES TO THURSTON COUNTY MONUMENTS "YELM-2" AND "7656" USING GPS BASE AND ROVER.

VERTICAL – NAVD 88 BASED ON GPS TIES TO THURSTON COUNTY MONUMENT "YELM-2", PUBLISHED ELEVATION 337.96.

SHEET INDEX

REVISIONS	DATE	BY

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 200, LACEY, WA 98516
(P) 360.352.1465
SCJALLIANCE.COM

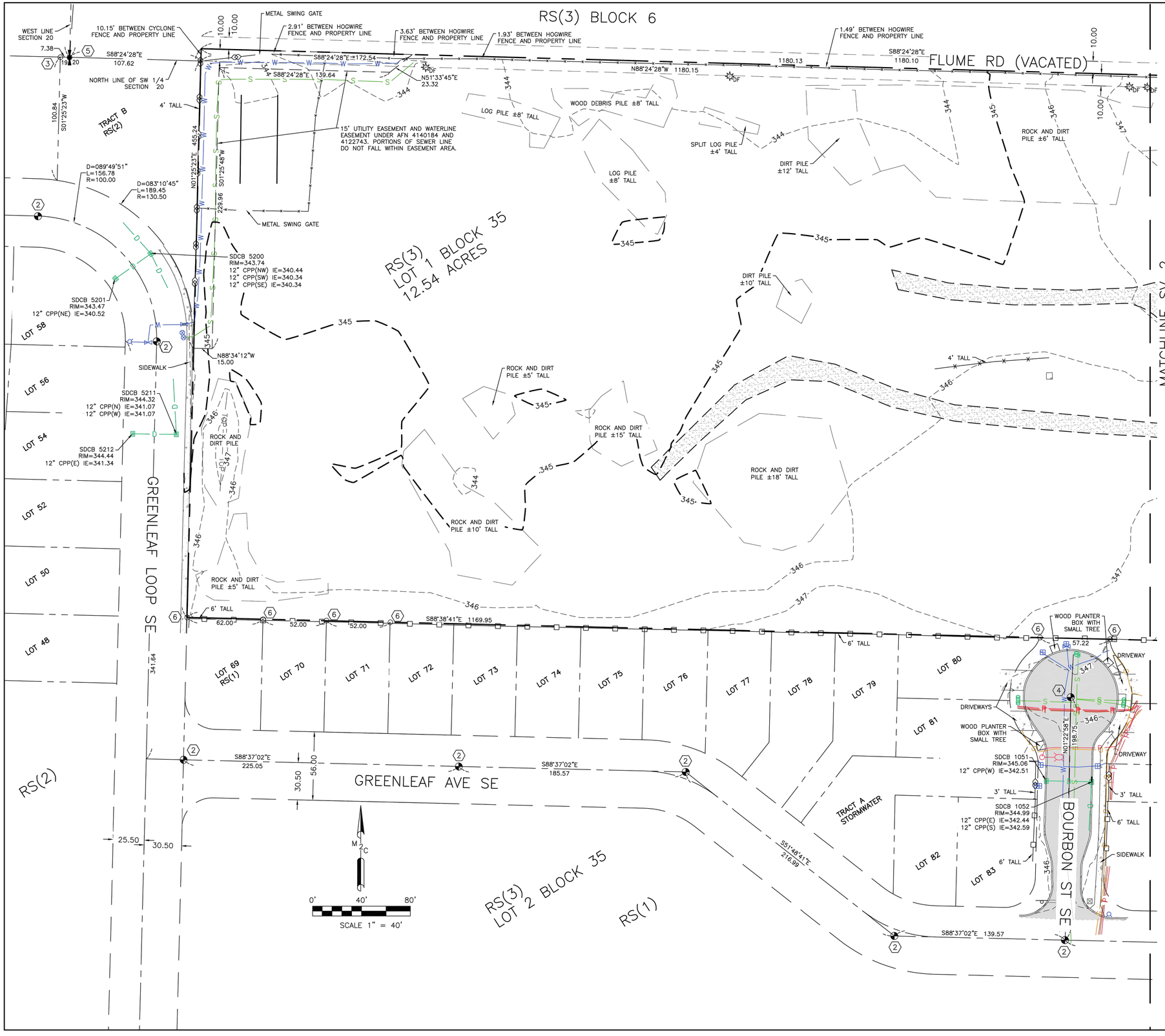
SHEET TITLE: COVER SHEET

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:

DESIGNER:	D. PHILLIPS
DRAWN BY:	N. ALTHAUSER
APPROVED BY:	D. PHILLIPS
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	21-000363_CV-01
DRAWING NO:	CV-01
SHEET NO:	1 OF 27

Apr 05, 2024 - 12:11:08pm - User nathan.althauser
N:\PROJECTS\3464 YELM PROPERTY DEVELOPMENT LLC\21-000363 WILLOW GLENN 4\CAD\21-000363_CV-01.DWG



DATUM

HORIZONTAL – WASHINGTON STATE PLANE COORDINATES, SOUTH ZONE, NAD 83/2011 BASED ON TIES TO THURSTON COUNTY MONUMENTS "YELM–2" AND "7656" USING GPS BASE AND ROVER.

VERTICAL – NAVD 88 BASED ON GPS TIES TO THURSTON COUNTY MONUMENT "YELM–2", PUBLISHED ELEVATION 337.96.

LEGAL DESCRIPTION

LOT 1 IN BLOCK 35 OF MCKENNA IRRIGATED TRACTS, AS PER PLAT RECORDED IN VOLUME 9 OF PLATS, PAGEDS 43 & 44, RECORDS OF THURSTON COUNTY, WASHINGTON; TOGETHER WITH THAT PART OF THE SOUTH HALF OF VACATED FLUME LANE ADJOINING SAID LOT ON THE NORTH. SUBJECT TO COVENANTS, CONDITIONS AND ENCUMBRANCES OF RECORD, IF ANY.

UTILITY NOTE

UTILITIES SHOWN HEREON ARE FROM FIELD MAPPING VISIBLE SURFACE APPURTENANCES, AND MAPPING UTILITY PAINT MARKS FROM A UTILITY LOCATING SERVICE. BURIED UTILITIES ARE ONLY SHOWN AS APPROXIMATE AND SHOULD BE VERIFIED BEFORE CONSTRUCTION.

LINE TYPES

- WOOD FENCE
- CHAIN LINK FENCE
- WIRE FENCE
- GROUND TOE
- GROUND TOP
- EDGE OF PILES
- STORM LINE
- SANITARY SEWER LINE
- BURIED TELEPHONE
- BURIED POWER
- OVERHEAD POWER
- WATER LINE
- NATURAL GAS LINE
- BURIED CABLE TV LINE
- BURIED FIBER OPTIC LINE
- STORM SWALE LINE
- MAJOR CONTOUR
- MINOR CONTOUR
- ROAD ROW
- ROAD ROW (VACATED)
- CENTERLINE ROAD ROW
- LOT LINE
- PROPERTY LINE
- EXTERIOR BUILDING
- BUILDING OVERHANG
- BUILDING DECK
- SHEET MATCHLINE

LEGEND

- DECIDUOUS TREE
- DOUGLAS–FIR TREE
- MAIL BOX
- STREET SIGN (AS DESCRIBED)
- BRASS CAP
- HUB AND TACK
- PK NAIL
- REBAR AND CAP
- REBAR AND CONROL CAP
- CABLE MARKER POST
- CABLE RISER/ PEDESTAL
- LUMINAIRE WITH ARM
- GUY ANCHOR
- POWER JUNCTION BOX
- POWER METER
- POWER POLE
- PP WITH DROP LINE
- PP WITH DROP AND TRANSFORMER
- PP WITH TRANSFORMER
- SS CLEANOUT
- STORM CATCH BASIN
- TELEPHONE RISER
- HOSE BIB
- IRRIGATION CONTROL VALVE
- WATER METER
- WATER VALVE
- WATER FIRE HYDRANT

HATCHING

- GRAVEL
- ASPHALT
- CONCRETE

SHEET NAME: SV-1
SHEET NO. 1 OF 2

PROJECT NAME: YELM WILLOW GLEN
CLIENT NAME: SCJ ALLIANCE

NW1/4 SW1/4, SECTION 20, T17N, R2E, W.M.

MTN 2 COAST, INC
PROFESSIONAL LAND SURVEYORS
2320 MOTTMAN RD SW, STE 106
TUMWATER, WA 98512
360.688.1949

BLAIR E. PRIGGE — 29278 — STATE OF WASHINGTON — REGISTERED PROFESSIONAL LAND SURVEYOR — NOV 9, 2021

DATE	03/01/2023
SCALE	1" = 40'
M2C PROJECT NO.:	21-706
DRAWN	GB
CHECKED	PJB
APPROVED	BEP

DATUM

HORIZONTAL – WASHINGTON STATE PLANE COORDINATES, SOUTH ZONE, NAD 83/2011 BASED ON TIES TO THURSTON COUNTY MONUMENTS "YELM–2" AND "7656" USING GPS BASE AND ROVER.

VERTICAL – NAVD 88 BASED ON GPS TIES TO THURSTON COUNTY MONUMENT "YELM–2", PUBLISHED ELEVATION 337.96.

RS(X) REFERENCED SURVEYS

1. WILLOW GLENN DIVISION 3 PLAT AFN 3974468. COMPLETED BY SKILLINGS CONNOLLY, FILED 11/29/2007.
2. WILLOW GLENN DIVISION 2 PLAT AFN 3624098. COMPLETED BY SKILLINGS CONNOLLY, FILED 3/12/2004.
3. MCKENNA IRRIGATED TRACTS VOL 9 OF PLATS, PAGES 43 AND 44, FILED 3/1/1920.
4. DECLARATION OF SHORT SUBDIVISION AND COVENANTS SS–0353 AFN 997816 SHORT PLATS VOLUME 5, PAGES 299–304, FILED 5/10/1977.

⟨X⟩ MONUMENT NOTES

1. FOUND 3" BRASS MONUMENT WITH PUNCH IN METAL CASE MARKED "YELM–2".
2. FOUND 3" BRASS SURFACE MONUMENT WITH PUNCH MARKED "SKILLINGS CONNOLLY CONSULTING ENGINEERS LS 27192".
3. FOUND 5/8" REBAR WITH RED PLASTIC CAP MARKED "FOX LS27192".
4. FOUND 3" BRASS SURFACE MONUMENT WITHOUT PUNCH MARKED "SKILLINGS CONNOLLY CONSULTING ENGINEERING LS 29275".
5. FOUND 5/8" REBAR WITH SMASHED YELLOW PLASTIC CAP, MARKING ON CAP NOT LEGIBLE. MONUMENT TIED FOR THURSTON COUNTY MONUMENT 7656, SET BASED ON MCKENNA'S IRRIGATED TRACTS.
6. FOUND 5/8" REBAR WITH ORANGE PLASTIC CAP MARKED "JCG LS29275".

SURVEY NOTES

1. INSTRUMENT USED: SOKKIA SRX 3 TOTAL STATION AND TOPCON GR5 GPS.
2. THIS SURVEY MEETS OR EXCEEDS THE STANDARDS OF WAC 332–130–090
3. SURVEY COMPLETED 12/15/2021
4. ALL MONUMENTS SHOWN AS FOUND VISITED 12/2021.
5. PURPOSE OF TOPOGRAPHICAL MAPPING IS FOR FUTURE DEVELOPMENT OF SITE.
6. CONTOURS WERE ESTABLISHED FROM FIELD MAPPING.
7. MTN2COAST (M2C) WAS RETAINED BY SCJ ALLIANCE TO COMPLETE A BOUNDARY AND TOPOGRAPHIC SURVEY OF THE PROPERTY.

SHEET NAME: SV-2 | SHEET NO 2 OF 2

PROJECT NAME: YELM WILLOW GLEN

CLIENT NAME: SCJ ALLIANCE

MTN 2 COAST, INC
PROFESSIONAL LAND SURVEYORS 2320 MOTTMAN RD SW, STE 106 TUMWATER, WA 98512
360.688.1949

BLAKE E. PRIGGE — STATE OF WASHINGTON — 29278 — REGISTERED PROFESSIONAL LAND SURVEYOR

DATE	03/01/2023
SCALE	1" = 40'
M2C PROJECT NO.:	21-706
DRAWN	GB
CHECKED	PJB
APPROVED	BEP

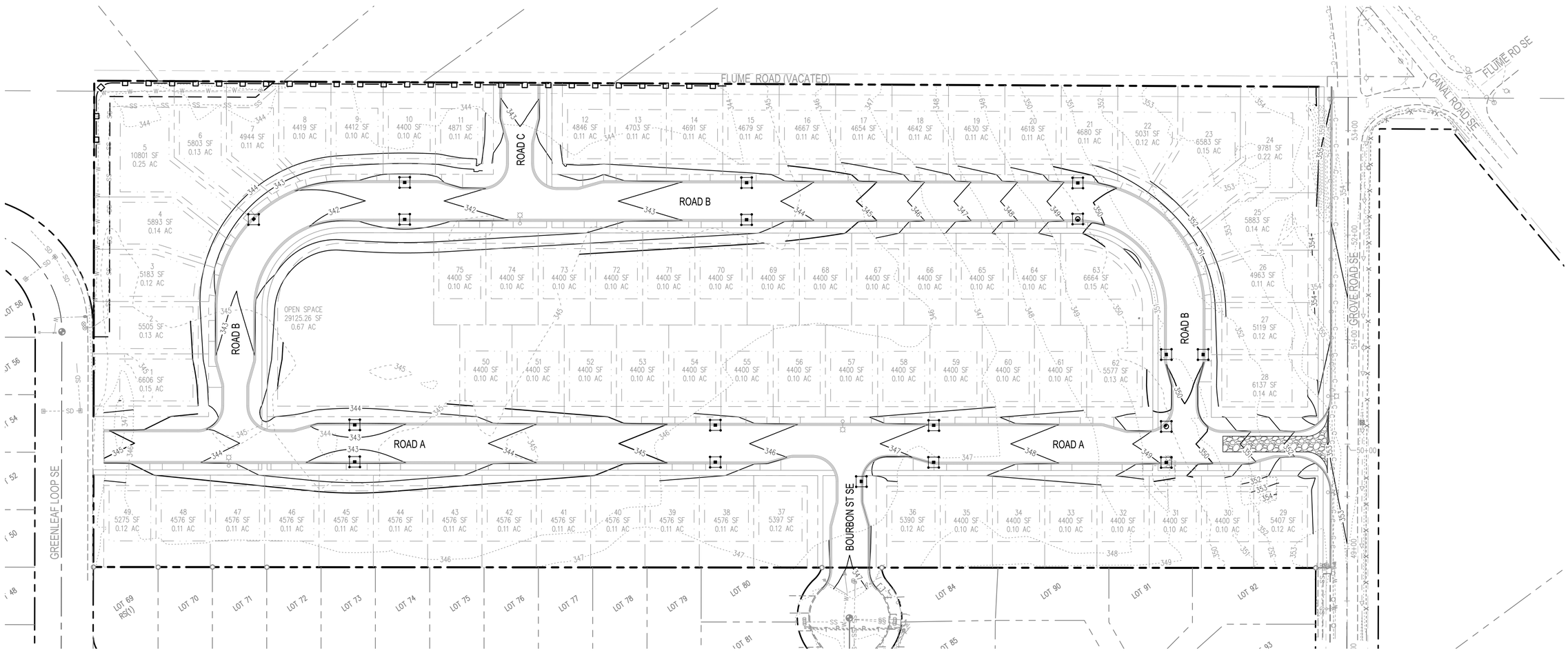
LEGEND

- EXISTING CONTOURS (MAJOR/MINOR)
- PROPOSED CONTOURS (MAJOR/MINOR)
- INLET SEDIMENT PROTECTION:
- SILT FENCE:
- EX STORM PIPE
- STABILIZED CONSTRUCTION ENTRANCE:
- CATCH BASIN TYPE 1
- CATCH BASIN TYPE 2

N

0 50 100

SCALE IN FEET



BY	DATE	REVISIONS

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 300, LACEY, WA 98516
P: (360) 352-1465
SCJALLIANCE.COM

SHEET TITLE: PRELIMINARY EROSION CONTROL PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:

DANIEL PATRICK PHILLIPS — STATE OF WASHINGTON — 19143 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY NOT FOR CONSTRUCTION

DESIGNER:	D. PHILLIPS
DRAWN BY:	N. ALTHAUSER
APPROVED BY:	D. PHILLIPS
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	21-000363_EC-01
DRAWING NO:	EC-01
SHEET NO:	4 OF 27

Apr 05, 2024 - 12:11:53pm - User: nathan.althauser
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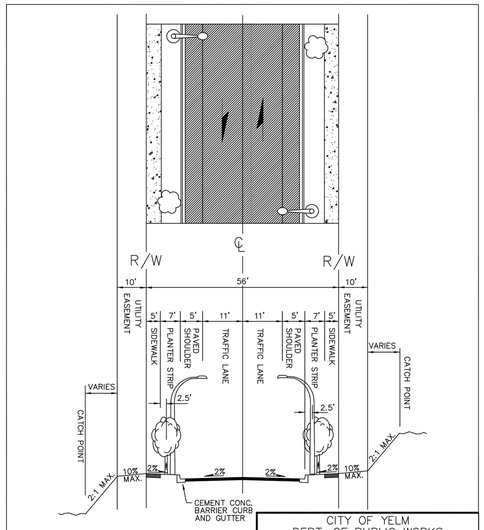
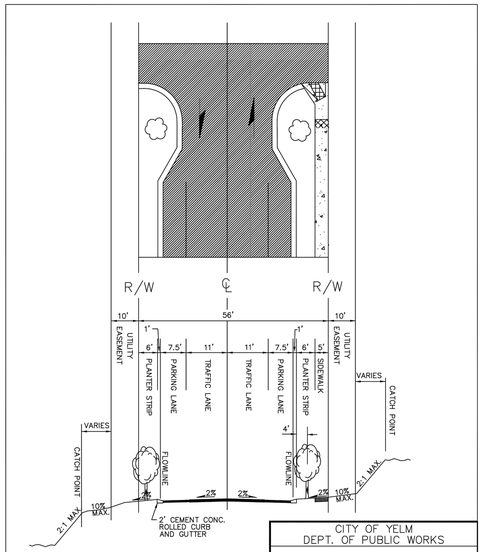


GENERAL NOTES:

1. NO "ON STREET" PARKING PERMITTED.
2. REFER TO RELEVANT SECTIONS OF THE DEVELOPMENT GUIDELINES FOR ADDITIONAL INFORMATION ON STORM DRAINAGE, STREET LIGHTING, PAVEMENT STRUCTURE, ECT.

JEG

CITY OF YELM DEPT. OF PUBLIC WORKS			
COMMERCIAL COLLECTOR			
APPROVED			DWG. NO. 2-4
DES.	DWN.	CKD.	DATE 9/21/2000

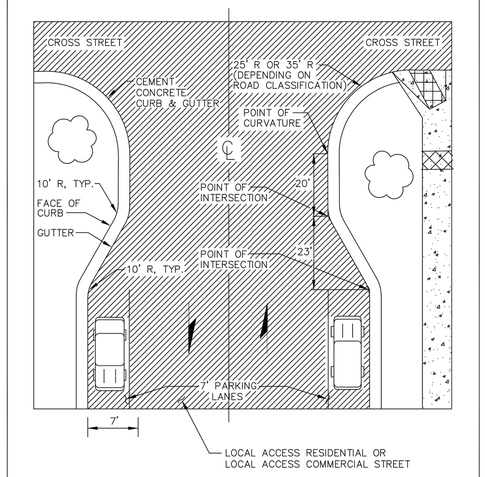


GENERAL NOTES:

1. "ON STREET" PARKING PERMITTED.
2. REFER TO RELEVANT SECTIONS OF THE DEVELOPMENT GUIDELINES FOR ADDITIONAL INFORMATION ON STORM DRAINAGE, STREET LIGHTING, PAVEMENT STRUCTURE, ETC.

JEG

CITY OF YELM DEPT. OF PUBLIC WORKS			
LOCAL ACCESS RESIDENTIAL			
APPROVED			DWG. NO. 2-7
DES.	DWN.	CKD.	DATE



GENERAL NOTE:

1. REFER TO RELEVANT SECTIONS OF THE DEVELOPMENT GUIDELINES FOR ADDITIONAL INFORMATION ON STORM DRAINAGE, STREET LIGHTING, PAVEMENT STRUCTURE, ETC.

JEG

CITY OF YELM DEPT. OF PUBLIC WORKS			
ON-STREET PARKING DETAIL			
APPROVED			DWG. NO. 2-8B
DES.	DWN.	CKD.	DATE 9/21/2000

LEGEND

- EXISTING RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- EXISTING LOT LINE
- PROPOSED PROPERTY LINE
- SETBACK
- EX EASEMENT
- PROPOSED EASEMENT
- CEMENT CONCRETE ROLLED CURB AND GUTTER PER CITY OF YELM DWG. NO. 2-13
- CEMENT CONCRETE BARRIER CURB AND GUTTER PER CITY OF YELM DWG. NO. 2-13
- CEMENT CONCRETE SIDEWALK PER CITY OF YELM DWG. NO. 2-11
- ASPHALT CEMENT PAVING
- CEMENT CONCRETE APPROACH
- LUMINAIRE

N

0 50 100

SCALE IN FEET

GENERAL NOTES:

1. ROAD A, ROAD B, AND ROAD C PER CITY OF YELM DWG. NO. 2-7, LOCAL ACCESS RESIDENTIAL AND 2-8B, ON-STREET PARKING DETAIL.
2. GROVE ROAD HALF STREET IMPROVEMENTS PER CITY OF YELM DWG. NO. 2-4, COMMERCIAL COLLECTOR.
3. AVAILABLE INFORMATION DOES NOT CONFIRM ANY WELLS WITHIN 100' OF PROPERTY LINE.
4. REFER TO PRELIMINARY PLAT MAPS SHEETS 1 OF 2 AND 2 OF 2, BY SCJ ALLIANCE, DATED APRIL 5, 2024 FOR HORIZONTAL CONTROL OF ROADWAYS, PARCELS, AND PROPOSED EASEMENTS.
5. PROPOSED LANDSCAPE IS SHOWN ON SEPARATE LANDSCAPE PLAN SET.

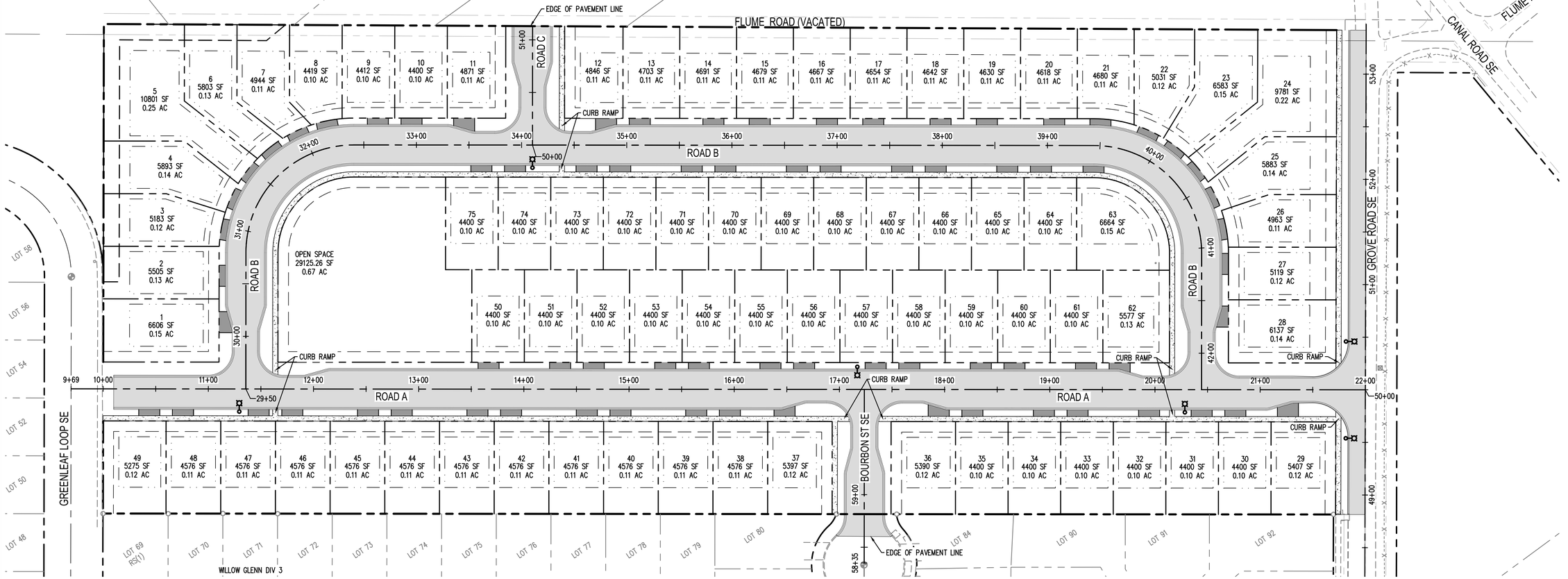
TPN: 64300600402
OWNER: BRANDON & ROXANNE SHAW

TPN: 64300600200
OWNER: ROBERT LOPER

TPN: 64300600101
OWNER: MICHAEL & KELLY KEMPINSKI

TPN: 64300600102
OWNER: MICHAEL & KELLY KEMPINSKI

TPN: 64300600100
OWNER: TANYA CRIST



BY	DATE	REVISIONS

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 300, LACEY, WA 98516
(360) 352-2465
SCJALLIANCE.COM

SHEET TITLE: PRELIMINARY SITE PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:

DANIEL PATRICK PHILLIPS — STATE OF WASHINGTON — 21810 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY NOT FOR CONSTRUCTION

DESIGNER:	D. PHILLIPS
DRAWN BY:	N. ALTHAUSER
APPROVED BY:	D. PHILLIPS
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	21-000363_SP-01
DRAWING NO:	SP-01
SHEET NO:	5 OF 27

Apr 05, 2024, 12:12:07pm – User: nathan.althauser
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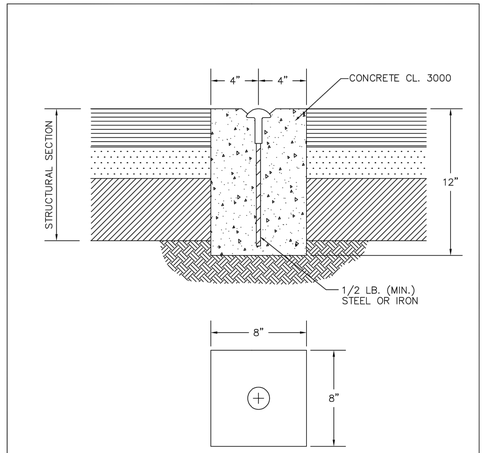


MONUMENT POINT TABLE

MONUMENT POINT #	NORTHING	EASTING
1	594439.24	1118691.58
2	594417.75	1119600.00
3	594414.07	1119755.65
4	594568.71	1118694.64
5	594668.75	1118799.54
6	594664.74	1118969.35
7	594652.11	1119503.01
8	594547.22	1119603.06
9	594425.34	1119279.47

GENERAL NOTES:

1. THIS MONUMENT TO BE USED IN BITUMINOUS OR ASPHALT CONCRETE PAVEMENT WHERE CASED MONUMENT IS NOT REQUIRED
2. CONCRETE BASE DIMENSIONS SHOWN ARE MINIMUM. CONCRETE BASE NEED NOT BE FORMED.
3. CAP SHALL BE 2" MIN. DIAM. BRASS PLUG MARKER.
4. CONCRETE TO BE PLACED ON A FIRM AND UNYIELDING FOUNDATION.

JEG

CITY OF YELM
DEPT. OF PUBLIC WORKS

CAST IN PLACE
MONUMENT

APPROVED PUBLIC WORKS DIRECTOR DATE			DWG. NO. 2–16
DES. S–C	DWN. S–C	CKD. S–C	DATE 10/3/94

LEGEND

- —— - —— EXISTING RIGHT-OF-WAY
- —— - —— EXISTING PROPERTY LINE
- —— — —— EXISTING LOT LINE
- —— — — PROPOSED PROPERTY LINE
- —— · — · SETBACK
- — — — EX EASEMENT
- — — — PROPOSED EASEMENT
- —— — —— PROPOSED ROADWAY CENTERLINE
- ═══ CEMENT CONCRETE ROLLED CURB AND GUTTER PER CITY OF YELM DWG. NO. 2-13
- ═══ CEMENT CONCRETE BARRIER CURB AND GUTTER PER CITY OF YELM DWG. NO. 2-13
- ⊕ CAST IN PLACE MONUMENT PER DWG. NO. 2-16

GENERAL NOTES:

1. ROAD A, ROAD B, AND ROAD C PER CITY OF YELM DWG. NO. 2-7, LOCAL ACCESS RESIDENTIAL AND 2-8B, ON-STREET PARKING DETAIL.
2. GROVE ROAD HALF STREET IMPROVEMENTS PER CITY OF YELM DWG. NO. 2-4, COMMERCIAL COLLECTOR.
3. AVAILABLE INFORMATION DOES NOT CONFIRM ANY WELLS WITHIN 100' OF PROPERTY LINE.
4. REFER TO PRELIMINARY PLAT MAPS SHEETS 1 OF 2 AND 2 OF 2, BY SCJ ALLIANCE, DATED APRIL 5, 2024 FOR HORIZONTAL CONTROL OF ROADWAYS, PARCELS, AND PROPOSED EASEMENTS.
5. PROPOSED LANDSCAPE IS SHOWN ON SEPARATE LANDSCAPE PLAN SET.

Apr 05, 2024 12:12:21pm – User nathan.althauser
N:\PROJECTS\5464 YELM PROPERTY DEVELOPMENT LLC\21-000363 WILLOW GLENN 4\CADD\21-000363_SP-02.DWG

REVISIONS	DATE	BY

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 200, LACEY, WA 98516
P: 360.352.1465
SCJALLIANCE.COM

SHEET TITLE:
PRELIMINARY MONUMENTATION PLAN

PROJECT NAME:
WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:
DANIEL PATRICK PHILLIPS
61019143
PRELIMINARY
NOT FOR CONSTRUCTION

DESIGNER: D. PHILLIPS
DRAWN BY: N. ALTHAUSER
APPROVED BY: D. PHILLIPS
DATE: APRIL 2024
JOB NO: 21-000363
DRAWING FILE NO: 21-000363_SP-02
DRAWING NO: SP-02
SHEET NO: 6 OF 27

GENERAL NOTES:

1. STORMWATER INFILTRATION FACILITY AND TREATMENT DEVICES ARE SIZED TO ACCOMMODATE STORMWATER FROM THE PROPOSED PUBLIC RIGHT-OF-WAY.
2. STORMWATER FOR EACH BUILDING LOT SHALL BE MANAGED ON THAT LOT.
3. A STORMWATER DESIGN FOR EACH BUILDING LOT SHALL BE COMPLETED WITH EACH LOT'S BUILDING PERMIT APPLICATION.

[X] CONSTRUCTION NOTES:

1. STORMWATER INFILTRATION FACILITY: SEE SD-02
2. NORTH FACILITY PERKFILTER® VAULT: SEE SD-03 FOR RIM AND INVERT ELEVATIONS
3. SOUTH FACILITY PERKFILTER® VAULT: SEE SD-03 FOR RIM AND INVERT ELEVATIONS

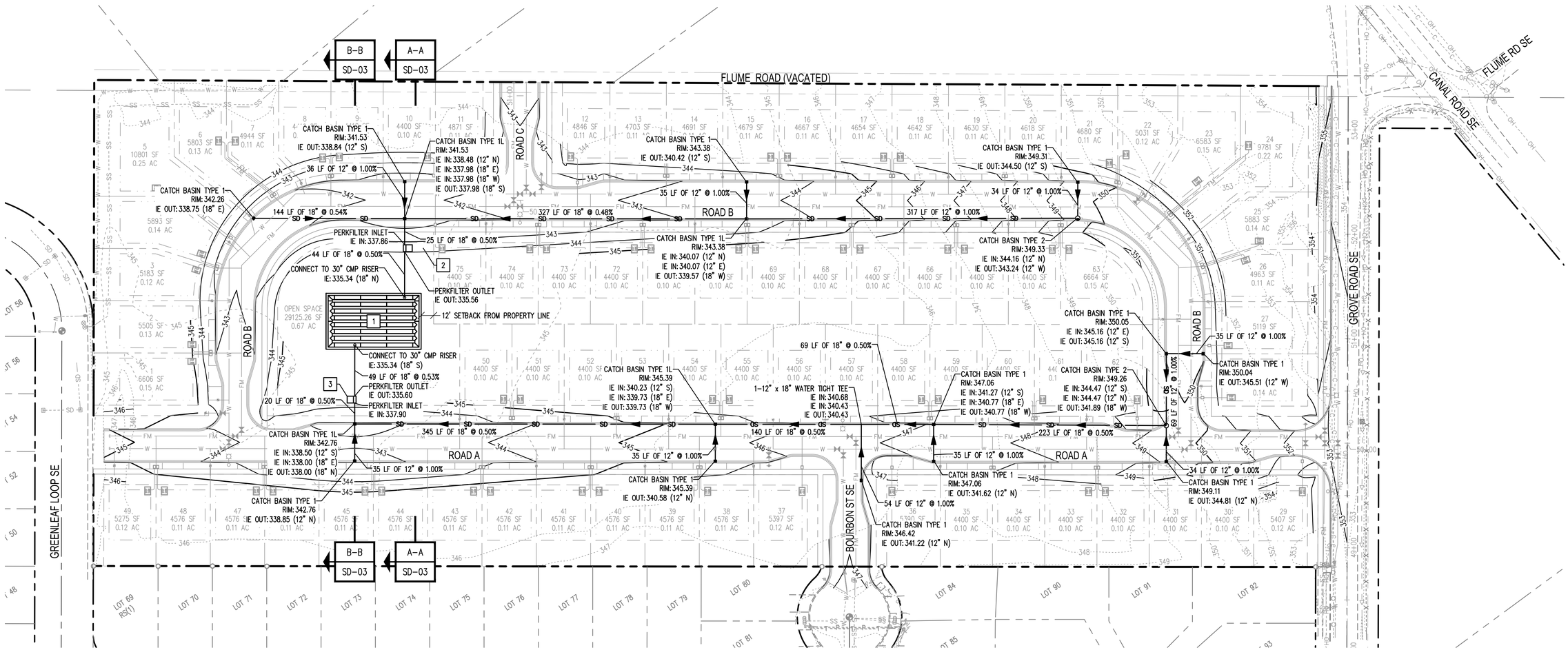
LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- EXISTING CONTOURS (MAJOR/MINOR)
- PROPOSED CONTOURS (MAJOR/MINOR)
- EX STORM PIPE
- EX CATCH BASIN
- CORRUGATED POLYETHYLENE STORM PIPE, ADS N-12 WT OR EQUAL
- FLOW DIRECTION
- CATCH BASIN TYPE 1
- CATCH BASIN TYPE 2
- STORMWATER TREATMENT DEVICE: SEE SD-02

N

0 50 100

SCALE IN FEET



	BY	DATE	REVISIONS
△			

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 300, LACEY, WA 98516
P: 360.352.1465
SCJALLIANCE.COM

SHEET TITLE: PRELIMINARY STORMWATER PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL: DANIEL PATRICK PHILLIPS — STATE OF WASHINGTON — PRELIMINARY NOT FOR CONSTRUCTION — REGISTERED PROFESSIONAL ENGINEER

DESIGNER:	D. PHILLIPS
DRAWN BY:	N. ALTHAUSER
APPROVED BY:	D. PHILLIPS
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	21-000363_SD-01
DRAWING NO:	SD-01
SHEET NO:	7 OF 27

Apr 05, 2024 - 12:12:45pm - User: nathan.althauser
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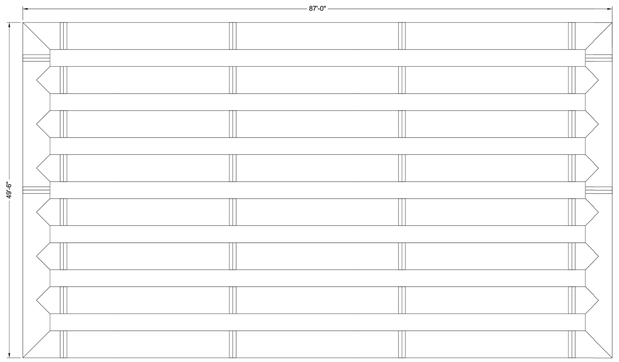

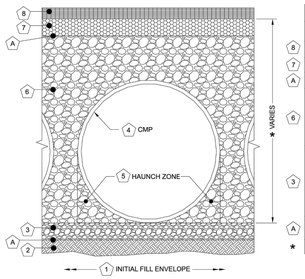

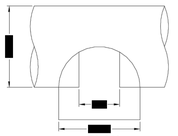

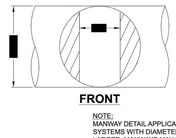

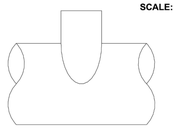

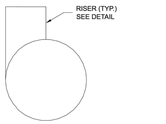

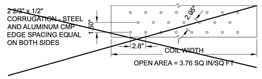

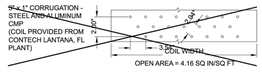

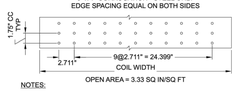

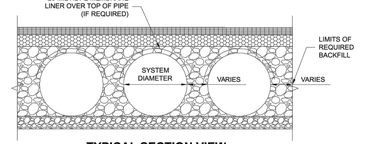

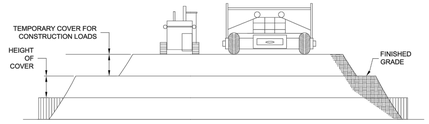

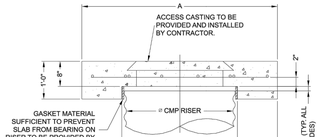

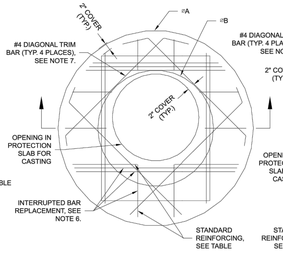

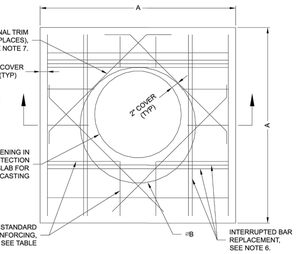

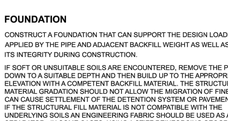

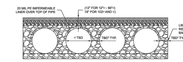

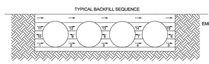

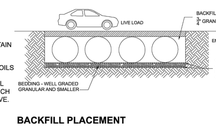

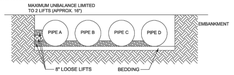

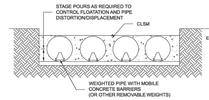

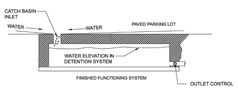

PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 731 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = N/A
- PIPE STORAGE VOLUME = 9,186 CF
- BACKFILL STORAGE VOLUME = 7,559 CF
- TOTAL STORAGE PROVIDED = 16,780 CF

PIPE DETAILS
- DIAMETER = 48"
- CORRUGATION = 2 2/3x1/2
- GAGE = 16
- COATING = ALT2
- WALL TYPE = PERFORATED
- BARREL SPACING = 30"

BACKFILL DETAILS
- WIDTH AT ENDS = 24"
- ABOVE PIPE = 12"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 12"

NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY
SCALE: 1" = 10'

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DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO39743 Willow Glenn IV - 12 inches per hour
Infiltration System
Yelm, WA
DETENTION SYSTEM

PROJECT No.: 27148
SEQ. No.: 39743
DATE: 10/20/2023
DESIGNED: DYO
DRAWN: DYO
CHECKED: DYO
APPROVED: DYO
SHEET NO.: 1

	Infiltration Systems - CMP Infiltration & CMP Perforated Drainage Pipe			
	Material Location	Description	Material Designation	Designation
8	Rigid or Flexible Pavement (if applicable)			
7	Road Base (if applicable			
A	Geotextile Layer	Non-Woven Geotextile	CONTECH C-40 or C-45	Engineer Decision for consideration to prevent soil migration into varying soil types. Wrap the trench only.
6	Backfill	Infiltration pipe systems have a pipe perforation sized of 3/8" diameter. An open graded, free draining stone, with a particle size of ½" – 2 ½" diameter is recommended.	AASHTO M 145-A-1 or AASHTO M 43 - 3, 4	Material shall be worked into the pipe haunches by means of shovel-slicing, rodding, air-tamper, vibratory rod, or other effective methods. Compaction of all placed fill material is necessary and shall be considered adequate when no further yielding of the material is observed under the compactor, or under foot, and the Project Engineer or his representative is satisfied with the level of compaction"
3	Bedding Stone	Well graded granular bedding material w/maximum particle size of 3"	AASHTO M43 - 3,357,4,467, 5, 56, 57	For soil aggregates larger than 3/8" a dedicated bedding layer is not required for CMP. Pipe may be placed on the trench bottom comprised of native suitable well graded & granular material. For Arch pipes it is recommended to be shaped to a relatively flat bottom or fine-grade the foundation to a slight v-shape. Soil aggregates less than 3/8" and unsuitable material should be over-excavated and re-placed with a 4"-6" layer of well graded & granular stone per the material designation.
A	Geotextile Layer	None	None	Contech does not recommend geotextiles be placed under the invert of Infiltration systems due to the propensity for geotextiles to clog over time.
*	Note: The listed AASHTO designations are for gradation only. The stone must also be angular and clean.			

1 MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT.

FOUNDATION/BEDDING PREPARATION

2 PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

5 HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

BACKFILL
MATERIAL SHALL BE PLACED IN 8"-10" MAXIMUM LIFTS. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE DEFLECTIONS WITHIN THE SYSTEM AND SETTLEMENT OF THE SOILS OVER THE SYSTEM. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO-LIFT DIFFERENTIAL BETWEEN THE SIDES OF ANY PIPE IN THE SYSTEM AT ALL TIMES DURING THE BACKFILL PROCESS. BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON ANY PIPES IN THE SYSTEM.

EQUIPMENT USED TO PLACE AND COMPACT THE BACKFILL SHALL BE OF A SIZE AND TYPE SO AS NOT TO DISTORT, DAMAGE, OR DISPLACE THE PIPE. ATTENTION MUST BE GIVEN TO PROVIDING ADEQUATE MINIMUM COVER FOR SUCH EQUIPMENT. MAINTAIN BALANCED LOADING ON ALL PIPES IN THE SYSTEM DURING ALL SUCH OPERATIONS.

OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL FOR MATERIAL REQUIRED.

NOTES:

1. PERFORATIONS MEET AASHTO AND ASTM SPECIFICATIONS.
2. PERFORATION OPEN AREA PER SQUARE FOOT OF PIPE IS BASED ON THE NOMINAL DIAMETER AND LENGTH OF PIPE.
3. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
4. ALL HOLES ⌀3/8".

TYPICAL PERFORATION DETAIL

SCALE: N.T.S.

NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.

TYPICAL MANWAY DETAIL

SCALE: N.T.S.

NOTE:
LADDERS ARE OPTIONAL AND ARE NOT REQUIRED FOR ALL SYSTEMS.

TYPICAL RISER DETAIL

SCALE: N.T.S.

TYPICAL SECTION VIEW

LINER OVER ROWS
SCALE: N.T.S.

NOTE: IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, AN HDPE MEMBRANE LINER IS RECOMMENDED WITH THE SYSTEM. THE IMPERMEABLE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

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CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

POLYMER COATED: AASHTO M-245 OR ASTM A-762

ALUMINUM: AASHTO M-196 OR ASTM B-745

APPLICABLE

HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.

REQUIREMENTS

INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

NOTE:
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SECTION VIEW

REINFORCING TABLE				
⌀ CMP RISER	A	⌀ B	REINFORCING	**BEARING PRESSURE (PSF)
24"	⌀ 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	⌀ 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	⌀ 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	⌀ 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	⌀ 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY

ROUND OPTION PLAN VIEW

SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

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CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.

GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED, SUCH AS ROAD SALTS FOR DEICING AGENTS. IF SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM THE USE OF SUCH AGENTS INCLUDING PREMATURE CORROSION AND REDUCED ACTUAL SERVICE LIFE.

THE PROJECT'S ENGINEER OF RECORD IS TO EVALUATE WHETHER SALTING AGENTS WILL BE USED ON OR NEAR THE PROJECT SITE, AND USE HIS/HER BEST JUDGEMENT TO DETERMINE IF ANY ADDITIONAL PROTECTIVE MEASURES ARE REQUIRED. BELOW IS A TYPICAL DETAIL SHOWING THE PLACEMENT OF A GEOMEMBRANE BARRIER FOR PROJECTS WHERE SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE.

IN-SITU TRENCH WALL

IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.

BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.

WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.

CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

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CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX
CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING
DYO39743 Willow Glenn IV - 12 inches per hour
Infiltration System
Yelm, WA
DETENTION SYSTEM
PROJECT No.: 27148 SEQ. No.: 39743 DATE: 10/20/2023
DESIGNED: DYO DRAWN: DYO
CHECKED: DYO APPROVED: DYO
SHEET NO.: 1

REVISIONS	DATE	BY

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 200, LACEY, WA 98516
P: 360.352.1465
SCJALLIANCE.COM

SHEET TITLE:
PRELIMINARY STORMWATER DETAILS

PROJECT NAME:
WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:
DANIEL PATRICK PHILLIPS
19143
PRELIMINARY NOT FOR CONSTRUCTION

DESIGNER: D. PHILLIPS
DRAWN BY: N. ALTHAUSER
APPROVED BY: D. PHILLIPS
DATE: APRIL 2024
JOB NO: 21-000363
DRAWING FILE NO: 21-000363_SD-02
DRAWING NO: SD-02
SHEET NO: 8 OF 27

Apr 05, 2024 12:12:57pm – User: nathan.althauser
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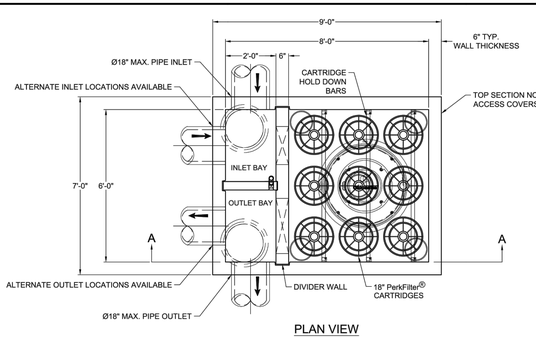
SITE SPECIFIC DATA	
Structure ID	North
Treatment Flow Rate (gpm/cfs)	0.149
Peak Flow Rate (cfs)	2.3
Cartridge Quantity	7
Rim Elevation	344

Pipe Data	Pipe Location	Pipe Size	Pipe Type	Invert Elevation
Inlet 1	-	-	-	337.86
Inlet 2	-	-	-	-
Outlet	-	-	-	335.56

Notes:
-

PERFORMANCE SPECIFICATIONS	
Peak Treatment Capacities:[1]	
Max. Cartridge Quantity	9
NJDEP 80% Removal, 75 micron	0.409 cfs
WA Ecology GULD - Basic & Phosphorus	0.205 cfs
Max. Bypass Capacity	9.6 cfs

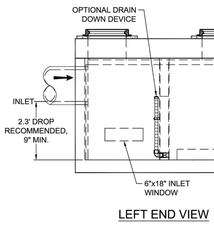
1. Contact Oldcastle for alternative treatment and peak flow capacities.



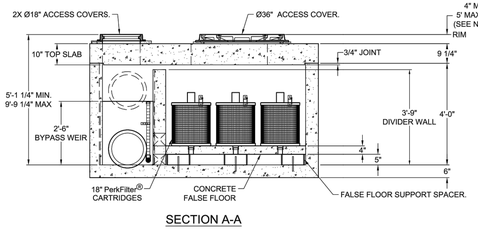
PLAN VIEW

NOTES:

1. DESIGN LOADINGS:
   A. AASHTO HS-20-44 (WITH IMPACT)
   B. DESIGN SOIL COVER: 5'-0" MAXIMUM
   C. ASSUMED WATER TABLE: BELOW BASE OF PRECAST (ENGINEER-OF-RECORD TO CONFIRM SITE WATER TABLE ELEVATION)
   D. LATERAL EARTH PRESSURE: 45 PCF (DRAINED)
   E. LATERAL LIVE LOAD SURCHARGE: 80 PSF (APPLIED TO 8'-0" BELOW GRADE)
   F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALLS, PIERS, OR FOUNDATIONS.
2. CONCRETE 28-DAY MINIMUM COMPRESSIVE STRENGTH: 5,000 PSI MINIMUM.
3. REINFORCING: REBAR, ASTM A615/A706, GRADE 60
4. CEMENT: ASTM C150
5. REQUIRED ALLOWABLE SOIL BEARING CAPACITY: 2,500 PSF
6. REFERENCE STANDARD:
   A. ASTM C890
   B. ASTM C913
   C. ACI 318-14
7. THIS STRUCTURE IS DESIGNED TO THE PARAMETERS NOTED HEREIN. ENGINEER-OF-RECORD SHALL VERIFY THAT NOTED PARAMETERS MEET OR EXCEED PROJECT REQUIREMENTS. IF DESIGN PARAMETERS ARE INCORRECT, REVIEWING ENGINEER/AUTHORITY SHALL NOTIFY OLDCASTLE INFRASTRUCTURE UPON REVIEW OF THIS SUBMITTAL.
8. OVERSIZED HOLES TO ACCOMMODATE SPECIFIC PIPE TYPE MUST BE CONCENTRIC TO PIPE ID. AFTER PIPES ARE INSTALLED, ALL ANNULAR SPACES SHALL BE FILLED WITH A MINIMUM OF 3,000 PSI CONCRETE FOR FULL THICKNESS OF PRECAST WALLS. PIPES ARE TO BE FLUSH WITH THE INSIDE SURFACE OF THE CONCRETE STRUCTURE.
9. CONTRACTOR RESPONSIBLE TO VERIFY ALL SIZES, LOCATIONS, AND ELEVATIONS OF OPENINGS.
10. CONTRACTOR RESPONSIBLE TO ENSURE ADEQUATE BEARING SURFACE IS PROVIDED (I.E. COMPACTED AND LEVEL PER PROJECT SPECIFICATIONS).
11. SECTION HEIGHTS, SLAB/WALL THICKNESSES, AND KEYWAYS ARE SUBJECT TO CHANGE AS REQUIRED FOR SITE REQUIREMENTS AND/OR DUE TO PRODUCT AVAILABILITY AND PRODUCTION FACILITY CONSTRAINTS.
12. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT OLDCASTLE INFRASTRUCTURE.
13. MAXIMUM PICK WEIGHTS:
    A. TOP - XX,XXX LBS
    B. BASE: XX,XXX LBS*
       * COMBINED WEIGHT OF BASE INCLUDES DIVIDER WALLS, FALSE FLOOR, AND PRODUCT INTERNALS.)
14. INTERNALS SHALL CONSIST OF CARTRIDGES, WEIR WALL, FALSE FLOOR, FALSE FLOOR SUPPORT SPACERS, AND DIVIDER WALL.



LEFT END VIEW



SECTION A-A

Oldcastle Infrastructure
A CRH COMPANY
Ph: 800.579.8819 | www.oldcastleinfrastructure.com/stormwater

PerkFilter® Vault (STANDARD)
6'x8' With 18" Cartridges

CUSTOMER: SCJ Alliance
PROJECT NAME: Willow Glenn IV
SHEET TITLE: Specifier Drawing PFV-68-18
REVISION: -
REV DATE: -
SHEET: 1 OF 1

Media Filtration

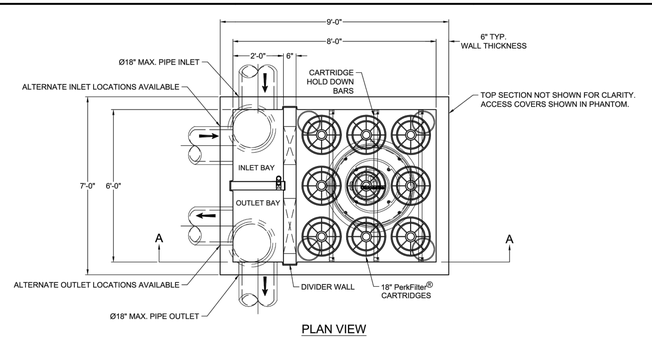
SITE SPECIFIC DATA	
Structure ID	South
Treatment Flow Rate (gpm/cfs)	0.175
Peak Flow Rate (cfs)	2.7
Cartridge Quantity	8
Rim Elevation	344.5

Pipe Data	Pipe Location	Pipe Size	Pipe Type	Invert Elevation
Inlet 1	-	-	-	337.9
Inlet 2	-	-	-	-
Outlet	-	-	-	335.6

Notes:
-

PERFORMANCE SPECIFICATIONS	
Peak Treatment Capacities:[1]	
Max. Cartridge Quantity	9
NJDEP 80% Removal, 75 micron	0.409 cfs
WA Ecology GULD - Basic & Phosphorus	0.205 cfs
Max. Bypass Capacity	9.6 cfs

1. Contact Oldcastle for alternative treatment and peak flow capacities.



PLAN VIEW

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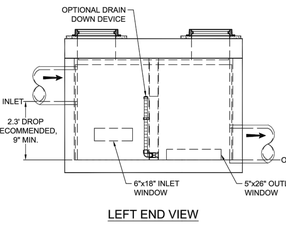
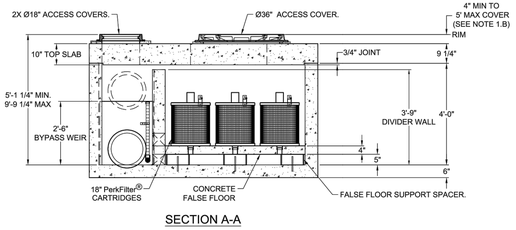


LEFT END VIEW



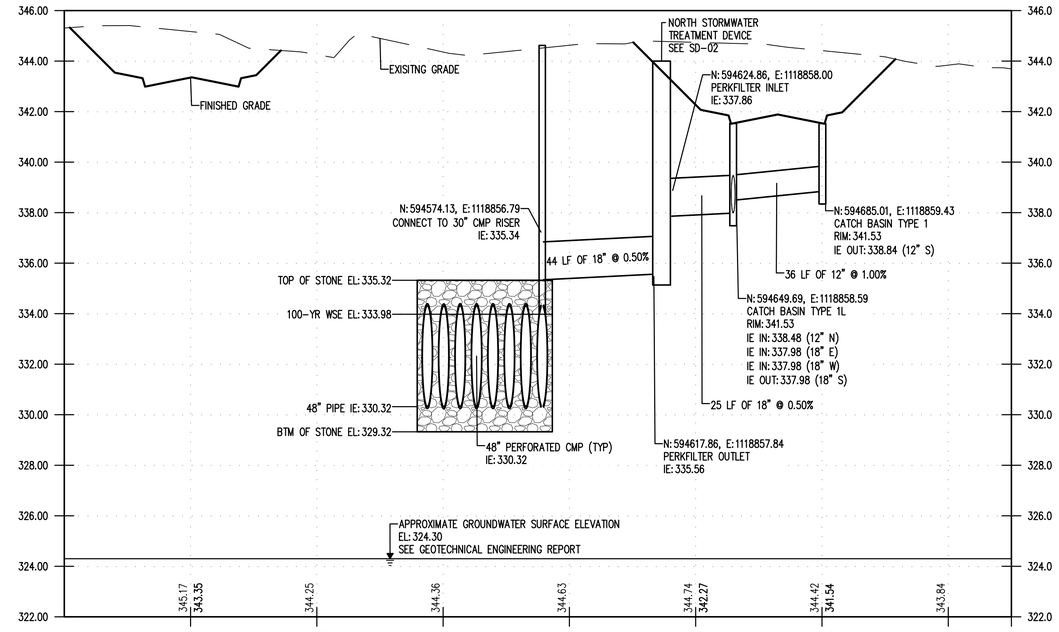
SECTION A-A

Oldcastle Infrastructure
A CRH COMPANY
Ph: 800.579.8819 | www.oldcastleinfrastructure.com/stormwater

PerkFilter® Vault (STANDARD)
6'x8' With 18" Cartridges

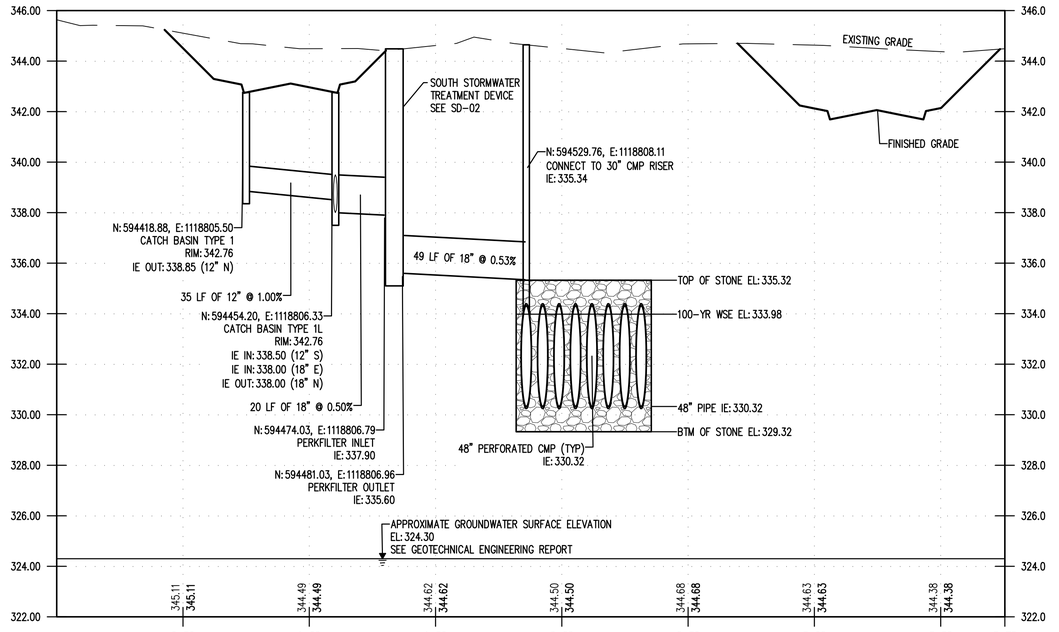
CUSTOMER: SCJ Alliance
PROJECT NAME: Willow Glenn IV
SHEET TITLE: Specifier Drawing PFV-68-18
REVISION: -
REV DATE: -
SHEET: 1 OF 1

Media Filtration



RETENTION SECTION A-A

H: 0 30 60 SCALE IN FEET
V: 0 3 6 SCALE IN FEET



RETENTION SECTION B-B

H: 0 30 60 SCALE IN FEET
V: 0 3 6 SCALE IN FEET

BY	DATE	REVISIONS

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 200, LACEY, WA 98516
(360) 352-1465
SCJALLIANCE.COM

SHEET TITLE: PRELIMINARY STORMWATER DETAILS

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:

DESIGNER:	D. PHILLIPS
DRAWN BY:	N. ALTHAUSER
APPROVED BY:	D. PHILLIPS
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	21-000363_SD-03
DRAWING NO:	SD-03
SHEET NO:	9 OF 27

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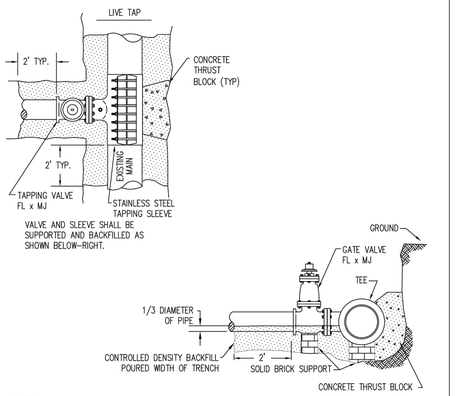

NOTES:

1. 11 MIL PLASTIC OR CONSTRUCTION FABRIC SHALL BE WRAPPED AROUND PIPE AND FITTINGS BEFORE THRUST BLOCK AND BACKFILL ARE POURED.
2. MJ CUT IN TEES SHALL NOT BE PERMITTED.
3. SUPPORT VALVE AND SLEEVE CONTINUOUSLY THROUGH INSTALLATION.

CITY OF YELM	APPROVED BY	DWG. NO.
CONNECTION TO EXISTING MAIN	PUBLIC WORKS DIRECTOR DATE	4-10
	DES. MKD / DWN. MKD / CKD. JEG	DATE 12/2016

GENERAL NOTES:

1. STEP SEWER SERVICE LINES SHALL BE 1-INCH SCHEDULE 40 PVC FROM STEP TANK TO SERVICE VALVE BOX
2. STEP SEWER SERVICE LINES SHALL BE 2-INCH SCHEDULE 40 PVC FROM SERVICE VALVE BOX TO STEP SEWER FORCEMAIN FOR DOUBLE SERVICE CONNECTIONS AND 1-INCH SCHEDULE 40 PVC FOR SINGLE SERVICE CONNECTIONS
3. WATER SERVICE LINES SHALL BE 1-INCH HIGH DENSITY POLYETHYLENE PIPE, MINIMUM PRESSURE CLASS 200 PSI DR7
4. WATER AND SEWER COVER AND CROSSINGS SHALL BE PER YELM ENGINEERING SPECIFICATIONS AND STANDARD DETAILS.

XX KEYED NOTES:

1. 5/8-INCH SINGLE METER SERVICE PER CITY OF YELM DWG. NO. 4-1
2. 5/8" DUAL METER SERVICE PER CITY OF YELM DWG. NO. 4-2 UNLESS NOTED OTHERWISE
3. EXTEND WATER TO NORTH BOUNDARY LINE IN THE EVENT THE PROPERTY TO THE NORTH IS NOT DEVELOPED BEFORE FINAL PLAT, FURNISH AND INSTALL A 2" BLOW-OFF ASSEMBLY PER CITY OF YELM DWG. NO. 4-9 AND SECTION 4.00.100 OF THE YELM ENGINEERING SPECIFICATIONS.
4. 1-INCH SCHEDULE 40 PVC SINGLE STEP SERVICE CONNECTION
5. DOUBLE SERVICE CONNECTION PER CITY OF YELM DWG. NO. 5-2 UNLESS NOTED OTHERWISE
6. EXTEND SEWER FORCEMAIN TO NORTH BOUNDARY LINE
7. CONNECT TO STEP MAIN PER CITY OF YELM DWG. NO. 5-1 (TYP)
8. SEE SD-01 FOR STORMWATER INFILTRATION FACILITY

LEGEND

EXISTING	PROPOSED	
		PROPERTY LINE
		EASEMENT
SD	SD	STORM LINE
SS	FM	3-INCH SDR 21 CLASS 200 GASKETED PVC STEP SEWER FORCEMAIN PIPE
W	W	8-INCH C900 PVC WATER LINE, UNLESS NOTED OTHERWISE
		GATE VALVE WITH STANDARD VALVE BOX PER CITY OF YELM DWG. NO. 4-11 (WATER) OR 5-21 (SANITARY SEWER)
		FIRE HYDRANT PER CITY OF YELM DWG. NO. 4-7
		WATER METER
		CATCH BASIN
		CATCH BASIN TYPE 2
		1,250 GALLON RESIDENTIAL CONCRETE STEP TANK PER CITY OF YELM DWG. NO. 5-9
		SERVICE VALVE BOX, PER CITY OF YELM DWG. NO. 5-2

N

0 50 100

SCALE IN FEET

FLUME ROAD (VACATED)

CANAL ROAD SE

FLUME RD SE

GREENLEAF LOOP SE

GROVE ROAD SE

BOURBON ST SE

ROAD A

ROAD B

ROAD C

OPEN SPACE 29125.26 SF 0.67 AC

1-8" 45° BEND

1-3" 45° BEND

1-8" TEE 3-8" GATE VALVES

1-3" TEE 3-3" GATE VALVES

1-3" TEE 2-3" GATE VALVES

1-8" TEE 2-8" GATE VALVES

1-3" CAP

1-8" CAP

1-10"x8" TEE 2-10" GATE VALVES 1-8" GATE VALVE

1-10" 11.25" BEND

CONNECT TO EXISTING 8" WATER MAIN

CONNECT TO EXISTING 3" STEP MAIN

CONNECT TO EXISTING 3" STEP MAIN CONNECT TO EXISTING 10" WATER MAIN 1-10" 11.25" BEND

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 300, LACEY, WA 98516
P: 360.352.1465
SCJALLIANCE.COM

BY	DATE	REVISIONS

SHEET TITLE: PRELIMINARY WATER AND SEWER PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:

DANIEL PATRICK PHILLIPS — STATE OF WASHINGTON — 19143 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY NOT FOR CONSTRUCTION

DESIGNER:	D. PHILLIPS
DRAWN BY:	N. ALTHAUSER
APPROVED BY:	D. PHILLIPS
DATE:	APRIL 2024
JOB NO:	21-000363
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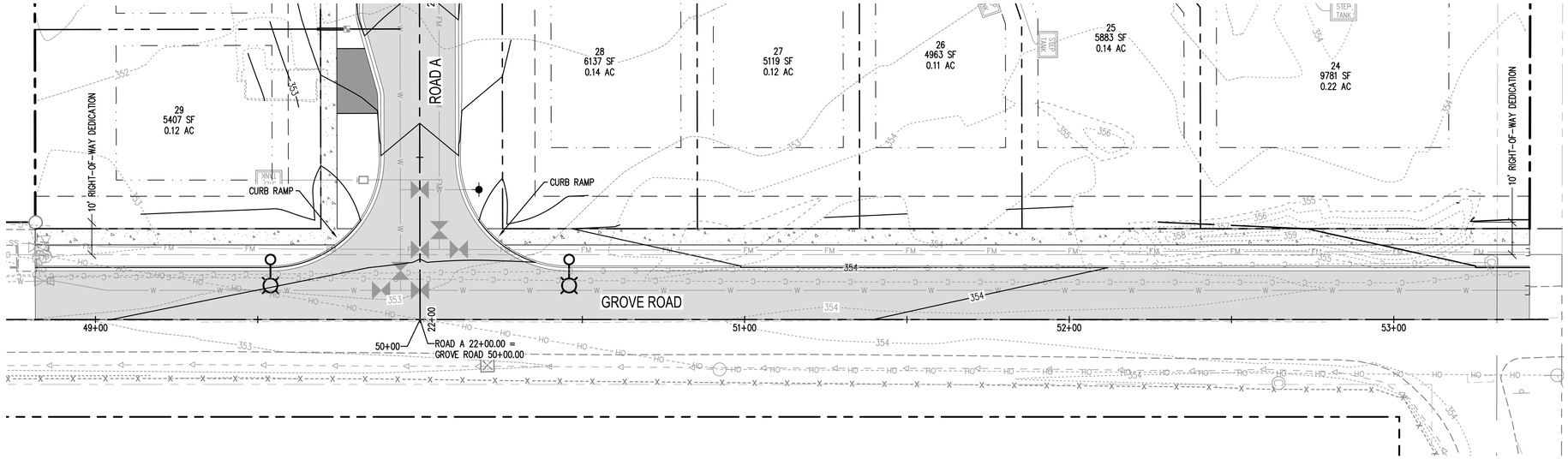
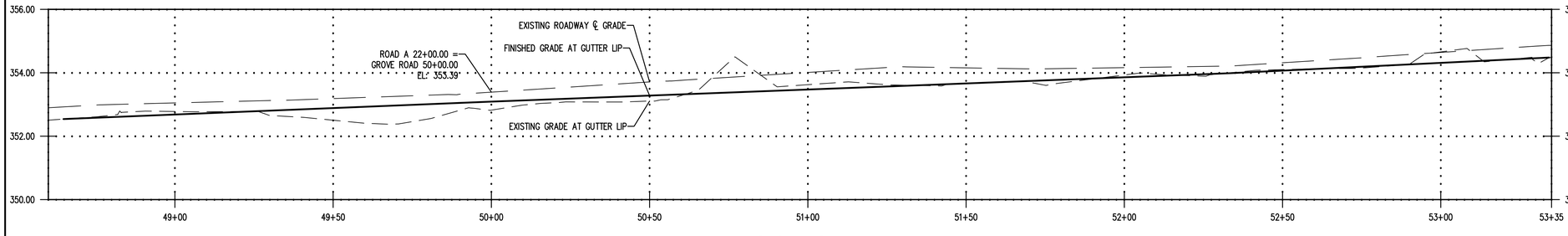
N:\PROJECTS\5464 YELM PROPERTY DEVELOPMENT LLC\21-000363 WILLOW GLENN 4\CAD\21-000363_UT-01.DWG

SEC. 20, T 17 N., R 2 E., W.M.





GROVE ROAD

H 0 20 40 SCALE IN FEET

V 0 2 4 SCALE IN FEET

0 20 40 SCALE IN FEET

LEGEND

- EXISTING RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- EXISTING LOT LINE
- EXISTING PROPERTY LINE TO BE ADJUSTED
- PROPOSED PROPERTY LINE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- SETBACK
- EXISTING EASEMENT
- PROPOSED EASEMENT
- EXISTING OVERHEAD POWER
- EXISTING CABLE
- EXISTING SEWER
- EXISTING WATER
- PROPOSED WATER LINE
- CEMENT CONCRETE ROLLED CURB AND GUTTER PER CITY OF YELM DWG. NO. 2-13
- CEMENT CONCRETE BARRIER CURB AND GUTTER PER CITY OF YELM DWG. NO. 2-11
- CEMENT CONCRETE SIDEWALK PER CITY OF YELM DWG. NO. 2-11
- ASPHALT CEMENT PAVING
- CEMENT CONCRETE APPROACH
- LUMINAIRE

GENERAL NOTE:

1. GROVE ROAD HALF STREET IMPROVEMENTS PER CITY OF YELM DWG. NO. 2-4, COMMERCIAL COLLECTOR
2. ROAD A PER CITY OF YELM DWG. NO. 2-7, LOCAL ACCESS RESIDENTIAL AND 2-8B, ON-STREET PARKING DETAIL

BY	DATE	REVISIONS

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 200, LACEY, WA 98516
P: (360) 352.2465
SCJALLIANCE.COM

SHEET TITLE: PRELIMINARY FRONTAGE IMPROVEMENTS

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:

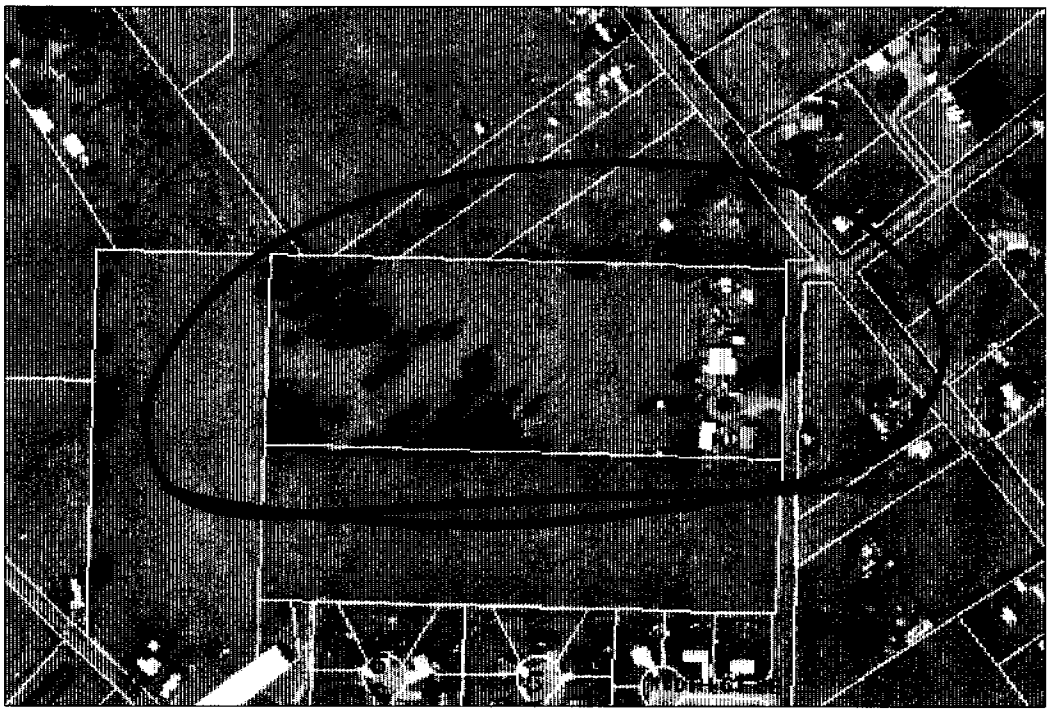
DANIEL PATRICK PHILLIPS — STATE OF WASHINGTON — 19143 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY NOT FOR CONSTRUCTION

DESIGNER:	D. PHILLIPS
DRAWN BY:	N. ALTHAUSER
APPROVED BY:	D. PHILLIPS
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	21-000363_FR-01
DRAWING NO:	FR-01
SHEET NO:	11 OF 27

Apr 05, 2024 - 12:14:04pm - User: nathan.althauser
N:\PROJECTS\5464 YELM PROPERTY DEVELOPMENT, LLC\21-000363 WILLOW GLENN 4\CADD\21-000363_FR-01.DWG

6430350010C

Thurston GeoData Center



Click on Map to:

- (•) Zoom In
- ( ) Zoom Out

Zoom Factor: 2

- ( ) Describe a Parcel
- ( ) Describe a Layer
- ( ) Measure Distance
- ( ) Measure Area

Zoom

Full County View

Print Map Only

PAN

[x] Display Aerial Photos

[ ] Display Parcel Text

Show other map layers?

none

Redraw Only

Search By:

6430350010C Tax Parcel Number

Street Number (ie 921)

Street Name (ie Oak)

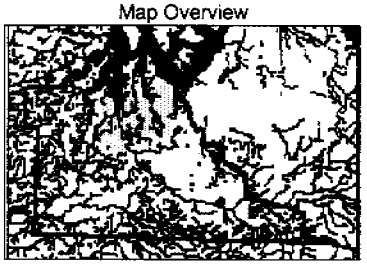
Section (ie 05182w)

Survey Target#/Name

CAPCOM Grid# (ie V-14)

Submit

Map Overview



Label Parcels With?

County Ordinances | Data Descriptions | Help | What's New | TGC Home | Assessor Questions

You are visitor 89,810 with map request 1,366,173 since. April 24, 1998

.../esrimap.dll?name=TGCMAP&Left=1117940.8524385&Bottom=594068.394586&Right=1121/21/00

INFORMATION SHEET FOR MOBILE HOME PARKS

NAME OF PARK _____ IDENTIFICATION # 65

LOCATION OF PARK BY ROAD _____

PARCEL NUMBER _____ TOWNSHIP ___ RANGE ___ SECTION ___ ¼SEC ___

NUMBER OF SPACES PERMITTED _____ DATE _____ APPROVED BY _____

_____ DATE _____ APPROVED BY _____

_____ DATE _____ APPROVED BY _____

METHOD OF WATER SUPPLY _____ CHEMICAL CONTENT _____

NAME OF PURVEYOR _____

METHOD OF SEWAGE DISPOSAL _____

MAINTENANCE AGREEMENT _____

TYPES AND DATES OF FAILURES OR REPAIRS _____

PERCOLATION RATES _____ WATER TABLES _____

SOIL TYPES _____

METHOD OF REFUSE STORAGE _____

METHOD OF COLLECTION _____

PLAN SUBMITTED _____ ITEMS CHECKED a, b, c, d, e, f, g, h, i, j, k

NUMBER OF TOILET FACILITIES _____ MALE _____ FEMALE

NUMBER OF BATHING FACILITIES _____ MALE _____ FEMALE

NUMBER OF LAVATORIES _____ MALE _____ FEMALE

NUMBER OF LAUNDRY FACILITIES _____ CAPACITY _____

POOL _____ MAXIMUM CAPACITY _____ NUMBER OF DRINKING FOUNTAINS _____

RECREATIONAL FACILITIES _____

6430350100 - Page 2 of 15

MEADOWLARK TRAILER PARK

FIRST PERMIT '75

PLAN RECIEVED ?
DRAWN IN 1970
SHOWS 3 HOMES

NO APPROVAL ?

MAY BE APPROVED BY BARTELSON
IN 1970 FOR 3 SPACES

No. ..... Expires December 31, 1978

Thurston-Mason Health District

STATE OF WASHINGTON

Mobile Home Court

PERMIT

Name George L. Rice Address P.O. Box 24, McKenna WA

agreeing to comply with all local rules and regulations applying to

Mobile Home Court Sanitation

is hereby granted a permit to operate Meadowlark Trailer Park

at P.O. Box 24, McKenna WA

within the Thurston-Mason Health District issued this

15th day of February, 19 78 THIS PERMIT IS NOT TRANSFERABLE

This permit shall remain the property of the Thurston-Mason Health District and may be suspended by the District Health Officer or his authorized agent; or revoked after an opportunity for hearing by the District Health Officer, upon violation by the holder of any of the local rules and regulations applicable hereto.

District Sanitarian

District Health Officer

No. .....

Expires Dec. 31, 1977

Thurston-Mason Health District

STATE OF WASHINGTON

Mobile Home Court

PERMIT

Name George L. Rice Address P.O. Box 24, McKenna, WA

agreeing to comply with all local rules and regulations applying to Mobile Home Court Sanitation

is hereby granted a permit to operate Meadowlark Trailer Park

within the Thurston-Mason Health District at P.O. Box 24, McKenna, WA

9th day of March, 1977 issued this

THIS PERMIT IS NOT TRANSFERABLE

This permit shall remain the property of the Thurston-Mason Health District and may be suspended by the District Health Officer or his authorized agent; or revoked after an opportunity for hearing by the District Health Officer, upon violation by the holder of any of the local rules and regulations applicable hereto.

District Sanitarian

District Health Officer

No. .....

Expires December 31, 1976

Thurston-Mason Health District

STATE OF WASHINGTON

MOBILE HOME COURT

PERMIT

Name George L. Rice Address P. O. Box 24, McKenna

agreeing to comply with all local rules and regulations applying to Mobile Home Court Sanitation

is hereby granted a permit to operate "MEADOWLARK TRAILER PARK;

within the Thurston-Mason Health District at P. O. Box 24, McKenna

January 1, 19 76 issued this

THIS PERMIT IS NOT TRANSFERABLE

This permit shall remain the property of the Thurston-Mason Health District and may be suspended by the District Health Officer or his authorized agent; or revoked after an opportunity for hearing by the District Health Officer, upon violation by the holder of any of the local rules and regulations applicable hereto.

District Sanitarian

District Health Officer

No. .....

Expires December 31, 1975

Thurston-Mason Health District

STATE OF WASHINGTON

MOBILE HOME COURT

PERMIT

Name George L. Rice Address P. O. Box 24, McKenna

agreeing to comply with all local rules and regulations applying to Mobile Home Court Sanitation

is hereby granted a permit to operate "Meadowlark Trailer Park"

within the Thurston-Mason Health District at P. O. Box 24, McKenna

issued this January 16, , 19 75.

THIS PERMIT IS NOT TRANSFERABLE

This permit shall remain the property of the Thurston-Mason Health District and may be suspended by the District Health Officer or his authorized agent; or revoked after an opportunity for hearing by the District Health Officer, upon violation by the holder of any of the local rules and regulations applicable hereto.

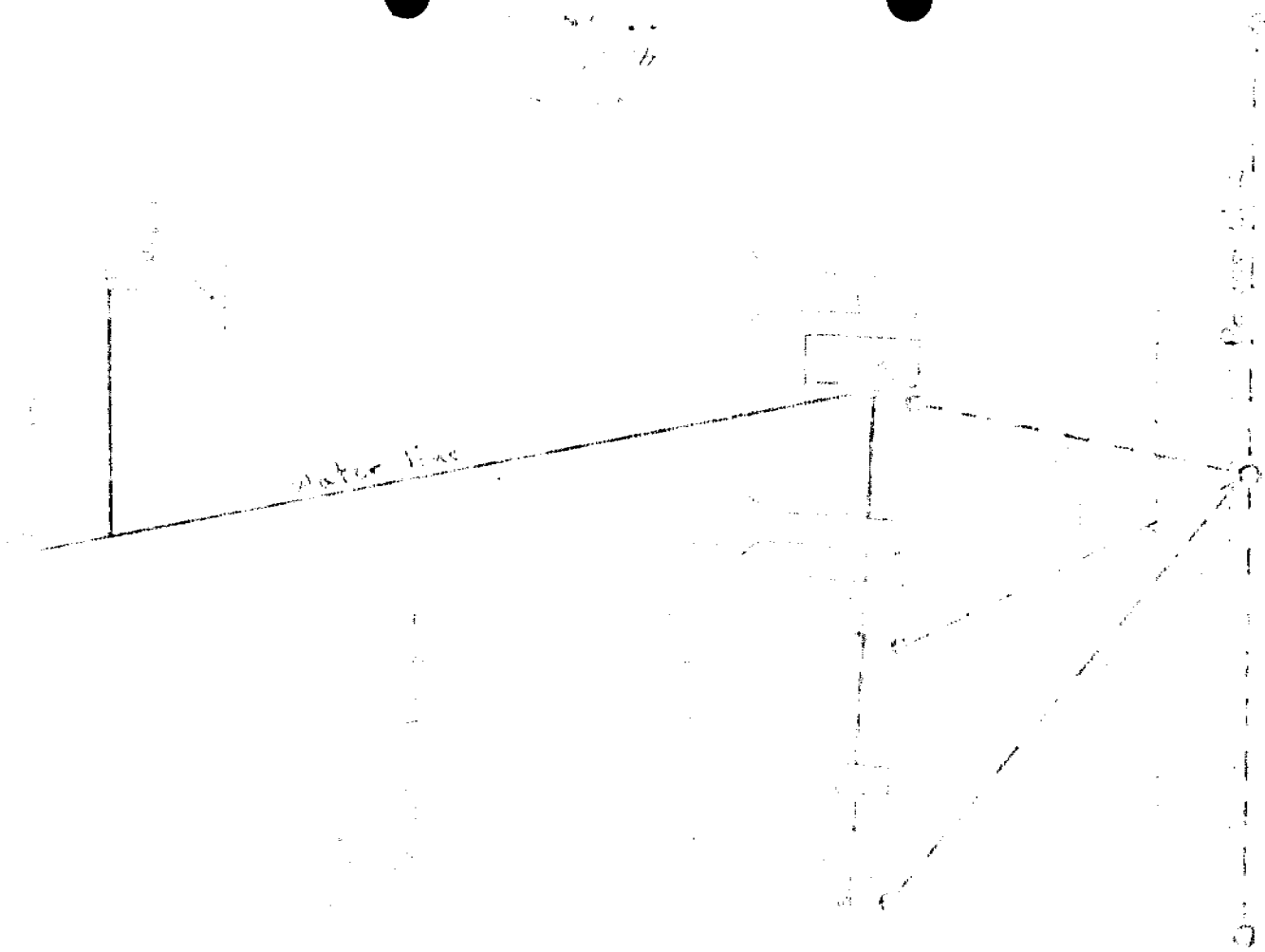
District Sanitarian

District Health Officer

Owner
Mailing Address
Builder
Sewage Contractor
Legal Description

Parcel No.
Directions to
Intended
No. of
Type of Soil
Soil Drainage
1.
2.
3.

Approved


water line

89

Rice George
6430-35001

5th & Birch
Shelton, Washington
Phone: 426-4407

Thurston-Mason Health District
DIVISION OF SANITATION
Application for Building Site Inspection

No. 2895
Court House Annex
Olympia, Washington
Phone: [illegible]

Owner George L. Rice Phone 453-7451

Mailing Address P.O. Bx. 24 City McKenna State Wash.

Builder SAME-AS-ABOVE Address —

Sewage Contractor STAN MISENER Address Yelm W.A.

Legal Description McKenna Irrig Tr. Lt #1 Blk 35

Parcel No. 6430 35001 Field Book No. USD County

Directions to Property TURN LEFT TO WOLF'S SHOP CENTER & Follow out RailRoad Ave. TO CANAL Rd. & TURN RT. & go TO START OF GROVE Rd.

Intended uses of Buildings Trailer-CRT Public Sewer ____ Water Supply Well

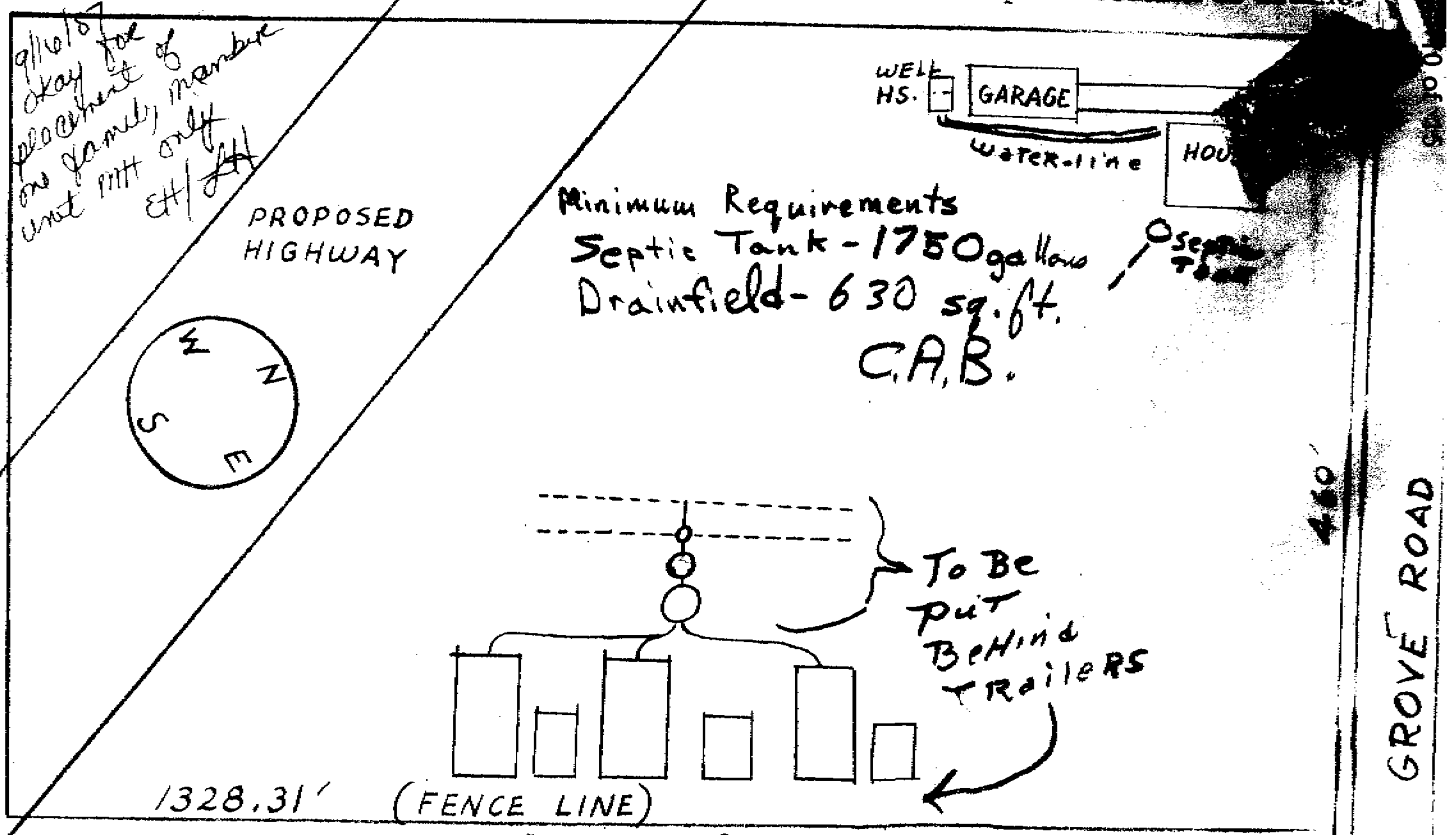
No. of Bedrooms ____ No. of Bathrooms ____ Basement ____ Septic Tank 2000

Type of Soil gravel Lot Size ____

Soil Drainage: Good ✓ Moderate ____ Poor ____ None ____

DRAW SKETCH in blank space or on separate sheet indicating the following:

1. Property lines and location of house on lot and indicate minimum and maximum setbacks plus dimensions of lot and all buildings.
2. Location of house and sewage disposal system in relation to streams, lakes, wells, patios, driveways, underground tanks, water supply lines and easements.
3. Proposed fill, including depth, area, porosity and amount plus location of drains.



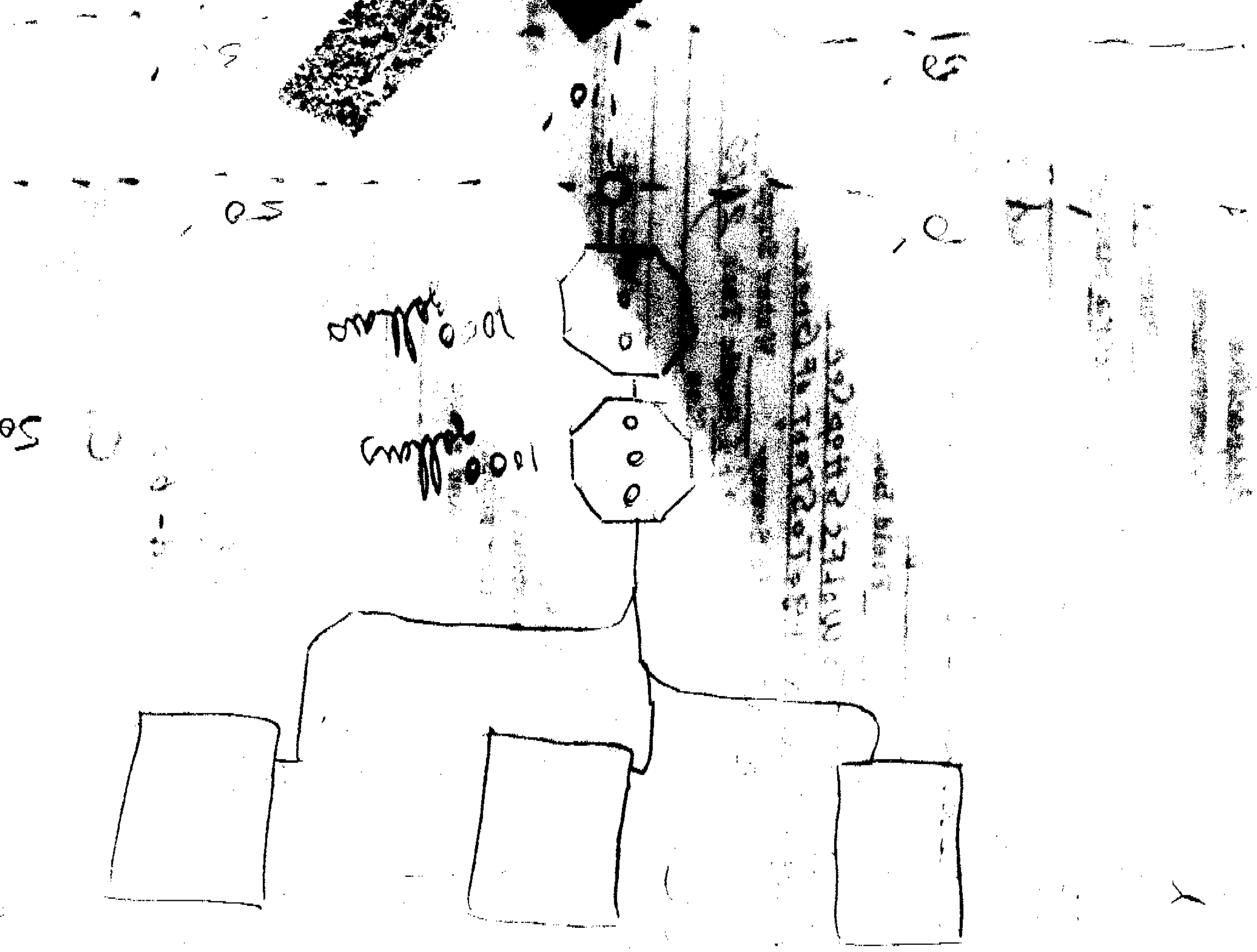
APPLICANT'S SIGNATURE George L. Rice DATE 7-24-70

Site inspection fee $10.00 Receipt No. 5919 By D. Tate

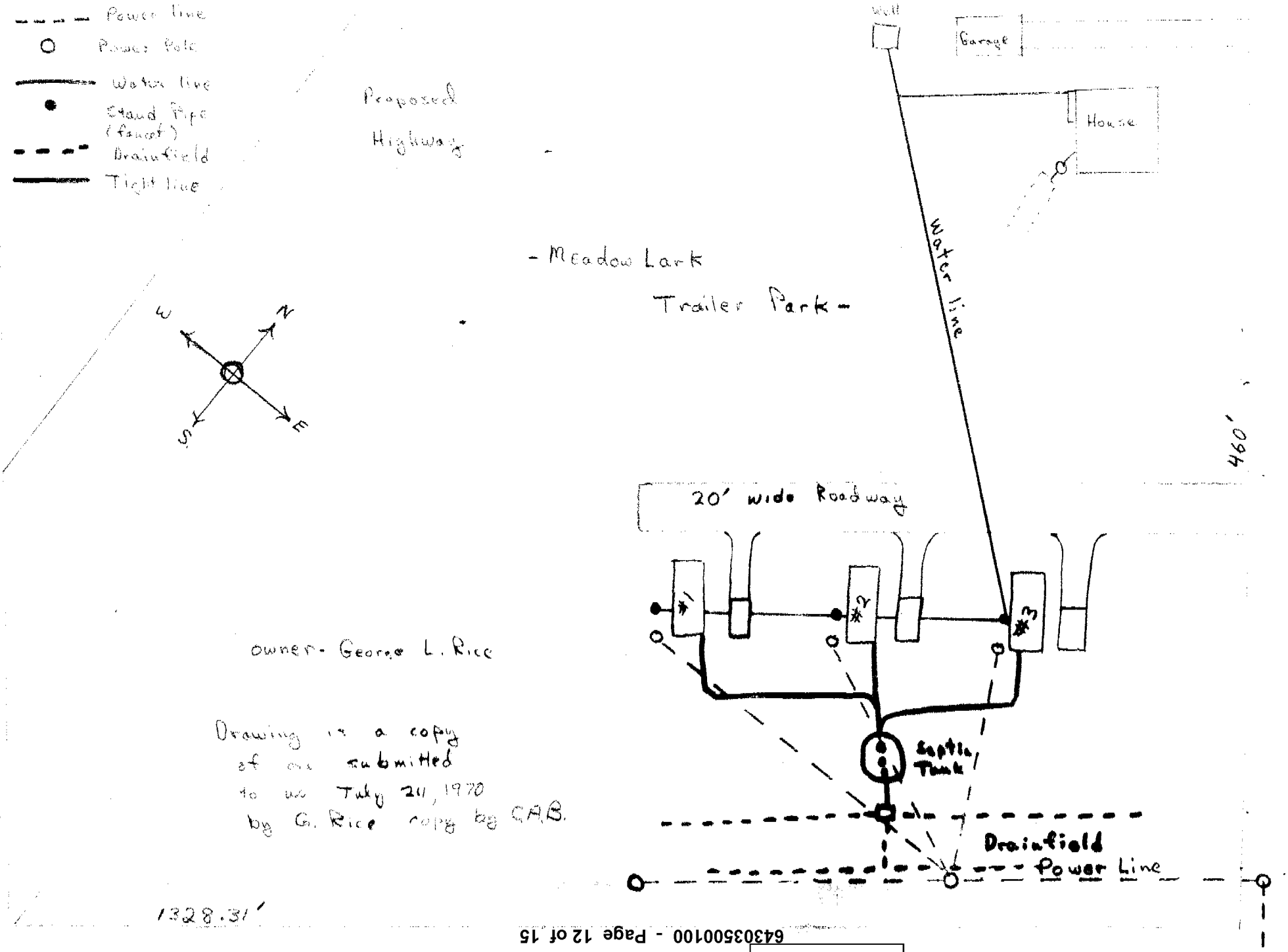
Approved July 30, 1970 Not Approved ____ By Charles A. Barthelson

Date ____ Date ____ Sanitarian ____

Soil All rocky
pand at 2 ft



Legal Description
McKenna Irrig. Dr. Lot #1 Blk 35



owner- George L. Rice

Drawing is a copy of one submitted to us July 21, 1970 by G. Rice copy by CAB.

89

Rice, George
6430-35001

5th & Birch
Shelton, Washington
Phone: 426-4407

Thurston-Mason Health District
DIVISION OF SANITATION
Application for Building Site Inspection

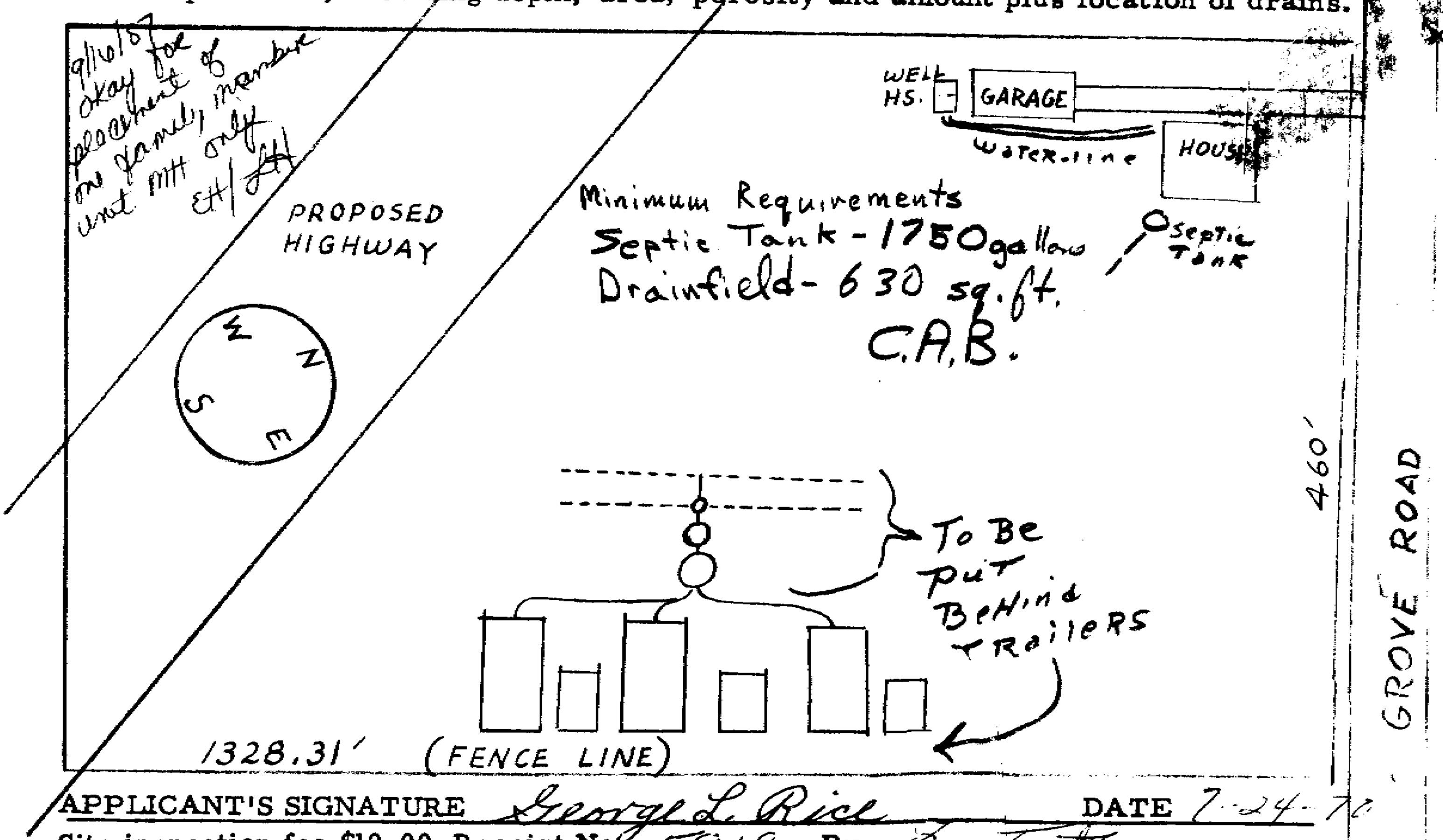
No. 2895
Court House Annex
Olympia, Washington
Phone: 352-4851

Owner George L. Rice Phone 458-7451
Mailing Address P.O. Bx. 24 City McKenna State Wash.
Builder SAME-AS-ABOVE Address —
Sewage Contractor STAN MISENER Address Yelm, W.N.
Legal Description McKenna Irrig. Tr. Lt #1 Blk 35

Parcel No. 6430 35001 Field Book No. 45R-County
Directions to Property TURN LEFT TO WOLF'S SHOP CENTER & FOLLOW OUT RAILROAD AVE. TO CANAL Rd. & TURN RT. & GO TO START OF GROVE Rd.
Intended uses of Buildings TRAILER-CRT. Public Sewer ____ Water Supply Well
No. of Bedrooms ____ No. of Bathrooms ____ Basement ____ Septic Tank 2 ...
Type of Soil Gravel Lot Size ____
Soil Drainage: Good ✓ Moderate ____ Poor ____ None ____

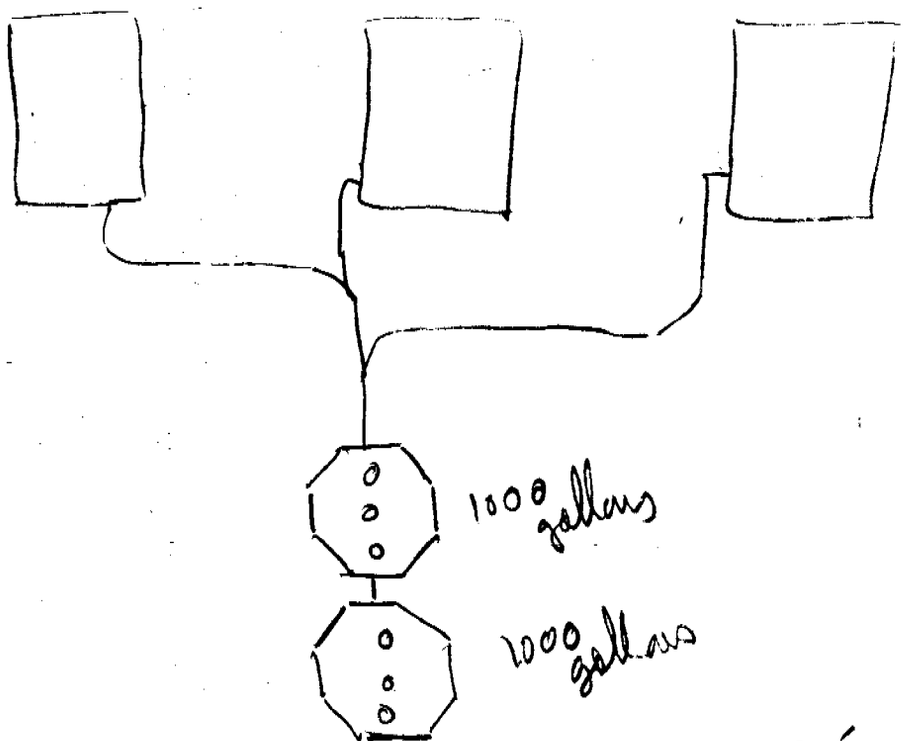
DRAW SKETCH in blank space or on separate sheet indicating the following:

1. Property lines and location of house on lot and indicate minimum and maximum setbacks plus dimensions of lot and all buildings.
2. Location of house and sewage disposal system in relation to streams, lakes, wells, patios, driveways, underground tanks, water supply lines and easements.
3. Proposed fill, including depth, area, porosity and amount plus location of drains.



APPLICANT'S SIGNATURE George L. Rice DATE 7-24-70
Site inspection fee $10.00 Receipt No. 5919 By J. Tate
Approved July 30, 1970 Not Approved ________ By Charles A. Barthelson
Date
Final Approval Date 9-14-71 Sanitarian Charles A. Barthelson

TMHD-S-1-3/69



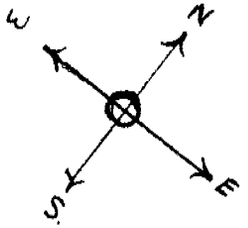
Soil - All rocky sand at 2½ ft'

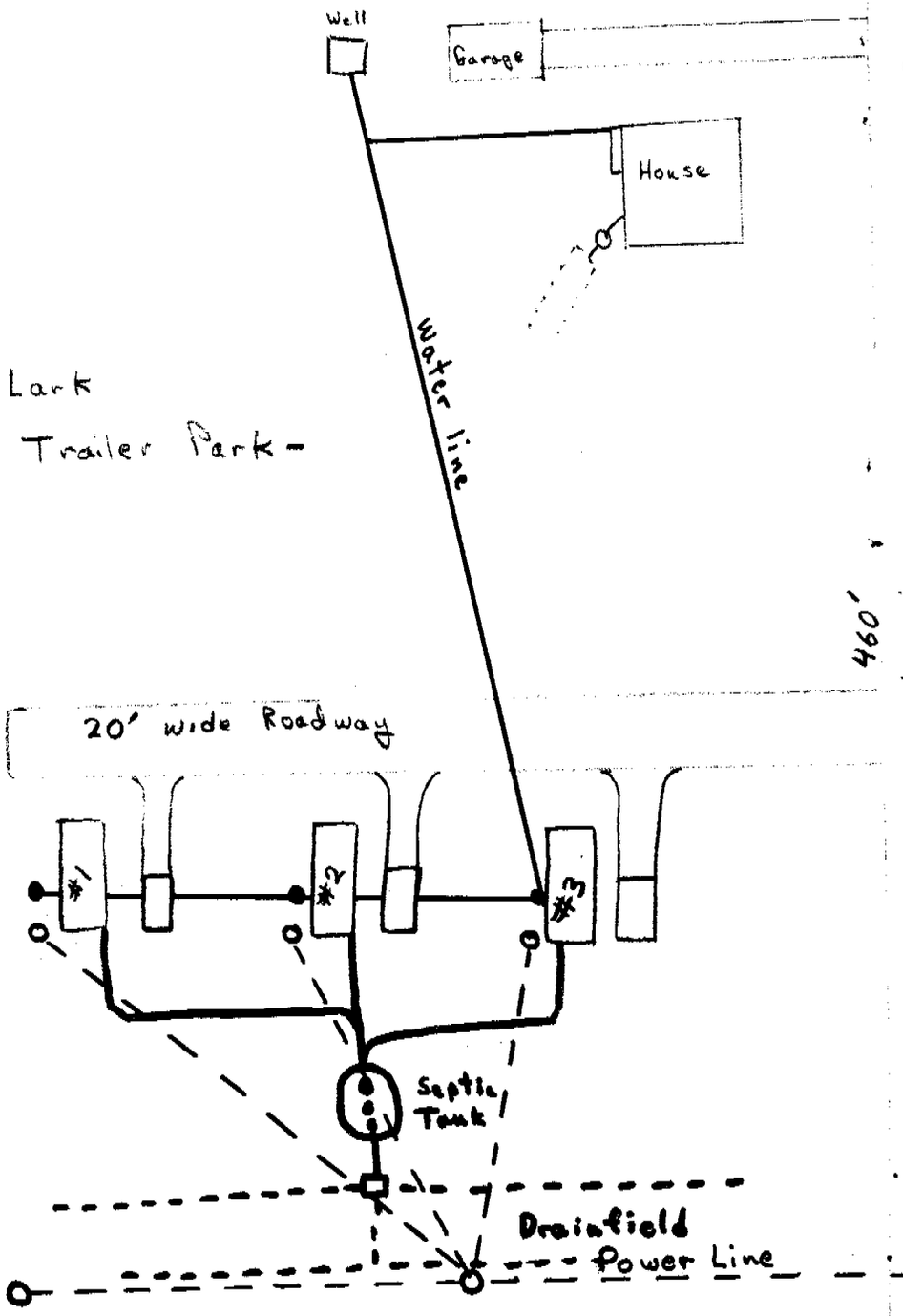
Legal Description
McKenna Irrig. tr. lot #1 Blk 35

Power line
Power Pole
Water line
Stand Pipe (faucet)
Drainfield
Tight line

Proposed
Highway

- Meadow Lark
Trailer Park -





owner - George L. Rice

Drawing is a copy
of one submitted
to us July 21, 1970
by G. Rice copy by CAB.

1328.31'

Building Development Center
3000 Pacific Avenue SE, Olympia, WA 98501
(360)786-5490 / (360)754-2939 (Fax)
TDD Line (360) 754-2933
Email: permit@co.thurston.wa.us
www.thurstoncountybdc.com
Creating Solutions for Our Future

MASTER APPLICATION

This application must accompany a project specific supplemental application.

STAFF USE ONLY	DATE STAMP
LABEL NOTE: ALL APPLICATIONS AND SITE PLANS MUST BE COMPLETED IN BLACK OR BLUE INK ONLY	Reset Form
Gopher Soils ☐ YES ☐ NO **Prairie Soils** ☐ YES ☐ NO	**Intake By:** _____

PROJECT DESCRIPTION _____

PROPERTY INFORMATION

1. **Tax Parcel Number(s)** _____; _____; _____
2. **Subdivision Name** _____ **Lot #**_____
3. **Property Address** _____ **City** _____ **Zip Code**_____
4. **Directions to Property** (from Thurston County Courthouse)

PROPERTY ACCESS

5. **Property Access** ☐ Existing ☐ Proposed
6. **Access Type** ☐ Private Driveway ☐ Shared Driveway ☐ Private Road ☐ Public Road
7. **Property Access Issues** (locked gate, gate code, dogs or other animals) ☐ No ☐ Yes _____
   Point of contact will be contacted for gate code prior to site visit. Gate codes written on this form are public information. Property owner is responsible for providing gate code and securing animals prior to site visit.

WATER/SEPTIC

8. **Water Supply** ☐ Existing ☐ Proposed
9. **Water Supply Type** ☐ Single Family ☐ Two Party Well ☐ Group A ☐ Group B
   WATER SYSTEM NAME_____
10. **Waste Water Sewage Disposal** ☐ Existing ☐ Proposed
11. **Sewage Disposal System Type** ☐ Individual Septic System ☐ Community System ☐ Sewer
    NAME OF PUBLIC SYSTEM_____

BILLING OF INVOICES

The fee charged at the time of application covers base hours listed on the fee schedule. When base hours by a Department are used, a monthly billing invoice is generated at the hourly rate listed on the fee schedule. Should review of the project exceed the base hours allotted, billing invoices shall be mailed to: ☐ **Owner** ☐ **Applicant** ☐ **Point of Contact**

PROPERTY OWNER (additional property owner sheet can be obtained online at www.thurstoncountybdc.com**)**

Property Owner Name _____

Mailing Address _____City_____State_____Zip Code_____

Phone (_____)_____Cell (_____)_____Fax (_____)_____

EMAIL _____

Communication from staff provided by Email? ☐ **YES** ☐ **NO**

Property Owner Signature*_____Date_____

APPLICANT

Applicant Name _____

Mailing Address _____City_____State_____Zip Code_____

Phone (_____)_____Cell (_____)_____Fax (_____)_____

EMAIL _____

Communication from staff provided by Email? ☐ **YES** ☐ **NO**

Signature*_____Date_____

POINT OF CONTACT (Person receiving all County correspondence)

Name _____

Mailing Address _____City_____State_____Zip Code_____

Phone (_____)_____Cell (_____)_____Fax (_____)_____

EMAIL _____

Communication from staff provided by Email? ☐ **YES** ☐ **NO**

Signature*_____Date_____

***DISCLAIMER**

Application is hereby made for a permit(s) to authorize the activities described herein. I certify that I am familiar with the information contained in the application package and that to the best of my knowledge and belief, such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities. I hereby grant to the agencies to which this application is made or forwarded, the right to enter the above-described location to inspect the proposed, in-progress or completed work. I agree to start work only after all necessary permits/approvals have been received.

Thurston County Environmental Health
3000 Pacific Avenue SE, Suite 225
Olympia, WA 98502-8809
(360)867-2673 / (360)867-2660 (Fax)
TDD Line (360) 754-2933
permit@co.thurston.wa.us /
www.thurstoncountybdc.com

Supplemental Application

ONSITE SEWAGE SYSTEM ABANDONMENT

STAFF USE ONLY	DATE STAMP
LABEL PLEASE NOTE: ALL APPLICATIONS AND SITE PLANS MUST BE COMPLETED IN BLACK OR BLUE INK ONLY	Reset Form **Intake by:**_____

This application cannot be submitted alone. In addition to this form, a complete package includes:

Applicant Use	SUBMITTAL CHECKLIST	Staff Use Only
☐	Master Application.	☐
☐	Pumper Report (available from pumping firm)	☐
☐	Applicable processing fees. *Refer to current fee schedules. Depending on the adopted fee structure, additional fees may occur if base hours/fees at intake are exhausted.*	☐

Reason for abandonment: _____

CERTIFICATION:

Name of pumping firm: _____ Date sewage tank was pumped: _____

Date sewage tank was filled: _____ Material used to fill sewage tank: _____

Date property was connected to sewer system: ☐ _____ ☐ (If applicable)

Septic tank pump and service report: ☐ attached ☐ submitted electronically

Name of sewer system: _____

County Use Only

Abandonment Approved by: _____ Date _____

Abandonment Disapproved by: _____ Date _____

Comments: _____

INSTRUCTIONS

1. Obtain and on-site sewage system abandonment application form from the Thurston County Permit Assistance Center.

2. Perform the abandonment:
    a. Have the sewage container pumped out by a Thurston County certified sewage system pumper. Ask the sewage system pumper to complete a pumper slip, certifying the pumping.
    b. Remove or destroy the lid.
    c. Fill the sewage container with earth, sand or gravel.
    d. It is recommended that the pipes leading into and out of the sewage container be disconnected.

3. Within five days of completion of the abandonment, complete the application, including the certification section. Attach the pumper slip to the on-site sewage system abandonment application and submit both to the Thurston County Permit Assistance Center, along with the application fee. If the abandonment is part of another Environmental Health review for the same property, and the reviews are being conducted concurrently, the abandonment fee may be waived. Please reference the pending review application when submitting the on-site sewage system abandonment application.

Environmental Health staff will review the documents and may visit the site to confirm the process. Upon approval, a copy of the approved application will be mailed to the applicant and county records will be changed to reflect the abandonment of the on-site sewage system.

ONSITE SEWAGE SYSTEM ABANDONMENT

How Do I Apply?

Obtain an On-Site Sewage System Abandonment application from the Thurston County Permit Assistance Center. Perform the abandonment (instructions below). Within five days of completion of the abandonment, complete the application, including the Certification section. Attach the pumper slip to the On-site Sewage System Abandonment application and submit both to the Thurston County Permit Assistance Center, with the applicable review fee. Complete application package requirements are outlined on the application.

Perform the Abandonment

Have the sewage container pumped out by a Thurston County certified sewage system pumper. Ask the sewage system pumper to complete a pumper slip, certifying the pumping. Remove or destroy the sewage container lid. Fill the sewage container with earth, sand or gravel. It is recommended that the pipes leading into and out of the sewage container be disconnected.

Review Process

Environmental Health staff will review the documents and may visit the site to confirm the process. Upon approval, a copy of the approved application will be mailed to the applicant and County records will be changed to reflect the abandonment of the on-site sewage system.

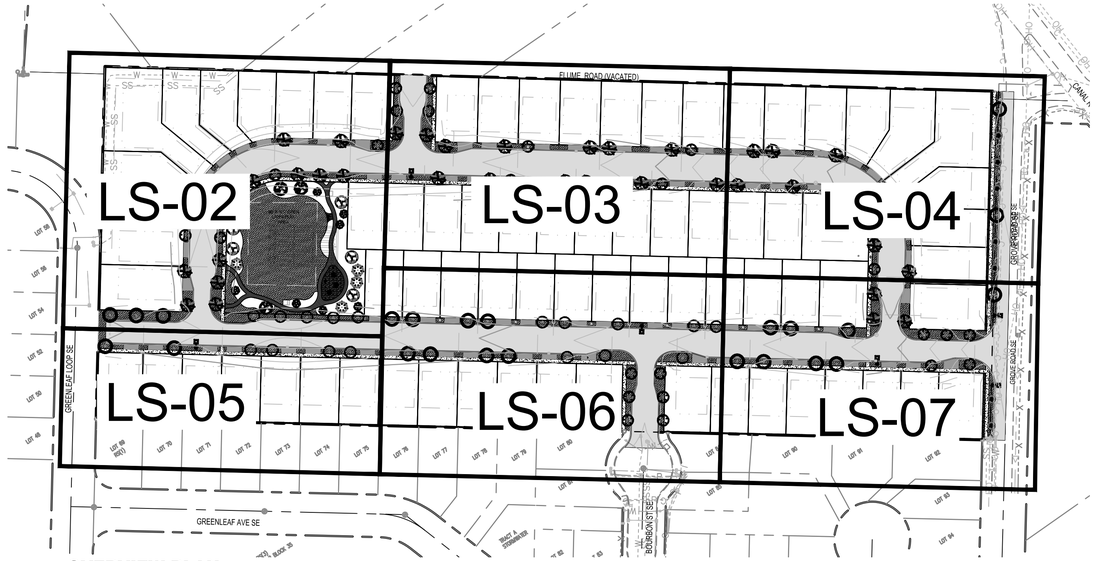
Note: If the abandonment is part of another Environmental Health review for the same property, and the reviews are being conducted concurrently, the abandonment fee may be waived. Please reference the pending review application when submitting the on-site sewage system abandonment application.

I Still Have Questions…

The information in this bulletin is a general guideline of the procedures and rules. For additional information, speak with a staff member at the Permit Assistance Center. Contact information is listed below. You may also review all Thurston County Codes online on the County website referenced at the bottom of this page.

PLANT SCHEDULE - ALL SHEETS

SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE	DESC.
TREES				
	7	ACER PALMATUM 'TWOMBLY'S RED SENTINEL' TWOMBLY'S RED SENTINEL JAPANESE MAPLE	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.
	5	CHAMAECYPARIS NOOTKATENSIS `PENDULA` WEEPING ALASKA CEDAR	7`-8` MIN. HT.	B&B/ CONT.
	5	HAMAMELIS X INTERMEDIA 'ARNOLD PROMISE' ARNOLD PROMISE WITCH HAZEL	7` HT. MIN., 3-5 STEMS	B&B/ CONT.
	17	MALUS X 'TSCHONOSKII' TSCHONOSKI CRABAPPLE	2" CAL., 10`-12` HT., B&B/CONT.	
	38	NYSSA SYLVATICA 'JFS-RED' FIRESTARTER® TUPELO	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.
	7	PICEA OMORIKA SERBIAN SPRUCE	7`-8` MIN. HT.	B&B/ CONT.
	3	PICEA ORIENTALIS 'ATROVIRENS' ORIENTAL SPRUCE	7`-8` HT. MIN.	B&B/ CONT.
	25	SYRINGA RETICULATA 'IVORY SILK' IVORY SILK JAPANESE TREE LILAC	2" CAL., 10`-12` HT., B&B/CONT.	6` MIN. BRANCH HT.
	23	ZELKOVA SERRATA 'JFS-KW1' CITY SPRITE® JAPANESE ZELKOVA	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.
SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE	SPACING
SHRUBS				
	33	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' KARL FOERSTER FEATHER REED GRASS	2 GAL	3` O.C.
	14	CORNUS ALBA 'BAILHALO' IVORY HALO® DOGWOOD	5 GAL	6` O.C.
	10	MORELLA CALIFORNICA CALIFORNIA WAX MYRTLE	5 GAL	6` O.C.
SYMBOL	QTY	BOTANICAL / COMMON NAME	CONT	SPACING
SHRUB AREAS				
	2,584 SF	SHRUB MIX PLANT IN GROUPINGS OF 5-7 SIMILAR.		
	42	ABELIA X GRANDIFLORA 'KALEIDOSCOPE' KALEIDOSCOPE GLOSSY ABELIA	3 GAL	4` O.C.
	42	CORNUS STOLONIFERA 'KELSEYI' KELSEY'S DWARF RED TWIG DOGWOOD	3 GAL	4` O.C.
	42	MAHONIA AQUIFOLIUM 'COMPACTA' COMPACT OREGON GRAPE	3 GAL	4` O.C.
	42	POTENTILLA FRUTICOSA 'PINK PRINCESS' PINK PRINCESS BUSH CINQUEFOIL	3 GAL	4` O.C.
	3,126 SF	LOW SHRUB AND GRASS MIX PLANT IN GROUPINGS OF 3-5 SIMILAR		
	129	COTONEASTER DAMMERI 'CORAL BEAUTY' CORAL BEAUTY COTONEASTER	1 GAL	2.5` O.C.
	129	HELICTOTRICHON SEMPERVIRENS BLUE OAT GRASS	1 GAL	2.5` O.C.
	129	PENNISETUM ORIENTALE 'KARLEY ROSE' KARLEY ROSE FOUNTAIN GRASS	1 GAL	2.5` O.C.
	129	PRUNUS LAUROCERASUS 'MOUNT VERNON' MOUNT VERNON ENGLISH LAUREL	1 GAL	3-1/2` O.C.
SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE	SPACING
GROUND COVERS				
	614	ARCTOSTAPHYLOS UVA-URSI 'MASSACHUSETTS' KINNIKINNICK	1 GAL	20" O.C.
	183	MAHONIA REPENS CREEPING MAHONIA	1 GAL	20" O.C.



OVERVIEW PLAN

0 100 200 300 feet

SCALE: 1" = 100'-0"

NORTH

LANDSCAPE SPECIFICATIONS

1. Refer to details for additional information.
2. Chemically kill and remove from site all existing weeds and vegetation not shown to remain on plans.
3. Distribute imported sandy loam topsoil (approved by the Landscape Architect) in areas shown and at depths indicated for crowning and berming of landscape areas, and backfill of retaining walls (if required). Dotted lines indicate 1' contour intervals. All landscape areas shall receive topsoil, whether indicated on plans or not, so that finish grades of all shrub beds shall be 2" below tops of adjacent curbs and pavement, and lawn areas shall be 1/2" below tops of adjacent curbs and pavement. Structural fill areas: Any landscape areas occurring within structural fill zones shall have said structural fill materials excavated to a depth of 12" below finish grades in shrub areas and 6" below grade in lawn areas, and replaced with specified topsoil. Dispose of excavated material off site.
4. Fine grade all landscape beds prior to planting operations.
5. No plant substitutions shall be permitted without prior approval of Landscape Architect/Owner.
6. All plants shall conform to the latest edition of the American Standard for Nursery Stock.
7. All plant materials and plant locations shall be approved by the Landscape Architect prior to installation.
8. Root barrier shall be incorporated adjacent and parallel to paving, curb and sidewalk, a minimum of 15 linear feet (7.5' on either side of trunk), 24" deep, where any tree is within 8' of paving, curb or sidewalk. Root barrier shall be DeepRoot UB-24 as available from Ewing Irrigation Products, 2901 S Tacoma Way, Tacoma, WA 98409 (253) 476-9530 or approved equal.
9. Soil amendment for soil preparation and planting backfill shall be a screened 5/8" minus nitrified wood residual compost equal to:
   A. "Silver Springs Top Grade Compost" brand compost as available from Corliss Resources Lake Tapps, WA (253) 279-9102.
   B. "Cedar Grove Compost" brand compost as available from Cedar Grove Compost, Maple Valley, WA (877) 764-5748.
   C. PREP/LRI compost as available from Randles Sand and Gravel, Inc., Puyallup, WA (253) 537-6828.
10. Soil Preparation - (all landscape areas). Spread 9 c.y. of specified soil amendment per 1000 s.f. (approx. 3" depth) of area. Spread 100 lbs./1000 s.f. of dolomite lime (in lawn areas only), 150 lbs./1000 s.f. of Agricultural Gypsum and 15 lbs./1000 s.f. of 16-8-8 commercial fertilizer over soil amendment. Roto-till all of the above to a 6"-8" depth and grade smooth, compacting as required and removing all rocks, clods and debris.
11. Lawn areas (seed or sod refer to plans) shall consist of one of the following turf types:

60% Turf-Type Perennial Rye Grass Varieties	60% Turf-Type Perennial Rye Grass Varieties
20% Bluegrass	40% Turf-Type Fescue
20% Hard Fescue	

12. Seed and sod shall be equal to that as grown by Country Green Turf Farms; Olympia, WA or JB Instant Lawn, Redmond, WA. Seed shall be applied at 7 lbs/1000 s.f. and include 10 lbs./1000 s.f. of United Horticulture 15-5-10 fertilizer in all lawn areas.
13. All trees in lawn areas shall be planted in a 3' diameter circle of bed mulch.

LANDSCAPE SPECIFICATIONS, CONT'D

14. Backfill mix for all plants shall be a blend of 1/3 existing site soil, 1/3 coarse sand, and 1/3 soil amendment specified in No. 9.
15. Apply Osmocote 18-6-12, 9 month slow release fertilizer over the surface of all plant pits at the following rates:

Trees Over 10' Height	2 Cups	Trees Under 10' Height:	1 Cup
All Shrubs Except 1 Gallons:	1/2 Cup	1 Gallon Plants:	1/4 Cup
Ground Covers:	1/4 Cup		

16. Fertilizer tablets for all plants shall be Agriform (20-10-5) 21 gram or 10 gram tablets distributed as follows: All trees: 4-21 gram tablets, all shrubs (except 1 gallons): 3-21 gram tablets, all 1 gallons: 1-21 gram tablet, all 2-1/4" and 4" pot ground covers: 1-10 gram tablet each. Set tablets directly next to rootball.
17. All shrub and ground cover beds shall receive a 3" depth (9 c.y. per 1000 s.f.) of "Fine Grind" hem/fir bark mulch as top dressing.
18. Apply a granular pre-emergent herbicide to all shrub and groundcover beds at the conclusion of the maintenance period. Do not use Casaron or Norasac Brands.
19. All work shall be performed to the satisfaction of the Landscape Architect/Owner.
20. All plants shall be guaranteed for one full year from date of project acceptance. All replaced plants shall be re-guaranteed. All replacements shall be made within 21 days of receiving written notice from the Owner. Contractor shall not be responsible for plants dying due to Owner neglect or vandalism, after the maintenance period.
21. Plant list quantities are shown for reference only. Contractor is responsible for verifying all quantities in list with actual plan call-outs, and installing plantings per the landscape plan. Groundcover and/or mass shrub quantities shall be adjusted as required for field conditions at the specified spacing.
22. Final inspection shall occur at the conclusion of a 60-day maintenance & plant establishment period. Maintenance period shall commence upon completion of all landscape installation activities and shall include the following:
   A. Mow lawns once per week.
   B. Remove all weeds over 1" in height.
   C. Replace dead or unhealthy plants.
   D. Ensure proper function of irrigation system.
   E. Ensure adequate moisture is delivered to all landscape beds including non-irrigated areas.
   F. Fertilize all lawns at conclusion of maintenance and plant establishment period.

REVISIONS	DATE	BY
REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	J. MCFARLAND

SCJ ALLIANCE
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SHEET TITLE: LANDSCAPE SHEET LAYOUT

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:

STATE OF WASHINGTON
JEFFREY B. GLANDER
No. 405 EXP. 02/09/25
LICENSED LANDSCAPE ARCHITECT

DESIGNER:	J. MCFARLAND
DRAWN BY:	J. MCFARLAND
APPROVED BY:	J. GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	_21-000363 X-LS
DRAWING NO:	LS-01
SHEET NO:	12 OF 27

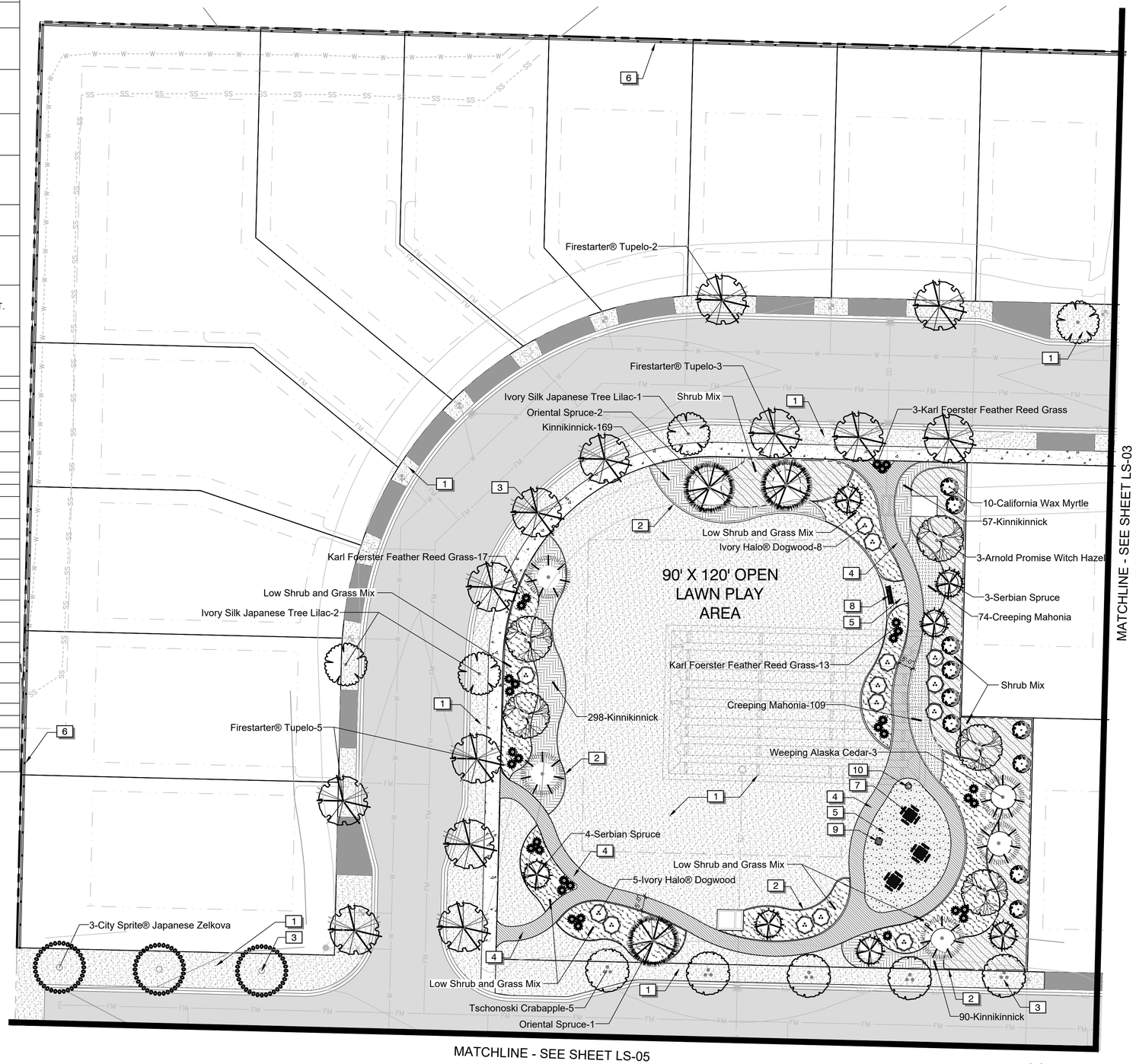
Apr 17, 2024 - 4:56:05pm - User: jill.mcfarland
N:\PROJECTS\464 YELM PROPERTY DEVELOPMENT LLC\21-000363 WILLOW GLENN 4\CAD_21-000363 X-LS.DWG

PLANT SCHEDULE LS-02

SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE	DESC.
TREES				
	7	ACER PALMATUM 'TWOMBLY'S RED SENTINEL' TWOMBLY'S RED SENTINEL JAPANESE MAPLE	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.
	5	CHAMAECYPARIS NOOTKATENSIS `PENDULA` WEEPING ALASKA CEDAR	7`-8` MIN. HT.	B&B/ CONT.
	5	HAMAMELIS X INTERMEDIA 'ARNOLD PROMISE' ARNOLD PROMISE WITCH HAZEL	7` HT. MIN., 3-5 STEMS	B&B/ CONT.
	17	MALUS X 'TSCHONOSKII' TSCHONOSKI CRABAPPLE	2" CAL., 10`-12` HT., B&B/CONT.	
	38	NYSSA SYLVATICA 'JFS-RED' FIRESTARTER® TUPELO	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.
	7	PICEA OMORIKA SERBIAN SPRUCE	7`-8` MIN. HT.	B&B/ CONT.
	3	PICEA ORIENTALIS 'ATROVIRENS' ORIENTAL SPRUCE	7`-8` HT. MIN.	B&B/ CONT.
	25	SYRINGA RETICULATA 'IVORY SILK' IVORY SILK JAPANESE TREE LILAC	2" CAL., 10`-12` HT., B&B/CONT.	6` MIN. BRANCH HT.
	23	ZELKOVA SERRATA 'JFS-KW1' CITY SPRITE® JAPANESE ZELKOVA	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.
SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE	SPACING
SHRUBS				
	33	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' KARL FOERSTER FEATHER REED GRASS	2 GAL	3` O.C.
	14	CORNUS ALBA 'BAILHALO' IVORY HALO® DOGWOOD	5 GAL	6` O.C.
	10	MORELLA CALIFORNICA CALIFORNIA WAX MYRTLE	5 GAL	6` O.C.
SYMBOL	QTY	BOTANICAL / COMMON NAME	CONT	SPACING
SHRUB AREAS				
	2,584 SF	SHRUB MIX		
	42	ABELIA X GRANDIFLORA 'KALEIDOSCOPE' KALEIDOSCOPE GLOSSY ABELIA	3 GAL	4` O.C.
	42	CORNUS STOLONIFERA 'KELSEYI' KELSEY'S DWARF RED TWIG DOGWOOD	3 GAL	4` O.C.
	42	MAHONIA AQUIFOLIUM 'COMPACTA' COMPACT OREGON GRAPE	3 GAL	4` O.C.
	42	POTENTILLA FRUTICOSA 'PINK PRINCESS' PINK PRINCESS BUSH CINQUEFOIL	3 GAL	4` O.C.
	3,126 SF	LOW SHRUB AND GRASS MIX		
	129	COTONEASTER DAMMERI 'CORAL BEAUTY' CORAL BEAUTY COTONEASTER	1 GAL	2.5` O.C.
	129	HELICTOTRICHON SEMPERVIRENS BLUE OAT GRASS	1 GAL	2.5` O.C.
	129	PENNISETUM ORIENTALE 'KARLEY ROSE' KARLEY ROSE FOUNTAIN GRASS	1 GAL	2.5` O.C.
	129	PRUNUS LAUROCERASUS 'MOUNT VERNON' MOUNT VERNON ENGLISH LAUREL	1 GAL	3-1/2` O.C.
SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE	SPACING
GROUND COVERS				
	614	ARCTOSTAPHYLOS UVA-URSI 'MASSACHUSETTS' KINNIKINNICK	1 GAL	20" O.C.
	183	MAHONIA REPENS CREEPING MAHONIA	1 GAL	20" O.C.

REFERENCE NOTES SCHEDULE LS-02

SYMBOL	DESCRIPTION	DETAIL
1	SOD LAWN, TYP	
2	LAWN EDGE, TYP.	5/LS-08
3	STREET TREE., TYP. SEE CITY OF YELM APPROVED STREET TREE DETAIL	8/LS-08
4	ASPHALT WALKING PATH, TYP.	7/LS-08
5	COMPACTED CRUSHED ROCK SURFACING,TYP.	6/LS-08
6	6' HT. WOOD SCREEN FENCE, INSTALLED AT PROPERTY LINE, TYP.	
7	PICNIC TABLE BY OWNER, TYP. TABLES SHALL BE IN-GROUND MOUNTED WITH CONCRETE FOOTINGS, FOLLOW MANUFACTURER'S RECOMMENDATIONS	
8	METAL BENCH WITH BACK BY OWNER, TYP. BENCHES SHALL BE IN-GROUND MOUNTED WITH CONCRETE FOOTINGS. INSTALL PER MANUFACUTURER RECOMMENDATIONS.	
9	STEEL, VANDAL-RESISTANT BBQ GRILL TO BE MOUNTED AT WAIST HEIGHT ON IN-GROUND MOUNTED POST WITH CONCRETE FOOTING, INSTALL PER MANUFACTURER'S RECOMMENDATION.	
10	METAL TRASH/RECYCLING CONTAINER BY OWNER. CONTAINER SHALL BE IN-GROUND MOUNTED WITH CONCRETE OR CRUSHED ROCK FOOTING, PER MANUFACTURER'S RECOMMENDATION.	



0 20 40 60 feet

SCALE: 1" = 20'-0"

NORTH

REVISIONS	DATE	BY
REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	J. MCFARLAND

SCJ ALLIANCE
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P: (360) 352-1465
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SHEET TITLE: LANDSCAPE PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL: STATE OF WASHINGTON · JEFFREY B. GLANDER · 405 · EXP. 02/08/25 · LICENSED LANDSCAPE ARCHITECT

DESIGNER:	J. MCFARLAND
DRAWN BY:	J. MCFARLAND
APPROVED BY:	J. GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	21-000363 X-LS
DRAWING NO:	LS-02
SHEET NO:	13 OF 27

Apr 17, 2024 4:56:13pm - User: jlmcfarland
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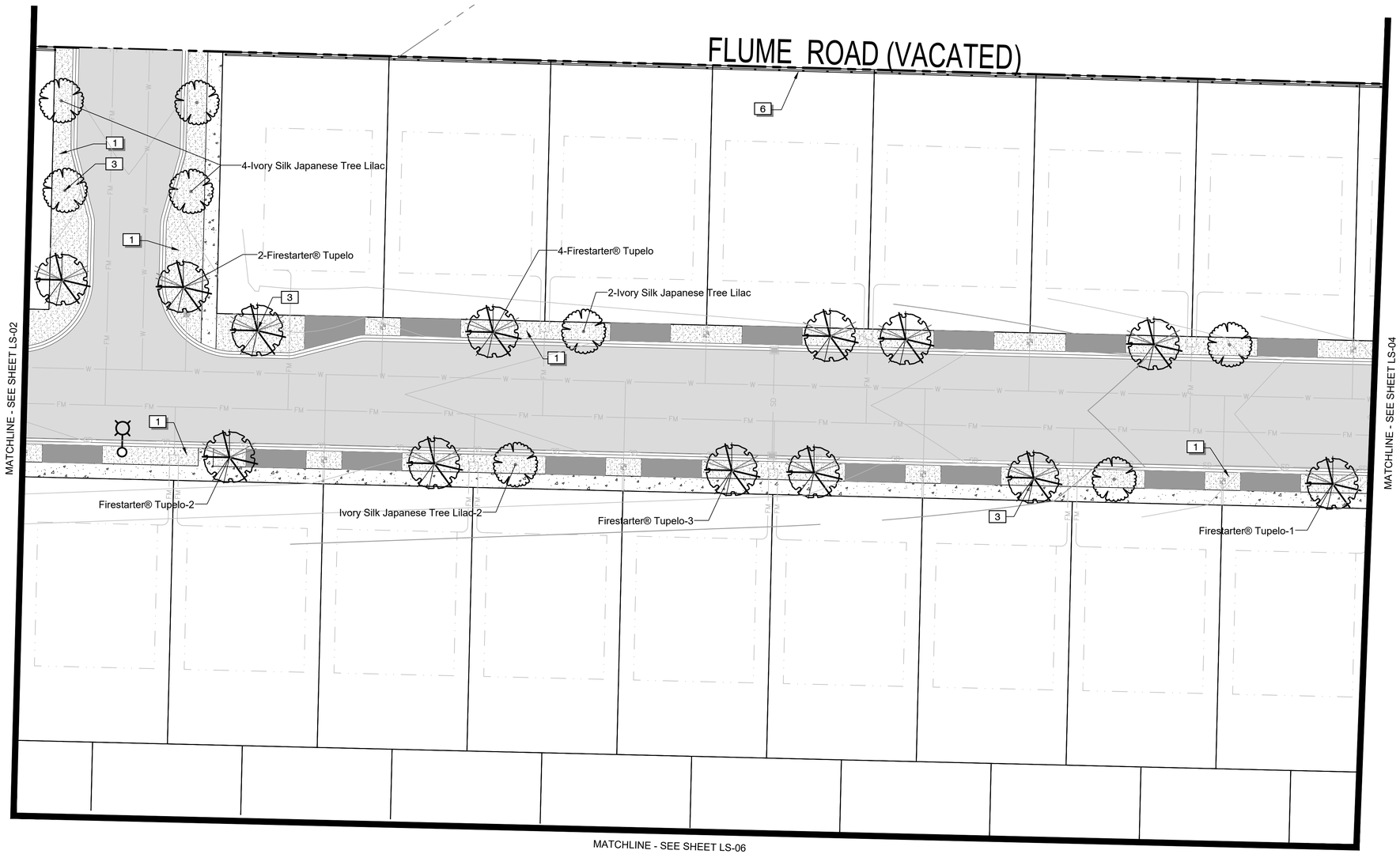

0 20 40 60 feet

SCALE: 1" = 20'-0"

NORTH

PLANT SCHEDULE LS-03

SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE	DESC.
TREES				
	13	NYSSA SYLVATICA 'JFS-RED' FIRESTARTER® TUPELO	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.
	8	SYRINGA RETICULATA 'IVORY SILK' IVORY SILK JAPANESE TREE LILAC	2" CAL., 10`-12` HT., B&B/CONT.	6` MIN. BRANCH HT.

REFERENCE NOTES SCHEDULE LS-03

SYMBOL	DESCRIPTION	DETAIL
1	SOD LAWN, TYP	
3	STREET TREE., TYP. SEE CITY OF YELM APPROVED STREET TREE DETAIL	8/LS-08
6	6' HT. WOOD SCREEN FENCE, INSTALLED AT PROPERTY LINE, TYP.	

REVISIONS	DATE	BY
REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	J. MCFARLAND

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SHEET TITLE: LANDSCAPE PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL: STATE OF WASHINGTON · JEFFREY B. GLANDER · 405 · EXP. 02/06/25 · LICENSED LANDSCAPE ARCHITECT

DESIGNER:	J. MCFARLAND
DRAWN BY:	J. MCFARLAND
APPROVED BY:	J. GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	21-000363 X-LS
DRAWING NO:	LS-03
SHEET NO:	14 OF 27

Apr 17, 2024 - 4:56:17pm - User: JM.mcfarland
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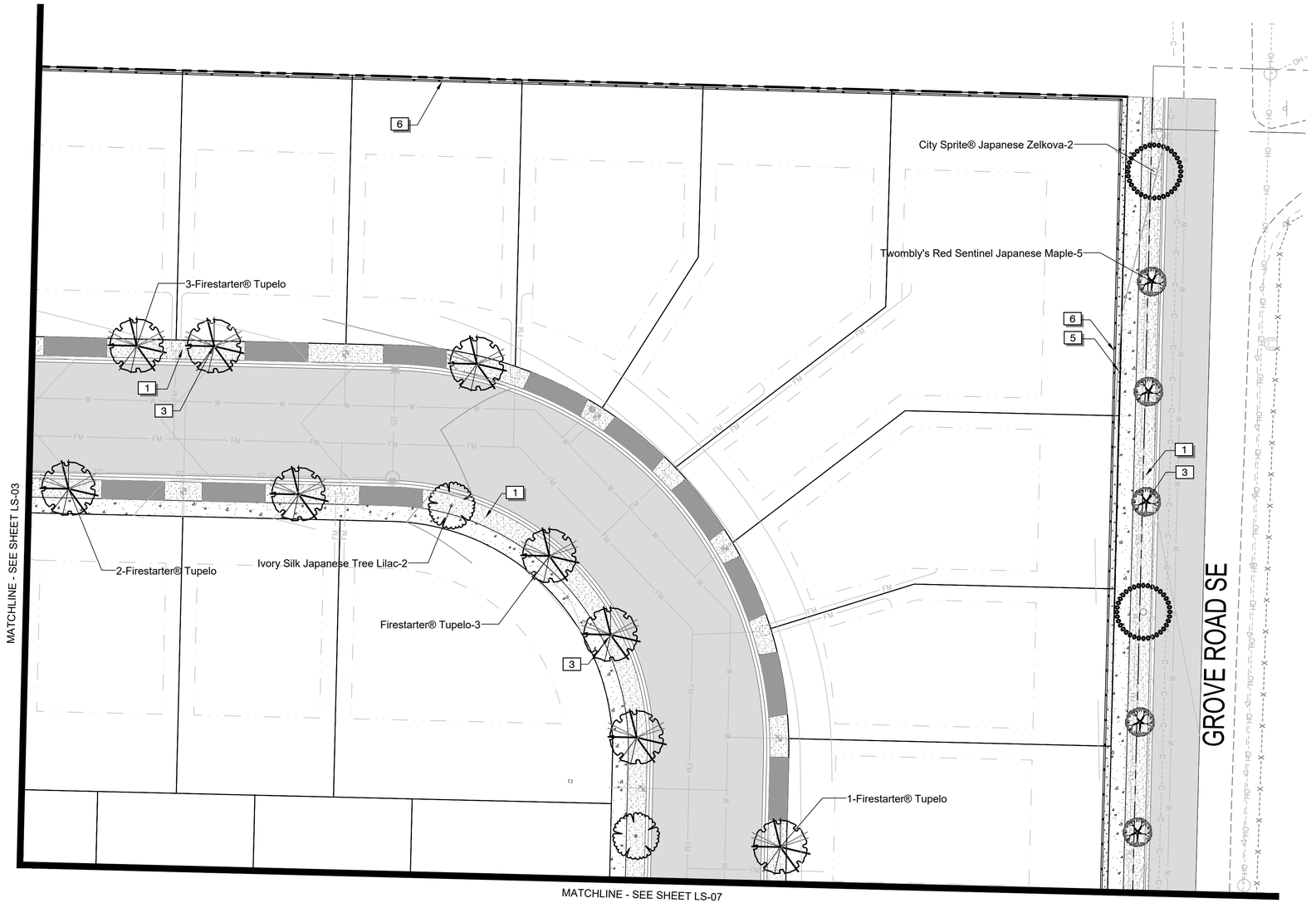

PLANT SCHEDULE LS-04

SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE	DESC.
TREES				
	5	ACER PALMATUM 'TWOMBLY'S RED SENTINEL' TWOMBLY'S RED SENTINEL JAPANESE MAPLE	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.
	9	NYSSA SYLVATICA 'JFS-RED' FIRESTARTER® TUPELO	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.
	2	SYRINGA RETICULATA 'IVORY SILK' IVORY SILK JAPANESE TREE LILAC	2" CAL., 10`-12` HT., B&B/CONT.	6` MIN. BRANCH HT.
	2	ZELKOVA SERRATA 'JFS-KW1' CITY SPRITE® JAPANESE ZELKOVA	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.

0 20 40 60 feet

SCALE: 1" = 20'-0"

NORTH

REFERENCE NOTES SCHEDULE LS-04

SYMBOL	DESCRIPTION	DETAIL
1	SOD LAWN, TYP	
3	STREET TREE., TYP. SEE CITY OF YELM APPROVED STREET TREE DETAIL	8/LS-08
5	COMPACTED CRUSHED ROCK SURFACING,TYP.	6/LS-08
6	6' HT. WOOD SCREEN FENCE, INSTALLED AT PROPERTY LINE, TYP.	

REVISIONS	DATE	BY
REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	J. MCFARLAND

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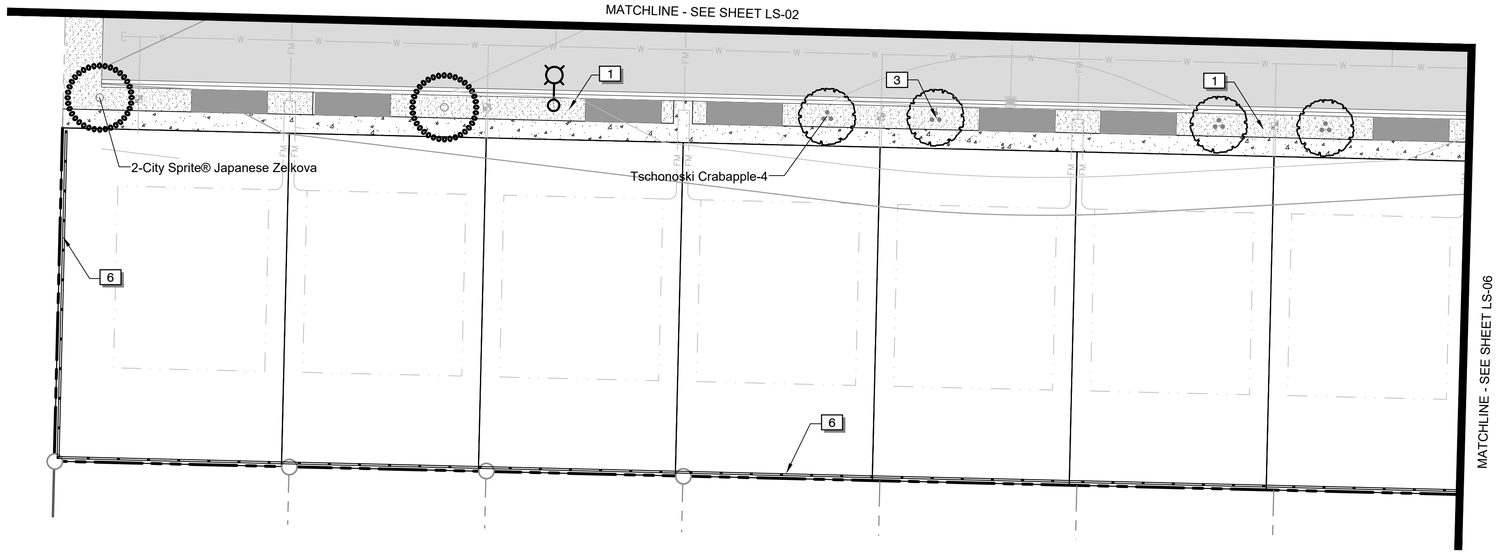
SHEET TITLE: LANDSCAPE PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL: STATE OF WASHINGTON · JEFFREY B. GLANDER · 405 · EXP. 02/08/25 · LICENSED LANDSCAPE ARCHITECT

DESIGNER:	J. MCFARLAND
DRAWN BY:	J. MCFARLAND
APPROVED BY:	J. GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	_21-000363 X-LS
DRAWING NO:	LS-04
SHEET NO:	15 OF 27



PLANT SCHEDULE LS-05

SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE	DESC.
TREES				
	4	MALUS X 'TSCHONOSKII' TSCHONOSKI CRABAPPLE	2" CAL., 10`-12` HT., B&B/CONT.	
	2	ZELKOVA SERRATA 'JFS-KW1' CITY SPRITE® JAPANESE ZELKOVA	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.

0 20 40 60 feet

SCALE: 1" = 20'-0"

NORTH

REFERENCE NOTES SCHEDULE LS-05

SYMBOL	DESCRIPTION	DETAIL
1	SOD LAWN, TYP	
3	STREET TREE., TYP. SEE CITY OF YELM APPROVED STREET TREE DETAIL	8/LS-08
6	6' HT. WOOD SCREEN FENCE, INSTALLED AT PROPERTY LINE, TYP.	

REVISIONS	DATE	BY
1 REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	A. VOS

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SHEET TITLE: LANDSCAPE PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:

STATE OF WASHINGTON
JEFFREY B. GLANDER
LICENSED LANDSCAPE ARCHITECT
No. 405 EXP. 02/06/25

DESIGNER:	A. VOS
DRAWN BY:	A. VOS
APPROVED BY:	J. GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	_21-000363 X-LS
DRAWING NO:	LS-05
SHEET NO:	16 OF 27

Apr 17, 2024 4:56:27pm – User: jill.mcclelland
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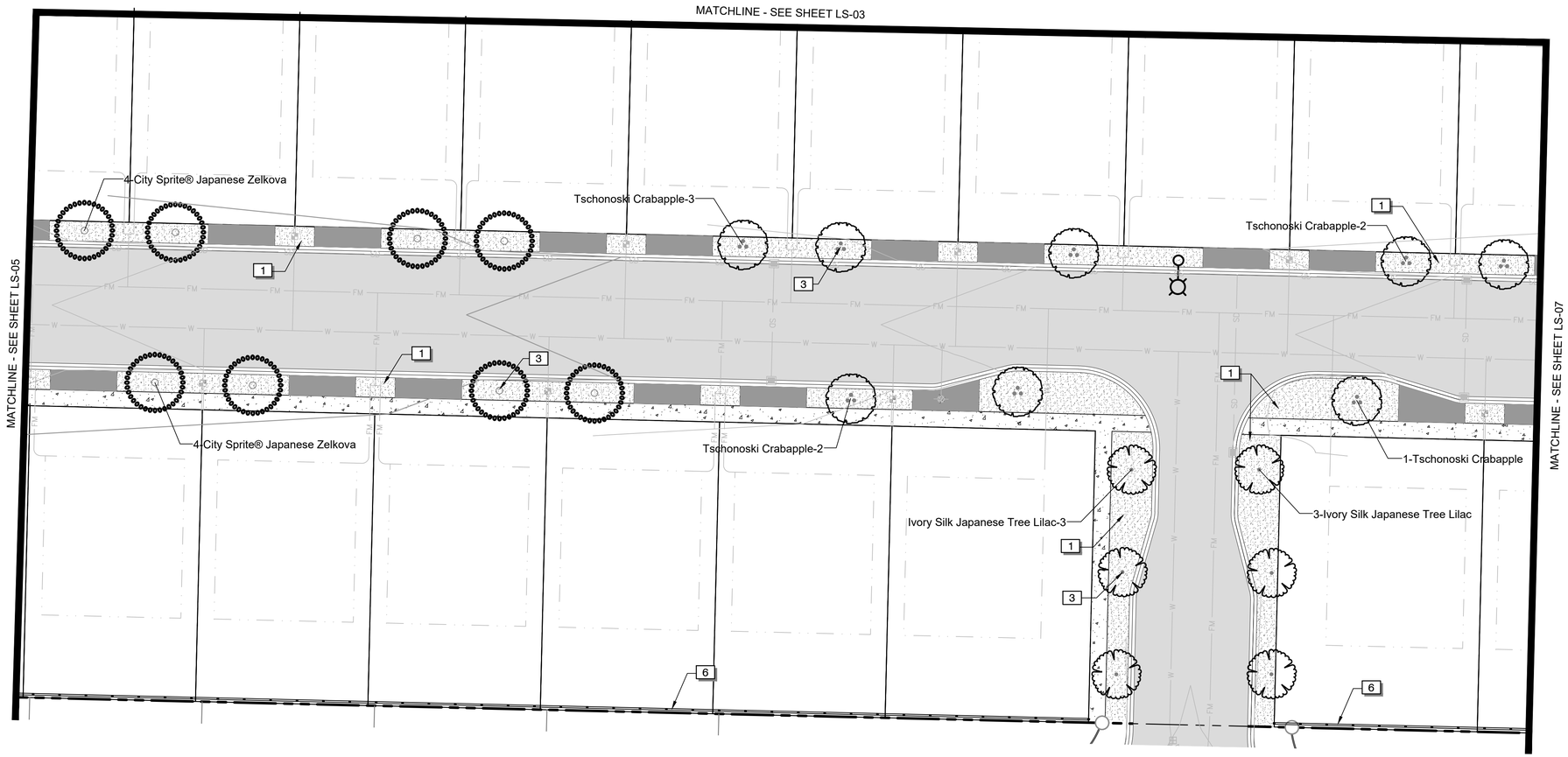

0 20 40 60 feet

SCALE: 1" = 20'-0"

NORTH

PLANT SCHEDULE LS-06

SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE	DESC.
TREES				
	8	MALUS X 'TSCHONOSKII' TSCHONOSKI CRABAPPLE	2" CAL., 10`-12` HT., B&B/CONT. 8/LS-08	
	6	SYRINGA RETICULATA 'IVORY SILK' IVORY SILK JAPANESE TREE LILAC	2" CAL., 10`-12` HT., B&B/CONT.	6` MIN. BRANCH HT.
	8	ZELKOVA SERRATA 'JFS-KW1' CITY SPRITE® JAPANESE ZELKOVA	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.

REFERENCE NOTES SCHEDULE LS-06

SYMBOL	DESCRIPTION	DETAIL
1	SOD LAWN, TYP	
3	STREET TREE., TYP. SEE CITY OF YELM APPROVED STREET TREE DETAIL	8/LS-08
6	6' HT. WOOD SCREEN FENCE, INSTALLED AT PROPERTY LINE, TYP.	

REVISIONS	DATE	BY
1 REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	J. MCFARLAND

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SHEET TITLE: LANDSCAPE PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL: STATE OF WASHINGTON · JEFFREY B. GLANDER · 24405 · EXP 02/08/25 · LICENSED LANDSCAPE ARCHITECT

DESIGNER:	J. MCFARLAND
DRAWN BY:	J. MCFARLAND
APPROVED BY:	J. GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	_21-000363 X-LS
DRAWING NO:	LS-06
SHEET NO:	17 OF 27

Apr 17, 2024 4:58:32pm – User: jlmcfarland
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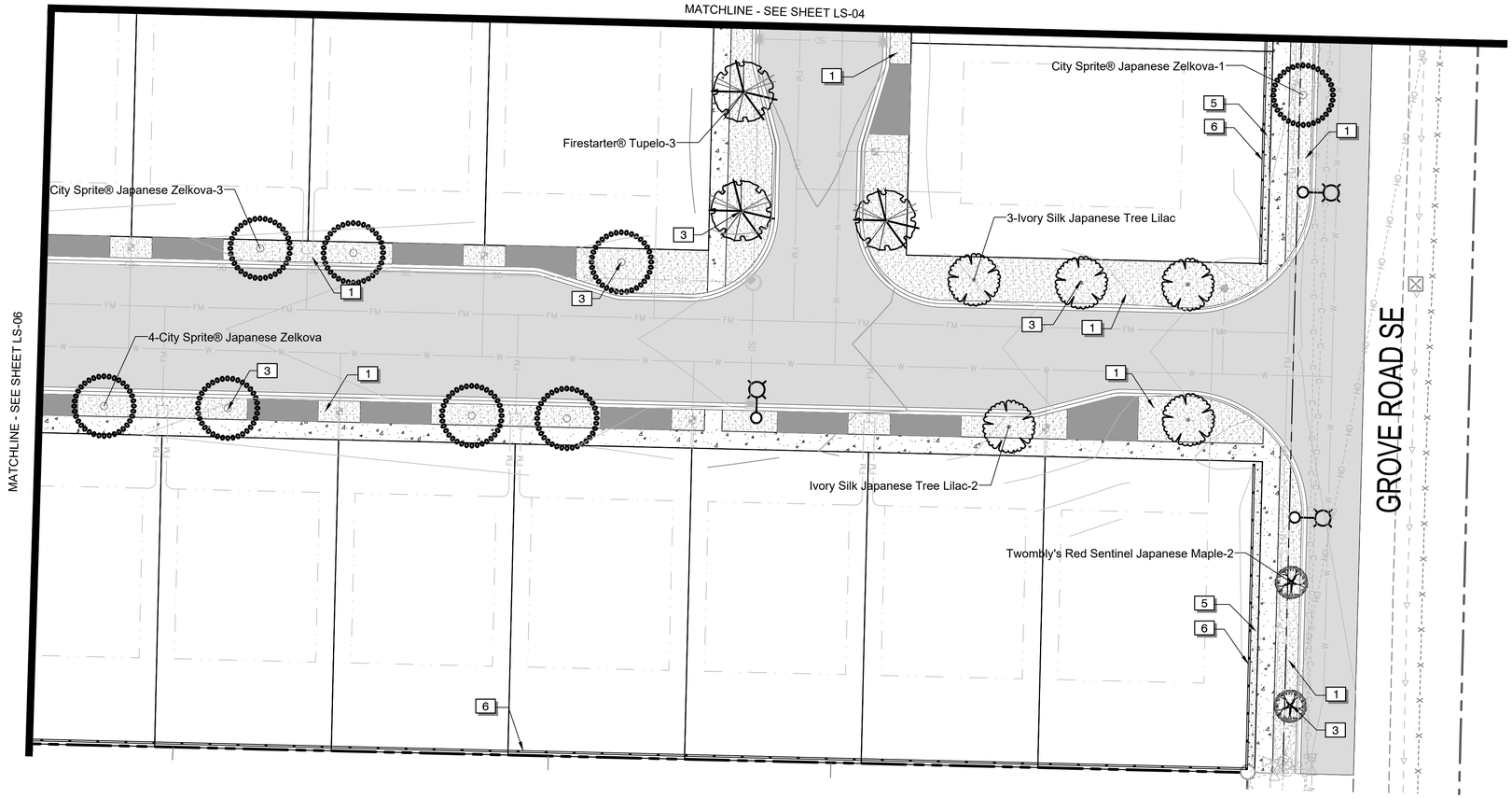

0 20 40 60 feet

SCALE: 1" = 20'-0"

NORTH

PLANT SCHEDULE LS-07

SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE	DESC.
TREES				
	2	ACER PALMATUM 'TWOMBLY'S RED SENTINEL' TWOMBLY'S RED SENTINEL JAPANESE MAPLE	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.
	3	NYSSA SYLVATICA 'JFS-RED' FIRESTARTER® TUPELO	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.
	5	SYRINGA RETICULATA 'IVORY SILK' IVORY SILK JAPANESE TREE LILAC	2" CAL., 10`-12` HT., B&B/CONT.	6` MIN. BRANCH HT.
	8	ZELKOVA SERRATA 'JFS-KW1' CITY SPRITE® JAPANESE ZELKOVA	2" CAL., 12`-14` HT., 6` MIN. BRANCH HT.	B&B/ CONT.

REFERENCE NOTES SCHEDULE LS-07

SYMBOL	DESCRIPTION	DETAIL
1	SOD LAWN, TYP	
3	STREET TREE., TYP. SEE CITY OF YELM APPROVED STREET TREE DETAIL	8/LS-08
5	COMPACTED CRUSHED ROCK SURFACING,TYP.	6/LS-08
6	6' HT. WOOD SCREEN FENCE, INSTALLED AT PROPERTY LINE, TYP.	

REVISIONS	DATE	BY
REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	J. MCFARLAND

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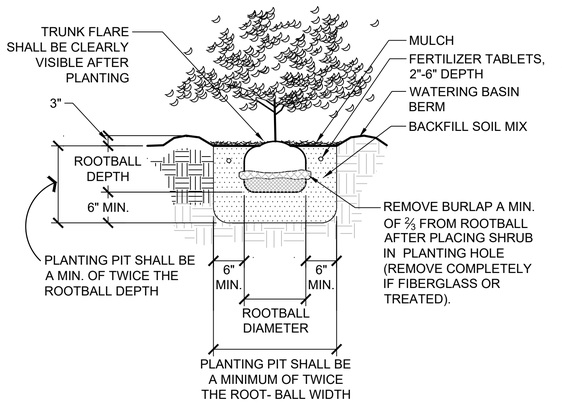
SHEET TITLE: LANDSCAPE PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL: STATE OF WASHINGTON · JEFFREY B. GLANDER · 21405 · REGISTERED LANDSCAPE ARCHITECT · EXP. 02/06/25

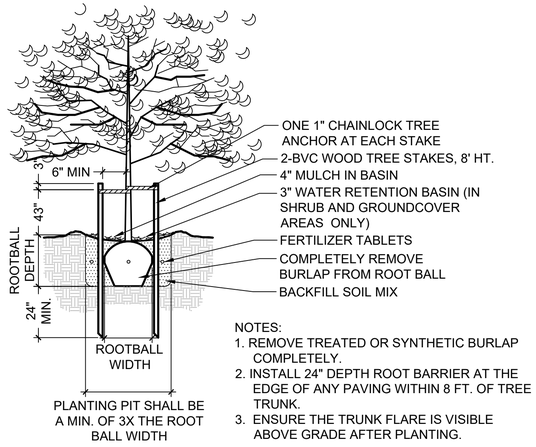
DESIGNER:	J. MCFARLAND
DRAWN BY:	J. MCFARLAND
APPROVED BY:	J. GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	21-000363 X-LS
DRAWING NO:	LS-07
SHEET NO:	18 OF 27

Apr 17, 2024 4:56:37pm – User: JMcmcfarland
N:\PROJECTS\5464 YELM PROPERTY DEVELOPMENT LLC\21-000363 WILLOW GLENN A\CAD_21-000363 X-LS.DWG



2 SHRUB PLANTING DETAIL (B&B OR CONT.)

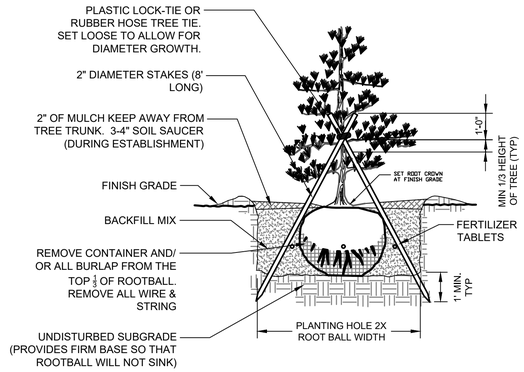
NTS P-RE-WIL2-04



NOTES:
1. REMOVE TREATED OR SYNTHETIC BURLAP COMPLETELY.
2. INSTALL 24" DEPTH ROOT BARRIER AT THE EDGE OF ANY PAVING WITHIN 8 FT. OF TREE TRUNK.
3. ENSURE THE TRUNK FLARE IS VISIBLE ABOVE GRADE AFTER PLANTING.

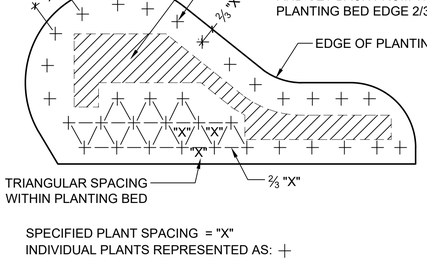
3 TREE PLANTING & STAKING DETAIL

NTS P-RE-WIL2-08



4 EVERGREEN TREE PLANTING DETAIL

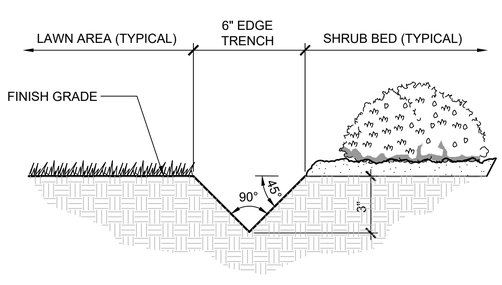
3/4" = 1'-0" P-RE-WIL2-19



SPECIFIED PLANT SPACING = "X"
INDIVIDUAL PLANTS REPRESENTED AS: +

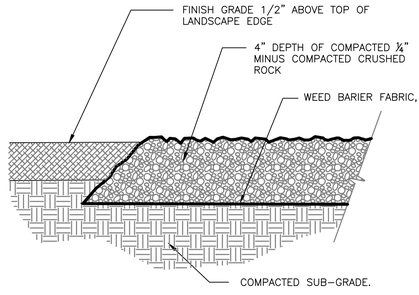
1 PLANT SPACING DETAIL

NTS P-RE-WIL2-01



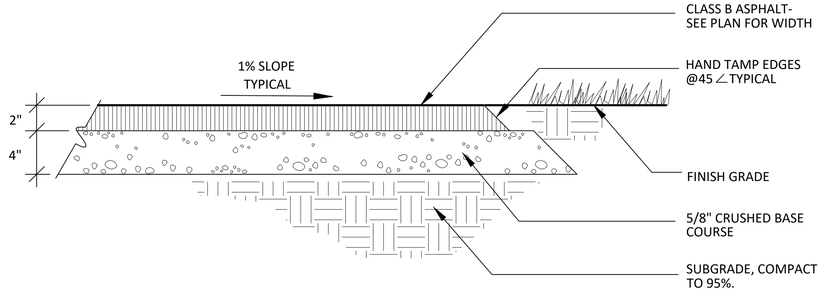
5 LAWN EDGE DETAIL

3" = 1'-0" P-RE-WIL2-15



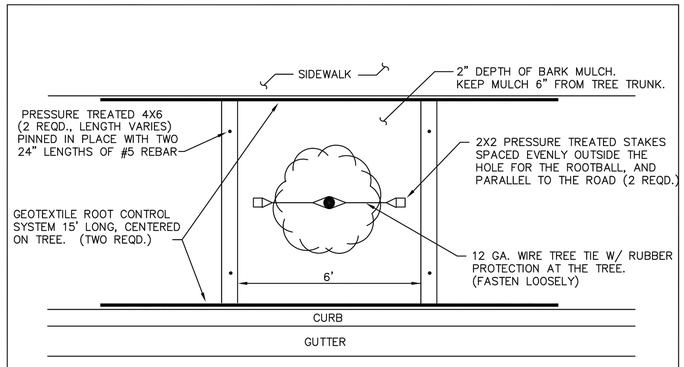
6 COMPACTED GRAVEL PAVING

3" = 1'-0" P-RE-WIL2-05



7 ASPHALT TRAIL

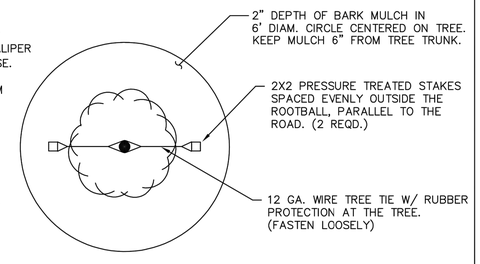
3" = 1'-0" P-RE-WIL2-25



FOR USE WHEN TREE IS WITHIN 6' OF CURB AND/OR SIDEWALK

STREET TREE SPECIFICATIONS:

1. TREES SHALL BE 2" TO 3" CALIPER MEASURED 6" ABOVE THE BASE.
2. TREES SHALL HAVE A MINIMUM 6 FOOT FREE-OF-BRANCH CLEARANCE, MEASURED FROM THE GROUND LINE TO THE FIRST BRANCH.
3. TREES SHALL BE SPACED 35 FEET ON CENTER STARTING 15 FEET FROM THE PROPERTY LINE.



FOR USE WHEN TREE IS NOT WITHIN 6' OF CURB AND/OR SIDEWALK

NOTES:
1. THE GEOTEXTILE ROOT CONTROL SYSTEM SHALL BE 12 INCH BIOBARRIER STRIPS, OR APPROVED EQUAL.
2. WIRE TREE TIE SHALL BE 42" ABOVE THE GROUND
3. FINISH GRADE FOR BARK MULCH SHALL BE 1 TO 2 INCHES BELOW SURROUNDING GRADE

JEG

CITY OF YELM
DEPT. OF PUBLIC WORKS

STREET TREE

APPROVED			DWG. NO.
PUBLIC WORKS DIRECTOR		DATE	2-19
DES.	DWN.	CKD.	DATE
S-C	S-C	S-C	10/3/94.

8

BY	DATE	REVISIONS

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 300, LACEY, WA 98516
360.352.1465
SCJALLIANCE.COM

SHEET TITLE: LANDSCAPE DETAILS

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL: STATE OF WASHINGTON · JEFFREY B. GLANDER · No. 405 EXP. 02/09/25 · LICENSED LANDSCAPE ARCHITECT

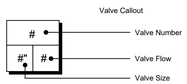
DESIGNER:	J.MCFARLAND
DRAWN BY:	J.MCFARLAND
APPROVED BY:	J.GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	_21-000363 X-LS
DRAWING NO:	LS-08
SHEET NO:	19 OF 27

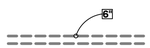
Apr 17, 2024 - 4:56:42pm - User: jillmcfarland
N:\PROJECTS\5464 YELM PROPERTY DEVELOPMENT LLC\21-000363 WILLOW GLENN 4\CAD_21-000363 X-LS.DWG

IRRIGATION SCHEDULE (ALL SHEETS)

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	DETAIL
□	HUNTER ICZ-101-25 DRIP CONTROL ZONE KIT. 1IN. ICV GLOBE VALVE WITH 1IN. HY100 FILTER SYSTEM. PRESSURE REGULATION: 25PSI. FLOW RANGE: 2 GPM TO 20 GPM. 150 MESH STAINLESS STEEL SCREEN.		1/IR-08
⊗	PIPE TRANSITION POINT ABOVE GRADE PIPE TRANSITION POINT FROM PVC LATERAL TO DRIP TUBING WITH RISER TO ABOVE GRADE INSTALLATION.		2/IR-08
	AREA TO RECEIVE DRIPLINE HUNTER HDL-06-18-R HDL-06-18-R: HUNTER DRIPLINE WITH 0.6 GPH FLOW. LIGHT BROWN TUBING WITH PURPLE STRIPING. EMITTERS AT 18" O.C. DRIPLINE LATERALS SPACED AT 18" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN. INSTALL WITH HUNTER PLD BARBED OR PLD-LOC FITTINGS.	15	3/IR-08
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION		DETAIL
○	HUNTER ICV-G 1IN. PLASTIC ELECTRIC REMOTE CONTROL VALVES, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.		5/IR-07
◪	HUNTER HQ-44LRC QUICK COUPLER VALVE, YELLOW RUBBER LOCKING COVER, RED BRASS AND STAINLESS STEEL, WITH 1IN. NPT INLET, 2-PIECE BODY.		3/IR-07
⧗	SHUT OFF VALVE B&K (107-900 SERIES) BRASS BALL VALVE WITH BRASS UNIONS (MATCH LINE SIZE)		1/IR-07
MV	HUNTER ICV-G MASTER VALVE 1-1/2" 1-1/2IN. PLASTIC ELECTRIC MASTER VALVE, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.		6/IR-07
Ⓓ	DRAIN VALVE WILKINS #200 3/4" ANGLE VALVE FOR MANUAL DRAIN VALVE ASSEMBLY W/ KEY EXTENSION		2/IR-07
DCVA	FEBCO 850 1-1/2" DOUBLE CHECK BACKFLOW PREVENTION, 1/2IN. TO 2IN.		4/IR-08
C	HUNTER I2C-4800-M/ICC-PED 48 STATION OUTDOOR MODULAR CONTROLLER. WITH FIVE ICM-800 MODULE. COMMERCIAL USE. METAL PEDESTAL.		5/IR-08
RS	HUNTER WSS WIRELESS SOLAR, RAIN FREEZE SENSOR WITH OUTDOOR INTERFACE, CONNECTS TO HUNTER PCC, PRO-C, AND I-CORE CONTROLLERS, INSTALL AS NOTED. INCLUDES 10 YEAR LITHIUM BATTERY AND RUBBER MODULE COVER, AND GUTTER MOUNT BRACKET.		
FS	HUNTER FLOW-CLIK-150 FLOW SENSOR SOV WITH INTERFACE PANEL, 1-1/2IN. SCHEDULE 40 SENSOR BODY, 24 VAC, 2 AMP, INSTALL INTERFACE PANEL AS REQUIRED.		
M	WATER METER 1" POC AT 1" METER INSTALLED BY GEN. CONTRACTOR, SEE CIVIL PLANS FOR ADDITIONAL INFORMATION. FIELD VERIFY EXACT LOCATION OF METER, STATIC PRESSURE IS APPROXIMATELY 48 PSI PER CITY OF YELM, NOTIFY LANDSCAPE ARCHITECT IF PRESSURE VARIES FROM WHAT IS INDICATED.		
———	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21		
— — — —	IRRIGATION MAINLINE: PVC SCHEDULE 40		
=========	PIPE SLEEVE: PVC CLASS 200 SDR 21		

Valve Callout

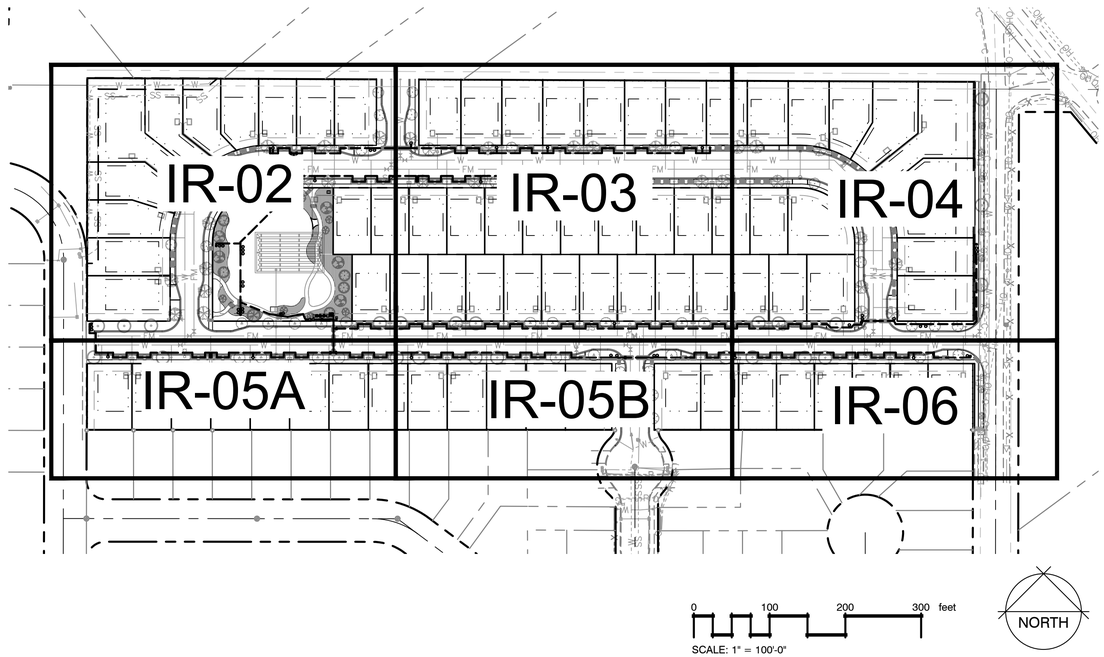




IRRIGATION SLEEVE & CALL OUT

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	DETAIL
2Q 2H 4Q 4H 6Q 6H	HUNTER PROS-04 SR SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
ES LCS RCS CS SS	HUNTER PROS-04 STRIP SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
Q T H F	HUNTER PROS-04 8 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
Q T H F	HUNTER PROS-04 10 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
Q T H F	HUNTER PROS-04 12 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
Q T H F	HUNTER PROS-04 15 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
Q H	HUNTER PROS-04 17 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
④ ⑥ ⑧ ⑩ ⑫ ⑮ ⑰	HUNTER PROS-04 ADJ SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
LST SST RST	HUNTER MP STRIP PROS-04-PRS40-CV TURF ROTATOR, 4IN. POP-UP WITH FACTORY INSTALLED CHECK VALVE, PRESSURE REGULATED TO 40 PSI, MP ROTATOR NOZZLE ON PRS40 BODY. LST=IVORY LEFT STRIP, SST=BROWN SIDE STRIP, RST=COPPER RIGHT STRIP.	30	4/IR-07
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	DETAIL
2.0	HUNTER I-20-04 2.0 TURF ROTOR, 4IN. POP-UP. ADJUSTABLE AND FULL CIRCLE. PLASTIC RISER. DRAIN CHECK VALVE. STANDARD NOZZLE.	25	7/IR-07
4.0	HUNTER I-20-04 4.0 TURF ROTOR, 4IN. POP-UP. ADJUSTABLE AND FULL CIRCLE. PLASTIC RISER. DRAIN CHECK VALVE. STANDARD NOZZLE.	25	7/IR-07
8.0	HUNTER I-20-04 8.0 TURF ROTOR, 4IN. POP-UP. ADJUSTABLE AND FULL CIRCLE. PLASTIC RISER. DRAIN CHECK VALVE. STANDARD NOZZLE.	25	7/IR-07



VALVE SCHEDULE (ALL SHEETS)

NUMBER	MODEL	SIZE	TYPE	GPM	PSI @ POC
1	HUNTER ICV-G	1"	TURF SPRAY	15	42.4
2	HUNTER ICV-G	1"	TURF SPRAY	16.2	41.3
3	HUNTER ICV-G	1"	TURF SPRAY	16.94	41.2
4	HUNTER ICV-G	1"	TURF SPRAY	17.78	41.6
5	HUNTER ICV-G	1"	TURF SPRAY	13.2	42.5
6	HUNTER ICV-G	1"	TURF SPRAY	12.32	38.3
7	HUNTER ICV-G	1"	TURF SPRAY	15	43.4
8	HUNTER ICV-G	1"	TURF SPRAY	15.08	40.2
9	HUNTER ICV-G	1"	TURF SPRAY	15.6	40.5
10	HUNTER ICV-G	1"	TURF SPRAY	9.6	38.6
11	HUNTER ICV-G	1"	TURF SPRAY	13.26	39.3
12	HUNTER ICV-G	1"	TURF SPRAY	12	40.6
13	HUNTER ICV-G	1"	TURF SPRAY	10.26	38.0
14	HUNTER ICV-G	1"	TURF SPRAY	16.26	40.2
15	HUNTER ICV-G	1"	TURF SPRAY	16.26	40.0
16	HUNTER ICV-G	1"	TURF SPRAY	16.11	39.8
17	HUNTER ICV-G	1"	TURF SPRAY	13.2	39.7
18	HUNTER ICV-G	1"	TURF SPRAY	15.6	39.4
19	HUNTER ICV-G	1"	TURF SPRAY	13.07	37.9
20	HUNTER ICV-G	1"	TURF SPRAY	16.76	41.3
21	HUNTER ICV-G	1"	TURF SPRAY	16.9	40.9
22	HUNTER ICZ-101-25	1"	AREA FOR DRIPLINE	13.96	35.8
23	HUNTER ICV-G	1"	TURF SPRAY	13.8	41.1
24	HUNTER ICV-G	1"	TURF SPRAY	15.81	38.2
25	HUNTER ICV-G	1"	TURF ROTOR	13.4	39.4
26	HUNTER ICV-G	1"	AREA FOR DRIPLINE	12.59	28.5
27	HUNTER ICV-G	1"	TURF SPRAY	15.92	38.1
28	HUNTER ICV-G	1"	TURF SPRAY	17.28	38.9
29	HUNTER ICV-G	1"	TURF SPRAY	15.21	38.4
30	HUNTER ICV-G	1"	TURF ROTOR	15	38.6
31	HUNTER ICV-G	1"	TURF ROTOR	18	39.5
32	HUNTER ICV-G	1"	TURF ROTOR	18	39.9
33	HUNTER ICV-G	1"	TURF ROTOR	18	39.5
34	HUNTER ICV-G	1"	TURF ROTOR	18	39.2
35	HUNTER ICV-G	1"	TURF ROTOR	13.4	38.5
36	HUNTER ICV-G	1"	TURF SPRAY	13.2	38.5
37	HUNTER ICZ-101-25	1"	AREA FOR DRIPLINE	16.61	37.4
38	HUNTER ICV-G	1"	TURF ROTOR	13.4	38.0
39	HUNTER ICV-G	1"	TURF SPRAY	13.8	38.9
40	HUNTER ICV-G	1"	TURF SPRAY	16.8	41.4
41	HUNTER ICV-G	1"	TURF SPRAY	15.6	43.5
42	HUNTER ICV-G	1"	TURF SPRAY	13.2	41.3
43	HUNTER ICV-G	1"	TURF SPRAY	14.29	38.7
44	HUNTER ICV-G	1"	TURF SPRAY	13.83	39.1
45	HUNTER ICV-G	1"	TURF SPRAY	15.13	39.4
46	HUNTER ICV-G	1"	TURF SPRAY	12.9	41.0
47	HUNTER ICV-G	1"	TURF SPRAY	9.6	38.2
48	HUNTER ICV-G	1"	TURF SPRAY	12	38.6

IRRIGATION SHEET NOTES (ALL SHEETS)

1. SEE DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. PLAN IS DIAGRAMMATIC. ALL PIPING, LATERALS, AND WIRE TO BE LOCATED IN BED OR LAWN AREAS WHERE APPROPRIATE.
3. PIPE SIZES ARE TO REMAIN CONSTANT BETWEEN PIPE SIZE CALL-OUTS. PIPES ARE LABELED TO SMALLEST PIPE SIZE ONLY (¾").
4. ALL IRRIGATION HEADS LOCATED IN LAWN AREAS SHALL BE 4" POP-UPS AND HEADS IN SHRUB AREAS SHALL BE 12" POP-UPS.
5. ALL DRIP TUBING SHALL BE INSTALLED BELOW THE FINISH SOIL GRADE UNLESS NOTED OTHERWISE. INSTALL TUBING AT A CONSISTENT DEPTH OF 2" BELOW TOP OF TOPSOIL.
6. ALL PIPES AND SLEEVES UNDER PAVED AREAS SHALL BE 24" DEEP. ALL MAINLINE SHALL BE 18" DEEP IN ALL UNPAVED AREAS, 24" IN PAVED ARES. ALL LATERALS SHALL BE 12" DEEP IN ALL UNPAVED AREAS AND 24" DEEP IN PAVED AREAS.
7. LOCATE ALL MAINLINES WITHIN THE PROJECT LIMITS. INSTALL #14-AWG DIRECT BURIAL LOW VOLTAGE WIRE ALONG MAINLINE; TAPE AND BUNDLE WIRE EVER 20' FT. PROVIDE RED COLOR WIRE FOR SIGNAL AND WHITE COLOR WIRE FOR COMMON. PROVIDE A MINIMUM OF ONE SPARE WIRE FOR EVERY 10 VALVES FOR A MAXIMUM OF FIVE SPARE WIRES.
8. ALL WORK SHALL BE PERFORMED TO THE SATISFACTION OF THE LANDSCAPE ARCHITECT/OWNER.

REVISIONS	DATE	BY
REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	C. OWEN

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 200, LACEY, WA 98516
P: 360.352.1465
SCJALLIANCE.COM

SHEET TITLE: OVERALL IRRIGATION PLAN

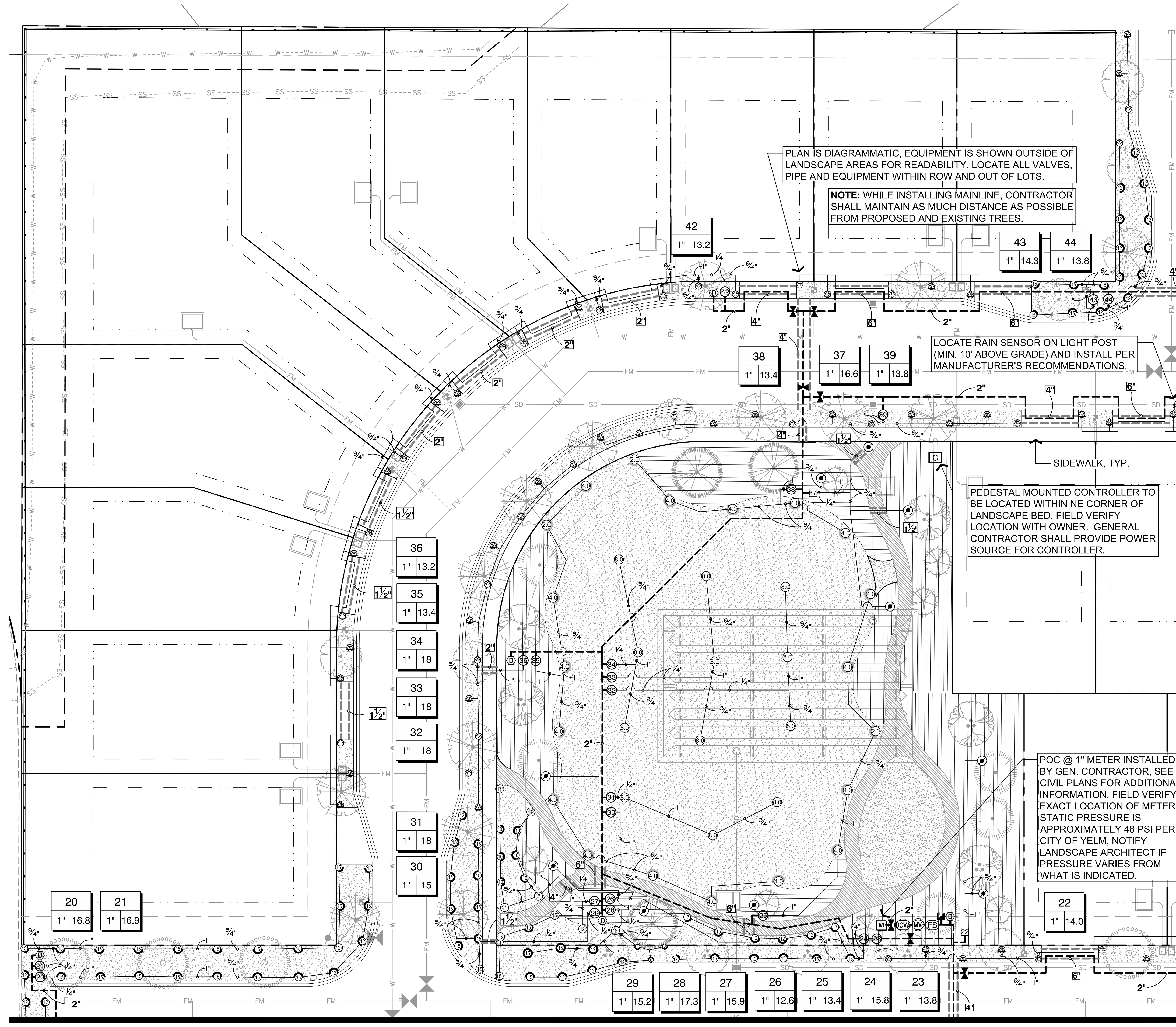
PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

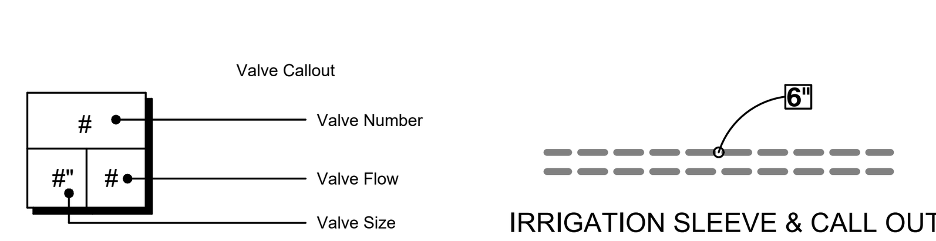
SEAL:

DESIGNER:	C. OWEN
DRAWN BY:	C. OWEN
APPROVED BY:	J. GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	_21-000363 X-IR
DRAWING NO:	IR-01
SHEET NO:	20 OF 27

IRRIGATION SCHEDULE IR-02

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	DETAIL
2Q 2H 4Q 4H 6Q 6H	HUNTER PROS-04 SR SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
ES LCS RCS CS SS	HUNTER PROS-04 STRIP SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
Q T H F	HUNTER PROS-04 10 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
Q T H F	HUNTER PROS-04 12 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
Q T H F	HUNTER PROS-04 15 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
Q H	HUNTER PROS-04 17 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
4 6 8 10 12 15 17	HUNTER PROS-04 ADJ SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	DETAIL
1.5	HUNTER I-20-04 1.5 TURF ROTOR, 4IN. POP-UP. ADJUSTABLE AND FULL CIRCLE. PLASTIC RISER. DRAIN CHECK VALVE. STANDARD NOZZLE.	25	7/IR-07
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	DETAIL
☐	HUNTER ICZ-101-25 DRIP CONTROL ZONE KIT. 1IN. ICV GLOBE VALVE WITH 1IN. HY100 FILTER SYSTEM. PRESSURE REGULATION: 25PSI. FLOW RANGE: 2 GPM TO 20 GPM. 150 MESH STAINLESS STEEL SCREEN.		1/IR-08
⊙	PIPE TRANSITION POINT ABOVE GRADE PIPE TRANSITION POINT FROM PVC LATERAL TO DRIP TUBING WITH RISER TO ABOVE GRADE INSTALLATION.		2/IR-08
	AREA TO RECEIVE DRIPLINE HUNTER HDL-06-18-R HDL-06-18-R: HUNTER DRIPLINE WITH 0.6 GPH FLOW. LIGHT BROWN TUBING WITH PURPLE STRIPING. EMITTERS AT 18" O.C. DRIPLINE LATERALS SPACED AT 18" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN. INSTALL WITH HUNTER PLD BARBED OR PLD-LOC FITTINGS.	15	3/IR-08
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION		DETAIL
○	HUNTER ICV-G 1IN. PLASTIC ELECTRIC REMOTE CONTROL VALVES, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.		5/IR-07
◪	HUNTER HQ-44LRC QUICK COUPLER VALVE, YELLOW RUBBER LOCKING COVER, RED BRASS AND STAINLESS STEEL, WITH 1IN. NPT INLET, 2-PIECE BODY.		3/IR-07
⧗	SHUT OFF VALVE B&K (107-900 SERIES) BRASS BALL VALVE WITH BRASS UNIONS (MATCH LINE SIZE)		1/IR-07
MV	HUNTER ICV-G MASTER VALVE 1-1/2" 1-1/2IN. PLASTIC ELECTRIC MASTER VALVE, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.		6/IR-07
D	DRAIN VALVE WILKINS #200 3/4" ANGLE VALVE FOR MANUAL DRAIN VALVE ASSEMBLY W/ KEY EXTENSION		2/IR-07
DCVA	FEBCO 850 1-1/2" DOUBLE CHECK BACKFLOW PREVENTION, 1/2IN. TO 2IN.		4/IR-08
C	HUNTER I2C-4800-M 48 STATION OUTDOOR MODULAR CONTROLLER. WITH FIVE ICM-800 MODULE. COMMERCIAL USE. METAL PEDESTAL.		5/IR-08
RS	HUNTER WSS WIRELESS SOLAR, RAIN FREEZE SENSOR WITH OUTDOOR INTERFACE, CONNECTS TO HUNTER PCC, PRO-C, AND I-CORE CONTROLLERS, INSTALL AS NOTED. INCLUDES 10 YEAR LITHIUM BATTERY AND RUBBER MODULE COVER, AND GUTTER MOUNT BRACKET.		
FS	HUNTER FLOW-CLIK-150 FLOW SENSOR SOV WITH INTERFACE PANEL, 1-1/2IN. SCHEDULE 40 SENSOR BODY, 24 VAC, 2 AMP, INSTALL INTERFACE PANEL AS REQUIRED.		
M	WATER METER 1" POC AT 1" METER INSTALLED BY GEN. CONTRACTOR, SEE CIVIL PLANS FOR ADDITIONAL INFORMATION. FIELD VERIFY EXACT LOCATION OF METER, STATIC PRESSURE IS APPROXIMATELY 48 PSI PER CITY OF YELM, NOTIFY LANDSCAPE ARCHITECT IF PRESSURE VARIES FROM WHAT IS INDICATED.		
————	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21		
— — —	IRRIGATION MAINLINE: PVC SCHEDULE 40		
========	PIPE SLEEVE: PVC CLASS 200 SDR 21		





SCALE: 1" = 20'-0"

NORTH

REVISIONS	DATE	BY
1 REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	C. OWEN

SCJ ALLIANCE
CONSULTING SERVICES
8730 TALLON LANE NE, SUITE 200, LACEY, WA 98516
P: 360.352.1465
SCJALLIANCE.COM

SHEET TITLE: IRRIGATION PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL: STATE OF WASHINGTON, JEFFREY B. GLANDER, LICENSED LANDSCAPE ARCHITECT

DESIGNER: C. OWEN
DRAWN BY: C. OWEN
APPROVED BY: J. GLANDER
DATE: APRIL 2024
JOB NO: 21-000363
DRAWING FILE NO: _21-000363 X-IR
DRAWING NO: IR-02
SHEET NO: 21 OF 27

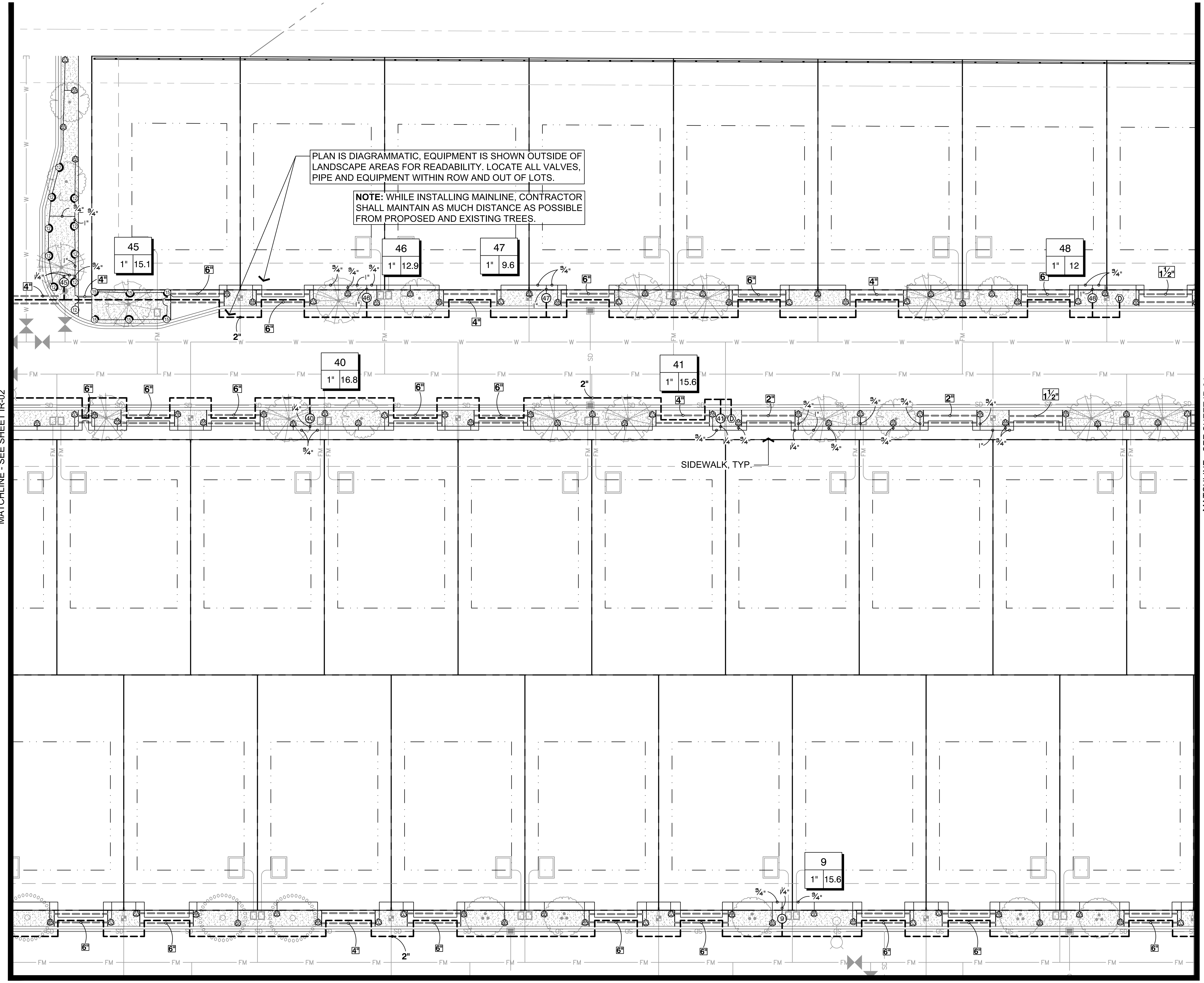
Apr 17, 2024 4:31:09pm – User colin.owen
N:\PROJECTS\5464 YELM PROPERTY DEVELOPMENT LLC\21-000363 WILLOW GLENN 4\CADD_21-000363 X-IR.DWG

IRRIGATION SCHEDULE IR-03

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	DETAIL
ES LCS RCS CS SS	HUNTER PROS-04 STRIP SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
12 Q T H F	HUNTER PROS-04 12 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
15 Q T H F	HUNTER PROS-04 15 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
4 6 8 10 12 15 17	HUNTER PROS-04 ADJ SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION		DETAIL
○	HUNTER ICV-G 1IN. PLASTIC ELECTRIC REMOTE CONTROL VALVES, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.		5/IR-07
D	DRAIN VALVE WILKINS #200 3/4" ANGLE VALVE FOR MANUAL DRAIN VALVE ASSEMBLY W/ KEY EXTENSION		2/IR-07
———	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21		
— — —	IRRIGATION MAINLINE: PVC SCHEDULE 40		
======	PIPE SLEEVE: PVC CLASS 200 SDR 21		

Valve Callout: Valve Number, Valve Flow, Valve Size

IRRIGATION SLEEVE & CALL OUT



SCALE: 1" = 20'-0"

NORTH

REVISIONS	DATE	BY
REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	C. OWEN

SCJ ALLIANCE CONSULTING SERVICES
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SHEET TITLE: IRRIGATION PLAN

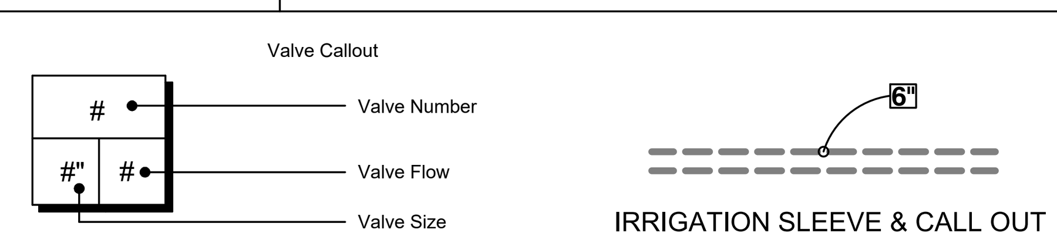
PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

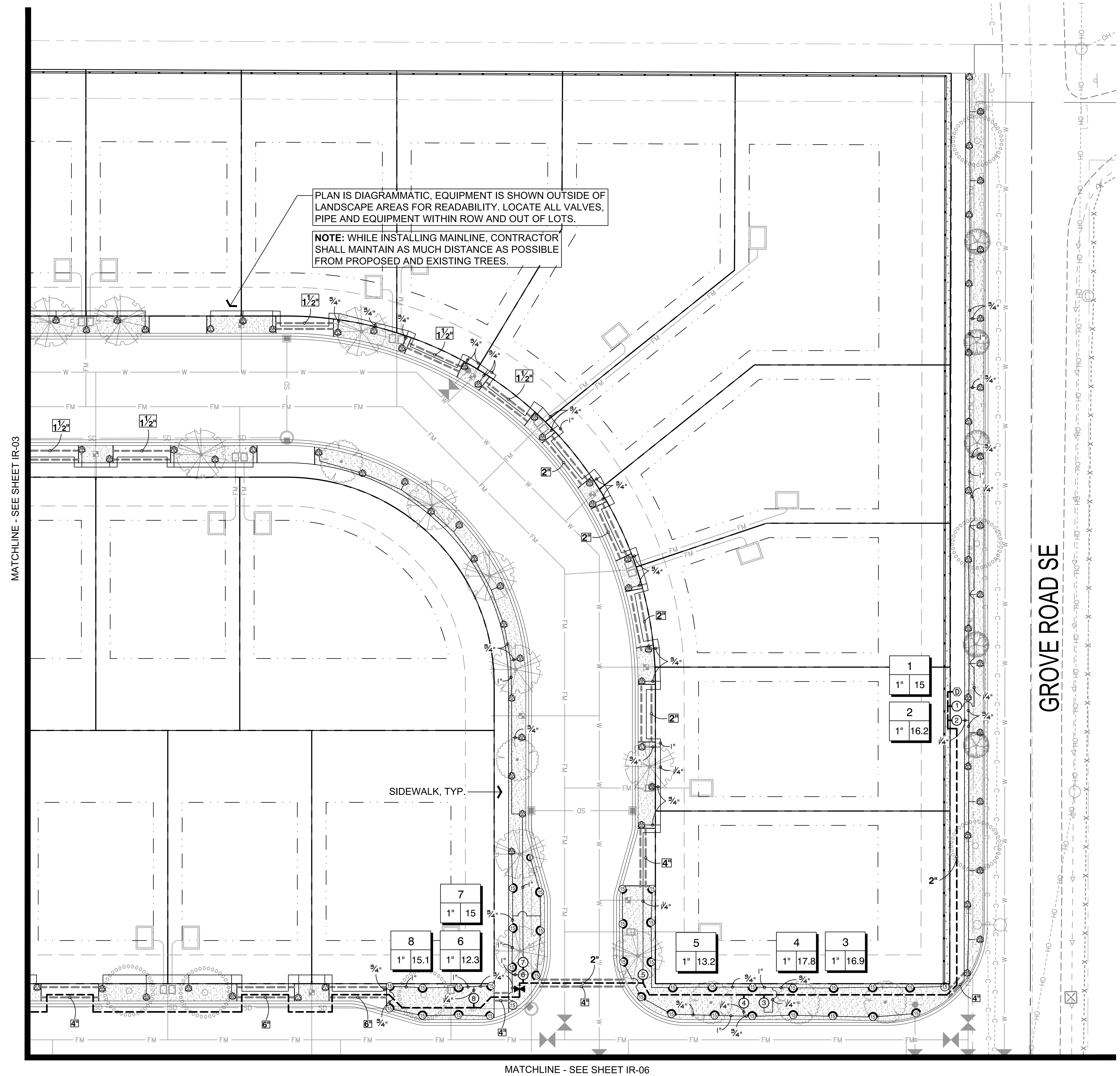
SEAL: STATE OF WASHINGTON, LICENSED LANDSCAPE ARCHITECT

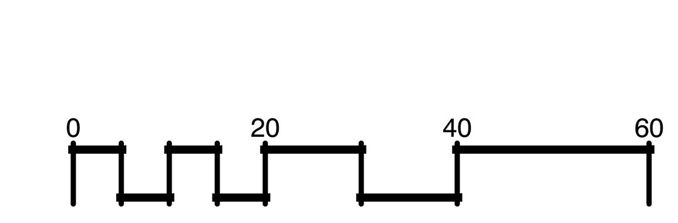
DESIGNER: C. OWEN
DRAWN BY: C. OWEN
APPROVED BY: J. GLANDER
DATE: APRIL 2024
JOB NO: 21-000363
DRAWING FILE NO: _21-000363 X-IR
DRAWING NO: IR-03
SHEET NO: 22 OF 27

IRRIGATION SCHEDULE IR-04

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	DETAIL
ES LCS RCS CS SS	HUNTER PROS-04 STRIP SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
Q T H F	HUNTER PROS-04 8 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
Q T H F	HUNTER PROS-04 15 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
4 6 8 10 12 15 17	HUNTER PROS-04 ADJ SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION		DETAIL
○	HUNTER ICV-G 1IN. PLASTIC ELECTRIC REMOTE CONTROL VALVES, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.		5/IR-07
⧗	SHUT OFF VALVE B&K (107-900 SERIES) BRASS BALL VALVE WITH BRASS UNIONS (MATCH LINE SIZE)		1/IR-07
D	DRAIN VALVE WILKINS #200 3/4" ANGLE VALVE FOR MANUAL DRAIN VALVE ASSEMBLY W/ KEY EXTENSION		2/IR-07
———	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21		
— — —	IRRIGATION MAINLINE: PVC SCHEDULE 40		
========	PIPE SLEEVE: PVC CLASS 200 SDR 21		







REVISIONS	DATE	BY
1 REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	C. OWEN

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SHEET TITLE: IRRIGATION PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL: STATE OF WASHINGTON, JEFFREY B. GLANDER, LICENSED LANDSCAPE ARCHITECT, NO. 405 EXP. 02/06/25

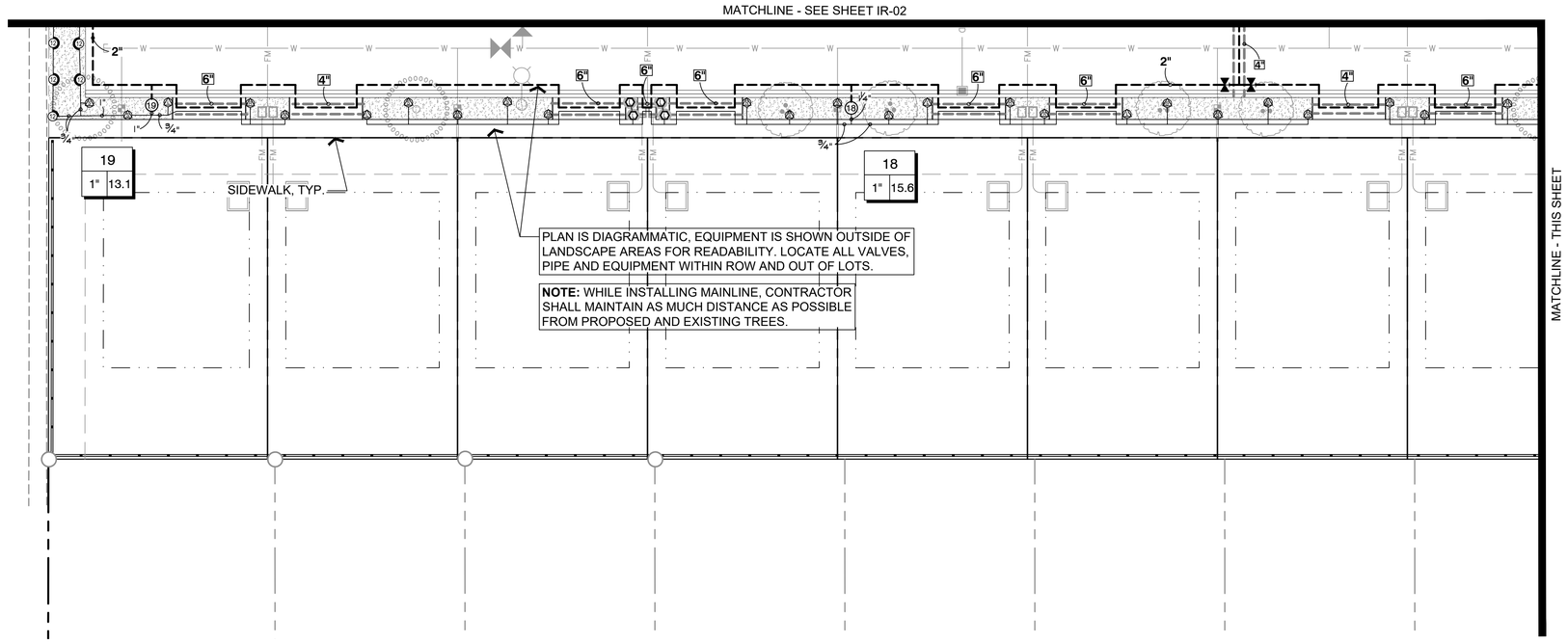
DESIGNER: C. OWEN
DRAWN BY: C. OWEN
APPROVED BY: J. GLANDER
DATE: APRIL 2024
JOB NO: 21-000363
DRAWING FILE NO: _21-000363 X-IR
DRAWING NO: IR-04
SHEET NO: 23 OF 27

Apr 17, 2024 4:31:20pm – User colin.owen
N:\PROJECTS\5464 YELM PROPERTY DEVELOPMENT LLC\21-000363 WILLOW GLENN 4\CADD_21-000363 X-IR.DWG

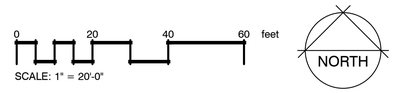
IRRIGATION SCHEDULE IR-05

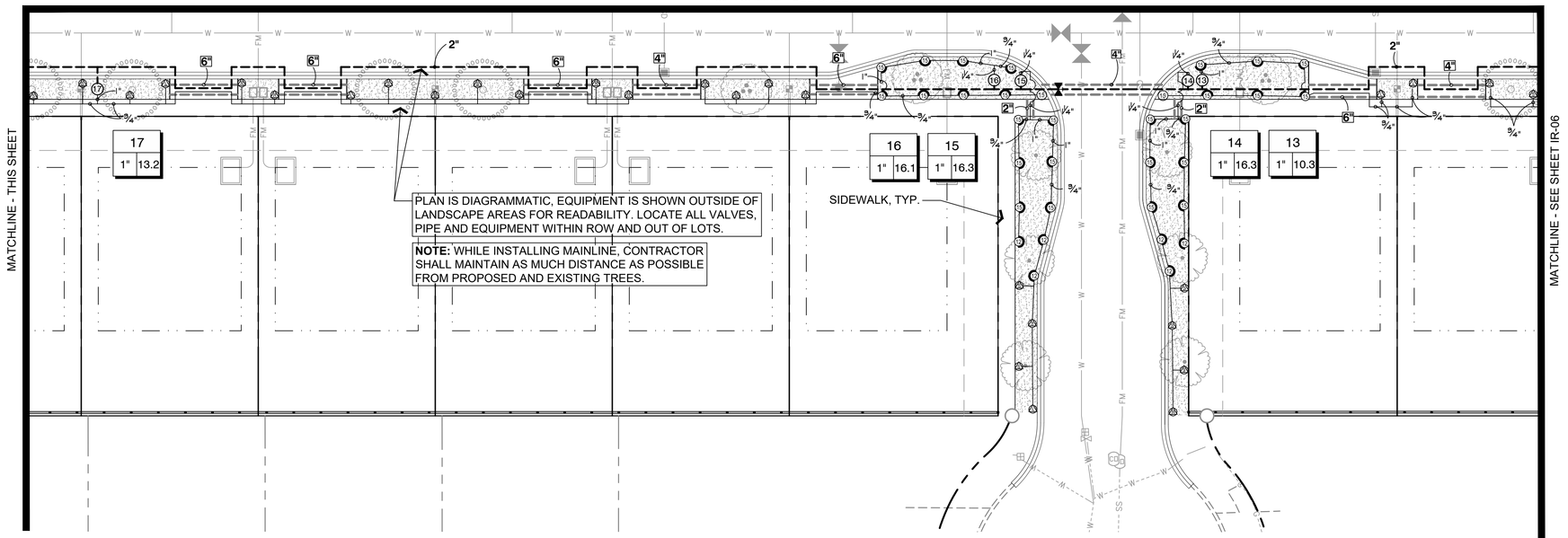
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	DETAIL
(ES) (LCS) (RCS) (CS) (SS)	HUNTER PROS-04 STRIP SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
(12Q) (12T) (12H) (12F)	HUNTER PROS-04 12 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
(15Q) (15T) (15H) (15F)	HUNTER PROS-04 15 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
(4) (6) (8) (10) (12) (15) (17)	HUNTER PROS-04 ADJ SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION		DETAIL
◯	HUNTER ICV-G 1IN. PLASTIC ELECTRIC REMOTE CONTROL VALVES, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.		5/IR-07
⧗	SHUT OFF VALVE B&K (107-900 SERIES) BRASS BALL VALVE WITH BRASS UNIONS (MATCH LINE SIZE)		1/IR-07
———	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21		
— — — —	IRRIGATION MAINLINE: PVC SCHEDULE 40		
═══	PIPE SLEEVE: PVC CLASS 200 SDR 21		

IRRIGATION SLEEVE & CALL OUT

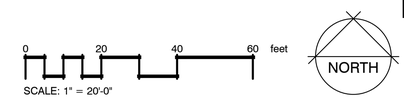


VIEW A





VIEW B



REVISIONS	DATE	BY
REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	C. OWEN

SCJ ALLIANCE
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SHEET TITLE: IRRIGATION PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

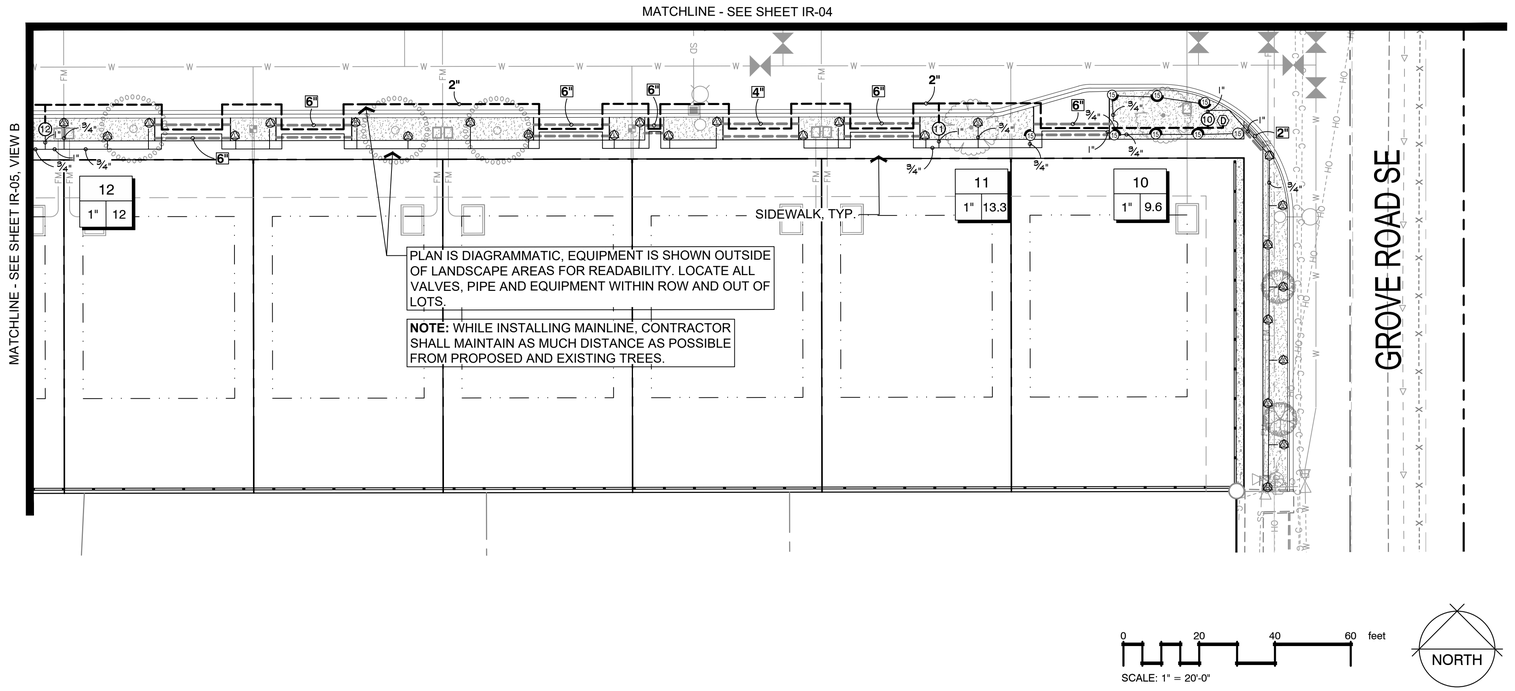
SEAL:

DESIGNER:	C. OWEN
DRAWN BY:	C. OWEN
APPROVED BY:	J. GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	_21-000363 X-IR
DRAWING NO:	IR-05
SHEET NO:	24 OF 27

IRRIGATION SCHEDULE IR-07

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	DETAIL
ES LCS RCS CS SS	HUNTER PROS-04 STRIP SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
15 Q, 15 T, 15 H, 15 F	HUNTER PROS-04 15 SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
4 6 8 10 12 15 17	HUNTER PROS-04 ADJ SERIES TURF SPRAY, 4IN. POP-UP. CO-MOLDED WIPER SEAL WITH UV RESISTANT MATERIAL.	25	4/IR-07
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION		DETAIL
◯	HUNTER ICV-G 1IN. PLASTIC ELECTRIC REMOTE CONTROL VALVES, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.		5/IR-07
Ⓓ	DRAIN VALVE WILKINS #200 3/4" ANGLE VALVE FOR MANUAL DRAIN VALVE ASSEMBLY W/ KEY EXTENSION		2/IR-07
———	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21		
— — — —	IRRIGATION MAINLINE: PVC SCHEDULE 40		
═══	PIPE SLEEVE: PVC CLASS 200 SDR 21		

Valve Callout



REVISIONS	DATE	BY
REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	C. OWEN

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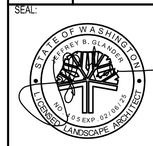
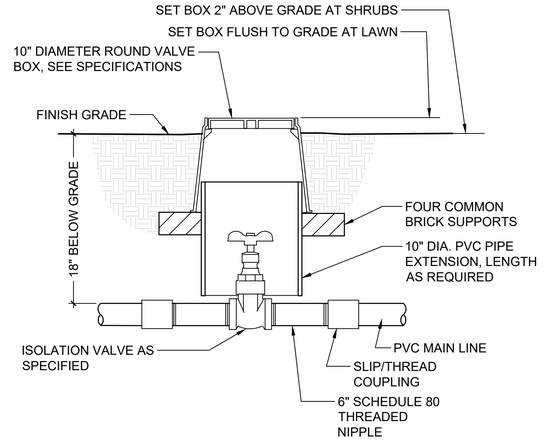
SHEET TITLE: IRRIGATION PLAN

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:

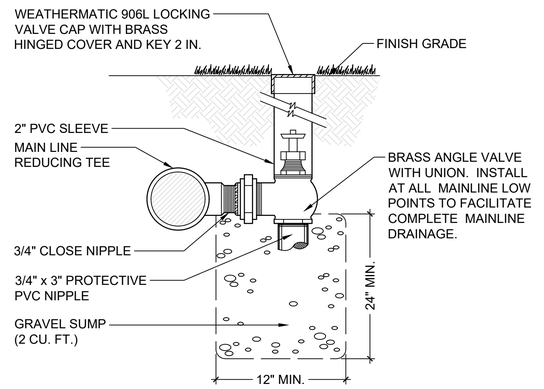


DESIGNER:	C. OWEN
DRAWN BY:	C. OWEN
APPROVED BY:	J. GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	_21-000363 X-IR
DRAWING NO:	IR-06
SHEET NO:	25 OF 27



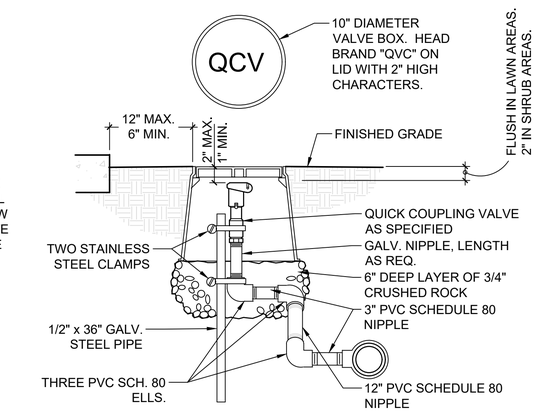
1 SHUT OFF VALVE

1 1/2" = 1'-0" P-RE-WIL2-03



2 MANUAL DRAIN VALVE DETAIL

N.T.S. P-RE-WIL2-06



3 QUICK COUPLING VALVE IN BOX

1 1/2" = 1'-0" P-RE-WIL2-02

4 POP-UP SPRINKLER HEAD

N.T.S. P-RE-WIL2-07

NOTE: ALL WIRES TO BE INSTALLED AS PER LOCAL CODES. NO "IN-LINE" WIRE SPLICES ALLOWED. TAPE AND BUNDLE WIRES EVERY 20 FEET. PROVIDE EXPANSION COILS AT EACH VALVE - WRAPPING WIRE AROUND 1/2" PIPE 15 TIMES. ALL THREADED CONNECTIONS SHALL BE MADE WITH TEFLON TAPE.

5 ELECTRONIC CONTROL VALVE

1" = 1'-0" P-RE-WIL2-20

6 MASTER CONTROL VALVE

1 1/2" = 1'-0" P-RE-WIL2-12

7 TURF ROTOR MARLEX ASSEMBLY

3" = 1'-0" P-RE-WIL2-24

IRRIGATION SPECIFICATIONS

1. THIS PLAN IS DIAGRAMMATIC; ALL PIPING, VALVES, ETC. SHALL BE INSTALLED IN SHRUB BEDS WHERE POSSIBLE AND SHALL FOLLOW THE PLAN AS CLOSE AS IS PRACTICAL.
2. LOCATE ALL MAINLINES WITHIN THE PROJECT LIMITS.
3. PIPE SIZES ARE CONSTANT BETWEEN PIPE SIZE CALL-OUTS. ALL LATERIAL PIPES SHALL BE INSTALLED AT 12" DEPTH AND 24" DEPTH UNDER PAVED AREAS. MAIINLINE PIPE SHALL BE INSTALLED AT 18" BELOW GRADE AND 24" BELOW PAVED AREAS.
4. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
5. ALL PIPING AND WIRING UNDER PAVED AREAS SHALL BE HOUSED IN CLASS 200 PVC SLEEVES INSTALLED AT A 24" DEPTH. SIZE SLEEVES AS NEEDED TO ACCOMMODATE PIPE AND WIRES, UNLESS OTHERWISE SPECIFIED ON DRAWING.
6. CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED TO OBTAIN FULL COVERAGE. LANDSCAPE ARCHITECT RESERVES THE RIGHT TO MAKE NOZZLE CHANGES AS NEEDED AT NO ADDITIONAL COST. ADJUST HEAD POSITIONS AND ADD OR DELETE HEADS AS NEEDED DEPENDING ON ACTUAL FIELD CONDITIONS.
7. ALL MANUAL, GATE AND ELECTRICAL VALVES AND OTHER UNDERGROUND EQUIPMENT SHALL BE HOUSED IN NELSON, AMETEK OR EQUAL RECTANGULAR VALVE BOXES.
8. NO IN-LINE WIRE SPLICES ALLOWED. SUPPLY VALVE BOXES AT ALL ELECTRICAL JUNCTIONS. TAPE AND BUNDLE WIRES EVERY 25 LINEAR FEET.
9. CONTRACTOR IS RESPONSIBLE FOR COMPLETE SYSTEM DRAINAGE. INSTALL MANUAL DRAINS AT ALL MAINLINE LOW POINT(S) AND WHERE INDICATED ON PLAN. CONTRACTOR SHALL PROVIDE ADJUSTABLE CHECK VALVES ON ANY IRRIGATION HEAD THAT EXPERIENCES LOW HEAD DRAINAGE.
10. ALL THREADED PIPE CONNECTIONS SHALL BE MADE USING TEFLON TAPE WRAPPED AT LEAST THREE TIMES AROUND PIPE THREADS.
11. ALL GATE AND ELECTRIC VALVES SHALL BE INSTALLED WITH UNIONS ON THE DOWNSTREAM END OF THE VALVE (REFER TO DETAILS).
12. ALL PIPE SHALL HAVE A FIRM UNIFORM BEARING FOR THE ENTIRE LENGTH OF EACH LINE, FREE OF ROCKS OR DEBRIS. ALL TRENCHES CONTAINING PIPE AND/OR WIRES SHALL BE BACKFILLED WITH CLEAN TOPSOIL, FREE OF ALL LUMBER, RUBBISH AND ROCKS OVER 1" IN SIZE, OR CLEAN SAND IF CLEAN TOPSOIL IS NOT AVAILABLE.
13. CONTRACTOR SHALL PROVIDE OWNER WITH ONE SET OF AS-BUILT RECORD DRAWINGS SHOWING EXACT ACTUAL LOCATIONS OF ALL SPRINKLER EQUIPMENT. CONTRACTOR SHALL ORIENT OWNER WITH COMPLETE SYSTEM AND CONTROLLER OPERATIONS, AND WINTERIZATION PROCEDURES.
14. CONTRACTOR SHALL SUPPLY AND INSTALL ALL EQUIPMENT SHOWN ON THE PLANS AND INDICATED IN THE SPECIFICATIONS TO ACHIEVE PROPER OPERATION OF SAID EQUIPMENT. ALL EQUIPMENT INSTALLATIONS, ELECTRICAL AND PLUMBING CONNECTIONS SHALL BE IN CONFORMANCE WITH ALL APPLICABLE CODES AND ORDINANCES, THESE SPECIFICATIONS, AND THE MANUFACTURERS RECOMMENDATIONS WHETHER INDICATED ON THE DRAWINGS OR NOT.
15. CONTRACTOR SHALL INCLUDE IN HIS BID ONE FALL WINTERIZATION AND ONE SPRING ACTIVATION OF IRRIGATION SYSTEM. THESE ACTIVITIES SHALL BE INCLUDED AS PART OF OWNER ORIENTATION PROCEDURES. ANY DAMAGE TO THE IRRIGATION SYSTEM OR THE LANDSCAPE AS A RESULT OF FAILURE TO COMPLY WITH THESE REQUIREMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
16. CONTRACTOR SHALL GUARANTEE IN WRITING ON HIS COMPANY LETTERHEAD ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE FULL YEAR FOLLOWING ACCEPTANCE OF SYSTEM INSTALLATION.
17. BACKFLOW PREVENTOR SHALL BE INSPECTED AND TESTED BY A CERTIFIED BACKFLOW DEVICE INSPECTOR. PROVIDE OWNER WITH ONE COPY OF APPROVAL CERTIFICATE.

	REVISIONS	DATE	BY
1	REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	C. OWEN

SCJ ALLIANCE
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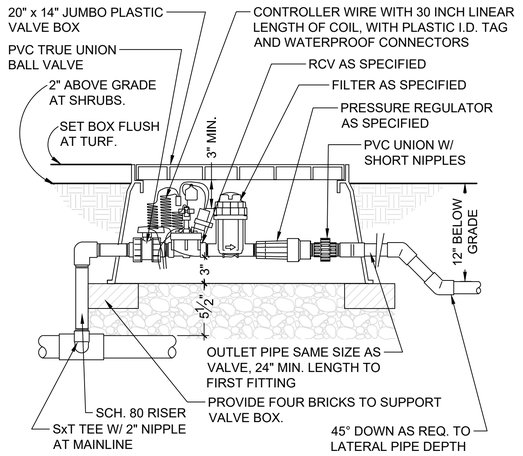
SHEET TITLE: IRRIGATION NOTES & DETAILS

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

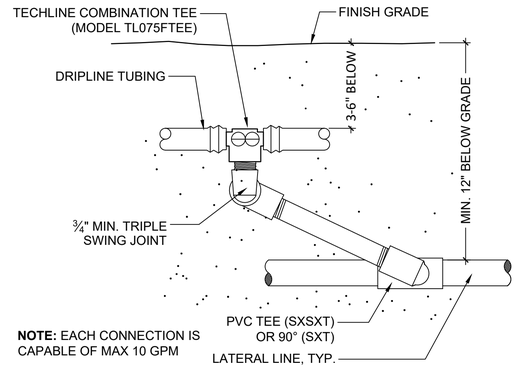
SEAL:

DESIGNER:	C. OWEN
DRAWN BY:	C. OWEN
APPROVED BY:	J. GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	_21-000363 X-IR
DRAWING NO:	IR-07
SHEET NO:	26 OF 27



1 DRIP VALVE W/ FILTER

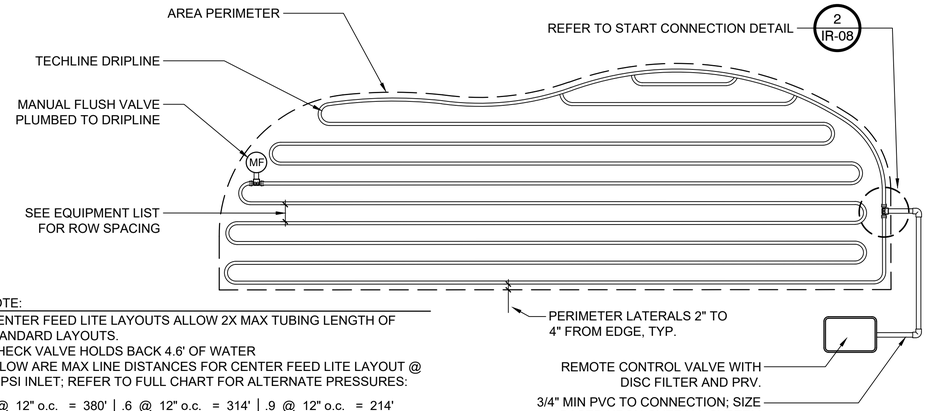
1 1/2" = 1'-0" P-RE-WIL2-09



NOTE: EACH CONNECTION IS CAPABLE OF MAX 10 GPM

2 DRIPLINE START CONNECTION (SWING JOINT RISER)

N.T.S. P-RE-WIL2-10



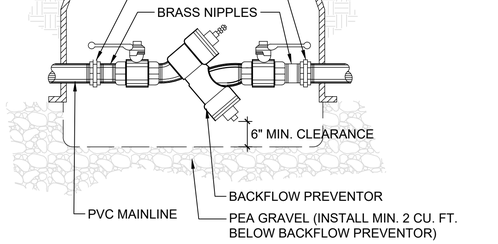
NOTE:
-CENTER FEED LITE LAYOUTS ALLOW 2X MAX TUBING LENGTH OF STANDARD LAYOUTS.
-CHECK VALVE HOLDS BACK 4.6' OF WATER

BELOW ARE MAX LINE DISTANCES FOR CENTER FEED LITE LAYOUT @ 25 PSI INLET; REFER TO FULL CHART FOR ALTERNATE PRESSURES:

.4 @ 12" o.c. = 380'	.6 @ 12" o.c. = 314'	.9 @ 12" o.c. = 214'
.4 @ 18" o.c. = 532'	.6 @ 18" o.c. = 441'	.9 @ 18" o.c. = 304'
.4 @ 24" o.c. = 675'	.6 @ 24" o.c. = 560'	.9 @ 24" o.c. = 385'

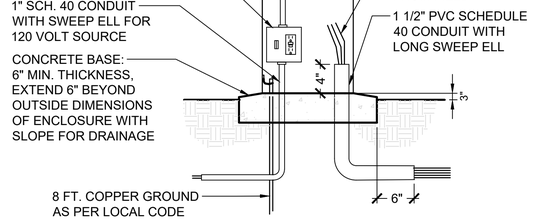
3 HUNTER DRIPLINE - IRREGULAR AREAS

N.T.S. P-RE-WIL2-23



4 DOUBLE CHECK VALVE (DCVA)

N.T.S. P-RE-WIL2-13



5 PEDESTAL MOUNT CONTROLLER

1" = 1'-0" P-RE-WIL2-21

REVISIONS	DATE	BY
REVISIONS DUE TO SITE PLAN UPDATES	04/19/24	C. OWEN

SCJ ALLIANCE
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P: 360.352.1465
SCJALLIANCE.COM

SHEET TITLE: IRRIGATION DETAILS

PROJECT NAME: WILLOW GLENN IV
9819 GROVE ROAD SE
YELM, WASHINGTON

SEAL:

STATE OF WASHINGTON
JEFFREY B. GLANDER
LICENSED LANDSCAPE ARCHITECT
REGISTERED EXP. 02/10/25

DESIGNER:	C. OWEN
DRAWN BY:	C. OWEN
APPROVED BY:	J. GLANDER
DATE:	APRIL 2024
JOB NO:	21-000363
DRAWING FILE NO:	_21-000363 X-IR
DRAWING NO:	IR-08
SHEET NO:	27 OF 27

Apr 17, 2024 4:31:42pm – User colin.owen
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Traffic Impact Analysis

Willow Glenn IV

Yelm, Washington

Prepared For:
Yelm Property Development, LLC

Prepared By:
SCJ Alliance
8730 Tallon Lane NE, Suite 200
Lacey, WA 98516
360.352.1465

April 2024

SCJ ALLIANCE
CONSULTING SERVICES

Traffic Impact Analysis

Project Information

Project:	Willow Glenn IV
Prepared for:	Yelm Property Development, LLC

Reviewing Agency

Jurisdiction:	City of Yelm

Project Representative

Prepared by:	SCJ Alliance 8730 Tallon Lane NE, Suite 200 Lacey, WA 98516 360.352.1465 scjalliance.com
Contact:	Ryan Shea, PTP, Senior Transportation Planner Eric Johnston, PE, Principal
Project Reference:	SCJ #21-000363 Path: N:\Projects\5464 Yelm Property Development LLC\21-000363 Willow Glenn 4\Phase 05 - TIA\TIA\03 - Dels\Traffic Impact Analysis 2024-0401.docx

Signature

The technical material and data contained in the Traffic Impact Analysis were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

Prepared by Ryan Shea, PTP, Senior Transportation Planner

04/02/2024

Approved by Eric Johnston, PE, Principal

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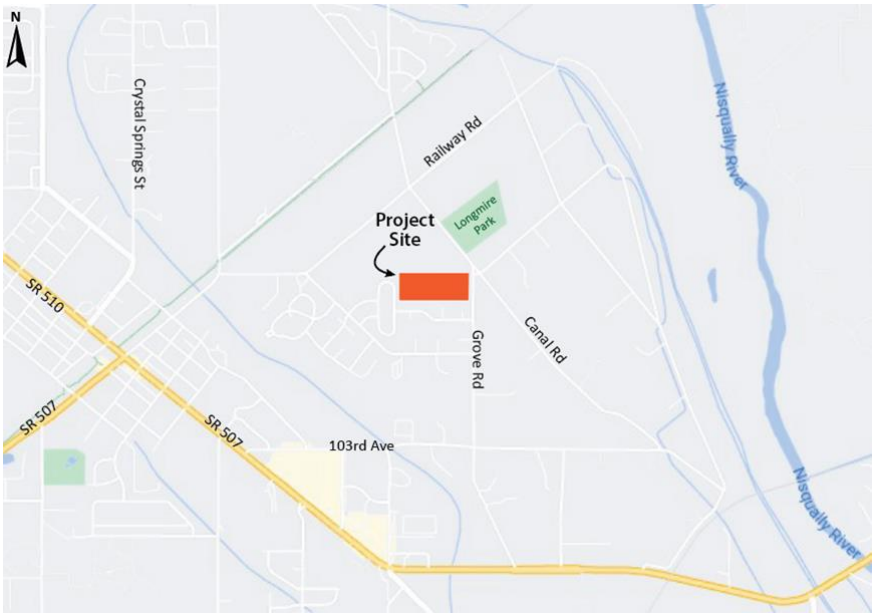
1 Introduction

1.1 Project Overview

Yelm Property Development, LLC is proposing to construct a 75-lot single-family subdivision in Yelm, Washington. **Figure 1** illustrates the site vicinity and the transportation network serving the project area.

Figure 1. Site Vicinity Map



1.2 Study Context

A Traffic Scoping Analysis was prepared and submitted to the City of Yelm on April 10, 2023 which outlined the trip generation and distribution/assignment assumptions. This report has been prepared to provide the necessary traffic analysis and project information for the City of Yelm to use in reviewing the development proposal. The report describes the existing and forecasted operation of the following intersections:

- Railway Road SE at Canal Rd SE
- Crystal Springs St/Edwards Street at Coates St SE
- 1st Street NE/NW Rhoton Road at Railway Road
- Railway Road at Middle Street NW
- Stevens Street at 1st Street NE
- 100th Way SE at Grove Road SE
- 103rd Ave SE at Grove Road SE
- Site Driveway at Grove Road SE
- Yelm Avenue at Grove Road SE

Operational analysis has been prepared for existing 2024 PM peak hour conditions and forecasted 2025 PM peak hour conditions with and without completion of the development.

2 Project Description

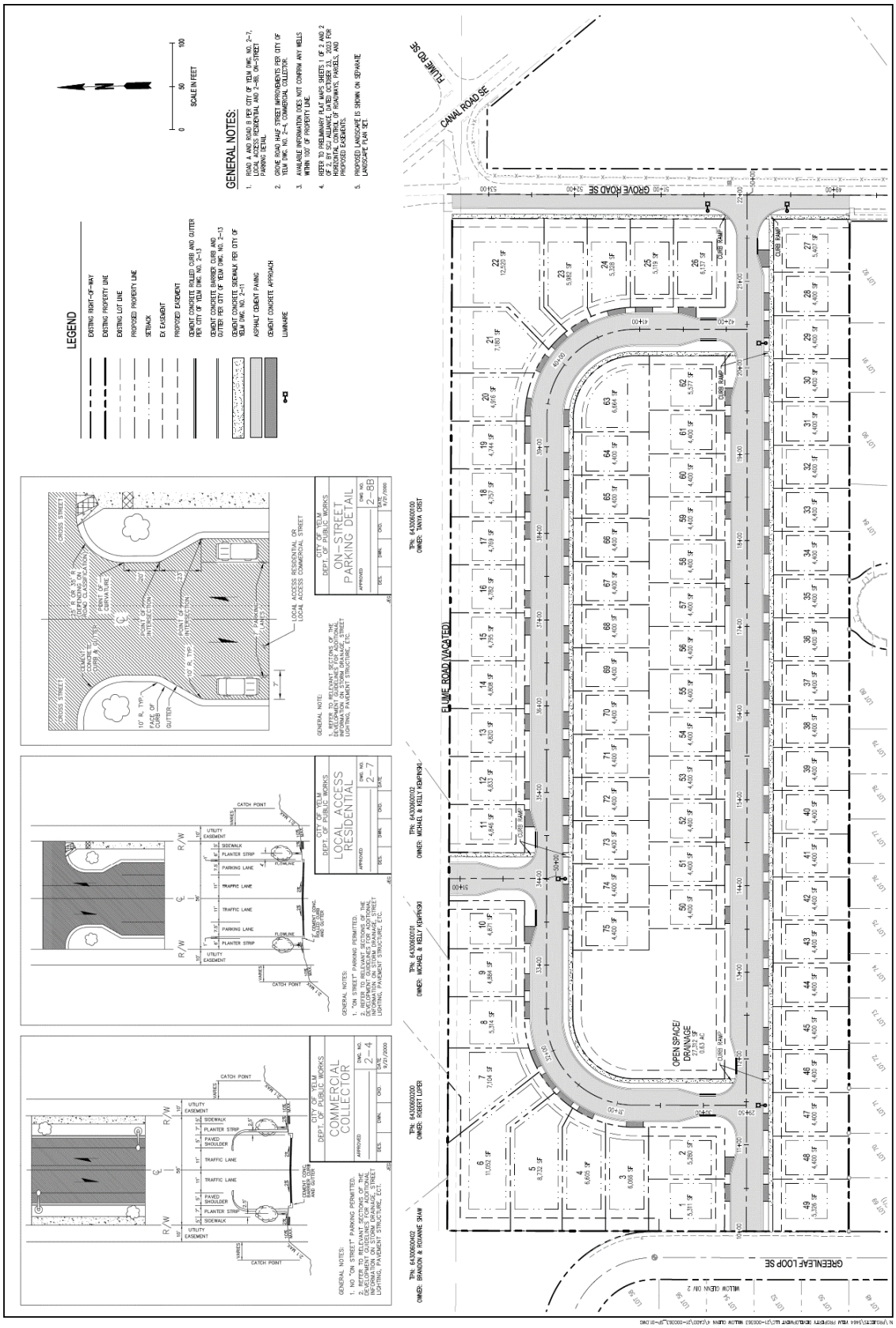
2.1 Development Proposal

The proposed Willow Glenn IV project will redevelop an existing 12.53-acre homesite as a new 75-lot single-family residential plat. The site is located at 9819 Grove Road SE within the City of Yelm urban growth boundary. The site has three existing residential structures and associated outbuildings (shop, garage, etc.) that will be removed. The site is also currently utilized by Yelm Property Development, LLC, and all business operations (structures and equipment) will be removed and or relocated.

Access to the project will be provided by one full access driveway on Grove Road. An additional access is proposed along Greenleaf Loop SE, which is expected to be used for emergency vehicles only. The site is also being designed to allow for a future connection to Canal Road SE to the north. The project is anticipated to open in 2025.

The preliminary site plan is provided on **Figure 2**.

Figure 2. Preliminary Site Plan



3 Existing Conditions

3.1 Area Land Uses

The *Willow Glenn IV* project will be located at 9819 Grove Road SE in Yelm, WA. The site has three existing residential structures and associated outbuildings (shop, garage, etc.) that will be removed. The site is also currently utilized by Yelm Property Development, LLC and all business operations (structures and equipment) will be removed and or relocated. The adjacent land uses are primarily residential. Longmire Community Park is located to the north and Fort Stevens Elementary School is located to the south.

3.2 Roadway Inventory

3.2.1 Grove Road

Grove Road is classified by the City of Yelm as commercial collector. In the project vicinity, Grove Road is a two-lane roadway providing one travel lane in each direction. This roadway has a posted speed limit of 35 mph.

3.2.2 Canal Road

Canal Road is classified by the City of Yelm as commercial collector. Canal Road is a two-lane roadway providing one travel lane in each direction and has a posted speed limit of 35 mph.

3.2.3 Railway Road SE

Railway Road SE is classified by the City of Yelm as neighborhood collector. This roadway provides one travel lane in each direction with a speed limit of 25 mph.

3.2.4 Middle Road SE

Middle Road SE is classified by the City of Yelm as neighborhood collector. Middle Road SE is a two-lane roadway providing one travel lane in each direction and has a posted speed limit of 25 mph.

3.2.5 100th Way SE

100th Way SE is classified by the City of Yelm as local access residential. This roadway provides one travel lane in each direction with a speed limit of 25 mph.

A summary of the existing intersection channelization and control type for each of the study intersections is provided in **Figure 3.**

3.3 Traffic Volume Data

Traffic Count Consultants, TC2, a transportation data collection service, provided evening peak period turning movement counts. The counts were collected between 4:00 and 6:00 PM for the PM peak period at the following locations:

- Railway Road SE at Canal Rd SE
- 1st Street NE/NW Rhoton Road at Railway Road
- Stevens Street at 1st Street NE

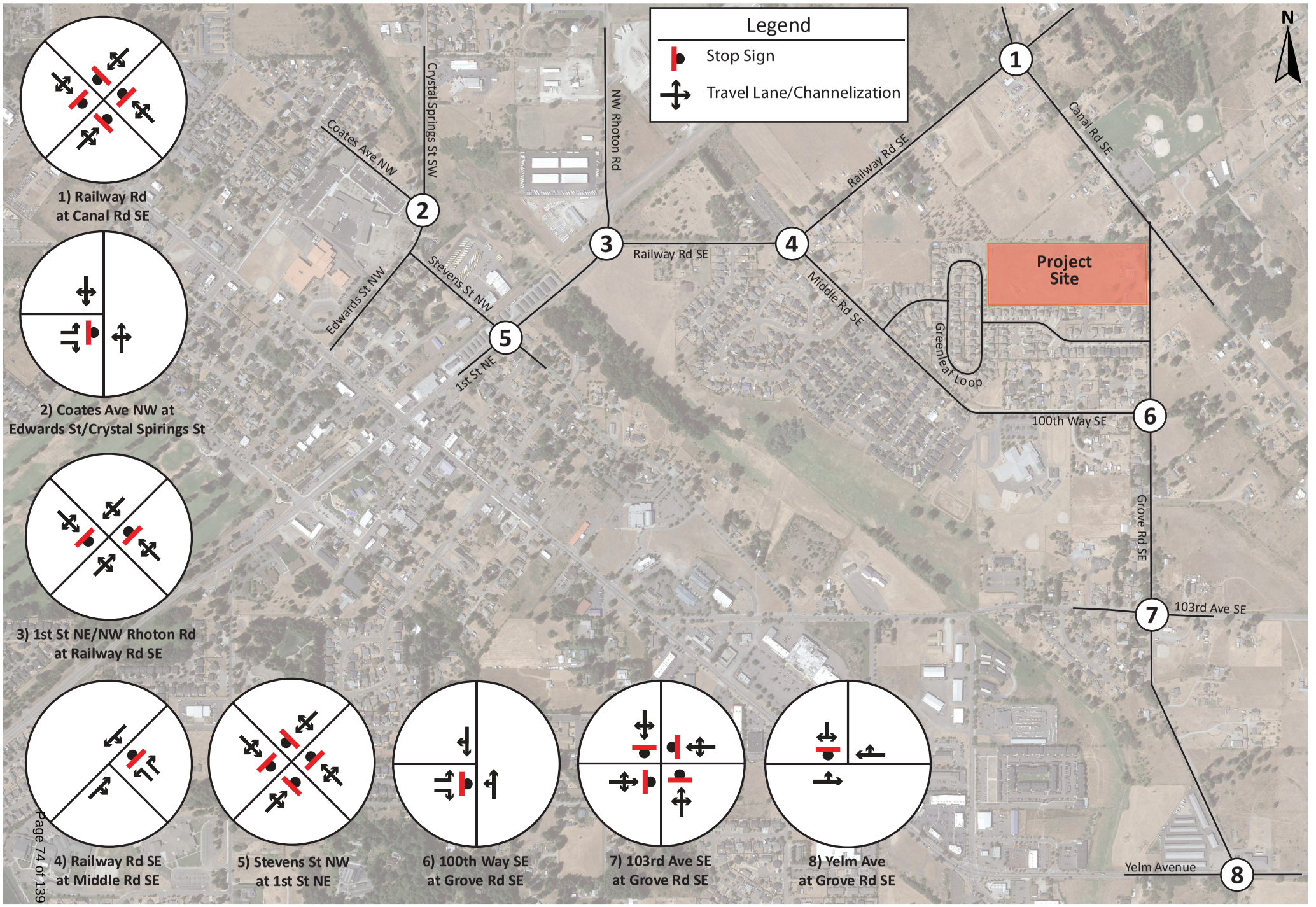
- 100th Way SE at Grove Road SE
- 103rd Avenue SE at Grove Road SE

For the intersection of Crystal Springs St/Edwards Street at Coates Street SE, the counts were collected over a four-hour period between 2:00 and 6:00 PM to capture the school traffic peak as well as the surrounding roadway network peak. The highest hour in the PM peak period, at this location, occurred during the school peak and has been used for the intersection analysis.

The intersection of Railway Road SE at Middle Road SE is included as a study intersection but was not counted. Given the traffic volume collection at both Railway Road SE at Canal Rd SE and 1st Street NE/NW Rhoton Road at Railway Road the turning movement volumes at Railway Road SE at Middle Road SE were able to be calculated to maintain balance between the two endpoint counts.

After an initial review of the TIA the City has asked to also include the intersection of Yelm Avenue (SR 507) at Grove Road. The City collected traffic counts across the city in January of 2024 which included this location and has provided this count for use in the TIA.

The existing 2024 traffic volumes for the study intersections for the PM peak hour are presented in **Figure 4**. The turning movement count diagrams and daily count data are provided in **Appendix A.**



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Willow Glenn IV
Yelm, Washington
Traffic Impact Analysis

Figure 3
Existing Channelization and Intersection Control

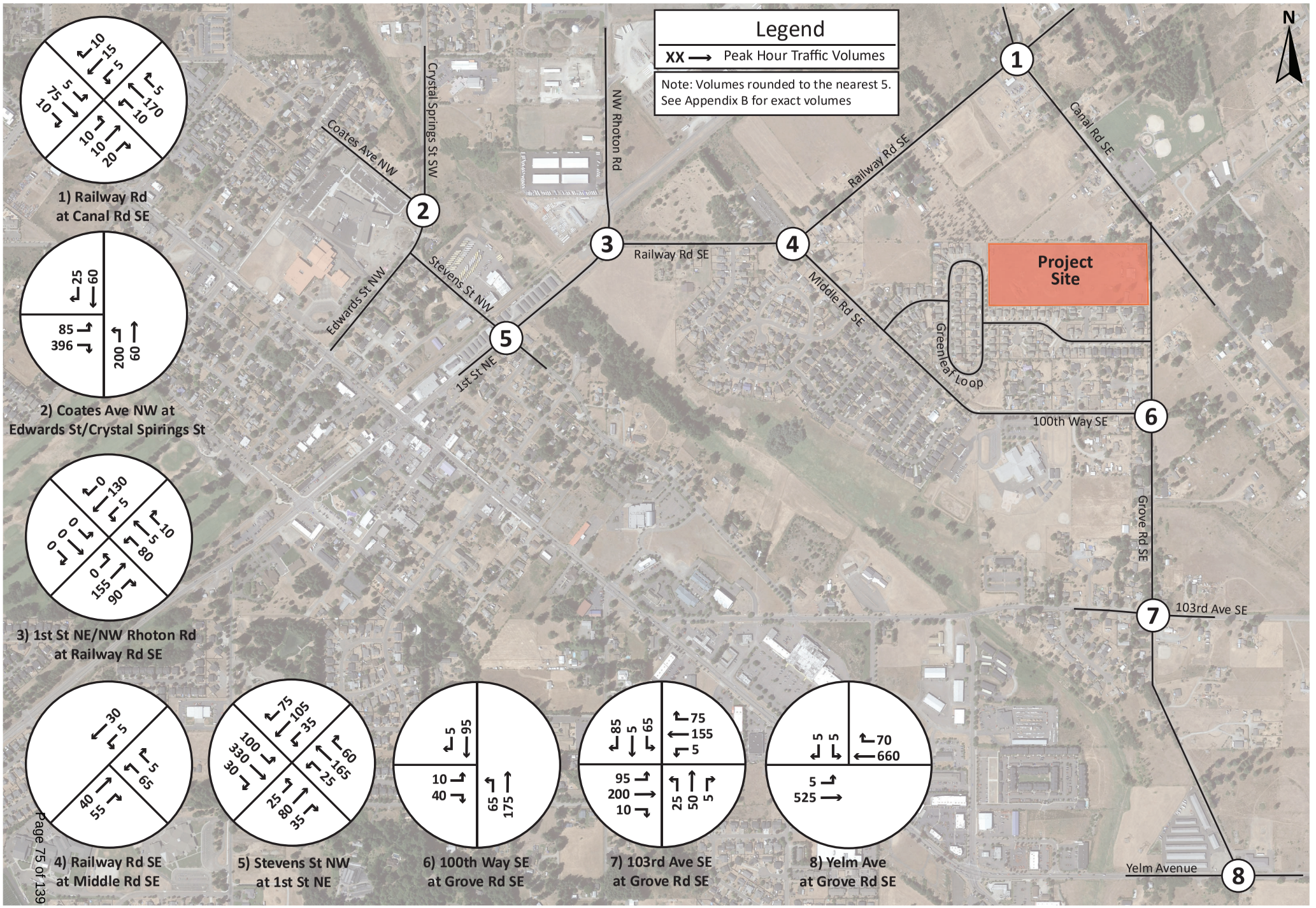

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Figure 4
Existing 2024 Traffic Volumes
PM Peak Hour

3.4 Crash History

The Washington Department of Transportation provides crash data for study area roadways. This data was collected over the five-year span between January 1, 2019 and December 31, 2023. A crash frequency rate per Millions of Entering Vehicles (MEV) was calculated for the study intersections based on the following formula:

$$\text{Crash Rate} = \frac{1{,}000{,}000 \times \text{Total Crashes}}{365 \times \text{Number of Years} \times \text{Average Daily Entering Traffic}}$$

The average daily traffic entering the study intersection was estimated by adding the entering PM peak hour turning movements and multiplying by a factor of 10. We have summarized the crash data for the study intersections in **Table 1**.

Table 1. Existing Crash Severity by Study Intersection

	Intersection	Total Daily Entering Traffic	Total Number of Reported Crashes	Number of Injury Crashes	Average crashes per Year	Crashes per MEV
1	Railway Road SE at Canal Rd SE	3,340	3	1	0.6	0.49
2	Crystal Springs St/Edwards Street at Coates St SE	8,270	9	2	1.8	0.60
3	1st Street NE/NW Rhoton Road at Railway Road	2,000	2	0	0.4	0.55
4	Railway Road at Middle Street NW	1,360	2	0	0.4	0.81
5	Stevens Street at 1st Street NE	10,670	11	6	2.2	0.56
6	100th Way SE at Grove Road SE	3,870	0	0	0	0.00
7	103rd Avenue SE at Grove Road SE	7,650	13	3	2.6	0.93
8	Yelm Avenue SE at Grove Road SE	12,670	10	4	2.0	0.43

None of the study area intersections presented a crash rate greater than 1.0 crashes per million entering vehicles. Three of the 50 reported crashes were classified as a serious injury crash and zero were classified as fatal. The serious injury crashes are described below:

- A serious injury crash was reported at 6:30 pm on February 21, 2021 at the intersection of 103rd Avenue SE at Grove Road SE. The crash involved two vehicles, resulting in one serious injury. One vehicle was traveling straight heading eastbound and the other vehicle was stopped at the stop sign heading westbound. The crash cause was reported as the eastbound vehicle colliding with the westbound vehicle due to the driver being apparently ill.

- A serious injury crash was reported at 3:18 pm on May 16, 2021 at the intersection of Yelm Avenue (SR 507) at Grove Road SE. The crash involved two vehicles, resulting in one serious injury. One vehicle was travelling south on Grove Road and the other westbound on Yelm Avenue. The vehicle on Grove Road was attempting to make a right turn onto Yelm Avenue and was struck by the second vehicle. The crash cause was reported as the Grove Road vehicle not granting RW to the Yelm Avenue vehicle and was flagged as an angle crash.
- A serious injury crash was reported at 6:49 pm on September 28, 2021 at the intersection of Yelm Avenue (SR 507) at Grove Road SE. The crash involved two vehicles, resulting in one serious injury. One vehicle was travelling south on Grove Road and the other westbound on Yelm Avenue. The vehicle on Grove Road was attempting to make a left turn onto Yelm Avenue and was struck by the second vehicle. The crash cause was reported as the Grove Road vehicle not granting RW to the Yelm Avenue vehicle and was flagged as an angle crash.

3.5 Transit and Non-Motorized Facilities

Intercity Transit currently provides transit service in the City of Yelm, via transit route 94, offering connections to Tumwater, Olympia, and Lacey. This route includes several stops along 103rd Avenue and Yelm Avenue. The closest transit stop is located approximately half mile south of the project site along 103rd Avenue.

In the project vicinity, sidewalks are currently only provided along portions of Grove Road SE and 100th Way SE. There are currently no bicycle lanes provided along the roadways within the project vicinity.

4 Project Traffic Characteristics

4.1 Site-Generated Traffic Volumes

The two project-related characteristics having the most effect on area traffic conditions are peak hour trip generation and the directional distribution of traffic volumes on the surrounding roadway network. These are discussed in the following paragraphs.

Site-Generated Traffic Volumes

Vehicle trip generation was calculated using the trip generation rates contained in the 11th edition of the Trip Generation Manual by the *Institute of Transportation Engineers (ITE)*. Single-Family Detached Housing (land use code 210) has been used to calculate the trip generation. For this analysis, the "fitted-curve" equation was used to estimate trips in preference to using the average trip rate as this approach was recommended by ITE.

The trip generation rates used for the PM peak hour trip are shown in **Table 2.**

Table 2. ITE Trip Generation Rates
Single-Family Detached Housing (LUC 210)

Time Period	Unit	Trip Rate	Enter %	Exit %
AM Peak Hour	Dwelling Units	0.76	26%	74%
PM Peak Hour	Dwelling Units	1.01	63%	37%
Daily	Dwelling Units	10.33	50%	50%

The total trip generation expected from this project is calculated by applying the unit measure for each land use category to the appropriate trip generation rate. The trip generation calculations are shown in **Table 3**.

Table 3. Project Trip Generation

Time Period	Units	Total Trips	Enter	Exit
AM Peak Hour	75	57	15	42
PM Peak Hour	75	76	48	28
Daily	75	774	387	387

4.2 Site Traffic Distribution and Assignment

For this study, the directional distribution of traffic to and from the proposed project was estimated using the regional transportation model. The Thurston Regional Planning Council (TRPC) created the area-wide transportation model with cooperation from local jurisdictions within the county. The model, developed using the Emme/4 software package, has been calibrated to represent the existing vehicle travel patterns throughout the entire county.

The *Willow Glenn IV* project is located within TAZ 711 of the regional transportation model. A distribution analysis was performed for this project by conducting a "Select Zone Analysis" for this TAZ. This feature of the Emme/4 software package allows all of the traffic into and out of a particular zone to be isolated and shown separately from the rest of the traffic on the network. This graphically shows the percentage of vehicles currently using each of the available routes into and out of the area. From this information, regional distribution percentages were calculated for future traffic traveling to and from the Willow Glenn IV project.

The regional traffic distribution percentages and site traffic distribution for the PM peak hour are shown on **Figure 5.**

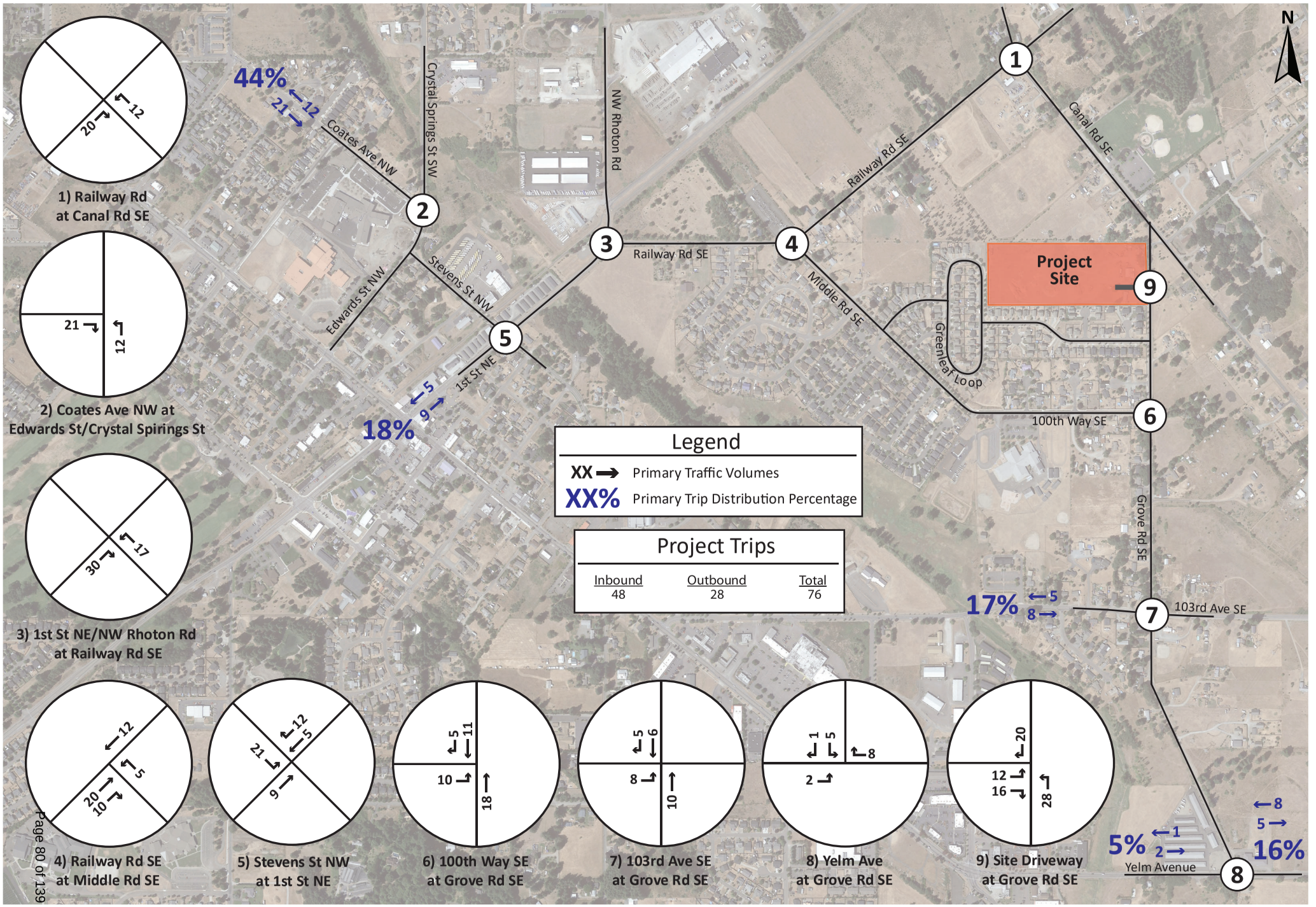

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Figure 5
Site-Generated Traffic Volumes
PM Peak Hour

5 Future Traffic Conditions

5.1 Roadway Network Improvements

The City of Yelm *Six-Year Transportation Improvement Plan* (TIP) and The City of Yelm 2009 *Transportation Plan* were reviewed for roadway improvement projects located within the project vicinity. The following roadway improvement projects were identified:

- Y3 SR 510 to SR 507 (SR 510 Yelm Loop)– Similar to the Y2 south Yelm Loop, the north loop provides a primary alternative for traffic traveling through and around the City Center near Canal Road. Construction of this facility would accommodate traffic associated with the industrial center, including truck traffic generated by this type of development. This project is currently in the design phase with an uncertain opening year.
- Y4C 103rd Avenue between Creek Street and SR 510 Yelm Loop - 103rd Avenue is improved from SR 507 (Yelm Avenue East) to Creek Street. From Creek Street, through the intersection of Grove Road, and to the new intersection of the SR 510 Yelm Loop 103rd Avenue are two resurfaced drive lanes with gravel shoulders. Reconstruction includes two drive lanes with a center turn lane where needed, paved shoulders, curb & gutter, planter strip with street trees and sidewalks for approximately 2800 linear feet. This portion of the "mini-loop' would complete access from the east end of the City to the west end. Fully improved street facilities provide more streamlined and safe traffic movements, and bike and pedestrian access.
- Y10 N.P. Road (Reconstruction) –N.P. Road serves the Yelm Industrial Area as well as providing the primary connection from the proposed SR 510 Yelm Loop main intersection (roundabout) at Wilkensen Road to the City Center. N.P. Road is not currently improved to City standards and does not provide for the turning movements of industrial traffic.
- Y13 Rhoton Road Improvements – 1st Street to Canal Road - Reconstruct and widen roadway to collector standard. Rhoton Road is a main connection from the SR 510 Yelm Loop to the City's Industrial area and downtown.

These projects are expected to provide a benefit to the study area, however none of these projects are expected to be constructed before the completion of the *Willow Glenn IV* project and were not accounted for in the intersection analysis.

5.2 Future Traffic Volumes

Traffic volume forecasts were prepared for PM peak hour conditions for the 2025 project opening year. The future traffic volume forecast includes non-specific background traffic growth, pipeline development traffic and estimated traffic generated by the proposed *Willow Glenn IV* project.

It is anticipated that background growth will occur within the study area and affect traffic volumes. To calculate a background growth rate historic traffic counts on the SR 507 for 2014 and 2018 were identified. An annualized growth rate between the two data points was determined which equates to 1 percent per year. A 1.0 percent annual growth rate (non-compounded) was applied to existing volumes.

The pipeline development projects identified within the vicinity of the *Willow Glenn IV* project include the following:

- The Hutch
- The Summit at Thompson Creek
- Samanth Ridge
- Habitat for Humanity
- Liberty Grove
- 407 E Yelm Coffee
- Country Meadows Estates I
- Country Meadow Estates II
- C&E Commercial
- Armor Storage

The projected 2025 traffic volumes without the *Willow Glenn IV* project are shown on **Figure 6.** The projected 2025 traffic volumes with the *Willow Glenn IV* project are shown on **Figure 7.**

The traffic volume calculations for the study intersections are included in **Appendix B**.

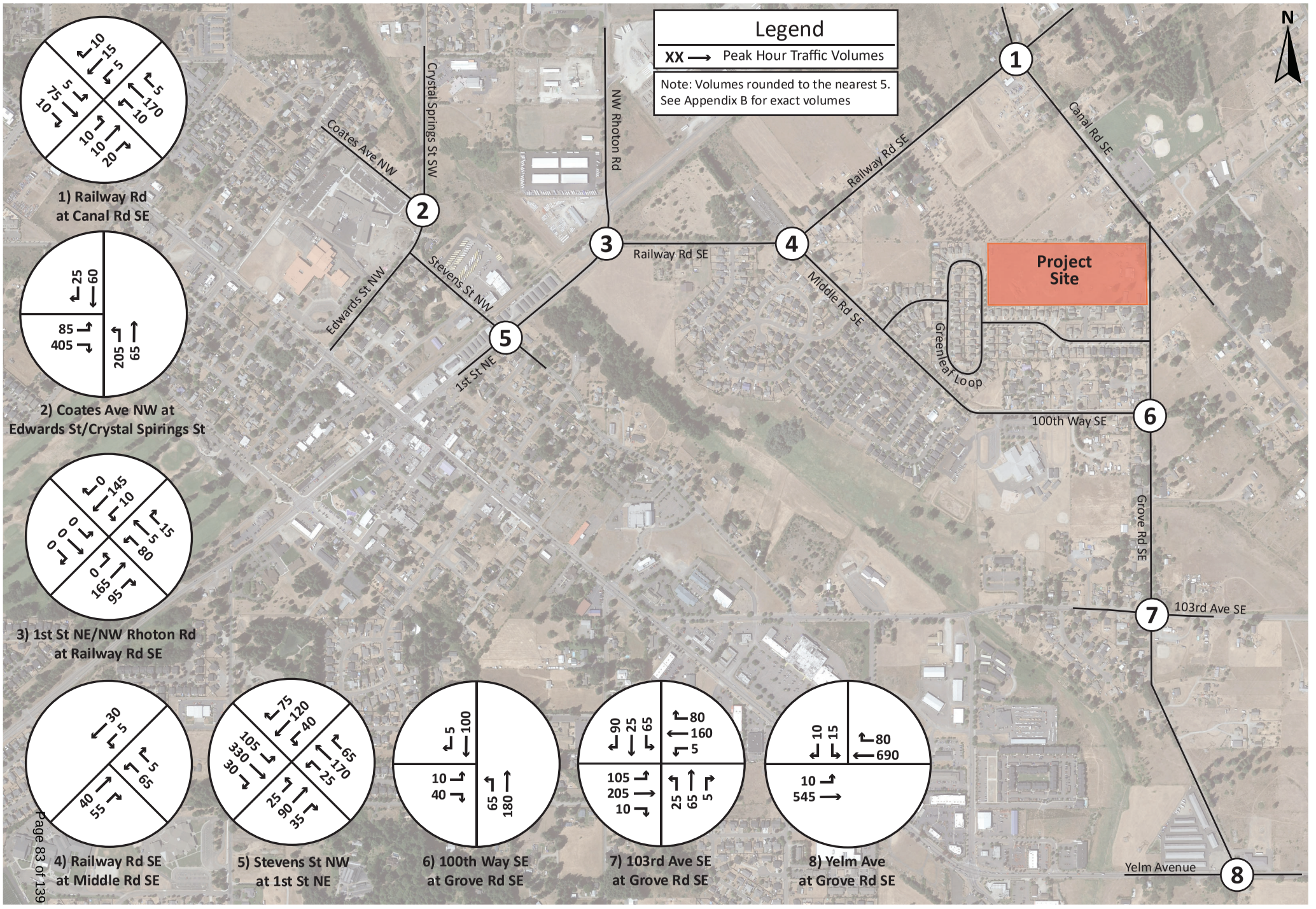

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Figure 6
Projected 2025 Traffic Volumes
PM Peak Hour Without Project

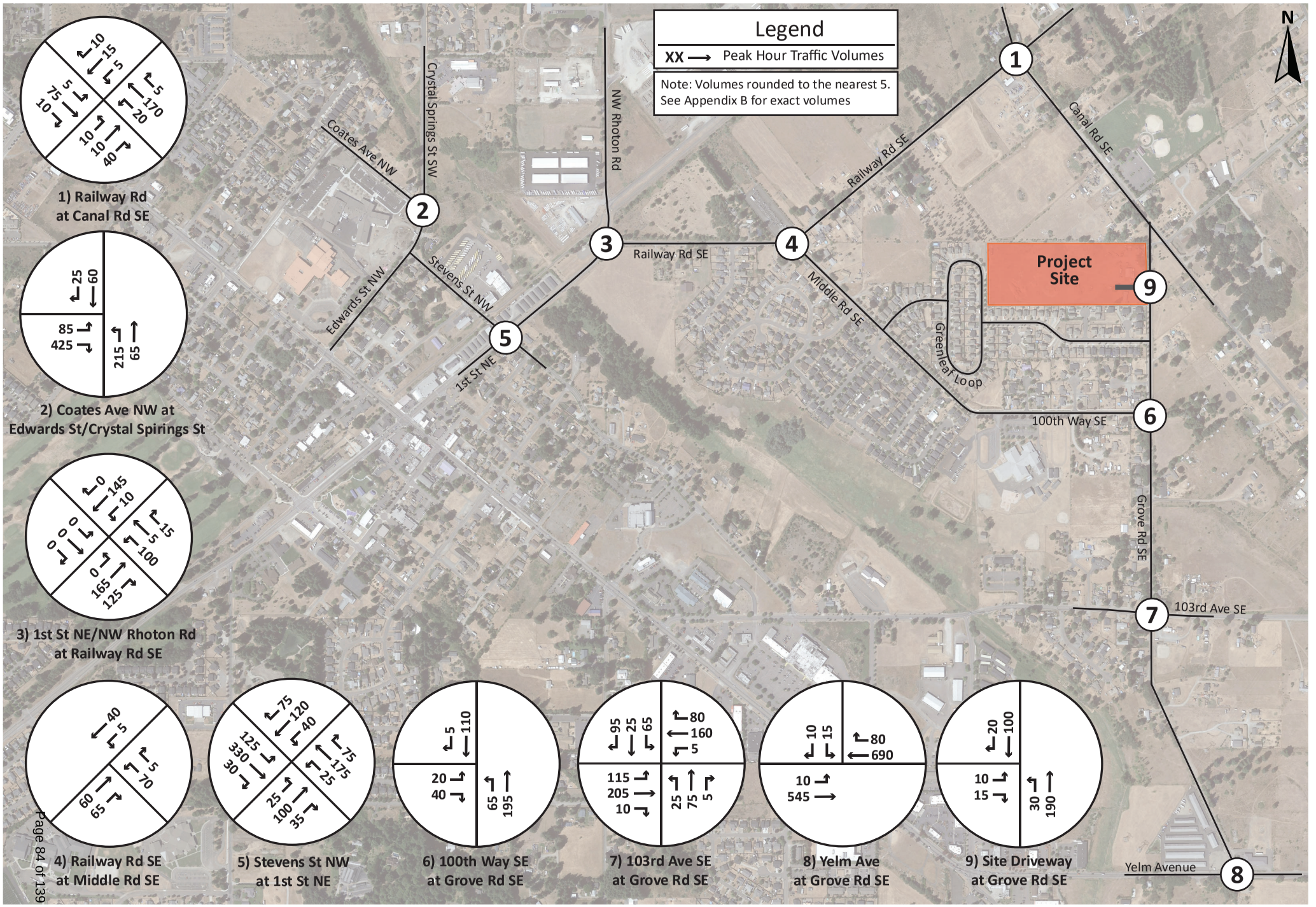

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Figure 7
Projected 2025 Traffic Volumes
PM Peak Hour With Project

6 Traffic Operations Analysis

Traffic analyses were conducted to identify any deficiencies within the study area for the PM peak hour in the 2024 base year and the 2025 project opening year.

6.1 Level of Service

The acknowledged source for determining overall capacity for arterial segments and independent intersections is the current edition of the *Highway Capacity Manual* (HCM). Operations analyses were completed for the base year and projected 2025 PM peak hour traffic volume scenarios for all study intersections. The PM peak hour is the highest traffic flow period during the day in this area. This time period is typically selected for analysis as it reflects the greatest impact of a project on the areas roadway system.

Intersection analysis was performed using Synchro version 11, with the HCM6 output of the Synchro software. The Synchro software packages implement the methodologies described in the current HCM.

The City of Yelm identifies a Level of Service (LOS) C standard in all residential zones and LOS D standard for all commercial and light industrial zones.

6.1.1 Intersection Operations

For signalized intersections, the overall LOS grade represents the weighted average of all movements at the intersection. For intersections under minor street stop-sign control, the LOS of the most difficult movement (typically the minor street left turn) is typically used to represent the intersection level of service. The LOS/delay criteria for stop sign-controlled intersections are different than for signalized intersections because driver expectation is that a signalized intersection is designed to carry higher traffic volumes and experience greater delay. Table 4 summarizes the various levels of delay associated with varying LOS conditions.

Table 4. Level of Service Criteria for Intersections

Level of Service	Signalized Intersection Average Control Delay (seconds/vehicle)	Stop-Controlled Intersection Average Control Delay (seconds/vehicle)
A	≤ 10	≤ 10
B	> 10-20	> 10-15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	> 80	> 50

6.2 Volume to Capacity Ratio

Another measure of the performance of an intersection is the “degree of traffic saturation” which is experienced. This is typically presented as a “volume to capacity” (v/c) ratio. Many factors affect the volume of traffic an intersection can accommodate during a specific time interval. These factors include the number of lanes, lane widths, the type of signal phasing, the number of parking maneuvers on the adjacent street, etc. Based on these factors, the intersection (or individual lane group) is determined to

have a total vehicle carrying capacity "c" for the analysis period. The analysis period volume "v" is compared to the calculated carrying capacity and presented as a ratio. If the v/c ratio is below 1.0, the demand volume is less than maximum capacity. If the v/c ratio is over 1.0, the demand volume exceeds the available capacity.

6.3 Intersection Analysis

The analysis was conducted for the following scenarios:

- Existing 2024 traffic volumes
- Projected 2025 background traffic volumes without the *Willow Glenn IV* project
- Projected 2025 traffic volumes with the *Willow Glenn IV* project

The operational analysis results of the study intersections for the PM peak hour are provided in **Table 5**. The LOS analysis worksheets are included in **Appendix C**.

Table 5. PM Peak Hour Intersection Level of Service

				Base Year 2024		2025 Without Project		2025 With Project	
	Intersection	Control Type	LOS Standard	LOS (delay)	Worst V/C Ratio	LOS (delay)	Worst V/C Ratio	LOS (delay)	Worst V/C Ratio
1	Railway Road SE at Canal Rd SE	AWSC[2]	C	A (8.1)	0.24	A (8.1)	0.24	A (8.3)	0.26
2	Crystal Springs St/Edwards Street at Coates St SE	TWSC[1]	D	C (16.9)	0.45	C (17.3)	0.46	C (18.0)	0.48
3	1st Street NE/NW Rhoton Road at Railway Road	TWSC[1]	D	B (13.3)	0.21	B (14.0)	0.23	C (15.1)	0.29
4	Railway Road at Middle Street NW	TWSC[1]	C	A (9.5)	0.09	A (9.5)	0.09	A (9.7)	0.10
5	Stevens Street at 1st Street NE	AWSC[2]	D	C (19.8)	0.80	C (21.8)	0.83	D (25.6)	0.89
6	100th Way SE at Grove Road SE	TWSC[1]	C	A (9.7)	0.07	A (9.7)	0.07	B (10.4)	0.09
7	103rd Avenue SE at Grove Road SE	AWSC[2]	C	B (12.1)	0.52	B (13.3)	0.57	B (13.9)	0.60
8	Yelm Avenue at Grove Road SE	TWSC[1]	D	C (19.1)	0.04	C (22.9)	0.11	C (24.6)	0.14
9	Site Driveway at Grove Road SE	TWSC[1]	C	N/A	N/A	N/A	N/A	A (9.9)	0.04

1-Two-Way-Stop-Control
2-All-Way-Stop-Control

6.3.1 Railway Road SE at Canal Rd SE

This is a four-leg intersection under all-way stop control. During the PM peak hour this intersection currently operates at LOS A. For the 2025 horizon without and with the project, the intersection is projected to remain at LOS A. This intersection is expected to operate within the City's LOS standard.

6.3.2 Crystal Springs St/Edwards Street at Coates St SE

This is a tee intersection with stop control for the eastbound approach. During the PM peak hour this intersection currently operates at LOS C. For the 2025 horizon year without and with the project, the intersection is projected to remain at LOS C. This intersection is expected to operate within the City's LOS standard.

6.3.3 1st Street NE/NW Rhoton Road at Railway Road

This is a tee intersection with stop control for the eastbound and westbound approaches. During the PM peak hour this intersection currently operates at LOS B and is projected to remain at LOS B for the 2025 horizon year without the project. With the addition of project traffic, this intersection is projected to operate at LOS C. This intersection is within the LOS standard.

6.3.4 Railway Road at Middle Street NW

This is a tee intersection with stop control for the westbound approach. During the PM peak hour this intersection currently operates at LOS A. For the 2025 horizon without and with the project, the intersection is projected to remain at LOS A. This intersection is expected to operate within the City's LOS standard.

6.3.5 Stevens Street at 1st Street NE

This is a four-leg intersection under all-way stop control. During the PM peak hour this intersection currently operates at LOS C and is projected to remain at LOS C for the 2025 horizon year without the project. With the addition of project traffic, this intersection is projected to operate at LOS D. This intersection is within the LOS standard.

6.3.6 100th Way SE at Grove Road SE

This is a tee intersection with stop control for the eastbound approach. During the PM peak hour this intersection currently operates at LOS A and is projected to remain at LOS A for the 2025 horizon year without the project. With the addition of project traffic, this intersection is projected to operate at LOS B. This intersection is within the LOS standard.

6.3.7 103rd Avenue SE at Grove Road SE

This is a four-leg intersection under all-way stop control. During the PM peak hour this intersection currently operates at LOS B. For the 2025 horizon year without and with the project, the intersection is projected to remain at LOS B. This intersection is expected to operate within the City's LOS standard.

6.3.8 Yelm Avenue (SR 507) at Grove Road SE

This is a three-leg intersection under two-way stop control for southbound Grove Road. During the PM peak hour this intersection currently operates at LOS C. For the 2025 horizon year without and with the project, the intersection is projected to remain at LOS C. This intersection is expected to operate within the City's LOS standard.

6.3.9 Site Driveway at Grove Road SE

This intersection will operate under stop control for the eastbound approach. For the 2025 horizon year with the project, the intersection is projected to operate at LOS A. This intersection is within the LOS standard.

7 Mitigation Measures

The proposed project is expected to add 76 PM peak hour vehicle trips to the existing street system at completion. The overall effect of the new trips will be negligible to the function and operations of the transportation network, as documented in this study.

However, the project will be responsible for the following mitigation measures:

7.1 Frontage Improvements

The *Willow Glenn IV* project will construct half street improvements along the project frontage on Grove Road SE.

7.2 City of Yelm Transportation Facilities Charge

The project developer will be required to pay a Transportation Facilities Charge in accordance with the City of Yelm impact fees. The City of Yelm collects traffic impacts fees based on PM peak hour trips generated by a proposed project. The fee will be calculated by the City of Yelm and is paid at time of building permit issuance.

The impact fee calculation for the proposed *Willow Glenn IV* project should consider the existing residential structures that will be removed as a result of the proposed project. The total units to be considered in the fee calculation should be 72 single family dwelling units, which generates 73 PM peak hour trips.

8 Summary and Conclusions

Yelm Property Development, LLC is proposing to construct the *Willow Glenn IV* residential subdivision in Yelm, Washington. The site is located at 9819 Grove Road SE within the City of Yelm urban growth boundary. The proposed project will redevelop the existing 12.53-acre homesite as a new 75-lot single-family residential plat. The existing structures on site will be removed.

Access to the project will be provided by one full access driveway on Grove Road. An additional access is proposed along Greenleaf Loop SE, which is expected to be used for emergency vehicles only. The site is also being designed to allow for a future connection to Canal Road SE to the north.

At full occupancy and operation, the project is estimated to generate approximately 76 trip ends during the PM peak hour. An evaluation of existing 2024 and project opening year (2025) conditions with and without project traffic was performed. All of the study intersections currently operate and are projected to operate within the City of Yelm level of service standard.

As part of the proposed project, half street improvements will be constructed along the project frontage on Grove Road SE. In addition, the project developer will be required to pay a Transportation Facilities Charge in accordance with the City of Yelm impact fees. The actual fee will be calculated by the City of Yelm and is paid at time of building permit issuance.

Appendix A
Traffic Volume Counts

Prepared for: **SCJ Alliance**

Traffic Count Consultants, Inc.

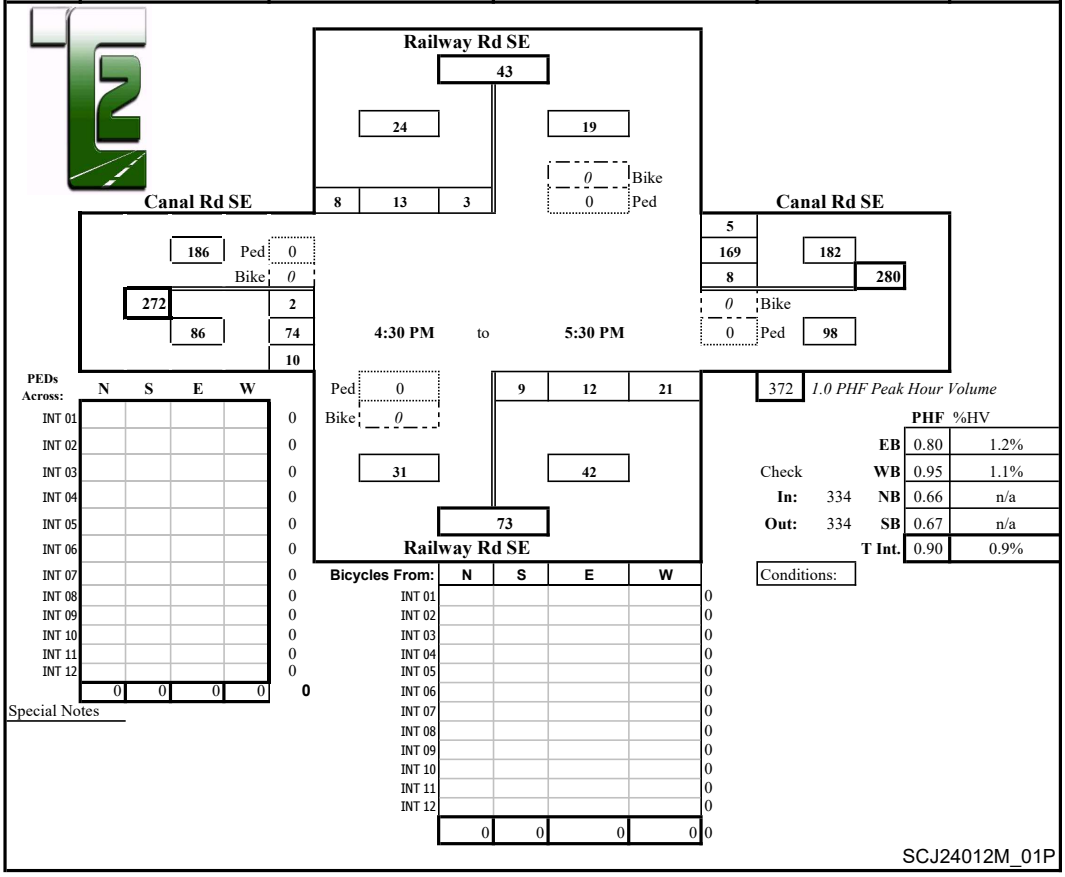
Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Railway Rd SE & Canal Rd SE **Date of Count:** Tue 01/23/2024

Location: Yelm, Washington **Checked By:** Jen

Time Interval	From North on (SB) Railway Rd SE				From South on (NB) Railway Rd SE				From East on (WB) Canal Rd SE				From West on (EB) Canal Rd SE				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	0	1	1	2	4	6	6	3	4	37	1	0	2	13	2	77
4:30 P	0	0	1	3	0	2	4	1	1	1	35	2	0	1	21	0	71
4:45 P	0	0	0	4	0	1	1	4	0	3	39	0	1	0	26	1	79
5:00 P	0	2	3	2	0	2	3	1	2	1	43	1	0	0	17	7	82
5:15 P	0	0	8	1	0	4	3	7	0	1	45	2	0	2	18	2	93
5:30 P	0	1	2	1	0	2	5	9	0	3	42	2	0	0	13	0	80
5:45 P	0	0	4	0	0	2	2	7	0	4	34	0	0	0	13	3	69
6:00 P	0	1	4	0	0	0	1	3	0	2	35	0	0	1	18	0	65
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	4	23	12	2	17	25	38	6	19	310	8	1	6	139	15	616
Peak Hour: 4:30 PM to 5:30 PM																	
Total	0	3	13	8	0	9	12	21	2	8	169	5	1	2	74	10	334
Approach	24				42				182				86				334
%HV	n/a				n/a				1.1%				1.2%				0.9%
PHF	0.67				0.66				0.95				0.80				0.90



Special Notes

SCJ24012M_01P

Prepared for: **SCJ Alliance**

Traffic Count Consultants, Inc.

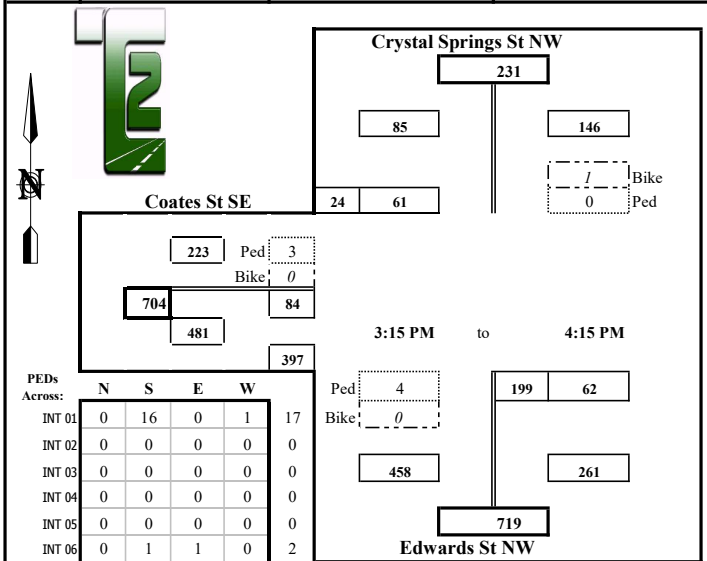
Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Crystal Springs St NW/Edwards St NW & Coates St SE **Date of Count:** Tue 01/23/2024

Location: Yelm, Washington **Checked By:** Jen

Time Interval	From North on (SB) Crystal Springs St NW				From South on (NB) Edwards St NW				From East on (WB) 0				From West on (EB) Coates St SE				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
2:15 P	0	0	4	8	2	46	14	0	0	0	0	0	1	29	0	129	230
2:30 P	1	0	4	11	1	48	10	0	0	0	0	0	2	39	0	98	210
2:45 P	2	0	11	7	2	35	12	0	0	0	0	0	1	12	0	69	146
3:00 P	0	0	5	7	2	37	8	0	0	0	0	0	1	10	0	57	124
3:15 P	0	0	9	10	2	48	16	0	0	0	0	0	2	17	0	62	162
3:30 P	0	0	16	5	1	46	19	0	0	0	0	0	3	17	0	89	192
3:45 P	3	0	22	6	3	58	11	0	0	0	0	0	3	20	0	112	229
4:00 P	0	0	11	6	0	37	14	0	0	0	0	0	2	29	0	107	204
4:15 P	0	0	12	7	1	58	18	0	0	0	0	0	2	18	0	89	202
4:30 P	1	0	8	10	0	35	13	0	0	0	0	0	1	18	0	99	183
4:45 P	1	0	8	8	2	49	14	0	0	0	0	0	0	24	0	89	192
5:00 P	1	0	12	7	0	49	14	0	0	0	0	0	3	24	0	83	189
Total Survey	9	0	122	92	16	546	163	0	0	0	0	0	21	257	0	1083	2263
	Peak Hour: 3:15 PM to 4:15 PM																
Total	3	0	61	24	5	199	62	0	0	0	0	0	10	84	0	397	827
Approach	85				261				0				481				827
%HV	3.5%				1.9%				n/a				2.1%				2.2%
PHF	0.76				0.86				n/a				0.88				0.90



PEDs Across:	N	S	E	W	
INT 01	0	16	0	1	17
INT 02	0	0	0	0	0
INT 03	0	0	0	0	0
INT 04	0	0	0	0	0
INT 05	0	0	0	0	0
INT 06	0	1	1	0	2
INT 07	0	2	0	0	2
INT 08	0	1	3	2	6
INT 09	0	0	0	1	1
INT 10	0	1	0	0	1
INT 11	0	2	1	2	5
INT 12	0	1	0	1	2
	0	24	5	7	36

Bicycles From:	N	S	E	W	
INT 01	0	0	0	1	1
INT 02	0	0	0	0	0
INT 03	0	0	0	0	0
INT 04	0	0	0	0	0
INT 05	0	0	0	0	0
INT 06	0	0	0	0	0
INT 07	0	0	0	0	0
INT 08	0	0	0	0	0
INT 09	1	0	0	0	1
INT 10	0	0	0	0	0
INT 11	0	0	0	0	0
INT 12	0	0	0	0	0
	1	0	0	1	2

920 *1.0 PHF Peak Hour Volume*

		PHF	%HV
	EB	0.88	2.1%
Check	WB	n/a	n/a
In: 827	NB	0.86	1.9%
Out: 827	SB	0.76	3.5%
	T Int.	0.90	2.2%

Conditions:

Special Notes

SCJ24012M_05P_1

Prepared for: **SCJ Alliance**

Traffic Count Consultants, Inc.

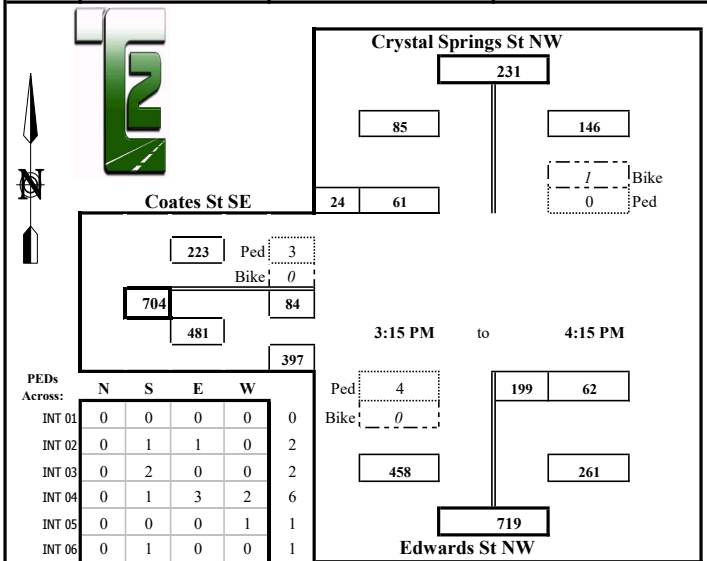
Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Crystal Springs St NW/Edwards St NW & Coates St SE **Date of Count:** Tue 01/23/2024

Location: Yelm, Washington **Checked By:** Jen

Time Interval	From North on (SB) Crystal Springs St NW				From South on (NB) Edwards St NW				From East on (WB) 0				From West on (EB) Coates St SE				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
3:15 P	0	0	9	10	2	48	16	0	0	0	0	0	2	17	0	62	162
3:30 P	0	0	16	5	1	46	19	0	0	0	0	0	3	17	0	89	192
3:45 P	3	0	22	6	3	58	11	0	0	0	0	0	3	20	0	112	229
4:00 P	0	0	11	6	0	37	14	0	0	0	0	0	2	29	0	107	204
4:15 P	0	0	12	7	1	58	18	0	0	0	0	0	2	18	0	89	202
4:30 P	1	0	8	10	0	35	13	0	0	0	0	0	1	18	0	99	183
4:45 P	1	0	8	8	2	49	14	0	0	0	0	0	0	24	0	89	192
5:00 P	1	0	12	7	0	49	14	0	0	0	0	0	3	24	0	83	189
5:15 P	0	0	7	9	0	57	4	0	0	0	0	0	2	20	0	89	186
5:30 P	0	0	10	5	1	37	11	0	0	0	0	0	0	23	0	86	172
5:45 P	1	0	4	10	0	38	14	0	0	0	0	0	0	14	0	65	145
6:00 P	0	0	3	7	0	39	9	0	0	0	0	0	0	16	0	84	158
Total Survey	7	0	122	90	10	551	157	0	0	0	0	0	18	240	0	1054	2214
	Peak Hour: 3:15 PM to 4:15 PM																
Total	3	0	61	24	5	199	62	0	0	0	0	0	10	84	0	397	827
Approach	85				261				0				481				827
%HV	3.5%				1.9%				n/a				2.1%				2.2%
PHF	0.76				0.86				n/a				0.88				0.90



PEDs Across:	N	S	E	W	
INT 01	0	0	0	0	0
INT 02	0	1	1	0	2
INT 03	0	2	0	0	2
INT 04	0	1	3	2	6
INT 05	0	0	0	1	1
INT 06	0	1	0	0	1
INT 07	0	2	1	2	5
INT 08	0	1	0	1	2
INT 09	0	2	0	0	2
INT 10	0	0	0	0	0
INT 11	0	2	1	0	3
INT 12	0	0	0	0	0
	0	12	6	6	24

Bicycles From:	N	S	E	W	
INT 01	0	0	0	0	0
INT 02	0	0	0	0	0
INT 03	0	0	0	0	0
INT 04	0	0	0	0	0
INT 05	1	0	0	0	1
INT 06	0	0	0	0	0
INT 07	0	0	0	0	0
INT 08	0	0	0	0	0
INT 09	0	0	0	0	0
INT 10	0	0	0	0	0
INT 11	0	0	0	0	0
INT 12	0	1	0	0	1
	1	1	0	0	2

Special Notes

916 *1.0 PHF Peak Hour Volume*

		PHF	%HV
	EB	0.88	2.1%
Check	WB	n/a	n/a
In: 827	NB	0.86	1.9%
Out: 827	SB	0.76	3.5%
	T Int.	0.90	2.2%

Conditions:

SCJ24012M_05P_2

Prepared for: **City of Yelm**

Traffic Count Consultants, Inc.

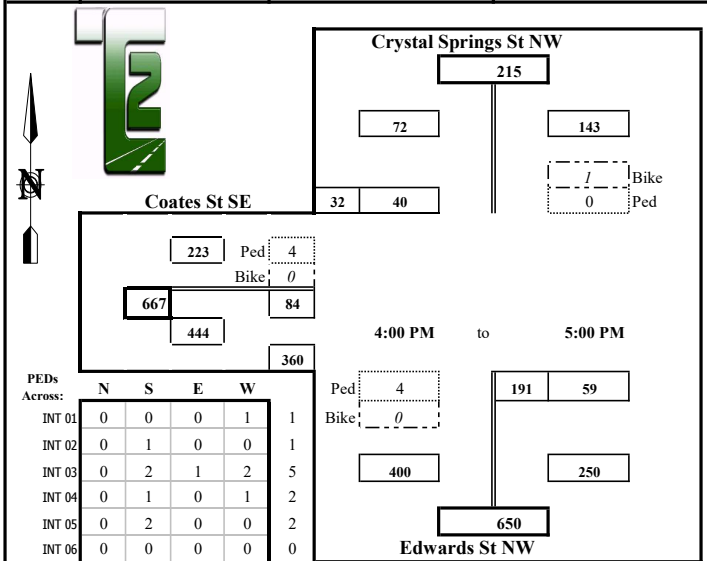
Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Crystal Springs St NW/Edwards St NW & Coates St SE **Date of Count:** Tue 01/23/2024

Location: Yelm, Washington **Checked By:** Jen

Time Interval	From North on (SB) Crystal Springs St NW				From South on (NB) Edwards St NW				From East on (WB) 0				From West on (EB) Coates St SE				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	0	12	7	1	58	18	0	0	0	0	0	2	18	0	89	202
4:30 P	1	0	8	10	0	35	13	0	0	0	0	0	1	18	0	99	183
4:45 P	1	0	8	8	2	49	14	0	0	0	0	0	0	24	0	89	192
5:00 P	1	0	12	7	0	49	14	0	0	0	0	0	3	24	0	83	189
5:15 P	0	0	7	9	0	57	4	0	0	0	0	0	2	20	0	89	186
5:30 P	0	0	10	5	1	37	11	0	0	0	0	0	0	23	0	86	172
5:45 P	1	0	4	10	0	38	14	0	0	0	0	0	0	14	0	65	145
6:00 P	0	0	3	7	0	39	9	0	0	0	0	0	0	16	0	84	158
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	4	0	64	63	4	362	97	0	0	0	0	0	8	157	0	684	1427
Peak Hour: 4:00 PM to 5:00 PM																	
Total	3	0	40	32	3	191	59	0	0	0	0	0	6	84	0	360	766
Approach	72				250				0				444				766
%HV	4.2%				1.2%				n/a				1.4%				1.6%
PHF	0.95				0.82				n/a				0.95				0.95



PEDs Across:	N	S	E	W	
INT 01	0	0	0	1	1
INT 02	0	1	0	0	1
INT 03	0	2	1	2	5
INT 04	0	1	0	1	2
INT 05	0	2	0	0	2
INT 06	0	0	0	0	0
INT 07	0	2	1	0	3
INT 08	0	0	0	0	0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	8	2	4	14

Bicycles From:	N	S	E	W	
INT 01	1	0	0	0	1
INT 02	0	0	0	0	0
INT 03	0	0	0	0	0
INT 04	0	0	0	0	0
INT 05	0	0	0	0	0
INT 06	0	0	0	0	0
INT 07	0	0	0	0	0
INT 08	0	1	0	0	1
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	1	1	0	0	2

808 *1.0 PHF Peak Hour Volume*

		PHF	%HV
	EB	0.95	1.4%
Check	WB	n/a	n/a
In: 766	NB	0.82	1.2%
Out: 766	SB	0.95	4.2%
	T Int.	0.95	1.6%

Conditions:

Special Notes

YLM24003TM_026P

Prepared for: **City of Yelm**

Traffic Count Consultants, Inc.

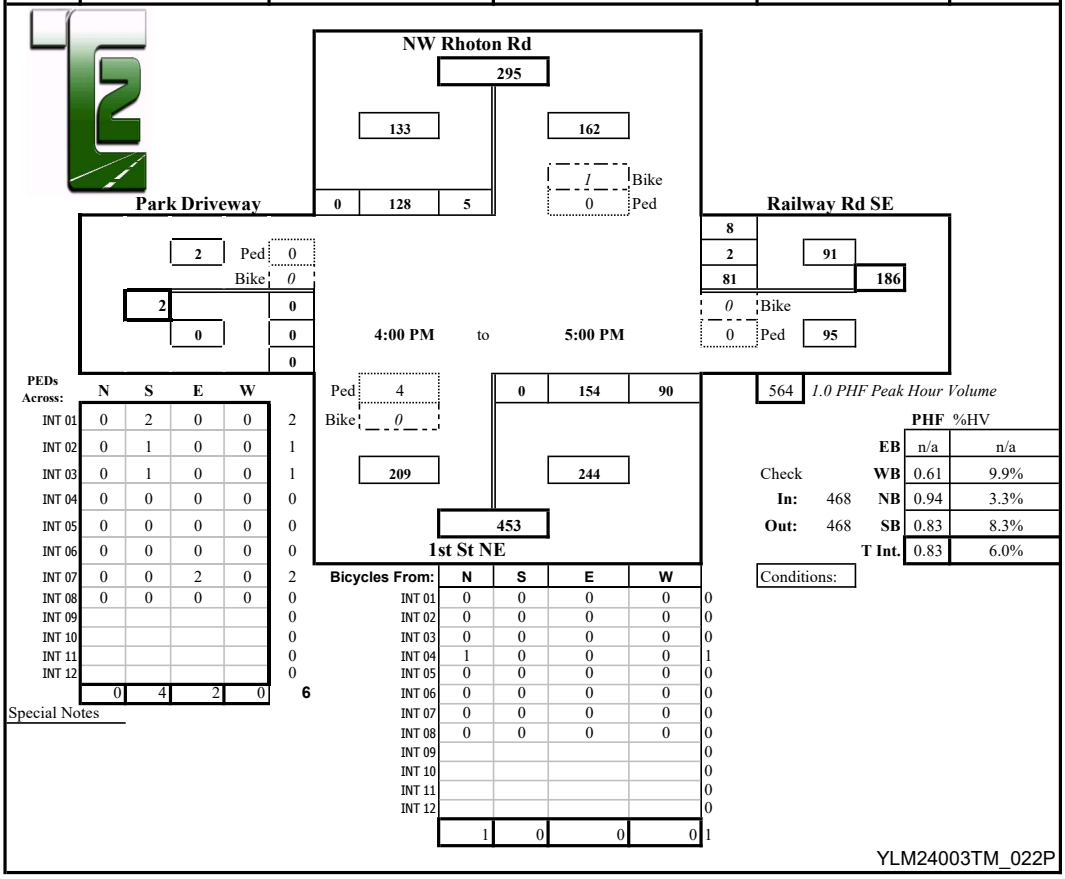
Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: NW Rhoton Rd/1st St NE & Railway Rd SE/Park Driveway **Date of Count:** Tue 01/23/2024

Location: Yelm, Washington **Checked By:** Jen

Time Interval	From North on (SB) NW Rhoton Rd				From South on (NB) 1st St NE				From East on (WB) Railway Rd SE				From West on (EB) Park Driveway				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	2	1	39	0	4	0	46	18	4	33	0	4	0	0	0	0	141
4:30 P	6	2	29	0	2	0	36	29	2	16	0	1	0	0	0	0	113
4:45 P	2	2	28	0	1	0	44	21	0	17	2	3	0	0	0	0	117
5:00 P	1	0	32	0	1	0	28	22	3	15	0	0	0	0	0	0	97
5:15 P	0	3	36	1	1	0	51	23	0	18	0	1	0	0	1	1	135
5:30 P	1	0	27	0	1	0	38	28	0	16	0	0	0	0	1	0	110
5:45 P	0	0	23	0	0	0	28	25	0	15	0	3	0	0	0	0	94
6:00 P	0	1	27	0	0	0	32	26	0	11	0	1	0	0	0	0	98
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	12	9	241	1	10	0	303	192	9	141	2	13	0	0	2	1	905
Peak Hour: 4:00 PM to 5:00 PM																	
Total	11	5	128	0	8	0	154	90	9	81	2	8	0	0	0	0	468
Approach	133				244				91				0				468
%HV	8.3%				3.3%				9.9%				n/a				6.0%
PHF	0.83				0.94				0.61				n/a				0.83



PEDs Across:	N	S	E	W	
INT 01	0	2	0	0	2
INT 02	0	1	0	0	1
INT 03	0	1	0	0	1
INT 04	0	0	0	0	0
INT 05	0	0	0	0	0
INT 06	0	0	0	0	0
INT 07	0	0	2	0	2
INT 08	0	0	0	0	0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	4	2	0	6

Bicycles From:	N	S	E	W	
INT 01	0	0	0	0	0
INT 02	0	0	0	0	0
INT 03	0	0	0	0	0
INT 04	1	0	0	0	1
INT 05	0	0	0	0	0
INT 06	0	0	0	0	0
INT 07	0	0	0	0	0
INT 08	0	0	0	0	0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	1	0	0	0	1

		PHF	%HV
	EB	n/a	n/a
Check	WB	0.61	9.9%
In: 468	NB	0.94	3.3%
Out: 468	SB	0.83	8.3%
	T Int.	0.83	6.0%

Conditions:

Special Notes

YLM24003TM_022P

Prepared for: **City of Yelm**

Traffic Count Consultants, Inc.

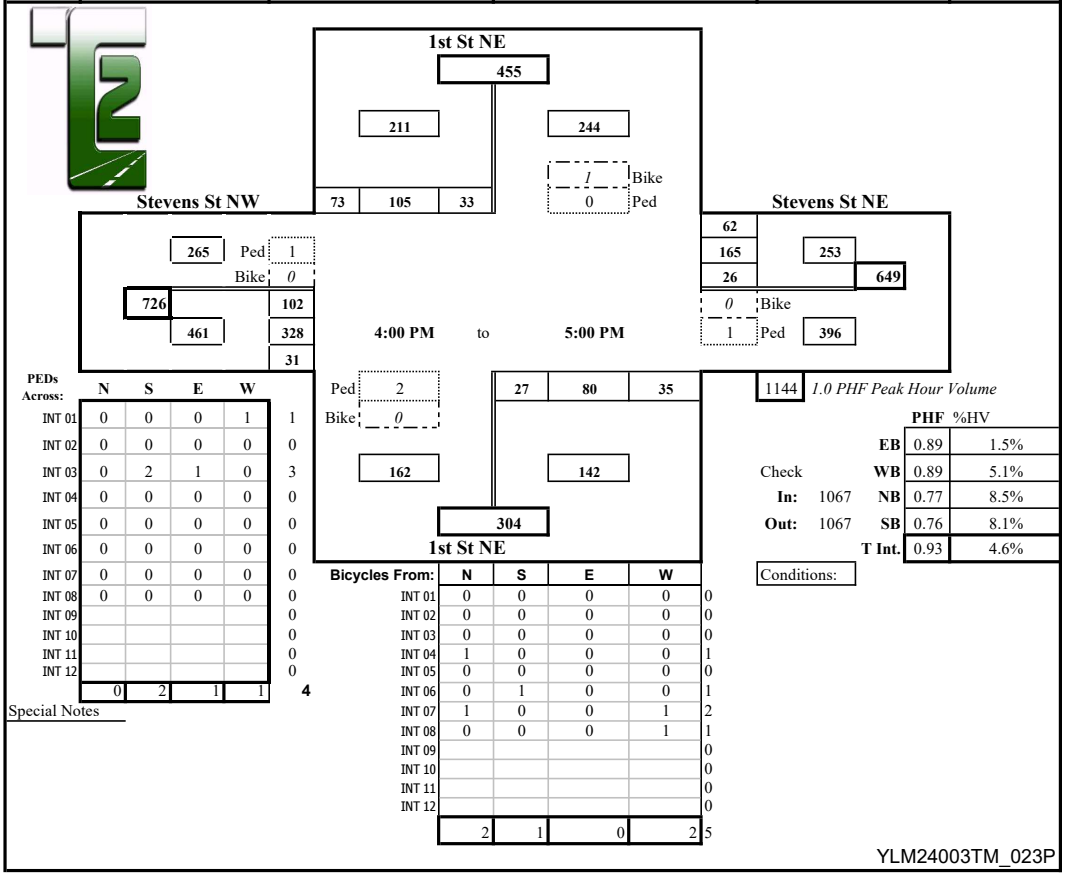
Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: 1st St NE & Stevens St NE/NW **Date of Count:** Tue 01/23/2024

Location: Yelm, Washington **Checked By:** Jen

Time Interval	From North on (SB) 1st St NE				From South on (NB) 1st St NE				From East on (WB) Stevens St NE				From West on (EB) Stevens St NW				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	4	11	36	22	4	10	25	11	6	3	42	17	4	21	80	8	286
4:30 P	8	8	27	14	5	7	23	11	3	4	34	16	0	29	93	7	273
4:45 P	1	9	18	19	2	3	20	5	3	9	46	16	1	26	74	8	253
5:00 P	4	5	24	18	1	7	12	8	1	10	43	13	2	26	81	8	255
5:15 P	0	9	28	21	0	3	30	5	1	13	40	13	1	30	56	6	254
5:30 P	1	3	21	17	0	4	29	7	2	6	32	11	1	27	69	9	235
5:45 P	0	7	21	12	0	1	22	3	0	8	35	6	0	22	55	1	193
6:00 P	0	4	21	12	0	1	17	2	0	11	34	10	0	33	50	7	202
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	18	56	196	135	12	36	178	52	16	64	306	102	9	214	558	54	1951
Peak Hour: 4:00 PM to 5:00 PM																	
Total	17	33	105	73	12	27	80	35	13	26	165	62	7	102	328	31	1067
Approach	211				142				253				461				1067
%HV	8.1%				8.5%				5.1%				1.5%				4.6%
PHF	0.76				0.77				0.89				0.89				0.93



1144 *1.0 PHF Peak Hour Volume*

	PHF	%HV
EB	0.89	1.5%
WB	0.89	5.1%
NB	0.77	8.5%
SB	0.76	8.1%
T Int.	0.93	4.6%

Check In: 1067 Out: 1067

Conditions:

PEDs Across:

	N	S	E	W	
INT 01	0	0	0	1	1
INT 02	0	0	0	0	0
INT 03	0	2	1	0	3
INT 04	0	0	0	0	0
INT 05	0	0	0	0	0
INT 06	0	0	0	0	0
INT 07	0	0	0	0	0
INT 08	0	0	0	0	0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	2	1	1	4

Bicycles From:

	N	S	E	W	
INT 01	0	0	0	0	0
INT 02	0	0	0	0	0
INT 03	0	0	0	0	0
INT 04	1	0	0	0	1
INT 05	0	0	0	0	0
INT 06	0	1	0	0	1
INT 07	1	0	0	1	2
INT 08	0	0	0	1	1
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	2	1	0	2	5

Special Notes

YLM24003TM_023P

Prepared for: **SCJ Alliance**

Traffic Count Consultants, Inc.

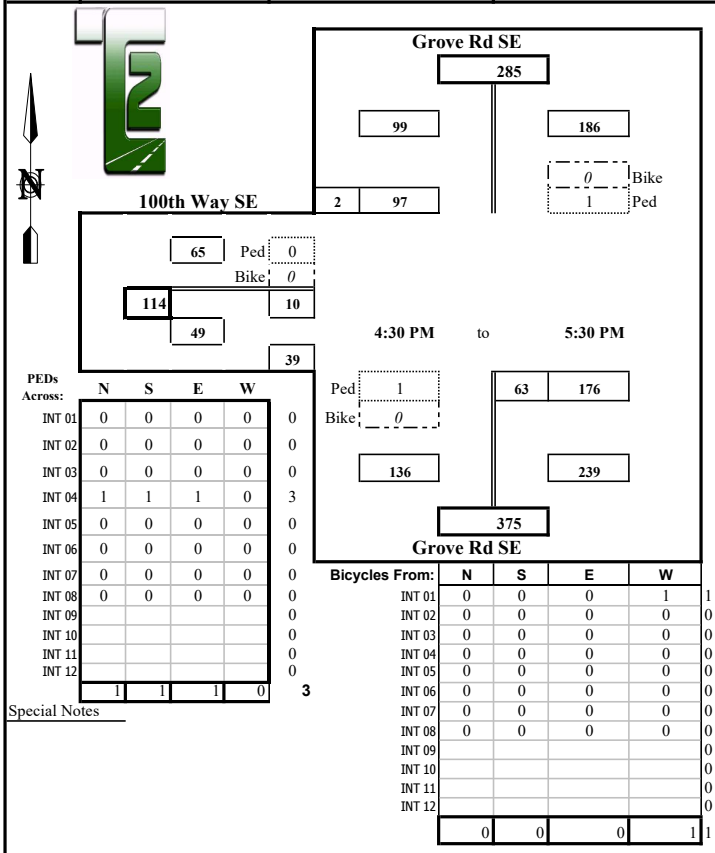
Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Grove Rd & 100th Way SE **Date of Count:** Tue 01/23/2024

Location: Yelm, Washington **Checked By:** Jen

Time Interval	From North on (SB) Grove Rd SE				From South on (NB) Grove Rd SE				From East on (WB) 0				From West on (EB) 100th Way SE				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	1	0	14	1	1	18	33	0	0	0	0	0	2	7	0	16	89
4:30 P	0	0	26	1	2	13	31	0	0	0	0	0	0	3	0	9	83
4:45 P	0	0	26	1	2	21	33	0	0	0	0	0	0	0	0	8	89
5:00 P	0	0	22	0	2	14	50	0	0	0	0	0	0	2	0	11	99
5:15 P	2	0	28	0	1	14	47	0	0	0	0	0	0	6	0	12	107
5:30 P	0	0	21	1	0	14	46	0	0	0	0	0	0	2	0	8	92
5:45 P	0	0	14	0	0	15	35	0	0	0	0	0	0	2	0	3	69
6:00 P	0	0	20	3	0	15	34	0	0	0	0	0	0	1	0	4	77
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	3	0	171	7	8	124	309	0	0	0	0	0	2	23	0	71	705
Peak Hour: 4:30 PM to 5:30 PM																	
Total	2	0	97	2	5	63	176	0	0	0	0	0	0	10	0	39	387
Approach	99				239				0				49				387
%HV	2.0%				2.1%				n/a				n/a				1.8%
PHF	0.88				0.93				n/a				0.68				0.90



PEDs Across:	N	S	E	W	
INT 01	0	0	0	0	0
INT 02	0	0	0	0	0
INT 03	0	0	0	0	0
INT 04	1	1	1	0	3
INT 05	0	0	0	0	0
INT 06	0	0	0	0	0
INT 07	0	0	0	0	0
INT 08	0	0	0	0	0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	1	1	1	0	3

Bicycles From:	N	S	E	W	
INT 01	0	0	0	1	1
INT 02	0	0	0	0	0
INT 03	0	0	0	0	0
INT 04	0	0	0	0	0
INT 05	0	0	0	0	0
INT 06	0	0	0	0	0
INT 07	0	0	0	0	0
INT 08	0	0	0	0	0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	0	0	1	1

428 *1.0 PHF Peak Hour Volume*

			PHF	%HV
		EB	0.68	n/a
Check		WB	n/a	n/a
In:	387	NB	0.93	2.1%
Out:	387	SB	0.88	2.0%
		T Int.	0.90	1.8%

Conditions:

Special Notes

SCJ24012M_02P

Prepared for: **City of Yelm**

Traffic Count Consultants, Inc.

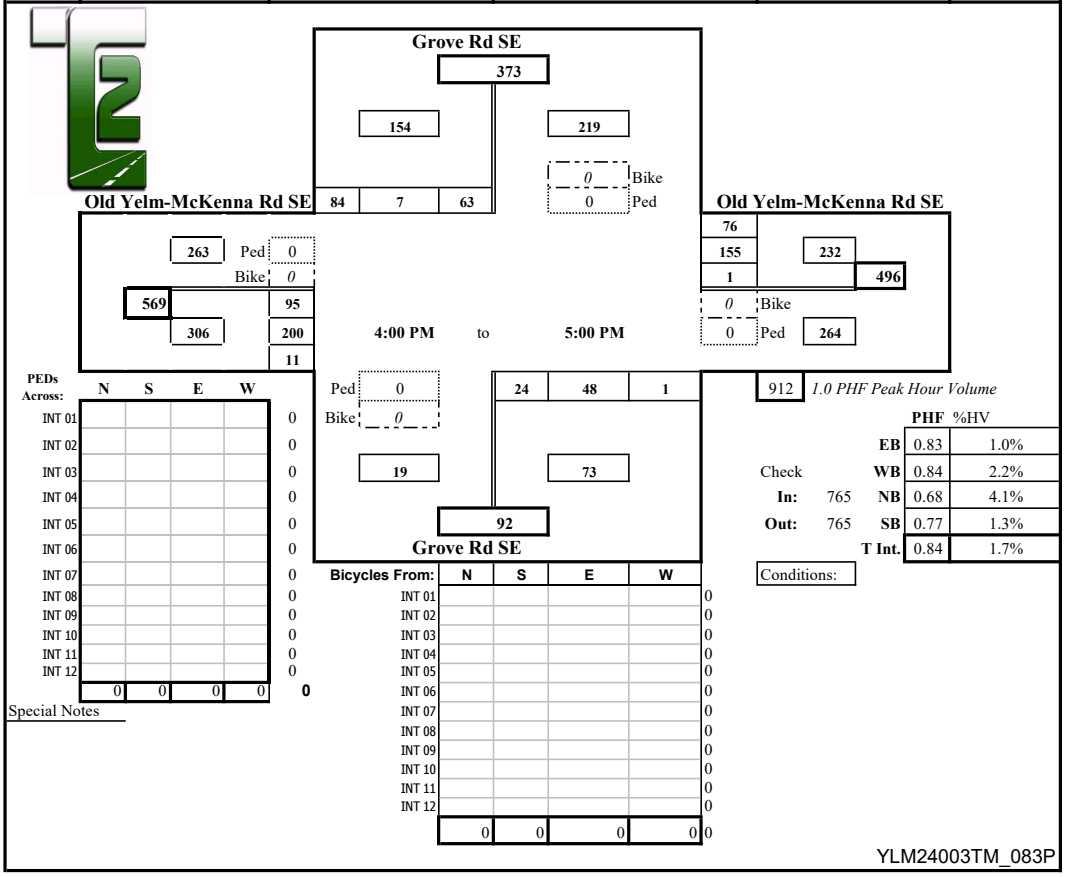
Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Grove Rd SE & Old Yelm- McKenna Rd SE **Date of Count:** Thu 01/18/2024

Location: Yelm, Washington **Checked By:** Jen

Time Interval	From North on (SB) Grove Rd SE				From South on (NB) Grove Rd SE				From East on (WB) Old Yelm-McKenna Rd SE				From West on (EB) Old Yelm-McKenna Rd SE				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	1	19	2	23	0	6	13	0	3	0	33	15	1	33	44	4	192
4:30 P	1	21	1	28	0	6	11	0	0	0	48	21	0	21	68	3	228
4:45 P	0	12	3	17	2	3	6	1	1	0	39	14	2	18	48	2	163
5:00 P	0	11	1	16	1	9	18	0	1	1	35	26	0	23	40	2	182
5:15 P	0	14	1	17	0	9	13	0	0	0	32	20	0	23	45	1	175
5:30 P	0	17	0	11	0	7	10	1	0	0	37	15	0	17	42	2	159
5:45 P	0	8	1	15	0	10	8	0	1	0	40	17	0	17	36	1	153
6:00 P	0	15	2	21	1	10	14	0	0	0	31	22	0	24	38	1	178
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	2	117	11	148	4	60	93	2	6	1	295	150	3	176	361	16	1430
Peak Hour: 4:00 PM to 5:00 PM																	
Total	2	63	7	84	3	24	48	1	5	1	155	76	3	95	200	11	765
Approach	154				73				232				306				765
%HV	1.3%				4.1%				2.2%				1.0%				1.7%
PHF	0.77				0.68				0.84				0.83				0.84



Special Notes

YLM24003TM_083P

Prepared for: **City of Yelm**

Traffic Count Consultants, Inc.

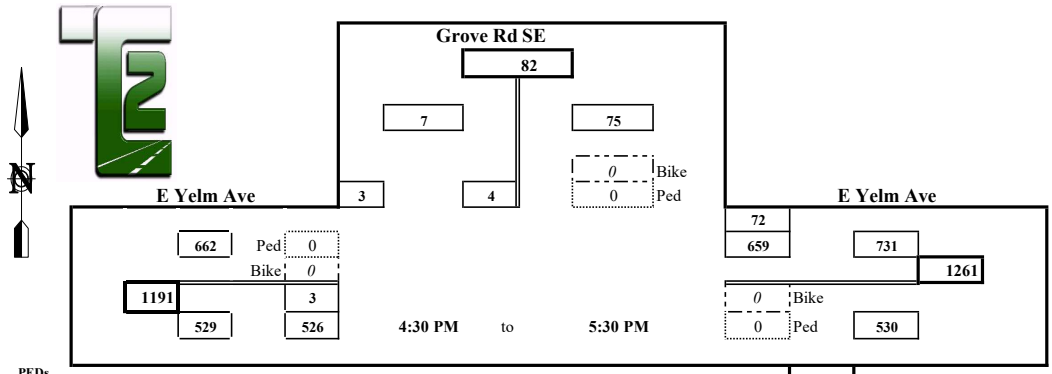
Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Grove Rd SE & E Yelm Ave **Date of Count:** Thu 01/18/2024

Location: Yelm, Washington **Checked By:** Jen

Time Interval	From North on (SB) Grove Rd SE				From South on (NB) 0				From East on (WB) E Yelm Ave				From West on (EB) E Yelm Ave				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	3	0	1	0	0	0	0	4	0	177	18	6	0	134	0	333
4:30 P	0	1	0	2	0	0	0	0	5	0	145	15	6	1	129	0	293
4:45 P	0	2	0	1	0	0	0	0	3	0	162	12	1	0	140	0	317
5:00 P	0	1	0	1	0	0	0	0	0	0	172	23	2	2	120	0	319
5:15 P	0	1	0	1	0	0	0	0	1	0	158	17	5	1	136	0	314
5:30 P	0	0	0	0	0	0	0	0	1	0	167	20	3	0	130	0	317
5:45 P	0	1	0	1	0	0	0	0	1	0	164	18	4	0	113	0	297
6:00 P	0	0	0	3	0	0	0	0	2	0	158	26	1	1	116	0	304
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	9	0	10	0	0	0	0	17	0	1303	149	28	5	1018	0	2494
Peak Hour: 4:30 PM to 5:30 PM																	
Total	0	4	0	3	0	0	0	0	5	0	659	72	11	3	526	0	1267
Approach	7				0				731				529				1267
%HV	n/a				n/a				0.7%				2.1%				1.3%
PHF	0.58				n/a				0.94				0.94				0.99



1332 *1.0 PHF Peak Hour Volume*

	PHF	%HV
EB	0.94	2.1%
WB	0.94	0.7%
NB	n/a	n/a
SB	0.58	n/a
T Int.	0.99	1.3%

Check In: 1267 Out: 1267

Conditions:

PEDs Across:

	N	S	E	W	
INT 01					0
INT 02					0
INT 03					0
INT 04					0
INT 05					0
INT 06					0
INT 07					0
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	0	0	0	0

Special Notes

Bicycles From:

	N	S	E	W	
INT 01	0	0	0	1	1
INT 02	0	0	0	0	0
INT 03	0	0	0	0	0
INT 04	0	0	0	0	0
INT 05	0	0	0	0	0
INT 06	0	0	0	0	0
INT 07	0	0	0	0	0
INT 08	0	0	0	0	0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	0	0	1	1

YLM24003TM_018P

Appendix B
Traffic Volume Calculation Worksheets

SCJ ALLIANCE
CONSULTING SERVICES

Willow Glenn IV

Trip Generation

PM Peak Hour Trip Generation

Site Plan Description	LUC	ITE Description	Variable	Value	Trip Rate	Distribution		Total Trips		
						In	Out	In	Out	Total
Single Family Home Lots	210	Single-Family Detached Housing	Dwelling Units	75.0	1.01	63%	37%	48	28	76
Total								48	28	76

210 Fitted Curve Equation 1.01

AM Peak Hour Trip Generation

Site Plan Description	LUC	ITE Description	Variable	Value	Trip Rate	Distribution		Total Trips		
						In	Out	In	Out	Total
Single Family Home Lots	210	Single-Family Detached Housing	Dwelling Units	75.0	0.76	26%	74%	15	42	57
Total								15	42	57

210 Fitted Curve Equation 0.76

Daily Trip Generation

Site Plan Description	LUC	ITE Description	Variable	Value	Trip Rate	Distribution		Total Trips		
						In	Out	In	Out	Total
Single Family Home Lots	210	Single-Family Detached Housing	Dwelling Units	75.0	10.33	50%	50%	387	387	774
Total								387	387	774

210 Fitted Curve Equation 10.33

SCJ ALLIANCE
CONSULTING SERVICES

Willow Glenn IV

PM Peak Hour Volumes
Growth Rate: 1%

Intersection	Movement		Existing 2024 Volumes	Background 2025 Growth	Total Pipeline Volumes	Baseline 2025 Volumes	Site Generated Total	Projected 2025 Volumes
		L	**2**	0	0	**2**	0	**2**
	EB	T	**74**	1	0	**75**	0	**75**
		R	**10**	0	0	**10**	0	**10**
1		L	**8**	0	0	**8**	12	**20**
Railway Rd SE	WB	T	**169**	2	0	**171**	0	**171**
Canal Rd SE		R	**5**	0	0	**5**	0	**5**
		L	**9**	0	0	**9**	0	**9**
TMC Date: 01/23/2024	NB	T	**12**	0	0	**12**	0	**12**
		R	**21**	0	0	**21**	20	**41**
4:30 - 5:30		L	**3**	0	0	**3**	0	**3**
PHF: 0.90	SB	T	**13**	0	0	**13**	0	**13**
		R	**8**	0	0	**8**	0	**8**
			334			**337**		**369**
		L	**84**	1	0	**85**	0	**85**
	EB	T	**0**	0	0	**0**	0	**0**
		R	**397**	4	2	**403**	21	**424**
2		L	**0**	0	0	**0**	0	**0**
Crystal Springs St/Edwards St	WB	T	**0**	0	0	**0**	0	**0**
Coates St SE		R	**0**	0	0	**0**	0	**0**
		L	**199**	2	2	**203**	12	**215**
TMC Date: 01/23/2024	NB	T	**62**	1	0	**63**	0	**63**
		R	**0**	0	0	**0**	0	**0**
3:15 - 4:15		L	**0**	0	0	**0**	0	**0**
PHF: 0.90	SB	T	**61**	1	0	**62**	0	**62**
		R	**24**	0	0	**24**	0	**24**
			827			**840**		**873**
		L	**0**	0	0	**0**	0	**0**
	EB	T	**0**	0	0	**0**	0	**0**
		R	**0**	0	0	**0**	0	**0**
3		L	**81**	1	0	**82**	17	**99**
1st St NE/NW Rhoton Rd	WB	T	**2**	0	0	**2**	0	**2**
Railway Rd SE		R	**8**	0	6	**14**	0	**14**
		L	**0**	0	0	**0**	0	**0**
TMC Date: 01/23/2024	NB	T	**154**	2	7	**163**	0	**163**
		R	**90**	1	4	**95**	30	**125**
4:00 - 5:00		L	**5**	0	6	**11**	0	**11**
PHF: 0.83	SB	T	**128**	1	17	**146**	0	**146**
		R	**0**	0	0	**0**	0	**0**
			468			**513**		**560**

SCJ ALLIANCE
CONSULTING SERVICES

Willow Glenn IV

PM Peak Hour Volumes
Growth Rate: 1%

Intersection	Movement		Existing 2024 Volumes	Background 2025 Growth	Total Pipeline Volumes	Baseline 2025 Volumes	Site Generated Total	Projected 2025 Volumes
		L	**0**	0	0	**0**	0	**0**
	EB	T	**0**	0	0	**0**	0	**0**
		R	**0**	0	0	**0**	0	**0**
4		L	**65**	1	0	**66**	5	**71**
Railway Rd SE	WB	T	**0**	0	0	**0**	0	**0**
Middle St		R	**5**	0	0	**5**	0	**5**
		L	**0**	0	0	**0**	0	**0**
	NB	T	**40**	0	0	**40**	20	**60**
		R	**55**	1	0	**56**	10	**66**
		L	**0**	0	0	**0**	0	**0**
	SB	T	**30**	0	0	**30**	12	**42**
		R	**5**	0	0	**5**	0	**5**
			200			**202**		**249**
		L	**102**	1	0	**103**	21	**124**
	EB	T	**328**	3	1	**332**	0	**332**
		R	**31**	0	0	**31**	0	**31**
5		L	**26**	0	0	**26**	0	**26**
Stevens St NW	WB	T	**165**	2	2	**169**	5	**174**
1st St NE		R	**62**	1	1	**64**	12	**76**
		L	**27**	0	0	**27**	0	**27**
TMC Date: 01/23/2024	NB	T	**80**	1	9	**90**	9	**99**
		R	**35**	0	0	**35**	0	**35**
4:00 - 5:00		L	**33**	0	5	**38**	0	**38**
PHF: 0.93	SB	T	**105**	1	16	**122**	0	**122**
		R	**73**	1	2	**76**	0	**76**
			1,067			**1,113**		**1,160**
		L	**10**	0	0	**10**	10	**20**
	EB	T	**0**	0	0	**0**	0	**0**
		R	**39**	0	2	**41**	0	**41**
6		L	**0**	0	0	**0**	0	**0**
100th Way SE	WB	T	**0**	0	0	**0**	0	**0**
Grove Rd SE		R	**0**	0	0	**0**	0	**0**
		L	**63**	1	2	**66**	0	**66**
TMC Date: 01/23/2024	NB	T	**176**	2	0	**178**	18	**196**
		R	**0**	0	0	**0**	0	**0**
4:30 - 5:30		L	**0**	0	0	**0**	0	**0**
PHF: 0.90	SB	T	**97**	1	0	**98**	11	**109**
		R	**2**	0	0	**2**	5	**7**
			387			**395**		**439**

SCJ ALLIANCE
CONSULTING SERVICES

Willow Glenn IV

PM Peak Hour Volumes
Growth Rate: 1%

Intersection	Movement		Existing 2024 Volumes	Background 2025 Growth	Total Pipeline Volumes	Baseline 2025 Volumes	Site Generated Total	Projected 2025 Volumes
		L	**95**	1	10	**106**	8	**114**
	EB	T	**200**	2	1	**203**	0	**203**
		R	**11**	0	0	**11**	0	**11**
7		L	**1**	0	0	**1**	0	**1**
103rd Avenue SE	WB	T	**155**	2	1	**158**	0	**158**
Grove Rd SE		R	**76**	1	2	**79**	0	**79**
		L	**24**	0	2	**26**	0	**26**
TMC Date: 01/18/2024	NB	T	**48**	0	15	**63**	10	**73**
		R	**1**	0	0	**1**	0	**1**
4:00 - 5:00		L	**63**	1	1	**65**	0	**65**
PHF: 0.84	SB	T	**7**	0	19	**26**	6	**32**
		R	**84**	1	6	**91**	5	**96**
			765			**830**		**859**
		L	**3**	0	5	**8**	2	**10**
	EB	T	**526**	5	12	**543**	0	**543**
		R	**0**	0	0	**0**	0	**0**
8		L	**0**	0	0	**0**	0	**0**
Yelm Avenue	WB	T	**659**	7	24	**690**	0	**690**
Grove Rd SE		R	**72**	1	7	**80**	6	**86**
		L	**0**	0	0	**0**	0	**0**
TMC Date: 01/18/2024	NB	T	**0**	0	0	**0**	0	**0**
		R	**0**	0	0	**0**	0	**0**
4:30 - 5:30		L	**4**	0	13	**17**	5	**22**
PHF: 0.99	SB	T	**0**	0	0	**0**	0	**0**
		R	**3**	0	7	**10**	1	**11**
			1,267			**1,348**		**1,362**
		L	**0**	0	0	**0**	12	**12**
	EB	T	**0**	0	0	**0**	0	**0**
		R	**0**	0	0	**0**	16	**16**
9		L	**0**	0	0	**0**	0	**0**
Site Driveway	WB	T	**0**	0	0	**0**	0	**0**
Grove Rd SE		R	**0**	0	0	**0**	0	**0**
		L	**0**	0	0	**0**	28	**28**
	NB	T	**186**	2	0	**188**	0	**188**
		R	**0**	0	0	**0**	0	**0**
		L	**0**	0	0	**0**	0	**0**
	SB	T	**99**	1	0	**100**	0	**100**
		R	**0**	0	0	**0**	20	**20**
			285			**288**		**364**

Appendix C
Operations Analysis Worksheets

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	5	75	10	10	170	5	10	10	20	5	15	10
Future Vol, veh/h	5	75	10	10	170	5	10	10	20	5	15	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	6	83	11	11	189	6	11	11	22	6	17	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	SE	NW	NE	SW
Opposing Approach	NW	SE	SW	NE
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SW	NE	SE	NW
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NE	SW	NW	SE
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.8	8.5	7.6	7.7
HCM LOS	A	A	A	A

Lane	NELn1	NWLn1	SELn1	SWLn1
Vol Left, %	25%	5%	6%	17%
Vol Thru, %	25%	92%	83%	50%
Vol Right, %	50%	3%	11%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	185	90	30
LT Vol	10	10	5	5
Through Vol	10	170	75	15
RT Vol	20	5	10	10
Lane Flow Rate	44	206	100	33
Geometry Grp	1	1	1	1
Degree of Util (X)	0.054	0.236	0.115	0.041
Departure Headway (Hd)	4.375	4.125	4.156	4.471
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	824	861	848	805
Service Time	2.376	2.197	2.253	2.473
HCM Lane V/C Ratio	0.053	0.239	0.118	0.041
HCM Control Delay	7.6	8.5	7.8	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.9	0.4	0.1

Intersection	
Int Delay, s/veh	9.2

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	200	60	60	25	85	395
Future Vol, veh/h	200	60	60	25	85	395
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	150	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	222	67	67	28	94	439

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	95	0	-	0	592	81
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	511	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1499	-	-	-	469	979
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	602	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1499	-	-	-	397	979
Mov Cap-2 Maneuver	-	-	-	-	397	-
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	602	-

Approach	NB	SB	SE
HCM Control Delay, s	6	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SELn2	SBT	SBR
Capacity (veh/h)	1499	-	397	979	-	-
HCM Lane V/C Ratio	0.148	-	0.238	0.448	-	-
HCM Control Delay (s)	7.8	0	16.9	11.6	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.9	2.4	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	1	80	5	10	1	155	90	5	130	1
Future Vol, veh/h	1	1	1	80	5	10	1	155	90	5	130	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	1	1	1	10	10	10	3	3	3	8	8	8
Mvmt Flow	1	1	1	96	6	12	1	187	108	6	157	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	422	467	158	414	413	241	158	0	0	295	0	0
Stage 1	170	170	-	243	243	-	-	-	-	-	-	-
Stage 2	252	297	-	171	170	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.2	6.6	6.3	4.13	-	-	4.18	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.59	4.09	3.39	2.227	-	-	2.272	-	-
Pot Cap-1 Maneuver	544	495	890	535	517	779	1416	-	-	1233	-	-
Stage 1	834	760	-	743	690	-	-	-	-	-	-	-
Stage 2	754	669	-	812	743	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	528	492	890	531	514	779	1416	-	-	1233	-	-
Mov Cap-2 Maneuver	528	492	-	531	514	-	-	-	-	-	-	-
Stage 1	833	756	-	742	689	-	-	-	-	-	-	-
Stage 2	735	668	-	806	739	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.1	13.3	0	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1416	-	-	594	548	1233	-	-
HCM Lane V/C Ratio	0.001	-	-	0.006	0.209	0.005	-	-
HCM Control Delay (s)	7.5	0	-	11.1	13.3	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.8	0	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	5	40	55	5	30
Future Vol, veh/h	65	5	40	55	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	5	43	60	5	33

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	116	73	0	0	103	0
Stage 1	73	-	-	-	-	-
Stage 2	43	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	880	989	-	-	1489	-
Stage 1	950	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	877	989	-	-	1489	-
Mov Cap-2 Maneuver	877	-	-	-	-	-
Stage 1	950	-	-	-	-	-
Stage 2	976	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	884	1489	-
HCM Lane V/C Ratio	-	-	0.086	0.004	-
HCM Control Delay (s)	-	-	9.5	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Intersection Delay, s/veh	19.8
Intersection LOS	C

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	25	80	35	35	105	75	100	330	30	25	165	60
Future Vol, veh/h	25	80	35	35	105	75	100	330	30	25	165	60
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	9	9	9	8	8	8	2	2	2	5	5	5
Mvmt Flow	27	86	38	38	113	81	108	355	32	27	177	65
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	NB	SB	SE	NW
Opposing Approach	SB	NB	NW	SE
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SE	NW	SB	NB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NW	SE	NB	SB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	12.3	13.5	28.1	14.3
HCM LOS	B	B	D	B

Lane	NBLn1	NBLn2	NWLn1	SELn1	SBLn1	SBLn2
Vol Left, %	100%	0%	10%	22%	100%	0%
Vol Thru, %	0%	70%	66%	72%	0%	58%
Vol Right, %	0%	30%	24%	7%	0%	42%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	115	250	460	35	180
LT Vol	25	0	25	100	35	0
Through Vol	0	80	165	330	0	105
RT Vol	0	35	60	30	0	75
Lane Flow Rate	27	124	269	495	38	194
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.06	0.25	0.459	0.801	0.082	0.376
Departure Headway (Hd)	8.018	7.283	6.145	5.833	7.8	6.986
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	446	492	586	623	459	515
Service Time	5.78	5.045	4.195	3.833	5.555	4.74
HCM Lane V/C Ratio	0.061	0.252	0.459	0.795	0.083	0.377
HCM Control Delay	11.3	12.5	14.3	28.1	11.3	13.9
HCM Lane LOS	B	B	B	D	B	B
HCM 95th-tile Q	0.2	1	2.4	8	0.3	1.7

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	40	65	175	95	5
Future Vol, veh/h	10	40	65	175	95	5
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	90	90	90	90	90	90
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	11	44	72	194	106	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	447	109	112	0	-	0
Stage 1	109	-	-	-	-	-
Stage 2	338	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.12	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.218	-	-	-
Pot Cap-1 Maneuver	571	947	1478	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	540	947	1478	-	-	-
Mov Cap-2 Maneuver	540	-	-	-	-	-
Stage 1	868	-	-	-	-	-
Stage 2	725	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1478	-	823	-	-
HCM Lane V/C Ratio	0.049	-	0.068	-	-
HCM Control Delay (s)	7.6	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	95	200	10	5	155	75	25	50	5	65	5	85
Future Vol, veh/h	95	200	10	5	155	75	25	50	5	65	5	85
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	1	1	1	2	2	2	4	4	4	1	1	1
Mvmt Flow	113	238	12	6	185	89	30	60	6	77	6	101
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.8	11.5	10.2	10.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	31%	31%	2%	42%
Vol Thru, %	62%	66%	66%	3%
Vol Right, %	6%	3%	32%	55%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	305	235	155
LT Vol	25	95	5	65
Through Vol	50	200	155	5
RT Vol	5	10	75	85
Lane Flow Rate	95	363	280	185
Geometry Grp	1	1	1	1
Degree of Util (X)	0.159	0.523	0.396	0.282
Departure Headway (Hd)	6.003	5.181	5.097	5.506
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	596	697	705	651
Service Time	4.057	3.217	3.137	3.554
HCM Lane V/C Ratio	0.159	0.521	0.397	0.284
HCM Control Delay	10.2	13.8	11.5	10.7
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	0.6	3.1	1.9	1.2

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	525	660	70	5	5
Future Vol, veh/h	5	525	660	70	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	530	667	71	5	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	737	0	-	0	1242	702
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	540	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	868	-	-	-	193	438
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	584	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	868	-	-	-	191	438
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	487	-
Stage 2	-	-	-	-	584	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.09	0	19.06
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	17	-	-	-	266
HCM Lane V/C Ratio	0.006	-	-	-	0.038
HCM Control Delay (s/veh)	9.2	0	-	-	19.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	5	75	10	10	170	5	10	10	20	5	15	10
Future Vol, veh/h	5	75	10	10	170	5	10	10	20	5	15	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	6	83	11	11	189	6	11	11	22	6	17	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	SE	NW	NE	SW
Opposing Approach	NW	SE	SW	NE
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SW	NE	SE	NW
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NE	SW	NW	SE
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.8	8.5	7.6	7.7
HCM LOS	A	A	A	A

Lane	NELn1	NWLn1	SELn1	SWLn1
Vol Left, %	25%	5%	6%	17%
Vol Thru, %	25%	92%	83%	50%
Vol Right, %	50%	3%	11%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	185	90	30
LT Vol	10	10	5	5
Through Vol	10	170	75	15
RT Vol	20	5	10	10
Lane Flow Rate	44	206	100	33
Geometry Grp	1	1	1	1
Degree of Util (X)	0.054	0.236	0.115	0.041
Departure Headway (Hd)	4.375	4.125	4.156	4.471
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	824	861	848	805
Service Time	2.376	2.197	2.253	2.473
HCM Lane V/C Ratio	0.053	0.239	0.118	0.041
HCM Control Delay	7.6	8.5	7.8	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.9	0.4	0.1

Intersection	
Int Delay, s/veh	9.3

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	205	65	60	25	85	405
Future Vol, veh/h	205	65	60	25	85	405
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	150	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	228	72	67	28	94	450

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	95	0	-	0	609	81
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	528	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1499	-	-	-	458	979
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	592	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1499	-	-	-	386	979
Mov Cap-2 Maneuver	-	-	-	-	386	-
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	592	-

Approach	NB	SB	SE
HCM Control Delay, s	5.9	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SELn2	SBT	SBR
Capacity (veh/h)	1499	-	386	979	-	-
HCM Lane V/C Ratio	0.152	-	0.245	0.46	-	-
HCM Control Delay (s)	7.8	0	17.3	11.8	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.9	2.5	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	1	80	5	15	1	165	95	10	145	1
Future Vol, veh/h	1	1	1	80	5	15	1	165	95	10	145	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	1	1	1	10	10	10	3	3	3	8	8	8
Mvmt Flow	1	1	1	96	6	18	1	199	114	12	175	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	470	515	176	459	458	256	176	0	0	313	0	0
Stage 1	200	200	-	258	258	-	-	-	-	-	-	-
Stage 2	270	315	-	201	200	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.2	6.6	6.3	4.13	-	-	4.18	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.59	4.09	3.39	2.227	-	-	2.272	-	-
Pot Cap-1 Maneuver	505	465	870	499	488	764	1394	-	-	1214	-	-
Stage 1	804	738	-	729	680	-	-	-	-	-	-	-
Stage 2	738	657	-	783	721	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	484	459	870	493	482	764	1394	-	-	1214	-	-
Mov Cap-2 Maneuver	484	459	-	493	482	-	-	-	-	-	-	-
Stage 1	803	730	-	728	679	-	-	-	-	-	-	-
Stage 2	713	656	-	772	713	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	14	0	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1394	-	-	556	520	1214	-	-
HCM Lane V/C Ratio	0.001	-	-	0.007	0.232	0.01	-	-
HCM Control Delay (s)	7.6	0	-	11.5	14	8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.9	0	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	5	40	55	5	30
Future Vol, veh/h	65	5	40	55	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	5	43	60	5	33

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	116	73	0	0	103	0
Stage 1	73	-	-	-	-	-
Stage 2	43	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	880	989	-	-	1489	-
Stage 1	950	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	877	989	-	-	1489	-
Mov Cap-2 Maneuver	877	-	-	-	-	-
Stage 1	950	-	-	-	-	-
Stage 2	976	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	884	1489	-
HCM Lane V/C Ratio	-	-	0.086	0.004	-
HCM Control Delay (s)	-	-	9.5	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Intersection Delay, s/veh	21.8
Intersection LOS	C

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	25	90	35	40	120	75	105	330	30	25	170	65
Future Vol, veh/h	25	90	35	40	120	75	105	330	30	25	170	65
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	9	9	9	8	8	8	2	2	2	5	5	5
Mvmt Flow	27	97	38	43	129	81	113	355	32	27	183	70
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	NB	SB	SE	NW
Opposing Approach	SB	NB	NW	SE
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SE	NW	SB	NB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NW	SE	NB	SB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	12.9	14.4	32	15.5
HCM LOS	B	B	D	C

Lane	NBLn1	NBLn2	NWLn1	SELn1	SBLn1	SBLn2
Vol Left, %	100%	0%	10%	23%	100%	0%
Vol Thru, %	0%	72%	65%	71%	0%	62%
Vol Right, %	0%	28%	25%	6%	0%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	125	260	465	40	195
LT Vol	25	0	25	105	40	0
Through Vol	0	90	170	330	0	120
RT Vol	0	35	65	30	0	75
Lane Flow Rate	27	134	280	500	43	210
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.061	0.28	0.493	0.832	0.095	0.417
Departure Headway (Hd)	8.211	7.493	6.346	5.988	7.958	7.166
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	435	478	568	605	450	501
Service Time	5.977	5.258	4.403	4.034	5.717	4.925
HCM Lane V/C Ratio	0.062	0.28	0.493	0.826	0.096	0.419
HCM Control Delay	11.5	13.2	15.5	32	11.6	15
HCM Lane LOS	B	B	C	D	B	B
HCM 95th-tile Q	0.2	1.1	2.7	8.7	0.3	2

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	40	65	180	100	5
Future Vol, veh/h	10	40	65	180	100	5
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	90	90	90	90	90	90
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	11	44	72	200	111	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	458	114	117	0	-	0
Stage 1	114	-	-	-	-	-
Stage 2	344	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.12	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.218	-	-	-
Pot Cap-1 Maneuver	563	941	1471	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	720	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	532	941	1471	-	-	-
Mov Cap-2 Maneuver	532	-	-	-	-	-
Stage 1	863	-	-	-	-	-
Stage 2	720	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1471	-	816	-	-
HCM Lane V/C Ratio	0.049	-	0.068	-	-
HCM Control Delay (s)	7.6	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	13.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	105	205	10	5	160	80	25	65	5	65	25	90
Future Vol, veh/h	105	205	10	5	160	80	25	65	5	65	25	90
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	1	1	1	2	2	2	4	4	4	1	1	1
Mvmt Flow	125	244	12	6	190	95	30	77	6	77	30	107
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15.5	12.4	10.8	11.7
HCM LOS	C	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	26%	33%	2%	36%
Vol Thru, %	68%	64%	65%	14%
Vol Right, %	5%	3%	33%	50%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	95	320	245	180
LT Vol	25	105	5	65
Through Vol	65	205	160	25
RT Vol	5	10	80	90
Lane Flow Rate	113	381	292	214
Geometry Grp	1	1	1	1
Degree of Util (X)	0.195	0.571	0.432	0.34
Departure Headway (Hd)	6.219	5.399	5.327	5.707
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	573	667	674	626
Service Time	4.299	3.456	3.388	3.775
HCM Lane V/C Ratio	0.197	0.571	0.433	0.342
HCM Control Delay	10.8	15.5	12.4	11.7
HCM Lane LOS	B	C	B	B
HCM 95th-tile Q	0.7	3.6	2.2	1.5

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	545	690	80	15	10
Future Vol, veh/h	10	545	690	80	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	551	697	81	15	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	778	0	-	0	1308	737
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	571	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	839	-	-	-	176	418
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	565	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	839	-	-	-	173	418
Mov Cap-2 Maneuver	-	-	-	-	173	-
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	565	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.17	0	22.93
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	32	-	-	-	226
HCM Lane V/C Ratio	0.012	-	-	-	0.112
HCM Control Delay (s/veh)	9.3	0	-	-	22.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	5	75	10	20	170	5	10	10	40	5	15	10
Future Vol, veh/h	5	75	10	20	170	5	10	10	40	5	15	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	6	83	11	22	189	6	11	11	44	6	17	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	SE	NW	NE	SW
Opposing Approach	NW	SE	SW	NE
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SW	NE	SE	NW
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NE	SW	NW	SE
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.9	8.7	7.7	7.7
HCM LOS	A	A	A	A

Lane	NELn1	NWLn1	SELn1	SWLn1
Vol Left, %	17%	10%	6%	17%
Vol Thru, %	17%	87%	83%	50%
Vol Right, %	67%	3%	11%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	60	195	90	30
LT Vol	10	20	5	5
Through Vol	10	170	75	15
RT Vol	40	5	10	10
Lane Flow Rate	67	217	100	33
Geometry Grp	1	1	1	1
Degree of Util (X)	0.079	0.251	0.12	0.042
Departure Headway (Hd)	4.29	4.173	4.309	4.528
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	839	847	835	794
Service Time	2.297	2.264	2.319	2.536
HCM Lane V/C Ratio	0.08	0.256	0.12	0.042
HCM Control Delay	7.7	8.7	7.9	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	1	0.4	0.1

Intersection	
Int Delay, s/veh	9.6

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	215	65	60	25	85	425
Future Vol, veh/h	215	65	60	25	85	425
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	150	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	239	72	67	28	94	472

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	95	0	-	0	631	81
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	550	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1499	-	-	-	445	979
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	578	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1499	-	-	-	371	979
Mov Cap-2 Maneuver	-	-	-	-	371	-
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	578	-

Approach	NB	SB	SE
HCM Control Delay, s	6	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SELn2	SBT	SBR
Capacity (veh/h)	1499	-	371	979	-	-
HCM Lane V/C Ratio	0.159	-	0.255	0.482	-	-
HCM Control Delay (s)	7.9	0	18	12.1	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.6	-	1	2.7	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	1	100	5	15	1	165	125	10	145	1
Future Vol, veh/h	1	1	1	100	5	15	1	165	125	10	145	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	1	1	1	10	10	10	3	3	3	8	8	8
Mvmt Flow	1	1	1	120	6	18	1	199	151	12	175	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	489	552	176	478	477	275	176	0	0	350	0	0
Stage 1	200	200	-	277	277	-	-	-	-	-	-	-
Stage 2	289	352	-	201	200	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.2	6.6	6.3	4.13	-	-	4.18	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.59	4.09	3.39	2.227	-	-	2.272	-	-
Pot Cap-1 Maneuver	491	443	870	485	476	745	1394	-	-	1176	-	-
Stage 1	804	738	-	712	667	-	-	-	-	-	-	-
Stage 2	721	633	-	783	721	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	470	438	870	479	470	745	1394	-	-	1176	-	-
Mov Cap-2 Maneuver	470	438	-	479	470	-	-	-	-	-	-	-
Stage 1	803	730	-	711	666	-	-	-	-	-	-	-
Stage 2	696	632	-	772	713	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	15.1	0	0.5
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1394	-	-	540	501	1176	-	-
HCM Lane V/C Ratio	0.001	-	-	0.007	0.289	0.01	-	-
HCM Control Delay (s)	7.6	0	-	11.7	15.1	8.1	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	1.2	0	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	70	5	60	65	5	40
Future Vol, veh/h	70	5	60	65	5	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	5	65	71	5	43

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	154	101	0	0	136	0
Stage 1	101	-	-	-	-	-
Stage 2	53	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	838	954	-	-	1448	-
Stage 1	923	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	835	954	-	-	1448	-
Mov Cap-2 Maneuver	835	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	966	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	842	1448	-
HCM Lane V/C Ratio	-	-	0.097	0.004	-
HCM Control Delay (s)	-	-	9.7	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Intersection Delay, s/veh	25.6
Intersection LOS	D

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	25	100	35	40	120	75	125	330	30	25	175	75
Future Vol, veh/h	25	100	35	40	120	75	125	330	30	25	175	75
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	9	9	9	8	8	8	2	2	2	5	5	5
Mvmt Flow	27	108	38	43	129	81	134	355	32	27	188	81
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	NB	SB	SE	NW
Opposing Approach	SB	NB	NW	SE
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SE	NW	SB	NB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NW	SE	NB	SB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	13.6	15	39.7	16.8
HCM LOS	B	B	E	C

Lane	NBLn1	NBLn2	NWLn1	SELn1	SBLn1	SBLn2
Vol Left, %	100%	0%	9%	26%	100%	0%
Vol Thru, %	0%	74%	64%	68%	0%	62%
Vol Right, %	0%	26%	27%	6%	0%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	135	275	485	40	195
LT Vol	25	0	25	125	40	0
Through Vol	0	100	175	330	0	120
RT Vol	0	35	75	30	0	75
Lane Flow Rate	27	145	296	522	43	210
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.063	0.31	0.534	0.888	0.098	0.429
Departure Headway (Hd)	8.404	7.699	6.496	6.13	8.167	7.373
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	425	465	553	589	437	486
Service Time	6.186	5.48	4.565	4.186	5.943	5.148
HCM Lane V/C Ratio	0.064	0.312	0.535	0.886	0.098	0.432
HCM Control Delay	11.8	13.9	16.8	39.7	11.8	15.6
HCM Lane LOS	B	B	C	E	B	C
HCM 95th-tile Q	0.2	1.3	3.1	10.4	0.3	2.1

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	40	65	195	110	5
Future Vol, veh/h	20	40	65	195	110	5
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	90	90	90	90	90	90
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	22	44	72	217	122	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	486	125	128	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.12	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.218	-	-	-
Pot Cap-1 Maneuver	542	928	1458	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	707	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	512	928	1458	-	-	-
Mov Cap-2 Maneuver	512	-	-	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	707	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1458	-	730	-	-
HCM Lane V/C Ratio	0.05	-	0.091	-	-
HCM Control Delay (s)	7.6	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	13.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	115	205	10	5	160	80	25	75	5	65	30	95
Future Vol, veh/h	115	205	10	5	160	80	25	75	5	65	30	95
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	1	1	1	2	2	2	4	4	4	1	1	1
Mvmt Flow	137	244	12	6	190	95	30	89	6	77	36	113
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.6	12.8	11.2	12.2
HCM LOS	C	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	35%	2%	34%
Vol Thru, %	71%	62%	65%	16%
Vol Right, %	5%	3%	33%	50%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	330	245	190
LT Vol	25	115	5	65
Through Vol	75	205	160	30
RT Vol	5	10	80	95
Lane Flow Rate	125	393	292	226
Geometry Grp	1	1	1	1
Degree of Util (X)	0.22	0.601	0.442	0.365
Departure Headway (Hd)	6.322	5.509	5.458	5.803
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	564	652	656	615
Service Time	4.413	3.576	3.531	3.881
HCM Lane V/C Ratio	0.222	0.603	0.445	0.367
HCM Control Delay	11.2	16.6	12.8	12.2
HCM Lane LOS	B	C	B	B
HCM 95th-tile Q	0.8	4	2.3	1.7

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	545	690	85	20	10
Future Vol, veh/h	10	545	690	85	20	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	551	697	86	20	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	783	0	-	0	1311	740
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	571	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	835	-	-	-	175	417
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	565	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	835	-	-	-	172	417
Mov Cap-2 Maneuver	-	-	-	-	172	-
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	565	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.17	0	24.56
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	32	-	-	-	214
HCM Lane V/C Ratio	0.012	-	-	-	0.142
HCM Control Delay (s/veh)	9.4	0	-	-	24.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	15	30	190	100	20
Future Vol, veh/h	10	15	30	190	100	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	16	33	207	109	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	391	120	130	0	-	0
Stage 1	120	-	-	-	-	-
Stage 2	272	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	613	932	1455	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	597	932	1455	-	-	-
Mov Cap-2 Maneuver	597	-	-	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	774	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.9	1.03	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	245	-	761	-	-
HCM Lane V/C Ratio	0.022	-	0.036	-	-
HCM Control Delay (s/veh)	7.5	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Olympic Region

PLANS, SPECIFICATIONS AND ESTIMATE
Review Comment Disposition Form

Project Title:	SR 507 – Willow Glenn IV TIA	Job Charge #:	
Reviewer (name & office) Sarah Bogue – Traffic Design Daniel Grimm – Traffic Design Date of Review Comments: 4/18/2024		Responses By: Date of Disposition:	

Comment No.	Sht or Pg.	Review Comment	Status Code	Designer's Response
1.	PDF p13	Please provide tables describing injury severity and collision type by intersection.	A	These additional tables will be prepared
2.	PDF p13	Were there any crashes involving pedestrians or cyclists? If so, please include a brief 1 sentence description of each collision.	C	~~No~~ Grove Road/507 did experience a pedestrian and bike crash. Table and description will be presented during the hearing. AK
3.	Synchro	Please use PHF of 1.0 for future scenarios at WSDOT facilities.	C	Noted. This will improve the projected performance of the intersection, Since the TIA currently projects performance within the City standard, this change will have no material affect for this analysis.
4.	GEN	Please verify that development will be constructed and fully occupied by 2025.	A	That is the expectation at this time.
5.				
6.				
7.				
8.				
9.				
10.				

Status Code Legend: A = Incorporated B = Open/Under Review C = Evaluated/Not Incorporated D = Beyond Scope/Not Evaluated
All "B" and "C" responses require explanatory comments.

FEHR PEERS
950 Pacific Avenue, Suite 1220
Tacoma, WA 98402

Willow Glenn Traffic Impact Analysis Review
Review Comments for City of Yelm
3/18/2024

Reviewer Contact Info:
Michael Adamson, PE
m.adamson@fehrandpeers.com
Nicholas Harris
n.harris@fehrandpeers.com

	Location	Comment
1.	Pg 10	*Note for City: The Consultant uses the ITE fitted curve equation rather than the traditional ITE rate to calculate trips generated, which may not be the best fit for the size of the development. Additionally, we note that the trip generation does not provide any credits for existing use. However, in this case The Consultant's assumptions provide a more conservative trip generation overall, so we do not see this as a concern requiring change. Should the City wish, they could flag the potential credit for existing uses as part of the calculation of impact fees, if those uses were recently occupied.*
2.	Pg 11	*Note for City: Study intersections identified do not include any along SR 507/510, even though portions of project trips will certainly use this roadway, particularly for those heading to/from the east. The current distribution splits the trips such that no one intersection is overly impacted. As noted by The Consultant, this is consistent with what is shown in TRPC's travel demand model. For the most part, we are not concerned about the distribution and any adverse impacts to intersections along SR 510/507. However, in the case of SR 507 & Grove Rd there are sight distance and capacity limitations that would add additional delay and discomfort to any vehicles routing through this intersection to/from the site. Per the trip distribution, ~16 site generated trips will use this intersection. It may be advisable for the City to still require The Consultant to analyze this intersection to ensure project impacts, particularly to delay and safety, are properly accounted for. Should the City opt to require this, we recommend the following comment:* No intersections along SR 510/507 were included as study intersections for this analysis. In reviewing the trip distribution and likely routing of vehicles, this is largely reasonable, as no one intersection along SR 510/507 is anticipated to carry too much site generated traffic. However, due to the limited turning capacity and observed sight distance issues at the intersection of SR 507 & Grove Road, it is likely that the anticipated 16 site trips routing through this intersection will have a disproportionate impact on delay and safety. **It is recommended that the Consultant include the intersection of SR 507 & Grove Rd as an additional study intersection to better quantify the delay and safety impacts of vehicle trips routing to/from the East.**

Reviewer Contact Info:
Michael Adamson, PE
m.adamson@fehrandpeers.com
Nicholas Harris
n.harris@fehrandpeers.com

	Location	Comment
3.	Pg 13	*Note for City: The Consultant derived growth rates for this analysis using pre-pandemic volumes (2014-2018), resulting in a 1% growth rate. Other developments we have reviewed for the City have shown a 4% growth rate in this area, which we have confirmed is reasonable with City Staff. Additionally, The Consultant assumed a 2025 opening year, which seems aggressive for the construction of 75 units considering we are already in 2024.* *All of that being said, they did include trips from 10 pipeline development projects, which provide a more refined view of trip growth and more than account for the more recent growth patterns of the City. We do not recommend any changes, as the final forecast they provide (with the baseline growth and pipeline projects) provides a conservative view of background traffic growth, even considering the 2025 opening year.*
4.	Appendix A	**Appendix A is missing TMC sheets for Railway Rd & Middle Rd SE; The Consultant should make sure these are included in the final submittal.**
5.	Pg 16; Appendix B	*Note for City: In rounding the Projected 2025 Traffic Volumes With Project, The Consultant rounded to the nearest 5, which means that they occasionally rounded down and removed project volume from the network when compared to the raw trip generation plus the baseline forecast. However, we don't anticipate this would impact the LOS outcomes, so no change is recommended.*

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
PO Box 47775, Olympia, WA 98504-7775 • 360-407-6300

February 14, 2024

Andrew Kollar, SEPA Contact
City of Yelm
Community Development Department
PO Box 479
Yelm, WA 98597

Dear Andrew Kollar:

Thank you for the opportunity to comment on the mitigated determination of nonsignificance for the Willow Glenn IV Project (2023.0188) located at 9819 Grove Road Southeast as proposed by Denny Balascio. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

HAZARDOUS WASTE & TOXICS REDUCTION: Garret Peck (564) 669-0836

The applicant proposes to demolish an existing structure(s). In addition to any required asbestos abatement procedures, the applicant should ensure that any other potentially dangerous or hazardous materials present, such as PCB-containing lamp ballasts, fluorescent lamps, and wall thermostats containing mercury, are removed prior to demolition. It is important that these materials and wastes are removed and appropriately managed prior to demolition. It is equally important that demolition debris is also safely managed, especially if it contains painted wood or concrete, treated wood, or other possibly dangerous materials.

Please review the "Dangerous Waste Rules for Demolition, Construction, and Renovation Wastes," posted at Ecology's website, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Dangerous-waste-guidance/Common-dangerous-waste/Construction-and-demolition . The applicant may also contact Rob Rieck of Ecology's Hazardous Waste and Toxics Reduction Program at (360) 407-6751 for more information about safely handling dangerous wastes and demolition debris.

SOLID WASTE MANAGEMENT: Derek Rockett (360) 995-3176

All grading and filling of land must utilize only clean fill. All other materials may be considered solid waste and permit approval may be required from your local jurisdictional health department prior to filling. All removed debris resulting from this project must be disposed of at an approved site. Contact the local jurisdictional health department or Department of Ecology for proper management of these materials.

TOXICS CLEANUP: Thomas Middleton (360) 999-9594

If contamination is suspected, discovered, or occurs during the proposed SEPA action, testing of the potentially contaminated media must be conducted. If contamination of soil or groundwater is readily apparent, or is revealed by testing, Ecology must be notified. Contact the Environmental Report Tracking System Coordinator for the Southwest Regional Office (SWRO) at (360) 407-6300. For assistance and information about subsequent cleanup and to identify the type of testing that will be required, contact Thomas Middleton with the SWRO, Toxics Cleanup Program at the phone number provided above.

Ecology's comments are based upon information provided by the lead agency. As such, they may not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate reviewing staff listed above.

Department of Ecology
Southwest Regional Office

(JKT:202400437)

cc: Garret Peck, HWTR
Derek Rockett, SWM
Thomas Middleton, TCP

NISQUALLY INDIAN TRIBE
Tribal Historic Preservation Office
4820 She-Nah-Num Drive S.E.
Olympia, Washington 98513
360.456.5221 (main)
877.768.8886 (toll free)
www.nisqually-nsn.gov

February 2, 2024

To: Andrew Kollar, Assistant Planner
City of Yelm
Public Services Department
901 Rhoton Rd SE
Yelm, WA 98597

Re: 2023.0992.SP0007

The Nisqually Indian Tribe's THPO has reviewed the notice of application that you provided for the above-named project and has no specific comments or concerns at this time. Please keep us informed if there are any Inadvertent Discoveries of Archaeological Resources/Human Burials.

Although the Nisqually Indian Tribe doesn't have any specific concerns at this time, we respect the traditional cultural knowledge of affected tribes and support their opinions on this matter as well.

Sincerely,

Brad Beach, THPO
Nisqually Indian Tribe
360-528-1084
360-456-5221 ext 1277
beach.brad@nisqually-nsn.gov

cc: Annette Bullchild, Director, Nisqually Indian Tribe

Andrew Kollar

From: Lauren Whybrew <lauren.whybrew@orcaa.org>
Sent: Monday, February 5, 2024 9:35 AM
To: Andrew Kollar
Cc: Rob Wyland
Subject: [External]ORCAA Comment on SEPA# 202400437; File# 2023.0188
Attachments: 2023.0992.SP0007 WILLOW GLENN IV SEPA CHECKLIST.pdf

Good morning,

Olympic Region Clean Air Agency (ORCAA) recently reviewed a notice regarding the Willow Glenn IV proposal, located at 9819 Grove Road SE in Yelm, WA. The project proposes the demolition of all existing structures, including:

- One single-family residence (approx. 988 sf)
- Two mobile homes (approx. 1500 sf)
- One barn (approx. 3,456 sf)
- Four sheds (approx. 350 sf, 65 sf, 80 sf, 90 sf)
- One well house (approx. 70 sf)

Olympic Region Clean Air Agency (ORCAA) has the following comments for the applicant:

ORCAA regulations require an asbestos survey for all demolition projects. Demolition projects by definition also include renovations performed to load-bearing structural members on the current building as part of a remodel. Prior to any demolition project, the following must be completed:

- A good faith asbestos survey must be conducted on the structure by a certified Asbestos Hazardous Emergency Response Act (AHERA) building inspector;
- If asbestos is found during the survey, an ORCAA Asbestos Removal Notification must be completed and all asbestos containing material must be properly removed prior to the demolition; and,
- If the structure is 120 sq. ft. or greater, an ORCAA Demolition Notification must be submitted regardless of the results of the asbestos survey. There is a mandatory 14-day waiting period after ORCAA receives notification, so we recommend the applicant complete the Demolition Notification promptly after receiving the survey.

**These requirements are specific to ORCAA and are not synonymous with any city or county permitting jurisdiction requirements*

Helpful Links:

A list of certified asbestos contractors is available at https://smex-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.orcaa.org%2fasbestos%2ddemolition%2fasbestos%2dservice%2dproviders%2f&umid=e201af28-1d91-414a-8def-8eedfa9a3f0a&auth=bc21d8ac6afe3205692fe0095e437a27b99ee6e6-315a4871619431dc3a18007bf8e5eb74f11ec829

The Demolition Notification form is available at https://smex-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.orcaa.org%2fasbestos%2ddemolition%2fasbestos%2dforms%2dresources%2fdemolition%2dnotification%2dform%2f&umid=e2

01af28-1d91-414a-8def-8eedfa9a3f0a&auth=bc21d8ac6afe3205692fe0095e437a27b99ee6e6-96e0e2a21552acd3dca7c26864271ca011c845ff

If applicable, the Contractor Asbestos Removal Application is available at https://smex-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.orcaa.org%2fasbestos%2ddemolition%2fasbestos%2dforms%2dresources%2fdemolition%2dnotification%2dform%2f&umid=e201af28-1d91-414a-8def-8eedfa9a3f0a&auth=bc21d8ac6afe3205692fe0095e437a27b99ee6e6-96e0e2a21552acd3dca7c26864271ca011c845ff

If you have any questions or concerns regarding the process, please contact Rob Wyland at robert.wyland@orcaa.org or by calling ORCAA's main office at 360-539-7610.

Thank you,

Lauren Whybrew, Engineer II

Olympic Region Clean Air Agency - "Clean Air is Everyone's Business!"
2940 Limited Lane NW · Olympia WA 98502 · www.orcaa.org
(360) 539-7610 ext. 107 · 1-800-422-5623