



NOTICE OF LAND USE APPLICATION IN YOUR AREA

Date of Mailing of this Notice: 07/17/2024

Notice Mailed To: Property owners within 300 feet of the subject property
Community Planning Organizations (CPO)
Interested Agencies

File Number: Z0151-24

Application Type: Design Review

Proposal: Application for a Design Review permit to construct a new 2,700 square foot Chick Fil A drive-thru restaurant. Site improvements include removal of the southern portion of the existing retail/office commercial building, repaving and restriping of the parking lot, new curbing and traffic marking, a reconstructed trash enclosure area, and new perimeter and interior parking lot landscape planters. The project will be presented to the Design Review Committee (DRC) for review and feedback on August 20 at 8:30AM on Zoom. The public is welcome to attend this meeting and provide comment. Please see the DRC website at <https://www.clackamas.us/planning/designreview.html>

Applicable Zoning and Development Ordinance (ZDO) Criteria: In order to be approved, this proposal must comply with ZDO Sections 202, 510, 827, 1001, 1002, 1003, 1005, 1006, 1007, 1009, 101, 1015, 1021, 1102, 1307, Ch. 10 of Comprehensive Plan. The ZDO criteria for evaluating this application can be viewed at <https://www.clackamas.us/planning/zdo.html>

Applicant: SCHWARTZ, STEVE

Property Owner: LOCKEHOUSE RETAIL GROUP INC

Site Address: 13843 SE MCLOUGHLIN BLVD
MILWAUKIE, OR 97222

Location: Corner of SE Courtney and SE McLoughlin. Former Eagle Bargain Outlet.

Assessor's Map and Tax Lot: 21E01CA02900
21E01CA03100

Zoning: C3-GENERAL COMMERCIAL

Staff Contact: Benjamin Blessing 503 742 4521

E-mail: BBlessing@clackamas.us

Community Planning Organization: The following recognized Community Planning Organization (CPO) has been notified of this application. This organization may develop a recommendation. You are welcome to contact the CPO and attend their meeting on this matter, if one is planned.

OAK GROVE COM COUNCIL
JOSEPH EDGE (503) 974-6422
ACROSS@4GDEV.COM

If this CPO is currently inactive and you are interested in becoming involved in land use planning in your area, please contact Clackamas County Community Engagement at communityinvolvement@clackamas.us. In some cases where there is an inactive CPO, a nearby active CPO may review the application. To determine if that applies to this application, call or email the staff contact.

How to Review this Application: A copy of the application, all documents and evidence submitted by or on behalf of the applicant, and applicable criteria are available for inspection at no cost. Copies may be purchased at the rate of \$2.00 per page for 8 1/2" x 11" or 11" x 14" documents, \$2.50 per page for 11" x 17" documents, \$3.50 per page for 18" x 24" documents and \$0.75 per sq ft with a \$5.00 minimum for large format documents. You may view or obtain these materials:

- Online at <https://accela.clackamas.us/citizenaccess/>. After selecting the Planning tab enter the file number to search. Select File Number and then select Attachments from the dropdown list, where you will find the submitted application; or
- By emailing or calling the staff contact.

Decision Process: Following the closing of the comment period, a written decision on this application will be made and a copy will be mailed to you. If you disagree with the decision, you may appeal to the Land Use Hearings Officer, who will conduct a public hearing. There is a \$250 appeal fee.

How to Comment on this Application:

To ensure your comments are considered prior to issuance of the decision, they must be received within 20 days of the date of this notice. Comments may be submitted by email to the staff contact or by regular mail to the address at the top of this notice. Please include the file number on all correspondence, and focus your comments on the approval criteria identified above or other criteria that you believe apply to the decision.

Comments:

Your Name/Organization

Telephone Number

Clackamas County is committed to providing meaningful access and will make reasonable accommodations, modifications, or provide translation, interpretation or other services upon request. Please contact us at least three (3) business days before the meeting at 503 -742-4545 or DRenhard@clackamas.us.

¿Traducción e interpretación? | Требуется ли вам устный или письменный перевод? |
翻译或口译? | Cần Biên dịch hoặc Phiên dịch? | 번역 또는 통역?



TYPE II OR III LAND USE APPLICATION

DEEMED COMPLETE

ORIGINAL DATE SUBMITTED:	04/11/24
FILE NUMBER:	Z0151-24-DR
APPLICATION TYPE:	DESIGN REVIEW

The Planning and Zoning Division staff deemed this application complete for the purposes of Oregon Revised Statutes (ORS) 215.427 on: July 10, 2024

Ben Blessing
Staff Name

Planner
Title

Comments:

Check one:

The subject property is located inside an urban growth boundary. The 120-day deadline for final action on the application pursuant to ORS 215.427(1) is: 11/7/2024

The subject property is not located inside an urban growth boundary. The 150-day deadline for final action on the application pursuant to ORS 215.427(1) is:



Planning and Zoning
Department of Transportation and Development

Development Services Building
 150 Beaver Creek Road | Oregon City, OR 97045
 503-742-4500 | zoninginfo@clackamas.us
 www.clackamas.us/planning

STAFF USE ONLY

Staff Initials: _____ File Number: _____

Land use application for:

DESIGN REVIEW

Application Fee:

**0.384% of construction cost, with \$1,340 minimum and \$36,835 maximum
 (plus \$4,030 if Hydrogeologic Review is required)**

APPLICANT INFORMATION			
Applicant name: Chick-fil-A	Applicant email: steve.schwartz@cfacorp.com	Applicant phone: 303.519.7206	
Applicant mailing address: 105 Progress	City: Irvine	State: CA	ZIP: 92618
Contact person name (if other than applicant): Austin Cross	Contact person email: across@gmail.com	Contact person phone: 916.817.7587	
Contact person mailing address: P.O. Box 270571	City: San Diego	State: CA	ZIP: 92198

PROPOSAL		
Brief description of proposal: Construction of a new drive-thru only Chick-fil-A location.	Estimated construction cost: \$1,100,000	Pre-application conference file number: ZPAC0096-23

SITE INFORMATION		
Site address: 13843 SE McLoughlin Blvd, Milwaukie, OR 97222	Comprehensive Plan designation:	Zoning district: C-3
Map and tax lot #: Township: _____ Range: _____ Section: _____ Tax Lot: <u>21E01CA029</u> Township: _____ Range: _____ Section: _____ Tax Lot: <u>21E01CA031</u> Township: _____ Range: _____ Section: _____ Tax Lot: _____	Land area: 1.54	
Adjacent properties under same ownership: Township: _____ Range: _____ Section: _____ Tax Lot: _____ Township: _____ Range: _____ Section: _____ Tax Lot: _____		

Printed names of all property owners: Joshua Amoroso	Signatures of all property owners: DocuSigned by: <i>Josh Amoroso</i> D4D5CCB278C149E...	Date(s): 4/11/2024
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I hereby certify that the statements contained herein, along with the evidence submitted, are in all respects true and correct to the best of my knowledge.

Applicant signature: *Steve Schwartz* Date: 2/20/2024 | 9:26 PM EST

A. Complete a pre-application conference:

You must attend a pre-application conference with Planning and Zoning staff before filing this application. [Information about the pre-application conference](#) process and a request form are available from the Planning and Zoning website.

B. Review applicable land use rules:

This application is subject to the provisions of [Section 1102, Design Review](#) of the [Clackamas County Zoning and Development Ordinance](#) (ZDO).

It is also subject to the ZDO's definitions, procedures, and other general provisions, as well as to the specific rules of the subject property's zoning district and applicable development standards, as outlined in the ZDO.

C. Turn in all of the following:

- Complete application form:** Respond to all the questions and requests in this application, and make sure all owners of the subject property sign the first page of this application. Applications without the signatures of *all* property owners are incomplete.
- Application fee:** The cost of this application is **0.384% of construction cost, with a \$1,340 minimum and \$36,835 maximum**. Payment can be made by cash, by check payable to "Clackamas County", or by credit/debit card with an additional card processing fee using the [Credit Card Authorization Form](#) available from the Planning and Zoning website. Payment is due when the application is submitted. Refer to the FAQs at the end of this form and to the adopted [Fee Schedule](#) for refund policies.
- Narrative describing the proposed use and demonstrating compliance with ZDO Section 1000, Development Standards, and the standards of the applicable zoning district(s)**
- Engineering geologic study**, if required pursuant to [ZDO Section 1002, Protection of Natural Features](#), or [1003, Hazards to Safety](#)
- Preliminary statements of feasibility from service providers and a Site Evaluation or Authorization Notice from the [Septic & Onsite Wastewater Program](#)**, as applicable and if required pursuant to [ZDO Section 1006, Utilities, Street Lights, Water Supply, Sewage Disposal, Surface Water Management, and Erosion Control](#) (forms for preliminary statements of feasibility are available at the Planning and Zoning [website](#))
- Transportation impact study**, if required pursuant to [ZDO Section 1007, Roads and Connectivity](#)
- Lot size and density calculations** showing compliance with [ZDO Section 1012, Lot Size and Density](#), if applicable to the proposal
- Vicinity map:** The map must show the location of the subject property in relation to adjacent properties, roads, bikeways, pedestrian access, utility access, and manmade or natural site features that cross the boundaries of the subject property.
- Existing conditions map:** The map must be drawn to a scale of not less than one inch = 50 feet, and must show all of the following, as listed in [ZDO Subsection 1102.02\(G\)](#):
 - Contour lines at two-foot intervals for slopes of 20% or less within an urban growth boundary (UGB); contour lines at five-foot intervals for slopes exceeding 20% within a UGB; contour lines at 10-foot intervals outside a UGB; and the source of contour information;

Autodesk Storm and Sanitary Analysis Output

Proposed Conditions Model

- Slope analysis designating portions of the site according to the following slope ranges and identifying the total land area in each category: zero to 20%, greater than 20% to 35%, greater than 35% to 50%, and greater than 50%;
- Drainage;
- Potential hazards to safety, including areas identified as mass movement, flood, soil, or fire hazards pursuant to [ZDO Section 1003](#);
- Natural features, such as rivers, streams, wetlands, underground springs, wildlife habitat, earth mounds, and large rock outcroppings;
- Wooded areas, significant clumps or groves of trees, and specimen conifers, oaks, and other large deciduous trees (where the site is heavily wooded, an aerial photograph, at a scale of not more than 1 inch = 400 feet, may be submitted and only those trees that will be affected by the proposed development need be sited accurately);
- Overlay zoning districts regulated by [ZDO Section 700, Special Districts](#);
- Noise sources;
- Sun and wind exposure;
- Significant views;
- Structures, impervious surfaces, utilities, onsite wastewater treatment systems, landscaping, driveways and easements (e.g. access, utility, storm drainage), with notes as to whether these will remain or be removed, and with dimensions of driveways and easements; and
- All of the following that are on or adjacent to the subject property, including dimensions and, if applicable, names: existing roads, platted unconstructed roads, railroad rights-of-way, bikeways, curbs, sidewalks, pedestrian pathways, accessways and trails.

Proposed site plan: The map must be drawn to a scale of not less than one inch = 50 feet, and must show all of the following, as listed in [ZDO Subsection 1102.02\(H\)](#):

- The subject property, including contiguous property under the same ownership as the subject property, and adjacent properties;
- Property lines and dimensions for the subject property (indicate any proposed changes to these)
- Natural features to be retained;
- Location, dimensions, and names of all existing or platted roads or other public ways, easements, and railroad rights-of-way on or adjacent to the subject property;
- Location of at least one temporary benchmark and spot elevations;
- Location and dimensions of structures, impervious surfaces, and utilities, whether proposed or existing and intended to be retained (for phased developments, include future buildings);
- Approximate location and size of storm drainage facilities;
- Relation to transit; parking and loading areas, including dimensions and number of individual parking and load spaces and drive aisles; bicycle racks; walkways; and pedestrian crossings;
- Orientation of structures showing windows and doors;
- Location and type of lighting;
- Service areas for waste disposal, recycling, loading, and delivery;
- Location of mail boxes;
- Freestanding signs; and
- Pedestrian amenities.

- Grading plan:** The plan must be drawn to a scale of not less than one inch = 50 feet, and must show the location and extent of proposed grading, general contour lines, slope ratios, slope stabilization proposals, and natural resources protection consistent with ZDO Sections 1002 and 1003
- Architectural drawings:** The drawings must show all of the following, as listed in [ZDO Subsection 1102.02\(J\)](#):
- Building elevations, including any building signs, with identifications of the dimensions, area, color, materials, and means of illumination of such signs and also identifying and showing dimensions of any electronic message center or other changeable copy sign areas;
 - Building sections;
 - Floor plans;
 - Color and type of building materials;
 - Elevation of freestanding sign(s) identifying the dimensions (including total height and height between the bottom of the sign and the ground), area, color, materials, and means of illumination, and also identifying and showing dimensions of any electronic message center or other changeable copy sign areas; and
 - Gross floor area, in square feet, of each structure; floor area ratio, if a minimum floor area ratio standard applies; and the number of dwellings.
- General landscaping plan:** The plan must be drawn to a scale of not less than one inch = 50 feet, and must show the elements required on the proposed site plan and all of the following, as listed in [ZDO Subsection 1102.02\(K\)](#):
- Existing plants and groups and plants proposed;
 - Description of soil conditions; plans for soil treatment such as stockpiling of topsoil or addition of soil amendments; and plant selection requirements relating to soil conditions;
 - Erosion controls, including plant materials and soil stabilization, if any;
 - Irrigation systems;
 - Landscape-related structures such as fences, terraces, decks, patios, shelters, and play areas; and
 - Open space and recreational areas and facilities, if applicable.
- Transportation improvement plan:** The plan must include proposed cross-sections for roads to be constructed or improved, including widths of travel lanes, bikeways, sidewalks, curbs, pedestrian pathways, and landscape strips. Identify the proposed landscape plan for any landscape strips, including street tree types, size, and location, and identify any proposed dedication of right-of-way.
- RCO District and PMU1 site master plan:** If the proposed development is in the Regional Center Office (RCO) District or a Planned Mixed Use 1 (PMU1) site, include any master plan required by [ZDO Subsection 1102.03\(B\)](#).
- OA District master plan:** If the proposed development is in the Office Apartment (OA) District, include any master plan required by [ZDO Subsection 1102.03\(C\)](#).
- Mobile vending unit narrative:** If the proposed development is for a mobile vending unit that exceeds the standards for both a level two and a level three mobile vending unit, include a narrative explaining how the proposal complies with the standards in [ZDO Subsection 837.05](#).

Note: Pursuant to [ZDO Subsection 1307.07\(C\)\(2\)](#), the Planning Director or designee may modify the preceding list of submittal requirements. Please consult the information provided in your pre-application conference.

FAQs

When is a Design Review permit required?

Approval of a Design Review permit is required by the Zoning and Development Ordinance (ZDO) for any development, redevelopment, expansions, and improvements in commercial and industrial zoning districts, except for uses approved through a zone change to Neighborhood Commercial (NC) District, and in the following residential zoning districts:

- High Density Residential (HDR)
- Medium Density Residential (MR-1)
- Medium High Density Residential (MR-2)
- Mountain Recreational Resort (MRR), except for detached single-family dwellings, manufactured homes, and their accessory uses if they are not part of a condominium development
- Planned Medium Density Residential (PMD)
- Regional Center High Density Residential (RCHDR)
- Special High Density Residential (SHD)
- Village Apartment (VA)
- Village Townhouse (VTH)

A Design Review permit is also required for specific types of residential development in other residential zoning districts, and for any other use as required by the Planning Director, the County Hearings Officer, or the Board of County Commissioners.

What is the permit application process?

Design Review permits are subject to a “Type II” land use application process, as provided for in [Section 1307](#) of the ZDO. Type II decisions include notice to owners of nearby land, the Community Planning Organization (if active), service providers (sewer, water, fire, etc.), and affected government agencies. If the application is approved, the applicant must comply with any conditions of approval identified in the decision. The application review procedure may be modified, pursuant to [Subsection 1102.04\(A\) or \(B\)](#), to include Design Review Committee review and recommendation to the Planning Director prior to issuance of the Planning Director’s decision. The Planning Director’s decision can be appealed to the County Land Use Hearings Officer.

What is needed for the County to approve a land use permit?

Applications for Design Review *may* be permitted after an evaluation by the County of applicable standards of the ZDO. The applicant is responsible for providing evidence that their proposal does or can meet those standards. In order to address the standards, the information requested in this application should be as thorough and complete as possible. A permit will only be approved or denied after a complete application is received and reviewed. The County approves an application only if it finds that the proposal meets the standards or can meet the standards with conditions.

Are all the submittal requirements listed in this application necessary?

County Staff, acting under the authority of the Planning Director per ZDO Subsection 1307.07(C)(2), has the ability to modify the submittal requirements for Design Review such that they are appropriate to the scope and context of the project. Any modifications to the submittal requirements should be discussed with Staff and identified through the required pre-application conference. Regardless of whether the submittal requirements are modified, it remains the applicant’s obligation to demonstrate that all approval criteria are met

FAQs continued

How long will it take the County to make a decision about an application?

The County makes every effort to issue a decision on a Type II land use application within 45 days of when we deem the application to be complete. State law generally requires a final County decision on a land use permit application in an urban area within 120 days of the application being deemed complete, and within 150 days for a land use permit in a rural area, although there are some exceptions.

If an application is submitted and then withdrawn, will a refund be given?

If a submitted Type II application is withdrawn before it is publicly noticed, 75% of the application fee paid, or the fee paid minus \$250, whichever is less, will be refunded. If a submitted application is withdrawn after it is publicly noticed, but before a decision is issued, 50% of the application fee paid, or the fee paid minus \$500, whichever is less, will be refunded. No refund will be given after a decision is issued.

Who can help answer additional questions?

For questions about the County's land use permit requirements and this application form, contact Planning and Zoning at **503-742-4500** or zoninginfo@clackamas.us. You can also find information online at the Planning and Zoning website: www.clackamas.us/planning.

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503-742-4545: ¿Traducción e interpretación? | Требуется ли вам устный или письменный перевод?
翻译或口译? | Cần Biên dịch hoặc Phiên dịch? | 번역 또는 통역?

July 2024

Clackamas County Planning and Zoning
Department of Transportation and Development
150 Beaver Creek Road
Oregon City, OR 97045
Attn: Ben Blessing, Sr. Planner

**Subject: Applicant Response to Incomplete Letter for Z0151-24-D
Chick-fil-A Design Review**

Dear Ben Blessing,

Thank you for your thoughtful comments. We have provided additional application materials and revised our narrative to address your comments. Please see below for responses to your comments and a summary of the changes made to the application package.

A. ZDO Sec. 1307.07(A): Provide evidence Joshua Amoroso is authorized agent of the owner, LRG Courtney Plaza, LLC.

Response: The land asset manager (Joshua Amoroso) signed the application on behalf of LRG Courtney Plaza. In support of authorized ownership, the applicant has included a copy of the management agreement with this revised submittal as Exhibit H.

B. Per Supplemental Application, provide “transportation improvement plans” consisting of proposed cross-sections for roads to be constructed or improved, including widths of travel lanes, bikeways, sidewalks, curbs, pedestrian pathways, and landscape strips.

Response: The applicant has added the street sections and identified proposed improvements as the second sheet behind the coversheet in Exhibit C.

C. Advisory: A response in ZDO Sec. 1005 says that the project is outside the Portland Metro UGB. In fact, this project is within the UGB. Consider readdressing this in narrative.

Response: The narrative has been corrected to note the project’s location within the Portland Metro UGB. Additionally, the applicant has provided an expanded response to ZDO Section 1005.02(D)(5)(c).

D. Advisory: You have addressed 1005.02(E), but have not provided any calculations confirming that 50% of buildings facing Mcloughlin are at min. setback, or max setback (20 feet) given there is a sidewalk. It appears only a small segment of canopy meets this. Consider specifying, and showing you can meet.

Response: An updated response has been added to the narrative addressing 1005.02(E). Additionally, canopy length (overall and distance within the 15 ft min setback) is provided on Sheet C2.0 in Exhibit C.

E. Advisory: ZDO Sec. 1005.03 (B) and (C). For subsection B, you mention no public trenches, yet it sounds like you are proposing a public entrance for a bathroom. This needs to face street. For subsection C, this is a commercial building and you still need to meet these standards. Nothing in the code exempts you just

Ben Blessing
Clackamas County Planning and Zoning
Department of Transportation and Development
July 2024
Page 2 of 2

because it is for fast food restaurant. Consider addressing, possibly through design modification.

Response: The applicant has revised the narrative response to address the new eight-foot-wide pedestrian path connecting the public entrance to Courtney Avenue, including two new tree wells/landscaping. An updated civil plan set is included with this revised submittal as Exhibit C.

F. Advisory: you show the zoning as CC in table 1009-1, but note, the zoning is C-3. Still should be able to meet min landscaping per your numbers, but just an FYI.

Response: Noted. The narrative has been revised to update Table 1009-1.

The applicant respectfully requests the County accept this response letter and revised application package and deem the application complete.

Thank you for your consideration,

Mariah Mitchell
Land Use Planner
DOWL
-
(541) 683-6090 | office
(541) 762-2096 | direct
-
dowl.com

c: Steve Schwartz, Andrew Hunt, Kevin Watson, Mike Towle, Jenn Glueck

Updated Application Materials:

- Narrative Response (Revised July 2024)
- Exhibits
 - A. Design Review Application Form
 - B. Preliminary Statements of Feasibility (WES)
 - C. Civil Plans
 - D. Architectural Plans
 - E. Photometric Plan
 - F. Traffic Impact Assessment (TIA)
 - G. Drainage Report
 - H. Management Agreement

#05244 Chick-Fil-A Restaurant

Clackamas County, Oregon

A Land Use Application For: Type II Design Review

Revised Submitted: July 2024

Applicant:
4G Development and Consulting
P.O. Box 270571
San Diego, California 92198
Contact: Austin Cross
Phone: 916.817.7587

Prepared by:
DOWL
920 Country Club Road, Suite 100B
Eugene, Oregon 97401
Contact: Mariah Mitchell
Phone: 541.762.2096



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Exhibits

- A. Design Review Application Form
- B. Preliminary Statements of Feasibility (WES)
- C. Civil Plans (revised May 2024)
- D. Architectural Plans
- E. Photometric Plan
- F. Traffic Impact Assessment (TIA)
- G. Drainage Report
- H. Management Agreement

Tables

Table 1: Surrounding Uses (21E01CA02900)	5
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I. Introduction

General Information

Applicant: **4G Development and Consulting**
P.O. Box 270571
San Diego, California 92198
Contact: Austin Cross
Phone: 916.817.7587
Email: across@4Gdev.com

Prepared by: <mailto:Jim.Bunker@weyerhaeuser.com>
DOWL
920 Country Club Road, Suite 100B
Eugene, Oregon 97401
Contact: Mariah Mitchell
Phone: 541.762.2096
Email: mmitchell@dowl.com

Project Location 13819 SE Mcloughlin Blvd, Milwaukie, 97222

Parcel ID Numbers: 21E01CA02900

Zoning: General Commercial (C-3)

Comprehensive Plan: Commercial

II. Project Summary

Project Description

On behalf of the applicant (4G Development and Consulting), DOWL requests approval of a Type II Design Review for a new 2,700 square foot restaurant building with drive-thru service lanes only (no interior seating) on tax lot 21E01CA02900. Site improvements include removal of the southern portion of the existing retail/office commercial building, repaving and restriping of the parking lot, new curbing and traffic marking, a reconstructed trash enclosure area, and new perimeter and interior parking lot landscape planters. A total of 62 parking stalls will be repaved and replaced with 47 new parking spaces for the new restaurant (of which 44 will be standard stalls and 3 will be ADA-accessible parking spaces). The applicants' requested parking totals exceed the maximum parking limits per Section 1015(C). As such, the applicant plans to mark all parking stalls in excess of the maximum parking limit for third-party pick-up, mobile order pick up, and employee carpool spaces consistent with Section 1015(D)(1).

Separate from this application, a property line adjustment will be submitted in the future to adjust the shared boundary line between the project site (tax lot 21E01CA02900) and tax lots 21E01CA03000 and TL21E01CA03200 to follow the applicant's lease line. All submittal materials and project design considerations identify property boundaries relative to this lease line.

Existing Conditions

The project area is approximately 1.4 acres located within tax lot 21E01CA02900 (1.6-acre), herein referred to as the "Project Site". The project site is located in the southeastern corner of property at the intersection of Courtney Avenue and McLoughlin Boulevard (Hwy 99E).

The project site is designated as General Commercial (C3). Adjacent zoning designations and uses are identified in Table 1 below.

Table 1: Surrounding Uses (21E01CA02900)

	Zoning	Use
North	C3	Gas Station
South	C3, MR1	Automotive Repair, Gas Station; Medium Density Residential
East	C3	Right-of-Way, Automotive Repair and Sales
West	MR1	Medium Density Residential

The project site is developed with a 15,410 square foot (SF) commercial/retail building constructed in 1948, before the effective date of county zoning and development codes. A total of 62 paved parking stalls serve the existing building.

A vicinity map and zoning map are included below as Figure 1 and Figure 2, respectively.

Figure 1. Vicinity Map

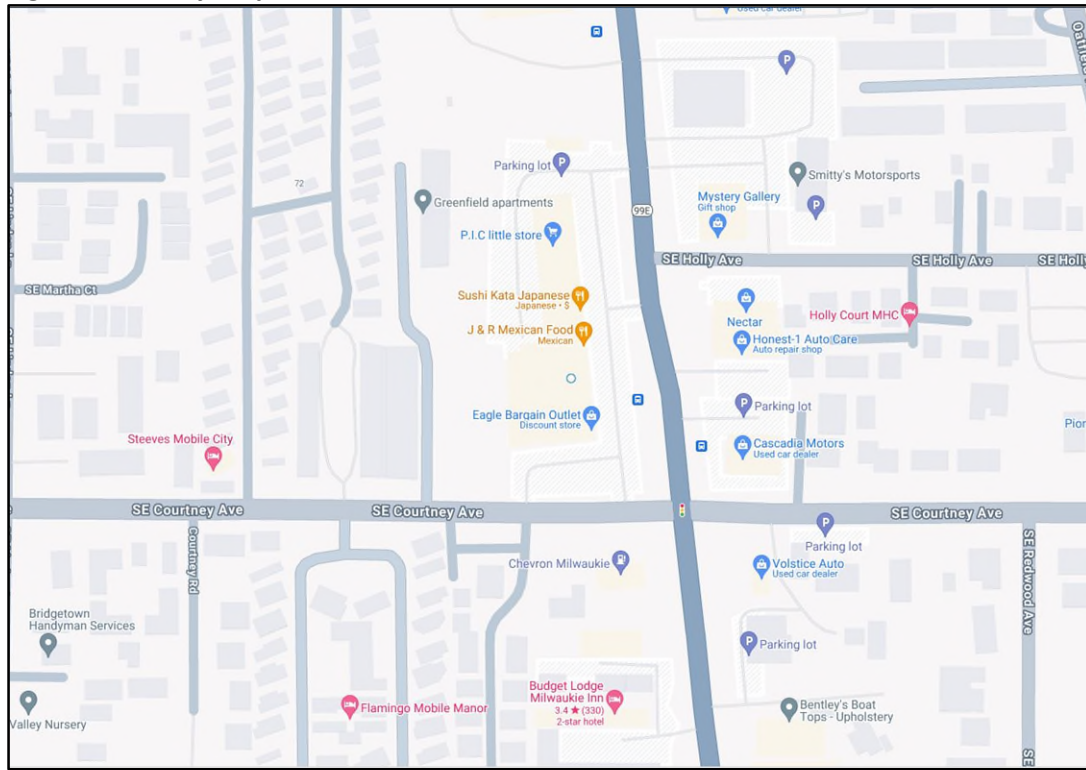
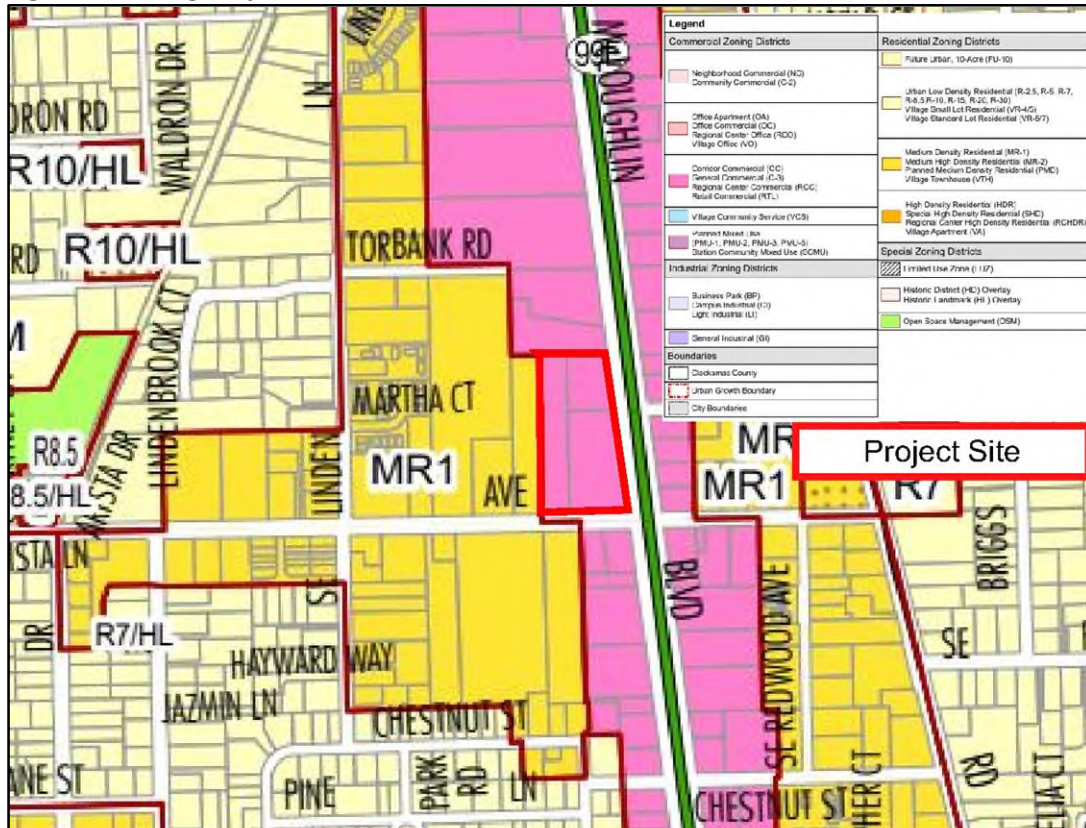


Figure 2. Zoning Map



III. Applicable Review Criteria

The applicable Clackamas County Zoning and Development Ordinance (ZDO) provisions are set forth below along with findings demonstrating the project’s consistency with these provisions. Code language that is not applicable to this proposal is not included.

Clackamas County Zoning and Development Ordinance (ZDO)

510 General Commercial (C-3)

510.03 Uses Permitted

Uses permitted in each zoning district are listed in Table 510-1, Permitted Uses in the Urban Commercial and Mixed-Use Zoning Districts. In addition, uses similar to one or more of the listed uses for the applicable zoning district may be authorized pursuant to Section 106, Authorizations of Similar Uses.

A. As used in Table 510-1:

Use	NC	C-2	RCC	RTL	CC	C-3	PMU ¹	SCMU	OA ^{2,3}	OC	RCO
Civic and Cultural Facilities , including art galleries, museums, and visitor centers	P	P	P	P	P	P	P	P	P	P	P
Composting Facilities	X	X	X	X	X	X	X	X	X	X	X
Daycare Services, Adult	P	P	P	P	P	P	P	P	P	L ⁵ ,C	L ⁵ ,C
Dog Services , including boarding, daycare, and grooming	S	P	P	P	P	P	P	P ⁷	S	C ⁸	L ⁵
Drive-Thru Window Services , subject to Section 827	C	A	A ⁹	A	A	A	A ¹⁰	X	X	A ¹⁰	A ¹⁰
Dwellings, including:											
Congregate Housing Facilities	X	X	p ^{11,12}	p ¹³	p ¹³	p ¹³	P	P	L	p ¹³	p ^{11,12}
Detached Single-Family Dwellings	A	A	X	A	X	A	X	X	X	X	X
Duplexes	X	A	X	P	P	P	P	P	L ¹⁴	P	X
Multifamily Dwellings	X	X	p ¹¹	p ¹³	p ¹³	p ¹³	P	P	L ¹⁴	p ¹³	p ¹¹
Quadplexes	X	X	p ¹¹	p ¹³	p ¹³	p ¹³	P	P	L ¹⁴	p ¹³	p ¹¹
Townhouses	X	A	X	A	X	A	P	P	L ¹⁵	X	X
Triplexes	X	X	X	P	P	P	P	P	L ¹⁴	P	X
Electric Vehicle Charging Stations	A,C	P	A	A,C	P	P	A	A	A	A	A
Employee Amenities , such as cafeterias, clinics, child care facilities, fitness facilities, lounges, and recreational facilities	A	A	A	A	A	A	A	A	A ¹⁶	A ¹⁶	A ¹⁶
Entertainment Facilities , including arcades, billiard halls, bowling alleys, miniature golf courses, and movie theaters	C ¹⁷	p ¹⁷	p ¹⁷	P	P	P	p ¹⁷	p ^{7,17}	S	C ^{8,17}	L ^{6,17}
Farmers' Markets , subject to Section 840	P	P	P	P	P	P	P	P	P	P	P

Response: The proposed restaurant with drive-thru lanes is considered an approved use in the C-3 zone per Table 510-1.

510.04 Dimensional Standards

Dimensional standards applicable in the urban commercial and mixed-use zoning districts are listed in Table 510-2, Dimensional Standards in the Urban Commercial and Mixed-Use Zoning Districts. Modifications to the standards of Table 510-2 are established by Sections 800, Special Use Requirements; 903, Setback Exceptions; 904, Height Exceptions; 1012, Lot Size and Density; 1107, Property Line Adjustments; and 1205, Variances. As used in Table 510-2, numbers in superscript correspond to the notes that follow Table 510-2.

Table 510-2: Dimensional Standards in the Urban Commercial and Mixed-Use Zoning Districts (abbreviated for this narrative)

<i>Standard</i>	<i>C-3</i>	<i>Proposed</i>
Minimum Lot size	None	-
Minimum Street Frontage	None	-
Maximum Front Setback	20 ⁶	15'
Minimum Front Setback	15	15'
Minimum Rear Setback	0 ¹²	155' from trash enclosure 209' from restaurant
Minimum Side Setback	0 ¹⁶	0
Maximum Building Height	None	-
Minimum Floor Area Ratio	None	-
Maximum Building Floor Area per Use	None	-
Minimum Residential Density	20 dwelling units per net acre for residential development; none for mixed-use development ²⁴	No residential proposed
Maximum Residential Density	60 dwelling units per acre ²⁵	No residential proposed

⁶ *The maximum front setback standard applies only if required by Subsection 1005.02(H). However, see Subsection 1005.02(E) for a related standard.*

¹² *If the rear lot line abuts a residential zoning district, the minimum shall be 15 feet plus one foot for each one-foot increase in building height over 35 feet. Height increments of less than one foot shall be rounded up to the nearest foot. For example, if the building height is 38.8 feet, the minimum setback shall be 19 feet.*

¹⁶ *If the side lot line abuts a residential zoning district, the minimum side yard setback shall be 15 feet plus one foot for each one-foot increase in building height over 35 feet. Height increments of less than one foot shall be rounded up to the nearest foot. For example, if the building height is 38.8 feet, the minimum setback shall be 19 feet.*

Response: The proposed building and use is located in conformance with the above development standards, as shown in the abbreviated version of Table 510-2.

827 Drive-Thru Window Services**827.01 Standards*****Drive-thru window services:***

A. Shall not limit the development of pedestrian-oriented or transit-supportive uses, or adversely impact such uses on adjacent lots. This criterion does not apply in the RC District;

Response: The proposed drive-thru is not anticipated to limit the development of pedestrian-oriented or transit-supportive uses, or adversely impact uses on adjacent lots for the following reasons and through the following measures:

- Design includes a 15-foot setback between the drive-thru lanes and the pedestrian walkways on Courtney Avenue and SE Mcloughlin Boulevard which provides sufficient distance from vehicle queuing, fumes, and noise associated with drive-thru users and restaurant operations.
- A five-foot wide landscape buffer is proposed between the drive thru lanes and pedestrian walkways to provide visual screening for pedestrians.

B. Shall create minimal conflict with pedestrian access to the building from adjacent lots and roads;

Response: Pedestrian access and cross walks delineated with pavement striping are proposed to minimize conflict between pedestrian access to the restaurant building from adjacent lots and roads. Specifically, pedestrian access is proposed from the northeastern corner of the project site. Multiple marked crosswalks are provided to provide safe pedestrian access from the SE McLoughlin Blvd and parking areas to the restaurant building. See construction note 17 on sheet C2.0 in Exhibit C for additional detail.

C. Shall not attract vehicle traffic into existing or proposed pedestrian and transit service areas; and

Response: Existing pedestrian and transit service areas adjacent to the project site include the sidewalk and a covered TriMet bus stop along SE Mcloughlin Blvd. Site improvements proposed with this application include a new sidewalk along the entire project frontage on SE Courtney (terminating at the western property line) and an outdoor seating area north of the restaurant building. Two-way vehicular traffic will enter the site from SE Courtney Blvd and is not expected to conflict with existing and proposed pedestrian and transit areas.

D. Shall not create offsite congestion due to lack of onsite vehicle queuing area commensurate with the estimated volume of traffic to be generated.

Response: The proposed drive-thru enters from the southwestern corner of the parking area and loops around the entire restaurant before terminating at the northeastern corner of the parking lot. The length of the drive through, coupled with traffic management mechanisms during peak hours (such as temporary staging measures to extend queuing vehicles on-site in the parking area), is expected to prevent any offsite congestion.

This conclusion is supported by the Traffic Impact Assessment, included with this submittal as Exhibit F.

E. In the Clackamas Regional Center Area, but outside the Clackamas Regional Center itself:

- 1. When drive-thru window service facilities are oriented toward front lot lines or street corners, pedestrian areas shall be buffered from the noise and exhaust of drive-thru vehicles.***

Response: The restaurant drive-thru lanes are oriented toward front lot lines/street corners. Pedestrian areas (namely existing sidewalks on SE Mcloughlin Boulevard, the proposed sidewalk on SE Courtney Avenue, and the proposed restaurant patio) will be screened from the drive-thru facilities by a five-foot-wide landscape buffer. Additionally, sidewalks are setback 15 feet from the drive-thru lanes to provide sufficient distance from vehicle queuing, fumes, and noise associated with restaurant operations.

- 2. When building entrances are separated from sidewalks by drive-thru window service facilities, special design features may be required to ensure safe, direct, and convenient crossings and to screen pedestrian areas from drive-thru window service facilities. These may include different paving types, raised elevation, warning signs, landscaping, walls, bollards, or other similar methods.***

Response: The proposed drive-thru will not separate any sidewalks from building entrances. All building entrances will be immediately accessible off of the sidewalk.

F. Inside the Clackamas Regional Center, drive-thru lanes are prohibited between the building and the street to which a building public entrance is oriented pursuant to Subsection 1005.09(B).

Response: The subject property is outside of the Clackamas Regional Center. Therefore, this provision does not apply.

900 General Provisions and Exceptions

903 Setback Exceptions

Response: There are no minimum setback distances for rear or side yards in the C-3 zone. The proposed restaurant will adhere to the minimum 15-foot front and maximum 20-foot front yard setback requirements. No exceptions will be pursued as part of this application.

904 Height Exceptions

Response: There is no maximum height in the C-3 zone.

1000 Development Standards

1001 General Provisions

Table 1001-1: Applicability of Section 1000¹

Type of Development	1002 Protection of Natural Features	1003 Hazards to Safety	1004 Historic Protection	1005 Site and Building Design	1006 Utilities, etc	1007 Roads & Connectivity	1009 Land-scaping	1010 Signs	1011 Open Space and Parks	1012 Lot Size and Density	1013 Planned Unit Developments	1015 Parking and Loading	1017 Solar Access	1021 Solid Waste & Recyclable Material Collection
Partitions														
Subdivisions	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	
Replats														
Institutional														
Commercial ²	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓
Industrial														
Manufactured dwelling parks	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓		
Multifamily dwellings	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓
Detached single-family dwellings	1002.01 1002.04 1002.05 1002.06	✓	✓		✓	1007.04 1007.08		✓				1015.01(A) 1015.02(A)(2) & (4) 1015.02(B-D) Table 1015-2		
Manufactured dwellings	1002.07 1002.09 ³													
Middle housing in the R-5, R-7, R-8.5, R-10, R-15, R-20, R-30, VR-4/5, and VR-5/7 Districts														
Duplexes, Triplexes, and Townhouses	1002.01 1002.09 ³	✓	✓		✓	1007.04 1007.08		✓				1015.01(A) 1015.02(A)(2) & (4) 1015.02(B-D) Table 1015-2		
Quadplexes and Cottage Clusters	1002.01 1002.09 ³	✓	✓		✓	1007.04		✓						
Middle housing land divisions	✓	✓	✓		✓	✓		✓		✓				

Response: All applicable sections required by Table 1001-1 are addressed in this narrative.

1002 Protection of Natural Features

1002.01 HILLSIDES

A. Development on slopes greater than or equal to 20 percent and less than or equal to 35 percent—except that for residential development in the RR, MRR, and HR Districts, the upper limit is 25 percent—shall require review of a Type I application pursuant to Section 1307, Procedures, and shall be subject to the following standards:

Response: The project site is a developed lot considered generally flat with minimal to no slopes present. Therefore, this section is not applicable.

1002.02 DEVELOPMENT RESTRICTION FOLLOWING EXCESSIVE TREE REMOVAL

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

Response: The project site is located within the Portland Metropolitan Urban Growth Boundary. However, no tree removal is proposed with this application as the project site is currently developed with no trees.

1002.03 Trees and Wooded Areas

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

Response: The project site is a developed lot with an existing commercial building. There are no existing trees on site. Therefore, no tree removal or disturbance of trees is proposed with this application. Any utility easements will avoid disturbance of any trees on neighboring parcels. Therefore, this section does not apply.

1002.04 RIVER AND STREAM CORRIDORS

The following standards shall apply to land that is outside both the Metropolitan Service District Boundary and the Portland Metropolitan Urban Growth Boundary.

- A. Developments shall be planned, designed, constructed, and maintained so that:***
- 1. River and stream corridors are preserved to the maximum extent feasible and water quality is protected through adequate drainage and erosion control practices; and***

Response: The project site is not adjacent to any rivers, streams, or riparian areas. Therefore, this section does not apply.

1002.05 DEER AND ELK WINTER RANGE

Development in deer and elk winter range below 3,000 feet in elevation, as identified on Comprehensive Plan Map III-2, Scenic and Distinctive Resource Areas, shall be designed to minimize adverse wildlife impacts.

Response: The project site is not located in deer or elk winter range per the Comprehensive Plan Map III-2, Scenic and Distinctive Resource Areas. Therefore, this section does not apply.

1002.06 MOUNT HOOD RESOURCE PROTECTION OPEN SPACE

Development in areas shown as Resource Protection Open Space on Comprehensive Plan Maps X-MH-1 through X-MH-3, Resource Protection Open Space, proposed in or within 100 feet of natural wetlands shall be designed to:

Response: The project site is not located in the Resource Protection Open Space area on the Comprehensive Plan Maps X-MH-1 through X-MH-3. The project site is not within 100 feet of a wetland. Therefore, this section does not apply.

1002.07 SIGNIFICANT NATURAL AREAS

Five significant natural areas are identified as unique/natural features on Comprehensive Plan Map III-2, Scenic & Distinctive Resource Areas. These areas are more specifically referred to as Williams Lake Bog, the land at Marmot, Multorpor Bog, Delphridge, and Wilhoit Springs. In these significant natural areas, the following shall be restricted, to the extent necessary to protect the unique or fragile character or features that are the basis for the unique/natural feature designation: building and road construction, filling and excavation, paving, and tree removal. Restrictions may be modified pursuant to Subsection 1011.03.

Response: The project site is not located within any of the significant natural areas identified in Comprehensive Plan Map III-2, Scenic & Distinctive Resource Areas. Therefore, this section does not apply.

1002.08 SIGNIFICANT LANDFORMS AND VEGETATION

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

Response: The project site was previously developed and has no known significant landforms and vegetation.

1002.09 RESOURCE PROTECTION AREAS IN THE VR 4/5 ND VR 5/7 DISTRICTS

Development of primary dwellings and accessory structures within a Resource Protection Area shown on Comprehensive Plan Map X-SV-1, Sunnyside Village Plan, Land Use Plan Map, shall require review of a Type I application pursuant to Section 1307, Procedures, and shall be subject to the following standards:

Response: The project site is zoned C-3. No portion of the project is zoned a resource protection area according to the Comprehensive Plan Map C-SV-1, Sunnyside Village Plan, or Land Use Plan Map. Therefore, this provision does not apply.

1003 Hazards to Safety

Response: No portion of the project site is located within a geologically hazardous area, flood hazard area (FEMA map 41005C0017D, effective 06/17/2008), area of unstable and poor draining soils or forested region subject to forest and brush fires. The project site is a developed lot located in an urban setting. Therefore, Section 1003 does not apply.

**1005 Site Building and Design
1005.02 General Site Design Standards**

The following site design standards apply:

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

Response: The project proposes to demolish the southern portion of the existing building. The proposed stand-alone restaurant will be located within the same development and oriented to face the street and sidewalks while allowing for the parking area to be centrally located between the existing and proposed building.

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

Response: The longest building elevations are oriented to true south to the maximum extent possible when considering other siting considerations, including the minimum and maximum setbacks from the street and orientation with pedestrian amenities.

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

Response: No solar panels are proposed with this submittal. Therefore, this provision does not apply.

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

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

Response: A continuous walkway is provided from the sidewalk on SE Mcloughlin Blvd to the proposed restaurant and to the northern property line, tying into the existing sidewalk that connects to the existing building to the north of the project site.

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

Response: The walkway referenced above continues south and connects with the restaurant outdoor seating area, restaurant entrance, and parking lot.

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

Response: Walkways will be illuminated by exterior restaurant and parking lot lighting, as shown in the photometric plan (Exhibit E).

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

Response: Walkways will be five foot wide and paved with concrete. Walkway design is illustrated on Sheet C2.0 in Exhibit C.

5. Standards for walkways through vehicular areas:

- a. Walkways crossing driveways, parking areas and loading areas shall be constructed to be clearly identifiable to motorists through the use of different paving material, raised elevation, warning signs or other similar methods.**

- b. Where walkways are adjacent to driveways, they shall be separated by a raised curb, bollards, landscaping or other physical barrier.***

Response: A raised curb is proposed between all driveways, consistent with this provision. A curb detail is included on Sheet C2.0 in Exhibit C.

- c. Inside the Portland Metropolitan Urban Growth Boundary (UGB), if the distance between the building public entrance and street is 75 feet or greater and located adjacent to a driveway or in a parking lot, the walkway shall be raised, with curbs, a minimum four-foot-wide landscape strip and shade trees planted a maximum of 30 feet on center.***

Response: The project site is within the Portland Metropolitan UGB. The distance between the building public entrance and Courtney Avenue is 60-feet as shown on Sheet C2.0 in Exhibit C. Therefore, this provision does not apply.

- d. The exclusive use of a painted crossing zone to make walkways identifiable to motorists may be used only for portions of walkways which are shorter than 30 feet and located across driveways, parking lots, or loading areas.***

Response: Painted crosswalks are proposed at several locations within the project site, including some that exceed 30 feet in length. For those crosswalks over 30-feet in length, the applicant has proposed signage advising of pedestrian cross-traffic. See Sheet C2.0 in Exhibit C for additional information.

- e. Walkways bordering parking spaces shall be at least seven feet wide or a minimum of five feet wide when concrete bumpers, bollards, curbing, landscaping, or other similar improvements are provided which prevent parked vehicles or opening doors from obstructing the walkway.***

Response: All walkways are a minimum of five feet wide. A 6-inch-tall curb and seven feet of landscaping is proposed to prevent vehicle overhang into walkways, as illustrated on Sheet C2.0 in Exhibit C.

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

- a. Walkway stubs shall be located in consideration of topography and eventual redevelopment of the adjacent property.***

Response: The proposed walkway will tie into the existing walkway that accesses the building to the north of the project site. Additionally, new sidewalks on SE Courtney Avenue are proposed along the site frontage to the western property line.

b. Notwithstanding the remainder of Subsection 1005.03(D)(6), walkway linkages to adjacent development shall not be required within industrial developments, to industrial developments, or to vacant industrially zoned land.

Response: No portion of the project site is zoned industrial or considered industrial development. Therefore, this provision does not apply.

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

1. If the minimum front yard depth standard is less than 20 feet, the front yard depth may be increased to 20 feet provided pedestrian amenities are developed within the yard.

Response: The minimum front yard depth standard in the C-3 zone is 15 feet. The restaurant building and canopy are located within the minimum setback along Mcloughlin Boulevard. The canopy adjacent Mcloughlin Boulevard is 60.42 feet long, of which 48-feet (or 79.44%) is located within the 20-foot setback, consistent with this provision. See Sheet C2.0 in Exhibit C for additional information.

2. Primary building entrances for buildings used to comply with Subsection 1005.03(E), shall:

- a. Face the street;***
- b. Be located at an angle facing both the street and a parking lot; or***
- c. Be located to the side of the building, provided that the walkway connecting to the street is a minimum of eight feet wide and is developed with landscaping and pedestrian amenities.***

Response: The primary restaurant entrance is located on the side of the building facing the parking lot area. Consistent with ZDO 1005.02(E)(2)(c), the applicant has provided a eight-foot-wide sidewalk from the covered side entrance to Courtney Avenue. This connective will also include two tree wells to either side of the stairs. Please refer to Sheet C2.0 in Exhibit C for additional information.

3. If a development has frontage on more than one street, Subsection 1005.03(E) must be met on only one frontage, as follows:

- a. If one of the streets is a major transit street, the standard shall be met on that street.**

Response: The project site fronts SE McLoughlin Blvd/OR99, classified as a principal arterial (Map 5-4a) and identified as a TriMet frequent service line with major bus stops (Map 5-8a). Consistent with this provision, the wide walkway connecting the restaurant entrance to SE Mcloughlin Blvd and provides outdoor seating along SE Mcloughlin Blvd.

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

- 1. A private street used to meet the standards in Subsection 1005.02(G) must have raised walking surfaces on both sides, street trees, curbs, and pedestrian scale street lighting, and must connect at both ends to an existing or proposed street.**
- 2. If a development has frontage on more than one major transit street, this orientation requirement needs to be met on only one side.**
- 3. The public entrance orientation requirement does not apply to warehouses or industrial buildings with less than 5,000 square feet of attached offices.**

Response: The new restaurant is considered a commercial use.

1005.03 Building Design

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

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

Response: Building façade design provides visual relief through the use of varied building materials (brick veneer, white stucco, prefinished metal and wood composite), varying levels along the roof and offset facades and canopies to highlight the entrance and differentiate the building entrance. See architectural plans included with this submittal as Exhibit D.

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

Response: Offset facades and canopies are provided to highlight the building entrance and alongside the building façade fronting the sidewalk. See architectural plans included with this submittal as Exhibit D.

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

Response: The restaurant building façade is designed to provide variety and visual interest. Specifically, the white stucco siding will be visually broken up by tan stucco on sides with east and west facing windows, glossy dark bronze framing around windows, doors, and along the drive-thru canopy and top of the roof, and grey brick veneer along the lower 3-feet of the building. See architectural plans included with this submittal as Exhibit D.

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

Response: The restaurant building façade has evenly spaced windows around the entire building, at a height appropriate for seeing into the restaurant. Window frames will have dark bronze framing, juxtaposed with the grey brick veneer on the lower extent of the window and white stucco on the upper extent of the window. Landscaping features will emphasize architectural detailing by drawing the eyes to the lower level of the building and ground cover.

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

Response: The proposed use as a restaurant warrants architectural features that are level and easy to maintain. The white and tan stucco and grey brick veneer are anticipated to age well when exposed to the elements.

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

Response: The Chick-fil-A building will be for a single use and will not have multiple uses or stories. Therefore, this provision does not apply.

B. Requirements for building entries:

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

Response: A four-foot-deep canopy is provided over the restaurant entrance.

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

Response: The proposed restaurant has a public entrance that faces the parking lot but includes an eight-foot-wide walkway with landscaping that connects to SE Courtney Avenue. This entrance is open during all business hours. Please refer to Sheet C2.0 in Exhibit C for the location of the public entrance.

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

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

Response: No transparent windows are provided. The street facing façade (drive-thru lanes) and restaurant building do not make sense with transparent windows, display windows, entry areas, or arcades. The applicant respectfully requests this standard not apply.

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

Response: No transparent windows are provided. The limited public use of the building wouldn't make sense with 40 percent transparent windows.

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

Response: No large-format retail is proposed with this application. Therefore, this provision does not apply.

- D. Requirements for roof design:**

1. For buildings with pitched roofs:

Response: A flat roof is proposed for the building.

2. For buildings, other than industrial buildings, with flat roofs or without visible roof surfaces, a cornice or other architectural treatment shall be used to provide visual interest at the top of the building.

Response: Visual interest at the top of the restaurant building is provided through varying levels along the roof and dark bronze T-framing. See architectural plans (Exhibit D) for additional information.

E. Requirements for exterior building materials:

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

Response: The restaurant building façade is designed to provide variety and visual interest. Specifically, the white stucco siding will be visually broken up by tan stucco on sides with east and west facing windows, glossy dark bronze framing around windows, doors, and drive-thru canopy, and along the top of the roof, and grey brick veneer along the lower 3-feet of the building. See architectural plans (Exhibit D) for additional information.

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

Response: The proposed use as a restaurant warrants architectural features that are level and easy to maintain. The white and tan stucco and brick veneer are anticipated to age well when exposed to the elements. See architectural plans (Exhibit D) for additional information.

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

Response: The restaurant building façade is designed to provide variety and visual interest. Specifically, the white stucco siding will be visually broken up by tan stucco on sides with east and west facing windows, glossy dark bronze framing around windows, doors, and drive-thru canopy, and along the top of the roof, and grey brick veneer along the lower 3-feet of the building. See architectural plans (Exhibit D) for additional information.

5. The surfaces of metal exterior building materials that are subject to rust or corrosion shall be coated to inhibit such rust and corrosion, and the surfaces of metal exterior building materials with rust or corrosion shall be stabilized and coated to inhibit future rust and corrosion.

Response: Metal exteriors will have a finished coat that inhibits rust or corrosion.

E. Additional building design requirements for multifamily dwellings, two- and three-family dwellings, and attached single-family dwellings:

Response: No multifamily or residential family dwellings are proposed with this application. Therefore, this provision and Subsections one (1) through five (5) do not apply.

G. Requirements to increase safety and surveillance:

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

Response: The building will have windows at eye level to maximize the potential for surveillance of entryways, walkways, and parking areas.

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

Response: Adequate lighting will be provided along entryways, walkways, and parking areas. A photometric plan is included with this submittal as Exhibit E.

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

Response: Parking areas will be accessible from SE Courtney Avenue and will provide proper circulation to permit easy police patrol.

5. Design landscaping to allow for surveillance opportunities.

Response: Landscaping will be maintained and designed to allow for surveillance opportunities.

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

Response: No mailbox is proposed with this submittal. Therefore, this provision does not apply.

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

Response: No fences or walls are proposed with this application.

8. Locate play areas for clear parental monitoring.

Response: No play areas are proposed with this application.

H. Solar access requirements:

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

Response: Windows have been evenly spaced around the building, including windows along the south side of the building.

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

Response: Overhangs are provided above the building entryway and exit. Framing around windows and pull-down shades will prevent excessive summer heat gains.

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

Response: A planting plan is included with this application as Sheet L1.0 of Exhibit C, which proposes planting of evergreen and deciduous trees for natural cooling in the summer and minimizing effects of winter winds.

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

- 1. Use shapes, colors, materials, textures, lines, and other architectural design features that enhance the design type area and complement the surrounding area and development.***

Response: The project site is located along SE Mcloughlin Blvd, subject to the Mcloughlin Corridor Design Plan. No frontage improvements or right-of-way (ROW) dedications on SE Mcloughlin Blvd are proposed and therefore, design standards relevant to the Mcloughlin Corridor Design Plan are not relevant.

Architectural design features, including brick veneer, white stucco, and dark metal, varied flat roof heights, and cornices on the single-story restaurant building are expected to compliment the surrounding area while providing a modern and updated appearance. See architectural plans (Exhibit D) for additional information.

- 2. Use colors, materials and scale, as appropriate, to visually connect building exteriors to adjoining civic/public spaces such as gateways, parks, plazas and transit stations.***

Response: The restaurant building is a single-story structure, oriented such that the parking area will complement the existing Courtney Shopping Plaza to the north. Pedestrian walkways are provided throughout the project site to access the shopping plaza, and TriMet bus stop.

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

Response: The restaurant building orientation and physical design consistent with those design types and uses adjacent to the project site.

- 4. Orient loading and delivery areas and other major service activity areas of the proposed project away from existing dwellings. Loading areas shall be located to the side or rear of buildings unless topography, natural features, rail service, or other requirements of this Ordinance dictate front-yard loading bays.***

Response: No permanent loading and delivery areas are proposed. Deliveries will take place during off-hours within the parking area, behind the restaurant building.

- 5. In industrial zoning districts, site areas used for vehicular operations, outdoor storage, and outdoor processing to minimize the impacts on adjacent dissimilar uses.***

Response: The project site is not designated as an industrial zone. Therefore, this provision does not apply.

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

Response: The proposed building uses colors, materials and architectural designs that are cohesive with other similarly sized buildings in the area.

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

Response: The project site is not located within an unincorporated community. Therefore, this provision does not apply.

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

Response: The project site is not located in a rural or natural resource area. Therefore, this provision does not apply.

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

Response: The project site is not located in a scenic area or adjacent open space. Therefore, this provision does not apply.

J. Requirements for screening mechanical equipment:

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

Response: All mechanical equipment will be located on the roof and screened by parapet walls. No portion of mechanical equipment will be visible from the street. See architectural plans (Exhibit D) for additional information.

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

Response: No ground mounted mechanical equipment is proposed with this submittal.

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

Response: Wall mounted mechanical equipment will be screened from view of streets by using landscaping around the perimeter of the project site. See the landscape plan (Sheet L1.0) and site plan (Sheet C2.0) in Exhibit C.

K. Requirements for specialized structures in industrial zoning districts:

Response: The project site is not designated as an industrial zone. Therefore, this provision does not apply.

L. Facades in the OA District: In the OA District, facades are subject to the following standards:

Response: The project site is not located in the Office Apartment (OA) District.

1005.04 Outdoor Lighting

A. Outdoor lighting devices:

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

Response: Exterior lighting is architecturally integrated into the design of the restaurant. Parking lot lighting is designed to be integrated with the site design and located in landscaped areas. See the landscape plan (Sheet L1.0) and site plan (Sheet C2.0) in Exhibit C.

- 2. Shall not direct light skyward.**

Response: No light is directed skyward. A photometric plan is included as Exhibit E.

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

Response: All exterior lighting is shielded and directed downwards to reduce light trespass. A photometric plan is included as Exhibit E.

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

Response: Bollard style lights are proposed on the restaurant exterior and mounted light poles are proposed in the parking area, consistent with this provision. A photometric plan is included as Exhibit E.

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

Response: Height of all light poles is 21'4" as demonstrated in the schedule, included with the photometric plan (Exhibit E).

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

Response: Lighting at all entrances will be downward facing and mounted at 12 feet or less and will not result in glare. See architectural plans (Exhibit D).

1005.05 Additional Requirements

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

Response: The project site is 65,000 square feet within the overall Courtney shopping complex. Therefore, the applicant is required to meet three of the following techniques.

- B. Use passive solar heating or cooling techniques to reduce energy consumption.**

- 5. Utilize deciduous trees to provide summer shade and allow winter sun.**

Response: Deciduous trees are spaced throughout the project site to provide summer shade and allow winter sun, consistent with this design technique. Refer to the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: Highly reflective (high albedo) white material is used on the roof surface. Please refer to the architectural plans (Exhibit D) for additional information.

G. Provide additional landscaping area at least 10 percent above the requirements for the site pursuant to Table 1009-1. For example, if the minimum area requirement is 20 percent, then 22 percent shall be provided. Credit shall be given for green roofs or other areas of vegetation that exceed the minimum area requirements.

Response: The applicant is required to provide 15 percent landscaping for the project site. In total, 22 percent landscaping (14,604 SF) landscaping is provided. Therefore, the applicant complies with this development technique. Refer to the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

1005.06 Modifications

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

Response: No modifications to Subsections 1005.03 and 1005.04 are requested with this submittal.

1006 Utilities, Street Lights, Water Supply, Sewage Disposal, Surface Water Management and Erosion Control

1006.01 General Standards

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

Response: Acknowledged.

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

Response: Acknowledged.

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

Response: Acknowledged.

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

Response: Acknowledged.

1006.02 Street Lights

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

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

Response: Streetlights are noted on in the civil plans (Exhibit C), consistent with this provision. Final design of streetlights and an off-site photometric plan can be provided following land use during construction drawing review as needed.

1006.03 Water Supply

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

Response: Acknowledged.

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

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

Response: A Preliminary Statement of Feasibility from Clackamas River Water is included with this application as Exhibit B. The feasibility letter indicates that water service,

including fire flows, is available in levels appropriate for development, supplemented by an additional attachment with comments from Betty Johnson with Clackamas River Water for development requirements.

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

Response: The statement indicates water service is adequate including fire flows. Therefore, this provision does not apply.

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

Response: The statement is dated March 2024, well within one year of filing the Type II Design Review application.

- C. *Prior to final approval of any partition or subdivision, the applicant shall provide evidence that any wells in the tract subject to temporary or permanent abandonment under Oregon Revised Statutes (ORS) 537.665 have been properly abandoned.***

Response: No partition or subdivision is proposed with this application. Therefore, this provision does not apply.

- D. *The following standards apply inside the Portland Metropolitan Urban Growth Boundary, Government Camp, Rhododendron, Wemme/Welches, Wildwood/Timberline, and Zigzag Village:***

- 1. *Land divisions or other development requiring water service shall not be approved, except as provided in Subsection 1006.03(D)(4), unless they can be served by a public water system in compliance with drinking water standards as determined by the Oregon Health Authority.***

Response: The proposed restaurant will connect to public water service. A Preliminary Letter of Feasibility is included with this application as Exhibit B.

- 2. *New development requiring water service within the boundaries of a water service system, created pursuant to ORS Chapters 264, 450, or 451, shall receive service from this system.***

Response: The proposed restaurant will connect to public water service. A Preliminary Letter of Feasibility is included with this application as Exhibit B.

3. *New public water systems shall not be created unless formed pursuant to ORS Chapters 264, 450, or 451.*

Response: The project site will use public water from the existing public water system along SE Mcloughlin Blvd. No new public water system is proposed with this application. Therefore, this provision does not apply.

4. *A lot of record not located within the approved boundaries of a public water system may be served by an alternative water source.*

Response: The project site is located within the approved boundaries of the public water system. Therefore, this provision does not apply.

1006.04 Sanitary Sewer Service

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

Response: The project site will require sanitary sewer service. A preliminary feasibility statement is provided from WES (Exhibit B), verifying sanitary sewer capacity in the wastewater treatment system and the sanitary sewage collection system.

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

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

Response: The project site will require sanitary sewer service. A preliminary feasibility statement is provided from WES (Exhibit B), verifying sanitary sewer capacity in the wastewater treatment system and the sanitary sewage collection system.

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

Response: Preliminary sanitary sewer system plans, and calculations were provided to the service provider as part of this approval. The signed preliminary statement of feasibility and comments from the provider are included with this application as Exhibit B.

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

Response: The applicant understands the statement will be valid one year from the approval date of a complete land use application.

1006.06 Surface Water Management and Erosion Control

The following surface water management and erosion control standards apply:

- A. Positive drainage and adequate conveyance of surface water shall be provided from roofs, footings, foundations, and other impervious or near-impervious surfaces to an appropriate discharge point.**

Response: The restaurant with drive-thru service and parking will amount to approximately 2,601 square feet of new impervious surface and 47,072 SF replaced impervious surface. The proposed improvements will require stormwater mitigation facilities that will ensure water quality and quantity standards are met. The proposed stormwater design will meet water quality by installing a series of filtered catch basins and surface facilities that provide water quality and detention. Conveyance of surface water is shown on the Sheet C4.0 included with Exhibit C. A preliminary feasibility report and signed statement of feasibility are included with this application as Exhibit B.

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

Response: The project site is located within the County's surface water management regulatory authority and is subject to this section.

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

- 1. The surface water management regulatory authority may require a preliminary surface water management plan and report, natural**

resource assessment, and buffer analysis prior to signing the preliminary statement of feasibility.

Response: Preliminary stormwater plans, and feasibility report were provided to the service provider as part of this request. The signed preliminary statement of feasibility and comments from the provider are included with this application as Exhibit B along with DOWL's drainage report included with this submittal as Exhibit G.

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

Response: Acknowledged.

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

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

Response: The project site has no existing natural drainage channels. Therefore, this provision does not apply.

- 2. Protect development from flood hazards;***

Response: The project site is not located within a special flood hazard area according to FIRM 41005C0017D, effective June 17, 2008. Additionally, the surface water disposal system is designed to convey flows up to a 25-year storm event.

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

Response: The proposed stormwater system design will meet Clackamas County Stormwater Design standards. Flow will be controlled to reduce the potential for damage or harm to the natural environment, or to property or persons within the drainage basin. The signed preliminary statement of feasibility and comments from the provider and DOWL's drainage report. See Exhibits B and G, respectively.

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

Response: The proposed stormwater system design will meet Clackamas County Stormwater Design standards. The proposed stormwater design will meet water Filtered catch basins and surface facilities that provide water quality and detention to ensure waters are substantially free of pollutants, including sedimentary materials, before leaving the site.

The signed preliminary statement of feasibility and comments from the provider are included with this application as Exhibit B.

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

Response: The stormwater runoff will be managed primarily through (4) surface stormwater facilities that will provide water quality and detention. The remainder of the site will be treated via filtered catch basins and detained in an underground storage facilities prior to release into the municipal stormwater system located along SE Mcloughlin Blvd at or below predevelopment conditions. The signed preliminary statement of feasibility and comments from the provider are included with this application as Exhibit B.

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

Response: Culverts will provide sufficient capacity without significant environmental degradation.

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

Response: The project site is not traversed by any watercourse, channel, stream, creek, gulch, or natural drainage channel. Therefore, this provision does not apply.

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

Response: The project site is not traversed by any watercourse, channel, stream, creek, gulch, or natural drainage channel. Therefore, this provision does not apply.

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

Response: All surface waters will be disposed of on-site before entering the city's storm drain on SE Mcloughlin Blvd. No flow is anticipated to be diverted to lands that have not previously encountered overland flow from the same upland source unless adjacent downstream owners agree. The signed preliminary statement of feasibility and comments from the provider are included with this application as Exhibit B along with DOWL's drainage report (Exhibit G).

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

Response: A surface water management and erosion control plan will be provided after land use approval but prior to the issuance of building permits.

1007 Roads and Connectivity

1007.06 STREET TREES

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

Response: The project fronts SE Mcloughlin Blvd and SE Courtney Avenue. Street trees are proposed on SE Courtney Avenue, along with other ROW improvements. Preliminary input from ODOT indicates street trees will not be allowed to be planted this close to their street. Therefore, no street trees are proposed adjacent to SE Mcloughlin Blvd.

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

Response: No exemption from street trees is requested with this submittal.

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

Response: Street trees are all Paperbark Maples, chosen for being drought tolerant and for their mature height relative to existing overhead powerlines. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: All street trees are planted at 30-feet on center and on level terrain with adequate soil conditions. No street trees are proposed within clear vision areas, specifically at the intersection of the project sites' drive aisle and SE Courtney Avenue. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: Acknowledged. Street trees are located within the ROW and do not conflict with the proposed pedestrian walkway, streetlights, or utilities on SE Courtney Avenue.

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

Response: Street tree species were selected for their scale, size, and maturity relative to overhead utilities and the street.

1009 Landscaping

1009.01 GENERAL PROVISIONS

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

Response: Landscaping materials were selected for site specific growing conditions, drought tolerance, and sun and wind tolerance. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

- B. ***A variety of plants, intermixed throughout landscaped areas, shall be provided, as follows:***
1. ***Evergreen and deciduous;***
 2. ***Trees, shrubs, and groundcover;***
 3. ***Plants of varying textures;***
 4. ***Plants of varying widths and heights at maturity; and***
 5. ***Plants with seasonal color interest (e.g., foliage, flowering perennials, annuals).***

Response: A variety of plants are proposed throughout landscaped areas, consistent with this provision. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: No invasive or non-native species are proposed. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: No storage of automobiles, equipment, merchandise, or materials are proposed with this submittal.

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

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

Response: The project site is located within the Portland Metropolitan UGB, therefore, landscaping is provided between the lot line and adjacent right-of-way, consistent with this provision. Refer to the landscape plan (Shet L1.0 in Exhibit C) for additional information.

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

Response: The drive-thru restaurant will not provide interior seating and therefore, no public entrances are proposed.

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

Response: Landscaping is proposed adjacent to all pedestrian walkways and areas, consistent with this provision.

Table 1009-1: Minimum Landscaped Area

Zoning District	Minimum Landscaped Area
CC, PMU, RCC, RCO, RTL	10 percent
RTC	<ul style="list-style-type: none"> 15 percent outside Government Camp 10 percent in Government Camp
SCMU	<ul style="list-style-type: none"> 15 percent for developments of three-family or multifamily dwellings, including mixed-use developments that include these uses 10 percent for all other developments
BP, C-2, C-3, GI, LI, NC, RC, RI, VCS, VO	15 percent
OA, OC, RCHDR	20 percent
HDR, MR-1, MR-2, MRR, PMD, VA, VTH	25 percent except 20 percent for attached single-family dwellings in the MR-1 and MR-2 Districts
HR	<ul style="list-style-type: none"> 25 percent for conditional uses 20 percent for attached single-family dwellings if three or more dwelling units are attached in succession
FF-10, FU-10, R-2.5 through R-30, RA-1, RA-2, RR, RRFF-5, VR-4/5, and VR-5/7	25 percent for conditional uses and for primary-use attached single-family dwellings in the VR-4/5 District if three or more dwelling units are attached in succession
SHD	40 percent

Response: Approximately 14,604 SF of landscaped area, roughly 22% of the project site, is provided. Therefore, the project complies with the minimum landscape area standard (15%) and the design technique identified in 1005.05.

1009.03 SURFACE PARKING AND LOADING AREA LANDSCAPING

Surface parking and loading areas shall be landscaped as follows:

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

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

Response: The applicant proposes 47 parking spaces which would require 1,175 SF of interior landscaped area. Approximately 2,593 SF of interior landscaped area is provided. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

2. ***One landscape swale located between two rows of parking spaces, as shown in Figure 1009-1, is required for every six rows of parking spaces, unless all parking spaces are developed entirely with porous pavement. Additional swales beyond the minimum requirement are allowed.***
 - a. ***For the purpose of Subsection 1009.03(A)(2), a “row” of parking spaces is one space deep, meaning that where two spaces abut at their ends, it is considered two “rows”.***
 - b. ***Parking spaces separated by pedestrian or vehicle crossings perpendicular to the row of parking spaces are considered to be part of a single row.***
 - c. ***The first required swale shall be developed for the entire length of the longest row of parking spaces.***
 - d. ***Gaps in a required swale are permitted only to provide for pedestrian and vehicle crossings.***
 - e. ***The parking lot shall be graded to allow surface water to flow into a swale. Curbs shall not separate parking spaces from the swale, and gaps between parking space tire stops are required to allow surface water to flow into a swale.***
 - f. ***Swales shall be a minimum of four feet wide.***
 - g. ***If the front portions of parking spaces are landscaped as allowed by Subsection 1015.02(A)(10), the landscaped portion of the parking space shall be adjacent and in addition to the swale, as shown in Figure 1009-1.***
 - h. ***Turf lawn is prohibited in swales.***

Response: Acknowledged. Landscaped islands are provided at the end of every row of parking spaces. Swales are four feet wide per this provision. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

3. ***Interior landscaping not developed as swales pursuant to Subsection 1009.03(A)(2) shall comply with the following standards:***
 - a. ***It shall be arranged in areas at the ends of rows of parking or between parking spaces within rows of parking. See Figure 1009-2.***

Response: All surface swales are arranged at the end of parking spaces, consistent with this provision. Please refer to the civil plans (Exhibit C) and landscape plan (Sheet L1.0 in Exhibit C) for additional information.

- b. ***It may join perimeter landscaping as long as the interior landscape area extends at least four feet into the parking area from the perimeter landscape line. See Figure 1009-2.***

Response: Acknowledged. Perimeter landscape facilities connect to interior landscape areas more than four feet. Refer to the landscape plan (Sheet L1.0 in Exhibit C).

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

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

Response: The abutting landscaped area is in addition to the perimeter landscaping, consistent with this provision. Refer to the landscape plan (Sheet L1.0 in Exhibit C).

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

Response: Interior landscaping was calculated consistent with this provision. Refer to the landscape plan (Sheet L1.0 in Exhibit C).

iii. The landscaped area is not abutting and parallel to required perimeter landscaping. See Figure 1009-2.

Response: Acknowledged.

d. The interior length and width of landscaped areas shall be a minimum of four feet.

Response: All landscape areas are a minimum length and width of four feet, consistent with this provision. Refer to the landscape plan (Sheet L1.0 in Exhibit C).

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

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

Response: A tree is provided in every landscape island at the end of each six interior parking spaces. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: Acknowledged. Parking lot area trees (Pyramidal European Hornbeam) were selected for their appropriateness within planter areas and drought tolerance. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

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

Response: The project site is not located in the OA, VA, VCS, VO, BP, LI, or GI Districts. Therefore, a five-foot-wide landscape strip is provided at the perimeter of all parking areas. No designated loading area is proposed with this submittal. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

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

Response: A three-foot continuous opaque evergreen hedge is provided. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: One tree is provided every 30 feet of landscaping strip. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: Upon establishment, ground cover will fully cover the remainder of the landscaped area. Refer to the landscape plan (Sheet L1.0 in Exhibit C).

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

Response: Acknowledged.

- 4. Required walkways may cross perimeter landscaping strips**

Response: Acknowledged.

1009.04 SCREENING AND BUFFERING

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

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

Response: No designated loading area is proposed. The trash receptacle is screened from the parking area and street by a vegetative buffer. See the landscape plan (Sheet L1.0) in Exhibit C) for additional information.

2. ***Storage areas;***

Response: No storage areas are proposed.

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

Response: No rainwater collection facilities are proposed.

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

Response: Parking and drive aisles are not adjacent to an Urban Low Density Residential zoning designation. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: The project site is adjacent to Medium Density Residential (MR-1) and as such, a six-foot-tall wooden fence and five-foot-wide evergreen hedge is proposed along the entire western property line abutting the residential zone. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: A sight obscuring six-foot-tall fence and five-foot-wide evergreen hedge is proposed between the adjacent residential zoning designation and drive aisle, consistent with this provision. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: A sight obscuring six-foot-tall fence and five-foot-wide evergreen hedge is proposed between the adjacent residential zoning designation and drive aisle, consistent with this provision. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: The fence and evergreen buffer will reduce significant adverse visual impacts such as dust and light trespass. The proposed restaurant is setback 209 feet from the adjacent residential uses. The applicant expects the distance will adequately buffer the residential uses from any significant adverse effects from noise and pollution. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

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

- a. A masonry wall or sight-obscuring fence a minimum of six feet in height. The wall or fence is to be placed along the interior side of the landscaping strip;**
- b. Evergreen vines, evergreen trees, or evergreen shrubs, any of which shall be spaced not more than five feet apart; and**
- c. Low-growing evergreen shrubs and evergreen ground cover covering the balance of the area; or**

Response: A sight obscuring six-foot-tall fence and five-foot-wide evergreen hedge is proposed between the adjacent residential zoning designation and drive aisle, consistent with this provision. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: Required walkways are accommodated without compromising buffering requirements outlined in this provision.

1009.07 FENCES AND WALLS

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

Response: The proposed six-foot-tall wooden fence will be a natural wooden color and match the wood composite material used for the restaurant.

1009.09 EROSION CONTROL

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

Response: All graded areas associated with redeveloping the site will either be developed or revegetated consistent with landscaping requirements. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: No sloped areas are present at the project site. Therefore, no netting is proposed.

1009.10 PLANTING AND MAINTENANCE

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

Response: No impervious weed barriers are proposed.

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

Response: All plant materials were selected for low lying heights or will be planted outside of clear vision areas. Interior landscape area trees will be limbed up consistent with this provision. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: No plants were selected that are expected to interfere with utilities. See the landscape plan (Sheet L1.0 in Exhibit C) for additional information.

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

Response: Acknowledged. See the landscape plan (Note #3 on Sheet L1.0 in Exhibit C) for additional information.

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

Response: Acknowledged. See the landscape plan (Note #3 on Sheet L1.0 in Exhibit C) for additional information.

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

Response: A signed maintenance agreement contract will be submitted to the county as a condition of approval.

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

Response: Plants were chosen based on their growing requirements, drought tolerance, and size at maturity, consistent with this provision.

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

Response: All deciduous trees are 2" caliper and have a minimum height of 8 feet, consistent with this provision. Please refer to the planting legend in the landscape plan (Sheet L1.0 in Exhibit C).

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

Response: All evergreen trees planted (namely the Vanderwolf's Pyramid Pine) comply with this standard. Please refer to the planting legend in the landscape plan (Sheet L1.0 in Exhibit C).

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

Response: All shrubs exceed this standard. Please refer to the planting legend in the landscape plan (Sheet L1.0 in Exhibit C).

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

Response: The applicant anticipates that ground cover will be miscellaneous plants staggered and spaced out 30-inches on center to prevent overcrowding of plants.

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

Response: The applicant anticipates that ground cover will be miscellaneous plants staggered and spaced out 30-inches on center to prevent overcrowding of plants.

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

1. ***An automatic irrigation controller shall be required for irrigation scheduling.***
2. ***The system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.***
3. ***In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.***
4. ***Narrow or irregularly shaped areas, including turf lawn, less than eight feet in width in any direction shall be irrigated with subsurface or low volume irrigation.***
5. ***Overhead sprinkler irrigation is prohibited within two feet of any impervious surface unless:***
 - a. ***The landscaped area is adjacent to permeable surfacing and no runoff occurs; or***
 - b. ***The adjacent impervious surfaces are designed and constructed to drain entirely to landscaping; or***
 - c. ***The irrigation designer specifies an alternative design or technology that complies with Subsection 1009.10(M)(2).***

Response: Acknowledged. A fully automatic underground irrigation system meeting the requirements of this code will be designed and submitted with civil design, following land use approval. See the landscape plan (Note #5 on Sheet L1.0 in Exhibit C) for additional information.

- N. Appropriate methods of plant care and landscaping maintenance shall be provided by the property owner. Pruning shall be done to current nursery industry standards.***

Response: Acknowledged.

- O. Plants shall be protected from damage due to heavy foot traffic or vehicular traffic by protective tree grates, pavers, or other suitable methods.***

Response: Acknowledged.

1010 Signs

1010.02 GENERAL PROVISIONS

Response: The location and dimensions of signage are unknown at this time and therefore, no signage is proposed with this submittal. The applicant expects a sign permit will be submitted at a later date.

1015 Parking and Loading

1015.01 GENERAL STANDARDS

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

Response: All parking areas will be paved with asphalt, consistent with this provision. Refer to the civil plan sheets (Exhibit C) for additional information.

- C. *Parking and loading requirements for uses and structures not specifically listed in Tables 1015-1, Automobile Parking Space Requirements; 1015-2, Minimum Required Bicycle Parking Spaces; and 1015-3, Minimum Required Off-Street Loading Berths shall be subject to the requirements for the most similar use.***

Response: The proposed use is considered a restaurant with drive-thru facilities, clearly defined in Table 1015-1.

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

Response: Motor vehicle parking and bicycle parking are separated from each other, consistent with this provision. Refer to the site plan (sheet C2.0 in Exhibit C) for additional information. No designated loading areas are proposed.

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

- a. *Rented, leased, or assigned to any other person or organization, except as provided for under Subsection 1015.02(D)(3)(a) for shared parking or Subsection 1015.04(C) for shared loading berths.***
- b. *Used for storing or accumulating goods or storing a commercial or recreational vehicle, camper, or boat, rendering the space(s) useless for parking or loading operations.***
- c. *Occupied by the conducting of any business activity, except for permitted temporary uses (e.g., farmers' markets).***

Response: No portion of the parking area will be rented, leased, used for storing materials or recreational vehicles, etc.

1015.02 MOTOR VEHICLE PARKING AREA STANDARDS

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

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

Response: Acknowledged. All parking stalls are located in a designated parking area with sufficient backing and maneuvering areas in drive aisles. Refer to the site plan (Sheet C2.0 in Exhibit C) for additional information.

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

Response: No compact or parallel stalls are proposed with this submittal. All parking stalls are 8.5 feet wide by 16 feet long, consistent with this provision. Refer to the site plan (Sheet C2.0 in Exhibit C) for additional information.

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

Response: No oversized stalls are proposed.

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

Response: Acknowledged.

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

Response: No double loaded angled parking bays are proposed.

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

Response: According to Table 1015-1, the 2,559 SF restaurant with drive-thru lanes is required to provide a minimum of 23 parking spaces and is limited to a maximum of 32 parking spaces. The applicant is requesting approval for 47 parking spaces. Therefore, one carpool/vanpool space is required. Carpool/vanpool parking will likely exceed the requirement in order to comply with Section 1015 (D)(1).

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

Response: All parking spaces are located such that cross access between the project site and adjacent site (Courtney Shopping Complex) will not have direct parking access onto them. Refer to the site plan (Sheet C2.0 in Exhibit C) for additional information.

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

Response: The Courtney Shopping Complex accesses directly from SE Mcloughlin Blvd. No shared driveway entrances or parking and maneuvering areas are necessary for both sites to maintain adequate access.

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

Response: No wheel stops are proposed with this submittal. Curbing for parking stalls is located where the curb stop would be located and landscaped area is provided in front of the parking space. See the site plan (Sheet C2.0 in Exhibit C) for additional information.

10. ***For parking spaces heading into a landscaped area, the area in front of the tire stop that is included in the parking space dimension may be landscaped instead of paved or graveled according to the following standards:***
 - a. ***Landscaping shall be ground cover plants only;***
 - b. ***The area in front of the tire stop that is included in the parking space dimension shall be in addition to the required minimum dimension for a landscape planter; and***
 - c. ***The landscaped area in front of the tire stop may count toward overall site landscaping requirements established in Table 1009-1, Minimum Landscaped Area. However, it may not count toward perimeter landscaping requirements established in Section 1009.03(B)(1).***

Response: No wheel stops are proposed with this submittal. Curbing for parking stalls is located where the curb stop would be located and landscaped area is provided in front of the parking space. All landscaped areas in front of wheel stops are included in the interior parking lot landscape total and excluded from perimeter landscape totals. See the site plan (Sheet C2.0) and the landscape plan (Sheet L1.0) in the civil plan set (Exhibit C).

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

Response: The project site is located within the Portland Metropolitan UGB and considered Urban Zone A. According to Table 1015-1, the 2,559 SF restaurant with drive-thru lanes is required to provide a minimum of 23 parking spaces and is limited to a maximum of 32 parking spaces. The applicant is requesting approval for 47 parking spaces.

2. ***In the event more than one use occupies a single structure or parcel, the total minimum requirement for parking shall be the sum of the minimum requirements of the several uses computed separately.***

Response: The Courtney Shopping Complex was constructed in 1948, before the effective date of the County's Zoning and Development Ordinances.

- C. ***Parking Maximums:***

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

Response: The project site is located within the Metro UGB and considered Urban Zone A. According to Table 1015-1, the 2,559 SF restaurant with drive-thru lanes is required to provide a minimum of 23 parking spaces and is limited to a maximum of 32 parking spaces. The applicant is requesting approval for 47 parking spaces, or 15 parking spaces over the maximum, as allowed under Section 1015.02(C)(3). Additional responses are provided below.

Preliminary communications with planning staff also indicate that staff are not enforcing parking minimums required in Table 1015-1 in an effort to comply with recent state legislation, namely the Climate Friendly and Equitable Communities (CFEC) rules. Therefore, compliance with parking minimums for the overall site is not expected to be applicable.

Table 1015-1: Automobile Parking Space Requirements

Land Use Category	Minimum Parking Spaces	Maximum Parking Spaces (Urban Zone A)	Maximum Parking Spaces (Urban Zone B)
Places of Worship (per seat located in main assembly room), unless a school, daycare, or similar facility is proposed in conjunction with primary use, in which case it shall have separate parking requirement	0.5, or 1 per 5.3 feet of bench length in main assembly room	0.6	0.8
Produce Stands (per stand)	4	None	None
Recreational Vehicle Camping Facilities	1 per campsite (in addition to the space required for parking the recreational vehicle) and 1 per employee at peak employment period	None	None
Restaurants: Fast Food with drive-thru window service	9	12.4	14.9
Restaurants: With no drive-thru window service, Taverns	15	19.1	23

D. Exceptions to Parking Requirements:

1. ***Parking maximums in Table 1015-1 and Note 4 to Table 1015-2 may be increased for the following:***
 - a. ***Parking spaces in parking structures;***
 - b. ***Fleet parking spaces;***
 - c. ***Designated employee carpool spaces;***
 - d. ***User-paid spaces; and***
 - e. ***Parking spaces for vehicles for sale, lease, or rent.***

Response: According to Table 1015-1, the 2,559 SF restaurant with drive-thru lanes is required to provide a minimum of 23 parking spaces and is limited to a maximum of 32 parking spaces. The applicant is requesting approval for 47 parking spaces, or 15 parking spaces over the maximum, as allowed under Section 1015.02(C)(3). All excess parking spaces will be designated as either user-paid spaces (third-party pick-up, mobile pick-up, and restaurant customer parking) and/or employee carpool parking. Therefore, the applicant respectfully requests approval of the 15 excess parking stalls per this provision.

1015.03 BICYCLE PARKING STANDARDS

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

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

Response: Four bicycle parking spaces, consisting of two staple style racks are proposed adjacent to the building exit. See construction note 20 on the site plan (Sheet C2.0 in Exhibit C).

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

Response: All bicycle parking spaces are located within 50 feet of the restaurant building. See the site plan (Sheet C2.0 in Exhibit C) and architectural plans (Exhibit D).

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

Response: No bicycle parking is proposed within the building.

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

Response: Bicycle parking is proposed for the restaurant use only.

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

Response: Bicycle parking is expected to be visible from the building.

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

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

Response: Four bicycle parking spaces are proposed. Therefore, this provision and additional sections discussing covered bicycle parking do not apply.

- 4. Required bicycle parking spaces shall be illuminated.**

Response: Bicycle parking will be illuminated due to the proximity of the restaurant building and parking areas. A photometric plan is included with this submittal as Exhibit E

- 5. Required bicycle parking areas shall be clearly marked and reserved for bicycle parking only.**

Response: Acknowledged.

- 6. Bicycle parking space dimensions and standards:**

- a. Bicycle parking spaces must be at least six feet long and two feet wide, and in covered situations the overhead clearance must be at least seven feet.**

Response: All bicycle parking spaces are 84" long by 4"6" wide and are uncovered. Refer to the bike parking footprint graphic provided on Sheet A-100 in the architectural plans (Exhibit D).

- b. An aisle a minimum of five feet wide must be provided for bicycle maneuvering.**

Response: Both staple style racks are proposed at 64" from each other, consistent with this provision.

- c. Bicycle racks must hold bicycles securely by the frame and be securely anchored.**

Response: Staple style racks can hold bicycles securely by the frame and will be securely anchored.

- d. Hanging bicycle racks and/or enclosed, stackable bike lockers may be substituted for surface racks if comparable dimensions, maneuvering, and clearance are provided to the user.**

Response: No hanging or enclosed bike racks, lockers, etc. are proposed.

- e. Bicycle racks must accommodate both:**

- i. Locking the frame and one wheel to the rack with a high-security U-shaped shackle lock; and**
- ii. Locking the frame and both wheels without removal of wheels to the rack with a chain or cable not longer than six feet.**

Response: Staple style bike racks are designed to accommodate locking the frame and front wheel of the bike, consistent with either lock design.

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

Response: The restaurant is required to provide a minimum of two bicycle parking stalls. The applicant exceeds this requirement by providing four bicycle parking stalls.

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

Response: No long-term bicycle parking is needed for the development. Therefore, designating between different types of bicycle parking spaces is not needed for the development.

Table 1015-2: Minimum Required Bicycle Parking Spaces

Land Use Category	Minimum Bicycle Parking Spaces ¹
Elementary Schools, Junior High Schools, Middle Schools, Senior High Schools, and Colleges (per classroom)	2 (maximum required spaces – 100)
Multifamily Dwellings (per dwelling unit)	0.5
Park-and-Ride Lots, Transit Centers, and Community Parks (per acre)	5
Preschools	4
Residential Care Facilities, Nursing Homes, and Hospitals (per 8 beds)	1
Retail and Commercial including offices and clinics	
Per 2,500 square feet, up to 50,000 square feet	1
Per each additional 5,000 square feet	1
Theaters, Places of Worship, Auditoriums, Dance Halls and other Public Assembly Places (per 40 seats or per 40 persons of design capacity, whichever is greater)	1
Warehouses and industrial buildings without attached offices, automotive service uses such as service stations and tire stores, and businesses selling large items such as major appliances, furniture, cars, or boats (per 10,000 square feet of building area)	1

1015.04 OFF-STREET LOADING STANDARDS

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

Response: The 2,559 square foot restaurant is not required to provide a loading berth per Table 1015-3. Therefore, no designated loading berth is proposed. The temporary loading berth will be located within one of the internal drive aisles in front of the restaurant and used during off-hours to avoid any conflicts between the restaurant use and deliveries.

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

Response: The 2,559 square foot restaurant is not required to provide a loading berth per Table 1015-4.

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

Response: The 2,559 square foot restaurant is not required to provide a loading berth per Table 1015-4.

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

Response: The 2,559 square foot restaurant is not required to provide a loading berth per Table 1015-4.

Table 1015-4: Minimum Required Off-Street Loading Berths

Land Use Category	Unit of Measurement	Number of Loading Berths	Minimum Required Dimension
Hospitals	Square feet of floor area		35 feet x 12 feet x 14 feet high
	Under 5,000	None	
	5,000 to 16,000	1	
	16,001 to 40,000	2	
	40,001 to 64,000	3	
	64,001 to 96,000	4	
	96,001 to 128,000	5	
	128,001 to 160,000	6	
	160,001 to 196,000	7	
	For each additional 36,000	1 additional berth	
Commercial Uses	Square feet of floor area		35 feet x 12 feet x 14 feet high
	Under 5,000	None	
	5,000 to 24,999	1	
	25,000 to 49,999	2	
	50,000 to 100,000	3	
	Each additional 50,000	1	

1021 Solid Waste and Recyclable Material Collection

1021.03 GENERAL STANDARDS

A. Pads: Compactors, containers, and drop boxes shall be located on a level Portland Cement concrete pad, a minimum four inches thick, at ground level or other location compatible

with the local collection service franchisee's equipment at the time of construction. The pad shall be designed to discharge surface water runoff to avoid ponding.

Response: The trash receptable is located on a 4" cement pad, consistent with this provision. See Sheet C2.0 in the civil plan (Exhibit C) for additional information.

B. Recycling and Solid Waste Service Areas:

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

Response: The recycling receptacles will be located in the same enclosure as the trash enclosure. See the site plan (Sheet C2.0 in Exhibit C) for the location of the trash and recycling facilities. See Sheet A1.03 in the architectural plan (Exhibit D) for elevations and materials of the trash enclosure.

2. *Recycling service areas shall be located in close proximity to the solid waste container areas and be accessible to the local collection service franchisee's equipment.*

Response: The recycling receptacles will be located in the same enclosure as the trash enclosure. See the site plan (Sheet C2.0 in Exhibit C) for the location of the trash and recycling facilities. See Sheet A1.03 in the architectural plan (Exhibit D) for elevations and materials of the trash enclosure.

3. *Recycling receptacles or shelters located outside a structure shall have lids and be covered by a roof constructed of water- and insect-resistive material.*

Response: The trash and recycling receptacles will have lids that are water and insect-resistant, consistent with this provision. See the site plan (Sheet C2.0 in Exhibit C) for the location of the trash and recycling facilities. See Sheet A1.03 in the architectural plan (Exhibit D) for elevations and materials of the trash enclosure.

4. *The location of recycling service areas and method of storage shall be approved by the local fire marshal.*

Response: Acknowledged. Preliminary comments received from the Clackamas Fire District #1 did not identify any concerns with the location of or methods of trash and recycling storage. The applicant expects addition review will be conducted as part of the land use review.

5. *Recycling and solid waste service areas shall be at ground level and be accessible to the local collection service franchisee.*

Response: Recycling and solid waste service areas are all at ground level. See the site plan (Sheet C2.0 in Exhibit C) for the location of the trash and recycling facilities. See Sheet A1.03 in the architectural plan (Exhibit D) for elevations and materials of the trash enclosure.

6. *Recycling and solid waste service areas shall be used only for storing solid waste and recyclable materials.*

Response: Acknowledged. Recycling and solid waste areas will be used for storing solid waste and recycling materials only.

- 7. *Recycling and solid waste service areas and equipment shall be maintained in a clean and safe condition pursuant to Chapter 10.03, Solid Waste and Wastes Management, of the Clackamas County Code.***

Response: The applicant anticipates that recycling and solid waste service areas and equipment will be maintained in a clean and safe condition, consistent with Chapter 10.03 Solid Waste and Wastes Management, of the Clackamas County Code and the restaurant operator's internal policies.

C. *Special Wastes or Recyclable Materials:*

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

Response: If applicable, the applicant anticipates that hazardous waste will be located, prepared, stored, collected, transported, and disposed of in a manner acceptable to the Oregon Department of Environmental Quality (DEQ).

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

Response: A sub-surface grease interceptor is proposed in the parking area adjacent to the restaurant as noted on the utility plan (see Sanitary Sewer Construction Note 1 on Sheet C5.0 in Exhibit C).

1021.04 ENCLOSURE AND GATE STANDARDS

- A. *Gate Access: Gates shall be designed to permit sufficient service access for the local collection service franchisee's equipment and personnel.***

Response: The gate will be designed to permit sufficient service access for the local collection service franchisee's equipment and personnel.

- B. *Gate Swing: The gate swing shall be free of obstructions and have restrainers in the open and closed positions.***

Response: No obstructions are located adjacent to the trash receptacle doors.

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

Response: A bollard is provided to prevent damage from container impacts (see elevation C2 on Sheet A103 in Exhibit D).

D. Bumper Rail: Enclosures constructed of concrete, brick, and masonry block or similar materials shall contain a bumper curb described in Subsection 1021.04(C) or a bumper rail to prevent damage from container impacts. The rail shall be secured by anchor bolts recessed in the rail within the perimeter walls of the enclosure at a height compatible with the receptacle.

Response: A bollard is provided to prevent damage from container impacts (see elevation C2 on Sheet A103 in Exhibit D).

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

Response: Acknowledged. The trash enclosure is separate from the grease trap and will be kept free of accumulated waste material, oil, and standing water.

1021.05 RECEPTACLE STANDARDS

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

1. Length and width of the service container.

Response: Length and width of the trash enclosure are identified in the refuse enclosure plan (D1 on Sheet A103 in Exhibit D).

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

Response: The pad area provides a minimum of two feet between the sides and rear of each container. The dimensions of the concrete pad area are shown on the architectural plans included with this application as Exhibit D.

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

Response: The pad area provides a minimum of three feet in front of each container. The dimensions in front of the solid waste and recycling containers are shown on the architectural plans included with this application as Exhibit D.

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

Response: The recycling and solid waste receptacle will not have a roof.

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

Response: The recycling and solid waste receptacle will not have a roof.

B. Drop Boxes and Compactors:

Response: No drop boxes or compactors are included with this request.

1021.06 VEHICLE ACCESS

- A. ***Vehicular access to the front of a container pad, shelter, or enclosure shall be a minimum of 45 feet long and a minimum of 12 feet wide.***

Response: The drive aisle leading to the trash enclosure is over 45 feet long and 24 feet wide. Refer to the site plan (Sheet C2.0 in Exhibit C).

- B. ***Vehicular access to service a drop box or compactor shall include the pad length required in Subsection 1021.06(A) plus a minimum of 65 feet in front of the loading hook placement position.***

Response: No drop boxes or compactors are included with this request.

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

Response: Vehicle access will be paved, and the trash enclosure pad will be concrete, consistent with this provision. Please refer to the civil plans (Exhibit C) and architectural plans (Exhibit D).

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

Response: No dead-end streets or driveways are present on the project site.

- E. ***The grade for access to the pad or enclosure shall not exceed three percent. Exceptions may be granted when compatible with the equipment manufacturer's specifications and consistent with Subsection 1021.08.***

Response: Grade throughout the pad site does not exceed three percent. Please refer to the civil plans (Exhibit C) and architectural plans (Exhibit D).

1021.07 SIGNS

"No parking" signs shall be placed in a prominent location on the enclosure or shelter and painted on the pavement in front of the enclosure or shelter to provide

unobstructed and safe access for servicing receptacles. Signs clearly identifying recycling containers and type of recyclable material shall be posted on each container.

Response: The applicant anticipates a “no parking” sign will be added to the trash and recycling receptacle enclosure, in accordance with this provision.

IV. Conclusion

As evidenced throughout this narrative and attached exhibits, the requested restaurant with drive-thru lanes meets the governing approval criteria. Therefore, the applicant respectfully requests county approval of this request.

Exhibit A

Design Review Application Form



Planning and Zoning
Department of Transportation and Development

Development Services Building
 150 Beaver Creek Road | Oregon City, OR 97045
 503-742-4500 | zoninginfo@clackamas.us
 www.clackamas.us/planning

STAFF USE ONLY

Staff Initials: _____ File Number: _____

Land use application for:

DESIGN REVIEW

Application Fee:

**0.384% of construction cost, with \$1,340 minimum and \$36,835 maximum
 (plus \$4,030 if Hydrogeologic Review is required)**

APPLICANT INFORMATION			
Applicant name: Chick-fil-A	Applicant email: steve.schwartz@cfacorp.com	Applicant phone: 303.519.7206	
Applicant mailing address: 105 Progress	City: Irvine	State: CA	ZIP: 92618
Contact person name (if other than applicant): Austin Cross	Contact person email: across@gmail.com	Contact person phone: 916.817.7587	
Contact person mailing address: P.O. Box 270571	City: San Diego	State: CA	ZIP: 92198

PROPOSAL		
Brief description of proposal: Construction of a new drive-thru only Chick-fil-A location.	Estimated construction cost: \$1,100,000	Pre-application conference file number: ZPAC0096-23

SITE INFORMATION		
Site address: 13843 SE McLoughlin Blvd, Milwaukie, OR 97222	Comprehensive Plan designation:	Zoning district: C-3
Map and tax lot #: Township: _____ Range: _____ Section: _____ Tax Lot: <u>21E01CA029</u> Township: _____ Range: _____ Section: _____ Tax Lot: <u>21E01CA031</u> Township: _____ Range: _____ Section: _____ Tax Lot: _____	Land area: 1.54	
Adjacent properties under same ownership: Township: _____ Range: _____ Section: _____ Tax Lot: _____ Township: _____ Range: _____ Section: _____ Tax Lot: _____		

Printed names of all property owners: Joshua Amoroso	Signatures of all property owners: DocuSigned by: <i>Josh Amoroso</i> D4D5CCB278C149E...	Date(s): 4/11/2024
---	---	-----------------------

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

Applicant signature: *Steve Schwartz* Date: 2/20/2024 | 9:26 PM EST

A. Complete a pre-application conference:

You must attend a pre-application conference with Planning and Zoning staff before filing this application. [Information about the pre-application conference](#) process and a request form are available from the Planning and Zoning website.

B. Review applicable land use rules:

This application is subject to the provisions of [Section 1102, Design Review](#) of the [Clackamas County Zoning and Development Ordinance](#) (ZDO).

It is also subject to the ZDO's definitions, procedures, and other general provisions, as well as to the specific rules of the subject property's zoning district and applicable development standards, as outlined in the ZDO.

C. Turn in all of the following:

- Complete application form:** Respond to all the questions and requests in this application, and make sure all owners of the subject property sign the first page of this application. Applications without the signatures of *all* property owners are incomplete.
- Application fee:** The cost of this application is **0.384% of construction cost, with a \$1,340 minimum and \$36,835 maximum**. Payment can be made by cash, by check payable to "Clackamas County", or by credit/debit card with an additional card processing fee using the [Credit Card Authorization Form](#) available from the Planning and Zoning website. Payment is due when the application is submitted. Refer to the FAQs at the end of this form and to the adopted [Fee Schedule](#) for refund policies.
- Narrative describing the proposed use and demonstrating compliance with ZDO Section 1000, Development Standards, and the standards of the applicable zoning district(s)**
- Engineering geologic study**, if required pursuant to [ZDO Section 1002, Protection of Natural Features](#), or [1003, Hazards to Safety](#)
- Preliminary statements of feasibility from service providers and a Site Evaluation or Authorization Notice from the [Septic & Onsite Wastewater Program](#)**, as applicable and if required pursuant to [ZDO Section 1006, Utilities, Street Lights, Water Supply, Sewage Disposal, Surface Water Management, and Erosion Control](#) (forms for preliminary statements of feasibility are available at the Planning and Zoning [website](#))
- Transportation impact study**, if required pursuant to [ZDO Section 1007, Roads and Connectivity](#)
- Lot size and density calculations** showing compliance with [ZDO Section 1012, Lot Size and Density](#), if applicable to the proposal
- Vicinity map:** The map must show the location of the subject property in relation to adjacent properties, roads, bikeways, pedestrian access, utility access, and manmade or natural site features that cross the boundaries of the subject property.
- Existing conditions map:** The map must be drawn to a scale of not less than one inch = 50 feet, and must show all of the following, as listed in [ZDO Subsection 1102.02\(G\)](#):
 - Contour lines at two-foot intervals for slopes of 20% or less within an urban growth boundary (UGB); contour lines at five-foot intervals for slopes exceeding 20% within a UGB; contour lines at 10-foot intervals outside a UGB; and the source of contour information;

Autodesk Storm and Sanitary Analysis Output

- Proposed Conditions Model
100% R24A11
- Slope analysis designating portions of the site according to the following slope ranges and identifying the total land area in each category: zero to 20%, greater than 20% to 35%, greater than 35% to 50%, and greater than 50%;
- Drainage;
- Potential hazards to safety, including areas identified as mass movement, flood, soil, or fire hazards pursuant to ZDO Section 1003;
- Natural features, such as rivers, streams, wetlands, underground springs, wildlife habitat, earth mounds, and large rock outcroppings;
- Wooded areas, significant clumps or groves of trees, and specimen conifers, oaks, and other large deciduous trees (where the site is heavily wooded, an aerial photograph, at a scale of not more than 1 inch = 400 feet, may be submitted and only those trees that will be affected by the proposed development need be sited accurately);
- Overlay zoning districts regulated by ZDO Section 700, Special Districts;
- Noise sources;
- Sun and wind exposure;
- Significant views;
- Structures, impervious surfaces, utilities, onsite wastewater treatment systems, landscaping, driveways and easements (e.g. access, utility, storm drainage), with notes as to whether these will remain or be removed, and with dimensions of driveways and easements; and
- All of the following that are on or adjacent to the subject property, including dimensions and, if applicable, names: existing roads, platted unconstructed roads, railroad rights-of-way, bikeways, curbs, sidewalks, pedestrian pathways, accessways and trails.

Proposed site plan: The map must be drawn to a scale of not less than one inch = 50 feet, and must show all of the following, as listed in ZDO Subsection 1102.02(H):

- The subject property, including contiguous property under the same ownership as the subject property, and adjacent properties;
- Property lines and dimensions for the subject property (indicate any proposed changes to these)
- Natural features to be retained;
- Location, dimensions, and names of all existing or platted roads or other public ways, easements, and railroad rights-of-way on or adjacent to the subject property;
- Location of at least one temporary benchmark and spot elevations;
- Location and dimensions of structures, impervious surfaces, and utilities, whether proposed or existing and intended to be retained (for phased developments, include future buildings);
- Approximate location and size of storm drainage facilities;
- Relation to transit; parking and loading areas, including dimensions and number of individual parking and load spaces and drive aisles; bicycle racks; walkways; and pedestrian crossings;
- Orientation of structures showing windows and doors;
- Location and type of lighting;
- Service areas for waste disposal, recycling, loading, and delivery;
- Location of mail boxes;
- Freestanding signs; and
- Pedestrian amenities.

- Grading plan:** The plan must be drawn to a scale of not less than one inch = 50 feet, and must show the location and extent of proposed grading, general contour lines, slope ratios, slope stabilization proposals, and natural resources protection consistent with ZDO Sections 1002 and 1003
- Architectural drawings:** The drawings must show all of the following, as listed in ZDO Subsection 1102.02(J):
- Building elevations, including any building signs, with identifications of the dimensions, area, color, materials, and means of illumination of such signs and also identifying and showing dimensions of any electronic message center or other changeable copy sign areas;
 - Building sections;
 - Floor plans;
 - Color and type of building materials;
 - Elevation of freestanding sign(s) identifying the dimensions (including total height and height between the bottom of the sign and the ground), area, color, materials, and means of illumination, and also identifying and showing dimensions of any electronic message center or other changeable copy sign areas; and
 - Gross floor area, in square feet, of each structure; floor area ratio, if a minimum floor area ratio standard applies; and the number of dwellings.
- General landscaping plan:** The plan must be drawn to a scale of not less than one inch = 50 feet, and must show the elements required on the proposed site plan and all of the following, as listed in ZDO Subsection 1102.02(K):
- Existing plants and groups and plants proposed;
 - Description of soil conditions; plans for soil treatment such as stockpiling of topsoil or addition of soil amendments; and plant selection requirements relating to soil conditions;
 - Erosion controls, including plant materials and soil stabilization, if any;
 - Irrigation systems;
 - Landscape-related structures such as fences, terraces, decks, patios, shelters, and play areas; and
 - Open space and recreational areas and facilities, if applicable.
- Transportation improvement plan:** The plan must include proposed cross-sections for roads to be constructed or improved, including widths of travel lanes, bikeways, sidewalks, curbs, pedestrian pathways, and landscape strips. Identify the proposed landscape plan for any landscape strips, including street tree types, size, and location, and identify any proposed dedication of right-of-way.
- RCO District and PMU1 site mater plan:** If the proposed development is in the Regional Center Office (RCO) District or a Planned Mixed Use 1 (PMU1) site, include any master plan required by ZDO Subsection 1102.03(B).
- OA District master plan:** If the proposed development is in the Office Apartment (OA) District, include any master plan required by ZDO Subsection 1102.03(C).
- Mobile vending unit narrative:** If the proposed development is for a mobile vending unit that exceeds the standards for both a level two and a level three mobile vending unit, include a narrative explaining how the proposal complies with the standards in ZDO Subsection 837.05.

Note: Pursuant to ZDO Subsection 1307.07(C)(2), the Planning Director or designee may modify the preceding list of submittal requirements. Please consult the information provided in your pre-application conference.

FAQs

When is a Design Review permit required?

Approval of a Design Review permit is required by the Zoning and Development Ordinance (ZDO) for any development, redevelopment, expansions, and improvements in commercial and industrial zoning districts, except for uses approved through a zone change to Neighborhood Commercial (NC) District, and in the following residential zoning districts:

- High Density Residential (HDR)
- Medium Density Residential (MR-1)
- Medium High Density Residential (MR-2)
- Mountain Recreational Resort (MRR), except for detached single-family dwellings, manufactured homes, and their accessory uses if they are not part of a condominium development
- Planned Medium Density Residential (PMD)
- Regional Center High Density Residential (RCHDR)
- Special High Density Residential (SHD)
- Village Apartment (VA)
- Village Townhouse (VTH)

A Design Review permit is also required for specific types of residential development in other residential zoning districts, and for any other use as required by the Planning Director, the County Hearings Officer, or the Board of County Commissioners.

What is the permit application process?

Design Review permits are subject to a “Type II” land use application process, as provided for in [Section 1307](#) of the ZDO. Type II decisions include notice to owners of nearby land, the Community Planning Organization (if active), service providers (sewer, water, fire, etc.), and affected government agencies. If the application is approved, the applicant must comply with any conditions of approval identified in the decision. The application review procedure may be modified, pursuant to [Subsection 1102.04\(A\) or \(B\)](#), to include Design Review Committee review and recommendation to the Planning Director prior to issuance of the Planning Director’s decision. The Planning Director’s decision can be appealed to the County Land Use Hearings Officer.

What is needed for the County to approve a land use permit?

Applications for Design Review *may* be permitted after an evaluation by the County of applicable standards of the ZDO. The applicant is responsible for providing evidence that their proposal does or can meet those standards. In order to address the standards, the information requested in this application should be as thorough and complete as possible. A permit will only be approved or denied after a complete application is received and reviewed. The County approves an application only if it finds that the proposal meets the standards or can meet the standards with conditions.

Are all the submittal requirements listed in this application necessary?

County Staff, acting under the authority of the Planning Director per ZDO Subsection 1307.07(C)(2), has the ability to modify the submittal requirements for Design Review such that they are appropriate to the scope and context of the project. Any modifications to the submittal requirements should be discussed with Staff and identified through the required pre-application conference. Regardless of whether the submittal requirements are modified, it remains the applicant’s obligation to demonstrate that all approval criteria are met

FAQs continued

How long will it take the County to make a decision about an application?

The County makes every effort to issue a decision on a Type II land use application within 45 days of when we deem the application to be complete. State law generally requires a final County decision on a land use permit application in an urban area within 120 days of the application being deemed complete, and within 150 days for a land use permit in a rural area, although there are some exceptions.

If an application is submitted and then withdrawn, will a refund be given?

If a submitted Type II application is withdrawn before it is publicly noticed, 75% of the application fee paid, or the fee paid minus \$250, whichever is less, will be refunded. If a submitted application is withdrawn after it is publicly noticed, but before a decision is issued, 50% of the application fee paid, or the fee paid minus \$500, whichever is less, will be refunded. No refund will be given after a decision is issued.

Who can help answer additional questions?

For questions about the County's land use permit requirements and this application form, contact Planning and Zoning at **503-742-4500** or zoninginfo@clackamas.us. You can also find information online at the Planning and Zoning website: www.clackamas.us/planning.

Clackamas County is committed to providing meaningful access and will make reasonable accommodations, modifications, or provide translation, interpretation or other services upon request. Please contact us at 503-742-4545 or drenhard@clackamas.us.

503-742-4545: ¿Traducción e interpretación? | Требуется ли вам устный или письменный перевод?
翻译或口译? | Cán Biên dịch hoặc Phiên dịch? | 번역 또는 통역?

Certificate Of Completion

Envelope Id: E8D55C44140C4D95A16C604FF5A37C02	Status: Completed
Subject: Land Use Application.pdf	
Source Envelope:	
Document Pages: 6	Signatures: 1
Certificate Pages: 1	Initials: 0
AutoNav: Enabled	Envelope Originator:
Envelope Stamping: Disabled	Steve Schwartz
Time Zone: (UTC-05:00) Eastern Time (US & Canada)	5200 Buffington Road
	Atlanta, GA 30349
	steve.schwartz@cfacorp.com
	IP Address: 73.169.94.227

Record Tracking

Status: Original	Holder: Steve Schwartz	Location: DocuSign
2/20/2024 9:25:33 PM	steve.schwartz@cfacorp.com	

Signer Events

Signature	Timestamp
Steve Schwartz steve.schwartz@cfacorp.com Sr. Principal Development Lead Chick-fil-A, Inc. Security Level: Email, Account Authentication (None)	Sent: 2/20/2024 9:25:34 PM Viewed: 2/20/2024 9:25:46 PM Signed: 2/20/2024 9:26:25 PM Freeform Signing
Signature Adoption: Pre-selected Style Using IP Address: 73.169.94.227 Signed using mobile	

Electronic Record and Signature Disclosure:
Not Offered via DocuSign

In Person Signer Events**Signature****Timestamp****Editor Delivery Events****Status****Timestamp****Agent Delivery Events****Status****Timestamp****Intermediary Delivery Events****Status****Timestamp****Certified Delivery Events****Status****Timestamp****Carbon Copy Events****Status****Timestamp****Witness Events****Signature****Timestamp****Notary Events****Signature****Timestamp****Envelope Summary Events****Status****Timestamps**

Envelope Sent	Hashed/Encrypted	2/20/2024 9:25:34 PM
Certified Delivered	Security Checked	2/20/2024 9:25:46 PM
Signing Complete	Security Checked	2/20/2024 9:26:25 PM
Completed	Security Checked	2/20/2024 9:26:25 PM

Payment Events**Status****Timestamps**

Exhibit B

Preliminary Statement of Feasibility (WES)

This statement of feasibility is signed by Oak Lodge with the following conditions.

Disclaimer:

Oak Lodge signs preliminary statements of feasibility for Surfacewater management as the Surfacewater management authority subject to the following conditions: The property owner is responsible for substantiating Surfacewater compliance and performance. This is demonstrated through a preliminary storm water report and plan submitted for the preliminary statement of feasibility. Oak Lodge does not own the storm water conveyance system and cannot authorize connections to that system. The owner of the system reconciles existing capacity to proposed impacts. Some development proposals may require use of public easements which Oak Lodge cannot determine access rights. Other conditions may apply depending on the proposal.

1. Stormwater treatment could meet Oak Lodge's standards and is to be constructed by the applicant and the design approved by an Oak Lodge permit following Land Use application approval.
2. Preliminary data provided by the applicant substantiate the ability to meet Oak Lodge stormwater standards.



Instructions for PRELIMINARY STATEMENTS OF FEASIBILITY

Instructions to Applicant:

The attached *Preliminary Statement of Feasibility* form is to be completed by the applicable sanitary sewer service provider, surface water management authority, and water service provider. Where there is no surface water management service district for the subject property, this form is to be provided to the Clackamas County Department of Transportation and Development, Transportation Engineering Division. *Preliminary Statements of Feasibility* are not required for onsite wastewater treatment facilities (e.g., septic tanks) or water service by private well.

Completed *Preliminary Statement of Feasibility* forms must be submitted with a land use application for design review, a partition, a subdivision, conditional use permit, or zone change.

It is the responsibility of the applicant for a land use application to provide a copy of this form to each service provider for the subject property. A service provider may require the submission of detailed plans and/or engineering data prior to determining whether a *Preliminary Statement of Feasibility* will be issued. Contact the service providers for details.

The forms must be dated no more than one year prior to submittal of a complete land use application.

Instructions to Reviewing Service Provider or Surface Water Management Authority:

A development is proposed within your service area. Please complete the attached *Preliminary Statement of Feasibility* to indicate whether adequate service can be provided to this development.

If adequate service can be provided only with the implementation of certain conditions of approval, you may attach such conditions to the completed form. Completion of the *Preliminary Statement of Feasibility* does not imply that additional requirements (e.g., plan submittals) may not be imposed by your agency once a land use application for the prospective development is filed.

Clackamas County Planning & Zoning will continue to provide notice to you of land use applications for property within your service area. This will allow you to determine whether the submitted development proposal differs from the plans reviewed by your agency in conjunction with the completion of this statement. This will also allow you to provide additional comments as necessary.

Clackamas County is committed to providing meaningful access and will make reasonable accommodations, modifications, or provide translation, interpretation or other services upon request. Please contact us at 503-742-4545 or drenhard@clackamas.us.

503-742-4545: ¿Traducción e interpretación? | Требуется ли вам устный или письменный перевод?
翻译或口译? | Cán Biên dịch hoặc Phiên dịch? | 번역 또는 통역?



PRELIMINARY STATEMENT OF FEASIBILITY

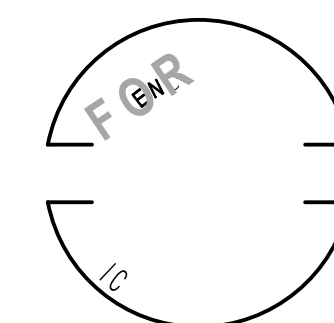
TO BE COMPLETED BY APPLICANT		
Applicant name:	Applicant email:	Applicant phone:
Project engineer:	Project engineer email:	Project engineer phone:
Site address:		
Map and tax lot #:		
Township: _____ Range: _____ Section: _____ Tax Lot: <u>21E01CA029</u>		
Township: _____ Range: _____ Section: _____ Tax Lot: <u>21E01CA031</u>		
Township: _____ Range: _____ Section: _____ Tax Lot: _____		

TO BE COMPLETED BY SERVICE PROVIDER / SURFACE WATER MANAGEMENT AUTHORITY	
Name of service provider / surface water management authority:	Name and title of authorized representative:
Representative email:	Representative phone:
Check all that apply:	
<p>Water Service</p> <p><input type="checkbox"/> Water service, <i>including fire flows</i>, is available in levels appropriate for the development and adequate water system capacity is available in source, supply, treatment, transmission, storage, and distribution, or such levels and capacity can be made available through improvements completed by the developer or the system owner.</p> <p><input type="checkbox"/> Water service is adequate <i>with the exception of fire flows</i>. The applicant shall provide a statement from the fire district serving the subject property that states that an alternate method of fire protection, such as an on-site water source or sprinkler system, is acceptable.</p> <p><input type="checkbox"/> Adequate water service <i>cannot</i> be provided.</p>	
<p>Sanitary Sewer Service</p> <p><input type="checkbox"/> Sanitary sewer capacity in the wastewater treatment system and the sanitary sewage collection system is available to serve the development or can be made available through improvements completed by the developer or the system owner.</p> <p><input type="checkbox"/> Adequate sanitary sewer service <i>cannot</i> be provided.</p>	
<p>Surface Water Management, Treatment, and Conveyance</p> <p><input type="checkbox"/> Adequate surface water management, treatment, and conveyance is available to serve the development or can be made available through improvements completed by the developer or the system owner.</p> <p><input type="checkbox"/> Adequate surface water management, treatment, and conveyance <i>cannot</i> be provided.</p>	
Is this statement issued subject to any conditions of approval?	
<input type="checkbox"/> YES, and those conditions are attached. <input type="checkbox"/> NO	
Signature of authorized representative: <i>Markus Mead</i>	Date of signature: March 21 2024

Exhibit C Civil Plans

PROPOSED CHICK-FIL-A RESTAURANT

13819 SE MCLOUGHLIN BLVD, MILWAUKIE, 97222
LAND USE DOCUMENTS



CHICK-FIL-A

FSR#

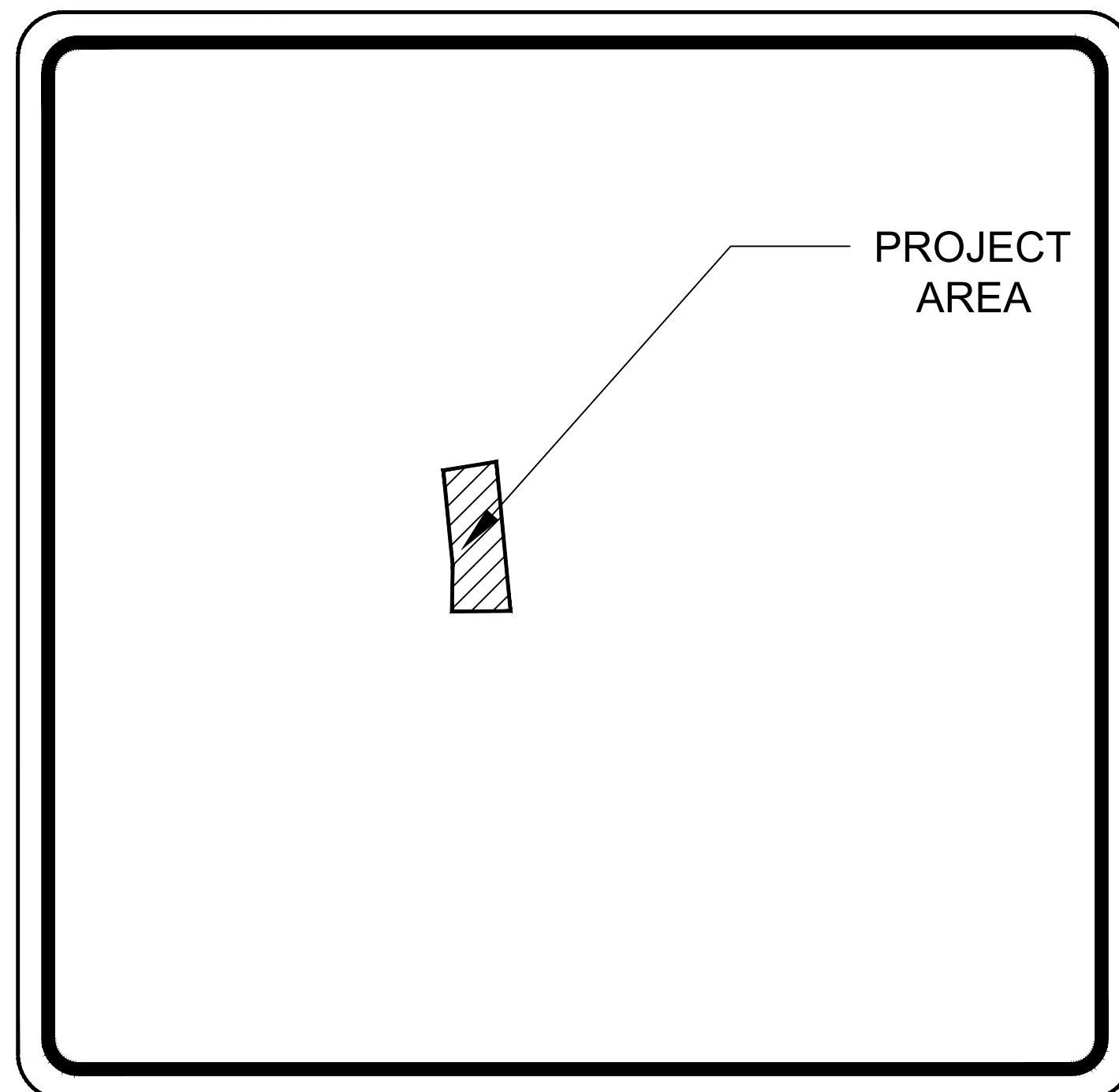
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SCHEMA

COVER SHEET

C0.0

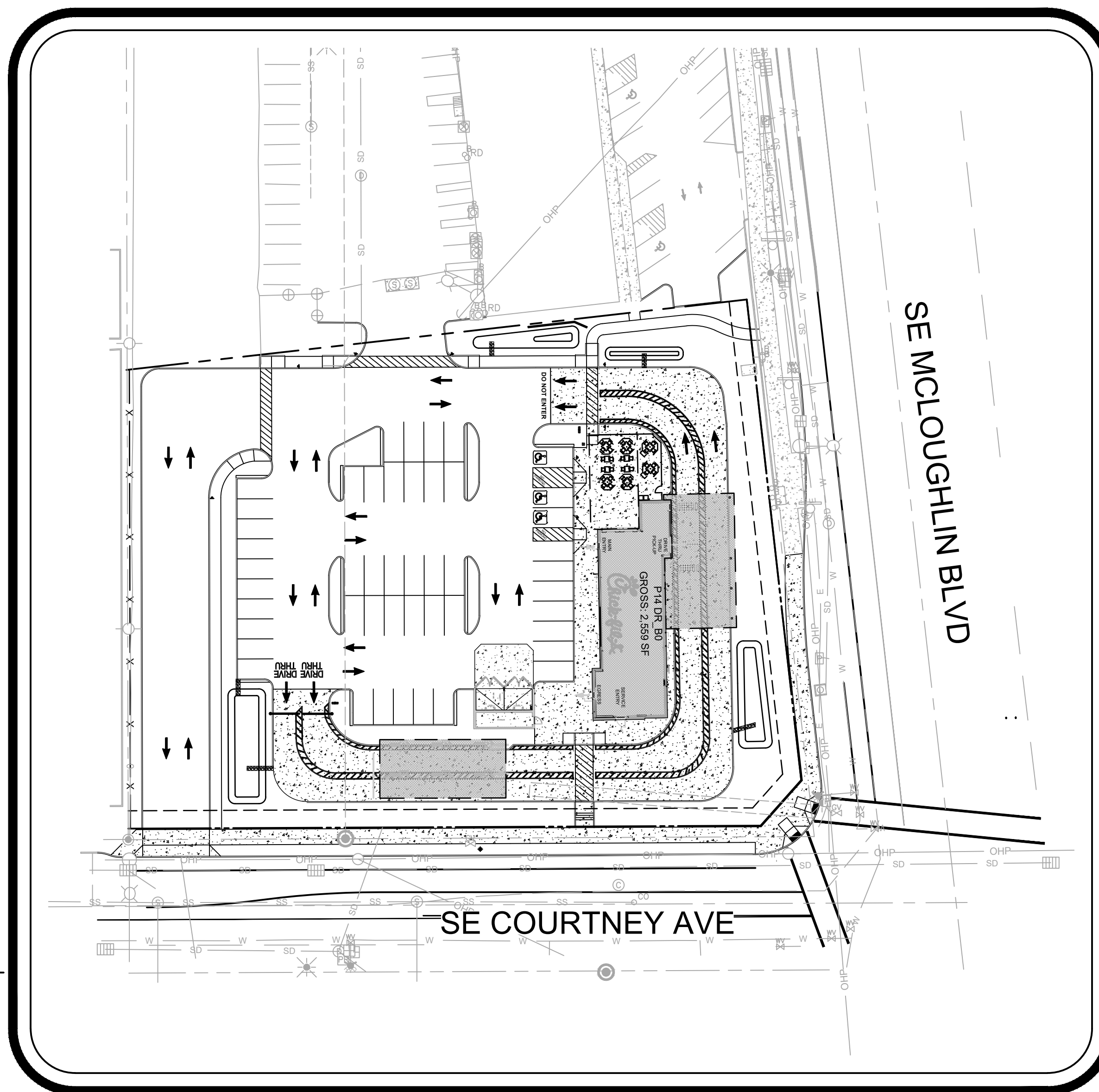
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Sheet List Table	
Sheet Number	Sheet Title
C0.0	COVER SHEET
C0.1	STREET TYPICAL SECTIONS
C1.0	EXISTING CONDITIONS
C1.1	DEMOLITION PLAN
C2.0	SITE PLAN
C3.0	GRADING PLAN
C4.0	STORM PLAN
C5.0	UTILITY PLAN
C5.1	FIRE ACCESS PLAN
L1.0	PLANTING PLAN



VICINITY MAP

SCALE: NTS



SITE MAP

SCALE: 1" = 40'



PROJECT DESCRIPTION

THE PROJECT SITE CONSISTS OF 3.612 ACRES OF THE EXISTING 13.26 ACRES AT 13765-13846 SE MCLOUGHLIN BLVD (TITLE REPORT: NCS-1118379-SD). THE PROPOSED BUILDING WOULD BE A 2,868 SQUARE FT RESTAURANT WITH DRIVE-THRU SERVICE. THERE WILL BE 47 PARKING SPACES WITH THE LEASE LIMITS.

SITE LOCATION

THE SITE IS DESIGNATED WITH AN ADDRESS OF 113819 SE MCLOUGHLIN BLVD, MILWAUKIE, 97222.

TAXLOT ID: 21E01CA03100 AND 21E01CA02900

BASIS OF BEARING

THIS SURVEY UTILIZES A LOW DISTORTION PROJECTION (LDP) WHICH IS RELATIVE TO THE OREGON COORDINATE REFERENCE SYSTEM (OCRS) OF 1983 (2011), WITH RESPECT TO THE LOCAL LATITUDE AND GROUND ELEVATION. THE LDP COORDINATES DEFINE TRUE GROUND DISTANCES.

BEARINGS BASED ON OREGON COORDINATE REFERENCE SYSTEM PORTLAND ZONE, NORTH AMERICAN DATUM OF NAD₈₃ (EPOCH 2010.0000) UNITS IN INTERNATIONAL FEET.

DATUM

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) BASED ON NATIONAL GEODETIC SURVEY ONLINE POSITIONING SERVICE OPUS STATIC OBSERVATIONS.

EXISTING SURVEY MONUMENTS ARE TO BE PROTECTED DURING CONSTRUCTION OR REPLACED IN ACCORDANCE WITH OREGON REVISED STATUTES 209.140-209.155

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CLACKAMAS COUNTY DESIGN STANDARDS AND STANDARD CONSTRUCTION SPECIFICATIONS.

PROJECT TEAM

OWNER

CHICK-FIL-A
ATTN: STEVE SCHWARTZ
15635 ALTON PARKWAY, SUITE 350
IRVINE, CALIFORNIA 92618
PHONE: (404) 305-4407
STEVE.SCHWARTZ@CFACORP.COM

CIVIL ENGINEER

DOWL
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PORTLAND, OREGON 97204
PHONE: (971) 280-8645
MTOWLE@DOWL.COM

GEOTECHNICAL ENGINEER

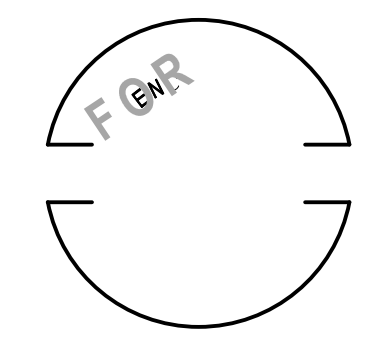
TERRACON CONSULTANTS
ATTN: KRISTOPHER T. HAUCK, PE
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KRISTOPHER.HAUCK@TERRACON.COM

SURVEY

S&F LAND SERVICES
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JERED.MCGRATH@SFLANDS.COM

LANDSCAPE ARCHITECT

DOWL
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WIAZZETTI@DOWL.COM



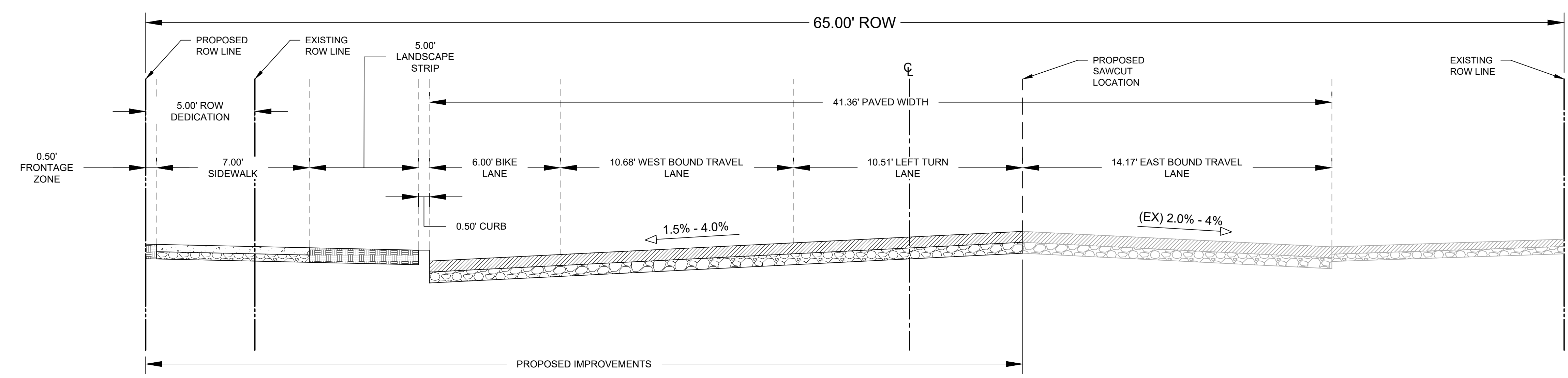
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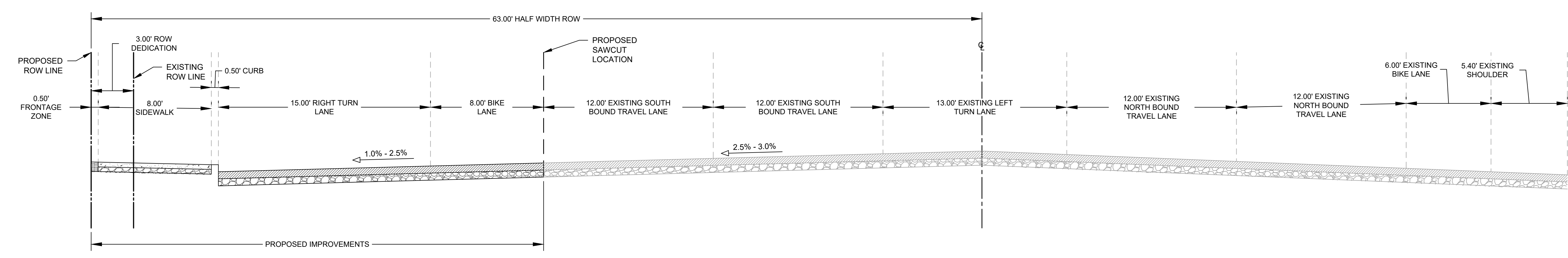
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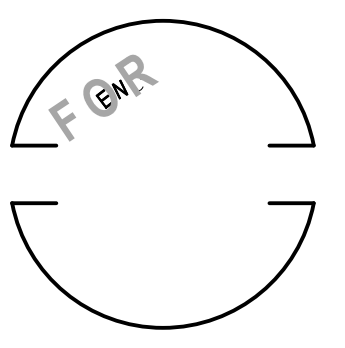


SE COURTNEY AVE TYPICAL SECTION
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SE MCLOUGHIN BLVD TYPICAL SECTION
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EXISTING
CONDITIONS

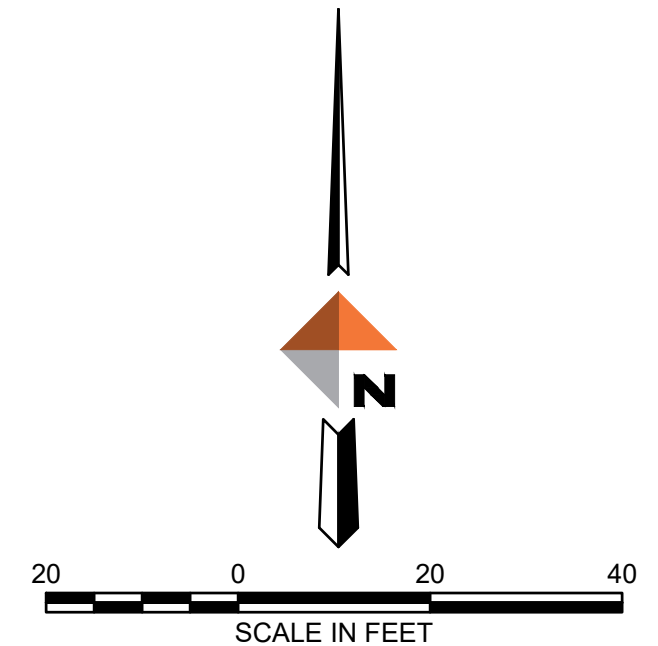
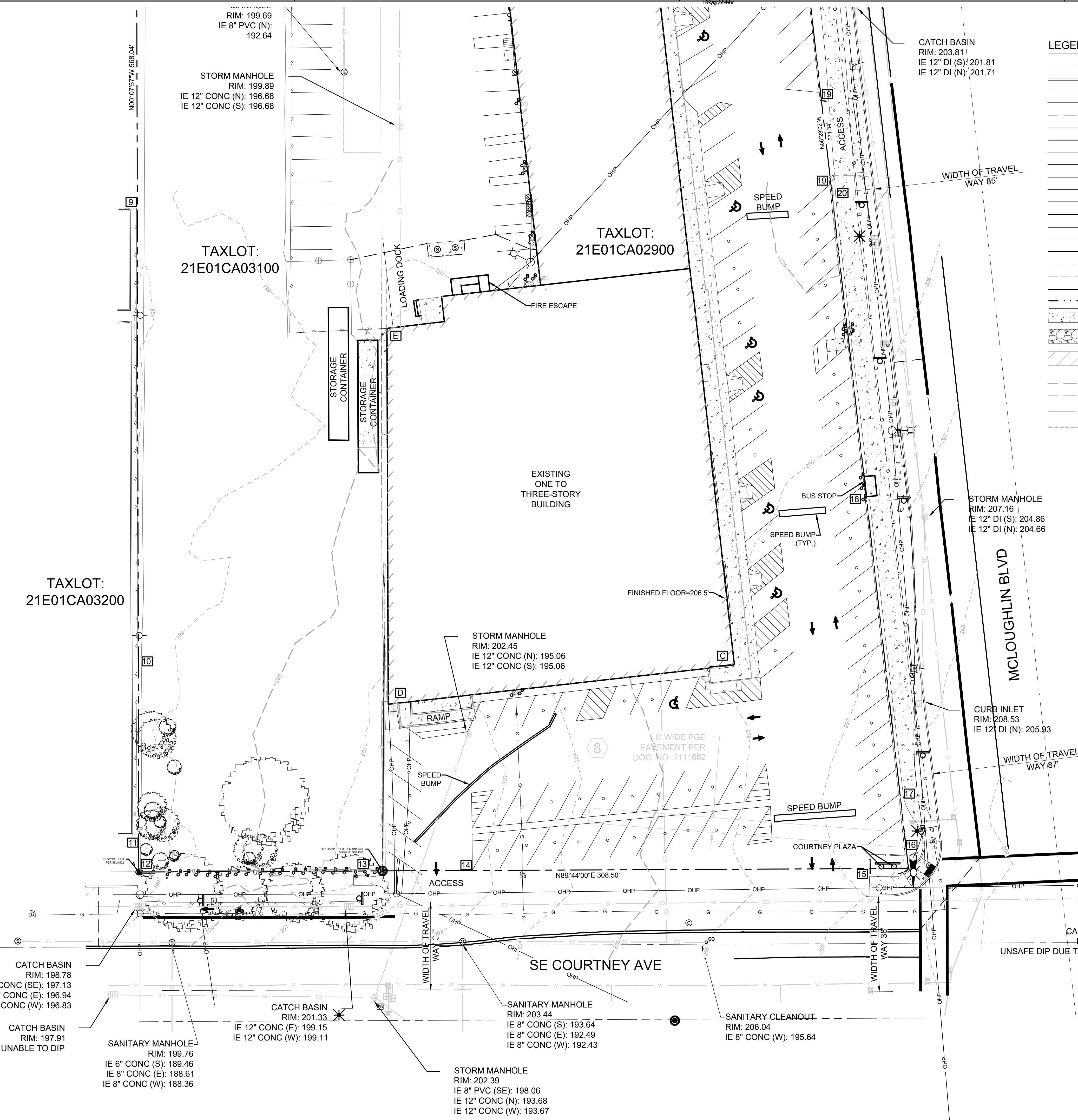
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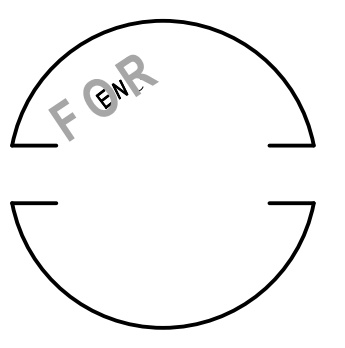
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	STANDARD CURB		SIGN
	EDGE OF PAVEMENT		BOLLARD
	EDGE OF CONCRETE		POWER POLE
	EDGE OF GRAVEL		POWER POLE W/ LIGHT
	FIBER OPTICS		POWER VAULT
	GAS		LIGHT-LAMP POST
	WATER		GUY ANCHOR
	STORM SEWER		SANITARY/STORM CLEAN-OUT
	ELECTRIC		SANITARY SEWER MANHOLE
	OVERHEAD POWER		EX. GAS METER
	SANITARY SEWER		STORM CATCH BASIN
	UNKNOWN UNDERGROUND UTILITY		STORM MANHOLE
	CENTERLINE		FIRE HYDRANT
	RIGHT OF WAY		WATER METER
	BOUNDARY LINE		WATER VALVE
	EASEMENT		GAS VALVE
	LOT/PARCEL LINE		TELEPHONE RISER
	DONATION LAND CLAIM		IRRIGATION CONTROL VALVE
	SECTION LINE		CATV RISER
	CONCRETE HATCH		EXISTING TREE
	GRAVEL HATCH		EXISTING TREE TO BE REMOVED
	CLEAR AND GRUB AREA		
	EX. MAJOR CONTOUR		
	EX. MINOR CONTOUR		
	FENCE		
	PROPOSED SAWCUT		

UNDERGROUND ACCURACY STATEMENT

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH WE CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. DUE TO THE HAZARDOUS NATURE AND APPLICABLE OSHA REQUIREMENTS REGARDING CONFINED SPACES, IT IS NOT DOWL POLICY TO SEND FIELD STAFF INTO UTILITY MANHOLES TO RETRIEVE DEPTH AND SIZE INFORMATION. INFORMATION SHOWN HEREON IS SUBJECT TO AN UNCERTAINTY IN ACCURACY DEPENDING ON DEPTH, SIZE, FLOW, AND CONSTRUCTION OF MANHOLES. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITY LINES.



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CHICK-FIL-A

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DEMOLITION
PLAN

C1.1

LEGEND

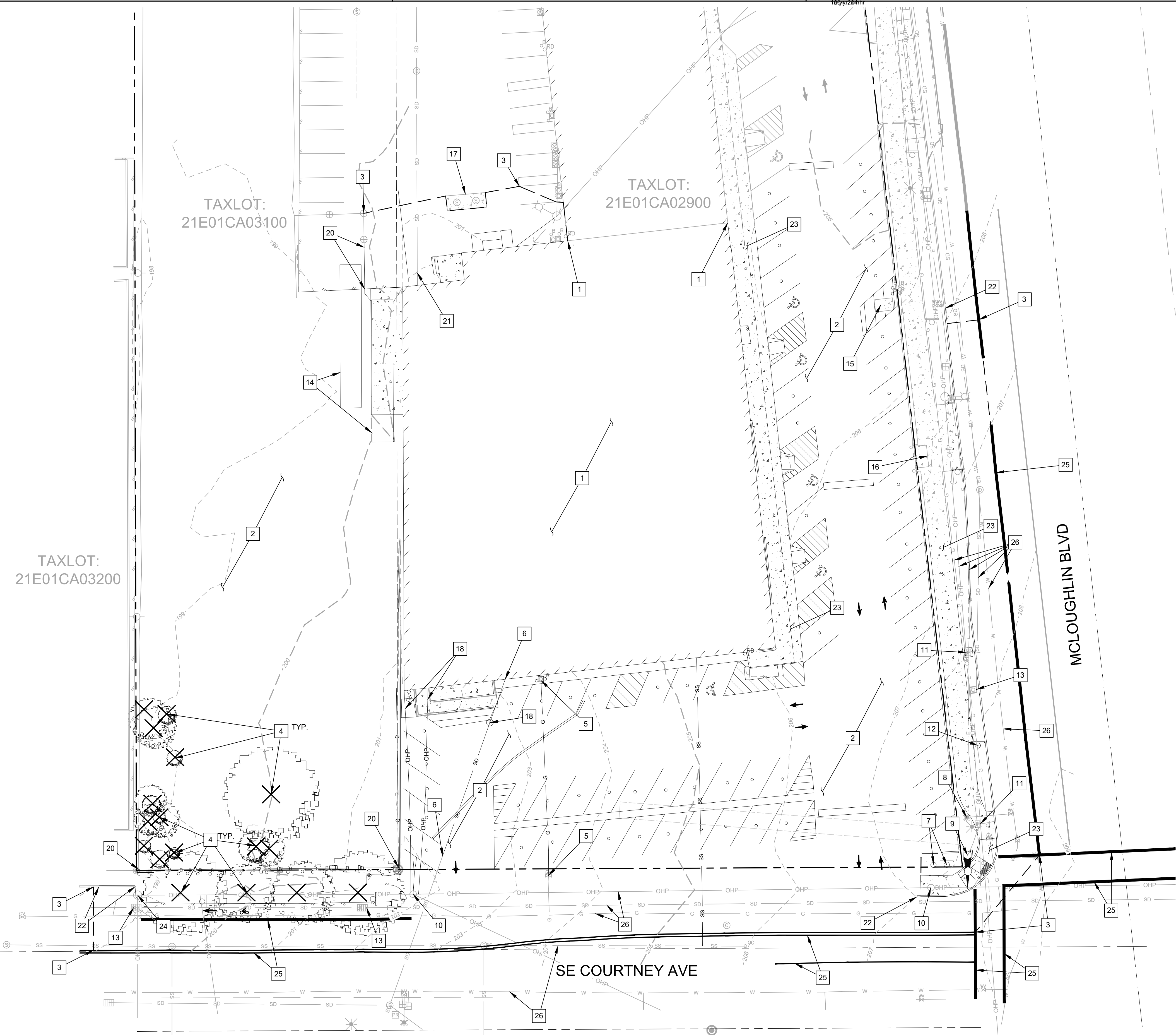
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	STANDARD CURB		SIGN
	EDGE OF PAVEMENT		BOLLARD
	EDGE OF CONCRETE		POWER POLE
	EDGE OF GRAVEL		POWER POLE W/ LIGHT
	FIBER OPTICS		POWER VAULT
	GAS		LIGHT-LAMP POST
	WATER		GUY ANCHOR
	STORM SEWER		SANITARY/STORM CLEAN-OUT
	ELECTRIC		SANITARY SEWER MANHOLE
	OVERHEAD POWER		EX. GAS METER
	SANITARY SEWER		STORM CATCH BASIN
	UNKNOWN UNDERGROUND UTILITY		STORM MANHOLE
	CENTERLINE		FIRE HYDRANT
	RIGHT OF WAY		WATER METER
	EASEMENT		WATER VALVE
	LOT/PARCEL LINE		GAS VALVE
	DONATION LAND CLAIM		TELEPHONE RISER
	SECTION LINE		IRRIGATION CONTROL VALVE
	CONCRETE HATCH		CATV RISER
	GRAVEL HATCH		EXISTING TREE
	CLEAR AND GRUB AREA		EXISTING TREE TO BE REMOVED
	EX. MAJOR CONTOUR		
	EX. MINOR CONTOUR		
	FENCE		
	PROPOSED SAWCUT		

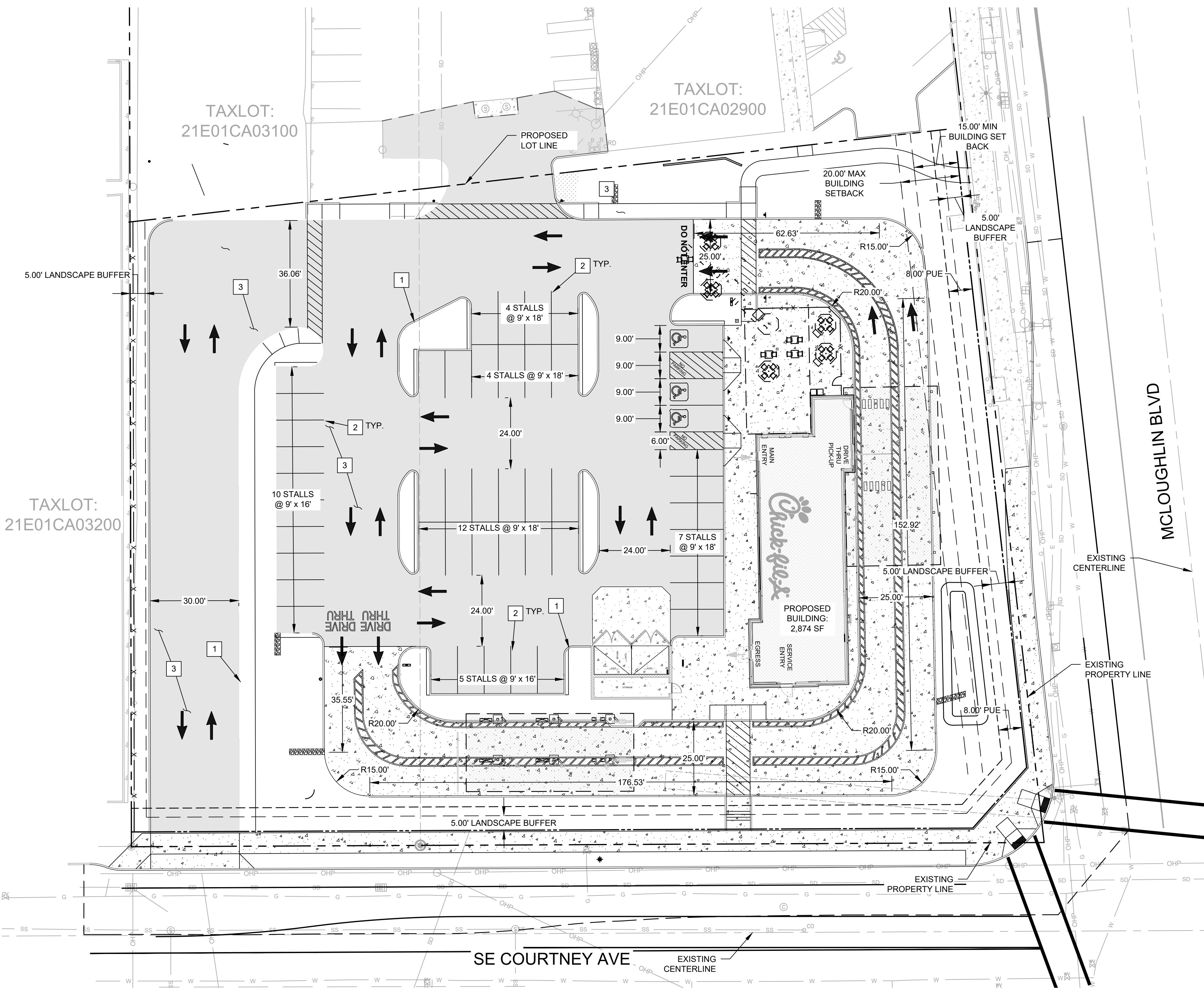
DEMOLITION NOTES

1. DEMOLISH EXISTING STRUCTURES AND CONCRETE FOUNDATIONS.
2. CLEAR AND GRUB AREA OF ALL ASPHALT AND CONCRETE PAVEMENT, CONCRETE CURB AND GUTTER, CONCRETE SIDEWALKS, BOLLARDS, MECHANICAL UNITS, VEGETATION, DEBRIS AND ANY OTHER DELETERIOUS MATERIALS.
3. PROPOSED SAWCUT LINE. SAWCUT EXISTING ASPHALT SURFACE FOR SMOOTH TRANSITION.
4. REMOVE EXISTING TREE.
5. REMOVE EXISTING GAS METER AND SERVICE TO BUILDING AND CAP AT EXISTING GAS VALVE
6. REMOVE EXISTING STORM LINE AND CAP AT PROPERTY LINE
7. REMOVE EXISTING SIGN
8. EXISTING HYDRANT TO BE RELOCATED TO BE BEHIND NEW CURB LINE
9. EXISTING TRAFFIC SIGNAL POLE WITH STREET LIGHT TO BE RELOCATED
10. EXISTING POLE TO BE RELOCATED
11. EXISTING ELECTRICAL UTILITY TO BE RELOCATED
12. EXISTING RIGHT TURN LANE SIGN TO BE RELOCATED
13. EXISTING CATCH BASIN TO BE RELOCATED
14. EXISTING SHIPPING CONTAINERS TO BE REMOVED
15. PROTECT EXISTING FDC AND CONCRETE PAD AND ASSOCIATED WATER LINE
16. PROTECT EXISTING BUS STOP
17. PROTECT EXISTING GREASE INTERCEPTOR
18. REMOVE EXISTING STORM MANHOLE
19. REMOVE EXISTING ELECTRICAL SERVICE TO BUILDING
20. REMOVE EXISTING FENCE
21. DEMO AND CAP EXISTING STORM LINE AT LEASE LINE. CONTRACTOR TO TV EXISTING STORM LINE AND CONFIRM WHERE EXISTING STORM LINE OUTLETS TO A PUBLIC STORM LINE
22. REMOVE EXISTING CURB
23. REMOVE EXISTING SIDEWALK
24. EXISTING UTILITY POLE WITH STREET LIGHT TO BE RELOCATED
25. EXISTING STRIPING TO BE REMOVED
26. PROTECT EXISTING UTILITIES

UNDERGROUND ACCURACY STATEMENT

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH WE CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. DUE TO THE HAZARDOUS NATURE AND APPLICABLE OSHA REQUIREMENTS REGARDING CONFINED SPACES, IT IS NOT DOWL POLICY TO SEND FIELD STAFF INTO UTILITY MANHOLES TO RETRIEVE DEPTH AND SIZE INFORMATION. INFORMATION SHOWN HEREON IS SUBJECT TO AN UNCERTAINTY IN ACCURACY DEPENDING ON DEPTH, SIZE, FLOW, AND CONSTRUCTION OF MANHOLES. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITY LINES.





CONSTRUCTION NOTES

1. PROPOSED STANDARD CONCRETE CURB. REFLECTIVE PAINT WITH ANTI-SLIP ADHESIVE. 2 COATS MIN. TYP.
2. PROPOSED 4" WHITE PAINTED PARKING STRIPE. 2 COATS MINIMUM. TYP.
3. PROPOSED ASPHALT. TYP.
4. PROPOSED STANDARD SIDEWALK.
5. PROPOSED TRASH ENCLOSURE AND STORAGE AREA WITH CONCRETE APRON.
6. PROPOSED BUILDING. SEE ARCHITECTURAL PLANS FOR DETAILS.
7. PROPOSED STANDARD A.D.A. STALL AND SIGNAGE.
8. PROPOSED VAN ACCESSIBLE A.D.A. STALL AND SIGNAGE.
9. PROPOSED STANDARD CURB WITH 12" LANDSCAPE AND IRRIGATION PROTECTION EXTENSION. (TYP.)
10. PROPOSED WHITE PAINTED DIRECTIONAL ARROW. TWO COATS MINIMUM. TYP.
11. PROPOSED CONCRETE PATIO WITH OUTDOOR SEATING.
12. PROPOSED DRIVE-THRU PAVEMENT MARKINGS.
13. PROPOSED HEAVY DUTY CONCRETE. (TYP.)
14. PROPOSED FLAGPOLE.
15. PROPOSED DRIVE-THRU CANOPY. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION
16. PROPOSED 4" WIDE YELLOW STRIPES @ 3' OC. STRIPING TO BE 24" WIDE AND YELLOW
17. PROPOSED CROSS WALK STRIPING.
18. PROPOSED ADA RAMP AND LANDING.
19. PROPOSED DRIVE-THRU EQUIPMENT AND SIGNAGE.
20. PROPOSED BIKE RACKS (2) SPACES
21. PROPOSED LANDSCAPING AREA.
22. PROPOSED FENCE
23. PROPOSED STORM WATER FACILITY. SEE SHEETS C3.0 AND C4.0 FOR MORE INFORMATION
24. PROPOSED STREET LIGHTING. STREET LIGHTING DESIGN TO BE PROVIDED AT CONSTRUCTION DOCUMENTS.
25. PROPOSED ADA RAMP
26. PROPOSED DRIVEWAY
27. PROPOSED BIKE LANE STRIPING
28. PROPOSED CENTER LANE STRIPING
29. PROPOSED LEFT TURN LANE STRIPING
30. PROPOSED RIGHT TURN LANE STRIPING
31. PROPOSED CROSSWALK STRIPING
32. PROPOSED WALL
33. PROPOSED PEDESTRIAN PATHWAY
34. PROPOSED 5x5' TREE WELL
35. PROPOSED STAIRS WITH HANDRAIL

BUILDING SETBACK CALCULATION:

TOTAL CANOPY LENGTH:	60.42'
LENGTH OF CANOPY WITHIN 20' SETBACK:	48.0'
PERCENT OF CANOPY WITHIN 20' SETBACK:	79.44%

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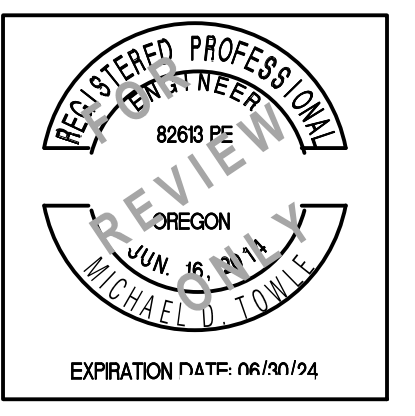
SITE AREA	
GROSS	1.48 AC 64,610 SF
NET	1.48 AC 64,610 SF
BUILDING FOOTPRINT	
BUILDING USE	2,874 SF
RESTAURANT	2,874 SF
COVERAGE	
GROSS	4%
NET	4%
PARKING REQUIRED	
MINIMUM SPACES	9/1000 SF 26
MAXIMUM SPACES	36
PARKING PROVIDED	
STANDARD	47
ADA	44
VAN	
REGULAR	1
BIKE PARKING	
SPACES REQUIRED	1/2500 SF 2 SPACES
SPACES PROVIDED	2 SPACES



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FSR# 05244

REVISION SCHEDULE

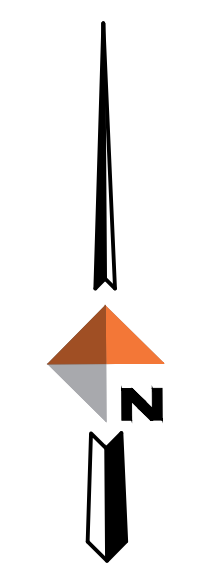
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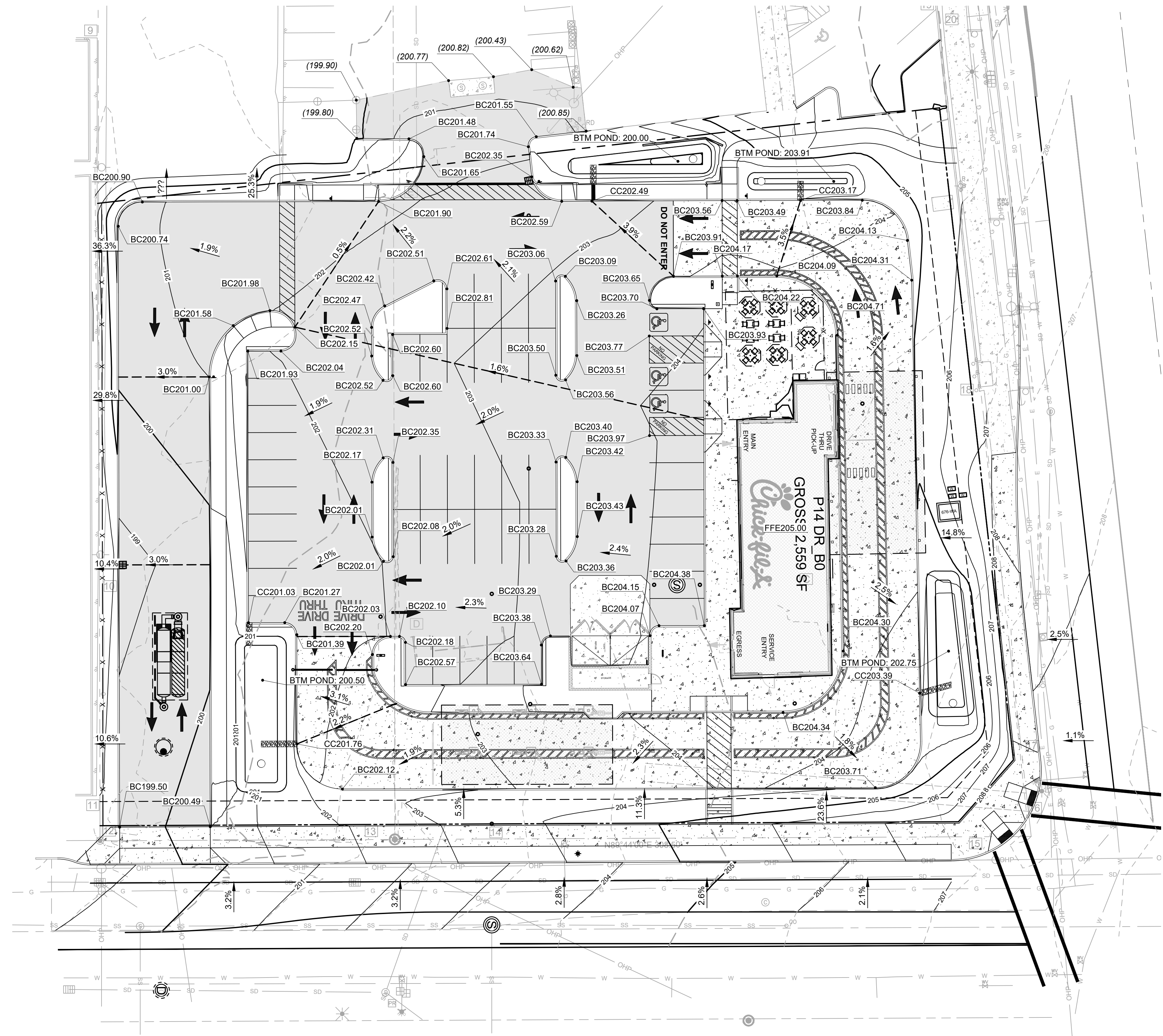
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SITE PLAN
SHEET NUMBER

C2.0



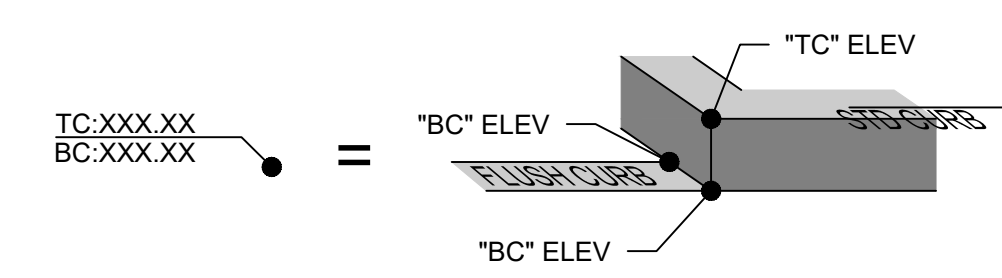
OREGON UTILITY
NOTIFICATION CENTER
1-800-332-2344

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LEGEND

	BOUNDARY LINE
	LEASE LINE
	BUILDING LINE
	EASEMENT
	PROPOSED MAJOR CONTOUR LINE
	PROPOSED MINOR CONTOUR LINE
	EXISTING MAJOR CONTOUR LINE
	EXISTING MINOR CONTOUR LINE
	PROPOSED GRADE BREAK
	PROPOSED SPOT ELEVATION PER ABBREVIATION TABLE BELOW
	SANITARY SEWER CLEANOUT
	STORM SEWER CLEANOUT
	STORM CATCH BASIN
	PROPOSED ASPHALT PAVEMENT
	PROPOSED CONCRETE SURFACE



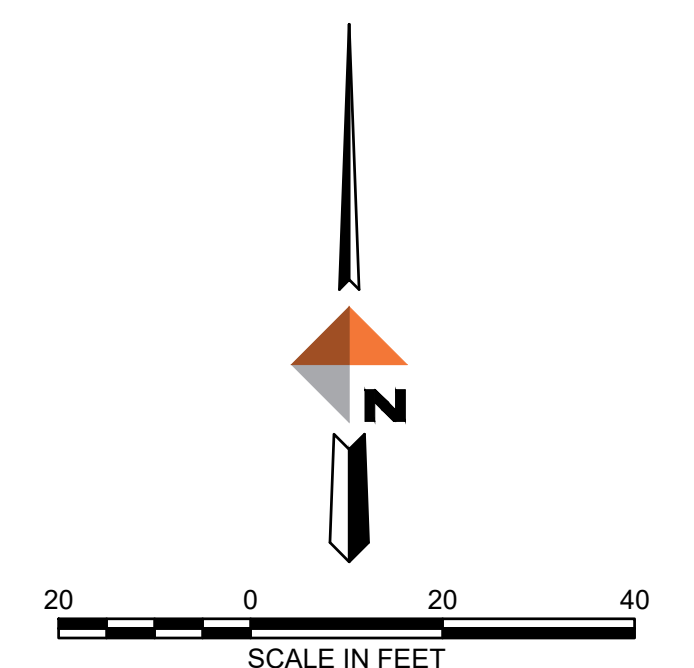
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ABBREVIATION TABLE

FFE:	FINISH FLOOR ELEVATION
FL:	FLOWLINE
FS:	FINISH SURFACE
HP:	HIGH POINT ELEVATION
LP:	LOW POINT ELEVATION
R:	RIM ELEVATION
S:	SPOT ELEVATION
TC:	TOP OF CURB

*ALL CURBS HAVE 6" EXPOSURE UNLESS OTHERWISE NOTED.

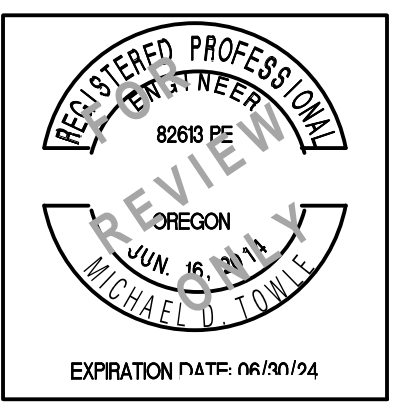
- GRADING NOTES**
- PAVEMENT IN ADA PARKING AREA TO HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
 - ALL CURBS TO HAVE 6" EXPOSURE UNLESS OTHERWISE NOTED.



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Portland, Oregon 97204
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MILWAUKIE, OREGON

FSR# 05244

REVISION SCHEDULE

NO.	DATE	DESCRIPTION
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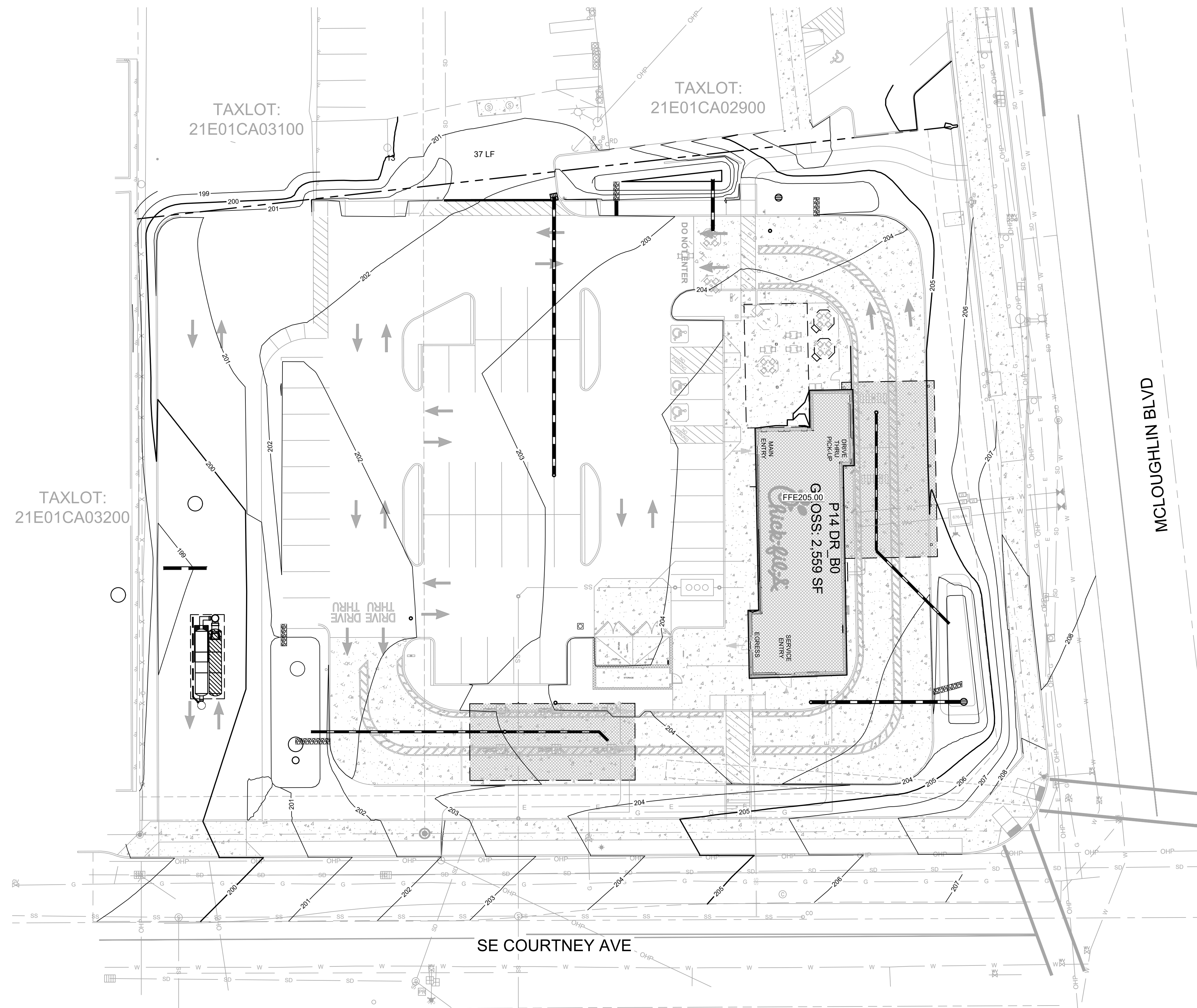
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SHEET
GRADING PLAN
SHEET NUMBER

C3.0

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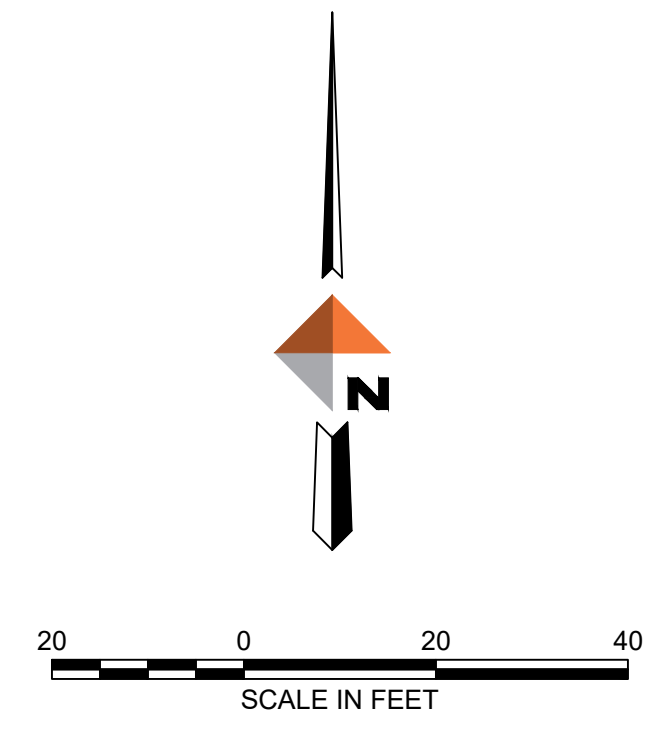


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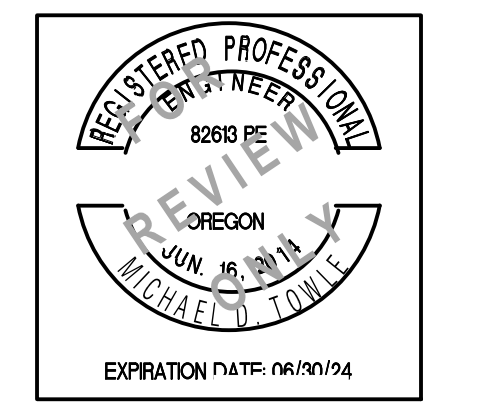
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	EXISTING EASEMENT
	EXISTING GAS LINE
	EXISTING SANITARY SEWER LINE
	PROPOSED STORM DRAIN LINE
	EXISTING DOMESTIC WATER LINE
	EXISTING FIRE WATER LINE
	EXISTING POWER(ELECTRIC) LINE
	EXISTING COMMUNICATIONS LINE
	PROPOSED FIRE DEPARTMENT CONNECTION
	PROPOSED HYDRANT
	PROPOSED WATER METER
	PROPOSED WATER VALVE
	PROPOSED DCDA
	PROPOSED SANITARY SEWER CLEAN OUT
	PROPOSED STORM SEWER CATCH BASIN
	PROPOSED STORM SEWER CLEAN OUT

- # STORMWATER KEYNOTES**
- PROPOSED 6-INCH PVC D3034 PIPE UNDER DRAIN LINE
 - PROPOSED 12-INCH PVC D3034 PIPE. SEE PLAN FOR LENGTH AND SLOPE.
 - PROPOSED 24-INCH ADS INLET PIPE
 - PROPOSED CONTECH FILTER CATCH BASIN. SEE TABLE THIS SHEET FOR MORE INFORMATION.
 - PROPOSED 60" FLOW CONTROL MANHOLE. SEE TABLE THIS SHEET FOR MORE INFORMATION.
 - PROPOSED (6) ADS DC-780 STORMTECH SYSTEM.
 - PROPOSED 48-INCH ADS STORM CHAMBER INLET/OUTLET. SEE TABLE THIS SHEET FOR MORE INFORMATION.
 - PROPOSED CONNECTION TO EXISTING STORM LINE WITH NEW MANHOLE. SEE MANHOLE TABLE THIS SHEET FOR MORE INFORMATION. CONTRACTOR TO POT HOLE AND CONFIRM EXISTING LINES LOCATION AND INVERT PRIOR TO CONSTRUCTION.
 - PROPOSED 12" ADS MANIFOLD PIPE
 - PROPOSED 8-INCH C900 PIPE. SEE PLAN FOR LENGTH AND SLOPE.
 - PROPOSED ROOF/CANOPY DRAIN CONNECTION. SEE PLAN FOR INVERT.
 - PROPOSED STORM WATER CLEAN OUT. SEE DATA TABLE THIS SHEET FOR MORE INFORMATION.
 - PROPOSED STORM FACILITY AREA DRAIN. SEE DATA TABLE THIS SHEET FOR MORE INFORMATION
 - PROPOSED 18" WIDE CURB CUT WITH ROCK
 - PROPOSED 18" URBAN ACCESSORIES TRENCH GRATE AND CHANNEL DRAIN. OWNER TO SELECT PEDESTRIAN RATED GRATE STYLE PRIOR TO INSTALLATION.
 - PROPOSED AKO TRENCH DRAIN WITH 0.5% SLOPE. GRATE TO BE H20 TRAFFIC RATED, AND DRAIN TO CONNECT TO FILTER SIDE OF THE CATCH BASIN. SEE PLAN FOR LENGTH.
 - PROPOSED LINED STORM WATER FACILITY WITH UNDER DRAIN AND MAX 3:1 SLOPED SIDES. SEE SHEET C3.0 FOR GRADING INFORMATION.
 - ROOF DRAIN OUTFALL TO WATER QUALITY FACILITY. SEE PLAN FOR INVERT.

ALL PRIVATE STORM CONNECTIONS
NOT MADE AT A STRUCTURE TO BE
MADE WITH A WYE FITTING



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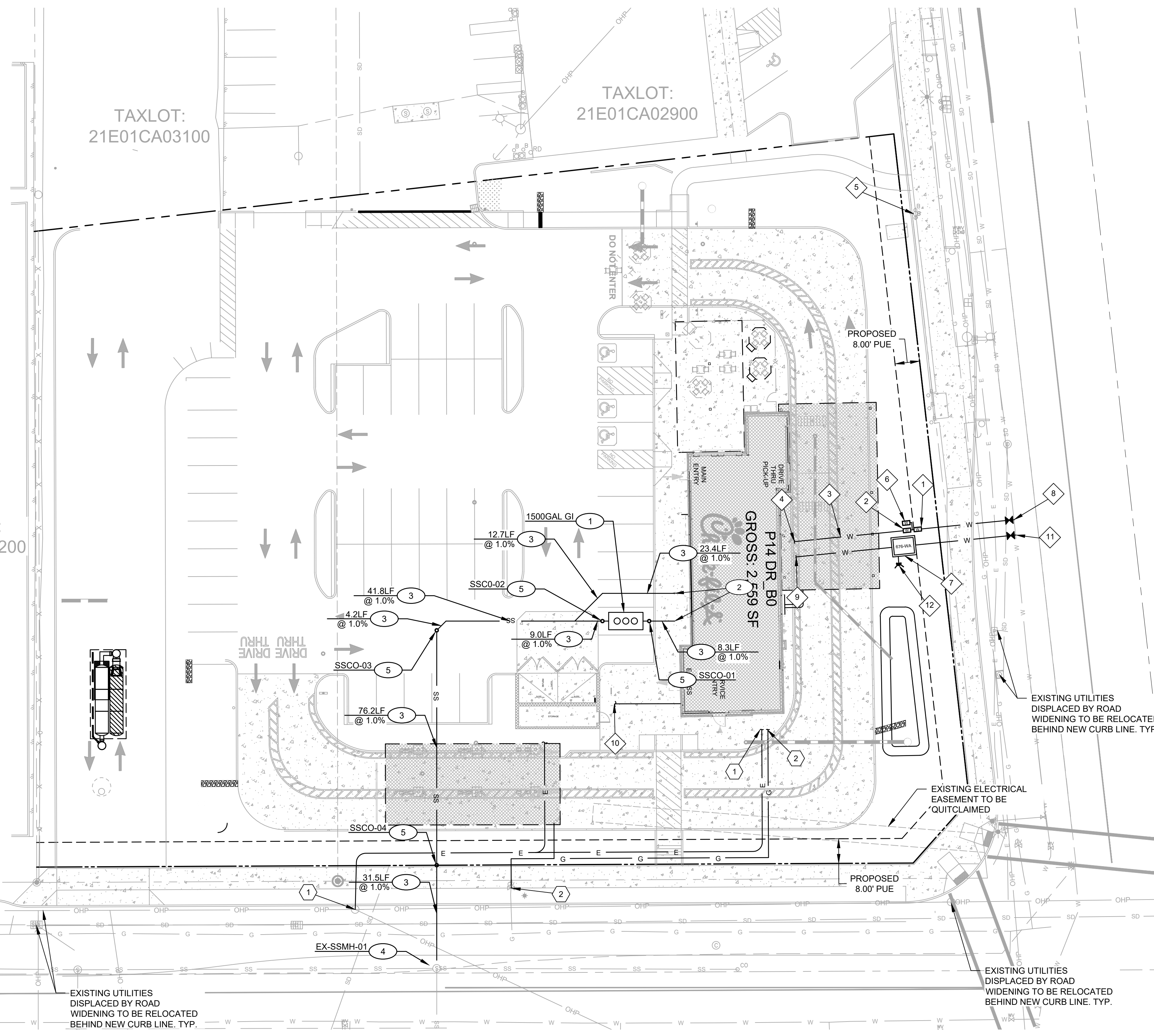
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STORM PLAN

SHEET NUMBER

C4.0

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LEGEND

---	PROPOSED PROPERTY LINE
G	PROPOSED GAS LINE
SS	PROPOSED SANITARY SEWER LINE
W	PROPOSED DOMESTIC WATER LINE
FW	PROPOSED FIRE WATER LINE
E	PROPOSED POWER(ELECTRIC) LINE
T	PROPOSED COMMUNICATIONS LINE
G	EXISTING GAS LINE
SS	EXISTING SANITARY SEWER LINE
W	EXISTING DOMESTIC WATER LINE
FW	EXISTING FIRE WATER LINE
E	EXISTING POWER(ELECTRIC) LINE
T	EXISTING COMMUNICATIONS LINE
+	PROPOSED FIRE DEPARTMENT CONNECTION
WM	PROPOSED HYDRANT
WM	PROPOSED WATER METER
WM	PROPOSED WATER VALVE
DC	PROPOSED DCDA
■	PROPOSED SANITARY SEWER CLEAN OUT

GENERAL NOTES

- SEE STORM WATER PLAN, SHEET C4.0 FOR MORE INFORMATION ON STORM UTILITIES AND FACILITIES
- CLEANOUTS TO BE INSTALLED ON STORM AND SEWER EVERY 90LF OF PIPE

WATER CONSTRUCTION NOTES

- PROPOSED DOMESTIC WATER SERVICE CONNECTION AND 1.5" DOMESTIC METER. CONTRACTOR TO PROVIDE NEW TAP AND METER TO MAIN LINE.
- PROPOSED 2" DOMESTIC BACKFLOW PREVENTION.
- PROPOSED 2" DOMESTIC WATER SERVICE LINE.
- PROPOSED DOMESTIC WATER CONNECTION TO BUILDING. LINE TO BE STUBBED 5' FROM FACE OF BUILDING
- PROTECT EXISTING FDC.
- PROPOSED 1" IRRIGATION BACKFLOW POINT OF CONNECTION
- PROPOSED 6" FIRE SERVICE AND BACKFLOW DEVICE.
- PROPOSED 2" TAP ON EXISTING MAIN
- PROPOSED FIRE CONNECTION TO THE BUILDING.
- PROPOSED WATER CONNECTION TO TRASH ENCLOSURE.
- PROPOSED 6" TAP ON EXISTING MAIN
- PROPOSED FDC

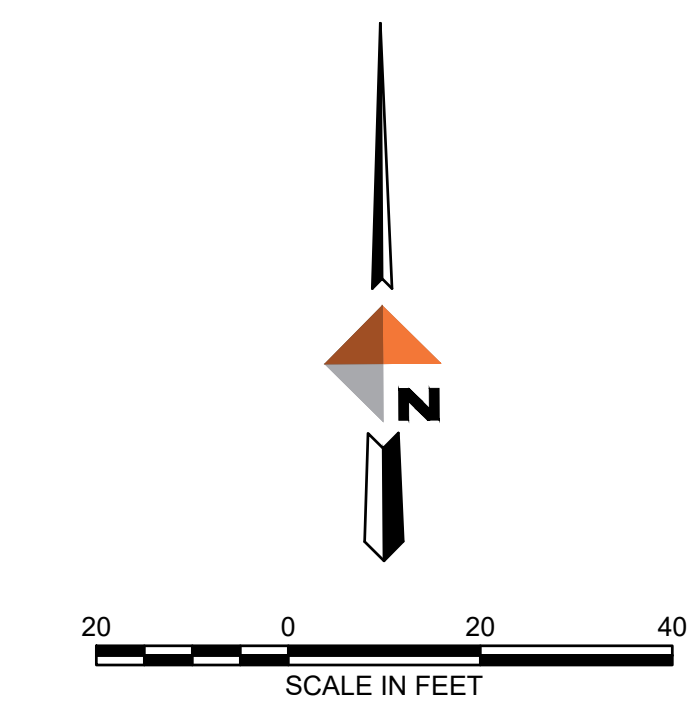
SANITARY SEWER CONSTRUCTION NOTES

- PROPOSED 1500 GALLON OLD CASTLE GREASE INTERCEPTOR VENTED BACK TO BUILDING. VAULT LID TO NOT EXCEED 24" IN GRADE RINGS. SEE TABLE THIS SHEET FOR MORE INFORMATION.
- PROPOSED SANITARY STUB 5' FROM BUILDING.
- PROPOSED 6" PVC SANITARY SEWER LINE. SEE PLAN FOR LENGTH AND SLOPE
- PROPOSED CONNECTION TO EXISTING MANHOLE
- PROPOSED SANITARY SEWER CLEANOUT. SEE TABLE THIS SHEET FOR MORE INFORMATION.

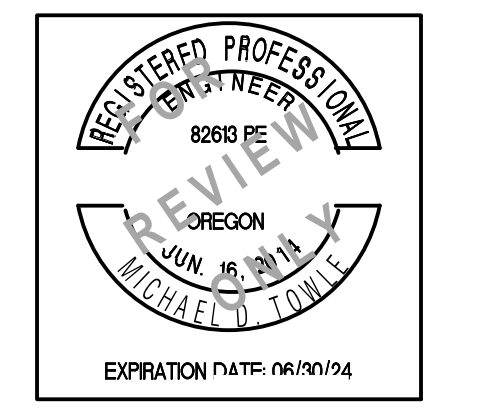
FRANCHISE UTILITY CONSTRUCTION NOTES

- CONNECT TO EXISTING POWER POLE BEING RELOCATED AND RUN ELECTRICAL CONDUIT TO BUILDING. CONTRACTOR TO COORDINATE CONNECTION WITH UTILITY PROVIDER AND MEP.
- CONNECT TO EXISTING GAS VALVE. INSTALL NEW METER, AND STUB 5' FROM FACE OF BUILDING. CONTRACTOR TO POTHOLE AND CONFIRM SIZE, ELEVATION, AND LOCATION PRIOR TO CONSTRUCTION. CONTRACTOR TO COORDINATE CONNECTION WITH UTILITY PROVIDER AND MEP.

ALL PRIVATE SEWER CONNECTIONS NOT MADE AT A STRUCTURE TO BE MADE WITH A WYE FITTING



OREGON UTILITY NOTIFICATION CENTER
1-800-332-2344



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MCCLOUGHLIN & COURTNEY
MILWAUKIE, OREGON

FSR# 05244

REVISION SCHEDULE

NO.	DATE	DESCRIPTION

CIVIL'S PROJECT #	14868.01
PRINTED FOR	SCHEMATIC DESIGN
DATE	MARCH 2024
DRAWN BY	RAR

UTILITY PLAN
SHEET NUMBER

C5.0

c:\dowl_p\p\03985656\SC-CS-UT-14868.dwg PLOT DATE 2024-03-14 17:11 USER: drommel

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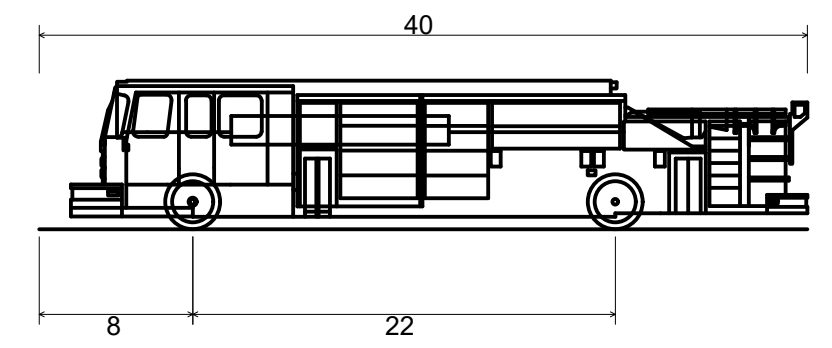
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21E01CA02900

TAXLOT:
21E01CA03200

LEGEND

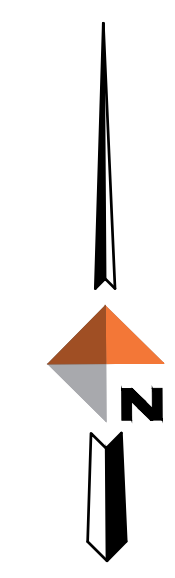
---	PROPOSED PROPERTY LINE
G	PROPOSED GAS LINE
SS	PROPOSED SANITARY SEWER LINE
W	PROPOSED DOMESTIC WATER LINE
FW	PROPOSED FIRE WATER LINE
E	PROPOSED POWER(ELECTRIC) LINE
T	PROPOSED COMMUNICATIONS LINE

- ⌘ PROPOSED FIRE DEPARTMENT CONNECTION
- PROPOSED HYDRANT
- WM PROPOSED WATER METER
- WV PROPOSED WATER VALVE
- DC PROPOSED DCDA
- PROPOSED SANITARY SEWER CLEAN OUT
- PROPOSED STORM SEWER CATCH BASIN
- PROPOSED STORM SEWER CLEAN OUT



Pumper Fire Truck
Overall Length 40.000ft
Overall Width 8.167ft
Overall Body Height 7.745ft
Min Body Ground Clearance 0.656ft
Track Width 8.167ft
Lock-to-lock time 5.00s
Max Wheel Angle 45.00°

EXISTING FIRE HYDRANT TO BE RELOCATED



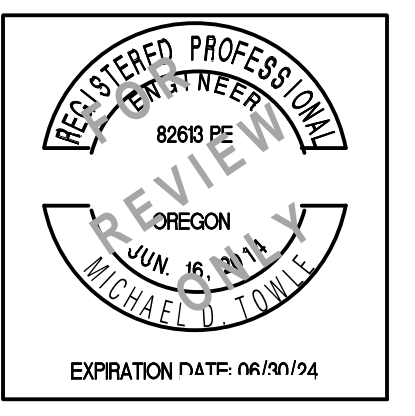
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Chick-fil-A
5200 Buffington Road
Atlanta, Georgia
30349-2998



309 SW 6TH AVENUE, #700
Portland, Oregon 97204
971-280-8641



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REVISION SCHEDULE

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DATE	MARCH 2024
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SHEET **FIRE ACCESS PLAN**
SHEET NUMBER

C5.1

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TAX LOT 21E01CA03100
ZONING C-3

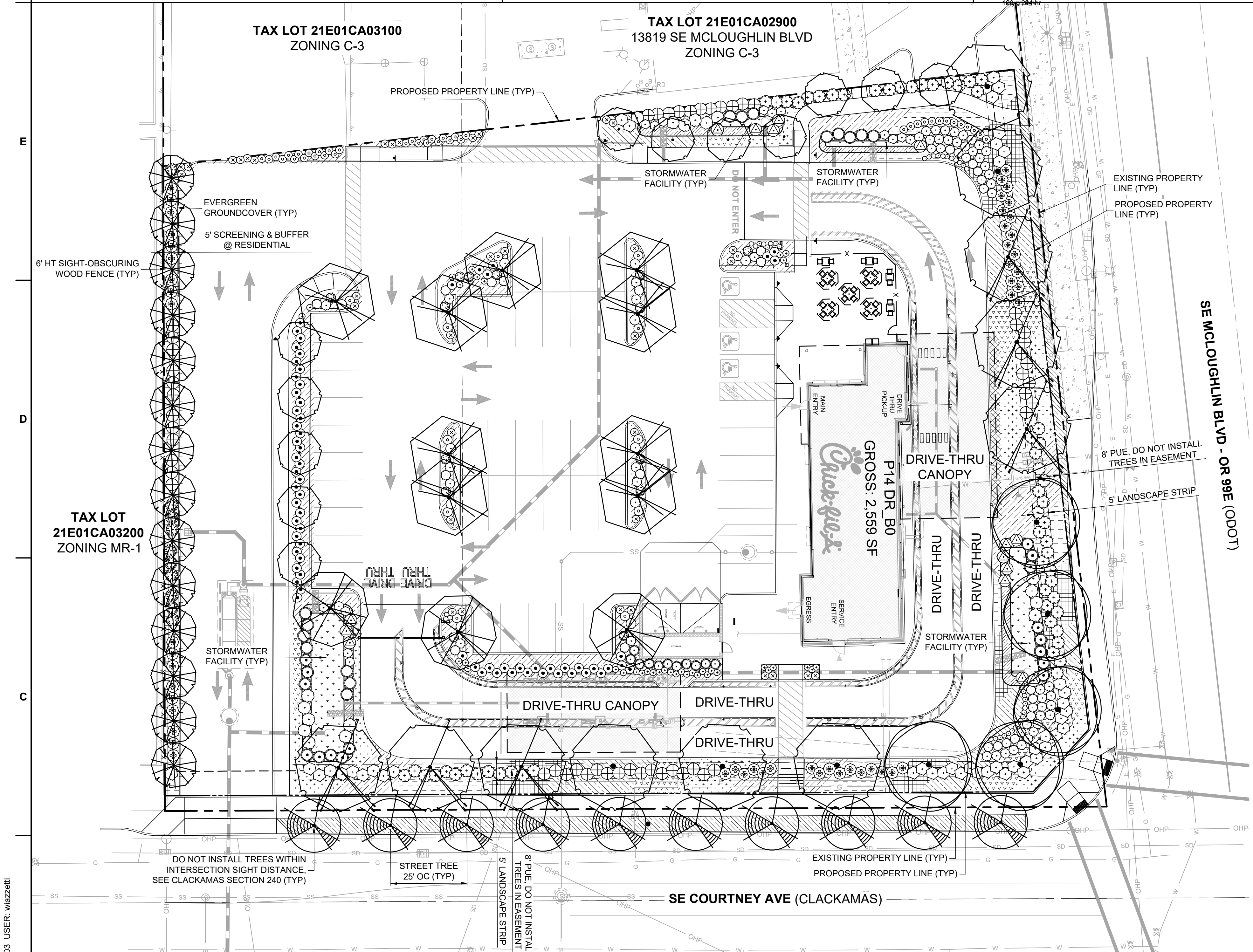
TAX LOT 21E01CA02900
13819 SE MCLOUGHLIN BLVD
ZONING C-3

PLANTING LEGEND

TREES ITEM	SIZE	QTY.	MATURE SIZE (H X W) / COMMENTS
ACER GRISEUM PAPERBARK MAPLE	2" CAL / B&B 8' HT MIN	10	25' H X 20' W / 5' BRANCHING HT DROUGHT TOL / OVERHEAD WIRES
ACER RUBRUM 'FRANK JR' REDPOINTE MAPLE	2" CAL / B&B AS SHOWN	6	45' H X 30' W / MEDIUM / PYRAMIDAL 5' BRANCHING HT / HEAT TOLERANCE
CARPINUS BETULUS 'FASTIGIATA' PYRAMIDAL EUROPEAN HORNBEAM	2" CAL / B&B 8' HT MIN	9	35' H X 25' W / 5' BRANCHING HT DROUGHT TOL / 3.6' TO 6' PLANTER
CLADRASTIS KENT 'PERKINS PINK' PERKINS PINK YELLOWWOOD	2" CAL / B&B AS SHOWN	5	30' H X 30' W / LARGE / 6' PLANTER DEEP-ROOTED / DROUGHT TOLERANT
NYSSA SYLVATICA 'NSUHH' GREEN GABLE TUPELO	2" CAL / B&B 8' HT MIN	3	40' H X 25' W / 1.5' BRANCHING HT WET & DROUGHT TOLERANT
PARROTIA PERSICA 'INGE'S RUBY VASE' RUBY VASE PERSIAN IRONWOOD	2" CAL / B&B AS SHOWN	12	28' H X 16' W / SMALL / 3' PLANTER POWER LINES / DROUGHT TOLERANT
PINUS FLEX 'VANDERWOLF'S PYRAMID' VANDERWOLF'S PYRAMID PINE	8' HT / B&B AS SHOWN	14	35' H X 15' W / SMALL / 4' PLANTER EVERGREEN / DROUGHT TOLERANT
ZELKOVA SERRATA 'GREEN VASE' GREEN VASE ZELKOVA	2" CAL / B&B AS SHOWN	5	45' H X 30' W / LARGE / 6' PLANTER 5' BRANCHING HT / DROUGHT TOLERANT
EXISTING TREE TO REMAIN			CONTRACTOR TO PROTECT IN PLACE

SHRUBS & ACCENTS ITEM	SIZE	QTY.	MATURE SIZE (H X W) / COMMENTS
ABELIA 'EDWARD GOUCHER' EDWARD GOUCHER ABELIA	5 GAL CONT 4'-0" OC	45	4' H X 5' W / MAINTAIN @ 3' HT EVERGREEN / DROUGHT TOLERANT
ARBUS UNEDO 'COMPACTA' COMPACT STRAWBERRY TREE	5 GAL CONT 4'-0" OC	59	6' H X 5' W / HIGH SCREEN SHRUB EVERGREEN / DROUGHT TOLERANT
ARCTOSTAPHYLOS COLUMBIANA MANZANITA	10 GAL CONT 4'-0" OC	10	6' H X 6' W / HIGH SCREEN SHRUB NATIVE EVERGREEN / DROUGHT TOLERANT
CALAMAGROSTIS X A. 'KARL FOERSTER' KARL FOERSTER REED GRASS	2 GAL 2'-0" OC	37	5' H X 24" W / VERTICAL GRASS DROUGHT TOLERANT
CHAMAECYPARIS OBTUSA 'GRACILIS' SLENDER HINOKI FASLSE CYPRESS	4' - 5' HT / B&B 3'-6" OC	11	6' H X 5' W / COLUMNAR EVERGREEN FULL SUN / LAYERED BRANCHES
CISTUS X PULVERULENTUS 'SUNSET' MAGENTA ROCK ROSE	5 GAL CONT 3'-0" OC	12	2' H X 4' W / EVERGREEN FULL SUN / DROUGHT TOLERANT
ILEX GLABRA 'SHAMROCK' SHAMROCK INKBERRY HOLLY	5 GAL CONT 3'-0" OC	14	4' H X 4' W / MAINTAIN @ 3' HT EVERGREEN / DROUGHT TOLERANT
LIGUSTRUM JAPONICUM 'TEXANUM' WAXLEAF PRIVET	5 GAL CONT 4'-0" OC	51	8' H X 6' W / HIGH SCREEN SHRUB EVERGREEN / DROUGHT TOLERANT
MAHONIA AQUIFOLIUM 'COMPACTA' COMPACT OREGON GRAPEHOLLY	5 GAL CONT 3'-0" OC	10	30" H X 3' W / EVERGREEN NATIVE SELECTION / DROUGHT TOLERANT
MISCANTHUS 'PURPURASCENS' AUTUMN FLAME GRASS	2 GAL CONT 2'-6" OC	40	5' H X 3' W / UPRIGHT ORANGE FALL COLOR / DROUGHT TOLERANT
MISCANTHUS SINENSIS 'LITTLE MISS' LITTLE MISS MAIDEN GRASS	2 GAL CONT 3'-0" OC	66	3' H X 3' W / COMPACT HABIT 2-TONE FOLIAGE / RED FLOWERS
MYRICA CALIFORNICA (MORELLA) PACIFIC WAX MYRTLE	10 GAL CONT 4'-0" OC	54	10' H X 6' W / HIGH SCREEN SHRUB NATIVE EVERGREEN / DROUGHT TOLERANT
PENNISETUM A. 'HADELN' HAMELN FOUNTAIN GRASS	2 GAL CONT 30" OC	35	30" H X 30" W FULL SUN / DROUGHT TOLERANT
ROSA 'RADRAZ' KNOCK OUT ROSE	2 GAL CONT 3'-0" OC	47	3' H X 3' W / DISEASE RESISTANT FULL SUN / DROUGHT TOLERANT
RUDBECKIA FULGIDA 'EARLY BIRD GOLD' EARLY BIRD GOLD BLACK EYED SUSAN	2 GAL CONT 18" OC	39	2' H X 2' W / PERENNIAL YELLOW FLOWERS SPRING TO FALL
NARCISSUS 'DUTCH MASTER' DUTCH MASTER TRUMPET DAFFODIL	16 CM + 4 PER AREA	200	20" H X 6" W / BULB YELLOW FLOWERS - SPRING
COLCHICUM GIGANTEUM 'THE GIANT' GIANT AUTUMN CROCUS	20 CM + 4 PER AREA	200	8" H X 6" W / BULB PURPLE FLOWERS - FALL
SPIRAEA JAPONICA 'NEON FLASH' NEON FLASH JAPANESE SPIREA	5 GAL CONT 3'-0" OC	12	3' H X 3' W / SMALL FULL SUN / BRIGHT RED FLOWERS
VACCINIUM OVATUM EVERGREEN HUCKLEBERRY	5 GAL CONT 3'-0" OC	19	3' H X 3' W / LOW SHRUB NATIVE EVERGREEN / DROUGHT TOLERANT

GROUNDCOVERS & MISC ITEM	SIZE	QTY.	MATURE SIZE (H X W)
ARCTOSTAPHYLOS UVA-URSI 'MASS.' MASS KINKINICK	1 GAL CONT 2'-0" OC	3,332 SF 966 PLANTS	9" H X 3' W / EVERGREEN SELECTION DROUGHT TOLERANT / FIRE RESISTANT
ARCTOSTAPHYLOS UVA-URSI KINKINICK	1 GAL CONT 2'-0" OC	1,792 SF 520 PLANTS	9" H X 3' W / EVERGREEN SELECTION DROUGHT TOLERANT / FIRE RESISTANT
COTONEASTER DAMMERI 'LOWFAST' BEARBERRY COTONEASTER	1 GAL CONT 2'-0" OC	916 SF 266 PLANTS	12" H X 3' W / EVERGREEN DROUGHT TOLERANT
PENNISETUM A. 'HADELN' HAMELN FOUNTAIN GRASS	1 GAL CONT 30" OC	780 SF 226 PLANTS	30" H X 30" W FULL SUN / DROUGHT TOLERANT
JUNIPERUS CONFERTA 'BLUE PACIFIC' BLUE PACIFIC SHORE JUNIPER	1 GAL CONT 2'-0" OC	1,177 SF 341 PLANTS	12" H X 3' W / LOW / EVERGREEN HEAT & DROUGHT TOLERANT
MAHONIA REPENS CREEPING MAHONIA	1 GAL CONT 2'-0" OC	2,029 SF 588 PLANTS	18" H X 3' W / EVERGREEN PNW NATIVE / DROUGHT TOLERANT
RUBUS CALY. 'EMERALD CARPET' EMERALD CARPET CREEPING BERRY	1 GAL CONT 2'-0" OC	1,268 SF 368 PLANTS	9" H X 3' W / EVERGREEN DROUGHT TOLERANT
HEMEROCALLIS 'HAPPY RETURNS' HAPPY RETURNS DAYLILY	1 GAL CONT 18" OC	185 SF 95 PLANTS	18" H X 18" W / DROUGHT TOLERANT FIRE RESISTANT
NARCISSUS 'DUTCH MASTER' DUTCH MASTER TRUMPET DAFFODIL	16 CM + 9" OC	400 BULBS	20" H X 6" W / BULB YELLOW FLOWERS - SPRING
COLCHICUM GIGANTEUM 'THE GIANT' GIANT AUTUMN CROCUS	20 CM + 9" OC	400 BULBS	8" H X 6" W / BULB PURPLE FLOWERS - FALL
VIOLA X WITTRUCKIANA 'CROWN GOLDEN' CROWN GOLDEN PANSY	4" CONT 9" OC	400 BULBS	8" X 10" / WINTER ANNUAL CLEAR GOLDEN FLOWERS



LANDSCAPE CODE SUMMARY

NET AREA: = 64,610 SF

DEVELOPMENT STANDARDS: CLACKAMAS COUNTY
ZONING BASE: GENERAL COMMERCIAL (C-3) (CHAPTER 510)

LANDSCAPING: (CHAPTER 1009)
LANDSCAPE AREA - C-3 ZONING = 15% MIN
NATIVE / DROUGHT TOL PLANTS = 75% MIN
TURF LAWN = 10% MAX
PEDESTRIAN AMENITIES = 1/3 MAX (15% IMPERVIOUS)
PARKING LANDSCAPE = 25 SF / SPACE
LANDSCAPE AREA INTERIOR = 4'
INTERIOR LANDSCAPE AREAS = 1 TREE / 8 SPACES
PERIMETER PARKING LANDSCAPE = 5' MIN WIDTH
SHRUBS = 3' HT CONTINUOUS EVRGRN
TREES = 1 TREE / 30 LF CANOPY
GROUND COVER = FULL COVER
GUARANTY = 1 YEAR FROM INSTALL
TREES MIN SIZE = 2" CAL (8' HT) / 8' HT EVRGRN
GROUND COVERAGE @ 3 YRS = 90%

PROPOSED DEVELOPMENT:
LANDSCAPE AREA PROPOSED = 14,810 SF OR 23% (15% REQ)
NATIVE / DROUGHT TOL PLANTS = 100% (75% MIN REQ)
TURF LAWN PROPOSED = 0% (10% MAX REQ)
PARKING PROPOSED TOTAL = 47 SPACES
PARKING INTERIOR LANDSCAPE = 2,913 SF (1,175 SF REQ)
PARKING INTERIOR TREES = 17 TREES (6 TREES REQ)

LEGEND

- BOUNDARY LINE
- BUILDING
- EASEMENT
- CURB & GUTTER

LANDSCAPE PLAN GENERAL NOTES:

- INSTALLATION DETAILS, NOTES & SPECIFICATIONS:** PLANT MATERIALS & INSTALLATION SHALL MEET STANDARDS OF CLACKAMAS COUNTY.
- MULCH:** ALL PLANTING AREAS EXCEPT FOR STORM FACILITIES SHALL BE MULCHED WITH 3" MIN DEPTH BARK MULCH, FRESH FIR MEDIUM GRIND.
- PLANT MATERIAL DELIVERED TO THE SITE SHALL MEET THE CURRENT VERSION OF THE AMERICAN NURSERYMAN'S SPECIFICATION ASSOCIATION STANDARDS FOR ALL SPECIFIED BALLED & BURLAPPED AND CONTAINER SIZES.**
- CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM THE PROJECT LANDSCAPE ARCHITECT FOR ALL PLANT MATERIAL SUBSTITUTIONS PRIOR TO PURCHASE. PLANT SUBSTITUTIONS THAT ARE NOT APPROVED IN WRITING, OR DO NOT COMPLY WITH THE PROJECT DRAWINGS AND SPECIFICATIONS WILL BE REJECTED BY THE LANDSCAPE ARCHITECT AT NO COST TO THE OWNER.**
- IRRIGATION:** ALL PROPOSED PLANT MATERIALS SHALL BE WATERED (MAY TO OCTOBER) BY A FULLY AUTOMATIC UNDERGROUND IRRIGATION SYSTEM MEETING THE REQUIREMENTS OF CLACKAMAS COUNTY ZONING & DEVELOPMENT ORDINANCE 1009.10.M. LANDSCAPING, PLANTING & MAINTENANCE. THE DESIGN INTENT SHALL BE DRIPLINE & TREE ROOT ZONE WATERING WITH AN ET BASED CONTROLLER, FLOW SENSOR & MASTER VALVE TO MINIMIZE WATER USE, PREVENT RUNOFF & MAXIMIZE WATER INFILTRATION. THE SYSTEM SHALL BE MAINTAINED FOR A MINIMUM OF ONE (1) FULL GROWING SEASON AFTER THE DATE OF SUBSTANTIAL COMPLETION. TREES SHALL BE WATERED AT A RATE OF 15 GALLONS PER TREE ONCE PER WEEK. SHRUBS & GROUNDCOVERS AT A RATE OF 1" PER WEEK OR AS NECESSARY TO MAINTAIN VIGOROUS HEALTHY GROWTH.

STORMWATER FACILITY PLANT MATERIALS:

NOTE: QUANTITIES SHOWN ARE FOR ON-SITE STORMWATER FACILITIES ONLY

SHRUBS & ACCENTS ITEM	SIZE	QTY.	MATURE SIZE (H X W) / COMMENTS
CORNUS SERICEA RED-TWIG DOGWOOD	2 GAL. CONT. @ 4'-0" O.C.	15	6' H X 4' W / ZONE A/B NATIVE
MAHONIA AQUIFOLIUM OREGON GRAPE	2 GAL. CONT. 3'-0" OC	16	4' H X 3' W / ZONE B NATIVE
RIBES SANGUINEUM RED-FLOWERING CURRANT	2 GAL. CONT. @ 4'-0" O.C.	16	8' H X 4' W / ZONE B NATIVE
SALIX STICHENSIS SITKA WILLOW	2 GAL. CONT. @ 4'-0" O.C.	16	20' H X 6' W / ZONE A NATIVE
SPIRAEA DOUGLASII DOUGLAS SPIREA	2 GAL. CONT. @ 4'-0" O.C.	15	7' H X 4' W / ZONE A/B NATIVE
78 TOTAL			

GROUNDCOVERS ITEM	SIZE	QTY.	POTENTIAL HEIGHT / PLANTING ZONE
ARCTOSTAPHYLOS UVA-URSI KINKINICK	1 GAL. CONT. 70 / 100 SF	1,108 SF 776 PLANTS	6" H X 12" W / ZONE B / EVERGREEN NATIVE
RUSH / SEDGE MIX 50% JUNCUS PATENS 50% CAREX OBUPTA	80 / 100 SF 1 GAL CONT / 24" HT 1 GAL CONT / 24" HT	866 SF 346 347	NATIVE 36" H / ZONE A / EVERGREEN 48" H / ZONE A / EVERGREEN
693 TOTAL			

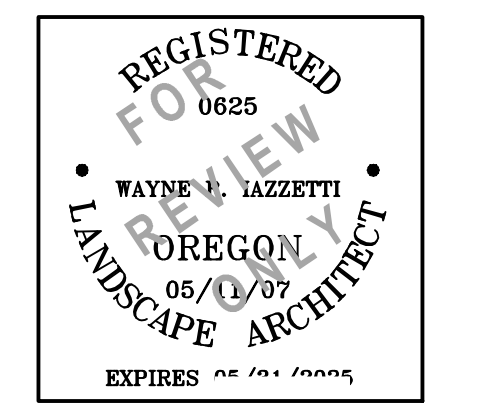
STORMWATER FACILITIES (PORTLAND BES STORMWATER MANAGEMENT MANUAL):
 GROWING MEDIUM = SEE CIVIL SHEETS
 STORMWATER FACILITY = BASIN WITH UNDERDRAIN & LINER
 ZONE A TOTAL = 866 SF = 693 PLANTS (693 PLANTS REQ)
 ZONE B TOTAL = 1,108 SF = 78 SHRUBS (78 SHRUBS REQ)
 ZONE B GROUND COVER (70 / 100 SF) = 776 PLANTS (776 PLANTS REQ)



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Portland, Oregon 97204
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FSR# 05244

REVISION SCHEDULE

NO.	DATE	DESCRIPTION

CIVIL'S PROJECT # 14868.01
 PRINTED FOR SCHEMATIC DESIGN
 DATE MARCH 2024
 DRAWN BY WRI

PLANTING PLAN
 SHEET NUMBER

L1.0

Exhibit D Architectural Plans

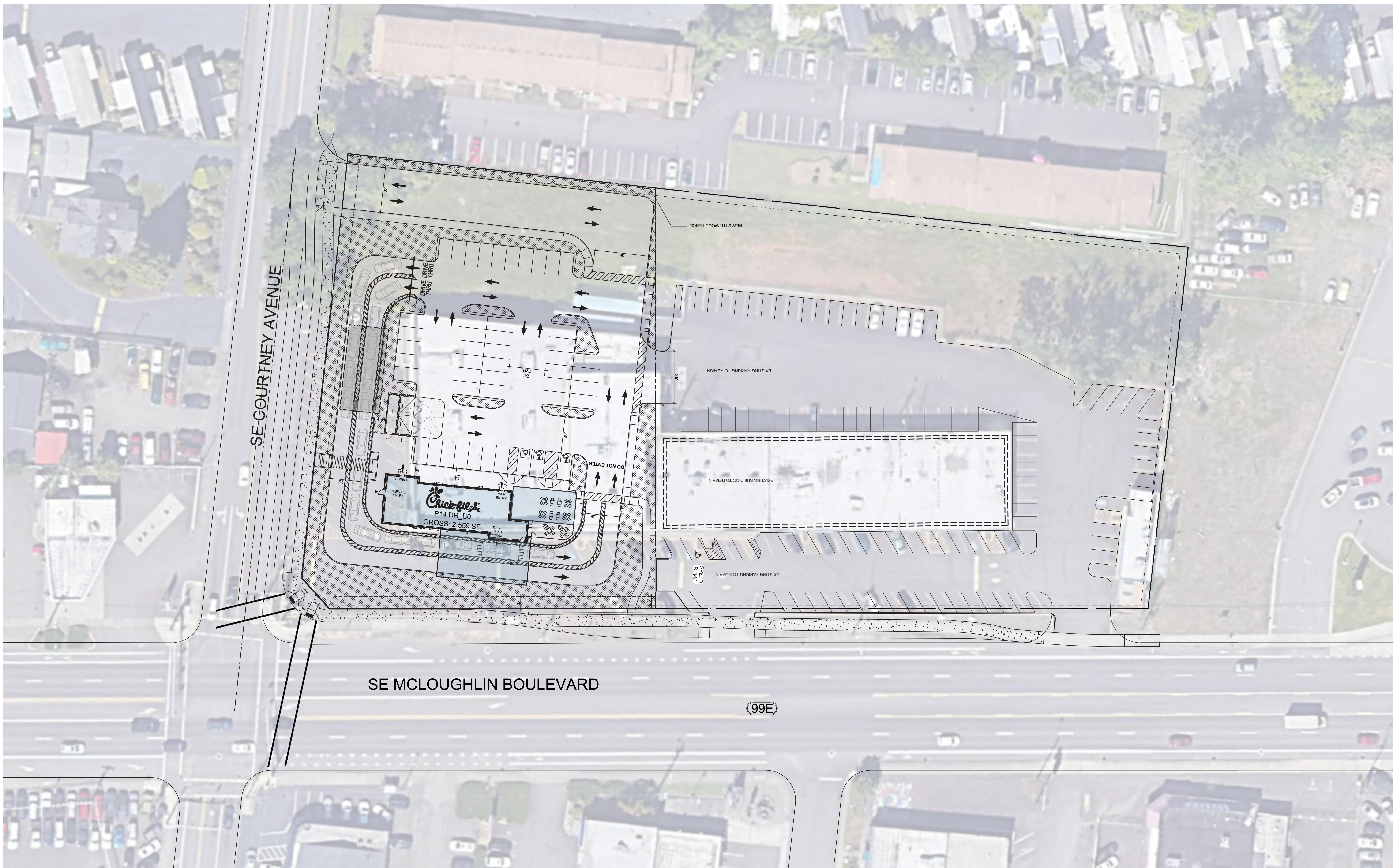


CFA 05244 LOUGHLIN & COURTNEY

MCCLOUGHLINN, OR

CONCEPTUAL DESIGN
SEA23-0028-00
05.30.2024





PROJECT DATA:

SITE AREA:		
GROSS:		1.54 AC 67,143 SF
NET:		1.54 AC 67,143 SF
BUILDING FOOTPRINT:		
BUILDING USE:		2,700 SF
RESTAURANT:		2,700 SF
COVERAGE:		
GROSS:		4%
NET:		4%
PARKING REQUIRED:		
RESTAURANT	9/1000 SF	30 STALLS
PARKING PROVIDED:		
AUTO:		47 STALLS @17.41/1000 SF
	<i>REQ. ACCESSIBLE</i>	4 STALLS
DT STACK		28 CARS
OP CANOPY		9TH CAR AT INNER LANE

DEVELOPMENT STANDARDS:

ZONING:		C-3
BUILDING SETBACKS:		
FRONT:	15 FT ¹	
SIDE:	0 FT	
REAR:	0 FT ²	
LANDSCAPE SETBACKS:		
FRONT:	5 FT	
SIDE:	5 FT ³	
REAR:	5 FT ³	
LANDSCAPE REQ.:		
	15% ⁴	

OFF-STREET PARKING:

STANDARD:	9X18
COMPACT:	8.5X16
COMPACT %:	25% ¹
DRIVE AISLE:	24 FT
OVERHANG:	2 FT
TREE WELL:	6 FT

REQ. PARKING RATIO BY USE:

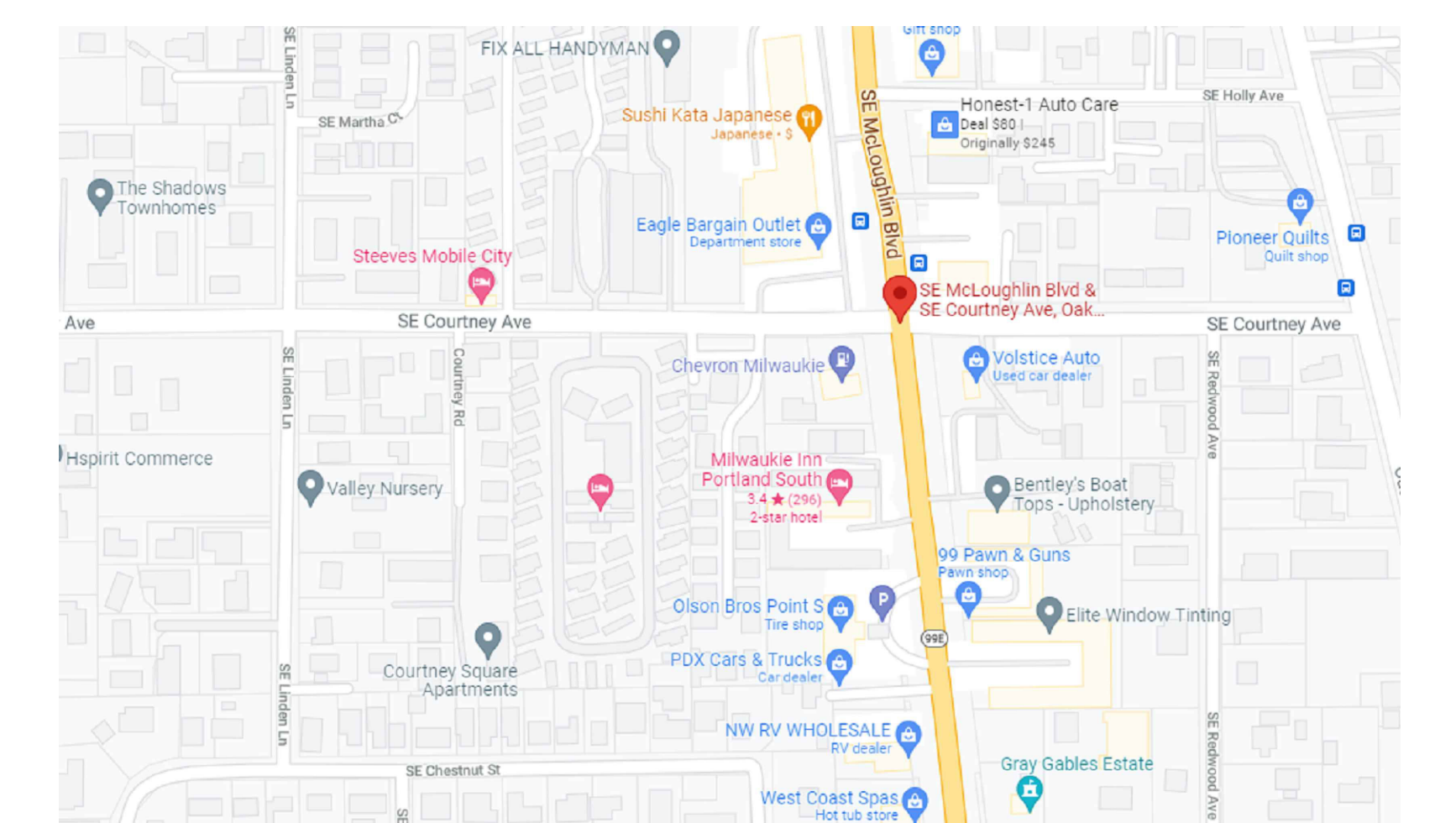
FASTFOOD:	9/1000 SF
RESTAURANT:	3/200 SF

- NOTES:**
- Maximum setback 20 feet.
 - If the rear lot line abuts a residential zoning district, the minimum shall be 15 feet plus one foot for each one-foot increase in building height over 35 feet.
 - Minimum amount.
 - 25 sf per stall not located on the perimeter. One landscape swale located between two rows of parking spaces is required for every 6 rows of parking spaces, unless all spaces are developed with porous pavement. Additional areas may be required.
 - Not require if one or more access drives link sites internally.

This conceptual design is based upon a preliminary review of entitlement requirements and on unverified and possibly incomplete site and/or building information, and is intended merely to assist in exploring how the project might be developed.

Stormwater Management Design:
AVERAGE REGIONAL REQUIRED PROVIDED

Boundary Source:
CIVIL CAD FILE



This conceptual design is based upon a preliminary review of entitlement requirements and on unverified and possibly incomplete site and/or building information, and is intended merely to assist in exploring how the project might be developed. Signage shown is for illustrative purposes only and does not necessarily reflect municipal code compliance. All colors shown are for representative purposes only. Refer to material samples for actual color verification.

CONCEPTUAL SITE PLAN

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MCLOUGHLIN, OR - SEA23-0028-00

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05.30.2024

PAGE 2



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PERSPECTIVE VIEW

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PAGE
3



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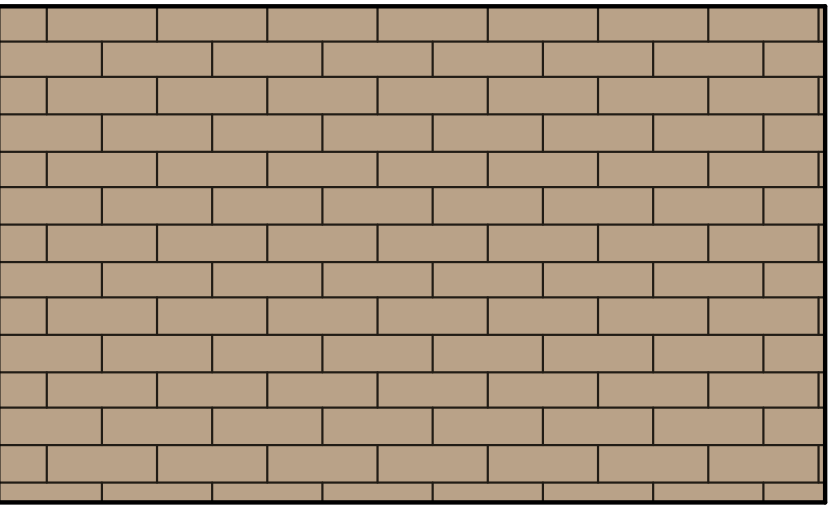
PERSPECTIVE VIEW

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MCLOUGHLIN, OR - SEA23-0028-00

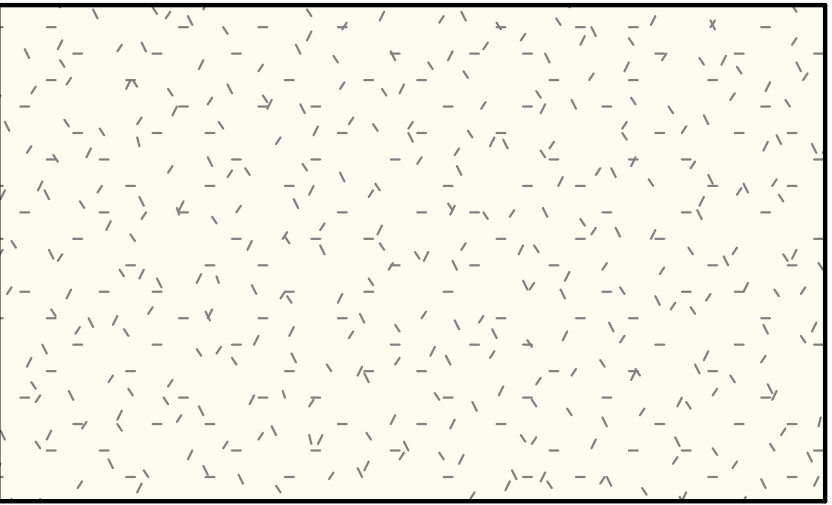
WARE MALCOMB

05.30.2024

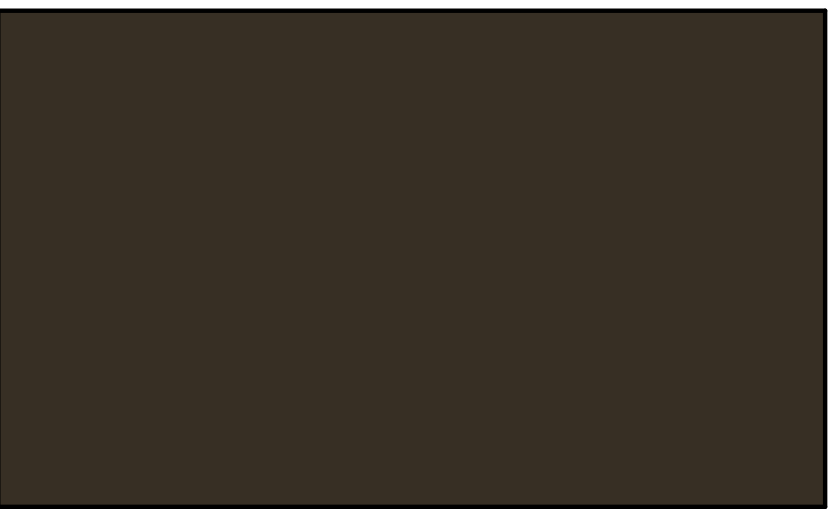
PAGE
4



BR-A BRICK VENER
COLOR: IMPERIAL GREY
SIZE: MODULAR



SC-1 STUCCO SYSTEM
COLOR: WEST HIGHLAND WHITE # SW 7566
FINISH: SAND MEDIUM



EC-1 PREFINISHED METAL COPING
COLOR: MIDNIGHT BRONZE



CM-1 WOOD COMPOSITE METARIAL
COLOR: C02 PALE COLDEN



CP-1 CANOPY METAL FASCIA
COLOR: DARK BRONZE



ST-1 STOREFRONT
COLOR: DARK BRONZE



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MATERIAL BOARD

CFA - 05244 MCGLOUGHLIN & COURTNEY
MCGLOUGHLIN, OR - SEA23-0028-00

WARE MALCOMB

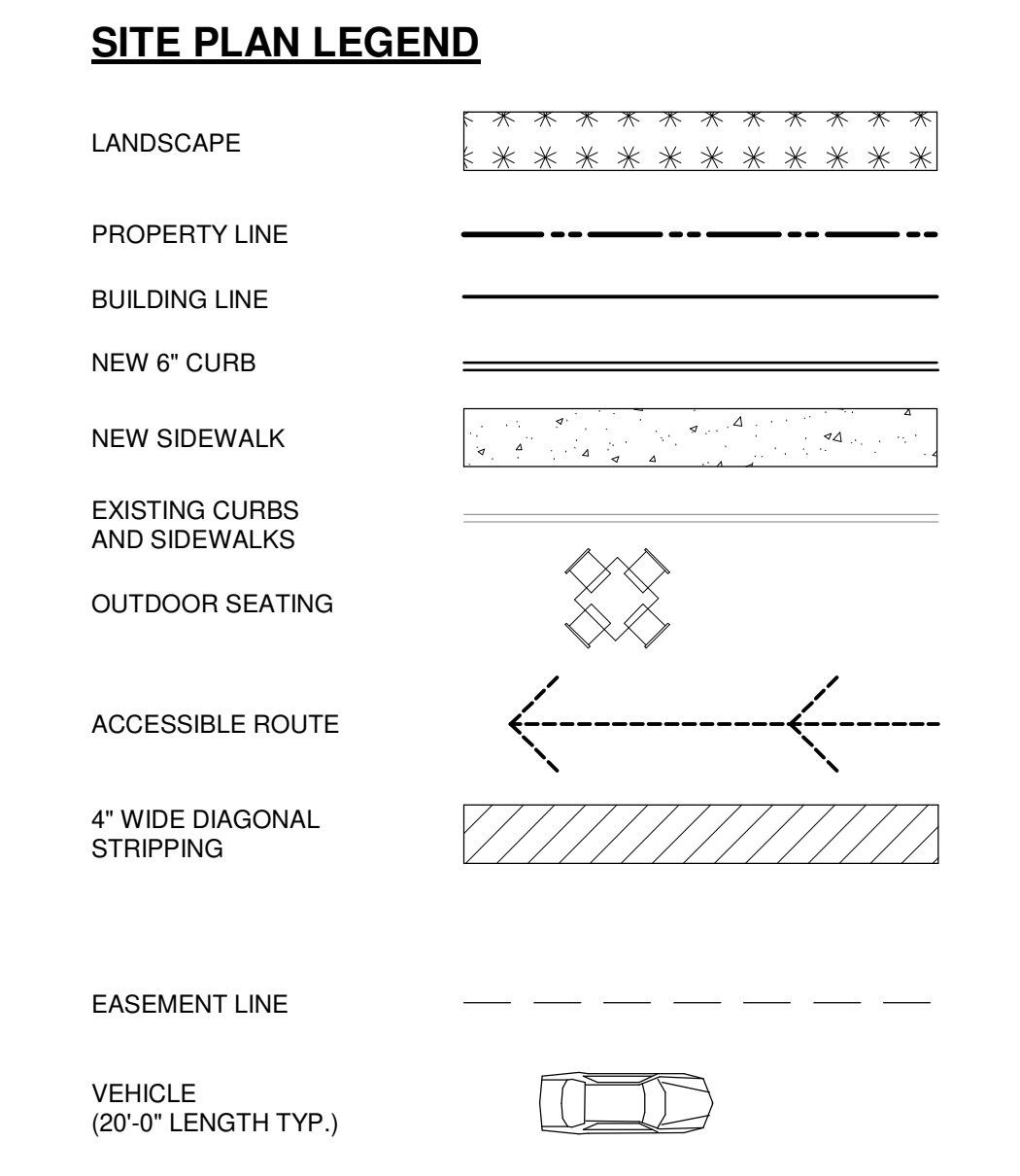
05.30.2024

5/30/2024 2:58:16 PM Autodesk Docs://OR_05244_McLoughlin Blvd & Courtney Ave_2024-2_DTO05244_McLoughlin Blvd & Courtney Ave_ARC.rvt DR-05244-A-100-SITE PLAN

- GENERAL NOTES**
- FOR ACCESSIBLE ROUTE MAX SLOPE 5% AND CROSS SLOPE (2%) ALONG PATH AND 2% SLOPE IN ANY DIRECTION AT EACH TURN AND INTERSECTION OF THE PATH OF TRAVEL.
 - MAXIMUM SETBACK 20 FT.
 - IF THE REAR ABUTS A RESIDENTIAL ZONING DISTRICT, THE MINIMUM SHALL BE 15 FT PLUS ONE FOOT FOR EACH ONE-FOOT INCREASE IN BUILDING HEIGHT OVER 35 FT.

SITE PLAN KEYNOTES

1	SIGNAGE PER SIGNAGE PACKAGE, TYP.
2	ADA PARKING STALL
3	FLAG POLE
4	REFUSE ENCLOSURE
5	BIKE RACK
6	NEW 6" HIGH WOOD FENCE



PROJECT DATA

SITE AREA:	1.54 AC
GROSS:	67,143 SF
NET:	1.43 AC
GROSS:	62,117 SF
BUILDING FOOTPRINT:	2,559 SF
COVERAGE:	4%
GROSS:	4%
NET:	4%
PARKING REQUIRED:	
RESTAURANT:	9/1000 SF
MAX COMPACT ALLOWED:	40% OF PROVIDED
	30 STALLS
	9 STALLS
PARKING PROVIDED:	
STANDARD:	47 STALLS
COMPACT:	0 STALLS
TOTAL:	47 STALLS
	@19.63/1000 SF
	4 STALLS
DT CAR STACK:	28 CARS
OP CANNOPY:	9TH CAR AT INNER LANE

DEVELOPMENT STANDARDS:

ZONING: CB
MAX. BLDG. HT.: 35 FT

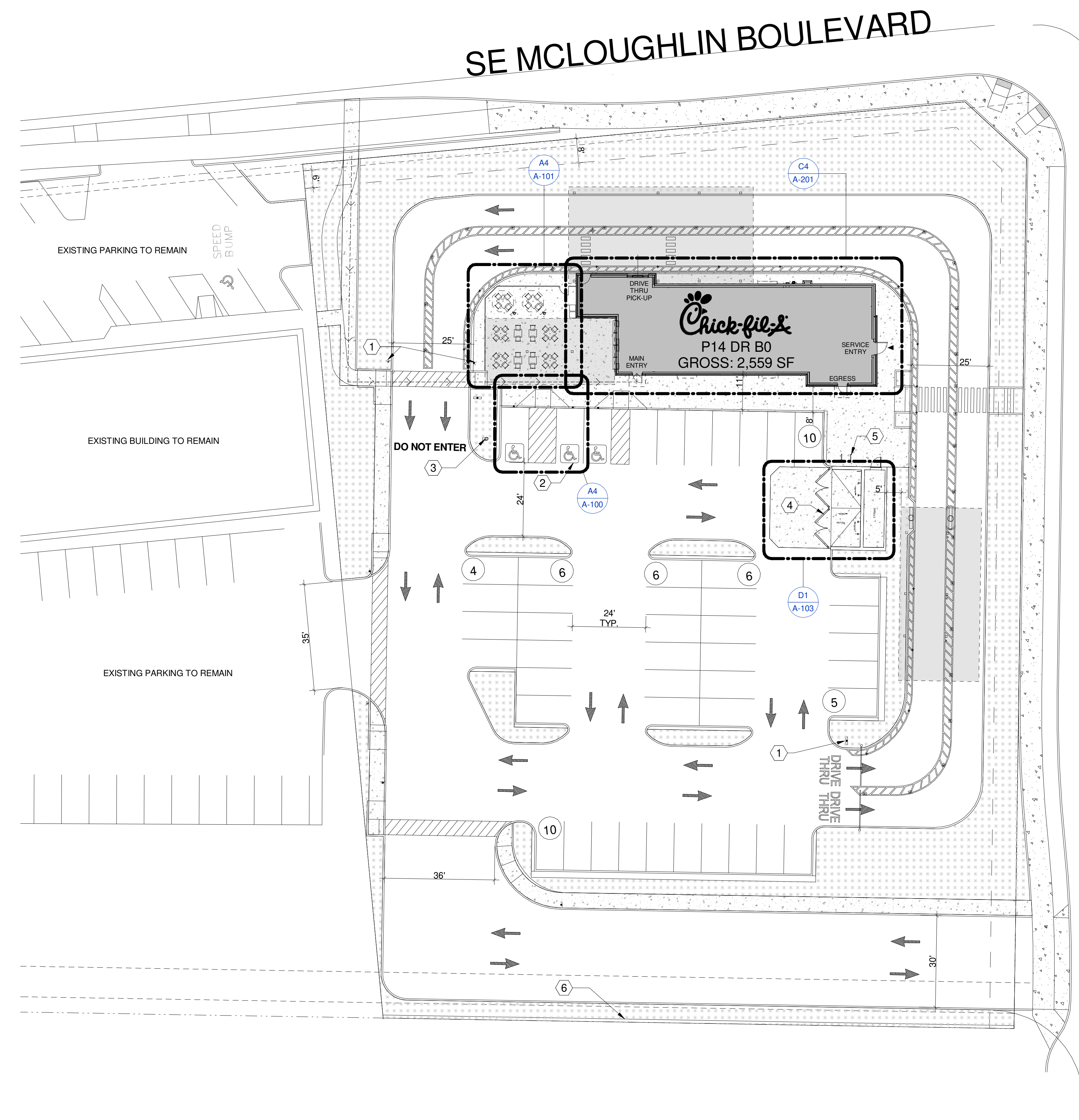
BUILDING SETBACKS:
FRONT: 15' FT
SIDE: N/A
REAR: N/A

LANDSCAPE SETBACKS:
FRONT: 5' FT
SIDE: 5' FT
REAR: 5' FT

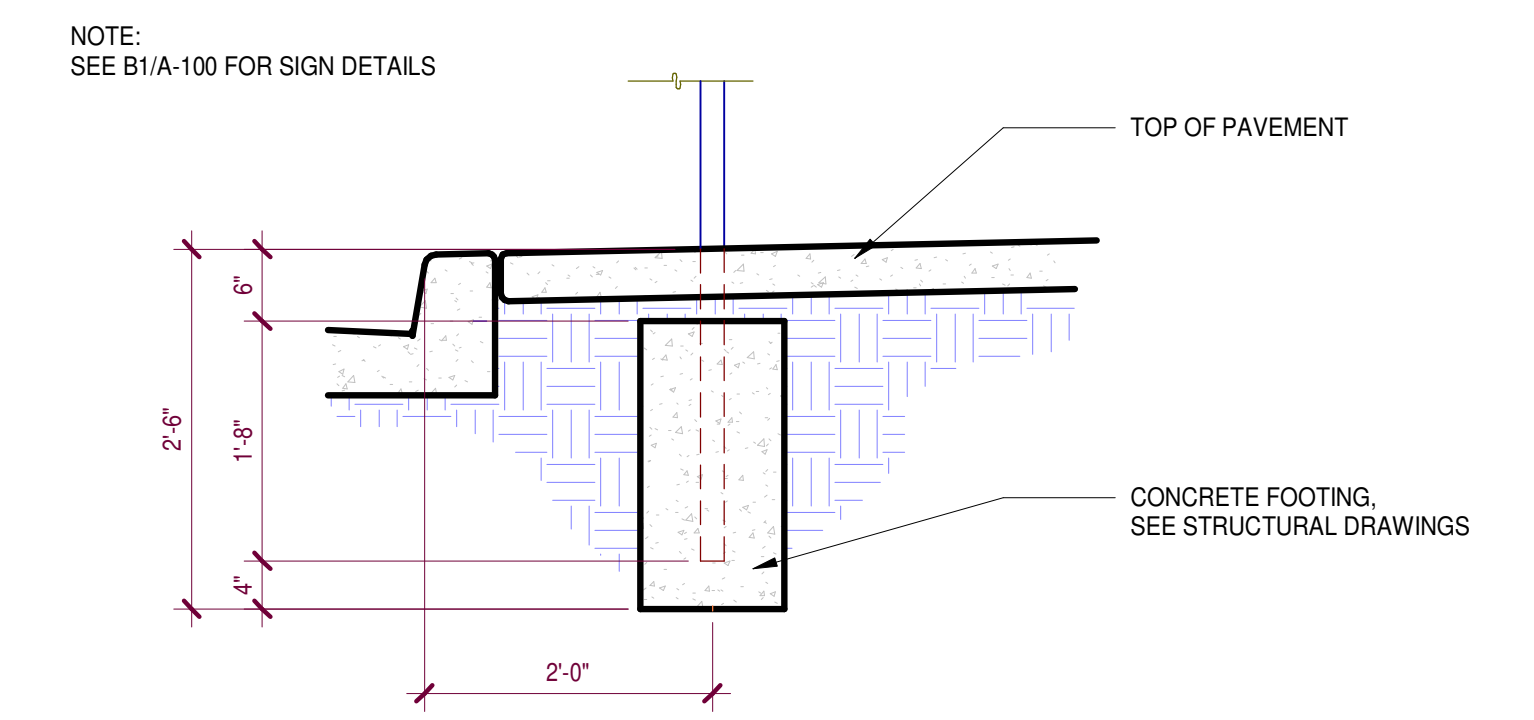
LANDSCAPE REQ: 15%

OFF STREET PARKING:
STANDARD: 9X18
COMPACT: 8.5X16
COMPACT %: 25%
DRIVE AISLE: 24 FT

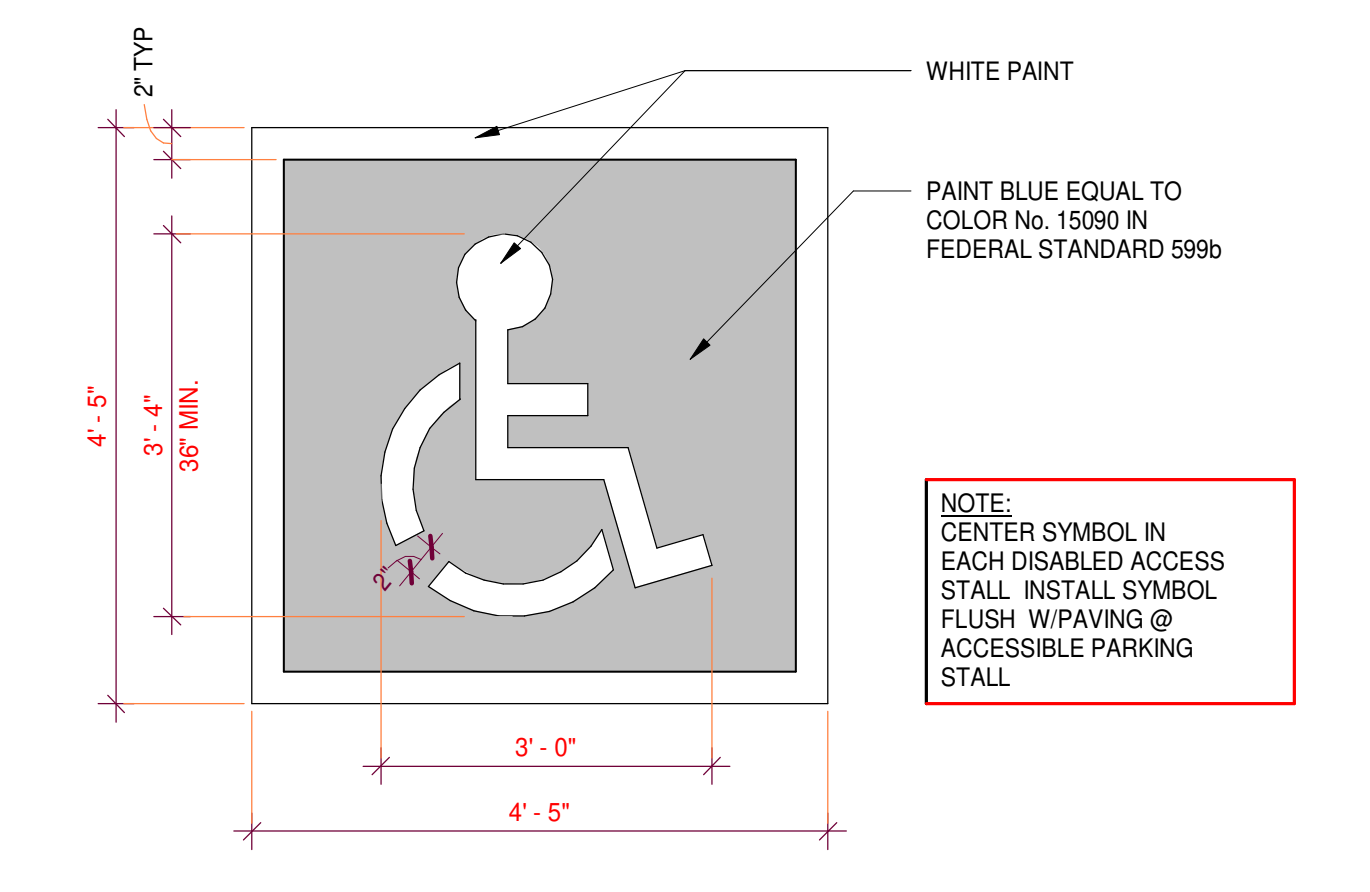
REQ. PARKING RATIO BY USE:
MIN. RESTAURANT: 9/1000 SF
MAX. RESTAURANT: 3/200 SF



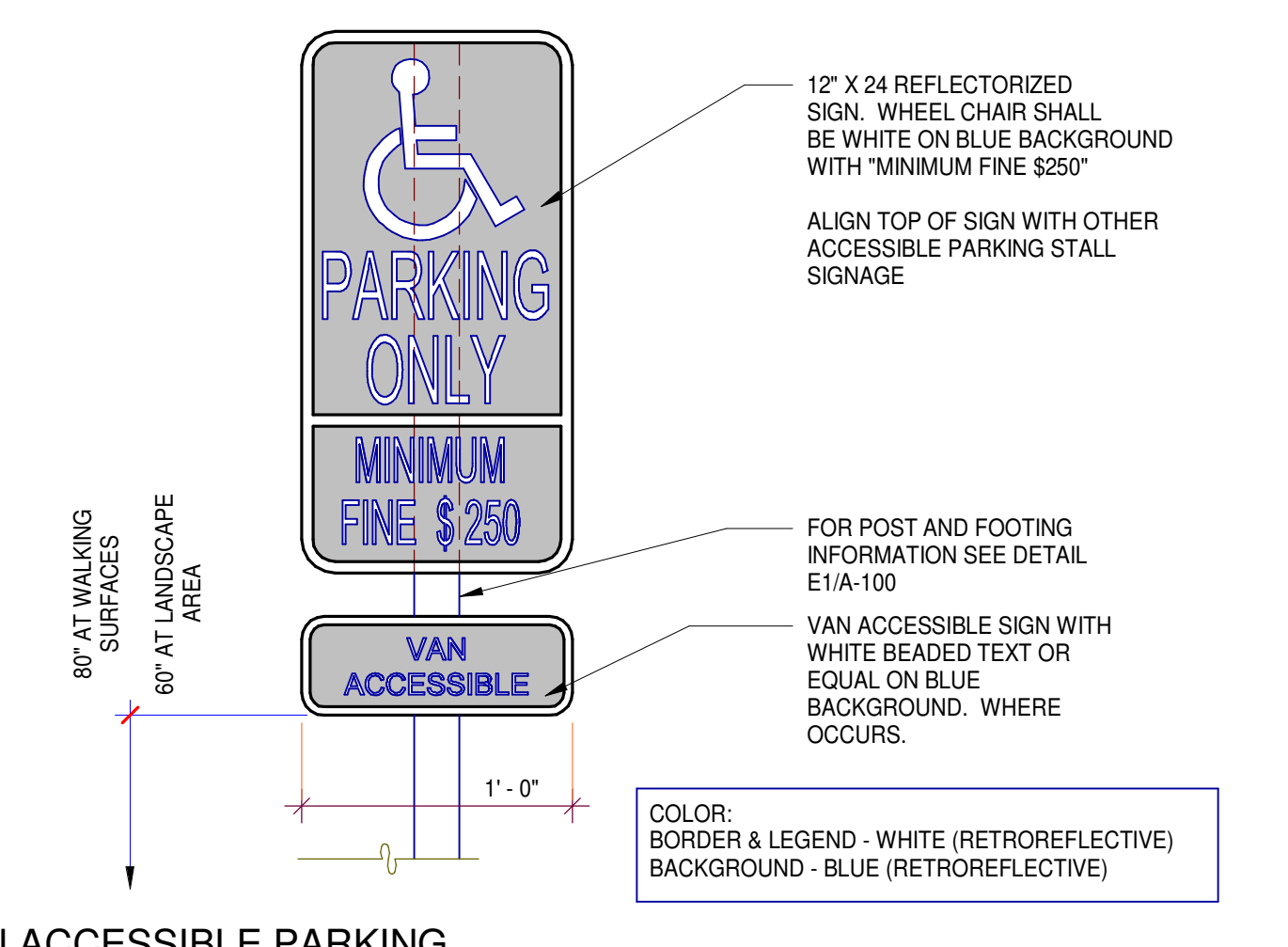
C4 SITE PLAN
1" = 20'-0"



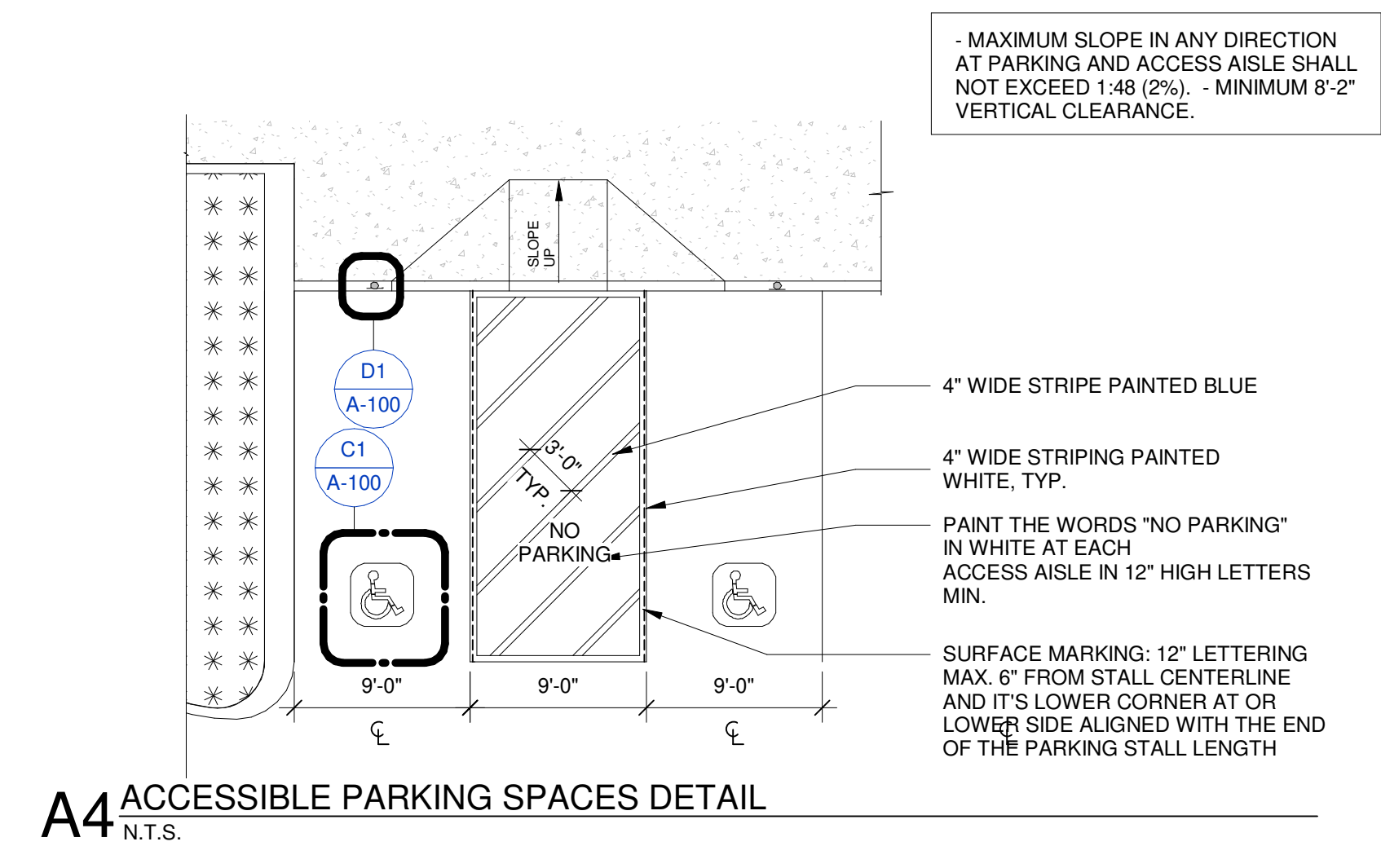
D1 TYPICAL SIGN FOUNDATION
N.T.S.



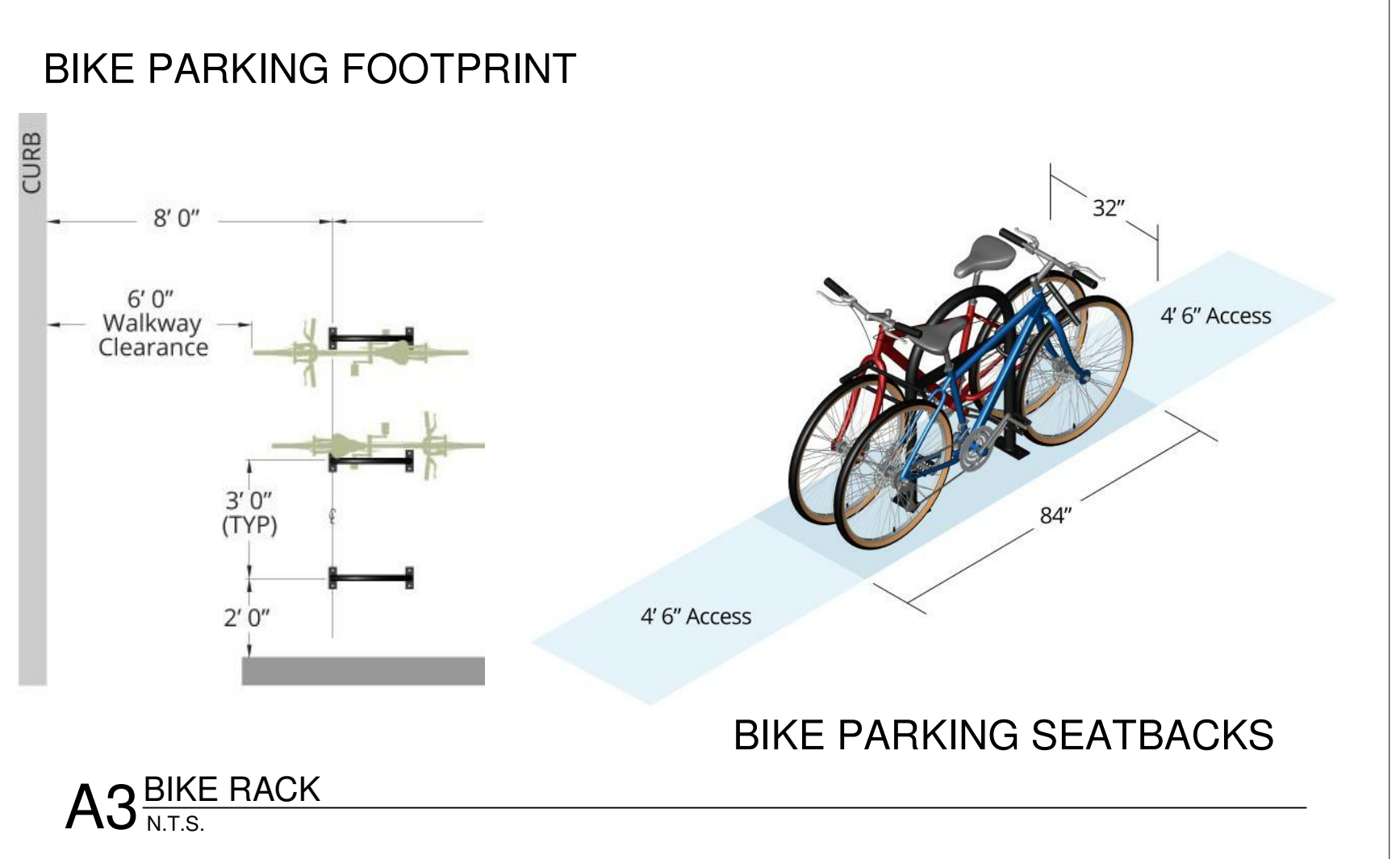
C1 ACCESSIBILITY PRKING SYMBOL
N.T.S.



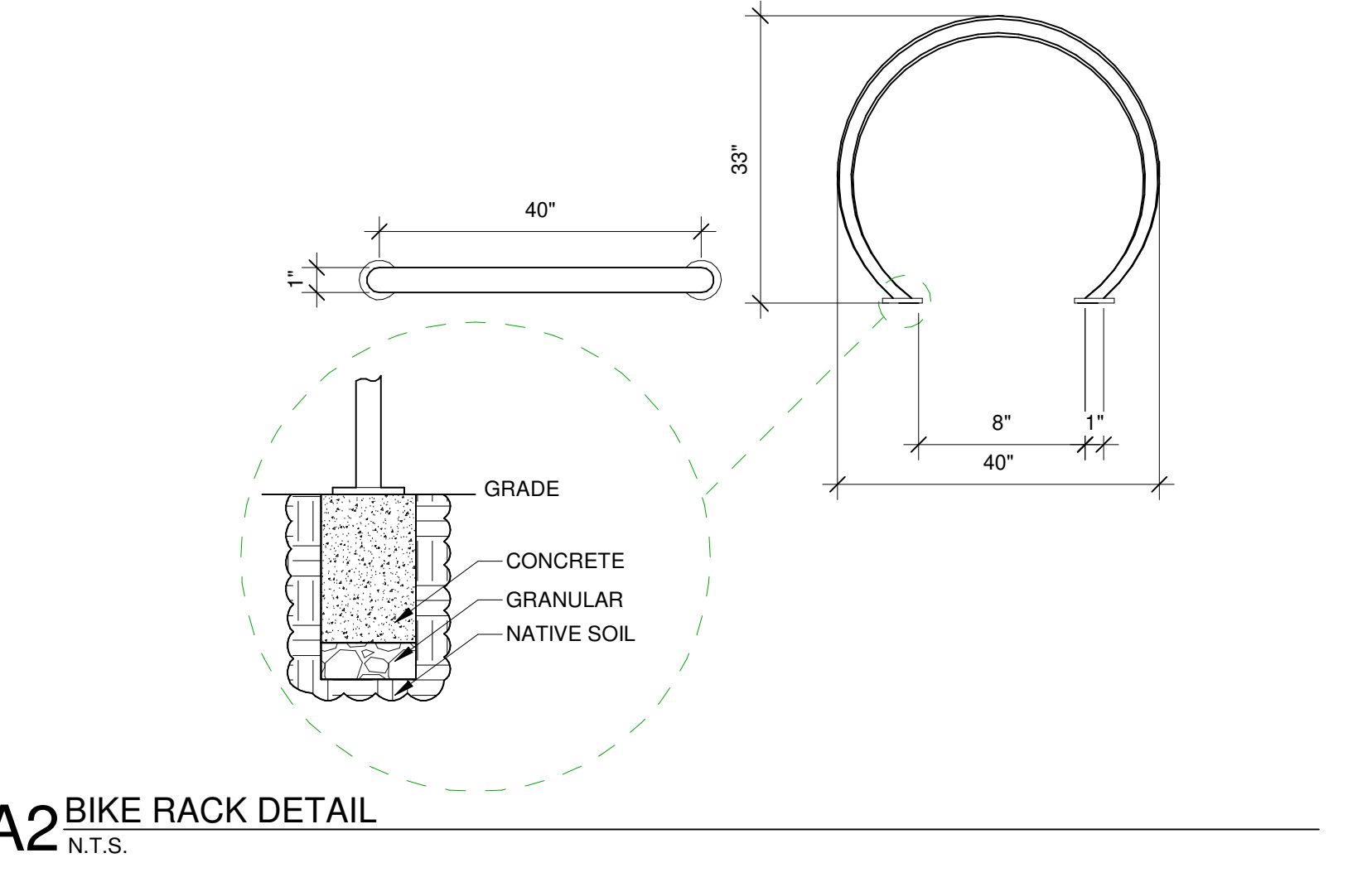
B1 VAN ACCESSIBLE PARKING
N.T.S.



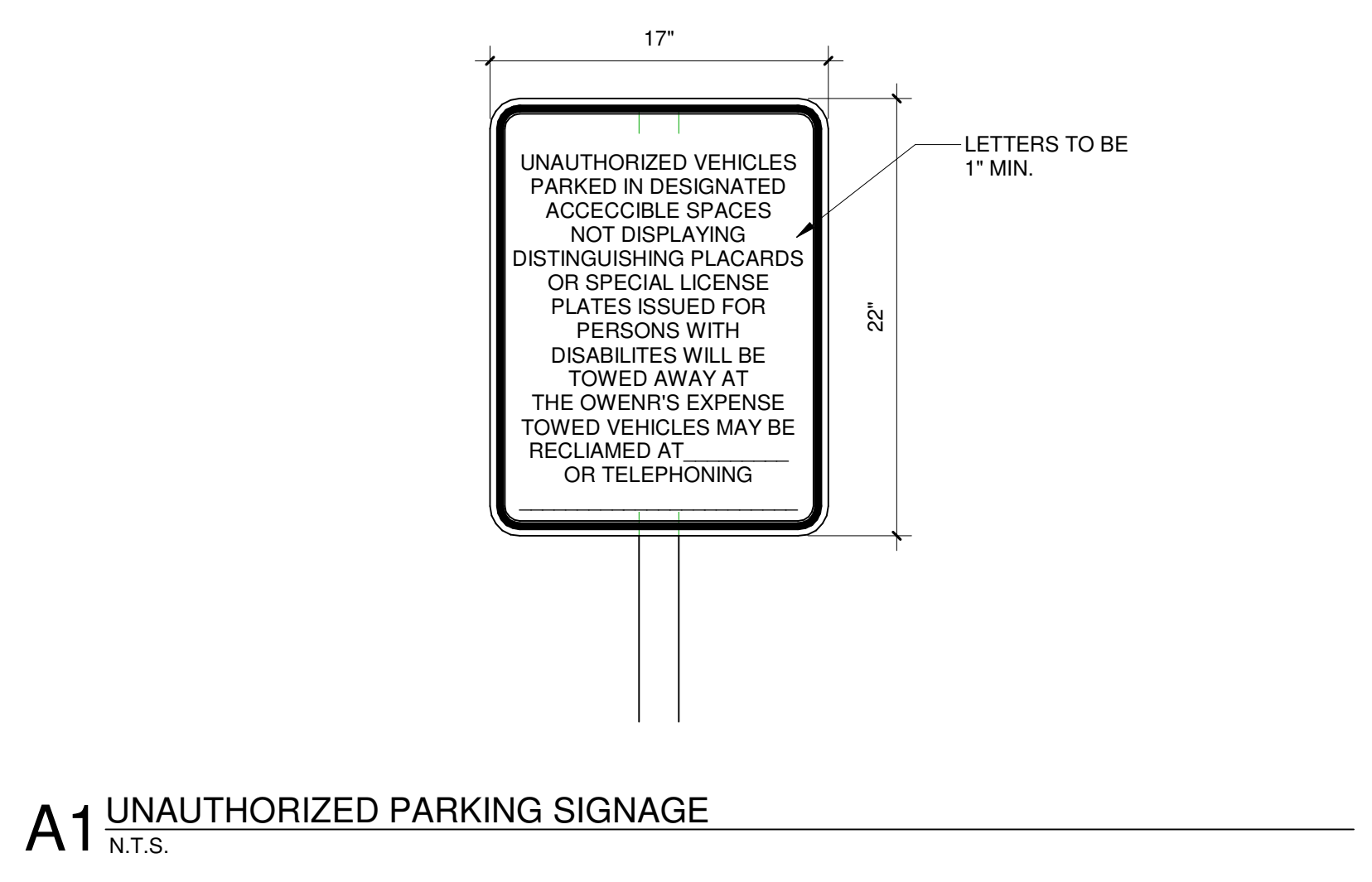
A4 ACCESSIBLE PARKING SPACES DETAIL
N.T.S.



A3 BIKE RACK
N.T.S.



A2 BIKE RACK DETAIL
N.T.S.



A1 UNAUTHORIZED PARKING SIGNAGE
N.T.S.



SITE ADAPT LOGO AND ADDRESS

PROTOTYPICAL SET

NOT FOR REGULATORY APPROVAL, BIDDING, OR CONSTRUCTION

CHICK-FIL-A
McLoughlin & SE
McLoughlin Boulevard & SE
Courtney Avenue
Oak Grove, OR 97267

FSR#05244
BUILDING TYPE / SIZE: P14 DR BOS
RELEASE: 23.09
PRINTED FOR SD

REVISION SCHEDULE

NO.	DATE	DESCRIPTION

CONSULTANT PROJECT # SEA23-0028-00
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SHEET: SITE PLAN
SHEET NUMBER: **A-100**

PATIO SEATING SCHEDULE									
Mark	Type	Count	Manufacturer	Model	Width	Depth	Height	Material	Finish
1	Patio Chair	32	Benchmark Design Group	WENDOVER CHAIR					
2	Patio Table - 4 Top	4	Benchmark Design Group	TAB3055-3636-AAL-WJ-UH-BDT	3'-0"	3'-0"	2'-5 1/4"	Aluminum - Dark Bronze	RAL 49/66220 (C34 Bronze One Coat)
3	Patio Table - 4 Top - ADA	2	Benchmark Design Group	TBL3056-3644-AL-UH	3'-8"	3'-0"	2'-5 1/4"	Aluminum - Dark Bronze	RAL 49/66220 (C34 Bronze One Coat)
4	Patio Table - 2 Top	4	Benchmark Design Group	TAB3055-2424-AAL-WJ-BDT	2'-0"	2'-0"	2'-5 1/4"	Aluminum - Dark Bronze	RAL 49/66220 (C34 Bronze One Coat)
5	Patio Umbrella	2	Benchmark Design Group	OCEAN MASTER PARASOL					
6	Trash Receptacle	2	Benchmark Design Group	CFA-AL-2444	2'-0"	2'-0"	3'-11"	Dark Bronze	RAL 49/66220 (C34 Bronze One Coat)



Chick-fil-A
5200 Buffington Road
Atlanta, Georgia
30349-2998

SITE
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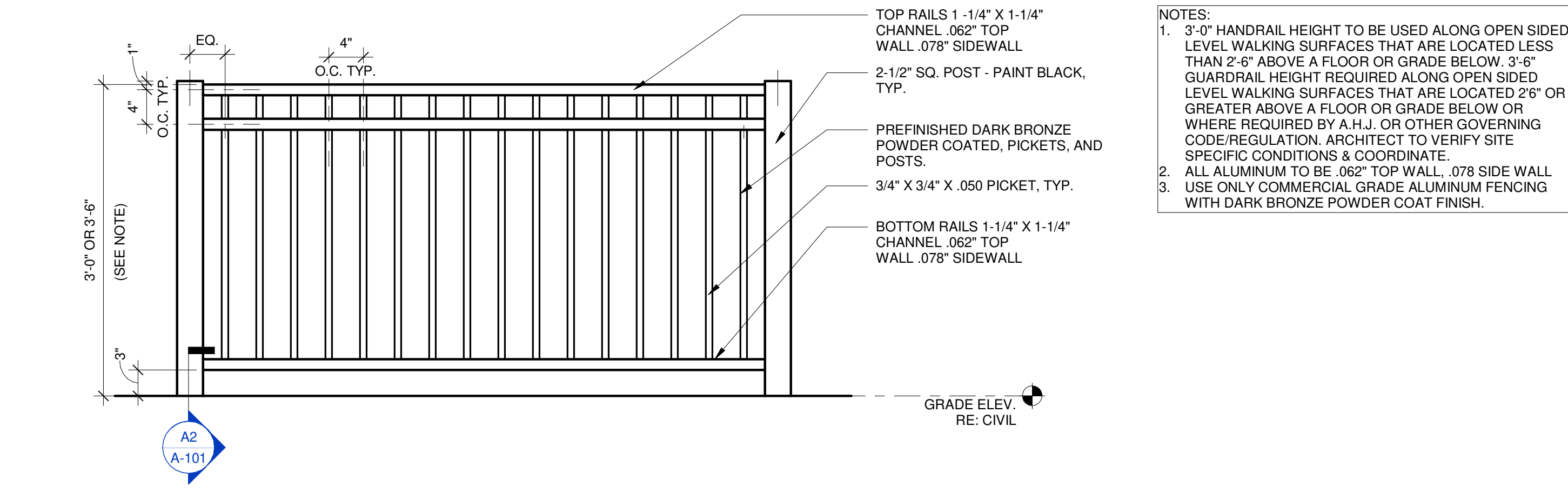
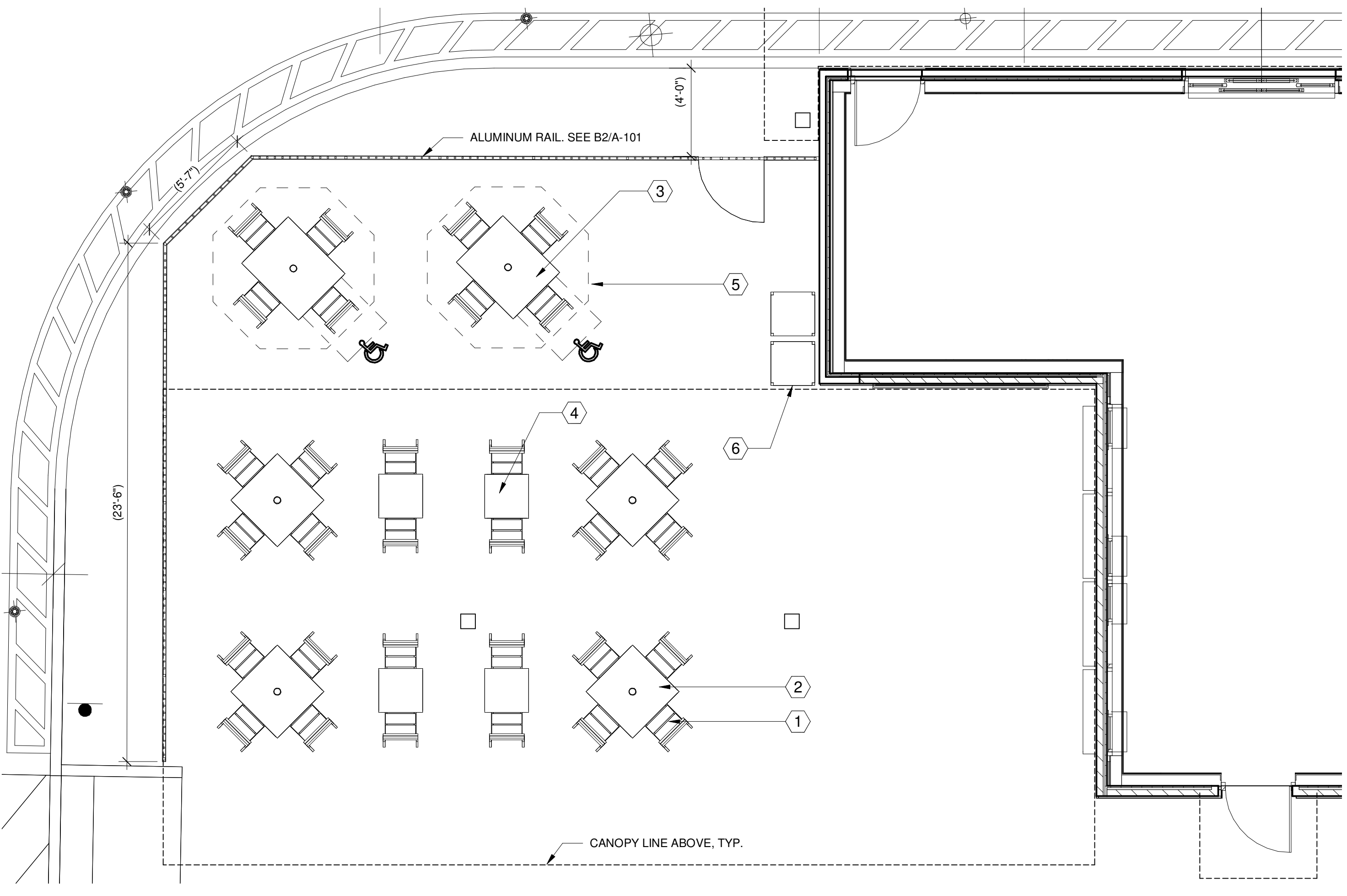
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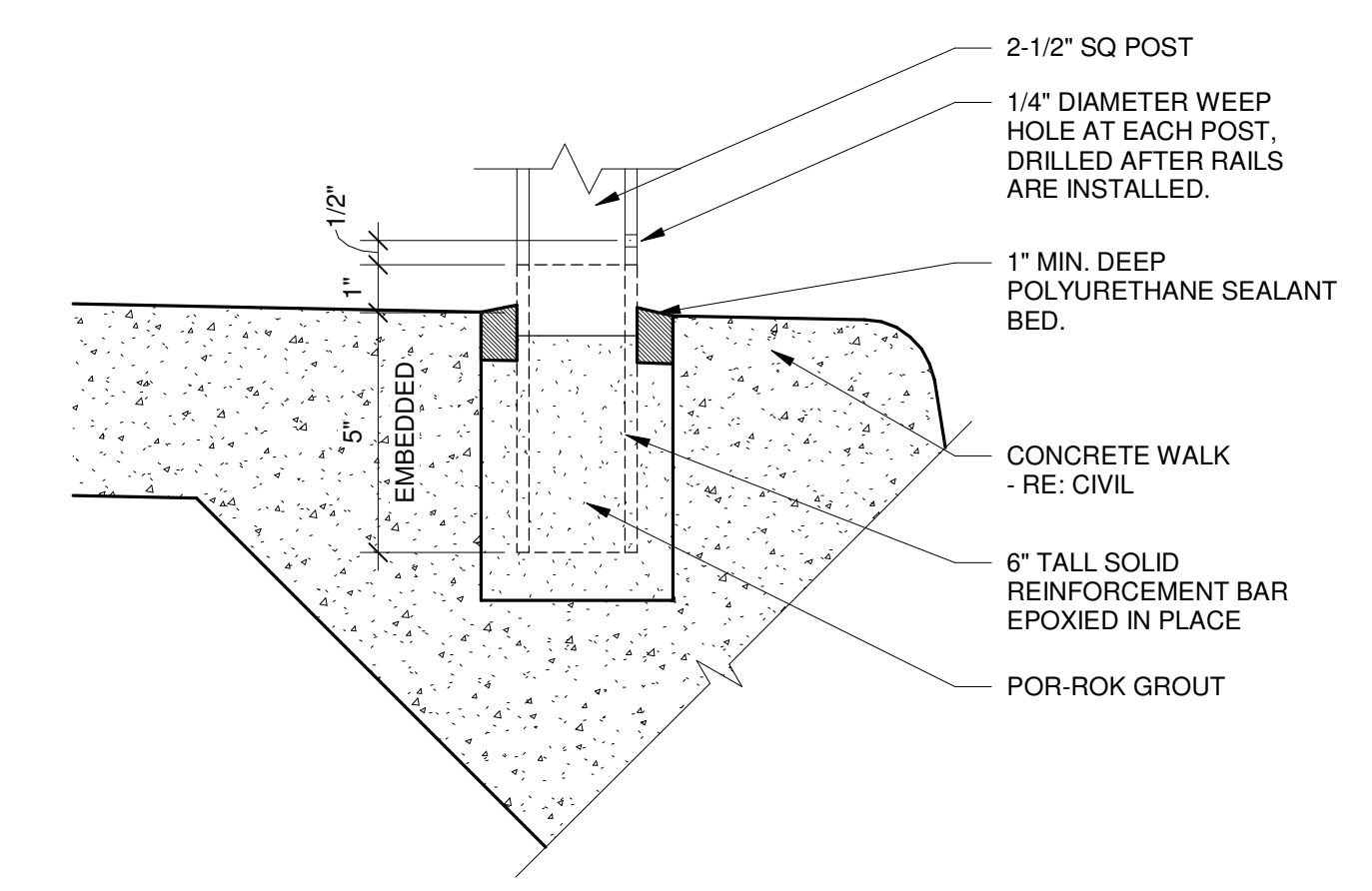
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SHEET: PATIO PLANS
SHEET NUMBER

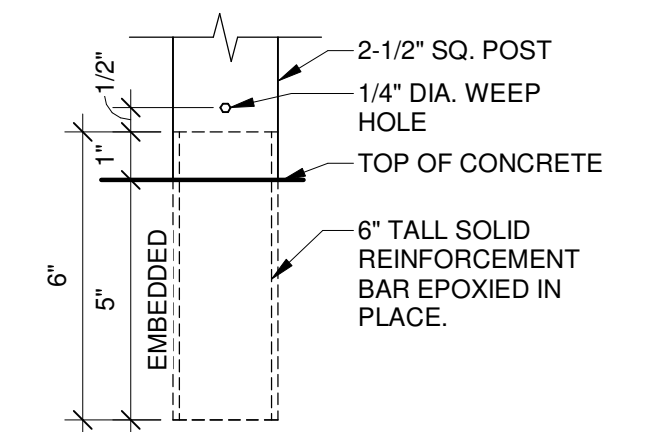
A-101



B2 TYP ALUMINUM RAIL
N.T.S.



A2 TYP EXTERIOR RAILING FIELD EMBEDMENT DETAIL
N.T.S.



WEEP HOLE NOTE:
ALL POSTS GROUTED INTO CONCRETE MUST HAVE A 1/4" DIAMETER WEEP HOLE LOCATED JUST ABOVE THE MOUNTING SURFACE AND ALONG THE PLANE OF THE RAIL. WEEP HOLES WILL NEED TO BE DRILLED AFTER RAILS HAVE BEEN INSTALLED.

A1 EMBEDDED POST DETAIL
N.T.S.

A4 DINING PATIO PLAN
1/4" = 1'-0"

5/30/2024 2:56:07 PM Autodesk Docs://OR_05244_McLoughlin Blvd & Courtney Ave_ARC.rvt 10-DR-05244-A-101-PATIO PLANS



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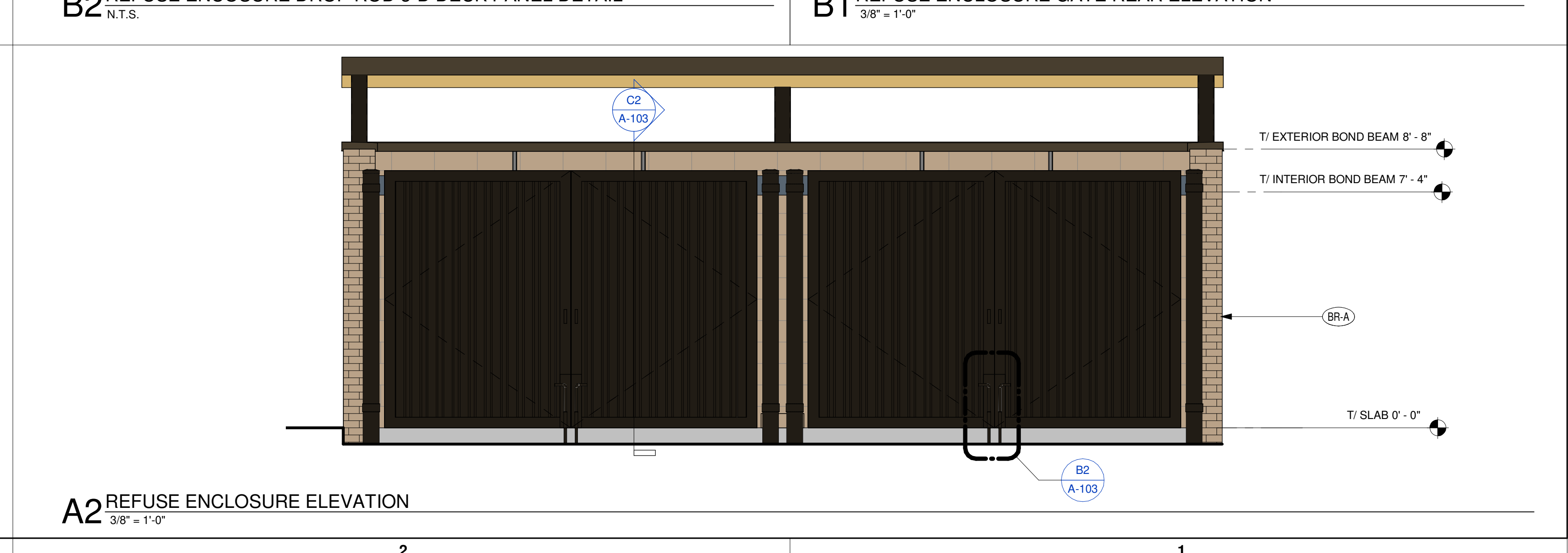
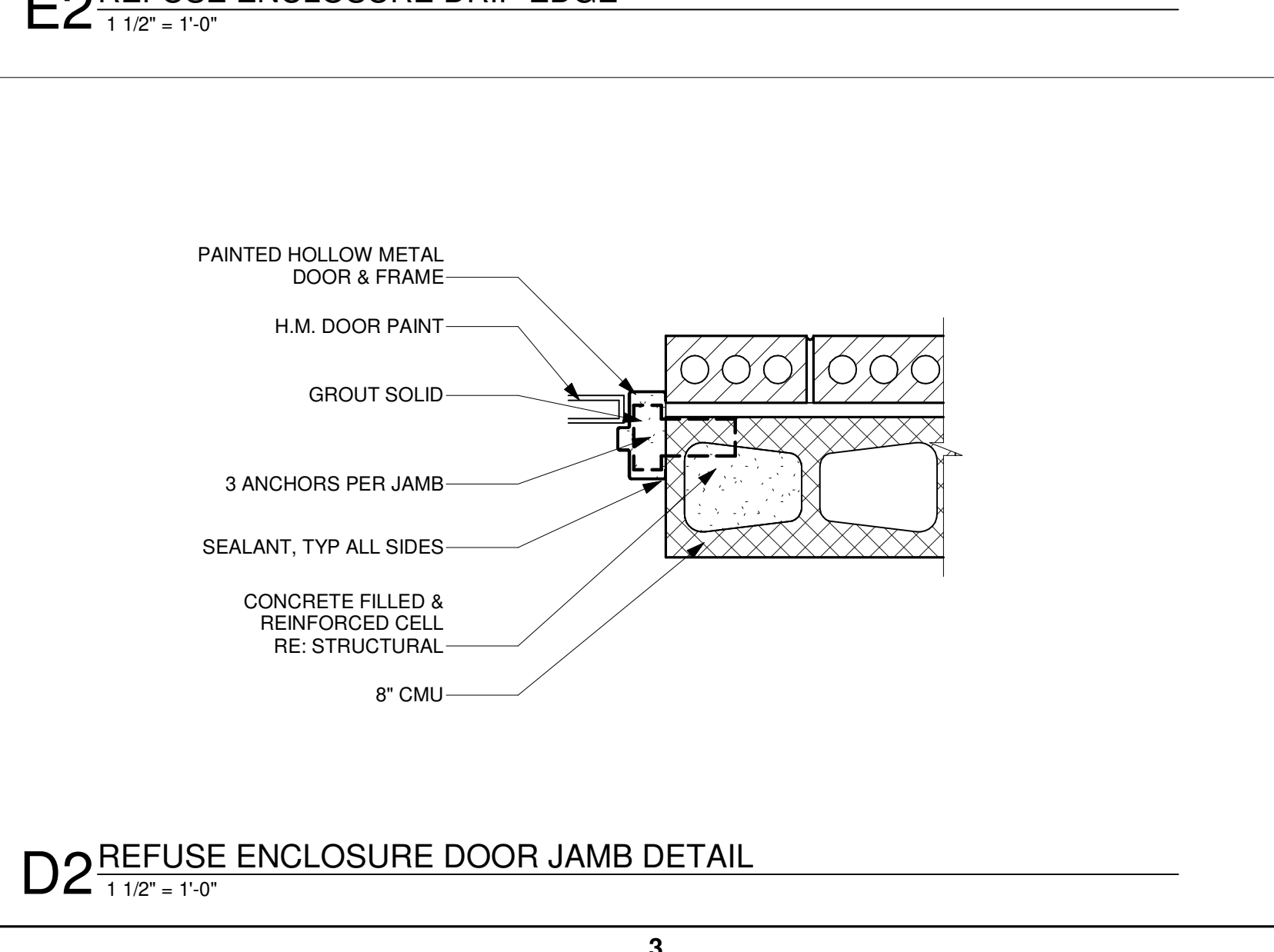
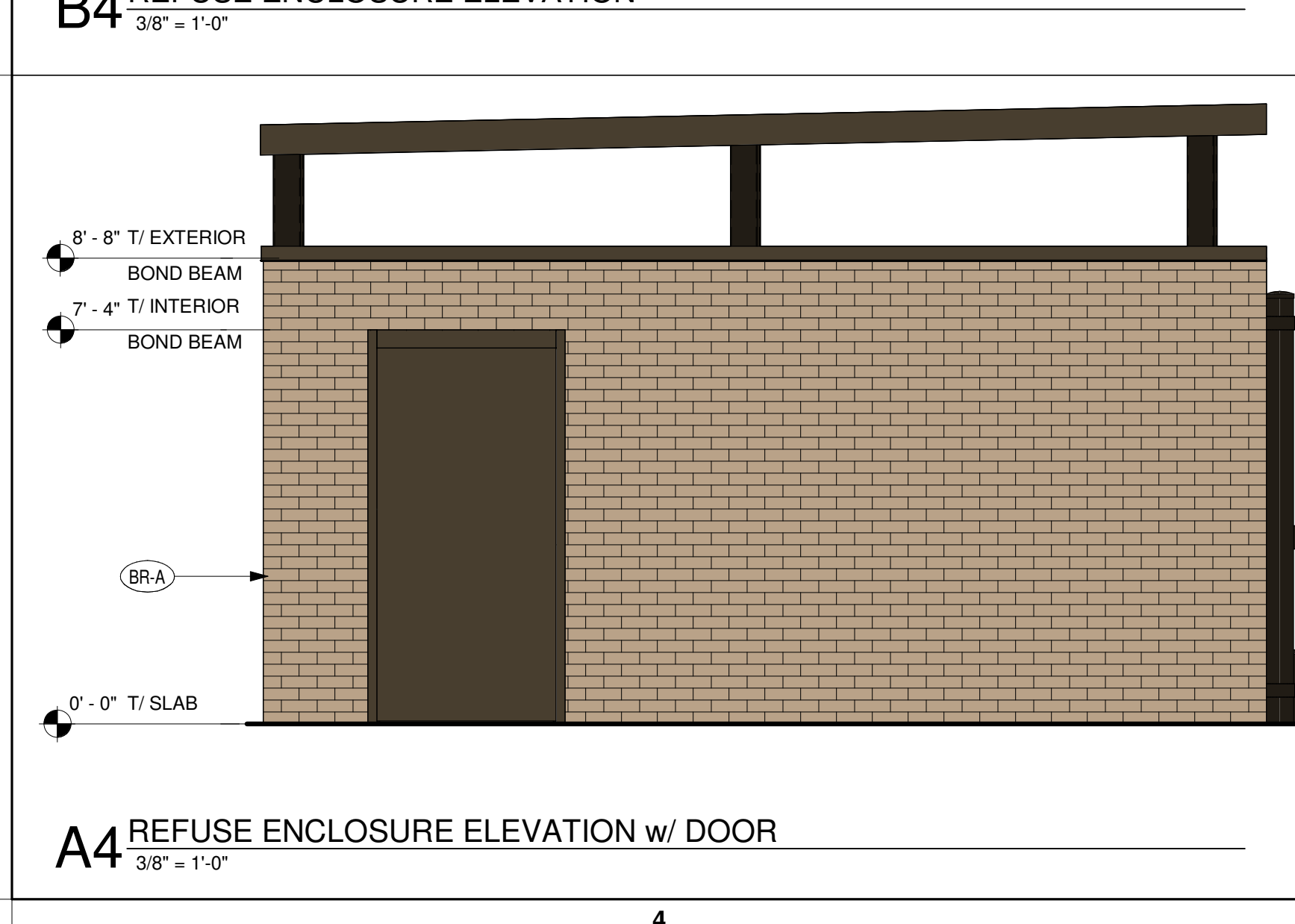
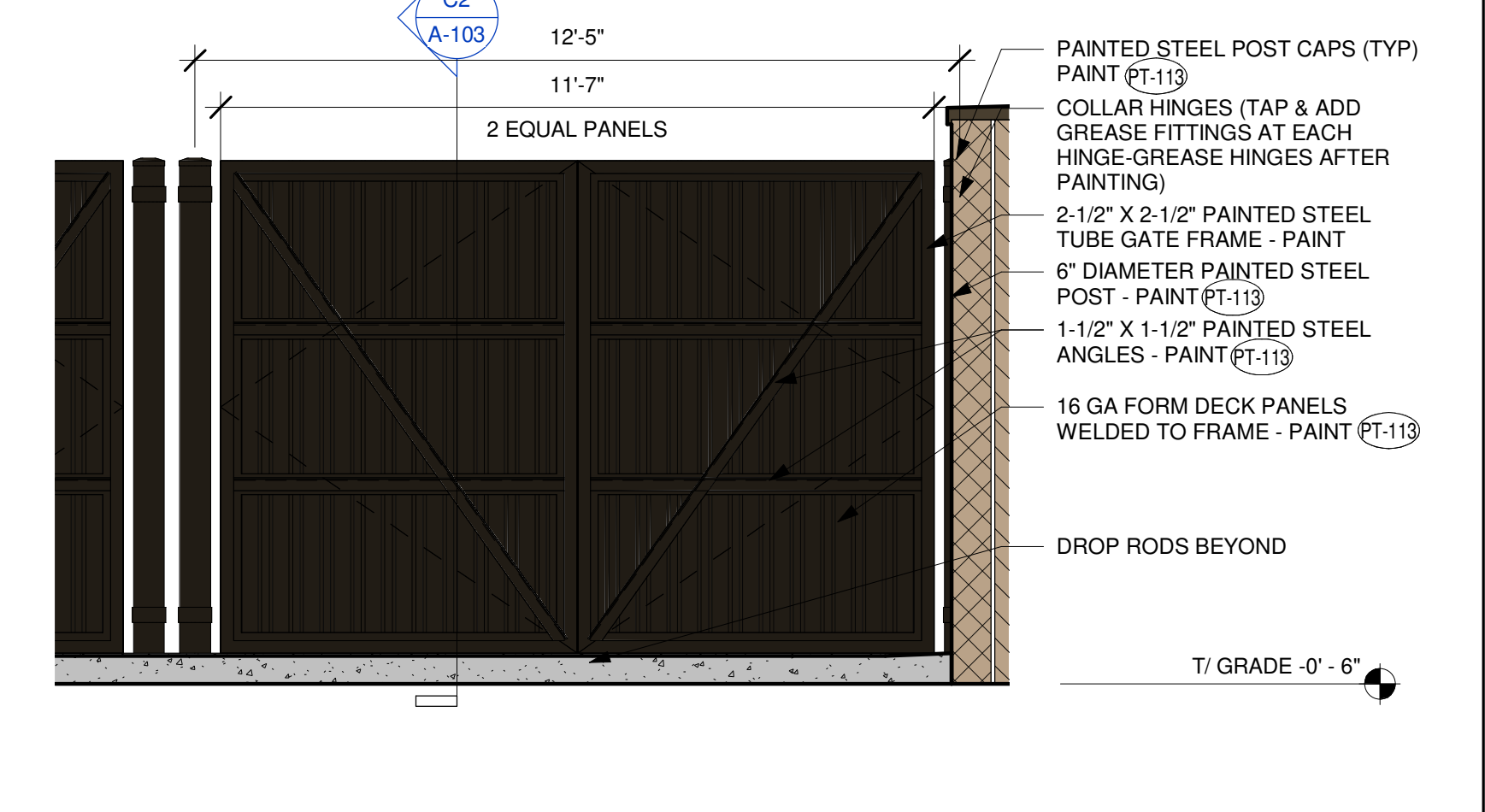
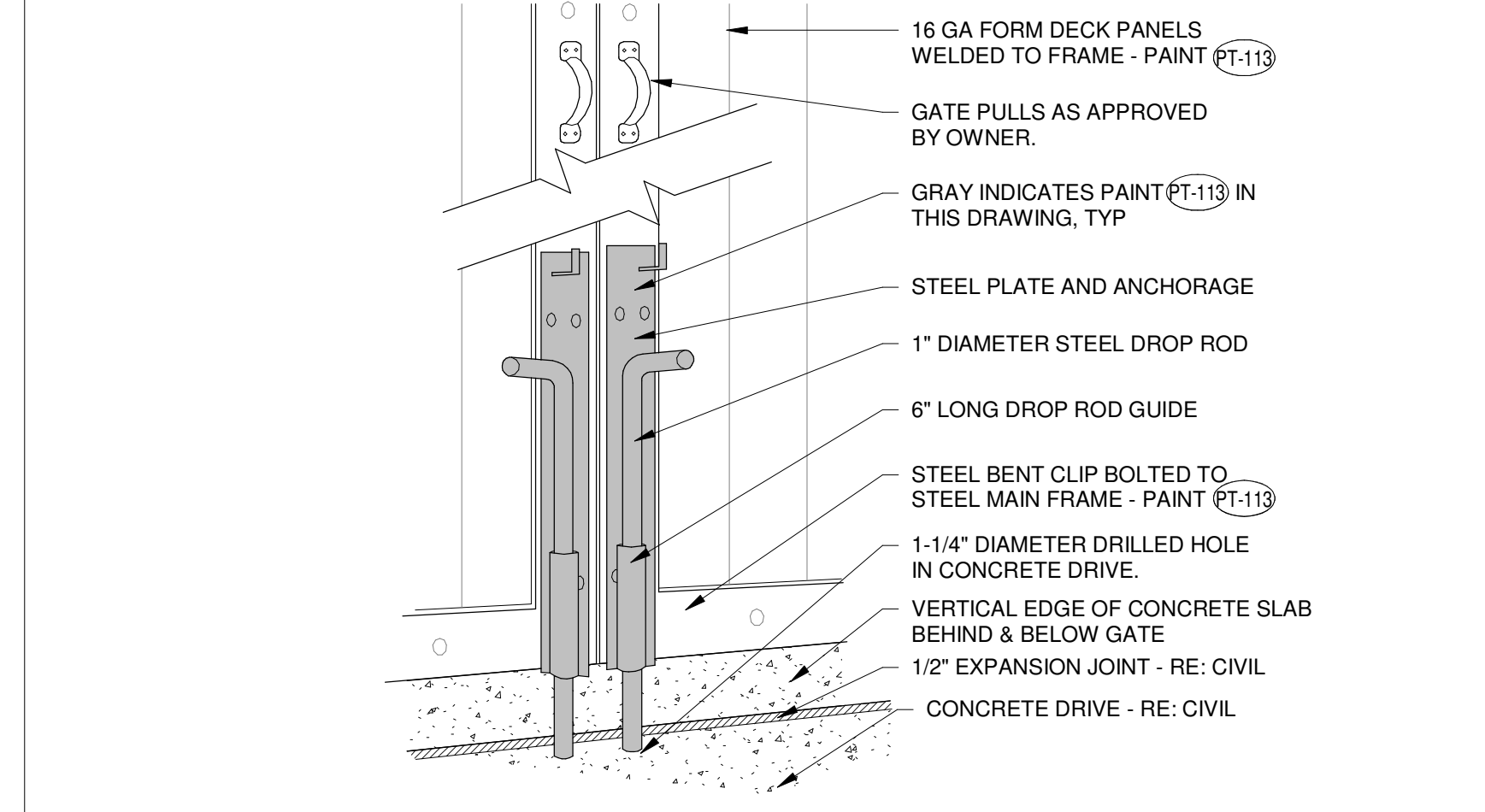
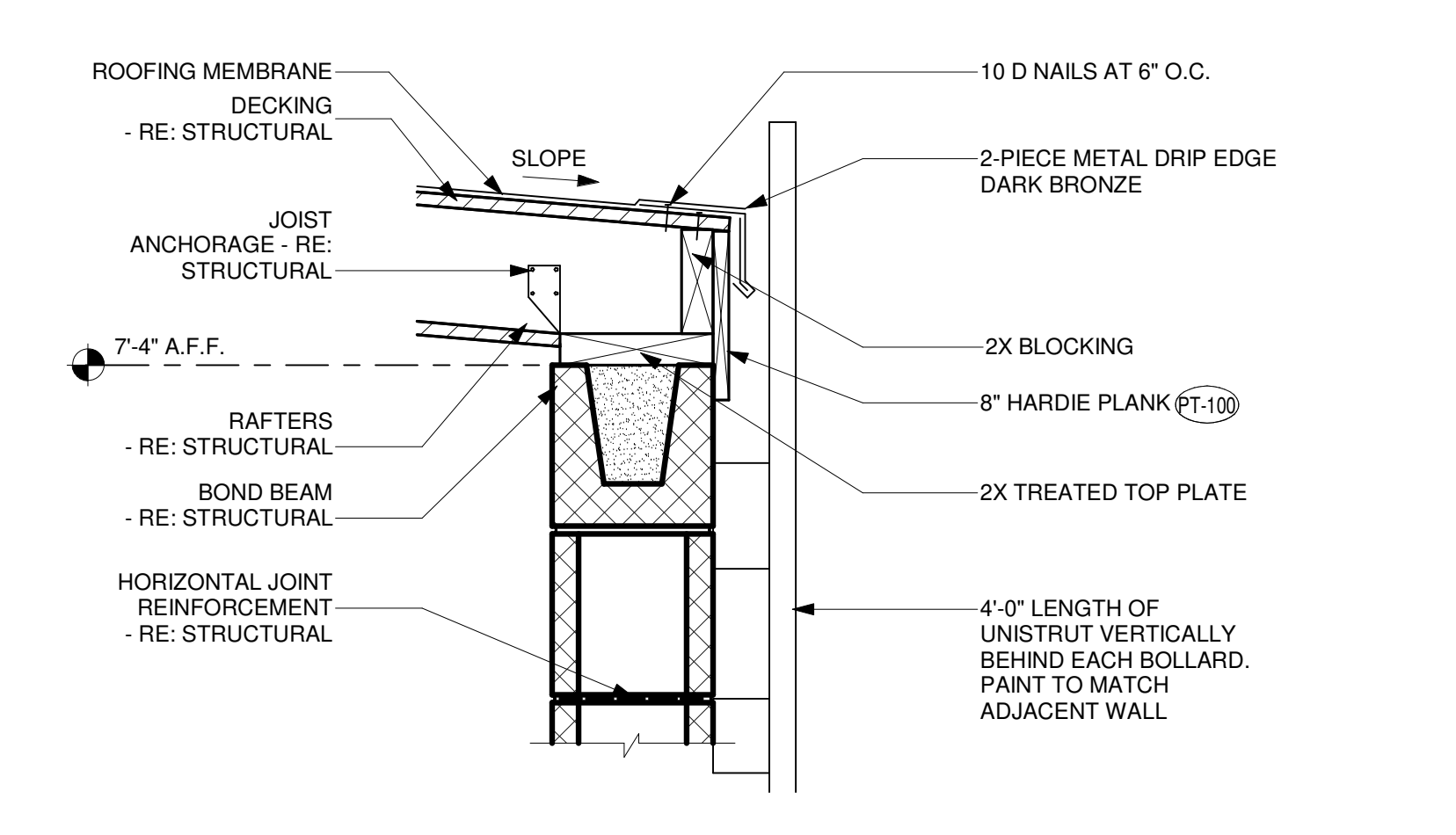
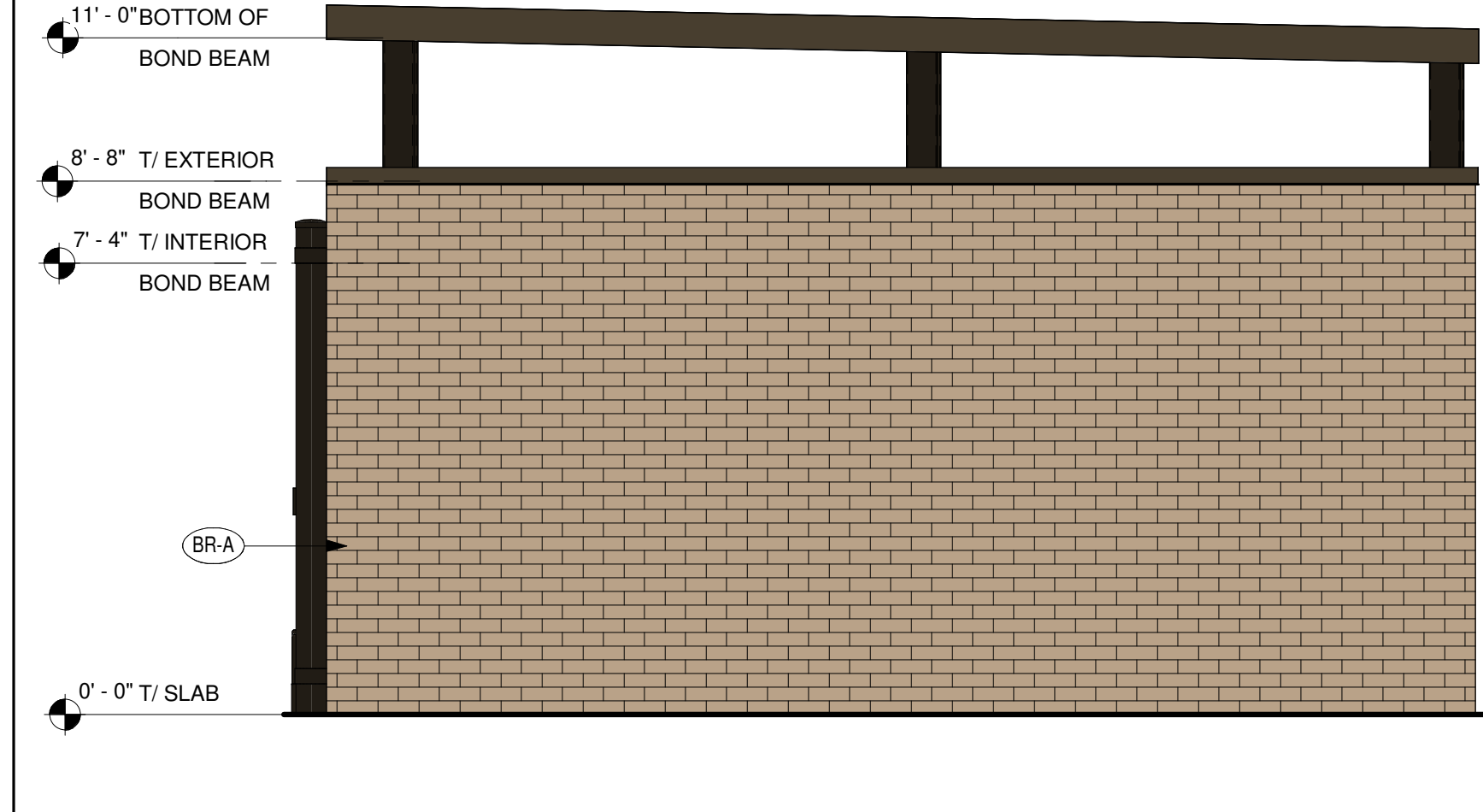
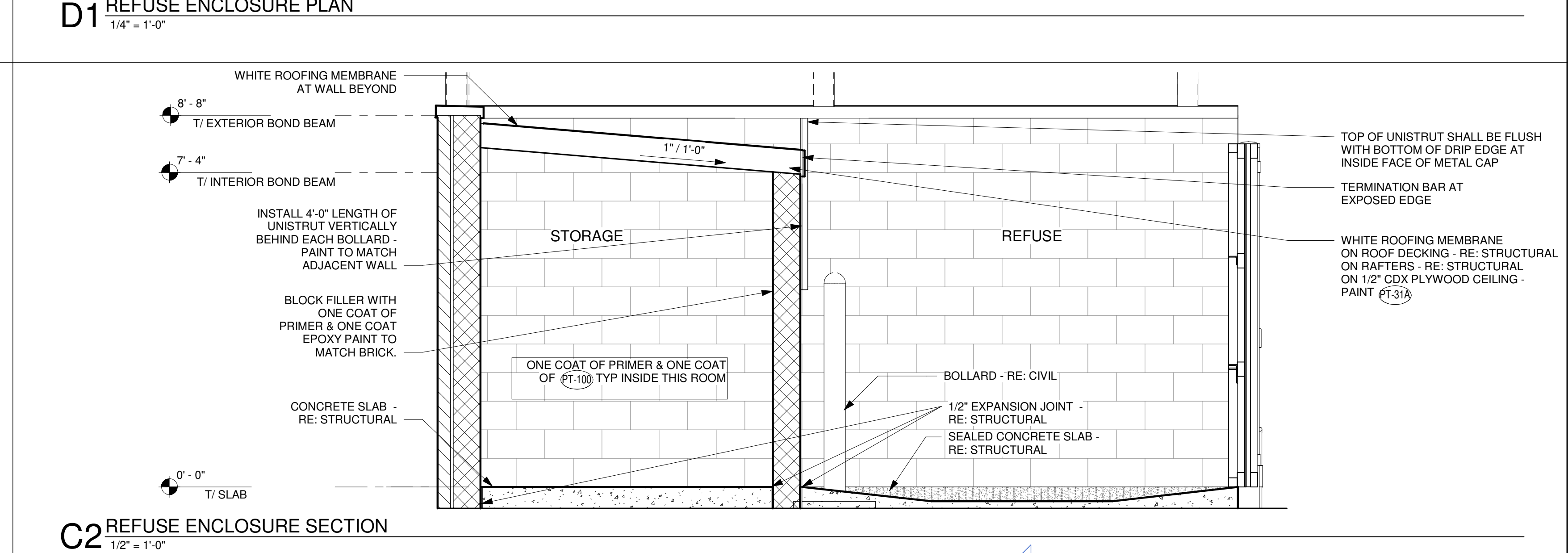
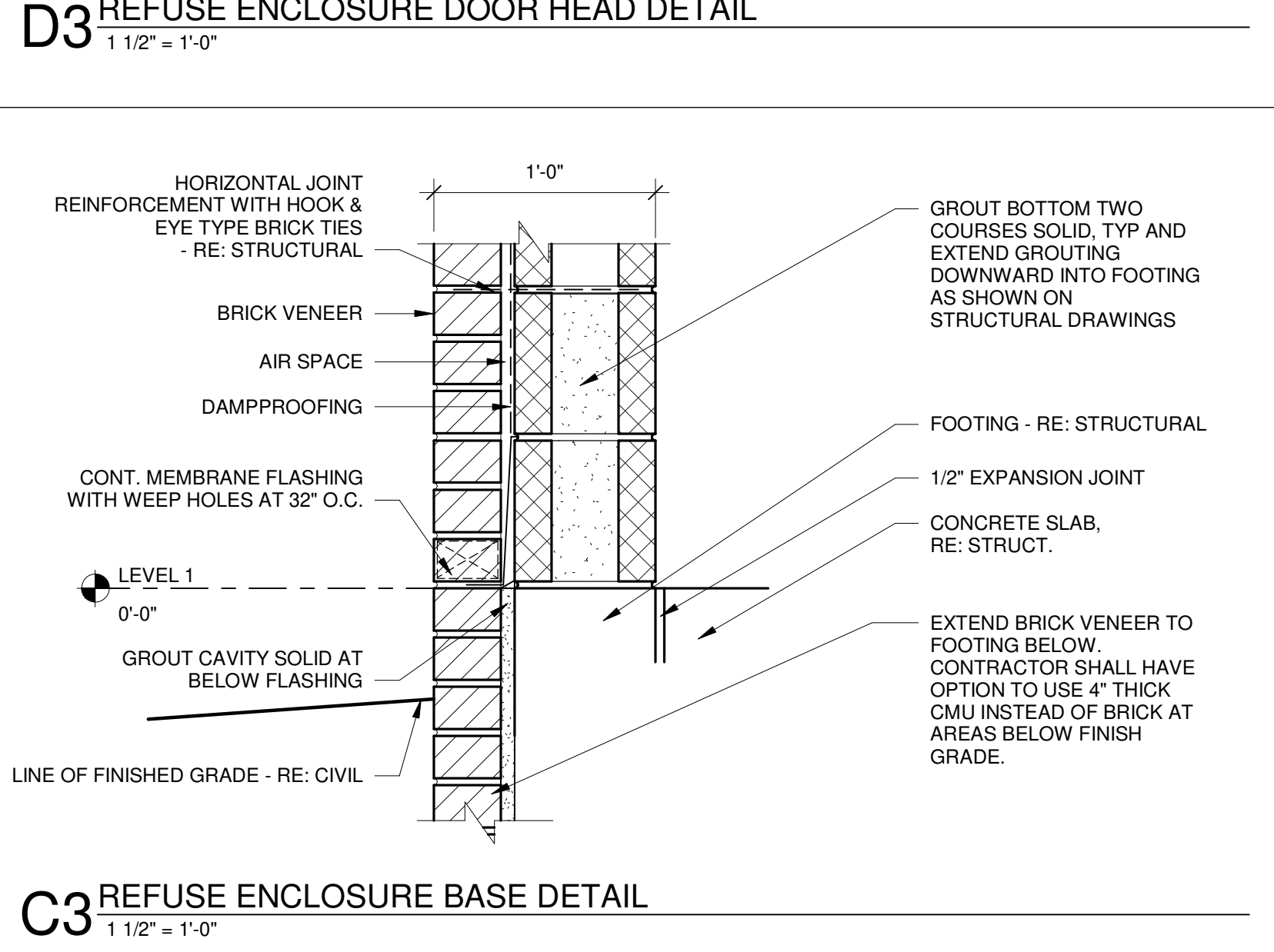
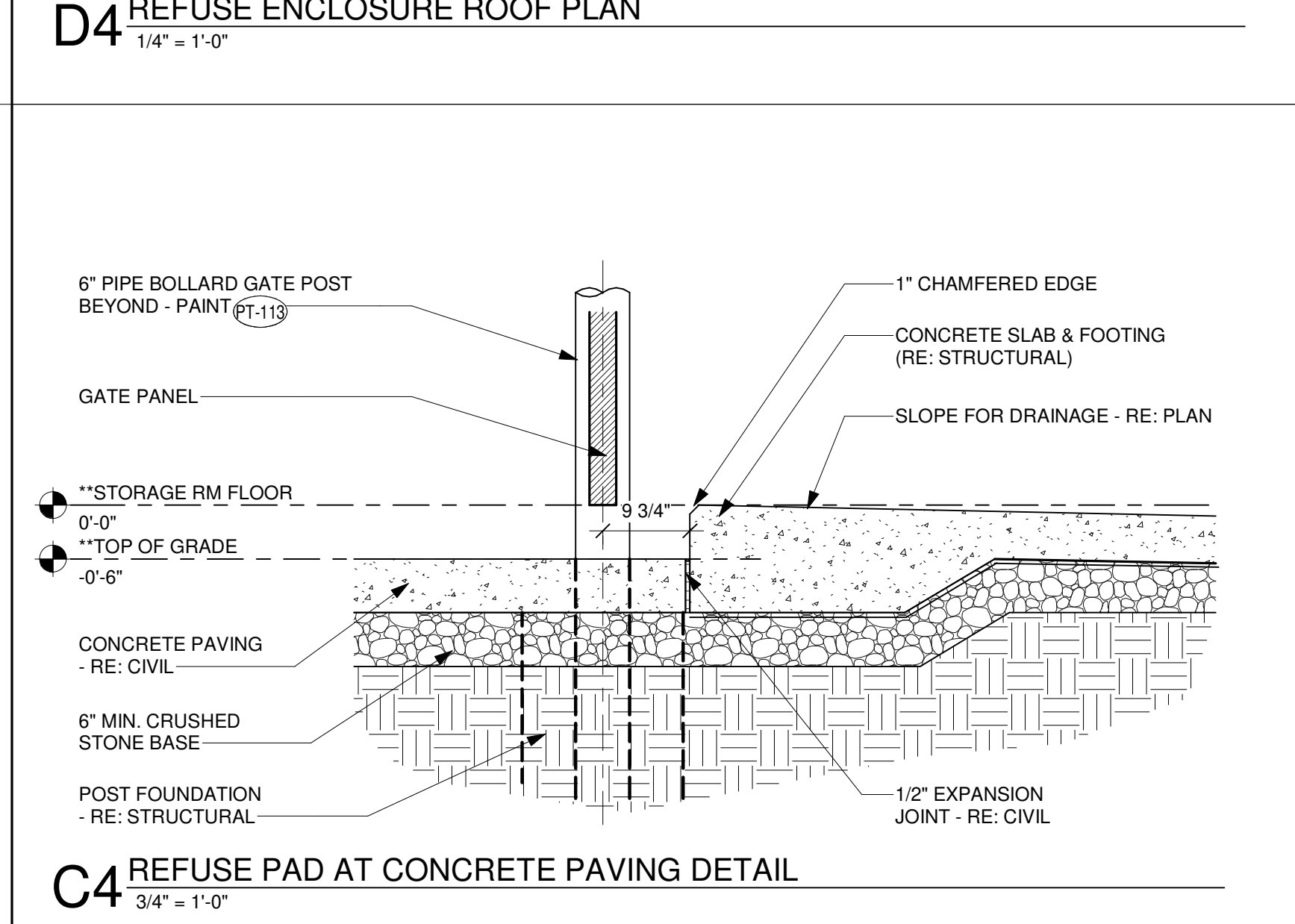
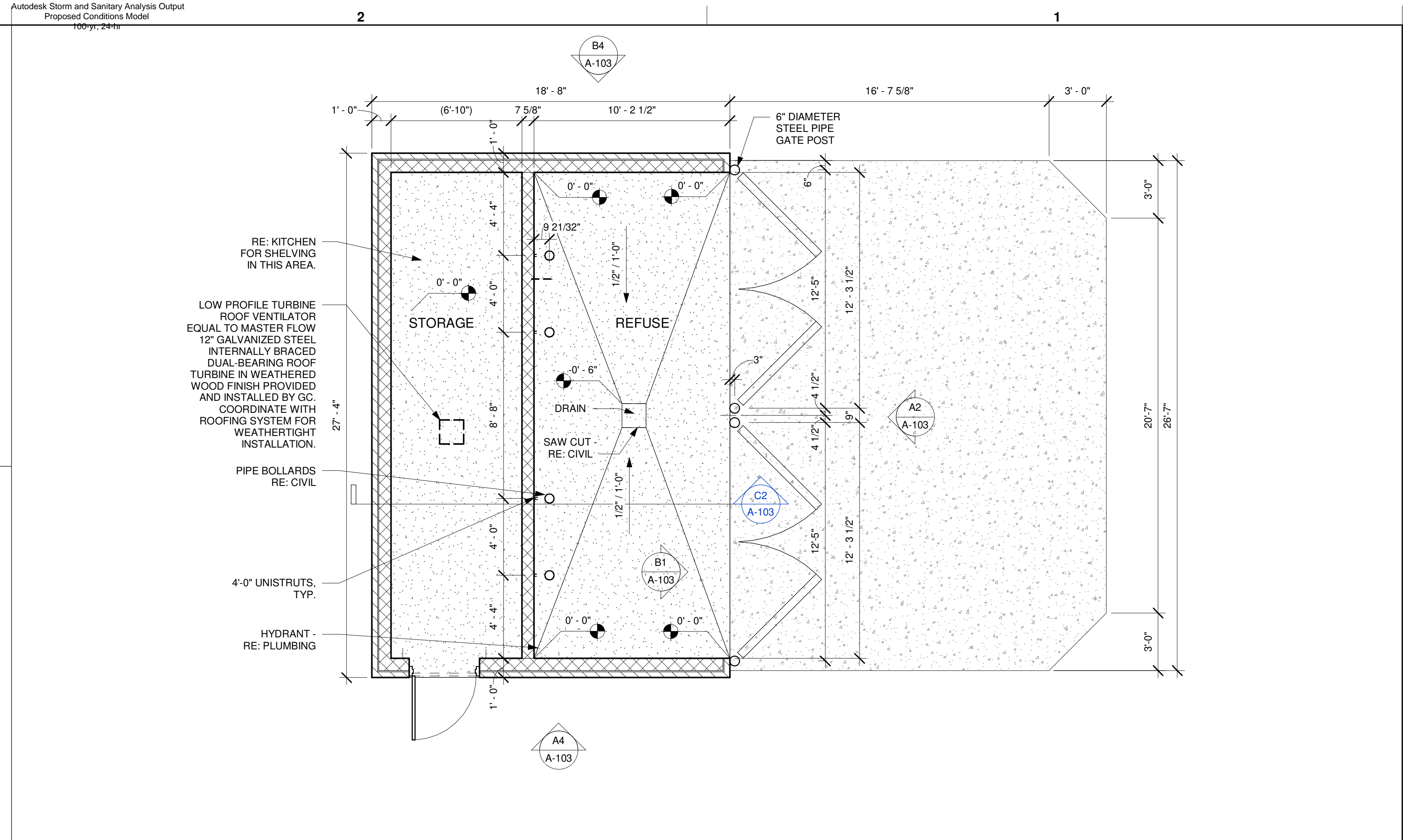
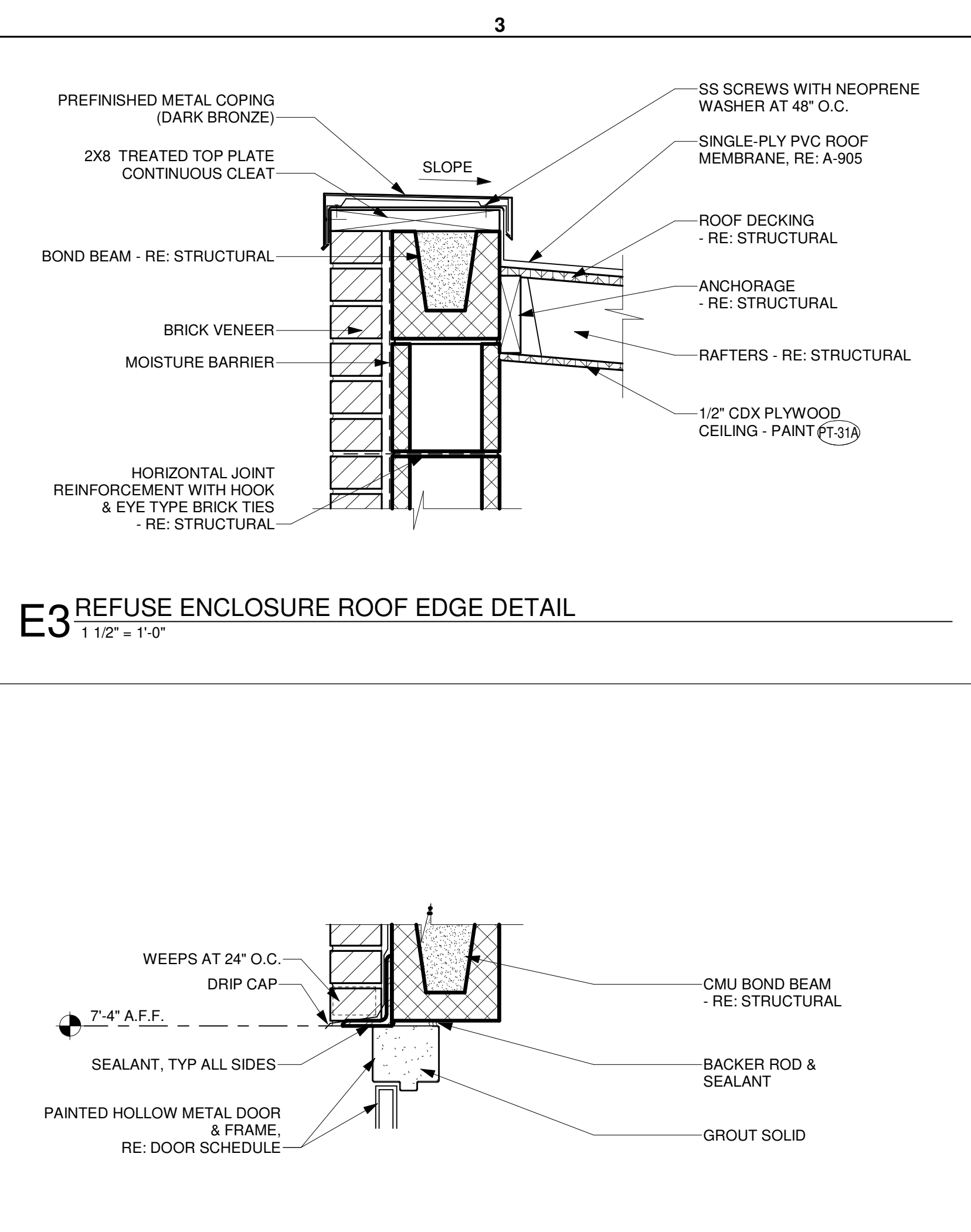
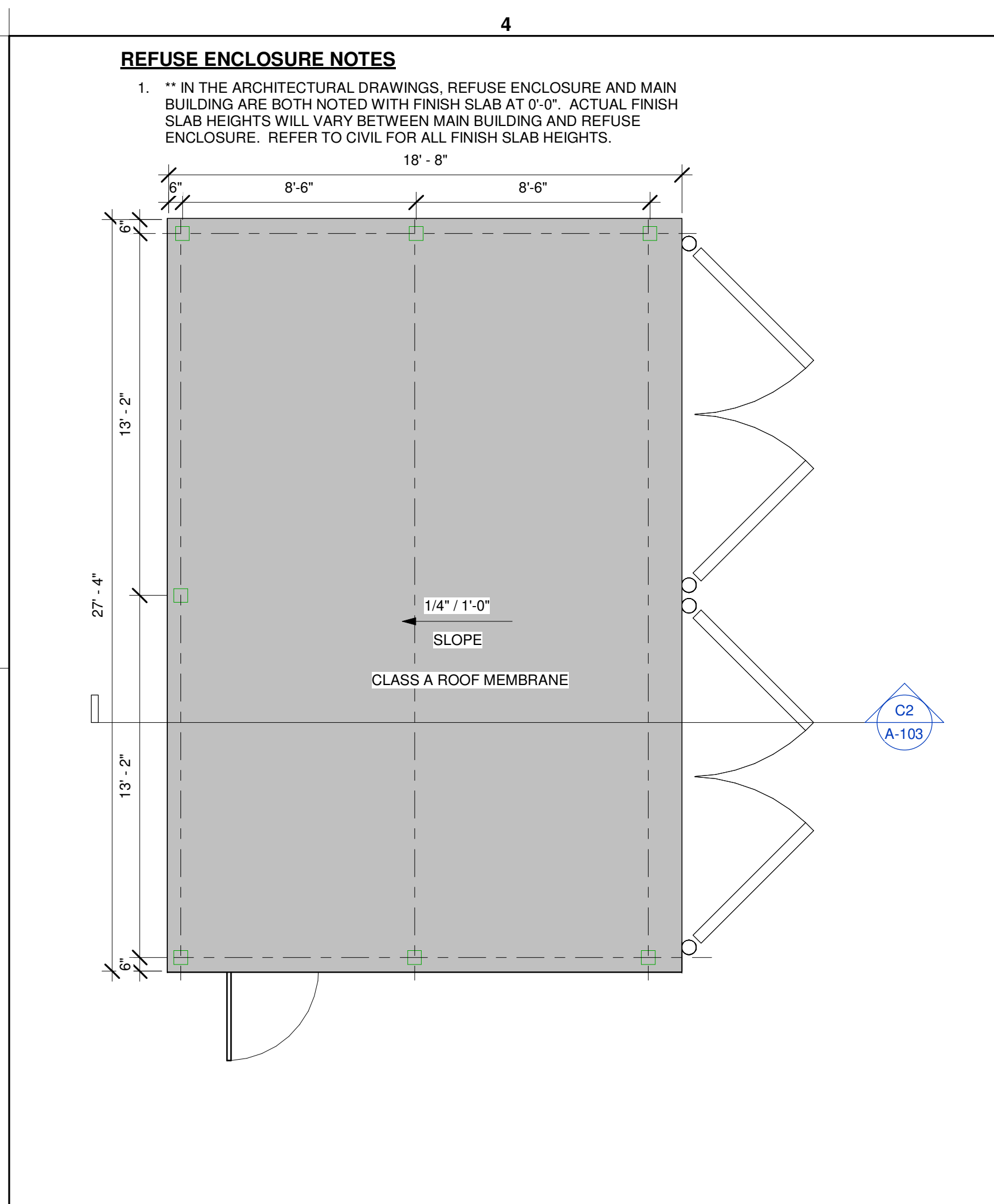
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A-103



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10-DR-05244-A-103-REFUSE ENCLOSURE



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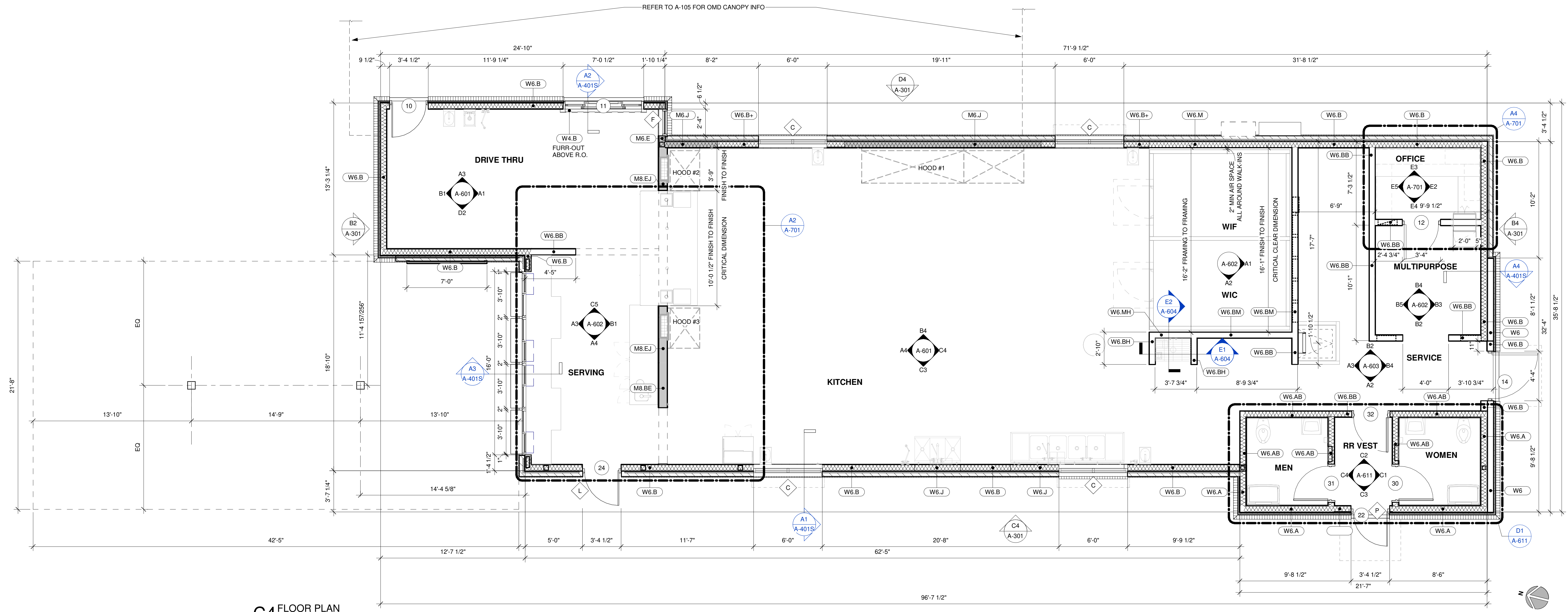
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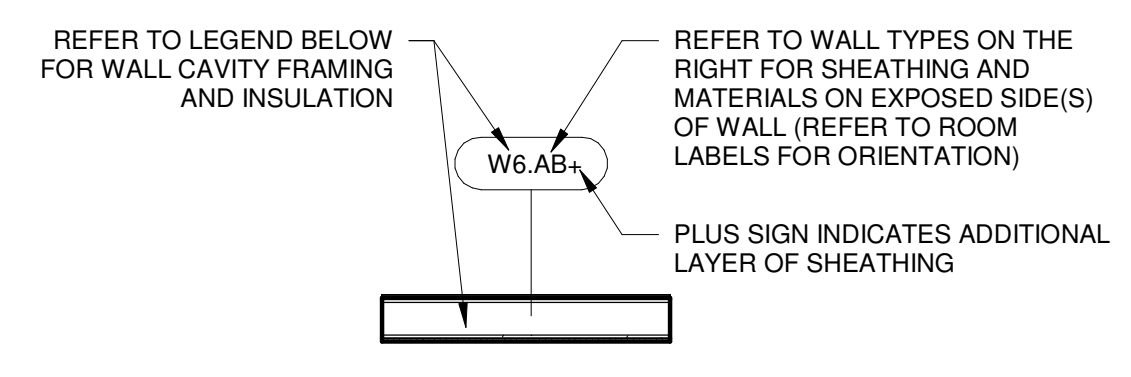
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FLOOR PLAN

SHEET NUMBER
A-201



C4 FLOOR PLAN
1/4" = 1'-0"



WOOD STUD WALL
W4: 2x4 WOOD STUDS
W6: 2x6 WOOD STUDS
W8: 2x8 WOOD STUDS

METAL STUD WALL
M4: 3 5/8" METAL STUDS
M6: 6" METAL STUDS
M8: 8" METAL STUDS

BATT INSULATION

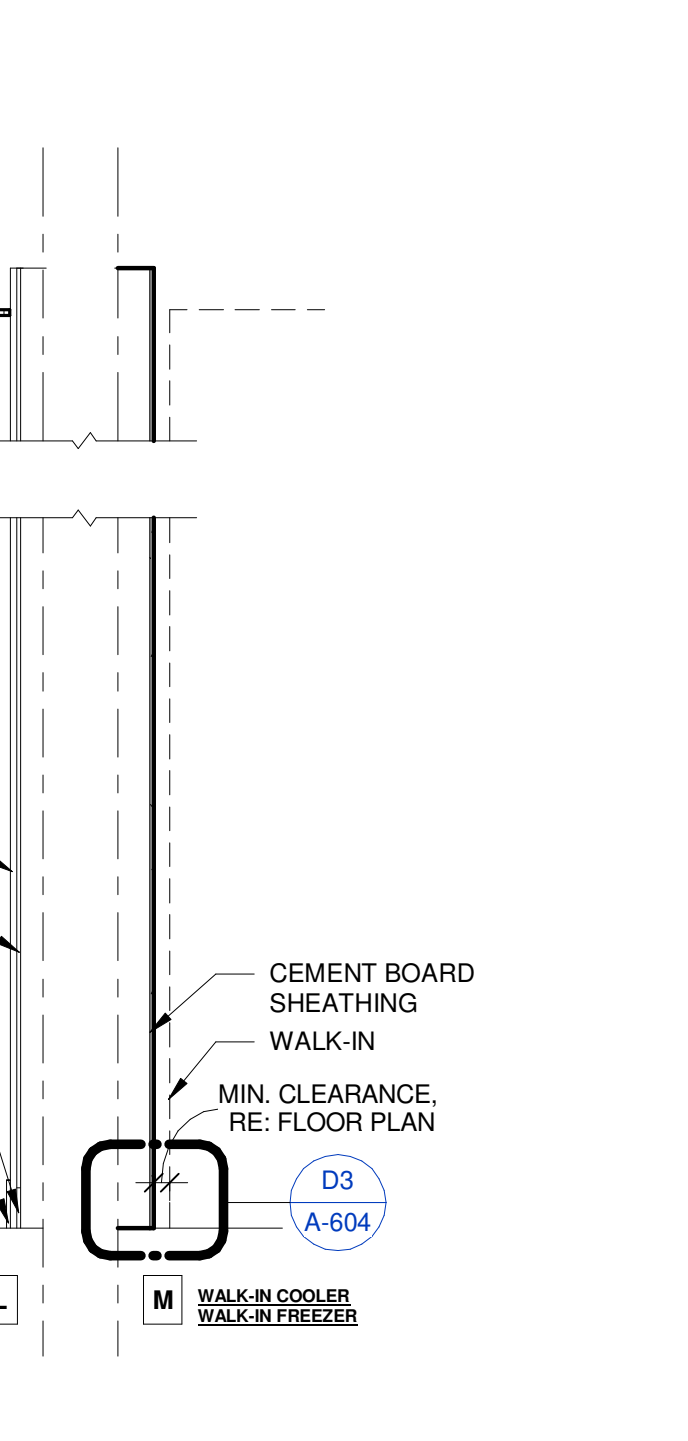
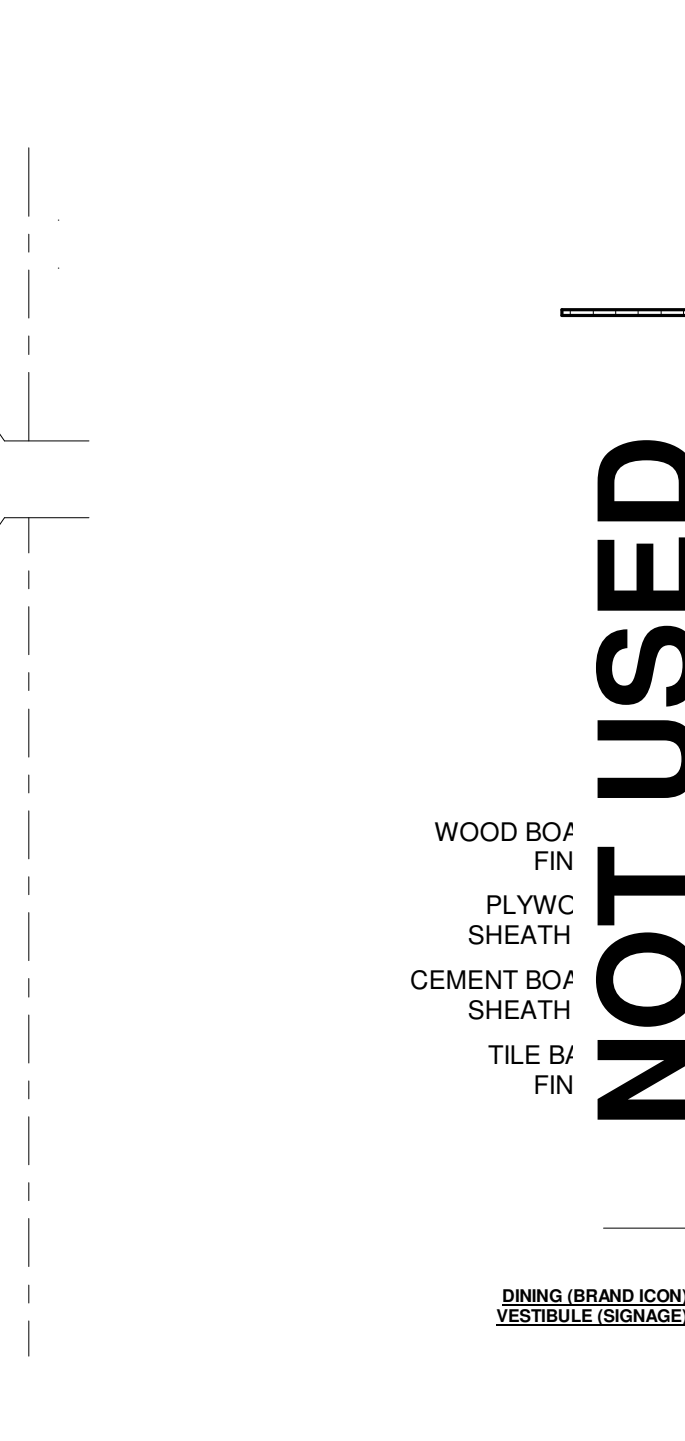
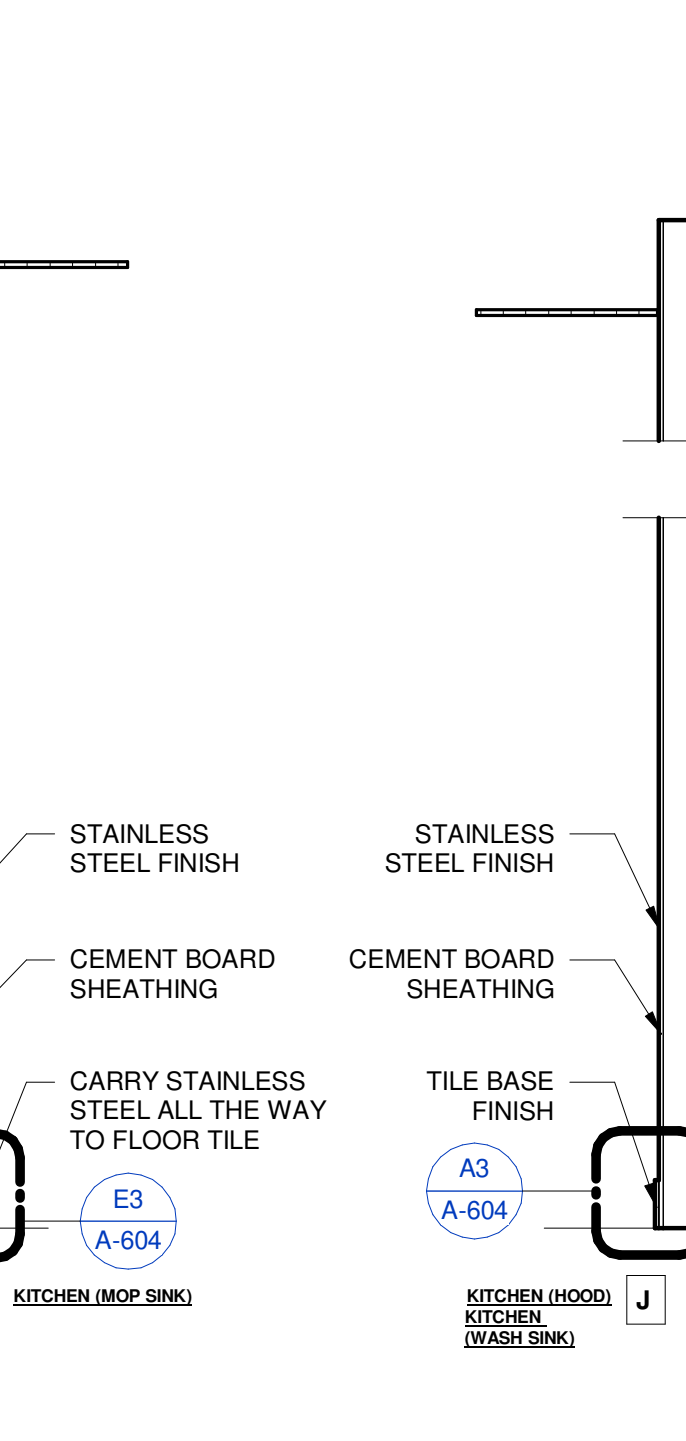
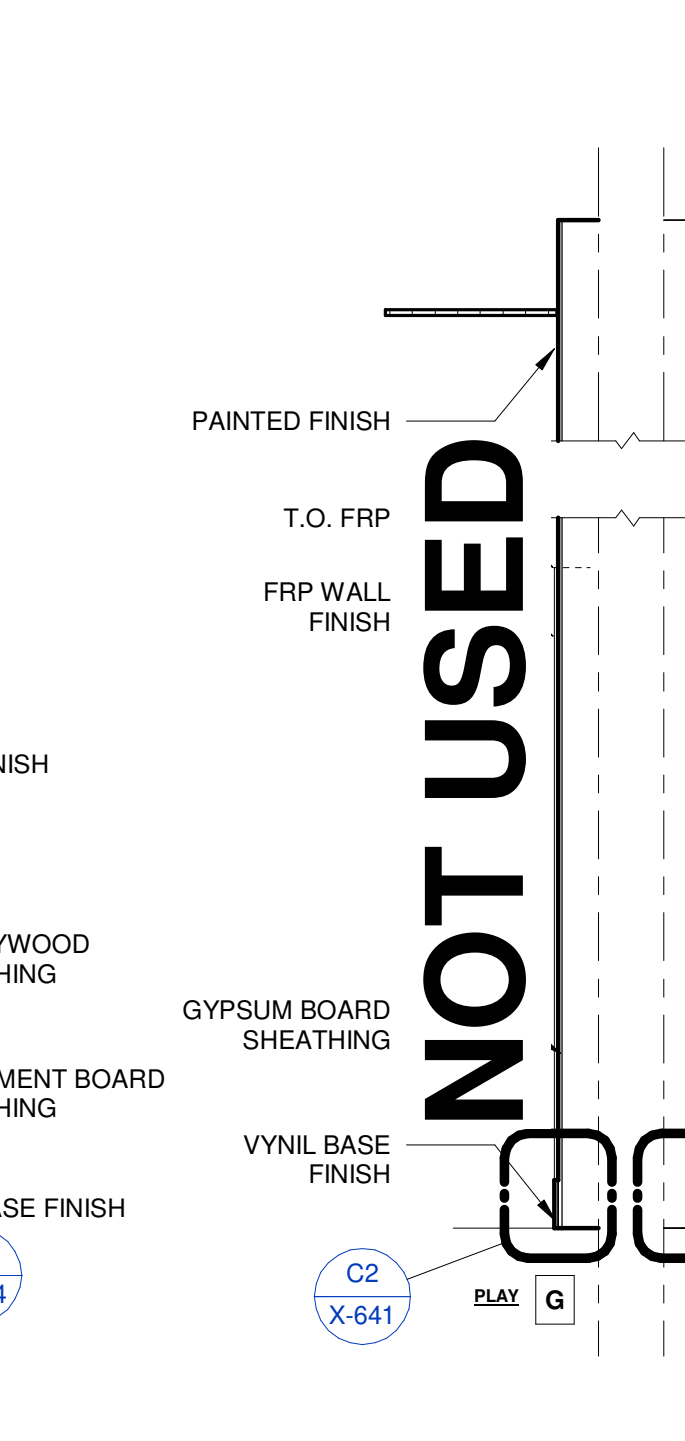
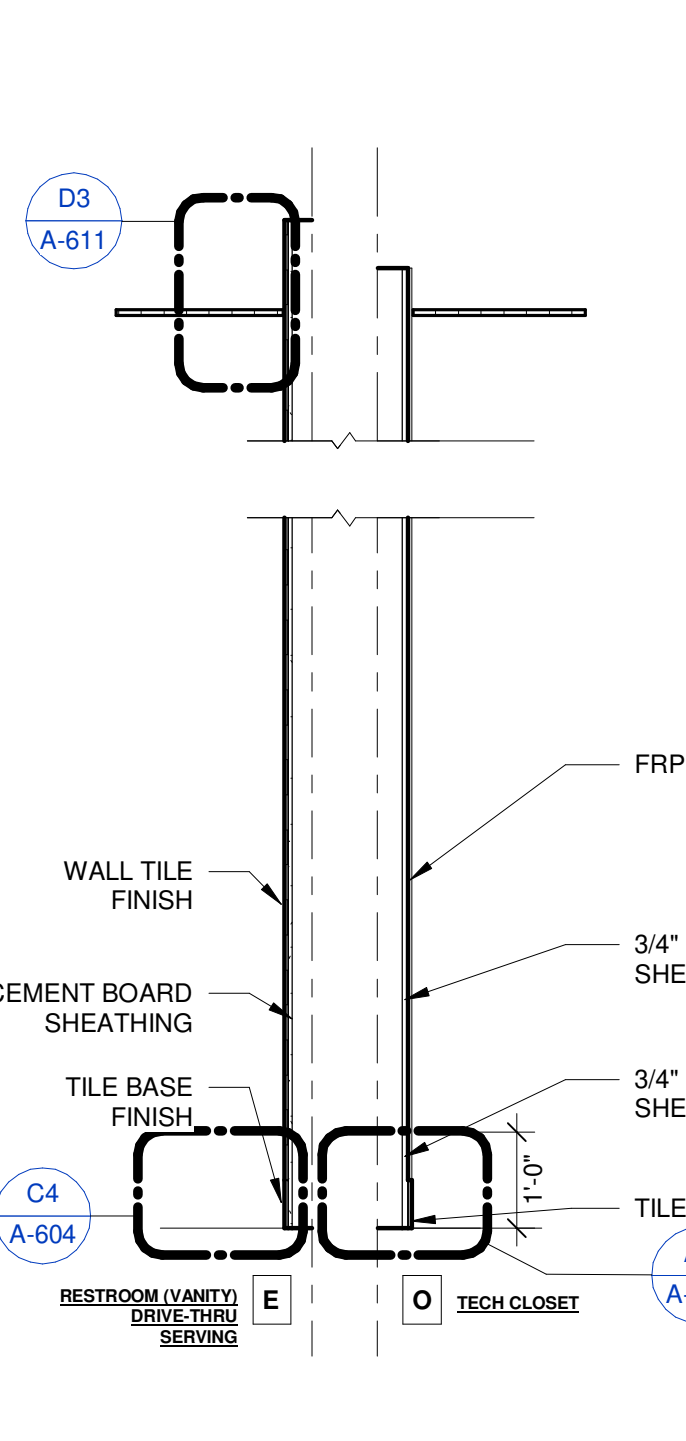
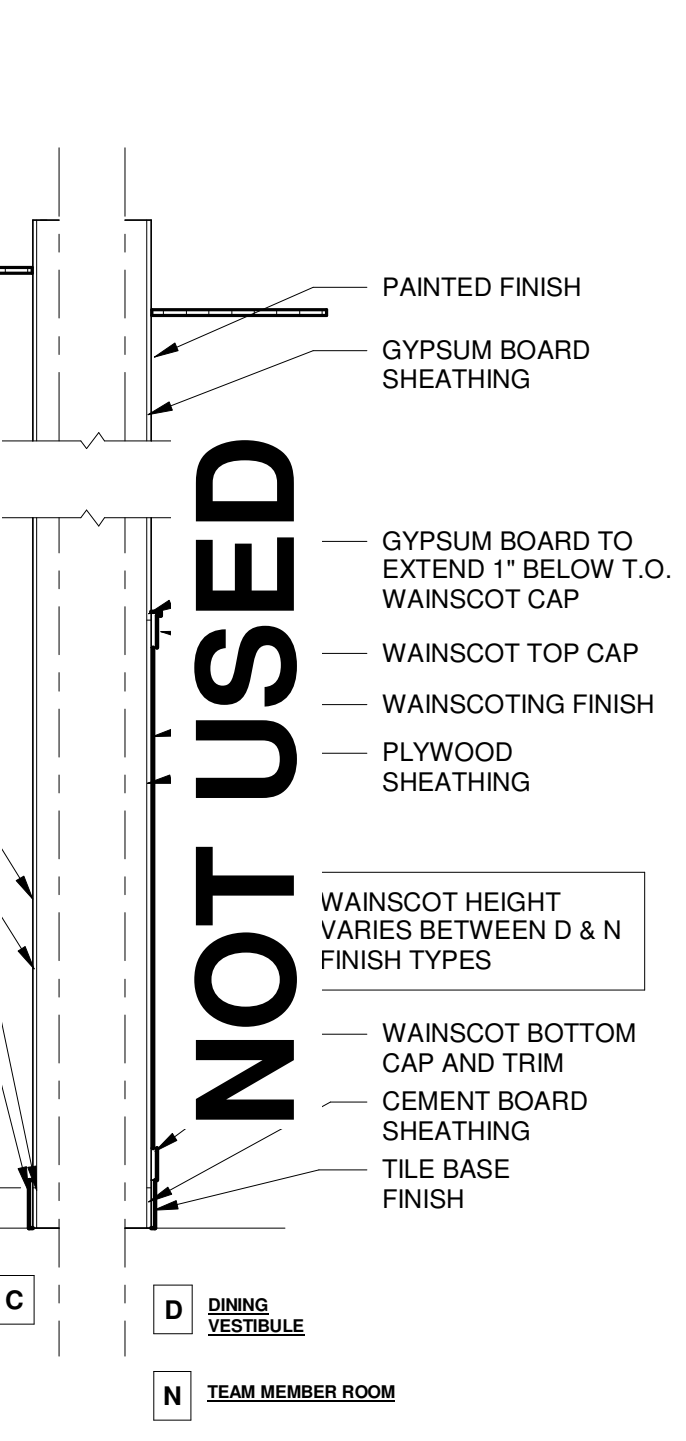
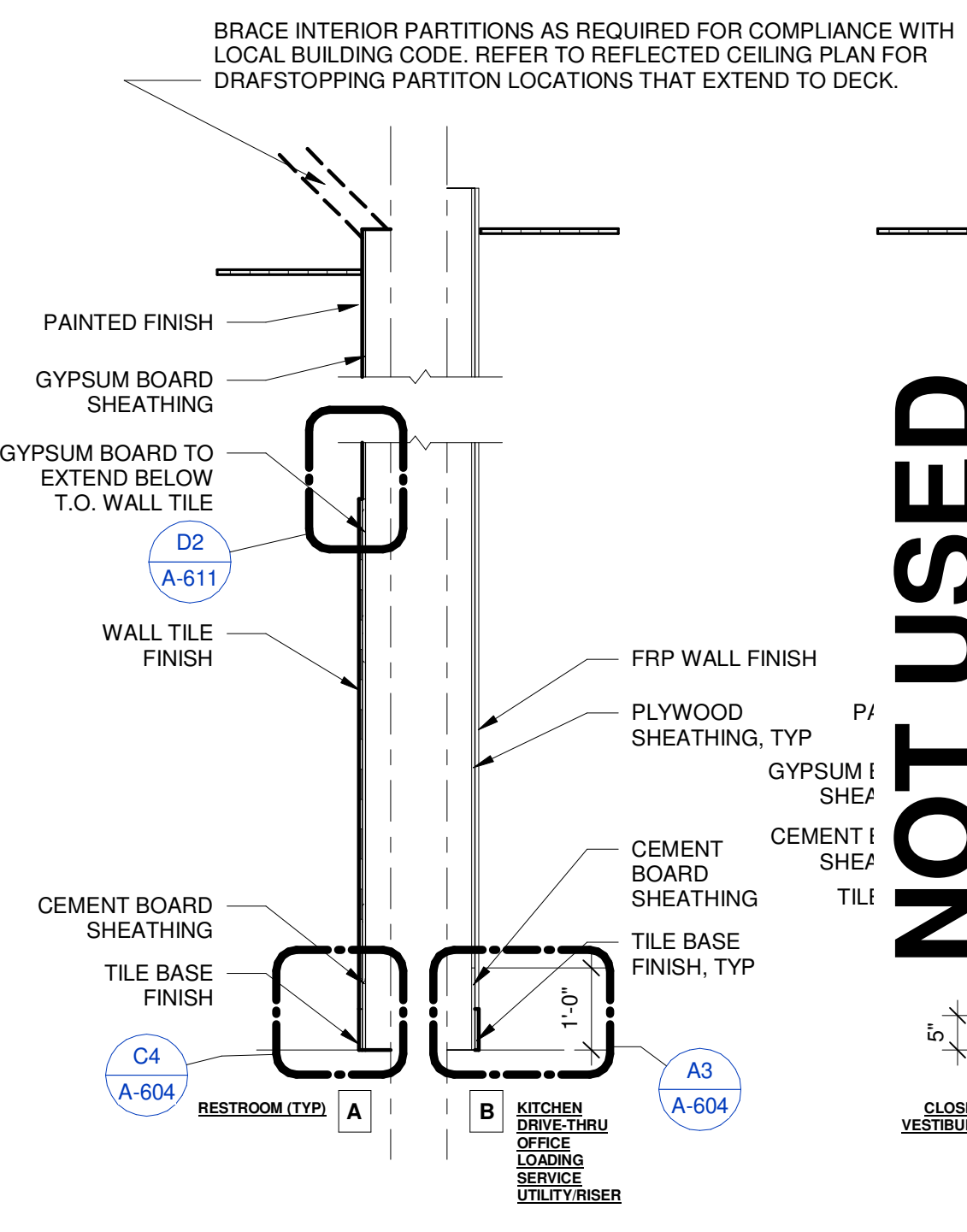
NOTE 1: WALL BLOCKING SHALL BE THE GENERAL CONTRACTOR'S RESPONSIBILITY. BLOCKING SHALL INCLUDE, BUT IS NOT LIMITED TO: AREAS INDICATED ON INTERIOR ELEVATIONS FOR GRAB BARS, SHELVING BRACKETS, MONITORS, FIXTURES, ETC. AS WELL AS BLOCKING FOR WINDOWS, CANOPIES, ROOF FRAMING, ROOF TOP UNITS, ETC.

NOTE 2: REFER TO STRUCTURAL DRAWINGS AND WALL SECTIONS FOR EXTERIOR WALL CONSTRUCTION.

NOTE 3: REFER TO FINISH PLAN FOR WALL FINISH INFO AND SPECIFICATIONS FOR WALL SHEATHING INFO. DIMENSIONS SHOWN ARE FROM FLOOR FINISH, TYP.

NOTE 4: GENERAL CONTRACTOR TO PROVIDE AND/OR VERIFY FIRE BLOCKING AT 10' MAX VERTICAL SPACING AND AT CEILING HEIGHT IN ALL COMBUSTIBLE STUD WALLS, ACCORDING TO LOCAL CODE REQUIREMENTS.

WALL TYPES LEGEND
N.T.S.



FLOORPLAN KEYNOTES

1	GC SHALL PROVIDE 5-1/2" HIGH CONCRETE MILLWORK CURBS. RE: OWNER SHOP DRAWINGS FOR EXACT LOCATIONS & DIMENSIONS.
2	GC SHALL SECURE SAFE USING (4) HILTI-HAS-E 1/2" x 4-1/2" ANCHOR BOLTS WITH HILTI HVJ ADHESIVE CAPSULE. AT EACH HOLE FASTEN THRU PHENOLIC BASE OF CABINET AND INTO CONCRETE CURB BELOW. VERIFY LOCATION WITH SAFE MANUFACTURER.
3	FREEZER AND COOLER DOORS AND HARDWARE SUPPLIED BY FREEZER/COOLER MANUFACTURER.
4	DASHED LINE INDICATES SOFFIT OR BULKHEAD ABOVE. RE: REFLECTED CEILING PLAN.
5	RECESSED PIN AND SLEEVE BOX. RE: KITCHEN ELEVATIONS FOR LOCATIONS AND HOOD DRAWINGS FOR SIZES.
8	STEEL WALL BY OWNER (TYP.) RE: OWNER FOR EXACT LOCATION.
9	SAFE SCREEN BY OWNER.
15	NETWORK CABINET.
18	ELECTRICAL PANEL. RE: ELECTRICAL.
19	ITEM BY OWNER.
20	2-SIDED ICON. RE: OWNER DRAWINGS.
22	CANOPY ABOVE BY OWNER.
23	DROP SLAB IN PLAY AREA 1-1/2". RE: STRUCTURAL.
24	MDP. RE: ELECTRICAL.
25	CT CABINET. RE: ELECTRICAL.
26	HAND SANITIZER CENTERED UNDER PLAY RULES SIGNAGE (WITH DECAL ON OPPOSITE SIDE IF MOUNTED ON STOREFRONT). RE: SCHEDULE ON A-701 FOR MODEL INFO.

INSULATION SCHEDULE

LOCATION	R-VALUE	THICKNESS
ROOF	R-30	5.2" RIGID
WALL (CONTINUOUS)	R-5	1" RIGID
WALL (CAVITY)	R-19	6" BATT
SLAB	R-10	2" RIGID

NOTES:
1. REFER TO FLOOR PLAN AND WALL SECTION SHEETS FOR INSULATION EXTENTS AND LOCATIONS.
2. REFER TO SPECIFICATIONS FOR INSULATION PRODUCT INFORMATION.

FLOOR PLAN GENERAL NOTES

A.1 ALL DIMENSIONS SHOWN ARE FRAMING DIMENSIONS (FACE OF STUD/JAMB) UNLESS OTHERWISE NOTED.

A.2 FASTENERS, ANCHORS, CLIPS, STRAPS, ETC WHICH ARE IN CONTACT WITH PRESERVATIVE AND/OR FIRE TREATED WOOD SHALL BE OF G-185 HOT DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, OR AN APPROVED EQUAL.

A.3 REFER TO CIVIL AND LANDSCAPE FOR LOCATIONS OF WALKS, BOLLARDS, LANDSCAPING AREAS, FLAG POLE, AND OTHER SITE ITEMS.

A.4 REFER TO INTERIOR ELEVATIONS FOR LOCATIONS AND TYPES OF CORNER GUARDS.

A.5 CONTRACTOR TO COORDINATE LOCATION OF POLE MOUNTED EXTERIOR CAMERA WITH STRONG SYSTEMS AND INSTALL UNDERGROUND CONDUIT AS REQUIRED. RE: ELECTRICAL.

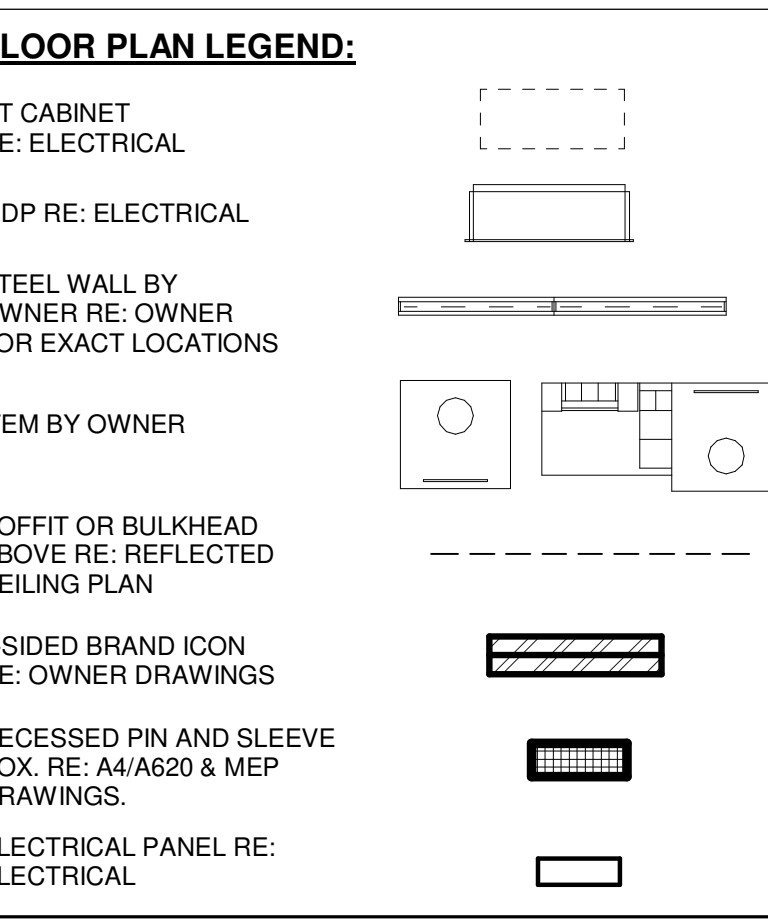
A.6 REFER TO ACCESSIBILITY PLAN AND FURNITURE DRAWINGS FOR SEATING LAYOUT & SPECIFICATIONS. CONTACT: OWNER.

A.7 REFER TO ACCESSIBILITY PLAN AND OWNER DRAWINGS FOR CONDIMENT COUNTERS AND TRASH RECEPTACLES.

A.8 REFER TO IT WALLBOARD USER GUIDE FOR WALLBOARD INSTALLATION, IF APPLICABLE.

A.9 REFER TO MILLWORK PLAN FOR RAISED CONCRETE CURB LOCATIONS.

A.10 FREEZER AND COOLER DOORS AND HARDWARE SUPPLIED BY FREEZER/COOLER MANUFACTURER.



5/30/2024 2:54:11 PM Autodesk Docs://OR_05244_McLoughlin Blvd & Courtney Ave_ARC.rvt
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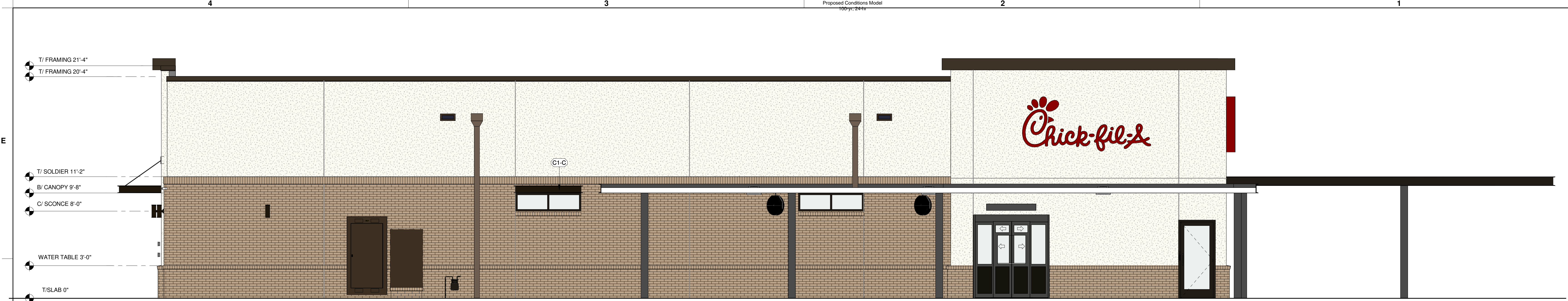
REVISION SCHEDULE		
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CONSULTANT PROJECT # SEA23-0028-00
DATE: 03/01/2024

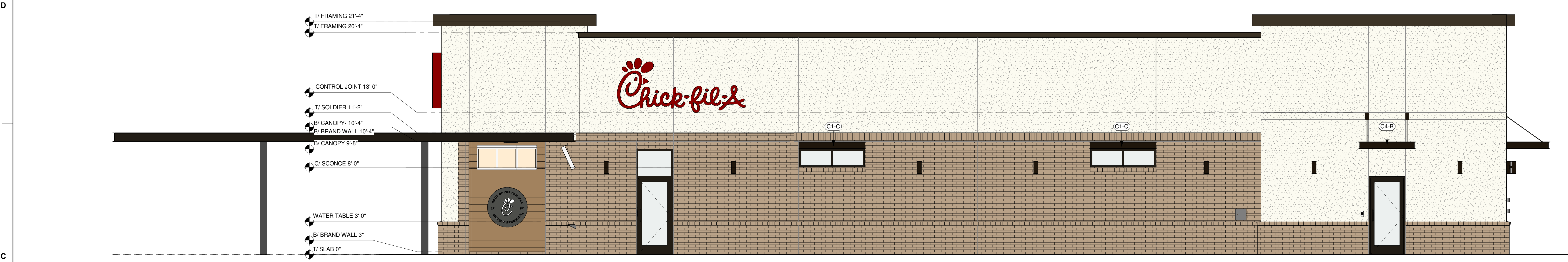
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EXTERIOR ELEVATIONS

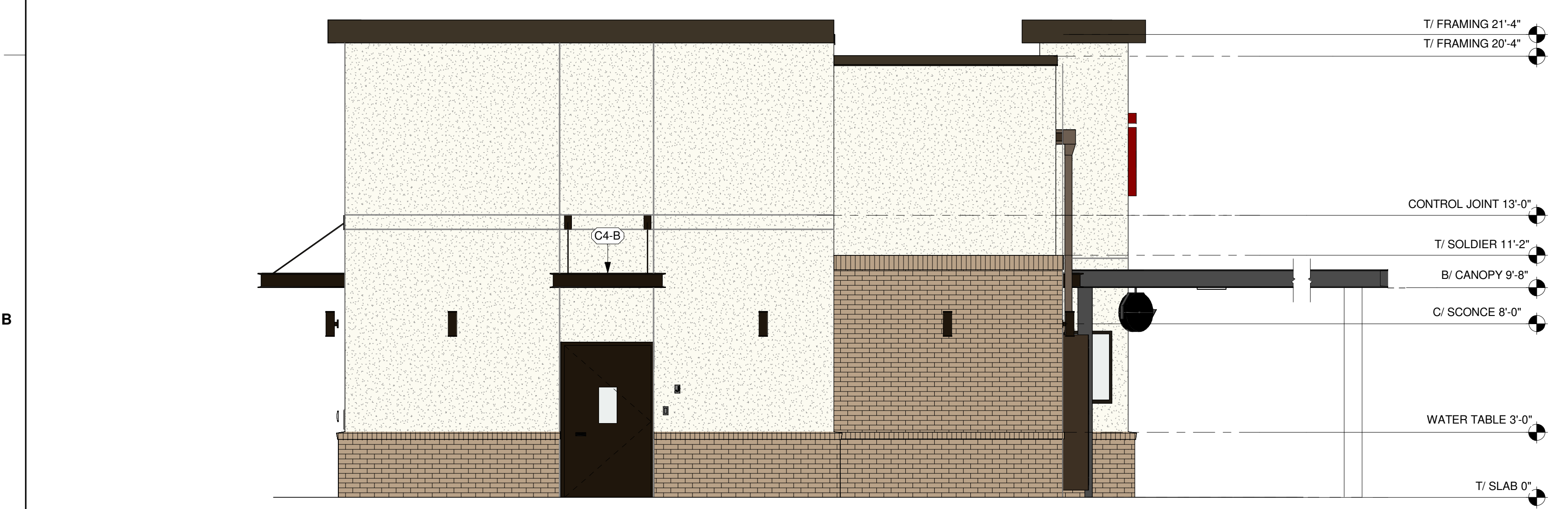
SHEET NUMBER
A-301



D4 WEST EXTERIOR ELEVATION
1/4" = 1'-0"



C4 EAST EXTERIOR ELEVATION
1/4" = 1'-0"



B4 SOUTH EXTERIOR ELEVATION
1/4" = 1'-0"



B2 NORTH EXTERIOR ELEVATION
1/4" = 1'-0"

APPROVED BRICK ALTERNATES
(SEE NATIONAL ACCOUNTS LIST FOR CONTACT INFORMATION)

FINISH	MANUFACTURER	MODEL	MORTAR	PLANT LOCATION	PREFERRED REGION(S)
BR-A	(PRIMARY BRICK)				
BR-02	ACME BRICK	PALOMA GRAY	ARGOS, SAN TAN	ELGIN, TX	SOUTHWEST
BR-18	MUTUAL MATERIALS	IMPERIAL GRAY	ARGOS, SAN TAN	MICA, WA	WEST
BR-20	GLEN-GERY	KHAKI MATT	ARGOS, SAN TAN	CHESWICK, PA	ATLANTIC, NORTHEAST, MIDWEST
BR-30	CHEROKEE BRICK	LIGHT GRAY SMOOTH	ARGOS, SAN TAN	MACON, GA	SOUTHEAST

FINISH SCHEDULE - EXTERIOR

MARK	DESCRIPTION	MANUFACTURER	MODEL NAME	MODEL NUMBER	COLOR	NOTE
BR-A	BRICK VENEER (PRIMARY)		MODULAR			*SEE APPROVED BRICK ALTERNATES
CM-1	WOOD COMPOSITE MATERIAL	RESYSTA INTERNATIONAL	FAÇADE CLADDING 7CH	RESP340812	C02, PALE GOLDEN	
CP-1	CANOPY METAL FASCIA		DURA COAT	DC19ST-2703	DARK BRONZE	OIL RUBBED BRONZE METALLIC TEXTURE PVD
CP-2	CANOPY METAL DECK				WHITE	SMOOTH WHITE, HIGH GLOSS
EC-1	PARAPET WALL COPING	DUROLAST / EXCEPTIONAL METALS			MIDNIGHT BRONZE	
PT-100	EXTERIOR PAINT	SHERWIN WILLIAMS	SHER-CRYL HIGH PERFORMANCE ACRYLIC #866-350	SW 2807	ROOKWOOD	REFUSE ENCLOSURE. FINISH: SEMI-GLOSS ON DOOR FRAMES, SATIN ON WALLS
PT-113	EXTERIOR PAINT	SHERWIN WILLIAMS	SHER-CRYL HIGH PERFORMANCE ACRYLIC #866-350		DARK BRONZE	FINISH: SEMI-GLOSS
SC-1	STUCCO	STO	POWERWALL		STO WHITE	FINISH: SAND MEDIUM
SC-2	STUCCO	STO	POWERWALL		ADOBE BROWN	FINISH: SAND MEDIUM
ST-1	STOREFRONT	YKK	YES 45		DARK BRONZE (MATTE)	

ATTACHED CANOPY SCHEDULE

Mark	Description	Count	Overall Width	Overall Depth	Tie Back Mounting (Offset From Top)	Integral Lighting
C1-C	Exterior Canopy	3	6'-4"	1'-0"	0"	No
C4-B	Exterior Canopy	2	5'-4"	4'-0"	2'-4"	Yes
Grand total		5				

CANOPY NOTES:
BUILDING MOUNTED CANOPIES - 8" THICK CANOPY KYVAR FINISH OF STRUCTURE, FASCIA, & DECKING TO MATCH (CP-1)
COLUMN MOUNTED CANOPIES - 10" THICK CANOPY - FINISH OF STRUCTURE TO BE (CP-1) - FINISH OF DECKING TO BE (CP-2)

GENERAL NOTES:
1. ALL SIGNAGE PROVIDED BY OTHERS
2. REF FLOOR PLAN AND WINDOW LEGEND FOR STOREFRONT INFORMATION

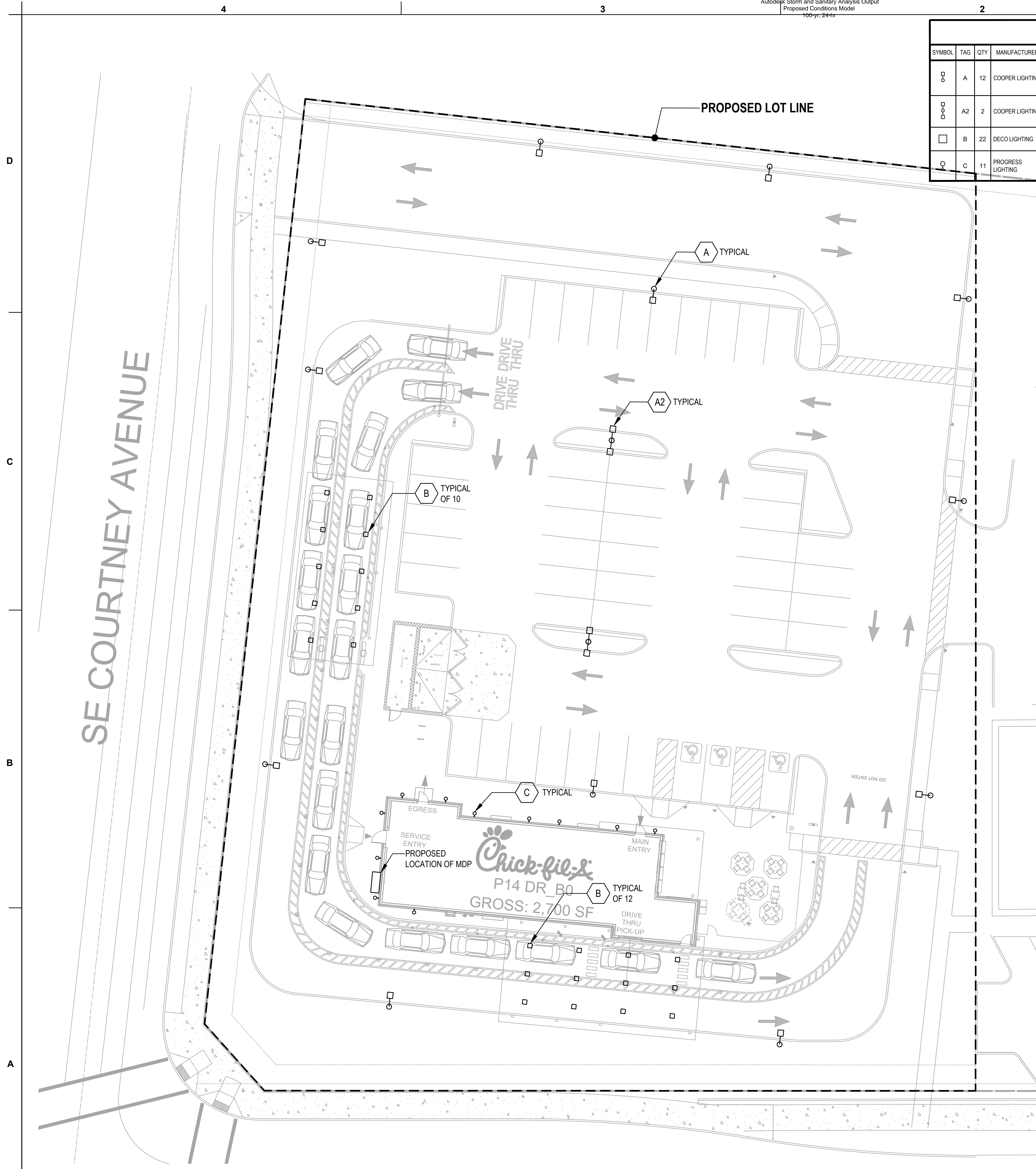
LEGEND

BR-A	BRICK VENEER COLOR: IMPERIAL GREY SIZE: MODULAR		EXPANSION JOINT, SEALANT COLOR TO MATCH MORTAR COLOR, RE: SPECIFICATIONS		OIL EXTRACTION PORT ACCESS BOX
SC-1	STUCCO SYSTEM COLOR: WEST HIGHLAND WHITE #SW7566 FINISH: SAND MEDIUM		CARD READER BY SECURITY VENDOR - RE: ELEC		CO2 FILL BOX - RE: KITCHEN
EC-1	PREFINISHED METAL COPING COLOR: MIDNIGHT BRONZE		SCUPPER - PT-113 SEE A2 / A-503		LIGHT FIXTURE - RE: ELECTRICAL
CM-1	WOOD COMPOSITE MATERIAL		DOWNSPOUT - PT-113 SEE A4 / A-503		CT CABINET - PT-113 RE: ELECTRICAL
			MENU BOARDS		WALK-UP WINDOW WITH TRANSOM - RE: NATIONAL ACCOUNTS
			MDP - PT-113 RE: ELECTRICAL		ORDER

5/30/2024 3:45:25 PM Autodesk Docs://OR_05244_McLoughlin Blvd & Courtney Ave_2024-2_DTO05244_McLoughlin Blvd & Courtney Ave_ARC.rvt 10-DR-05244-A-301-EXTERIOR ELEVATIONS

Exhibit E Photometric Plan

SCHEDULE												
SYMBOL	TAG	QTY	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	FILE NAME	(QTY) LAMP	LUMENS	LLF	WATTS	DISTRIBUTION	MOUNTING HEIGHT
□	A	12	COOPER LIGHTING	PRV-PA2B-730-U-T4W-HSS	PREVAIL AREA AND ROADWAY LUMINAIRE (2) 70 CRI, 3000K, 970mA LIGHT ENGINES WITH 24 LEADS AND TYPE IV WIDE OPTICS WITH HOUSE SIDE SHIELD	PRV-PA2B-730-U-T4W-HSS.ies	1	12,816	0.9	151.0	BUG RATING - B1-U0-G3	21'-4"
□	A2	2	COOPER LIGHTING	PRV-PA2B-730-U-T4W	PREVAIL AREA AND ROADWAY LUMINAIRE (2) 70 CRI, 3000K, 970mA LIGHT ENGINES WITH 24 LEADS AND TYPE IV WIDE OPTICS	PRV-PA2B-730-U-T4W.ies	2	35,392	0.9	302.0	BUG RATING - B3-U0-G4	21'-4"
□	B	22	DECO LIGHTING	D533R-PRO-55-30-U-5-W-M	LED CANOPY LUMINAIRE, 3000K, 80 CRI		1	7910	0.9	55		RECESS
□	C	11	PROGRESS LIGHTING	P5675-31	5' UP/DOWN CYLINDER WITH HEAVY DUTY ALUMINUM CONSTRUCTION, WET LISTED, WITH TWO GENERAL ELECTRIC RETROFIT LAMPS #LED12P30RWS3025		2		0.9	24		8'-0"



Chick-fil-A

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CHICK-FIL-A
MCCLOUGHLIN & COURTNEY
MCCLOUGHLIN & COURTNEY
MILWAUKIE, OREGON

FSR# 05244

BUILDING TYPE / SIZE:
RELEASE:
REVISION SCHEDULE

CONSULTANT PROJECT #
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SHEET
SITE LIGHTING PLAN

SHEET NUMBER

SITE LIGHTING PLAN

SCALE
1/16" = 1'-0"

1

ES1.0



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Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Parking/Driveway	+	4.1 fc	25.8 fc	1.9fc	13.6:1	2.2:1
Canopy 1	+	37.9 fc	55.3 fc	18.3fc	3.0:1	2.1:1
Canopy 2	+	39.7 fc	54.9 fc	18.7fc	2.9:1	2.1:1



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SHEET

SITE PHOTOMETRIC PLAN

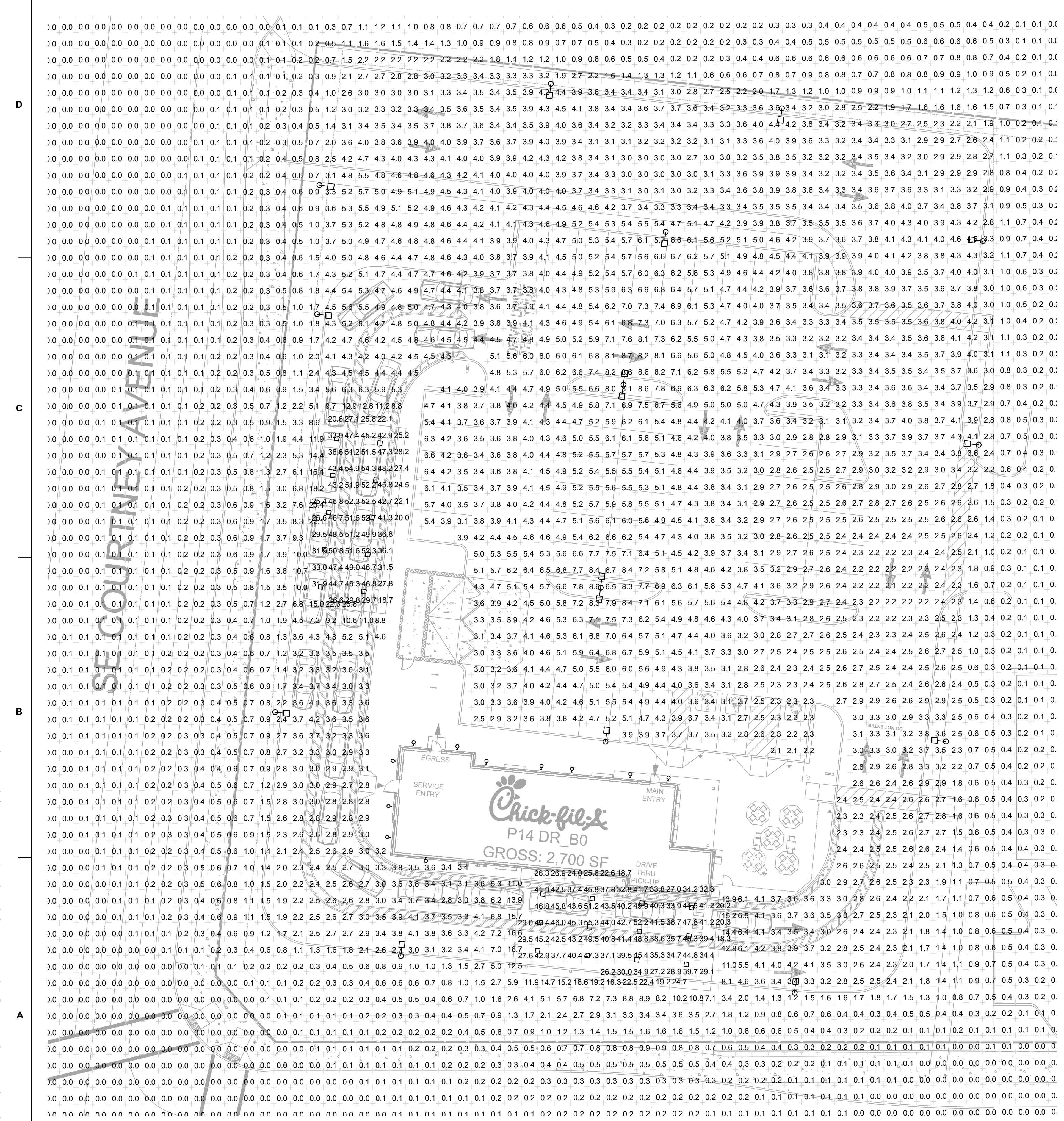
SHEET NUMBER

SITE PHOTOMETRIC PLAN

SCALE
1/16" = 1'-0"

1

EP1.0



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Project	Notes	Catalog #	Type
Prepared by			Date



Lumark Prevail Discrete LED

Area / Site Luminaire

Product Features



Product Certifications

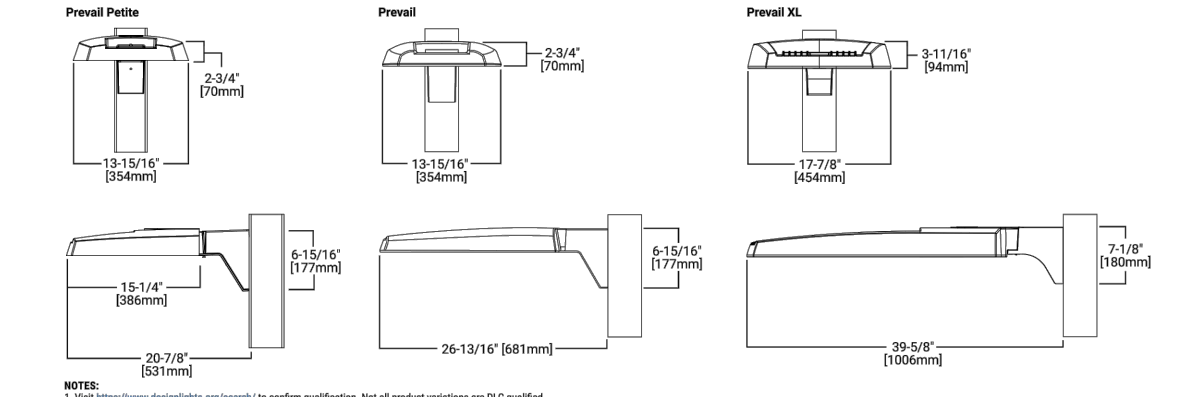


Connected Systems

- WireLinx

- #### Quick Facts
- Direct-mounted discrete light engine for improved optical uniformity and visual comfort
 - Lumen packages range from 4,300- 41,000 nominal lumens (30W - 300W)
 - Replaces 70W up to 1,000W HID equivalents
 - Efficacies up to 140 lumens per watt
 - Standard universal quick mount arm with universal drill pattern

Dimensional Details



Lumark Prevail Discrete LED

Ordering Information

SAMPLE NUMBER: **PRV-XL-PA4B-74D-U-TW-BZ**

Product Family	Light Engine	Color Temperature	Voltage	Distribution	Mounting	Finish
PRV-P-Prevail Poles	A-050A Nominal 24 LED Rectangles	3000K, 4000K, 5000K, 6000K, 8000K, 9000K	120/277V, 277V, 480V, 600V	T80-T80H, T80-T80H, T80-T80H, T80-T80H	Blank-Indirect, Pole, Wall, Mast Arm	Black, Bronze, Dark Platinum, Graphite Metallic, White
PRV-P-Prevail Poles	A-050A Nominal 24 LED Rectangles	3000K, 4000K, 5000K, 6000K, 8000K, 9000K	120/277V, 277V, 480V, 600V	T80-T80H, T80-T80H, T80-T80H, T80-T80H	Blank-Indirect, Pole, Wall, Mast Arm	Black, Bronze, Dark Platinum, Graphite Metallic, White

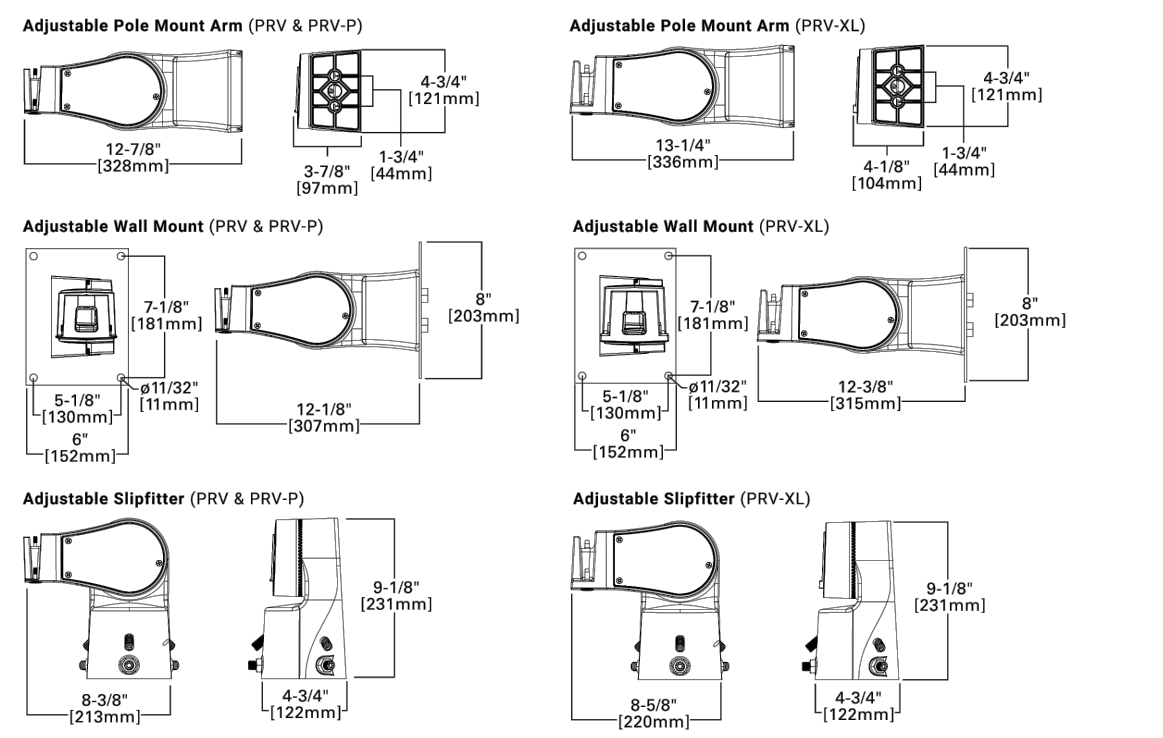
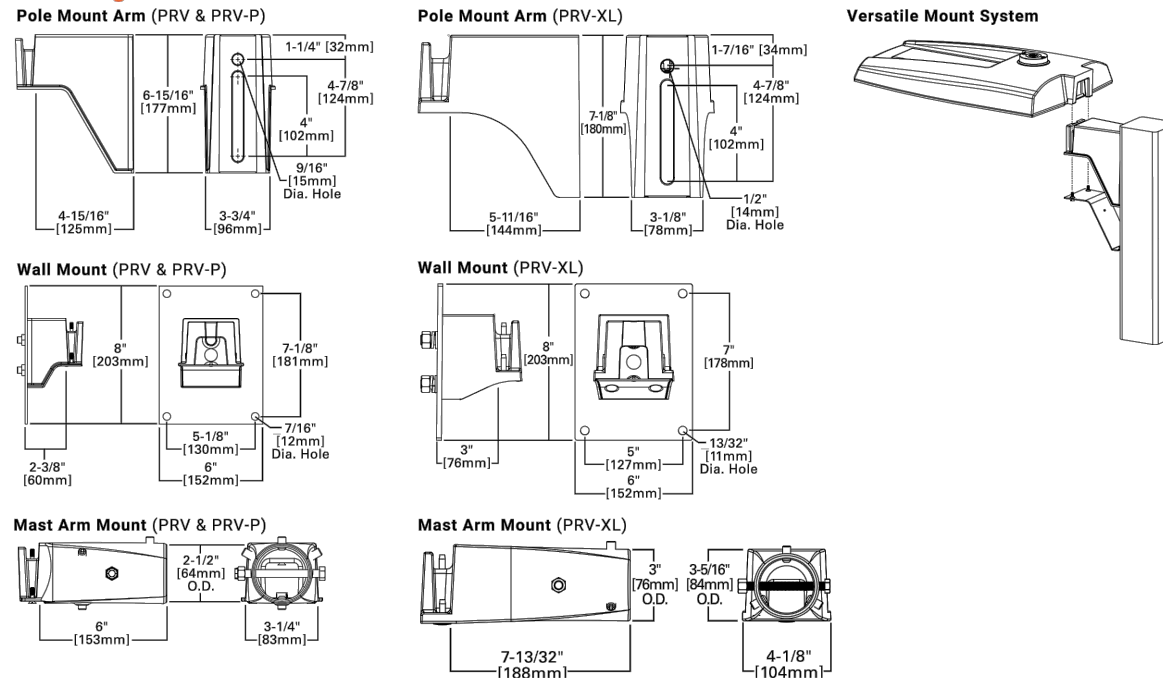
Notes: 1. Luminaire dimensions are shown in millimeters (mm) and inches (in). 2. All dimensions are nominal. 3. Mounting hole dimensions are shown in millimeters (mm) and inches (in). 4. Mounting hole dimensions are shown in millimeters (mm) and inches (in). 5. Mounting hole dimensions are shown in millimeters (mm) and inches (in).

LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Protocol
LumenSafe Technology	• Network Camera, High Res, 2-Zone Camera, Network P2	• Network Camera, High Res, 2-Zone Camera, Network P2

Lumark Prevail Discrete LED

Mounting Details



Lumark Prevail Discrete LED

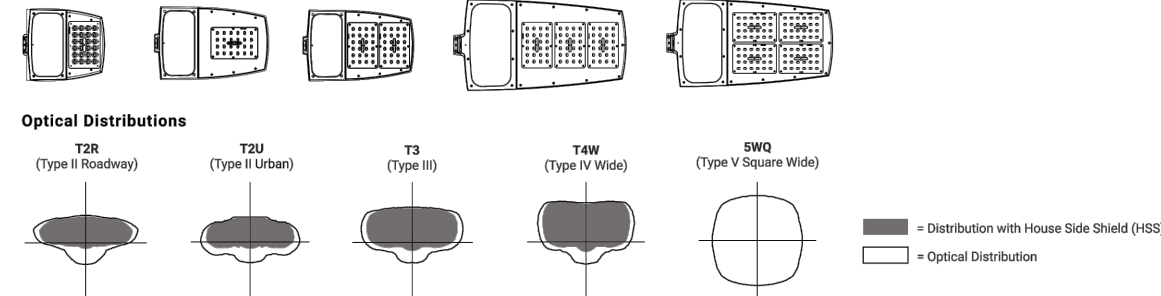
Mounting Details

Mounting Configurations and EPAs

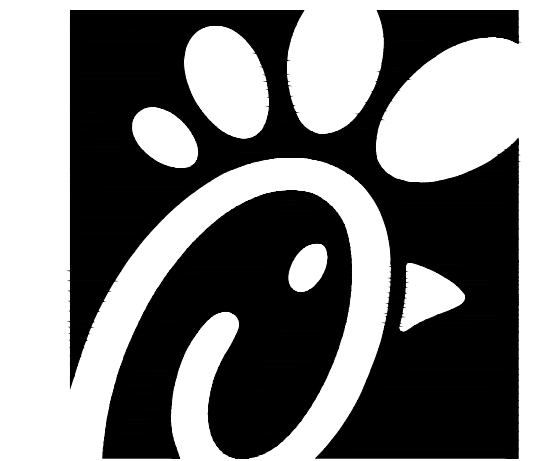
NOTE: For 277V nominal, 100' requires minimum 2" square of 1/2" spaced grid for fixture clearance. For 480V & 600V requires minimum 4" square of 1/2" spaced grid for fixture clearance. Customer is responsible for engineering support and final fixture installation for applications.

Housing Size	T8 Angle	Arm Mount Single	Arm Mount 2 @ 180°	Arm Mount 2 @ 90°	Arm Mount 3 @ 90°	Arm Mount 4 @ 90°
Prevail Pole	0°	0.84	1.68	0.84	1.38	1.38
	40°	1.68	1.81	2.42	3.15	3.30
	60°	0.82	1.38	1.42	1.63	1.63
Prevail	0°	2.20	2.40	3.85	3.88	4.07
	40°	2.20	2.40	3.25	4.28	4.47
	60°	1.12	2.25	2.53	3.22	3.32
Prevail XL	0°	3.90	4.08	5.26	6.91	6.79
	40°	3.90	4.26	5.59	7.17	7.49

Optical Configurations



- #### Product Specifications
- Single piece die-cast aluminum housing
 - Rethrow die-cast aluminum door
 - Dark Sky Approved (D00K CCT and warmer only)
 - Precision-machined polycarbonate optics
 - 40°C minimum operating temperature
 - 40°C maximum operating temperature
 - 0.9 power factor
 - $C_{dRa}> 90$ total harmonic distortion
 - Class I electronic drivers have expected life of 100,000 hours with +1% failure rate
 - 10-100 dimming driver is standard with leads external to the fixture
 - Standard MOV surge protective device designed to withstand 10kV of transient line surge



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MILWAUKIE, OREGON

FSR# 05244

BUILDING TYPE / SIZE: RELEASE
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SHEET

EXTERIOR LIGHTING CUTSHEET

SHEET NUMBER

DECO LIGHTING

Client: _____ Order #: _____
Project Name: _____ Type: _____ Qty: _____

D533R-PRO High Performance Recessed Canopy Light

Performance Data
CRI: 80+
CCT: 3000K, 3500K, 4000K, 5000K
Projected Lifetime: 175,000 Hours (L80); 91,000 Hours (L90)

Dimming: 0-10V dimming standard, 100% down to 10%
Operating Temperature: -40°C to +50°C Ambient

ETL Listed
Suitable for dry, damp, wet locations

Description
The D533R-PRO recessed canopy light is perfect as a low-power utility or apartment garage light and is well-suited for security, entry ways, and perimeter lighting. Featuring a motion sensor standard, sturdy construction and IP65 rated housing, the D533R-PRO also delivers top-end performance at up to 154 lumens per watt.

Features

- Gasketed high performance PMMA optics.
- Universal voltage 120-277V standard; 347-480V Available
- Powder coated aluminum and steel housing
- Robust design for superb durability
- CRi of 80 or greater for accurate color rendering in parking applications
- Delivers up to 154 lm/W
- IP65 Rated

ETL 10 Yr USA
Listed Warranty Available Buy American and Compliant

D533R-PRO High Performance Recessed Canopy Light

Dimensions

Motion Sensor

Bi-Level & Daylight Harvest PIR Sensor

Top View - L3 Lens

Side View - L3 Lens

Ordering Information

FXTURE SERIES	DISTRIBUTION	FINISH	OPTION
D533R-PRO High Performance Recessed Canopy Light	5 Type V 4 Type IV 3 Type III	W White S Silver Z Bronze C Custom	E Emergency M Motion Sensor

WATTAGE/LUMENS

35	35W/5270 ¹
55	55W/7910 ¹
75	75W/11550 ¹

CCT

30	3000K
35	3500K
40	4000K
50	5000K

VOLTAGE

U	122-277V
K	347-480V

¹ Delivered Lumens

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2017 16th Ave. Commerce Ca 90040
www.geldecos.com
info@geldecos.com
t: 310.319.3923
f: 310.399.6955

Deco Lighting practices a program of continuous product development, and as a result product specifications change frequently. We reserve the right to change product specifications without notice. Contact Deco for the latest product information.

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DECO LIGHTING

TYPE "B"

PROGRESS LIGHTING

Project: _____
Fixture Type: _____
Location: _____
Contact: _____

P5675-31 Cylinder

5" up/down cylinder/ outdoor lantern in Black, with heavy duty aluminum construction and die cast wall bracket. Powder coated finish. Wet location listed when used with P860045 top cover lens.

- Black finish.
- Powder coat finish.
- Ideal for a wide variety of interior and exterior applications.
- Die-cast aluminum wall brackets and heavy duty aluminum framing.
- Wet location listed when used with P860045 top cover lens (sold separately)

Category: Outdoor
Finish: Black (powder coat paint)
Construction: cast aluminum Construction

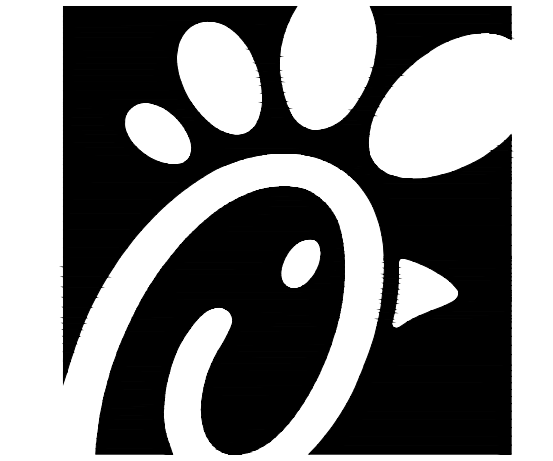
Width: 5 in
Height: 14 in
Depth: 7 7/8 in
H/CTR: 7 in

MOUNTING	ELECTRICAL	LAMPING	ADDITIONAL INFORMATION
Wall mounted Mounting strap for outlet box included	Prewired 6 inches of wire supplied 120 V	Quantity: two 75 W max. PAR-30 or BR-30 or LED equivalent E26 base porcelain sockets	cCSAus Damp Location Listed 1-year Limited Warranty

back plate covers a standard 4" recessed outlet box: 4.5" W.

701 Millennium Blvd. Greenville, South Carolina 29607
www.progresslighting.com
Rev. 0720

TYPE "C"



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MILWAUKIE, OREGON

FSR# 05244

BUILDING TYPE / SIZE:
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EXTERIOR LIGHTING CUTSHEET

SHEET NUMBER

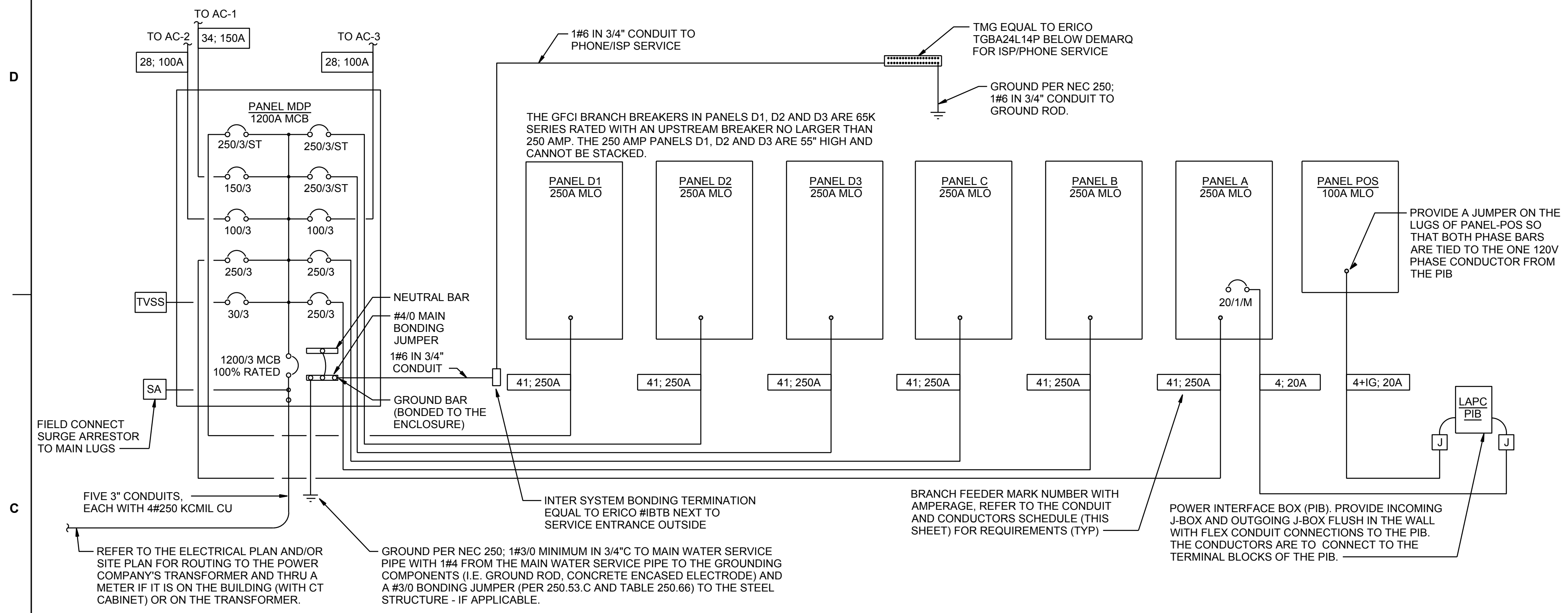
EXTERIOR LIGHTING CUTSHEET

SCALE
NTS

1

EP1.2





SINGLE-LINE DIAGRAM NOTES

- VERIFY SERVICE LOCATIONS AND CONFORM TO THE REQUIREMENTS OF THE POWER COMPANY AND/OR DEVELOPER. POWER COMPANY AND/OR DEVELOPER SHALL BE CONTACTED PRIOR TO BEGINNING CONSTRUCTION TO ARRANGE AND VERIFY FOR THE INSTALLATION OF THE POWER COMPANY SERVICE, METER, AND OTHER ITEMS.
- GROUND ALL EQUIPMENT AND SERVICES IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE, LOCAL APPLICABLE CODES, AND ALSO AS INDICATED ON DRAWINGS.
- MAKE NECESSARY INSPECTIONS OF EXISTING SITE AND SERVICE LOCATIONS AS REQUIRED FOR THIS WORK AND MAKE ALLOWANCE FOR EXISTING CONDITIONS BEFORE SUBMITTING BID. VERIFY WORK REQUIRED WITH POWER COMPANY AND TELEPHONE COMPANY.
- CUT AND PATCH THE CONSTRUCTION WORK AS REQUIRED FOR PROPER INSTALLATION OF THE ELECTRICAL WORK. ALL PATCHING SHALL MATCH THE SURROUNDING WORK TO THE SATISFACTION OF THE ARCHITECT. ALL CONDUIT SHALL BE INSTALLED CONCEALED UNLESS SPECIFICALLY APPROVED BY THE ARCHITECT. COORDINATE SAW CUTTING WITH LANDLORD'S OR OWNER'S REPRESENTATIVE.
- WIRE AND CABLE:
 - A. CONDUCTORS SHALL BE COPPER, #12 AWG, MINIMUM UNLESS SPECIFICALLY NOTED OTHERWISE.
 - B. CONDUCTOR #10 AWG AND SMALLER SHALL BE SOLID AND #8 AWG AND LARGER SHALL BE STRANDED. INSULATION SHALL BE 600 VOLT, THHN/THWN.
- PROVIDE ENGRAVED LAMINATED PHENOLIC BLOCK-ON-WHITE (UNLESS NOTED OTHERWISE) NAMEPLATES SECURED TO EQUIPMENT WITH ADHESIVE AND SCREWS FOR PANELBOARDS, RELAY CABINETS, TRANSFORMERS, DISTRIBUTION BOARDS, AND MAIN PANELBOARD - IDENTIFYING EQUIPMENT DESIGNATION (CORRESPONDING WITH DESIGNATION USED ON DRAWINGS) AND EQUIPMENT VOLTAGE. LETTERING SHALL BE 1/4" HIGH. PROVIDE LABELS FOR CIRCUIT BREAKERS, FUSIBLE SWITCHES AND STARTERS IN PANELBOARDS AND DISTRIBUTION BOARDS FOR EACH DEVICE IDENTIFYING EQUIPMENT CONTROLLED. LETTERING SHALL BE 1/8" HIGH.
- ALL DEVICES SHALL HAVE AN INTERRUPTING CAPACITY NOT LESS THAN THE POWER COMPANY AVAILABLE FAULT CURRENT, OR AS INDICATED ON THE DRAWINGS.
- 120/208 VOLT BRANCH CIRCUIT PANELBOARD BREAKERS SHALL HAVE A MINIMUM U.L. SERIES RATING OF 65 KAIC WITH UP-STREAM FEEDER BREAKERS AS NOTED.
- AVAILABLE SPACE FOR MAIN PANELBOARD IS LIMITED. PANELBOARD MUST FIT IN ALLOCATED SPACE. COORDINATE WITH CONSTRUCTION AS REQUIRED.
- ALL WIRING SHALL BE IN CONDUIT, E.M.T OR RIGID. FLEXIBLE CONDUIT MAY ONLY BE USED FOR FINAL CONNECTIONS AND WITH GREEN EQUIPMENT GROUNDING CONDUCTORS.

SWITCHGEAR AND CONTROL EQUIPMENT NOTES

- PURCHASE PANELBOARDS, SURGE ARRESTOR, AND TVSS FROM AN APPROVED NATIONAL ACCOUNTS VENDOR (SEE SHEET E-902 SECTION C16440, PANELBOARDS) PROVIDING SQUARE-D EQUIPMENT. NO SUBSTITUTIONS ALLOWED.
- PURCHASE CONTROL PANEL 'CFA-T500' FROM SUNCOAST ENVIRONMENTAL, INC. (NO SUBSTITUTIONS ALLOWED). ALL EQUIPMENT IN THE CONTROL PANEL SHALL BE INSTALLED, WIRED AND CONNECTED AT THE FACTORY, INCLUDING AUTOMATIC LIGHTING CONTROL SYSTEM, LIGHTING RELAYS, HVAC STARTERS, POWER SUPPLIES, MISCELLANEOUS RELAYS AND CONTROLS, AND THERMOSTATS.
- CONTRACTOR SHALL PROVIDE PANEL FEEDERS A, B, C, D1, D2, D3, AND POS, BRANCH CIRCUIT CONDUIT AND WIRE, AND INSTALL ALL EQUIPMENT AS REQUIRED.
- ALL BREAKERS AND PANELS SHALL BE SQUARE-D.
- TVSS AND SURGE ARRESTOR UNITS SHALL BE MOUNTED DIRECTLY ADJACENT TO THE SIDE OF THE MAIN DISTRIBUTION PANEL IN NEMA 3R ENCLOSURES. CLOSE NIPPLE THE UNITS TO THE SIDE OF THE PANEL. PROVIDE CONNECTION OF TVSS UNIT TO BREAKER IN PANEL. CONNECT SURGE ARRESTOR TO MAIN INCOMING LUGS OF THE PANEL. CONNECT USING MINIMUM LENGTH OF WIRE WITHOUT SHARP BENDS IN THE WIRE AND SHALL NOT BE LENGTHENED FROM WIRE LENGTH PROVIDED WITH THE TVSS OR SURGE SUPPRESSOR DEVICE.

B1 CONDUIT AND CONDUCTORS SCHEDULE

Mark No.	OCP Device (Amp/Poles)	Conductors		Conductors		Raceway Size (Nominal Inches)						
		60d C	75d C	Phase & Neutral Size	Min Eq Grd Qty/Set	No. Sets	Phase EMT	Neutral IMC	Equip Grd RIGID PVC	With IG EMT IMC PVC		
1	20/1	20	-	2 12 THHN	1 12	One	0.75	0.75	0.75	0.75	0.75	0.75
2	20/2	20	-	3 12 THHN	1 12	One	0.75	0.75	0.75	0.75	0.75	0.75
3	20/3	20	-	4 12 THHN	1 12	One	0.75	0.75	0.75	0.75	0.75	0.75
4	25/1	30	-	2 10 THHN	1 10	One	0.75	0.75	0.75	0.75	0.75	0.75
5	25/2	30	-	3 10 THHN	1 10	One	0.75	0.75	0.75	0.75	0.75	0.75
6	25/3	30	-	4 10 THHN	1 10	One	0.75	0.75	0.75	0.75	0.75	0.75
7	30/1	30	-	2 10 THHN	1 10	One	0.75	0.75	0.75	0.75	0.75	0.75
8	30/2	30	-	3 10 THHN	1 10	One	0.75	0.75	0.75	0.75	0.75	0.75
9	30/3	30	-	4 10 THHN	1 10	One	0.75	0.75	0.75	0.75	0.75	0.75
10	40/1	40	-	2 8 THHN	1 10	One	0.75	0.75	0.75	0.75	0.75	0.75
11	40/2	40	-	3 8 THHN	1 10	One	0.75	0.75	0.75	0.75	0.75	0.75
12	40/3	40	-	4 8 THHN	1 10	One	0.75	0.75	0.75	0.75	0.75	1.00
13	45/3	55	-	4 6 THHN	1 10	One	1.00	1.00	1.00	1.00	1.00	1.00
14	50/1	55	-	2 6 THHN	1 10	One	0.75	0.75	0.75	0.75	0.75	0.75
15	50/2	55	-	3 6 THHN	1 10	One	0.75	0.75	0.75	0.75	1.00	1.00
16	50/3	55	-	4 6 THHN	1 10	One	1.00	1.00	1.00	1.00	1.00	1.00
17	60/1	70	-	2 4 THW	1 8	One	1.00	1.00	1.00	1.00	1.25	1.00
18	60/2	70	-	3 4 THW	1 8	One	1.25	1.25	1.25	1.25	1.25	1.25
19	60/3	70	-	4 4 THW	1 8	One	1.25	1.25	1.25	1.25	1.25	1.25
20	70/1	70	-	2 4 THW	1 8	One	1.00	1.00	1.00	1.00	1.25	1.00
21	70/2	70	-	3 4 THW	1 8	One	1.25	1.00	1.25	1.25	1.25	1.25
22	70/3	70	-	4 4 THW	1 8	One	1.25	1.25	1.25	1.25	1.25	1.25
23	80/2	85	-	3 3 THW	1 8	One	1.25	1.25	1.25	1.25	1.25	1.25
24	80/3	85	-	4 3 THW	1 8	One	1.25	1.25	1.25	1.25	1.50	1.50
25	90/2	95	-	3 2 THW	1 8	One	1.25	1.25	1.25	1.25	1.50	1.50
26	90/3	95	-	4 2 THW	1 8	One	1.50	1.25	1.50	1.50	1.50	1.50
27	100/2	110	-	3 1 THW	1 6	One	1.50	1.50	1.50	1.50	2.00	2.00
28	100/3	110	-	4 1 THW	1 6	One	2.00	2.00	2.00	2.00	2.00	2.00
29	110/2	-	150	3 1/0 THW	1 6	One	1.25	1.25	1.25	1.25	1.50	1.50
30	110/3	-	150	4 1/0 THW	1 6	One	1.50	1.25	1.50	1.50	1.50	1.50
31	125/2	-	150	3 1/0 THW	1 6	One	1.50	1.50	1.50	1.50	2.00	2.00
32	125/3	-	150	4 1/0 THW	1 6	One	2.00	2.00	2.00	2.00	2.00	2.00
33	150/2	-	150	3 1/0 THW	1 6	One	2.00	1.50	2.00	2.00	2.00	2.00
34	150/3	-	150	4 1/0 THW	1 6	One	2.00	2.00	2.00	2.00	2.00	2.00
35	175/2	-	175	3 2/0 THW	1 6	One	2.00	2.00	2.00	2.00	2.00	2.00
36	175/3	-	175	4 2/0 THW	1 6	One	2.00	2.00	2.00	2.00	2.50	2.50
37	200/2	-	200	3 3/0 THW	1 6	One	2.00	2.00	2.00	2.00	2.50	2.50
38	200/3	-	200	4 3/0 THW	1 6	One	2.50	2.50	2.50	2.50	2.50	2.50
39	225/2	-	230	3 4/0 THW	1 4	One	2.50	2.00	2.50	2.50	2.50	2.50
40	225/3	-	230	4 4/0 THW	1 4	One	2.50	2.50	2.50	2.50	3.00	3.00
41	250/3	-	255	4 250 THW	1 4	One	2.50	3.00	3.00	3.00	3.00	3.00
42A	300/3	-	285	4 300 THW	1 4	One	3.00	3.00	3.00	3.00	3.00	3.00
42B	300/3	-	310	4 350 THW	1 4	One	3.00	3.00	3.00	3.00	3.00	3.00
43A	350/3	-	335	4 400 THW	1 4	One	3.00	3.50	3.50	3.50	3.50	3.50
43B	350/3	-	380	4 500 THW	1 4	One	3.50	3.50	3.50	3.50	3.50	3.50
44A	400/3	-	380	4 500 THW	1 3	One	3.50	3.50	3.50	3.50	3.50	3.50
44B	400/3	-	400	4 3/0 THW	1 3	Two	2.50	2.50	2.50	2.50	2.50	2.50
45A	600/3	-	570	4 300 THW	1 1	Two	3.00	3.00	3.00	3.00	3.00	3.00
45B	600/3	-	620	4 350 THW	1 1	Two	3.00	3.00	3.00	3.00	3.00	3.50
46A	800/3	-	760	4 500 THW	1 1/0	Two	3.50	3.50	3.50	3.50	3.50	3.50
46B	800/3	-	820	4 600 THW	1 1/0	Two	4.00	4.00	4.00	4.00	4.00	4.00
47	1000/3	-	1005	4 400 THW	1 2/0	Three	3.50	3.50	3.50	3.50	3.50	3.50
48	1200/3	-	1240	4 350 THW	1 3/0	Four	3.50	3.50	3.50	3.50	3.50	4.00
49	1600/3	-	1675	4 400 THW	1 4/0	Five	4.00	4.00	4.00	4.00	4.00	4.00

Notes:
Conductors are rated at 600 volt or below and are to be copper.

NEC Table 310.15(B)(16) - formerly Table 310.16 - is used for the basis of the conductor ampacities, which is not more than three current carrying conductors in a raceway at an ambient temperature of 30 deg C with 60 deg C rated conductors and connectors per 110.14-C-1 for up to 100 amp rated and up to #1 AWG conductors for equipment terminations and 75 deg C rated conductors and termination connectors for larger than 100 amp or above #1 AWG conductors.

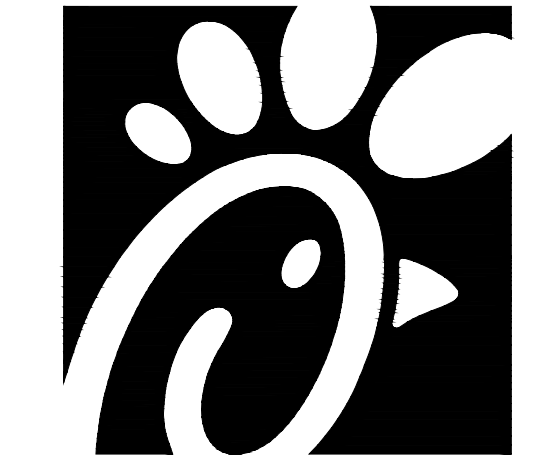
NEC Tables 4, 5, and Appendix C is used for the basis of the conduit sizes. Table C1 for EMT, Table C4 for IMC, Table C8 for Rigid, and Table C10 for PVC (Sch 40).

All Branch Feeders and Branch Circuits shall include a green Equipment Grounding Conductor.

Omit Grounding conductor on Service Entrance Feeders.

Omit Neutral conductor on all Delta primary transformer feeders or single-phase 2 pole loads and 3 phase loads not requiring a neutral.

The above conductors are not calculated for Voltage Drop. Any circuits that exceed 100 feet shall be calculated by the Installer to have less than a three percent voltage drop on feeders and five percent on branch circuits per the NEC.



Chick-fil-A

Chick-fil-A
5200 Buffington Road
Atlanta, Georgia
30349-2998

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CHICK-FIL-A
MCMCLOUGHLIN & COURTNEY
MCMCLOUGHLIN & COURTNEY
MILWAUKIE, OREGON

FSR# 05244

BUILDING TYPE / SIZE:
RELEASE:
REVISION SCHEDULE

CONSULTANT PROJECT #
PRINTED FOR
DATE
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SHEET
SINGLE LINE DIAGRAM
SHEET NUMBER

Exhibit F

Traffic Impact Assessment (TIA)

Memorandum

Project#: 29794

February 22, 2024

To: Christian Snuffin, PE, PTOE
Clackamas County Department of Transportation & Development
150 Beaver Creek Road
Oregon City, OR 97045

Avi Tayar, PE
Oregon Department of Transportation (ODOT) Region 1
123 NW Flanders Street
Portland, OR 97209

From: Chris Brehmer, PE & Julia Kuhn, PE & Megan Mannion

RE: McLoughlin Boulevard Chick-fil-A Transportation Impact Study



EXPIRES: 12/31/25

Chick-fil-A (the Applicant) is proposing construction of a new approximately 2,700 square foot drive through only restaurant on property located at 13819 SE McLoughlin Boulevard (OR 99E) in Clackamas County. This report documents the transportation impacts associated with the restaurant and follows the requirements of *Clackamas County Roadway Design Standards* Section 295. The following findings are discussed in more detail herein:

- The study intersections were found to operate acceptably during the weekday midday and PM peak hours under existing and future conditions (without and with site development).
- The proposed restaurant will replace existing retail building space within Courtney Plaza and includes the following proposed access changes:
 - Elimination of the existing internal drive aisle connection within Courtney Plaza between the southernmost Courtney Plaza access on SE McLoughlin Boulevard and the restaurant site (as requested by the County and ODOT);
 - Vacation of two existing site access driveways on SE Courtney Avenue; and,
 - Construction of a new site access driveway on SE Courtney Avenue at the western end of the project property, maximizing the distance between the access and SE McLoughlin Boulevard.
- The proposed restaurant drive-through has two order lines, with meal delivery provided in both lanes and has been designed to accommodate the anticipated queue requirements on site without impact to the public roadway network.
- No right-turn or left-turn lanes are required on SE Courtney Avenue at the proposed site access.

Subject to applicable Clackamas County and ODOT concurrence, we recommend Chick-fil-A do the following in conjunction with the proposed restaurant:

- Reconstruct the site frontage along SE McLoughlin Boulevard per ODOT requirements and provide a separate southbound right-turn lane at the SE Courtney Avenue intersection with at least 50 feet of storage.
- Coordinate frontage improvements with Clackamas County for consistency with the Courtney Avenue Complete Streets design and construction plan.

- Reconstruct the site frontage along SE Courtney Avenue per County requirements and extend the existing eastbound left-turn lane on SE Courtney Avenue approaching OR 99E to provide 175 feet of storage (approximately 75 feet of storage is provided today).
- Place a new STOP (R1-1) sign for vehicles exiting the site at the new site access driveway onto Courtney Avenue in accordance with County standards and the *Manual on Uniform Traffic Control Devices* (MUTCD).
- Place and maintain all vegetation and other above ground objects adjacent to the site access points to provide adequate minimum sight distance in accordance with the applicable Clackamas County and/or ODOT requirements.

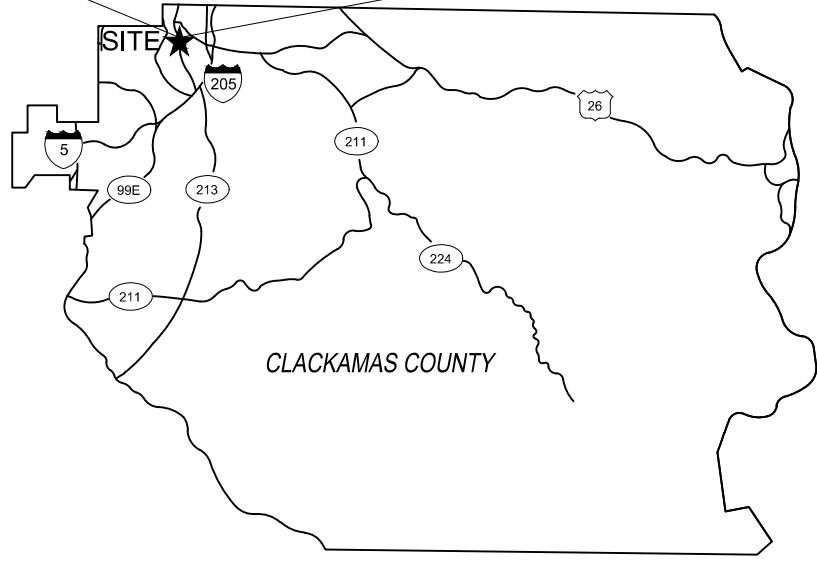
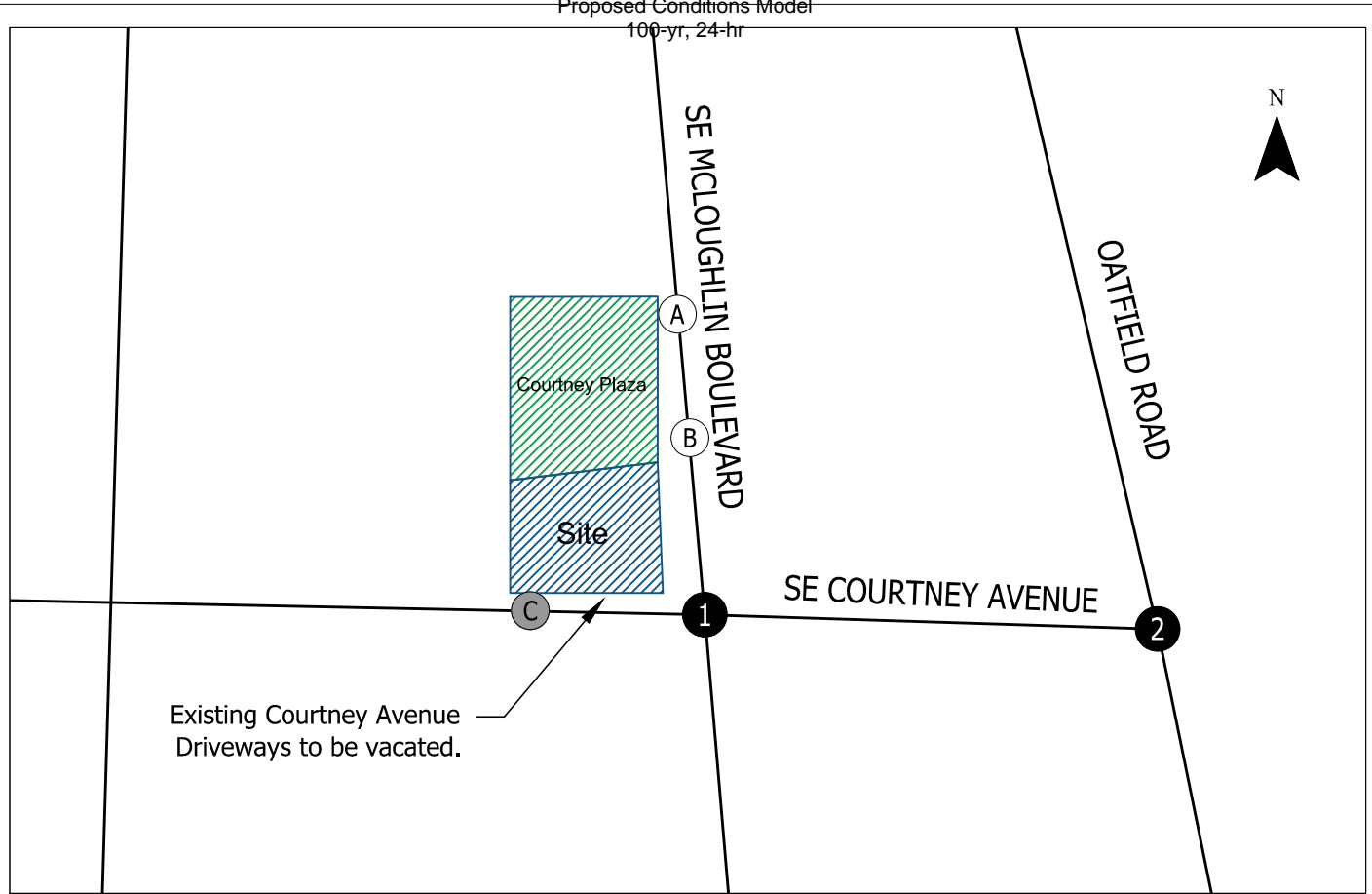
Introduction

The proposed approximately 2,700 square foot Chick-fil-A will replace approximately 26,210 square feet of existing retail space on the northwest corner of the SE McLoughlin Boulevard / SE Courtney Avenue intersection. The proposed Chick-fil-A will be a drive through only model, with the drive-through located along the east side of the building.

The site is proposed to have one full movement access on SE Courtney Avenue and will make no changes to two existing full movement accesses (shared with the existing Courtney Plaza) on SE McLoughlin Boulevard. The existing Courtney Plaza internal drive aisle connection between the southernmost Plaza access on OR 99E (as requested by the County and ODOT), the restaurant site will be removed and a new connection will be provided on the west side of the remaining retail buildings within Courtney Plaza.

Restaurant development and occupancy is anticipated in 2025.

Figure 1 displays the site vicinity, and Figure 2 displays the proposed site plan.



- ## - Study Intersections
- ## - Existing Site Driveway
- ## - Proposed Driveway

Site Vicinity Map
Clackamas County, OR

Figure
1

H:\29\29794 - Milwaukee Chick-fil-A\report\figs\29794 - Report Figures.dwg Feb 12, 2024 - 4:25pm - mmsamiam Layout Tab: Site Vicinity Map

H:\29\29794 - Milwaukie Chick-fil-A\report\figs\29794 - Report Figures.dwg Feb 12, 2024 - 4:32pm - mmannion Layout Tab: Proposed Site Plan

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Proposed Site Plan
Clackamas County, OR

Figure
2

Report Scope

This report identifies the transportation-related impacts associated with the proposed Chick-fil-A restaurant and was prepared in accordance with *Clackamas County Roadway Design Standards* Section 295 and ODOT requirements. Per discussions and written scoping confirmation with County and ODOT staff, operational analyses were performed at the following study intersections during the weekday midday and PM peak periods:

1. SE McLoughlin Boulevard / SE Courtney Avenue;
2. Oatfield Road / SE Courtney Avenue;
 - A. SE McLoughlin Boulevard / Existing Courtney Plaza Access (north);
 - B. SE McLoughlin Boulevard / Existing Courtney Plaza Access (south); and,
 - C. Proposed Site Access Driveway / SE Courtney Avenue.

This report evaluates the following transportation issues:

- Existing land use and transportation system conditions within the site vicinity during the weekday midday and PM peak periods;
- Forecast year 2025 background traffic conditions during the weekday midday and PM peak periods, considering a growth in existing traffic volumes and transportation improvements planned in the study area;
- Trip generation and distribution estimates for the proposed restaurant;
- Forecast year 2025 total traffic conditions during the weekday midday and PM peak periods with build-out of the site;
- Turn lane and queuing considerations;
- Sight distance considerations;
- Delivery truck circulation;
- Compliance with County access spacing requirements per the Roadway Design Standards, Section 220;
- Drive through queuing considerations;
- Traffic Management Plan considerations; and,
- Study recommendations.

Analysis Methodology

All operational analyses described in this report were performed in accordance with the procedures stated in the *Highway Capacity Manual* (HCM). HCM 7th Edition was used to assess intersection performance per ODOT requirements (Reference 1). Per ODOT requirements, the peak 15-minute flow rates were used in the evaluation of all intersection volume-to-capacity ratios (V/C). The operations analysis presented in this report was completed using Vistro software.

Applicable Operating Standards

Table 5-2a of the *Clackamas County Comprehensive Plan* sets performance evaluation standards for the urban area (Reference 2). Per County standards, a maximum V/C ratio of 0.99 must be maintained during the midday peak hour along with a maximum V/C of 1.1 during the first hour of the weekday PM peak hour

along McLoughlin Boulevard (OR 99E). All other study intersections are within the neighborhood boundary. Per these standards, a maximum V/C ratio of 0.90 must be maintained during the midday peak hour and a maximum of V/C of 0.99 during the first hour of the weekday PM peak hour.

All study intersections along SE McLoughlin Boulevard (OR 99E) are subject to ODOT mobility targets outlined in the *Oregon Highway Plan* corresponding to a volume-to-capacity (V/C) ≤ 0.90 during the peak hour using peak 15-minute flow rates (Reference 3).

Existing Conditions

This section summarizes the existing characteristics of the transportation system and adjacent land uses in the vicinity of the proposed development, including an inventory of the existing multimodal transportation facilities, a summary of recent crash history and an evaluation of existing intersection operations for motor vehicles at the study intersections.

Site Conditions and Adjacent Land Uses

The proposed Chick-fil-A would replace a portion of Courtney Plaza located at the northwest corner of SE McLoughlin Boulevard / SE Courtney Avenue. Land uses along SE McLoughlin Boulevard (OR 99E), north and south of the site (including the remaining Courtney Plaza businesses) are primarily retail in nature. The land uses along SE Courtney Avenue west of the project site are primarily residential but also includes Oak Grove Elementary School further to the west and some commercial development directly to the south.

Transportation Facilities

Table 1 summarizes the attributes of key roadway facilities in the vicinity. Figure 3 illustrates the existing lane configurations and traffic control devices at the study intersections.

Table 1: Roadway Characteristics

Roadway	Classification ¹	Motor Vehicle Travel Lanes	Posted Speed	Sidewalk Present?	Striped Bicycle Lanes Present?	On-Street Parking Allowed?
SE McLoughlin Boulevard (OR 99E)	Principal Arterial	5	40 mph	Partial ²	Yes	No
Oatfield Road	Minor Arterial	2	35 mph	No	Yes	No
SE Courtney Avenue	Collector	2	30 mph	Partial ³	Partial ⁴	Partial ⁵

¹ Per *Clackamas County Comprehensive Plan*, Chapter 5, Map 5-4a (Reference 2)

² Sidewalks are typically present along both sides of SE McLoughlin Boulevard, however, there is 1,130 feet of missing sidewalk on the west side of McLoughlin Boulevard south of SE Courtney Avenue. Sidewalk infill at this location was identified as one of the top five key investments in the McLoughlin Investments Strategy completed in 2023.

³ Sidewalks are provided on the south side of SE Courtney Avenue east of SE McLoughlin Boulevard. Clackamas County is currently leading a Complete Streets project that will construct sidewalks on both sides of SE Courtney Avenue from the Trolley Trail (to the west) to SE McLoughlin Boulevard. Construction is anticipated in 2026.

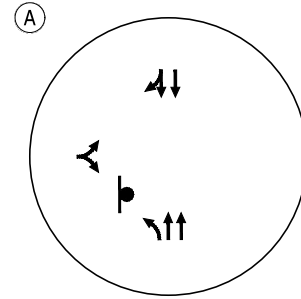
⁴ Striped bicycle lanes are provided east of SE McLoughlin Boulevard but are dropped at intersections. Striped bicycle lanes are not provided west of SE McLoughlin Boulevard until after the proposed site driveway. Clackamas County is currently leading a Complete Streets project that will provide buffered bike lanes on SE Courtney Avenue from the Trolley Trail (to the west) to SE McLoughlin Boulevard. Construction is anticipated in 2026.

⁵ On-street parking is intermittently available along residential frontage on SE Courtney Avenue. On-street parking will likely be removed as part of the upcoming Courtney Avenue Complete Street project led by Clackamas County.

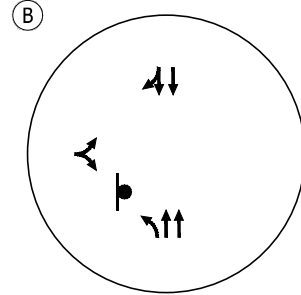
Proposed Conditions Model
100-yr, 24-hr



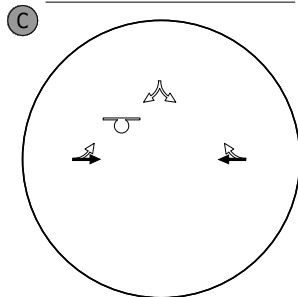
SE MCLOUGHLIN BOULEVARD /
EXISTING COURTNEY PLAZA ACCESS
(NORTH)



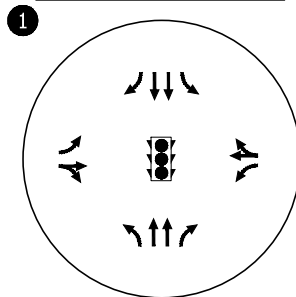
SE MCLOUGHLIN BOULEVARD /
EXISTING COURTNEY PLAZA ACCESS
(SOUTH)



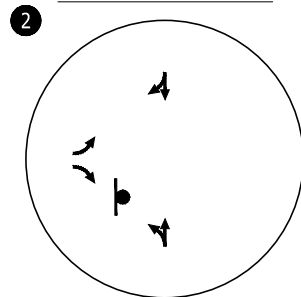
PROPOSED SITE ACCESS DRIVEWAY /
SE COURTNEY AVENUE







SE MCLOUGHLIN BOULEVARD /
SE COURTNEY AVENUE



OATFIELD ROAD / SE
COURTNEY AVENUE



-  - STOP SIGN
-  - TRAFFIC SIGNAL
-  - EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL
-  - FUTURE LANE CONFIGURATION AND TRAFFIC CONTROL

Existing Lane Configurations
& Traffic Control Devices
Clackamas County, OR

Figure
3

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Transit Facilities

The proposed site is fronted by an existing TriMet (Reference 4) bus stop on SE McLoughlin Boulevard serving lines 33 (15-minute peak hour frequency) and 99 (8 times a day). Both lines provide service to the Milwaukie City Center north of the site, providing additional regional access to/from the site. The existing bus stop has a glass panel shelter with a bench.

Facilities for People Walking and Riding Bikes

There is a continuous detached sidewalk along the SE McLoughlin Boulevard site frontage today, but no sidewalk along the site frontage of SE Courtney Avenue. New sidewalks will be constructed along the site frontage on SE McLoughlin Boulevard and SE Courtney Avenue with the proposed site development, as shown in Figure 2.

The *Clackamas County Comprehensive Plan Map 5-2a* identifies SE McLoughlin Boulevard, SE Courtney Avenue and Oatfield Road as bikeways. Today, bike lanes are present on both sides of SE McLoughlin Boulevard and SE Courtney Avenue but they terminate prior to the signalized intersection that connects the two roadways.

Clackamas County is leading a Complete Streets project along SE Courtney Avenue from the Trolley Trail to SE McLoughlin Boulevard, adjacent to the project site. This project includes enhanced pedestrian and bicycle facilities on both sides of SE Courtney Avenue and will connect to the Trolley Trail, providing a regional connection to and from the site for people walking and biking. Construction is scheduled for 2026. The proposed Chick-fil-A frontage improvements will need to be coordinated with the County project.

Crash History Analysis

The ODOT Crash Data System was queried to obtain crash records at the study intersections for the five-year period from January 1, 2017 to December 31, 2021 (we note that the 2022 data available from ODOT was deemed preliminary and subject to change at the time this report was prepared so it was not used). The crash type classifications at each intersection were reviewed to assess whether crash patterns might be identifiable. Table 2 summarizes the reported crashes by type and severity. No fatal crashes were reported. *Appendix "A" provides detailed crash data at the study intersections.*

Table 2: Reported Crash History (2016 – 2020)

#	Study Intersection Location	Crash Type								Severity		Total
		Angle	Turn	Rear-End	Side Swipe	Fixed Object	Ped/Bike	Head-On	Backing	PDO ¹	Injury	
1	SE McLoughlin Boulevard / SE Courtney Avenue	5	9	5	2	1	1	0	0	9	14	23
2	Oatfield Road / SE Courtney Avenue	0	7	3	0	0	0	0	0	6	4	10
A	SE McLoughlin Boulevard / Existing Courtney Plaza Access (north)	0	0	0	0	0	0	0	0	0	0	0
B	SE McLoughlin Boulevard / Existing Courtney Plaza Access (south)	0	2	0	0	0	0	0	0	1	1	2
C	Courtney Plaza Driveway(s) / SE Courtney Avenue	0	3	0	0	0	1	0	0	1	3	4

¹ PDO = Property damage only

Critical crash rates were calculated for each of the study intersections following the analysis methodology presented in the ODOT *Analysis Procedures Manual* (Reference 5). APM Chapter 4 provides 90th percentile crash rates per million entering vehicles at a variety of intersection configurations based on number of approaches and traffic control types. The critical crash rate for each intersection is calculated based on the average crash rate for each facility and serves as a threshold for further analysis. Per the APM, intersections with crash rates that exceed the 90th percentile values shown in APM Exhibit 4-1 or with a crash rate that exceeds its critical crash rate should be flagged for further analysis. Table 3 summarizes the crash rate assessment for each intersection and compares those values to the observed crash rate.

As shown in Table 3, the Oatfield Road / SE Courtney Avenue intersection crash rate is greater than the 90th percentile crash rate. Of the ten reported crashes over the five-year period, five crashes involved a vehicle making an eastbound left-turn, four of which involved the second vehicle traveling northbound on Oatfield Road. Four of these crashes occurred between 2017 to 2019 and one occurred in 2020. Historical photos of the intersection from 2017 to 2021 indicate that vegetation along the fence line of the property located on the southwest corner of the intersection has been significantly removed as early as 2021. The resultant improved sight distance for eastbound vehicles may explain the recent reduction in crashes. Vegetation at this intersection should continue to be maintained to provide sight distance in accordance with County requirements. No safety-based mitigations are recommended at the intersection in conjunction with the proposed restaurant development as a function of the crash data review findings.

Additionally, the existing Courtney Plaza access driveway/approximately 190 feet long curb cut (summarized as one access point for crash data review purposes) along SE Courtney Avenue has an intersection crash rate greater than the 90th percentile crash rate as calculated in Table 3. There are no apparent trends among the four reported crashes in the five-year period. Today, two separate Courtney Plaza driveways are striped with on-site parking provided in-between but are constructed as a single curb cut that is approximately 190 feet wide. The existing Courtney Plaza curb will be vacated with the proposed Chick-fil-A site frontage improvements and replaced by a 30-foot site access driveway situated further west near the project property line, as shown in Figure 2. Considering the proposed vacation of the existing long curb cut, planned site frontage improvements along SE Courtney Avenue and the location of the proposed new site access as far west as possible away from OR 99E, no other safety-based mitigations are recommended in conjunction with the proposed restaurant.

Table 3: Intersection Critical Crash Rate Assessment

Study Intersection		90 th Percentile Rate ^{1,2}	Observed Crash Rate ¹	Observed Crash Rate > 90 th Percentile Rate
#	Location			
1	SE McLoughlin Boulevard / SE Courtney Avenue	0.86	0.46	No
2	Oatfield Road / SE Courtney Avenue	0.29	0.54	Yes
A	SE McLoughlin Boulevard / Existing Courtney Plaza Access (north)	0.29	0.00	No
B	SE McLoughlin Boulevard / Existing Courtney Plaza Access (south)	0.29	0.05	No
C	Existing Courtney Plaza Driveway(s) / SE Courtney Avenue	0.29	0.61	Yes

¹ Crash Rate reported as crashes per million entering vehicles (crashes/MEV).

² Values shown obtained from APM Exhibit 4-1, Intersection Crash Rates per MEV by Land Type and Traffic Control

ODOT SPIS List

ODOT maintains Safety Priority Index System (SPIS) lists to identify existing hazardous intersections for potential safety improvements. The SPIS lists consider the crash data for the three prior years. The ODOT Region 1 2021 SPIS list was reviewed to determine if any study intersections were identified as having an SPIS score in the top 15 percent and ranking amongst other projects. The SPIS score is calculated based on three factors:

- Frequency of crashes (25% of the SPIS score)
- Rate of crashes (25% of the SPIS score)
- Severity of crashes (50% of the SPIS score)

The SE McLoughlin Boulevard / SE Courtney Avenue intersection is identified within the 2021 ODOT Region 1 top 15% SPIS list.

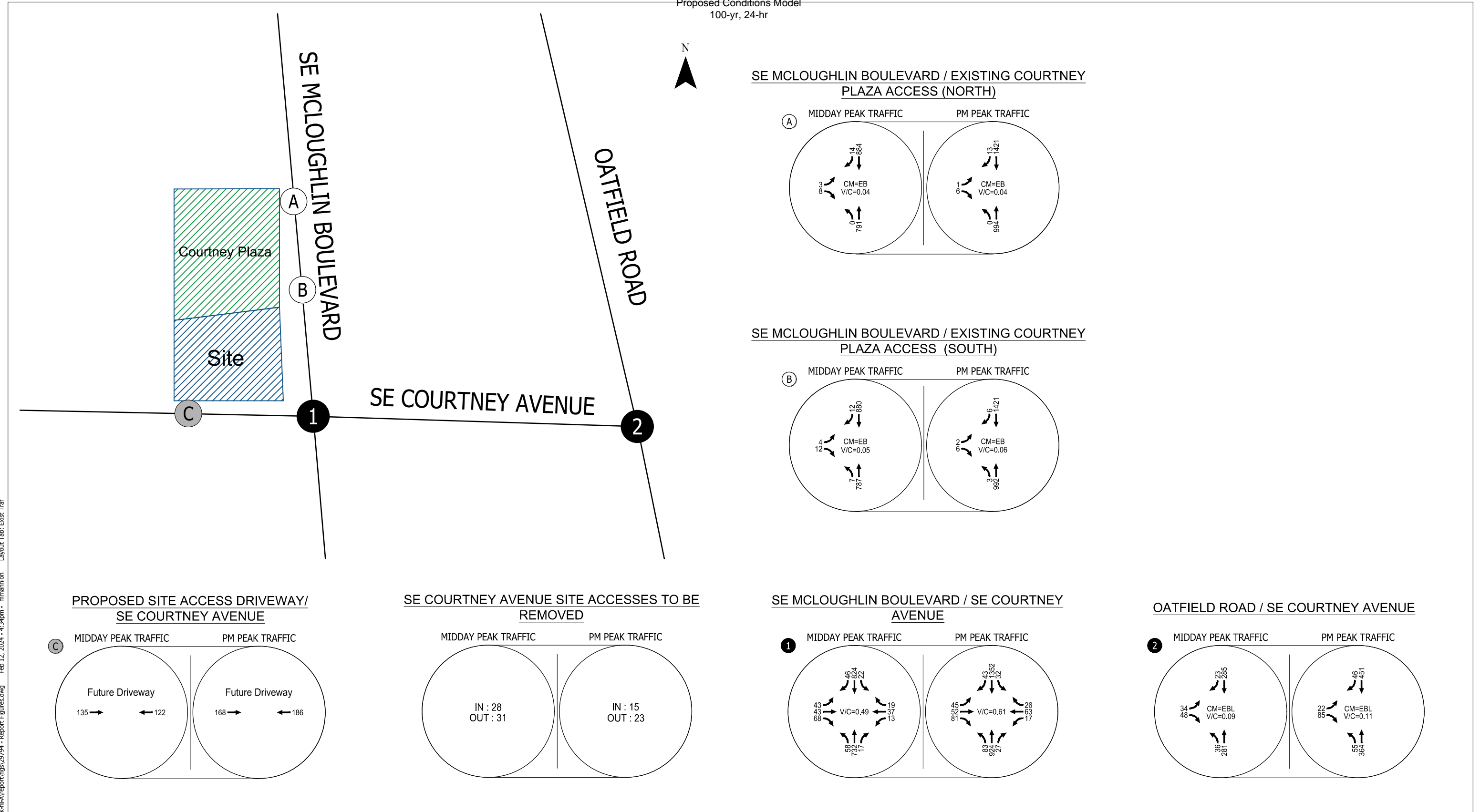
The SE McLoughlin Boulevard / SE Courtney Avenue intersection will be modified in part through the aforementioned Clackamas County Complete Streets project along SE Courtney Avenue. Further, the proposed restaurant development will reconstruct the project site frontage along both SE McLoughlin Boulevard and SE Courtney Avenue as will be described later in this report. The project frontage changes will enhance access management along both roadways (reducing the number and width of site accesses on SE Courtney Avenue and locating the new access away from SE McLoughlin Boulevard to the extent possible as well as severing the existing on-site roadway connection between the southern access to Courtney Plaza and the restaurant). In addition, the project frontage changes will provide for a southbound bicycle lane on SE McLoughlin Boulevard, a westbound bicycle lane on SE Courtney Avenue, new sidewalk facilities where there are none today, an improved southbound right-turn lane on SE McLoughlin Avenue, and a longer eastbound left-turn lane on SE Courtney Avenue. The County planned and applicant-proposed changes collectively include countermeasures that offer documented crash modification factor benefits.

Existing Conditions Operational Analysis

Vehicle turning movement, pedestrian and bicycle counts were collected at the study intersections in December 2023 while local schools were in session¹. The counts were conducted during the weekday midday (11:00 AM – 1:00 PM) and evening (3:30 – 6:30 PM) peak periods. On the day of the counts, the midday peak hour occurred from 11:50 AM – 12:50 PM at SE McLoughlin Boulevard / SE Courtney Avenue and 11:55 AM – 12:55 PM at Oatfield Road / SE Courtney Avenue. The weekday PM peak hour occurred from 3:30 PM – 4:30 PM at SE McLoughlin Boulevard / SE Courtney Avenue and 3:35 PM – 3:35 PM at Oatfield Road / SE Courtney Avenue. The peak hour of SE McLoughlin Boulevard / SE Courtney Avenue determined the peak hour analyzed at the site access driveways. *Appendix "B" contains the traffic count worksheets.* Current traffic signal phasing and signal cycle length information for the signal at SE McLoughlin Boulevard / SE Courtney Avenue were obtained from ODOT.

Figure 4 summarizes the existing traffic conditions at the study intersections during the weekday midday and PM peak hours. As shown, the study intersection operations satisfy applicable County and ODOT V/C ratio metrics during both peak hours. *Existing conditions operations analysis worksheets are provided in Appendix "C".*

¹ The traffic counts also included counts of trips in and out of the existing Courtney Plaza buildings to be removed in conjunction with the proposed restaurant development as documented later in this report.



CM = INTERSECTION MOVEMENT (UNSIGNALIZED)
V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO (SIGNALIZED)/
CRITICAL MOVEMENT VOLUME-TO-CAPACITY RATIO (UNSIGNALIZED)

Existing Traffic Conditions
Midday & PM Peak Hours
Clackamas County, OR

Figure 4

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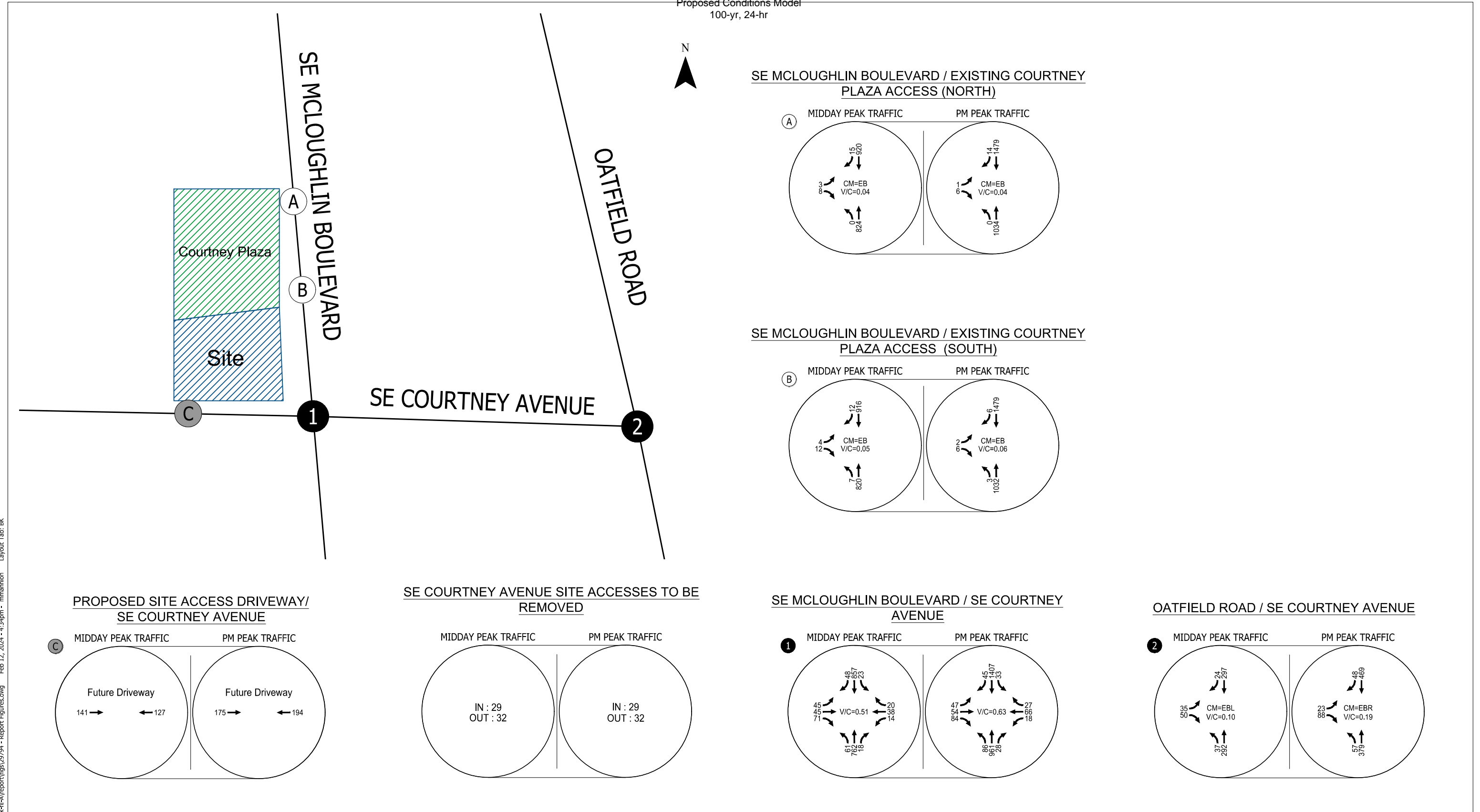
Transportation Impact Analysis

The transportation impact analysis identifies how the study intersections will operate in the year 2025 upon occupancy of the restaurant. This section of the report includes analysis of 2025 background traffic volumes and intersection operations, an estimate of existing and proposed site-generated trips, analysis of 2025 total traffic volumes and intersection operations, turn lane and queuing considerations, sight distance, delivery truck circulation, drive-through queuing considerations, and consistency with County access spacing requirements.

2025 Background Operational Analysis

Per County direction, a two-percent annual growth rate was applied to the existing traffic volumes to reflect near-term growth for background traffic. No in-process developments in the site vicinity were identified by the County. In addition, no vehicle capacity changes to the study intersections were identified by ODOT or the County that would occur prior to 2025.

Figure 5 illustrates the 2025 background traffic volumes and corresponding operational analysis for the weekday midday and PM peak hours. As shown, all the study intersections are expected to continue to satisfy applicable County and ODOT V/C ratio metrics under background conditions. *Appendix "D" includes the operations analysis worksheets.*



CM = INTERSECTION MOVEMENT (UNSIGNALIZED)
V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO (SIGNALIZED)/
CRITICAL MOVEMENT VOLUME-TO-CAPACITY RATIO (UNSIGNALIZED)

Year 2025 Background Traffic Conditions
Midday & PM Peak Hours
Clackamas County, OR

Figure
5

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Proposed Development Plan

The proposed up to 2,700 square foot Chick-fil-A will replace approximately 26,210 SF of the existing Courtney Plaza located on site, including removal of the current Eagle Bargain Outlet occupying the southern portion of the building area to be removed. The proposed Chick-fil-A will vacate the existing access on SE Courtney Avenue and provide a single new full movement access located near the western project property line. As proposed, the restaurant site will also be indirectly connected to the two existing full movement Courtney Plaza accesses on SE McLoughlin Boulevard via a new parking lot drive aisle connection situated on the north and west sides of the remaining Courtney Plaza building area. The current drive aisle link between the southern Courtney Plaza access on SE McLoughlin Boulevard and the restaurant site will be vacated.

Trip Generation Estimate for Existing Buildings to Be Removed

As previously noted, traffic counts of vehicle circulation with Courtney Plaza were conducted on the same day as the study intersection traffic counts. The traffic counts monitored individual on-site vehicle movements to correlate driveway trips directly to persons who shopped at the current Eagle Bargain Outlet that will be removed with the proposed restaurant development. The counts found that 52 midday peak hour vehicle trips (26 in and 26 out) traveled to Eagle Bargain Outlet along with 49 PM peak hour vehicle trips (21 in and 28 out) based on the peak hour of the study intersections (as opposed to the peak hour of the generator). While there is additional existing Courtney Plaza building space that will be removed in conjunction with the proposed Chick-fil-A, the remaining space to be removed was vacant at the time of the traffic counts.

Chick-fil-A Trip Generation Estimate

A trip generation study was conducted at four Chick-fil-A sites in the greater Portland area and one in Keizer in 2022. The five sites studied include one in Tanasbourne (Hillsboro, opened March 2016), on Beaverton-Hillsdale Highway (opened June 2019), in the Cedar Hills Crossing area (opened July 2019), on TV Highway in Hillsboro (opened April 14, 2022), and in Keizer Station (opened August 4, 2022). Trip generation rates were calculated based on the data collected at these five sites per the ITE *Trip Generation Handbook* methodology.

The resultant trip rates (as measured as vehicle trips per 1,000 square feet of building) observed at the five sites during the weekday midday and PM peak hours are provided in *Appendix "E"*. In reviewing the data, we note the following:

- Daily trips were only counted at the Keizer Station site. AM, midday, and PM peak hour trips were collected at all five sites.
- Tanasbourne has been open the longest of the five sites surveyed (Tanasbourne and the existing Clackamas Chick-fil-A opened at the same time). The trip generation rates at this store are higher than the others during the midday and PM peak periods, a reflection of its proximity to US 26 and NW 185th Avenue.
- The TV Highway location that opened in 2022 helps to serve Hillsboro/Aloha customers previously served by Tanasbourne. Despite its being open for approximately five weeks at the time of traffic count data collection, this store has the lowest trip rates of the five locations surveyed. Chick-fil-A indicates that it is common for their new stores in an existing market to not experience the same level of grand opening interest as compared to openings in new markets.

With these considerations in mind but still to provide a reasonable estimate of potential trip generation, we used the average peak rate of the three highest sites measured and excluded the data from the TV Highway site and the Cedar Hills Boulevard site (the lowest of the five). A comparison of the average rates using the three higher versus all five sites as well as to the rates reflected in the *Trip Generation Manual* is shown below:

- Trips per 1,000 square feet based on all five sites = 46.9 during the weekday PM peak hour
- Trips per 1,000 square feet based on three sites (excluding TV Highway and Cedar Hills Boulevard) = 55.1 during the weekday PM peak hour
- Trips per 1,000 square feet from the Trip Generation Manual for a fast food restaurant with a drive through = 33.0 during the weekday PM peak hour

Table 4 shows the midday and PM peak hour trip estimates for the proposed Chick-fil-A trip using the average of the three highest Oregon sites measured in 2022. Table 4 also shows the Eagle Bargain Outlet trips included in the study intersection traffic counts that will be replaced by the proposed restaurant (no trip reduction was made for the remaining vacant Courtney Plaza building space that will be removed as part of the proposed restaurant development). *Appendix "F" contains the Eagle Bargain Market trip generation study data.*

Table 4: Trip Generation

Land Use	Data Source	Size (SF)	Daily Trips	Midday Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out
Trips County at Occupied Portion of Existing Building Area to Be Removed									
Eagle Bargain Outlet	Traffic Counts	26,210 ¹	-	52	26	26	49	21	28
Proposed Chick-fil-A									
Chick-fil-A	Oregon Chick-fil-A Site Data	2,700	1,687	191	98	93	149	79	70
Less Pass-by Trips ² (50% midday & Daily, 55% PM)			-844	-96	-49	-47	-82	-43	-39
Total Net New			843	95	49	46	67	36	31
Proposed Net New – Existing Net New			-	43	23	20	18	15	3

¹ 26,210 square feet reflects the building area to be removed with the proposed restaurant development. The Eagle Bargain Outlet area is less than this amount. Trips shown in and out of Eagle Bargain Outlet in Table 4 reflect only those vehicles directly counted traveling to and from Eagle Bargain Outlet.

² Assumed pass-by rate of 50% midday peak hour & daily, 55% PM peak hour per fast food restaurant with drive through window data in the *Trip Generation Manual, 11th Edition* (Reference 6)

Trip Distribution/Assignment

The trip distribution pattern for the proposed restaurant is based on existing travel patterns, the location of major trip origins and destinations in the study area and the proximity of existing Clackamas Chick-fil-As located east of the site.

For analysis purposes, trip assignment was conducted sequentially using the following incremental steps:

1. The existing Eagle Bargain Market and Courtney Plaza trips at the Courtney Plaza accesses were re-assigned to the study intersections to reflect the proposed new site plan. This step included 1) re-assigning all of the existing Eagle Bargain Market SE Courtney Avenue site access trips to the proposed new access on SE Courtney Avenue and 2) re-routing the other existing Courtney Plaza trips that access SE Courtney Avenue today to the existing McLoughlin Boulevard access (in

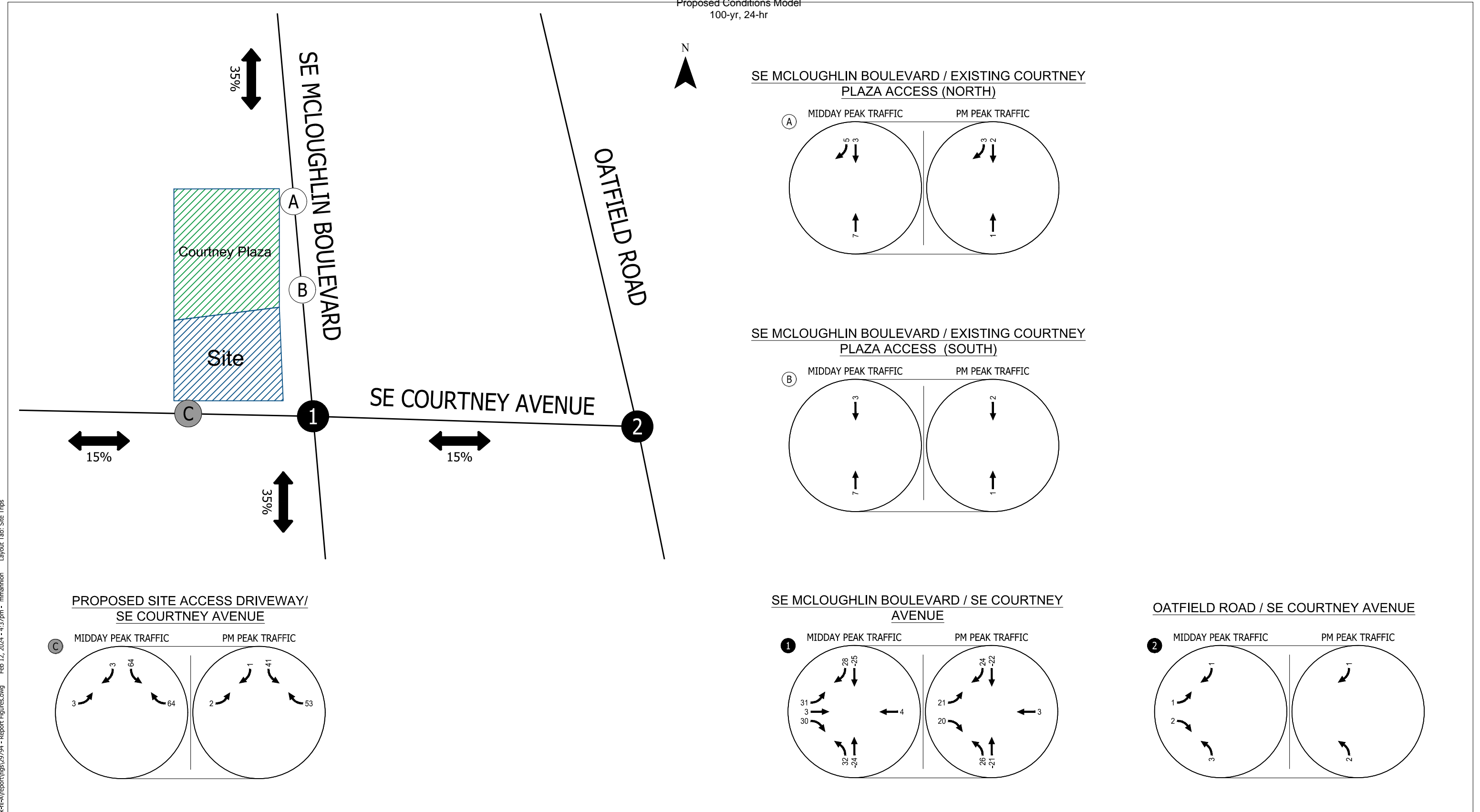
recognition that the current drive aisle connection between Courtney Plaza and SE Courtney Avenue will be severed).

2. The Chick-fil-A pass-by trips shown in Table 4 were added to the study intersections. All pass-by trips for the restaurant were assumed to originate on SE McLoughlin Boulevard and travel to/from the site via the SE McLoughlin Boulevard / SE Courtney Avenue intersection to provide a conservative analysis of the signalized intersection and proposed SE Courtney Avenue site-access. Some future southbound pass-by trips made by Chick-fil-A customers traveling along SE McLoughlin Boulevard who are familiar with the area may instead route via the north Courtney Plaza access on SE McLoughlin Boulevard.
3. The increase in net new trips shown in Table 4 were added to the study intersections.

The cumulative result of the steps above is a study intersection trip assignment that reflects the total trip generation of the proposed restaurant (98 entering and 93 exiting midday peak hour trips as well as 79 entering and 70 exiting PM peak hour trips).

The trip distribution pattern as well as weekday midday and PM peak hour site-generated trips are summarized in Figure 6². Appendix "G" also includes figures illustrating the assumed existing trip re-route, pass-by and net new trip assignments.

² Figure 6 provides the sum of the Proposed Net New – Existing Net New + Pass-by Trips shown in Table 4. See Appendix G for a further breakdown of the Proposed Net New, Existing Net New, and Pass-by site trips.



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XX - TRIP DISTRIBUTION

Estimated Trip Distribution Pattern & Site-Generated Trip Assignment
Midday & PM Peak Hours
Clackamas County, OR

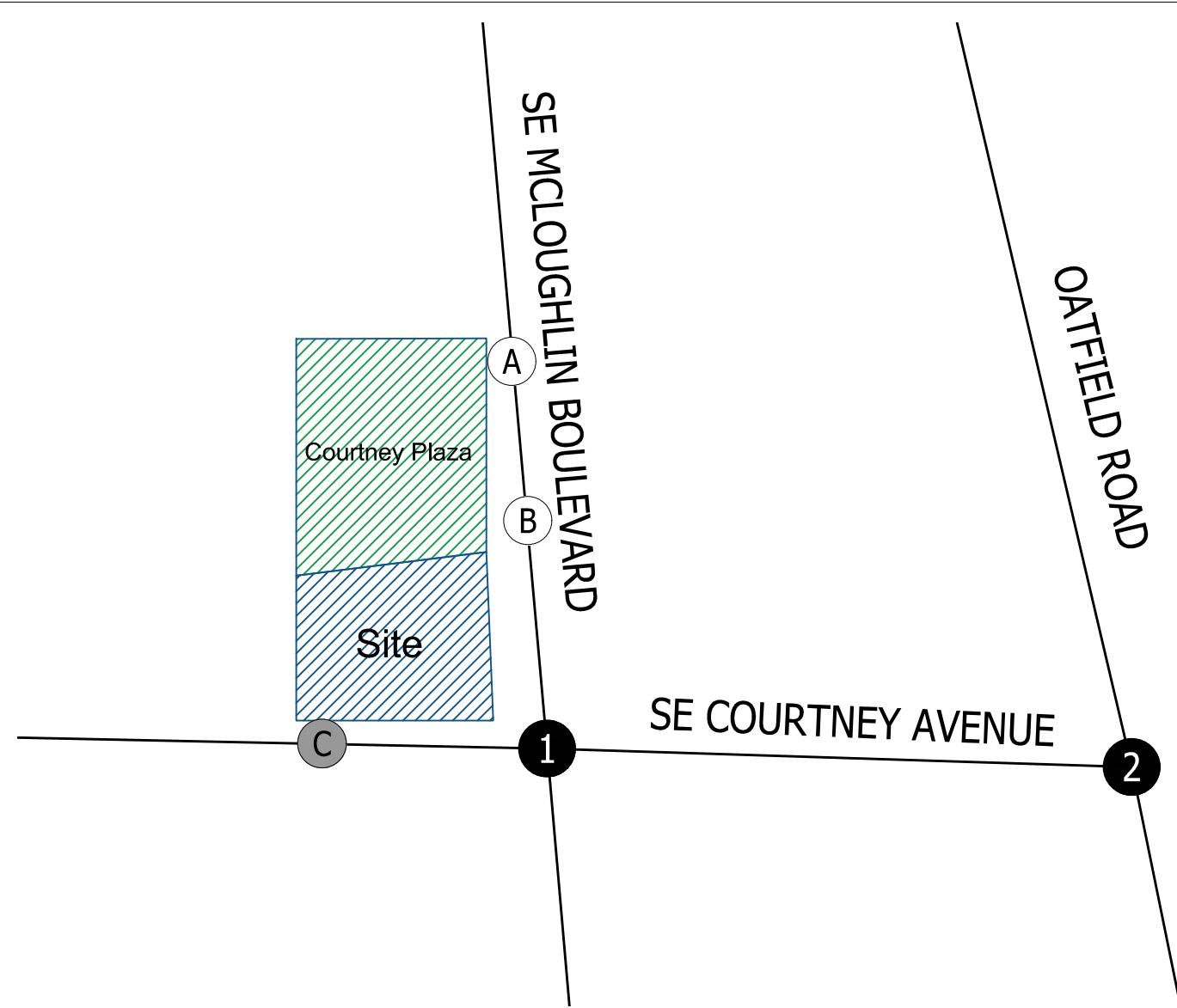
Figure 6

Year 2025 Total Traffic Conditions

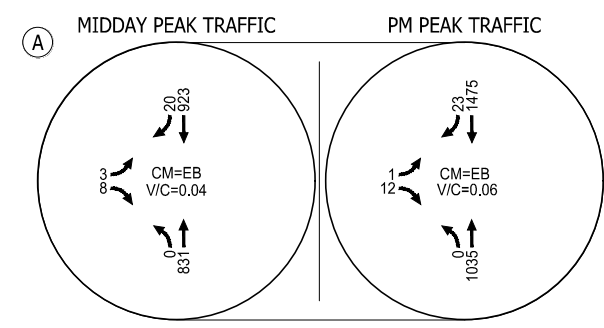
The total traffic conditions analysis forecasts how the study intersections will operate with the traffic generated by the proposed Chick-fil-A. The site-generated traffic shown in Figure 6 was added to the year 2025 background traffic volumes shown in Figure 5 to arrive at the total traffic volumes for the weekday midday and PM peak hours shown in Figure 7. Figure 7 also presents the corresponding traffic operations at the study intersections. *Appendix "H" contains the 2025 Total Traffic Conditions intersection analysis worksheets.*

As shown, all the study intersections are expected to continue to satisfy applicable County and ODOT V/C ratio metrics under total traffic conditions.

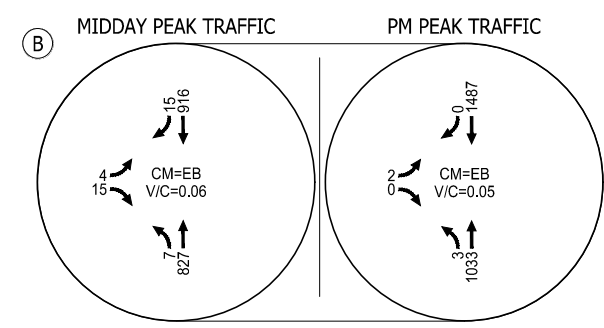
We recommend Chick-fil-A place a new STOP (R1-1) sign for vehicles exiting the site at the new site access driveway onto Courney Avenue in accordance with County standards and the *Manual on Uniform Traffic Control Devices (MUTCD)*.



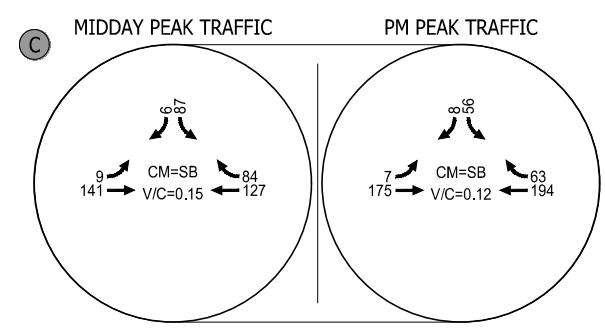
SE MCLOUGHLIN BOULEVARD / EXISTING COURTNEY PLAZA ACCESS (NORTH)



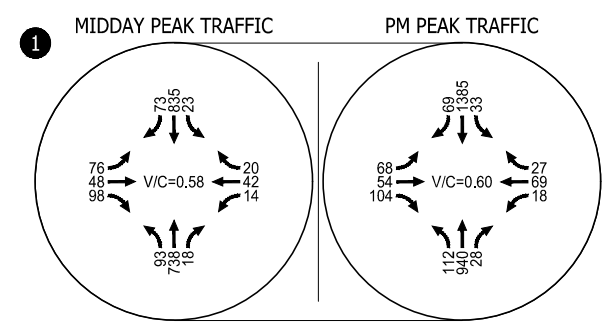
SE MCLOUGHLIN BOULEVARD / EXISTING COURTNEY PLAZA ACCESS (SOUTH)



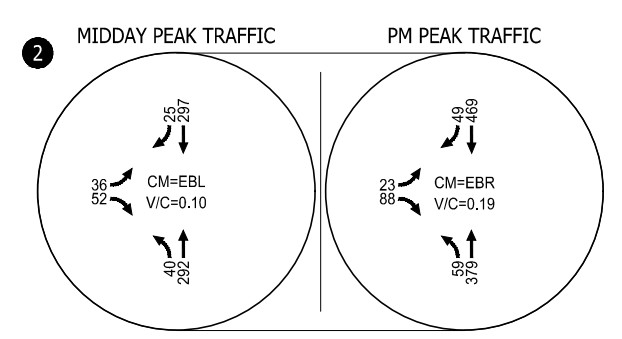
PROPOSED SITE ACCESS DRIVEWAY / SE COURTNEY AVENUE



SE MCLOUGHLIN BOULEVARD / SE COURTNEY AVENUE



OATFIELD ROAD / SE COURTNEY AVENUE



CM = INTERSECTION MOVEMENT (UNSIGNALIZED)
 V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO (SIGNALIZED)/
 CRITICAL MOVEMENT VOLUME-TO-CAPACITY RATIO (UNSIGNALIZED)

Year 2025 Total Traffic Conditions
Midday & PM Peak Hours
Clackamas County, OR

Figure 7

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95th Percentile Queuing Analysis

A 95th-percentile queuing analysis was performed in Vistro at each of the study intersections for all analysis scenarios to address the queuing analysis requirements identified in *Clackamas County Roadway Standards Section 295.16*. Queue reports from Vistro are included in Appendices “C”, “D”, and “H”. Table 5 summarizes the existing and estimated future year 2025 95th-percentile queues during the weekday midday and PM peak hours. Queues are rounded up to the nearest vehicle length (approximately 25 feet). Movements in **bold** indicate the 95th percentile queue is greater than the available storage.

Table 5: Summary of 95th-Percentile Queues

Study Intersection		Move-ment	Available Storage (feet)	2023 Existing Traffic Conditions		2025 Background Traffic Conditions		2025 Total Traffic Conditions	
				MD (feet)	PM (feet)	MD (feet)	PM (feet)	MD (feet)	PM (feet)
#	Location								
1	SE McLoughlin Boulevard / SE Courtney Avenue	NBL	150	25	50	25	75	50	100
		NBT	>500	125	200	125	225	125	225
		NBR	100	25	25	25	25	25	25
		SBL	150	25	25	25	25	25	25
		SBT	>500 ¹	150	425	150	450	175	425
		SBR	100	25	25	25	25	25	25
		EBL	75	75	75	75	100	100	175
		EBTR	270 ²	125	175	125	200	175	200
		WBL	75	25	50	25	50	25	50
		WBTR	>200 ³	75	125	75	125	75	150
2	Oatfield Road / SE Courtney Avenue	EBL	75	25	25	25	25	25	25
		EBR	75	25	25	25	25	25	25
A	SE McLoughlin Boulevard / Existing Site Access Driveway (north)	NBL	100	0	0	0	0	0	0
		EBLR	25	25	25	25	25	25	25
B	SE McLoughlin Boulevard / Existing Site Access Driveway (south)	NBL	25	25	25	25	25	25	25
		EBLR	25	25	25	25	25	25	25
C	Proposed Site Access Driveway / SE Courtney Avenue	SBLR	125	-	-	-	-	25	25

Where: EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, L = left-turn, T=through, R=right, TR = shared through/right, LR = shared left/ right

¹ The next closest signalized intersection is located over ½ mile to the north. There is approximately 275 feet of available storage between the southbound stop bar at SE Courtney Avenue and the existing south Courtney Plaza access. The closest public street intersection, SE McLoughlin Boulevard / SE Holly Avenue, is approximately 340 feet from the southbound stop bar at SE Courtney Avenue and is a three approach stop-controlled intersection at SE Holly Avenue.

² Distance shown is from the eastbound stop bar on SE Courtney Avenue at SE McLoughlin Boulevard and the east side of the proposed restaurant access. Other private driveways are located on the south side of SE Courtney Avenue between the proposed restaurant access and SE McLoughlin Boulevard.

³ There are private driveways located on the north and south sides of SE Courtney Avenue located east of SE McLoughlin Boulevard but no north-south public streets.

Queues on all four approaches of the SE McLoughlin Boulevard / SE Courtney Avenue intersection block one or more private accesses today. Of note, the eastbound SE Courtney Avenue left-turn queue is anticipated to exceed the available 75-foot striped storage under background and total traffic conditions. Given the site-generated impact the proposed restaurant will have on this movement, we recommend Chick-fil-A extend the existing eastbound left-turn lane on SE Courtney Avenue approaching SE McLoughlin Boulevard to provide 175 feet of storage. It appears that the turn lane extension can be completed in conjunction with the planned reconstruction of the project site frontage along Courtney Avenue between SE McLoughlin Boulevard and the project west property line. With provision of the recommended additional left-turn storage, the proposed new Chick-fil-A access on SE Courtney Avenue will be located west of projected eastbound queuing along SE Courtney Avenue.

We further recommend that at least 75 feet of storage be provided for the separate southbound right-turn lane to be reconstructed along the project site frontage on SE McLoughlin Boulevard, subject to ODOT direction.

Turn Lane Considerations

The potential need for turn lanes at the site driveways was evaluated per *Clackamas County Roadway Standards* Section 295.18.1.

The potential need for an eastbound left-turn lane at the proposed site access along SE Courtney Avenue was evaluated using the ODOT turn lane criteria presented in the *ODOT Analysis Procedures Manual* (Reference 5). Based on the projected left-turn volumes shown in Figure 7 and the Left-turn Lane Criterion in *Analysis Procedures Manual* Exhibit 12-1, the ODOT criteria for providing a separate left-turn lane are not met. The existing Courtney Plaza accesses on SE McLoughlin Boulevard are served by a two-way left-turn lane today.

No need for separate right-turn lanes was identified as the proposed SE Courtney Avenue site access or the existing Courtney Plaza accesses on SE McLoughlin Boulevard considering *ODOT Highway Design Manual* (Reference 7) Section 506.11 guidance that "right turn lanes should not be used for private drives unless the access has significant turning volume, a specific accident problem could be corrected by utilizing a right turn lane, or the access is within a rural community area and meets the criteria from the *Analysis Procedures Manual*."

Access Spacing

Clackamas County Roadway Standards Section 220 defines County access management requirements.

Section 220.4.a requires developments to "first take access to the lower functional classification roadway".

Findings: Primary site access is proposed via SE Courtney Avenue. Secondary access to the site will also be possible via the two existing Courtney Plaza accesses on SE McLoughlin Boulevard that will require circulation around the west and north sides of the remaining Courtney Plaza buildings north of the proposed restaurant. Per County and ODOT request, the proposed site plan (shown in Figure 2) eliminates the existing drive aisle connection between the SE McLoughlin Boulevard accesses and the proposed Chick-fil-A on the east side of Courtney Plaza. The standard is satisfied.

Section 220.3, Access Spacing, requires collector roads have a minimum spacing of 150 feet between full movement accesses (access spacing to be measured from centerline to centerline of accesses or roadways) and must be a minimum of 100 feet away from an arterial roadway such as SE McLoughlin Boulevard.

Findings: SE Courtney Avenue is classified by the County as a Collector roadway. The applicant proposes to vacate the two striped existing Courtney Plaza accesses along SE Courtney Avenue (currently striped within a 190-foot long curb cut) and construct a single 30-foot-wide driveway located at the west side of the project site. The proposed new site access location on SE Courtney Avenue readily satisfies the minimum 100 feet spacing requirement from SE McLoughlin Boulevard.

The proposed new SE Courtney Avenue access location maximizes the distance from SE McLoughlin Boulevard but will be within 150 feet of other existing off-site private accesses. There are four existing private accesses on the south side of SE Courtney Avenue between the eastbound stop bar at SE McLoughlin Boulevard and the project site west property line. Further, the Greenfield Apartments development located on the north side of SE Courtney Avenue directly west of the project site has its only vehicle access located less than approximately 20 feet from the project property line. The existing off-site accesses on the south side of SE Courtney Avenue and the Greenfield Apartments access do not satisfy County spacing and effectively preclude any ability to satisfy the minimum 150 feet of space between full movement accesses.

While the proposed Chick-fil-A access on SE Courtney Avenue cannot satisfy the minimum 150 feet spacing standard, we recommend full movement access be provided as proposed considering 1) the proposed location maximizes the available storage west of SE McLoughlin Boulevard 2) restricting turn movements to right-turns only through installation of a raised median on SE Courtney Avenue would a) directly impact other off-site properties with no alternative access that would in turn result in out-of-direction travel and b) would likely result in either i) increased out-of-direction travel of Chick-fil-A trips in the residential area west of the project site or ii) increased use of the Courtney Plaza site accesses on SE McLoughlin Boulevard for restaurant trips (hindering the ability of the project to provide primary access on the lower functional classification roadway).

Site Circulation Considerations

Driveway Sight Distance

We recommend intersection sight distance be provided at the proposed Chick-fil-A and existing Courtney Plaza site accesses per Clackamas County Code design requirements and that landscaping, above ground utilities, and signing be located and maintained in a manner that preserves adequate intersection sight distance.

The proposed new SE Courtney Avenue site driveway sight distance compliance with *Clackamas County Roadway Standards* Section 240 is documented on the project civil engineering plans, a portion of which are included in *Appendix I*.

Drive Through Queuing

This section addresses *Clackamas County Roadway Standards* Section 295.16 related to drive-through queuing impacts to public roadways. The site has been designed to maximize on-site queueing space available for customers using the drive-through. Two drive-through lanes are provided and both are served at the pick-up area via a drive-through door that staff use to deliver meals. The drive-through is designed to store approximately 31³ vehicles on-site based on the size and spacing of typical customer vehicles (including the two vehicles at the pick-up area).

³ While the designated drive through area accommodates 31 vehicles between the meal pick-up area and the back of the dedicated drive through lanes (prior to reaching the first on-site parking space), additional

A queuing study was also conducted at four Portland area Chick-fil-A sites in May 2022. The overall maximum observed drive through queue was 29 vehicles during the PM peak hour at the Tanasbourne site. Based on the maximum observed queue at the four project sites, we conclude the proposed site plan has adequate drive-through storage to accommodate drive-through queues on-site without impact to nearby public roadway facilities⁴. *The results of the Queuing Study are provided in Appendix "E".*

Delivery Truck Circulation

Clackamas County Roadway Standards Section 295.17.2 requires developments that will generate greater than 50 daily vehicles of a size greater than or equal to WB50 to provide analysis of truck turning movements between the project site and the nearest collector or arterial roadway (whichever is closer). Restaurant deliveries are expected to enter and exit the site via the site access on SE Courtney Avenue.

The proposed development is expected to generate 1 to 3 delivery trucks per day. Of these, one larger vehicle equal to or longer than a WB50 is expected to deliver at night while smaller bread and produce delivery vehicles are expected during the day. A WB-67 design vehicle truck circulation diagram is documented in the project civil engineering plans included in Appendix J.

Traffic Management Plan Considerations

Clackamas County staff opined that initial opening period traffic volumes at the site may be higher than those found at a mature store. As previously discussed in the trip generation section of this report, year 2022 data collected at the second Chick-fil-A in Hillsboro a few weeks after opening found the trip generation of the new site to be the lowest of four area locations surveyed. Chick-fil-A reports that there was no formal traffic management plan implemented for the 2022 Hillsboro Chick-fil-A grand opening and that all parking and drive-through queuing has been accommodated on-site from the first day of operations. Chick-fil-A further indicates that it is common for their new stores in an existing market to not experience the same level of grand opening interest as compared to openings in new markets.

There is an existing Chick-fil-A site near the Clackamas Town Center approximately 4.5 miles to the east of the proposed SE McLoughlin Boulevard site. Additionally, a second Clackamas site located on SE 82nd Avenue, 4.5 miles northeast of this site, is anticipated. Given these other existing restaurant sites, the proposed third restaurant opening experience in Clackamas could be akin to the recent Hillsboro second

drive through storage is available on site within the parking drive aisle north of the drive through lane. Drive through queues up to an additional three vehicles can be accommodated in the western most lane approaching the drive-through entry without blocking drive aisles. The parking spaces along the west side of the drive aisle leading to the drive through entry will be designated employee parking to minimize vehicle movements across the drive through entry lanes during periods of peak demand. Additional queue storage can be designated on site as needed through on-site temporary traffic management techniques such as those presented later in this report.

⁴ It should be noted that three of the four Portland area sites studied have a single drive through pickup window whereas the proposed site will have two active drive through lanes with pickup areas. Of the four sites studied, only the TV Highway site has the new two drive through lane configuration and it has both the lowest trip generation and the shortest drive through queues.

site opening recognizing the new Clackamas site will also capture existing market share served today by an existing restaurant within even closer proximity.⁵

If necessary, Chick-fil-A could implement additional temporary on-site queue storage during opening period traffic conditions. We note that Chick-fil-A is able to cone off and sign additional on-site drive through storage; an example of which is shown below in Photo 1.

Photo 1. View of Example Chick-fil-A Temporary Parking Lot Drive Through Extension (Keizer, OR)



Image Source: Chick-fil-A

Appendix K illustrates one potential approach to provide interim on-site queue storage for opening period conditions. Other on-site configurations may be possible and can be prepared by Chick-fil-A in

⁵ We further note that Chick-fil-A also opened a new restaurant at Keizer Station in August 2022. Chick-fil-A representatives report that no formal TMP was required; however, the restaurant operator met with the City police department in advance to review a plan to minimize any restaurant traffic backing to the public street including engagement of City police officers to manage traffic. We understand the restaurant implemented temporary extra drive-through storage within the site parking lot and that drive through queues are being accommodated on-site despite the restaurant being the first in the greater Salem-Keizer area and in close proximity to I-5.

coordination with the Courtney Plaza property owner as needed recognizing the proposed SE McLoughlin Boulevard site opening is over a year away (at the time this report was prepared) and future market conditions (including the status of other nearby restaurants) cannot be fully understood now.

Findings and Recommendations

Based on the results of this report, the proposed Chick-fil-A can be constructed while maintaining acceptable operations at the study intersections. No capacity-based mitigation needs were identified.

Findings

- The study intersections were found to operate acceptably during the weekday midday and PM peak hours under existing and future conditions (without and with site development).
- The proposed restaurant will replace existing retail building space within Courtney Plaza and includes the following proposed access changes:
 - Elimination of the existing internal drive aisle connection within Courtney Plaza between the southernmost Courtney Plaza access on SE McLoughlin Boulevard and the restaurant site (as requested by the County and Oregon Department of Transportation, ODOT);
 - Vacation of two existing site access driveways on SE Courtney Avenue; and,
 - Construction of a single new site access driveway on SE Courtney Avenue at the western end of the project property, maximizing the distance between the access and SE McLoughlin Boulevard.
- The restaurant drive-through has two order lines, with meal delivery provided in both lanes and has been designed to accommodate the anticipated queue requirements on site without impact to the public roadway network.
- No right-turn or left-turn lanes are required on SE Courtney Avenue at the proposed site access.

Recommendations

Subject to applicable Clackamas County and ODOT concurrence, we recommend Chick-fil-A do the following in conjunction with the proposed restaurant:

- Reconstruct the site frontage along SE McLoughlin Boulevard per ODOT requirements and provide a separate southbound right-turn lane at the SE Courtney Avenue intersection with at least 75 feet of storage.
- Coordinate frontage improvements with Clackamas County for consistency with the Courtney Avenue Complete Streets design and construction.
- Reconstruct the site frontage along SE Courtney Avenue per County requirements and extend the existing eastbound left-turn lane on SE Courtney Avenue approaching SE McLoughlin Boulevard to provide 175 feet of storage (approximately 50 feet of storage is provided today).
- Place a new STOP (R1-1) sign for vehicles exiting the site at the new site access driveway onto Courtney Avenue in accordance with County standards and the *Manual on Uniform Traffic Control Devices* (MUTCD).
- Place and maintain all vegetation and other above ground objects adjacent to the site access points to provide adequate minimum sight distance in accordance with the applicable Clackamas County and/or ODOT requirements.

References

1. Transportation Research Board. *Highway Capacity Manual, 7th Edition*. 2022.
2. Clackamas County. *Clackamas County Comprehensive Plan*. January 2022.
3. Oregon Department of Transportation. *Oregon Highway Plan*. December 2015.
4. "Maps and Schedules". TriMet. <https://trimet.org/schedules/index.htm>.
5. Oregon Department of Transportation. *Analysis Procedures Manual Version 2*. June 8, 2022 Update.
6. Institute of Transportation Engineers. *Trip Generation Manual, 11th Edition*. 2021.
7. Oregon Department of Transportation. *Highway Design Manual 2023*.

Appendix

- A. ODOT Crash Data
- B. Traffic Counts
- C. Existing Traffic Conditions Analysis Worksheets
- D. 2025 Background Traffic Conditions Analysis Worksheets
- E. Trip Generation/Queuing Study
- F. Eagle Bargain Outlet Trip Generation Data
- G. Trip Assignment Summary Figures
- H. 2025 Total Traffic Conditions Analysis Worksheets
- I. Driveway Sight Distance Exhibits
- J. Delivery Truck Circulation Exhibit
- K. Traffic Management Plan Alternative

Appendix A: ODOT Crash Data

Highway 081 ALL ROAD TYPES, MP 7.38 to 7.44 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

COLLISION TYPE	FATAL CRASHES	NON- FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION	INTER- SECTION RELATED	OFF- ROAD
YEAR: 2021														
ANGLE	0	1	0	1	0	1	0	1	0	0	1	1	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	0	1	1	0	1	0	0
YEAR 2021 TOTAL	0	2	0	2	0	2	0	1	1	1	1	2	0	0
YEAR: 2020														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	1
REAR-END	0	1	2	3	0	1	0	3	0	3	0	1	0	0
SIDESWIPE - OVERTAKING	0	1	0	1	0	1	0	1	0	0	1	0	0	0
YEAR 2020 TOTAL	0	2	3	5	0	2	0	5	0	4	1	2	0	1
YEAR: 2019														
ANGLE	0	1	0	1	0	2	0	1	0	0	1	1	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	0	1	0	1	0	0	0
TURNING MOVEMENTS	0	1	1	2	0	2	0	2	0	2	0	2	0	0
YEAR 2019 TOTAL	0	2	2	4	0	4	0	3	1	2	2	3	0	0
YEAR: 2018														
ANGLE	0	1	0	1	0	2	0	1	0	1	0	1	0	0
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	1	0	0	1	0	0	1
TURNING MOVEMENTS	0	1	0	1	0	2	0	0	1	1	0	1	0	0
YEAR 2018 TOTAL	0	2	1	3	0	4	0	2	1	2	1	2	0	1
YEAR: 2017														
ANGLE	0	1	0	1	0	1	0	0	1	0	1	1	0	0

Highway 081 ALL ROAD TYPES, MP 7.38 to 7.44 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

COLLISION TYPE	FATAL	NON-	PROPERTY	TOTAL	PEOPLE	PEOPLE	TRUCKS	DRY	WET	DAY	DARK	INTER-	SECTION	OFF-
	CRASHES	FATAL	DAMAGE	CRASHES	KILLED	INJURED		SURF	SURF			SECTION	RELATED	
REAR-END	0	1	1	2	0	1	0	1	1	1	1	2	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	0	1	1	0	0	0	0
TURNING MOVEMENTS	0	4	1	5	0	6	0	3	2	3	2	5	0	0
YEAR 2017 TOTAL	0	6	3	9	0	8	0	4	5	5	4	8	0	0
FINAL TOTAL	0	14	9	23	0	20	0	15	8	14	9	17	0	2

081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.38 to 7.44 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

1 - 6 of 23 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	TRLR	QTY	MOVE	A	S	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE				
INVEST	E	A	U	I	C	DAY	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE					
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE				
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS		(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE				
01069	N	N	N	N	N	03/19/2017	CLACKAMAS	1	14		STRGHT	N	N	N	RAIN	S-STRGHT	01	NONE	9	STRGHT									13				
NONE	SU							MN	0		UN	(NONE)	UNKNOWN	N	WET	SS-0	N/A	N	-S								000	000	00				
N	9A						PORTLAND UA	7.39			03		N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	000	000	00				
N	45	25	22.21				-122 38 .4			008100100S00		(04)																					
01797	N	N	N	N	N	07/10/2020	CLACKAMAS	1	14		STRGHT	N	N	N	CLR	S-1STOP	01	NONE	9	STRGHT									29				
NONE	FR							MN	0		UN	(NONE)	NONE	N	DRY	REAR	N/A	N	-S									000	000	00			
N	9A						PORTLAND UA	7.39			04		N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	000	000	00				
N	45	25	22.21				-122 38 .42			008100100S00		(04)																					
03910	N	N	N	N	N	11/06/2019	CLACKAMAS	1	14		STRGHT	N	N	N	RAIN	S-STRGHT	01	NONE	9	STRGHT									13				
NONE	WE							MN	0		UN	(NONE)	L-TURN REF	N	WET	SS-0	N/A	N	-S									000	000	00			
N	4P						PORTLAND UA	7.39			05		N	DUSK	PDO		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	000	000	00				
N	45	25	22.21				-122 38 .4			008100100S00		(05)																					
02825	N	N	N	N	N	10/19/2020	CLACKAMAS	1	14		STRGHT	N	N	N	CLD	S-1STOP	01	NONE	0	STRGHT									013	29			
STATE	MO							MN	0		UN	(NONE)	NONE	N	DRY	REAR	PRVTE	S	-N									000	000	00			
N	11A						PORTLAND UA	7.39			06		N	DAY	INJ		PSNGR CAR			01	DRVR	NONE	51	M	OTH-Y	042	000	000	29				
N	45	25	22.22				-122 38 .42			008100100S00		(04)																					
01862	N	Y	N	N	N	06/01/2018	CLACKAMAS	1	14		STRGHT	N	Y	UNK	FIX OBJ	01	NONE	9	STRGHT									058	33				
COUNTY	FR							MN	0		UN	(NONE)	NONE	N	DRY	FIX	N/A	S	-N									000	000	00			
Y	12A						PORTLAND UA	7.39			08		N	DLIT	PDO		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	000	000	00				
N	45	25	22.23				-122 38 .4			008100100S00		(04)																					
00524	N	N	N	N	N	02/09/2020	CLACKAMAS	1	14		INTER	CROSS	N	Y	CLD	PRKD MV	01	NONE	9	STRGHT									16,04,32				
STATE	SU							MN	0		N		TRF SIGNAL	N	DRY	ANGL	N/A	S	-N									000	000	00			
N	10A						PORTLAND UA	7.40			05	0	N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	000	000	00				
N	45	25	21.75				-122 38 .34			008100100S00																							
01698	N	N	N	N	N	04/20/2017	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT									29				
NONE	TH							MN	0		N		TRF SIGNAL	N	DRY	REAR	PRVTE	N	-S									000	000	00			
N	6P						PORTLAND UA	7.41			06	0	N	DAY	INJ		PSNGR CAR			01	DRVR	NONE	19	Unk	OR-Y	026	000	000	29				
N	45	25	21.27				-122 38 .24			008100100S00																							

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081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.38 to 7.44 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.38 to 7.44 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

7 - 11 of 23 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE																									
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	A S																			
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED														
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS		(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE									
																02	NONE	0																				

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081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.38 to 7.44 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.38 to 7.44 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.38 to 7.44 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.38 to 7.44 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

22 - 23 of 23 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	ACT	EVENT	CAUSE														
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST	STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY															
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND	STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED								
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR						
														02	NONE	0	TURN-L																
														PRVTE																		000	00
														PSNGR	CAR					01	DRVR	NONE	74	F	OR-Y			020,028,004	000			04,02,08	
01047	N	N	N	N	N	04/01/2020	CLACKAMAS	1	14		STRGHT	N				CLR															110	18	
STATE						WE				MN	0					UN	(NONE)	NONE	N		DRY												
N						6A	PORTLAND UA			7.44	04					DAWN					STRGHT	01	BIKE	INJC	40	M		ROAD	080		046	110	18
N						45 25 19.65	-122 37 59.99				008100100S00		(04)																				
														01	NONE	0	STRGHT															000	00
														PRVTE																		000	00
														PSNGR	CAR					01	DRVR	NONE	27	F	OR-Y			000		000			00

081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.38 to 7.44 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

SE OATFIELD RD, MP 1.08 to 1.10, 01/01/2017 to 12/31/2021

COLLISION TYPE	FATAL CRASHES	NON- FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION	INTER- SECTION RELATED	OFF- ROAD
YEAR: 2020														
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	0	1	0	1	0	0
YEAR 2020 TOTAL	0	0	1	1	0	0	0	0	0	1	0	1	0	0
YEAR: 2019														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	0	1	1	0	0
YEAR 2019 TOTAL	0	0	2	2	0	0	0	2	0	1	1	2	0	0
YEAR: 2018														
TURNING MOVEMENTS	0	1	2	3	0	1	0	3	0	3	0	3	0	0
YEAR 2018 TOTAL	0	1	2	3	0	1	0	3	0	3	0	3	0	0
YEAR: 2017														
REAR-END	0	2	0	2	0	4	0	2	0	1	1	2	0	0
TURNING MOVEMENTS	0	1	1	2	0	1	0	1	1	1	1	2	0	0
YEAR 2017 TOTAL	0	3	1	4	0	5	0	3	1	2	2	4	0	0
FINAL TOTAL	0	4	6	10	0	6	0	8	1	7	3	10	0	0

CLACKAMAS COUNTY

SE OATFIELD RD, MP 1.08 to 1.10, 01/01/2017 to 12/31/2021

1 - 4 of 10 Crash records shown.

SER#	S	D	M	P	R	J	S	W	DATE	MILEPNT	COUNTY	ROADS	INT-TYPE	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	TRLR	QTY	MOVE		A	S																							
INVEST	E	A	U	I	C	O	DAY	DIST	FROM	FIRST	STREET	RD	CHAR	(#LANES)	CONTL	RNDBT	SURF	COLL	OWNER	FROM			PRTC	INJ	G	E	LICNS	PED																				
RD DPT	E	L	G	N	H	R	TIME	INTERSECT	SECOND	STREET	DIRECT																																					
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN									V#	TYPE	TO		P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE															
03556	N	N	N	N	N	N	08/29/2017	1.09	SE OATFIELD RD	INTER		3-LEG	N	N	CLR	S-1STOP	01	NONE	0	STRGHT																							16,07					
COUNTY							TU			SE		UNKNOWN	N	DRY	REAR			PRVTE		SE-NW																			000	00								
N							5P		06	0			N	DAY	INJ			PSNGR CAR				01	DRVR	NONE	50	M	OR-Y		043,026	025									00	16,07								
N							45 25 21.19	-122 37																																								
								48.61																																								
05317	N	N	N	N	N	N	12/14/2017	1.09	SE OATFIELD RD	INTER		3-LEG	N	N	CLR	S-1STOP	01	NONE	0	STRGHT																					013	07,29,32						
COUNTY							TH			S		UNKNOWN	N	DRY	REAR			PRVTE		S -N																			000	00								
N							5P		06	0			N	DARK	INJ			PSNGR CAR				01	DRVR	INJC	72	M	OR-Y		043,026,052	000											000	07,29,32						
N							45 25 21.19	-122 37																																								
								48.61																																								
02953	N	N	N	N	N	N	08/26/2019	1.09	SE OATFIELD RD	INTER		3-LEG	N	N	CLR	S-1STOP	01	NONE	9	STRGHT																								29				
NONE							MO			SW		NONE	N	DRY	REAR			N/A		S -N																			000	00								
N							1P		06	0			N	DAY	PDO			PSNGR CAR				01	DRVR	NONE	00	Unk	UNK		000	000												000	00					
N							45 25 21.19	-122 37																																								
								48.61																																								
87862	N	N	N	N	N	N	06/29/2017	1.09	SE OATFIELD RD	INTER		3-LEG	N	N	CLR	ANGL-STP	01	NONE	0	TURN-L																										08		
NONE							TH			W		STOP SIGN	N	DRY	TURN			PRVTE		S -W																							000	00				
N							5P		06	0			N	DAY	INJ			PSNGR CAR				01	DRVR	NONE	68	M	OR-Y		002	000															000	08		
N							45 25 21.19	-122 37																																								
								48.61																																								
00700	N	N	N	N	N	N	02/24/2018	1.09	SE OATFIELD RD	INTER		3-LEG	N	N	CLR	O-1 L-TURN	01	NONE	0	STRGHT																												08,02
NONE							SA			CN		UNKNOWN	N	DRY	TURN			PRVTE		N -S																								000	00			
N							9A		01	0			N	DAY	INJ			PSNGR CAR				01	DRVR	INJC	30	F	OR-Y		000	000																000		
N							45 25 21.2	-122 37																																								
								48.61																																								

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CLACKAMAS COUNTY

SE OATFIELD RD, MP 1.08 to 1.10, 01/01/2017 to 12/31/2021

CLACKAMAS COUNTY

SE OATFIELD RD, MP 1.08 to 1.10, 01/01/2017 to 12/31/2021

Highway 081 ALL ROAD TYPES, MP 7.29 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

COLLISION TYPE	FATAL CRASHES	NON- FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION	INTER- SECTION RELATED	OFF- ROAD
YEAR: 2021														
REAR-END	0	0	1	1	0	0	0	0	1	1	0	0	0	0
TURNING MOVEMENTS	0	1	0	1	0	2	0	1	0	1	0	1	0	0
YEAR 2021 TOTAL	0	1	1	2	0	2	0	1	1	2	0	1	0	0
YEAR: 2020														
REAR-END	0	1	1	2	0	1	0	2	0	2	0	0	0	0
YEAR 2020 TOTAL	0	1	1	2	0	1	0	2	0	2	0	0	0	0
YEAR: 2019														
REAR-END	0	1	0	1	0	1	0	1	0	0	1	0	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	0	1	0	1	0	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	0	1	1	0	0
YEAR 2019 TOTAL	0	1	2	3	0	1	0	2	1	0	3	1	0	0
YEAR: 2018														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	1	0	0	1	0	0	1
REAR-END	0	0	1	1	0	0	0	1	0	1	0	0	0	0
TURNING MOVEMENTS	0	2	1	3	0	4	0	2	1	2	1	1	0	0
YEAR 2018 TOTAL	0	2	3	5	0	4	0	4	1	3	2	1	0	1
YEAR: 2017														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	0	0	0

Highway 081 ALL ROAD TYPES, MP 7.29 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

COLLISION TYPE	FATAL	NON-	PROPERTY	TOTAL	PEOPLE	PEOPLE	TRUCKS	DRY	WET	DAY	DARK	INTER-	SECTION	OFF-
	CRASHES	FATAL	DAMAGE	CRASHES	KILLED	INJURED		SURF	SURF			SECTION	RELATED	
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	0	1	1	0	0	0	0
YEAR 2017 TOTAL	0	1	1	2	0	1	0	1	1	2	0	0	0	0
FINAL TOTAL	0	6	8	14	0	9	0	10	4	9	5	3	0	1

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EXHIBIT 8

081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.29 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

1 - 5 of 14 Crash records shown.

SER#	S	D	M	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	A	S	ACT	EVENT	CAUSE																
INVEST	E	A	U	I	C	O	D	A	Y	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE																
RD DPT	E	L	G	N	H	R	TIME	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ																
UNLOC?	D	C	S	V	L	K	LAT	LONG	MILEPNT	LRS	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY																
00746	N	N	N	N	N	N	03/18/2021	CLACKAMAS	1	14			STRGHT	N	N	RAIN	S-1STOP	01	NONE	9	STRGHT																
STATE							TH		MN	0			UN	(NONE)	UNKNOWN	N	WET	REAR	N/A		N-S																
N							5P	PORTLAND UA	7.29				04			N	DAY	PDO	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK	000	000	00								
N							45 25 27.14	-122 38 1.23			008100100S00		(04)																000	000	00						
																			02	NONE	9	STOP															
																			N/A		N-S									011	00						
																			PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	00						
																															000	000	00				
03648	N	N	N	N	N	N	10/10/2018	CLACKAMAS	1	14			STRGHT	N	N	CLR	S-1STOP	01	NONE	9	STRGHT																
NONE							WE		MN	0			UN	(NONE)	NONE	N	DRY	REAR	N/A		N-S																
N							1P	PORTLAND UA	7.32				03			N	DAY	PDO	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK	000	000	00								
N							45 25 25.6	-122 38 .97			008100100S00		(04)																		000	000	00				
																																011	00				
																			PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	00						
00969	N	Y	N	N	N	N	03/18/2018	CLACKAMAS	1	14			INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE	0	STRGHT															
STATE							SU		MN	0			CN		UNKNOWN	N	DRY	TURN	PRVTE		S-N																
N							8P	PORTLAND UA	7.33				04	0		N	DUSK	INJ	PSNGR	CAR	01	DRVR	INJB	25	F	OR-Y	000	000	00								
N							45 25 25.06	-122 38 .88			008100100S00																						000	000	00		
																																	028,004	000	02,08		
																			02	NONE	0	TURN-L															
																			PRVTE		N-E		01	DRVR	INJB	84	M	OR-Y	028,004	000	000	00					
																			PSNGR	CAR												000	000	00			
																																	000	000	00		
00001	N	N	N	N	N	N	01/01/2019	CLACKAMAS	1	14			INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE	9	STRGHT															
STATE							TU		MN	0			CN		NONE	N	DRY	TURN	N/A		S-N																
N							9P	PORTLAND UA	7.33				04	0		N	DLIT	PDO	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK	000	000	00								
N							45 25 25.08	-122 38 .92			008100100S00																							000	000	00	
																																		000	000	00	
																			02	NONE	9	TURN-L															
																			N/A		N-E		01	DRVR	NONE	00	Unk	UNK	000	000	00	00					
																			PSNGR	CAR														000	000	00	
03120	N	N	N	N	N	N	10/18/2021	CLACKAMAS	1	14			INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE	0	TURN-L															
STATE							MO		MN	0			CN		STOP SIGN	N	DRY	TURN	PRVTE		N-E																
N							3P	PORTLAND UA	7.33				04	0		N	DAY	INJ	PSNGR	CAR	01	DRVR	INJB	84	M	OR-Y	028,004	000	000	00							
N							45 25 25.05	-122 38 .88			008100100S00																								028,004	000	02,08
																																		000	000	00	
																			02	NONE	0	STRGHT															
																			PRVTE		S-N		01	DRVR	INJC	68	F	OR-Y	000	000	00	00					
																			PSNGR	CAR													000	000	00		
01085	N	N	N	N	N	N	03/30/2018	CLACKAMAS	1	14			ALLEY	N	N	CLR	ANGL-OTH	01	NONE	9	TURN-R																
STATE							FR		MN	0			UN	(NONE)	UNKNOWN	N	DRY	TURN	N/A		W-S																
N							3P	PORTLAND UA	7.34				03			N	DAY	PDO	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK	000	000	00								
N							45 25 24.58	-122 38 .8			008100100S00		(04)																				000	000	00		

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.29 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.29 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

6 - 11 of 14 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE																												
INVEST	E	A	U	I	C	DAY	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	A	S																					
RD DPT	E	L	G	N	H	R	TIME	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED																
UNLOC?	D	C	S	V	L	K	LAT	LONG	MILEPNT	LRS	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE												
																	02	NONE	9	STRGHT																000	00				
																	N/A	N-S																		000	00				
																	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00												
04223	N	N	N	N	N	N	11/25/2019	CLACKAMAS	1	14		STRGHT																										07			
STATE							MO				MN	0	UN	(NONE)	L-TURN	REF	N	DRY	REAR	PRVTE	N-S														000	00					
N							6P	PORTLAND UA		7.34		04				N	DLIT	INJ	PSNGR	CAR		01	DRVR	NONE	24	M	NONE						043	000	07						
N							45 25 24.57	-122 38 .78			008100100S00		(05)																												
																	02	NONE	0	STOP																		011	00		
																	PRVTE	N-S		01	DRVR	INJC	54	M	OR-Y		000	000	00									00			
																	PSNGR	CAR																					000	00	
01156	N	N	N	N	N	N	04/05/2018	CLACKAMAS	1	14		ALLEY																											02,08		
STATE							TH				MN	0	UN	(NONE)	UNKNOWN	N	WET	TURN	PRVTE	N-S																000	00				
N							3P	PORTLAND UA		7.35		03				N	DAY	INJ	PSNGR	CAR		01	DRVR	NONE	33	M	OR-Y								000	000	00				
N							45 25 24.1	-122 38 .73			008100100S00		(04)																										019	00	
																	02	NONE	0	TURN-L																		028,004	000	00	02,08
																	PRVTE	S-W		01	DRVR	INJB	34	F	OR-Y		028,004	000	00									00			
																	PSNGR	CAR																					OR<25		
00669	N	N	N	N	N	N	01/05/2017	CLACKAMAS	1	14		STRGHT																											29		
NONE							TH				MN	0	UN	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	N-S																000	00				
N							4P	PORTLAND UA		7.37		04				N	DAY	INJ	PSNGR	CAR		01	DRVR	NONE	41	F	OR-Y								026	000	29				
N							45 25 23.16	-122 38 .56			008100100S00		(04)																										OR<25		
																	01	NONE	0	STRGHT																		000	00		
																	PRVTE	N-S		02	PSNG	NO<5	03	M												000	000	00			
																	02	NONE	0	STOP																				011	00
																	PRVTE	N-S		01	DRVR	INJC	60	F	OR-Y		000	000	00											OR<25	
																	PSNGR	CAR																						OR<25	
01069	N	N	N	N	N	N	03/19/2017	CLACKAMAS	1	14		STRGHT																												13	
NONE							SU				MN	0	UN	(NONE)	UNKNOWN	N	WET	SS-O	N/A	N-S																000	00				
N							9A	PORTLAND UA		7.39		03				N	DAY	PDO	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK								000	000	00				
N							45 25 22.21	-122 38 .4			008100100S00		(04)																										UNK		
																	02	NONE	9	STRGHT																			000	00	
																	N/A	N-S		01	DRVR	NONE	00	Unk	UNK		000	000	00										000	00	
																	PSNGR	CAR																						UNK	
01797	N	N	N	N	N	N	07/10/2020	CLACKAMAS	1	14		STRGHT																												29	
NONE							FR				MN	0	UN	(NONE)	NONE	N	DRY	REAR	N/A	N-S																000	00				
N							9A	PORTLAND UA		7.39		04				N	DAY	PDO	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK								000	000	00				
N							45 25 22.21	-122 38 .42			008100100S00		(04)																										UNK		
																	02	NONE	9	STOP																			011	00	
																	N/A	N-S		01	DRVR	NONE	00	Unk	UNK		000	000	00										000	00	
																	PSNGR	CAR																						UNK	

081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.29 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.29 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

12 - 14 of 14 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	A	S	ACT	EVENT	CAUSE													
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE			
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO												
03910	N	N	N	N		11/06/2019	CLACKAMAS	1	14		STRGHT	N		N	RAIN	S-STRGHT	01	NONE	9	STRGHT									13		
NONE						WE		MN	0		UN	(NONE)	L-TURN REF	N	WET	SS-O	N/A		N-S									000	00		
N						4P	PORTLAND UA	7.39			05			N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00		
N						45 25 22.21	-122 38 .4			008100100S00		(05)																			
																	02	NONE	9	STRGHT											
																		N/A		N-S								000	000	00	
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00		
02825	N	N	N	N	N	10/19/2020	CLACKAMAS	1	14		STRGHT	N		N	CLD	S-1STOP	01	NONE	0	STRGHT								013	29		
STATE						MO		MN	0		UN	(NONE)	NONE	N	DRY	REAR		PRVTE		S-N								000	00		
N						11A	PORTLAND UA	7.39			06			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	51	M	OTH-Y		042	000	29		
N						45 25 22.22	-122 38 .42			008100100S00		(04)																			
																	02	NONE	0	STOP											
																		PRVTE		S-N									012	00	
																		PSNGR CAR		01	DRVR	INJC	79	M	OR-Y		000	000	00		
01862	N	Y	N	N	N	06/01/2018	CLACKAMAS	1	14		STRGHT	N		Y	UNK	FIX OBJ	01	NONE	9	STRGHT								058	33		
COUNTY						FR		MN	0		UN	(NONE)	NONE	N	DRY	FIX		N/A		S-N								000	00		
Y						12A	PORTLAND UA	7.39			08			N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00		
N						45 25 22.23	-122 38 .4			008100100S00		(04)																			

081: PACIFIC HIGHWAY EAST

Highway 081 ALL ROAD TYPES, MP 7.29 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

01/09/2024

TRANSPORTATION DATA SERVICES AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SE COURTNEY AVE, MP 0.16 to 0.20, 01/01/2017 to 12/31/2021

COLLISION TYPE	FATAL CRASHES	NON- FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION	INTER- SECTION RELATED	OFF- ROAD
YEAR: 2021														
TURNING MOVEMENTS	0	1	0	1	0	2	0	0	1	1	0	0	0	0
YEAR 2021 TOTAL	0	1	0	1	0	2	0	0	1	1	0	0	0	0
YEAR: 2020														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	0	0	0
YEAR 2020 TOTAL	0	0	1	1	0	0	0	1	0	1	0	0	0	0
YEAR: 2018														
PEDESTRIAN	0	1	0	1	0	1	0	1	0	1	0	0	0	1
YEAR 2018 TOTAL	0	1	0	1	0	1	0	1	0	1	0	0	0	1
YEAR: 2017														
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	0	1	0	0	0
YEAR 2017 TOTAL	0	1	0	1	0	1	0	1	0	0	1	0	0	0
FINAL TOTAL	0	3	1	4	0	4	0	3	1	3	1	0	0	1

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EXHIBIT 8

CLACKAMAS COUNTY

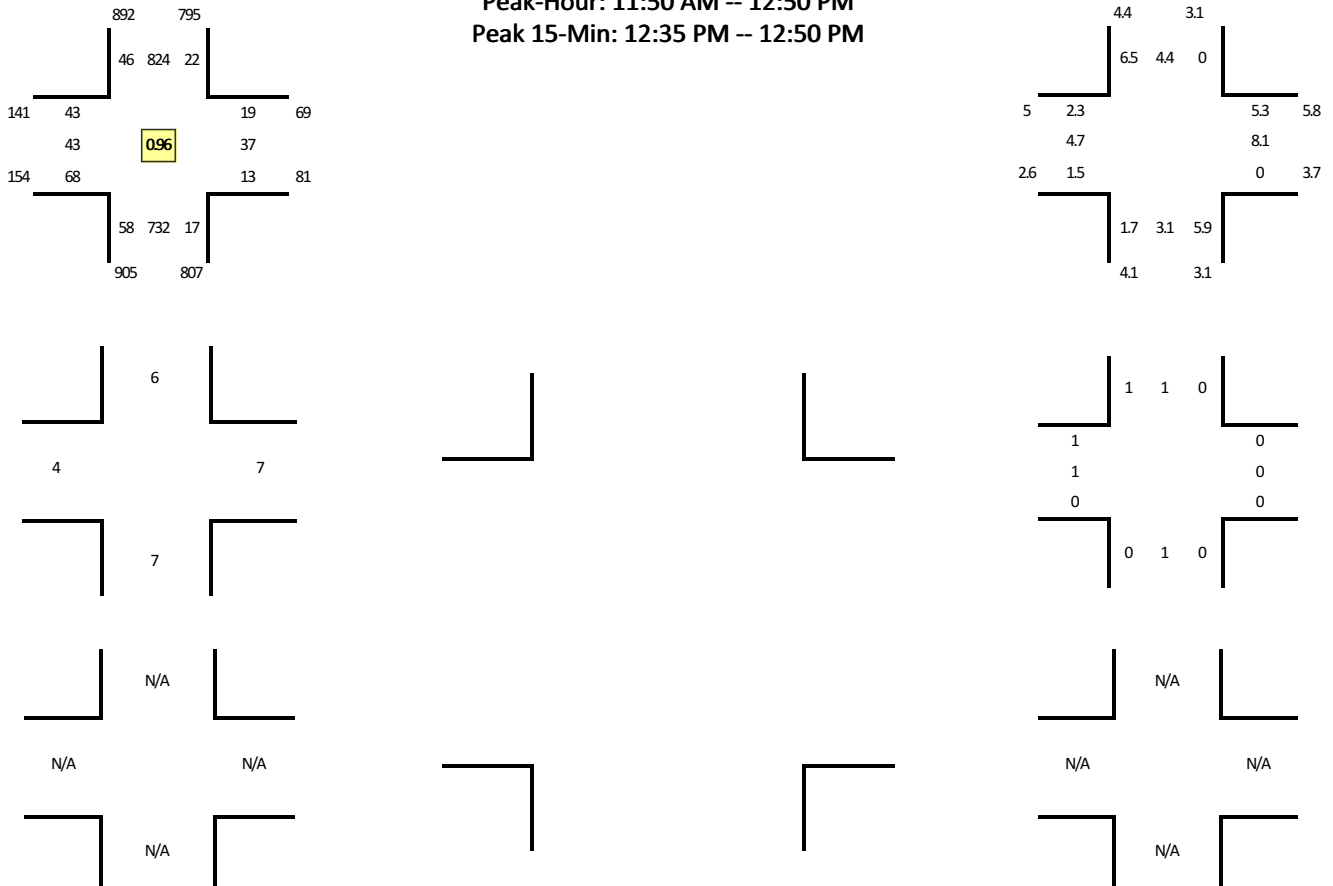
Appendix B: Traffic Counts

LOCATION: SE McLoughlin Blvd -- SE Courtney Ave
 CITY/STATE: Oak Grove, OR

100-yr, 24-hr

QC JOB #: 16420001
 DATE: Thu, Dec 7 2023

Peak-Hour: 11:50 AM -- 12:50 PM
 Peak 15-Min: 12:35 PM -- 12:50 PM



5-Min Count Period Beginning At	SE McLoughlin Blvd (Northbound)				SE McLoughlin Blvd (Southbound)				SE Courtney Ave (Eastbound)				SE Courtney Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	5	55	0	0	1	70	4	0	3	1	7	0	1	4	0	0	151	
11:05 AM	4	77	1	0	1	54	2	0	3	0	7	0	1	3	0	0	153	
11:10 AM	4	50	1	0	1	67	4	0	6	4	2	0	2	1	1	0	143	
11:15 AM	5	71	2	0	2	43	1	0	0	2	1	0	3	5	2	0	137	
11:20 AM	5	52	0	0	1	85	4	0	5	3	13	0	1	1	2	0	172	
11:25 AM	3	82	1	0	1	64	2	0	1	5	2	0	1	4	0	0	166	
11:30 AM	2	44	1	0	1	79	0	0	4	3	9	0	1	2	2	0	148	
11:35 AM	4	63	0	0	1	50	1	0	7	1	8	0	4	0	2	0	141	
11:40 AM	5	62	1	0	4	63	4	0	4	1	5	0	0	1	1	0	151	
11:45 AM	5	52	0	0	1	75	3	0	5	2	3	0	0	3	1	0	150	
11:50 AM	5	54	1	0	1	76	5	0	3	2	9	0	0	5	1	0	162	
11:55 AM	4	72	0	0	4	54	5	0	4	3	6	0	1	5	1	0	159	1833
12:00 PM	8	53	2	0	0	60	8	0	7	5	7	0	3	3	3	0	159	1841
12:05 PM	9	62	1	0	0	81	2	0	1	4	4	0	1	2	5	0	172	1860
12:10 PM	7	53	2	0	1	80	3	0	5	3	12	0	0	2	1	0	169	1886
12:15 PM	2	54	1	0	2	62	3	0	2	2	2	0	1	0	0	0	131	1880
12:20 PM	3	73	2	0	5	86	3	0	2	5	5	0	1	1	1	0	187	1895
12:25 PM	2	47	2	0	0	62	1	0	3	3	3	0	2	4	1	0	130	1859
12:30 PM	2	70	2	0	5	55	5	0	2	5	2	0	0	3	0	0	151	1862
12:35 PM	4	68	2	0	1	55	2	0	6	4	7	0	2	4	1	0	156	1877
12:40 PM	3	68	2	0	2	86	7	0	3	5	5	0	0	6	2	0	189	1915
12:45 PM	9	58	0	0	0	67	2	1	5	2	6	0	2	2	3	0	157	1922
12:50 PM	11	46	1	0	3	66	5	0	3	2	6	0	0	2	1	0	146	1906
12:55 PM	5	53	2	0	1	65	2	0	6	3	4	0	2	3	1	0	147	1894
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	64	776	16	0	12	832	44	4	56	44	72	0	16	48	24	0	2008	
Heavy Trucks	0	28	0		0	24	4		0	0	0		0	0	0		56	
Buses																		
Pedestrians	0	0				4				0				4			8	
Bicycles	0	0			0	0	0		0	0	0		0	0	0		0	
Scooters																		

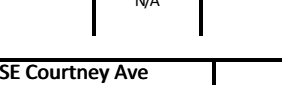
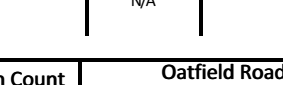
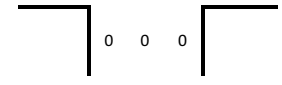
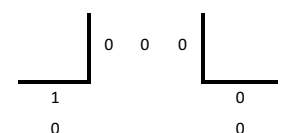
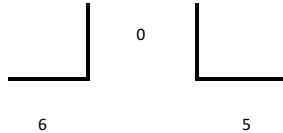
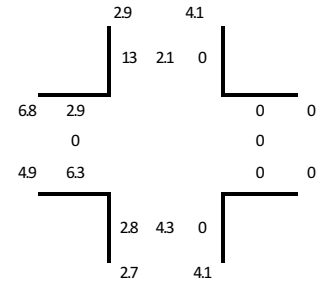
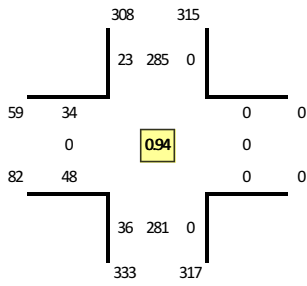
Comments:

LOCATION: Oatfield Road -- SE Courtney Ave
 CITY/STATE: Oak Grove, OR

100-yr, 24-hr

QC JOB #: 16420003
 DATE: Thu, Dec 7 2023

Peak-Hour: 11:55 AM -- 12:55 PM
 Peak 15-Min: 11:55 AM -- 12:10 PM



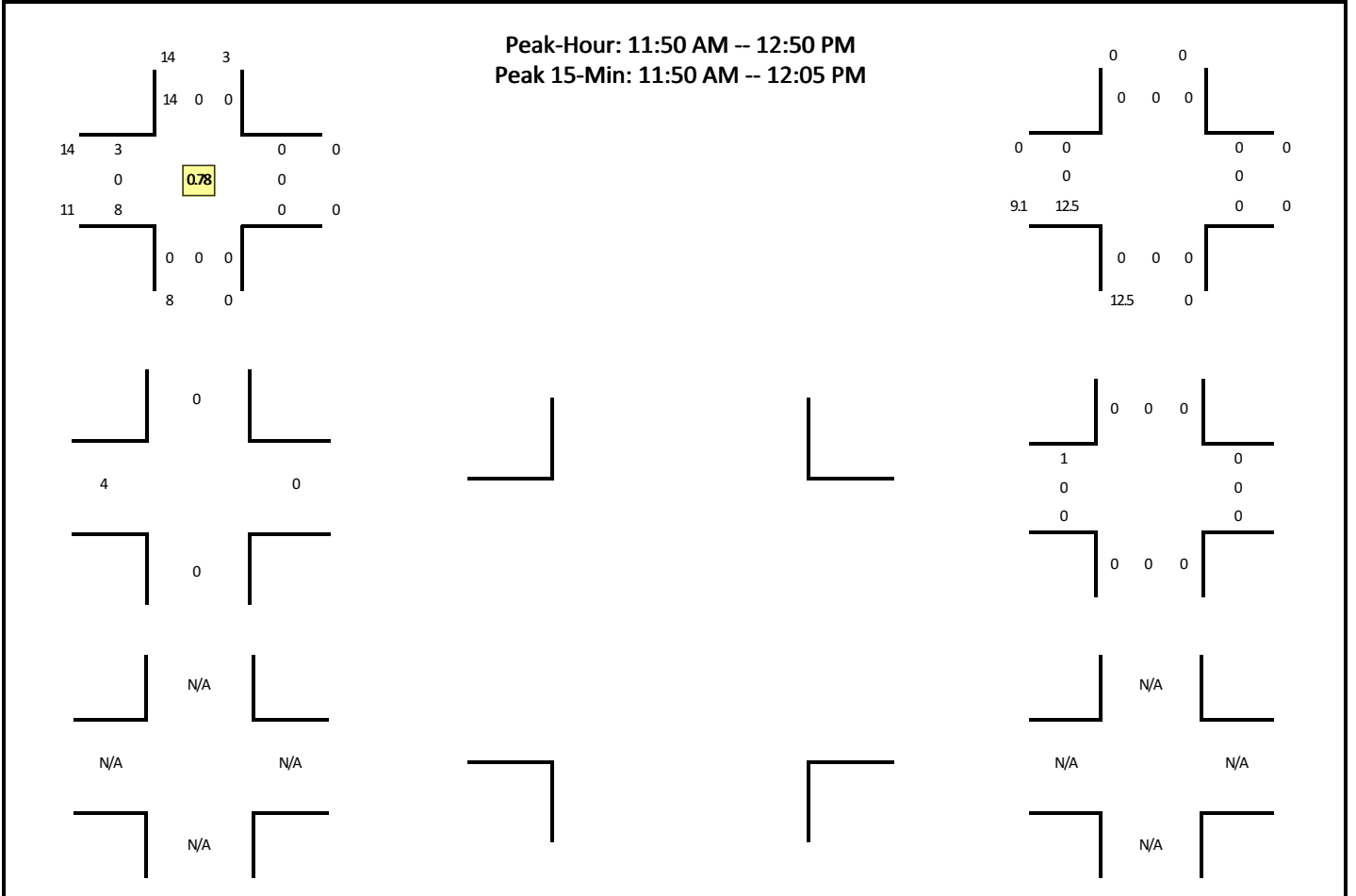
5-Min Count Period Beginning At	Oatfield Road (Northbound)				Oatfield Road (Southbound)				SE Courtney Ave (Eastbound)				SE Courtney Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	1	22	0	0	0	21	4	0	0	0	4	0	0	0	0	0	52	
11:05 AM	2	20	0	0	0	15	3	0	1	0	1	0	0	0	0	0	42	
11:10 AM	3	21	0	0	0	26	2	0	3	0	1	0	0	0	0	0	56	
11:15 AM	3	27	0	0	0	19	5	0	4	0	2	0	0	0	0	0	60	
11:20 AM	2	19	0	0	0	18	2	0	1	0	4	0	0	0	0	0	46	
11:25 AM	2	18	0	0	0	19	3	0	1	0	4	0	0	0	0	0	47	
11:30 AM	5	24	0	0	0	18	1	0	2	0	4	0	0	0	0	0	54	
11:35 AM	0	21	0	0	0	14	3	0	2	0	2	0	0	0	0	0	42	
11:40 AM	2	25	0	0	0	24	0	0	0	0	5	0	0	0	0	0	56	
11:45 AM	3	19	0	0	0	29	2	0	1	0	2	0	0	0	0	0	56	
11:50 AM	5	25	0	0	0	17	2	0	3	0	1	0	0	0	0	0	53	
11:55 AM	2	21	0	0	0	23	6	0	2	0	5	0	0	0	0	0	59	623
12:00 PM	6	27	0	0	0	31	0	0	3	0	1	0	0	0	0	0	68	639
12:05 PM	4	26	0	0	0	21	2	0	5	0	3	0	0	0	0	0	61	658
12:10 PM	2	17	0	0	0	22	1	0	4	0	2	0	0	0	0	0	48	650
12:15 PM	0	23	0	0	0	17	0	0	1	0	6	0	0	0	0	0	47	637
12:20 PM	1	26	0	0	0	26	1	0	4	0	8	0	0	0	0	0	66	657
12:25 PM	5	22	0	0	0	25	3	0	1	0	2	0	0	0	0	0	58	668
12:30 PM	2	21	0	0	0	23	1	0	2	0	7	0	0	0	0	0	56	670
12:35 PM	3	30	0	0	0	23	4	0	2	0	3	0	0	0	0	0	65	693
12:40 PM	4	21	0	0	0	21	3	0	7	0	5	0	0	0	0	0	61	698
12:45 PM	4	27	0	0	0	29	1	0	1	0	0	0	0	0	0	0	62	704
12:50 PM	3	20	0	0	0	24	1	0	2	0	6	0	0	0	0	0	56	707
12:55 PM	2	26	0	0	0	23	3	0	1	0	3	0	0	0	0	0	58	706
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	48	296	0	0	0	300	32	0	40	0	36	0	0	0	0	0	752	
Heavy Trucks	4	4	0	0	0	8	8	0	4	0	0	0	0	0	0	0	28	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles		0				0	0			0	0			0	0		4	
Scooters																		

Comments:

LOCATION: SE McLoughlin Blvd -- Site Access #4
 CITY/STATE: Oak Grove, OR

100-yr, 24-hr

QC JOB #: 16420009
 DATE: Thu, Dec 7 2023



5-Min Count Period Beginning At	SE McLoughlin Blvd (Northbound)				SE McLoughlin Blvd (Southbound)				Site Access #4 (Eastbound)				Site Access #4 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	3	
11:05 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
11:10 AM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	
11:15 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	
11:20 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	3	
11:25 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	
11:30 AM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	
11:35 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	
11:40 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	
11:45 AM	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	3	
11:50 AM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	
11:55 AM	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	3	30
12:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	29
12:05 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	29
12:10 PM	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	0	4	31
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29
12:20 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	28
12:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
12:30 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	25
12:35 PM	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	3	25
12:40 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	25
12:45 PM	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	3	25
12:50 PM	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	3	25
12:55 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	23
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	0	0	24	0	4	0	4	0	0	0	0	0	32	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

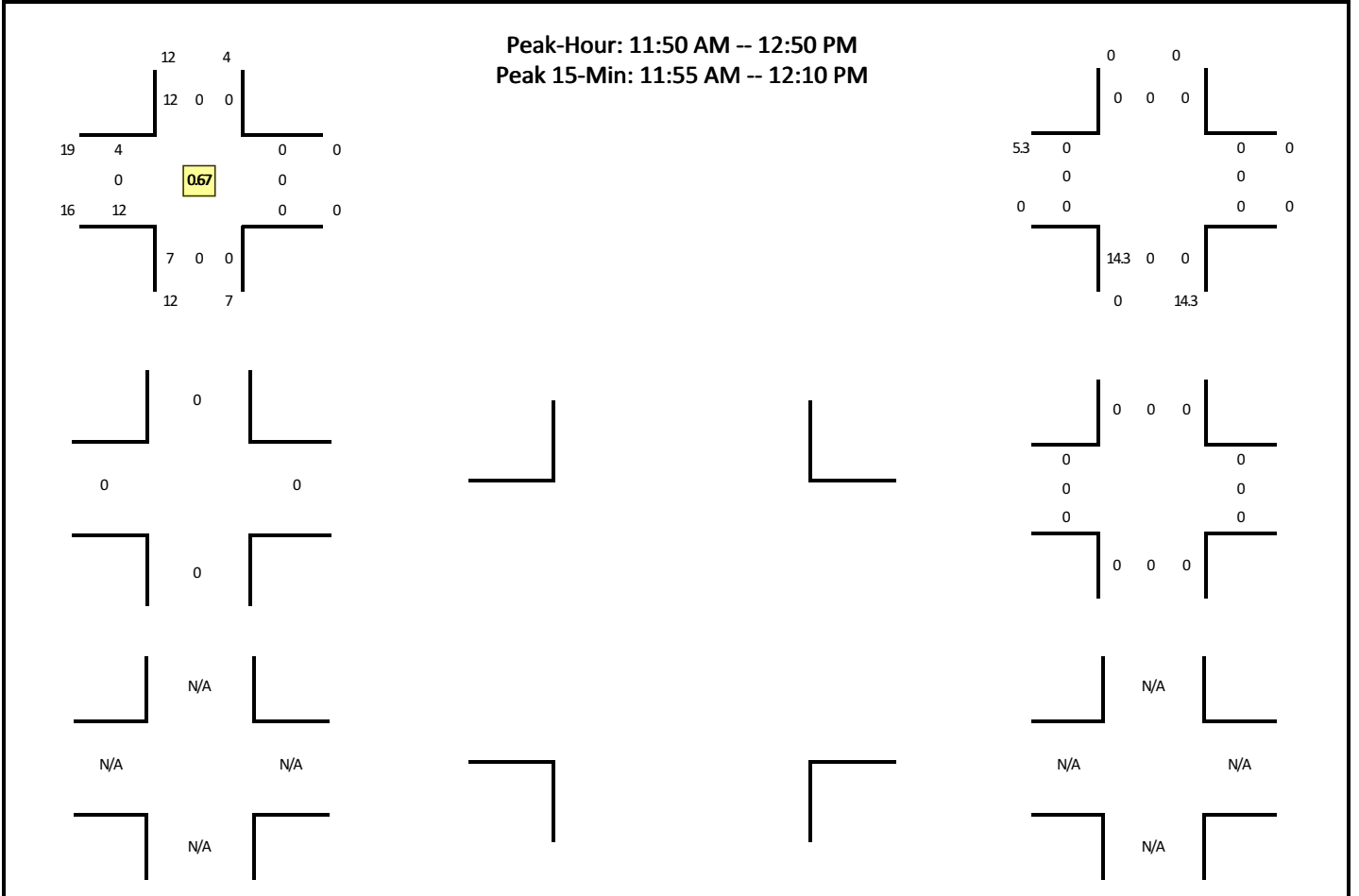
Comments:

LOCATION: SE McLoughlin Blvd -- Site Access #3
CITY/STATE: Oak Grove, OR

100-yr, 24-hr

QC JOB #: 16420011
DATE: Thu, Dec 7 2023

Peak-Hour: 11:50 AM -- 12:50 PM
Peak 15-Min: 11:55 AM -- 12:10 PM



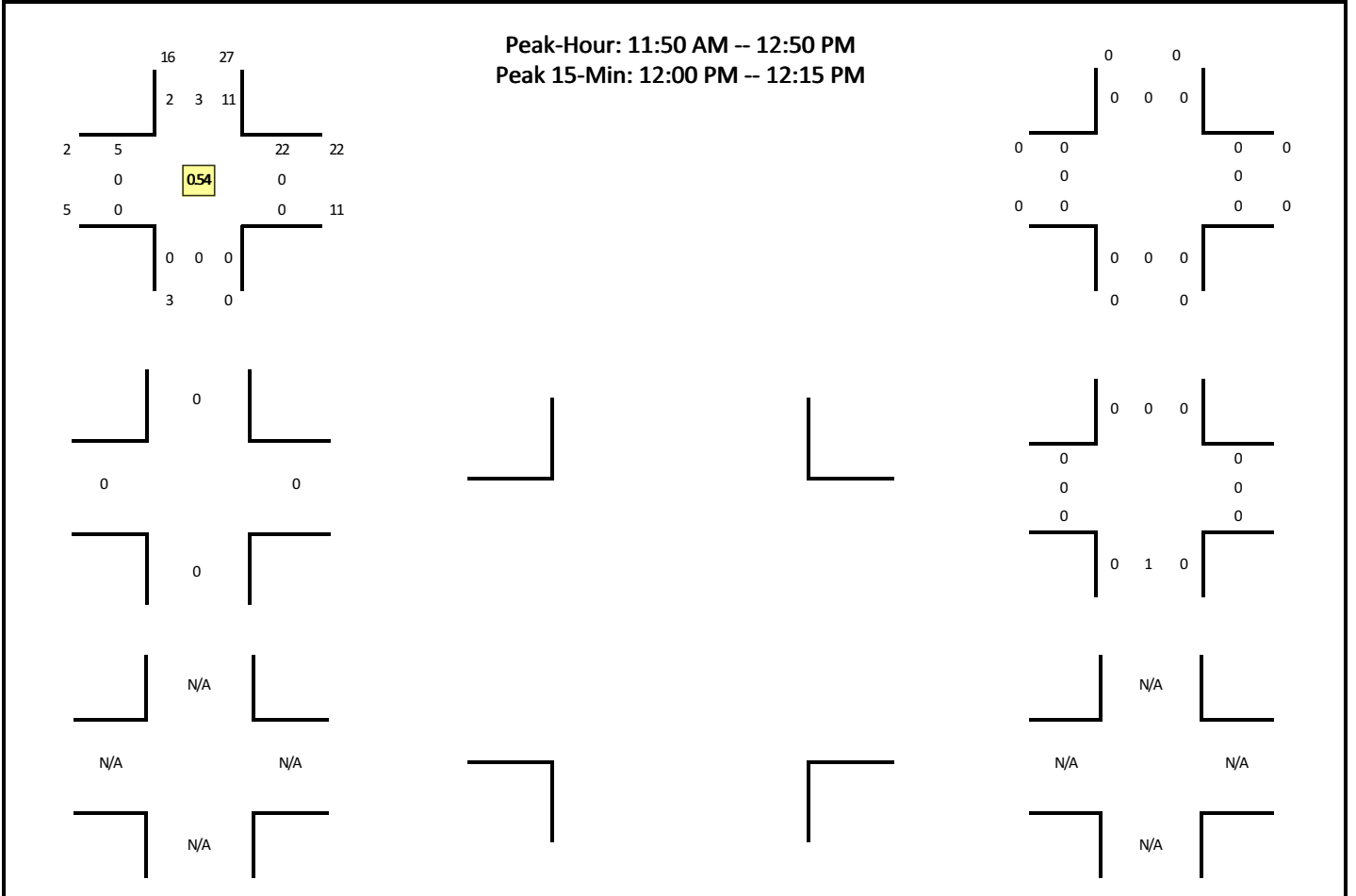
5-Min Count Period Beginning At	SE McLoughlin Blvd (Northbound)				SE McLoughlin Blvd (Southbound)				Site Access #3 (Eastbound)				Site Access #3 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
11:05 AM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	
11:10 AM	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3	
11:15 AM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	
11:20 AM	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	
11:25 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	
11:30 AM	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	
11:35 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
11:40 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
11:45 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	
11:50 AM	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	
11:55 AM	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3	25
12:00 PM	1	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0	5	29
12:05 PM	1	0	0	0	0	0	2	0	1	0	1	0	0	0	0	0	5	30
12:10 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	29
12:15 PM	1	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	4	31
12:20 PM	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	3	32
12:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
12:30 PM	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	30
12:35 PM	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	4	33
12:40 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	34
12:45 PM	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	35
12:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33
12:55 PM	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	4	34
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	12	0	0	0	0	0	28	0	4	0	8	0	0	0	0	0	52	
Heavy Trucks	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: Site Access #2 -- SE Courtney Ave
 CITY/STATE: Oak Grove, OR

100-yr, 24-hr

QC JOB #: 16420007
 DATE: Thu, Dec 7 2023



5-Min Count Period Beginning At	Site Access #2 (Northbound)				Site Access #2 (Southbound)				SE Courtney Ave (Eastbound)				SE Courtney Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	
11:05 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	3	
11:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
11:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	2	
11:20 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	2	
11:25 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	2	
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:35 AM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	1	0	5	
11:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
11:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	3	
11:50 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3	0	5	
11:55 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	28
12:00 PM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3	0	5	31
12:05 PM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	4	0	6	34
12:10 PM	0	0	0	0	4	1	0	0	0	0	0	0	0	0	4	0	9	42
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40
12:20 PM	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1	0	4	42
12:25 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	3	43
12:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	44
12:35 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	41
12:40 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0	4	44
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	43
12:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38
12:55 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	37
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	24	4	0	0	8	0	0	0	0	0	44	0	80	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

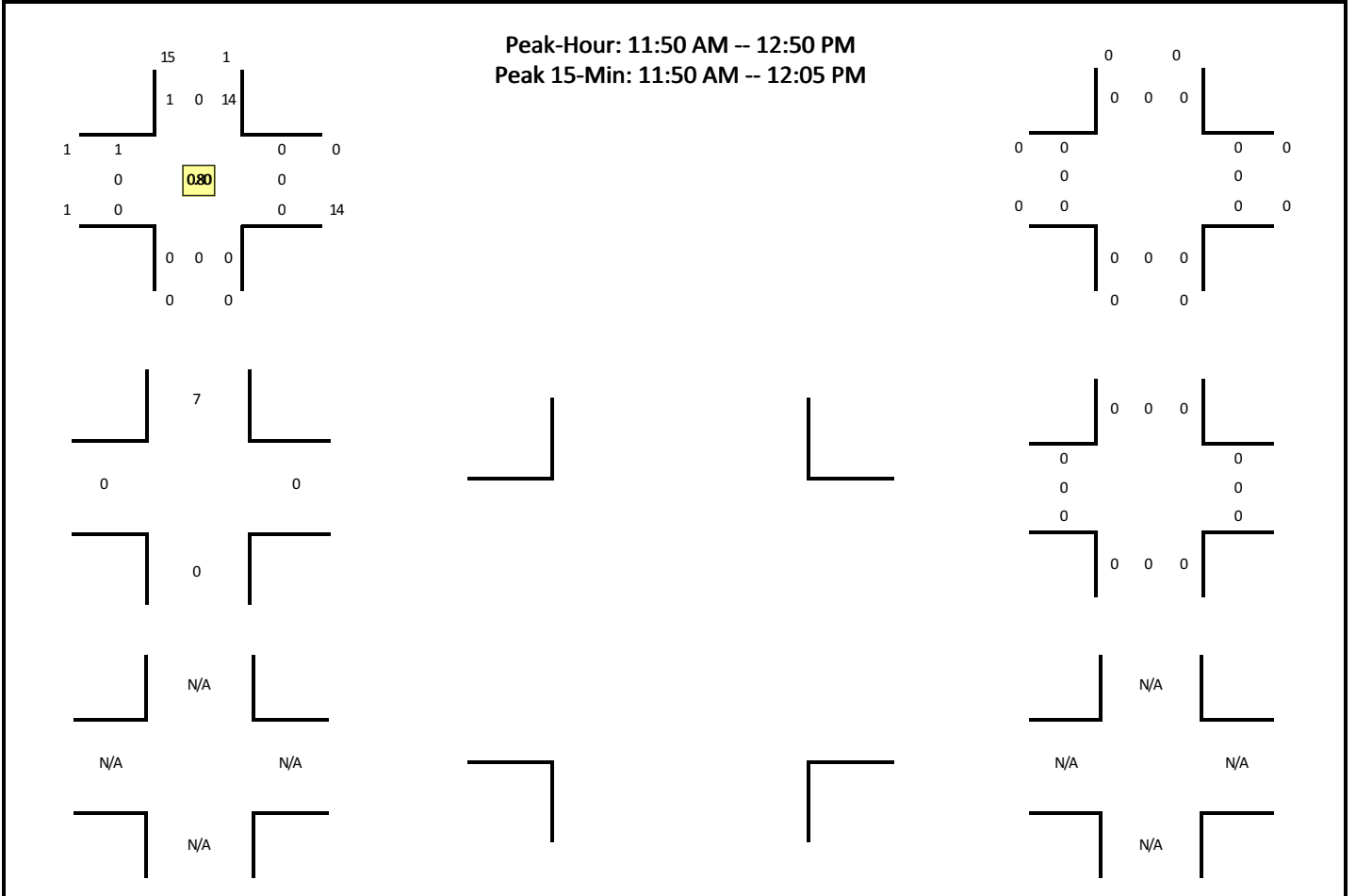
Comments:

LOCATION: Site Access #1 -- SE Courtney Ave
 CITY/STATE: Oak Grove, OR

100-yr, 24-hr

QC JOB #: 16420005
 DATE: Thu, Dec 7 2023

Peak-Hour: 11:50 AM -- 12:50 PM
 Peak 15-Min: 11:50 AM -- 12:05 PM



5-Min Count Period Beginning At	Site Access #1 (Northbound)				Site Access #1 (Southbound)				SE Courtney Ave (Eastbound)				SE Courtney Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:05 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
11:10 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
11:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:25 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
11:30 AM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
11:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:40 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:50 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
11:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	3
12:05 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
12:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
12:20 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
12:25 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
12:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
12:35 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
12:40 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
12:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:55 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	0	0	0	0	16	0	0	0	4	0	0	0	0	0	0	0	20	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Buses																		
Pedestrians		0				8				0				0			8	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

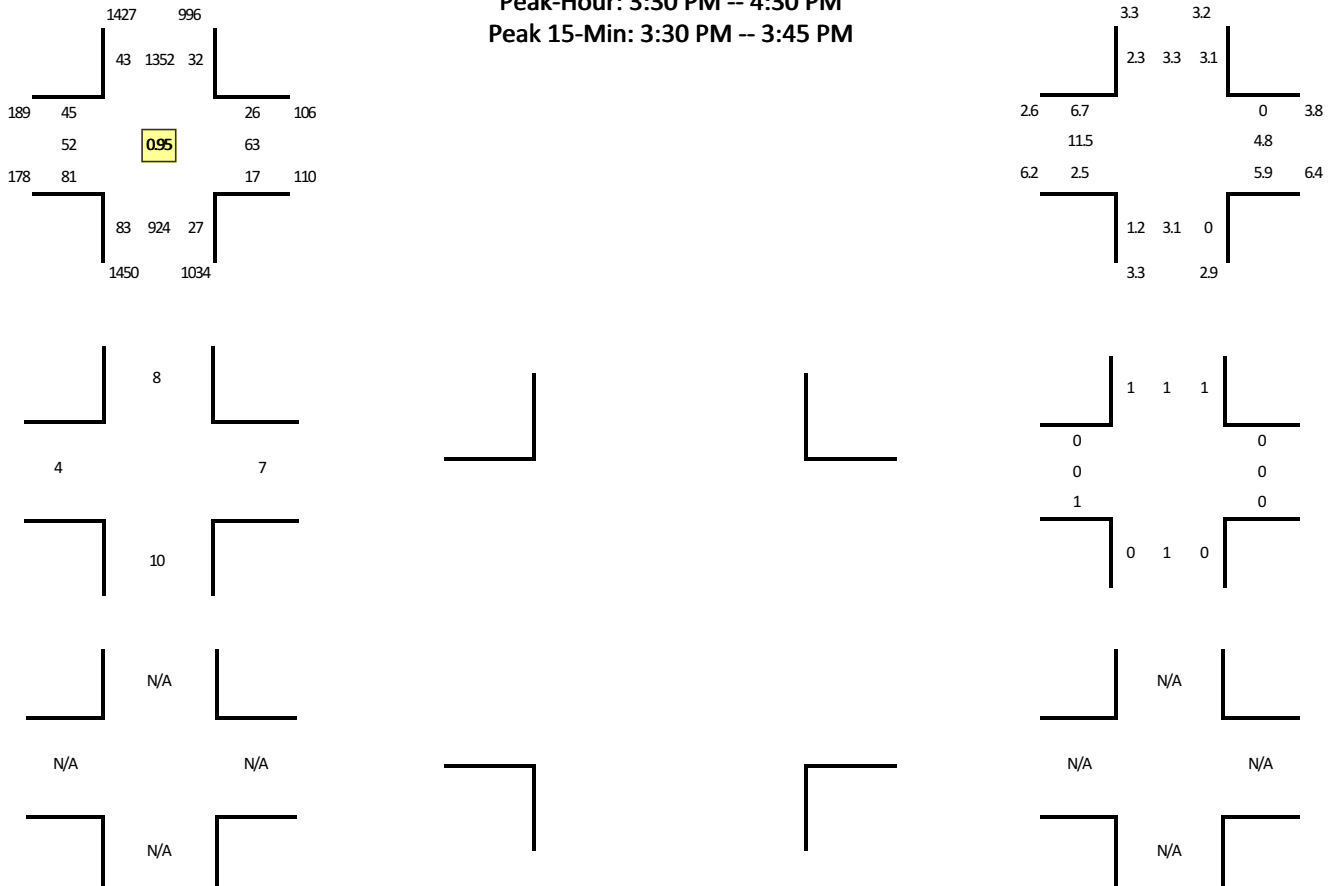
Comments:

LOCATION: SE McLoughlin Blvd -- SE Courtney Ave
 CITY/STATE: Oak Grove, OR

100-yr, 24-hr

QC JOB #: 16420013
 DATE: Thu, Dec 7 2023

Peak-Hour: 3:30 PM -- 4:30 PM
 Peak 15-Min: 3:30 PM -- 3:45 PM



5-Min Count Period Beginning At	SE McLoughlin Blvd (Northbound)				SE McLoughlin Blvd (Southbound)				SE Courtney Ave (Eastbound)				SE Courtney Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	4	77	2	0	1	144	4	0	8	2	9	0	0	7	4	0	262	
3:35 PM	12	85	4	0	2	111	3	1	4	6	8	0	0	3	2	0	241	
3:40 PM	9	79	1	0	4	99	4	0	7	6	5	0	1	6	2	0	223	
3:45 PM	7	77	2	0	3	117	4	0	0	8	5	0	3	10	0	0	236	
3:50 PM	5	77	1	0	6	97	2	0	4	5	14	0	2	6	3	0	222	
3:55 PM	5	94	1	0	3	106	3	0	4	5	4	0	0	4	2	0	231	
4:00 PM	4	75	1	0	0	109	7	0	3	3	11	0	0	3	3	0	219	
4:05 PM	5	87	2	0	5	135	4	0	6	5	0	0	2	3	1	0	255	
4:10 PM	11	79	3	0	1	114	4	0	0	3	8	0	2	7	2	0	234	
4:15 PM	10	62	4	0	2	97	2	0	1	2	6	0	3	6	3	0	198	
4:20 PM	4	64	4	0	3	103	4	0	6	3	7	0	2	3	1	0	204	
4:25 PM	7	68	2	0	1	120	2	0	2	4	4	0	2	5	3	0	220	2745
4:30 PM	4	75	1	0	4	103	8	0	2	7	5	0	0	7	1	0	217	2700
4:35 PM	12	76	1	0	2	84	4	0	7	4	3	0	1	11	1	0	206	2665
4:40 PM	3	78	3	0	0	142	4	0	4	7	8	0	0	6	0	0	255	2697
4:45 PM	8	78	2	0	5	100	7	0	7	3	4	0	2	4	0	0	220	2681
4:50 PM	5	64	1	0	4	109	7	0	1	9	7	0	0	12	0	0	219	2678
4:55 PM	5	77	2	0	1	113	7	0	4	6	3	0	1	5	2	0	226	2673
5:00 PM	3	62	4	0	2	128	6	0	2	5	5	0	2	3	1	0	223	2677
5:05 PM	5	93	0	0	2	124	7	0	2	7	3	0	4	9	1	0	257	2679
5:10 PM	6	59	1	0	4	112	7	0	5	4	7	0	0	4	1	0	210	2655
5:15 PM	3	68	0	0	2	110	4	0	9	6	0	0	4	8	2	0	216	2673
5:20 PM	3	84	0	0	4	102	8	0	4	2	8	0	1	12	0	0	228	2697
5:25 PM	5	75	2	0	2	104	6	0	3	4	4	0	1	5	1	0	212	2689
5:30 PM	4	56	1	0	2	103	4	0	4	8	5	0	0	9	3	0	199	2671
5:35 PM	6	71	2	0	4	117	4	0	4	3	10	0	3	8	2	0	234	2699
5:40 PM	6	93	2	0	4	109	7	0	2	3	6	0	2	10	1	0	245	2689
5:45 PM	4	62	0	0	4	103	3	0	5	3	3	0	2	5	2	0	196	2665
5:50 PM	4	76	1	0	5	87	9	0	8	3	4	0	2	6	4	0	209	2655
5:55 PM	5	74	2	0	4	109	8	0	5	5	4	0	2	5	0	0	223	2652
6:00 PM	8	67	4	0	3	83	6	0	4	3	5	0	1	5	2	0	191	2620
6:05 PM	5	69	1	0	4	94	4	0	8	2	5	0	1	1	0	0	194	2557
6:10 PM	4	71	1	0	0	70	4	0	3	6	12	0	1	8	0	0	180	2527
6:15 PM	9	78	2	0	3	107	8	0	2	0	6	0	0	1	0	0	216	2527
6:20 PM	5	56	0	0	3	62	4	0	5	4	2	0	0	5	3	0	149	2448
6:25 PM	6	53	1	0	3	74	2	0	5	3	4	0	1	2	1	0	155	2391

Autodesk Storm and Sanitary Analysis Output

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	100	964	28	0	28	1416	44	4	76	56	88	0	4	64	32	0	2904
Heavy Trucks	0	16	0		0	48	0		8	12	8		0	4	0		96
Buses																	
Pedestrians		8				8				4				4			24
Bicycles	0	4	0		0	4	0		0	0	0		0	0	0		8
Scooters																	

Comments:

Report generated on 12/15/2023 3:58 PM

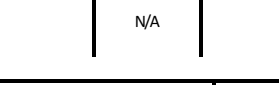
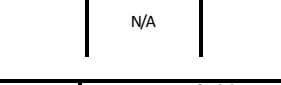
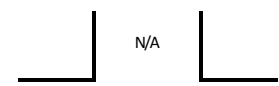
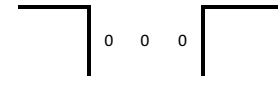
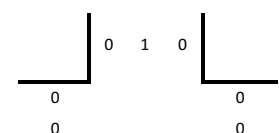
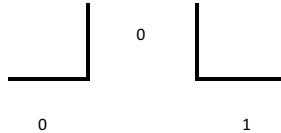
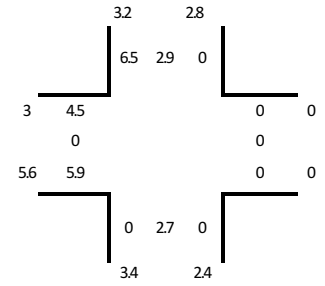
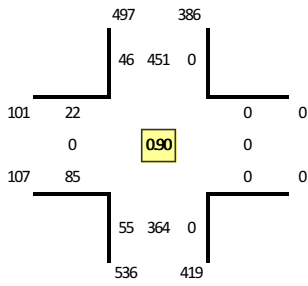
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Oatfield Road -- SE Courtney Ave
 CITY/STATE: Oak Grove, OR

100-yr, 24-hr

QC JOB #: 16420014
 DATE: Thu, Dec 7 2023

Peak-Hour: 3:35 PM -- 4:35 PM
 Peak 15-Min: 3:40 PM -- 3:55 PM



5-Min Count Period Beginning At	Oatfield Road (Northbound)				Oatfield Road (Southbound)				SE Courtney Ave (Eastbound)				SE Courtney Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	4	24	0	0	0	24	4	0	1	0	3	0	0	0	0	0	60	
3:35 PM	4	28	0	0	0	40	4	0	3	0	8	0	0	0	0	0	87	
3:40 PM	4	39	0	0	0	43	5	0	3	0	7	0	0	0	0	0	101	
3:45 PM	6	32	0	0	0	38	5	0	0	0	10	0	0	0	0	0	91	
3:50 PM	5	33	0	0	0	37	3	0	2	0	13	0	0	0	0	0	93	
3:55 PM	5	27	0	0	0	34	2	0	5	0	4	0	0	0	0	0	77	
4:00 PM	5	32	0	0	0	34	3	0	0	0	3	0	0	0	0	0	77	
4:05 PM	4	28	0	0	0	42	4	0	1	0	10	0	0	0	0	0	89	
4:10 PM	3	30	0	0	0	32	7	0	4	0	3	0	0	0	0	0	79	
4:15 PM	7	25	0	0	0	37	5	0	1	0	7	0	0	0	0	0	82	
4:20 PM	4	31	0	0	0	32	2	0	1	0	5	0	0	0	0	0	75	
4:25 PM	6	27	0	0	0	42	3	0	1	0	7	0	0	0	0	0	86	997
4:30 PM	2	32	0	0	0	40	3	0	1	0	8	0	0	0	0	0	86	1023
4:35 PM	6	23	0	0	0	40	8	0	4	0	4	0	0	0	0	0	85	1021
4:40 PM	2	21	0	0	0	32	5	0	2	0	6	0	0	0	0	0	68	988
4:45 PM	2	30	0	0	0	41	3	0	6	0	7	0	0	0	0	0	89	986
4:50 PM	4	23	0	0	0	36	8	0	3	0	13	0	0	0	0	0	87	980
4:55 PM	3	23	0	0	0	46	4	0	2	0	6	0	0	0	0	0	84	987
5:00 PM	6	33	0	0	0	29	4	0	4	0	6	0	0	0	0	0	82	992
5:05 PM	3	24	0	0	0	36	5	0	6	0	6	0	0	0	0	0	80	983
5:10 PM	4	30	0	0	0	34	8	0	3	0	2	0	0	0	0	0	81	985
5:15 PM	2	23	0	0	0	39	6	0	3	0	8	0	0	0	0	0	81	984
5:20 PM	6	25	0	0	0	37	5	0	0	0	6	0	0	0	0	0	79	988
5:25 PM	1	26	0	0	0	34	6	0	3	0	5	0	0	0	0	0	75	977
5:30 PM	7	39	0	0	0	37	5	0	4	0	5	0	0	0	0	0	97	988
5:35 PM	6	27	0	0	0	31	5	0	6	0	4	0	0	0	0	0	79	982
5:40 PM	9	37	0	0	0	27	5	0	2	0	8	0	0	0	0	0	88	1002
5:45 PM	4	21	0	0	0	29	8	0	2	0	7	0	0	0	0	0	71	984
5:50 PM	4	19	0	0	0	30	5	0	2	0	6	0	0	0	0	0	66	963
5:55 PM	4	24	0	0	0	45	5	0	2	0	7	0	0	0	0	0	87	966
6:00 PM	2	35	0	0	0	30	2	0	5	0	6	0	0	0	0	0	80	964
6:05 PM	1	31	0	0	0	27	1	0	2	0	3	1	0	0	0	0	66	950
6:10 PM	4	23	0	0	0	26	3	0	3	0	1	0	0	0	0	0	60	929
6:15 PM	2	15	0	0	0	32	0	0	1	0	6	0	0	0	0	0	56	904
6:20 PM	4	29	0	0	0	15	2	0	2	0	3	0	0	0	0	0	55	880
6:25 PM	1	20	0	0	0	20	4	0	1	0	8	0	0	0	0	0	54	859

Autodesk Storm and Sanitary Analysis Output

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	60	416	0	0	0	472	52	0	20	0	120	0	0	0	0	0	1140
Heavy Trucks	0	8	0	0	0	12	4	0	4	0	12	0	0	0	0	0	40
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

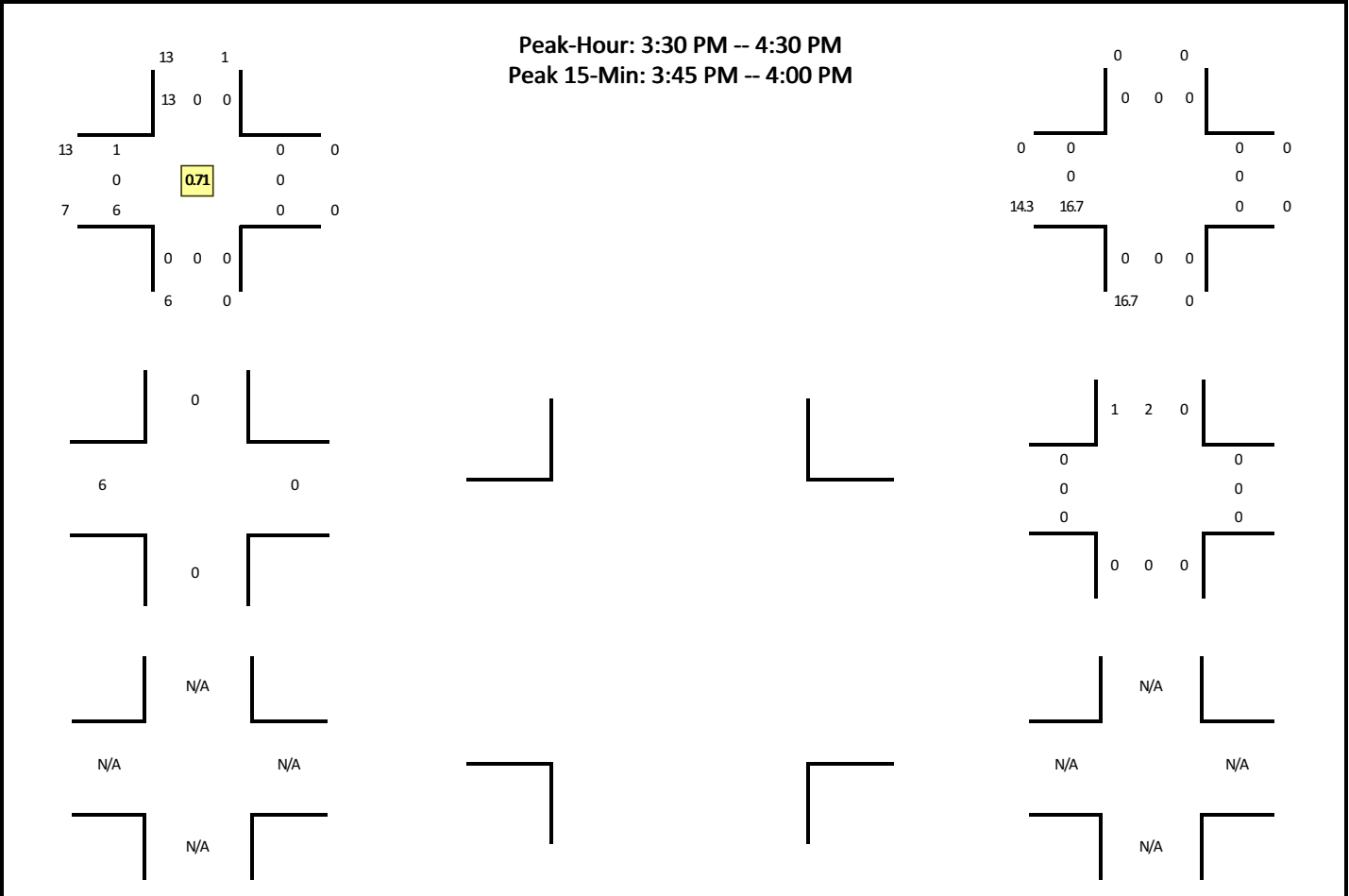
Report generated on 12/15/2023 3:58 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: SE McLoughlin Blvd -- Site Access #4
 CITY/STATE: Oak Grove, OR

QC JOB #: 16420017
 DATE: Thu, Dec 7 2023

Peak-Hour: 3:30 PM -- 4:30 PM
 Peak 15-Min: 3:45 PM -- 4:00 PM



5-Min Count Period Beginning At	SE McLoughlin Blvd (Northbound)				SE McLoughlin Blvd (Southbound)				Site Access #4 (Eastbound)				Site Access #4 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	
3:35 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
3:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	
3:50 PM	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	4	
3:55 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
4:05 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	
4:10 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	
4:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
4:20 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	
4:25 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	20
4:30 PM	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	3	21
4:35 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	21
4:40 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	23
4:45 PM	2	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	5	26
4:50 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	23
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	23
5:05 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	23
5:10 PM	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3	23
5:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	23
5:20 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	22
5:25 PM	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3	24
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	22
5:35 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	22
5:40 PM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	22
5:45 PM	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	4	21
5:50 PM	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3	23
5:55 PM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	27
6:00 PM	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	3	28
6:05 PM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	28
6:10 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	26
6:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	26
6:20 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	27
6:25 PM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	26

Autodesk Storm and Sanitary Analysis Output

Peak 15-Min Flowrates	Proposed Conditions Model																Total
	Northbound				Southbound				Eastbound				Westbound				
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	20	0	0	0	8	0	0	0	0	0	28
Heavy Trucks	0	0	0		0	0	0		0	0	4		0	0	0		4
Buses																	
Pedestrians		0				0				16				0			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	
<i>Comments:</i>																	

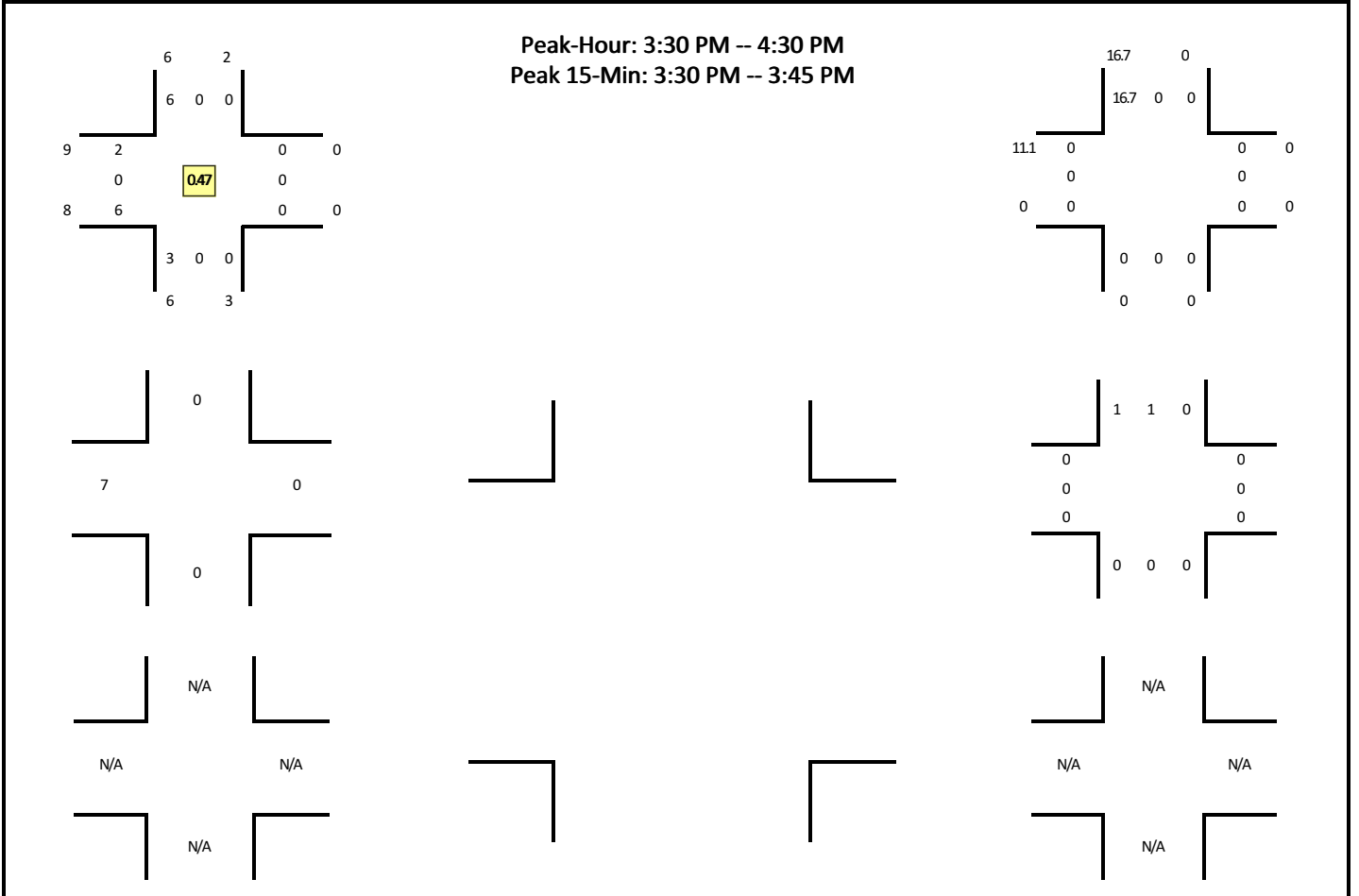
Report generated on 1/21/2024 1:08 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: SE McLoughlin Blvd -- Site Access #3
 CITY/STATE: Oak Grove, OR

QC JOB #: 16420018
 DATE: Thu, Dec 7 2023

Peak-Hour: 3:30 PM -- 4:30 PM
 Peak 15-Min: 3:30 PM -- 3:45 PM



5-Min Count Period Beginning At	SE McLoughlin Blvd (Northbound)				SE McLoughlin Blvd (Southbound)				Site Access #3 (Eastbound)				Site Access #3 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
3:35 PM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	
3:40 PM	0	0	0	0	0	0	2	0	1	0	3	0	0	0	0	0	6	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:55 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:05 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:15 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
4:20 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
4:25 PM	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	3	17
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	17
4:35 PM	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	3	18
4:40 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	13
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	14
4:50 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	16
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
5:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	16
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	14
5:20 PM	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	0	4	17
5:25 PM	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	3	17
5:30 PM	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	4	20
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
5:40 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	17
5:45 PM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	18
5:50 PM	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	4	20
5:55 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	21
6:00 PM	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3	23
6:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
6:10 PM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	25
6:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	25
6:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
6:25 PM	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	4	22

Autodesk Storm and Sanitary Analysis Output

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	0	0	0	0	8	0	4	0	20	0	0	0	0	0	36
Heavy Trucks	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4
Buses																	
Pedestrians		0				0				12				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	
<i>Comments:</i>																	

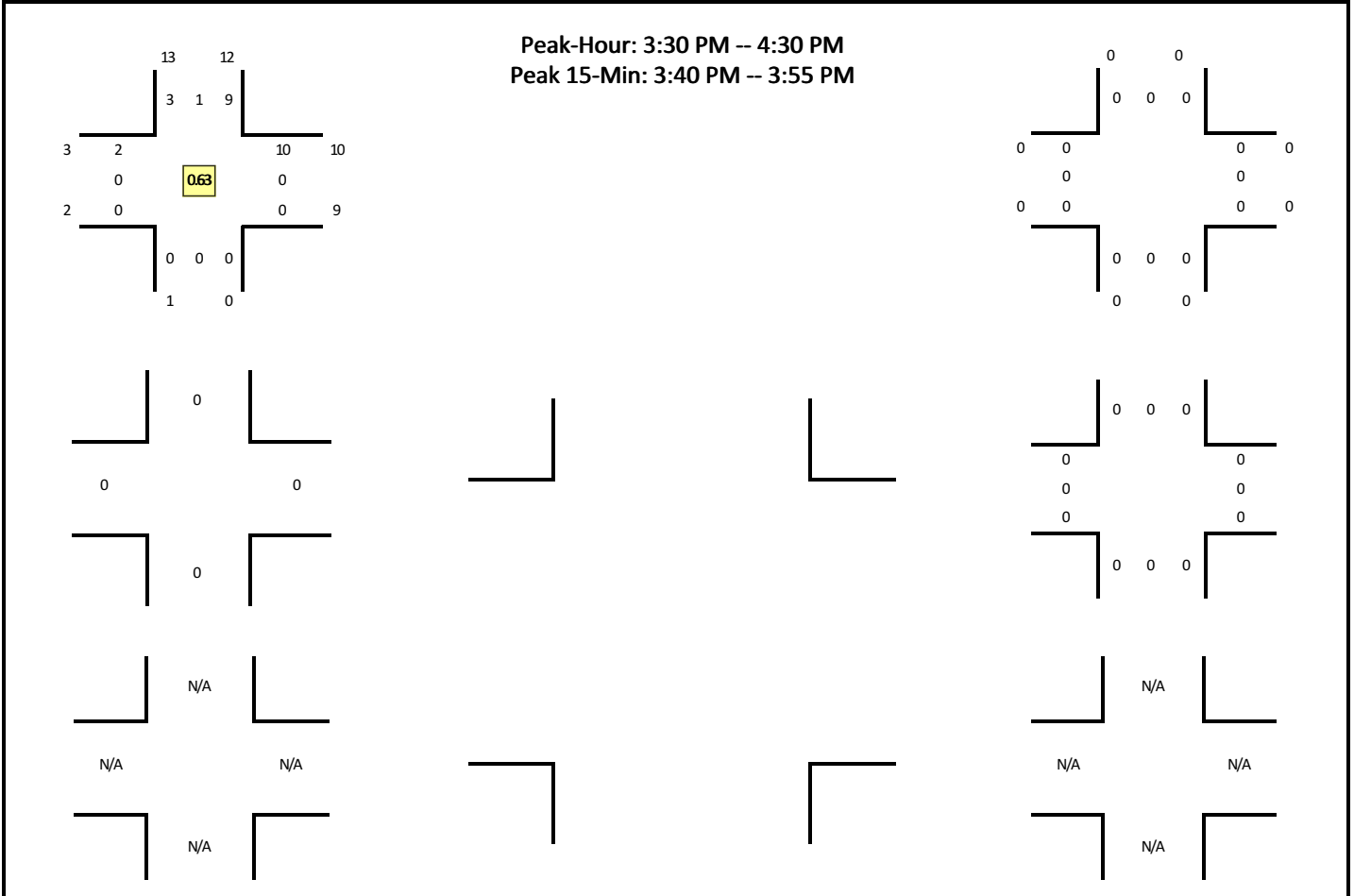
Report generated on 1/21/2024 1:08 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Site Access #2 -- SE Courtney Ave
CITY/STATE: Oak Grove, OR

100-yr, 24-hr

QC JOB #: 16420016
DATE: Thu, Dec 7 2023



5-Min Count Period Beginning At	Site Access #2 (Northbound)				Site Access #2 (Southbound)				SE Courtney Ave (Eastbound)				SE Courtney Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	
3:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	
3:40 PM	0	0	0	0	1	0	2	0	0	0	0	0	0	0	2	0	5	
3:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
3:50 PM	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	4	
3:55 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	
4:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	2	
4:05 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
4:15 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:25 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2	25
4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	25
4:35 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	4	27
4:40 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	3	25
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	25
4:50 PM	0	0	0	0	0	1	2	0	0	0	0	0	0	0	3	0	6	27
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	26
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	3	27
5:05 PM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	27
5:10 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	3	29
5:15 PM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	0	4	31
5:20 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	33
5:25 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	32
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	31
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
5:40 PM	0	0	0	0	2	0	0	0	1	0	0	0	0	0	1	0	4	28
5:45 PM	0	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0	4	31
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	26
5:55 PM	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	3	28
6:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4	0	5	30
6:05 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	4	32
6:10 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	2	31
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
6:20 PM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	27
6:25 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	29

Autodesk Storm and Sanitary Analysis Output

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	20	0	8	0	4	0	0	0	0	0	8	0	40
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/21/2024 1:07 PM

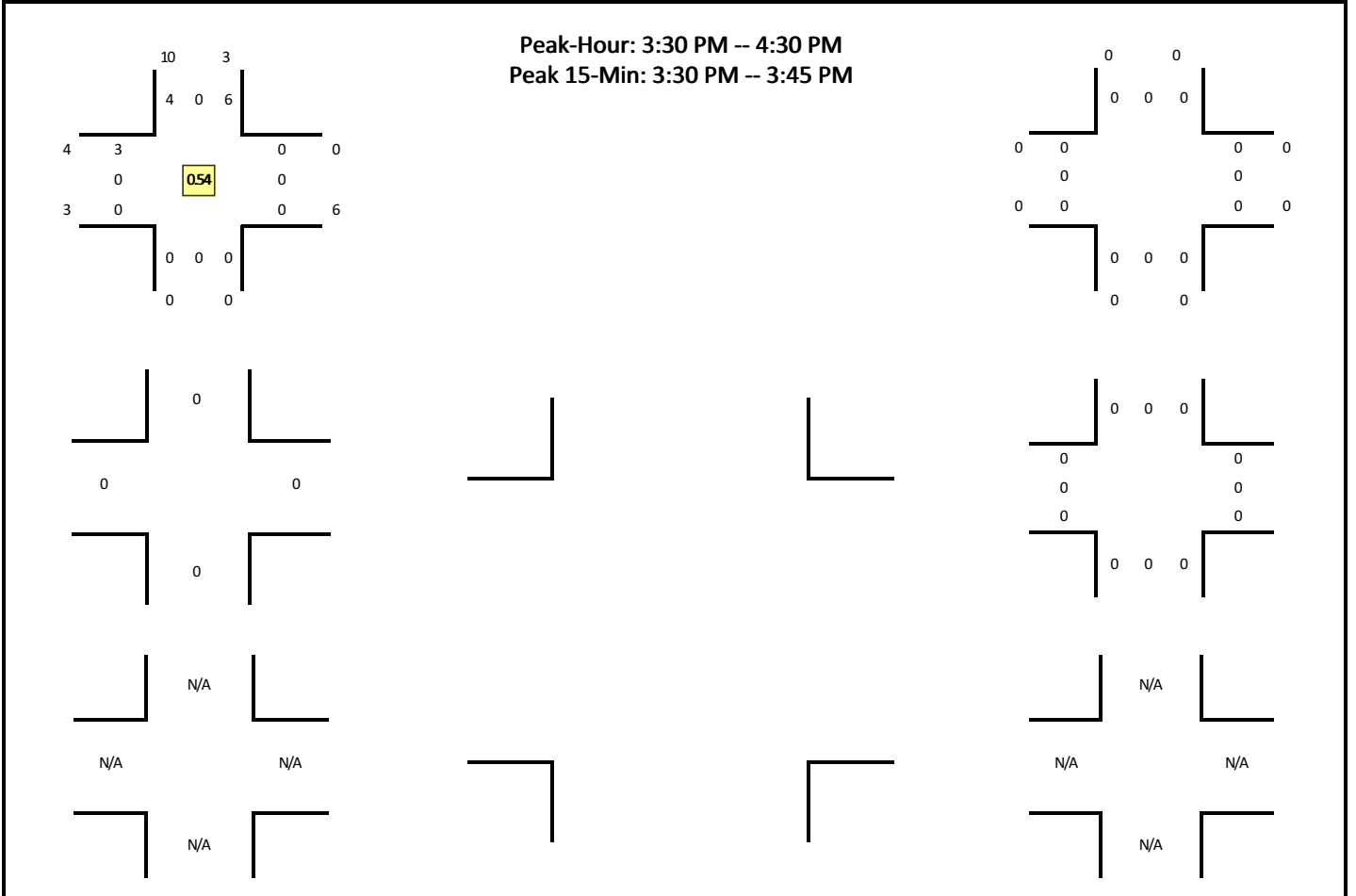
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Site Access #1 -- SE Courtney Ave
 CITY/STATE: Oak Grove, OR

100-yr, 24-hr

QC JOB #: 16420015
 DATE: Thu, Dec 7 2023

Peak-Hour: 3:30 PM -- 4:30 PM
 Peak 15-Min: 3:30 PM -- 3:45 PM



5-Min Count Period Beginning At	Site Access #1 (Northbound)				Site Access #1 (Southbound)				SE Courtney Ave (Eastbound)				SE Courtney Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	
3:35 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	
3:40 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	
3:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
3:50 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	
3:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	
4:05 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	
4:20 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
4:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	7
4:50 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	7
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:35 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	3
5:40 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
6:05 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	4
6:10 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	5
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
6:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
6:25 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	7

Autodesk Storm and Sanitary Analysis Output

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	16	0	4	0	4	0	0	0	0	0	0	0	0	24
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses																		
Pedestrians		0				0				0				0				0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0			0
Scooters																		0

Comments:

Report generated on 1/21/2024 1:07 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Appendix C:
Existing Traffic Conditions
Analysis Worksheets

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 1: 1 EX_MidDay

Intersection Level Of Service Report
Intersection 1: McLoughlin Blvd/Courtney Ave

Control Type:	Signalized	Delay (sec / veh):	10.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.486

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	13.00	12.00	14.00	12.00	12.00	14.00	10.00	12.00	12.00	11.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	160.00	100.00	110.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukee CFA

Scenario 1: 1 EX_MidDay

Volumes

Name												
Base Volume Input [veh/h]	58	732	17	22	824	46	43	43	68	13	37	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	6.00	0.00	4.00	7.00	2.00	5.00	1.00	0.00	8.00	5.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	17	0	0	10
Total Hourly Volume [veh/h]	58	732	17	22	824	46	43	43	51	13	37	9
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	191	4	6	215	12	11	11	13	3	10	2
Total Analysis Volume [veh/h]	60	763	18	23	858	48	45	45	53	14	39	9
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0		0			0			0			
v_di, Inbound Pedestrian Volume crossing major street	0		0			0			0			
v_co, Outbound Pedestrian Volume crossing minor street	0		0			0			0			
v_ci, Inbound Pedestrian Volume crossing minor street	0		0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0			0			
Bicycle Volume [bicycles/h]	1		2			2			0			

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukee CFA

Scenario 1: 1 EX_MidDay

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	36.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	ProtPer	Permis	Overla	ProtPer	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	3	1	6	7	7	4	0	3	8	0
Auxiliary Signal Groups			2,3			6,7						
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	4	4	10	4	4	6	0	4	6	0
Maximum Green [s]	30	42	30	30	42	30	30	30	0	30	30	0
Amber [s]	3.5	4.3	3.5	3.5	4.3	3.5	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	17	42	15	17	42	15	15	26	0	15	26	0
Vehicle Extension [s]	2.3	4.7	2.3	2.3	4.7	2.3	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	0	7	0	0	9	0	0	9	0
Pedestrian Clearance [s]	0	11	0	0	10	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	2.0	2.0	2.8	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukee CFA

Scenario 1: 1 EX_MidDay

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.80	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	0.00	2.80	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	78	72	83	79	72	87	4	8	1	4
g / C, Green / Cycle	0.78	0.72	0.83	0.79	0.72	0.87	0.04	0.08	0.01	0.04
(v / s)_i Volume / Saturation Flow Rate	0.10	0.24	0.01	0.01	0.27	0.03	0.03	0.07	0.01	0.03
s, saturation flow rate [veh/h]	576	3179	1414	1561	3153	1403	1603	1484	1629	1551
c, Capacity [veh/h]	465	2282	1176	1338	2262	1217	59	120	22	69
d1, Uniform Delay [s]	3.31	5.24	1.45	2.28	5.49	0.91	47.78	45.26	49.13	47.12
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.57	0.40	0.02	0.00	0.49	0.06	11.73	7.99	17.07	7.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.33	0.02	0.02	0.38	0.04	0.76	0.82	0.64	0.69
d, Delay for Lane Group [s/veh]	3.89	5.63	1.47	2.28	5.98	0.97	59.50	53.26	66.20	54.39
Lane Group LOS	A	A	A	A	A	A	E	D	E	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.29	2.37	0.03	0.06	2.80	0.04	1.30	2.64	0.45	1.31
50th-Percentile Queue Length [ft/ln]	7.23	59.28	0.81	1.47	69.99	0.94	32.46	66.12	11.27	32.82
95th-Percentile Queue Length [veh/ln]	0.52	4.27	0.06	0.11	5.04	0.07	2.34	4.76	0.81	2.36
95th-Percentile Queue Length [ft/ln]	13.02	106.70	1.46	2.64	125.98	1.69	58.42	119.02	20.29	59.07

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 1: 1 EX_MidDay

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.89	5.63	1.47	2.28	5.98	0.97	59.50	53.26	53.26	66.20	54.39	54.39
Movement LOS	A	A	A	A	A	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	5.42			5.63			55.22			57.06		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	10.74											
Intersection LOS	B											
Intersection V/C	0.486											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0			13.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.87			37.87			39.63			39.63		
I_p,int, Pedestrian LOS Score for Intersection	2.842			2.836			2.132			2.012		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	744			744			440			440		
d_b, Bicycle Delay [s]	19.75			19.76			30.47			30.44		
I_b,int, Bicycle LOS Score for Intersection	2.253			2.326			1.824			1.678		
Bicycle LOS	B			B			A			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 1: 1 EX_MidDay

Intersection Level Of Service Report
Intersection 2: Oatfield Rd/Courtney Ave

Control Type:	Two-way stop	Delay (sec / veh):	15.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.091

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	36	281	285	23	34	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	4.00	2.00	13.00	3.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	281	285	23	34	48
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	75	76	6	9	13
Total Analysis Volume [veh/h]	38	299	303	24	36	51
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 1: 1 EX_MidDay

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.09	0.07
d_M, Delay for Movement [s/veh]	7.98	0.00	0.00	0.00	15.05	10.41
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.00	0.00	0.30	0.23
95th-Percentile Queue Length [ft/ln]	1.62	1.62	0.00	0.00	7.49	5.73
d_A, Approach Delay [s/veh]	0.90		0.00		12.33	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.83					
Intersection LOS	C					

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Milwaukie CFA

Scenario 1: 1 EX_MidDay

Intersection Level Of Service Report
Intersection 103: McLoughlin Blvd/Site Access #3

Control Type:	Two-way stop	Delay (sec / veh):	30.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.028

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	7	787	880	12	4	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.00	3.00	4.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	787	880	12	4	12
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	205	229	3	1	3
Total Analysis Volume [veh/h]	7	820	917	13	4	13
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 1: 1 EX_MidDay

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.03	0.02
d_M, Delay for Movement [s/veh]	10.50	0.00	0.00	0.00	30.73	12.14
Movement LOS	B	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.00	0.16	0.16
95th-Percentile Queue Length [ft/ln]	0.80	0.00	0.00	0.00	4.06	4.06
d_A, Approach Delay [s/veh]	0.09		0.00		16.52	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.20					
Intersection LOS	D					

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Milwaukie CFA

Scenario 1: 1 EX_MidDay

Intersection Level Of Service Report
Intersection 104: McLoughlin Blvd/Site Access #4

Control Type:	Two-way stop	Delay (sec / veh):	30.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	0	791	884	14	3	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	4.00	0.00	0.00	12.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	791	884	14	3	8
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	206	230	4	1	2
Total Analysis Volume [veh/h]	0	824	921	15	3	8
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 1: 1 EX_MidDay

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.02	0.02
d_M, Delay for Movement [s/veh]	9.86	0.00	0.00	0.00	30.05	12.43
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	2.79	2.79
d_A, Approach Delay [s/veh]	0.00		0.00		17.23	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.11					
Intersection LOS	D					

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Milwaukie CFA

Scenario 2: 2 EX_PM

Intersection Level Of Service Report
Intersection 1: McLoughlin Blvd/Courtney Ave

Control Type:	Signalized	Delay (sec / veh):	16.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.610

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	13.00	12.00	14.00	12.00	12.00	14.00	10.00	12.00	12.00	11.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	160.00	100.00	110.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
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Milwaukee CFA

Scenario 2: 2 EX_PM

Volumes

Name												
Base Volume Input [veh/h]	83	924	27	32	1352	43	45	52	81	17	63	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	3.00	0.00	3.00	3.00	2.00	7.00	12.00	2.00	6.00	5.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	20	0	0	13
Total Hourly Volume [veh/h]	83	924	27	32	1352	43	45	52	61	17	63	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	243	7	8	356	11	12	14	16	4	17	3
Total Analysis Volume [veh/h]	87	973	28	34	1423	45	47	55	64	18	66	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0		0			0			0			
v_di, Inbound Pedestrian Volume crossing major street	0		0			0			0			
v_co, Outbound Pedestrian Volume crossing minor street	0		0			0			0			
v_ci, Inbound Pedestrian Volume crossing minor street	0		0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0			0			
Bicycle Volume [bicycles/h]	1		3			1			0			

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukee CFA

Scenario 2: 2 EX_PM

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	109.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	ProtPer	Permis	Overla	ProtPer	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	3	1	6	7	7	4	0	3	8	0
Auxiliary Signal Groups			2,3			6,7						
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	4	4	10	4	4	6	0	4	6	0
Maximum Green [s]	16	60	15	15	59	15	15	30	0	15	30	0
Amber [s]	3.5	4.3	3.5	3.5	4.3	3.5	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	16	60	15	15	59	15	15	30	0	15	30	0
Vehicle Extension [s]	2.3	4.7	2.3	2.3	4.7	2.3	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	0	7	0	0	9	0	0	9	0
Pedestrian Clearance [s]	0	11	0	0	10	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	2.0	2.0	2.8	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
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Milwaukee CFA

Scenario 2: 2 EX_PM

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.40	4.80	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	0.00	2.80	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	87	87	93	94	79	100	5	12	2	8
g / C, Green / Cycle	0.72	0.72	0.77	0.78	0.66	0.83	0.04	0.10	0.02	0.06
(v / s)_i Volume / Saturation Flow Rate	0.58	0.31	0.02	0.05	0.45	0.03	0.03	0.08	0.01	0.05
s, saturation flow rate [veh/h]	150	3179	1482	735	3179	1458	1539	1402	1551	1593
c, Capacity [veh/h]	177	2294	1142	567	2091	1215	60	140	24	100
d1, Uniform Delay [s]	16.04	6.70	3.22	6.61	12.72	1.72	57.17	53.16	58.87	55.51
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.50	0.58	0.04	0.03	1.81	0.06	12.39	8.55	24.20	8.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.42	0.02	0.06	0.68	0.04	0.78	0.85	0.75	0.80
d, Delay for Lane Group [s/veh]	25.54	7.28	3.26	6.63	14.53	1.78	69.55	61.71	83.07	64.11
Lane Group LOS	C	A	A	A	B	A	E	E	F	E
Critical Lane Group	No	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.01	4.33	0.14	0.14	10.89	0.12	1.62	3.86	0.71	2.63
50th-Percentile Queue Length [ft/ln]	25.23	108.34	3.38	3.44	272.37	3.06	40.53	96.54	17.68	65.73
95th-Percentile Queue Length [veh/ln]	1.82	7.75	0.24	0.25	16.31	0.22	2.92	6.95	1.27	4.73
95th-Percentile Queue Length [ft/ln]	45.41	193.69	6.08	6.19	407.70	5.50	72.95	173.76	31.82	118.31

Autodesk Storm and Sanitary Analysis Output
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Scenario 2: 2 EX_PM

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.54	7.28	3.26	6.63	14.53	1.78	69.55	61.71	61.71	83.07	64.11	64.11
Movement LOS	C	A	A	A	B	A	E	E	E	F	E	E
d_A, Approach Delay [s/veh]	8.63		13.96		63.93		67.59					
Approach LOS	A		B		E		E					
d_I, Intersection Delay [s/veh]	16.68											
Intersection LOS	B											
Intersection V/C	0.610											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0		13.0		11.0		11.0					
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00					
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00					
d_p, Pedestrian Delay [s]	47.72		47.72		49.52		49.52					
I_p,int, Pedestrian LOS Score for Intersection	3.031		3.017		2.231		2.085					
Crosswalk LOS	C		C		B		B					
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000		2000		2000		2000					
c_b, Capacity of the bicycle lane [bicycles/h]	920		903		433		433					
d_b, Bicycle Delay [s]	17.52		18.08		36.85		36.83					
I_b,int, Bicycle LOS Score for Intersection	2.457		2.799		1.867		1.743					
Bicycle LOS	B		C		A		A					

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Milwaukie CFA

Scenario 2: 2 EX_PM

Intersection Level Of Service Report
Intersection 2: Oatfield Rd/Courtney Ave

Control Type:	Two-way stop	Delay (sec / veh):	22.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.105

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	55	364	451	46	22	85
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	3.00	7.00	5.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	364	451	46	22	85
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	101	125	13	6	24
Total Analysis Volume [veh/h]	61	404	501	51	24	94
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
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Scenario 2: 2 EX_PM

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.00	0.01	0.00	0.11	0.17
d_M, Delay for Movement [s/veh]	8.57	0.00	0.00	0.00	22.59	13.00
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.11	0.11	0.00	0.00	0.35	0.62
95th-Percentile Queue Length [ft/ln]	2.63	2.63	0.00	0.00	8.68	15.51
d_A, Approach Delay [s/veh]	1.12		0.00		14.95	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.02					
Intersection LOS	C					

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Milwaukie CFA

Scenario 2: 2 EX_PM

Intersection Level Of Service Report
Intersection 103: McLoughlin Blvd/Site Access #3

Control Type:	Two-way stop	Delay (sec / veh):	77.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.039

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	3	992	1421	6	2	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	3.00	17.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	992	1421	6	2	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	261	374	2	1	2
Total Analysis Volume [veh/h]	3	1044	1496	6	2	6
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

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Scenario 2: 2 EX_PM

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.04	0.02
d_M, Delay for Movement [s/veh]	13.02	0.00	0.00	0.00	77.29	16.56
Movement LOS	B	A	A	A	F	C
95th-Percentile Queue Length [veh/ln]	0.02	0.00	0.00	0.00	0.18	0.18
95th-Percentile Queue Length [ft/ln]	0.50	0.00	0.00	0.00	4.41	4.41
d_A, Approach Delay [s/veh]	0.04		0.00		31.74	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	0.11					
Intersection LOS	F					

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Scenario 2: 2 EX_PM

Intersection Level Of Service Report
Intersection 104: McLoughlin Blvd/Site Access #4

Control Type:	Two-way stop	Delay (sec / veh):	76.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.020

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	0	994	1421	13	1	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	3.00	0.00	0.00	17.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	994	1421	13	1	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	262	374	3	0	2
Total Analysis Volume [veh/h]	0	1046	1496	14	1	6
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

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Milwaukie CFA

Scenario 2: 2 EX_PM

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.02	0.02
d_M, Delay for Movement [s/veh]	13.02	0.00	0.00	0.00	75.99	17.03
Movement LOS	B	A	A	A	F	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.12	0.12
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	2.97	2.97
d_A, Approach Delay [s/veh]	0.00		0.00		25.46	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	0.07					
Intersection LOS	F					

Appendix D:
2025 Background Traffic Conditions
Analysis Worksheets

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Milwaukie CFA

Scenario 3: 3 BK_MidDay

Intersection Level Of Service Report
Intersection 1: McLoughlin Blvd/Courtney Ave

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.511

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	13.00	12.00	14.00	12.00	12.00	14.00	10.00	12.00	12.00	11.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	160.00	100.00	110.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

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Milwaukee CFA

Scenario 3: 3 BK_MidDay

Volumes

Name												
Base Volume Input [veh/h]	61	762	18	23	857	48	45	45	71	14	38	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	6.00	0.00	4.00	7.00	2.00	5.00	1.00	0.00	8.00	5.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	18	0	0	10
Total Hourly Volume [veh/h]	61	762	18	23	857	48	45	45	53	14	38	10
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	198	5	6	223	13	12	12	14	4	10	3
Total Analysis Volume [veh/h]	64	794	19	24	893	50	47	47	55	15	40	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0		0			0			0			
v_di, Inbound Pedestrian Volume crossing major street	0		0			0			0			
v_co, Outbound Pedestrian Volume crossing minor street	0		0			0			0			
v_ci, Inbound Pedestrian Volume crossing minor street	0		0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0			0			
Bicycle Volume [bicycles/h]	1		2			2			0			

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

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Milwaukee CFA

Scenario 3: 3 BK_MidDay

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	36.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	ProtPer	Permis	Overla	ProtPer	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	3	1	6	7	7	4	0	3	8	0
Auxiliary Signal Groups			2,3			6,7						
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	4	4	10	4	4	6	0	4	6	0
Maximum Green [s]	30	42	30	30	42	30	30	30	0	30	30	0
Amber [s]	3.5	4.3	3.5	3.5	4.3	3.5	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	17	42	15	17	42	15	15	26	0	15	26	0
Vehicle Extension [s]	2.3	4.7	2.3	2.3	4.7	2.3	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	0	7	0	0	9	0	0	9	0
Pedestrian Clearance [s]	0	11	0	0	10	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	2.0	2.0	2.8	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

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Milwaukee CFA

Scenario 3: 3 BK_MidDay

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.80	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	0.00	2.80	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	77	71	83	79	72	87	4	8	1	5
g / C, Green / Cycle	0.77	0.71	0.83	0.79	0.71	0.87	0.04	0.08	0.01	0.05
(v / s)_i Volume / Saturation Flow Rate	0.12	0.25	0.01	0.02	0.28	0.04	0.03	0.07	0.01	0.03
s, saturation flow rate [veh/h]	556	3179	1414	1558	3153	1403	1603	1485	1629	1547
c, Capacity [veh/h]	445	2268	1171	1332	2251	1216	62	125	23	71
d1, Uniform Delay [s]	3.52	5.47	1.50	2.34	5.71	0.93	47.66	45.09	49.08	47.10
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	0.43	0.03	0.00	0.52	0.06	11.09	7.81	16.87	7.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.35	0.02	0.02	0.40	0.04	0.76	0.82	0.65	0.71
d, Delay for Lane Group [s/veh]	4.20	5.90	1.52	2.35	6.24	0.99	58.75	52.90	65.95	54.80
Lane Group LOS	A	A	A	A	A	A	E	D	E	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.33	2.57	0.04	0.06	3.02	0.04	1.34	2.74	0.48	1.37
50th-Percentile Queue Length [ft/ln]	8.29	64.16	0.90	1.58	75.52	1.01	33.62	68.59	12.00	34.32
95th-Percentile Queue Length [veh/ln]	0.60	4.62	0.06	0.11	5.44	0.07	2.42	4.94	0.86	2.47
95th-Percentile Queue Length [ft/ln]	14.92	115.49	1.61	2.84	135.94	1.82	60.52	123.46	21.60	61.78

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

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Scenario 3: 3 BK_MidDay

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.20	5.90	1.52	2.35	6.24	0.99	58.75	52.90	52.90	65.95	54.80	54.80
Movement LOS	A	A	A	A	A	A	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	5.68		5.87		54.74		57.38					
Approach LOS	A		A		D		E					
d_I, Intersection Delay [s/veh]	10.95											
Intersection LOS	B											
Intersection V/C	0.511											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0		13.0		11.0		11.0					
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00					
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00					
d_p, Pedestrian Delay [s]	37.87		37.87		39.63		39.63					
I_p,int, Pedestrian LOS Score for Intersection	2.858		2.852		2.142		2.014					
Crosswalk LOS	C		C		B		B					
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000		2000		2000		2000					
c_b, Capacity of the bicycle lane [bicycles/h]	744		744		440		440					
d_b, Bicycle Delay [s]	19.75		19.76		30.47		30.44					
I_b,int, Bicycle LOS Score for Intersection	2.283		2.357		1.835		1.683					
Bicycle LOS	B		B		A		A					

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Scenario 3: 3 BK_MidDay

Intersection Level Of Service Report
Intersection 2: Oatfield Rd/Courtney Ave

Control Type:	Two-way stop	Delay (sec / veh):	15.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.098

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	37	292	297	24	35	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	4.00	2.00	13.00	3.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	292	297	24	35	50
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	78	79	6	9	13
Total Analysis Volume [veh/h]	39	311	316	26	37	53
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

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Milwaukie CFA

Scenario 3: 3 BK_MidDay

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.10	0.08
d_M, Delay for Movement [s/veh]	8.02	0.00	0.00	0.00	15.53	10.54
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.00	0.00	0.32	0.24
95th-Percentile Queue Length [ft/ln]	1.66	1.66	0.00	0.00	8.06	6.09
d_A, Approach Delay [s/veh]	0.89		0.00		12.59	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.85					
Intersection LOS	C					

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Milwaukie CFA

Scenario 3: 3 BK_MidDay

Intersection Level Of Service Report
Intersection 103: McLoughlin Blvd/Site Access #3

Control Type:	Two-way stop	Delay (sec / veh):	32.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.030

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	7	820	916	12	4	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.00	3.00	4.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	820	916	12	4	12
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	214	239	3	1	3
Total Analysis Volume [veh/h]	7	854	954	13	4	13
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
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Scenario 3: 3 BK_MidDay

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.03	0.02
d_M, Delay for Movement [s/veh]	10.70	0.00	0.00	0.00	32.94	12.40
Movement LOS	B	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.00	0.17	0.17
95th-Percentile Queue Length [ft/ln]	0.83	0.00	0.00	0.00	4.31	4.31
d_A, Approach Delay [s/veh]	0.09		0.00		17.23	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.20					
Intersection LOS	D					

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Milwaukie CFA

Scenario 3: 3 BK_MidDay

Intersection Level Of Service Report
Intersection 104: McLoughlin Blvd/Site Access #4

Control Type:	Two-way stop	Delay (sec / veh):	32.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	0	824	920	15	3	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	4.00	0.00	0.00	12.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	824	920	15	3	8
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	215	240	4	1	2
Total Analysis Volume [veh/h]	0	858	958	16	3	8
Pedestrian Volume [ped/h]	0		0		0	

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Scenario 3: 3 BK_MidDay

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.02	0.02
d_M, Delay for Movement [s/veh]	10.03	0.00	0.00	0.00	32.21	12.69
Movement LOS	B	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.12	0.12
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	2.97	2.97
d_A, Approach Delay [s/veh]	0.00		0.00		18.01	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.11					
Intersection LOS	D					

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Milwaukee CFA

Scenario 4: 4 BK_PM

Intersection Level Of Service Report
Intersection 1: McLoughlin Blvd/Courtney Ave

Control Type:	Signalized	Delay (sec / veh):	17.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.634

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	13.00	12.00	14.00	12.00	12.00	14.00	10.00	12.00	12.00	11.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	160.00	100.00	110.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Autodesk Storm and Sanitary Analysis Output
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Scenario 4: 4 BK_PM

Volumes

Name												
Base Volume Input [veh/h]	86	961	28	33	1407	45	47	54	84	18	66	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	3.00	0.00	3.00	3.00	2.00	7.00	12.00	2.00	6.00	5.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	21	0	0	14
Total Hourly Volume [veh/h]	86	961	28	33	1407	45	47	54	63	18	66	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	253	7	9	370	12	12	14	17	5	17	3
Total Analysis Volume [veh/h]	91	1012	29	35	1481	47	49	57	66	19	69	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0		0			0			0			
v_di, Inbound Pedestrian Volume crossing major street	0		0			0			0			
v_co, Outbound Pedestrian Volume crossing minor street	0		0			0			0			
v_ci, Inbound Pedestrian Volume crossing minor street	0		0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0			0			
Bicycle Volume [bicycles/h]	1		3			1			0			

Autodesk Storm and Sanitary Analysis Output
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Milwaukee CFA

Scenario 4: 4 BK_PM

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	109.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	ProtPer	Permis	Overla	ProtPer	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	3	1	6	7	7	4	0	3	8	0
Auxiliary Signal Groups			2,3			6,7						
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	4	4	10	4	4	6	0	4	6	0
Maximum Green [s]	16	60	15	15	59	15	15	30	0	15	30	0
Amber [s]	3.5	4.3	3.5	3.5	4.3	3.5	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	16	60	15	15	59	15	15	30	0	15	30	0
Vehicle Extension [s]	2.3	4.7	2.3	2.3	4.7	2.3	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	0	7	0	0	9	0	0	9	0
Pedestrian Clearance [s]	0	11	0	0	10	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	2.0	2.0	2.8	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Scenario 4: 4 BK_PM

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.40	4.80	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	0.00	2.80	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	86	86	92	94	79	100	5	12	2	8
g / C, Green / Cycle	0.72	0.72	0.77	0.78	0.65	0.83	0.04	0.10	0.02	0.06
(v / s)_i Volume / Saturation Flow Rate	0.70	0.32	0.02	0.05	0.47	0.03	0.03	0.09	0.01	0.05
s, saturation flow rate [veh/h]	129	3179	1482	727	3179	1458	1539	1402	1551	1595
c, Capacity [veh/h]	165	2282	1138	559	2079	1215	63	144	25	104
d1, Uniform Delay [s]	17.72	7.01	3.32	7.05	13.45	1.72	57.03	52.97	58.84	55.36
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.74	0.63	0.04	0.03	2.11	0.06	11.80	8.48	24.60	8.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.44	0.03	0.06	0.71	0.04	0.78	0.85	0.76	0.80
d, Delay for Lane Group [s/veh]	30.46	7.64	3.36	7.07	15.56	1.78	68.84	61.45	83.43	63.78
Lane Group LOS	C	A	A	A	B	A	E	E	F	E
Critical Lane Group	No	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.16	4.69	0.14	0.14	11.95	0.13	1.68	3.99	0.75	2.72
50th-Percentile Queue Length [ft/ln]	29.11	117.26	3.59	3.56	298.75	3.20	41.98	99.63	18.66	68.01
95th-Percentile Queue Length [veh/ln]	2.10	8.24	0.26	0.26	17.62	0.23	3.02	7.17	1.34	4.90
95th-Percentile Queue Length [ft/ln]	52.39	206.05	6.46	6.42	440.48	5.75	75.57	179.33	33.59	122.42

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Scenario 4: 4 BK_PM

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.46	7.64	3.36	7.07	15.56	1.78	68.84	61.45	61.45	83.43	63.78	63.78
Movement LOS	C	A	A	A	B	A	E	E	E	F	E	E
d_A, Approach Delay [s/veh]	9.37			14.96			63.55			67.44		
Approach LOS	A			B			E			E		
d_I, Intersection Delay [s/veh]	17.44											
Intersection LOS	B											
Intersection V/C	0.634											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0			13.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.72			47.72			49.52			49.52		
I_p,int, Pedestrian LOS Score for Intersection	3.054			3.040			2.243			2.090		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	920			903			433			433		
d_b, Bicycle Delay [s]	17.52			18.08			36.85			36.83		
I_b,int, Bicycle LOS Score for Intersection	2.494			2.849			1.878			1.751		
Bicycle LOS	B			C			A			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Scenario 4: 4 BK_PM

Intersection Level Of Service Report
Intersection 2: Oatfield Rd/Courtney Ave

Control Type:	Two-way stop	Delay (sec / veh):	24.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.121

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	57	379	469	48	23	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	3.00	7.00	5.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	379	469	48	23	88
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	105	130	13	6	24
Total Analysis Volume [veh/h]	63	421	521	53	26	98
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
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Scenario 4: 4 BK_PM

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.00	0.01	0.00	0.12	0.19
d_M, Delay for Movement [s/veh]	8.64	0.00	0.00	0.00	24.09	13.35
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.11	0.11	0.00	0.00	0.41	0.67
95th-Percentile Queue Length [ft/ln]	2.72	2.72	0.00	0.00	10.17	16.85
d_A, Approach Delay [s/veh]	1.12		0.00		15.60	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	2.10					
Intersection LOS	C					

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 4: 4 BK_PM

Intersection Level Of Service Report
Intersection 103: McLoughlin Blvd/Site Access #3

Control Type:	Two-way stop	Delay (sec / veh):	87.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.045

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	3	1032	1479	6	2	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	3.00	17.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	1032	1479	6	2	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	272	389	2	1	2
Total Analysis Volume [veh/h]	3	1086	1557	6	2	6
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 4: 4 BK_PM

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.02	0.00	0.04	0.02
d_M, Delay for Movement [s/veh]	13.46	0.00	0.00	0.00	87.30	17.39
Movement LOS	B	A	A	A	F	C
95th-Percentile Queue Length [veh/ln]	0.02	0.00	0.00	0.00	0.20	0.20
95th-Percentile Queue Length [ft/ln]	0.53	0.00	0.00	0.00	4.92	4.92
d_A, Approach Delay [s/veh]	0.04		0.00		34.87	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	0.12					
Intersection LOS	F					

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 4: 4 BK_PM

Intersection Level Of Service Report
Intersection 104: McLoughlin Blvd/Site Access #4

Control Type:	Two-way stop	Delay (sec / veh):	85.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	0	1034	1479	14	1	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	3.00	0.00	0.00	17.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1034	1479	14	1	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	272	389	4	0	2
Total Analysis Volume [veh/h]	0	1088	1557	15	1	6
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 4: 4 BK_PM

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.02	0.02
d_M, Delay for Movement [s/veh]	13.47	0.00	0.00	0.00	85.77	17.76
Movement LOS	B	A	A	A	F	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.13	0.13
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	3.26	3.26
d_A, Approach Delay [s/veh]	0.00		0.00		27.48	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	0.07					
Intersection LOS	F					

Appendix E: Trip Generation/Queuing Study

Table 1: Observed Trip Rates (per 1000 SF)

			AM Peak Hour			PM Peak Hour		
Site	Size (SF)	Daily	TOTAL	IN	OUT	TOTAL	IN	OUT
Tanasbourne	4,962	-	26.60	51%	49%	60.46	50%	50%
Beaverton-Hillsdale	4,845	-	12.38	50%	50%	47.06	53%	47%
Cedars Hills	4,815	-	13.50	55%	45%	38.21	48%	52%
TV Highway	5,166	-	12.39	56%	44%	30.97	54%	46%
Keizer Station	5,199	624.74	15.96	53%	47%	57.90	57%	43%
Average		624.74	16.17	53%	47%	46.92	52%	48%

Table 2: Observed Trip Rates (per 1000 SF)

			AM Peak Hour			PM Peak Hour		
Site	Size (SF)	Daily	TOTAL	IN	OUT	TOTAL	IN	OUT
Tanasbourne	4,962	-	26.60	51%	49%	60.46	50%	50%
Beaverton-Hillsdale	4,845	-	12.38	50%	50%	47.06	53%	47%
Keizer Station	5,199	624.74	15.96	53%	47%	57.90	57%	43%
Average		624.74	18.32	51%	49%	55.14	53%	47%

Table 3: Observed Portland Area CFA AM Peak Hour Queuing

Site	95 th Percentile Queue	Max Queue
Tanasbourne	7	8
Beaverton-Hillsdale	4	6
Cedars Hills	6	8
TV Highway	7	7

Table 4: Observed Portland Area CFA Mid-day Peak Hour Queuing

Site	95 th Percentile Queue	Max Queue
Tanasbourne	23	24
Beaverton-Hillsdale	22	23
Cedars Hills	13	14
TV Highway	16	19

Table 5: Observed Portland Area CFA PM Peak Hour Queuing

Site	95 th Percentile Queue	Max Queue
Tanasbourne	25	29
Beaverton-Hillsdale	21	22
Cedars Hills	15	18
TV Highway	15	16

Appendix F: Eagle Bargain Outlet Trip Generation Data



Site Code: 16420021
Location: Eagle Bargain Outlet
Date: 12/7/2023
Time: 11:00 AM – 1:00 PM

Time	Groups of Peds Entering Eagle Outlet	Groups of Peds Leaving Eagle Outlet
11:00 AM	1	1
11:05 AM	2	2
11:10 AM	2	1
11:15 AM	1	0
11:20 AM	1	1
11:25 AM	1	3
11:30 AM	2	2
11:35 AM	0	0
11:40 AM	1	1
11:45 AM	2	0
11:50 AM	5	2
11:55 AM	1	3
12:00 PM	4	1
12:05 PM	3	5
12:10 PM	3	2
12:15 PM	5	2
12:20 PM	1	2
12:25 PM	2	2
12:30 PM	0	4
12:35 PM	1	1
12:40 PM	0	2
12:45 PM	1	0
12:50 PM	2	5
12:55 PM	2	3

Peak Hour (11:50AM - 12:50PM)

IN	OUT
26	26

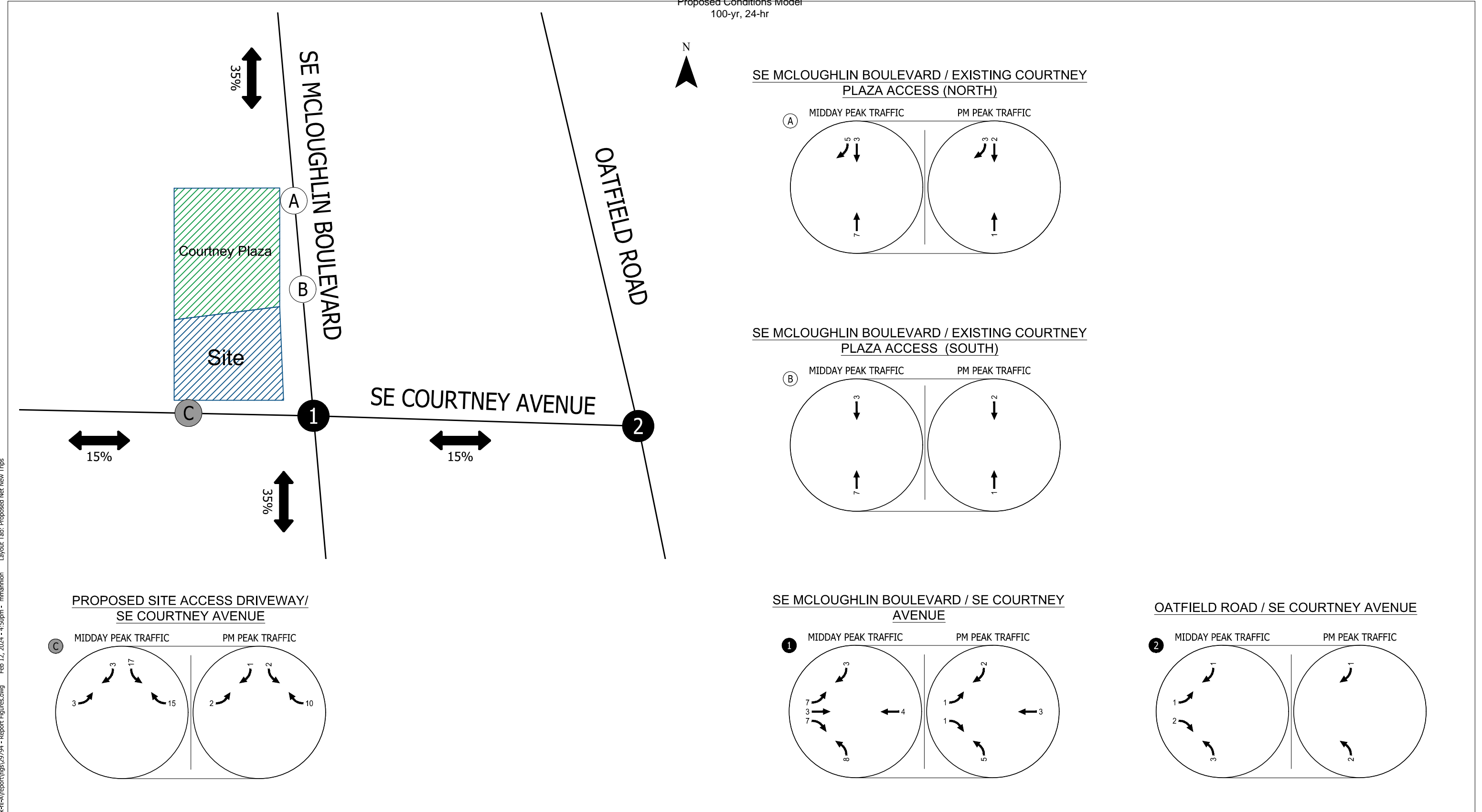


Site Code: 16420022
Location: Eagle Bargain Outlet
Date: 12/7/2023
Time: 3:30 PM-6:30 PM

Time	Groups of Peds Entering Eagle Outlet	Groups of Peds Leaving Eagle Outlet
3:30 PM	1	1
3:35 PM	1	2
3:40 PM	4	5
3:45 PM	2	5
3:50 PM	1	1
3:55 PM	2	1
4:00 PM	2	4
4:05 PM	1	3
4:10 PM	0	0
4:15 PM	2	0
4:20 PM	2	3
4:25 PM	3	3
4:30 PM	1	1
4:35 PM	1	2
4:40 PM	5	0
4:45 PM	1	4
4:50 PM	1	2
4:55 PM	0	1
5:00 PM	2	1
5:05 PM	0	0
5:10 PM	0	2
5:15 PM	1	1
5:20 PM	0	0
5:25 PM	1	0
5:30 PM	1	1
5:35 PM	0	1
5:40 PM	0	0
5:45 PM	0	0
5:50 PM	3	0
5:55 PM	1	1
6:00 PM	1	1
6:05 PM	1	2
6:10 PM	1	2
6:15 PM	1	1
6:20 PM	0	1
6:25 PM	0	1

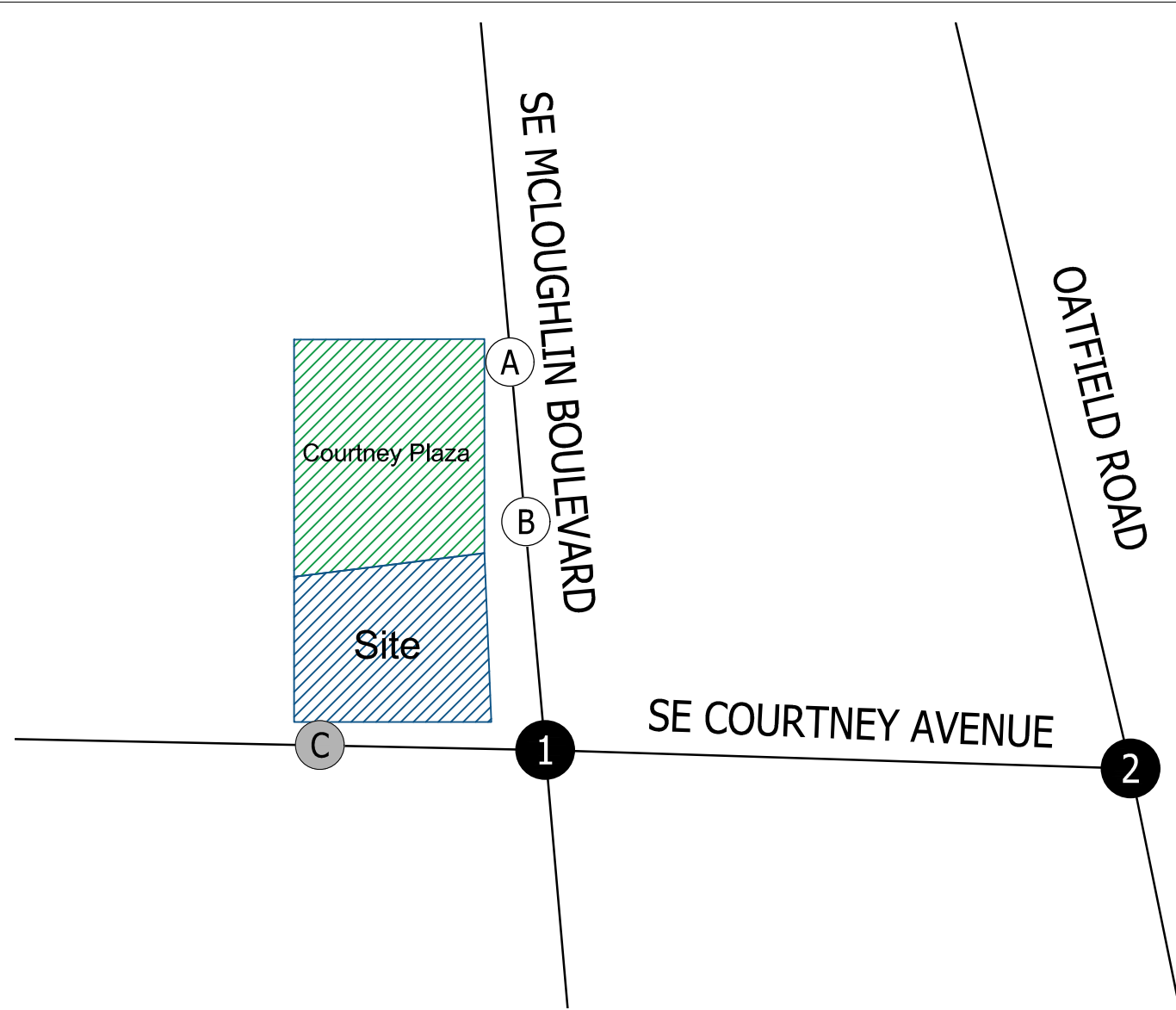
Peak Hour (3:30-4:30 PM)
IN OUT
 21 28

Appendix G: Trip Assignment Summary Figures

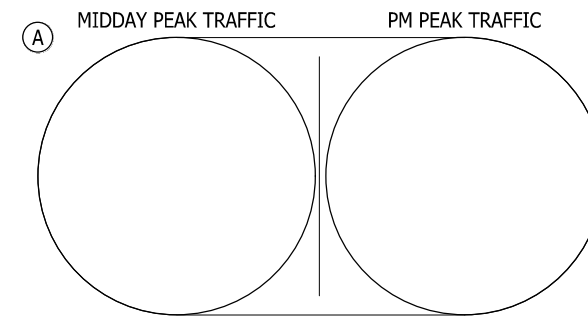


Estimated Trip Distribution Pattern & Proposed Net New Trips
Midday & PM Peak Hours
Clackamas County, OR

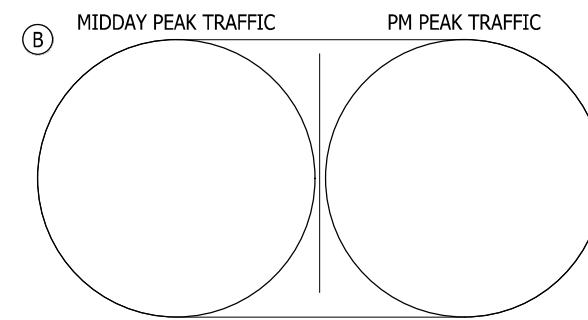
Figure
G-1



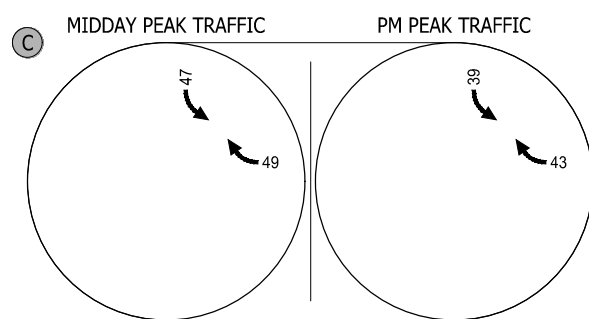
SE MCLOUGHLIN BOULEVARD / EXISTING COURTNEY PLAZA ACCESS (NORTH)



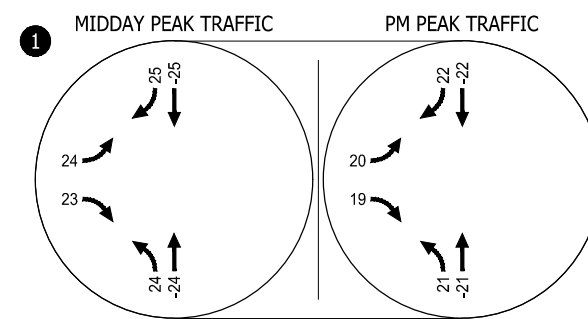
SE MCLOUGHLIN BOULEVARD / EXISTING COURTNEY PLAZA ACCESS (SOUTH)



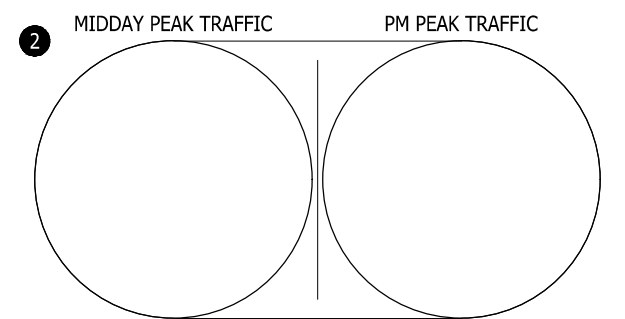
PROPOSED SITE ACCESS DRIVEWAY / SE COURTNEY AVENUE



SE MCLOUGHLIN BOULEVARD / SE COURTNEY AVENUE



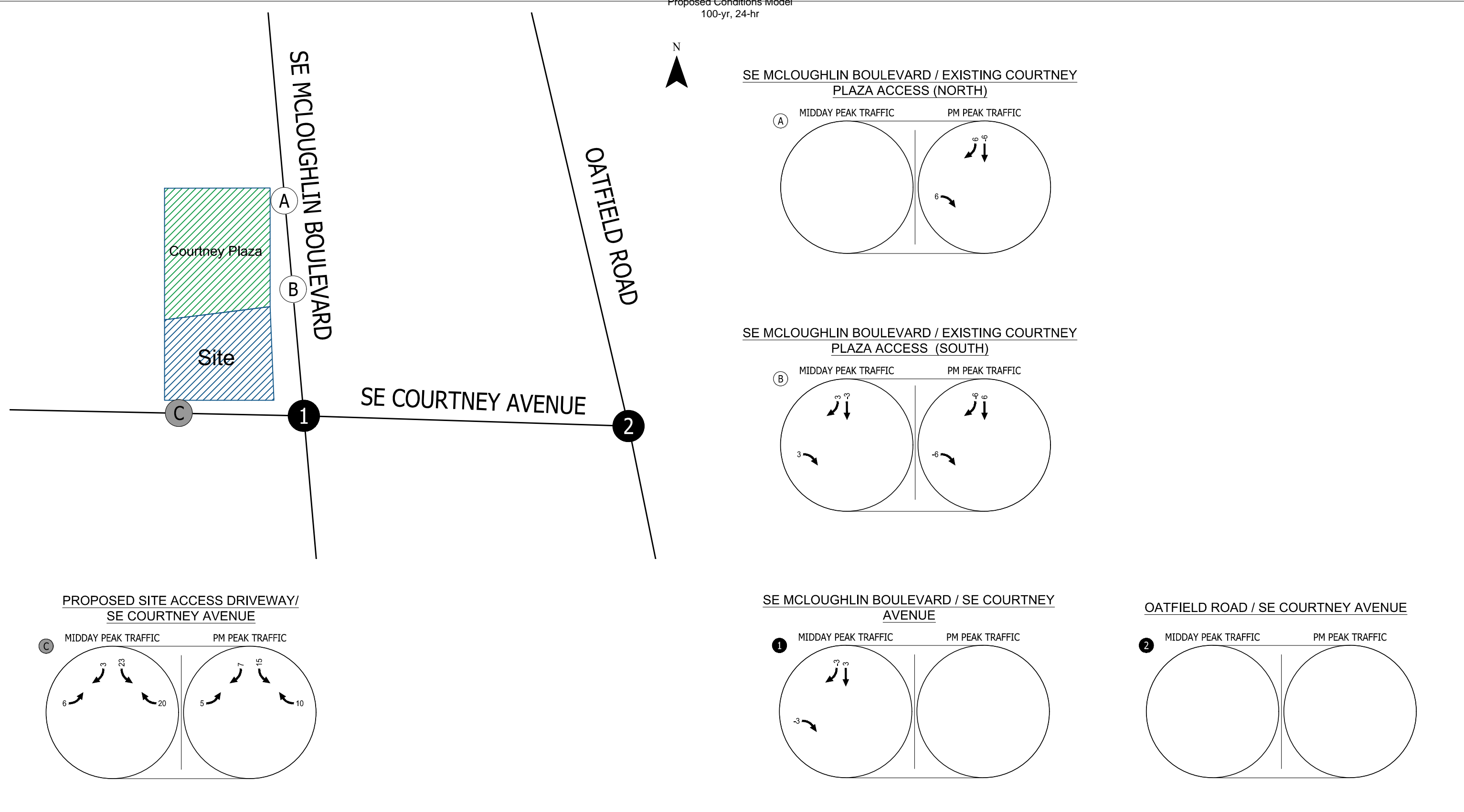
OATFIELD ROAD / SE COURTNEY AVENUE



Pass-by Trips
Midday & PM Peak Hours
Clackamas County, OR

Figure
G-2

H:\2024\2024 - Milwaukee Chick-fil-A\report\figs\2024 - 4-16pm - mmanion - Layout Tab: Pass-by Trips



Existing New New Trips (Driveway Reroute)
Midday & PM Peak Hours
Clackamas County, OR

Figure
G-3

H:\29\29794 - Milwaukee Chick-fil-A\report\figs\29794 - Report Figures.dwg Feb 12, 2024 - 4:48pm - mmannion - Layout Tab: Existing Net New Trips

Appendix H:
2025 Total Traffic Conditions
Analysis Worksheets

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 5: 5 TT_MidDay

Intersection Level Of Service Report
Intersection 1: McLoughlin Blvd/Courtney Ave

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.578

Intersection Setup

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	13.00	12.00	14.00	12.00	12.00	14.00	10.00	12.00	12.00	11.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	160.00	100.00	110.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukee CFA

Scenario 5: 5 TT_MidDay

Volumes

Name												
Base Volume Input [veh/h]	93	738	18	23	835	73	76	48	98	14	42	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	6.00	0.00	4.00	7.00	2.00	5.00	1.00	0.00	8.00	5.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	25	0	0	10
Total Hourly Volume [veh/h]	93	738	18	23	835	73	76	48	73	14	42	10
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	192	5	6	217	19	20	13	19	4	11	3
Total Analysis Volume [veh/h]	97	769	19	24	870	76	79	50	76	15	44	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0		0			0			0			
v_di, Inbound Pedestrian Volume crossing major street	0		0			0			0			
v_co, Outbound Pedestrian Volume crossing minor street	0		0			0			0			
v_ci, Inbound Pedestrian Volume crossing minor street	0		0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0			0			
Bicycle Volume [bicycles/h]	1		2			2			0			

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 5: 5 TT_MidDay

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	36.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	ProtPer	Permis	Overla	ProtPer	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	3	1	6	7	7	4	0	3	8	0
Auxiliary Signal Groups			2,3			6,7						
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	4	4	10	4	4	6	0	4	6	0
Maximum Green [s]	30	42	30	30	42	30	30	30	0	30	30	0
Amber [s]	3.5	4.3	3.5	3.5	4.3	3.5	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	17	42	15	17	42	15	15	26	0	15	26	0
Vehicle Extension [s]	2.3	4.7	2.3	2.3	4.7	2.3	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	0	7	0	0	9	0	0	9	0
Pedestrian Clearance [s]	0	11	0	0	10	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	2.0	2.0	2.8	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukee CFA

Scenario 5: 5 TT_MidDay

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.80	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	0.00	2.80	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	76	70	81	76	68	87	7	10	1	5
g / C, Green / Cycle	0.76	0.70	0.81	0.76	0.68	0.87	0.07	0.10	0.01	0.05
(v / s)_i Volume / Saturation Flow Rate	0.17	0.24	0.01	0.02	0.28	0.05	0.05	0.09	0.01	0.03
s, saturation flow rate [veh/h]	555	3179	1414	1577	3153	1404	1603	1469	1629	1551
c, Capacity [veh/h]	428	2208	1145	1301	2142	1215	105	151	23	73
d1, Uniform Delay [s]	4.25	6.15	1.85	2.97	7.11	0.97	45.95	44.06	49.08	47.07
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.23	0.43	0.03	0.00	0.57	0.10	6.41	7.19	16.87	8.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.35	0.02	0.02	0.41	0.06	0.75	0.83	0.65	0.74
d, Delay for Lane Group [s/veh]	5.48	6.59	1.87	2.98	7.68	1.06	52.36	51.25	65.95	55.57
Lane Group LOS	A	A	A	A	A	A	D	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.58	2.73	0.05	0.08	3.50	0.07	2.11	3.34	0.48	1.49
50th-Percentile Queue Length [ft/ln]	14.45	68.26	1.15	2.06	87.56	1.66	52.65	83.54	12.00	37.33
95th-Percentile Queue Length [veh/ln]	1.04	4.91	0.08	0.15	6.30	0.12	3.79	6.01	0.86	2.69
95th-Percentile Queue Length [ft/ln]	26.02	122.87	2.08	3.72	157.61	2.98	94.77	150.37	21.60	67.20

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Scenario 5: 5 TT_MidDay

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.48	6.59	1.87	2.98	7.68	1.06	52.36	51.25	51.25	65.95	55.57	55.57
Movement LOS	A	A	A	A	A	A	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	6.37			7.05			51.68			57.82		
Approach LOS	A			A			D			E		
d_I, Intersection Delay [s/veh]	12.71											
Intersection LOS	B											
Intersection V/C	0.578											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0			13.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.87			37.87			39.63			39.63		
I_p,int, Pedestrian LOS Score for Intersection	2.861			2.854			2.225			2.016		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	744			744			440			440		
d_b, Bicycle Delay [s]	19.75			19.76			30.47			30.44		
I_b,int, Bicycle LOS Score for Intersection	2.290			2.360			1.939			1.690		
Bicycle LOS	B			B			A			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Scenario 5: 5 TT_MidDay

Intersection Level Of Service Report
Intersection 2: Oatfield Rd/Courtney Ave

Control Type:	Two-way stop	Delay (sec / veh):	15.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.102

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	40	292	297	25	36	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	4.00	2.00	13.00	3.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	292	297	25	36	52
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	78	79	7	10	14
Total Analysis Volume [veh/h]	43	311	316	27	38	55
Pedestrian Volume [ped/h]	0		0		0	

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Scenario 5: 5 TT_MidDay

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.10	0.08
d_M, Delay for Movement [s/veh]	8.02	0.00	0.00	0.00	15.74	10.56
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.00	0.00	0.34	0.25
95th-Percentile Queue Length [ft/ln]	1.83	1.83	0.00	0.00	8.44	6.35
d_A, Approach Delay [s/veh]	0.97		0.00		12.68	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.93					
Intersection LOS	C					

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Scenario 5: 5 TT_MidDay

Intersection Level Of Service Report
Intersection 103: McLoughlin Blvd/Site Access #3

Control Type:	Two-way stop	Delay (sec / veh):	33.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.031

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	7	827	916	15	4	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.00	3.00	4.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	827	916	15	4	15
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	215	239	4	1	4
Total Analysis Volume [veh/h]	7	861	954	16	4	16
Pedestrian Volume [ped/h]	0		0		0	

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Scenario 5: 5 TT_MidDay

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.03	0.03
d_M, Delay for Movement [s/veh]	10.71	0.00	0.00	0.00	33.18	12.45
Movement LOS	B	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.00	0.19	0.19
95th-Percentile Queue Length [ft/ln]	0.83	0.00	0.00	0.00	4.81	4.81
d_A, Approach Delay [s/veh]	0.09		0.00		16.60	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.22					
Intersection LOS	D					

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Scenario 5: 5 TT_MidDay

Intersection Level Of Service Report
Intersection 104: McLoughlin Blvd/Site Access #4

Control Type:	Two-way stop	Delay (sec / veh):	32.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.023

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	0	831	923	20	3	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	4.00	0.00	0.00	12.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	831	923	20	3	8
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	216	240	5	1	2
Total Analysis Volume [veh/h]	0	866	961	21	3	8
Pedestrian Volume [ped/h]	0		0		0	

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Scenario 5: 5 TT_MidDay

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.02	0.02
d_M, Delay for Movement [s/veh]	10.06	0.00	0.00	0.00	32.61	12.75
Movement LOS	B	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.12	0.12
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	3.01	3.01
d_A, Approach Delay [s/veh]	0.00		0.00		18.16	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.11					
Intersection LOS	D					

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Scenario 5: 5 TT_MidDay

Intersection Level Of Service Report
Intersection 201: Future Site Access/Courtney Ave

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.144

Intersection Setup

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	87	6	9	141	127	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	3.00	8.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	6	9	141	127	84
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	2	2	38	34	22
Total Analysis Volume [veh/h]	93	6	10	150	135	89
Pedestrian Volume [ped/h]	0		0		0	

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Scenario 5: 5 TT_MidDay

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.54	10.12	7.66	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.53	0.53	0.02	0.02	0.00	0.00
95th-Percentile Queue Length [ft/ln]	13.21	13.21	0.42	0.42	0.00	0.00
d_A, Approach Delay [s/veh]	11.45		0.48		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.51					
Intersection LOS	B					

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Scenario 6: 6 TT_PM

Intersection Level Of Service Report
Intersection 1: McLoughlin Blvd/Courtney Ave

Control Type:	Signalized	Delay (sec / veh):	21.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.595

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	13.00	12.00	14.00	12.00	12.00	14.00	10.00	12.00	12.00	11.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	160.00	100.00	110.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

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Scenario 6: 6 TT_PM

Volumes

Name												
Base Volume Input [veh/h]	112	940	28	33	1385	69	68	54	104	18	69	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	3.00	0.00	3.00	3.00	2.00	7.00	12.00	2.00	6.00	5.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	26	0	0	14
Total Hourly Volume [veh/h]	112	940	28	33	1385	69	68	54	78	18	69	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	247	7	9	364	18	18	14	21	5	18	3
Total Analysis Volume [veh/h]	118	989	29	35	1458	73	72	57	82	19	73	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0		0			0			0			
v_di, Inbound Pedestrian Volume crossing major street	0		0			0			0			
v_co, Outbound Pedestrian Volume crossing minor street	0		0			0			0			
v_ci, Inbound Pedestrian Volume crossing minor street	0		0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0		0			0			0			
Bicycle Volume [bicycles/h]	1		3			1			0			

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Scenario 6: 6 TT_PM

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	109.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	ProtPer	Permis	Overla	ProtPer	Permis	Overla	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	3	1	6	7	7	4	0	3	8	0
Auxiliary Signal Groups			2,3			6,7						
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	4	4	10	4	4	6	0	4	6	0
Maximum Green [s]	16	60	15	15	59	15	15	30	0	15	30	0
Amber [s]	3.5	4.3	3.5	3.5	4.3	3.5	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	16	60	15	15	59	15	15	30	0	15	30	0
Vehicle Extension [s]	2.3	4.7	2.3	2.3	4.7	2.3	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	0	7	0	0	9	0	0	9	0
Pedestrian Clearance [s]	0	11	0	0	10	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	2.0	2.0	2.8	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukee CFA

Scenario 6: 6 TT_PM

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.00	4.80	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	0.00	2.80	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	85	85	91	94	79	100	4	14	2	8
g / C, Green / Cycle	0.71	0.71	0.75	0.78	0.66	0.83	0.03	0.12	0.02	0.07
(v / s)_i Volume / Saturation Flow Rate	0.90	0.31	0.02	0.08	0.46	0.05	0.05	0.10	0.01	0.05
s, saturation flow rate [veh/h]	131	3179	1482	447	3179	1458	1539	1390	1551	1597
c, Capacity [veh/h]	165	2241	1119	321	2102	1214	60	161	25	108
d1, Uniform Delay [s]	18.67	7.58	3.69	8.60	12.73	1.75	82.99	52.18	58.84	55.17
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.95	0.63	0.04	0.09	1.91	0.09	109.79	8.37	24.60	8.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.44	0.03	0.11	0.69	0.06	1.20	0.87	0.76	0.80
d, Delay for Lane Group [s/veh]	41.62	8.22	3.73	8.69	14.65	1.85	192.78	60.55	83.43	63.39
Lane Group LOS	D	A	A	A	B	A	F	E	F	E
Critical Lane Group	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.88	4.85	0.16	0.15	11.25	0.20	3.67	4.48	0.75	2.84
50th-Percentile Queue Length [ft/ln]	46.92	121.14	3.91	3.66	281.18	5.06	91.64	112.09	18.66	71.06
95th-Percentile Queue Length [veh/ln]	3.38	8.46	0.28	0.26	16.75	0.36	6.60	7.96	1.34	5.12
95th-Percentile Queue Length [ft/ln]	84.45	211.40	7.03	6.58	418.69	9.11	164.95	198.91	33.59	127.91

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

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Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 6: 6 TT_PM

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.62	8.22	3.73	8.69	14.65	1.85	192.78	60.55	60.55	83.43	63.39	63.39
Movement LOS	D	A	A	A	B	A	F	E	E	F	E	E
d_A, Approach Delay [s/veh]	11.57			13.92			105.67			66.98		
Approach LOS	B			B			F			E		
d_I, Intersection Delay [s/veh]	21.31											
Intersection LOS	C											
Intersection V/C	0.595											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0			13.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.72			47.72			49.52			49.52		
I_p,int, Pedestrian LOS Score for Intersection	3.055			3.040			2.322			2.100		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	920			903			433			433		
d_b, Bicycle Delay [s]	17.52			18.08			36.85			36.83		
I_b,int, Bicycle LOS Score for Intersection	2.497			2.852			1.951			1.758		
Bicycle LOS	B			C			A			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 6: 6 TT_PM

Intersection Level Of Service Report
Intersection 2: Oatfield Rd/Courtney Ave

Control Type:	Two-way stop	Delay (sec / veh):	24.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.123

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	59	379	469	49	23	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	3.00	7.00	5.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	379	469	49	23	88
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	105	130	14	6	24
Total Analysis Volume [veh/h]	66	421	521	54	26	98
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 6: 6 TT_PM

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.01	0.00	0.12	0.19
d_M, Delay for Movement [s/veh]	8.65	0.00	0.00	0.00	24.38	13.36
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.11	0.11	0.00	0.00	0.41	0.67
95th-Percentile Queue Length [ft/ln]	2.85	2.85	0.00	0.00	10.32	16.86
d_A, Approach Delay [s/veh]	1.17		0.00		15.67	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	2.12					
Intersection LOS	C					

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 6: 6 TT_PM

Intersection Level Of Service Report
Intersection 103: McLoughlin Blvd/Site Access #3

Control Type:	Two-way stop	Delay (sec / veh):	89.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.045

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	3	1033	1487	0	2	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	3.00	17.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	1033	1487	0	2	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	272	391	0	1	0
Total Analysis Volume [veh/h]	3	1087	1565	0	2	0
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 6: 6 TT_PM

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.02	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	13.48	0.00	0.00	0.00	89.94	19.35
Movement LOS	B	A	A	A	F	C
95th-Percentile Queue Length [veh/ln]	0.02	0.00	0.00	0.00	0.14	0.14
95th-Percentile Queue Length [ft/ln]	0.53	0.00	0.00	0.00	3.45	3.45
d_A, Approach Delay [s/veh]	0.04		0.00		89.94	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	0.08					
Intersection LOS	F					

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 6: 6 TT_PM

Intersection Level Of Service Report
Intersection 104: McLoughlin Blvd/Site Access #4

Control Type:	Two-way stop	Delay (sec / veh):	86.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	0	1035	1475	23	1	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	3.00	0.00	0.00	17.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1035	1475	23	1	12
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	272	388	6	0	3
Total Analysis Volume [veh/h]	0	1089	1553	24	1	13
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 6: 6 TT_PM

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.02	0.04
d_M, Delay for Movement [s/veh]	13.51	0.00	0.00	0.00	86.11	18.03
Movement LOS	B	A	A	A	F	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.21	0.21
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.18	5.18
d_A, Approach Delay [s/veh]	0.00		0.00		22.89	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.12					
Intersection LOS	F					

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 6: 6 TT_PM

Intersection Level Of Service Report
Intersection 201: Future Site Access/Courtney Ave

Control Type:	Two-way stop	Delay (sec / veh):	12.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.111

Intersection Setup

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	56	8	7	175	194	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	8.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	8	7	175	194	63
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	2	49	54	18
Total Analysis Volume [veh/h]	62	9	8	194	216	70
Pedestrian Volume [ped/h]	0		0		0	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Generated with

Version 2023 (SP 0-2)

Milwaukie CFA

Scenario 6: 6 TT_PM

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

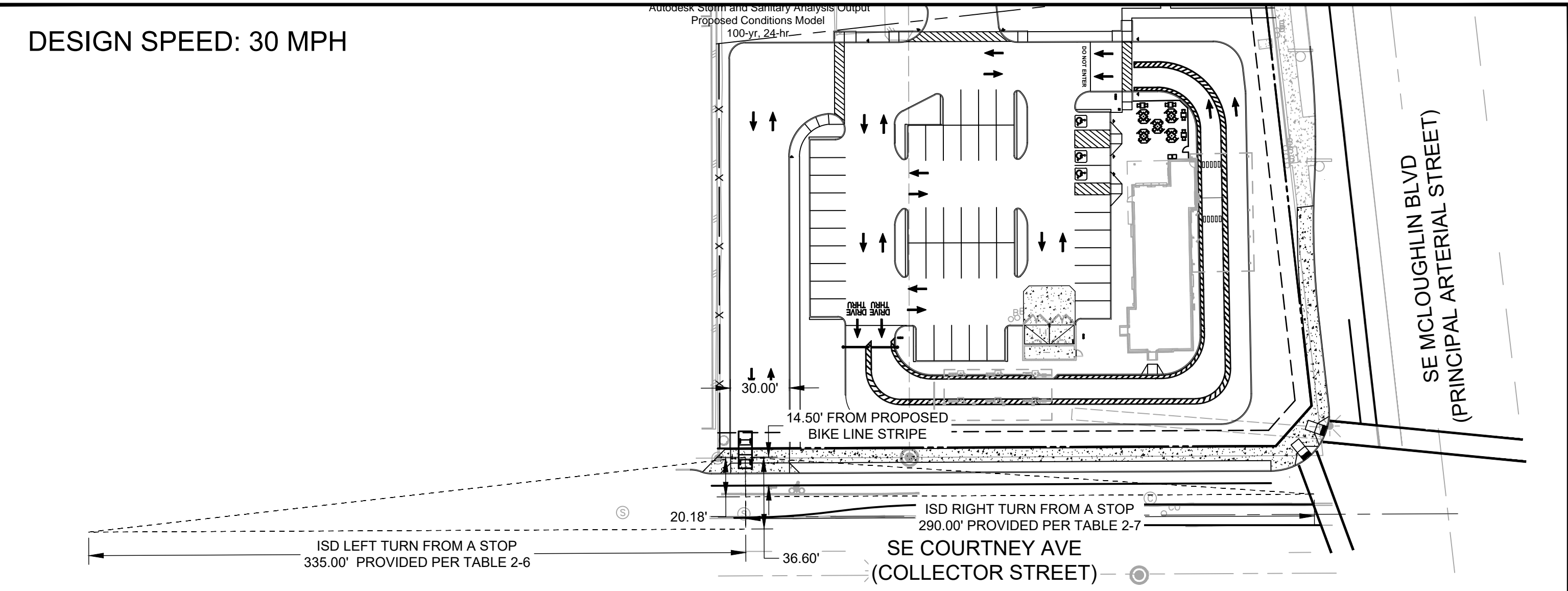
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.31	10.41	7.80	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.42	0.42	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	10.39	10.39	0.33	0.33	0.00	0.00
d_A, Approach Delay [s/veh]	12.07		0.31		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.64					
Intersection LOS	B					

Appendix I:
Driveway Sight Distance Exhibit

DESIGN SPEED: 30 MPH

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr



ISD LEFT TURN FROM A STOP
335.00' PROVIDED PER TABLE 2-6

20.18'

ISD RIGHT TURN FROM A STOP
290.00' PROVIDED PER TABLE 2-7

36.60'

SE COURTNEY AVE
(COLLECTOR STREET)

SE MCLOUGHLIN BLVD
(PRINCIPAL ARTERIAL STREET)

C:\dowl_p\p\0413529\truck turning.dwg PLOT DATE 2024-02-21 17:00 SAVED DATE 2024-02-21 17:00 USER: musell

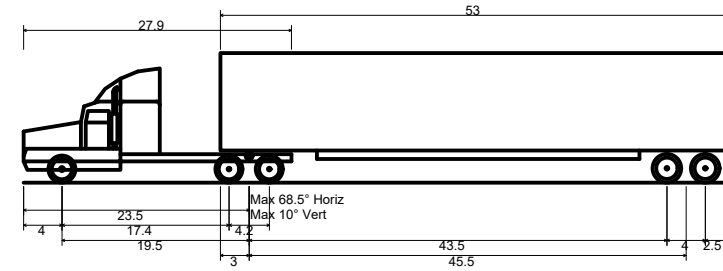


CFA COURTNEY AND MCLOUGHLIN
COURTNEY SIGHT DISTANCE

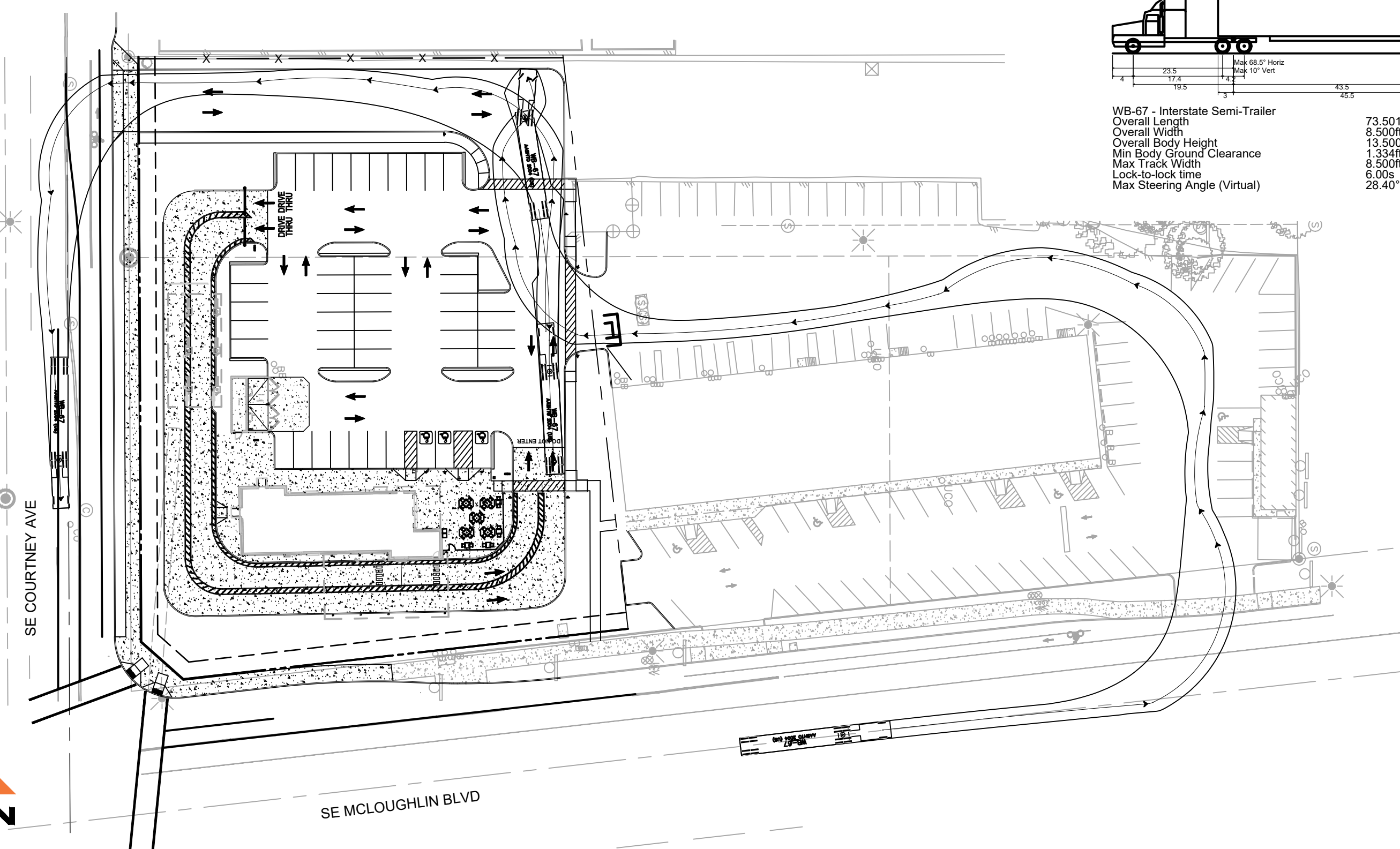
PROJECT	14868
DATE	02/21/2024

1 OF 1
272 of 368
Exhibit 3

Appendix J: Delivery Truck Circulation Exhibit



WB-67 - Interstate Semi-Trailer
 Overall Length 73.50ft
 Overall Width 8.50ft
 Overall Body Height 13.50ft
 Min Body Ground Clearance 1.334ft
 Max Track Width 8.50ft
 Lock-to-lock time 6.00s
 Max Steering Angle (Virtual) 28.40°



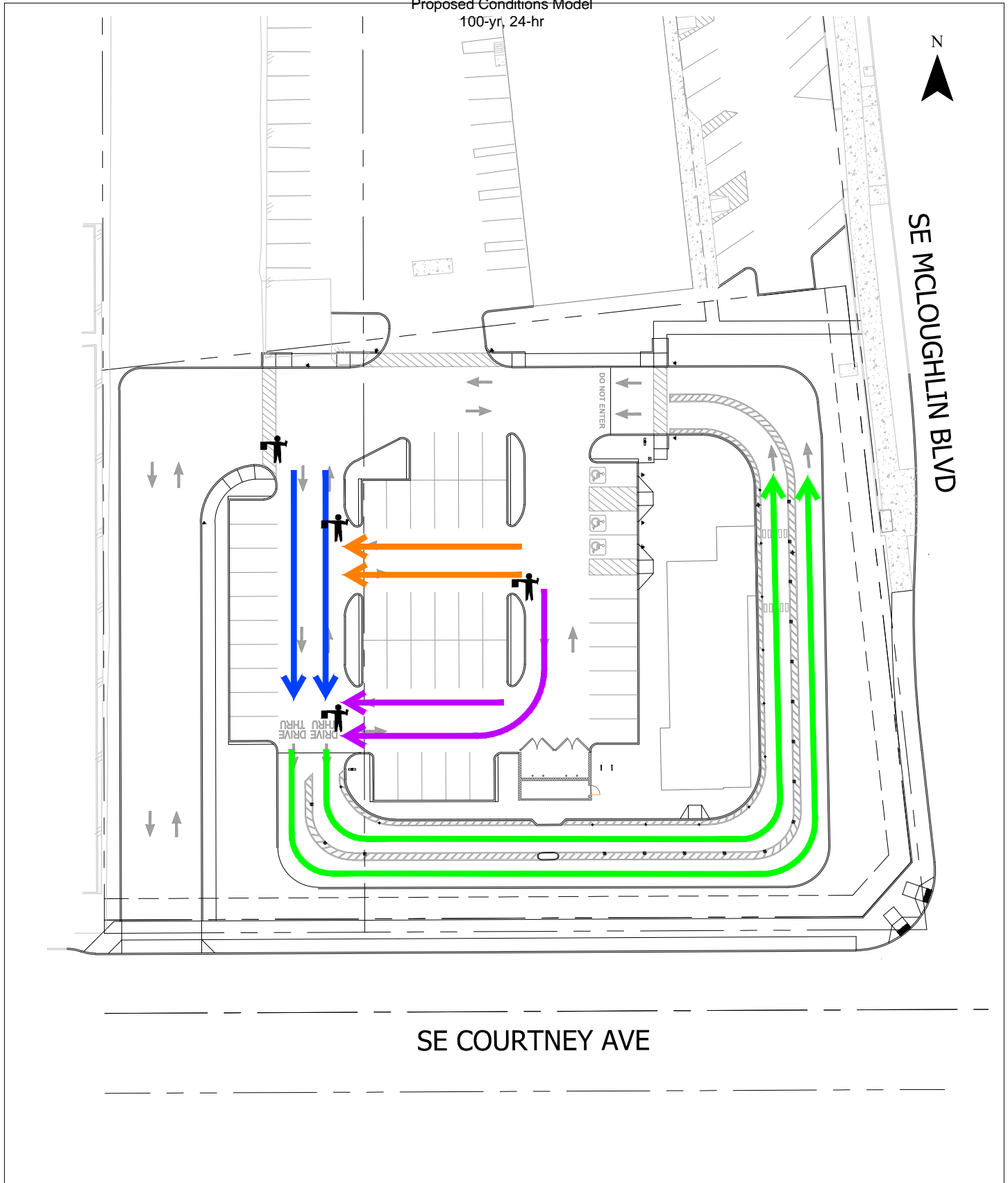
CFA COURTNEY AND MCLOUGHLIN
 TRUCK TURNING

PROJECT 14868
 DATE 02/21/2024

1 OF 1
 274 of 368
 Exhibit B

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Appendix K:
Traffic Management Plan Alternative



H:\2023\2794 - Milwaukie Chick-fil-A\design\CD\2794-figures.dwg Feb 21, 2024 - 9:59pm - jherniksen Layout Tab: Fig2

LEGEND

	Drive Through Lane Storage
	Phase 1 Temp. Queue Management
	Phase 2 Temp. Queue Management
	Phase 3 Temp. Queue Management
	Traffic Control personnel

**Conceptual Illustration of Potential Drive Through Temporary Queue Management Plan
Milwaukie, Oregon**

Figure
K-1

Exhibit G

Drainage Report

MEMORANDUM

TO: Oak Lodge Water Service District
FROM: Ryan Russell, EIT
DATE: March 21st, 2024
SUBJECT: Stormwater Design Memorandum – Chick-fil-A Courtney

I. OVERVIEW

The proposed project will construct new fast-food restaurant at 13819 SE Mcloughlin Blvd Milwaukie, Oregon 97222. The improvements include construction of paving, utilities, structure, landscaping, and stormwater mitigation facilities. The proposed stormwater facilities have been designed to provide stormwater conveyance, detention, and water quality mitigation.

II. REGULATORY REQUIREMENTS

The proposed improvements have been designed to comply with Oak Lodge Water Service District *Design and Construction Standards*, dated February 18th, 2021 (OLWSD). Section 2.0012.B in the OLWSD standards describes that the design of the water quality facilities must follow the current City of Portland standards, therefore the water quality facilities have been design in accordance the *City of Portland 2020 Stormwater Management Manual*. This site has been classified as a redevelopment that will be designed to treat all proposed impervious surfaces on site. The requirements have been summarized in Table 1 below.

Table 1: CWS Surface Water Requirements

Design Criteria	Performance Target	
Conveyance	100-year event	
Water Quality	0.19 in/hr	
Detention	<u>Pre-Developed</u> 50% of 2-yr	<u>Post-Developed</u> 2-yr

III. HYDROLOGIC AND HYDRAULIC ANALYSIS

The hydrologic and hydraulic analysis for the project was completed using the Autodesk Storm and Sanitary Analysis 2022.0.1 (SSA) software package. Hydrologic calculations utilized Soil Conservation Service (SCS) Technical Release No. 55 (TR-55) Urban Hydrology for Small Watersheds methodology, as outlined in the following sections. In addition, Autodesk AutoCAD 2022 was used for watershed delineation and figure creation.

IV. HYDROLOGIC METHOD

The Soil Conservation Service (SCS) unit hydrograph routing method was used for this analysis. The SCS method is based on the curve number (CN) approach and uses the Natural Resources Conservation Service’s (NRCS) equations for computing runoff. The SCS method includes inputs like basin area, time of concentration, curve number, and 24-hour precipitation depth. The curve number was assumed to be 74 for all pervious areas, and a composite curve number of 90 was calculated for the pre-development surfaces. The basin delineation for the site has been summarized in Table 2. Overall site data for the pre-developed and post-developed conditions have been provided in Table 3. The rainfall depths used in this analysis

are from Table A-9 in the SWMM and have been summarized in Table 4. Proposed and existing basin maps has been attached at the back of this memo.

Table 2: Proposed Basin Information

Basin	Impervious Area (sf)	Pervious Area (sf)	Total Area (sf)	Curve Number	Time of Concentration
Basin 1	12,156	1,089	13,245	96.0	5.0
Basin 2	3,802	76	3,878	97.5	5.0
Basin 3	1,652	944	2,596	89.3	5.0
Basin 4	4,604	2,910	7,514	88.7	5.0
Basin 5	20,019	4,477	24,496	93.6	5.0
Basin 6	7,311	3,732	11,043	89.9	5.0
Basin A ¹	305	1,542	1,847	78.0	5.0
Total	49,848	14,770	64,618	90.4	5.0

1. Basin A drains away from the site on the north and east edges of the site.

Table 3: Site Data Information

Basin	Impervious Area (sf)	Pervious Area (sf)	Total Area (sf)	Curve Number	Time of Concentration
Pre-Developed	44,330	20,280	64,610	90.5	5.0
Post-Developed	49,848	14,770	64,618	90.4	5.0

Table 4: Design Rainfall Depths

Recurrence Interval (#-yr / 24-hr)	Depth (in)
2-yr	2.40
100-yr	4.70

V. HYDRAULIC MODEL

SSA is a comprehensive modeling package that was used to perform the hydrologic and hydraulic computations simultaneously. The hydraulic features of the software were used to model the pipes, structures, surface facilities, detention storage, and outfalls as a complete system. The model was run using a hydrodynamic approach for unconfined flows and the Darcy-Weisbach equation for pressurized flows. The software analysis accounted for back water effects, flow reversal, surcharging, and pressure flow.

VI. STORMWATER QUALITY DESIGN

The proposed development has been designed to be mitigate for water quality through a combination of surface and mechanical treatment facilities. The site has been mitigated to the greatest extent feasible with water quality (WQ) basins. The WQ basins have been designed in accordance with Section 3.2.2.4 of the SWMM. Areas infeasible to treat with WQ basins have been designed to be mitigated by Contech StormFilter catch basins. The Contech StormFilter with ZPG media is listed on the City of Portland’s Manufactured Stormwater Treatment Technologies approved products list. The surface storm water facilities were sized with the rational method, as described in the *City of Portland 2020 Stormwater Management Manual* section A.3.1. The calculations for the water quality flows for the basins were calculated using the prescribed runoff coefficient and rainfall intensity from Table A-7 of the SWMM, as shown in Equation 1-1 below. The impervious area used to size the facilities were taken from Table 2.

$$Eq. 1 - 1 \quad Q_{Water\ Quality} (cfs) = (.90) * \left(.19 \frac{in}{hr} \right) * Area(ac)$$

Once the required water quality flows were calculated the StormFilter basins were sized based off the StormFilter spec sheets included in the appendix. The minimum surface area for each WQ Basin was calculated by using Equation 1-2 as shown below. A percolation rate of 10 in/hr was used for the planting media, and a factor of safety of 2 was applied to account for sedimentation over the life of the facility. These facilities will have a maximum ponding depth of two feet, maximum side slopes of 3:1, an underdrain, flow control orifice, and overflow. WQ basin design summaries have been provided in Table 5.1 and Table 5.2.

$$Eq. 1 - 2 \quad Area (sf) = \frac{Q_{Water\ Quality} (cfs)}{K (soil\ percolation, \frac{in}{hr})}$$

Table 5: Mechanical Water Quality Design Summary

Facility ID	Water Quality Cartridge Configuration	Water Quality Flow (cfs)	Provided Treatment Flow Rate (cfs)
WQCB-01	2 x 27-in	0.048	0.050
WQCB-02	1 x 18-in	0.015	0.017

Table 5.1: Water Quality Basin Design Summary

Facility ID	Water Quality Flow (cfs)	Facility Size Required (SF)	Facility Size Provided (SF)
WQ Basin-01	0.0065	56.03	349.89
WQ Basin -02	0.0181	156.16	195.53
WQ Basin-03	0.0786	678.98	857.31
WQ Basin -04	0.0287	247.96	621.12

Table 5.2: Water Quality Basin Geometry Design Summary

Facility ID	Underdrain Size	Ponding Depth	Overflow Device	Soil Depth	Rock Depth	Side Slopes	Lined	Freeboard
WQ Basin-01	6"	2' Max	12" Standpipe	12"	12"	3:1 max	Yes	2" min
WQ Basin -02	6"	2' Max	12" Standpipe	12"	12"	3:1 max	Yes	2" min
WQ Basin-03	6"	2' Max	12" Standpipe	12"	12"	3:1 max	Yes	2" min
WQ Basin -04	6"	2' Max	12" Standpipe	12"	12"	3:1 max	Yes	2" min

VII. STORMWATER DETENTION DESIGN

The proposed development has been designed to detain the post-developed runoff rate to half of the pre-developed rate for the 2-year, 24-hour rainfall event. To achieve the required flow reduction, storage facilities with flow restriction devices have been proposed to hold the runoff and release it at a controlled rate. The facilities include surface storage in WQ Basins and subsurface storage in ADS StormTech Chambers. The facilities have been designed in accordance with Section 2.0012 and Section 2.1005.03.04 to the greatest extent feasible. A summary of the ADS chamber configuration has been provided in Table 6. A summary of the flow control structure configuration has been provided in Table 7. The site has areas around the perimeter that are impracticable to capture, and the facilities have been designed to provide additional storage to over-detain for the uncaptured areas. A summary of the pre- and post-developed flow rates have been provided in Table 8.

Table 6: ADS Design Summary

Parameter	Value
Chamber Type	DC-780
No. Chambers	6
No. End Caps	4
Stone Porosity	0.40
Stone Above Chambers	6-in
Stone Below Chambers	9-in
Underdrain	Yes
Total Storage	669 cu.ft

Table 7: Flow Control Structure Design Summary

Facility	Description	Diameter (in)	Elevation (ft)	Configuration
Flow Control Manhole	Low-Flow Orifice	2.5	194.10	Side
	High-Flow Overflow	12.0	197.67	Overflow
WQ Basin-01	Low-Flow Orifice	0.50	199.0	Side
	High-Flow Overflow	12.0	201.0	Overflow
WQ Basin -02	Low-Flow Orifice	0.50	202.91	Side
	High-Flow Overflow	12.0	204.91	Overflow
WQ Basin -03	Low-Flow Orifice	0.75	199.5	Side
	High-Flow Overflow	12.0	201.50	Overflow
WQ Basin -04	Low-Flow Orifice	1.00	201.75	Side
	High-Flow Overflow	12.0	203.00	Overflow

Table 8: Detention Summary

Event	Pre-Developed Flow Rate (cfs)	Post-Developed Flow Rate (cfs)
2-yr, 24-hr	0.57	0.25
100-yr, 24-hr	1.43	0.90

VIII. STORMWATER CONVEYANCE DESIGN

A conveyance analysis has been completed and the system is able to convey the 100-year storm event. A minimum of one foot of freeboard has been maintained within the system through the 100-year storm.

IX. DOWNSTREAM ANALYSIS

The site has been designed to release at flow rates at half of the pre-developed condition. The existing condition for the site consists of developed surfaces that leave the site undetained, without reported capacity issues. Because of the mitigation efforts, the flows leaving the site will be less than what currently exists at the site, therefore the downstream system has been determined to have adequate capacity.

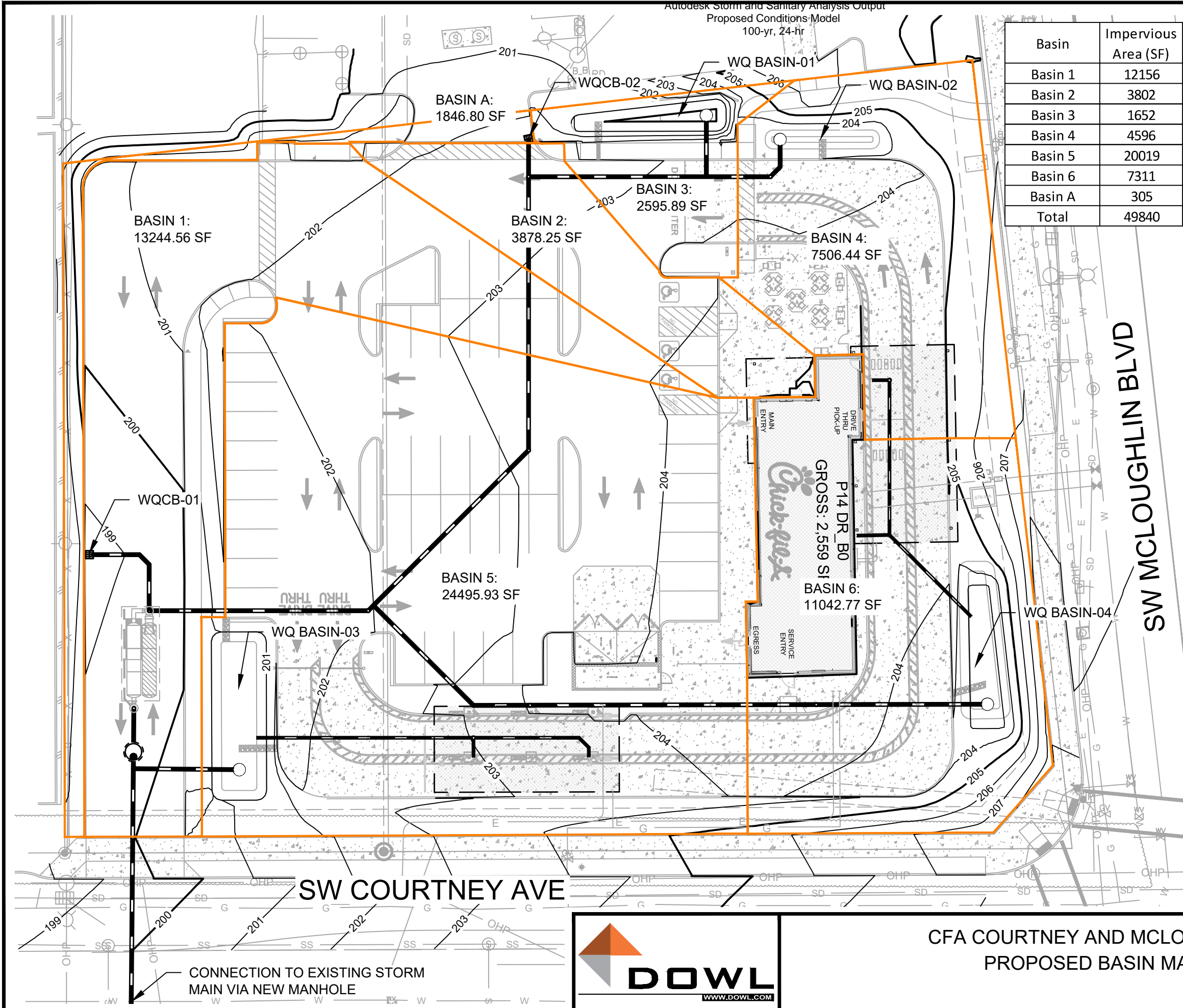
X. CONCLUSION

The proposed drainage system has been analyzed for its ability to convey, treat, and detain runoff from the site. It has been concluded that the system has been designed to meet the minimum requirements specified in the *OLWSD Design and Construction Standards* for conveyance and detention, and with the *City of Portland 2020 Stormwater Management Manual* for water quality.

XI. ATTACHMENTS

1. Proposed and Existing Basin Map
2. Stormwater Plan and Detail Sheets
3. Stormwater Model Inputs and Outputs
4. Geotechnical Report Excerpts
5. USDA Soil Maps

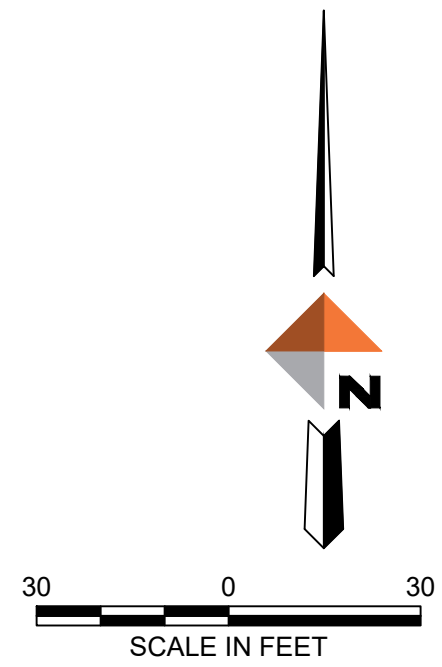
Basin	Impervious Area (SF)	Pervious Area (SF)	Total Area (SF)	Curve Number	Time of Concentration (min)
Basin 1	12156	1089	13245	96.03	5.0
Basin 2	3802	76	3878	97.53	5.0
Basin 3	1652	944	2596	89.27	5.0
Basin 4	4596	2910	7506	88.70	5.0
Basin 5	20019	4477	24496	93.61	5.0
Basin 6	7311	3732	11043	89.89	5.0
Basin A	305	1542	1847	77.96	5.0
Total	49840	14770	64610	90.43	5.0



SW M'CLOUGHLIN BLVD

SW COURTNEY AVE

CONNECTION TO EXISTING STORM MAIN VIA NEW MANHOLE



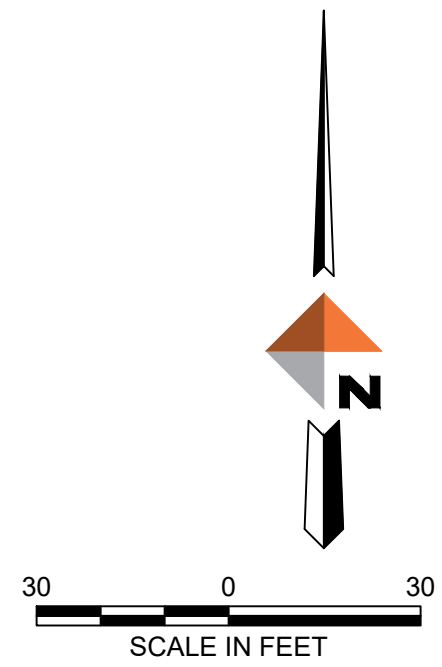
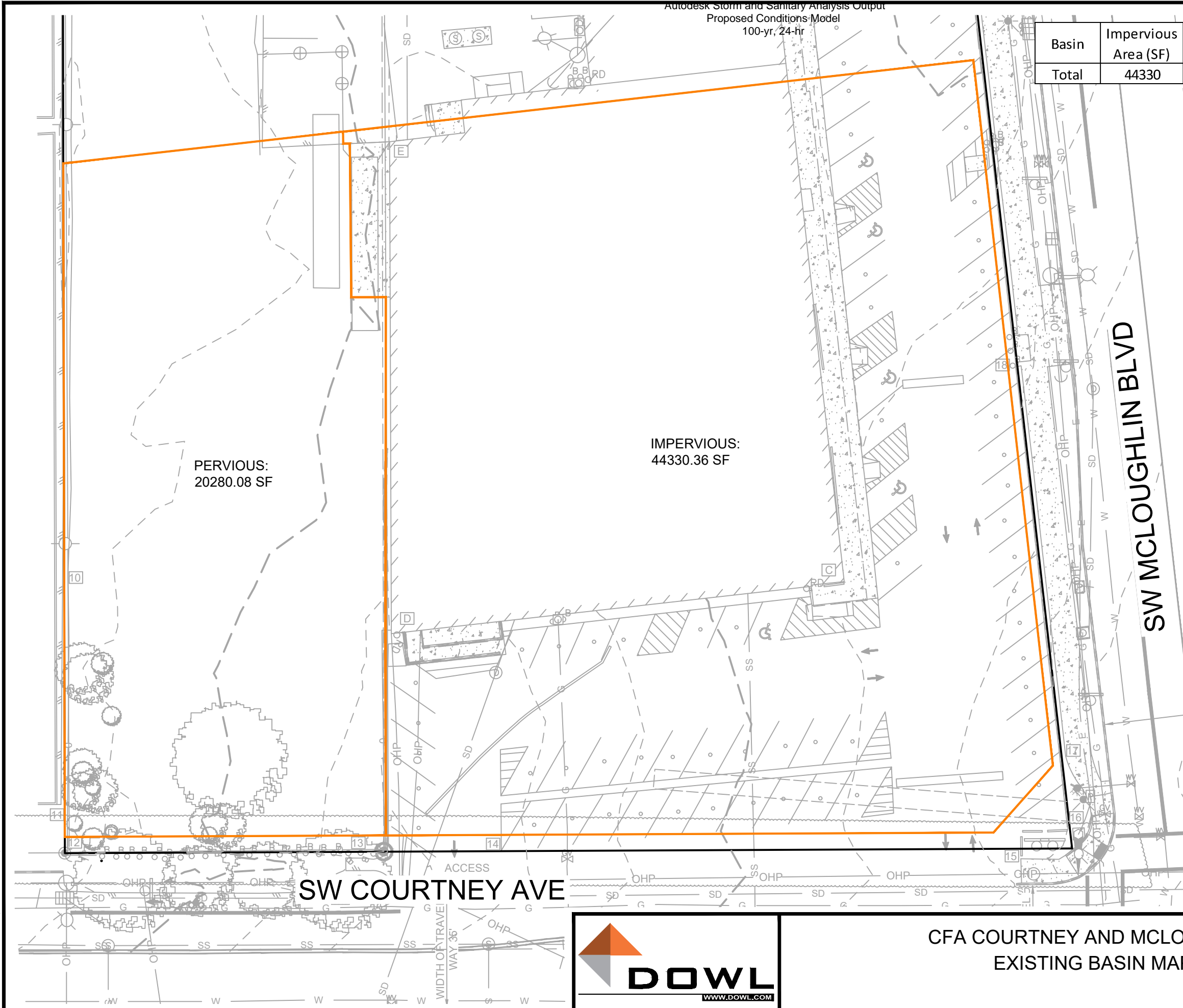
CFA COURTNEY AND M'CLOUGHLIN
PROPOSED BASIN MAP

PROJECT 14868
DATE 03/19/2024

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Basin	Impervious Area (SF)	Pervious Area (SF)	Total Area (SF)	Curve Number	Time of Concentration (min)
Total	44330	20280	64610	90.47	5.0



SW COURTNEY AVE

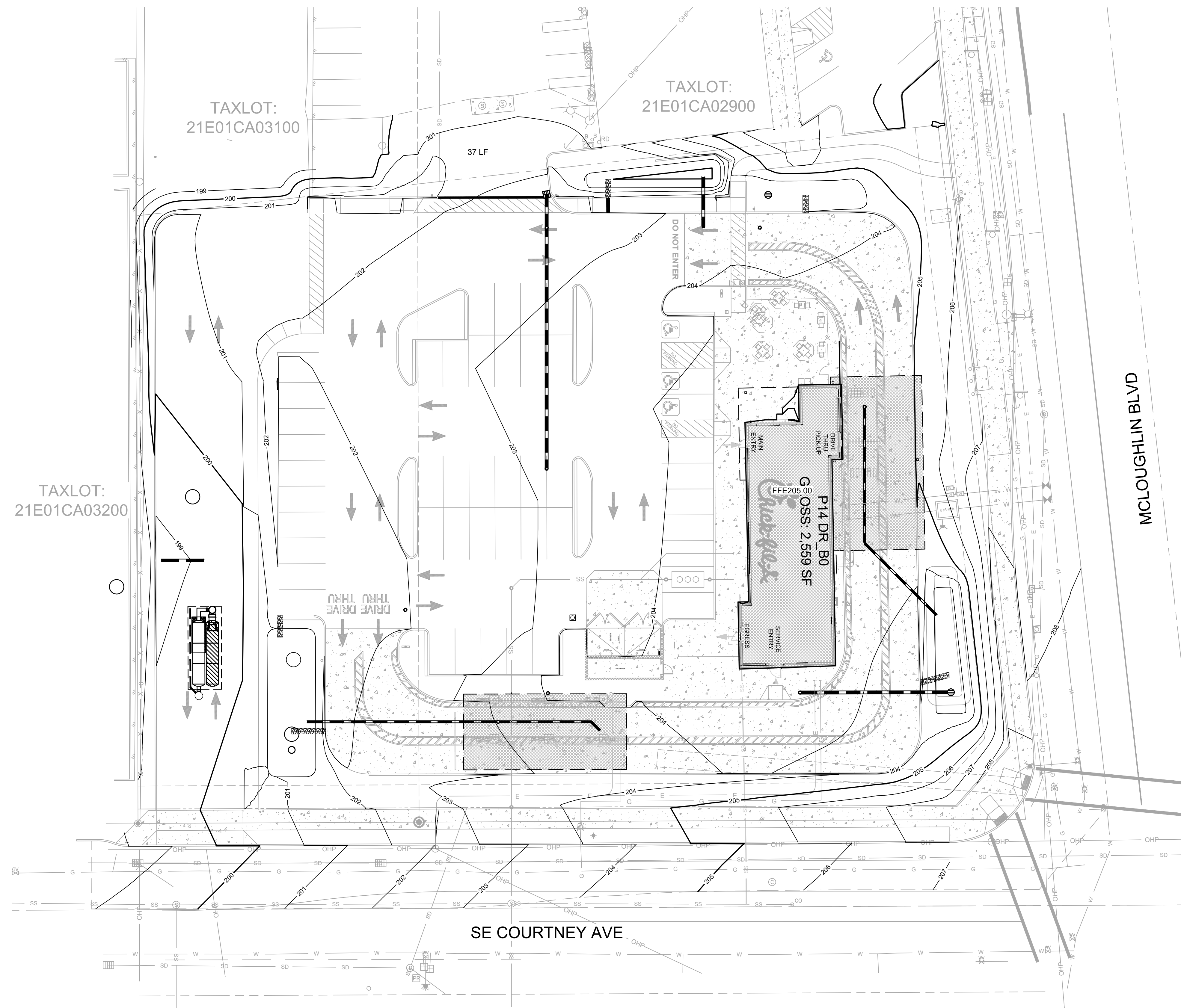
SW M'CLOUGHLIN BLVD



CFA COURTNEY AND M'CLOUGHLIN
EXISTING BASIN MAP

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DATE 03/19/2024

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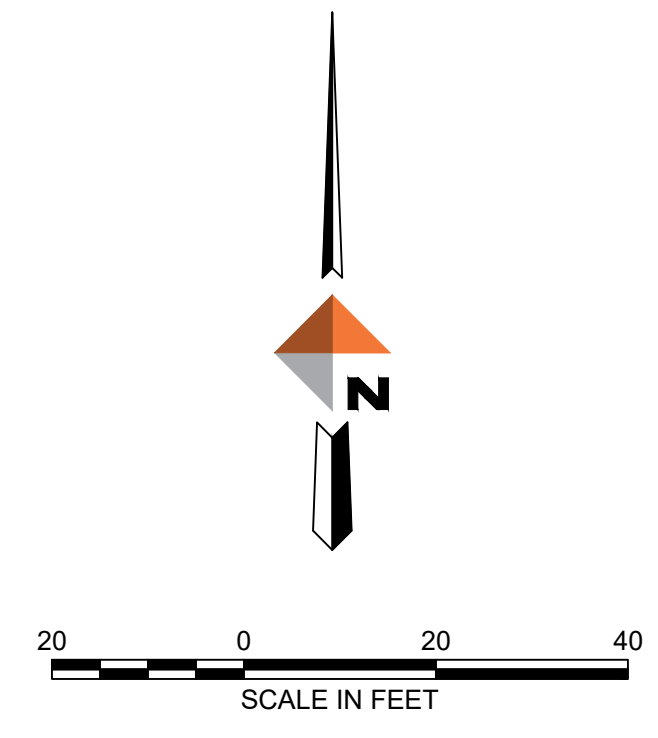


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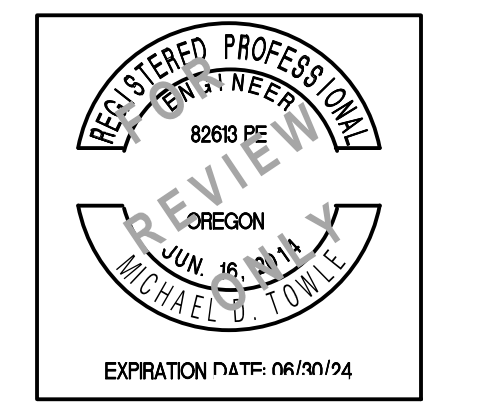
	EXISTING PROPERTY LINE
	EXISTING EASEMENT
	EXISTING GAS LINE
	EXISTING SANITARY SEWER LINE
	PROPOSED STORM DRAIN LINE
	EXISTING DOMESTIC WATER LINE
	EXISTING FIRE WATER LINE
	EXISTING POWER(ELECTRIC) LINE
	EXISTING COMMUNICATIONS LINE
	PROPOSED FIRE DEPARTMENT CONNECTION
	PROPOSED HYDRANT
	PROPOSED WATER METER
	PROPOSED WATER VALVE
	PROPOSED DCDA
	PROPOSED SANITARY SEWER CLEAN OUT
	PROPOSED STORM SEWER CATCH BASIN
	PROPOSED STORM SEWER CLEAN OUT

- STORMWATER KEYNOTES**
- PROPOSED 6-INCH PVC D3034 PIPE UNDER DRAIN LINE
 - PROPOSED 12-INCH PVC D3034 PIPE. SEE PLAN FOR LENGTH AND SLOPE.
 - PROPOSED 24-INCH ADS INLET PIPE
 - PROPOSED CONTECH FILTER CATCH BASIN. SEE TABLE THIS SHEET FOR MORE INFORMATION.
 - PROPOSED 60" FLOW CONTROL MANHOLE. SEE TABLE THIS SHEET FOR MORE INFORMATION.
 - PROPOSED (6) ADS DC-780 STORMTECH SYSTEM.
 - PROPOSED 48-INCH ADS STORM CHAMBER INLET/OUTLET. SEE TABLE THIS SHEET FOR MORE INFORMATION.
 - PROPOSED CONNECTION TO EXISTING STORM LINE WITH NEW MANHOLE. SEE MANHOLE TABLE THIS SHEET FOR MORE INFORMATION. CONTRACTOR TO POT HOLE AND CONFIRM EXISTING LINES LOCATION AND INVERT PRIOR TO CONSTRUCTION.
 - PROPOSED 12" ADS MANIFOLD PIPE
 - PROPOSED 8-INCH C900 PIPE. SEE PLAN FOR LENGTH AND SLOPE.
 - PROPOSED ROOF/CANOPY DRAIN CONNECTION. SEE PLAN FOR INVERT.
 - PROPOSED STORM WATER CLEAN OUT. SEE DATA TABLE THIS SHEET FOR MORE INFORMATION.
 - PROPOSED STORM FACILITY AREA DRAIN. SEE DATA TABLE THIS SHEET FOR MORE INFORMATION
 - PROPOSED 18" WIDE CURB CUT WITH ROCK
 - PROPOSED 18" URBAN ACCESSORIES TRENCH GRATE AND CHANNEL DRAIN. OWNER TO SELECT PEDESTRIAN RATED GRATE STYLE PRIOR TO INSTALLATION.
 - PROPOSED AKO TRENCH DRAIN WITH 0.5% SLOPE. GRATE TO BE H20 TRAFFIC RATED, AND DRAIN TO CONNECT TO FILTER SIDE OF THE CATCH BASIN. SEE PLAN FOR LENGTH.
 - PROPOSED LINED STORM WATER FACILITY WITH UNDER DRAIN AND MAX 3:1 SLOPED SIDES. SEE SHEET C3.0 FOR GRADING INFORMATION.
 - ROOF DRAIN OUTFALL TO WATER QUALITY FACILITY. SEE PLAN FOR INVERT.

ALL PRIVATE STORM CONNECTIONS NOT MADE AT A STRUCTURE TO BE MADE WITH A WYE FITTING



OREGON UTILITY NOTIFICATION CENTER
1-800-332-2344



CHICK-FIL-A
McLOUGHLIN & COURTNEY
MILWAUKIE, OREGON

FSR# 05244

REVISION SCHEDULE

NO.	DATE	DESCRIPTION

CIVIL PROJECT #	14868.01
PRINTED FOR	SCHEMATIC DESIGN
DATE	MARCH 2024
DRAWN BY	RAR
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DESIGN REVIEW SHEET NUMBER
STORM PLAN

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PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	

CFA C&M MILWUAKIE, OR, USA

DC-780 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH DC-780.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
 - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
 - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
 - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE DC-780 CHAMBER SYSTEM

1. STORMTECH DC-780 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH DC-780 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
 - STONESHOOTER LOCATED OFF THE CHAMBER BED.
 - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH DC-780 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER DC-780 CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

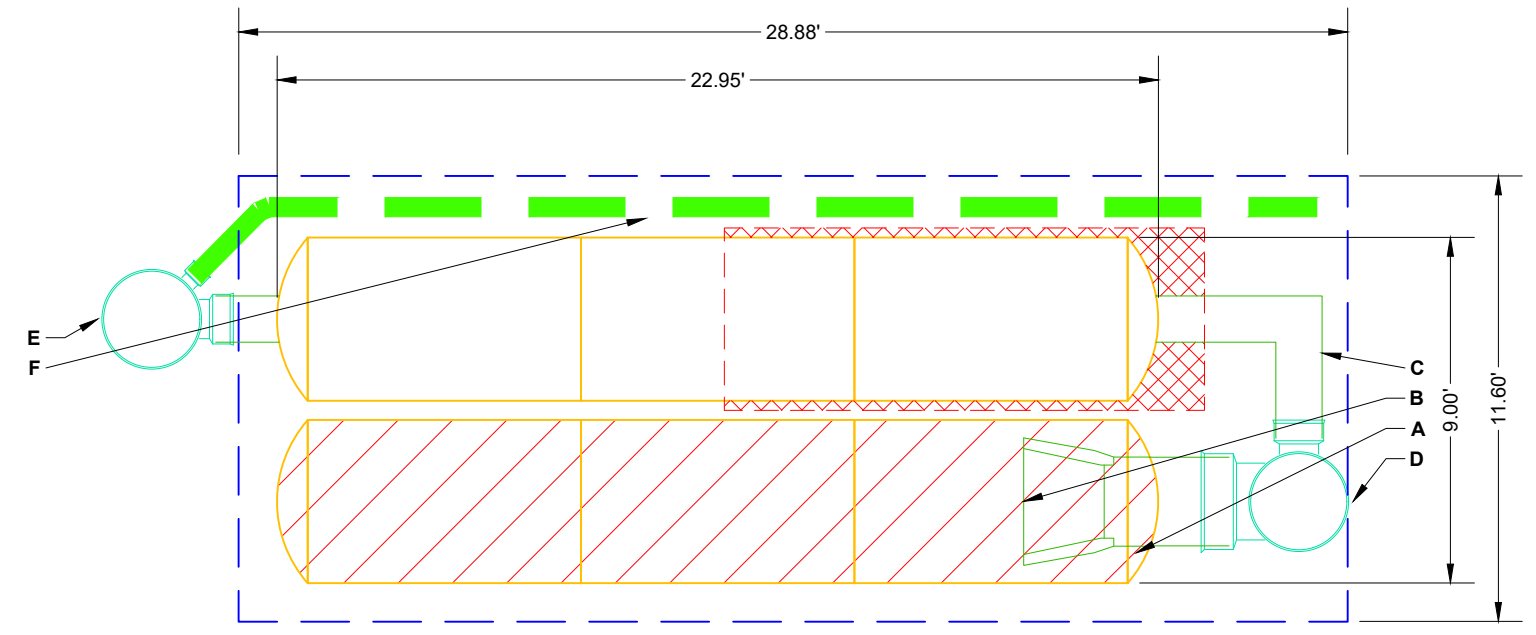
USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

PROPOSED LAYOUT		CONCEPTUAL ELEVATIONS:	
6	STORMTECH DC-780 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	15.25
4	STORMTECH DC-780 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	5.25
6	STONE ABOVE (in)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	4.75
9	STONE BELOW (in)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	4.75
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	4.75
669	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	3.75
		TOP OF DC-780 CHAMBER:	3.25
		12" x 12" TOP MANIFOLD INVERT:	1.79
		12" BOTTOM CONNECTION INVERT:	0.85
335	SYSTEM AREA (SF)	24" ISOLATOR ROW PLUS INVERT:	0.76
81.0	SYSTEM PERIMETER (ft)	BOTTOM OF DC-780 CHAMBER:	0.75
		UNDERDRAIN INVERT:	0.00
		BOTTOM OF STONE:	0.00

*INVERT ABOVE BASE OF CHAMBER

Autodesk Storm and Sanitary Analysis Output			
PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*
PREFABRICATED EZ END CAP	A	24" BOTTOM PREFABRICATED EZ END CAP, PART#: SC740ECEZ / TYP OF ALL 24" BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	0.10"
FLAMP	B	INSTALL FLAMP ON 24" ACCESS PIPE / PART#: SC74024RAMP	
MANIFOLD	C	12" x 12" TOP MANIFOLD, ADS N-12	12.50"
NYLOPLAST (INLET W/ ISO PLUS ROW)	D	30" DIAMETER (24.00" SUMP MIN)	2.3 CFS IN
NYLOPLAST (OUTLET)	E	30" DIAMETER (DESIGN BY ENGINEER)	2.0 CFS OUT
UNDERDRAIN	F	6" ADS N-12 DUAL WALL PERFORATED HDPE UNDERDRAIN	



- ISOLATOR ROW PLUS (SEE DETAIL)
- PLACE MINIMUM 12.50' OF ADSPLUS125 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS
- BED LIMITS

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

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Chamber System

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4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

CFA C&M

MILWAUKIE, OR, USA

DATE: _____

PROJECT #: _____

DRAWN: RR

CHECKED: N/A

DESCRIPTION

DATE

DRW

CHK

SHEET

288 OF 6

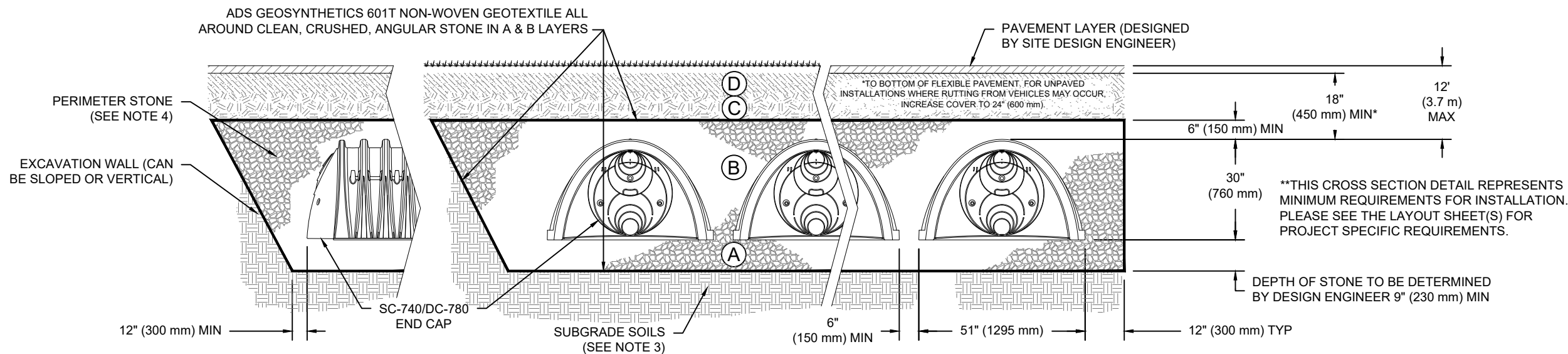
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ACCEPTABLE FILL MATERIALS: STORMTECH DC-780 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 ¹ A-1, A-2-4, A-3 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE ⁵	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE ⁵	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

PLEASE NOTE:

1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. DC-780 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

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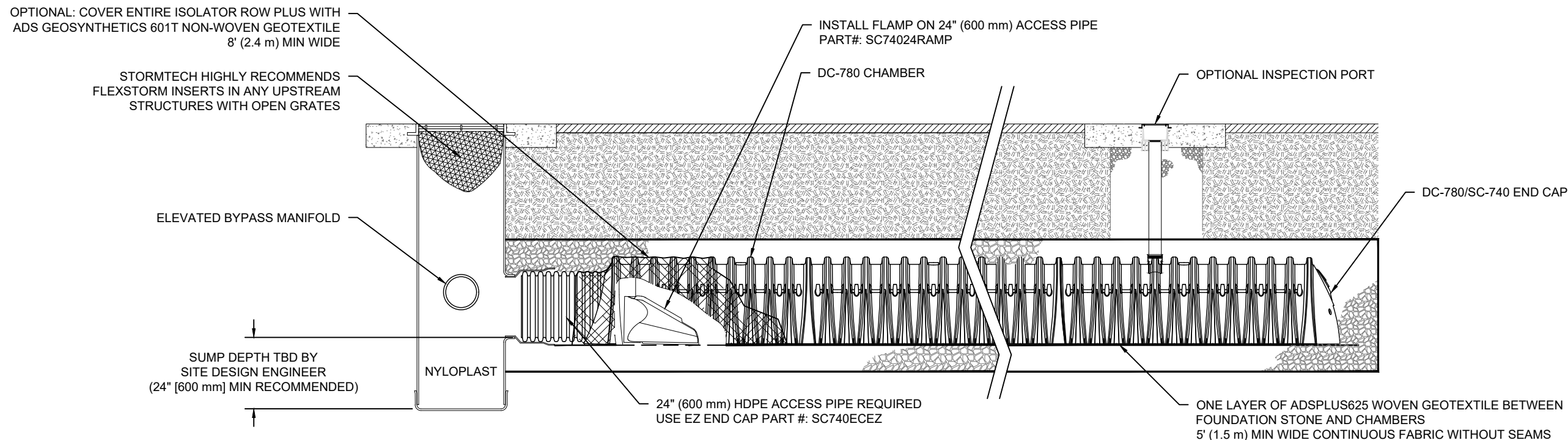
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DC-780 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
 - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
 - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
 - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
 - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
 - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
 - B. ALL ISOLATOR PLUS ROWS
 - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
 - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
 - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
 - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
 - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
 - B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
 - C. VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

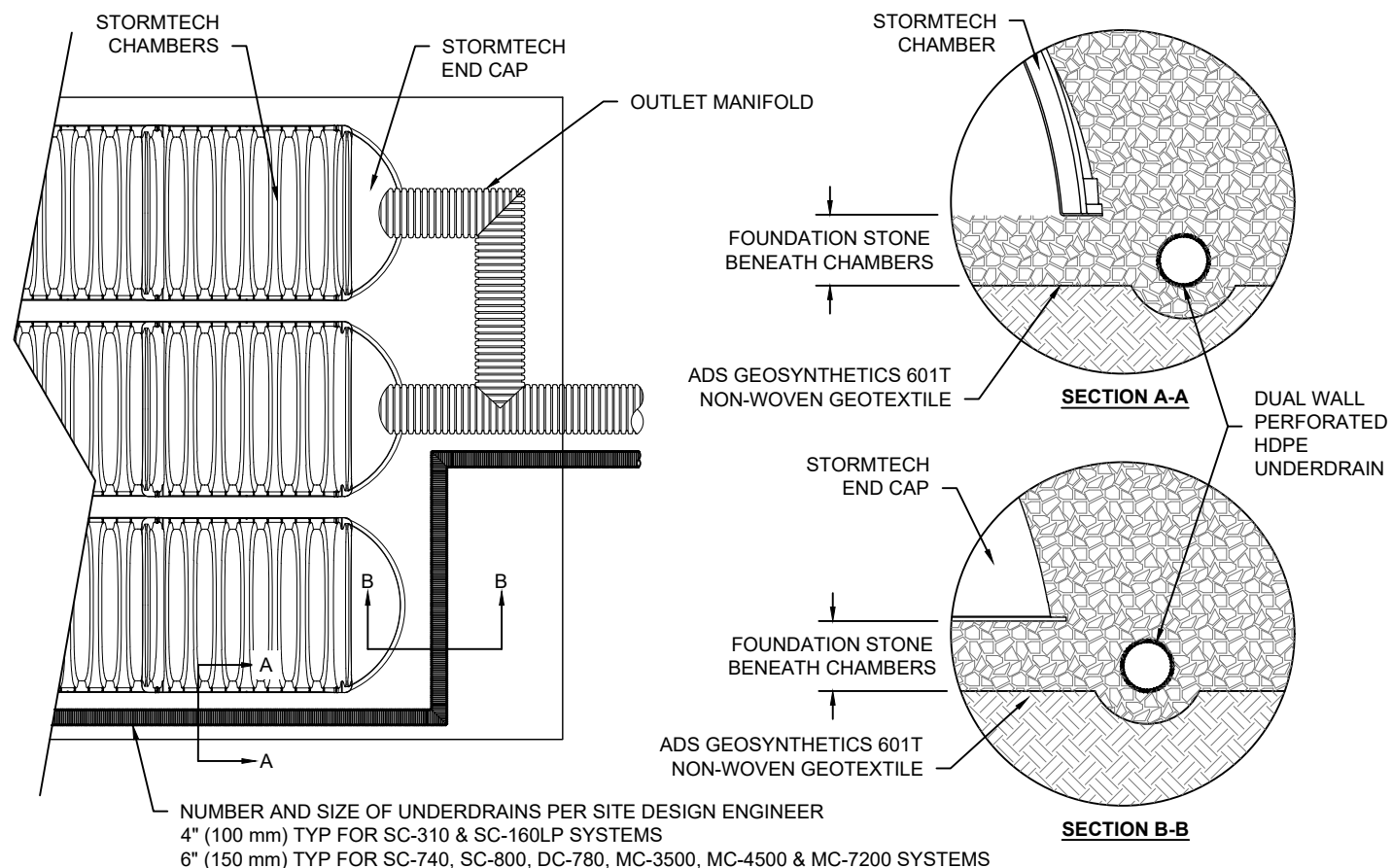
NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

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<p>StormTech® Chamber System</p>	<p>888-892-2694 WWW.STORMTECH.COM</p>	<p>4640 TRUEMAN BLVD HILLIARD, OH 43026 1-800-733-7473</p>	<p>THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.</p>			
<p>DATE</p>	<p>DRW</p>	<p>CHK</p>	<p>DESCRIPTION</p>			

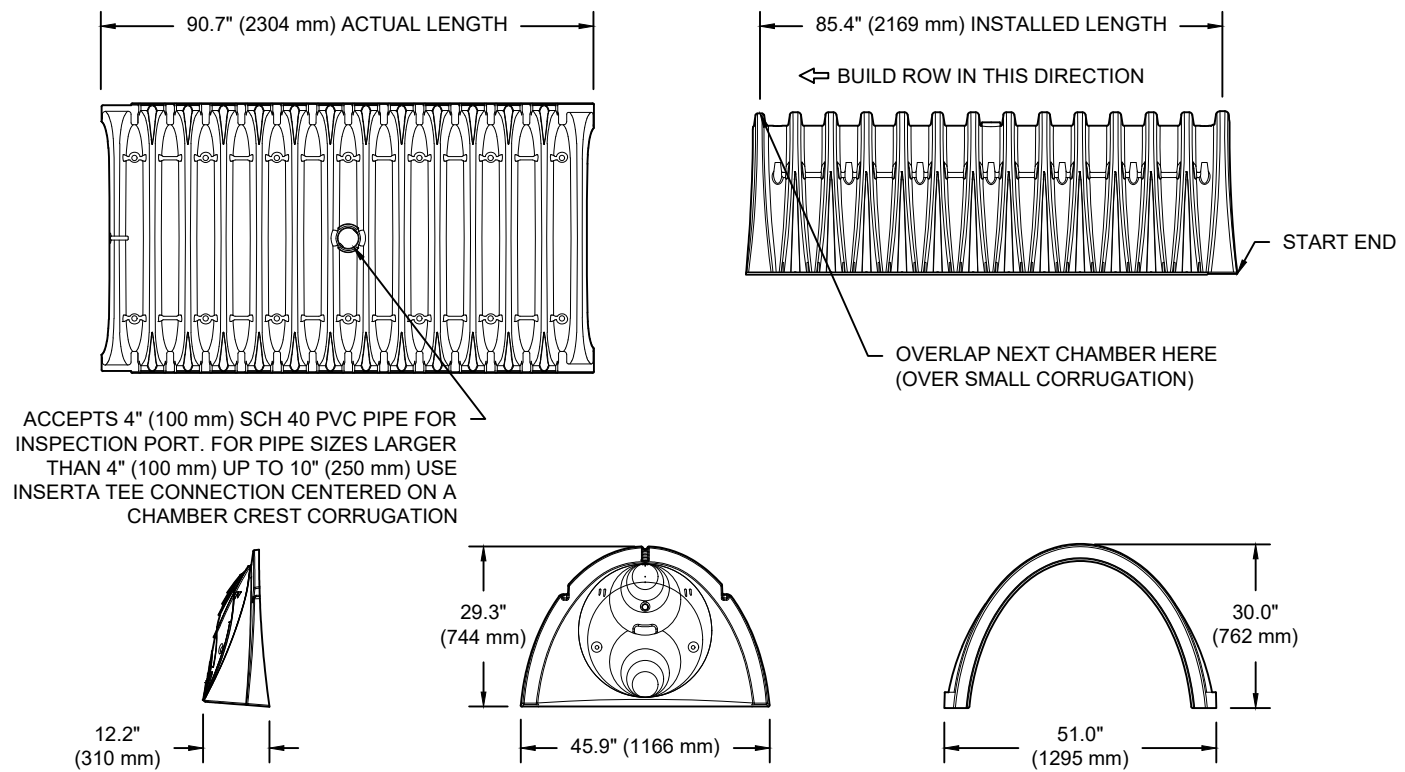
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DC-780 TECHNICAL SPECIFICATION

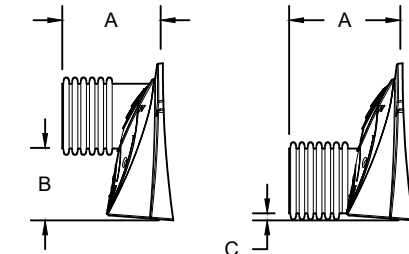
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NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	46.2 CUBIC FEET	(1.30 m ³)
MINIMUM INSTALLED STORAGE*	78.4 CUBIC FEET	(2.20 m ³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, 9" (229 mm) BELOW, AND 6" (152 mm) BETWEEN CHAMBERS



STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T / SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740ECEZ*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740ECEZ ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740ECEZ THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

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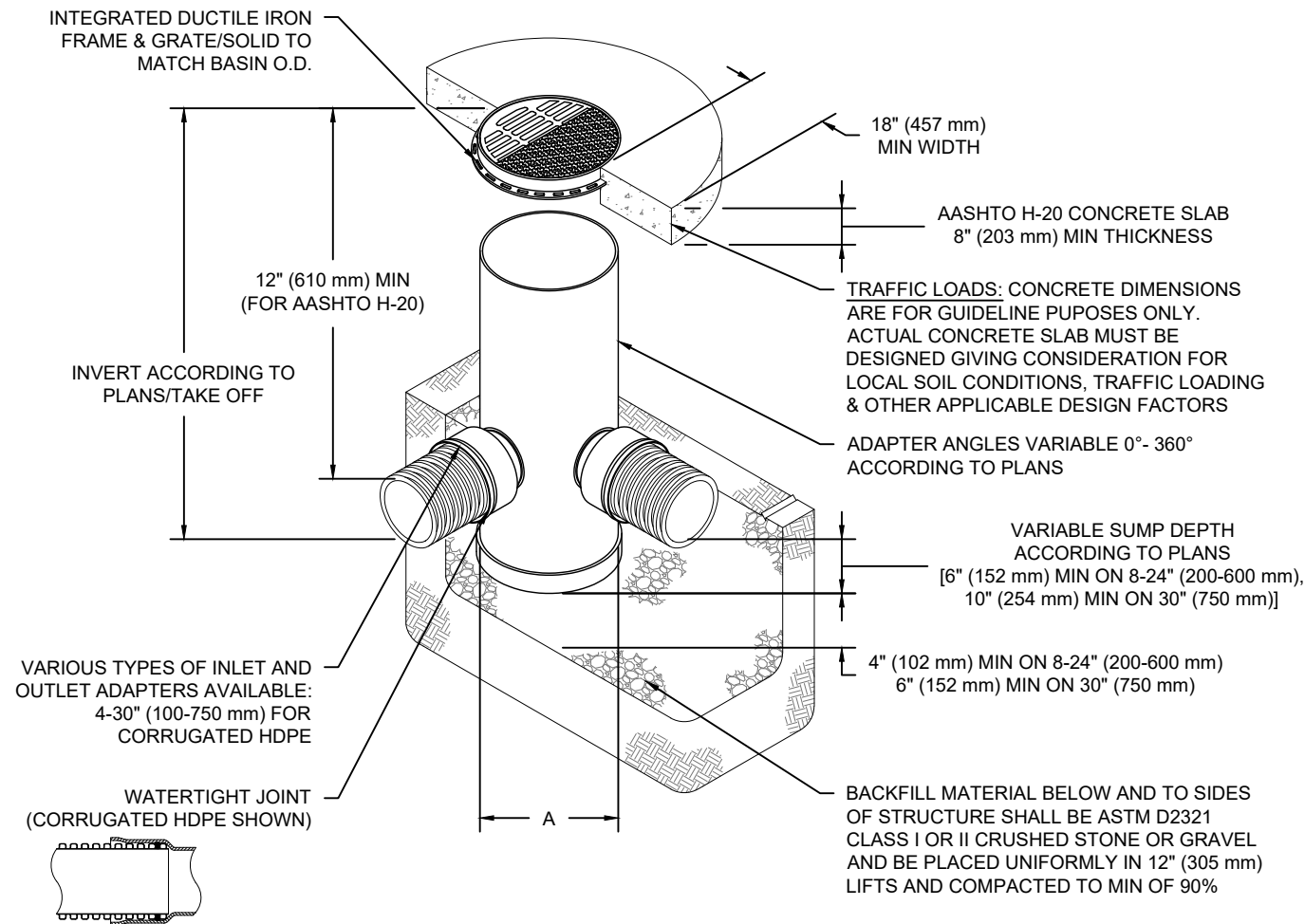
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NYLOPLAST DRAIN BASIN

NTS



NOTES

- 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
- 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
- DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
- DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
- FOR COMPLETE DESIGN AND PRODUCT INFORMATION: WWW.NYLOPLAST-US.COM
- TO ORDER CALL: 800-821-6710

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

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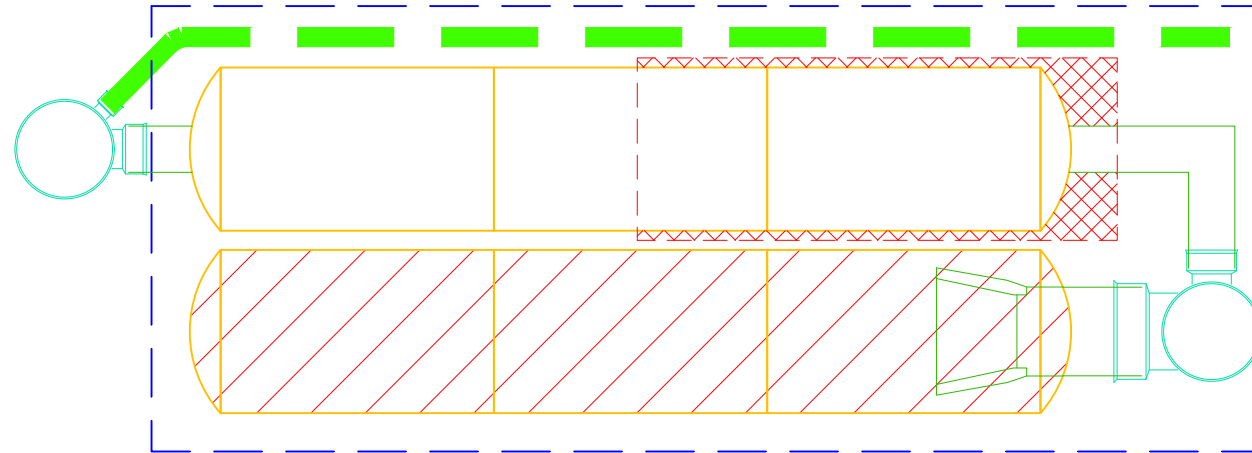
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Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Project: _____

Chamber Model -	DC-780
Units -	Imperial
Number of chambers -	6
Voids in the stone (porosity) -	40 %
Base of Stone Elevation -	100.00 ft
Amount of Stone Above Chambers -	6 in
Amount of Stone Below Chambers -	9 in
Area of system -	335 sf



Include Perimeter Stone in Calculations

Click for Stage Area Data

[Click Here for Metric](#)

StormTech DC-780 Cumulative Storage Volumes

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Total Chamber (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch & St (cubic feet)	Cumulative Chamber (cubic feet)	Elevation (feet)
45	0.00	0.00	11.17	11.17	669.07	103.75
44	0.00	0.00	11.17	11.17	657.90	103.67
43	0.00	0.00	11.17	11.17	646.73	103.58
42	0.00	0.00	11.17	11.17	635.57	103.50
41	0.00	0.00	11.17	11.17	624.40	103.42
40	0.00	0.00	11.17	11.17	613.23	103.33
39	0.06	0.35	11.03	11.38	602.07	103.25
38	0.17	1.00	10.77	11.77	590.69	103.17
37	0.29	1.72	10.48	12.20	578.92	103.08
36	0.61	3.67	9.70	13.37	566.73	103.00
35	0.81	4.86	9.22	14.08	553.36	102.92
34	0.96	5.75	8.86	14.62	539.28	102.83
33	1.08	6.50	8.57	15.07	524.66	102.75
32	1.19	7.13	8.32	15.44	509.59	102.67
31	1.27	7.64	8.11	15.75	494.15	102.58
30	1.36	8.18	7.89	16.08	478.40	102.50
29	1.45	8.73	7.68	16.40	462.32	102.42
28	1.53	9.16	7.50	16.66	445.92	102.33
27	1.59	9.55	7.35	16.89	429.25	102.25
26	1.65	9.91	7.20	17.11	412.36	102.17
25	1.71	10.25	7.07	17.32	395.24	102.08
24	1.76	10.58	6.94	17.51	377.93	102.00
23	1.81	10.88	6.82	17.69	360.41	101.92
22	1.86	11.16	6.70	17.86	342.72	101.83
21	1.90	11.43	6.60	18.02	324.86	101.75
20	1.95	11.68	6.50	18.17	306.83	101.67
19	1.99	11.91	6.40	18.31	288.66	101.58
18	2.02	12.13	6.31	18.45	270.35	101.50
17	2.06	12.34	6.23	18.57	251.90	101.42
16	2.09	12.53	6.15	18.69	233.33	101.33
15	2.12	12.71	6.08	18.79	214.65	101.25
14	2.15	12.88	6.01	18.89	195.85	101.17
13	2.17	13.04	5.95	18.99	176.96	101.08
12	2.20	13.18	5.89	19.08	157.97	101.00
11	2.22	13.32	5.84	19.16	138.90	100.92
10	2.24	13.46	5.78	19.24	119.74	100.83
9	0.00	0.00	11.17	11.17	100.50	100.75
8	0.00	0.00	11.17	11.17	89.33	100.67
7	0.00	0.00	11.17	11.17	78.17	100.58
6	0.00	0.00	11.17	11.17	67.00	100.50
5	0.00	0.00	11.17	11.17	55.83	100.42
4	0.00	0.00	11.17	11.17	44.67	100.33
3	0.00	0.00	11.17	11.17	33.50	100.25
2	0.00	0.00	11.17	11.17	22.33	100.17
1	0.00	0.00	11.17	11.17	11.17	100.08

Stage Area Data

Depth (feet)	Elevation (feet)	Area (ft2)	Area (acres)
0.00	100.00000	134.00	0.0031
0.08	100.08333	134.00	0.0031
0.17	100.16667	134.00	0.0031
0.25	100.25000	134.00	0.0031
0.33	100.33333	134.00	0.0031
0.42	100.41667	134.00	0.0031
0.50	100.50000	134.00	0.0031
0.58	100.58333	134.00	0.0031
0.67	100.66667	134.00	0.0031
0.75	100.75000	134.00	0.0031
0.83	100.83333	230.88	0.0053
0.92	100.91667	229.87	0.0053
1.00	101.00000	228.90	0.0053
1.08	101.08333	227.86	0.0052
1.17	101.16667	226.73	0.0052
1.25	101.25000	225.52	0.0052
1.33	101.33333	224.22	0.0051
1.42	101.41667	222.83	0.0051
1.50	101.50000	221.35	0.0051
1.58	101.58333	219.76	0.0050
1.67	101.66667	218.07	0.0050
1.75	101.75000	216.28	0.0050
1.83	101.83333	214.36	0.0049
1.92	101.91667	212.32	0.0049
2.00	102.00000	210.14	0.0048
2.08	102.08333	207.82	0.0048
2.17	102.16667	205.34	0.0047
2.25	102.25000	202.73	0.0047
2.33	102.33333	199.97	0.0046
2.42	102.41667	196.83	0.0045
2.50	102.50000	192.93	0.0044
2.58	102.58333	189.04	0.0043
2.67	102.66667	185.31	0.0043
2.75	102.75000	180.79	0.0042
2.83	102.83333	175.43	0.0040
2.92	102.91667	169.01	0.0039
3.00	103.00000	160.40	0.0037
3.08	103.08333	146.38	0.0034
3.17	103.16667	141.20	0.0032
3.25	103.25000	136.50	0.0031
3.33	103.33333	134.00	0.0031
3.42	103.41667	134.00	0.0031
3.50	103.50000	134.00	0.0031
3.58	103.58333	134.00	0.0031
3.67	103.66667	134.00	0.0031
3.75	103.75000	134.00	0.0031

STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 2 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF TWO CARTRIDGES. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL. PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

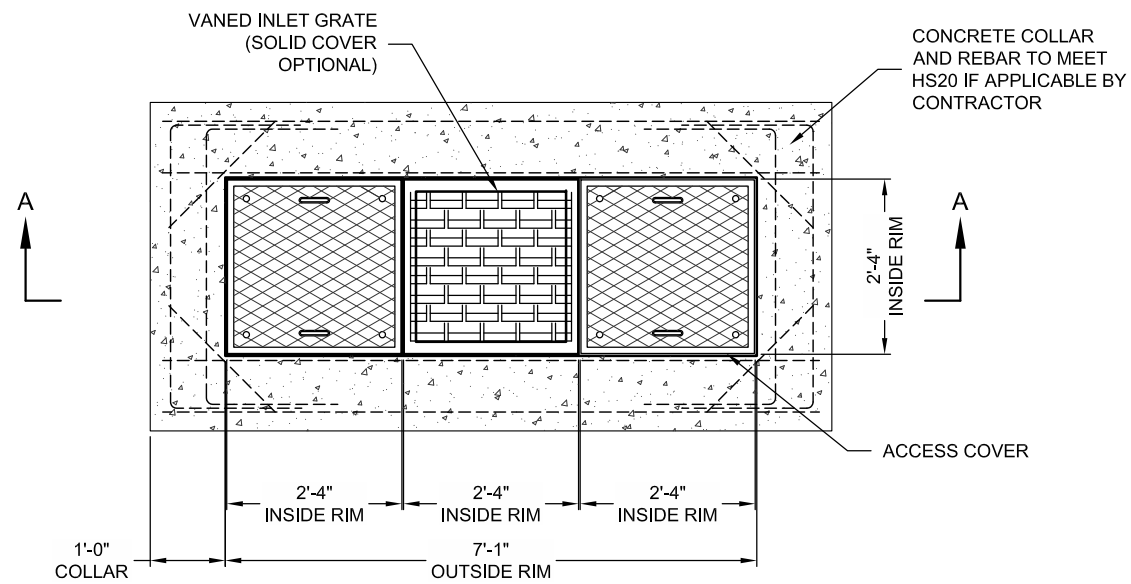
* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

GENERAL NOTES

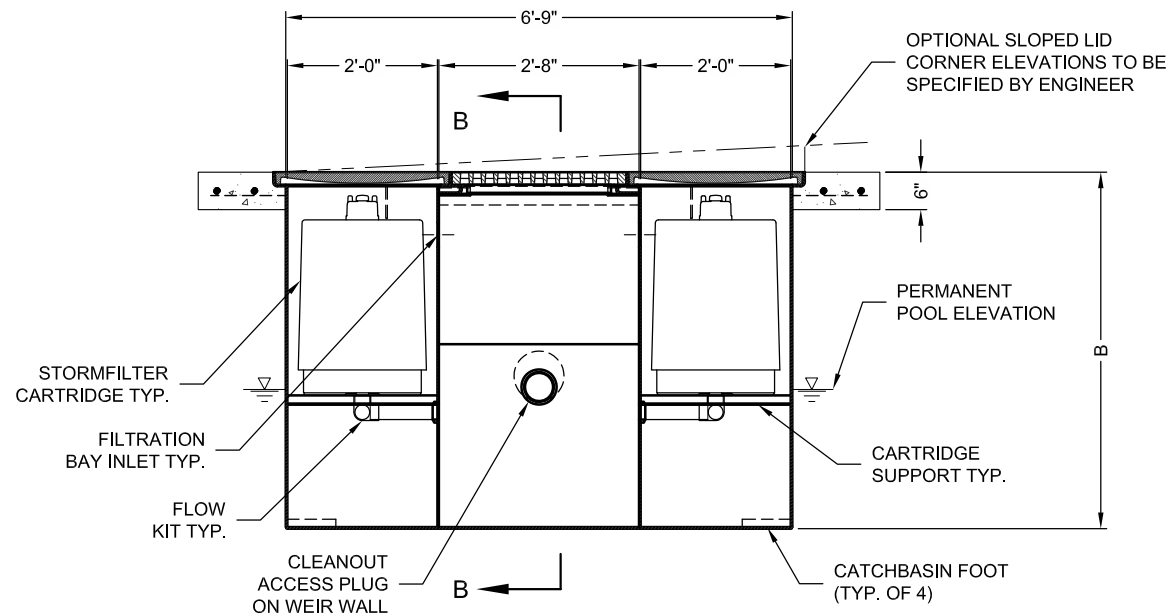
- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. WWW.CONTECHES.COM
- STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
- MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
- STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
- STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET AASHTO M306 LOAD RATING. TO MEET HS20 LOAD RATING ON STRUCTURE, A CONCRETE COLLAR IS REQUIRED. WHEN REQUIRED, CONCRETE COLLAR WITH #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
- FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
- SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

INSTALLATION NOTES

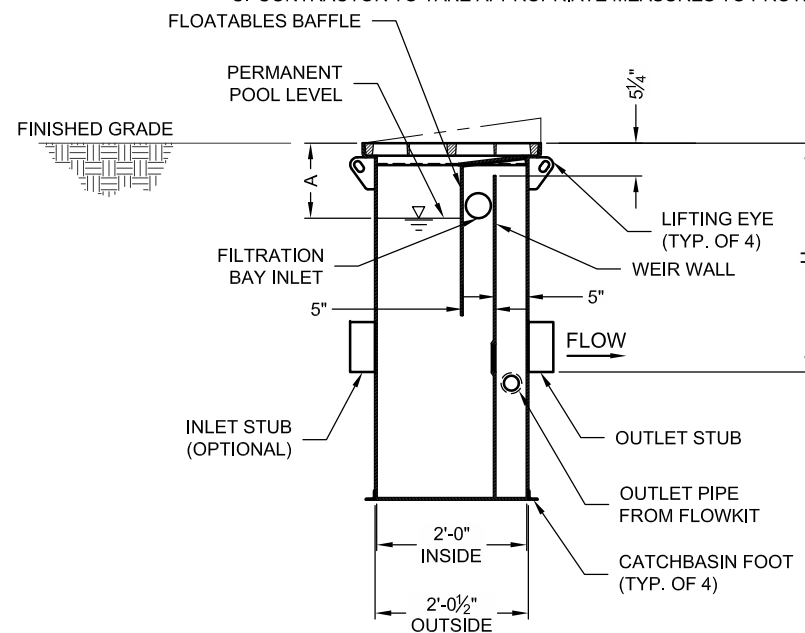
- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.



PLAN VIEW



SECTION A-A

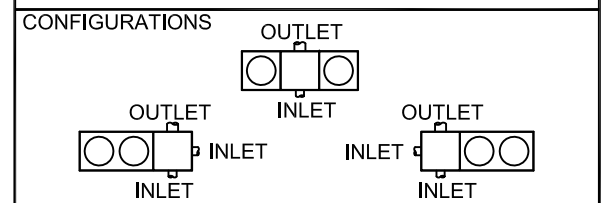


SECTION B-B

2-CARTRIDGE DEEP CATCHBASIN STORMFILTER DATA

STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1.8 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
CARTRIDGE FLOW RATE (gpm)	XX
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX
RIM ELEVATION	XXX.XX'

PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"



SLOPED LID	YES/NO
SOLID COVER	YES/NO
NOTES/SPECIAL REQUIREMENTS:	

STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 1 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF ONE CARTRIDGE. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL. PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

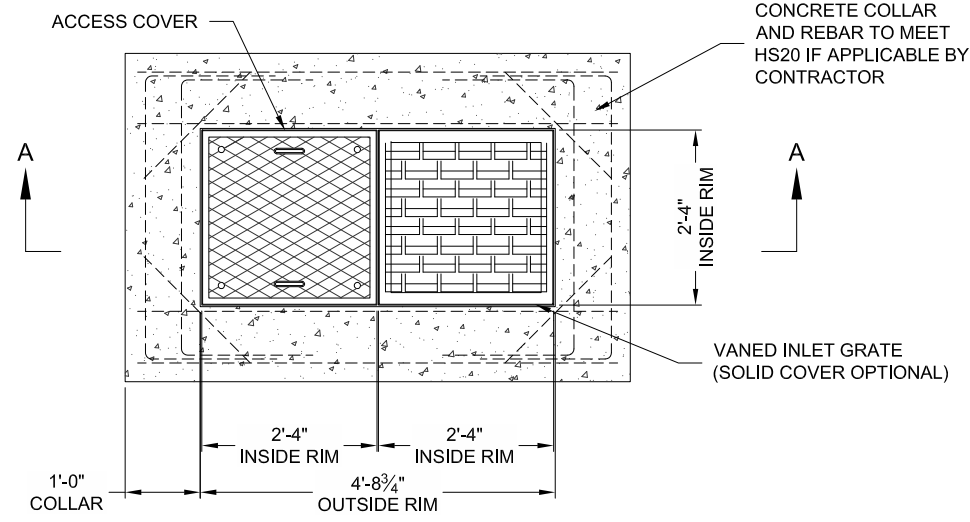
* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

GENERAL NOTES

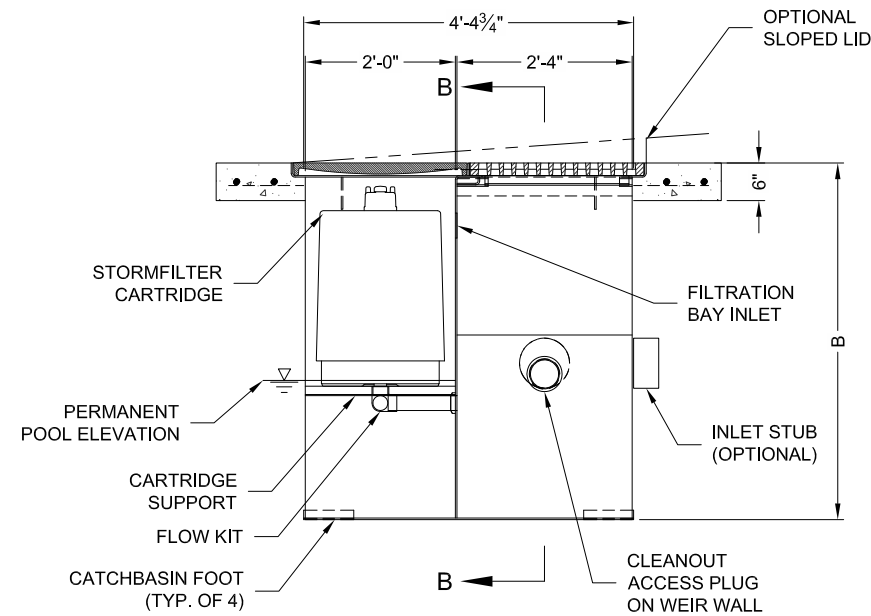
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- STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
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INSTALLATION NOTES

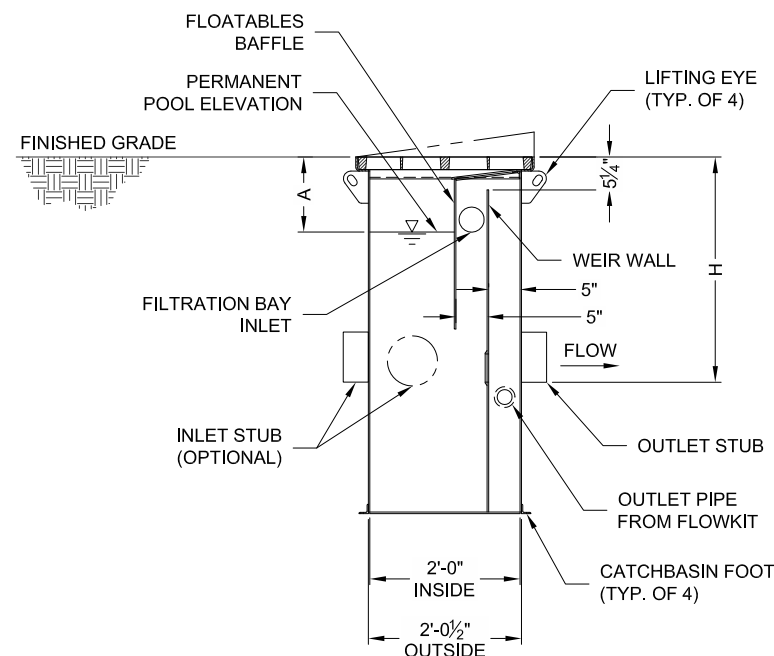
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- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.



PLAN VIEW



SECTION A-A

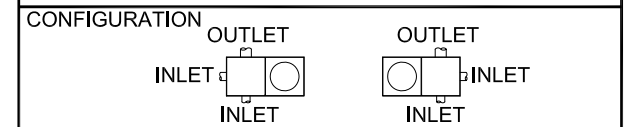


SECTION B-B

1-CARTRIDGE CATCHBASIN STORMFILTER DATA

STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
CARTRIDGE HEIGHT (27", 18", 18" DEEP)	XX
CARTRIDGE FLOW RATE (gpm)	XX
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX
RIM ELEVATION	XXX.XX'

PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"



SLOPED LID	YES/NO
SOLID COVER	YES/NO
NOTES/SPECIAL REQUIREMENTS:	

Autodesk® Storm and Sanitary Analysis 2016 - Version 13.4.254 (Build 0)

Project Description

File Name 14868 - proposed stormwater model.SPF

Analysis Options

Flow Units cfs
Subbasin Hydrograph Method. SCS TR-55
Time of Concentration..... User-Defined
Link Routing Method Hydrodynamic
Storage Node Exfiltration.. Constant rate, free surface area
Starting Date MAR-12-2024 00:00:00
Ending Date MAR-13-2024 00:00:00
Report Time Step 00:05:00

Element Count

Number of rain gages 0
Number of subbasins 8
Number of nodes 38
Number of links 40

Subbasin Summary

Subbasin ID	Total Area acres	Peak Rate Factor
Basin-1	0.30	484.00
Basin-2	0.09	484.00
Basin-3	0.07	484.00
Basin-4	0.18	484.00
Basin-5	0.56	484.00
Basin-6	0.25	484.00
Basin-A-Offiste	0.10	484.00
Pre-Developed	1.48	484.00

Node Summary

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft ²	External Inflow
Drains-Away-In	JUNCTION	10.00	20.00	0.00	
MH-02	JUNCTION	193.87	194.95	0.00	
MH-03	JUNCTION	195.31	202.40	40.00	
MH-04	JUNCTION	195.25	202.60	0.00	
MH-05	JUNCTION	194.80	204.64	0.00	
MH-06	JUNCTION	201.01	203.63	0.00	
MH-07	JUNCTION	200.83	203.02	0.00	
MH-08	JUNCTION	194.10	199.50	0.00	
Out-1Pipe - (15)	(1) (1) JUNCTION	195.65	203.43	0.00	
Structure - (21)	JUNCTION	195.50	202.75	0.00	
Structure - (22)	JUNCTION	195.24	204.01	0.00	
Structure - (23)	JUNCTION	195.47	200.00	0.00	
Structure - (28)	JUNCTION	203.16	204.88	0.00	
Structure - (29)	JUNCTION	202.93	204.56	0.00	
Structure - (37)	JUNCTION	194.20	199.00	0.00	
Structure - (38)	JUNCTION	200.86	202.96	0.00	
Structure - (39)	JUNCTION	201.04	203.53	0.00	
Structure - (4)	JUNCTION	194.25	198.67	0.00	
Structure - (40)	JUNCTION	203.03	204.97	0.00	
Structure - (41)	JUNCTION	203.19	204.97	0.00	
Structure - (42)	JUNCTION	195.54	205.41	0.00	
Structure - (43)	JUNCTION	194.03	200.50	0.00	
Structure - (45)	JUNCTION	193.82	199.86	0.00	
Structure - (47)	JUNCTION	194.18	199.12	0.00	
Structure - (49)	JUNCTION	194.72	203.49	0.00	
Structure - (51)	JUNCTION	194.50	202.03	0.00	
Structure - (52)	JUNCTION	194.13	199.24	0.00	
Structure - (53)	JUNCTION	194.49	201.97	0.00	
Structure - (54)	JUNCTION	195.63	203.57	0.00	
Structure - (55)	JUNCTION	195.53	203.45	0.00	
Structure - (59)	JUNCTION	194.84	203.15	0.00	
Out-1Pipe - (37)	OUTFALL	193.50	194.50	0.00	
Pre-Developed-Out chambers	OUTFALL	0.00	0.00	0.00	
STOR-01	STORAGE	194.10	199.25	0.00	
STOR-02	STORAGE	199.00	201.50	0.00	
STOR-03	STORAGE	202.91	205.41	0.00	
STOR-04	STORAGE	201.75	204.25	0.00	
STOR-04	STORAGE	199.50	202.00	0.00	

Link Summary

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness	
Pipe - (13)	Structure - (21)	Structure - (22)	CONDUIT	30.0	0.8663	0.0120	
Pipe - (14)	Structure - (23)	Structure - (55)	CONDUIT	18.5	0.4852	0.0120	
Pipe - (15)	(1) Structure - (54)	Structure - (55)	CONDUIT	19.6	0.5095	0.0120	
Pipe - (15)	(1) (1) Out-1Pipe - (15)	(1) (1) Structure - (54)	CONDUIT		4.2	0.4725	0.0120
Pipe - (19)	Structure - (28)	Structure - (29)	CONDUIT	47.4	0.4850	0.0120	
Pipe - (20)	Structure - (29)	STOR-03	CONDUIT	35.3	0.5099	0.0120	
Pipe - (28)	Structure - (4)	Structure - (37)	CONDUIT	11.0	0.4547	0.0120	
Pipe - (29)	Structure - (37)	Structure - (47)	CONDUIT	4.2	0.4714	0.0120	
Pipe - (29)	(1) Structure - (47)	Structure - (52)	CONDUIT	10.9	0.4773	0.0120	
Pipe - (29)	(1) (1) Structure - (52)	chambers	CONDUIT	2.7	1.0247	0.0120	
Pipe - (32)	Structure - (40)	Structure - (29)	CONDUIT	9.9	1.0089	0.0120	
Pipe - (33)	Structure - (41)	Structure - (28)	CONDUIT	4.6	0.6536	0.0150	
Pipe - (34)	Structure - (42)	Out-1Pipe - (15)	(1) (1) CONDUIT		8.2	0.4860	0.0120
Pipe - (37)	Structure - (45)	Out-1Pipe - (37)	CONDUIT	64.2	0.5000	0.0120	
Pipe - (38)	Structure - (22)	MH-05	CONDUIT	87.6	0.5023	0.0120	
Pipe - (41)	Structure - (53)	Structure - (52)	CONDUIT	71.9	0.5006	0.0120	
Pipe - (45)	(1) Structure - (59)	Structure - (51)	CONDUIT	67.0	0.5075	0.0120	
Pipe - (46)	Structure - (51)	Structure - (53)	CONDUIT	2.8	0.3620	0.0120	
Pipe-02	MH-02	Structure - (45)	CONDUIT	10.0	0.4899	0.0120	
Pipe-03	Structure - (43)	MH-02	CONDUIT	32.6	0.4902	0.0120	
Pipe-04	MH-03	MH-04	CONDUIT	12.0	0.5000	0.0120	
Pipe-05	MH-04	Structure - (59)	CONDUIT	84.0	0.4881	0.0120	
Pipe-07	Structure - (55)	MH-04	CONDUIT	55.0	0.5091	0.0150	
Pipe-08	Structure - (49)	Structure - (51)	CONDUIT	43.3	0.5076	0.0150	

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Pipe-09	Structure - (38)	MH-07	CONDUIT	6.0	0.5000	0.0120
Pipe-10	MH-05	Structure - (49)	CONDUIT	17.3	0.4624	0.0120
Pipe-11	Structure - (39)	MH-06	CONDUIT	6.0	0.5000	0.0120
Pipe-14	MH-06	MH-07	CONDUIT	35.3	0.5099	0.0120
Pipe-15	STOR-04	MH-07	CONDUIT	66.4	3.3032	0.0120
Pipe-17	MH-08	MH-02	CONDUIT	33.4	0.6890	0.0120
Orifice-01	STOR-01	Structure - (23)	ORIFICE			
Orifice-02	STOR-02	Structure - (42)	ORIFICE			
Orifice-03	STOR-03	Structure - (21)	ORIFICE			
Orifice-04	STOR-04	Structure - (43)	ORIFICE			
Orifice-09	chambers	MH-08	ORIFICE			
overflow	chambers	MH-08	ORIFICE			
Overflow-1	STOR-01	Structure - (23)	ORIFICE			
Overflow-2	STOR-02	Structure - (42)	ORIFICE			
Overflow-3	STOR-03	Structure - (21)	ORIFICE			
Overflow-4	STOR-04	Structure - (43)	ORIFICE			

Cross Section Summary

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft ²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
Pipe - (13)	CIRCULAR	1.00	1.00	1	0.79	0.25	3.59
Pipe - (14)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.69
Pipe - (15) (1)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.76
Pipe - (15) (1) (1)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.65
Pipe - (19)	CIRCULAR	0.67	0.67	1	0.35	0.17	0.91
Pipe - (20)	CIRCULAR	0.67	0.67	1	0.35	0.17	0.93
Pipe - (28)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.60
Pipe - (29)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.65
Pipe - (29) (1)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.67
Pipe - (29) (1) (1)	CIRCULAR	1.00	1.00	1	0.79	0.25	3.91
Pipe - (32)	CIRCULAR	0.67	0.67	1	0.35	0.17	1.31
Pipe - (33)	CIRCULAR	0.67	0.67	1	0.35	0.17	0.85
Pipe - (34)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.69
Pipe - (37)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.73
Pipe - (38)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.74
Pipe - (41)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.73
Pipe - (45) (1)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.75
Pipe - (46)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.32
Pipe-02	CIRCULAR	1.00	1.00	1	0.79	0.25	2.70
Pipe-03	CIRCULAR	1.00	1.00	1	0.79	0.25	2.70
Pipe-04	CIRCULAR	1.00	1.00	1	0.79	0.25	2.73
Pipe-05	CIRCULAR	1.00	1.00	1	0.79	0.25	2.70
Pipe-07	CIRCULAR	1.00	1.00	1	0.79	0.25	2.20
Pipe-08	CIRCULAR	1.50	1.50	1	1.77	0.38	6.49
Pipe-09	CIRCULAR	1.00	1.00	1	0.79	0.25	2.73
Pipe-10	CIRCULAR	1.00	1.00	1	0.79	0.25	2.62
Pipe-11	CIRCULAR	0.67	0.67	1	0.35	0.17	0.93
Pipe-14	CIRCULAR	0.67	0.67	1	0.35	0.17	0.93
Pipe-15	CIRCULAR	0.67	0.67	1	0.35	0.17	2.38
Pipe-17	CIRCULAR	1.00	1.00	1	0.79	0.25	3.20

Runoff Quantity Continuity	Volume acre-ft	Depth inches
Total Precipitation	1.133	4.483
Surface Runoff	0.003	0.012
Continuity Error (%)	-0.000	

Flow Routing Continuity	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	0.833	0.271
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.042	0.014
Continuity Error (%)	0.024	

Composite Curve Number Computations Report

Subbasin Basin-1			
Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.30	-	96.00
Composite Area & Weighted CN	0.30		96.00

Subbasin Basin-2			
Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.09	-	97.50
Composite Area & Weighted CN	0.09		97.50

Subbasin Basin-3			
Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.07	-	87.03
Composite Area & Weighted CN	0.07		87.03

Subbasin Basin-4			
Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.18	-	88.11
Composite Area & Weighted CN	0.18		88.11

Subbasin Basin-5			
Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.56	-	93.60
Composite Area & Weighted CN	0.56		93.60

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr

Subbasin Basin-6

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.25	-	89.90
Composite Area & Weighted CN	0.25		89.90

Subbasin Basin-A-Offiste

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.10	-	84.61
Composite Area & Weighted CN	0.10		84.61

Subbasin Pre-Developed

Soil/Surface Description	Area (acres)	Soil Group	CN
-	1.48	-	91.00
Composite Area & Weighted CN	1.48		91.00

Subbasin Runoff Summary

Subbasin ID	Total Precip in	Total Runoff in	Peak Runoff cfs	Weighted Curve Number	Time of Concentration days hh:mm:ss
Basin-1	4.50	4.04	0.31	96.000	0 00:05:00
Basin-2	4.50	4.21	0.10	97.500	0 00:05:00
Basin-3	4.50	3.10	0.06	87.030	0 00:05:00
Basin-4	4.50	3.21	0.15	88.110	0 00:05:00
Basin-5	4.50	3.77	0.55	93.600	0 00:05:00
Basin-6	4.50	3.38	0.23	89.900	0 00:05:00
Basin-A-Offiste	4.50	2.87	0.07	84.610	0 00:05:00
Pre-Developed	4.50	3.50	1.36	91.000	0 00:05:00

Node Depth Summary

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days hh:mm	Total Flooded Volume acre-in	Total Time Flooded minutes	Retention Time hh:mm:ss
Drains-Away-In	0.00	0.00	10.00	0 03:35	0	0	0:00:00
MH-02	0.21	0.48	194.35	0 08:05	0	0	0:00:00
MH-03	0.27	2.21	197.52	0 08:46	0	0	0:00:00
MH-04	0.30	2.27	197.52	0 08:46	0	0	0:00:00
MH-05	0.43	2.72	197.52	0 08:46	0	0	0:00:00
MH-06	0.00	0.00	201.01	0 00:00	0	0	0:00:00
MH-07	0.00	0.00	200.83	0 00:00	0	0	0:00:00
MH-08	0.13	0.26	194.36	0 08:05	0	0	0:00:00
Out-1Pipe - (15) (1) (1)	0.22	1.87	197.52	0 08:46	0	0	0:00:00
Structure - (21)	0.23	2.02	197.52	0 08:46	0	0	0:00:00
Structure - (22)	0.30	2.28	197.52	0 08:46	0	0	0:00:00
Structure - (23)	0.32	2.06	197.52	0 08:46	0	0	0:00:00
Structure - (28)	0.00	0.00	203.16	0 00:00	0	0	0:00:00
Structure - (29)	0.05	0.14	203.07	0 08:00	0	0	0:00:00
Structure - (37)	0.81	3.32	197.52	0 08:46	0	0	0:00:00
Structure - (38)	0.00	0.00	200.86	0 00:00	0	0	0:00:00
Structure - (39)	0.00	0.00	201.04	0 00:00	0	0	0:00:00
Structure - (4)	0.77	3.27	197.52	0 08:46	0	0	0:00:00
Structure - (40)	0.00	0.04	203.07	0 08:01	0	0	0:00:00
Structure - (41)	0.00	0.00	203.19	0 00:00	0	0	0:00:00
Structure - (42)	0.33	1.99	197.52	0 08:46	0	0	0:00:00
Structure - (43)	0.11	0.39	194.42	0 08:01	0	0	0:00:00
Structure - (45)	0.18	0.41	194.23	0 08:05	0	0	0:00:00
Structure - (47)	0.83	3.34	197.52	0 08:46	0	0	0:00:00
Structure - (49)	0.46	2.80	197.52	0 08:46	0	0	0:00:00
Structure - (51)	0.59	3.02	197.52	0 08:46	0	0	0:00:00
Structure - (52)	0.88	3.39	197.52	0 08:46	0	0	0:00:00
Structure - (53)	0.59	3.03	197.52	0 08:46	0	0	0:00:00
Structure - (54)	0.22	1.89	197.52	0 08:46	0	0	0:00:00
Structure - (55)	0.23	1.99	197.52	0 08:46	0	0	0:00:00
Structure - (59)	0.42	2.68	197.52	0 08:46	0	0	0:00:00
Out-1Pipe - (37)	0.17	0.37	193.87	0 08:05	0	0	0:00:00
Pre-Developed-Out chambers	0.00	0.00	0.00	0 00:00	0	0	0:00:00
STOR-01	0.90	3.42	197.52	0 08:46	0	0	0:00:00
STOR-02	0.71	1.10	200.10	0 22:00	0	0	0:00:00
STOR-03	1.59	2.06	204.97	0 08:00	0	0	0:00:00
STOR-04	0.95	1.32	203.07	0 08:00	0	0	0:00:00
STOR-04	1.65	2.14	201.64	0 08:00	0	0	0:00:00

Node Flow Summary

Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Inflow Occurrence days hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days hh:mm
Drains-Away-In	JUNCTION	0.07	0.07	0 08:00	0.00	
MH-02	JUNCTION	0.00	0.78	0 08:05	0.00	
MH-03	JUNCTION	0.10	0.10	0 07:55	0.00	
MH-04	JUNCTION	0.00	0.23	0 07:51	0.00	
MH-05	JUNCTION	0.00	0.21	0 08:03	0.00	
MH-06	JUNCTION	0.00	0.00	0 00:00	0.00	
MH-07	JUNCTION	0.00	0.00	0 00:00	0.00	
MH-08	JUNCTION	0.00	0.30	0 08:46	0.00	
Out-1Pipe - (15) (1) (1)	JUNCTION	0.00	0.15	0 07:56	0.00	
Structure - (21)	JUNCTION	0.00	0.23	0 08:00	0.00	
Structure - (22)	JUNCTION	0.00	0.22	0 07:51	0.00	
Structure - (23)	JUNCTION	0.00	0.04	0 08:05	0.00	
Structure - (28)	JUNCTION	0.00	0.00	0 00:00	0.00	
Structure - (29)	JUNCTION	0.00	0.01	0 07:39	0.00	
Structure - (37)	JUNCTION	0.00	0.31	0 07:54	0.00	
Structure - (38)	JUNCTION	0.00	0.00	0 00:00	0.00	
Structure - (39)	JUNCTION	0.00	0.00	0 00:00	0.00	
Structure - (4)	JUNCTION	0.31	0.31	0 07:55	0.00	
Structure - (40)	JUNCTION	0.00	0.00	0 07:43	0.00	
Structure - (41)	JUNCTION	0.00	0.00	0 00:00	0.00	

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100-yr, 24-hr

Structure - (42)	JUNCTION	0.00	0.15	0	08:00	0.00
Structure - (43)	JUNCTION	0.00	0.55	0	08:00	0.00
Structure - (45)	JUNCTION	0.00	0.78	0	08:05	0.00
Structure - (47)	JUNCTION	0.00	0.31	0	07:54	0.00
Structure - (49)	JUNCTION	0.00	0.20	0	08:03	0.00
Structure - (51)	JUNCTION	0.00	0.31	0	08:07	0.00
Structure - (52)	JUNCTION	0.00	0.54	0	08:07	0.00
Structure - (53)	JUNCTION	0.00	0.31	0	08:07	0.00
Structure - (54)	JUNCTION	0.00	0.15	0	07:55	0.00
Structure - (55)	JUNCTION	0.00	0.16	0	07:52	0.00
Structure - (59)	JUNCTION	0.00	0.22	0	07:47	0.00
Out-1Pipe - (37)	OUTFALL	0.00	0.78	0	08:05	0.00
Pre-Developed-Out chambers	OUTFALL	1.35	1.35	0	08:00	0.00
STOR-01	STORAGE	0.06	0.06	0	08:00	0.00
STOR-02	STORAGE	0.15	0.15	0	08:00	0.00
STOR-03	STORAGE	0.23	0.23	0	08:00	0.00
STOR-04	STORAGE	0.55	0.55	0	07:55	0.00

Storage Node Summary

Storage Node ID	Maximum Ponded Volume 1000 ft ³	Maximum Ponded Volume (%)	Time of Max Ponded Volume days hh:mm	Average Ponded Volume 1000 ft ³	Average Ponded Volume (%)	Maximum Storage Node Outflow cfs	Maximum Exfiltration Rate cfm	Time of Max. Exfiltration Rate hh:mm:ss	Total Exfiltrated Volume 1000 ft ³
chambers	0.625	73	0 08:46	0.150	17	0.30	0.00	0:00:00	0.000
STOR-01	0.372	26	0 22:00	0.227	16	0.01	0.00	0:00:00	0.000
STOR-02	0.171	66	0 08:00	0.123	48	0.15	0.00	0:00:00	0.000
STOR-03	0.303	32	0 08:00	0.203	21	0.23	0.00	0:00:00	0.000
STOR-04	1.110	78	0 08:00	0.802	56	0.55	0.00	0:00:00	0.000

Outfall Loading Summary

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
Out-1Pipe - (37)	93.67	0.22	0.78
Pre-Developed-Out	92.01	0.24	1.35
System	92.84	0.46	2.12

Link Flow Summary

Link ID	Element Type	Time of Peak Flow Occurrence days hh:mm	Maximum Velocity Attained ft/sec	Length Factor	Peak Flow during Analysis cfs	Design Flow Capacity cfs	Ratio of Maximum /Design Flow	Ratio of Maximum Flow Depth	Total Time Surcharged minutes	Reported Condition
Pipe - (13)	CONDUIT	0 07:51	2.10	1.00	0.22	3.59	0.06	1.00	122	SURCHARGED
Pipe - (14)	CONDUIT	0 08:05	0.42	1.00	0.04	2.69	0.01	1.00	111	SURCHARGED
Pipe - (15) (1)	CONDUIT	0 07:53	1.26	1.00	0.16	2.76	0.06	1.00	110	SURCHARGED
Pipe - (15) (1) (1)	CONDUIT	0 07:55	1.00	1.00	0.15	2.65	0.06	1.00	108	SURCHARGED
Pipe - (19)	CONDUIT	0 00:00	0.00	1.00	0.00	0.91	0.00	0.11	0	Calculated
Pipe - (20)	CONDUIT	0 07:39	0.15	1.00	0.01	0.93	0.01	0.35	0	Calculated
Pipe - (28)	CONDUIT	0 07:54	0.87	1.00	0.31	2.60	0.12	1.00	368	SURCHARGED
Pipe - (29)	CONDUIT	0 07:54	0.88	1.00	0.31	2.65	0.12	1.00	382	SURCHARGED
Pipe - (29) (1)	CONDUIT	0 07:54	0.72	1.00	0.31	2.67	0.12	1.00	388	SURCHARGED
Pipe - (29) (1) (1)	CONDUIT	0 08:07	1.45	1.00	0.53	3.91	0.14	1.00	406	SURCHARGED
Pipe - (32)	CONDUIT	0 07:43	0.15	1.00	0.00	1.31	0.00	0.14	0	Calculated
Pipe - (33)	CONDUIT	0 00:00	0.00	1.00	0.00	0.85	0.00	0.00	0	Calculated
Pipe - (34)	CONDUIT	0 07:56	1.04	1.00	0.15	2.69	0.06	1.00	105	SURCHARGED
Pipe - (37)	CONDUIT	0 08:05	2.79	1.00	0.78	2.73	0.29	0.39	0	Calculated
Pipe - (38)	CONDUIT	0 08:03	1.16	1.00	0.21	2.74	0.08	1.00	152	SURCHARGED
Pipe - (41)	CONDUIT	0 08:07	0.48	1.00	0.30	2.73	0.11	1.00	304	SURCHARGED
Pipe - (45) (1)	CONDUIT	0 08:08	0.80	1.00	0.14	2.75	0.05	1.00	225	SURCHARGED
Pipe - (46)	CONDUIT	0 08:07	1.23	1.00	0.31	2.32	0.13	1.00	302	SURCHARGED
Pipe-02	CONDUIT	0 08:05	2.32	1.00	0.78	2.70	0.29	0.44	0	Calculated
Pipe-03	CONDUIT	0 08:00	1.72	1.00	0.55	2.70	0.20	0.43	0	Calculated
Pipe-04	CONDUIT	0 08:03	1.05	1.00	0.09	2.73	0.03	1.00	143	SURCHARGED
Pipe-05	CONDUIT	0 07:47	1.54	1.00	0.22	2.70	0.08	1.00	151	SURCHARGED
Pipe-07	CONDUIT	0 07:52	1.39	1.00	0.15	2.20	0.07	1.00	119	SURCHARGED
Pipe-08	CONDUIT	0 08:05	0.57	1.00	0.20	6.49	0.03	1.00	155	SURCHARGED
Pipe-09	CONDUIT	0 00:00	0.00	1.00	0.00	2.73	0.00	0.00	0	Calculated
Pipe-10	CONDUIT	0 08:03	1.11	1.00	0.20	2.62	0.08	1.00	234	SURCHARGED
Pipe-11	CONDUIT	0 00:00	0.00	1.00	0.00	0.93	0.00	0.00	0	Calculated
Pipe-14	CONDUIT	0 00:00	0.00	1.00	0.00	0.93	0.00	0.00	0	Calculated
Pipe-15	CONDUIT	0 00:00	0.00	1.00	0.00	2.38	0.00	0.00	0	Calculated
Pipe-17	CONDUIT	0 08:46	1.64	1.00	0.30	3.20	0.09	0.37	0	Calculated
Orifice-01	ORIFICE	0 22:00			0.01			1.00		
Orifice-02	ORIFICE	0 08:00			0.01			1.00		
Orifice-03	ORIFICE	0 08:00			0.03			1.00		
Orifice-04	ORIFICE	0 08:00			0.02			1.00		
Orifice-09	ORIFICE	0 08:46			0.30			1.00		
overflow	ORIFICE	0 00:00			0.00					
Overflow-1	ORIFICE	0 00:00			0.00					
Overflow-2	ORIFICE	0 08:00			0.14					
Overflow-3	ORIFICE	0 08:00			0.20					
Overflow-4	ORIFICE	0 08:00			0.53					

Highest Flow Instability Indexes

All links are stable.

Analysis began on: Thu Mar 21 14:11:23 2024
Analysis ended on: Thu Mar 21 14:11:28 2024
Total elapsed time: 00:00:05

Autodesk® Storm and Sanitary Analysis 2016 - Version 13.4.254 (Build 0)

Project Description

File Name 14868 - proposed stormwater model.SPF

Analysis Options

Flow Units cfs
Subbasin Hydrograph Method. SCS TR-55
Time of Concentration..... User-Defined
Link Routing Method Hydrodynamic
Storage Node Exfiltration.. Constant rate, free surface area
Starting Date MAR-12-2024 00:00:00
Ending Date MAR-13-2024 00:00:00
Report Time Step 00:05:00

Element Count

Number of rain gages 0
Number of subbasins 8
Number of nodes 38
Number of links 40

Subbasin Summary

Subbasin ID	Total Area acres	Peak Rate Factor
Basin-1	0.30	484.00
Basin-2	0.09	484.00
Basin-3	0.07	484.00
Basin-4	0.18	484.00
Basin-5	0.56	484.00
Basin-6	0.25	484.00
Basin-A-Offiste	0.10	484.00
Pre-Developed	1.48	484.00

Node Summary

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft ²	External Inflow
Drains-Away-In	JUNCTION	10.00	20.00	0.00	
MH-02	JUNCTION	193.87	194.95	0.00	
MH-03	JUNCTION	195.31	202.40	40.00	
MH-04	JUNCTION	195.25	202.60	0.00	
MH-05	JUNCTION	194.80	204.64	0.00	
MH-06	JUNCTION	201.01	203.63	0.00	
MH-07	JUNCTION	200.83	203.02	0.00	
MH-08	JUNCTION	194.10	199.50	0.00	
Out-1Pipe - (15)	(1) (1) JUNCTION	195.65	203.43	0.00	
Structure - (21)	JUNCTION	195.50	202.75	0.00	
Structure - (22)	JUNCTION	195.24	204.01	0.00	
Structure - (23)	JUNCTION	195.47	200.00	0.00	
Structure - (28)	JUNCTION	203.16	204.88	0.00	
Structure - (29)	JUNCTION	202.93	204.56	0.00	
Structure - (37)	JUNCTION	194.20	199.00	0.00	
Structure - (38)	JUNCTION	200.86	202.96	0.00	
Structure - (39)	JUNCTION	201.04	203.53	0.00	
Structure - (4)	JUNCTION	194.25	198.67	0.00	
Structure - (40)	JUNCTION	203.03	204.97	0.00	
Structure - (41)	JUNCTION	203.19	204.97	0.00	
Structure - (42)	JUNCTION	195.54	205.41	0.00	
Structure - (43)	JUNCTION	194.03	200.50	0.00	
Structure - (45)	JUNCTION	193.82	199.86	0.00	
Structure - (47)	JUNCTION	194.18	199.12	0.00	
Structure - (49)	JUNCTION	194.72	203.49	0.00	
Structure - (51)	JUNCTION	194.50	202.03	0.00	
Structure - (52)	JUNCTION	194.13	199.24	0.00	
Structure - (53)	JUNCTION	194.49	201.97	0.00	
Structure - (54)	JUNCTION	195.63	203.57	0.00	
Structure - (55)	JUNCTION	195.53	203.45	0.00	
Structure - (59)	JUNCTION	194.84	203.15	0.00	
Out-1Pipe - (37)	OUTFALL	193.50	194.50	0.00	
Pre-Developed-Out chambers	OUTFALL	0.00	0.00	0.00	
STOR-01	STORAGE	194.10	199.25	0.00	
STOR-02	STORAGE	199.00	201.50	0.00	
STOR-03	STORAGE	202.91	205.41	0.00	
STOR-04	STORAGE	201.75	204.25	0.00	
STOR-04	STORAGE	199.50	202.00	0.00	

Link Summary

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
Pipe - (13)	Structure - (21)	Structure - (22)	CONDUIT	30.0	0.8663	0.0120
Pipe - (14)	Structure - (23)	Structure - (55)	CONDUIT	18.5	0.4852	0.0120
Pipe - (15)	(1) Structure - (54)	Structure - (55)	CONDUIT	19.6	0.5095	0.0120
Pipe - (15)	(1) (1) Out-1Pipe - (15)	(1) (1) Structure - (54)	CONDUIT		4.2	0.4725
Pipe - (19)	Structure - (28)	Structure - (29)	CONDUIT	47.4	0.4850	0.0120
Pipe - (20)	Structure - (29)	STOR-03	CONDUIT	35.3	0.5099	0.0120
Pipe - (28)	Structure - (4)	Structure - (37)	CONDUIT	11.0	0.4547	0.0120
Pipe - (29)	Structure - (37)	Structure - (47)	CONDUIT	4.2	0.4714	0.0120
Pipe - (29)	(1) Structure - (47)	Structure - (52)	CONDUIT	10.9	0.4773	0.0120
Pipe - (29)	(1) (1) Structure - (52)	chambers	CONDUIT	2.7	1.0247	0.0120
Pipe - (32)	Structure - (40)	Structure - (29)	CONDUIT	9.9	1.0089	0.0120
Pipe - (33)	Structure - (41)	Structure - (28)	CONDUIT	4.6	0.6536	0.0150
Pipe - (34)	Structure - (42)	Out-1Pipe - (15)	(1) (1) CONDUIT		8.2	0.4860
Pipe - (37)	Structure - (45)	Out-1Pipe - (37)	CONDUIT	64.2	0.5000	0.0120
Pipe - (38)	Structure - (22)	MH-05	CONDUIT	87.6	0.5023	0.0120
Pipe - (41)	Structure - (53)	Structure - (52)	CONDUIT	71.9	0.5006	0.0120
Pipe - (45)	(1) Structure - (59)	Structure - (51)	CONDUIT	67.0	0.5075	0.0120
Pipe - (46)	Structure - (51)	Structure - (53)	CONDUIT	2.8	0.3620	0.0120
Pipe-02	MH-02	Structure - (45)	CONDUIT	10.0	0.4899	0.0120
Pipe-03	Structure - (43)	MH-02	CONDUIT	32.6	0.4902	0.0120
Pipe-04	MH-03	MH-04	CONDUIT	12.0	0.5000	0.0120
Pipe-05	MH-04	Structure - (59)	CONDUIT	84.0	0.4881	0.0120
Pipe-07	Structure - (55)	MH-04	CONDUIT	55.0	0.5091	0.0150
Pipe-08	Structure - (49)	Structure - (51)	CONDUIT	43.3	0.5076	0.0150

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Pipe-09	Structure - (38)	MH-07	CONDUIT	6.0	0.5000	0.0120
Pipe-10	MH-05	Structure - (49)	CONDUIT	17.3	0.4624	0.0120
Pipe-11	Structure - (39)	MH-06	CONDUIT	6.0	0.5000	0.0120
Pipe-14	MH-06	MH-07	CONDUIT	35.3	0.5099	0.0120
Pipe-15	STOR-04	MH-07	CONDUIT	66.4	3.3032	0.0120
Pipe-17	MH-08	MH-02	CONDUIT	33.4	0.6890	0.0120
Orifice-01	STOR-01	Structure - (23)	ORIFICE			
Orifice-02	STOR-02	Structure - (42)	ORIFICE			
Orifice-03	STOR-03	Structure - (21)	ORIFICE			
Orifice-04	STOR-04	Structure - (43)	ORIFICE			
Orifice-09	chambers	MH-08	ORIFICE			
overflow	chambers	MH-08	ORIFICE			
Overflow-1	STOR-01	Structure - (23)	ORIFICE			
Overflow-2	STOR-02	Structure - (42)	ORIFICE			
Overflow-3	STOR-03	Structure - (21)	ORIFICE			
Overflow-4	STOR-04	Structure - (43)	ORIFICE			

Cross Section Summary

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft ²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
Pipe - (13)	CIRCULAR	1.00	1.00	1	0.79	0.25	3.59
Pipe - (14)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.69
Pipe - (15) (1)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.76
Pipe - (15) (1) (1)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.65
Pipe - (19)	CIRCULAR	0.67	0.67	1	0.35	0.17	0.91
Pipe - (20)	CIRCULAR	0.67	0.67	1	0.35	0.17	0.93
Pipe - (28)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.60
Pipe - (29)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.65
Pipe - (29) (1)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.67
Pipe - (29) (1) (1)	CIRCULAR	1.00	1.00	1	0.79	0.25	3.91
Pipe - (32)	CIRCULAR	0.67	0.67	1	0.35	0.17	1.31
Pipe - (33)	CIRCULAR	0.67	0.67	1	0.35	0.17	0.85
Pipe - (34)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.69
Pipe - (37)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.73
Pipe - (38)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.74
Pipe - (41)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.73
Pipe - (45) (1)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.75
Pipe - (46)	CIRCULAR	1.00	1.00	1	0.79	0.25	2.32
Pipe-02	CIRCULAR	1.00	1.00	1	0.79	0.25	2.70
Pipe-03	CIRCULAR	1.00	1.00	1	0.79	0.25	2.70
Pipe-04	CIRCULAR	1.00	1.00	1	0.79	0.25	2.73
Pipe-05	CIRCULAR	1.00	1.00	1	0.79	0.25	2.70
Pipe-07	CIRCULAR	1.00	1.00	1	0.79	0.25	2.20
Pipe-08	CIRCULAR	1.50	1.50	1	1.77	0.38	6.49
Pipe-09	CIRCULAR	1.00	1.00	1	0.79	0.25	2.73
Pipe-10	CIRCULAR	1.00	1.00	1	0.79	0.25	2.62
Pipe-11	CIRCULAR	0.67	0.67	1	0.35	0.17	0.93
Pipe-14	CIRCULAR	0.67	0.67	1	0.35	0.17	0.93
Pipe-15	CIRCULAR	0.67	0.67	1	0.35	0.17	2.38
Pipe-17	CIRCULAR	1.00	1.00	1	0.79	0.25	3.20

Runoff Quantity Continuity	Volume acre-ft	Depth inches
Total Precipitation	0.604	2.391
Surface Runoff	0.001	0.005
Continuity Error (%)	-0.000	

Flow Routing Continuity	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	0.360	0.117
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.029	0.010
Continuity Error (%)	0.021	

Composite Curve Number Computations Report

Subbasin Basin-1

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.30	-	96.00
Composite Area & Weighted CN	0.30		96.00

Subbasin Basin-2

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.09	-	97.50
Composite Area & Weighted CN	0.09		97.50

Subbasin Basin-3

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.07	-	87.03
Composite Area & Weighted CN	0.07		87.03

Subbasin Basin-4

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.18	-	88.11
Composite Area & Weighted CN	0.18		88.11

Subbasin Basin-5

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.56	-	93.60
Composite Area & Weighted CN	0.56		93.60

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Proposed Conditions Model
100-yr, 24-hr

Subbasin Basin-6

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.25	-	89.90
Composite Area & Weighted CN	0.25		89.90

Subbasin Basin-A-Offiste

Soil/Surface Description	Area (acres)	Soil Group	CN
-	0.10	-	84.61
Composite Area & Weighted CN	0.10		84.61

Subbasin Pre-Developed

Soil/Surface Description	Area (acres)	Soil Group	CN
-	1.48	-	91.00
Composite Area & Weighted CN	1.48		91.00

Subbasin Runoff Summary

Subbasin ID	Total Precip in	Total Runoff in	Peak Runoff cfs	Weighted Curve Number	Time of Concentration days	Time of Concentration hh:mm:ss
Basin-1	2.40	1.96	0.15	96.000	0	00:05:00
Basin-2	2.40	2.12	0.05	97.500	0	00:05:00
Basin-3	2.40	1.22	0.02	87.030	0	00:05:00
Basin-4	2.40	1.30	0.06	88.110	0	00:05:00
Basin-5	2.40	1.74	0.26	93.600	0	00:05:00
Basin-6	2.40	1.43	0.09	89.900	0	00:05:00
Basin-A-Offiste	2.40	1.07	0.02	84.610	0	00:05:00
Pre-Developed	2.40	1.52	0.57	91.000	0	00:05:00

Node Depth Summary

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Time Flooded minutes	Retention Time hh:mm:ss	
Drains-Away-In	0.00	0.00	10.00	0	05:45	0	0	0:00:00	
MH-02	0.13	0.24	194.11	0	08:52	0	0	0:00:00	
MH-03	0.04	0.10	195.41	0	07:55	0	0	0:00:00	
MH-04	0.06	0.11	195.36	0	08:00	0	0	0:00:00	
MH-05	0.05	0.18	194.98	0	08:19	0	0	0:00:00	
MH-06	0.00	0.00	201.01	0	00:00	0	0	0:00:00	
MH-07	0.00	0.00	200.83	0	00:00	0	0	0:00:00	
MH-08	0.09	0.15	194.25	0	08:18	0	0	0:00:00	
Out-1Pipe - (15) (1) (1)	0.05	0.10	195.75	195.75	0	08:54	0	0	0:00:00
Structure - (21)	0.04	0.06	195.56	0	09:16	0	0	0:00:00	
Structure - (22)	0.05	0.07	195.31	0	09:22	0	0	0:00:00	
Structure - (23)	0.13	0.18	195.65	0	13:25	0	0	0:00:00	
Structure - (28)	0.00	0.00	203.16	0	00:00	0	0	0:00:00	
Structure - (29)	0.00	0.00	202.93	0	00:00	0	0	0:00:00	
Structure - (37)	0.19	0.78	194.98	0	08:19	0	0	0:00:00	
Structure - (38)	0.00	0.00	200.86	0	00:00	0	0	0:00:00	
Structure - (39)	0.00	0.00	201.04	0	00:00	0	0	0:00:00	
Structure - (4)	0.15	0.73	194.98	0	08:19	0	0	0:00:00	
Structure - (40)	0.00	0.00	203.03	0	00:00	0	0	0:00:00	
Structure - (41)	0.00	0.00	203.19	0	00:00	0	0	0:00:00	
Structure - (42)	0.16	0.22	195.76	0	08:53	0	0	0:00:00	
Structure - (43)	0.07	0.13	194.16	0	08:52	0	0	0:00:00	
Structure - (45)	0.12	0.21	194.03	0	08:52	0	0	0:00:00	
Structure - (47)	0.20	0.80	194.98	0	08:19	0	0	0:00:00	
Structure - (49)	0.06	0.26	194.98	0	08:19	0	0	0:00:00	
Structure - (51)	0.11	0.48	194.98	0	08:19	0	0	0:00:00	
Structure - (52)	0.25	0.85	194.98	0	08:19	0	0	0:00:00	
Structure - (53)	0.10	0.49	194.98	0	08:19	0	0	0:00:00	
Structure - (54)	0.05	0.10	195.73	0	08:54	0	0	0:00:00	
Structure - (55)	0.04	0.08	195.61	0	08:56	0	0	0:00:00	
Structure - (59)	0.06	0.14	194.98	0	08:20	0	0	0:00:00	
Out-1Pipe - (37)	0.11	0.20	193.70	0	08:52	0	0	0:00:00	
Pre-Developed-Out chambers	0.00	0.00	0.00	0	00:00	0	0	0:00:00	
STOR-01	0.27	0.88	194.98	0	08:19	0	0	0:00:00	
STOR-02	0.26	0.40	199.40	0	13:24	0	0	0:00:00	
STOR-03	1.39	2.01	204.92	0	08:52	0	0	0:00:00	
STOR-04	0.47	1.09	202.84	0	09:22	0	0	0:00:00	
STOR-04	1.46	2.04	201.54	0	08:52	0	0	0:00:00	

Node Flow Summary

Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Inflow Occurrence days	Time of Peak Inflow Occurrence hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days	Time of Peak Flooding Occurrence hh:mm
Drains-Away-In	JUNCTION	0.02	0.02	0	08:00	0.00		
MH-02	JUNCTION	0.00	0.23	0	08:51	0.00		
MH-03	JUNCTION	0.05	0.05	0	07:55	0.00		
MH-04	JUNCTION	0.00	0.06	0	08:00	0.00		
MH-05	JUNCTION	0.00	0.03	0	09:32	0.00		
MH-06	JUNCTION	0.00	0.00	0	00:00	0.00		
MH-07	JUNCTION	0.00	0.00	0	00:00	0.00		
MH-08	JUNCTION	0.00	0.14	0	08:19	0.00		
Out-1Pipe - (15) (1) (1)	JUNCTION	0.00	0.02	0	08:53	0.00		
Structure - (21)	JUNCTION	0.00	0.03	0	09:22	0.00		
Structure - (22)	JUNCTION	0.00	0.03	0	09:19	0.00		
Structure - (23)	JUNCTION	0.00	0.00	0	13:24	0.00		
Structure - (28)	JUNCTION	0.00	0.00	0	00:00	0.00		
Structure - (29)	JUNCTION	0.00	0.00	0	00:00	0.00		
Structure - (37)	JUNCTION	0.00	0.15	0	08:00	0.00		
Structure - (38)	JUNCTION	0.00	0.00	0	00:00	0.00		
Structure - (39)	JUNCTION	0.00	0.00	0	00:00	0.00		
Structure - (4)	JUNCTION	0.15	0.15	0	07:55	0.00		
Structure - (40)	JUNCTION	0.00	0.00	0	00:00	0.00		
Structure - (41)	JUNCTION	0.00	0.00	0	00:00	0.00		

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Structure - (42)	JUNCTION	0.00	0.02	0	08:52	0.00
Structure - (43)	JUNCTION	0.00	0.09	0	08:52	0.00
Structure - (45)	JUNCTION	0.00	0.23	0	08:52	0.00
Structure - (47)	JUNCTION	0.00	0.15	0	08:00	0.00
Structure - (49)	JUNCTION	0.00	0.03	0	09:11	0.00
Structure - (51)	JUNCTION	0.00	0.08	0	07:53	0.00
Structure - (52)	JUNCTION	0.00	0.19	0	08:05	0.00
Structure - (53)	JUNCTION	0.00	0.07	0	08:58	0.00
Structure - (54)	JUNCTION	0.00	0.02	0	08:54	0.00
Structure - (55)	JUNCTION	0.00	0.03	0	08:54	0.00
Structure - (59)	JUNCTION	0.00	0.06	0	08:00	0.00
Out-1Pipe - (37)	OUTFALL	0.00	0.23	0	08:52	0.00
Pre-Developed-Out chambers	OUTFALL	0.57	0.57	0	08:00	0.00
chambers	STORAGE	0.00	0.18	0	08:05	0.00
STOR-01	STORAGE	0.02	0.02	0	08:00	0.00
STOR-02	STORAGE	0.06	0.06	0	08:00	0.00
STOR-03	STORAGE	0.09	0.09	0	08:00	0.00
STOR-04	STORAGE	0.25	0.25	0	08:00	0.00

Storage Node Summary

Storage Node ID	Maximum Poned Volume 1000 ft ³	Maximum Poned Volume (%)	Time of Max Poned Volume days hh:mm	Average Poned Volume 1000 ft ³	Average Poned Volume (%)	Maximum Storage Node Outflow cfs	Maximum Exfiltration Rate cfm	Time of Max. Exfiltration Rate hh:mm:ss	Total Exfiltrated Volume 1000 ft ³
chambers	0.126	15	0 08:19	0.036	4	0.14	0.00	0:00:00	0.000
STOR-01	0.087	6	0 13:24	0.054	4	0.00	0.00	0:00:00	0.000
STOR-02	0.162	63	0 08:52	0.107	41	0.02	0.00	0:00:00	0.000
STOR-03	0.220	23	0 09:22	0.078	8	0.03	0.00	0:00:00	0.000
STOR-04	1.023	72	0 08:52	0.701	49	0.09	0.00	0:00:00	0.000

Outfall Loading Summary

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
Out-1Pipe - (37)	90.43	0.10	0.23
Pre-Developed-Out	86.62	0.11	0.57
System	88.52	0.21	0.72

Link Flow Summary

Link ID	Element Type	Time of Peak Flow Occurrence days hh:mm	Maximum Velocity Attained ft/sec	Length Factor	Peak Flow during Analysis cfs	Design Flow Capacity cfs	Ratio of Maximum /Design Flow	Ratio of Maximum Flow Depth	Total Time Surcharged minutes	Reported Condition
Pipe - (13)	CONDUIT	0 09:19	1.22	1.00	0.03	3.59	0.01	0.07	0	Calculated
Pipe - (14)	CONDUIT	0 13:25	0.35	1.00	0.00	2.69	0.00	0.05	0	Calculated
Pipe - (15) (1)	CONDUIT	0 08:54	0.69	1.00	0.02	2.76	0.01	0.09	0	Calculated
Pipe - (15) (1) (1)	CONDUIT	0 08:54	0.61	1.00	0.02	2.65	0.01	0.10	0	Calculated
Pipe - (19)	CONDUIT	0 00:00	0.00	1.00	0.00	0.91	0.00	0.00	0	Calculated
Pipe - (20)	CONDUIT	0 00:00	0.00	1.00	0.00	0.93	0.00	0.07	0	Calculated
Pipe - (28)	CONDUIT	0 08:00	0.85	1.00	0.15	2.60	0.06	0.75	0	Calculated
Pipe - (29)	CONDUIT	0 08:00	0.85	1.00	0.15	2.65	0.06	0.79	0	Calculated
Pipe - (29) (1)	CONDUIT	0 08:00	0.66	1.00	0.14	2.67	0.05	0.83	0	Calculated
Pipe - (29) (1) (1)	CONDUIT	0 08:05	1.27	1.00	0.18	3.91	0.05	0.86	0	Calculated
Pipe - (32)	CONDUIT	0 00:00	0.00	1.00	0.00	1.31	0.00	0.00	0	Calculated
Pipe - (33)	CONDUIT	0 00:00	0.00	1.00	0.00	0.85	0.00	0.00	0	Calculated
Pipe - (34)	CONDUIT	0 08:53	0.73	1.00	0.02	2.69	0.01	0.08	0	Calculated
Pipe - (37)	CONDUIT	0 08:52	2.04	1.00	0.23	2.73	0.08	0.20	0	Calculated
Pipe - (38)	CONDUIT	0 09:32	1.10	1.00	0.03	2.74	0.01	0.12	0	Calculated
Pipe - (41)	CONDUIT	0 08:58	0.59	1.00	0.08	2.73	0.03	0.67	0	Calculated
Pipe - (45) (1)	CONDUIT	0 08:01	1.02	1.00	0.06	2.75	0.02	0.31	0	Calculated
Pipe - (46)	CONDUIT	0 08:58	1.24	1.00	0.07	2.32	0.03	0.48	0	Calculated
Pipe-02	CONDUIT	0 08:52	1.76	1.00	0.23	2.70	0.09	0.22	0	Calculated
Pipe-03	CONDUIT	0 08:52	0.94	1.00	0.09	2.70	0.03	0.18	0	Calculated
Pipe-04	CONDUIT	0 07:56	1.13	1.00	0.05	2.73	0.02	0.10	0	Calculated
Pipe-05	CONDUIT	0 08:00	1.39	1.00	0.06	2.70	0.02	0.11	0	Calculated
Pipe-07	CONDUIT	0 08:56	0.84	1.00	0.03	2.20	0.01	0.08	0	Calculated
Pipe-08	CONDUIT	0 09:15	0.57	1.00	0.03	6.49	0.00	0.25	0	Calculated
Pipe-09	CONDUIT	0 00:00	0.00	1.00	0.00	2.73	0.00	0.00	0	Calculated
Pipe-10	CONDUIT	0 09:11	1.06	1.00	0.03	2.62	0.01	0.22	0	Calculated
Pipe-11	CONDUIT	0 00:00	0.00	1.00	0.00	0.93	0.00	0.00	0	Calculated
Pipe-14	CONDUIT	0 00:00	0.00	1.00	0.00	0.93	0.00	0.00	0	Calculated
Pipe-15	CONDUIT	0 00:00	0.00	1.00	0.00	2.38	0.00	0.00	0	Calculated
Pipe-17	CONDUIT	0 08:19	1.59	1.00	0.14	3.20	0.04	0.19	0	Calculated
Orifice-01	ORIFICE	0 13:24			0.00			1.00		
Orifice-02	ORIFICE	0 08:52			0.01			1.00		
Orifice-03	ORIFICE	0 09:22			0.03			1.00		
Orifice-04	ORIFICE	0 08:52			0.02			1.00		
Orifice-09	ORIFICE	0 08:19			0.14			1.00		
overflow	ORIFICE	0 00:00			0.00					
Overflow-1	ORIFICE	0 00:00			0.00					
Overflow-2	ORIFICE	0 08:52			0.01					
Overflow-3	ORIFICE	0 00:00			0.00					
Overflow-4	ORIFICE	0 08:52			0.07					

Highest Flow Instability Indexes

Link Orifice-09 (3)

Analysis began on: Thu Mar 21 14:15:59 2024
Analysis ended on: Thu Mar 21 14:16:03 2024
Total elapsed time: 00:00:04

below the existing ground at the proposed building location, because of predominantly dense gravelly soil, the site is not susceptible to liquefaction.

Geotechnical Characterization

Geology

Based on our review of the Geologic mapping^{1,2} the site is underlain by Pleistocene catastrophic flood deposits³ originating from glacial outburst floods of Lake Missoula. The flood deposits were produced by the periodic failure of glacial ice dams that impounded Lake Missoula in present day Montana between 18,000 to 15,000 years ago. Floodwaters flowed through Idaho, eastern Washington, and through the Columbia River Gorge. Near Rainier, Oregon, the river channel was restricted, causing floodwaters to back up the Willamette Valley as far south as Eugene. Floodwaters in the Portland area were as much as 400 feet deep, leaving only the tops of the tallest hills dry. The flood deposits are typically split into three different facies: the coarse-grained facies, the fine-grained facies, and the channel facies. The site is mapped in the coarse-grained facies (Mff). The coarse-grained flood deposits typically consist of sand and gravel with some boulders. Beds are generally poorly defined and thin (less than 3 feet thick). Well logs indicate these soils extend to depths of about 5 to 20 feet below grade in the area of the site, and are underlain by the middle Miocene Basalt of Sand Hollow unit (Tfsh) of the Wanapum Basalt of the Columbia River Basalt Group. The Sand Hollow unit consists of four basaltic flows characterized by fine- to medium-grained, dark gray to black fresh

- ¹ Madin, I.P., 2004. Geologic mapping and database for the Portland area fault studies: Final report, Clackamas, Multnomah, and Washington Counties, Oregon: Oregon Department of Geology and Mineral Industries, Open-File Report O-04-02, scale 1:100,000.
- ² Ma, Madin, Duplantis, and Williams, 2012, Lidar-based Surficial Geologic Map and Database of the Greater Portland, Oregon, Area, Clackamas, Columbia, Marion, Multnomah, Washington, and Yamhill Counties, Oregon, and Clark County, Washington Oregon Department of Geology and Mineral Industries Open-File Report O-12-02.
- ³ Beeson, M.H., 1989, Geologic Map of the Lake Oswego Quadrangle, Clackamas, Multnomah, and Washington Counties, Oregon, State of Oregon Department of Geology and Mineral Industries, GMS-59.

surfaces and green-gray to black weathered surfaces. The basalt develops a clayey residual soil resulting from its in-place decomposition.

Subsurface Profile

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of the site. Conditions observed at each exploration point are indicated on the individual logs. The individual logs can be found in the [Exploration Results](#) and the GeoModel can be found in the [Figures](#) attachment of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	FILL	POORLY GRADED GRAVEL WITH SAND (GP), ASPHALT, TOPSOIL, SANDY ELASTIC SILT (ML), SANDY LEAN CLAY WITH GRAVEL (CL)
2	MISSOULA FLOOD DEPOSITS	SANDY ELASTIC SILT(ML), SANDY LEAN CLAY(CL): Brown to gray, medium stiff to hard, medium plastic
3	RESIDUAL SOIL	CLAYEY SAND WITH GRAVEL(SC), POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM), SILTY GRAVEL WITH SAND(GM), SILTY SAND WITH GRAVEL(SM): Brown to dark gray, medium dense to very dense
4	BASALT	BASALT: gray

Groundwater Conditions

We observed our explorations while drilling and after completion for the presence and level of groundwater. The water levels observed in the explorations are provided on the exploration logs in [Exploration and Laboratory Results](#) and are summarized below.

Boring Number	Approximate Ground Surface Elevation (feet) ¹	Approximate Depth to Groundwater (Seepage) while Drilling (feet)
B-1	203	10
B-2	204	8
B-3	203	7.5
B-7	195	3.4

1. Based on elevations obtained from Google Earth and depth to the observed groundwater during explorations. Note the assumed ground surface elevation is presented on the exploration logs.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the explorations were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the exploration logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

Geologic Hazards

Seismic Hazards

Seismic hazards resulting from earthquake motions can include slope stability, liquefaction, and surface rupture due to faulting or lateral spreading. Liquefaction is the phenomenon wherein soil strength is dramatically reduced when subjected to vibration or shaking.

We reviewed the Statewide Geohazards Viewer (HazVu) published by the Oregon Department of Geology and Mineral Studies (DOGAMI) and available online⁴. The viewer categorizes the expected earthquake shaking from light, moderate, strong, very strong, severe and violent, and the landslide susceptibility from low, moderate, high, and very high.

- Earthquake Liquefaction Hazard: Very Low

⁴ Statewide Geohazards Viewer (HazVu) published by the Oregon Department of Geology and Mineral Studies (DOGAMI) <https://gis.dogami.oregon.gov/hazvu/>, accessed July 2023

- Expected Earthquake Shaking: Very Strong
- Landslide Susceptibility (due to earthquake): Low

Nearby Faults

The United States Geological Survey (USGS) maintains the Quaternary Fault and Fold Database containing descriptions and locations of recently active faults within the United States. The three closest faults to the project site include the Oatfield fault (No.875), the Portland Hills fault (No.877), and the Bolton fault (No.874). Published information pertaining to each fault or fault zone is provided in the following table:

Fault Name	Oatfield fault	Portland Hills fault	Bolton fault
USGS Fault Number	875	877	874
USGS Fault Class	A	A	B
Distance and Direction of Fault from the Site	0.3 mi SW	1 mi NE	5 mi SW
Length of Fault	18 miles	31 miles	6 miles
Strike (degrees)	N41W	N37°W	N53°W
Sense of Movement	Reverse, Right lateral	Reverse, Right lateral	Reverse
Dip Direction	NE	SW	SW
Slip-rate Category	Less than 0.2 mm/yr	Less than 0.2 mm/yr	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)	Undifferentiated Quaternary (<1.6 Ma)	Undifferentiated Quaternary (<1.6 Ma)

Based on our review of the available fault information, the depth to bedrock, and the site’s proximity to the nearest known faults, it is our opinion that the risk of surface rupture due to ground faulting is low.

Infiltration

The infiltration tests in explorations IT-1 and IT-2 were performed using the encased falling head method using a 6.25-inch inside diameter hollow stem augers. Prior to performing the infiltration test, we drilled boreholes beside the proposed infiltration test locations to identify underlying soil layers, existing groundwater levels in our test locations, and to extend exploration to a minimum of 5 feet beyond the infiltration test

depth. We conducted the test in general accordance with the 2023 Clackamas County Water Environment Services Stormwater Standards by first performing a minimum soaking period of 4 hours. At the end of the soaking period, we utilized 6 inches of water head to record the infiltration rate in approximate 15 to 20-minute increments until a relatively steady infiltration rate was observed, as provided in the table below. The table below summarizes the infiltration test data and provides our recommended minimum correction factor based on the test method.

Infiltration Test Result

Exploration ID	Approximate Exploration Elevation (ft)	Test Depth Below Grade (ft)	Approximate Ground Water level (ft) ²	Soil Type	Measured Infiltration Rate (in/hr) ¹
IT-1	196	5	192.5	Silty gravel with sand	0.0
IT-2	204	5	196	Silty sand with gravel	0.0

1. Recommended minimum correction factor of 2 is based on anticipated ambiguities and the long-term system degradation due to siltation, biofouling, crusting or other factors.
2. Groundwater level observations in the nearby borings ranged from as little as 3.5 ft in boring B-7 (at the northwest corner of the site) to 8 feet in boring B-2 (near the southeast corner of the site).

Unfortunately, based on the results of the infiltration test, we recommend other means of stormwater management be planned and implemented into design and construction at the site because the soils are not conducive to infiltration.

Geotechnical Overview

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings, provided that the recommendations provided in this report are implemented in the design and construction phases of this project. Based on the subsurface conditions encountered, the proposed building can be supported on conventional foundations bearing on suitable native soils. Any undocumented fill encountered within the building pad should be completely removed and replaced with structural fill.

The subsurface materials generally consisted of the existing fill over fine-grained native soils with variable amounts of sand and gravel overlaying medium dense to dense sand

Geotechnical Engineering Report

Chick-fil-A Restaurant #05244 | Oak Grove, Oregon
January 24, 2024 | Terracon Project No. 82235148



Exploration Plan (Landscape)

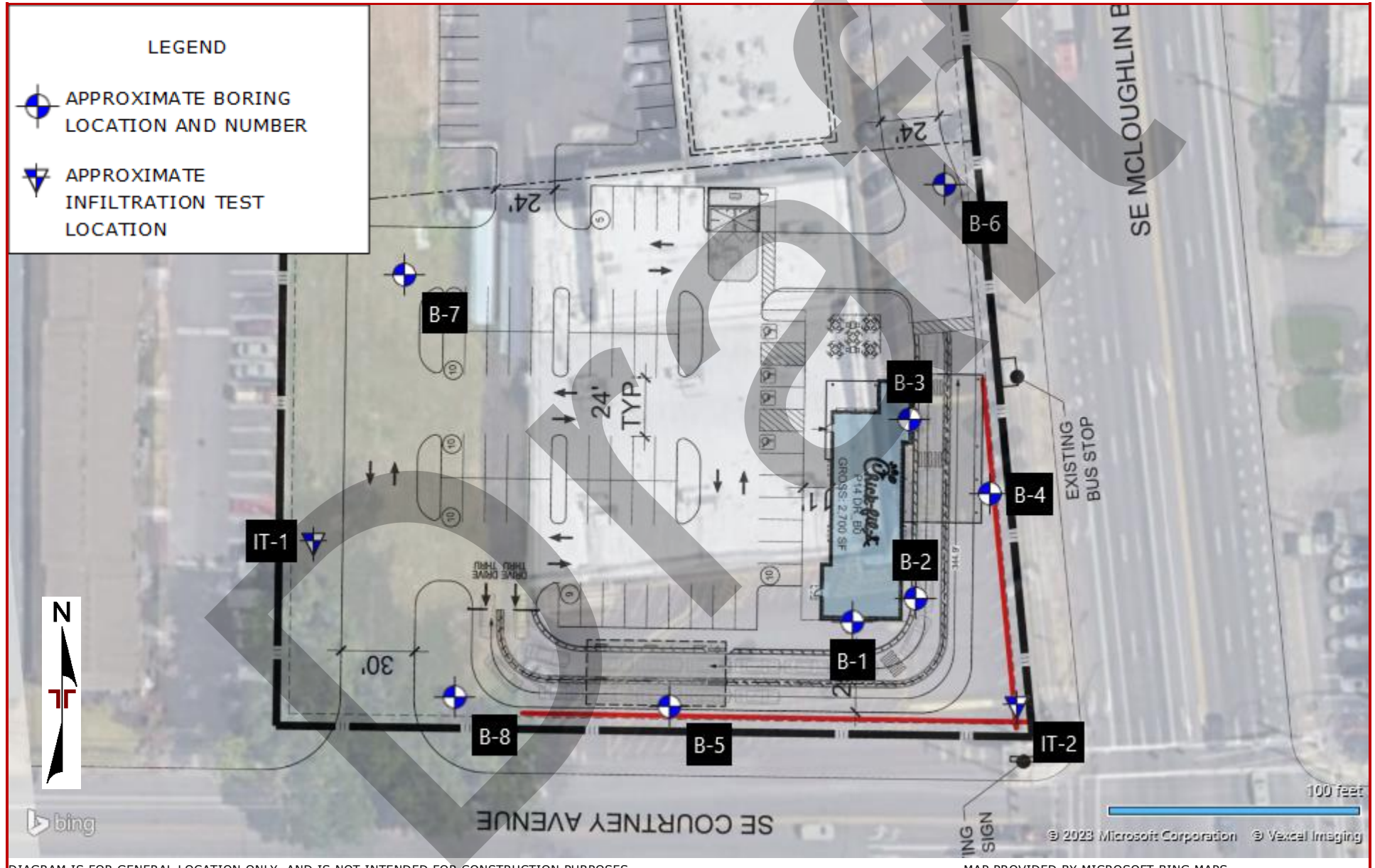


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES.

MAP PROVIDED BY MICROSOFT BING MAPS

Table 2-2a Runoff curve numbers for urban areas ^{1/}

Cover description	Average percent impervious area ^{2/}	Curve numbers for hydrologic soil group			
		A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) ^{3/} :					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ^{4/}		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82

Developing urban areas

Newly graded areas (pervious areas only, no vegetation) ^{5/}		77	86	91	94
---	--	----	----	----	----

Idle lands (CN's are determined using cover types similar to those in table 2-2c).

¹ Average runoff condition, and $I_a = 0.2S$.

² The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

³ CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

⁴ Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

⁵ Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Autodesk Storm and Sanitary Analysis Output
Proposed Conditions Model
100-yr, 24-hr



Soil Map may not be valid at this scale.

Map Scale: 1:629 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

Hydrologic Soil Group—Clackamas County Area, Oregon

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.




























Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 20, Sep 7, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 26, 2022—Oct 11, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

MAP LEGEND

Area of Interest (AOI)	 C
Area of Interest (AOI)	 C/D
Soils	 D
Soil Rating Polygons	 Not rated or not available
Water Features	 Streams and Canals
Transportation	 RAILS
	 Interstate Highways
	 US Routes
	 Major Roads
	 Local Roads
Background	 Aerial Photography
Soil Rating Lines	 A
	 A/D
	 B
	 B/D
	 C
	 C/D
	 D
	 Not rated or not available
Soil Rating Points	 A
	 A/D
	 B
	 B/D
	 C
	 C/D
	 D
	 Not rated or not available

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
78B	Saum silt loam, 3 to 8 percent slopes	C	1.8	100.0%
Totals for Area of Interest			1.8	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Precipitation Frequency Data Output

NOAA Atlas 2

Oregon 45.423020226761444°N 122.63429261317°W
Site-specific Estimates

Map	Precipitation (inches)	Precipitation Intensity (in/hr)
2-year 6-hour	1.12	0.19
2-year 24-hour	2.59	0.11
100-year 6-hour	1.99	0.33
100-year 24-hour	4.62	0.19

[Go to PFDS](#)
[Go to NA2](#)

Hydrometeorological Design Studies Center - NOAA/National Weather Service
1325 East-West Highway - Silver Spring, MD 20910 - (301) 713-1669
Thu Mar 21 20:32:18 2024

Exhibit H: Management Agreement

**LRG Managers, LLC
Company Resolution
June 8, 2022**

We, Josh Amoroso, Steve Cutter and Ryan Nickelson, being the Managers of LRG Managers, LLC, a California limited liability company (the "Company"), hereby adopt the following resolution:

For the acquisition of 13735-13843 SE McLoughlin Blvd Milwaukie, Oregon, title order numbers 36262108677 and 36262108679, with escrow held by Ticor Title, Josh Amoroso may sign any required closing documents, including, but not limited to, loan documents and agreements, as Manager solely on behalf of the Company.

Agreed and Accepted:

DocuSigned by:



55C9A79F00945C...
Josh Amoroso

Manager

June 8, 2022

DocuSigned by:



55C915017A064E4...
Steve Cutter

Manager

June 8, 2022

DocuSigned by:



55C9297109241F6...
Ryan Nickelson

Manager

June 8, 2022

Exhibit List: Z0151-24-D

1. Clackamas Fire District
2. Oak Lodge Water Services
3. County Sustainability Division
4. ODOT
5. County Engineering Division
6. Comp Plan Map 10-MC-1
7. Comp Plan Figure 10-MC-2
8. County Planning and Zoning Design Review Committee Recommendations

**Please note, all exhibits can be emailed. The actual submittal package is very large, not included as an exhibit, and must be viewed using Public Service Portal: <https://accela.clackamas.us/citizenaccess/>



Date: July 17, 2024

To: Ben Blessing, Senior Planner, Clackamas County

From: Valere Liljefelt, Deputy Fire Marshal, Clackamas Fire District #1

RE: Z0151-24 13843 SE McLoughlin Blvd Commercial

A land use plan review was conducted for the listed property. It has been determined that this property is in an area with public water supply, and there are no site conditions that would prevent the applicant from constructing the proper access. Fire department access and water supply are reviewed in accordance with the 2022 edition of the Oregon Fire Code (OFC).

When submitting plans for fire department access and water supply approval please include the following information:

- Fire apparatus access
- Fire lanes
- Fire hydrants
- Fire lines
- Available fire flow
- FDC location (if applicable)
- Power lines crossing access lanes
- Building square footage
- Construction type
- Fire flow test per NFPA 291 no older than 12 months

Submit Fire access/water supply site plan via CFD1 website [Fire access/water supply submittal link](#).
[Fire Access and Water Supply Plan Submittal - Clackamas Fire District](#) The Fire code application guide link is on the instructions page.

For design assistance we provide additional information with the Fire Code Application Guide found on the first page of the submittal process.

Note: This review is to determine if the project can be designed and constructed to meet the requirements of the Oregon Fire Code, and should not be considered approval of the design as submitted.

July. 31, 2024
Ben Blessing
Clackamas County Planning Division
150 Beaver Creek Road
Oregon City, OR 97045

Re: Conditions_OLWS_Z0151-24

Scope: Application for a Design Review permit to construct a new 2,700 square foot Chick Fil A drive-thru restaurant. Site improvements include removal of the southern portion of the existing retail/office commercial building, repaving and restriping of the parking lot, new curbing and traffic marking, a reconstructed trash enclosure area, and new perimeter and interior parking lot landscape planters.

Land Use Approval Conditions / Comments: As a condition of land use application approval, OLWS requests the property owner be required to comply with the following requirements and to procure the necessary approvals and/or permits from the OLWS in accordance with the OLWS code, regulations or policies.

- The proposed development is located within the service area of Oak Lodge Water Services for sanitary sewer, water and surface water and shall be subject to the Oak Lodge Rules and Regulations and Design and Construction Standards for applicable utilities.
- The application will be reviewed by the rules, regulations and design and construction standards in effect on the date of complete application to OLWS; not Land Use application.
- Property owner shall apply for an erosion and sediment control permit from OLWS.
- Property owner shall apply for a Site Development permit from OLWS for any public infrastructure changes corresponding with the County "SC" permit.
- Sanitary sewer and/or water SDCs may be assessed.
- All fees and charges shall be paid before the Site Development permit is issued or plat approval. All costs associated with the design, construction and testing of any applicable utility shall be proved by and at the sole expense of the owner and performed prior to building permit approval.
- Utilities exist to serve the property. Oak Lodge does not require any public utility extensions.
- The public infrastructure in Oak Lodge's purview shall be installed prior to building permit approval or plat approval. Bonding for this installation is not allowed.
- Each taxlot shall have separate water and sewer connections to the public system.
- Property owner shall apply for a Utility Permit from OLWS corresponding to the building permit.
- Property owner shall be responsible for the maintenance of any stormwater facilities constructed in the public right-of-way (if applicable, depending on design) and/or private property.
- Property owner to demonstrate that stormwater generated from all applicable impervious surfaces can enter the public system according to OLWS design standards.
- A stormwater overflow path is required. This is to be designed in conjunction with Clackamas County DTD.

- A stormwater utility downstream analysis is required per Oak Lodge standards. Any deficiencies in the existing system sizing or performance, observed or anecdotal, shall be identified by the owner to Clackamas County and Oak Lodge.
- Stormwater treatment including water quality and detention is required. All water for all new or altered impervious surfaces is to be treated including all private and public water for any street improvements. All relevant water is to be captured and treated. Open vegetated systems are preferred unless they are unfeasible.
- All fees and charges shall be paid before the Oak Lodge permit is issued. All costs associated with the design, construction and testing of any applicable utility shall be proved by and at the sole expense of the owner and performed prior to plat approval.

Sincerely,

Oak Lodge Water Services

A handwritten signature in blue ink that reads "Markus Mead". The signature is written in a cursive style and is underlined with a blue line.

Markus Mead, AICP, CESCL
Development Review Specialist



To: Ben Blessing
From: Tenille Beseda Fillwock
Subj: Land Use Comment - Z0151-24 Chick-Fil-A
Sustainability & Solid Waste Finding and Condition

Finding:

The proposed trash and recycling enclosure is located at the southeastern corner of the parking lot. It sets on a 4" concrete pad and is approximately 10'10" deep and 27'4" wide with a drain in the middle and a 7'10" deep storage room along the back of the enclosure. Four bollards are proposed at the rear of the enclosure with two service gates at the front. The applicant anticipates a "no parking" sign will be added to the enclosure. In response to 1021.05 (5), the narrative reads, "The recycling and solid waste receptacle will not have a roof." However, the designs on A-103 indicate a roof with an 11'0" clearance.

Pursuant to [ZDO 1021](#), the proposed enclosure does not comply with:

1021.04 ENCLOSURE AND GATE STANDARDS (C/D – four bollards do not meet the requirement for a bumper curb/rail to protect the walls from container damage)

1021.05 RECEPTACLE STANDARDS (A – Enclosure plans needed of receptacle footprints with required spacing illustrated, including 20 feet of unobstructed overhead or vertical clearance)

If these standards cannot be met, the applicant can request modification pursuant to 1021.08.

Recommendation to Planner:

With Engineering approval, adherence to any additional fire and/or building requirements triggered by the >200sq.ft. roof, and with the additional detail to illustrate compliance with 1021.04 and 1021.05 outlined above, these standards can be met.

Condition:

Prior to issuance of building permits, the applicant shall submit detailed enclosure plans that clearly outline a waste and recycling enclosure (with container footprints for all required receptacles: garbage, recycling, food scraps, glass) that meets the requirements specified in [ZDO 1021](#). The applicant shall

work with Clackamas County's Sustainability & Solid Waste staff to finalize plans that comply with design standards.

To discuss plans, please contact Sustainability & Solid Waste staff at wasteinfo@clackamas.us, 503.557.6363 (option 7).

Find information about enclosure requirements at www.clackamas.us/recycling/enclosure.html

Find information about the status of your application at acela.clackamas.us/citizenaccess/



August 7, 2024

ODOT # 13088

ODOT Updated Response

Project Name: Chick-fil-A	Applicant: Chick-fil-A
Jurisdiction: Clackamas County	Jurisdiction Case #: Z0151-24
Site Address: 13819 SE McLoughlin Blvd	State Highway: SE McLoughlin Blvd (OR 99E)

The site of this proposed land use action is adjacent to SE McLoughlin Blvd (OR 99E). ODOT has permitting authority for this facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation.

LAND USE

The application is for a Design Review permit to construct a new 2,700SF Chick Fil A drive-through restaurant. Site Improvements include removal of the southern portion of the existing retail/office commercial building, repaving and restriping the parking lot, new curbing and traffic markings, a reconstructed trash enclosure area and new perimeter and interior parking lot landscape planters.

During the pre-application conference, the applicant discussed completing a property line adjustment prior to submitting for the Design Review permit.

COMMENTS/FINDINGS

Access to the State Highway

The existing site has three accesses, including two driveways off SE McLoughlin Blvd (OR 99E). The development does not propose to change these accesses. Based on a review of the provided documents, as well as review of crash history of the Courtney Avenue (Courtney) and OR 99E intersection, the proposed development will likely affect turning movements onto Courtney and entering and exiting the development from OR 99E. Based on our data, approximately 50% of the reported crashes within this area occurred during vehicle turning movements. Although the proposed tax lot reconfiguration makes it difficult to change the two accesses, ODOT encourages and recommends the development restrict its use of the southern access, approximately 315 feet north of said intersection.

During the pre-application meeting, Clackamas County proposed a barrier which would eliminate movement from vehicles exiting the drive-thru and immediately exiting from the southern access. This could be use of a bollard system or possible curb installation. The applicant appeared amenable to this change and ODOT supports this restriction.

Based on a review of the provided Land Use Submittal CFA Plan Set, ODOT understands the applicant plans to incorporate landscaping where the bollard system was discussed as shown on the Planting Plan plansheet L1.0. These plantings greatly reduce the possible drive thru vehicles from exiting said drive-thru and exiting from the southern highway access as discussed above. ODOT supports this landscaped area.

Frontage Improvements and Right of Way

An ODOT Miscellaneous Permit is Required for all work in the State highway right of way. ODOT recommends the county require the following improvements within the McLoughlin Blvd right of way as shown in the land use application submittal:

1. Realignment of two crosswalks
2. Bike lane reconfiguration
3. Upgrading the traffic signal to radar
4. 8ft wide separated sidewalk
5. Curb and gutter, remove curb inlet and plug MH
6. Two pedestrian poles with signals
7. Illumination
8. Sign and striping
9. Signal Pole relocation
10. Paving
11. Extend right turn lane consistent with the Traffic Impact Analysis (TIA)
12. Bus stop and shelter relocation
13. 3ft right of way donation to ODOT

The follow may be required by ODOT to process the Miscellaneous Permit:

1. TIA.
2. Approved donation.
3. ADA Checklist.
4. Cultural Review/ Certification.
5. State Traffic Roadway Engineer (STRE) approval for relocating signal pole.
6. STRE approval for re-aligning bike lane.
7. STRE approval for re-aligning two crosswalks.
8. STRE approval for Bus Stop & Shelter relocation.

ODOT Technical Review Requirements

All alterations within the State highway right of way are subject to ODOT standards. Alterations along the State highway but outside of the ODOT right of way may also be subject to ODOT review pending its potential impact on the safe operation of the State highway.

The following ODOT manuals may apply:

- ODOT Traffic Manual
- ODOT Highway Design Manual
- ODOT Hydraulics Design Manual

The ODOT Traffic Manual (TM) identifies items that require ODOT Region Traffic Engineer (RTE) approval. Items requiring RTE approval must be prepared by an Oregon-registered Professional Engineer (P.E.) and will be reviewed by the ODOT Region 1 Technical Center. See the TM for information on authorities and required approvals. Some approvals require a unique request form (Traffic Approval).

Deviations from ODOT Standards

Proposed alterations that deviate from ODOT standards will require a Design Exception/Deviation prepared by an Oregon-registered Professional Engineer (P.E.) for review by the ODOT Region 1 Technical Center. ODOT can only determine if design elements will require a Design Exception/Deviation or RTE approval once detailed plans have been reviewed.

Note: A Design Exception/Deviation or RTE approval items may take **6 months or longer to process**. The preparation of a Design Exception or RTE approval does not guarantee its ultimate approval.

ODOT RECOMMENDED LOCAL CONDITIONS OF APPROVAL

McLoughlin Blvd Improvements

1. Realignment of two crosswalks
2. Bike land reconfiguration
3. Upgrading the traffic signal to radar
4. 8ft wide separated sidewalk
5. Curb and gutter, remove curb inlet and plug MH
6. Two pedestrian poles with signals
7. Illumination
8. Sign and striping
9. Signal Pole relocation
10. Paving
11. Extend right turn lane consistent with the Traffic Impact Analysis
12. Bus stop and shelter relocation

Right of Way Donation to ODOT

- 3 foot right of way donated to ODOT as necessary to accommodate the planned cross section shall be provided. The deed must be to the State of Oregon, Oregon Department of Transportation. The ODOT District contact will assist in coordinating the transfer. ODOT should provide verification to the local jurisdiction that this requirement has been fulfilled. The property owner must be the signatory for the deed and will be responsible for a certified environmental assessment of the site prior to transfer of property to the Department. **Note: It may take up to 6 months or longer to transfer ownership of property to ODOT.**

Permits and Agreements to Work in State Right of Way

- An ODOT Miscellaneous Permit must be obtained for all work in the highway right of way. When the total value of improvements within the ODOT right of way is estimated to be \$100,000 or more, an agreement with ODOT is required to address the transfer of ownership of the improvement to ODOT. An Intergovernmental Agreement is required for agreements involving local governments and a Cooperative Improvement Agreement is required for private sector agreements. The agreement shall address the work standards that must be followed, maintenance responsibilities, and compliance with ORS 276.071, which includes State of Oregon prevailing wage requirements. **Note: If a CIA is required, it may take 6 months or longer to process.**

Please send a copy of the Land Use Notice of Decision to:

ODOT Region 1 Planning, Development Review
123 NW Flanders St., Portland, OR 97209

ODOT_R1_DevRev@odot.oregon.gov

Development Review Planner: Marah Danielson	Marah.b.danielson@odot.oregon.gov
District Contact: District 2B	d2bup@odot.oregon.gov

Memorandum

TO: Ben Blessing, Planning and Zoning

FROM: Kenneth Kent, Development Engineering,

DATE: August 12, 2024

RE: Z0151-24-D, Chick-fil-A, SE Courtney Avenue and SE McLoughlin Boulevard
Tax Lots: 21E01CA02900 and 21E01CA03100

Transportation Engineering staff have reviewed this application and have the following comments:

Facts and Findings:

1. The applicant has proposed construction of a 2,700 square foot Chick-fil-A restaurant on the west side of SE McLoughlin Boulevard and north side of SE Courtney Avenue. The proposed restaurant will provide drive-thru window service, walk-up window service and outdoor seating. No indoor seating is proposed.
2. The proposed development is subject to the provisions of *Clackamas County Zoning and Development Ordinance (ZDO)* Section 1007 pertaining to roads and connectivity, Section 1015 pertaining to parking and loading, and Water Environment Services requirements and Roadway Standards Chapter 4 pertaining to surface water management.
3. SE McLoughlin Boulevard is classified as a principal arterial roadway and is under the jurisdiction of the Oregon Department of Transportation (ODOT). SE Courtney Avenue classified as collector roadway. Clackamas County has adopted roadway standards that pertain to the structural section, construction characteristics, minimum required right-of-way widths, and access standards for arterial and collector roads.
4. Consistent with *ZDO* Section 1007.02, the applicant is required to improve the roadway frontage of the project site to current standards. The project site is part of the McLoughlin Corridor Design Plan, as shown on Comprehensive Plan Map 1-MC-1.
5. The McLaughlin Corridor Plan establishes a special road cross section for the portion of SE McLoughlin Boulevard along the project site frontage, as provided in Comprehensive Plan Figure 10-MC-2. The existing right-of-way width along the SE McLoughlin Boulevard site frontage appears to be a 120 feet, which is consistent with the adopted cross section. However, current standards have increased the minimum width of bike lanes on arterial roadways 6 feet to 8 feet. The applicant will be required to dedicate approximately 3 feet of public right-of-way along the entire SE McLoughlin Boulevard frontage to accommodate the required frontage improvements.

6. The existing SE Courtney Avenue right-of-way width is 60 feet along the site frontage. The meeting the minimum right-of-way width for a three lane collector is 70 feet. The applicant will be required to dedicate 5 feet of additional right-of-way. In addition, per Roadway Standards Drawing C130, an 8-foot wide public utility easement will be required adjacent to the public right-of-way of SE Courtney Avenue.
7. Consistent with ZDO Section 1007, the applicant is required to improve the roadway frontage of the project site to current standards, including, but not necessarily limited to, up to a one-half street improvement. The McLaughlin Corridor Plan calls for an 88-foot wide curb to curb width on SE McLoughlin Boulevard, per Figure 10-MC-2. The existing paved width is currently provided, but is not striped per the adopted cross section. In order to accommodate an 8-foot wide bike lane, and a 15-wide right turn lane, pavement widening will be required, as well as reconstructing the curb and gutter. Additionally, an 8-foot wide sidewalk will be required.
8. Clackamas County will be improving SE Courtney Avenue along the project site frontage up to but not including the curb ramps at SE McLoughlin Boulevard. The project, known as Courtney Avenue Complete Streets is funded and will be constructed in 2026. Based on anticipated construction schedules, it appears that the proposed Chick-fil-A development will proceed prior to the Courtney Avenue project. The applicant will be required to construct improvements along the entire site frontage. Applicant shall coordinate specific design elements with the County project team so the improvements tie-in appropriately. The applicant will be require to construct a one half street improvement to Collector standards, providing one half street width of approximately 27 feet from the existing centerline stipe, providing a left turn lane, westbound travel lane and a 6-foot width bike lane. In addition, curb, landscape strip and a 7-foot wide sidewalk will be required.
9. As provided by Section 220.4 of the Clackamas County Roadway Standards, access to arterial roadways is restricted when a property has frontage on a lower classification roadway. The proposed Chick-fil-A restaurant is part of the shopping center that includes three driveways onto SE McLoughlin Boulevard with drive aisles that run parallel to the building and SE McLoughlin Boulevard. The southernmost driveway is close to the exit of the proposed drive-thru lanes. In discussions with ODOT and County staff, in lieu of closing the driveway, in order to eliminate turning conflicts and congestion on-site at the driveway that would impact the highway, an alternate design was determined to be acceptable that closes the drive aisle on-site connecting the front portion of the shopping center with the Chick-fil-A site. The applicant's preliminary plan is consistent with this determination.
10. The applicant will be required to provide adequate on-site circulation for all vehicles anticipated to use the parking and maneuvering areas, and the drive-thru service window. As specified by ZDO Section 827.01(D), drive-thru services cannot create off-site congestion. The proposed site design includes a dual drive-thru lane design that can accommodate 31 vehicles. The TIS includes a queuing study of other Chick-fil-A restaurants and notes that the maximum number of vehicles observed at other facilities is 29. It is also noted that there is area in the on-site drive aisles that can accommodate additional queuing. The proposed

parking and maneuvering areas appear to provide adequate access. The applicant will be required demonstrate turning movements for large vehicles such as garbage truck and emergency service vehicles. Vehicle parking spaces and bicycle parking spaces will be required to meet minimum ZDO section 1015 and Clackamas Roadway Standards dimensional requirements.

11. Per Clackamas Roadway Standards Section 240, developments are required to be served by driveways that provide adequate intersection sight distance. It appears sight distance can be provided at the proposed driveway.
12. ZDO Subsection 1007.07 requires that the transportation facilities within the impact area of a development are adequate, meeting operational standards. The applicant has provided a traffic impact study (TIS) by Kittelson & Associates, dated February 22, 2024, addressing the traffic impacts of the proposed restaurant. County Engineering required that the traffic generation include counts at similar Chick-fil-A restaurants, to reflect the typically higher volumes experienced at the restaurants. The TIS concludes that the study intersections will operate within County and ODOT standards, the driveways serving the site can meet intersection sight distance standards, and that on-site queuing for the drive-thru will not cause off-site congestion. County Engineering staff concur with the TIS findings.

Preface to recommended conditions of approval:

The following items are project requirements from the Department of Transportation and Development's Development Engineering Division. These conditions of approval are not intended to include every engineering requirement necessary for the successful completion of this project, but are provided to illustrate to the applicant specific details regarding the required improvements that may prove helpful in determining the cost and scope of the project. These conditions are based upon the requirements detailed in the County's Comprehensive Plan (Comp Plan), the County's Zoning and Development Ordinance (ZDO) and the County's Site Development and Roadway Construction Standards (Roadway Standards). Additional requirements, beyond those stated in the conditions of approval, may be required. The applicant may discuss the requirements of the project with staff at any time.

The requirements specifically required by the Comp Plan and the ZDO cannot be modified by the Development Engineering Division. However, the requirements detailed in these conditions of approval, derived from the Roadway Standards, are based upon nationally accepted standards and engineering judgment and may be modified pursuant to Section 170 of the Roadway Standards. The applicant is required to provide sufficient justification to staff in the request. Staff shall determine if a modification is warranted.

Development Engineering recommended conditions of approval:

- 1) All frontage improvements in, or adjacent to Clackamas County right-of-way, or on site, shall be in compliance with *Clackamas County Roadway Standards*.

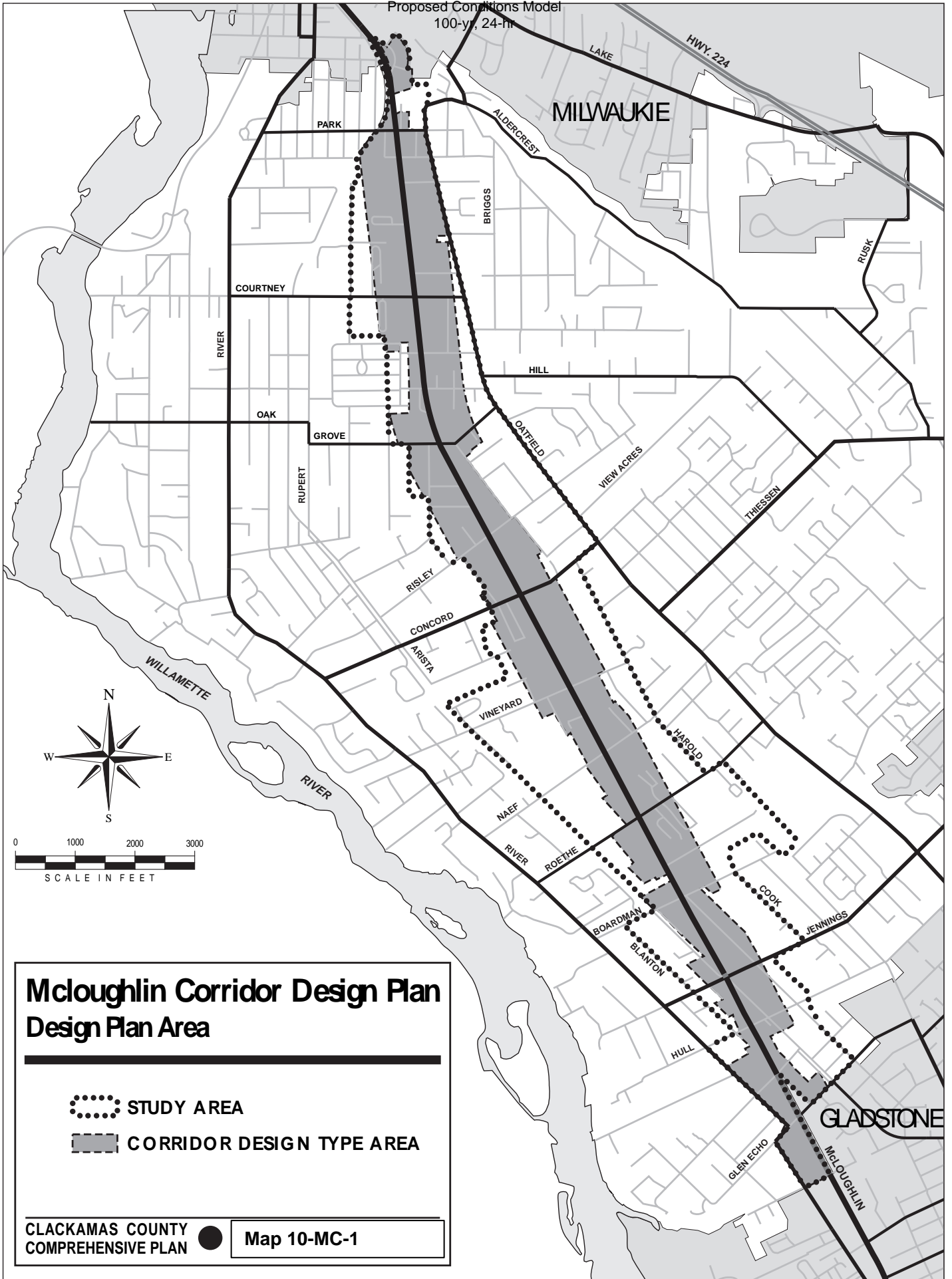
- 2) The applicant shall obtain a Development Permit from Clackamas County Department of Transportation and Development prior to the initiation of any construction activities associated with the project.
- 3) The applicant shall dedicate additional right-of-way along the entire SE McLoughlin Boulevard site frontage to accommodate the required improvements with a minimum of 6 inches behind the back of sidewalk.
- 4) The applicant shall dedicate approximately 5 feet of right-of-way along the entire site frontage of SE Courtney Avenue, and shall verify by a professional survey that a minimum 35-foot wide, one-half right-of-way width exists.
- 5) The applicant shall design and construct improvements along the Chick-fil-A site frontage of SE McLoughlin Boulevard to arterial roadway standards, consistent with Standard Drawing C140, Figure 10-MC-2 of the Comprehensive Plan, and to ODOT standards. These improvements shall consist of the following:
 - a) An 8-foot wide unobstructed sidewalk.
 - b) Curb and gutter, per Oregon Standard Drawings. The existing curb inlet shall be removed and manhole plugged.
 - c) A 15-foot wide right turn lane, with a minimum of 50 feet of storage.
 - d) A minimum 8-foot wide bike lane, including reconfiguration of striping.
 - e) Dual Curb ramps shall be constructed at the SE Courtney Avenue and SE McLoughlin Boulevard intersection, designed per Oregon Standard Drawings. The curb radius shall be 30 feet.
 - f) The existing bus stop shall be relocated, as necessary, with a minimum 8-foot wide sidewalk centered on the bus stop. (Reference ZDO Section 1007.04.H.2)
 - g) A minimum 5-foot wide landscape strip shall be provided between the sidewalk and curb, except where located adjacent to the right turn lane, where the sidewalk can be curb-tight.
 - h) Relocate the signal pole and replace to current standards, including pedestrian poles
 - i) Relocated cross walks.
 - j) Drainage facilities in conformance with Water Environment Services requirements and *Clackamas County Roadway Standards* Chapter 4.
- 6) The applicant shall design and construct improvements along the entire site frontage of SE Courtney Avenue to local commercial roadway standards, consistent with Standard Drawing C110. These improvements shall consist of the following:
 - a) Up to a minimum 27-foot wide one half street improvement, as measured from the existing centerline strip, providing a left turn lane, westbound through lane, and a 6-foot wide bike lane. The structural section shall comply with Standard Drawing C100 for a collector roadway.

- b) Standard curb, or curb and gutter if curblin slope is less than one percent.
 - c) A 7-foot wide unobstructed sidewalk, constructed per Roadway Standards Drawing S960.
 - d) A minimum 5-foot wide landscape strip shall be provided between the sidewalk and curb. Street trees shall be provided within the landscape strip along the entire site frontage at 25-40-foot spacing, based on tree species.
 - e) Minimum 28-foot wide concrete driveway approach, per Standard Drawing D650.
 - f) The applicant shall provide and maintain adequate sight lines for minimum intersection sight distance of 335 feet at the driveway intersection with SE Courtney Avenue.
 - g) Drainage facilities in conformance with Oak Lodge Water Services requirements and *Clackamas County Roadway Standards* Chapter 4.
- 7) The applicant shall design and construct on-site parking and maneuvering areas as follows:
- a) The applicant shall provide adequate on site circulation for the parking and maneuvering of all vehicles anticipated to use the site, including, but not limited to:
 - i) A minimum of 24 feet of back up maneuvering room for all 90-degree parking spaces;
 - ii) The paths traced by the extremities of trucks and emergency vehicles shall be demonstrated.
 - b) Parking spaces shall meet minimum *ZDO* section 1015 and Roadway Standards, Standard Drawing P100/200 dimensional requirements. The plans shall list the number of parking spaces required and the number of parking spaces provided. The applicant shall label all compact, carpool, disabled, and loading berth spaces on the plans.
 - c) All curbs shall typically be type "C", or curb and gutter if curb line slope is less than one percent, if they carry, direct or channel surface water. Alternative curbs will be considered when it is determined by the Clackamas County Department of Transportation and Development that type "C" curbs or curb and gutter are not appropriate. Extruded curbs for carrying, directing or channeling surface water, or used as a vehicle wheel stop, shall not be allowed.
 - d) Where the on-site ADA walkway intersects the public sidewalk, there shall be a minimum 5x5 foot wide landing.
 - e) A stop sign shall be provide at the driveway intersection with SE Courtney Avenue
 - f) The drive-thru shall be managed so that queues from the drive-thru lanes do not cause vehicles to back up off of the site and into the public right-of-way. When the drive-thru queue exceeds the drive-thru lanes, the Temporary Queue Management Plan shall be utilized per Figure K of the Kittelson & Associates Traffic Impact Study, dated February 22, 2024.
- 8) All traffic control devices on private property, located where private driveways intersect County facilities shall be installed and maintained by the applicant, and shall meet standards

set forth in the *Manual on Uniform Traffic Control Devices* and relevant Oregon supplements.

- 9) Primary Inspector:
 - a) The applicant shall enter into a Developer/Engineer Agreement for primary inspection services per Section 180 of the Roadway Standards. This form will be provided to the applicant and shall be signed and returned to County Plans Reviewer.
 - b) Prior to final plat, the applicant shall provide a Certificate of Compliance signed by the Engineer of Record stating all materials and improvements have been installed per approved plans and manufacture's specifications.
- 10) A Fire Access and water supply plan shall be provided for subdivisions, commercial buildings over 1000 square feet in size or when required by Clackamas Fire District #1. The plan shall show fire apparatus access, fire lanes, fire hydrants, fire lines, available fire flow, fdc location if applicable, building square footage and type of construction. The applicant shall provide fire flow tests per NFPA 291 and shall be no older than 12 months. Work to be completed by experienced and responsible persons and coordinated with the local water authority.
- 11) Following completion of site construction activities of subdivisions, buildings over 1000 square feet or when required by Clackamas Fire District #1, the applicant shall provide as-built Fire Access and Water Supply pdf plans to the local Fire District and the County. The pdf plans shall show fire apparatus access, fire lanes, fire hydrants, fire lines, available fire flow, fdc location if applicable, building square footage and type of construction. The plans shall include any supporting details of the access, circulation, water vaults, fire lines, valves, fdc, backflow devices, etc.
- 12) Prior to certificate of occupancy, Substantial Completion shall be met, per Roadway Standards Section 190.2. For any other unfinished improvements required by conditions of approval, a performance surety shall be provided per Roadway Standards Section 190.3, based on an Engineer's cost estimate. The estimate shall be submitted for review and approval of quantities of asphalt concrete, aggregates, curbs, sidewalks and any other required improvements and associated construction costs.
- 13) Prior to the issuance of a building permit, the applicant shall submit to Clackamas County Engineering Office:
 - a) Written approval from the Clackamas Fire District #1 for the planned access, circulation, fire lanes and water source supply. The approval shall be in the form of site and utility plans stamped and signed by the Fire Marshal.
 - b) Written approval from ODOT in the form of a permit for all work within the SE McLoughlin Boulevard right-of-way.
 - c) Written approval from Clackamas River Water District for adequate water supply source to serve the development. The approval shall be in the form of utility plans stamped and signed by the Water District representative.

- d) Written approval from Oak Lodge Water Services for surface water management facilities, surface water detention facilities, and erosion control measures.
- e) A set of street and site improvement construction plans, including a striping and signing plan, for review, in conformance with *Clackamas County Roadway Standards* Section 140, to Clackamas County's Engineering Office and obtain written approval, in the form of a Development Permit.



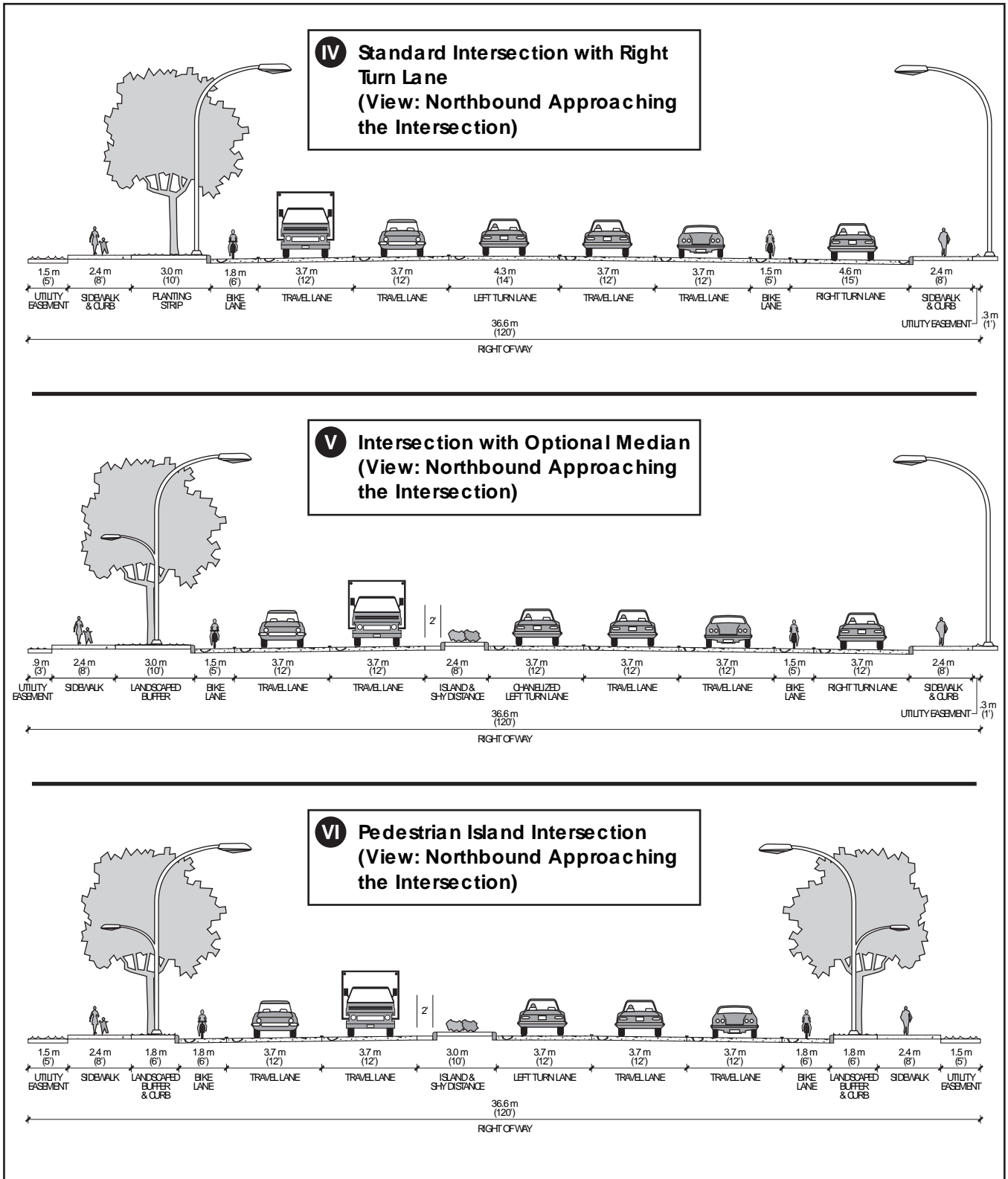
**Mcloughlin Corridor Design Plan
Design Plan Area**

●●●● STUDY AREA

■■■■ CORRIDOR DESIGN TYPE AREA

CLACKAMAS COUNTY
COMPREHENSIVE PLAN

● Map 10-MC-1



**McLoughlin Corridor Design Plan
 Street Cross Sections**

CLACKAMAS COUNTY
 COMPREHENSIVE PLAN

I CROSS SECTION LOCATION (See Map X-MC-2)

FIGURE 10-MC-2



RECCOMENDATION TO THE DESIGN REVIEW COMMITTEE

Recommended Decision: Denied

Permit Type: Design Review

File No. Z0151-24-D

Proposal: Development of Chick-Fil-A drive-thru restaurant on a commercial lot.

Meeting Date: August 20, 2022 (Staff report prepared Aug. 13, 2024)

Issued By : Ben Blessing, Sr. Planner, Bblessing@clackamas.us

Assessor’s Map & Tax Lot(s): 21E01CA02900, 03000, and 03100

Site Address: 13819 SE MCLOUGHLIN BLVD (former Eagle Bargain Outlet)

Applicant: SCHWARTZ, STEVE

Owner of Property: LOCKEHOUSE RETAIL GROUP INC

Zoning: General Commercial (C-3)

APPLICABLE APPROVAL CRITERIA: This application is subject to Clackamas County Zoning and Development Ordinance (ZDO) Section(s) 202, 510, 827, 1002, 1003, 1005, 1006, 1007, 1009, 1010, 1015, 1021, 1102 and 1307.

COMMENTS:

Notice was sent to applicable agencies and owners of property within 300 feet. Comments received relating to the applicable approval criteria listed above are addressed in the Agency Comment and/or Findings Section.

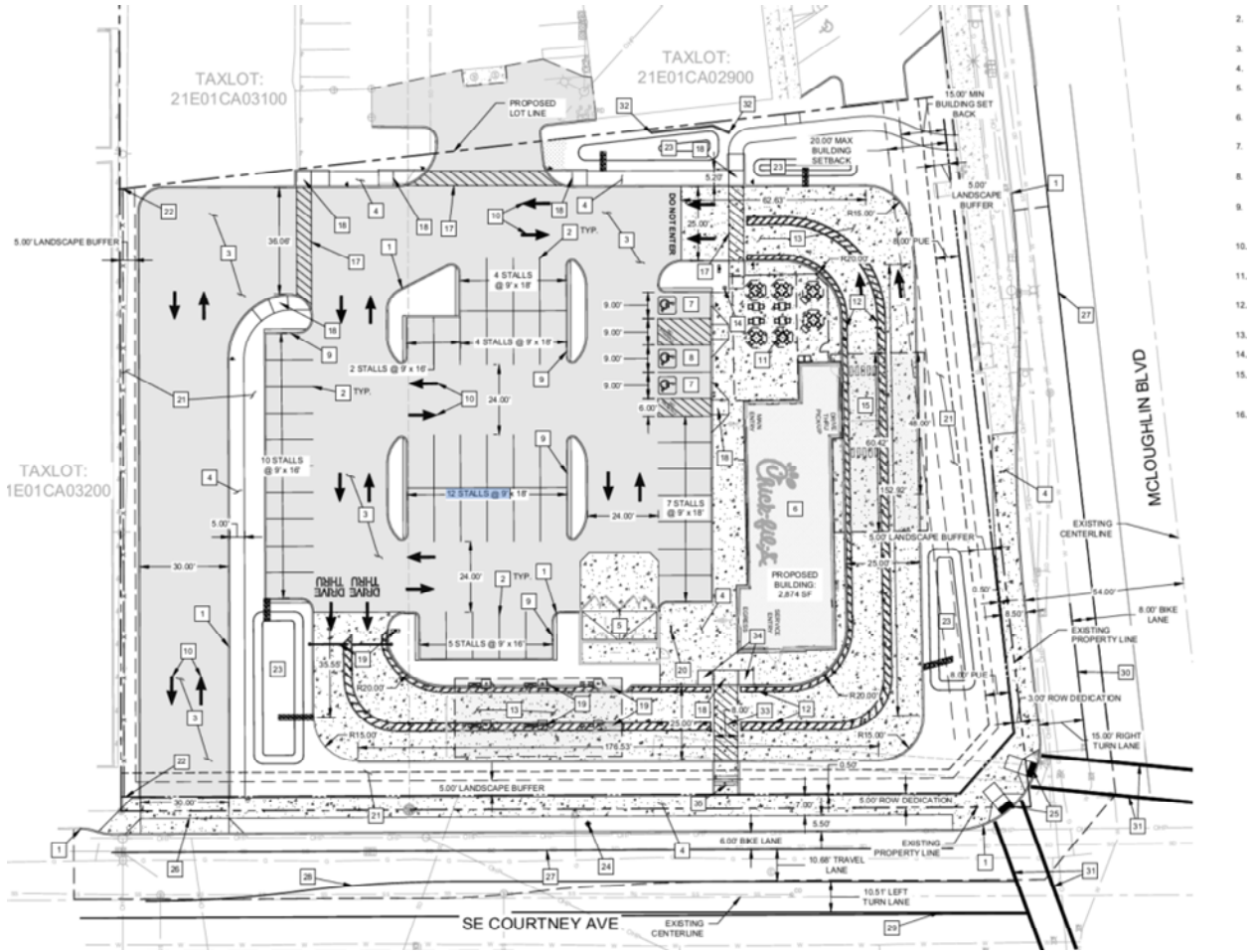
PUBLIC COMMENTS

No comments received from property owners within 300 feet.

Clackamas County is committed to providing meaningful access and will make reasonable accommodations, modifications, or provide translation, interpretation or other services upon request. Please contact us at 503-742-4545 or email DRenhard@clackamas.us.

503-742-4545: ¿Traducción e interpretación? |Требуется ли вам устный или письменный перевод? 翻译或口译 ? | Cán Biên dịch hoặc Phiên dịch? | 번역 또는 통역?

Site Plan:



Location Map

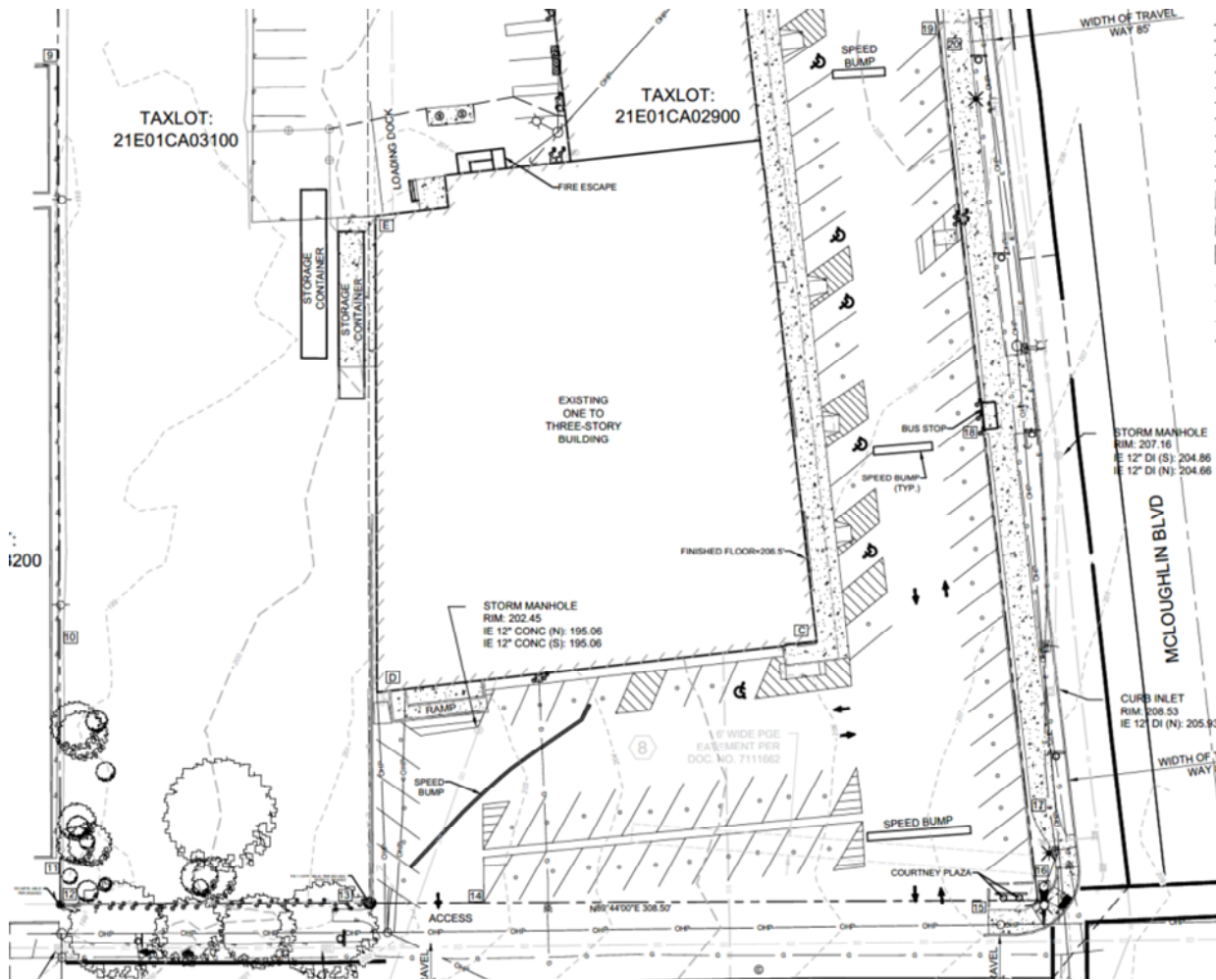


Street View, Site Plan and Project Drawings

Street View (Looking west From SE McLoughlin Blvd (99E):



Existing Conditions Map



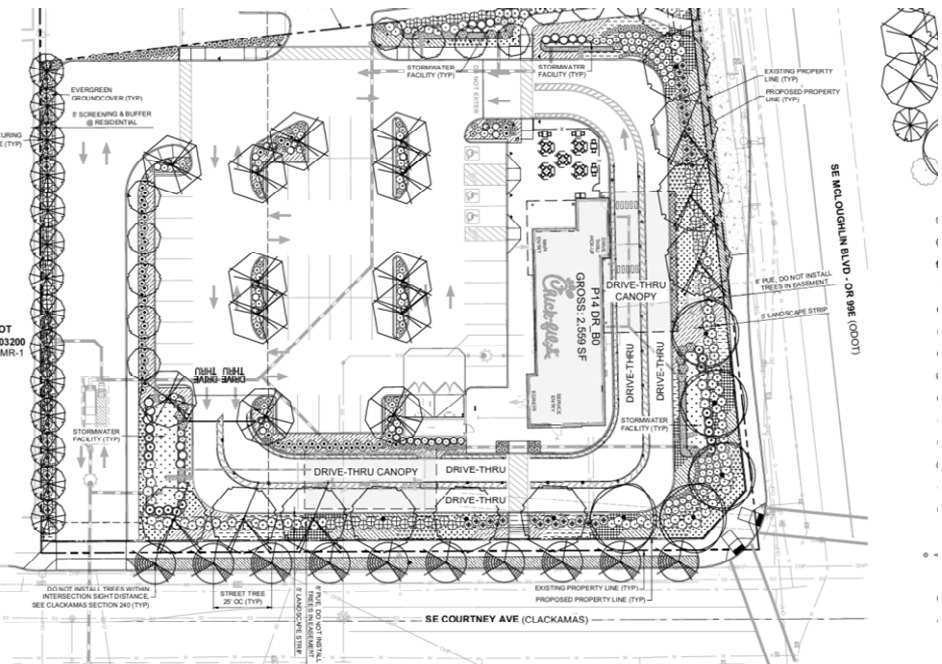
Building Renderings



Building Elevations



LANDSCAPE PLAN (See full plan set for legend)



RECOMMENDED CONDITIONS OF APPROVAL (IF DENIAL RECOMMENDATION IS REVERSED)

The conditions listed are necessary to ensure that approval criteria for this land use permit are satisfied. Where a condition relates to a specific approval criterion, the code citation for that criterion follows in parentheses. **Note**, these conditions are included only if the applicant can supplement the application package with enough specificity to comply with the ZDO criteria not currently met. At present, staff still recommends denial, as discussed in the findings below.

- 1) Approval of this land use permit is based on the submitted written narrative and plan(s) filed with the County on April 12, 2024 and July 10, 2024. No work shall occur under this permit other than which is specified within these documents, unless otherwise required or specified in the conditions below. It shall be the responsibility of the property owner(s) to comply with this document(s) and the limitation of any approval resulting from the decision, if denial recommendation is reversed.

- 2) **Prior to issuance of building permit, the applicant/property owner shall provide a civil plan set showing compliance with:**
 - A) Vehicle Parking space requirements:
 - i. Maximum Parking if entire development shares parking: 169 Spaces (ZDO Sec. 1015.02C).
 - ii. Parking space design shall comply with ZDO Sec. 1015.02(A)
 - B) Bicycle Parking space requirements in ZDO Sec. 1015.03
 - iii. Minimum 1 bicycle space.
 - iv. Bicycle Design shall comply with ZDO Sec. 1015.03(B)
 - C) Trash and recycling enclosure shall fully address the standards of ZDO 1021. An updated trash enclosure plan shall be prepared, addressing the standards noted in Sec. 1021 and noted by Clackamas County Sustainability. Applicant shall coordinate with Clackamas County Sustainability to ensure compliance with the standards of ZDO 1021. Please contact Tenille Beseda: tbeseda@clackamas.us
 - D) All elements of proposed site development including installation of landscape materials and irrigation. Plants shall be a variety of deciduous and conifer trees (1009.02)
 - E) Street Lighting shall be designed and installed as deemed necessary by Clackamas County Service District #5. Please contact Wendi Coryell: wendicor@clackamas.us for details. (ZDO Sec. 1006.02)
 - F) On-site lighting shall comply with the Photometric Plan shown on Exhibit E of the submitted application. (ZDO Sec. 1005.04)
 - G) Minimum six-foot site obscuring fence and associated five-foot landscape strip with evergreen trees every five feet or less. (ZDO Sec. 1009.04E.)

- H) Provide a planting “maintenance plan” showing compliance with ZDO Sec. 1009.10 (A) through (O).
- I) The two cross walks exceeding 30 linear feet must use different paving material, raised elevations, warning signs, or combination thereof. (1005.02D.5.)
- J) Raised curbs required on the northern walkway. (1005.02D.5.)

3) General conditions of approval:

- A) Any new/additional signs proposed shall meet with the standards of ZDO 1010, as to be determined at the time of the building permit.
- B) Rooftop mechanical equipment shall be screened from view.
- C) This approval of design review is valid for four years from the date of the final decision (ZDO Sec. 1102.05). This project shall be “implemented” as defined in ZDO Sec. 1102.05, prior to the date of expiration of this design review.
- D) If the design review approval is not implemented within the initial approval period established by Subsection 1102.05(A), a two-year time extension may be approved pursuant to Section 1310, *Time Extension*.

4) Oak Lodge Water Services (OLWS) - permits@olws.org: Sanitary Sewer, Stormwater, Water

- A) Prior to Certificate of Occupancy, applicant shall comply with all OLWS conditions of approval listed in Addendum #1 (See last page of this recommendation).

**5) Oregon Dept. of Transportation (ODOT):
Marah.B.DANIELSON@odot.oregon.gov**

- A) Applicant shall comply with all applicable conditions of approval required by ODOT set forth in Exhibit 4.

**6) Clackamas County Engineering Conditions (ZDO 1007, 1015):
Engineering@clackamas.us**

- A) **Advisory:** All frontage improvements in, or adjacent to Clackamas County right-of-way, or on site, shall be in compliance with *Clackamas County Roadway Standards*.
- B) The applicant shall obtain a Development Permit from Clackamas County Department of Transportation and Development prior to the initiation of any construction activities associated with the project.
- C) The applicant shall dedicate additional right-of-way along the entire SE McLoughlin Boulevard site frontage to accommodate the required improvements with a minimum of 6 inches behind the back of sidewalk.
- D) The applicant shall dedicate approximately 5 feet of right-of-way along the entire site frontage of SE Courtney Avenue, and shall verify by a professional survey that a minimum 35-foot wide, one-half right-of-way width exists.

- E) The applicant shall design and construct improvements along the Chick-fil-A site frontage of SE McLoughlin Boulevard to arterial roadway standards, consistent with Standard Drawing C140, Figure 10-MC-2 of the Comprehensive Plan, and to ODOT standards. These improvements shall consist of the following:
- v. An 8-foot wide unobstructed sidewalk.
 - vi. Curb and gutter, per Oregon Standard Drawings. The existing curb inlet shall be removed and manhole plugged.
 - vii. A 15-foot wide right turn lane, with a minimum of 50 feet of storage.
 - viii. A minimum 8-foot wide bike lane, including reconfiguration of striping.
 - ix. Dual Curb ramps shall be constructed at the SE Courtney Avenue and SE McLoughlin Boulevard intersection, designed per Oregon Standard Drawings. The curb radius shall be 30 feet.
 - x. The existing bus stop shall be relocated, as necessary, with a minimum 8-foot wide sidewalk centered on the bus stop. (Reference ZDO Section 1007.04.H.2)
 - xi. A minimum 5-foot wide landscape strip shall be provided between the sidewalk and curb, except where located adjacent to the right turn lane, where the sidewalk can be curb-tight.
 - xii. Relocate the signal pole and replace to current standards, including pedestrian poles
 - xiii. Relocated cross walks.
 - xiv. Drainage facilities in conformance with Water Environment Services requirements and *Clackamas County Roadway Standards* Chapter 4
- F) The applicant shall design and construct improvements along the entire site frontage of SE Courtney Avenue to local commercial roadway standards, consistent with Standard Drawing C110. These improvements shall consist of the following:
- i. Up to a minimum 27-foot wide one half street improvement, as measured from the existing centerline strip, providing a left turn lane, westbound through lane, and a 6-foot wide bike lane. The structural section shall comply with Standard Drawing C100 for a collector roadway.
 - ii. Standard curb, or curb and gutter if curblines slope is less than one percent.
 - iii. A 7-foot wide unobstructed sidewalk, constructed per Roadway Standards Drawing S960.
 - iv. A minimum 5-foot wide landscape strip shall be provided between the sidewalk and curb. Street trees shall be provided within the landscape strip along the entire site frontage at 25-40-foot spacing, based on tree species.

- v. Minimum 28-foot wide concrete driveway approach, per Standard Drawing D650.
 - vi. The applicant shall provide and maintain adequate sight lines for minimum intersection sight distance of 335 feet at the driveway intersection with SE Courtney Avenue.
 - vii. Drainage facilities in conformance with Oak Lodge Water Services requirements and *Clackamas County Roadway Standards* Chapter 4.
- G) The applicant shall design and construct on-site parking and maneuvering areas as follows:
- i. The applicant shall provide adequate on site circulation for the parking and maneuvering of all vehicles anticipated to use the site, including, but not limited to:
 - a) A minimum of 24 feet of back up maneuvering room for all 90-degree parking spaces;
 - b) The paths traced by the extremities of trucks and emergency vehicles shall be demonstrated.
 - ii. Parking spaces shall meet minimum *ZDO* section 1015 and *Roadway Standards*, Standard Drawing P100/200 dimensional requirements. The plans shall list the number of parking spaces required and the number of parking spaces provided. The applicant shall label all compact, carpool, disabled, and loading berth spaces on the plans.
 - iii. All curbs shall typically be type "C", or curb and gutter if curb line slope is less than one percent, if they carry, direct or channel surface water. Alternative curbs will be considered when it is determined by the Clackamas County Department of Transportation and Development that type "C" curbs or curb and gutter are not appropriate. Extruded curbs for carrying, directing or channeling surface water, or used as a vehicle wheel stop, shall not be allowed.
 - iv. Where the on-site ADA walkway intersects the public sidewalk, there shall be a minimum 5x5 foot wide landing.
 - v. A stop sign shall be provide at the driveway intersection with SE Courtney Avenue
 - vi. The drive-thru shall be managed so that queues from the drive-thru lanes do not cause vehicles to back up off of the site and into the public right-of-way. When the drive-thru queue exceeds the drive-thru lanes, the Temporary Queue Management Plan shall be utilized per Figure K of the Kittelson & Associates Traffic Impact Study, dated February 22, 2024.
 - vii. Crossover easements shall be granted to each Lot of Record for shared site circulation.

- viii. Crossover easements shall be granted to each Lot of Record for shared parking, if shared parking is proposed.
- H) All traffic control devices on private property, located where private driveways intersect County facilities shall be installed and maintained by the applicant, and shall meet standards set forth in the *Manual on Uniform Traffic Control Devices* and relevant Oregon supplements.
- I) Primary Inspector:
- i. The applicant shall enter into a Developer/Engineer Agreement for primary inspection services per Section 180 of the Roadway Standards. This form will be provided to the applicant and shall be signed and returned to County Plans Reviewer.
 - ii. Prior to certificate of occupancy, the applicant shall provide a Certificate of Compliance signed by the Engineer of Record stating all materials and improvements have been installed per approved plans and manufacture's specifications.
- J) A Fire Access and water supply plan shall be provided for subdivisions, commercial buildings over 1000 square feet in size or when required by Clackamas Fire District #1. The plan shall show fire apparatus access, fire lanes, fire hydrants, fire lines, available fire flow, fdc location if applicable, building square footage and type of construction. The applicant shall provide fire flow tests per NFPA 291 and shall be no older than 12 months. Work to be completed by experienced and responsible persons and coordinated with the local water authority.
- K) Following completion of site construction activities of subdivisions, buildings over 1000 square feet or when required by Clackamas Fire District #1, the applicant shall provide as-built Fire Access and Water Supply pdf plans to the local Fire District and the County. The pdf plans shall show fire apparatus access, fire lanes, fire hydrants, fire lines, available fire flow, fdc location if applicable, building square footage and type of construction. The plans shall include any supporting details of the access, circulation, water vaults, fire lines, valves, fdc, backflow devices, etc.
- L) Prior to certificate of occupancy, Substantial Completion shall be met, per Roadway Standards Section 190.2. For any other unfinished improvements required by conditions of approval, a performance surety shall be provided per Roadway Standards Section 190.3, based on an Engineer's cost estimate. The estimate shall be submitted for review and approval of quantities of asphalt concrete, aggregates, curbs, sidewalks and any other required improvements and associated construction costs.
- M) Prior to the issuance of a building permit, the applicant shall submit to Clackamas County Engineering Office:
- i. Written approval from the Clackamas Fire District #1 for the planned access, circulation, fire lanes and water source supply. The approval

shall be in the form of site and utility plans stamped and signed by the Fire Marshal.

- ii. Written approval from ODOT in the form of a permit for all work within the SE McLoughlin Boulevard right-of-way.
- iii. Written approval from Oak Lodge Water Services for surface water management facilities, surface water detention facilities, drinking water, and erosion control measures.
- iv. A set of street and site improvement construction plans, including a striping and signing plan, for review, in conformance with *Clackamas County Roadway Standards* Section 140, to Clackamas County's Engineering Office and obtain written approval, in the form of a Development Permit.

FINDINGS

The findings below identify the standards and criteria that are relevant to this decision, state the facts relied upon in rendering the decision, and explain the justification for the decision.

1. **PROJECT OVERVIEW:** The subject property consists of three tax lots (tax lot 2900, 3000, 3100), all in common ownership. A new 2,700 square foot Chick Fil A restaurant is proposed, with dual drive-thru service lanes, a walk-up service window, and an outdoor seating area. No interior seating is proposed. The site is currently developed with a multi-tenant commercial building, similar in nature to a strip mall. The existing building is comprised of two sections; a north half and a south half. The south half most recently contained a retailer called Eagle Bargain Outlet. This section of the building will be demolished to make way for the 2,700 square foot Chick Fil A restaurant, associated drive through lanes, outdoor seating, and modified parking. The north half of the existing building will remain. Additionally, the applicant is proposing two property line adjustments to reconfigure the tax lots, keeping the existing building on two reconfigured lots, and the new Chick Fil A on another. These requests are being reviewed through a separate type I application process. See planning files Z0301-24 and Z0302-24.

Site History and Geography: The subject property was developed several decades ago, with structures appearing on the County Tax Assessor records as early as 1948. The site was first zoned in 1960 as "General Commercial", and there have been no subsequent zone changes since. Staff did not identify any historical Design Review records authorizing new development, though land use permit records for new signs and/or sign modifications are present. The subject property is situated at the northwest corner of SE Courtney Avenue (Courtney Ave) and SE Mcloughlin Blvd. (99E). The site flat, with no identified environmentally sensitive waters, habitat, or natural hazards. There are some

trees at the western extent of the subject property, adjacent to Courtney Rd. These trees will be removed to accommodate a new driveway entrance.

Access: Access circulation and driveway entrances will be modified, with the existing Courtney Ave entrance near 99E to be completely removed. Additionally, one of the two existing entrances onto 99E, the entrance nearest the Courtney Ave intersection, will be restricted to turn-in movements only. Vehicles existing the restaurant/drive-thru will be not be allowed to access that exit, and must exit on SE Courtney Ave. Thus, vehicles existing the drive-thru must circulate around the restaurant to the west side of the development and exit on Courtney Ave.

Site Improvements/Amenities: The overall site will include, but is not limited to the following features; a two-lane drive-thru, a total of 47reconstructed parking spaces, an outdoor seating area, on-site landscaping, and a trash enclosure. Frontage improvements include right of way dedications on both Courtney and 99E. Bike lane reconfiguration on 99E is required, and new bike lanes on Courtney are required. Oregon Dept. of Transportation (ODOT) requires several additional upgrades along 99E (See comments dated Aug, 7: Exhibit 4). Full landscaping around the site perimeter is also proposed, and site obscuring fence is planned on the western property line.

Summary of Reason for Denial Recommendation: The following is a list of sections that are not met at present. I cite the ZDO section and a brief summary on why the criteria is not met. Please reference the findings section for complete analysis on each listed criteria.

- ZDO Sec. 510.03, Permitted Uses: Applicant has proposed drive-thru restaurants as primary use when it must be accessory use.
- ZDO Sec. 1005.02(B): Longest building elevation not oriented to true south, thus not maximizing south facing dimension.
- ZDO Sec. 1005.02(E)(1): At least 50 percent of street frontage does not have buildings located at min. front setback line.
- ZDO Sec. 1005.03(C): Min. required windows are not present.
- ZDO Sec. 1015.02(D)(1): Exceeds maximum parking because "User-Paid spaces" require a fee be paid to use the space. *Note, if the entire development shares parking spaces, the maximum parking space threshold can be met.
- ZDO Sec. 1021: Trash enclosure does not meet 1021.04(C) and (D), and 1021.05(A).

The applicant may choose to address these issues and update submittal package prior to the during Design Review Committee (DRC) meeting. If staff,

with the recommendations of DRC confirms updates can meet ZDO Criteria, approval may still be granted. Alternatively and only relevant to ZDO Sec. 1005.02 and/or 1005.03, Design Modifications may be sought per ZDO Sec. 1005.06.

This application is subject to Clackamas County Zoning and Development Ordinance (ZDO) Section(s) 510, 827, 1001, 1002, 1003, 1005, 1006, 1007, 1009, 1010, 1015, 1021, 1102, and 1307. The Clackamas County Planning and Zoning Staff has reviewed these Sections of the ZDO and design guidelines in conjunction with this proposal and make the following findings and conclusions:

2. **Section 1102 – Design Review**

Subsection 1102.01 Applicability

Finding: Clackamas County’s Zoning and Development Ordinance determines development types for which design review is required. ZDO Subsection 1102.01(A) states that design review is required for, “...Development, redevelopment, expansions, and improvements in commercial and industrial zoning districts...” Thus, design review is required for the project.

Subsection 1102.02 Submittal Requirements

Finding: Clackamas County’s Zoning and Development Ordinance (ZDO) determines the submittal requirements necessary for design review. The applicant initially submitted a set of information April 12, 2024, which did not meet the minimum submittal requirements. Applicant subsequently submitted a set of information on July 10, 2024, consistent with the submittal requirements of the Zoning and Development ordinance, and replacing the initial submittal. County staff deemed this application complete on July 10, 2022. The standard is met.

Subsection 1102.03 Approval Criteria

Finding: Clackamas County’s Zoning and Development Ordinance determines that projects which require design review are subject to the standards of the underlying zoning district as well as to Section 1000 “Development Standards”. The analysis of the proposal, per those sections of the Clackamas County ZDO, follow in subsequent sections.

Subsection 1102.04 Design Review Committee

Finding: The impact to surrounding properties, particularly with regard to residential areas directly west, warrant a review by the Design Review Committee (DRC). Additionally, given the historic issues related to traffic, queueing, and parking associated with a drive-thru restaurants of this scope, the DRC’s expertise is warranted.

Subsection 1102.05 Approval Period and Time Extensions

Finding: These standards are listed above in the conditions of approval section.

3. **Section 510 – Corridor Commercial (CC) Zoning district**

Subsection 510.03 Uses Permitted

Clackamas County’s ZDO determines uses that are permitted primary, permitted accessory, conditionally permitted, or not allowed in each zoning district.

Finding: The proposed development is located in the C-3 Zone. The applicant’s submitted materials indicate that the proposed use is a “drive thru window service”. The applicant incorrectly states this use is an “approved use”. In fact, Table 510-1, ZDO Sec. 510 lists drive-thru window service as “A” or “accessory use”. ZDO Sec. 202 defines accessory use as follows:

A subordinate building or use, the function of which is clearly incidental to that of the main building or use on the same lot

The applicant has not demonstrated that there is a primary use proposed. Table 510-1 does identify “Services, Commercial-Food and Beverage” as a primary use. Since neither “Food and Beverage” nor “restaurant” is specifically identified in ZDO’s definitions (Section 202), outdoor seating and a walk-up window may be considered a “food and beverage” commercial service, but the applicant must demonstrate this is the primary use for the proposed restaurant. At present, staff finds ZDO Subsection 510.03 is not met. Staff therefore recommends denial of this application, at present. Note, the applicant may supplement the record with additional documentation confirming that “Drive-Thru Window Services” are in fact, accessory uses.

Subsection 510.04 Dimensional Standards

Finding: The table below demonstrates how the applicant’s proposal complies with the dimensional standards of the C-3 zoning district and Table 510-2. These standards can be met.

	Ordinance Standard	Demonstrated Dimension	Complies With Standard
Minimum Lot Size	None	1.48 acre	Complies
Min. Street Frontage	None	N/A	
Minimum Front Yard Setback	15 feet	15 feet (eastern most extent of canopy).	Complies

(Courtney and 99E			
Maximum Front Setback¹	20' feet (if applicable)	20' to 50' (off of 99E)/~30' (off of Courtney)	Complies
Minimum Rear Yard Setback²	0 feet	+50' (north property line)	Complies
Minimum Side Yard Setback³	15 feet	100+ feet	Complies

4. Section 827-- DRIVE-THRU WINDOW SERVICES

Subsection 827.01 Standards:

- A. Shall not limit the development of pedestrian-oriented or transit-supportive uses, or adversely impact such uses on adjacent lots. This criterion does not apply in the RC District;

Finding: *The applicant provides several reasons why pedestrian and transit oriented uses will not be adversely impacted. Applicant notes that minimum 15 foot setback will be met for all structures. Furthermore, landscaping strips will create a separation between pedestrians on public roads. This standard is met.*

- B. Shall create minimal conflict with pedestrian access to the building from adjacent lots and roads;

Finding: *Staff agrees with the applicant, crosswalks are sufficiently stripped, and provide pedestrian access to the northern site and sidewalks in public rights of way. This standard is met.*

- C. Shall not attract vehicle traffic into existing or proposed pedestrian and transit service areas;

Finding: *The applicant's proposal to limit two-way traffic and circulation from Courtney will not attract vehicle traffic into existing or proposed pedestrian and transit service areas. This standard is met*

¹ Footnote 6, table 510-2 references ZDO Sec. 1005.02(H). Findings related to this subsection are detailed below.

² Typically, lots abutting two county/state roads would be considered "corner lots" per ZDO Sec. 202. Primary access is taken from Courtney Ave. Thus, the rear yard setback will be the northern property line, tax lot 2900.

³ Side yard setbacks abutting residential zones require a 15-foot setback (Table 510-2, footnote 16). In this case, the west property line is 15'.

- D. Shall not create offsite congestion due to lack of onsite vehicle queuing area commensurate with the estimated volume of traffic to be generated.

Finding: *The proposed site design includes a dual drive-thru lane that can accommodate 31 vehicles. The TIS includes a queuing study of other Chick-fil-A restaurants and notes that the maximum number of vehicles observed at other facilities is 29. It is also noted that there is area in the on-site drive aisles that can accommodate additional queuing. The proposed parking and maneuvering areas appear to provide adequate access. The applicant will be required demonstrate turning movements for large vehicles such as garbage truck and emergency service vehicles. This standard is met*

- E. In the Clackamas Regional Center (CRC) Area, but outside the Clackamas Regional Center itself:

Finding: *The subject property is not located in the CRC. This criteria is not applicable.*

5. **Section 1002/1003 – Protection of Natural Features/Natural Hazards**

Section 1002 addresses the protection of various natural features including hillsides, the excessive removal of trees prior to development, the protection of trees and wooded areas through development, river and stream corridors, the winter ranges of deer and elk populations, certain open spaces near Mount Hood, significant natural areas, and significant landforms and vegetation. Section 1003 addresses 'Hazards to Safety' such as landslide hazards, wet/hydric soils, etc.

Finding: As discussed above, the site is flat and does not contain any environmental areas, natural hazards, or significant vegetation. This criteria is not applicable.

6. **Section 1005 – Sustainable Site and Building Design**

Section 1005 addresses the development of sites and design of buildings so as to efficiently utilize land, create lively, safe, and walkable centers, support the use of non-auto modes of transportation, reduce impact of development of natural features, utilize opportunities arising from a site's configuration, design illumination so dark skies are maintained when possible and accommodate the needs of users of developments. It applies to institutional, commercial, and industrial development; multifamily dwellings; and developments of more than one two- or three-family dwelling.

Subsection 1005.02 – General Site Design Standards establishes standards for the sites of commercial, industrial, and multifamily developments and addresses standards for the placement and orientation of buildings, on-site pedestrian circulation, the placement and orientation of building entrances, and other use and zone-specific standards.

Subsection 1005.02(A) **Finding:** *the applicant's narrative addresses future uses of the property and notes that the development will be pedestrian accessible. This criteria can be met.*

Subsection 1005.02(B) **Finding:** *The applicant states that they are siting the building as close to true south orientation as possible. However, they still do not meet the standard. A Design Modification must be submitted pursuant to ZDO Sec. 1005.06 if the building is to be oriented in an east west direction, or modify the site plan to orient building to face south. This standard is not met.*

Subsection 1005.02(C) **Finding:** *Not applicable as solar panels are not proposed.*

Subsection 1005.02(D):

1. Walkways shall directly connect each building public entrance accessible to the public to the nearest sidewalk or pedestrian pathway, and to all adjacent streets, including streets that dead-end at the development or to which the development is not oriented. **Finding:** *The applicant's site plan shows connected walkways from Courtney Ave to the restaurant, and from the northern building to the outdoor seating area. This criteria is met.*
2. Walkways shall connect each building to outdoor activity areas including parking lots, transit stops, children's play areas, and plazas. **Finding:** *Walkways are clearly connected to outdoor seating area, sidewalks/transit stops on public rights of way, and parking lot. This criteria is met.*
3. **Findings:** *The site is adequately illuminated per Exhibit E. Walkways are hard surfaced and at least 5 feet wide.*
4. **Findings:** *The site is adequately illuminated per Exhibit E. Walkways are hard surfaced and at least 5 feet wide.*
5. Standards for walkways through vehicular areas. **Findings:** *Crosswalk striping is proposed across all driveways per site plan (C2.0). Raised curbs are proposed adjacent to the driveway at northern property line. The public entrance is located less than 75 feet from street, and does not need raised walkways with curb and landscape strips as required in Subsection c. Subsection d. requires painted crossings across driveways for segments 30 feet or less. Therefore, all the cross walks may use striping, except the two cross walks exceeding 30 feet must use different paving material or raised elevation. This requirement is detailed above as a condition of approval. Subsection e. is met, since the walkway along the northern boundary will use raised curbs. This too will be a condition of approval. This criteria can be met.*

6. The interconnected onsite walkway system shall connect to walkways in adjacent developments. **Finding:** *The proposed walkway system is connected to the existing northern building via a standard sidewalk. Pedestrian access to Courtney Ave, 99E, and the northern development is proposed and meets the aforementioned requirements. This standard is met.*

Subsection 1005.02(E): Inside the UGB, except for industrial developments, a minimum of 50 percent of the street frontage of the development site shall have buildings located at the minimum front setback line.

1. If the minimum front setback standard is less than 20 feet, the front setback may be increased to a maximum of 20 feet provided pedestrian amenities are developed within the front setback area.

Finding: *In total, the applicant is proposing 60.42 linear feet of new building footprint within 20 feet of 99E. The new building is not the actual restaurant, but a covered canopy for the drive-thru lines. However, the applicant has calculated the canopy as a percentage of the proposed building, not the entire street frontage of the development site. The ZDO does not define "development site" but it is clear that development site is not just a portion of the overall building. Staff calculates street frontage along 99E conservatively as roughly 150 feet. This means at least 75 feet of the proposed building needs to be sited within 20 feet of front property line along 99E. It is also not clear that a canopy is considered a "building" as defined in ZDO Sec. 202. It is a structure, but a "building" is defined as follows: "Any structure used or intended for supporting or sheltering any use or occupancy. This standard is not met.*

2. Primary building entrances for buildings used to comply with Subsection 1005.02(E), shall:

- c. Be located to the side of the building, provided that the walkway connecting to the street is a minimum of eight feet wide and is developed with landscaping and pedestrian amenities

Finding: *The applicant is proposing a side entrance that will be accessed via an 8-foot wide sidewalk off of Courtney Ave, surrounded by landscaping. This standard is met.*

Subsection 1005.02(F) through (H): **Finding,** *the parking lot is not over three acres. This development is not retail, office or mixed use. These standards are not applicable.*

Subsection 1005.02(I) through (L): **Finding,** *These standards do not apply to CC zone, and therefore, are not applicable.*

Subsection 1005.03 – Building Design provides standards for building facades, entrances roof design, exterior building materials, the screening of mechanical equipment, and other use- and zone-specific standards.

Subsection 1005.03(A): **Findings**; *Architectural variety on each building face is demonstrated with the typical Chick Fil A design. The scale, design, and architectural elements appear to be sufficient for this site. This criteria is met.*

Subsection 1005.03(B): **Findings**; *The applicant's narrative and plans call for a four-foot wide canopy over public entrance. As discussed above, the public entrance is facing the parking lot but is accessed by an eight-foot wide landscaped sidewalk. This criteria is met.*

Subsection 1005.03(C): The street-facing facade of commercial, mixed-use and institutional buildings sited to comply with 1005.02(E) shall meet the following requirements: **Findings**; *Applicant is requesting this section not be applied given the canopy is designed to cover cars in the drive-thru lanes and would not be appropriate. First, to deviate from this standard, a Design Modification must be submitted pursuant to ZDO Sec. 1005.06. Moreover, Subsection 1005.02(E) is not being met at present. Applicant has two options: 1) Redesign building to comply with subsection 1005.02(E) and this subsection, or 2) request Design Modifications pursuant to 1005.06. Staff cannot advise on the likelihood of Design Modification approval. It is the applicant's burden of proof to show compliance with ZDO Sec. 1005.06 and 1005.01. This standard is not met.*

Subsection 1005.03(D) and (E): **Findings**; *The flat roof design will have a dark bronze metal coping trim that will provide visual interest. The applicant proposes a variety of external materials including white and brown stucco finish, dark and light brick veneer, and other painted dark metal. Staff finds these materials are sufficient to comply with Subsection E, but also welcomes any detailed recommendations from the DRC.*

Subsection 1005.03(G) and (H): **Findings**; *given the size and location of the development, and that it will be easily protected by law enforcement, lighting will be sufficient. The building is designed for solar access in some places, and will have some measures to reduce solar heating. These standards are met.*

Subsection 1005.03(I) and (J): **Findings**; *In terms of shapes, color, and integration with the surrounding area's overall architecture, the proposed restaurant will be compatible with similar large and medium-scale commercial businesses and fast food restaurants. There are no existing civic/public places such as plazas, parks, etc. Delivery areas shall not be adjacent to residential areas. Rooftop mechanical equipment is proposed to be screened from view. This requirement is recommended in the conditions of approval section. No wall or ground mounted equipment is proposed. This criteria can be met.*

Subsection 1005.03(K) and (L): Findings: this criteria is not applicable in the C-3 zone.

Subsection 1005.04 – Outdoor Lighting provides standards to ensure that onsite lighting is compatible with the site and surrounding uses while preventing light trespass and pollution.

Finding: *The applicant has submitted a photometric plan with Exhibit E that shows light being directed inward. Staff also notes that pole mounted lights do not exceed the height of the Chick Fil A building. A condition of approval is warranted that all lighting comply with ZDO Sec. 1005.04(A), prior to certificate of occupancy.*

Subsection 1005.05 – requires applicants to employ “Additional Requirement” for every 20,000 square feet of site area. The site is required to provide three additional requirements given the development area:

Finding: *The applicant's site is approximately 65,000 square feet of net development area. According to this provision, the applicant must provide at least three of the techniques listed in subsections A-X. Techniques B, C, and G were chosen to comply with this provision. Staff reviewed the site plan and agrees these features are present. This criteria is met.*

7. Section 1006 – Utilities, Street Lights, Water Supply, Sewage Disposal, Surface Water Management, and Erosion Control.

Section 1006 addresses the provision of appropriate infrastructure for utilities, water supply, and sewage disposal, as well as the management of surface water and site erosion.

Finding: *Additional street lighting may be warranted, and the subject property will be required to annex into the lighting district (Clackamas County Service District #5, CCSD#5), if not already within. A condition of approval is warranted to comply with Street Lighting per 1006.02. Preliminary Statement of feasibility signed by Oak Lodge Water Services Authority (OLWS) were submitted and are dated less than 1 year from the date of completion of this request. Statements show public drinking water, sanitary sewer, and storm/surface water standards can be met. OLWS submitted comments and recommended conditions of approval in a letter dated July 31, 2024 (Exhibit 2). Staff concurs with OLWS' listed conditions of approval, except those unrelated to development standards (e.g. fees, etc.), which will be listed as advisory only. Staff recommends these conditions be incorporated into this decision, as Addendum #1, and be met prior to Certificate of Occupancy. **As conditioned in Section II, these standards can be met.***

8. Section 1007 - Roads and Connectivity

1007.01 - General Provisions

- A. The location, alignment, design, grade, width, and capacity of all roads shall be planned, coordinated, and controlled by the Department of Transportation and Development and shall conform to Section 1007, Chapters 5 and 10 of the Comprehensive Plan, and the Clackamas County Roadway Standards. Where conflicts occur between Section 1007, the Comprehensive Plan, and the Clackamas County Roadway Standards, the Comprehensive Plan shall control. The below findings are based on comments received by the Clackamas County Development Engineering Division, dated August 12, 2022 (Exhibit 5).

Findings: *The applicant has proposed construction of a 2,700 square foot Chick-fil-A restaurant on the west side of SE McLoughlin Boulevard and north side of SE Courtney Avenue. The proposed restaurant will provide drive-thru window service, walk-up window service and outdoor seating. No indoor seating is proposed.*

The proposed development is subject to the provisions of Clackamas County Zoning and Development Ordinance (ZDO) Section 1007 pertaining to roads and connectivity, Section 1015 pertaining to parking and loading, and Water Environment Services requirements and Roadway Standards Chapter 4 pertaining to surface water management.

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

Finding: *SE McLoughlin Boulevard is classified as a principal arterial roadway and is under the jurisdiction of the Oregon Department of Transportation (ODOT). ODOT has submitted comments dated August 7, 2024 (Exhibit 4). Several conditions of approval are recommended by ODOT. Most of the recommendations are part of the County's McLoughlin Corridor plan (cited below) and will be applied in the conditions of approval. Other ODOT recommended conditions not specifically addressed by the ZDO may still be applicable under ODOT rules and regulations. A condition of approval is listed above, requiring the applicant adhere to ODOT conditions of approval, where applicable by ODOT.*

SE Courtney Avenue classified as collector roadway. Clackamas County has adopted roadway standards that pertain to the structural section, construction characteristics, minimum required right-of-way widths, and access standards for arterial and collector roads.

Consistent with ZDO Section 1007.02, the applicant is required to improve the roadway frontage of the project site to current standards. The project site is part of the McLoughlin Corridor Design Plan, as shown on Comprehensive Plan Map 1-MC-1 (Exhibit 6).

- C. New developments shall have access points connecting with existing private, public, county, or state roads.
 - 1. Intersection spacing and access control shall be based on Subsection 3.08.110(E) of the Metro Code (*Regional Transportation Functional Plan*); Chapters 5 and 10 of the Comprehensive Plan; and the Clackamas County Roadway Standards.
 - 2. Joint access and circulation drives utilizing reciprocal easements shall be utilized as deemed necessary by the Department of Transportation and Development. In the NC District, joint street access for adjacent commercial developments shall be required.
- D. Roadways shall be designed to accommodate transit services where transit service is existing or planned and to provide for the separation of motor vehicles, bicycle, and pedestrian traffic, and other modes as appropriate.

Finding: *The proposed circulation and access plan crosses over three different lots of record. Shared driveways and potential shared parking spaces must be contained in a common cross over easement. Also, the bus shelter on 99E shall be relocated if necessary. These two items are listed above in the conditions of approval. **This criteria can be met.***

1007.02 - Public and Private Roadways

- A. All roadways shall be developed according to the classifications, guidelines, tables, figures, and maps in Chapters 5 and 10 of the Comprehensive Plan and the provisions of the Clackamas County Roadway Standards.
 - 1. Development along streets with specific design standards specified in Chapter 10 of the Comprehensive Plan shall improve those streets as shown in Chapter 10.

Finding: *The McLaughlin Corridor Plan establishes a special road cross section for the portion of SE McLoughlin Boulevard along the project site frontage, as provided in Comprehensive Plan Figure 10-MC-2. The existing right-of-way width along the SE McLoughlin Boulevard site frontage appears to be a 120 feet, which is consistent with the adopted cross section. However, current standards have increased the minimum width of bike lanes on arterial roadways 6 feet to 8 feet. The applicant will be required to dedicate approximately 3 feet of public right-of-way along the entire SE McLoughlin Boulevard frontage to accommodate the required frontage improvements.*

The existing SE Courtney Avenue right-of-way width is 60 feet along the site frontage. The meeting the minimum right-of-way width for a three lane collector is 70 feet. The applicant will be required to dedicate 5 feet of additional right-of-way. In addition, per Roadway Standards Drawing C130, an 8-foot wide public utility easement will be required adjacent to the public right-of-way of SE Courtney Avenue

Consistent with ZDO Section 1007, the applicant is required to improve the roadway frontage of the project site to current standards, including, but not necessarily limited to, up to a one-half street improvement. The McLaughlin Corridor Plan calls for an 88-foot wide curb to curb width on SE McLoughlin Boulevard, per Figure 10-MC-2 (Exhibit 7). The existing paved width is currently provided, but is not striped per the adopted cross section. In order to accommodate an 8-foot wide bike lane, and a 15-wide right turn lane, pavement widening will be required, as well as reconstructing the curb and gutter. Additionally, an 8-foot wide sidewalk will be required.

Clackamas County will be improving SE Courtney Avenue along the project site frontage up to but not including the curb ramps at SE McLoughlin Boulevard. The project, known as Courtney Avenue Complete Streets is funded and will be constructed in 2026. Based on anticipated construction schedules, it appears that the proposed Chick-fil-A development will proceed prior to the Courtney Avenue project. The applicant will be required to construct improvements along the entire site frontage. Applicant shall coordinate specific design elements with the County project team so the improvements tie-in appropriately. The applicant will be require to construct a one half street improvement to Collector standards, providing one half street width of approximately 27 feet from the existing centerline stipe, providing a left turn lane, westbound travel lane and a 6-foot width bike lane. In addition, curb, landscape strip and a 7-foot wide sidewalk will be required

As provided by Section 220.4 of the Clackamas County Roadway Standards, access to arterial roadways is restricted when a property has frontage on a lower classification roadway. The proposed Chick-fil-A restaurant is part of the shopping center that includes three driveways onto SE McLoughlin Boulevard with drive aisles that run parallel to the building and SE McLoughlin Boulevard. The southernmost driveway is close to the exit of the proposed drive-thru lanes. In discussions with ODOT and County staff, in lieu of closing the driveway, in order to eliminate turning conflicts and congestion on-site at the driveway that would impact the highway, an alternate design was determined to be acceptable that closes the drive aisle on-site connecting the front portion of the shopping center with the Chick-fil-A site. The applicant's preliminary plan is consistent with this determination.

This criteria can be met.

1007.03 PRIVATE ROADS AND ACCESS DRIVES

Findings: The applicant will be required to provide adequate on-site circulation for all vehicles anticipated to use the parking and maneuvering areas, and the drive-thru service window. As specified by ZDO Section 827.01(D), drive-thru services cannot create off-site congestion. The proposed site design includes a dual drive-thru lane design that can accommodate 31 vehicles. The TIS includes a queuing study of other Chick-fil-A restaurants and notes that the maximum number of vehicles observed at other facilities is 29. It is also noted that there is area in the on-site drive aisles that can accommodate additional queuing. The proposed parking and maneuvering areas appear to provide adequate access. The applicant will be required demonstrate turning movements for large vehicles such as garbage truck and emergency service vehicles. Vehicle parking spaces and bicycle parking spaces will be required to meet minimum ZDO section 1015 and Clackamas Roadway Standards dimensional requirements. As noted above, cross over easements are required for any shared access and parking spaces used between the Chick Fil A and northern building.

Clackamas Roadway Standards Section 240, developments are required to be served by driveways that provide adequate intersection sight distance. It appears sight distance can be provided at the proposed driveway

These standards can be met and are detailed above in the conditions of approval.

1007.04 - Pedestrian and Bicycle Facilities

- A. **General Standards:** Pedestrian and bicycle facilities shall be developed according to the classifications and guidelines listed in Section 1007, Comprehensive Plan Figures 5-1 through 5-3, *Typical Roadway Cross Sections*, Chapters 5 and 10 of the Comprehensive Plan, and the Clackamas County Roadway Standards.

Finding: Compliance with McLoughlin Ave and Courtney Ave Design Plans include pedestrian facilities. These specific standards are detailed in the Conditions of Approval section.

This criteria can be met.

1007.05 - Transit Amenities

Finding: Tri-Met was given notice of this application but did not provide any comments or recommendations. ODOT notes the existing bus shelter may need to be relocated. A condition of approval is noted above, requiring the bus shelter be relocated, if necessary, pursuant to County and ODOT standards. This criteria can be met.

Subsection 1007.06 – Street Trees addresses requirements for street trees within the Portland Metropolitan Urban Growth Boundary, in the Clackamas Regional Center Area, in the Business Park zoning district, and in Sunnyside Village.

Finding: *Compliance with McLoughlin Ave and Courtney Ave Design Plans will ensure landscape strips and street trees are installed. These specific standards are detailed in the Conditions of Approval section. As conditioned, these standards can be met.*

SUBSECTION 1007.07 - Transportation Facilities Concurrency

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

Finding: *ZDO Subsection 1007.07 requires that the transportation facilities within the impact area of a development are adequate, meeting operational standards. The applicant has provided a traffic impact study (TIS) by Kittelson & Associates, dated February 22, 2024, addressing the traffic impacts of the proposed restaurant. County Engineering required that the traffic generation include counts at similar Chick-fil-A restaurants, to reflect the typically higher volumes experienced at the restaurants. The TIS concludes that the study intersections will operate within County and ODOT standards, the driveways serving the site can meet intersection sight distance standards, and that on-site queuing for the drive-thru will not cause off-site congestion. County Engineering staff concur with the TIS findings. This standard is met.*

9. Section 1009 – Landscaping

Section 1009 seeks to ensure that sites are designed with appropriately selected, designed, installed, and maintained landscape materials and that landscaped areas are used for appropriate purposes.

1009.01(A) through (H) – General Provisions:

Finding: *The applicant has submitted a detailed Planting Plan with Sheet L1.0. Hardy and low-maintenance, fast growing native plants have been selected. A variety of landscaping is proposed, including deciduous and evergreen trees and shrubs. Staff cross referenced the Planting Plan with the 2016 Clackamas County Prohibited and Nuisance Plant list, and confirmed no prohibited or nuisance plants are present. Applicant is also planning to place trees within landscaped area between lot line and improved portion of adjacent right of way, as well as public entrances. Pedestrian walkways shall be adjacent to landscaped areas. Existing vegetation is to be removed from site. Conditions of approval are warranted, ensuring that vegetation variety, and both evergreen and deciduous trees are included in the Planting Plan. These standards can be met.*

1009.02 – Minimum Area Standards:

Finding: The proposed site design sows a 22% landscaped area, and will meet the 15% minimum landscaped area requirement in the C-3 zone. Staff notes that the applicant's Planting Plan L1.0 appears to include the landscape strips within the Courtney Ave. ZDO Sec. 1009.02(A) (1) and (2) specify that landscaping within rights of way "shall not count toward compliance with the minimum landscaped area". Furthermore, the "minimum landscaped area shall be calculated after subtracting any public dedications from the area of the subject property." However, with very narrow strips proposed in the rights of way, staff calculates this area is 1,500 square feet or less. Even after subtracting this amount, there will be roughly 13,000 square feet of landscaped areas, or roughly 20 percent. This amount is still well over the minimum requirement, and can still comply with the landscaping standards. A condition of approval is recommended, requiring the applicant to submit a revised Landscape Plan, with updated calculations not including areas within public rights of way. **As conditioned, these standards can be met.**

1009.03 – Surface Parking and Loading Standards:

Findings: An interior landscape islands are proposed at the ends of parking rows and abuts the parking row adjacent to the main driveway at the western end of lot. Additionally, the applicant has included at least one tree in each landscape island, with an interior length and width of at least four feet. The amount of required interior landscaped area exceeds ZDO Subsec. 1009.03(A)(1). That standard is met. A conditional of approval requiring the applicant to submit an interior landscape swale/island cross section, subject to Figure 1009-1, is recommended to confirm the interior length and width is at least four feet. Five-foot perimeter landscaping is also included, and can comply with 1009.03(B). With conditions, these standards can be met.

1009.04 – Screening and Buffering:

Findings: Applicant notes that all trash receptacle areas will be properly screened. Storage and ground water collection facilities are not proposed. However, the western property line is adjacent to a residential development with a medium density residential (MR-1) zoning designation. Notwithstanding, there are no requirements to install screening adjacent to a medium density residential zone. "Buffering" as required by 1009.04(E), however, must be installed. The applicant is proposing a minimum 6-foot high sight obscuring fence within a 5-foot wide landscaping strip. Also, evergreen trees (Vanderwolf's Pyramid Pine) will be installed at 5-foot intervals, which will provide adequate landscape aesthetic. A condition of approval is required to ensure screening around trash enclosures occur. A condition of approval is also required to ensure a minimum six-foot sight obscuring perimeter fence and evergreen plantings are installed on the western property line. With conditions of approval, the development complies with 1009.04.

1009.06(C) – Landscape Strips:

Findings: This section requires "a landscaping strip a minimum of five-feet wide shall be provided abutting front lot lines." The applicant's planting plan meets the

standard. Some of the landscaping strips adjacent to Courtney Ave and 99E may be slightly less than five feet. This small encroachment is permitted to accommodate the eight-foot wide sidewalk per 1009.06(C).

1009.10 – Planting and Maintenance:

Findings: *This section sets forth requirements to ensure proper plantings, planting survival, and plant maintenance. Applicant shall be required to follow the standards set forth in subsections A through O. These are recommended as conditions of approval and noted above.*

10. Section 1010 – Signs

The provisions of Section 1010 are intended to maintain a safe and pleasing environment for the people of Clackamas County by regulating the size, height, number, location, type, structure, design, lighting, and maintenance of signs.

Finding: *No signage is proposed in this application. Future signage will need to comply with the standards of Section 1010. Signs are reviewed under a Type 1-Ministerial process, or through a building permit. This criteria is not applicable at this time.*

11. Section 1015 – Parking and Loading

Section 1015 is designed to ensure that developments in Clackamas County provide sufficient and properly designed parking for motor vehicles and bicycles as well as appropriate off-street loading areas.

Finding: *In terms of ZDO Subsec. 1015.02(A), the applicant states that the multiple design standards have, or will be adhered to. Staff reviewed the parking plan, and agrees that standards can be met. The applicant has noted that at least one carpool/vanpool spaces are planned. Staff recommends a conditions of approval that the applicant provide planning staff a checklist that standards 1-10 are met based on a civil plan set drawing. This criteria can be met.*

ZDO Sec. 1015.02(B); Parking Minimums:

Findings: *The applicant has proposed to develop the site with a 2,700 sq. ft. Drive-thru restaurant. This use requires a minimum of 9 parking spots per 1,000 sq. ft. of leasable area per Table 1015-1 (This site is in Urban Zone A). The applicant is proposing 47 parking spaces. Therefore, minimum parking is met. Staff also notes Oregon Administrative Rule (OAR) 660-012-400 mandates that Clackamas County not apply minimum parking standards within ½ mile of high frequency transit corridors. Therefore, parking minimums do not apply to the Chick Fil A restaurant, nor do they apply to remaining commercial development. This criteria is met.*

ZDO Sec. 1015.02(C); Parking Maximums:

Finding: *The applicant has recalculated the maximum parking spaces allowed pursuant to a roughly 2,700 square foot restaurant with drive-thru. Table 1015-1*

allows 12.4 spaces per 1,000 sq. ft. or roughly 32 parking spaces. However, the applicant proposes 47 parking spaces, thereby exceeding the standard. The applicant asserts that the additional parking is allowed pursuant to ZDO Sec. 1015.02(C)(3) and 1015.02(D)(1) (d.). Staff finds that 1015.02(C)(3) is not applicable because this proposal is not an expansion. In fact, the leasable floor space is being reduced by over 15,000 square feet. Also, when considering the entire remaining development, the existing and proposed parking configuration can still meet the parking maximums, as discussed below.

With regard to ZDO 1015.02(D)(1) (d.), parking maximums in table 1015-1 may be increased for user-paid spaces or employee carpool spaces. However, the applicant has not identified how third-party/mobile pick up lanes are, in fact, user-paid spaces. "User-paid" is not defined in the ZDO, but it clearly involves some kind of fee. It's not clear that by designating these spaces for third-party/mobile pick up, they become user-paid. If the applicant wishes to use this provision, a detailed user-paid site plan and plan detail shall be submitted, confirming that a fee is required to use the additional parking spaces. Therefore, staff recommends more information prior to making favorable findings. At present, this standard is not met.

With regard to the remaining parking spaces and remaining commercial building, the applicant has not clearly identified whether parking associated with the existing development will be used in conjunction with the new Chick Fil A or not. When calculating the maximum parking for the entire development, including the remaining building, the ice cream shop building, and the new Chick Fil A building, the maximum number of parking spaces is 169. That includes roughly 12,000 square feet of retail space, 4,000 square feet of restaurants without drive-thru service (ice cream shop and two other restaurants identified by staff), and of course, the 2,700 square foot Chick Fil A. According to the applicant's site plan, roughly 102 parking spaces remain. An additional 47 spaces associated with the Chick Fil A will bring total spaces to 149, below the maximum parking threshold. All told, if the applicant intends to allow parking through the entire development, the parking maximum threshold is met. If parking is to be restricted to the Chick Fil A development only, applicant will need to provide further information demonstrating compliance with ZDO 1015.02(D)(1) (d.), noted in the paragraph above. This criteria can be met, and is detailed above in the conditions of approval section. If the entire development will share parking, easements must be recorded, allowing crossover use of the parking spaces.

ZDO Sec. 1015.03; Bicycle Standards:

Finding: *Applicant is proposing four bicycle spaces. The minimum requirement per Table 1015-2 is one. The applicant's civil plan set must demonstrate compliance with all bicycle design standards set forth in 1015.03. Preliminary plans and narrative show these standards can be met. Conditions of Approval noted above will ensure the bicycle racks are constructed to County standards. This criteria can be met.*

ZDO Sec. 1015.03; Off-Street Loading:

Finding: *Off-street loading is not required for a building less than 5,000 square feet. This criteria is not applicable.*

12. Section 1021 – Refuse and Recycling Standards For Commercial, Industrial, and Multi-Family Developments

Finding: Staff received comments from the County Sustainability and Solid Waste Division (Exhibit 3) noting the proposed trash enclosure, as designed, does not meet ZDO Subsection 1021.04(C), (D), and Subsection 1021.05(A). At present, the design does not comply with applicable standards. Please redesign the trash enclosure to include bumper curbs and to have appropriate vertical clearance of 20 feet. Contact Sustainability staff with questions on the design. This criteria is not met.

ADVISORY NOTES

Advisory notes are not a part of the decision on this land use permit. The items listed below are not conditions of land use approval and are not subject to appeal. They are advisory and informational only but may represent requirements of other agencies/departments.

Clackamas Fire District #1 Submitted Advisory Comments: **See Exhibit 1**