MEETING NOTICE

TUALATIN ARCHITECTURAL REVIEW BOARD
SEPTEMBER 20, 2017, 6:30 PM
POLICE TRAINING ROOM
8650 SW TUALATIN RD
TUALATIN, OR 97062

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1. **CALL TO ORDER**
   Staff: Aquilla Hurd-Ravich, Planning Manager; Charles H. Benson III, Associate Planner.
   Members: Jeff DeHaan, Skip Stanaway, Chris Goodell, Patrick Gaynor, Carol Bellows, and Angela Niggli.
   Alternate: John Medvac

2. **APPROVAL OF MINUTES**

   A. Approval of February 6, 2017 Minutes

   B. Approval of June 28, 2017 Minutes

3. **COMMUNICATIONS FROM THE PUBLIC (NOT ON THE AGENDA)**

4. **PUBLIC HEARINGS**

   A. IPT Tualatin Recommendation and Staff Report for AR-17-0006

5. **COMMUNICATIONS FROM BOARD MEMBERS**

6. **ADJOURNMENT**

MEMORANDUM
CITY OF TUALATIN

Architectural Review Board **2.A.**

FROM: Lynette Sanford, Office Coordinator

DATE: 09/20/2017

SUBJECT: Approval of February 6, 2017 Minutes

Attachments

ARB Minutes 2.6.17

City of Tualatin

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UNOFFICIAL

ARCHITECTURAL REVIEW BOARD - MINUTES OF FEBRUARY 6, 2017

MEMBERS PRESENT:
Jeff DeHaan, Chair
John Howorth
Skip Stanaway
Chris Goodell
Patrick Gaynor
Carol Bellos
Angela Niggli

STAFF PRESENT:
Aquilla Hurd-Ravich
Erin Engman
Tony Doran
Melinda Anderson
Lynette Sanford

MEMBER ABSENT:

GUESTS: Brian Bainnson, Steve Kolbers, Jim Knees

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1. CALL TO ORDER AND ROLL CALL:

Mr. DeHaan called the meeting to order at 6:30 pm.

2. APPROVAL OF MINUTES:

Mr. DeHaan asked for review and approval of the June 10, 2015 ARB Minutes.
MOTION by Stanaway SECONDED by Goodell to approve the minutes as written.
MOTION PASSED unanimously (7-0).

3. COMMUNICATION FROM THE PUBLIC (NOT ON THE AGENDA):

None

4. PUBLIC HEARINGS:

A. Legacy Health Meridian Park Patient Care Expansion Recommendation and Staff Report for AR16-0009.

Mr. DeHaan read the script for Quasi-Judicial Hearings. Mr. DeHaan asked the board members if they had a conflict of interest, bias, or ex parte contact with the applicant. Mr. Stanaway clarified that he has worked with the members representing Legacy but this will not affect his decision. Mr. Howorth stated that he lives near the Legacy campus, but it will not influence his decision. Ms. Bellows disclosed that she is

acquainted with the Landscape Architect for Legacy but it will not affect her decision.

Erin Engman, Assistant Planner, presented the staff report for the Legacy Health Meridian Park Patient Care Expansion which included a PowerPoint presentation. Ms. Engman stated that this project is for a 163,203 square foot expansion of the existing Meridian Park Hospital. The building is proposed to be four stories tall and approximately 65 feet in height. Elements of the review are limited to the following architectural features:

- Architecture
- Parking lot
- Bike parking
- Landscaping
- Tree mitigation
- Lighting
- Trash plan and enclosures

Ms. Engman explained that the Architectural Review board (ARB) needs to review this proposal per TDC 73.030 which states that all commercial development with a building 50,000 square feet or larger needs to be reviewed by the ARB. The ARB shall make the final decision on the Architectural Review proposal. The decision may be appealed to the City Council.

Ms. Engman went through the slides which detailed the proposed site plan, elevations, access ways, and landscaping. Ms. Engman noted that City staff is recommending 18 conditions of approval which are detailed in the decision. These conditions include pedestrian circulation, public transit, landscaping requirements, and bicycle parking.

Ms. Engman stated that the recommended options include:

- Approve with staff recommended finds and conditions of approval
- Approve with amended findings and conditions of approval
- Continue the hearing
- Deny the application

Jim Knees, PKA Architects, 6969 SW Hampton Street, Portland, OR 97223

Mr. Knees presented a PowerPoint presentation of the Meridian Park Patient Care Expansion. Mr. Knees acknowledged that they agree with all the conditions of approval.

Mr. Knees stated that in April, 2015, his firm met with Legacy Meridian Park to begin the process of patient care expansion. Their needs included replacement beds, room to grow for the future, unifying the main entrance, and providing major medical center for the community.

Mr. Knees noted that healthcare is equipment extensive and they have lost their

capacity. They are looking to provide new space to create better function for the hospital and patients. Mr. Knees went through the slides which detailed the following:

- Existing site
- Height Restriction
- Building Location
- Approach to Building
- Patient Floor
- Patient Unit on Site
- Ground Floor
- Patient Access
- Public Access Ways
- Building and Landscape
- Existing Conditions
- Massing Bread Down
- Aerial View
- View from North, South, East and West

Mr. Knees mentioned that there was special consideration for where the proposed building was positioned in relation to access. The interior was designed to comply with special requirements for healthcare such as nursing to patient ratio, good visualization for nurses, and that every patient room have a window.

Mr. Knees stated that the proposed building will house patients on the top two floors; the main floor will house the lobby, waiting rooms, and a pre-admission clinic. There will also be a covered drop off area for patients with broad landscaping around the perimeter.

Brian Bainnson, Quatrefoil, Inc., 404 SE 80th Ave, Portland, OR 97213

Mr. Bainnson, Landscape Architect for Quatrefoil, Inc., has worked with Legacy Health since 1998 on their extensive healing gardens. Mr. Bainnson stated that Legacy has the largest number of healing and therapy gardens in the world. The existing garden is actively used with a focus on patients and staff and relies heavily on volunteers for its upkeep.

Mr. Bainnson went through the slides which detailed the landscaping plan and noted that the new building allowed them to increase the garden space and tree canopies. He also pointed out the new curved retaining wall that will draw people to the entrance.

Mr. Knees continued through the PowerPoint slides which detailed the design elements and materials of the building. One feature includes a glass lobby which will create a strong visible entrance and allows you to see inside at night.

Mr. Stanaway inquired about the location of the main entry on the site. Mr. Knees responded that the main entrance is 65th on the north end. Mr. Stanaway asked what

was in place to bring people in from that location. Mr. Knees acknowledged that a sign code change was approved recently that will improve directional signage throughout the location. Mr. Bainnson responded that the curved retaining wall will create guidance though the site since it will be heavily landscaped and lit at night.

Mr. Stanaway asked about the tree selection and noted he is not a fan of lollipop trees. Mr. Bainnson responded that within the parking lot there will be a mix of trees that will be varied in height and low landscaping will surround the entryway. They will also have trees that will scale a three story building.

Mr. DeHaan inquired about the signage for this project. Ms. Engman responded that the sign permits have been approved but have not been installed. The entry monument signs will be 14 feet in height and very legible from the roadway. When you arrive into the site, there will be a better pedestrian experience with signs of 8-10 feet. Mr. DeHaan asked about the approval and review of the signs. Ms. Hurd-Ravich responded that staff reviewed and approved the sign permits, and they are currently going through the building permit process.

Ms. Bellows stated that the Emergency room is hard to find on the site and that the main parking lot is always at capacity. Mr. Knees responded that the new signage will direct people to the Emergency room easier. Ms. Bellows noted that the north wall looks challenging and noticed that there was not an entrance to the garden. Mr. Knees responded that the north wall is the back of the patient tower. From the second floor, the patients will see interesting landscape and a canopy of trees.

Mr. Howorth inquired about building height. Mr. Knees responded that the proposed building is 65 feet; the one behind it is 18 feet. Mr. Howorth asked about screening of the building from surrounding neighbors. Mr. Knees responded the screening will be the tree canopy. Mr. Stanaway asked about screening of mechanical units. Mr. Knees responded that they will not be seen.

Mr. Howorth asked about the photometric plan and how much light will come from the interior of the building. Mr. Knees responded that most of the light will be cast upon the adjacent buildings, the office buildings are not active at night, and the patient room drapes will be closed.

Mr. Stanaway inquired about a materials board. Ms. Hurd-Ravich responded that one is not required but we do require information about the colors and materials being used. Mr. Stanaway asked about the color of the building. Mr. Knees responded that the outside will be white.

Mr. DeHaan asked about LEED status. Mr. Knees responded that they have made every attempt to make the building energy efficient, but were not going for LEED status. Mr. DeHaan asked if there will be electric car charging stations. Mr. Knees answered affirmatively. Mr. Bainnson added that there are storm water facilities as part of the gardens.

Mr. Gaynor inquired about the lock and load wall height. Mr. Knees responded that it is 16-17 feet in height and heavily planted with Douglas fir and evergreen trees. Mr. Gaynor asked about the Clean Water Services provider letter and if there was a condition of approval. Ms. Hurd-Ravich responded that a Clean Water Services letter is implemented in the public facilities decision and our code requirements must be met.

Mr. Howorth inquired about the parking plan and questioned the benefit of having more variety regarding ADA and compact spaces. He's concerned a larger vehicle will be unable to park in the proposed row and it should be staggered between compact and regular parking spaces.

Mr. Gaynor inquired about the tree selection and tree placement and had concerns regarding the different varieties being used. Discussion continued regarding the size of the trees, soil analysis and depths, and drainage.

After deliberation, the board members agreed to approve AR16-0009 with the following revision:

- Where new lighting is called for, the additional condition is that it meets the dark skies requirement as laid out in current LEED standards.

MOTION by Stanaway, SECONDED by Bellows to approve with the condition as stated above. MOTION PASSED unanimously (7-0).

5. COMMUNICATION FROM BOARD MEMBERS:

None

6. FUTURE ACTION ITEMS

Ms. Hurd-Ravich stated that there are no future meetings scheduled.

7. ADJOURNMENT

MOTION by Stanaway, SECONDED by Bellows to adjourn the meeting at 8:29 pm.

_____ Lynette Sanford, Office Coordinator

MEMORANDUM
CITY OF TUALATIN

Architectural Review Board **2.B.**

FROM: Lynette Sanford, Office Coordinator

DATE: 09/20/2017

SUBJECT: Approval of June 28, 2017 Minutes

Attachments

ARB Minutes 6.28.17

City of Tualatin

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UNOFFICIAL

ARCHITECTURAL REVIEW BOARD MEETING
MINUTES OF JUNE 28, 2017

ARB MEMBERS PRESENT:	**STAFF PRESENT**
Jeff DeHaan	Aquilla Hurd-Ravich
Skip Stanaway (arrived during Agenda item 4)	Alice Cannon
Patrick Gaynor	Erin Engman
Chris Goodell	Lynette Sanford
Carol Bellows	

ARB MEMBERS ABSENT: Angela Niggli, John Howorth

GUESTS: Suzannah Stanley, Phillip Brown, Brad Tire

1. CALL TO ORDER AND ROLL CALL:

Jeff DeHaan, Chair, called the meeting to order at 6:35 pm and reviewed the agenda. Roll call was taken. Mr. DeHaan read the script for Quasi-Judicial Hearings and asked the board members if they had a conflict of interest, bias or ex parte contact with the applicant. Mr. Gaynor noted that he has visited the site of the proposed development.

2. APPROVAL OF MINUTES:

A. Approval of Joint ARB/TPC Minutes from March 20, 2017.

Mr. DeHaan asked for review and approval of the March 20, 2017 Joint TPC/ARB minutes. MOTION by Goodell, SECONDED by Bellows to approve the minutes as written. MOTION PASSED 4-0.

3. COMMUNICATIONS FROM THE PUBLIC (NOT ON THE AGENDA)

None

4. PUBLIC HEARINGS:

A. Majestic Building 1 Recommendation and Staff Report for AR-17-0002.

Erin Engman, Assistant Planner, presented the staff report for Majestic Building 1 which included a PowerPoint presentation. Ms. Engman noted that the applicant is requesting approval to develop a 229,146 square foot industrial building, 39 feet in height. This

project is subject to Architectural Review Board (ARB) review per TDC 73.030 which states that all industrial developments with a building of 150,000 square feet or larger must be reviewed by the ARB.

Ms. Engman stated that the site consists of one parcel that is approximately 11.54 acres in size and is currently vacant. Tenants have not been determined at this time, but the applicant anticipates warehouse activity with accessory office use. Planned improvements also include pedestrian walkways landscaping, and 137 parking spaces with associated grading, drainage, and lighting.

Ms. Engman went through the slides which detailed the existing site plan, proposed site plan, proposed elevations and adjacent development.

Ms. Engman stated that staff recommends approval with the following conditions:

- Evidence that minimum parking requirements are met when tenants are identified
- Building perimeter landscape area (five feet wide) along southern and western elevation
- Modifications to parking stalls to meet standards along southern and western elevation
- Modifications to trash enclosure areas to satisfy Republic Services design conditions
- Accessway connection to SW 115th Ave
- Access defined by a landscape area of five feet wide by 30 feet long along the north side of the access drive.

Ms. Engman noted that the staff report incorrectly states the landscaping extend 25 feet. For industrial uses, it should be 30 feet (addressed on page 34 of the staff report). Ms. Engman added that the board members may wish to amend the condition to 30 feet.

Ms. Engman stated that the recommended options include:

- Approve with staff recommended findings and conditions of approval
- Approve with amended findings and conditions of approval
- Continue the hearing
- Deny the application

Suzannah Stanley, Mackenzie, 1515 SE Water Ave, Suite 100, Portland, OR 97214

Ms. Stanley presented a PowerPoint presentation of the Majestic warehouse proposal. This presentation included aerial photos of the site, access roads, project goals, and landscaping details.

Phillip Brown, Majestic Realty, Hillsboro, OR

Mr. Brown gave a brief history of his firm. He stated that it is family owned, private, and was founded in 1948. It has grown to 82 million square feet of commercial properties throughout the country. The Majestic Brookwood Business Park in Hillsboro was awarded the 2017 Industrial Development of the Year. He has searched for property in Tualatin for a number of years and was fortunate to build a partnership with the owner of this current property.

Ms. Stanley discussed the parking requirements for the site. Since the tenants are unknown, they depended on the Metro Employee Density Study. Ms. Stanley concluded that this property will have plenty of parking for their employees and additional parking will be provided if required for future tenants to meet parking standards.

Ms. Stanley also noted that since parking is an issue in the neighborhood, Mackenzie has plans to restripe Itel Street to add safe parking lanes. Ms. Stanley added that Itel Street is approximately 900' away so additional impacts are not expected.

Ms. Stanley noted that Condition AF-6 stated "a minimum 5 foot wide landscaped area along the south and west building perimeters that are viewable by the general public from parking lots or public right of way". Ms. Stanley acknowledged that the site has steep grade challenges and providing a full five feet of landscaping around the south and east side is challenging and almost impossible. Ms. Stanley added that the general public is not defined in the code and the general public will not visit the site – it will be primarily employees and distributors. Ms. Stanley also noted that code section 73.310(1) does not apply to the south and west building facades.

Mr. Brown stated that the issue is the public right-of-way. Blake Street is approximately 18-30 feet higher than the rest of the site and it's doubtful the area will ever be visible. Ms. Stanley added that other buildings in the area do not have 5 feet of landscaping. Ms. Stanley proposed removing condition AF-6, except for a 2.5 foot overhang.

Ms. Bellows noted that Blake Street is planned to be a connector. Ms. Cannon acknowledged that it is slated to be built from 115th-124th and a concept study is in the works for the alignment. Mr. Brown added that due to the grade differential, it will not be visible. Ms. Cannon added that she has visited the other sites in the area and found that they are in compliance regarding the code provisions and it needs to be consistent with future development. Mr. Brown disagreed that the other buildings are in compliance.

Mr. Gaynor asked if a fence and gate on the south side would that constitute a private area. Ms. Hurd-Ravich responded that the topic was brought up by the applicant and we determined that is not a way to mitigate code requirement.

Mr. Stanaway stated that since we're dealing with a large scale of building, landscaping has a major role in softening the façade. Mr. Stanaway added that an adequate plant strip is necessary to accomplish that.

Mr. DeHaan asked if there are negative consequences if the board makes an exception to the 5 feet landscaping standard. Ms. Hurd- Ravich responded that she spoke with the City Attorney and the ARB cannot convey that 2.5 feet is adequate. However, they can interpret the general public definition.

Brad Tire, Mackenzie, 1515 SE Water Ave., Suite 100, Portland, OR 97214

Mr. Tire, Landscape Architect, stated that there is a big drop off to the south, so they're planning on using Raywood Ash trees to soften the façade on the rear (south) side of the building. Mr. DeHaan asked how many bays were planned. Ms. Stanley answered that there are many bays, 22 feet wide, which are planned to be screened with trees.

Mr. Gaynor inquired about the plant choices. TDC 73.360 states that plants need to be strong enough to survive in the area. With his experience, the Raywood Ash tree may not be the best choice. It has a low lifespan, is weak rooted, and many commercial centers have asked him to remove them. Mr. Gaynor recommends the Urbanite Ash instead for a long life span. He also recommends the Japanese Zelkova over the Shademaster Honeylocust. As for shrubs, Mr. Gaynor recommended the Evergreen Huckleberry or Parney Cotoneaster. Mr. Gaynor also recommended a minimum of 18 inches of topsoil in all landscape areas.

Mr. Stanaway wanted to clarify what issues they are most concerned about. Ms. Stanley replied AF-7 and AF-9 with regards to parking overhang. Ms. Stanley proposes 2.5 feet be landscaped instead of 5 feet and propose to striking AF-7. The islands would stay the same size.

Mr. Goodell stated that page 47 states the condition requires a total of 7.5 feet including 2.5 feet of overhang. Ms. Stanley replied they cannot meet that requirement on the south and east sides.

The owner of the property, Mr. Nemarnik, asked how big the islands were. Ms. Stanley said they are 16-22 feet wide and remarked that if you took the square footage of landscaping including the islands, it would be advantageous over a five foot strip.

Mr. Goodell inquired about the striping of Itel Street. Ms. Hurd-Ravich responded that it is part of the public facilities discussion. Mr. Goodell inquired if they were in agreement with the garbage restriction. Ms. Stanley responded that they are fine with the condition but if a future tenant does not need that space, they may submit a revision.

Mr. DeHaan asked if they can comply with parking space requirement if they acquire a manufacturing tenant. Mr. Brown answered affirmatively. Ms. Hurd-Ravich added that when a tenant arrives, the City will ensure proof that parking requirements are met.

Chair DeHaan closed the public hearing and the members deliberated.

Mr. DeHaan stated that he thinks it's reasonable to make a determination that the two sides of the building are not viewable therefore should only require 2.5 feet of overhang landscaping. Mr. Stanaway stated the reason for the additional landscaping is to provide a greater variety for the general public. It affects the leasable space of the building and can impact tenant interest. Mr. Stanaway would like to see the landscaping condition enforced. Ms. Bellows agreed.

Mr. Gaynor requested additional trees be added along Blake Street in a staggered fashion for a better visual barrier. Ms. Engman responded that the area consists of a rock wall and the applicant has decided to plant raspberry along the edge. It was determined this area did not have enough soil depth for trees.

Mr. DeHaan asked for a motion to correct the typo on the staff report to amend the landscaping standard from 25 feet to 30 feet. MOTION by Goodell, SECONDED by Stanaway to make the change. MOTION PASSED 5-0.

MOTION by Goodell to approve with staff recommended findings and conditions of approval. SECONDED by Stanaway. MOTION PASSED 4-1 with DeHaan opposing.

5. COMMUNICATION FROM BOARD MEMBERS

None

6. ADJOURNMENT

MOTION by Stanaway, SECONDED by Bellows to adjourn the meeting at 8:16 PM.

_____ Lynette Sanford, Office Coordinator

MEMORANDUM
CITY OF TUALATIN

Architectural Review Board **4.A.**

FROM: Charles Benson, Associate Planner

DATE: 09/20/2017

SUBJECT: IPT Tualatin Recommendation and Staff Report for AR-17-0006

ISSUE BEFORE ARCHITECTURAL REVIEW BOARD:

Consideration to approve the Architectural Review (AR) proposal (AR-17-0006) for a new one-story approximately 157,230-square-foot industrial building “shell” at 12155 SW Tualatin-Sherwood Road approximately 400 feet east of 124th Avenue.The building design is cohesive and consists of 42-foot-tall tilt-up concrete panels anchored with prominent corner elements, with industrial-style canopies and clear aluminum storefront windows.

EXECUTIVE SUMMARY:

The applicant, Industrial Property Trust (IPT) Tualatin DC LLC, proposes to construct a new one-story approximately 157,230-square-foot industrial building “shell” at 12155 SW Tualatin-Sherwood Road approximately 400 feet east of 124th Avenue. While tenants are unknown at this time, the proposed building would house up to four (4) tenants and a mix of office, industrial, and warehousing uses.The proposed development would include 159 parking spaces, two access driveways along SW Cimino Street--the west driveway would be shared with the existing Itel Corporate Center at 12310-12370 SW Cimino Street, and would require the eastward extension of Cimino Street to the project site’s eastern boundary line. Approximately 63,000 square feet of landscaping (16.5 percent of the property) would be provided throughout the project site.

The relatively flat subject site is comprised of one approximately 9-acre parcel, with the southeast corner currently occupied by the Itel family farm that has been used for farming and truck repair for several years. Access to the project site is currently provided through an 180-foot-wide driveway along SW Tualatin-Sherwood Road; all existing development on this site, including the farm and the access driveway, will be removed as part of the proposed development.? There are no wetlands, greenways, or riverbanks located on-site, nor is the site located within any Natural Resources Protection Overlay District (NRPO) or floodplain.

Pursuant to Tualatin Development Code (TDC) Section 73.030(2), this proposal requires Architectural Review Board (ARB) review and decision as the proposed industrial building would be greater than 150,000 square feet in size.

DISCUSSION:

Staff recommends that the ARB approve AR-17-0006 with conditions of approval to meet TDC requirements. The proposal generally reflects TDC standards.

The following conditions are highlighted as they could result in adjustments to the Site Plan, Sheet C1.1 (dated July 28, 2017):

1. Evidence that pedestrian and bicycle accessways meet minimum TDC and ADA standards;
2. Modifications to mixed solid waste and recyclables storages areas to meet minimum TDC storage area size requirements;
3. Modifications to bicycle parking to meet TDC minimum parking standards;
4. Modifications to vanpool/carpool parking to meet TDC minimum parking standards;
5. Modifications to parking stalls to meet TDC minimum size requirements; and
6. Modifications to lighting in the eastern portion of the project site to reduce amount of light shining onto the property to the east.

Staff recommends additional conditions of approval as included in Attachment 100, ARB Staff Report; however, these conditions are not expected to modify the proposed development.

RECOMMENDATION:

Staff recommends that the ARB approve AR-17-0006 with recommended findings and conditions of approval. The ARB has the following four options:

1. Approve the application with staff recommended findings and conditions of approval;
2. Approve the application with amended findings and conditions;
3. Continue the hearing; or
4. Deny the application.

Attachments

Attachment 100 - Staff Report and Recommendations

Attachment 101 - Application Materials

Attachment 102 - Comments

Attachment 103 - City Engineer (PFR) Findings

City of Tualatin

www.tualatinoregon.gov

September 20, 2017

STAFF REPORT
RECOMMENDATION TO THE ARCHITECTURAL REVIEW BOARD

Case #:	AR17-0006
Project:	IPT Tualatin
Location:	12155 SW Tualatin-Sherwood Rd
Tax Map/Lots:	2S1 27BC 00200
Applicant/Owner:	VLMK Engineering + Design / IPT Tualatin DC LLC
Applicant/Rep.:	Jennifer Kimura, VMLK Engineering + Design, Portland, OR jenniferk@vmlk.com

TABLE OF CONTENTS

Arrangements can be made to provide these materials in alternative formats such as large type or audio recording. Please contact the Planning Division at 503.691.3026 and allow as much lead time as possible.

I. INTRODUCTION

A. Project Description

Industrial Property Trust (IPT) Tualatin DC LLC, proposes to construct a new one-story approximately 157,230-square-foot industrial building "shell" at 12155 SW Tualatin-Sherwood Road approximately 400 feet east of 124th Avenue. The proposed building, occupying approximately 41 percent of the property, would be centered on the project site, with building entrances and access points at each of the building's four corners, and surrounded by approximately 165,180 square feet (43 percent of the property) of paved parking and circulation areas. The remainder of the project site would be developed with approximately 63,600 square feet (16.5 percent of the property) of perimeter landscaping.

The proposed development would include 159 parking spaces primarily located in the northern and southern portion of the project site, served by two access driveways along SW Cimino Street. The west driveway would be shared with the existing Itel Corporate Center at 12310-12370 SW Cimino Street; the east driveway would be located in the northeast corner of the project site and would require the eastward extension of Cimino Street, which currently ends approximately 25 feet east of the project site's western boundary line. Landscaping would be provided along the entire perimeter of the project site.

The building design is cohesive and consists of 42-foot-tall tilt-up concrete panels anchored with prominent corner elements, with industrial-style canopies and clear aluminum storefront windows. The loading dock areas are recessed into the building's east and west façades and screened from views along SW Tualatin-Sherwood Road with perimeter landscaping. The building exterior would be comprised of neutral gray colors with deep blue accents, with an overall architectural style similar to the Itel Corporate Center development to the west.

While tenants are unknown at this time, the proposed building would house up to four (4) tenants and a mix of office, industrial, and warehousing uses.

B. Site Description

This approximately 9-acre parcel, Washington County Tax Lot 2S1 27BC 00200, is relatively flat, with the southeast corner currently occupied by the Itel family farm that has been used for farming and truck repair for several years (see Figure I-1). Access to the project site is currently provided through an 180-foot-wide driveway along SW Tualatin-Sherwood Road; all existing development on this site, including the farm and the access driveway, will be removed as part of the proposed development.

The subject lot and neighboring properties to the north, east, and west are located in the City of Tualatin's General Manufacturing (MG) Planning District, which extends northward to Oregon Route 99W (Pacific Highway), eastward to SW 95th Avenue, southward to the Portland & Western Railroad (PNWR) right-of-way, and westward to SW Cipole Road and Tualatin's western boundary. The properties adjacent and south of the project site—and south of SW Tualatin-Sherwood Road—are not located within Tualatin city limits but are located within its planning area and are mapped with a Manufacturing Business Park (MBP) planning district.

There are no wetlands, greenways, or riverbanks located on-site, nor is the site located within any Natural Resources Protection Overlay District (NRPO) or floodplain. While there is a large wetland area north of the subject site, this wetland is located greater than 200 feet from the site and no vegetated corridor is present on the subject property.

Figure I-1. Aerial Map of Subject Area

C. Project Schedule

A pre-application conference for this project was held on June 26, 2016. A neighborhood/developer meeting—as required by Tualatin Development Code (TDC) 31.063—was held on June 12, 2017, commencing at 6:00 PM in the Conference Room at the Tualatin Public Library, 18878 SW Martinazzi Avenue, Tualatin, OR 97062. Meeting attendees included two members from the IPT Tualatin project team and two representatives from the City of Tualatin. There were no members from the community in attendance.

This application was originally submitted on July 19, 2017, and deemed complete on August 14, 2017. Per the 120-Day Rule—Oregon Revised Statute (ORS) 227.178-227.179—final City of Tualatin action/decision on this application must be completed on or before December 12, 2017.

Staff last visited the site on August 21, 2017.

II. RECOMMENDED FINDINGS

The Planning Division findings in the following section are based on interpretive compliance with the Tualatin Development Code (TDC) and other applicable ordinances. All references are to sections in the TDC unless otherwise noted.

In the following section, planning staff comments, findings, and conditions of approval are in Italic font.

A. Previous Related Land Use Actions

With the exception of the Itel/IDM Partition (PAR-08-03), which was recorded in 2009 as Washington County Document No. 2009059449, there are no previous land use actions related to the project site.

B. Planning Districts and Adjacent Land Uses

The subject property is located in the in the General Manufacturing (MG) planning district where light manufacturing, warehousing/distribution, wholesaling uses, and a wide range of heavier manufacturing and processing activities are permitted pursuant to Tualatin Development Code (TDC) 61.020.

Adjacent planning districts and land uses are:

North: General Manufacturing Planning District (MG)
- Undeveloped property containing wetlands (Wager property)

East: General Manufacturing Planning District (MG)
- Residential property at 12075 SW Tualatin-Sherwood Road containing the Wager House, a Tualatin Historic Landmark

South: Manufacturing Business Park Planning District (MBP)*
- Undeveloped property at southeast corner of SW Tualatin-Sherwood Road and 124th Avenue (Itel property)
- Residential property at 12350 SW Tualatin-Sherwood Road
- Farm at 12150 SW Tualatin-Sherwood Road (Itel property)

West: General Manufacturing Planning District (MG)
- One-Story Itel Corporate Center at 12310-12370 SW Cimino Street currently housing Shields Manufacturing, Rexel, FleetPride Truck & Trailer Parts, and IDM (Investment Development Management, LLC)

**Located in planning area, outside of Tualatin city limits*

C. Planning District Uses

Section 61.020 General Manufacturing (MG) Permitted Uses

No building, structure or land shall be used in this district except for the following uses as restricted in TDC 61.021. *[non-applicable provisions omitted for brevity]…*

(1) All uses permitted by TDC 60.020 and 60.037 in the Light Manufacturing Planning District.

(8) Manufacture of the following types of products: […]

60.020(18) Offices for executive, administrative, and professional uses related to the sale or service of industrial products.

60.020(34) Warehousing related to the above uses; and warehousing for merchandise or goods normally sold or owned in commercial or residential planning districts, but excluding direct retail sales to customers from such warehouse structure, and excluding the storage of hazardous materials.

Applicant Response: The list of allowed uses is extensive and includes most types of uses that we see in a standard industrial warehouse and/or manufacturing facility. This project is proposed as a "shell" building and the tenant is not known at this time, but it is anticipated to fall within the parameters of those items shown on the approved list.

Although future tenants are not known at this time, staff notes that the applicant has identified a probable mix of 60 percent warehouse, 25 percent manufacturing, and 15 percent office, all of which are permitted outright in the General Manufacturing (MG) planning district; this mix was used to analyze compliance with use-specific code requirements such as parking. This planning district allows a wide range of warehousing, manufacturing, and accessory uses, and any proposed use will comply with permitted use standards prior to issuance of any Certificate of Occupancy by the City of Tualatin Building Division. Staff finds that this standard is met.

Section 61.021 Restrictions on Permitted Uses

Staff finds that the applicant's narrative does not address TDC 61.021—Restrictions on Permitted Uses.

The following restrictions shall apply to those uses listed as permitted uses in TDC 61.020:

(1) The use must be conducted wholly within a completely enclosed building, except off-street parking and loading, utility facilities, wireless communication facilities, outdoor storage of materials and products directly related to the permitted use and outdoor play areas of child day care centers as required by state day care certification standards.

Although tenants are not yet determined, it is not anticipated that any activities will be conducted outside of the building, except for off-street parking and loading. The proposed development is designed in a manner that is not conducive to outdoor use, and the future activities on the project site are expected to be similar to those on the related Itel Corporate Center at 12310-12370 SW Cimino Street adjacent and west. Staff finds that this standard is met.

(2) The retail sale of products manufactured, assembled, packaged or wholesaled on the site is allowed provided that the retail sale area, including the showroom area, shall be no greater than 5% of the gross floor area of the building not to exceed 1,500 square feet.

Although tenants are not yet determined, any proposed use—including the amount of retail space allotted per tenant for products manufactured, assembled, packaged or wholesaled on the site—will comply with permitted use standards prior to issuance of any Certificate of Occupancy by the City of Tualatin Building Division. Staff finds that this standard is met.

(3) For other retail uses, excluding retail sales of products manufactured, assembled, packaged or wholesaled on the site, the following restrictions shall apply:

(a) Retail uses on land designated Employment Area or Corridor on Map 9-4 shall not be greater than 60,000 square feet of gross floor area per building or business.

As the project site is not located on land designated Employment Area or Corridor, staff finds that this standard does not apply. Staff notes that the subject site is located in a designated Industrial Area as shown on TDC Map 9-4.

(b) Retail commercial, retail service and professional service uses on land designated Industrial Area on Map 9-4 shall not be greater than 5,000 square feet of sales or service area in a single outlet, or not greater than 20,000 square feet of sales or service area for multiple outlets in a single building or in multiple buildings that are part of the same development project, with the following two exceptions, which shall not be subject to the size limitations stated in this subsection:

(i) Commercial uses within the Special Setbacks for Commercial Uses Area, shown on Map 9-5, and as specified in TDC 61.035, except 61.035(4)(b).

Staff notes that the Special Setbacks for Commercial Uses Area covers the project site within 250 feet of the southern property line along SW Tualatin-Sherwood Road, which prohibits commercial uses identified in TDC 60.020 and 60.040 from this area. Although tenants are not yet determined, any proposed use—including commercial uses listed in TDC 60.020 and 60.040—will comply with permitted use standards prior to issuance of any Certificate of Occupancy by the City of Tualatin Building Division. Staff finds that this standard is met.

(ii) Development approved through the application of the Industrial Business Park Overlay District to certain properties, as specified in TDC Chapter 69.

As the project site is not located within an Industrial Business Park Overlay District, staff finds that this standard does not apply.

(iii) Development approved through the application of standards for additional small-scale mixed uses in ML as specified in TDC 60.037-60.038.

Although tenants are not yet determined, if proposed, commercial uses identified in TDC 60.037 and 60.038 are governed by the standards outlined in these code sections, including: a limit on office space to a maximum 25 percent of total gross floor area, individual retail and service use no greater than 5,000 square feet per outlet, and total combined retail and service uses no greater than 20,000 square feet for the development site. Any proposed use will comply with permitted use standards prior to issuance of any Certificate of Occupancy by the City of Tualatin Building Division. Staff finds that this standard is met.

D. Lot Sizes

Section 61.050 Lot Size

Except for lots for public utility facilities, natural gas pumping stations and wireless communication facility which shall be established through the Subdivision, Partition or Lot Line Adjustment process, the following requirements shall apply:

(1) The minimum lot area shall be 20,000 square feet.
(2) The minimum lot width shall be 100 feet.
(3) The minimum average lot width at the building line shall be 100 feet.
(4) The minimum lot width at the street shall be 100 feet.
(5) For flag lots, the minimum lot width at the street shall be sufficient to comply with at least the minimum access requirements contained in TDC 73.400(8) to (12).
(6) The minimum lot width at the street shall be 50 feet on a cul-de-sac street.

Applicant Response: The proposed site complies as follows: the lot is over 20,000 SF (actual 386,007 SF), the lot width (and average at the building) is greater than 100 feet (varies with a minimum dimension of 603 feet), the lot width at the street is greater than 100 feet (actual is 603 feet), and the last two items do not apply to this project.

Staff finds that the above-referenced standards TDC 61.050(1) through (4) are met as shown on the submitted A.L.T.A./N.S.P.S. Land Title Survey (dated July 28, 2017). Staff finds that the above-referenced standards TDC 61.050(5) and (6) do not apply.

E. Setback Requirements

Section 61.060 Setback Requirements

(1) Front yard. The minimum setback is 30 feet. When the front yard is across the street from a residential or Manufacturing Park (MP) district, a front yard setback of 50 feet is required. When a fish and wildlife habitat area is placed in a Tract and dedicated to the City at the City's option, dedicated in a manner approved by the City to a non-profit conservation organization or is retained in private ownership by the developer, the minimum setback is 10 – 30 feet, as determined in the Architectural Review process, with the exception of front yards across the street from a residential or MP District, provided the buildings are located farther away from fish and wildlife habitat areas.

General Manufacturing (MG) District		
Yard (Public ROW)	**Minimum Building Setback**	**Proposed Setback**
Front Yard (SW Tualatin-Sherwood Road)	30 feet	Approx. 80 feet (south)
Front Yard (SW Cimino Street)*	30 feet	Approx. 90 feet (north)
Side Yard	0 to 50 feet	95 feet (east and west)
Rear Yard	0 to 50 feet	N/A**
*After dedication.		
**Project site will have no rear yard after Cimino Street dedication.		

Applicant Response: The proposed building is located more than 60 feet from all property lines.

Staff finds that the front yard setback standards are met. The proposed building would be set back approximately 80 feet from SW Tualatin-Sherwood Road, and after the Cimino Street dedication, the proposed building would be set back approximately 90 feet from the extended Cimino Street public right-of-way. However, while these distances were interpreted from the submitted plans, these specific dimensions were not included.

Condition of Approval: The applicant shall revise site plan (Sheet C1.1) to include building setback dimensions from property lines pursuant to TDC 61.060(1).

(2) Side yard. The minimum setback is 0 to 50 feet, as determined through the Architectural Review process. When the side yard is adjacent to a property line or across the street from a residential or Manufacturing Park (MP) District, a side yard setback of 50 feet is required.

Staff finds that the side yard setback standards are met. The proposed building would be set back approximately 95 feet from both the east and west property lines. However, while these distances were interpreted from the submitted plans, these specific dimensions were not indicated on the plans.

Condition of Approval: The applicant shall revise site plan (Sheet C1.1) to include building setback dimensions from property lines pursuant to TDC 61.060(2).

(3) Rear yard. The minimum setback is 0 to 50 feet, as determined through the Architectural Review process. When the rear yard is adjacent to a property line or across the street from a residential or Manufacturing Park (MP) District, a rear yard setback of 50 feet is required.

After the dedication of a northern portion of the project site for the SW Cimino Street extension, the project site will no longer have a rear yard; thus, staff finds that this standard does not apply.

(4) Corner lot yards. The minimum set-back is the maximum setback prescribed for each yard for a sufficient distance from the street intersections and driveways to provide adequate sight distance for vehicular and pedestrian traffic at intersections and driveways, as determined through the Architectural Review process.

As the project site does not fit the definition of a corner lot, staff finds that this standard does not apply.

(5) The minimum parking and circulation area setback is 5 feet, except when a yard is adjacent to public streets or Residential or Manufacturing Park District, the minimum setback is 10 feet. No setback is required from lot lines within ingress and egress areas shared by abutting properties in accordance with TDC 73.400(2).

Applicant Response: The proposed parking is a minimum of 5 feet from all property lines and the site is surrounded by MG or MBP zones. The other items (corner lots, railroad spurs, wireless communication, etc.) in this code section do not apply to this project.

Staff finds that the minimum parking and circulation area setback standards are met. The proposed parking and circulation areas would be set back approximately 25 feet from SW Tualatin-Sherwood Road and approximately 35 feet from the SW Cimino Street extension. However, while these distances were interpreted from the submitted plans, these specific dimensions were not indicated on the plans.

Condition of Approval: The applicant shall revise site plan (Sheet C1.1) to include parking and circulation area setback dimensions from public streets pursuant to TDC 61.060(5).

(6) No spur rail trackage shall be permitted within 200 feet of an adjacent residential district.
(7) No setbacks are required at points where side or rear property lines abut a railroad right-of-way or spur track.
(8) No fence shall be constructed within 10 feet of a public right-of-way.
(9) Setbacks for a wireless communication facility shall be established through the Architectural Review process, shall consider TDC 73.510, shall be a minimum of 5 feet, and shall be set back from an RL District, or an RML District with an approved small lot subdivision, no less than 175 feet for a monopole that is no more than 35 feet in height and the setback shall increase five feet for each one foot increase in height up to 80 feet in height, and the setback shall increase 10 feet for each one foot increase in height above 80 feet.

Staff finds that above-referenced standards TDC 61.060(6), (7), (8), and (9) do not apply.

F. Structure Height

Section 61.080 Structure Height

(1) Except as provided in TDC 61.080(2) - (4), no structure shall exceed a height of 60 feet and flagpoles which display the flag of the United States of America either alone or with the State of Oregon flag shall not exceed 100 feet above grade provided that the setbacks are not less than a distance equal to the flagpole height.

Applicant Response: This proposed building is 42 feet high.

Staff finds that this standard is met as shown on Sheet A2.0 Exterior Elevations (dated July 28, 2017).

(2) The maximum permitted structure height in TDC 61.080(1) may be increased to no more than 100 feet, provided that all yards adjacent to the structure are not less than a distance equal to the height of the structure.

(3) Height Adjacent to a Residential District. Where a property line, street or alley separates MG land from land in a residential district, a building, flagpole or wireless communication support structure shall not be greater than 28 feet in height at the required 50-foot setback line. No building or structure, including flagpoles, shall extend above a plane beginning at 28 feet in height at the required 50 foot setback line and extending away from and above the setback line at a slope of 45 degrees, subject always to the maximum height limitation in TDC 61.080(1) and (2).

(4) Wireless Communication Support Structure. The maximum structure height for a wireless communication support structure and antennas is 100 feet unless the wireless communication support structure and antennas are located within 300 feet of the centerline of I-5, in which case the maximum structure height is 120 feet.

Staff finds that above-referenced standards TDC 61.080(2), (3), and (4) do not apply.

G. Development Review Approval

Section 73.050 Criteria and Standards

Staff finds that the applicant's narrative does not address TDC 73.050—Criteria and Standards.

(1) In exercising or performing his or her powers, duties, or functions, the Planning Director shall determine whether there is compliance with the following:

(a) The proposed site development, including the site plan, architecture, landscaping, parking and graphic design, is in conformance with the standards of this and other applicable City ordinances insofar as the location, height, and appearance of the proposed development are involved;

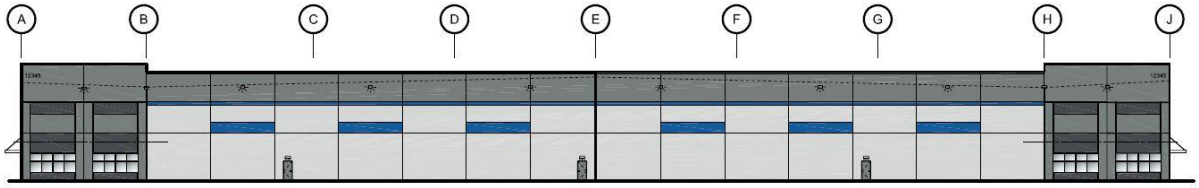
(b) The proposed design of the development is compatible with the design of other developments in the general vicinity; and

(c) The location, design, size, color and materials of the exterior of all structures are compatible with the proposed development and appropriate to the design character of other developments in the vicinity.

Staff finds that the proposed development would be consistent with existing and similarly developed industrial uses in the immediate vicinity, most notably the Itel Corporate Center at 12310-12370 SW Cimino Street immediately adjacent to the west. While the remaining properties in the immediate vicinity include a mix of undeveloped parcels, farmland, and a smattering of single-family homes, the wider area is mapped with General Manufacturing (MG) and Manufacturing Business Park (MBP) planning districts with the expectation that these areas would eventually redevelop into manufacturing uses similar to those proposed on the subject site. These standards are met.

The proposed building is composed of tilt-up concrete panels and anchored with corner elements, industrial-style canopies, and clear aluminum storefront windows. The proposed building shares a number of design elements with the Itel Corporate Center to the west, including: a second set of windows near the building corners—giving the appearance of a second interior floor; loading docks oriented away from public right-of-ways; and the use of color and accents to minimize building massing.

Typical Partial East-/West-Facing Elevation at each of the proposed building's four corners



South Elevation of the proposed building, facing SW Tualatin-Sherwood Road

Staff notes that the proposal is similar to the Itel Corporate Center to the west, as shown in photos of this development's northwest (left photo) and southwest (right photo) corners.

(2) In making his or her determination of compliance with the above requirements, the Planning Director shall be guided by the objectives and standards set forth in this chapter. If the architectural review plan includes utility facilities or public utility facilities, then the City Engineer shall determine whether those aspects of the proposed plan comply with applicable standards.

Staff notes that the proposed development would include utility facilities and/or public utility facilities. These facilities are reviewed by the City of Tualatin Engineering Division and the applicant shall comply with the incorporated Public Facilities Recommendation (PFR) from the Engineering Division.

(3) In determining compliance with the requirements set forth, the Planning Director shall consider the effect of his or her action on the availability and cost of needed housing types. However, consideration of these factors shall not prevent the Community Development Director from imposing conditions of approval necessary to meet the requirements of this section. The costs of such conditions shall not unduly increase the cost of housing beyond the minimum necessary to achieve the purposes of this Code. As part of the Architectural Review process, the Community Development Director has no authority to reduce dwelling unit densities.

The project site is located in the General Manufacturing (MG) Planning District and designed as an Industrial Area (IA) by Metro and therefore unsuitable for housing; this standard does not apply.

(4) As part of Architectural Review, the property owner may apply for approval to cut trees in addition to those allowed in TDC 34.200. The granting or denial of a tree cutting permit shall be based on the criteria in TDC 34.230.

Staff notes that the proposed development would result in the removal of 27 existing trees on the project site as illustrated on Sheet TP1.0, Tree Protection Plan. Tree preservation and removal standards are discussed in the responses to TDC 34.210 and TDC 73.250 below. Staff notes that a tree inventory was conducted by City Wide Tree Service, Inc. on July 7, 2017, and this inventory was included as part of the submitted application materials. Staff finds that this standard is met.

(5) Conflicting Standards. In addition to the MUCOD requirements, the requirements in TDC Chapter 73 (Community Design Standards) and other applicable Chapters apply. If TDC Chapters 57, 73 and other applicable Chapters, conflict or are different, they shall be resolved in accordance with TDC 57.200(2).

As the subject site is not within the Mixed Use Commercial Overlay District (MUCOD), staff finds that this standard does not apply.

H. Landscape and Building Maintenance

<u>Section 73.100 Landscaping and Building Installation and Maintenance</u>

(1) All landscaping approved through the Architectural Review Process shall be continually maintained, including necessary watering, weeding, pruning and replacement, in a manner substantially similar to that originally approved through the Architectural Review Process, unless subsequently altered with Community Development Director approval.

A note has also been added to this decision to retain all trees identified on the landscape plan (sheets L1.0, L2.0, and L3.0, dated June 2017) unless approval is obtained through the Community Development Department to remove trees through a modification to the landscape plan.

(2) All building exterior improvements approved through the Architectural Review Process shall be continually maintained including necessary painting and repair so as to remain substantially

similar to original approval through the Architectural Review Process, unless subsequently altered with Community Development Director approval.

A note has been added to this decision to meet the standard.

I. Site Planning

Section 73.160 Standards (Community Design)

(1) Pedestrian and Bicycle Circulation:

(a) For commercial, public and semi-public uses:

The proposal is for an industrial use; therefore, staff finds that this standard does not apply.

(b) For Industrial Uses:

(i) a walkway shall be provided from the main building entrance to sidewalks in the public right-of-way and other on-site buildings and accessways. The walkway shall be a minimum of 5 feet wide and constructed of concrete, asphalt, or a pervious surface such as pavers or grasscrete, but not gravel or woody material, and be ADA compliant, if applicable.

Applicant Response: We have included an 8-foot-wide bicycle and pedestrian accessway from the entry to both streets (Cimino Street on the north and Tualatin/Sherwood Road on the south).

Staff notes walkways connecting to sidewalks along SW Tualatin-Sherwood Road and Cimino Street. However, the submitted site plans do not include any information on walkway characteristics, including width, materials, and ADA compliance. Staff recommends a condition of approval to meet this standard.

Condition of Approval: The applicant shall revise the appropriate sheets to provide information pedestrian and bicycle accessways on the project site, including at minimum accessway width, surface materials, and ADA compliance pursuant to TDC 73.160(1)(b)(i).

(ii) Walkways through parking areas, drive aisles and loading areas shall have a different appearance than the adjacent paved vehicular areas.

Staff notes two marked crosswalks on the project site—one in the northern portion and the other in the southeast corner—and identified as such in Keynote 10 on Sheet C1.1 Site Plan (dated July 28, 2017); therefore, staff finds this standard is met.

(iii) Accessways shall be provided as a connection between the development's walkway and bikeway circulation system and an adjacent bike lane;

Staff notes that there is an existing westbound bike lane within SW Tualatin-Sherwood Road adjacent to the project site, and Sheet C1.1, Site Plan (dated July 28, 2017), illustrates a direct connection between this right-of-way and proposed development's walkway and bikeway system. However, as noted in the response to TDC 73.160(1)(b)(i) above, the submitted site plans do not include any information on walkway characteristics, including width, materials, and ADA compliance. Staff recommends a condition of approval to meet this standard.

Staff notes that there are no marked bike lanes along SW Cimino Street.

Condition of Approval: The applicant shall revise the appropriate sheets to provide information pedestrian and bicycle accessways on the project site, including at minimum accessway width, surface materials, and ADA compliance pursuant to TDC 73.160(1)(b)(iii).

(iv) Accessways may be gated for security purposes;

As no accessway gates are proposed, staff finds that this standard does not apply.

(v) Outdoor Recreation Access Routes shall be provided between the development's walkway and bikeway circulation system and parks, bikeways and greenways where a bike or pedestrian path is designated.

As there are no parks, bikeways, or greenways adjacent to the project site, staff finds that this standard does not apply. Staff notes that there is an existing westbound bike lane within SW Tualatin-Sherwood Road adjacent to the project site; connection to this amenity is discussed in TDC 73.160(1)(b)(iii) above.

(c) Curb ramps shall be provided wherever a walkway or accessway crosses a curb.

Staff finds that this standard is met as shown in Sheet C1.1 Site Plan and C5.0 Site Details (both dated July 28, 2017).

(d) Accessways shall be a minimum of 8 feet wide and constructed in accordance with the Public Works Construction Code if they are public accessways, and if they are private accessways they shall be constructed of asphalt, concrete or a pervious surface such as pervious asphalt or concrete, pavers or grasscrete, but not gravel or woody material, and be ADA compliant, if applicable.

As established in TDC 73.160(1)(b)(iii), an accessway is required for the subject site. While a public accessway is not required, the private accessway is required to be a minimum of 8 feet wide to meet the criterion. Staff recommends a condition of approval to meet the standard.

Condition of Approval: The applicant shall revise the appropriate sheets to provide information pertaining to pedestrian and bicycle accessways on the project site, including at minimum accessway width, surface materials, and ADA compliance pursuant to TDC 73.160(1)(d).

(e) Accessways to undeveloped parcels or undeveloped transit facilities need not be constructed at the time the subject property is developed. In such cases the applicant for development of a parcel adjacent to an undeveloped parcel shall enter into a written agreement with the City guaranteeing future performance by the applicant and any successors in interest of the property being developed to construct an accessway when the adjacent undeveloped parcel is developed. The agreement shall be subject to the City's review and approval.

As there are no undeveloped parcels or undeveloped transit facilities on or immediately adjacent to the project site, staff finds that this standard does not apply.

(f) Where a bridge or culvert would be necessary to span a designated greenway or wetland to provide a connection to a bike or pedestrian path, the City may limit the number and location of accessways to reduce the impact on the greenway or wetland.

As confirmed by a wetland report submitted with this application, there are no wetlands or greenways on the subject site; and while there is a large wetland area north of the subject site, this wetland is located greater than 200 feet to the north and does not bisect any existing or proposed bike or pedestrian pathways. Thus, staff finds that this standard does not apply.

(g) Accessways shall be constructed, owned and maintained by the property owner.

A note has been added to this decision to meet the standard.

(2) Drive-up Uses

(a) Drive-up uses shall provide a minimum stacking area clear of the public right-of-way and parking lot aisles from the window serving the vehicles as follows:

(i) Banks--each lane shall pro-vide a minimum capacity for five automobiles.

(ii) Restaurants--each lane shall provide a minimum capacity for eight automobiles.

(iii) Other Drive-Up Uses--each lane shall provide a minimum capacity for two to eight automobiles, as determined through the architectural review process.

(iv) For purposes of this Section, an automobile shall be considered no less than twenty feet in length. The width and turning radius of drive-up aisles shall be approved through the architectural review process.

(b) Parking maneuvers shall not occur in the stacking area. The stacking area shall not interfere with safe and efficient access to other parking areas on the property.

(c) Locate drive-up aisles and windows a minimum of 50 feet from residential planning districts to avoid adverse impacts. A wall or other visual or acoustic may be required through the architectural review process.

As no drive-up uses are proposed, staff finds that this standard does not apply.

(3) Safety and Security

(a) Locate windows and provide lighting in a manner which enables tenants, employees and police to watch over pedestrian, parking and loading areas.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan and Sheet A2.0 Exterior Elevations (both dated July 28, 2017). Staff notes that the proposed building design would include windows at each of the building's four corners to allow surveillance of pedestrian, parking, and loading areas on the project site. In addition, the proposed development would include lighting along all building façades and in the parking, loading, and circulation areas.

(b) In commercial, public and semi-public development and where possible in industrial development, locate windows and provide lighting in a manner which enables surveillance of interior activity from the public right-of-way.

Staff finds that this standard is met per window and lighting placement as shown on Sheet C1.1 Site Plan and Sheet A2.0 Exterior Elevations (both dated July 28, 2017).

(c) Locate, orient and select on-site lighting to facilitate surveillance of on-site activities from the public right-of-way without shining into public rights-of-way or fish and wildlife habitat areas.

Staff finds that this standard is met as shown on Sheet LT1.0 Site Lighting Plan (dated July 28, 2017). However, staff recommends a condition of approval to install the lighting as proposed to ensure that lighting will not affect identified wetland areas north of the subject site.

Condition of Approval: The applicant shall install lighting as shown on the site lighting plan (Sheet LT1.07) to ensure that the proposed development will not result in excess lighting and will continue to meet the lighting standards of TDC 73.160(3)(c).

(d) Provide an identification system which clearly locates buildings and their entries for patrons and emergency services.

Staff finds that this standard is met as the locations for building addresses are shown on Sheet A2.0 Exterior Elevations (both dated July 28, 2017). Staff notes that the building design clearly accentuates building entrances at each of its four corners.

All signage permits and approvals are handled separately and not as part of this review. Staff also notes that provisions for emergency services are reviewed through the building permit process. Refer to comments from Tualatin Valley Fire & Rescue (TVF&R) in Attachment 102.

(e) Shrubs in parking areas must not exceed 30 inches in height. Tree canopies must not extend below 8 feet measured from grade.

Staff finds that this standard is met as shown on Sheets L1.0, L2.0, and L3.0 (the landscape plan and landscape details and specifications, all dated July 28, 2017).

(f) Above ground sewer or water pumping stations, pressure reading stations, water reservoirs, electrical substations, and above ground natural gas pumping stations shall provide a minimum 6' tall security fence or wall.

As none of the above-mentioned improvements is proposed, staff finds that this standard does not apply.

(4) Service, Delivery and Screening

(a) On and above grade electrical and mechanical equipment such as transformers, heat pumps and air conditioners shall be screened with sight obscuring fences, walls or landscaping.

Staff finds that this standard is met. The site plan (Sheet C1.1 Site Plan, dated July 28, 2017) illustrates a transformer pad north of the proposed building, and the landscape plan (Sheet L1.0 Landscape Plan, dated July 28, 2017) shows that this facility would be screened using a combination of medium to large shrubs.

Condition of Approval: The applicant shall submit scaled elevations that illustrate future above-grade mechanical equipment, including rooftop units, screened by a parapet or other method as proposed by the applicant when submitting for a mechanical permit, pursuant to TDC 73.160(4)(a).

(b) Outdoor storage, excluding mixed solid waste and source separated recyclables storage areas listed under TDC 73.227, shall be screened with a sight obscuring fence, wall, berm or dense evergreen landscaping.

As none of the above-mentioned elements is proposed, staff finds that this standard does not apply. However, if future tenants desire outdoor storage, such facilities must obtain Planning Division approval for appropriate screening mechanisms.

(c) Above ground pumping stations, pressure reading stations, water reservoirs; electrical substations, and above ground natural gas pumping stations shall be screened with sight-obscuring fences or walls and landscaping.

As none of the above-mentioned elements is proposed, staff finds that this standard does not apply. However, should conditions change in the future and any of the above-referenced elements are necessary, the applicant shall submit revised plans for approval of appropriate screening mechanisms.

(5) The Federal Americans with Disabilities Act (ADA) applies to development in the City of Tualatin. Although TDC, Chapter 73 does not include the Oregon Structural Specialty Code's (OSSC) accessibility standards as requirements to be reviewed during the Architectural Review process, compliance with the OSSC is a requirement at the Building Permit step. It is strongly recommended all materials submitted for Architectural Review show compliance with the OSSC.

Applicant Response: This project is subject to the 2014 OSSC and the ADA code requirements and has been designed to comply with both.

Staff notes that the proposed development will include six (6) ADA-compliant parking spaces as shown on Sheet C1.1 Site Plan and C5.0 Site Details (both dated July 28, 2017). However, as discussed in the responses to TDC 73.160(1)(b) and 73.160(1)(d) above, the submitted site plans do not include any information on ADA-compliance of walkways and accessways and staff has recommended this

information be provided as a condition of approval. Staff also notes that ADA and OSSC standards must be met during the building permit process.

(6) (a) All industrial, institutional, retail and office development on a transit street designated in TDC Chapter 11 (Figure 11-5) shall provide either a transit stop pad on-site, or an on-site or public sidewalk connection to a transit stop along the subject property's frontage on the transit street.

Applicant Response: SW Tualatin-Sherwood Road has a transit stop approximately ¼-mile east of the site. We have included a sidewalk connection from the building entry to the sidewalk along T/S Road that leads to this transit stop.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017). Staff notes that SW Tualatin-Sherwood Road is classified as a transit street on Figure 11-5, with the nearest transit stops for the recently-implemented commuter hour bus service (Bus Line 97) along SW Tualatin-Sherwood Road with scheduled bus stops at the SW 124th Avenue intersection (Stop ID 13832 and 13841). The proposed development would include a sidewalk connection from the building's southeast corner to the SW Tualatin-Sherwood Road sidewalk that leads to both aforementioned bus stops, the nearest of which is only 200 feet west of the subject site (Stop ID 13832). While the proposed sidewalk connection meets the standard, staff notes that a sidewalk connection at the building's southwest corner (as opposed to the proposed connection at the building's southeast corner) might be more appropriate as it is closer to the nearest transit stop and SW 124th Avenue.

(b) In addition to (a) above, new retail, office and institutional uses abutting major transit stops as designated in TDC Chapter 11 (Figure 11-5) shall:
- **(i) locate any portion of a building within 20 feet of the major transit stop or provide a pedestrian plaza at the transit stop;**
- **(ii) provide a reasonably direct pedestrian connection between the major transit stop and a building entrance on the site;**
- **(iii) provide a transit passenger landing pad accessible to disabled persons;**
- **(iv) provide an easement or dedication for a passenger shelter as determined by the City; and**
- **(v) provide lighting at the major transit stop.**

As the project site is not adjacent to a major transit stop, staff finds that these standards do not apply.

Section 61.075 Sound Barrier Construction.

(1) Sound barrier construction shall be used to intercept all straight-line lateral paths of 450 feet or less between a residential property within a residential planning district and any side edge of an overhead door or other doorway larger than 64 square feet, at a minimum height of eight feet above the floor elevation of the doorway.

(2) Sound barrier construction shall be used to intercept all straight-line lateral paths of 450 feet or less between a residential property within a residential planning district and any building mechanical device at a minimum height equal to the height of the mechanical object to be screened.

(3) Sound barrier construction shall consist of masonry walls or earth berms located so as to reflect sound away from, rather than toward, noise sensitive properties. This may include masonry "wing walls" attached to a building, detached masonry walls (such as at the perimeter of the site), earth berms, or combinations of the three.

(4) Wing walls must be at least as tall as the tallest overhead door they are designed to screen at the point where they meet the building. The height of the wall may be reduced along a

maximum incline formed by a horizontal distance twice the vertical change in height, or 26.5 degrees from horizontal.

(5) "Straight-line lateral path" shall mean a direct line between two points as measured on a site plan. "Wing wall" shall mean a wall that is attached to a building on one side and meets the screening requirements of (1) and (2) of this section. "Building mechanical device" shall include, but is not necessarily limited to, heating, cooling and ventilation equipment, compressors, waste evacuation systems, electrical transformers, and other motorized or powered machinery located on the exterior of a building.

(6) Where existing structures (on or off site) are located such that they will reflect sound away from residential areas and will function as a sound barrier, on-site sound barrier construction shall not be required, except that at the time such structures are removed, sound barrier construction shall be required.

(7) New construction, including additions or changes to existing facilities, shall comply with the provisions of this section. When additions or changes to existing facilities are proposed, existing structures on the property may be required to comply with the provisions of this section, as determined through the Architectural Review process. Where buildings or outdoor use areas located on more than one parcel are all part of a single use as determined through the Architectural Review process, all of the parcels may be required to comply with the provisions of this section.

Applicant Response: This project is not located near a residential zone. It is surrounded by MG or MBP Zones.

As there are no residential planning districts within 450 feet of the project site (the nearest residential district [RL] and residential area [Hedges Park] are greater than 3,500 feet to the south and east of the project site), staff finds that these standards do not apply.

Staff notes that the residential property at 12075 SW Tualatin-Sherwood Road containing the Wager House is adjacent to the project site; however, it is located in the General Manufacturing (MG) planning district and therefore TDC 61.075 does not apply.

J. Structure Design

Section 73.220 Standards

The following standards are minimum requirements for commercial, industrial, public and semi-public development and it is expected that development proposals shall meet or exceed these minimum requirements.

(1) Safety and Security

(a) Locate, orient and select on-site lighting to facilitate surveillance of on-site activities from the public right-of-way or other public areas without shining into public rights-of-way or fish and wildlife habitat areas.

Applicant Response: The site plan indicates several site lights (along with building lights) that will provide good lighting of the parking lot and is open to good view from both streets. These lights will be shielded to prevent light from spilling over to the public way or neighbors.

Staff addressed this standard in TDC 73.160(3)(c).

(b) Provide an identification system which clearly identifies and locates buildings and their entries.

Applicant Response: The project will be visible from both streets and will have the address located in several places on the building to provide good clear identification of the building.

Staff addressed this standard in TDC 73.160(3)(d).

(c) Shrubs in parking areas shall not exceed 30 inches in height, and tree canopies must not extend below 8 feet measured from grade, except for parking structures and underground parking where this provision shall not apply.

Applicant Response: The landscape plan has been designed to meet the intent of this requirement for shrubs and tree canopies, but the owner will hire a landscape maintenance company that will have a responsibility to maintain these clearances.

Staff addressed this standard in TDC 73.160(3)(e).

K. Environmental Regulations

Section 63.051 Noise.

Staff finds that the applicant's narrative does not address TDC 63.051—Noise.

(1) Except as otherwise provided in this section, all industrial development shall comply with the Oregon State Department of Environmental Quality standards relating to noise. From 9:00 p.m. to 7:00 a.m., a dBA reading from an industrial development, whether new or existing, shall not exceed an L-max of 60 dBA when measured from a noise sensitive property.

(2) Method of measurement: sound or noise measurements procedures shall conform to the methods described in this section or to procedures approved by the Oregon Department of Environmental Quality.

(a) Measurements shall be made with a calibrated sound level meter in good operating condition, meeting the requirements of a Type I or Type II meter, as specified in ANSI Standards, Section 1.4 - 1971. For purposes of this section, a sound level meter shall contain at least an "A" weighting network, and both fast and slow response capability.

(b) Persons conducting sound level measurements shall have received training in the techniques of sound measurement and the operation of sound measuring instruments from the Department of Environ-mental Quality or other competent body prior to engaging in any enforcement activity.

(c) When sound measurements are made, they shall be made from a position no more than 25 feet away from the noise sensitive property.

Staff finds that these regulations are matters of zoning enforcement, and less matters to be reviewed as development standards. As such, as a condition of approval, the proposed development must comply with all applicable noise standards (see "The Following Code Requirements Apply to the Site in an On-Going Manner" section under "Conditions of Approval" below).

L. Mixed Solid Waste and Source Separated Recyclables Storage Areas

Section 73.227 Standards

Staff finds that the applicant's narrative does not address TDC 73.227—Standards (Mixed Solid Waste and Source Separated Recyclables Storage Areas).

The following standards are minimum requirements for mixed solid waste and source separated recyclables storage areas. To provide for flexibility in designing functional storage areas, this section provides four different methods to meet the objectives of providing adequate storage for mixed solid waste and source separated recyclables and improving the efficiency of collection. An applicant shall choose and implement one of the following four methods to demonstrate compliance: 1) minimum

standards; 2) waste assessment; 3) comprehensive recycling plan; or 4) franchised hauler review, as more fully described in subsections (2), (3), (4) and (5) of this section.

(1) The mixed solid waste and source separated recyclables storage standards shall apply to all new or expanded multi-family residential developments containing five or more units and to new or expanded commercial, industrial, public and semi-public development.

Staff finds that the proposed project is a new industrial development; as such, these standards apply and are addressed below.

(2) Minimum Standards Method.

Staff has employed the minimum standards method below to determine compliance with code standards related to solid waste and recyclables storage areas as the applicant did not address this entire section.

(a) The size and location of the storage area(s) shall be indicated on the site plan. Compliance with the requirements set forth below is reviewed through the Architectural Review process.

(i) The storage area requirement is based on the area encompassed by predominant use(s) of the building (e.g., residential, office, retail, wholesale/warehouse/ manufacturing, educational/institutional or other) as well as the area encompassed by other distinct uses. If a building has more than one use and that use occupies 20 percent or less of the gross leasable area (GLA) of the building, the GLA occupied by that use shall be counted toward the floor area of the predominant use(s). If a building has more than one use and that use occupies more than 20 percent of the GLA of the building, then the storage area requirement for the whole building shall be the sum of the area of each use.

Staff notes that while no tenants are proposed at this time, the applicant has identified a probable mix of 60 percent warehouse, 25 percent manufacturing, and 15 percent office within the proposed building. The minimum storage area required for the proposed developed is calculated below in Section 73.227(2)(a)(v).

(ii) Storage areas for multiple uses on a single site may be combined and shared.

All proposed uses will be located within one building, intended to house up to four (4) tenants. The site plan illustrates four (4) trash/recycling enclosures, one near each corner of the project site. Staff finds that this standard is met.

(iii) The specific requirements are based on an assumed storage area height of 4 feet for mixed solid waste and source separated recyclables. Vertical storage higher than 4 feet, but no higher than 7 feet may be used to accommodate the same volume of storage in a reduced floor space (potential reduction of 43 percent of specific requirements). Where vertical or stacked storage is proposed, submitted plans shall include drawings to illustrate the layout of the storage area and dimensions for containers.

No stacked or vertical storage is proposed; therefore, staff finds that this standard does not apply.

(iv) Multi-family residential developments containing 5-10 units shall provide a minimum storage area of 50 square feet. Multi-family residential developments containing more than 10 units shall provide 50 square feet plus an additional 5 square feet per unit for each unit above 10.

The proposed project does not include any multi-family residential development; therefore, staff finds that this standard does not apply.

(v) Commercial, industrial, public and semi-public developments shall provide a minimum storage area of 10 square feet plus: Office - 4 square feet/1000 square feet gross leasable area (GLA); Retail - 10 square feet/1000 square feet GLA; Wholesale/ Warehouse/ Manufacturing - 6 square feet/1000 square feet GLA; Educational and institutional - 4 square feet/1000 square feet GLA; and other - 4 square feet/1000 square feet GLA.

Staff has calculated the minimum storage area required based on the probable mix of 60 percent warehouse, 25 percent manufacturing, and 15 percent office within the proposed building, yielding a minimum requirement of 907 square feet of storage area. As illustrated and described on Sheet C1.1 Site Plan and Sheet C5.1 Site Details (both dated July 28, 2017), the proposed development will include four (4) 209-square-foot trash and recycling enclosures—totaling 836 square feet—which is less than the minimum requirement. Staff recommends a condition of approval to meet the minimum storage area standards.

Condition of Approval: The applicant shall revise the appropriate sheets to illustrate a minimum storage area of 907 square feet is provided for mixed solid waste and recyclables and install to revised plans pursuant to TDC 73.227(2)(v).

Table I-1. Trash Enclosure Requirements

Use (within Building)	Use Percentage	Area (sf)	Applied Rate (sf)	Minimum Required (ft)
Warehouse	60%	94,340	([94,340/ 1,000]*6)	566
Manufacturing	25%	39,310	([39,310/ 1,000]*6)	236
Office	15%	23,580	([23,580/ 1,000]*4)	95
General	N/A	N/A	N/A	10
Total Minimum Requirement				**907**
Proposed Trash and Recyclables Storage Area				**836**

(6) Location, Design and Access Standards for Storage Areas.

(a) Location Standards

(i) To encourage its use, the storage area for source separated recyclables may be co-located with the storage area for mixed solid waste.

Staff finds this standard is met as shown Sheet C5.1 Site Details (dated July 28, 2017). Staff notes that the proposed storage areas would include two (2) garbage dumpsters and one (1) recycling container. Staff also notes that the current development proposal does not meet minimum mixed solid waste and recyclables storage area requirements as discussed in TDC 73.227(2)(v) above.

(ii) Indoor and outdoor storage areas shall comply with Building and Fire Code requirements.

Staff notes that Building and Fire Codes are administrated by others.

(iii) Storage area space requirements can be satisfied with a single location or multiple locations, and can combine both interior and exterior locations.

Staff finds that Sheet C1.1 Site Plan (dated July 28, 2017) illustrates four (4) exterior trash/recycling enclosures, one near each corner of the project site; no interior storage areas have been identified in the application materials. Staff finds that this standard is met.

Staff notes that the current development proposal does not meet minimum mixed solid waste and recyclables storage area requirements as discussed in TDC 73.227(2)(v) above.

(iv) Exterior storage areas shall not be located within a required front yard setback or in a yard adjacent to a public or private street.

Staff finds that the standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017).

(v) Exterior storage areas shall be located in central and visible locations on the site to enhance security for users.

Staff finds that the standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017). Staff notes that while the exterior storage areas are not centrally located, these facilities are located at highly visible locations near each of the proposed building's four corners.

(vi) Exterior storage areas can be located in a parking area, if the proposed use provides parking spaces required through the Architectural Review process. Storage areas shall be appropriately screened according to TDC 73.227(6)(b)(iii).

Staff finds that the proposed storage areas are located in the parking area and will be screened by concrete wall panels, metal panel gates, and landscaping elements, as shown on Sheet C1.1 Site Plan and Sheets L1.0 and L2.0 Landscape Plan (all dated July 28, 2017). This standard is met.

(vii) Storage areas shall be accessible for collection vehicles and located so that the storage area will not obstruct pedestrian or vehicle traffic movement on site or on public streets adjacent to the site.

Staff finds that the proposed storage area will not obstruct pedestrian or vehicle traffic movement as shown on Sheet C1.1 Site Plan (dated July 28, 2017). In addition, a July 13, 2017 letter from Republic Services, the trash hauler for the proposed development, states that Republic Services would be able to service the storage areas as proposed. However, as discussed and conditioned in TDC 73.227(2)(v) above, the current development proposal does not meet minimum mixed solid waste and recyclables storage area requirements and will therefore need to be modified to satisfy TDC standards. As such, these modifications would need to be reviewed and approved by Republic Services to meet this standard.

Condition of Approval: The applicant shall vet the modified mixed solid waste and recyclables storage areas with Republic Services to ensure these areas are accessible for collection vehicles pursuant to TDC 73.227(6)(a)(vii).

(b) Design Standards

(i) The dimensions of the storage area shall accommodate containers consistent with current methods of local collection at the time of Architectural Review approval.

As discussed in TDC 73.227(2)(v) above, the current development proposal does not meet minimum mixed solid waste and recyclables storage area requirements, which may require modifications to meet those standards. Any modifications as a result would need to be reviewed and approved by Republic Services to meet 73.227(6)(b)(i) standards.

Condition of Approval: The applicant shall vet the modified mixed solid waste and recyclables storage areas with Republic Services by providing a new signed letter from Republic Services based on the modified storage areas to ensure these areas can accommodate Republic Services collection containers pursuant to TDC 73.227(6)(b)(i).

(ii) Storage containers shall meet Fire Code standards and be made and covered with water proof materials or situated in a covered area.

Staff notes that Fire Codes are administrated by others.

(iii) Exterior storage areas shall be enclosed by a sight obscuring fence or wall at least 6 feet in height. In multi-family, commercial, public and semi-public developments evergreen plants shall be placed around the enclosure walls, excluding the gate or entrance openings. Gate openings for haulers shall be a minimum of 10 feet wide and shall be capable of being secured in a closed and open position. A separate pedestrian access shall also be provided in multi-family, commercial, public and semi-public developments.

Staff finds that the standard is met as shown on Sheet C5.1 Site Details (dated July 28, 2017).

(iv) Exterior storage areas shall have either a concrete or asphalt floor surface.

Staff finds that the standard is met as shown on Sheet C5.1 Site Details (dated July 28, 2017).

(v) Storage areas and containers shall be clearly labeled to indicate the type of material accepted.

Staff notes that clearly labeled trash and recyclable storage containers will be provided by Republic Services, the trash hauler for the proposed development; therefore, staff finds that this standard is met.

(c) Access Standards

(i) Access to storage areas can be limited for security reasons. However, the storage areas shall be accessible to users at convenient times of the day, and to hauler personnel on the day and approximate time they are scheduled to provide hauler service.

Staff finds that this standard is met pursuant to a July 13, 2017 letter from Republic Services, the trash hauler for the proposed development, which states that Republic Services would be able to service the storage areas as proposed.

(ii) Storage areas shall be designed to be easily accessible to hauler trucks and equipment, considering paving, grade, gate clearance and vehicle access. A minimum of 10 feet horizontal clearance and 8 feet vertical clearance is required if the storage area is covered.

Staff finds that the accessibility requirements of trash enclosures have been previously addressed, most recently in 73.227(6)(a)(vii) above. As the proposed trash enclosures would not be covered, the minimum horizontal and vertical clearances do not apply.

(iii) Storage areas shall be accessible to collection vehicles without requiring backing out of a driveway onto a public street. If only a single access point is available to the storage area, adequate turning radius shall be provided to allow vehicles to safely exit the site in a forward motion.

Staff finds that the standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017).

M. Landscaping

Section 73.240 Landscaping General Provisions

(1) The following standards are minimum requirements.

(2) The minimum area requirement for landscaping for conditional uses for RL, RML, RMH, RH and RH/HR Planning Districts, listed in TDC 40.030, 41.030, 42.030, 43.030 and 44.030, excluding 40.030(3), 40.030 (4)(j), 40.030 (4)(m), 40.030 (4)(n) and 41.030(2) shall be twenty-five (25) percent of the total area to be developed. When a dedication is granted in accordance with the planning district provisions on the subject property for a fish and wildlife habitat area, the minimum area requirement for landscaping shall be twenty (20) percent of the total area to be developed as determined through the AR process.

As the project site is not located in any of the planning districts mentioned above, staff finds that this standard does not apply.

(3) The minimum area requirement for landscaping for uses in CO, CR, CC, CG, ML and MG Planning Districts shall be fifteen (15) percent of the total land area to be developed, except within the Core Area Parking District, where the minimum area requirement for landscaping shall be 10 percent. When a dedication is granted in accordance with the planning district provisions on the subject property for a fish and wildlife habitat area, the minimum area requirement for landscaping may be reduced by 2.5 percent from the minimum area requirement as determined through the AR process.

Applicant Response: The site is designed with 16% landscaping.

Staff notes that the proposal is located in the MG planning district. Sheet C1.1 (dated July 28, 2017) states that 63,595 square feet or 16.5% of landscaping is proposed, which meets the standard.

(4) The minimum area requirement for landscaping for uses in IN, CN, CO/MR, MC and MP Planning Districts shall be twenty-five (25) percent of the total land area to be developed. When a dedication is granted in accordance with the planning district provisions on the subject property for a fish and wildlife habitat area, the minimum area requirement for landscaping may be reduced by 2.5 percent from the minimum area requirement as determined through the AR process.

As the project site is not located in any of the planning districts mentioned above, staff finds that this standard does not apply.

(5) The minimum area requirement for landscaping for uses in the Industrial Business Park Overlay Planning District and the Manufacturing Business Park Planning District shall be twenty (20) percent of the total land area to be developed.

As the project site is not located in either of the planning districts mentioned above, staff finds that this standard does not apply.

(6) The minimum area requirement for landscaping for approved Industrial Master Plans shall be 20% of the total land area to be developed.

As the project site is not located in an approved Industrial Master Plan, staff finds that this standard does not apply.

(7) For properties within the Hedges Creek Wetland Protection District which have signed the "Wetlands Mitigation Agreement", the improved or unimproved wetland buffer area may reduce the required landscaping to 12.5 percent as long as all other landscape requirements are met.

As the project site is not located within the Hedges Creek Wetland Protection District, staff finds that this standard does not apply.

(8) Developments not in a Low Density Residential (RL) or Manufacturing Park (MP) Planning District, but which abut an RL or MP Planning District shall provide and perpetually maintain dense, evergreen landscaped buffers between allowed uses in the district and the adjacent Low Density Residential (RL) or Manufacturing Park (MP) Planning District as approved through the Architectural Review process.

As the project site is not located in either of the planning districts mentioned above, staff finds that this standard does not apply.

(9) Yards adjacent to public streets, except as described in the Hedges Creek Wetlands Mitigation Agreement, TDC 73.240(7), shall be planted to lawn or live groundcover and trees and shrubs and be perpetually maintained in a manner providing a park-like character to the property as approved through the Architectural Review process.

Applicant Response: The site landscape plan indicates the areas along both streets are fully landscaped with a variety of lawn, ground cover, shrubs and trees. These areas will be irrigated and maintained.

Staff finds that this standard is met as shown on Sheets L1.0 and L2.0 Landscape Plan (both dated July 28, 2017).

(10) Yards not adjacent to public streets or Low Density Residential (RL) or Manufacturing Park (MP) Planning Districts shall be planted with trees, shrubs, grass or other live groundcover, and maintained consistent with a landscape plan indicating areas of future expansion, as approved through the Architectural Review process.

Staff finds that this standard is met as shown on Sheets L1.0 and L2.0 Landscape Plan (both dated July 28, 2017).

(11) Any required landscaped area shall be designed, constructed, installed, and maintained so that within three years the ground shall be covered by living grass or other plant materials. (The foliage crown of trees shall not be used to meet this requirement.) A maximum of 10% of the landscaped area may be covered with un-vegetated areas of bark chips, rock or stone. Disturbed soils are encouraged to be amended to an original or higher level of porosity to regain infiltration and stormwater storage capacity.

Applicant Response: The site landscape plan indicates that all areas on the site that are not covered with asphalt paving are to be landscaped and irrigated. The landscaping will be maintained to provide good standing and maturity of plants at the three-year timeline.

Staff finds that this standard is met as shown on Sheets L1.0 and L2.0 Landscape Plan (both dated July 28, 2017).

(12) In the MP District, wetland buffer areas up to 50 feet in width may be counted toward the required percentage of site landscaping, subject to the following:

- **(a) The amount of wetland buffer area which may be counted as landscaping is limited to a maximum of two and one-half percent (2.5 percent) of the total land area to be developed.**
- **(b) All portions of the required buffer area to be counted as landscape shall be within the boundaries of the subject property. No credit may be claimed for wetland buffer areas lying outside the lot lines of the subject parcel.**

(c) Where wetlands mitigation in the buffer has not yet occurred at the time of development, the developer shall perform, or bear the cost of, all necessary mitigation work in the course of site development, in accordance with a Removal/Fill Permit or permits issued by the Oregon Division of State Lands and the US Army Corps of Engineers and the Unified Sewerage Agency.

(d) Where wetlands mitigation in the buffer has already been performed in accordance with a Removal/Fill Permit or permits issued by the Oregon Division of State Lands and the US Army Corps of Engineers, the developer shall include an enhanced mitigation plan approved by the Oregon Division of State Lands and the Unified Sewerage Agency as part of the Architectural Review submittal. The developer shall complete all work required by the enhanced wetland mitigation plan in conjunction with development of the site.

As the project site is not located in the MP planning district, staff finds that this standard does not apply.

(13) Landscape plans for required landscaped areas that include fences should carefully integrate any fencing into the plan to guide wild animals toward animal crossings under, over, or around transportation corridors.

There are no fences proposed with this development; therefore, staff finds that this standard does not apply.

73.260 Tree and Plant Specifications

(1) The following specifications are minimum standards for trees and plants:

(a) Deciduous Trees. Deciduous shade and ornamental trees shall be a minimum one and one-half inch (1-1/2") caliper measured six inches (6") above ground, balled and burlapped. Bare root trees will be acceptable to plant during their dormant season. Trees shall be characteristically shaped specimens.

(b) Coniferous Trees. Coniferous trees shall be a minimum five feet (5') in height above ground, balled and burlapped. Bare root trees will be acceptable to plant during their dormant season. Trees shall be well branched and characteristically shaped specimens.

(c) Evergreen and Deciduous Shrubs. Evergreen and deciduous shrubs shall be at least one (1) to five (5) gallon size. Shrubs shall be characteristically branched. Side of shrub with best foliage shall be oriented to public view.

(d) Groundcovers. Groundcovers shall be fully rooted and shall be well branched or leafed. English ivy (Hedera helix) is considered a high maintenance material which is detrimental to other landscape materials and buildings and is therefore prohibited.

(e) Lawns. Lawns shall consist of grasses, including sod, or seeds of acceptable mix within the local landscape industry. Lawns shall be 100 percent coverage and weed free.

Applicant Response: The landscape plans have been designed to comply with all of the items (deciduous trees, coniferous trees, evergreen and deciduous shrubs, groundcovers and lawns) in this section.

Staff finds that these standards are met as shown on Sheets L1.0 and L2.0 Landscape Plan (both dated July 28, 2017).

(2) Landscaping shall be installed in accordance with the provisions of Sunset New Western Garden Book (latest edition), Lane Publishing Company, Menlo Park, California or the American Nurserymen Association Standards (latest edition).

Staff finds that this standard is met per notes included on Sheet L3.0 Landscape Details & Specifications (dated July 28, 2017).

(3) The following guidelines are suggested to ensure the longevity and continued vigor of plant materials:

(a) Select and site permanent landscape materials in such a manner as to produce a hardy and drought-resistant landscaped area.

(b) Consider soil type and depth, spacing, exposure to sun and wind, slope and contours of the site, building walls and overhangs, and compatibility with existing native vegetation preserved on the site or in the vicinity.

Staff finds that this standard is met per notes included on Sheet L3.0 Landscape Details & Specifications (dated July 28, 2017).

(4) All trees and plant materials shall be healthy, disease-free, damage-free, well-branched stock, characteristic of the species.

(5) All plant growth in landscaped areas of developments shall be controlled by pruning, trimming or otherwise so that:

(a) It will not interfere with designated pedestrian or vehicular access; and

(b) It will not constitute a traffic hazard because of reduced visibility.

Staff finds that these regulations are matters of zoning enforcement, and less matters to be reviewed as development standards. Therefore, staff's findings regarding the proposal in review are mute as to compliance with Sections 73.260(4) and 73.260(5). Staff notes that Sheet L3.0 Landscape Details & Specifications (dated July 28, 2017) states that "all plant material shall be guaranteed from final acceptance for one full growing season or one year, whichever is longer."

Section 73.280 Irrigation System Required

Except for townhouse lots, landscaped areas shall be irrigated with an automatic underground or drip irrigation system.

Applicant Response: It is noted on the landscape plans that all of the landscaping is to be irrigated with an automatic underground irrigation system. This will be provided by Bidder Design.

Staff finds that this standard is met per general note 3 on Sheet L1.0 Landscape Plan (dated July 28, 2017).

Section 73.290 Re-vegetation in Un-landscaped Areas

Staff finds that the applicant's narrative does not address TDC 73.290—Re-vegetation in Un-landscaped Areas.

The purpose of this section is to ensure erosion protection, and in appropriate areas to encourage soil amendment, for those areas not included within the landscape percentage requirements so native plants will be established, and trees will not be lost.

(1) Where vegetation has been removed or damaged in areas not affected by the landscaping requirements and that are not to be occupied by structures or other improvements, vegetation shall be replanted.

(2) Plant materials shall be watered at intervals sufficient to ensure survival and growth for a minimum of two growing seasons.

(3) The use of native plant materials is encouraged to reduce irrigation and maintenance demands.

(4) Disturbed soils should be amended to an original or higher level of porosity to regain infiltration and stormwater storage capacity.

As the proposed development would not result in any un-landscaped areas as shown on Sheet C1.1 Site Plan and Sheets L1.0 and L2.0 Landscape Plan (all dated July 28, 2017), staff finds that this standard does not apply.

Section 73.310 Landscape Standards – Commercial, Industrial, Public and Semi-Public Uses

(1) A minimum 5'-wide landscaped area must be located along all building perimeters which are viewable by the general public from parking lots or the public right-of-way, excluding loading areas, bicycle parking areas and pedestrian egress/ingress locations. Pedestrian amenities such as landscaped plazas and arcades may be substituted for this requirement. This requirement shall not apply where the distance along a wall between two vehicle or pedestrian access openings (such as entry doors, garage doors, carports and pedestrian corridors) is less than 8 feet.

Applicant Response: The landscape plans indicate that there is a minimum of 5-feet of landscaping around the entire perimeter of the building with the exceptions of the loading dock areas and the sidewalk and pedestrian access.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan and Sheets L1.0 and L2.0 Landscape Plan (all dated July 28, 2017).

(2) Areas exclusively for pedestrian use that are developed with pavers, bricks, etc., and contain pedestrian amenities, such as benches, tables with umbrellas, children's play areas, shade trees, canopies, etc., may be included as part of the site landscape area requirement.

Applicant Response: Due to the industrial nature of the future building uses, these types of amenities are not included with the landscape design of this project.

Staff notes the applicant has chosen not to use this option.

(3) All areas not occupied by buildings, parking spaces, driveways, drive aisles, pedestrian areas or undisturbed natural areas shall be landscaped.

Applicant Response: The landscape plans have been designed to cover all areas not occupied by asphalt paving or the building.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan and Sheets L1.0 and L2.0 Landscape Plan (all dated July 28, 2017).

Section 73.340 Off-Street Parking Lot and Loading Area Landscaping - Commercial, Industrial, Public and Semi-Public Uses, and Residential and Mixed Use Residential Uses within the Central Design District.

Staff finds that the applicant's narrative does not address TDC 73.340—Off-Street Parking Lot and Loading Area Landscaping - Commercial, Industrial, Public and Semi-Public Uses, and Residential and Mixed Use Residential Uses within the Central Design District.

(1) A clear zone shall be provided for the driver at ends of on-site drive aisles and at driveway entrances, vertically between a maximum of 30 inches and a minimum of 8 feet as measured from the ground level, except for parking structures and underground parking where this provision shall not apply.

Staff finds that clear zones are shown on Sheets L1.0 and L2.0 Landscape Plan (both dated July 28, 2017) for the ends of on-site drive aisles in the parking and circulation areas. However, vision clearance areas

are not illustrated at the access driveways along SW Cimino Street. Staff recommends a condition of approval to meet the standard.

Condition of Approval: The applicant shall revise Sheet L1.0 Landscape Plan to illustrate vision clearance areas at the SW Cimino Street access driveways and revise the landscape plan as necessary to create clear zones pursuant to TDC 73.340(1).

(2) Perimeter site landscaping of at least 5 feet in width shall be provided in all off-street parking and vehicular circulation areas (including loading areas). For conditional uses in multifamily residential planning districts the landscape width shall be at least 10 feet except for uses allowed by TDC 40.030(3), 40.030(5)(j), 40.030(5)(m), 40.030(5)(n) and 41.030(2).

(a) The landscape area shall contain:

(i) Deciduous trees an average of not more than 30 feet on center. The trees shall meet the requirements of TDC 73.360(7).

(ii) Plantings which reach a mature height of 30 inches in three years which provide screening of vehicular headlights year round.

(iii) Shrubs or ground cover, planted so as to achieve 90 percent coverage within three years.

(iv) Native trees and shrubs are encouraged.

Staff finds that these standards met as shown on Sheet C1.1 Site Plan and Sheets L1.0 and L2.0 Landscape Plan (all dated July 28, 2017). Staff notes that regulations regarding vegetative longevity are matters of zoning enforcement, and less matters to be reviewed as development standards.

(b) Where off-street parking areas on separate lots are adjacent to one another and are connected by vehicular access, the landscaped strips required in subsection (2) of this section are not required.

Staff finds that this standard is met as shown on Sheets C1.1 Site Plan and Sheets L1.0 and L2.0 Landscape Plan (all dated July 28, 2017). Staff notes that the subject site would share an access driveway with the Itel Corporate Center development adjacent to the west and the 5-foot-wide landscaped strip is not required at this shared access point; the remainder of the subject site would include 5 feet of perimeter landscaping as required pursuant to TDC 73.340(2).

Section 73.360 Off-Street Parking Lot Landscape Islands - Commercial, Industrial, Public, and Semi-Public Uses.

(1) A minimum of 25 square feet per parking stall be improved with landscape island areas. They may be lower than the surrounding parking surface to allow them to receive stormwater run-off and function as water quality facilities as well as parking lot landscaping. They shall be protected from vehicles by curbs, but the curbs may have spaces to allow drainage into the islands. They shall be dispersed throughout the parking area [see TDC 73.380(3)]. They shall be planted with groundcover or shrubs that will completely cover the island area within 3 years. They shall be planted with deciduous shade trees when needed to meet the parking lot shade tree requirements. Native plant materials are encouraged. Landscape square footage requirements shall not apply to parking structures and underground parking.

Applicant Response: The site plan indicates a landscape island at the ends of all parking areas and at approximately every eight (8) parking stalls. Using the 25 sf per stall, we are required to have 3,975 sf of landscape islands (159 stalls x 25). We currently have 5,346 sf of landscape islands to comply with this requirement.

Staff finds that these standards are met as shown on Sheets L1.0 and L2.0 Landscape Plan (both dated July 28, 2017). However, staff finds that regulations regarding vegetative longevity are matters of zoning enforcement, and less matters to be reviewed as development standards.

(2) Landscaped island areas with deciduous parking lot shade trees shall be a minimum of 5 feet in width (from inside of curb to curb).

Applicant Response: The site plan indicates that the majority of the landscape islands are 9-feet wide and the smallest ones are 5-feet wide minimum.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017).

(3) A minimum of one deciduous shade tree shall be provided for every four (4) parking spaces to lessen the adverse impacts of glare, reduce heat from paved surfaces, and to emphasize circulation patterns. Required shade trees shall be uniformly distributed throughout the parking lot (see TDC 73.380(3)), except that within the Central Design District landscape islands and shade trees may be placed to frame views of the Tualatin Commons water feature or identified architectural focal elements. The trees shall meet the requirements of TDC 73.360(7). Parking lot shade tree requirements shall not apply to parking structures and underground parking.

Applicant Response: The landscape plan includes deciduous trees in several locations to comply with this requirement.

Staff finds that these standards are met as shown on Sheets L1.0 and L2.0 Landscape Plan (both dated July 28, 2017). Staff notes that 40 parking lot shade trees are required for the proposed 159 on-site parking spaces, and 44 parking lot shade trees are proposed and identified on the landscape plan.

(4) Landscape islands shall be utilized at aisle ends to protect parked vehicles from moving vehicles and emphasize vehicular circulation patterns. Landscape island location requirements shall not apply to parking structures and underground parking.

Applicant Response: The site plan indicates a landscape island at the ends of all parking areas to comply with this section.

Staff finds that this standard is shown on Sheets L1.0 and L2.0 Landscape Plan (both dated July 28, 2017).

(5) Required plant material in landscape islands shall achieve 90 percent coverage within three years. Native shrubs and trees are encouraged.

Staff finds that these regulations are matters of zoning enforcement, and less matters to be reviewed as development standards. Therefore, staff's findings regarding the proposal in review are mute as to compliance with Section 73.360(5).

(6) (a) Except as in (b) below, site access from the public street shall be defined with a landscape area not less than 5 feet in width on each side and extend 25 feet back from the property line for commercial, public, and semi-public development with 12 or more parking spaces and extend 30 feet back from the property line for industrial development, except for parking structures and underground parking which shall be determined through the Architectural Review process.

Staff finds that the 30-foot-deep landscaping along access driveways from SW Cimino Street are met; the 5-foot-wide landscaping on each side of the site accessway driveways are approximately 32 feet deep. However, while these distances were interpreted from the submitted plans, these specific dimensions were not included.

Condition of Approval: The applicant shall revise site plan (Sheet C1.1) to include landscape depth dimensions along both access driveways to/from SW Cimino Street pursuant to TDC 73.360(6)(a).

(b) In the Central Design District where driveway access is on local streets, not collectors or arterials, and the building(s) on the property is(are) less than 5,000 square feet in gross floor area, or parking is the only use on the property, site access from the public street shall be defined with a landscape area not less than 5 feet in width on each side and extend 5 feet back from the property line, except for parking structures and underground parking which shall be determined through the Architectural Review process.

As the project site is not within the Central Design District, staff finds that this standard does not apply.

(7) Deciduous shade trees shall meet the following criteria:
- **(a) Reach a mature height of 30 feet or more;**
- **(b) Cast moderate to dense shade in summer;**
- **(c) Long lived, i.e., over 60 years;**
- **(d) Do well in an urban environment:**
  - **(i) Pollution tolerant.**
  - **(ii) Tolerant of direct and reflected heat.**
- **(e) Require little maintenance:**
  - **(i) Mechanically strong.**
  - **(ii) Insect- and disease-resistant.**
  - **(iii) Require little pruning.**
- **(f) Be resistant to drought conditions;**
- **(g) Be barren of fruit production.**

The plant legend on Sheet L1.0 Landscape Plan (dated July 28, 2017) suggests the following deciduous tree species to be planted as part of the proposed development: Crimson Sentry Maple and Golden Desert Ash (street trees); Marshall Seedless Ash, Yellowwood, and Akebono Flowering Cherry (interior parking lot trees); and European Hornbeam and Pacific Sunset Maple (perimeter parking lot trees). All of these tree species, with the exception of the Marshall Seedless Ash and the Akebono Flowering Cherry, are included in TDC 74.765 Schedule A: Street Tree Species and are therefore suitable for planting at this location. While not included on this schedule, both the Marshall Seedless Ash and the Akebono Flowering Cherry are common parking lot and landscaping trees in the Pacific Northwest. Staff finds this standard is met.

Section 73.410 Street Tree Plan

Staff finds that the applicant's narrative does not address TDC 73.410—Street Tree Plan.

A person who desires to plant a street tree shall comply with TDC 74.765, which comprises the street tree plan.

Staff notes that street trees and other features of the public right-of-way are reviewed by City of Tualatin Engineering and Operations/Parks Maintenance Divisions. Staff confirms that Golden Desert Ash and Crimson Sentry Maple trees are included on TDC 74.765 Schedule A: Street Tree Species.

N. Tree Removal and Preservation

Section 34.210 Application for Architectural Review, Subdivision or Partition Review, or Tree Removal Permit.

(1) Architectural Review, Subdivision, or Partition. When a property owner wishes to remove trees, other than the exemptions permitted under TDC 34.200(3), to develop property, and the

development is subject to Architectural Review, Subdivision Review, or Partition Review approval, the property owner shall apply for approval to remove trees as part of the Architectural Review, Subdivision Review, or Partition Review application process.

(a) The application for tree removal shall include:

(i) A Tree Preservation Site Plan, drawn to a legible scale, showing the following information: a north arrow; existing and proposed property lines; existing and proposed topographical contour lines; existing and proposed structures, impervious surfaces, wells, septic systems, and stormwater retention/detention facilities; existing and proposed utility and access locations/easements; illustration of vision clearance areas; and illustration of all trees on-site that are eight inches or more in diameter (including size, species, and tag i.d. number). All trees proposed for removal and all trees proposed for preservation shall be indicated on the site plan as such by identifying symbols, except as follows:

(A) Where Clean Water Services (CWS) has issued a Service Provider Letter that addresses the proposed development currently under consideration, and

(B) Where CWS has approved delineation of a "sensitive area" or "vegetated corridor" on the subject property, and

(C) Where CWS has required dedication of an easement that prohibits encroachment into the delineated area, then

(D) All trees located within the CWS-required easement need not be individually identified on the Tree Preservation Site Plan if the CWS-required easement boundary is clearly illustrated and identified on the Tree Preservation Site Plan.

(ii) A tree assessment prepared by a qualified arborist, including the following information: an analysis as to whether trees proposed for preservation can in fact be preserved in light of the development proposed, are healthy specimens, and do not pose an imminent hazard to persons or property if preserved; an analysis as to whether any trees proposed for removal could be reasonably preserved in light of the development proposed and health of the tree; a statement addressing the approval criteria set forth in TDC 34.230; and arborist's signature and contact information. The tree assessment report shall have been prepared and dated no more than one calendar year proceeding the date the development application is deemed complete by the City. Where TDC 34.210(1)(a)(i)(A) through (D) are applicable, trees located within the CWS-required easement need not be included in the tree assessment report.

(iii) All trees on-site shall be physically identified and numbered in the field with an arborist-approved tagging system. The tag i.d. numbers shall correspond with the tag i.d. numbers illustrated on the site plan. Where TDC 34.210(1)(a)(i)(A) through (D) are applicable, trees located in the CWS-required easement need not be tagged.

(b) The application for tree removal shall be approved or denied based on the criteria in TDC 34.230.

(c) The approval or denial of an application to remove trees shall be a part of the Architectural Review, Subdivision Review, or Partition Review decision.

Applicant Response: The proposed development includes removal of approximately (27) existing trees that are located adjacent to the existing farm structures. The trees (and structures) will be removed for the development of the new building and parking lot.

Staff finds that these standards are met as shown on Sheet TP1.0 Tree Preservation Plan (dated July 28, 2017) and the tree inventory conducted by City Wide Tree Service, Inc. on July 7, 2017.

Section 34.230 Tree Removal Criteria

The Community Development Director shall consider the following criteria when approving, approving with conditions, or denying a request to cut trees.

(1) An applicant must satisfactorily demonstrate that any of the following criteria are met:
- **(a) The tree is diseased, and**
  - **(i) The disease threatens the structural integrity of the tree; or**
  - **(ii) The disease permanently and severely diminishes the esthetic value of the tree; or**
  - **(iii) The continued retention of the tree could result in other trees being infected with a disease that threatens either their structural integrity or esthetic value.**
- **(b) The tree represents a hazard which may include but not be limited to:**
  - **(i) The tree is in danger of falling;**
  - **(ii) Substantial portions of the tree are in danger of falling.**
- **(c) It is necessary to remove the tree to construct proposed improvements based on Architectural Review approval, building permit, or approval of a Subdivision or Partition Review.**

Staff finds that this standard is met pursuant to TDC 34.230(1)(c) as the removal of trees on the subject site are necessary to construct the proposed development.

Section 73.250 Tree Preservation

(1) Trees and other plant materials to be retained shall be identified on the landscape plan and grading plan.

(2) During the construction process:
- **(a) The owner or the owner's agents shall provide above and below ground protection for existing trees and plant materials identified to remain.**
- **(b) Trees and plant materials identified for preservation shall be protected by chain link or other sturdy fencing placed around the tree at the drip line.**
- **(c) If it is necessary to fence within the drip line, such fencing shall be specified by a qualified arborist as defined in TDC 31.060.**
- **(d) Neither top soil storage nor construction material storage shall be located within the drip line of trees designated to be preserved.**
- **(e) Where site conditions make necessary a grading, building, paving, trenching, boring, digging, or other similar encroachment upon a preserved tree's drip-line area, such grading, paving, trenching, boring, digging, or similar encroachment shall only be permitted under the direction of a qualified arborist. Such direction must assure that the health needs of trees within the preserved area can be met.**
- **(f) Tree root ends shall not remain exposed.**

(3) Landscaping under preserved trees shall be compatible with the retention and health of said tree.

(4) When it is necessary for a preserved tree to be removed in accordance with TDC 34.210 the landscaped area surrounding the tree or trees shall be maintained and replanted with trees that relate to the present landscape plan, or if there is no landscape plan, then trees that are complementary with existing, nearby landscape materials. Native trees are encouraged

(5) Pruning for retained deciduous shade trees shall be in accordance with National Arborist Association "Pruning Standards For Shade Trees," revised 1979.

(6) Except for impervious surface areas, one hundred percent (100%) of the area preserved under any tree or group of trees retained in the landscape plan (as approved through the Architectural

Review process) shall apply directly to the percentage of landscaping required for a development.

Applicant Response: All of the existing trees on the site will be removed to allow construction of the building and parking lot. New trees will be planted in the landscaped areas as shown on the landscape plans. A Tree Preservation Plan and an Arborist Report have been included with the AR submittal package.

Staff finds that these standards are met as shown on Sheet TP1.0 Tree Preservation Plan (dated July 28, 2017). Staff notes that the proposed development would result in the removal of all 27 existing trees on the project site.

O. Grading

Section 73.270 Grading

(1) After completion of site grading, topsoil is to be restored to exposed cut and fill areas to provide a suitable base for seeding and planting.

(2) All planting areas shall be graded to provide positive drainage.

(3) Neither soil, water, plant materials nor mulching materials shall be allowed to wash across roadways or walkways.

(4) Impervious surface drainage shall be directed away from pedestrian walkways, dwelling units, buildings, outdoor private and shared areas and landscape areas except where the landscape area is a water quality facility.

With regard to standards of 73.270(1) through 73.270(4), including grading and surface drainage, staff defers to the analysis of the City Engineer.

P. Off-Street Parking and Loading

Section 73.370 Off-Street Parking and Loading

(1) General Provisions.

(a) At the time of establishment of a new structure or use, or change in use, or change in use of an existing structure, within any planning district of the City, off-street parking spaces, off-street vanpool and carpool parking spaces for commercial, institutional and industrial uses, off-street bicycle parking, and off-street loading berths shall be as provided in this and following sections, unless greater requirements are otherwise established by the conditional use permit or the Architectural Review process, based upon clear findings that a greater number of spaces are necessary at that location for protection of public health, safety and welfare or that a lesser number of vehicle parking spaces will be sufficient to carry out the objectives of this section. In the Central Design District, the Design Guidelines of TDC 73.610 shall be considered. In case of conflicts between guidelines or objectives in TDC Chapter 73, the proposal shall provide a balance.

Applicant Response: The site plan has been designed to comply with the minimum parking standards for size, layout and required amount. We currently exceed the minimum amount of parking spaces required by a few spaces. The site plan also indicates bike parking and van/carpool parking to meet the minimum standards.

(b) At the time of enlargement of an existing multi-family residential, commercial, institutional or industrial structure or use, TDC 73.370 shall apply to the existing and enlarged structure or use.

(c) Except where otherwise specified, the floor area measured shall be the gross floor area of the building primary to the function of the particular use of the property other than space devoted to off-street parking or loading.

(d) Where employees are specified, the term shall apply to all persons, including proprietors, working on the premises during the peak shift.

(e) Calculations to determine the number of required parking spaces and loading berths shall be rounded to the nearest whole number.

(f) If the use of a property changes, thereby increasing off-street parking or loading requirements, the increased parking/loading area shall be provided prior to commencement of the new use.

(g) Parking and loading requirements for structures not specifically listed herein shall be determined by the Community Development Director, based upon requirements of comparable uses listed.

(h) When several uses occupy a single structure, the total requirements for off-street parking may be the sum of the requirements of the several uses computed separately or be computed in accordance with TDC 73.370(1)(m), Joint Use Parking.

(i) Off-street parking spaces for dwellings shall be located on the same lot with the dwelling. Other required parking spaces may be located on a separate parcel, provided the parcel is not greater than five hundred (500) feet from the entrance to the building to be served, measured along the shortest pedestrian route to the building. The applicant must prove that the parking located on another parcel is functionally located and that there is safe vehicular and pedestrian access to and from the site. The parcel upon which parking facilities are located shall be in the same ownership as the structure.

(j) Required parking spaces shall be available for the parking of operable passenger automobiles of residents, customers, patrons and employees and shall not be used for storage of vehicles or materials or for the parking of trucks used in conducting the business.

Staff finds the standards of 73.370(1)(a) through 73.370(1)(j) are met as shown on Sheet C1.1 Site Plan (dated July 28, 2017). Parking findings are based off a mixed-use proposal of 60 percent warehouse, 25 percent manufacturing, and 15 percent office uses, and provisions of 73.370(1(f) may change as tenants are speculative at this time. Staff notes that if the mix of uses change to include those with greater off-street parking standards, parking requirements will be reevaluated at that time and prior to issuance of any Certificates of Occupancy or future changes in use that require more parking.

(k) Institution of on-street parking, where none is previously provided, shall not be done solely for the purpose of relieving crowded parking lots in commercial or industrial planning districts.

Staff finds that regulation of Section 73.370(k) is a matter of zoning enforcement and less a matter to be reviewed as development standards. Staff notes that no parking is allowed on SW Tualatin-Sherwood Road. Staff also notes that the SW Cimino Street extension will be constructed to the 60-foot-wide Commercial/Industrial standards pursuant to TDC Chapter 74: Public Improvement Requirements, which allows for an 8-foot-wide parking strip in both directions along this street.

(l) Parking facilities may be shared by users on adjacent parcels if the following standards are met:

(i) One of the parcels has excess parking spaces, considering the present use of the property; the other parcel lacks sufficient area for required parking spaces.

(ii) The total number of parking spaces meets the standards for the sum of the number of spaces which would be separately required for each use.

(iii) Legal documentation, to the satisfaction of the City Attorney, shall be submitted verifying permanent use of the excess parking area on one lot by patrons of the uses deficient in required parking area.

(iv) Physical access between adjoining lots shall be such that functional and reasonable access is actually provided to uses on the parcel deficient in parking spaces.

(v) Adequate directional signs shall be installed specifying the joint parking arrangement.

(vi) Areas in the Natural Resource Protection Overlay District, Other Natural Areas identified in Figure 3-4 of the Parks and Recreation Master Plan, or a Clean Water Services Vegetated Corridor would be better protected.

As the proposal does not include shared parking with adjacent parcels, staff finds that this standard does not apply.

(m) Joint Use Parking. Joint use of parking spaces may occur where two or more separate developments or multiple uses in a development are able to jointly use some or all of the same required parking spaces because their parking demands occur at different times. Joint use of parking spaces may be allowed if the following standards are met:

(i) There shall be no substantial conflict in the principal operating hours of the buildings or uses for which the joint use parking is proposed. Future change of use, such as expansion of a building or establishment of hours of operation which conflict with or affect a joint use parking agreement are prohibited, unless approval is obtained through the Architectural Review process;

(ii) The joint use parking spaces shall be located no more than 500 feet from a building or use to be served by the joint use parking;

(iii) The number and location of parking spaces, hours of use and changes in operating hours of uses subject to joint use shall be approved through the Architectural Review process;

(iv) Legal documentation, to the satisfaction of the City Attorney, shall be submitted verifying the joint use parking between the separate developments. Joint use parking agreements may include provisions covering maintenance, liability, hours of use and cross easements; and

(v) The City Attorney approved legal documentation shall be recorded by the applicant at the Washington or Clackamas County Recorder's Office and a copy of the recorded document submitted to the Planning Department prior to issuance of a building permit.

(vi) Areas in the Natural Resource Protection Overlay District, Other Natural Areas identified in Figure 3-4 of the Parks and Recreation Master Plan, or a Clean Water Services Vegetated Corridor would be better protected.

As the proposal does not include joint parking with adjacent development, staff finds that this standard does not apply. Staff notes that the subject site and the Itel Corporate Center property to the west share an access driveway along SW Cimino Street.

(n) Bicycle parking facilities shall include long-term parking that consists of covered, secure stationary racks, lockable enclosures, or rooms (indoor or outdoor) in which the bicycle is stored and short-term parking provided by secure stationary racks (covered or not covered), which accommodate a bicyclist's lock securing the frame and both wheels. The

Community Development Director, their designee, or the Architectural Review Board may approve a form of bicycle parking not specified in these provisions but that meets the needs of long-term and/or short-term parking pursuant to Section 73.370.

Applicant Response: The site plan indicates the required bicycle parking for both short-term and long-term parking. The long-term parking is located inside the building. The size of each bike parking space is designed to meet the minimum requirements listed in this code section.

Staff notes that the applicant has proposed 12 exterior short-term bike parking spaces and 11 interior long-term bike parking spaces as shown on Sheet C1.1 Site Plan (dated July 28, 2017). While the site plan keynotes state that the details for bicycle parking are included in the site details (Sheets C5.0 and C5.1, both dated July 28, 2017), no details on the exterior parking facilities is provided (details for interior bicycle parking is included on Sheet C5.0) Staff recommends a condition of approval to meet the standard.

Condition of Approval: The applicant shall revise site details (Sheet C5.0) to include details on the exterior bicycle parking facilities pursuant to TDC 73.370(1)(n).

(o) Each bicycle parking space shall be at least 6 feet long and 2 feet wide, and overhead clearance in covered areas shall be at least 7 feet, unless a lower height is approved through the Architectural Review process.

As noted in the response to 73.370(1)(n) above, details on the exterior parking facilities were not included in this application. Staff notes that details on the interior bicycle parking facilities is included on Sheet C5.0 Site Details (dated July 28, 2017). Staff recommends a condition of approval to meet the standard.

Condition of Approval: The applicant shall revise site details (Sheet C5.0) to include details on the exterior bicycle parking facilities pursuant to TDC 73.370(1)(o).

(p) A 5-foot-wide bicycle maneuvering area shall be provided beside or between each row of bicycle parking. It shall be constructed of concrete, asphalt or a pervious surface such as pavers or grasscrete, but not gravel or woody material, and be maintained.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017). Staff notes that approximately 6 feet of concrete maneuvering area is provided.

(q) Access to bicycle parking shall be provided by an area at least 3 feet in width. It shall be constructed of concrete, asphalt or a pervious surface such as pavers or grasscrete, but not gravel or woody material, and be maintained.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017). Staff notes that approximately 6 feet of concrete access area is provided.

(r) Required bicycle parking shall be located in convenient, secure, and well-lighted locations approved through the Architectural Review process. Lighting, which may be provided, shall be deflected to not shine or create glare into street rights-of-way or fish and wildlife habitat areas.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan and Sheet LT1.0 Site Lighting Plan (both dated July 28, 2017). Staff notes that short-term bike parking would be located near the building entrances at all four corners of the proposed building.

(s) Long-term bicycle parking facilities may be provided inside a building in suitable secure and accessible locations.

Staff finds that the standard is met as shown on Sheet C1.1 Site Plan and Sheet C5.0 Site Details (both dated July 28, 2017). Staff notes that 11 interior parking spaces would be located near the northeast, northwest, and southwest corners of the proposed building.

(t) Bicycle parking may be provided within the public right-of-way in the Core Area Parking District subject to approval of the City Engineer and provided it meets the other requirements for bicycle parking.

As the subject site is not located in the Core Area Parking District, staff finds that this standard does not apply.

(u) Bicycle parking areas and facilities shall be identified with appropriate signing as specified in the Manual on Uniform Traffic Control Devices (MUTCD) (latest edition). At a minimum, bicycle parking signs shall be located at the main entrance and at the location of the bicycle parking facilities.

Staff finds that while Sheet C5.0 Site Details (dated July 28, 2017) includes detail on a bicycle parking sign for interior bicycle parking facilities, Sheet C1.0 Site Plan (dated July 28, 2017) does not include bicycle parking sign locations for either interior or exterior parking. Staff recommends a condition of approval to meet the standard.

Condition of Approval: The applicant shall revise Sheets C1.1 Site Plan and C5.0 Site Details to include bicycle parking signage per MUTCD standards and install to revised plans pursuant to TDC 73.370(1)(u).

(v) Required bicycle parking spaces shall be provided at no cost to the bicyclist, or with only a nominal charge for key deposits, etc. This shall not preclude the operation of private for-profit bicycle parking businesses.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017).

(w) Parking on existing residential, commercial and industrial development may be redeveloped as a transit facility as a way to encourage the development of transit supportive facilities such as bus stops and pullouts, bus shelters and park and ride stations. Parking spaces converted to such uses in conjunction with the transit agency and approved through the Architectural Review process will not be required to be replaced.

Staff finds that this standard does not apply.

(x) Required vanpool and carpool parking shall meet the 9-foot parking stall standards in Figure 73-1 and be identified with appropriate signage.

Staff finds that this standard is met as shown on Site C1.1 Site Plan (dated July 28, 2017).

(2) Off-Street Parking Provisions.

(a) The following are the minimum and maximum requirements for off-street motor vehicle parking in the City, except for minimum parking requirements for the uses in TDC 73.370(2)(a) within the Core Area Parking District (CAPD). Minimum standards for off-street motor vehicle parking for the uses in 73.370(2)(a) Residential Uses: iii, iv, v, vi, vii; Places of Public Assembly: I, ii, iv; Commercial Amusements: I, ii; and Commercial: I, ii, xi, xii, xiv in the CAPD are in TDC 73.370(2)(b). The maximum requirements are divided into Zone A and Zone B, as shown on the Tualatin Parking Zone Map, Figure 73-3. The following are exempt from calculation of maximum parking requirements: parking structures; fleet parking; parking for vehicles for sale, lease or rent; car/vanpool parking; dedicated valet parking; and user-paid parking.

Use	Minimum Motor Vehicle Parking Requirements	Maximum Motor Vehicle Parking Requirements	Bicycle Parking Requirements	Percentage of Bicycle Parking to be Covered
Commercial				
(vi) General office	2.7 spaces per 1,000 SF gross floor area (GFA)	2.7 spaces per 1,000 SF gross floor area (GFA) [Zone B]	2, or 0.5 spaces per 1,000 gross square feet (GSF), whichever is greater	First 10 spaces or 40 percent, whichever is greater
	(2.70 * 23.58) 64	(4.1 * 23.58) 97	(0.5 * 23.58) 12	10
Industrial				
(i) Manufacturing	1.6 spaces per 1,000 SF gross floor area (GFA)	None	2, or 0.1 spaces per 1,000 gross square feet (GSF), whichever is greater	First 5 spaces or 30 percent, whichever is greater
	(1.6 * 39.31) 63	N/A	(0.1 * 39.31) 4	4
(ii) Warehousing	0.3 spaces per 1,000 SF gross floor area (GFA)	0.5 spaces per 1,000 SF gross floor area (GFA) [Zone B]	2, or 0.1 spaces per 1,000 gross square feet (GSF), whichever is greater	First 5 spaces or 30 percent, whichever is greater
	(0.3 * 94.34) 28	(0.5 * 94.34) 47	(0.1 * 94.34) 9	5
TOTALS	**155**	**N/A**	**25**	**10***
* Based on General Office standards (most conservative) applied to total bicycle parking required.				

Staff finds that this standard is not met. While the total number of proposed vehicle parking spaces (159) meets the minimum code requirement for vehicle parking spaces (155), the proposed development would only provide 23 on-site bicycle parking spaces, which is less than the 25-space minimum requirement. Staff notes that the proposed number of covered parking spaces (11) meets the covered parking standard (10) for this development. Staff recommends a condition of approval to meet the standard. Staff also recommends revisiting proposed uses and minimum parking standards once tenants have been identified.

Condition of Approval: Revise the site plan (Sheet C1.1) and the overall development plan to include the minimum amount of required bicycle parking pursuant to TDC 73.370(2)(a).

(b) The following are the minimum requirements for off-street motor vehicle parking in the Core Area Parking District (CAPD) for the uses in TDC 73.370(2)(a)(Residential Uses: iii, iv, v, vi, vii; Places of Public Assembly: i, ii, iv; Commercial Amusements: i, ii; and Commercial: i, ii, xi, xii, xiv).

As the subject site is not located in the Core Area Parking District, staff finds that this standard does not apply.

(3) Off-Street Vanpool and Carpool Parking Provisions.
The minimum number of off-street Vanpool and Carpool parking for commercial, institutional and industrial uses is as follows:

Number of Required Parking Spaces	Number of Vanpool or Carpool Spaces
0 to 10	1
10 to 25	2
26 and greater	1 for each 25 spaces

Staff finds that this standard is not met. Per the table above, the proposed 155 parking spaces would require seven (7) vanpool/carpool spaces; Sheet C1.1 Site Plan (dated July 28, 2017) only illustrates six (6) vanpool/carpool spaces.

Condition of Approval: The applicant shall revise the site plan (Sheet C1.1) to include the minimum number of required vanpool/carpool parking spaces pursuant to TDC 73.370(3).

Section 73.380 Off-Street Parking Lots

A parking lot, whether an accessory or principal use, intended for the parking of automobiles or trucks, shall comply with the following:

(1) Off-street parking lot design shall comply with the dimensional standards set forth in Figure 73-1 of this section, except for parking structures and underground parking where stall length and width requirements for a standard size stall shall be reduced by .5 feet and vehicular access at the entrance if gated shall be a minimum of 18 feet in width.

Applicant Response: The parking lot has been designed to comply with the minimum size of a standard parking stall.

Staff finds that this standard is not met. As shown in TDC Figure 73-1, parking stalls at a 90-degree angle are required to be 9 feet wide by 18.5 feet deep. Staff notes that TDC standard 73.380(1) allows 2.5 feet of overhang—thereby allowing 16-foot-deep parking spaces—in cases where the overhang does not affect the effective widths of required landscaping or pedestrian amenities. As illustrated and noted on Sheet C1.1 Site Plan (dated July 28, 2017), all on-site parking stalls would be 9'x18', which do not meet the 9'x18.5' minimum standard. Staff recommends a condition of approval to meet the standard.

Condition of Approval: The applicant shall revise the appropriate sheets to include parking spaces that conform to TDC Figure 73-1 standards, most notably 9 feet wide by 18.5 feet deep for parking spaces at a 90-degree angle and install to revised plans pursuant to TDC 73.380(1). The applicant may utilize the bumper overhang provision if seven-and-a-half (7.5) feet of perimeter landscaping is provided at these locations or if the overhang does not reduce effective sidewalk widths below ADA standards.

(2) Parking stalls for sub-compact vehicles shall not exceed 35 percent of the total parking stalls required by TDC 73.370(2). Stalls in excess of the number required by TDC 73.370(2) can be sub-compact stalls.

Applicant Response: This project does not include compact parking stalls.

As there are no sub-compact parking stalls included in this proposal, staff finds that this standard is met.

(3) Off-street parking stalls shall not exceed eight continuous spaces in a row without a landscape separation, except for parking structures and underground parking. For parking lots within the Central Design District that are designed to frame views of the central water feature or identified architectural focal elements as provided in TDC 73.350(3), this requirement shall not apply and the location of parking lot landscape islands shall be determined through the Architectural Review process.

Applicant Response: The site plan has been designed to provide a landscape island at no more than every (8) parking stalls.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017).

(4) Parking stalls shall be constructed of asphalt or concrete, or a pervious surface such as pavers or grasscrete, but not gravel or woody material. Drive aisles and parking stalls shall be maintained adequately for all-weather use and drained to avoid water flow across sidewalks. Pervious surfaces such as pervious concrete, pavers and grasscrete, but not gravel or woody material, are encouraged for parking stalls in or abutting the Natural Resource Protection Overlay District, Other Natural Areas identified in Figure 3-4 of the Parks and Recreation Master Plan, or in a Clean Water Services Vegetated Corridor. Parking lot landscaping shall be provided pursuant to the requirements of TDC 73.350 and TDC 73.360. Walkways in parking lots shall be provided pursuant to TDC 73.160.

Applicant Response: The site plan indicates the dimensions of the drive aisles and notes that all are constructed of asphalt paving. Parking lot landscaping is provided as noted in items above.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017).

(5) Except for parking to serve residential uses, parking areas adjacent to or within residential planning districts or adjacent to residential uses shall be designed to minimize disturbance of residents.

While the project site is immediately adjacent to the residential property at 12075 SW Tualatin-Sherwood Road to the east, only 17 of the proposed 159 parking spaces face eastward along their shared property, and an even fewer number of these spaces face existing structures on the residential site (see Sheet C1.1 Site Plan, dated July 28, 2017). Thus, staff finds that this standard is met.

(6) Artificial lighting, which may be provided, shall be deflected to not shine or create glare in a residential planning district, an adjacent dwelling, street right-of-way in such a manner as to impair the use of such way or a Natural Resource Protection Overlay District, Other Natural Areas identified in Figure 3-4 of the Parks and Recreation Master Plan, or a Clean Water Services Vegetated Corridor.

While the proposed lighting would not result in impacts to natural resources/areas and would not impact adjacent right-of-ways (SW Tualatin-Sherwood Road and the Cimino Street extension), Sheet LT1.0 Site Lighting Plan (dated July 28, 2017) shows lighting extending as far as 70 feet into the neighboring residential property at 12075 SW Tualatin-Sherwood Road to the east As existing structures on this adjacent residential property are located as close as 90 feet from the property, the proposed lighting plan has the potential to impact this property. Staff recommends a condition of approval to meet the standard.

Condition of Approval: The applicant shall modify the proposed lighting plan to include lighting on the eastern portion of the project site that does not shine onto the adjacent residential property at 12075 SW Tualatin-Sherwood Road and illustrate the results of these modifications on Sheet LT1.0 Site Lighting Plan pursuant to TDC 73.380(6).

(7) Groups of more than 4 parking spaces shall be so located and served by driveways that their use will require no backing movements or other maneuvering within a street right-of-way other than an alley.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017).

(8) Service drives to off-street parking areas shall be designed and constructed to facilitate the flow of traffic, provide maximum safety of traffic access and egress, and maximum safety for pedestrians and vehicular traffic on the site.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017).

(9) Parking bumpers or wheel stops or curbing shall be provided to prevent cars from encroaching on the street right-of-way, adjacent landscaped areas, or adjacent pedestrian walkways.

Staff finds that this standard is met as shown in Sheet C1.1 Site Plan and Sheet C5.0 Site Details (see detail 4, "Section at Curb," both sheets dated July 28, 2017). Staff notes that wheel stops are proposed for the ADA-compliant spaces and the minimum 6-inch-tall concrete curbs are intended to prevent cars from encroaching into landscaping and pedestrian pathways.

(10) Disability parking spaces and accessibility shall be provided in accordance with applicable federal and state requirements.

ADA accessibility requirements are typically reviewed during the building permit stage. Staff notes that the six (6) proposed ADA parking spaces are located near the building entrances at the northeast, northwest, and southwest corners of the proposed building.

(11) On-site drive aisles without parking spaces, which provide access to parking areas with regular spaces or with a mix of regular and sub-compact spaces, shall have a minimum width of 22 feet for two-way traffic and 12 feet for one-way traffic. On-site drive aisles without parking spaces, which provide access to parking areas with only sub-compact spaces, shall have a minimum width of 20 feet for two-way traffic and 12 feet for one-way traffic.

Staff finds that the on-site drive aisle standards are met as shown in Sheet C1.1 Site Plan (dated July 28, 2017). Staff notes that access and other features of the public right-of-way are reviewed by City of Tualatin Engineering and Operations/Parks Maintenance Divisions. Staff also notes that the current proposal does not meet standard parking stall requirements pursuant to 73.380(1) and that the applicant should make sure their modifications to meet those requirements do not result in non-compliance of on-site drive aisle width standards.

Section 73.390 Off-Street Loading Facilities

(1) The minimum number of off-street loading berths for commercial, industrial, public and semi-public uses is as follows:

Square Feet of Floor Area	Number of Berths
Less than 5,000	0
5,000 - 25,000	1
25,000 - 60,000	2
60,000 and over	3

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017).

(2) Loading berths shall conform to the following minimum size specifications.

(a) Commercial, public and semi-public uses of 5,000 to 25,000 square feet shall be 12' x 25' and uses greater than 25,000 shall be 12' x 35'

(b) Industrial uses - 12' x 60'

(c) Berths shall have an unobstructed height of 14'

(d) Loading berths shall not use the public right-of-way as part of the required off-street loading area.

Applicant Response: This project is providing more than the required number of loading berths. It has (36) total loading docks. The size of each space (12' x 60') meets the minimum requirements.

While staff can confirm the applicant account regarding the number of total loading docks (36), the submitted site plans do not include any information on loading berth widths and depths. Staff recommends a condition of approval to meet this standard.

Condition of Approval: The applicant shall revise site plan (Sheet C1.1) to include loading dock/berth dimensions pursuant to TDC 73.390(2).

(3) Required loading areas shall be screened from public view from public streets and adjacent properties by means of sight-obscuring landscaping, walls or other means, as approved through the Architectural Review process.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan and Sheets L1.0 and L2.0 Landscape Plan (all dated July 28, 2017). Staff notes that the loading dock areas are recessed into the building's east and west façades and screened from views along SW Tualatin-Sherwood Road with perimeter landscaping.

(4) Required loading facilities shall be installed prior to final building inspection and shall be permanently maintained as a condition of use.

Staff finds that these regulations are matters of zoning enforcement, and less matters to be reviewed as development standards. Therefore, staff's findings regarding the proposal in review are mute as to compliance with Section 73.390(4).

(5) A driveway designed for continuous forward flow of passenger vehicles for the purpose of loading and unloading children shall be located on the site of a school or child day care center having a capacity greater than 25 students.

As the proposed development would not include a school or child day care center, staff finds that this standard does not apply.

(6) The off-street loading facilities shall in all cases be on the same lot or parcel as the structure they are intended to serve. In no case shall the required off-street loading spaces be part of the area used to satisfy the off-street parking requirements.

Staff finds that this standard is met as shown on Sheet C1.1 Site Plan (dated July 28, 2017).

(7) Subject to Architectural Review approval, the Community Development Director may allow the standards in this Section to be relaxed within the Central Design District, where a dense mix of uses is desirable in close proximity, pedestrian circulation is strongly emphasized, and the orientation of structures around a central water feature virtually eliminates the possibility of reserving any side of a building solely for truck access. Adjustments may include, but are not limited to, reduction in the number of loading berths required, adjustment of loading berth size specifications and right-of-way restrictions, shared loading berths and maneuvering areas for use by more than one building, alteration or elimination of screening requirements, and

requirements for maintenance of berths in a clean and visually appealing condition. The Community Development Director, their designee, or the Architectural Review Board may allow a loading area adjacent to or within a street right-of-way in the Central Design District where the loading and unloading operations meet all of the following criteria:

(a) short in duration (i.e., less than one hour);
(b) infrequent (fewer than three operations daily);
(c) does not obstruct traffic during peak traffic hours;
(d) does not interfere with emergency response services;
(e) is acceptable to the applicable roadway authority; and
(f) the design standards for the abut-ting road allow on-street parking.

As the project site is not located in the Central Design District, staff finds that this standard does not apply.

Q. Access

Section 73.400 Access

(1) The provision and maintenance of vehicular and pedestrian ingress and egress from private property to the public streets as stipulated in this Code are continuing requirements for the use of any structure or parcel of real property in the City of Tualatin. Access management and spacing standards are provided in this section of the TDC and TDC Chapter 75. No building or other permit shall be issued until scale plans are presented that show how the ingress and egress requirement is to be fulfilled. If the owner or occupant of a lot or building changes the use to which the lot or building is put, thereby increasing ingress and egress requirements, it shall be unlawful and a violation of this code to begin or maintain such altered use until the required increase in ingress and egress is provided.

Staff defers to the analysis of the City Engineer (see City Engineer findings).

R. Signs

Except code required signs for street number, disabled parking and car/vanpool, no signs are proposed by this application and none are approved. The applicant shall submit separate sign permit applications for any future signage.

S. Time Limit on Approval

Section 73.056 Time Limit on Approval

Architectural Review approvals shall expire after two years unless:

(1) A building, or grading permit submitted in conjunction with a building permit application, has been issued and substantial construction pursuant thereto has taken place and an inspection performed by a member of the Building Division; or

(2) The Architectural Review (AR) applicant requests in writing an extension and the City approves it. If the Community Development Director and City Engineer or their designees approved the AR. then the Community Development Director and City Engineer shall decide upon the extension request. If the Architectural Review Board (ARB) approved the AR. then the ARB shall decide upon the extension request. The applicant shall provide notice of extension request to past recipients of the AR notice of application and post a sign pursuant to TDC 31.064. Before approving an extension, the deciding party shall find the request meets these criteria:

(a) The applicant submitted a written extension request prior to the original expiration date.

(b) There have been no significant changes in any conditions, ordinances, regulations or other standards of the City or applicable agencies that affect the previously approved project so as to warrant its resubmittal for AR.

(c) If the previously approved application included a special study, the applicant provided with the extension a status report that shows no significant changes on the site or within the vicinity of the site. A letter from a recognized professional also would satisfy this criterion if it states that conditions have not changed after the original approval and that no new study is warranted.

(d) If the AR applicant neglected site maintenance and allowed the site to become blighted, the deciding party shall factor this into its decision.

(e) The deciding party shall grant no more than a single one-year extension for an AR approval.

(f) If the Community Development Director and City Engineer or their designees are the deciding party, then they shall decide within thirty (30) days of receipt of the request. If the ARB is the deciding party. then the ARB shall decide within sixty (60) days of receipt of the request. If the deciding party fails to decide within the applicable time period, the decision shall default to approval.

III. RECOMMENDED CONDITIONS

Based on the Findings and Conclusions presented, staff recommends approval of AR-17-0002 subject to the following Architectural Features (AF) conditions of approval:

CONDITIONS OF APPROVAL DOCUMENTATION:

AF-1 Prior to applying for building permits on the subject site, the applicant shall submit one revised paper plan set—24 x 36, a paper narrative, and electronically in Adobe PDF file format—for review and approval to the Planning Division that meet the conditions of approval below. The narrative shall explain how and on what page each condition of approval has been met. The submittal shall contain page numbers and a table of contents. No piecemeal submittals will be accepted. Each submittal will be reviewed in two (2) weeks.

PRIOR TO APPLICATION FOR A BUILDING PERMIT:

AF-2 The applicant shall revise site plan (Sheet C1.1) to include building setback dimensions from property lines pursuant to TDC 61.060(1) and (2).

AF-3 The applicant shall revise site plan (Sheet C1.1) to include parking and circulation area setback dimensions from public streets pursuant to TDC 61.060(5).

AF-4 The applicant shall revise the appropriate sheets to provide information pertaining to pedestrian and bicycle accessways on the project site, including at minimum accessway width, surface materials, and ADA compliance pursuant to TDC 73.160(1)(b)(i), TDC 73.160(1)(b)(iii), and TDC 73.160(1)(d).

AF-5 The applicant shall install lighting as shown on the site lighting plan (Sheet LT1.0) to ensure that the proposed development will not result in excess lighting and will continue to meet the lighting standards of TDC 73.160(3)(c).

AF-6 The applicant shall revise the appropriate sheets to illustrate a minimum storage area of 907 square feet is provided for mixed solid waste and recyclables and install to revised plans pursuant to TDC 73.227(2)(v).

AF-7 The applicant shall vet the modified mixed solid waste and recyclables storage areas with Republic Services by providing a new signed letter from Republic Services based on the modified storage areas to ensure these areas are accessible for collection vehicles pursuant to TDC 73.227(6)(a)(vii) and TDC 73.227(6)(b)(i).

AF-8 The applicant shall revise Sheet L1.0 Landscape Plan to illustrate vision clearance areas at the SW Cimino Street access driveways and revise the landscape plan as necessary to create clear zones pursuant to TDC 73.340(1).

AF-9 The applicant shall revise site plan (Sheet C1.1) to include landscape depth dimensions along both access driveways to/from SW Cimino Street pursuant to TDC 73.360(6)(a).

AF-10 The applicant shall revise site details (Sheet C5.0) to include details on the exterior bicycle parking facilities pursuant to TDC 73.370(1)(n) and TDC 73.370(1)(o).

AF-11 The applicant shall revise Sheets C1.1 Site Plan and C5.0 Site Details to include bicycle parking signage per MUTCD standards and install to revised plans pursuant to TDC 73.370(1)(u).

AF-12 Revise the site plan (Sheet C1.1) and the overall development plan to include the minimum amount of required bicycle parking pursuant to TDC 73.370(2)(a).

AF-13 The applicant shall revise the site plan (Sheet C1.1) to include the minimum number of required vanpool/carpool parking spaces pursuant to TDC 73.370(3).

AF-14 The applicant shall revise the appropriate sheets to include parking spaces that conform to TDC Figure 73-1 standards, most notably 9 feet wide by 18.5 feet deep for parking spaces at a 90-degree angle and install to revised plans pursuant to TDC 73.380(1). The applicant may utilize the bumper overhang provision if seven-and-a-half (7.5) feet of perimeter landscaping is provided at these locations or if the overhang does not reduce effective sidewalk widths below ADA standards.

AF-15 The applicant shall modify the proposed lighting plan to include lighting on the eastern portion of the project site that does not shine onto the adjacent residential property at 12075 SW Tualatin-Sherwood Road and illustrate the results of these modifications on Sheet LT1.0 Site Lighting Plan pursuant to TDC 73.380(6).

AF-16 The applicant shall revise site plan (Sheet C1.1) to include loading dock/berth dimensions pursuant to TDC 73.390(2).

AF-17 The applicant shall comply with the incorporated Public Facilities Recommendation (PFR) from the City of Tualatin Engineering Division.

PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY:

AF-18 The applicant shall submit scaled elevations that illustrate future above-grade mechanical equipment, including rooftop units, screened by a parapet or other method as proposed by the applicant when submitting for a mechanical permit, pursuant to TDC 73.160(4)(a).

AF-19 The applicant shall construct proposed buildings and all site improvements as illustrated on approved plans and conditions of approval.

THE FOLLOWING CODE REQUIREMENTS APPLY TO THE SITE IN AN ON-GOING MANNER:

- The applicant must submit sign permit applications separately from this Architectural Review (AR) for any proposed signage.
- Accessways shall be constructed, owned and maintained by the property owner. TDC 73.160(1)(g)
- All landscaping approved through the AR process must be continually maintained, including necessary watering, weeding, pruning and replacement, in a manner substantially similar to that originally approved by the AR decision, unless subsequently altered with Community Development Director's approval. TDC 73.100(1)
- All building exterior improvements approved through the AR process must be continually maintained, including necessary painting and repair, so as to remain substantially similar to original approval through the AR process, unless subsequently altered with Community Development Director's approval. TDC 73.100(2)
- Site landscaping and street trees shall be maintained to meet the vision clearance requirements of TDC 73.400(16).
- The proposed development must comply with the noise standards of TDC 63.051(1).
- The proposed development must comply with all applicable policies and regulations set forth by the TDC.

PLEASE BE ADVISED (AS APPLICABLE):

- The plan sets for the Planning Division must contain sheets relevant to AR conditions of approval while also not being a full building permit set. For example, because the Planning Division needs no erosion control or roof framing plan sheets, exclude them.
- Following Planning Division approval of revised plans and when the constructed site is ready, the applicant must contact the Planning Division for a site inspection in order to obtain a certificate of occupancy. This inspection is separate from inspection(s) done by the Building Division. Staff recommends scheduling a Planning inspection at least three business days in advance of the desired inspection date.

Attachments:
101: Application Materials – Revised August 9, 2017
102: Tualatin Valley Fire & Rescue Conditions of Approval – August 25, 2017

City of Tualatin
www.tualatinoregon.gov

"NECESSARY PARTIES" MARKED BELOW

NOTICE OF APPLICATION SUBMITTAL

☐ ANNEXATION ☐ CONDITIONAL USE PERMIT ☐ PLAN TEXT AMENDMENT
☒ ARCHITECTURAL REVIEW ☐ PLAN MAP AMENDMENT ☐ OTHER:

CASE/FILE: AR17-0006 (Community Development Dept.: Planning Division)

PROPOSAL	
	To construct a one-story approximately 157,230-square-foot speculative manufacturing building along the north side of SW Tualatin-Sherwood Road and east of SW 124th Avenue.

PROPERTY					
☐ n/a	**Name of Application**	IPT TUALATIN			
	Street Address	12155 SW Tualatin-Sherwood Road			
	Tax Map and Lot No(s).	2S1 27BC 00200			
	Planning District	General Manufacturing (MG)	**Overlays** ☐	**NRPO** ☐	**Flood Plain** ☐
	Previous Applications	N/A	**Additional Applications:** N/A		**CIO** COMMERCIAL

DATES					CONTACT	
	Receipt of application	07/19/2017	**Deemed Complete**	08/14/2017		**Name:** Charles H. Benson III, AICP
	Notice of application submittal			08/14/2017		**Title:** Associate Planner
	Project Status / Development Review meeting			06/26/2017		**E-mail:** CBENSON@tualatin.gov
	Comments due for staff report			08/28/2017		**Phone:** 503-691-3029
	Public meeting: ☒ **ARB** ☐ **TPC** ☐ **n/a**					**Notes:** You may view the application materials through this City web page: www.tualatinoregon.gov/projects
	City Council (CC) ☒ **n/a**					

City Staff
- ☒ City Manager
- ☒ Building Official
- ☒ Chief of Police
- ☒ City Attorney
- ☒ City Engineer
- ☒ Community Development Director
- ☒ Community Services Director
- ☒ Economic Development liaison
- ☒ Engineering Associate*
- ☒ Finance Director
- ☒ GIS technician(s)
- ☒ IS Manager
- ☒ Operations Director*
- ☒ Parks and Recreation Coordinator
- ☒ Planning Manager
- ☒ Street/Sewer Supervisor
- ☒ Water Supervisor

Neighboring Cities
- ☐ Durham
- ☐ King City Planning Commission
- ☐ Lake Oswego
- ☐ Rivergrove PC
- ☐ Sherwood Planning Dept.
- ☐ Tigard Community Development Dept.
- ☐ Wilsonville Planning Division

Counties
- ☐ Clackamas County Dept. of Transportation and Development
- ☒ Washington County Dept. of Land Use and Transportation (ARs)
- ☐ Washington County Long Range Planning (LRP) (Annexations)

Regional Government
- ☒ Metro

School Districts
- ☐ Lake Oswego School Dist. 7J
- ☐ Sherwood SD 88J
- ☒ Tigard-Tualatin SD 23J (TTSD)
- ☐ West Linn-Wilsonville SD 3J

State Agencies
- ☐ Oregon Dept. of Aviation
- ☒ Oregon Dept. of Environmental Quality (DEQ)
- ☐ Oregon Dept. of Land Conservation and Development (DLCD) (via proprietary notice)
- ☒ Oregon Dept. of State Lands: Wetlands Program
- ☒ Oregon Dept. of Transportation (ODOT) Region 1
- ☐ ODOT Maintenance Dist. 2A
- ☐ ODOT Rail Division
- ☐ OR Dept. of Revenue

Utilities
- ☒ Republic Services
- ☒ Clean Water Services (CWS)
- ☒ Comcast [cable]*
- ☒ Frontier Communications [phone]
- ☒ Northwest Natural [gas]
- ☒ Portland General Electric (PGE)
- ☒ TriMet
- ☒ Tualatin Valley Fire & Rescue (TVF&R)
- ☒ United States Postal Service (USPS) (Washington; 18850 SW Teton Ave.)
- ☐ USPS (Clackamas)
- ☒ Washington County Consolidated Communications Agency (WCCCA)

Additional Parties
- ☒ Tualatin Citizen Involvement Organization (CIO)

***Paper Copies**

- ☐ *1.032: Burden of Proof*
- ☒ *31.071 Architectural Review Procedure*
- ☒ *31.074 Architectural Review Application Review Process*
- ☐ *31.077 Quasi-Judicial Evidentiary Hearing Procedures*
- ☐ *Metro Code 3.09.045 Annexation Review Criteria*
- ☐ *32.030 Criteria for Review of Conditional Uses*
- ☐ *33.020 Conditions for Granting a Variance that is not a Sign or a Wireless Communication Facility*
- ☐ *33.022 Criteria for Granting a Sign Variance*
- ☐ *33.024 Criteria for Granting a Minor Variance*
- ☐ *33.025 Criteria for Granting a Variance*
- ☐ *34.200 Tree Cutting on Private Property without Architectural Review, Subdivision or Partition Approval, or Tree Removal Permit Prohibited*
- ☐ *34.210 Application for Architectural Review, Subdivision or Partition Review, or Permit*
- ☐ *34.230 Criteria (tree removal)*
- ☐ *35.060 Conditions for Granting Reinstatement of Nonconforming Use*
- ☐ *36.160 Subdivision Plan Approval*
- ☐ *36.230 Review Process (partitioning)*
- ☐ *36.330 Review Process (property line adjustment)*
- ☐ *37.030 Criteria for Review (IMP)*
- ☐ *40.030 Conditional Uses Permitted (RL)*
- ☐ *40.060 Lot Size for Conditional Uses (RL)*
- ☐ *40.080 Setback Requirements for Conditional Uses (RL)*
- ☐ *41.030 Conditional Uses Permitted (RML)*
- ☐ *41.050 Lot Size for Conditional Uses (RML)*
- ☐ *41.070 Setback Requirements for Conditional Uses (RML)*
- ☐ *42.030 Conditional Uses Permitted (RMH)*
- ☐ *42.050 Lot Size for Conditional Uses (RMH)*
- ☐ *42.070 Setback Requirements for Conditional Uses (RMH)*
- ☐ *43.030 Conditional Uses Permitted (RH)*
- ☐ *43.060 Lot Size for Conditional Uses (RH)*
- ☐ *43.090 Setback Requirements for Conditional Uses (RH)*
- ☐ *44.030 Conditional Uses Permitted (RH-HR)*
- ☐ *44.050 Lot Size for Conditional Uses (RH-HR)*
- ☐ *44.070 Setback Requirements for Conditional Uses (RH-HR)*
- ☐ *49.030 Conditional Uses (IN)*
- ☐ *49.040 Lot Size for Permitted and Conditional Uses (IN)*
- ☐ *49.060 Setback Requirements for Conditional Uses (IN)*
- ☐ *50.020 Permitted Uses (CO)*
- ☐ *50.030 Central Urban Renewal Plan – Additional Permitted Uses and Conditional Uses (CO)*
- ☐ *50.040 Conditional Uses (CO)*
- ☐ *52.030 Conditional Uses (CR)*
- ☐ *53.050 Conditional Uses (CC)*
- ☐ *53.055 Central Urban Renewal Area – Conditional Uses (CC)*
- ☐ *54.030 Conditional Uses (CG)*
- ☐ *56.030 Conditional Uses (MC)*
- ☐ *56.045 Lot Size for Conditional Uses (MC)*
- ☐ *57.030 Conditional Uses (MUCOD)*
- ☐ *60.040 Conditional Uses (ML)*
- ☐ *60.041 Restrictions on Conditional Uses (ML)*
- ☐ *61.030 Conditional Uses (MG)*
- ☐ *61.031 Restrictions on Conditional Uses (MG)*
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- ☐ *68.030 Criteria for Designation of a Landmark*
- ☐ *68.060 Demolition Criteria*
- ☐ *68.070 Relocation Criteria*
- ☐ *68.100 Alteration and New Construction Criteria*
- ☐ *68.110 Alteration and New Construction Approval Process*
- ☐ *73.130 Standards*
- ☒ *73.160 Standards*
- ☐ *73.190 Standards – Single-Family and Multi-Family Uses*
- ☐ *73.220 Standards*
- ☐ *73.227 Standards*
- ☒ *73.230 Landscaping Standards*
- ☐ *73.300 Landscape Standards – Multi-Family Uses*
- ☒ *73.310 Landscape Standards – Commercial, Industrial, Public and Semi-Public Uses*
- ☒ *73.320 Off-Street Parking Lot Landscaping Standards*
- ☐ *73.470 Standards*
- ☐ *73.500 Standards*

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City of Tualatin

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APPLICATION FOR ARCHITECTURAL REVIEW

Direct Communication to:		
Name: Jennifer Kimura		Title: Permit Coordinator
Company Name: VLMK Engineering + Design		
Current address: 3933 SW Kelly Ave		
City: Portland	State: Oregon	ZIP Code: 97239
Phone: 503.222.4453	Fax:	Email: jenniferk@vlmk.com

Applicant		
Name: Jennifer Kimura		Company Name: VLMK Engineering + Design
Address: 3933 SW Kelly Ave		
City: Portland	State: Oregon	ZIP Code: 97239
Phone: 503.222.4453	Fax:	Email: jenniferk@vlmk.com
Applicant's Signature:		Date:

Property Owner		
Name: Kenneth E. Itel		
Address: 12155 SW Tualatin Sherwood Road		
City: Tualatin	State: Oregon	ZIP Code: 97062
Phone: 503.730.0592	Fax:	Email: ken.itel@gmail.com
Property Owner's Signature: Kenneth E. Itel		Date 7/17/17
(Note: Letter of authorization is required if not signed by owner)		

Architect		
Name:		
Address:		
City:	State:	ZIP Code:
Phone:	Fax:	Email:

Landscape Architect		
Name: Otten and Associates		
Address: 3933 SW Kelly Ave Suite B		
City: Portland	State: Oregon	ZIP Code: 97239
Phone: 503.972.0311	Fax:	Email: janet@ottenla.com

Engineer		
Name: VLMK Engineering + Design		
Address: 3933 SW Kelly Ave		
City: Portland	State: Oregon	ZIP Code: 97239
Phone: 503.222.4453	Fax:	Email: jasons@vlmk.com

Project		
Project Title: IPT Tualatin		
Address: 12155 SW Tualatin Sherwood Road		
City: Tualatin	State: Oregon	ZIP Code: 97062
Brief Project Description: Proposed construction of a 157,230 sf speculative building and associated site work		
Proposed Use: Shell/Spec Building - No Tenant at this time		

Value of Improvements:	$10.2M

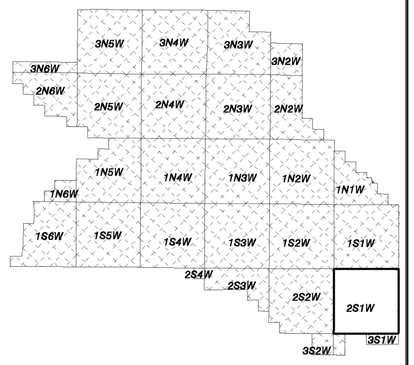
AS THE PERSON RESPONSIBLE FOR THIS APPLICATION, I HEREBY ACKNOWLEDGE THAT I HAVE READ THIS APPLICATION AND STATE THAT THE INFORMATION ABOVE, ON THE FACT SHEET, AND THE SURROUNDING PERTY OWNER MAILING LIST IS CORRECT. I AGREE TO COMPLY WITH ALL APPLICABLE CITY AND COUNTY ORDINANCES AND STATE LAWS REGARDING BUILDING CONSTRUCTION AND LAND USE.

Applicant's Signature:	Date: 7-19-17

Office Use		
Case No:	Date Received:	Received by:
Fee: Complete Review :	Receipt No:	
Application Complete as of:	ARB hearing date (if applicable):	
Posting Verification:	6 copies of drawings (folded)	
1 reproducible 8 ½" X 11" vicinity map	1 reproducible 8 ½" X 11" site, grading, LS, Public Facilities plan	
Neighborhood/Developer meeting materials		

Revised: 6/12/14

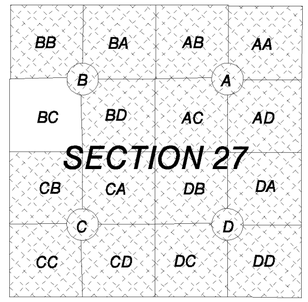
2S 1 27BC



WASHINGTON COUNTY OREGON
SW1/4 NW1/4 SECTION 27 T2S R1W W.M.
SCALE 1" = 100'

36	31	32	33	34	35	36	31
1	6	5	4	3	2	1	6
12	7	8	9	10	11	12	7
13	18	17	16	15	14	13	18
24	19	20	21	22	23	24	19
25	30	29	28	27	26	25	30
36	31	32	33	34	35	36	31
1	6	5	4	3	2	1	6

FOR ADDITIONAL MAPS VISIT OUR WEBSITE AT www.co.washington.or.us



Cancelled Taxlots For: 2S127BC

SCALE 1" = 100'

0 50 100 200 300

Assessment
CARTOGRAPHY
Taxation

PLOT DATE: April 26, 2016

FOR ASSESSMENT PURPOSES ONLY - DO NOT RELY ON FOR OTHER USE

Map areas delineated by either gray shading or a cross-hatched pattern are for reference only and may not indicate the most current property boundaries. Please consult the appropriate map for the most current information.

TUALATIN
2S 1 27BC

dig2s1w27

Clean Water Services

Clean Water Services File Number
17-001435

Sensitive Area Pre-Screening Site Assessment

1. **Jurisdiction:** Tualatin

2. **Property Information** *(example 1S234AB01400)*
Tax lot ID(s): 2S127BC00200
Site Address: 12155 SW Tualatin Sherwood Road
City, State, Zip: Tualatin, Oregon , 97062
Nearest Cross Street: SW 124th Avenue and SW Cimino Street

3. **Owner Information**
Name:
Company: Industrial Property Trust
Address: 4675 MacArthur Court Suite 625
City, State, Zip: Newport Beach, California, 92660
Phone/Fax: 949.892.4912
E-Mail:

4. **Development Activity** *(check **all** that apply)*
- ☐ Addition to Single Family Residence (rooms, deck, garage)
- ☐ Lot Line Adjustment
- ☐ Minor Land Partition
- ☐ Residential Condominium
- ☐ Commercial Condominium
- ☐ Residential Subdivision
- ☐ Commercial Subdivision
- ☒ Single Lot Commercial
- ☐ Multi Lot Commercial

Other
Proposed construction of a 140,576 Shell Building

5. **Applicant Information**
Name: Jennifer Kimura
Company: VLMK Engineering + Design
Address: 3933 SW Kelly Avenue
City, State, Zip: Portland, Oregon , 97239
Phone/Fax: 503.222.4453
E-Mail: jenniferk@vlmk.com

6. **Will the project involve any off-site work?** ☐ Yes ☐ No ☒ Unknown
Location and description of off-site work

7. **Additional comments or information that may be needed to understand your project**
Proposed construction of a 140,576 Shell Building and associated site work

This application does NOT replace Grading and Erosion Control Permits, Connection Permits, Building Permits, Site Development Permits, DEQ 1200-C Permit or other permits as issued by the Department of Environmental Quality, Department of State Lands and/or Department of the Army COE. All required permits and approvals must be obtained and completed under applicable local, state, and federal law.

By signing this form, the Owner or Owner's authorized agent or representative, acknowledges and agrees that employees of Clean Water Services have authority to enter the project site at all reasonable times for the purpose of inspecting project site conditions and gathering information related to the project site. I certify that I am familiar with the information contained in this document, and to the best of my knowledge and belief, this information is true, complete, and accurate.

Print/Type Name Jennifer Kimura **Print/Type Title** Permit Coordinator

ONLINE SUBMITTAL **Date** 4/25/2017

FOR DISTRICT USE ONLY

- ☐ Sensitive areas potentially exist on site or within 200' of the site. **THE APPLICANT MUST PERFORM A SITE ASSESSMENT PRIOR TO ISSUANCE OF A SERVICE PROVIDER LETTER.** If Sensitive Areas exist on the site or within 200 feet on adjacent properties, a Natural Resources Assessment Report may also be required.
- ☐ Based on review of the submitted materials and best available information Sensitive areas do not appear to exist on site or within 200' of the site. This Sensitive Area Pre-Screening Site Assessment does NOT eliminate the need to evaluate and protect water quality sensitive areas if they are subsequently discovered. This document will serve as your Service Provider letter as required by Resolution and Order 07-20, Section 3.02.1. All required permits and approvals must be obtained and completed under applicable local, State, and federal law.
- ☒ Based on review of the submitted materials and best available information the above referenced project will not significantly impact the existing or potentially sensitive area(s) found near the site. This Sensitive Area Pre-Screening Site Assessment does NOT eliminate the need to evaluate and protect additional water quality sensitive areas if they are subsequently discovered. This document will serve as your Service Provider letter as required by Resolution and Order 07-20, Section 3.02.1. All required permits and approvals must be obtained and completed under applicable local, state and federal law.
- ☐ **This Service Provider Letter is not valid unless _____ CWS approved site plan(s) are attached.**
- ☐ The proposed activity does not meet the definition of development or the lot was platted after 9/9/95 ORS 92.040(2). NO SITE ASSESSMENT OR SERVICE PROVIDER LETTER IS REQUIRED.

Reviewed by Chuck Berkheimer Date 5/1/17

N88°30'49"W 959.78'

SW CIMINO STREET

S01°46'34"W 42.48'

S47°18'06"W 38.64'

W.Q./DETENTION SWALE

W.Q./DETENTION SWALE

PRIVATE W.Q./DETENTION POND

2S 1 27B 00400

A

85,838 SQ. FT.
EXISTING (SHADED)

184 SP. (2.1/T)

LOT 1

LOT 2

B

140,570 SQ. FT.
159 SP. (1.1/T)

TAX LOT 400
MAP 2S 1 27B

39,713 SF.

32,310 SF.

36,544 SF.

32,004 SF.

362'

282.0'

156.0'

155.0'

360'

307'6

146'

672.06' — N 1°52'4" E (M/L)

N01°37'11"E 624.17'

N01°37'11"E 260.84'

N88°18'04"E 106.96'

N83°41'30"E 852.05'

124TH AVENUE

124th AVENUE

S01°46'34"W 646.00'

N01°46'34"E 2637.44'

GRAVEL ROAD

S47°11'35"E 51.59'

S83°41'30"W 94.35'

CONCRETE APRON

SW TUALATIN SHERWOOD ROAD

SITE PLAN - SCHEME 04

1" = 30.0'

30 0 30 60 90

SITE AREA SUMMARY

SITE AREA:	386,007 SQFT.	8.86	ACRES (+/-)
BUILDING 'B'	140,570 SQFT.	36.4%	COVERAGE
LANDSCAPE:	58,500 SQFT.	15.2%	COVERAGE
PAVING	186,937 SQFT.	48.4%	COVERAGE
PARKING (REQ'D.):	156 SPACES		
PARKING (ACTUAL.):	159 SPACES	1.1 PER TH.	

PARKING BASED ON 20% OFFICE, 30% MANUF. AND 50% WHSE.

Itel Development

TUALITIN SHERWOOD ROAD, AT 124TH AVENUE IN TUALATIN, OREGON

VLMK ENGINEERING + DESIGN
3933 SW Kelly Avenue Portland, Oregon 97239 | tel: 503.222.4453 | fax: 503.248.9263 | www.vlmk.com

PACIFIC HABITAT SERVICES, INC

9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

(800) 871-9333 ● (503) 570-0800 ● Fax (503)570-085

June 26, 2017

IPT Acquisitions, LLC
C/o KG Investment Properties
Kim Schoenfelder
1920 NW AmberGlen Parkway, Suite 100
Beaverton, OR 97006

Re: Itel Development Site in Tualatin, Oregon
PHS Number: 6232

Kim:

Pacific habitat Services, Inc. (PHS) conducted a site visit on May 5, 2017, for the Itel development site located at 12155 SW Tualatin-Sherwood Road in Tualatin, Oregon (Township 2S, Range 1W, Section 27BC, Tax Lot 200). The purpose of the site visit was to determine if water quality sensitive areas (e.g., wetlands, streams) were present within the subject site or located within 200 feet of the site.

With the exception of the southeast corner of the property, which includes a house, yard and rose garden; and an adjacent garage, several outbuildings and gravel storage lot; the remainder of the site consists of an active hay field primarily composed of orchardgrass (*Dactylis glomerata*) and tall fescue (*Schedonorus arundinaceus*). Vegetation within the yard consists of a lawn and mature trees, including shore pine (*Pinus contorta*), Western red cedar (*Thuja plicata*), European white birch (*Betula pendula*), and beaked hazelnut (*Corylus cornuta*).

Mapped soils on the site include Hillsboro loam, 3 to 7 and 7 to 12 percent slopes (21B and 21C), neither of which is considered to be hydric. Soils observed throughout the property were well-drained and consistent with the mapped soil type. No evidence of hydrology was present during the time of our site visit. PHS took a sample point (SP 1) within the lowest area on the site, in the northeastern portion of the property; no evidence of hydrophytic vegetation, hydric soils, or wetland hydrology was observed. The data sheet for sample point 1 is attached; the sample point location is shown on the attached aerial photo; also included are site photos.

Based on PHS's site investigation, we have concluded that there are no wetlands or other sensitive areas present on or within 200 feet of the subject site. It should be noted that a large wetland area is present north of the subject site; however, the wetland is located greater than 200 feet from the site and the slopes adjacent to the wetland are less than 25 percent, and therefore, no vegetated corridor is present on the subject property.

Please feel free to contact me if you have any questions.

Sincerely,

Caroline Rim
Natural Resource Specialist

Attachments

PHS # 6232

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region

Project/Site: **12155 SW Tualatin-Sherwood Rd.** City/County: **Tualatin/Washington** Sampling Date: **5/5/2017**

Applicant/Owner: **IPT Acquisitions, LLC** State: **OR** Sampling Point: **1**

Investigator(s): **Caroline Rim** Section, Township, Range: **S27BC T2S R1W**

Landform (hillslope, terrace, etc.:) **slope** Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): **LRRA** Lat: **45.37025°** Long: **-122.80201°** Datum: **DD**

Soil Map Unit Name: **Hillsboro loam** NWI Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes **X** No _____ (if no, explain in Remarks)

Are vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? (Y/N) **Y**

Are vegetation ____ Soil ____ or Hydrology ____ naturally problematic? If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes		No	**X**	**Is Sampled Area within a Wetland?** Yes _____ No **X**
Hydric Soil Present?	Yes		No	**X**	
Wetland Hydrology Present?	Yes		No	**X**	

Remarks:

VEGETATION - Use scientific names of plants.

	absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (plot size: ____)			
1			
2			
3			
4			
	0	= Total Cover	
Sapling/Shrub Stratum (plot size: ____)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb Stratum (plot size: **5**)			
1 ***Dactylis glomerata***	**90**	**X**	**FACU**
2 ***Schedonorus arundinaceaus***	**10**		**FAC**
3			
4			
5			
6			
7			
8			
	100	= Total Cover	
Woody Vine Stratum (plot size: ____)			
1			
2			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of		Multiply by:	
OBL Species		x 1 =	**0**
FACW species		x 2 =	**0**
FAC Species		x 3 =	**0**
FACU Species		x 4 =	**0**
UPL Species		x 5 =	**0**
Column Totals	**0** (A)		**0** (B)

Prevalence Index =B/A = **#DIV/0!**

Hydrophytic Vegetation Indicators:

_____ 1- Rapid Test for Hydrophytic Vegetation

_____ 2- Dominance Test is >50%

_____ 3-Prevalence Index is ≤ 3.0[1]

_____ 4-Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet)

_____ 5- Wetland Non-Vascular Plants[1]

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No **X**

Remarks:

SOIL PHS # **6232** Sampling Point: **1**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(Inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	**10YR 3/3**	**100**					**Silt Loam**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1) **(except MLRA 1)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: **compaction**

Depth (inches): **12**

Hydric Soil Present? Yes _____ **No X**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water stained Leaves (B9) **(Except MLRA 1, 2, 4A, and 4B)**
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soils (C6)
- Stunted or Stressed Plants (D1) **(LRR A)**
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water stained Leaves (B9) **(MLRA1, 2, 4A, and 4B)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Fac-Neutral Test (D5)
- Raised Ant Mounds (D6) **(LRR A)**
- Frost-Heave Hummocks (D7)

Field Observations:

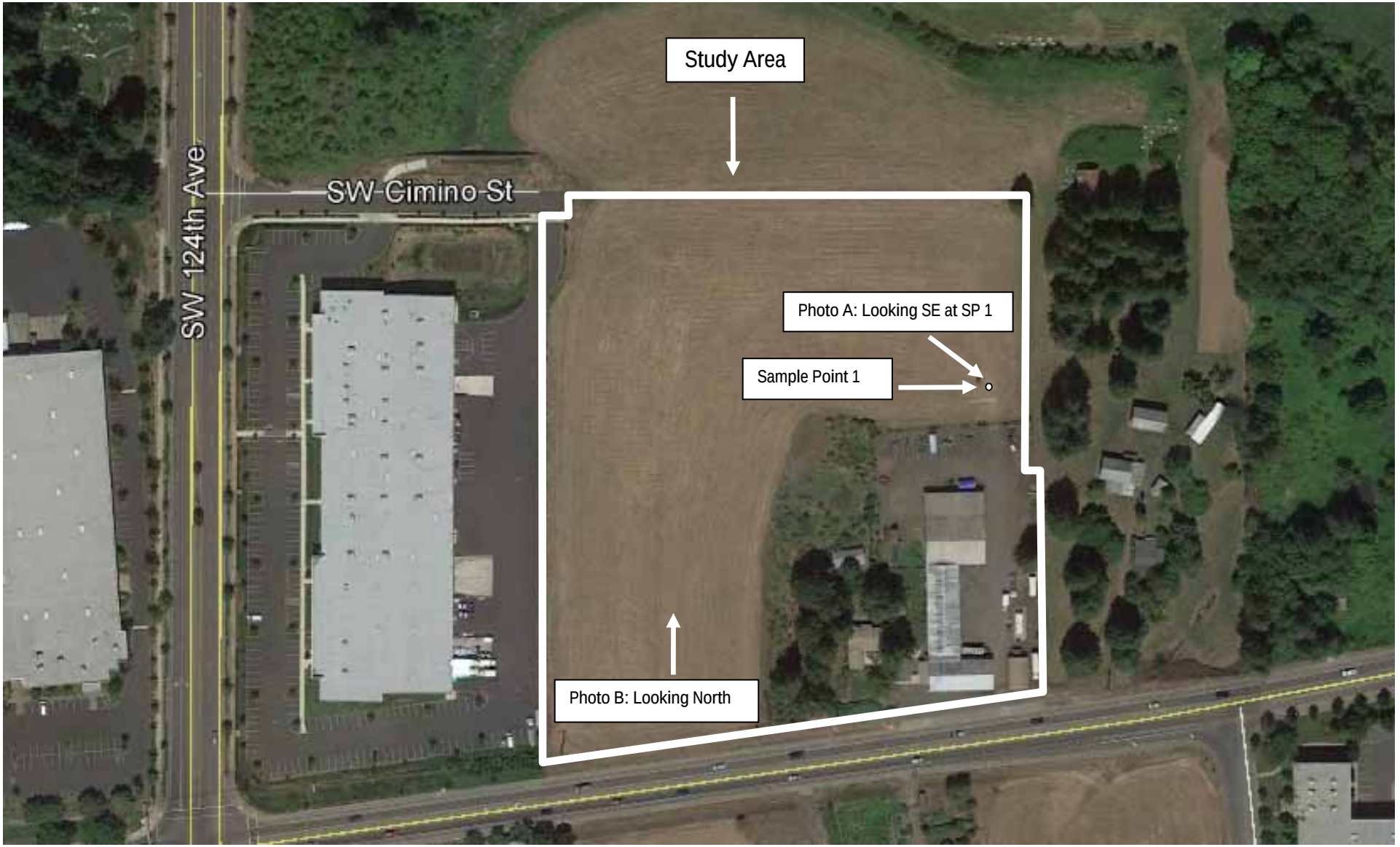
Surface Water Present?	Yes	_____	No **X**	Depth (inches):	_____
Water Table Present?	Yes	_____	No **X**	Depth (inches):	**>18**
Saturation Present? (includes capillary fringe)	Yes	_____	No **X**	Depth (inches):	**>18**

Wetland Hydrology Present?

Yes _____ **No X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



6232
6/26/2017

Pacific Habitat Services, Inc.
9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

Aerial Photo
12155 SW Tualatin-Sherwood Road, Tualatin, Oregon
Google Earth, 2017

FIGURE
1

Photo A

Looking to the southeast at Sample Point 1 (shovel)

Photo B

Looking to the north from south end of field

#6232
6/26/2017

Pacific Habitat Services, Inc.
9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

Photodocumentation
12155 SW Tualatin-Sherwood Road, Tualatin, Oregon
Both photos taken on May 5, 2017

City of Tualatin
www.tualatinoregon.gov

Hydraulic Modeling Fee

Water supply modeling is necessary for larger projects to determine the impact of the project's water demand on the water supply system. Water supply modeling will be performed by a consulting engineer based on the most recent version of the Tualatin Water System Master Plan.

Due to possible impacts to the water supply system, the following projects in Tualatin require hydraulic modeling based on the size and type of the project and projected water use for the finished project. The outcome of modeling could require offsite improvements to the water supply system in order to ensure that adequate water supply is available to serve the project and reduce impacts to the overall system.

Hydraulic modeling of the water supply system is required for the following project type/sizes/demand:

Project Type	Criteria	Permit Fee
Commercial or Industrial Building	Building floor area greater than 48,300 square feet **or** Anticipated daily water demand greater than 870 gallons per acre per day	$ 300 per building
Residential development	More than 49 dwelling units	$ 1,000
Multi-family development	More than 49 dwelling units **or** a combined building floor area greater than 48,300 square feet	$ 300 per building

Please complete this form and submit the form and required fee (if applicable) with your land-use application (architectural review, subdivision, etc.).

[X] Commercial or Industrial Development

- Building floor area **157,230** square feet
- Anticipated water demand (if known) _____ gallons per day
- Described planned building use **SHELL BLDG. (USE UNKNOWN). IT IS ESTIMATED AT 15% OFFICE, 25% MFR. AND 60% WAREHOUSE**

[ ] Residential Development

- Number of dwelling units or single family home lots _____

[ ] Multi-Family Residential Development

- Number of dwelling units_____
- Building floor area (sum of all building) _____
- Number of multi-family buildings_____

Permit fee required based on the information provided above $ 300

- If no fee is required, enter $0.

NOTE: Water Supply Modeling does not replace the requirement for fire hydrant flow testing. Flow testing of fire hydrants will still be required to verify adequate fire flow of finished system

IPT TUALATIN

SW Cimino Street
Tualatin, OR

PRELIMINARY STORMWATER REPORT

VLMK Project Number: 20170034

Industrial Property Trust (IPT)
4675 MacArthur Court, Suite 625
Newport Beach, California 92660

Prepared By: Jacob A. Bubacz E.I.T.
July 19, 2017
Revised July 26, 2017

VLMK
ENGINEERING + DESIGN

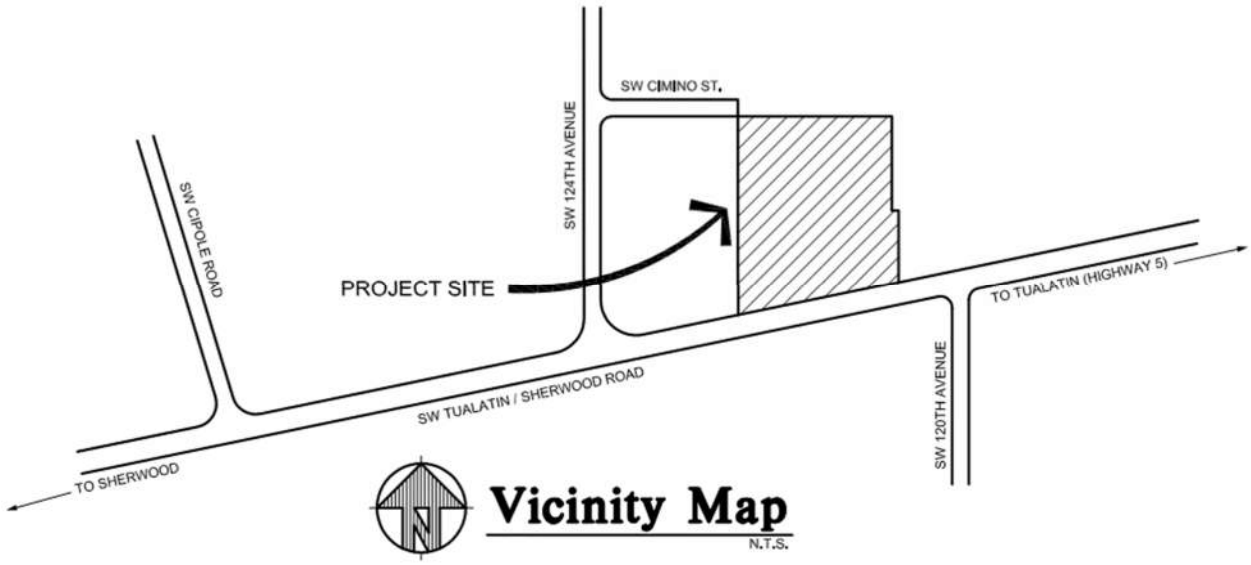
Project: IPT Tualatin
Project Address: SW Cimino Street
Tualatin, OR

Project Number: 20170034

TABLE OF CONTENTS

I. SITE AND PROJECT INFORMATION

A. Vicinity Map



B. Project Information

The proposed IPT Tualatin development is located to the North of SW Tualatin-Sherwood Highway, south of SW Cimino Street, and directly east of the existing Itel Corporate Center.

The survey information is from a Topographic Survey provided by Westlake Consultants, Inc. (Pacific Corporate Center, 15115 SW Sequoia Parkway, Suite 150, Tigard, Oregon, 97224 Phone: (503)684-0652). The existing site is made of up primarily fallow coverage and includes a few structures, gravel lot and undeveloped land with tree coverage. The majority of the site drains to the north to the existing wetlands located to the north. The site area is 386,007 s.f. The proposed shell building is 157,230 s.f. The new total impervious areas are 322,412 s.f.

Onsite water quality treatment of new impervious area will be provided by the use of two StormFilter Vaults and a few single-unit StormFilter Catchbasins. Water quantity control for onsite runoff will be achieved with the use of StormTech underground storage chambers and engineered outlet control structures designed to attenuate release rates to less than pre-developed peak flow rates for the 2-, 10-, and 25-year design storms. The stormwater detention facilities have been oversized to perform additional mitigation of onsite runoff in order to offset water quantity control for the proposed SW Cimino Street roadway improvements. After treatment and detention, runoff will be discharged to a public sewer, with a small portion infiltrating to the native soil beneath the underground chambers.

All stormwater facilities and conveyance systems for this development have been designed per the City of Tualatin and Clean Water Services Standards.

Additional design information used was obtained from:

- USDA SCS "Soil Survey of Washington County"
- USDA SCS TR-55 "Urban Hydrology for Small Watersheds"
- "Stormwater Calculations for Itel Corporate Center" VLMK Consulting Engineers #206649
- "Stormwater Calculations for Cimino Road Public Improvements" VLMK Consulting Engineers #206649

Software used in design:

- HydroCAD Stormwater Modeling Software
- Microsoft Excel 2016
- AutoCAD Civil 3D 2016

C. Stormwater Narrative

The majority of onsite stormwater runoff will be collected at various Catchbasins and roof drains throughout the property. Stormwater is then conveyed to StormFilters for water quality treatment before entering underground StormTech detention chambers for water quantity control. Engineered outlet control structures at both underground storage facilities will use a combination of orifices and weirs to release stormwater post-development runoff at less than pre-developed peak rates.

The number of StormFilters required for this development was calculated using the Clean Water Services flowrate equal to 0.36" over the new impervious area, over 48-hours. Quantity control will limit post-development runoff rates to at least pre-development runoff rates, up to the 25-year event. Treated and detained runoff will be discharged to the new public storm line within SW Cimino Street. The extension of SW Cimino Street and related infrastructure will be built concurrently with development of this site. The new public storm line ties into the culvert under Cimino Street, which outfalls into the wetland buffer to the north of the site. The existing 18" conveyance pipe in Cimino Street was designed with capacity for additional flow from the development of this property.

Water quality and quantity control for the proposed Cimino Street roadway extension is required by the City of Tualatin. Quantity control for this roadway runoff will be achieved by oversizing the onsite detention facilities through additional mitigation of onsite runoff. The adjacent, existing Itel Corporate Center stormwater facilities were designed with capacity for a portion of the future SW Cimino Street (approximately 368 feet) improvements that will be installed concurrent with this development. Treatment of the remaining roadway improvements (approximately 280 feet) will be provided with this development.

Quantity control will be achieved by providing additional quantity control for on-site runoff within the underground storage chambers. Calculations have been performed such that sizing of the detention facility is based on the pre-development on-site area only (±8.86 acres) and the post-development area of the site and the roadway basin (±9.25 acres). HydroCAD calculations give preliminary detention volumes required in order to detain the overall site and road area, and release it at the release rate for the site area only. The pond model was created and adjusted until the post-development "model" storm event (street and site) yielded appropriate outflow rates (less than pre-development rates). The arched chambers are embedded in a drain rock bed and are open at the base. Storage volumes include void space in the surrounding rock, above and below the chambers. These systems will not be lined on the bottom and sides by an impermeable liner. Infiltrations test results performed by the geotechnical engineer on July 17, 2017 included a result of 0.6 inches/hour. Applying a Safety Factor of 2, and using a design infiltration rate of 0.3 inches/hour, less than 20% of the full storm event will infiltrate and this system will therefore not be considered a UIC by Oregon DEQ.

Water quality treatment for roadway runoff will be provided with LIDA street-side swales between the roadway curb and sidewalk with overflow grates for larger storm events that will tie into the public storm line within SW Cimino Street.

IPT TUALATIN
ON-SITE BASIN
386,107 SF
8.86 AC
Tc = 32.7 min.
CN = 81

W E S N

EXISTING CONDITIONS 1" = 100'

100 0 100 200 300

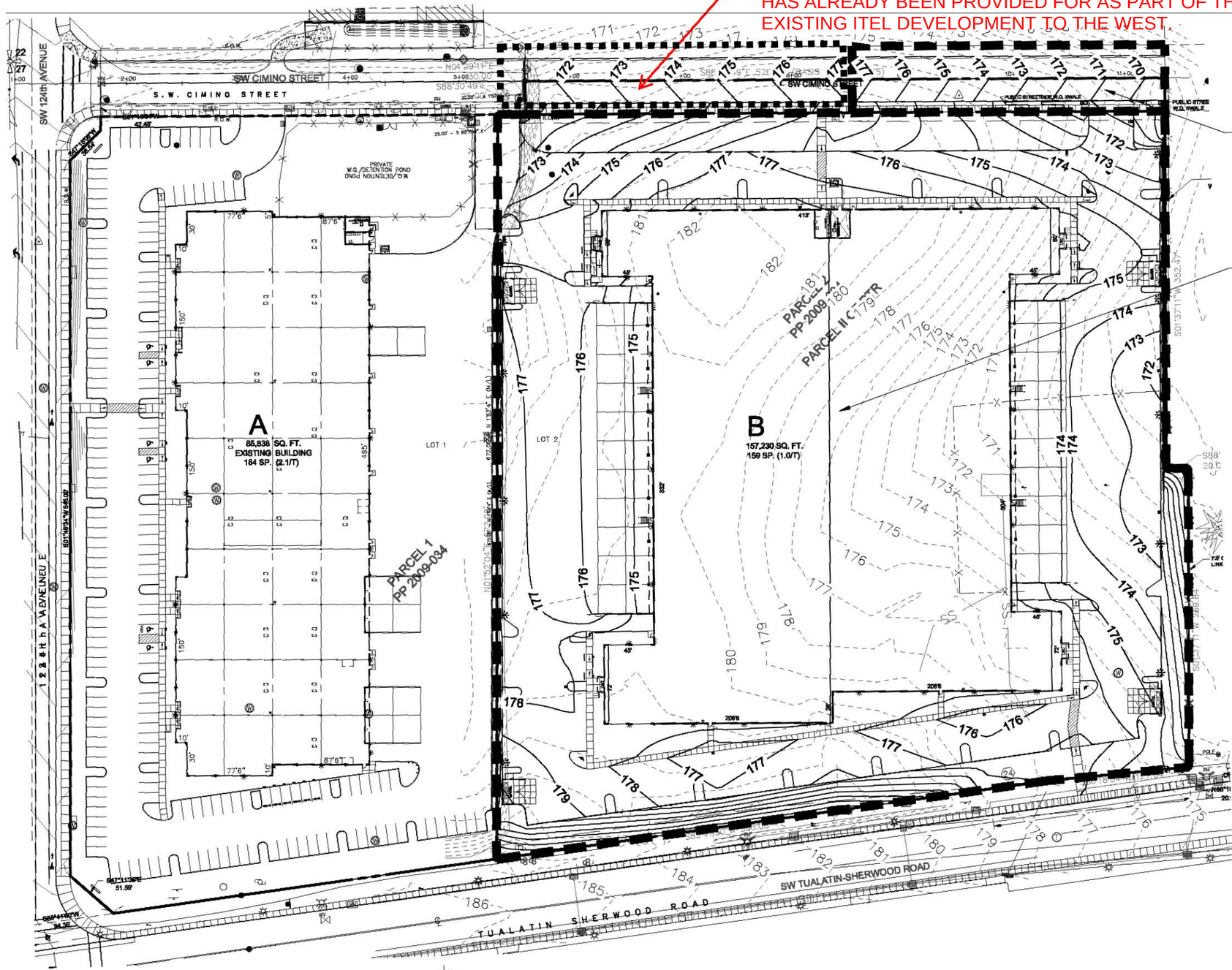
VLMK
ENGINEERING + DESIGN
3933 SW Kelly Avenue
Portland, Oregon 97239
503.222.4453
VLMK.COM

IPT TUALATIN
12155 SW TUALATIN SHERWOOD ROAD
TUALATIN, OREGON 97062

EXISTING CONDITIONS

DATE Jul. 19, 2017
SCALE AS NOTED
PROJ. NO. 20170034
DRAWN JAB
CHECKED

WATER QUALITY/QUANTITY CONTROL FOR THIS WESTERN PORTION OF THE SW CIMINO ROADWAY IMPROVEMENTS HAS ALREADY BEEN PROVIDED FOR AS PART OF THE EXISTING ITEL DEVELOPMENT TO THE WEST.



CIMINO ROAD BASIN
16,914 SF
0.39 AC
Tc = 5 min.
CN = 98

IPT TUALATIN ON-SITE BASIN
386,107 SF
8.86 AC
Tc = 5 min.
CN = 92

DEVELOPED CONDITIONS 1" = 100'

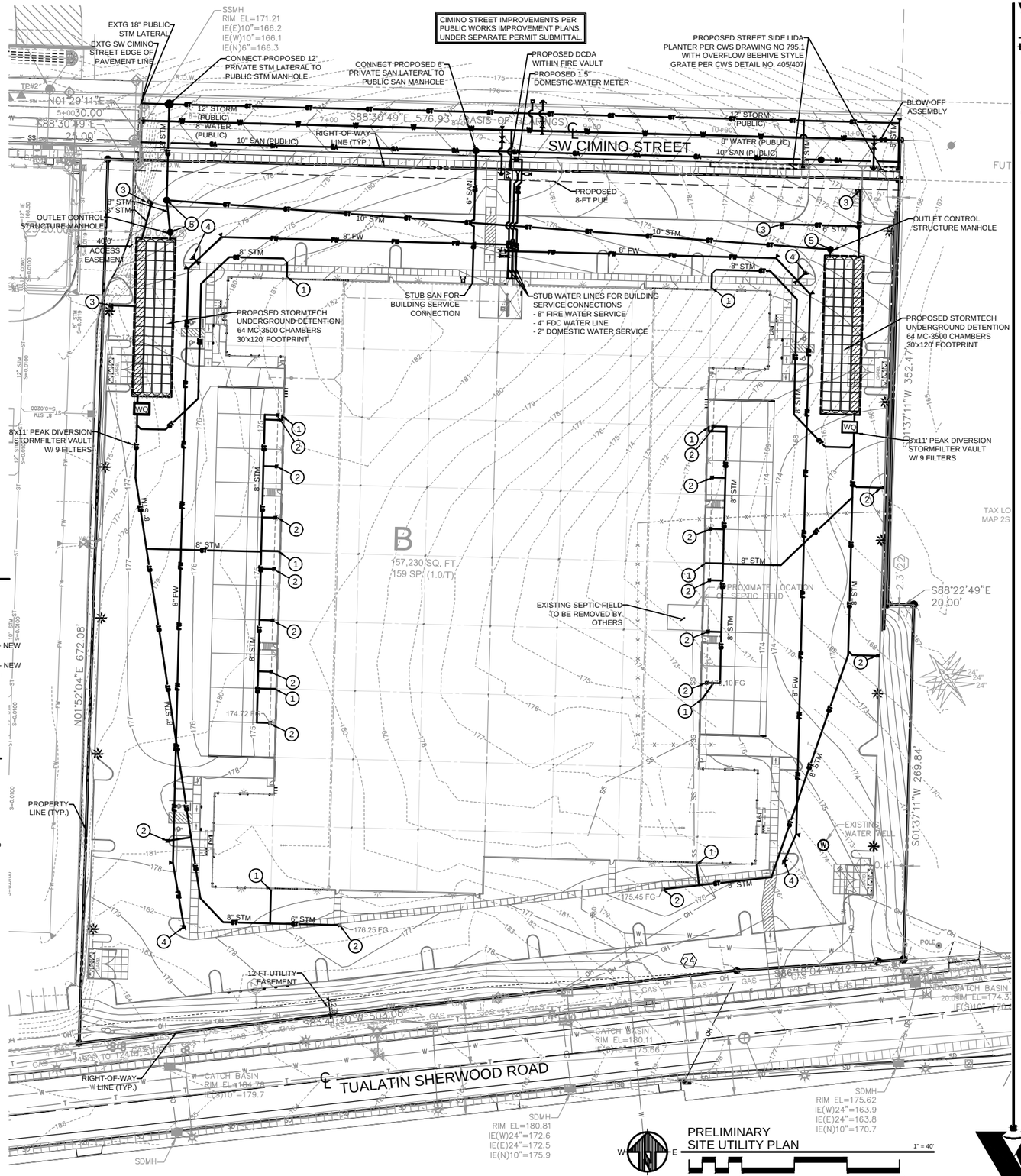
100 0 100 200 300

VLMK ENGINEERING + DESIGNS
3933 SW Kelly Avenue
Portland, Oregon 97239
503.222.4453
VLMK.COM

IPT TUALATIN
12155 SW TUALATIN SHERWOOD ROAD
TUALATIN, OREGON 97062

DEVELOPED CONDITIONS

DATE: Jul. 19, 2017
SCALE: AS NOTED
PROJ. NO.: 20170034
DRAWN: JAB
CHECKED:



SURVEY LEGEND

	GUY WIRE	(#X)	EASEMENT KEYNOTE NUMBER
	POWER POLE	(##.## RX)	RECORD DIMENSION PER R1
VI	ELECTRICAL VAULT	R/M	RECORD AND MEASURED
D	STORM DRAIN MAN HOLE	IR	IRON REBAR
	CATCH BASIN	IP	IRON PIPE
	STAND PIPE	MON	MONUMENT
S	SEWER MAN HOLE	CL	CENTERLINE
EM	ELECTRIC METER	FD	FOUND
	FOUND MONUMENT AS SHOWN ON R1	YPC	YELLOW PLASTIC CAP
	FINISHED FLOOR ELEVATION	FNC	FENCE
W	WATER MONITORING WELL	BLD	BUILDING
	RIGHT OF WAY LINE		EDGE OF GRAVEL
	EASEMENT LINE	SS	UNDERGROUND SEWER LINE
	SECTION OR DLC LINE AS NOTED	SD	UNDERGROUND STORM DRAIN LINE
	PROPERTY LINE		BUILDING OUTLINE
	CENTER LINE		EXCEPTION 24 - RESTRICTED ACCESS
	EDGE OF PAVEMENT		
X X	FENCE AS NOTED		
W	UNDERGROUND WATER LINE		
E	UNDERGROUND ELECTRIC LINE		
T	UNDERGROUND COMMUNICATION LINE		
OH	OVERHEAD UTILITY LINE		
GAS	UNDERGROUND GAS LINE		

UTILITY SYMBOLS

SA	SANITARY - NEW
ST	STORM - NEW
G	GAS - NEW
T	TELEPHONE - NEW
E	ELECTRICAL - NEW
W	WATER - NEW
DW	DOMESTIC WATER - NEW
FW	FIRE WATER - NEW
FDC	FDC SERVICE LINE - NEW
IE	INVERT ELEVATION
C.O.	CLEAN OUT
MH	MANHOLE
CB	CATCH BASIN
AD	AREA DRAIN
EXTG	EXISTING

GENERAL SYMBOLS

EXISTING	NEW	
		CATCH BASIN (CB) -OR AREA DRAIN (AD)
		MANHOLE (MH)
		UTILITY POLE
		FIRE HYDRANT (FH)
M	M	METER
V	FV	UTILITY VAULT
T	T	TRANSFORMER AND PAD
TRAN	TRAN	TRANSFORMER
		VALVE BOX COVER
		POST INDICATOR VALVE
		LIGHT POLE
		WALL MOUNTED LIGHT
		FIRE DEPARTMENT CONNECTION (FDC)
		GATE VALVE
		CHECK VALVE
C.O.	C.O.	CLEAN OUT (CO)

UTILITY KEYNOTES

1. STUB FOR DS CONNECTION.
2. STANDARD CATCH BASIN.
3. 1-CARTRIDGE STORMFILTER CATCHBASIN
4. STANDARD FIRE HYDRANT ASSEMBLY. MIN. 3-FT CLR. AROUND ALL HYDRANTS.
5. STANDARD STORM MANHOLE.
6. OVERFLOW BEEHIVE STYLE GRATE PER CWS DETAIL NO. 405/407.

VLMK
ENGINEERING + DESIGN
3933 SW Kelly Avenue
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VLMK.COM

PROJECT NAME
IPT TUALATIN DC LLC

SW CIMINO STREET
TUALATIN, OR.

REVISIONS

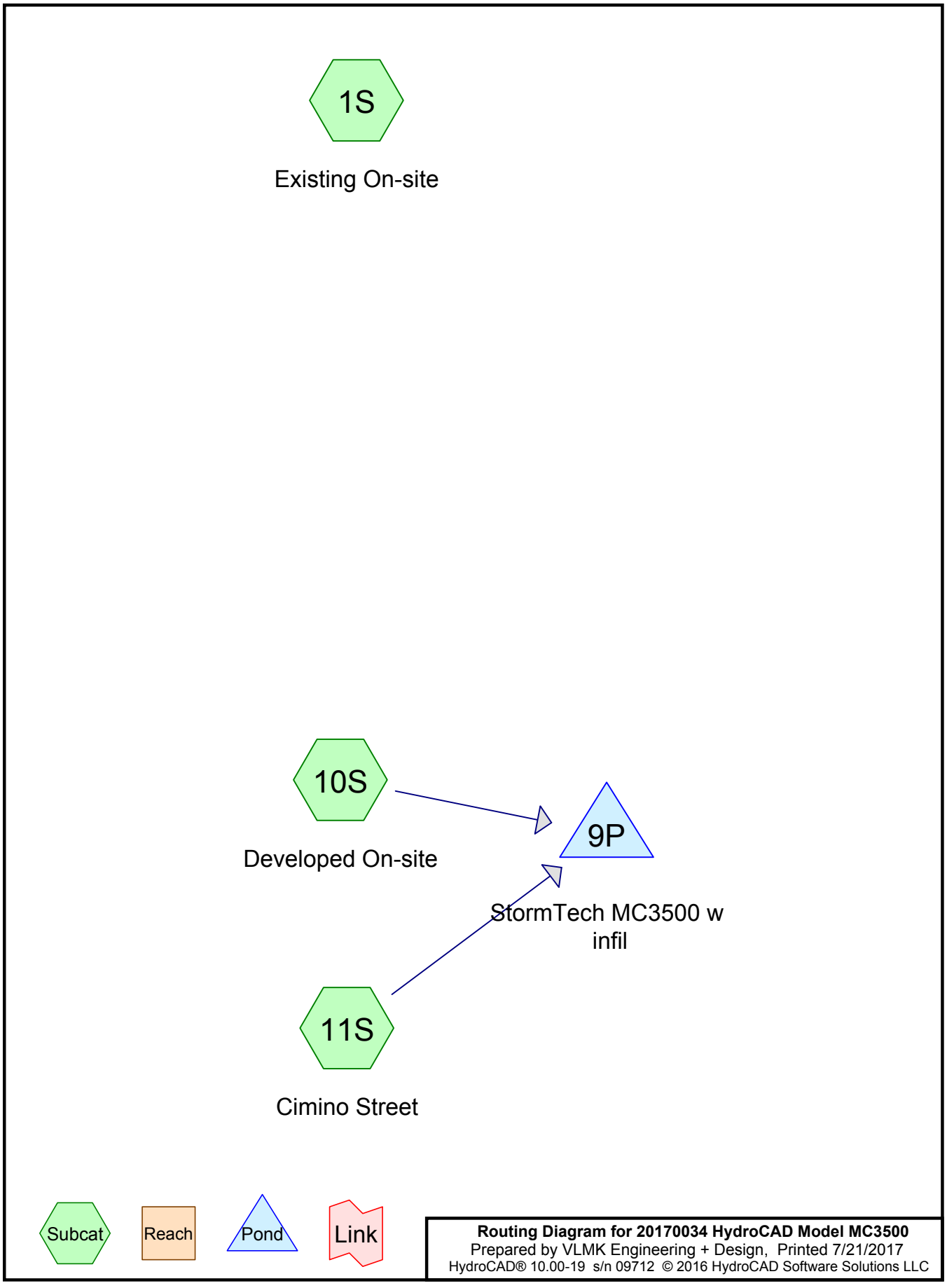
⚠	DATE	DESCRIPTION

DATE: JUNE 2017
SCALE: AS NOTED
PROJ. NO.: 20170034
DRAWN: CJM
CHECKED: BMD

SITE UTILITY PLAN

C3.0

G:\Acad\2017\20170340\Drawings\100 C3.0 UTILITY PLAN.dwg7/26/2017 8:55 AM



Routing Diagram for 20170034 HydroCAD Model MC3500
Prepared by VLMK Engineering + Design, Printed 7/21/2017

Time span=0.50-36.00 hrs, dt=0.05 hrs, 711 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing On-site Runoff Area=8.870 ac 4.06% Impervious Runoff Depth=1.00"
Flow Length=835' Tc=32.7 min CN=81/98 Runoff=1.18 cfs 32,079 cf

Subcatchment 10S: Developed On-site Runoff Area=8.860 ac 83.52% Impervious Runoff Depth=1.93"
Flow Length=808' Tc=5.0 min CN=61/98 Runoff=4.26 cfs 62,035 cf

Subcatchment 11S: Cimino Street Runoff Area=0.390 ac 100.00% Impervious Runoff Depth=2.27"
Tc=5.0 min CN=0/98 Runoff=0.22 cfs 3,215 cf

Pond 9P: StormTech MC3500 w infil Peak Elev=167.80' Storage=17,557 cf Inflow=4.49 cfs 65,249 cf
Discarded=0.06 cfs 6,724 cf Primary=1.16 cfs 58,125 cf Outflow=1.22 cfs 64,848 cf

Total Runoff Area = 789,307 sf Runoff Volume = 97,329 cf Average Runoff Depth = 1.48"
55.02% Pervious = 434,293 sf 44.98% Impervious = 355,014 sf

Summary for Subcatchment 1S: Existing On-site

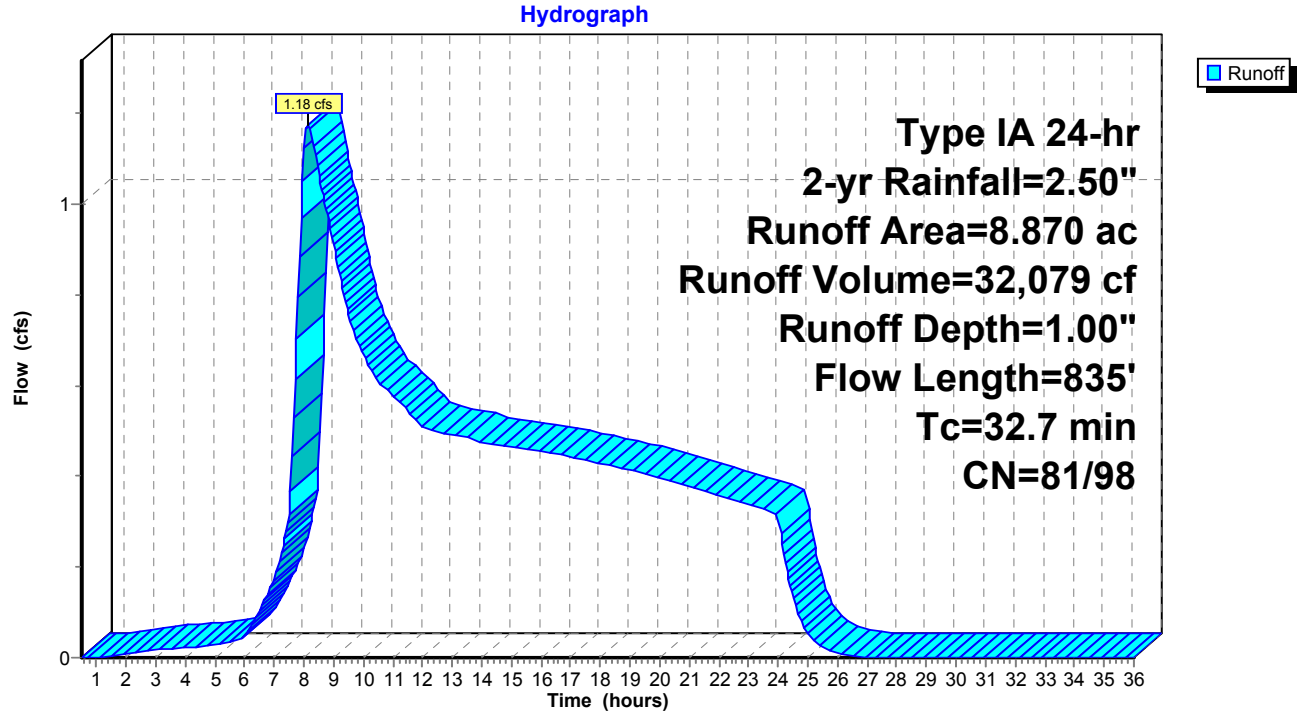
Runoff = 1.18 cfs @ 8.14 hrs, Volume= 32,079 cf, Depth= 1.00"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2-yr Rainfall=2.50"

	Area (ac)	CN	Description
*	0.360	98	Roof
*	1.130	85	Gravel
*	6.200	83	Fallow
*	1.180	65	Woods and Grass
	8.870	81	Weighted Average
	8.510	81	95.94% Pervious Area
	0.360	98	4.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	300	0.0200	0.17		**Sheet Flow,** n= 0.170 P2= 2.50"
3.2	535	0.0300	2.79		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
32.7	835	Total			

Subcatchment 1S: Existing On-site



Hydrograph for Subcatchment 1S: Existing On-site

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.50	0.02	0.00	0.00	0.00
0.75	0.04	0.00	0.00	0.00
1.00	0.05	0.00	0.00	0.00
1.25	0.07	0.00	0.00	0.00
1.50	0.09	0.00	0.01	0.00
1.75	0.11	0.00	0.02	0.01
2.00	0.13	0.00	0.02	0.01
2.25	0.14	0.00	0.04	0.01
2.50	0.16	0.00	0.05	0.01
2.75	0.18	0.00	0.06	0.02
3.00	0.20	0.00	0.07	0.02
3.25	0.22	0.00	0.09	0.02
3.50	0.25	0.00	0.10	0.02
3.75	0.27	0.00	0.12	0.02
4.00	0.29	0.00	0.14	0.02
4.25	0.31	0.00	0.16	0.02
4.50	0.34	0.00	0.18	0.03
4.75	0.36	0.00	0.20	0.03
5.00	0.39	0.00	0.22	0.03
5.25	0.42	0.00	0.25	0.03
5.50	0.45	0.00	0.27	0.03
5.75	0.48	0.00	0.30	0.04
6.00	0.51	0.00	0.33	0.05
6.25	0.55	0.00	0.37	0.07
6.50	0.59	0.01	0.40	0.11
6.75	0.63	0.01	0.44	0.14
7.00	0.67	0.02	0.48	0.18
7.25	0.72	0.02	0.52	0.23
7.50	0.78	0.04	0.57	0.32
7.75	0.92	0.07	0.71	0.70
8.00	1.06	0.12	0.85	**1.12**
8.25	1.14	0.15	0.93	**1.16**
8.50	1.20	0.17	0.99	1.06
8.75	1.25	0.20	1.04	0.99
9.00	1.30	0.22	1.08	0.91
9.25	1.34	0.24	1.12	0.83
9.50	1.37	0.25	1.16	0.76
9.75	1.41	0.27	1.19	0.71
10.00	1.44	0.29	1.22	0.67
10.25	1.47	0.30	1.25	0.64
10.50	1.50	0.32	1.28	0.61
10.75	1.53	0.33	1.31	0.59
11.00	1.56	0.35	1.34	0.58
11.25	1.59	0.36	1.37	0.56
11.50	1.61	0.37	1.39	0.55
11.75	1.64	0.39	1.41	0.53
12.00	1.66	0.40	1.44	0.51
12.25	1.68	0.41	1.46	0.50
12.50	1.71	0.43	1.48	0.50
12.75	1.73	0.44	1.51	0.49
13.00	1.75	0.45	1.53	0.49
13.25	1.78	0.47	1.55	0.49
13.50	1.80	0.48	1.57	0.49
13.75	1.82	0.49	1.60	0.48
14.00	1.84	0.51	1.62	0.47
14.25	1.86	0.52	1.64	0.47
14.50	1.88	0.53	1.66	0.47
14.75	1.90	0.54	1.68	0.47
15.00	1.92	0.56	1.70	0.47
15.25	1.94	0.57	1.72	0.46
15.50	1.96	0.58	1.74	0.46
15.75	1.98	0.59	1.76	0.46
16.00	2.00	0.61	1.78	0.46
16.25	2.02	0.62	1.80	0.45
16.50	2.04	0.63	1.81	0.45
16.75	2.06	0.64	1.83	0.45
17.00	2.08	0.65	1.85	0.44
17.25	2.10	0.67	1.87	0.44
17.50	2.11	0.68	1.89	0.44
17.75	2.13	0.69	1.91	0.43
18.00	2.15	0.70	1.92	0.43
18.25	2.17	0.71	1.94	0.43
18.50	2.18	0.72	1.96	0.42
18.75	2.20	0.74	1.97	0.42
19.00	2.22	0.75	1.99	0.41
19.25	2.23	0.76	2.01	0.41
19.50	2.25	0.77	2.02	0.41
19.75	2.27	0.78	2.04	0.40
20.00	2.28	0.79	2.05	0.40
20.25	2.30	0.80	2.07	0.39
20.50	2.31	0.81	2.08	0.39
20.75	2.33	0.82	2.10	0.38
21.00	2.34	0.83	2.11	0.38
21.25	2.36	0.84	2.13	0.37
21.50	2.37	0.85	2.14	0.37
21.75	2.38	0.86	2.16	0.36
22.00	2.40	0.87	2.17	0.36
22.25	2.41	0.88	2.18	0.35
22.50	2.43	0.89	2.20	0.35
22.75	2.44	0.90	2.21	0.34
23.00	2.45	0.91	2.22	0.34
23.25	2.46	0.92	2.23	0.33
23.50	2.48	0.93	2.25	0.33
23.75	2.49	0.93	2.26	0.32
24.00	**2.50**	**0.94**	**2.27**	0.32
24.25	2.50	0.94	2.27	0.21
24.50	2.50	0.94	2.27	0.13
24.75	2.50	0.94	2.27	0.08
25.00	2.50	0.94	2.27	0.05
25.25	2.50	0.94	2.27	0.03
25.50	2.50	0.94	2.27	0.02
25.75	2.50	0.94	2.27	0.01
26.00	2.50	0.94	2.27	0.01
26.25	2.50	0.94	2.27	0.01
26.50	2.50	0.94	2.27	0.00
26.75	2.50	0.94	2.27	0.00
27.00	2.50	0.94	2.27	0.00
27.25	2.50	0.94	2.27	0.00
27.50	2.50	0.94	2.27	0.00
27.75	2.50	0.94	2.27	0.00
28.00	2.50	0.94	2.27	0.00
28.25	2.50	0.94	2.27	0.00
28.50	2.50	0.94	2.27	0.00
28.75	2.50	0.94	2.27	0.00
29.00	2.50	0.94	2.27	0.00
29.25	2.50	0.94	2.27	0.00
29.50	2.50	0.94	2.27	0.00
29.75	2.50	0.94	2.27	0.00
30.00	2.50	0.94	2.27	0.00
30.25	2.50	0.94	2.27	0.00
30.50	2.50	0.94	2.27	0.00
30.75	2.50	0.94	2.27	0.00
31.00	2.50	0.94	2.27	0.00
31.25	2.50	0.94	2.27	0.00
31.50	2.50	0.94	2.27	0.00
31.75	2.50	0.94	2.27	0.00
32.00	2.50	0.94	2.27	0.00
32.25	2.50	0.94	2.27	0.00
32.50	2.50	0.94	2.27	0.00
32.75	2.50	0.94	2.27	0.00
33.00	2.50	0.94	2.27	0.00
33.25	2.50	0.94	2.27	0.00
33.50	2.50	0.94	2.27	0.00
33.75	2.50	0.94	2.27	0.00
34.00	2.50	0.94	2.27	0.00
34.25	2.50	0.94	2.27	0.00
34.50	2.50	0.94	2.27	0.00
34.75	2.50	0.94	2.27	0.00
35.00	2.50	0.94	2.27	0.00
35.25	2.50	0.94	2.27	0.00
35.50	2.50	0.94	2.27	0.00
35.75	2.50	0.94	2.27	0.00
36.00	2.50	0.94	2.27	0.00

Summary for Subcatchment 10S: Developed On-site

[49] Hint: Tc<2dt may require smaller dt

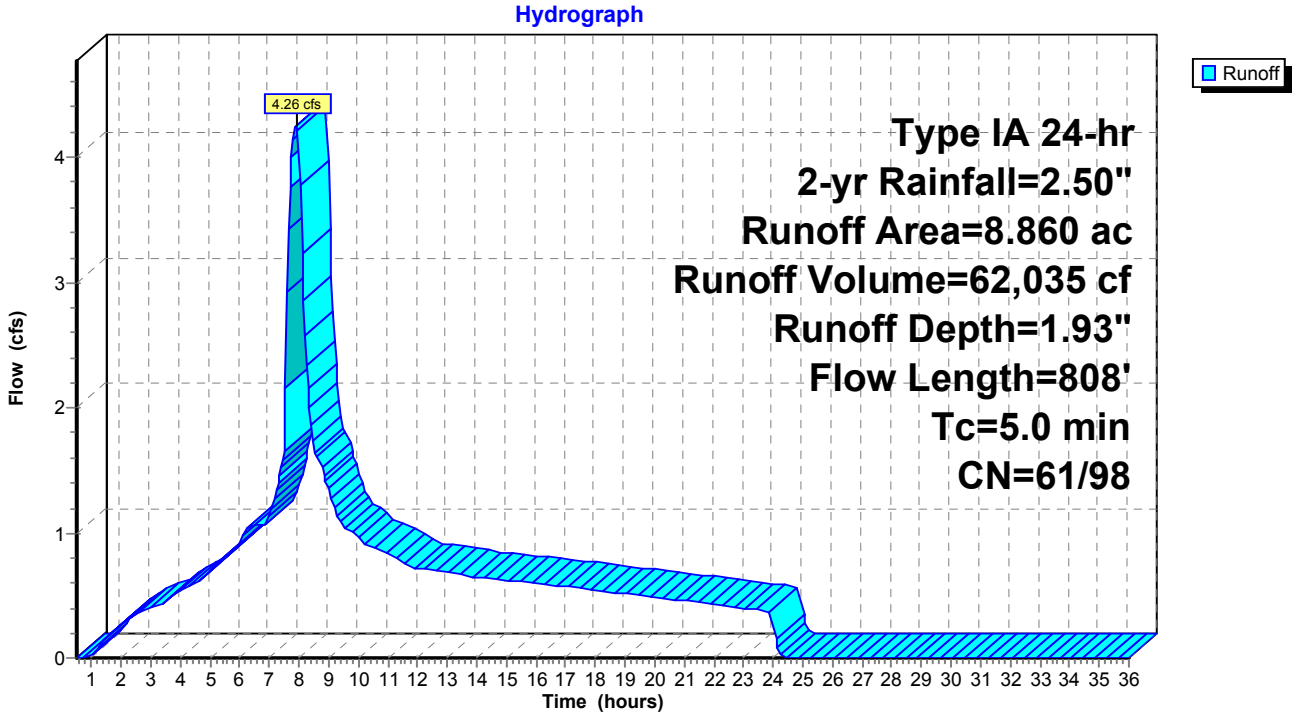
Runoff = 4.26 cfs @ 7.90 hrs, Volume= 62,035 cf, Depth= 1.93"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2-yr Rainfall=2.50"

	Area (ac)	CN	Description
*	7.400	98	Site Imp
*	1.460	61	Site Pervious
	8.860	92	Weighted Average
	1.460	61	16.48% Pervious Area
	7.400	98	83.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	178	0.0200	1.36		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.50"
2.8	630	0.0100	3.75	1.31	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
5.0	808	Total			

Subcatchment 10S: Developed On-site



Hydrograph for Subcatchment 10S: Developed On-site

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.50	0.02	0.00	0.00	0.00
0.75	0.04	0.00	0.00	0.00
1.00	0.05	0.00	0.00	0.02
1.25	0.07	0.00	0.00	0.09
1.50	0.09	0.00	0.01	0.17
1.75	0.11	0.00	0.02	0.22
2.00	0.13	0.00	0.02	0.26
2.25	0.14	0.00	0.04	0.32
2.50	0.16	0.00	0.05	0.36
2.75	0.18	0.00	0.06	0.38
3.00	0.20	0.00	0.07	0.40
3.25	0.22	0.00	0.09	0.42
3.50	0.25	0.00	0.10	0.45
3.75	0.27	0.00	0.12	0.50
4.00	0.29	0.00	0.14	0.54
4.25	0.31	0.00	0.16	0.56
4.50	0.34	0.00	0.18	0.60
4.75	0.36	0.00	0.20	0.64
5.00	0.39	0.00	0.22	0.70
5.25	0.42	0.00	0.25	0.76
5.50	0.45	0.00	0.27	0.81
5.75	0.48	0.00	0.30	0.84
6.00	0.51	0.00	0.33	0.91
6.25	0.55	0.00	0.37	1.04
6.50	0.59	0.00	0.40	1.09
6.75	0.63	0.00	0.44	1.04
7.00	0.67	0.00	0.48	1.14
7.25	0.72	0.00	0.52	1.35
7.50	0.78	0.00	0.57	1.66
7.75	0.92	0.00	0.71	**4.00**
8.00	1.06	0.00	0.85	**4.16**
8.25	1.14	0.00	0.93	2.35
8.50	1.20	0.00	0.99	1.64
8.75	1.25	0.00	1.04	1.55
9.00	1.30	0.00	1.08	1.34
9.25	1.34	0.00	1.12	1.15
9.50	1.37	0.00	1.16	1.04
9.75	1.41	0.00	1.19	1.02
10.00	1.44	0.00	1.22	0.97
10.25	1.47	0.01	1.25	0.91
10.50	1.50	0.01	1.28	0.87
10.75	1.53	0.01	1.31	0.87
11.00	1.56	0.01	1.34	0.84
11.25	1.59	0.01	1.37	0.80
11.50	1.61	0.02	1.39	0.77
11.75	1.64	0.02	1.41	0.72
12.00	1.66	0.02	1.44	0.71
12.25	1.68	0.02	1.46	0.71
12.50	1.71	0.03	1.48	0.73
12.75	1.73	0.03	1.51	0.69
13.00	1.75	0.03	1.53	0.68
13.25	1.78	0.04	1.55	0.69
13.50	1.80	0.04	1.57	0.67
13.75	1.82	0.04	1.60	0.65
14.00	1.84	0.05	1.62	0.64
14.25	1.86	0.05	1.64	0.64
14.50	1.88	0.05	1.66	0.64
14.75	1.90	0.06	1.68	0.63
15.00	1.92	0.06	1.70	0.62
15.25	1.94	0.06	1.72	0.62
15.50	1.96	0.07	1.74	0.61
15.75	1.98	0.07	1.76	0.60
16.00	2.00	0.07	1.78	0.60
16.25	2.02	0.08	1.80	0.59
16.50	2.04	0.08	1.81	0.58
16.75	2.06	0.08	1.83	0.58
17.00	2.08	0.09	1.85	0.57
17.25	2.10	0.09	1.87	0.56
17.50	2.11	0.10	1.89	0.56
17.75	2.13	0.10	1.91	0.55
18.00	2.15	0.10	1.92	0.54
18.25	2.17	0.11	1.94	0.54
18.50	2.18	0.11	1.96	0.53
18.75	2.20	0.12	1.97	0.52
19.00	2.22	0.12	1.99	0.52
19.25	2.23	0.12	2.01	0.51
19.50	2.25	0.13	2.02	0.50
19.75	2.27	0.13	2.04	0.49
20.00	2.28	0.14	2.05	0.49
20.25	2.30	0.14	2.07	0.48
20.50	2.31	0.14	2.08	0.47
20.75	2.33	0.15	2.10	0.47
21.00	2.34	0.15	2.11	0.46
21.25	2.36	0.16	2.13	0.45
21.50	2.37	0.16	2.14	0.44
21.75	2.38	0.16	2.16	0.44
22.00	2.40	0.17	2.17	0.43
22.25	2.41	0.17	2.18	0.42
22.50	2.43	0.17	2.20	0.42
22.75	2.44	0.18	2.21	0.41
23.00	2.45	0.18	2.22	0.40
23.25	2.46	0.19	2.23	0.39
23.50	2.48	0.19	2.25	0.39
23.75	2.49	0.19	2.26	0.38
24.00	**2.50**	**0.20**	**2.27**	0.37
24.25	2.50	0.20	2.27	0.02
24.50	2.50	0.20	2.27	0.00
24.75	2.50	0.20	2.27	0.00
25.00	2.50	0.20	2.27	0.00
25.25	2.50	0.20	2.27	0.00
25.50	2.50	0.20	2.27	0.00
25.75	2.50	0.20	2.27	0.00
26.00	2.50	0.20	2.27	0.00
26.25	2.50	0.20	2.27	0.00
26.50	2.50	0.20	2.27	0.00
26.75	2.50	0.20	2.27	0.00
27.00	2.50	0.20	2.27	0.00
27.25	2.50	0.20	2.27	0.00
27.50	2.50	0.20	2.27	0.00
27.75	2.50	0.20	2.27	0.00
28.00	2.50	0.20	2.27	0.00
28.25	2.50	0.20	2.27	0.00
28.50	2.50	0.20	2.27	0.00
28.75	2.50	0.20	2.27	0.00
29.00	2.50	0.20	2.27	0.00
29.25	2.50	0.20	2.27	0.00
29.50	2.50	0.20	2.27	0.00
29.75	2.50	0.20	2.27	0.00
30.00	2.50	0.20	2.27	0.00
30.25	2.50	0.20	2.27	0.00
30.50	2.50	0.20	2.27	0.00
30.75	2.50	0.20	2.27	0.00
31.00	2.50	0.20	2.27	0.00
31.25	2.50	0.20	2.27	0.00
31.50	2.50	0.20	2.27	0.00
31.75	2.50	0.20	2.27	0.00
32.00	2.50	0.20	2.27	0.00
32.25	2.50	0.20	2.27	0.00
32.50	2.50	0.20	2.27	0.00
32.75	2.50	0.20	2.27	0.00
33.00	2.50	0.20	2.27	0.00
33.25	2.50	0.20	2.27	0.00
33.50	2.50	0.20	2.27	0.00
33.75	2.50	0.20	2.27	0.00
34.00	2.50	0.20	2.27	0.00
34.25	2.50	0.20	2.27	0.00
34.50	2.50	0.20	2.27	0.00
34.75	2.50	0.20	2.27	0.00
35.00	2.50	0.20	2.27	0.00
35.25	2.50	0.20	2.27	0.00
35.50	2.50	0.20	2.27	0.00
35.75	2.50	0.20	2.27	0.00
36.00	2.50	0.20	2.27	0.00

Summary for Subcatchment 11S: Cimino Street

[49] Hint: Tc<2dt may require smaller dt

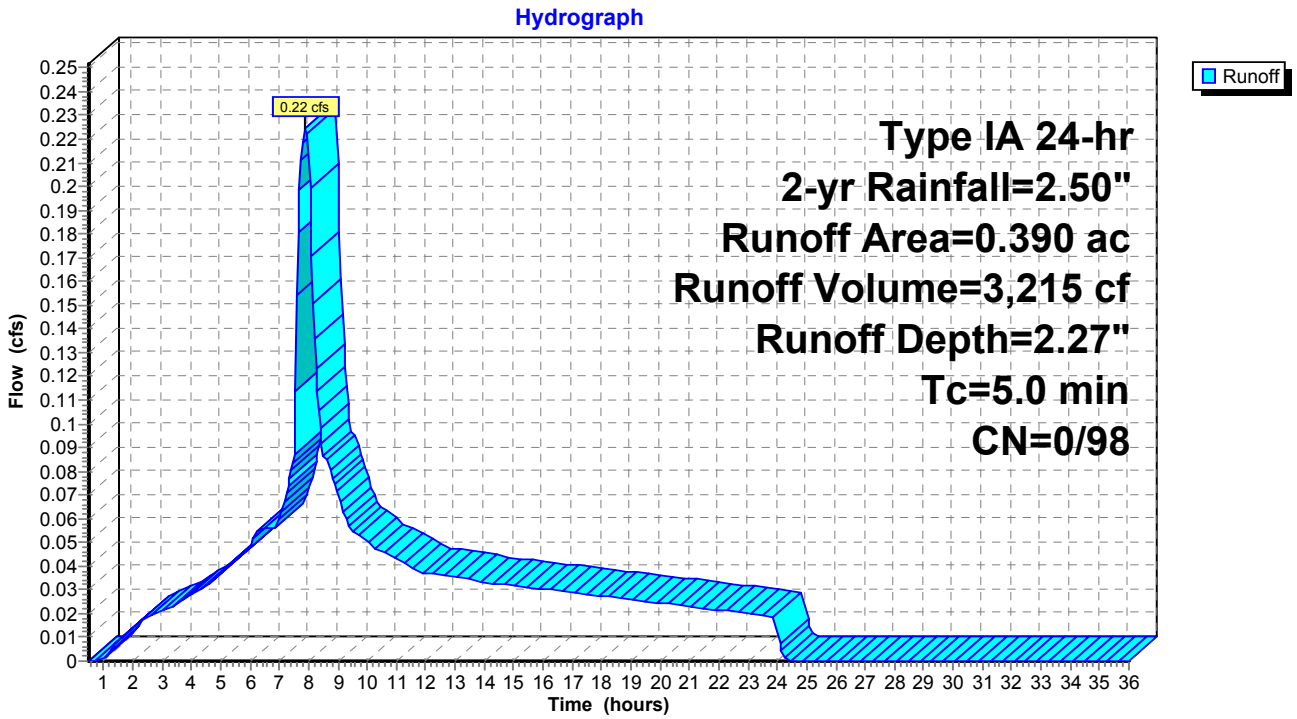
Runoff = 0.22 cfs @ 7.90 hrs, Volume= 3,215 cf, Depth= 2.27"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2-yr Rainfall=2.50"

	Area (ac)	CN	Description
*	0.390	98	Public Roadway Improvements
	0.390	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 11S: Cimino Street



Hydrograph for Subcatchment 11S: Cimino Street

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.50	0.02	**0.00**	0.00	0.00
0.75	0.04	0.00	0.00	0.00
1.00	0.05	0.00	0.00	0.00
1.25	0.07	0.00	0.00	0.00
1.50	0.09	0.00	0.01	0.01
1.75	0.11	0.00	0.02	0.01
2.00	0.13	0.00	0.02	0.01
2.25	0.14	0.00	0.04	0.02
2.50	0.16	0.00	0.05	0.02
2.75	0.18	0.00	0.06	0.02
3.00	0.20	0.00	0.07	0.02
3.25	0.22	0.00	0.09	0.02
3.50	0.25	0.00	0.10	0.02
3.75	0.27	0.00	0.12	0.03
4.00	0.29	0.00	0.14	0.03
4.25	0.31	0.00	0.16	0.03
4.50	0.34	0.00	0.18	0.03
4.75	0.36	0.00	0.20	0.03
5.00	0.39	0.00	0.22	0.04
5.25	0.42	0.00	0.25	0.04
5.50	0.45	0.00	0.27	0.04
5.75	0.48	0.00	0.30	0.04
6.00	0.51	0.00	0.33	0.05
6.25	0.55	0.00	0.37	0.05
6.50	0.59	0.00	0.40	0.06
6.75	0.63	0.00	0.44	0.05
7.00	0.67	0.00	0.48	0.06
7.25	0.72	0.00	0.52	0.07
7.50	0.78	0.00	0.57	0.09
7.75	0.92	0.00	0.71	**0.21**
8.00	1.06	0.00	0.85	**0.22**
8.25	1.14	0.00	0.93	0.12
8.50	1.20	0.00	0.99	0.09
8.75	1.25	0.00	1.04	0.08
9.00	1.30	0.00	1.08	0.07
9.25	1.34	0.00	1.12	0.06
9.50	1.37	0.00	1.16	0.05
9.75	1.41	0.00	1.19	0.05
10.00	1.44	0.00	1.22	0.05
10.25	1.47	0.00	1.25	0.05
10.50	1.50	0.00	1.28	0.05
10.75	1.53	0.00	1.31	0.05
11.00	1.56	0.00	1.34	0.04
11.25	1.59	0.00	1.37	0.04
11.50	1.61	0.00	1.39	0.04
11.75	1.64	0.00	1.41	0.04
12.00	1.66	0.00	1.44	0.04
12.25	1.68	0.00	1.46	0.04
12.50	1.71	0.00	1.48	0.04
12.75	1.73	0.00	1.51	0.04
13.00	1.75	0.00	1.53	0.03
13.25	1.78	0.00	1.55	0.04
13.50	1.80	0.00	1.57	0.03
13.75	1.82	0.00	1.60	0.03
14.00	1.84	0.00	1.62	0.03
14.25	1.86	0.00	1.64	0.03
14.50	1.88	0.00	1.66	0.03
14.75	1.90	0.00	1.68	0.03
15.00	1.92	0.00	1.70	0.03
15.25	1.94	0.00	1.72	0.03
15.50	1.96	0.00	1.74	0.03
15.75	1.98	0.00	1.76	0.03
16.00	2.00	0.00	1.78	0.03
16.25	2.02	0.00	1.80	0.03
16.50	2.04	0.00	1.81	0.03
16.75	2.06	0.00	1.83	0.03
17.00	2.08	0.00	1.85	0.03
17.25	2.10	0.00	1.87	0.03
17.50	2.11	0.00	1.89	0.03
17.75	2.13	0.00	1.91	0.03
18.00	2.15	0.00	1.92	0.03
18.25	2.17	0.00	1.94	0.03
18.50	2.18	0.00	1.96	0.03
18.75	2.20	0.00	1.97	0.03
19.00	2.22	0.00	1.99	0.03
19.25	2.23	0.00	2.01	0.03
19.50	2.25	0.00	2.02	0.03
19.75	2.27	0.00	2.04	0.02
20.00	2.28	0.00	2.05	0.02
20.25	2.30	0.00	2.07	0.02
20.50	2.31	0.00	2.08	0.02
20.75	2.33	0.00	2.10	0.02
21.00	2.34	0.00	2.11	0.02
21.25	2.36	0.00	2.13	0.02
21.50	2.37	0.00	2.14	0.02
21.75	2.38	0.00	2.16	0.02
22.00	2.40	0.00	2.17	0.02
22.25	2.41	0.00	2.18	0.02
22.50	2.43	0.00	2.20	0.02
22.75	2.44	0.00	2.21	0.02
23.00	2.45	0.00	2.22	0.02
23.25	2.46	0.00	2.23	0.02
23.50	2.48	0.00	2.25	0.02
23.75	2.49	0.00	2.26	0.02
24.00	**2.50**	0.00	**2.27**	0.02
24.25	2.50	0.00	2.27	0.00
24.50	2.50	0.00	2.27	0.00
24.75	2.50	0.00	2.27	0.00
25.00	2.50	0.00	2.27	0.00
25.25	2.50	0.00	2.27	0.00
25.50	2.50	0.00	2.27	0.00
25.75	2.50	0.00	2.27	0.00
26.00	2.50	0.00	2.27	0.00
26.25	2.50	0.00	2.27	0.00
26.50	2.50	0.00	2.27	0.00
26.75	2.50	0.00	2.27	0.00
27.00	2.50	0.00	2.27	0.00
27.25	2.50	0.00	2.27	0.00
27.50	2.50	0.00	2.27	0.00
27.75	2.50	0.00	2.27	0.00
28.00	2.50	0.00	2.27	0.00
28.25	2.50	0.00	2.27	0.00
28.50	2.50	0.00	2.27	0.00
28.75	2.50	0.00	2.27	0.00
29.00	2.50	0.00	2.27	0.00
29.25	2.50	0.00	2.27	0.00
29.50	2.50	0.00	2.27	0.00
29.75	2.50	0.00	2.27	0.00
30.00	2.50	0.00	2.27	0.00
30.25	2.50	0.00	2.27	0.00
30.50	2.50	0.00	2.27	0.00
30.75	2.50	0.00	2.27	0.00
31.00	2.50	0.00	2.27	0.00
31.25	2.50	0.00	2.27	0.00
31.50	2.50	0.00	2.27	0.00
31.75	2.50	0.00	2.27	0.00
32.00	2.50	0.00	2.27	0.00
32.25	2.50	0.00	2.27	0.00
32.50	2.50	0.00	2.27	0.00
32.75	2.50	0.00	2.27	0.00
33.00	2.50	0.00	2.27	0.00
33.25	2.50	0.00	2.27	0.00
33.50	2.50	0.00	2.27	0.00
33.75	2.50	0.00	2.27	0.00
34.00	2.50	0.00	2.27	0.00
34.25	2.50	0.00	2.27	0.00
34.50	2.50	0.00	2.27	0.00
34.75	2.50	0.00	2.27	0.00
35.00	2.50	0.00	2.27	0.00
35.25	2.50	0.00	2.27	0.00
35.50	2.50	0.00	2.27	0.00
35.75	2.50	0.00	2.27	0.00
36.00	2.50	0.00	2.27	0.00

Summary for Pond 9P: StormTech MC3500 w infil

Inflow Area = 402,930 sf, 84.22% Impervious, Inflow Depth = 1.94" for 2-yr event
Inflow = 4.49 cfs @ 7.90 hrs, Volume= 65,249 cf
Outflow = 1.22 cfs @ 9.24 hrs, Volume= 64,848 cf, Atten= 73%, Lag= 80.4 min
Discarded = 0.06 cfs @ 9.24 hrs, Volume= 6,724 cf
Primary = 1.16 cfs @ 9.24 hrs, Volume= 58,125 cf

Routing by Stor-Ind method, Time Span= 0.50-36.00 hrs, dt= 0.05 hrs
Peak Elev= 167.80' @ 9.24 hrs Surf.Area= 7,055 sf Storage= 17,557 cf

Plug-Flow detention time= 208.3 min calculated for 64,848 cf (99% of inflow)
Center-of-Mass det. time= 203.7 min (883.5 - 679.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	163.50'	14,733 cf	**58.58'W x 120.42'L x 7.25'H Field A** 51,146 cf Overall - 14,312 cf Embedded = 36,834 cf x 40.0% Voids
#2A	166.00'	14,312 cf	**ADS_StormTech MC-3500 d +Cap** x 128 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 8 Rows of 16 Chambers Cap Storage= +14.9 cf x 2 x 8 rows = 238.4 cf
		29,046 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	164.00'	**12.0" Round Culvert** L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 163.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	164.00'	**3.3" Vert. Orifice/Grate** C= 0.600
#3	Device 1	165.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	168.50'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Device 1	170.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#6	Discarded	163.50'	**0.300 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.06 cfs @ 9.24 hrs HW=167.80' (Free Discharge)
└**6=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=1.16 cfs @ 9.24 hrs HW=167.80' (Free Discharge)
└**1=Culvert** (Passes 1.16 cfs of 4.40 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.55 cfs @ 9.21 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.61 cfs @ 7.03 fps)
  ├**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**5=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 9P: StormTech MC3500 w infil - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 8 rows = 238.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

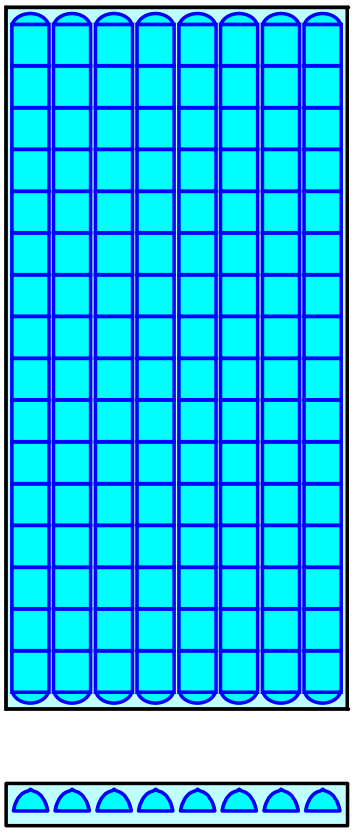
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
8 Rows x 77.0" Wide + 9.0" Spacing x 7 + 12.0" Side Stone x 2 = 58.58' Base Width
30.0" Base + 45.0" Chamber Height + 12.0" Cover = 7.25' Field Height

128 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 8 Rows = 14,312.2 cf Chamber Storage

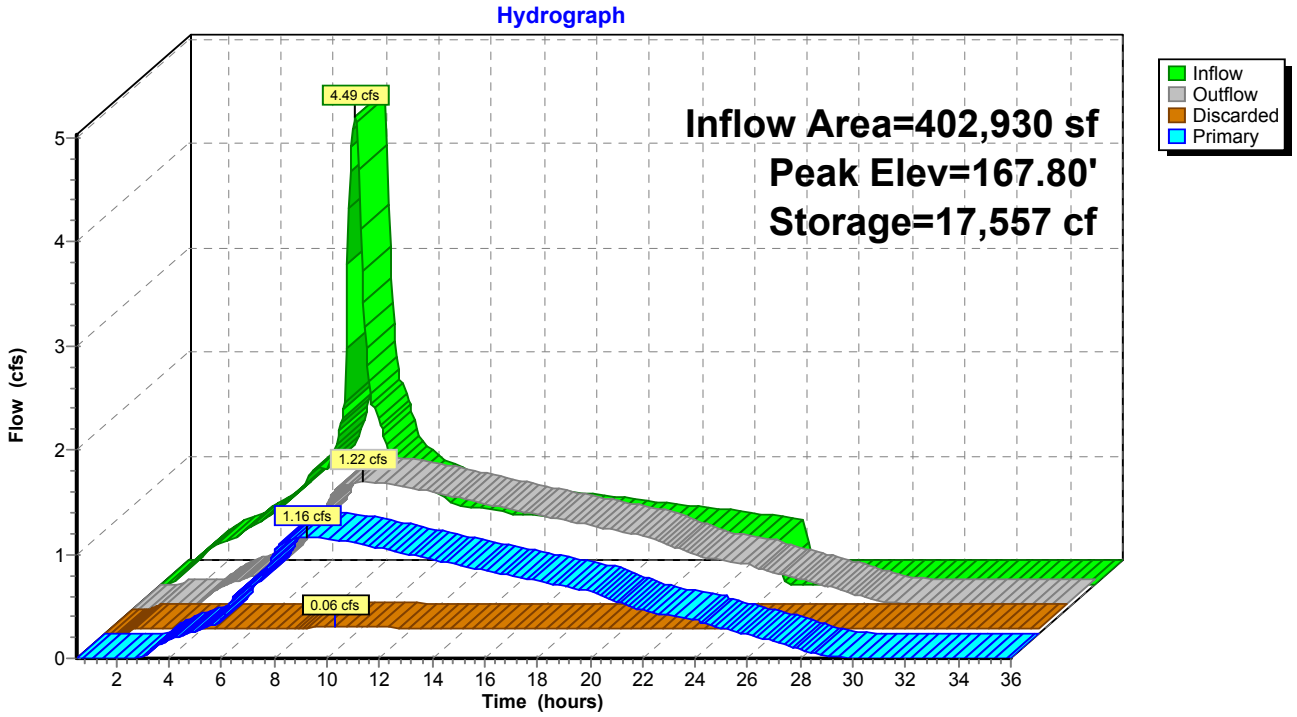
51,145.9 cf Field - 14,312.2 cf Chambers = 36,833.6 cf Stone x 40.0% Voids = 14,733.5 cf Stone Storage

Chamber Storage + Stone Storage = 29,045.7 cf = 0.667 af
Overall Storage Efficiency = 56.8%
Overall System Size = 120.42' x 58.58' x 7.25'

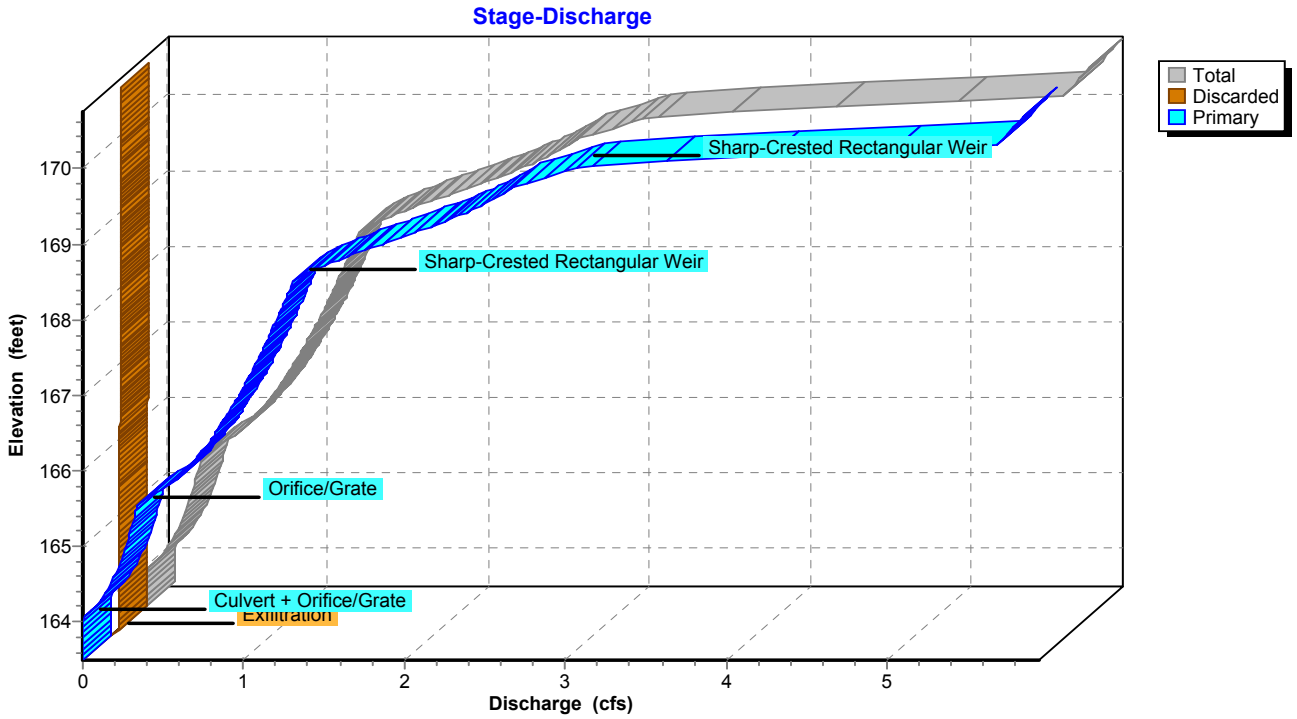
128 Chambers
1,894.3 cy Field
1,364.2 cy Stone



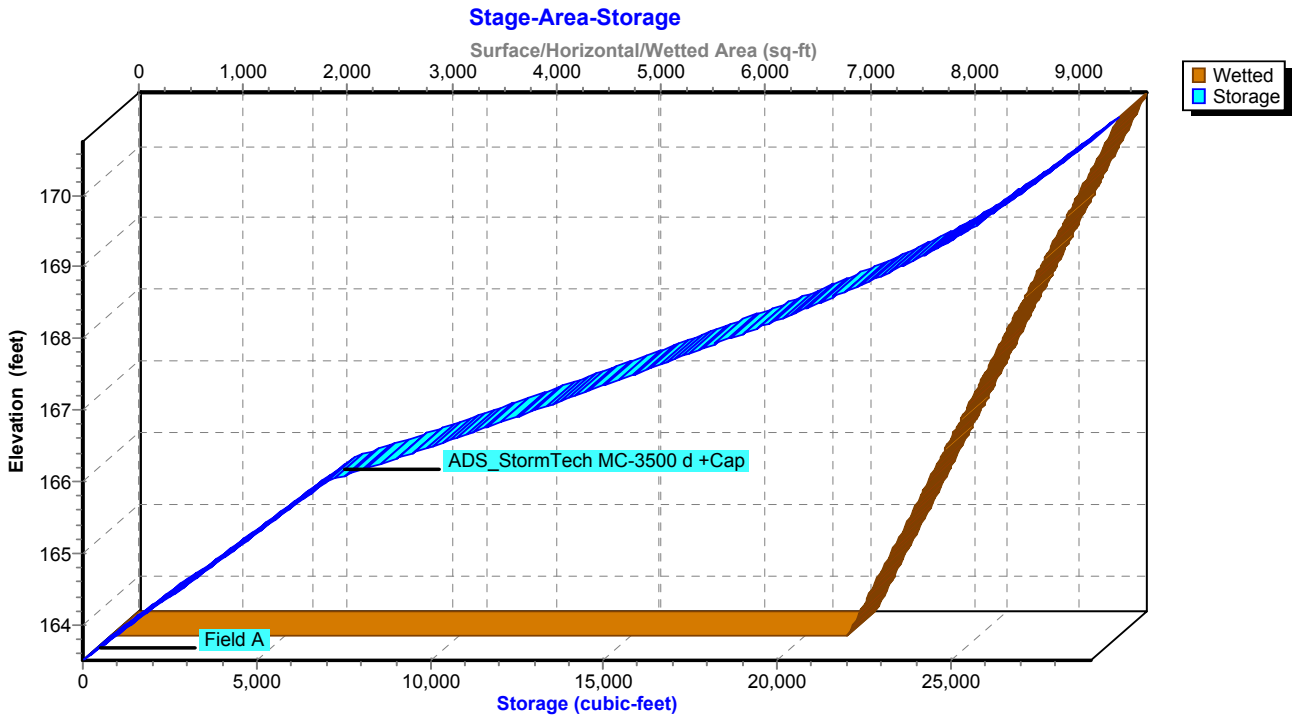
Pond 9P: StormTech MC3500 w infil



Pond 9P: StormTech MC3500 w infil



Pond 9P: StormTech MC3500 w infil



Hydrograph for Pond 9P: StormTech MC3500 w infil

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.50	0.00	0	163.50	0.00	0.00	0.00
1.50	0.18	149	163.55	0.04	0.04	0.00
2.50	0.37	981	163.85	0.05	0.05	0.00
3.50	0.47	2,209	164.28	0.16	0.05	0.11
4.50	0.63	3,438	164.72	0.27	0.05	0.22
5.50	0.86	4,973	165.26	0.36	0.05	0.30
6.50	1.15	6,863	165.93	0.65	0.06	0.60
7.50	**1.75**	8,839	166.29	0.81	0.06	0.75
8.50	**1.73**	**16,764**	**167.65**	**1.19**	**0.06**	**1.13**
9.50	1.09	**17,493**	**167.79**	**1.22**	**0.06**	**1.16**
10.50	0.92	16,800	167.66	1.19	0.06	1.13
11.50	0.81	15,751	167.47	1.15	0.06	1.09
12.50	0.77	14,449	167.24	1.09	0.06	1.03
13.50	0.70	13,230	167.03	1.04	0.06	0.98
14.50	0.67	12,050	166.83	0.98	0.06	0.92
15.50	0.64	10,978	166.65	0.93	0.06	0.87
16.50	0.61	9,994	166.49	0.87	0.06	0.82
17.50	0.58	9,094	166.34	0.82	0.06	0.77
18.50	0.56	8,273	166.20	0.77	0.06	0.72
19.50	0.53	7,527	166.08	0.72	0.06	0.67
20.50	0.50	6,867	165.93	0.65	0.06	0.60
21.50	0.47	6,421	165.78	0.56	0.05	0.50
22.50	0.44	6,178	165.69	0.49	0.05	0.43
23.50	0.41	6,020	165.63	0.45	0.05	0.39
24.50	0.00	5,382	165.41	0.38	0.05	0.32
25.50	0.00	4,142	164.97	0.31	0.05	0.26
26.50	0.00	3,131	164.61	0.25	0.05	0.20
27.50	0.00	2,361	164.34	0.18	0.05	0.13
28.50	0.00	1,861	164.16	0.10	0.05	0.05
29.50	0.00	1,586	164.06	0.06	0.05	0.01
30.50	0.00	1,391	163.99	0.05	0.05	0.00
31.50	0.00	1,211	163.93	0.05	0.05	0.00
32.50	0.00	1,031	163.87	0.05	0.05	0.00
33.50	0.00	851	163.80	0.05	0.05	0.00
34.50	0.00	673	163.74	0.05	0.05	0.00
35.50	0.00	494	163.68	0.05	0.05	0.00

Stage-Discharge for Pond 9P: StormTech MC3500 w infil

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
163.50	0.00	0.00	0.00
163.60	0.05	0.05	0.00
163.70	0.05	0.05	0.00
163.80	0.05	0.05	0.00
163.90	0.05	0.05	0.00
164.00	0.05	0.05	0.00
164.10	0.07	0.05	0.02
164.20	0.12	0.05	0.07
164.30	0.17	0.05	0.12
164.40	0.20	0.05	0.15
164.50	0.22	0.05	0.17
164.60	0.25	0.05	0.19
164.70	0.27	0.05	0.21
164.80	0.29	0.05	0.23
164.90	0.30	0.05	0.25
165.00	0.32	0.05	0.27
165.10	0.33	0.05	0.28
165.20	0.35	0.05	0.29
165.30	0.36	0.05	0.31
165.40	0.38	0.05	0.32
165.50	0.39	0.05	0.33
165.60	0.42	0.05	0.37
165.70	0.50	0.05	0.44
165.80	0.58	0.05	0.52
165.90	0.64	0.05	0.58
166.00	0.69	0.06	0.63
166.10	0.73	0.06	0.68
166.20	0.77	0.06	0.72
166.30	0.81	0.06	0.75
166.40	0.85	0.06	0.79
166.50	0.88	0.06	0.82
166.60	0.91	0.06	0.85
166.70	0.94	0.06	0.88
166.80	0.97	0.06	0.91
166.90	1.00	0.06	0.94
167.00	1.03	0.06	0.97
167.10	1.05	0.06	1.00
167.20	1.08	0.06	1.02
167.30	1.10	0.06	1.05
167.40	1.13	0.06	1.07
167.50	1.15	0.06	1.09
167.60	1.18	0.06	1.12
167.70	1.20	0.06	1.14
167.80	1.22	0.06	1.16
167.90	1.24	0.06	1.18
168.00	1.26	0.06	1.20
168.10	1.29	0.06	1.22
168.20	1.31	0.06	1.25
168.30	1.33	0.06	1.27
168.40	1.35	0.06	1.29
168.50	1.37	0.06	1.30
168.60	1.44	0.06	1.37
168.70	1.54	0.06	1.48
168.80	1.66	0.06	1.60
168.90	1.79	0.06	1.73
169.00	1.92	0.06	1.86
169.10	2.06	0.06	1.99
169.20	2.19	0.06	2.12
169.30	2.31	0.06	2.25
169.40	2.43	0.06	2.36
169.50	2.53	0.06	2.47
169.60	2.62	0.06	2.56
169.70	2.70	0.06	2.64
169.80	2.81	0.06	2.75
169.90	2.97	0.06	2.91
170.00	3.13	0.07	3.07
170.10	3.71	0.07	3.65
170.20	4.63	0.07	4.57
170.30	5.74	0.07	5.67
170.40	5.78	0.07	5.72
170.50	5.83	0.07	5.76
170.60	5.87	0.07	5.81
170.70	**5.92**	**0.07**	**5.85**

Stage-Area-Storage for Pond 9P: StormTech MC3500 w infil

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
163.50	7,055	0
163.60	7,090	282
163.70	7,126	564
163.80	7,162	847
163.90	7,198	1,129
164.00	7,234	1,411
164.10	7,269	1,693
164.20	7,305	1,975
164.30	7,341	2,257
164.40	7,377	2,540
164.50	7,413	2,822
164.60	7,448	3,104
164.70	7,484	3,386
164.80	7,520	3,668
164.90	7,556	3,951
165.00	7,592	4,233
165.10	7,627	4,515
165.20	7,663	4,797
165.30	7,699	5,079
165.40	7,735	5,361
165.50	7,771	5,644
165.60	7,806	5,926
165.70	7,842	6,208
165.80	7,878	6,490
165.90	7,914	6,772
166.00	7,950	7,055
166.10	7,985	7,665
166.20	8,021	8,272
166.30	8,057	8,878
166.40	8,093	9,480
166.50	8,129	10,081
166.60	8,164	10,678
166.70	8,200	11,274
166.80	8,236	11,866
166.90	8,272	12,454
167.00	8,308	13,040
167.10	8,343	13,621
167.20	8,379	14,200
167.30	8,415	14,774
167.40	8,451	15,343
167.50	8,487	15,908
167.60	8,522	16,468
167.70	8,558	17,023
167.80	8,594	17,572
167.90	8,630	18,116
168.00	8,666	18,653
168.10	8,701	19,184
168.20	8,737	19,708
168.30	8,773	20,223
168.40	8,809	20,731
168.50	8,845	21,231
168.60	8,880	21,720
168.70	8,916	22,200
168.80	8,952	22,668
168.90	8,988	23,125
169.00	9,024	23,568
169.10	9,059	23,996
169.20	9,095	24,406
169.30	9,131	24,794
169.40	9,167	25,150
169.50	9,203	25,476
169.60	9,238	25,785
169.70	9,274	26,081
169.80	9,310	26,365
169.90	9,346	26,647
170.00	9,382	26,929
170.10	9,417	27,212
170.20	9,453	27,494
170.30	9,489	27,776
170.40	9,525	28,058
170.50	9,561	28,340
170.60	9,596	28,622
170.70	**9,632**	**28,905**

Time span=0.50-36.00 hrs, dt=0.05 hrs, 711 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing On-site Runoff Area=8.870 ac 4.06% Impervious Runoff Depth=1.73"
Flow Length=835' Tc=32.7 min CN=81/98 Runoff=2.34 cfs 55,735 cf

Subcatchment 10S: Developed On-site Runoff Area=8.860 ac 83.52% Impervious Runoff Depth=2.78"
Flow Length=808' Tc=5.0 min CN=61/98 Runoff=5.99 cfs 89,322 cf

Subcatchment 11S: Cimino Street Runoff Area=0.390 ac 100.00% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=0/98 Runoff=0.31 cfs 4,554 cf

Pond 9P: StormTech MC3500 w infil Peak Elev=169.18' Storage=24,343 cf Inflow=6.30 cfs 93,876 cf
Discarded=0.06 cfs 6,981 cf Primary=2.10 cfs 86,286 cf Outflow=2.17 cfs 93,268 cf

Total Runoff Area = 789,307 sf Runoff Volume = 149,611 cf Average Runoff Depth = 2.27"
55.02% Pervious = 434,293 sf 44.98% Impervious = 355,014 sf

Summary for Subcatchment 1S: Existing On-site

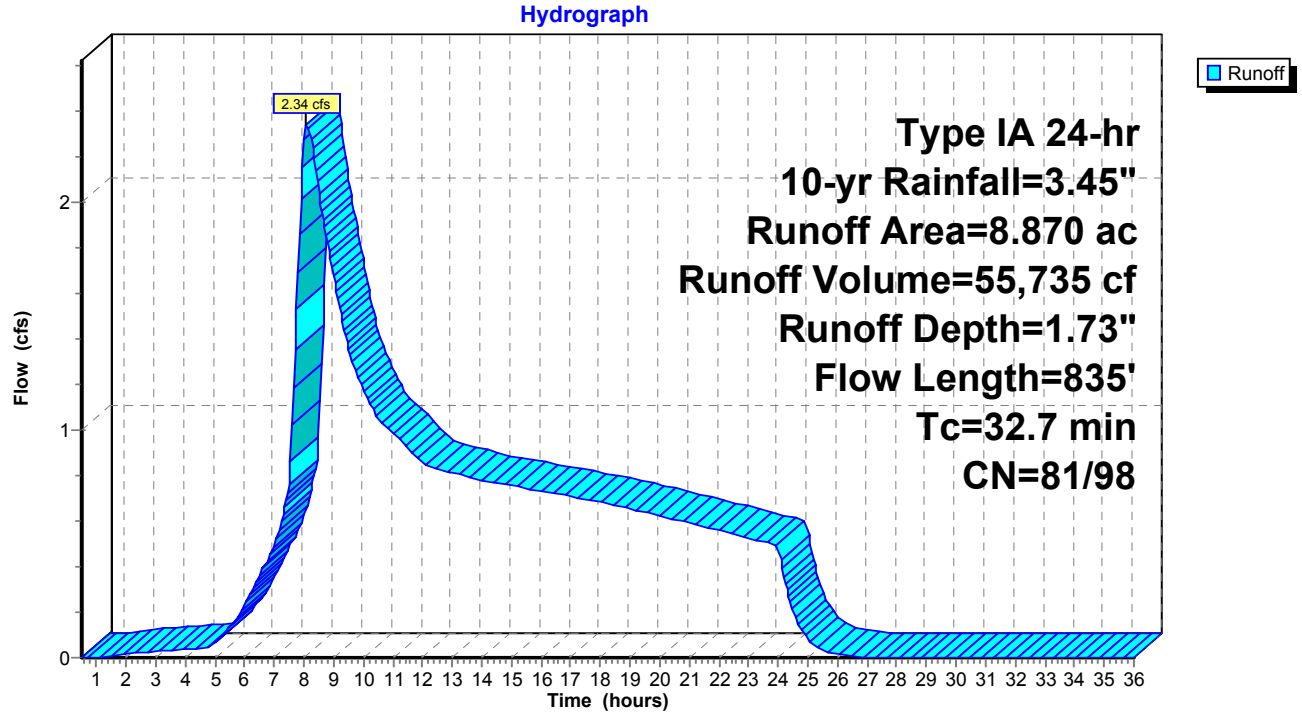
Runoff = 2.34 cfs @ 8.08 hrs, Volume= 55,735 cf, Depth= 1.73"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10-yr Rainfall=3.45"

	Area (ac)	CN	Description
*	0.360	98	Roof
*	1.130	85	Gravel
*	6.200	83	Fallow
*	1.180	65	Woods and Grass
	8.870	81	Weighted Average
	8.510	81	95.94% Pervious Area
	0.360	98	4.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	300	0.0200	0.17		**Sheet Flow,** n= 0.170 P2= 2.50"
3.2	535	0.0300	2.79		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
32.7	835	Total			

Subcatchment 1S: Existing On-site



Hydrograph for Subcatchment 1S: Existing On-site

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.50	0.03	0.00	0.00	0.00
0.75	0.05	0.00	0.00	0.00
1.00	0.07	0.00	0.00	0.00
1.25	0.09	0.00	0.01	0.00
1.50	0.12	0.00	0.02	0.01
1.75	0.15	0.00	0.04	0.01
2.00	0.17	0.00	0.05	0.02
2.25	0.20	0.00	0.07	0.02
2.50	0.23	0.00	0.09	0.02
2.75	0.26	0.00	0.11	0.03
3.00	0.28	0.00	0.13	0.03
3.25	0.31	0.00	0.15	0.03
3.50	0.34	0.00	0.18	0.03
3.75	0.37	0.00	0.20	0.03
4.00	0.40	0.00	0.23	0.04
4.25	0.43	0.00	0.26	0.04
4.50	0.47	0.00	0.29	0.04
4.75	0.50	0.00	0.32	0.05
5.00	0.54	0.00	0.35	0.07
5.25	0.58	0.00	0.39	0.10
5.50	0.62	0.01	0.43	0.14
5.75	0.66	0.01	0.47	0.18
6.00	0.71	0.02	0.51	0.23
6.25	0.76	0.03	0.56	0.30
6.50	0.82	0.05	0.62	0.37
6.75	0.87	0.06	0.66	0.43
7.00	0.92	0.07	0.72	0.50
7.25	0.99	0.09	0.78	0.60
7.50	1.07	0.12	0.86	0.76
7.75	1.27	0.20	1.05	1.53
8.00	1.47	0.30	1.25	**2.28**
8.25	1.58	0.36	1.36	**2.28**
8.50	1.66	0.40	1.43	2.04
8.75	1.73	0.44	1.51	1.86
9.00	1.79	0.48	1.57	1.68
9.25	1.85	0.51	1.62	1.51
9.50	1.90	0.54	1.67	1.36
9.75	1.95	0.57	1.72	1.26
10.00	1.99	0.60	1.77	1.18
10.25	2.03	0.63	1.81	1.11
10.50	2.07	0.65	1.85	1.05
10.75	2.11	0.68	1.89	1.02
11.00	2.15	0.70	1.93	0.99
11.25	2.19	0.73	1.96	0.96
11.50	2.23	0.75	2.00	0.92
11.75	2.26	0.77	2.03	0.89
12.00	2.29	0.80	2.06	0.85
12.25	2.32	0.82	2.09	0.84
12.50	2.36	0.84	2.13	0.84
12.75	2.39	0.86	2.16	0.82
13.00	2.42	0.88	2.19	0.81
13.25	2.45	0.91	2.22	0.81
13.50	2.48	0.93	2.25	0.80
13.75	2.51	0.95	2.28	0.79
14.00	2.54	0.97	2.31	0.78
14.25	2.57	0.99	2.34	0.77
14.50	2.60	1.01	2.37	0.77
14.75	2.63	1.03	2.40	0.76
15.00	2.65	1.05	2.42	0.76
15.25	2.68	1.07	2.45	0.75
15.50	2.71	1.09	2.48	0.75
15.75	2.74	1.11	2.51	0.74
16.00	2.76	1.13	2.53	0.73
16.25	2.79	1.15	2.56	0.73
16.50	2.82	1.17	2.59	0.72
16.75	2.84	1.19	2.61	0.72
17.00	2.87	1.21	2.64	0.71
17.25	2.89	1.23	2.66	0.70
17.50	2.92	1.25	2.69	0.70
17.75	2.94	1.27	2.71	0.69
18.00	2.97	1.29	2.73	0.68
18.25	2.99	1.31	2.76	0.68
18.50	3.01	1.32	2.78	0.67
18.75	3.04	1.34	2.81	0.66
19.00	3.06	1.36	2.83	0.65
19.25	3.08	1.38	2.85	0.65
19.50	3.11	1.39	2.87	0.64
19.75	3.13	1.41	2.89	0.63
20.00	3.15	1.43	2.92	0.62
20.25	3.17	1.45	2.94	0.62
20.50	3.19	1.46	2.96	0.61
20.75	3.21	1.48	2.98	0.60
21.00	3.23	1.49	3.00	0.59
21.25	3.25	1.51	3.02	0.59
21.50	3.27	1.53	3.04	0.58
21.75	3.29	1.54	3.06	0.57
22.00	3.31	1.56	3.08	0.56
22.25	3.33	1.57	3.10	0.55
22.50	3.35	1.59	3.11	0.54
22.75	3.36	1.60	3.13	0.54
23.00	3.38	1.61	3.15	0.53
23.25	3.40	1.63	3.17	0.52
23.50	3.42	1.64	3.18	0.51
23.75	3.43	1.65	3.20	0.50
24.00	**3.45**	**1.67**	**3.22**	0.49
24.25	3.45	1.67	3.22	0.33
24.50	3.45	1.67	3.22	0.21
24.75	3.45	1.67	3.22	0.13
25.00	3.45	1.67	3.22	0.08
25.25	3.45	1.67	3.22	0.05
25.50	3.45	1.67	3.22	0.03
25.75	3.45	1.67	3.22	0.02
26.00	3.45	1.67	3.22	0.01
26.25	3.45	1.67	3.22	0.01
26.50	3.45	1.67	3.22	0.01
26.75	3.45	1.67	3.22	0.00
27.00	3.45	1.67	3.22	0.00
27.25	3.45	1.67	3.22	0.00
27.50	3.45	1.67	3.22	0.00
27.75	3.45	1.67	3.22	0.00
28.00	3.45	1.67	3.22	0.00
28.25	3.45	1.67	3.22	0.00
28.50	3.45	1.67	3.22	0.00
28.75	3.45	1.67	3.22	0.00
29.00	3.45	1.67	3.22	0.00
29.25	3.45	1.67	3.22	0.00
29.50	3.45	1.67	3.22	0.00
29.75	3.45	1.67	3.22	0.00
30.00	3.45	1.67	3.22	0.00
30.25	3.45	1.67	3.22	0.00
30.50	3.45	1.67	3.22	0.00
30.75	3.45	1.67	3.22	0.00
31.00	3.45	1.67	3.22	0.00
31.25	3.45	1.67	3.22	0.00
31.50	3.45	1.67	3.22	0.00
31.75	3.45	1.67	3.22	0.00
32.00	3.45	1.67	3.22	0.00
32.25	3.45	1.67	3.22	0.00
32.50	3.45	1.67	3.22	0.00
32.75	3.45	1.67	3.22	0.00
33.00	3.45	1.67	3.22	0.00
33.25	3.45	1.67	3.22	0.00
33.50	3.45	1.67	3.22	0.00
33.75	3.45	1.67	3.22	0.00
34.00	3.45	1.67	3.22	0.00
34.25	3.45	1.67	3.22	0.00
34.50	3.45	1.67	3.22	0.00
34.75	3.45	1.67	3.22	0.00
35.00	3.45	1.67	3.22	0.00
35.25	3.45	1.67	3.22	0.00
35.50	3.45	1.67	3.22	0.00
35.75	3.45	1.67	3.22	0.00
36.00	3.45	1.67	3.22	0.00

Summary for Subcatchment 10S: Developed On-site

[49] Hint: Tc<2dt may require smaller dt

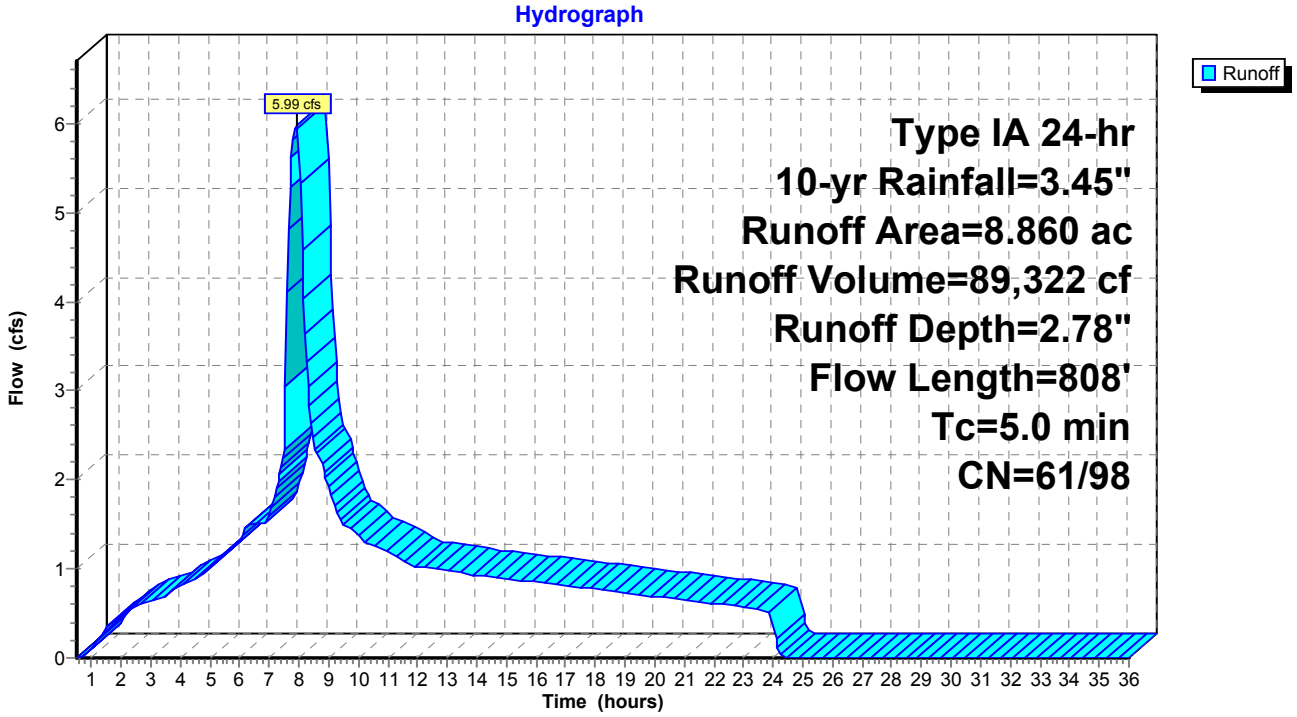
Runoff = 5.99 cfs @ 7.90 hrs, Volume= 89,322 cf, Depth= 2.78"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10-yr Rainfall=3.45"

	Area (ac)	CN	Description
*	7.400	98	Site Imp
*	1.460	61	Site Pervious
	8.860	92	Weighted Average
	1.460	61	16.48% Pervious Area
	7.400	98	83.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	178	0.0200	1.36		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.50"
2.8	630	0.0100	3.75	1.31	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
5.0	808	Total			

Subcatchment 10S: Developed On-site



Hydrograph for Subcatchment 10S: Developed On-site

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.50	0.03	0.00	0.00	0.00
0.75	0.05	0.00	0.00	0.02
1.00	0.07	0.00	0.00	0.10
1.25	0.09	0.00	0.01	0.23
1.50	0.12	0.00	0.02	0.35
1.75	0.15	0.00	0.04	0.41
2.00	0.17	0.00	0.05	0.47
2.25	0.20	0.00	0.07	0.54
2.50	0.23	0.00	0.09	0.59
2.75	0.26	0.00	0.11	0.62
3.00	0.28	0.00	0.13	0.64
3.25	0.31	0.00	0.15	0.65
3.50	0.34	0.00	0.18	0.69
3.75	0.37	0.00	0.20	0.77
4.00	0.40	0.00	0.23	0.82
4.25	0.43	0.00	0.26	0.84
4.50	0.47	0.00	0.29	0.89
4.75	0.50	0.00	0.32	0.95
5.00	0.54	0.00	0.35	1.02
5.25	0.58	0.00	0.39	1.11
5.50	0.62	0.00	0.43	1.18
5.75	0.66	0.00	0.47	1.22
6.00	0.71	0.00	0.51	1.31
6.25	0.76	0.00	0.56	1.49
6.50	0.82	0.00	0.62	1.55
6.75	0.87	0.00	0.66	1.48
7.00	0.92	0.00	0.72	1.62
7.25	0.99	0.00	0.78	1.91
7.50	1.07	0.00	0.86	2.34
7.75	1.27	0.00	1.05	**5.62**
8.00	1.47	0.01	1.25	**5.86**
8.25	1.58	0.01	1.36	3.32
8.50	1.66	0.02	1.43	2.33
8.75	1.73	0.03	1.51	2.20
9.00	1.79	0.04	1.57	1.91
9.25	1.85	0.05	1.62	1.65
9.50	1.90	0.05	1.67	1.49
9.75	1.95	0.06	1.72	1.46
10.00	1.99	0.07	1.77	1.38
10.25	2.03	0.08	1.81	1.30
10.50	2.07	0.09	1.85	1.25
10.75	2.11	0.10	1.89	1.24
11.00	2.15	0.11	1.93	1.20
11.25	2.19	0.11	1.96	1.15
11.50	2.23	0.12	2.00	1.09
11.75	2.26	0.13	2.03	1.03
12.00	2.29	0.14	2.06	1.01
12.25	2.32	0.15	2.09	1.01
12.50	2.36	0.16	2.13	1.04
12.75	2.39	0.16	2.16	0.98
13.00	2.42	0.17	2.19	0.96
13.25	2.45	0.18	2.22	0.99
13.50	2.48	0.19	2.25	0.95
13.75	2.51	0.20	2.28	0.93
14.00	2.54	0.21	2.31	0.91
14.25	2.57	0.22	2.34	0.92
14.50	2.60	0.23	2.37	0.91
14.75	2.63	0.23	2.40	0.90
15.00	2.65	0.24	2.42	0.89
15.25	2.68	0.25	2.45	0.88
15.50	2.71	0.26	2.48	0.87
15.75	2.74	0.27	2.51	0.86
16.00	2.76	0.28	2.53	0.85
16.25	2.79	0.29	2.56	0.84
16.50	2.82	0.30	2.59	0.83
16.75	2.84	0.31	2.61	0.82
17.00	2.87	0.32	2.64	0.81
17.25	2.89	0.33	2.66	0.80
17.50	2.92	0.33	2.69	0.79
17.75	2.94	0.34	2.71	0.78
18.00	2.97	0.35	2.73	0.77
18.25	2.99	0.36	2.76	0.76
18.50	3.01	0.37	2.78	0.75
18.75	3.04	0.38	2.81	0.74
19.00	3.06	0.39	2.83	0.73
19.25	3.08	0.40	2.85	0.72
19.50	3.11	0.41	2.87	0.71
19.75	3.13	0.41	2.89	0.70
20.00	3.15	0.42	2.92	0.69
20.25	3.17	0.43	2.94	0.68
20.50	3.19	0.44	2.96	0.67
20.75	3.21	0.45	2.98	0.66
21.00	3.23	0.46	3.00	0.65
21.25	3.25	0.47	3.02	0.64
21.50	3.27	0.47	3.04	0.63
21.75	3.29	0.48	3.06	0.62
22.00	3.31	0.49	3.08	0.61
22.25	3.33	0.50	3.10	0.60
22.50	3.35	0.51	3.11	0.59
22.75	3.36	0.51	3.13	0.58
23.00	3.38	0.52	3.15	0.57
23.25	3.40	0.53	3.17	0.56
23.50	3.42	0.54	3.18	0.55
23.75	3.43	0.54	3.20	0.54
24.00	**3.45**	**0.55**	**3.22**	0.53
24.25	3.45	0.55	3.22	0.03
24.50	3.45	0.55	3.22	0.00
24.75	3.45	0.55	3.22	0.00
25.00	3.45	0.55	3.22	0.00
25.25	3.45	0.55	3.22	0.00
25.50	3.45	0.55	3.22	0.00
25.75	3.45	0.55	3.22	0.00
26.00	3.45	0.55	3.22	0.00
26.25	3.45	0.55	3.22	0.00
26.50	3.45	0.55	3.22	0.00
26.75	3.45	0.55	3.22	0.00
27.00	3.45	0.55	3.22	0.00
27.25	3.45	0.55	3.22	0.00
27.50	3.45	0.55	3.22	0.00
27.75	3.45	0.55	3.22	0.00
28.00	3.45	0.55	3.22	0.00
28.25	3.45	0.55	3.22	0.00
28.50	3.45	0.55	3.22	0.00
28.75	3.45	0.55	3.22	0.00
29.00	3.45	0.55	3.22	0.00
29.25	3.45	0.55	3.22	0.00
29.50	3.45	0.55	3.22	0.00
29.75	3.45	0.55	3.22	0.00
30.00	3.45	0.55	3.22	0.00
30.25	3.45	0.55	3.22	0.00
30.50	3.45	0.55	3.22	0.00
30.75	3.45	0.55	3.22	0.00
31.00	3.45	0.55	3.22	0.00
31.25	3.45	0.55	3.22	0.00
31.50	3.45	0.55	3.22	0.00
31.75	3.45	0.55	3.22	0.00
32.00	3.45	0.55	3.22	0.00
32.25	3.45	0.55	3.22	0.00
32.50	3.45	0.55	3.22	0.00
32.75	3.45	0.55	3.22	0.00
33.00	3.45	0.55	3.22	0.00
33.25	3.45	0.55	3.22	0.00
33.50	3.45	0.55	3.22	0.00
33.75	3.45	0.55	3.22	0.00
34.00	3.45	0.55	3.22	0.00
34.25	3.45	0.55	3.22	0.00
34.50	3.45	0.55	3.22	0.00
34.75	3.45	0.55	3.22	0.00
35.00	3.45	0.55	3.22	0.00
35.25	3.45	0.55	3.22	0.00
35.50	3.45	0.55	3.22	0.00
35.75	3.45	0.55	3.22	0.00
36.00	3.45	0.55	3.22	0.00

Summary for Subcatchment 11S: Cimino Street

[49] Hint: Tc<2dt may require smaller dt

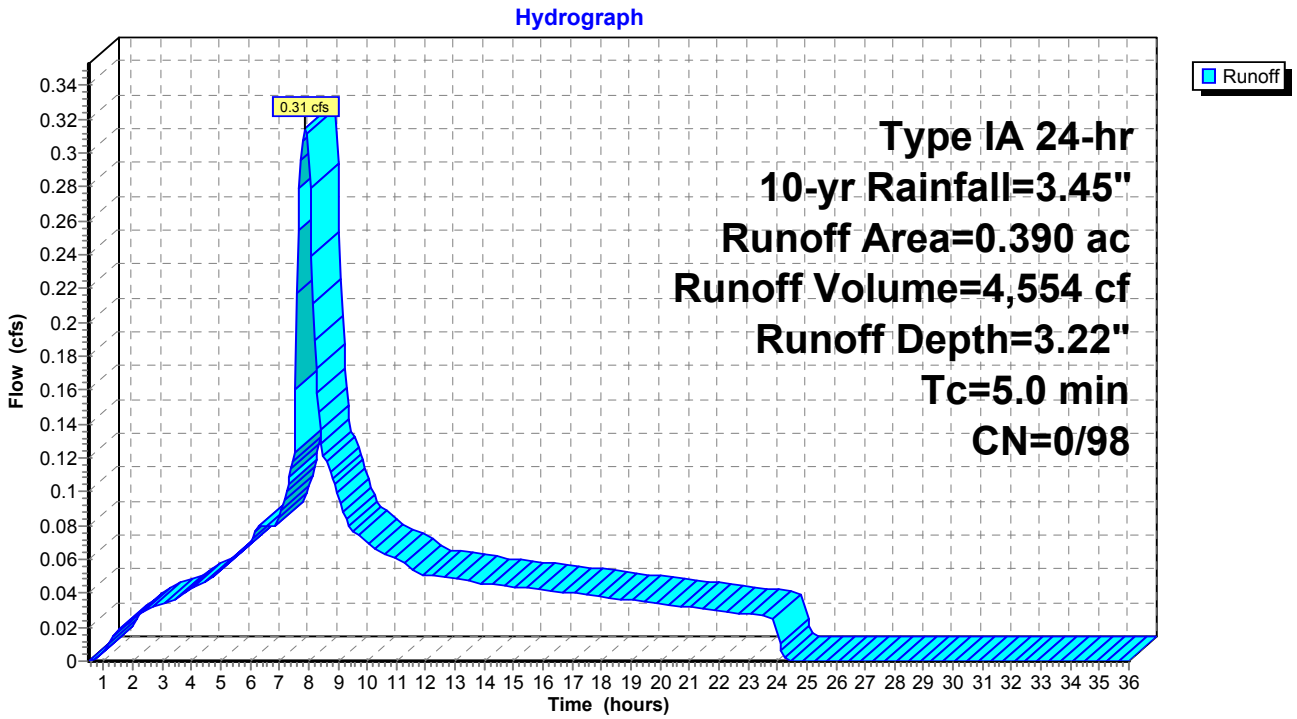
Runoff = 0.31 cfs @ 7.90 hrs, Volume= 4,554 cf, Depth= 3.22"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10-yr Rainfall=3.45"

	Area (ac)	CN	Description
*	0.390	98	Public Roadway Improvements
	0.390	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 11S: Cimino Street



Hydrograph for Subcatchment 11S: Cimino Street

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.50	0.03	**0.00**	0.00	0.00
0.75	0.05	0.00	0.00	0.00
1.00	0.07	0.00	0.00	0.01
1.25	0.09	0.00	0.01	0.01
1.50	0.12	0.00	0.02	0.02
1.75	0.15	0.00	0.04	0.02
2.00	0.17	0.00	0.05	0.02
2.25	0.20	0.00	0.07	0.03
2.50	0.23	0.00	0.09	0.03
2.75	0.26	0.00	0.11	0.03
3.00	0.28	0.00	0.13	0.03
3.25	0.31	0.00	0.15	0.03
3.50	0.34	0.00	0.18	0.04
3.75	0.37	0.00	0.20	0.04
4.00	0.40	0.00	0.23	0.04
4.25	0.43	0.00	0.26	0.04
4.50	0.47	0.00	0.29	0.05
4.75	0.50	0.00	0.32	0.05
5.00	0.54	0.00	0.35	0.05
5.25	0.58	0.00	0.39	0.06
5.50	0.62	0.00	0.43	0.06
5.75	0.66	0.00	0.47	0.06
6.00	0.71	0.00	0.51	0.07
6.25	0.76	0.00	0.56	0.08
6.50	0.82	0.00	0.62	0.08
6.75	0.87	0.00	0.66	0.08
7.00	0.92	0.00	0.72	0.09
7.25	0.99	0.00	0.78	0.10
7.50	1.07	0.00	0.86	0.12
7.75	1.27	0.00	1.05	**0.30**
8.00	1.47	0.00	1.25	**0.31**
8.25	1.58	0.00	1.36	0.17
8.50	1.66	0.00	1.43	0.12
8.75	1.73	0.00	1.51	0.11
9.00	1.79	0.00	1.57	0.10
9.25	1.85	0.00	1.62	0.08
9.50	1.90	0.00	1.67	0.08
9.75	1.95	0.00	1.72	0.07
10.00	1.99	0.00	1.77	0.07
10.25	2.03	0.00	1.81	0.07
10.50	2.07	0.00	1.85	0.06
10.75	2.11	0.00	1.89	0.06
11.00	2.15	0.00	1.93	0.06
11.25	2.19	0.00	1.96	0.06
11.50	2.23	0.00	2.00	0.06
11.75	2.26	0.00	2.03	0.05
12.00	2.29	0.00	2.06	0.05
12.25	2.32	0.00	2.09	0.05
12.50	2.36	0.00	2.13	0.05
12.75	2.39	0.00	2.16	0.05
13.00	2.42	0.00	2.19	0.05
13.25	2.45	0.00	2.22	0.05
13.50	2.48	0.00	2.25	0.05
13.75	2.51	0.00	2.28	0.05
14.00	2.54	0.00	2.31	0.05
14.25	2.57	0.00	2.34	0.05
14.50	2.60	0.00	2.37	0.05
14.75	2.63	0.00	2.40	0.04
15.00	2.65	0.00	2.42	0.04
15.25	2.68	0.00	2.45	0.04
15.50	2.71	0.00	2.48	0.04
15.75	2.74	0.00	2.51	0.04
16.00	2.76	0.00	2.53	0.04
16.25	2.79	0.00	2.56	0.04
16.50	2.82	0.00	2.59	0.04
16.75	2.84	0.00	2.61	0.04
17.00	2.87	0.00	2.64	0.04
17.25	2.89	0.00	2.66	0.04
17.50	2.92	0.00	2.69	0.04
17.75	2.94	0.00	2.71	0.04
18.00	2.97	0.00	2.73	0.04
18.25	2.99	0.00	2.76	0.04
18.50	3.01	0.00	2.78	0.04
18.75	3.04	0.00	2.81	0.04
19.00	3.06	0.00	2.83	0.04
19.25	3.08	0.00	2.85	0.04
19.50	3.11	0.00	2.87	0.03
19.75	3.13	0.00	2.89	0.03
20.00	3.15	0.00	2.92	0.03
20.25	3.17	0.00	2.94	0.03
20.50	3.19	0.00	2.96	0.03
20.75	3.21	0.00	2.98	0.03
21.00	3.23	0.00	3.00	0.03
21.25	3.25	0.00	3.02	0.03
21.50	3.27	0.00	3.04	0.03
21.75	3.29	0.00	3.06	0.03
22.00	3.31	0.00	3.08	0.03
22.25	3.33	0.00	3.10	0.03
22.50	3.35	0.00	3.11	0.03
22.75	3.36	0.00	3.13	0.03
23.00	3.38	0.00	3.15	0.03
23.25	3.40	0.00	3.17	0.03
23.50	3.42	0.00	3.18	0.03
23.75	3.43	0.00	3.20	0.03
24.00	**3.45**	0.00	**3.22**	0.03
24.25	3.45	0.00	3.22	0.00
24.50	3.45	0.00	3.22	0.00
24.75	3.45	0.00	3.22	0.00
25.00	3.45	0.00	3.22	0.00
25.25	3.45	0.00	3.22	0.00
25.50	3.45	0.00	3.22	0.00
25.75	3.45	0.00	3.22	0.00
26.00	3.45	0.00	3.22	0.00
26.25	3.45	0.00	3.22	0.00
26.50	3.45	0.00	3.22	0.00
26.75	3.45	0.00	3.22	0.00
27.00	3.45	0.00	3.22	0.00
27.25	3.45	0.00	3.22	0.00
27.50	3.45	0.00	3.22	0.00
27.75	3.45	0.00	3.22	0.00
28.00	3.45	0.00	3.22	0.00
28.25	3.45	0.00	3.22	0.00
28.50	3.45	0.00	3.22	0.00
28.75	3.45	0.00	3.22	0.00
29.00	3.45	0.00	3.22	0.00
29.25	3.45	0.00	3.22	0.00
29.50	3.45	0.00	3.22	0.00
29.75	3.45	0.00	3.22	0.00
30.00	3.45	0.00	3.22	0.00
30.25	3.45	0.00	3.22	0.00
30.50	3.45	0.00	3.22	0.00
30.75	3.45	0.00	3.22	0.00
31.00	3.45	0.00	3.22	0.00
31.25	3.45	0.00	3.22	0.00
31.50	3.45	0.00	3.22	0.00
31.75	3.45	0.00	3.22	0.00
32.00	3.45	0.00	3.22	0.00
32.25	3.45	0.00	3.22	0.00
32.50	3.45	0.00	3.22	0.00
32.75	3.45	0.00	3.22	0.00
33.00	3.45	0.00	3.22	0.00
33.25	3.45	0.00	3.22	0.00
33.50	3.45	0.00	3.22	0.00
33.75	3.45	0.00	3.22	0.00
34.00	3.45	0.00	3.22	0.00
34.25	3.45	0.00	3.22	0.00
34.50	3.45	0.00	3.22	0.00
34.75	3.45	0.00	3.22	0.00
35.00	3.45	0.00	3.22	0.00
35.25	3.45	0.00	3.22	0.00
35.50	3.45	0.00	3.22	0.00
35.75	3.45	0.00	3.22	0.00
36.00	3.45	0.00	3.22	0.00

Summary for Pond 9P: StormTech MC3500 w infil

Inflow Area = 402,930 sf, 84.22% Impervious, Inflow Depth = 2.80" for 10-yr event
Inflow = 6.30 cfs @ 7.90 hrs, Volume= 93,876 cf
Outflow = 2.17 cfs @ 8.87 hrs, Volume= 93,268 cf, Atten= 66%, Lag= 58.1 min
Discarded = 0.06 cfs @ 8.87 hrs, Volume= 6,981 cf
Primary = 2.10 cfs @ 8.87 hrs, Volume= 86,286 cf

Routing by Stor-Ind method, Time Span= 0.50-36.00 hrs, dt= 0.05 hrs
Peak Elev= 169.18' @ 8.87 hrs Surf.Area= 7,055 sf Storage= 24,343 cf

Plug-Flow detention time= 215.6 min calculated for 93,137 cf (99% of inflow)
Center-of-Mass det. time= 211.3 min (884.8 - 673.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	163.50'	14,733 cf	**58.58'W x 120.42'L x 7.25'H Field A** 51,146 cf Overall - 14,312 cf Embedded = 36,834 cf x 40.0% Voids
#2A	166.00'	14,312 cf	**ADS_StormTech MC-3500 d +Cap** x 128 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 8 Rows of 16 Chambers Cap Storage= +14.9 cf x 2 x 8 rows = 238.4 cf
		29,046 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	164.00'	**12.0" Round Culvert** L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 163.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	164.00'	**3.3" Vert. Orifice/Grate** C= 0.600
#3	Device 1	165.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	168.50'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Device 1	170.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#6	Discarded	163.50'	**0.300 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.06 cfs @ 8.87 hrs HW=169.18' (Free Discharge)
└**6=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=2.10 cfs @ 8.87 hrs HW=169.18' (Free Discharge)
└**1=Culvert** (Passes 2.10 cfs of 5.15 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.64 cfs @ 10.82 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.79 cfs @ 9.03 fps)
  ├**4=Sharp-Crested Rectangular Weir** (Weir Controls 0.67 cfs @ 2.70 fps)
  └**5=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 9P: StormTech MC3500 w infil - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 8 rows = 238.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

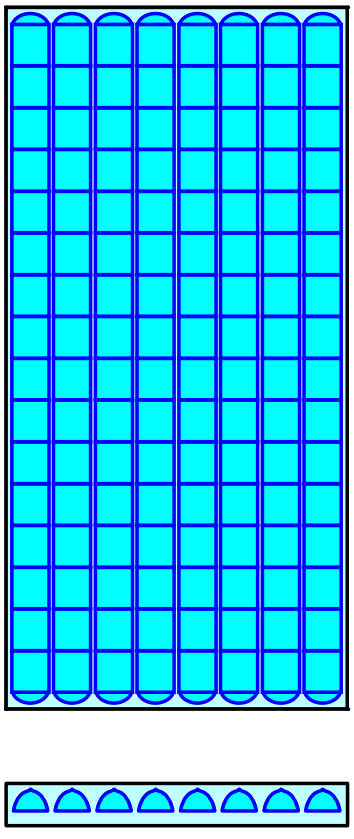
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
8 Rows x 77.0" Wide + 9.0" Spacing x 7 + 12.0" Side Stone x 2 = 58.58' Base Width
30.0" Base + 45.0" Chamber Height + 12.0" Cover = 7.25' Field Height

128 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 8 Rows = 14,312.2 cf Chamber Storage

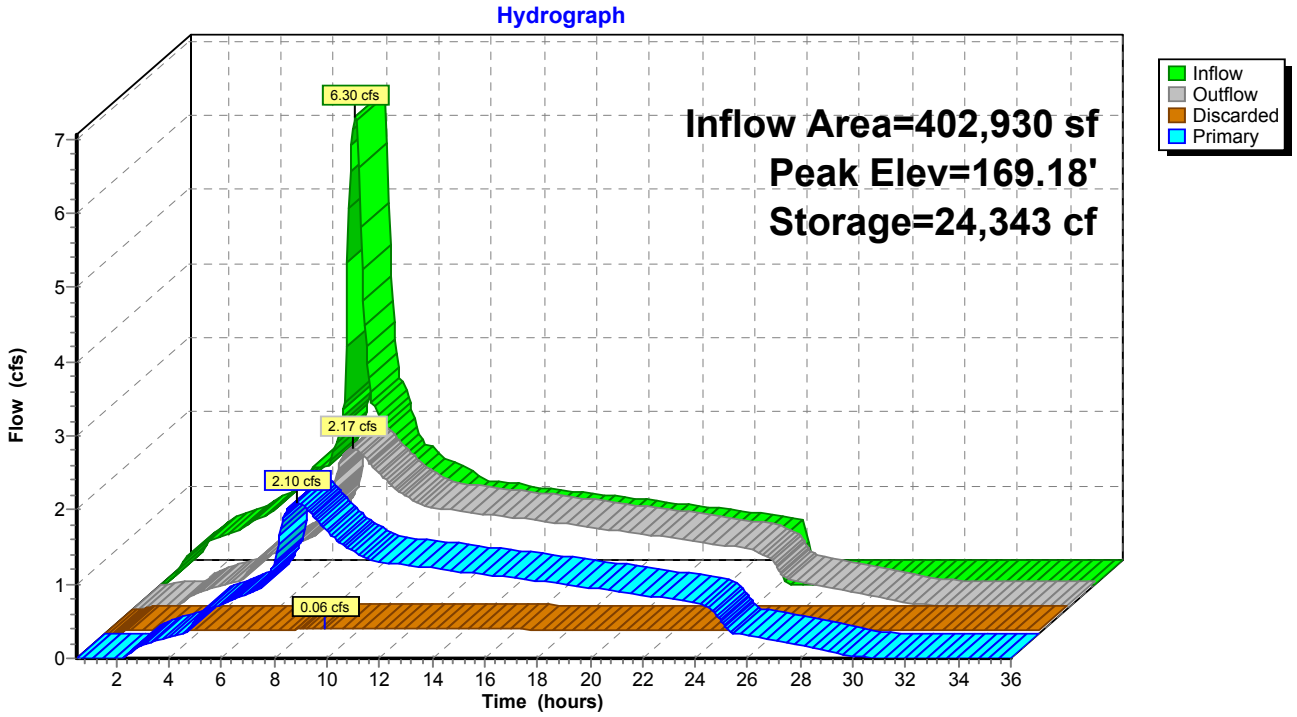
51,145.9 cf Field - 14,312.2 cf Chambers = 36,833.6 cf Stone x 40.0% Voids = 14,733.5 cf Stone Storage

Chamber Storage + Stone Storage = 29,045.7 cf = 0.667 af
Overall Storage Efficiency = 56.8%
Overall System Size = 120.42' x 58.58' x 7.25'

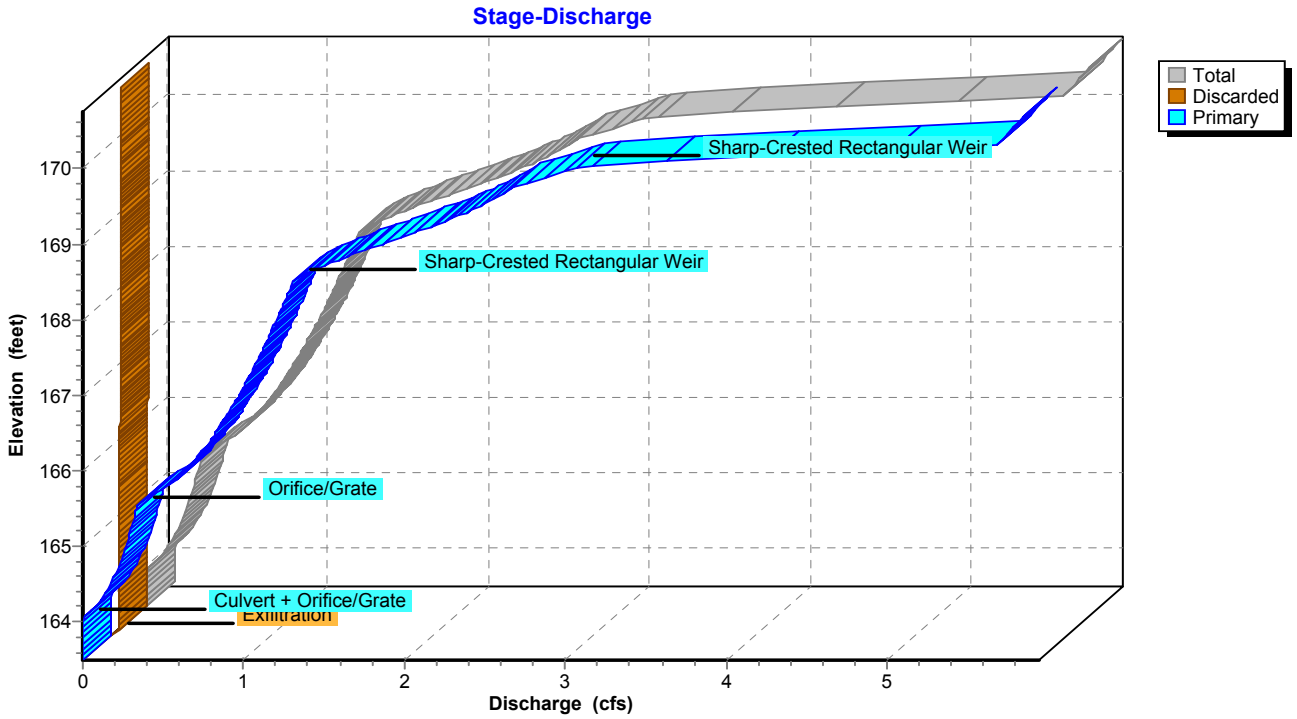
128 Chambers
1,894.3 cy Field
1,364.2 cy Stone



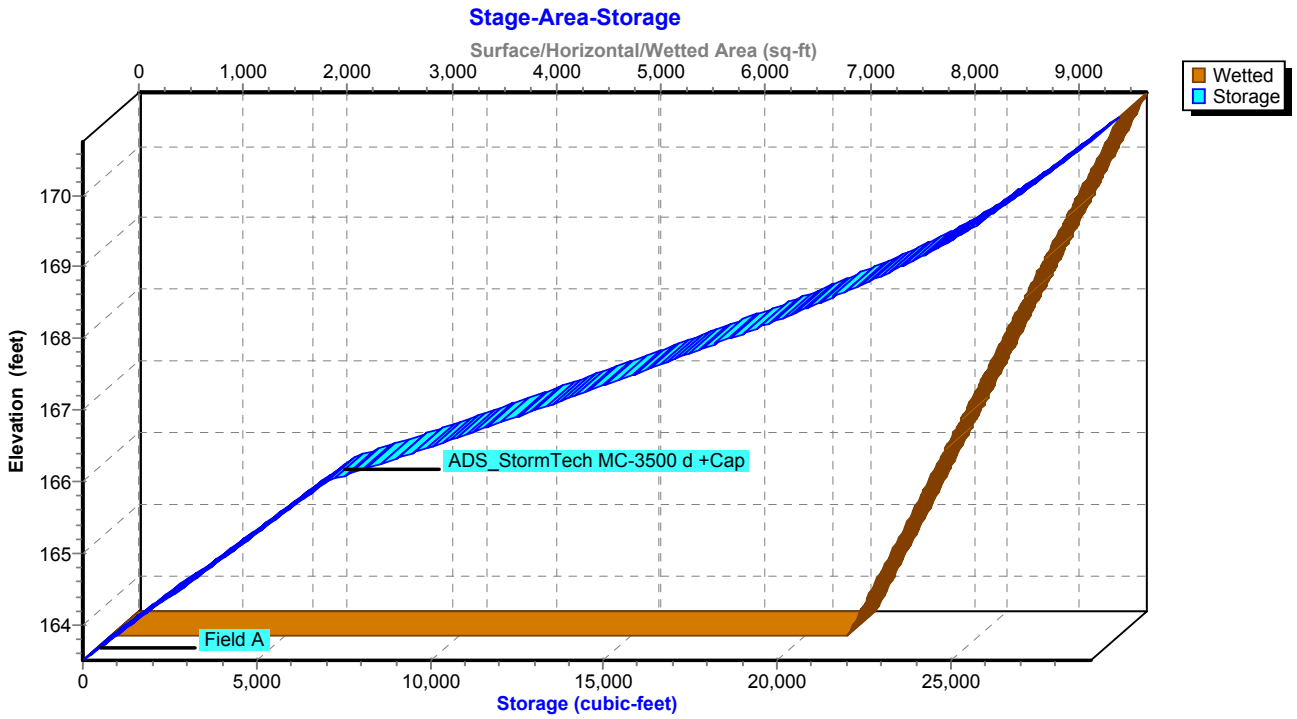
Pond 9P: StormTech MC3500 w infil



Pond 9P: StormTech MC3500 w infil



Pond 9P: StormTech MC3500 w infil



Hydrograph for Pond 9P: StormTech MC3500 w infil

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.50	0.00	0	163.50	0.00	0.00	0.00
1.50	0.37	416	163.65	0.05	0.05	0.00
2.50	0.62	1,998	164.21	0.13	0.05	0.07
3.50	0.73	3,626	164.79	0.28	0.05	0.23
4.50	0.94	5,480	165.44	0.38	0.05	0.33
5.50	1.24	7,384	166.05	0.71	0.06	0.66
6.50	1.64	9,676	166.43	0.86	0.06	0.80
7.50	**2.46**	12,869	166.97	1.02	0.06	0.96
8.50	**2.45**	**24,047**	**169.11**	**2.07**	**0.06**	**2.01**
9.50	1.56	**23,723**	**169.04**	**1.97**	**0.06**	**1.91**
10.50	1.31	22,505	168.76	1.62	0.06	1.55
11.50	1.15	21,587	168.57	1.41	0.06	1.35
12.50	1.09	20,551	168.36	1.34	0.06	1.28
13.50	1.00	19,516	168.16	1.30	0.06	1.24
14.50	0.95	18,405	167.95	1.25	0.06	1.19
15.50	0.91	17,327	167.76	1.21	0.06	1.15
16.50	0.87	16,262	167.56	1.17	0.06	1.11
17.50	0.83	15,208	167.38	1.12	0.06	1.06
18.50	0.79	14,167	167.19	1.08	0.06	1.02
19.50	0.75	13,140	167.02	1.03	0.06	0.97
20.50	0.71	12,129	166.84	0.98	0.06	0.93
21.50	0.66	11,138	166.68	0.94	0.06	0.88
22.50	0.62	10,172	166.52	0.88	0.06	0.83
23.50	0.58	9,235	166.36	0.83	0.06	0.78
24.50	0.00	7,607	166.09	0.73	0.06	0.67
25.50	0.00	5,610	165.49	0.39	0.05	0.33
26.50	0.00	4,332	165.04	0.32	0.05	0.27
27.50	0.00	3,282	164.66	0.26	0.05	0.21
28.50	0.00	2,471	164.38	0.19	0.05	0.14
29.50	0.00	1,924	164.18	0.11	0.05	0.06
30.50	0.00	1,624	164.08	0.06	0.05	0.01
31.50	0.00	1,421	164.00	0.05	0.05	0.00
32.50	0.00	1,241	163.94	0.05	0.05	0.00
33.50	0.00	1,060	163.88	0.05	0.05	0.00
34.50	0.00	881	163.81	0.05	0.05	0.00
35.50	0.00	702	163.75	0.05	0.05	0.00

Stage-Discharge for Pond 9P: StormTech MC3500 w infil

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
163.50	0.00	0.00	0.00
163.60	0.05	0.05	0.00
163.70	0.05	0.05	0.00
163.80	0.05	0.05	0.00
163.90	0.05	0.05	0.00
164.00	0.05	0.05	0.00
164.10	0.07	0.05	0.02
164.20	0.12	0.05	0.07
164.30	0.17	0.05	0.12
164.40	0.20	0.05	0.15
164.50	0.22	0.05	0.17
164.60	0.25	0.05	0.19
164.70	0.27	0.05	0.21
164.80	0.29	0.05	0.23
164.90	0.30	0.05	0.25
165.00	0.32	0.05	0.27
165.10	0.33	0.05	0.28
165.20	0.35	0.05	0.29
165.30	0.36	0.05	0.31
165.40	0.38	0.05	0.32
165.50	0.39	0.05	0.33
165.60	0.42	0.05	0.37
165.70	0.50	0.05	0.44
165.80	0.58	0.05	0.52
165.90	0.64	0.05	0.58
166.00	0.69	0.06	0.63
166.10	0.73	0.06	0.68
166.20	0.77	0.06	0.72
166.30	0.81	0.06	0.75
166.40	0.85	0.06	0.79
166.50	0.88	0.06	0.82
166.60	0.91	0.06	0.85
166.70	0.94	0.06	0.88
166.80	0.97	0.06	0.91
166.90	1.00	0.06	0.94
167.00	1.03	0.06	0.97
167.10	1.05	0.06	1.00
167.20	1.08	0.06	1.02
167.30	1.10	0.06	1.05
167.40	1.13	0.06	1.07
167.50	1.15	0.06	1.09
167.60	1.18	0.06	1.12
167.70	1.20	0.06	1.14
167.80	1.22	0.06	1.16
167.90	1.24	0.06	1.18
168.00	1.26	0.06	1.20
168.10	1.29	0.06	1.22
168.20	1.31	0.06	1.25
168.30	1.33	0.06	1.27
168.40	1.35	0.06	1.29
168.50	1.37	0.06	1.30
168.60	1.44	0.06	1.37
168.70	1.54	0.06	1.48
168.80	1.66	0.06	1.60
168.90	1.79	0.06	1.73
169.00	1.92	0.06	1.86
169.10	2.06	0.06	1.99
169.20	2.19	0.06	2.12
169.30	2.31	0.06	2.25
169.40	2.43	0.06	2.36
169.50	2.53	0.06	2.47
169.60	2.62	0.06	2.56
169.70	2.70	0.06	2.64
169.80	2.81	0.06	2.75
169.90	2.97	0.06	2.91
170.00	3.13	0.07	3.07
170.10	3.71	0.07	3.65
170.20	4.63	0.07	4.57
170.30	5.74	0.07	5.67
170.40	5.78	0.07	5.72
170.50	5.83	0.07	5.76
170.60	5.87	0.07	5.81
170.70	**5.92**	**0.07**	**5.85**

Stage-Area-Storage for Pond 9P: StormTech MC3500 w infil

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
163.50	7,055	0
163.60	7,090	282
163.70	7,126	564
163.80	7,162	847
163.90	7,198	1,129
164.00	7,234	1,411
164.10	7,269	1,693
164.20	7,305	1,975
164.30	7,341	2,257
164.40	7,377	2,540
164.50	7,413	2,822
164.60	7,448	3,104
164.70	7,484	3,386
164.80	7,520	3,668
164.90	7,556	3,951
165.00	7,592	4,233
165.10	7,627	4,515
165.20	7,663	4,797
165.30	7,699	5,079
165.40	7,735	5,361
165.50	7,771	5,644
165.60	7,806	5,926
165.70	7,842	6,208
165.80	7,878	6,490
165.90	7,914	6,772
166.00	7,950	7,055
166.10	7,985	7,665
166.20	8,021	8,272
166.30	8,057	8,878
166.40	8,093	9,480
166.50	8,129	10,081
166.60	8,164	10,678
166.70	8,200	11,274
166.80	8,236	11,866
166.90	8,272	12,454
167.00	8,308	13,040
167.10	8,343	13,621
167.20	8,379	14,200
167.30	8,415	14,774
167.40	8,451	15,343
167.50	8,487	15,908
167.60	8,522	16,468
167.70	8,558	17,023
167.80	8,594	17,572
167.90	8,630	18,116
168.00	8,666	18,653
168.10	8,701	19,184
168.20	8,737	19,708
168.30	8,773	20,223
168.40	8,809	20,731
168.50	8,845	21,231
168.60	8,880	21,720
168.70	8,916	22,200
168.80	8,952	22,668
168.90	8,988	23,125
169.00	9,024	23,568
169.10	9,059	23,996
169.20	9,095	24,406
169.30	9,131	24,794
169.40	9,167	25,150
169.50	9,203	25,476
169.60	9,238	25,785
169.70	9,274	26,081
169.80	9,310	26,365
169.90	9,346	26,647
170.00	9,382	26,929
170.10	9,417	27,212
170.20	9,453	27,494
170.30	9,489	27,776
170.40	9,525	28,058
170.50	9,561	28,340
170.60	9,596	28,622
170.70	**9,632**	**28,905**

Time span=0.50-36.00 hrs, dt=0.05 hrs, 711 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing On-site Runoff Area=8.870 ac 4.06% Impervious Runoff Depth=2.10"
Flow Length=835' Tc=32.7 min CN=81/98 Runoff=2.96 cfs 67,737 cf

Subcatchment 10S: Developed On-site Runoff Area=8.860 ac 83.52% Impervious Runoff Depth>3.19"
Flow Length=808' Tc=5.0 min CN=61/98 Runoff=6.86 cfs 102,498 cf

Subcatchment 11S: Cimino Street Runoff Area=0.390 ac 100.00% Impervious Runoff Depth>3.67"
Tc=5.0 min CN=0/98 Runoff=0.36 cfs 5,189 cf

Pond 9P: StormTech MC3500 w infil Peak Elev=169.88' Storage=26,602 cf Inflow=7.22 cfs 107,687 cf
Discarded=0.06 cfs 7,080 cf Primary=2.88 cfs 99,883 cf Outflow=2.94 cfs 106,962 cf

Total Runoff Area = 789,307 sf Runoff Volume = 175,424 cf Average Runoff Depth = 2.67"
55.02% Pervious = 434,293 sf 44.98% Impervious = 355,014 sf

Summary for Subcatchment 1S: Existing On-site

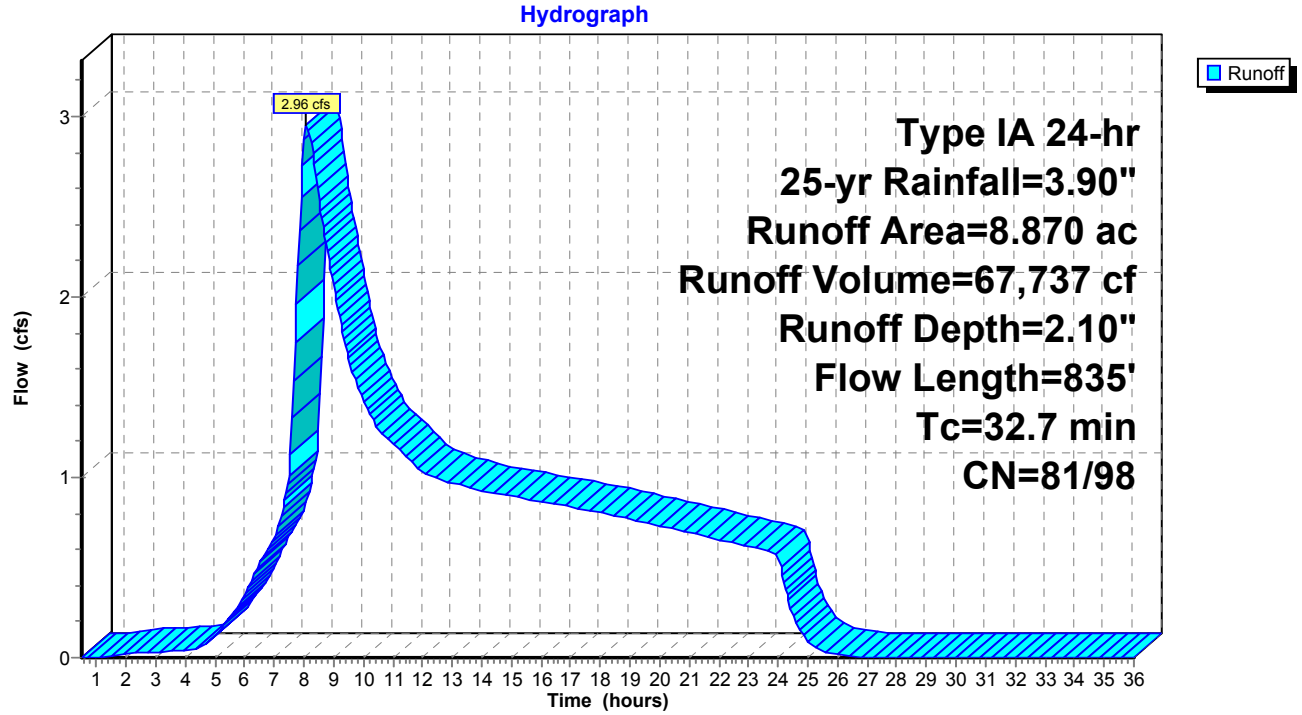
Runoff = 2.96 cfs @ 8.07 hrs, Volume= 67,737 cf, Depth= 2.10"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25-yr Rainfall=3.90"

	Area (ac)	CN	Description
*	0.360	98	Roof
*	1.130	85	Gravel
*	6.200	83	Fallow
*	1.180	65	Woods and Grass
	8.870	81	Weighted Average
	8.510	81	95.94% Pervious Area
	0.360	98	4.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	300	0.0200	0.17		**Sheet Flow,** n= 0.170 P2= 2.50"
3.2	535	0.0300	2.79		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
32.7	835	Total			

Subcatchment 1S: Existing On-site



Hydrograph for Subcatchment 1S: Existing On-site

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.50	0.04	0.00	0.00	0.00
0.75	0.06	0.00	0.00	0.00
1.00	0.08	0.00	0.01	0.00
1.25	0.11	0.00	0.02	0.01
1.50	0.14	0.00	0.03	0.01
1.75	0.17	0.00	0.05	0.02
2.00	0.20	0.00	0.07	0.02
2.25	0.23	0.00	0.09	0.02
2.50	0.26	0.00	0.11	0.03
2.75	0.29	0.00	0.14	0.03
3.00	0.32	0.00	0.16	0.03
3.25	0.35	0.00	0.19	0.03
3.50	0.38	0.00	0.21	0.04
3.75	0.42	0.00	0.24	0.04
4.00	0.45	0.00	0.28	0.04
4.25	0.49	0.00	0.31	0.05
4.50	0.53	0.00	0.34	0.06
4.75	0.57	0.00	0.38	0.09
5.00	0.61	0.01	0.42	0.13
5.25	0.65	0.01	0.46	0.17
5.50	0.70	0.02	0.51	0.23
5.75	0.75	0.03	0.55	0.28
6.00	0.80	0.04	0.60	0.35
6.25	0.86	0.06	0.66	0.43
6.50	0.92	0.07	0.72	0.52
6.75	0.98	0.09	0.77	0.59
7.00	1.05	0.11	0.83	0.67
7.25	1.12	0.14	0.91	0.80
7.50	1.21	0.18	0.99	1.01
7.75	1.43	0.28	1.21	1.97
8.00	1.66	0.40	1.44	**2.88**
8.25	1.78	0.47	1.56	**2.85**
8.50	1.87	0.53	1.65	2.54
8.75	1.96	0.58	1.73	2.30
9.00	2.03	0.62	1.80	2.07
9.25	2.09	0.66	1.86	1.85
9.50	2.14	0.70	1.92	1.66
9.75	2.20	0.73	1.97	1.53
10.00	2.25	0.77	2.02	1.43
10.25	2.30	0.80	2.07	1.34
10.50	2.34	0.83	2.12	1.27
10.75	2.39	0.86	2.16	1.23
11.00	2.43	0.90	2.20	1.19
11.25	2.48	0.92	2.25	1.15
11.50	2.52	0.95	2.29	1.11
11.75	2.55	0.98	2.32	1.06
12.00	2.59	1.01	2.36	1.02
12.25	2.63	1.03	2.40	1.00
12.50	2.66	1.06	2.43	1.00
12.75	2.70	1.09	2.47	0.98
13.00	2.73	1.11	2.50	0.96
13.25	2.77	1.14	2.54	0.96
13.50	2.80	1.16	2.57	0.95
13.75	2.84	1.19	2.61	0.94
14.00	2.87	1.21	2.64	0.92
14.25	2.90	1.24	2.67	0.92
14.50	2.94	1.26	2.70	0.91
14.75	2.97	1.29	2.74	0.90
15.00	3.00	1.31	2.77	0.90
15.25	3.03	1.34	2.80	0.89
15.50	3.06	1.36	2.83	0.88
15.75	3.09	1.39	2.86	0.88
16.00	3.12	1.41	2.89	0.87
16.25	3.15	1.43	2.92	0.86
16.50	3.18	1.46	2.95	0.85
16.75	3.21	1.48	2.98	0.85
17.00	3.24	1.50	3.01	0.84
17.25	3.27	1.52	3.04	0.83
17.50	3.30	1.55	3.07	0.82
17.75	3.33	1.57	3.09	0.81
18.00	3.35	1.59	3.12	0.81
18.25	3.38	1.61	3.15	0.80
18.50	3.41	1.63	3.17	0.79
18.75	3.43	1.65	3.20	0.78
19.00	3.46	1.68	3.23	0.77
19.25	3.48	1.70	3.25	0.76
19.50	3.51	1.72	3.28	0.75
19.75	3.53	1.74	3.30	0.74
20.00	3.56	1.76	3.33	0.73
20.25	3.58	1.78	3.35	0.72
20.50	3.61	1.80	3.37	0.72
20.75	3.63	1.81	3.40	0.71
21.00	3.65	1.83	3.42	0.70
21.25	3.68	1.85	3.44	0.69
21.50	3.70	1.87	3.46	0.68
21.75	3.72	1.89	3.49	0.67
22.00	3.74	1.91	3.51	0.66
22.25	3.76	1.92	3.53	0.65
22.50	3.78	1.94	3.55	0.64
22.75	3.80	1.96	3.57	0.63
23.00	3.82	1.97	3.59	0.62
23.25	3.84	1.99	3.61	0.61
23.50	3.86	2.01	3.63	0.60
23.75	3.88	2.02	3.65	0.59
24.00	**3.90**	**2.04**	**3.67**	0.58
24.25	3.90	2.04	3.67	0.38
24.50	3.90	2.04	3.67	0.24
24.75	3.90	2.04	3.67	0.15
25.00	3.90	2.04	3.67	0.10
25.25	3.90	2.04	3.67	0.06
25.50	3.90	2.04	3.67	0.04
25.75	3.90	2.04	3.67	0.02
26.00	3.90	2.04	3.67	0.02
26.25	3.90	2.04	3.67	0.01
26.50	3.90	2.04	3.67	0.01
26.75	3.90	2.04	3.67	0.00
27.00	3.90	2.04	3.67	0.00
27.25	3.90	2.04	3.67	0.00
27.50	3.90	2.04	3.67	0.00
27.75	3.90	2.04	3.67	0.00
28.00	3.90	2.04	3.67	0.00
28.25	3.90	2.04	3.67	0.00
28.50	3.90	2.04	3.67	0.00
28.75	3.90	2.04	3.67	0.00
29.00	3.90	2.04	3.67	0.00
29.25	3.90	2.04	3.67	0.00
29.50	3.90	2.04	3.67	0.00
29.75	3.90	2.04	3.67	0.00
30.00	3.90	2.04	3.67	0.00
30.25	3.90	2.04	3.67	0.00
30.50	3.90	2.04	3.67	0.00
30.75	3.90	2.04	3.67	0.00
31.00	3.90	2.04	3.67	0.00
31.25	3.90	2.04	3.67	0.00
31.50	3.90	2.04	3.67	0.00
31.75	3.90	2.04	3.67	0.00
32.00	3.90	2.04	3.67	0.00
32.25	3.90	2.04	3.67	0.00
32.50	3.90	2.04	3.67	0.00
32.75	3.90	2.04	3.67	0.00
33.00	3.90	2.04	3.67	0.00
33.25	3.90	2.04	3.67	0.00
33.50	3.90	2.04	3.67	0.00
33.75	3.90	2.04	3.67	0.00
34.00	3.90	2.04	3.67	0.00
34.25	3.90	2.04	3.67	0.00
34.50	3.90	2.04	3.67	0.00
34.75	3.90	2.04	3.67	0.00
35.00	3.90	2.04	3.67	0.00
35.25	3.90	2.04	3.67	0.00
35.50	3.90	2.04	3.67	0.00
35.75	3.90	2.04	3.67	0.00
36.00	3.90	2.04	3.67	0.00

Summary for Subcatchment 10S: Developed On-site

[49] Hint: Tc<2dt may require smaller dt

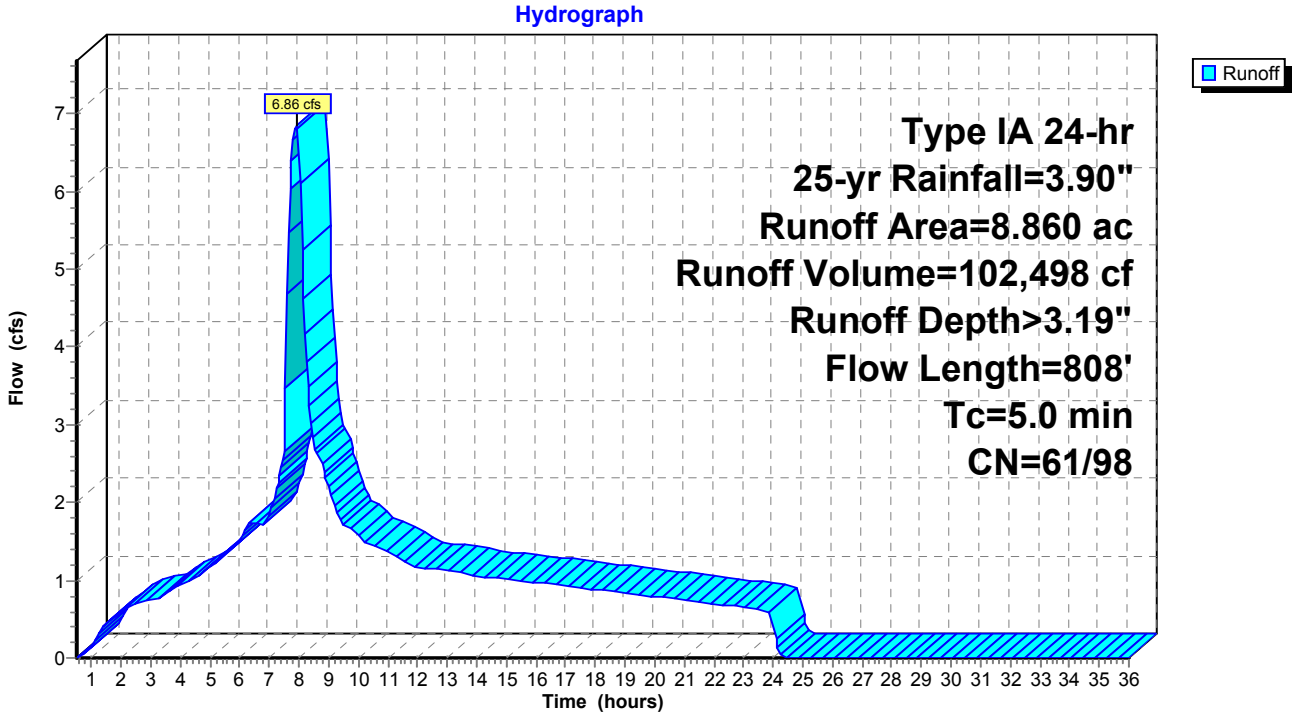
Runoff = 6.86 cfs @ 7.91 hrs, Volume= 102,498 cf, Depth> 3.19"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25-yr Rainfall=3.90"

	Area (ac)	CN	Description
*	7.400	98	Site Imp
*	1.460	61	Site Pervious
	8.860	92	Weighted Average
	1.460	61	16.48% Pervious Area
	7.400	98	83.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	178	0.0200	1.36		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.50"
2.8	630	0.0100	3.75	1.31	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
5.0	808	Total			

Subcatchment 10S: Developed On-site



Hydrograph for Subcatchment 10S: Developed On-site

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.50	0.04	0.00	0.00	0.00
0.75	0.06	0.00	0.00	0.04
1.00	0.08	0.00	0.01	0.14
1.25	0.11	0.00	0.02	0.31
1.50	0.14	0.00	0.03	0.45
1.75	0.17	0.00	0.05	0.51
2.00	0.20	0.00	0.07	0.57
2.25	0.23	0.00	0.09	0.65
2.50	0.26	0.00	0.11	0.70
2.75	0.29	0.00	0.14	0.73
3.00	0.32	0.00	0.16	0.76
3.25	0.35	0.00	0.19	0.77
3.50	0.38	0.00	0.21	0.81
3.75	0.42	0.00	0.24	0.89
4.00	0.45	0.00	0.28	0.95
4.25	0.49	0.00	0.31	0.98
4.50	0.53	0.00	0.34	1.03
4.75	0.57	0.00	0.38	1.09
5.00	0.61	0.00	0.42	1.17
5.25	0.65	0.00	0.46	1.28
5.50	0.70	0.00	0.51	1.35
5.75	0.75	0.00	0.55	1.39
6.00	0.80	0.00	0.60	1.50
6.25	0.86	0.00	0.66	1.70
6.50	0.92	0.00	0.72	1.77
6.75	0.98	0.00	0.77	1.68
7.00	1.05	0.00	0.83	1.85
7.25	1.12	0.00	0.91	2.17
7.50	1.21	0.00	0.99	2.66
7.75	1.43	0.00	1.21	**6.41**
8.00	1.66	0.02	1.44	**6.71**
8.25	1.78	0.04	1.56	3.81
8.50	1.87	0.05	1.65	2.67
8.75	1.96	0.06	1.73	2.52
9.00	2.03	0.08	1.80	2.19
9.25	2.09	0.09	1.86	1.89
9.50	2.14	0.10	1.92	1.70
9.75	2.20	0.12	1.97	1.67
10.00	2.25	0.13	2.02	1.58
10.25	2.30	0.14	2.07	1.48
10.50	2.34	0.15	2.12	1.43
10.75	2.39	0.16	2.16	1.42
11.00	2.43	0.18	2.20	1.37
11.25	2.48	0.19	2.25	1.31
11.50	2.52	0.20	2.29	1.25
11.75	2.55	0.21	2.32	1.18
12.00	2.59	0.22	2.36	1.15
12.25	2.63	0.23	2.40	1.15
12.50	2.66	0.25	2.43	1.19
12.75	2.70	0.26	2.47	1.12
13.00	2.73	0.27	2.50	1.10
13.25	2.77	0.28	2.54	1.13
13.50	2.80	0.29	2.57	1.09
13.75	2.84	0.31	2.61	1.06
14.00	2.87	0.32	2.64	1.05
14.25	2.90	0.33	2.67	1.05
14.50	2.94	0.34	2.70	1.04
14.75	2.97	0.35	2.74	1.03
15.00	3.00	0.37	2.77	1.02
15.25	3.03	0.38	2.80	1.01
15.50	3.06	0.39	2.83	0.99
15.75	3.09	0.40	2.86	0.98
16.00	3.12	0.41	2.89	0.97
16.25	3.15	0.43	2.92	0.96
16.50	3.18	0.44	2.95	0.95
16.75	3.21	0.45	2.98	0.94
17.00	3.24	0.46	3.01	0.93
17.25	3.27	0.47	3.04	0.92
17.50	3.30	0.48	3.07	0.91
17.75	3.33	0.50	3.09	0.89
18.00	3.35	0.51	3.12	0.88
18.25	3.38	0.52	3.15	0.87
18.50	3.41	0.53	3.17	0.86
18.75	3.43	0.54	3.20	0.85
19.00	3.46	0.55	3.23	0.84
19.25	3.48	0.57	3.25	0.83
19.50	3.51	0.58	3.28	0.82
19.75	3.53	0.59	3.30	0.80
20.00	3.56	0.60	3.33	0.79
20.25	3.58	0.61	3.35	0.78
20.50	3.61	0.62	3.37	0.77
20.75	3.63	0.63	3.40	0.76
21.00	3.65	0.64	3.42	0.75
21.25	3.68	0.65	3.44	0.73
21.50	3.70	0.66	3.46	0.72
21.75	3.72	0.67	3.49	0.71
22.00	3.74	0.68	3.51	0.70
22.25	3.76	0.70	3.53	0.69
22.50	3.78	0.71	3.55	0.68
22.75	3.80	0.71	3.57	0.66
23.00	3.82	0.72	3.59	0.65
23.25	3.84	0.73	3.61	0.64
23.50	3.86	0.74	3.63	0.63
23.75	3.88	0.75	3.65	0.62
24.00	**3.90**	**0.76**	**3.67**	0.60
24.25	3.90	0.76	3.67	0.04
24.50	3.90	0.76	3.67	0.00
24.75	3.90	0.76	3.67	0.00
25.00	3.90	0.76	3.67	0.00
25.25	3.90	0.76	3.67	0.00
25.50	3.90	0.76	3.67	0.00
25.75	3.90	0.76	3.67	0.00
26.00	3.90	0.76	3.67	0.00
26.25	3.90	0.76	3.67	0.00
26.50	3.90	0.76	3.67	0.00
26.75	3.90	0.76	3.67	0.00
27.00	3.90	0.76	3.67	0.00
27.25	3.90	0.76	3.67	0.00
27.50	3.90	0.76	3.67	0.00
27.75	3.90	0.76	3.67	0.00
28.00	3.90	0.76	3.67	0.00
28.25	3.90	0.76	3.67	0.00
28.50	3.90	0.76	3.67	0.00
28.75	3.90	0.76	3.67	0.00
29.00	3.90	0.76	3.67	0.00
29.25	3.90	0.76	3.67	0.00
29.50	3.90	0.76	3.67	0.00
29.75	3.90	0.76	3.67	0.00
30.00	3.90	0.76	3.67	0.00
30.25	3.90	0.76	3.67	0.00
30.50	3.90	0.76	3.67	0.00
30.75	3.90	0.76	3.67	0.00
31.00	3.90	0.76	3.67	0.00
31.25	3.90	0.76	3.67	0.00
31.50	3.90	0.76	3.67	0.00
31.75	3.90	0.76	3.67	0.00
32.00	3.90	0.76	3.67	0.00
32.25	3.90	0.76	3.67	0.00
32.50	3.90	0.76	3.67	0.00
32.75	3.90	0.76	3.67	0.00
33.00	3.90	0.76	3.67	0.00
33.25	3.90	0.76	3.67	0.00
33.50	3.90	0.76	3.67	0.00
33.75	3.90	0.76	3.67	0.00
34.00	3.90	0.76	3.67	0.00
34.25	3.90	0.76	3.67	0.00
34.50	3.90	0.76	3.67	0.00
34.75	3.90	0.76	3.67	0.00
35.00	3.90	0.76	3.67	0.00
35.25	3.90	0.76	3.67	0.00
35.50	3.90	0.76	3.67	0.00
35.75	3.90	0.76	3.67	0.00
36.00	3.90	0.76	3.67	0.00

Summary for Subcatchment 11S: Cimino Street

[49] Hint: Tc<2dt may require smaller dt

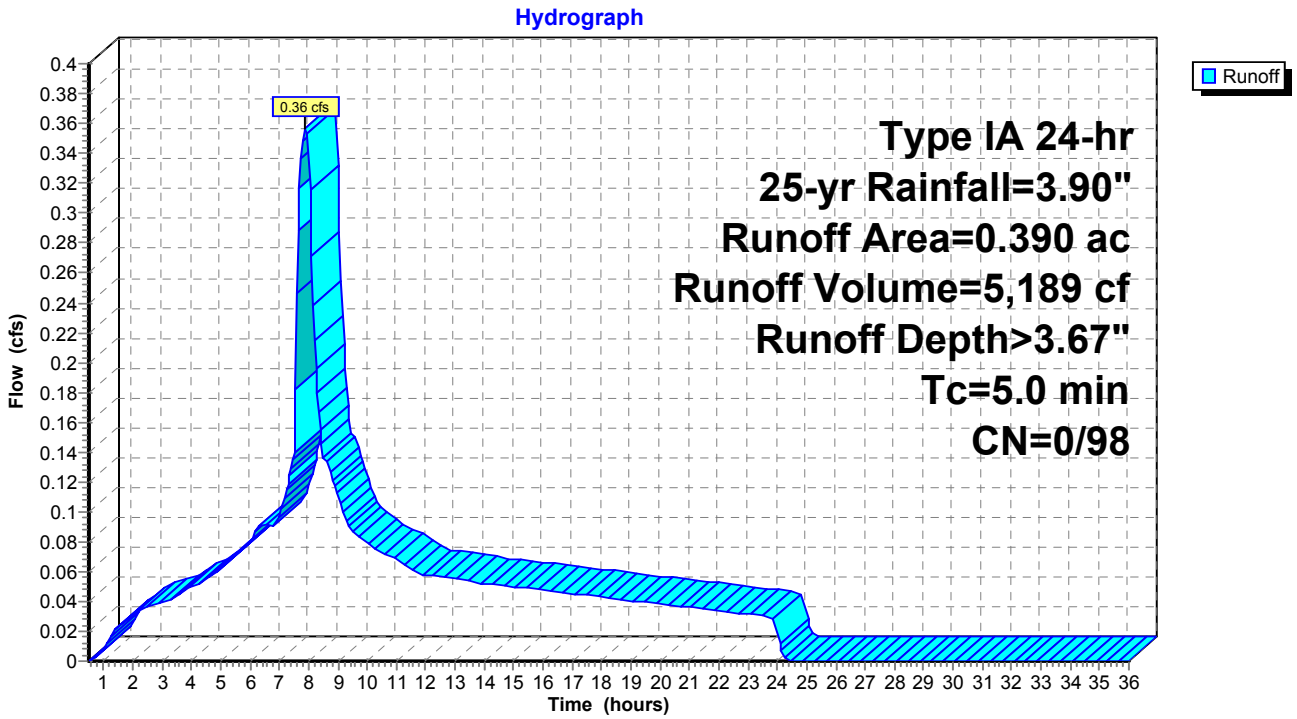
Runoff = 0.36 cfs @ 7.90 hrs, Volume= 5,189 cf, Depth> 3.67"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25-yr Rainfall=3.90"

	Area (ac)	CN	Description
*	0.390	98	Public Roadway Improvements
	0.390	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 11S: Cimino Street



Hydrograph for Subcatchment 11S: Cimino Street

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.50	0.04	**0.00**	0.00	0.00
0.75	0.06	0.00	0.00	0.00
1.00	0.08	0.00	0.01	0.01
1.25	0.11	0.00	0.02	0.02
1.50	0.14	0.00	0.03	0.02
1.75	0.17	0.00	0.05	0.03
2.00	0.20	0.00	0.07	0.03
2.25	0.23	0.00	0.09	0.03
2.50	0.26	0.00	0.11	0.04
2.75	0.29	0.00	0.14	0.04
3.00	0.32	0.00	0.16	0.04
3.25	0.35	0.00	0.19	0.04
3.50	0.38	0.00	0.21	0.04
3.75	0.42	0.00	0.24	0.05
4.00	0.45	0.00	0.28	0.05
4.25	0.49	0.00	0.31	0.05
4.50	0.53	0.00	0.34	0.05
4.75	0.57	0.00	0.38	0.06
5.00	0.61	0.00	0.42	0.06
5.25	0.65	0.00	0.46	0.07
5.50	0.70	0.00	0.51	0.07
5.75	0.75	0.00	0.55	0.07
6.00	0.80	0.00	0.60	0.08
6.25	0.86	0.00	0.66	0.09
6.50	0.92	0.00	0.72	0.09
6.75	0.98	0.00	0.77	0.09
7.00	1.05	0.00	0.83	0.10
7.25	1.12	0.00	0.91	0.11
7.50	1.21	0.00	0.99	0.14
7.75	1.43	0.00	1.21	**0.34**
8.00	1.66	0.00	1.44	**0.35**
8.25	1.78	0.00	1.56	0.20
8.50	1.87	0.00	1.65	0.14
8.75	1.96	0.00	1.73	0.13
9.00	2.03	0.00	1.80	0.11
9.25	2.09	0.00	1.86	0.10
9.50	2.14	0.00	1.92	0.09
9.75	2.20	0.00	1.97	0.08
10.00	2.25	0.00	2.02	0.08
10.25	2.30	0.00	2.07	0.07
10.50	2.34	0.00	2.12	0.07
10.75	2.39	0.00	2.16	0.07
11.00	2.43	0.00	2.20	0.07
11.25	2.48	0.00	2.25	0.07
11.50	2.52	0.00	2.29	0.06
11.75	2.55	0.00	2.32	0.06
12.00	2.59	0.00	2.36	0.06
12.25	2.63	0.00	2.40	0.06
12.50	2.66	0.00	2.43	0.06
12.75	2.70	0.00	2.47	0.06
13.00	2.73	0.00	2.50	0.05
13.25	2.77	0.00	2.54	0.06
13.50	2.80	0.00	2.57	0.05
13.75	2.84	0.00	2.61	0.05
14.00	2.87	0.00	2.64	0.05
14.25	2.90	0.00	2.67	0.05
14.50	2.94	0.00	2.70	0.05
14.75	2.97	0.00	2.74	0.05
15.00	3.00	0.00	2.77	0.05
15.25	3.03	0.00	2.80	0.05
15.50	3.06	0.00	2.83	0.05
15.75	3.09	0.00	2.86	0.05
16.00	3.12	0.00	2.89	0.05
16.25	3.15	0.00	2.92	0.05
16.50	3.18	0.00	2.95	0.05
16.75	3.21	0.00	2.98	0.05
17.00	3.24	0.00	3.01	0.05
17.25	3.27	0.00	3.04	0.04
17.50	3.30	0.00	3.07	0.04
17.75	3.33	0.00	3.09	0.04
18.00	3.35	0.00	3.12	0.04
18.25	3.38	0.00	3.15	0.04
18.50	3.41	0.00	3.17	0.04
18.75	3.43	0.00	3.20	0.04
19.00	3.46	0.00	3.23	0.04
19.25	3.48	0.00	3.25	0.04
19.50	3.51	0.00	3.28	0.04
19.75	3.53	0.00	3.30	0.04
20.00	3.56	0.00	3.33	0.04
20.25	3.58	0.00	3.35	0.04
20.50	3.61	0.00	3.37	0.04
20.75	3.63	0.00	3.40	0.04
21.00	3.65	0.00	3.42	0.04
21.25	3.68	0.00	3.44	0.04
21.50	3.70	0.00	3.46	0.03
21.75	3.72	0.00	3.49	0.03
22.00	3.74	0.00	3.51	0.03
22.25	3.76	0.00	3.53	0.03
22.50	3.78	0.00	3.55	0.03
22.75	3.80	0.00	3.57	0.03
23.00	3.82	0.00	3.59	0.03
23.25	3.84	0.00	3.61	0.03
23.50	3.86	0.00	3.63	0.03
23.75	3.88	0.00	3.65	0.03
24.00	**3.90**	0.00	**3.67**	0.03
24.25	3.90	0.00	3.67	0.00
24.50	3.90	0.00	3.67	0.00
24.75	3.90	0.00	3.67	0.00
25.00	3.90	0.00	3.67	0.00
25.25	3.90	0.00	3.67	0.00
25.50	3.90	0.00	3.67	0.00
25.75	3.90	0.00	3.67	0.00
26.00	3.90	0.00	3.67	0.00
26.25	3.90	0.00	3.67	0.00
26.50	3.90	0.00	3.67	0.00
26.75	3.90	0.00	3.67	0.00
27.00	3.90	0.00	3.67	0.00
27.25	3.90	0.00	3.67	0.00
27.50	3.90	0.00	3.67	0.00
27.75	3.90	0.00	3.67	0.00
28.00	3.90	0.00	3.67	0.00
28.25	3.90	0.00	3.67	0.00
28.50	3.90	0.00	3.67	0.00
28.75	3.90	0.00	3.67	0.00
29.00	3.90	0.00	3.67	0.00
29.25	3.90	0.00	3.67	0.00
29.50	3.90	0.00	3.67	0.00
29.75	3.90	0.00	3.67	0.00
30.00	3.90	0.00	3.67	0.00
30.25	3.90	0.00	3.67	0.00
30.50	3.90	0.00	3.67	0.00
30.75	3.90	0.00	3.67	0.00
31.00	3.90	0.00	3.67	0.00
31.25	3.90	0.00	3.67	0.00
31.50	3.90	0.00	3.67	0.00
31.75	3.90	0.00	3.67	0.00
32.00	3.90	0.00	3.67	0.00
32.25	3.90	0.00	3.67	0.00
32.50	3.90	0.00	3.67	0.00
32.75	3.90	0.00	3.67	0.00
33.00	3.90	0.00	3.67	0.00
33.25	3.90	0.00	3.67	0.00
33.50	3.90	0.00	3.67	0.00
33.75	3.90	0.00	3.67	0.00
34.00	3.90	0.00	3.67	0.00
34.25	3.90	0.00	3.67	0.00
34.50	3.90	0.00	3.67	0.00
34.75	3.90	0.00	3.67	0.00
35.00	3.90	0.00	3.67	0.00
35.25	3.90	0.00	3.67	0.00
35.50	3.90	0.00	3.67	0.00
35.75	3.90	0.00	3.67	0.00
36.00	3.90	0.00	3.67	0.00

Summary for Pond 9P: StormTech MC3500 w infil

Inflow Area = 402,930 sf, 84.22% Impervious, Inflow Depth > 3.21" for 25-yr event
Inflow = 7.22 cfs @ 7.91 hrs, Volume= 107,687 cf
Outflow = 2.94 cfs @ 8.46 hrs, Volume= 106,962 cf, Atten= 59%, Lag= 33.4 min
Discarded = 0.06 cfs @ 8.46 hrs, Volume= 7,080 cf
Primary = 2.88 cfs @ 8.46 hrs, Volume= 99,883 cf

Routing by Stor-Ind method, Time Span= 0.50-36.00 hrs, dt= 0.05 hrs
Peak Elev= 169.88' @ 8.46 hrs Surf.Area= 7,055 sf Storage= 26,602 cf

Plug-Flow detention time= 211.3 min calculated for 106,962 cf (99% of inflow)
Center-of-Mass det. time= 206.2 min (877.6 - 671.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	163.50'	14,733 cf	**58.58'W x 120.42'L x 7.25'H Field A** 51,146 cf Overall - 14,312 cf Embedded = 36,834 cf x 40.0% Voids
#2A	166.00'	14,312 cf	**ADS_StormTech MC-3500 d +Cap** x 128 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 8 Rows of 16 Chambers Cap Storage= +14.9 cf x 2 x 8 rows = 238.4 cf
		29,046 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	164.00'	**12.0" Round Culvert** L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 163.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	164.00'	**3.3" Vert. Orifice/Grate** C= 0.600
#3	Device 1	165.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	168.50'	**0.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Device 1	170.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#6	Discarded	163.50'	**0.300 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.06 cfs @ 8.46 hrs HW=169.88' (Free Discharge)
└**6=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=2.88 cfs @ 8.46 hrs HW=169.88' (Free Discharge)
└**1=Culvert** (Passes 2.88 cfs of 5.48 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.69 cfs @ 11.54 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.86 cfs @ 9.89 fps)
  ├**4=Sharp-Crested Rectangular Weir** (Weir Controls 1.33 cfs @ 3.85 fps)
  └**5=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 9P: StormTech MC3500 w infil - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 8 rows = 238.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

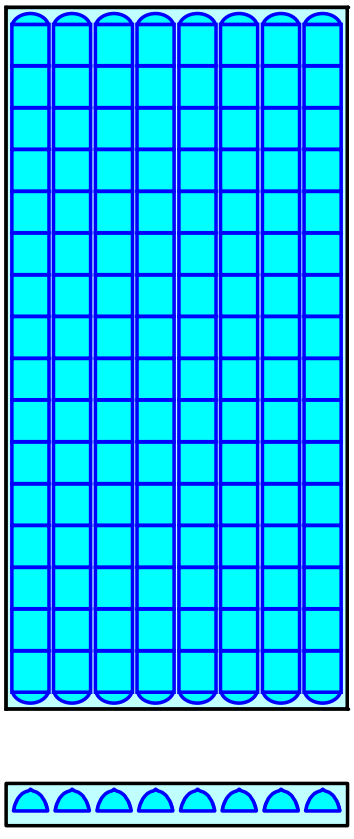
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
8 Rows x 77.0" Wide + 9.0" Spacing x 7 + 12.0" Side Stone x 2 = 58.58' Base Width
30.0" Base + 45.0" Chamber Height + 12.0" Cover = 7.25' Field Height

128 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 8 Rows = 14,312.2 cf Chamber Storage

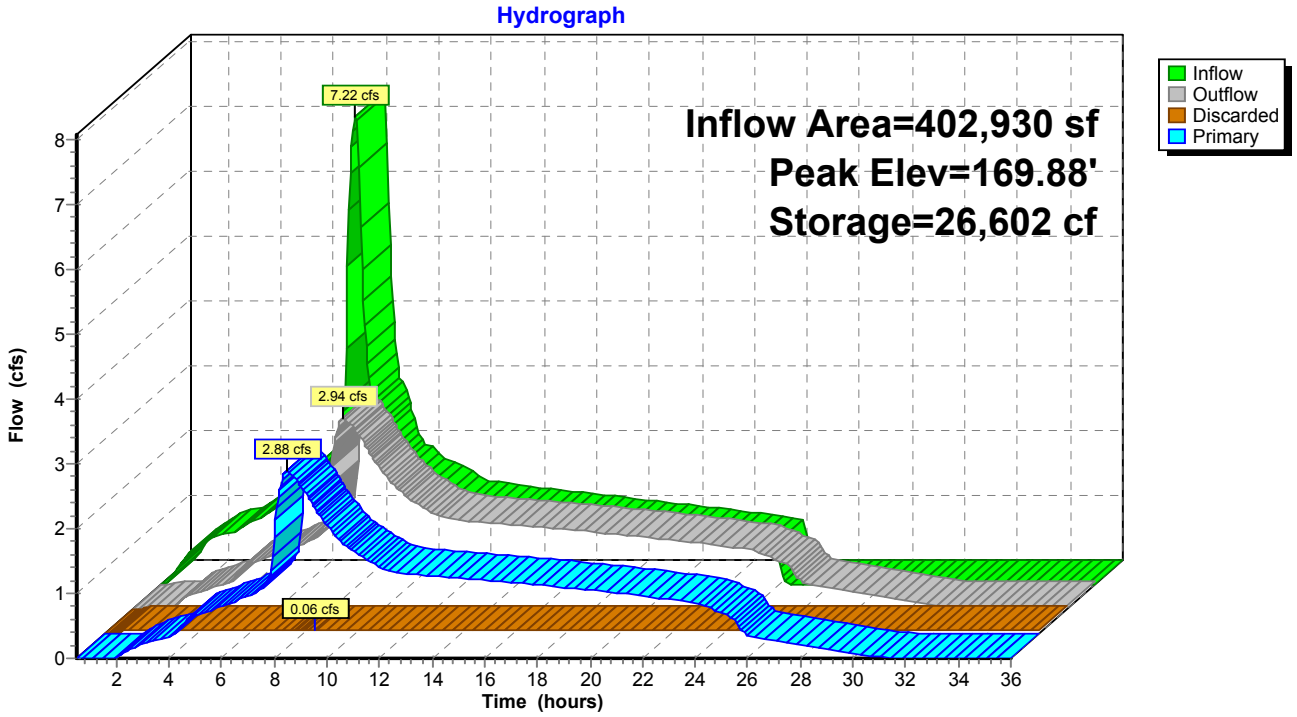
51,145.9 cf Field - 14,312.2 cf Chambers = 36,833.6 cf Stone x 40.0% Voids = 14,733.5 cf Stone Storage

Chamber Storage + Stone Storage = 29,045.7 cf = 0.667 af
Overall Storage Efficiency = 56.8%
Overall System Size = 120.42' x 58.58' x 7.25'

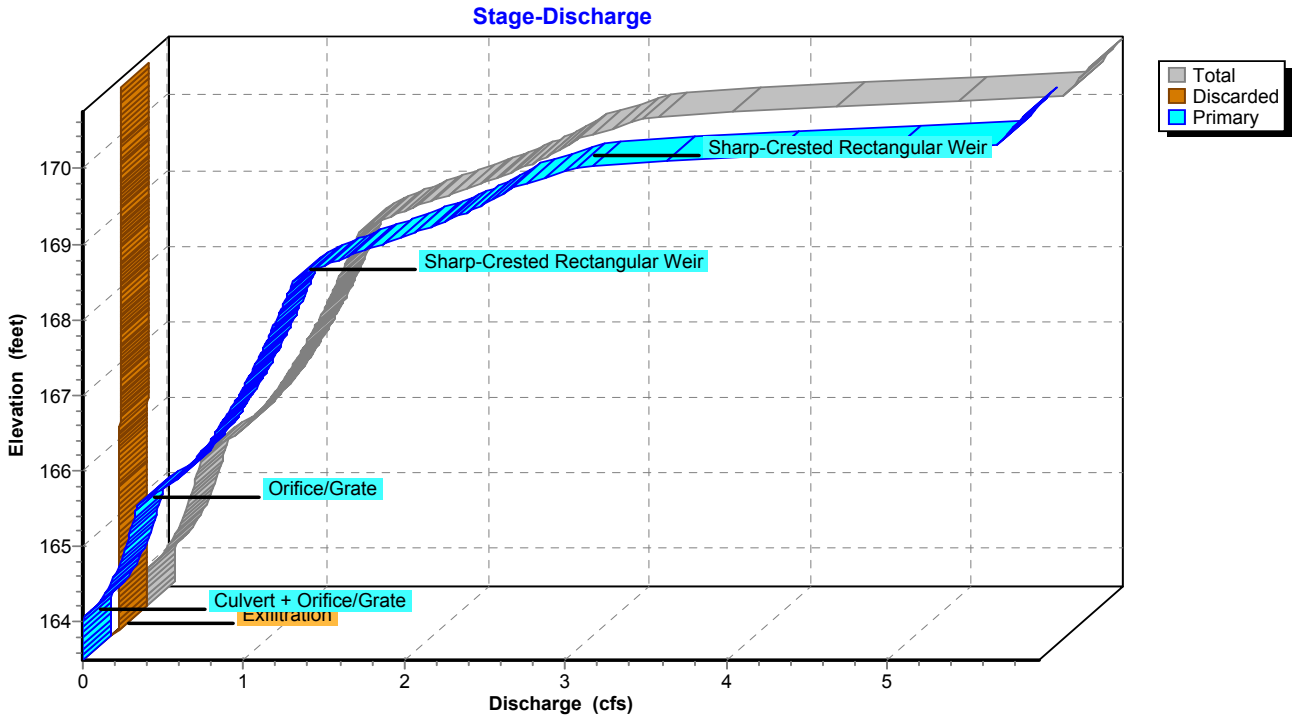
128 Chambers
1,894.3 cy Field
1,364.2 cy Stone



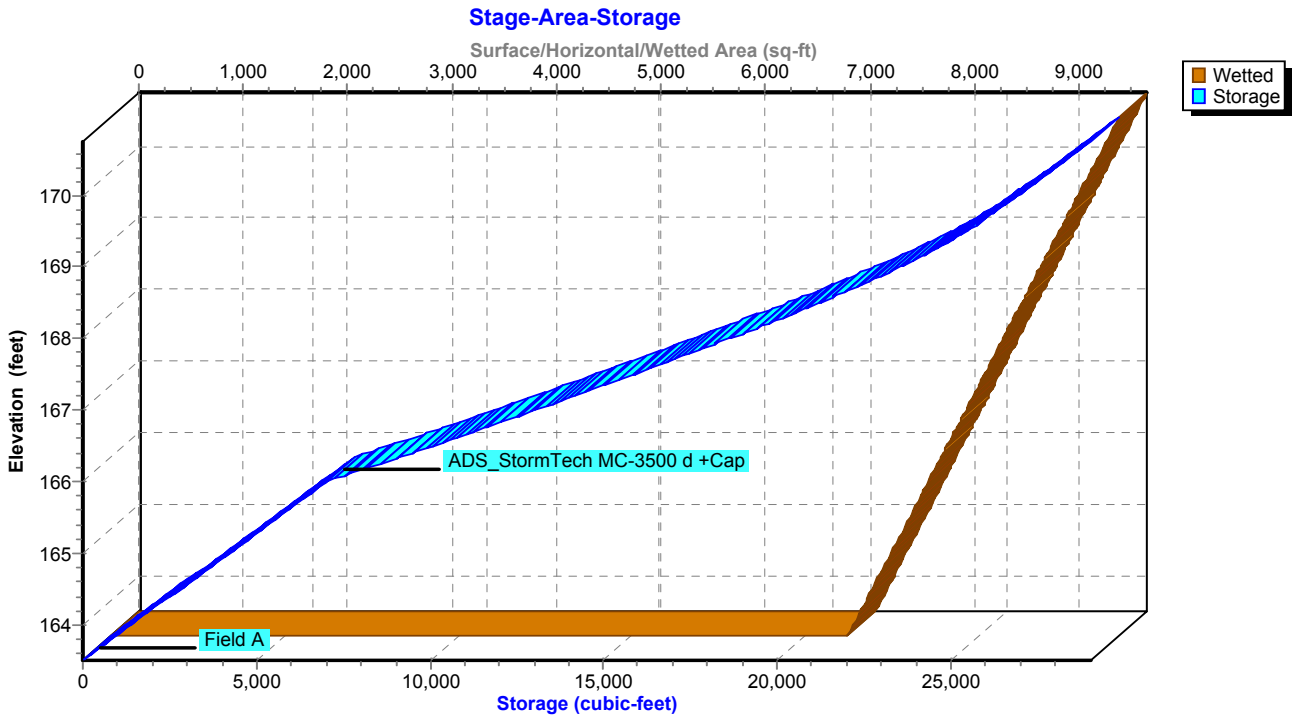
Pond 9P: StormTech MC3500 w infil



Pond 9P: StormTech MC3500 w infil



Pond 9P: StormTech MC3500 w infil



Hydrograph for Pond 9P: StormTech MC3500 w infil

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.50	0.00	0	163.50	0.00	0.00	0.00
1.50	0.47	587	163.71	0.05	0.05	0.00
2.50	0.74	2,470	164.38	0.19	0.05	0.14
3.50	0.85	4,358	165.04	0.33	0.05	0.27
4.50	1.08	6,458	165.79	0.57	0.05	0.51
5.50	1.42	8,419	166.22	0.78	0.06	0.73
6.50	1.87	11,173	166.68	0.94	0.06	0.88
7.50	**2.80**	**14,963**	**167.33**	**1.11**	**0.06**	**1.05**
8.50	**2.81**	**26,593**	**169.88**	**2.94**	**0.06**	**2.87**
9.50	1.79	25,122	169.39	2.42	0.06	2.35
10.50	1.50	23,421	168.97	1.88	0.06	1.82
11.50	1.31	22,379	168.74	1.58	0.06	1.52
12.50	1.25	21,500	168.55	1.40	0.06	1.34
13.50	1.14	20,820	168.42	1.35	0.06	1.29
14.50	1.09	20,001	168.26	1.32	0.06	1.26
15.50	1.04	19,157	168.09	1.28	0.06	1.22
16.50	1.00	18,271	167.93	1.25	0.06	1.19
17.50	0.95	17,347	167.76	1.21	0.06	1.15
18.50	0.90	16,391	167.59	1.17	0.06	1.11
19.50	0.85	15,407	167.41	1.13	0.06	1.07
20.50	0.81	14,402	167.24	1.09	0.06	1.03
21.50	0.76	13,381	167.06	1.04	0.06	0.98
22.50	0.71	12,351	166.88	0.99	0.06	0.94
23.50	0.66	11,320	166.71	0.94	0.06	0.89
24.50	0.00	9,458	166.40	0.84	0.06	0.79
25.50	0.00	6,746	165.89	0.63	0.05	0.58
26.50	0.00	5,141	165.32	0.36	0.05	0.31
27.50	0.00	3,941	164.90	0.30	0.05	0.25
28.50	0.00	2,973	164.55	0.24	0.05	0.18
29.50	0.00	2,249	164.30	0.17	0.05	0.11
30.50	0.00	1,800	164.14	0.09	0.05	0.04
31.50	0.00	1,548	164.05	0.06	0.05	0.01
32.50	0.00	1,358	163.98	0.05	0.05	0.00
33.50	0.00	1,178	163.92	0.05	0.05	0.00
34.50	0.00	998	163.85	0.05	0.05	0.00
35.50	0.00	819	163.79	0.05	0.05	0.00

Stage-Discharge for Pond 9P: StormTech MC3500 w infil

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
163.50	0.00	0.00	0.00
163.60	0.05	0.05	0.00
163.70	0.05	0.05	0.00
163.80	0.05	0.05	0.00
163.90	0.05	0.05	0.00
164.00	0.05	0.05	0.00
164.10	0.07	0.05	0.02
164.20	0.12	0.05	0.07
164.30	0.17	0.05	0.12
164.40	0.20	0.05	0.15
164.50	0.22	0.05	0.17
164.60	0.25	0.05	0.19
164.70	0.27	0.05	0.21
164.80	0.29	0.05	0.23
164.90	0.30	0.05	0.25
165.00	0.32	0.05	0.27
165.10	0.33	0.05	0.28
165.20	0.35	0.05	0.29
165.30	0.36	0.05	0.31
165.40	0.38	0.05	0.32
165.50	0.39	0.05	0.33
165.60	0.42	0.05	0.37
165.70	0.50	0.05	0.44
165.80	0.58	0.05	0.52
165.90	0.64	0.05	0.58
166.00	0.69	0.06	0.63
166.10	0.73	0.06	0.68
166.20	0.77	0.06	0.72
166.30	0.81	0.06	0.75
166.40	0.85	0.06	0.79
166.50	0.88	0.06	0.82
166.60	0.91	0.06	0.85
166.70	0.94	0.06	0.88
166.80	0.97	0.06	0.91
166.90	1.00	0.06	0.94
167.00	1.03	0.06	0.97
167.10	1.05	0.06	1.00
167.20	1.08	0.06	1.02
167.30	1.10	0.06	1.05
167.40	1.13	0.06	1.07
167.50	1.15	0.06	1.09
167.60	1.18	0.06	1.12
167.70	1.20	0.06	1.14
167.80	1.22	0.06	1.16
167.90	1.24	0.06	1.18
168.00	1.26	0.06	1.20
168.10	1.29	0.06	1.22
168.20	1.31	0.06	1.25
168.30	1.33	0.06	1.27
168.40	1.35	0.06	1.29
168.50	1.37	0.06	1.30
168.60	1.44	0.06	1.37
168.70	1.54	0.06	1.48
168.80	1.66	0.06	1.60
168.90	1.79	0.06	1.73
169.00	1.92	0.06	1.86
169.10	2.06	0.06	1.99
169.20	2.19	0.06	2.12
169.30	2.31	0.06	2.25
169.40	2.43	0.06	2.36
169.50	2.53	0.06	2.47
169.60	2.62	0.06	2.56
169.70	2.70	0.06	2.64
169.80	2.81	0.06	2.75
169.90	2.97	0.06	2.91
170.00	3.13	0.07	3.07
170.10	3.71	0.07	3.65
170.20	4.63	0.07	4.57
170.30	5.74	0.07	5.67
170.40	5.78	0.07	5.72
170.50	5.83	0.07	5.76
170.60	5.87	0.07	5.81
170.70	**5.92**	**0.07**	**5.85**

Stage-Area-Storage for Pond 9P: StormTech MC3500 w infil

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
163.50	7,055	0
163.60	7,090	282
163.70	7,126	564
163.80	7,162	847
163.90	7,198	1,129
164.00	7,234	1,411
164.10	7,269	1,693
164.20	7,305	1,975
164.30	7,341	2,257
164.40	7,377	2,540
164.50	7,413	2,822
164.60	7,448	3,104
164.70	7,484	3,386
164.80	7,520	3,668
164.90	7,556	3,951
165.00	7,592	4,233
165.10	7,627	4,515
165.20	7,663	4,797
165.30	7,699	5,079
165.40	7,735	5,361
165.50	7,771	5,644
165.60	7,806	5,926
165.70	7,842	6,208
165.80	7,878	6,490
165.90	7,914	6,772
166.00	7,950	7,055
166.10	7,985	7,665
166.20	8,021	8,272
166.30	8,057	8,878
166.40	8,093	9,480
166.50	8,129	10,081
166.60	8,164	10,678
166.70	8,200	11,274
166.80	8,236	11,866
166.90	8,272	12,454
167.00	8,308	13,040
167.10	8,343	13,621
167.20	8,379	14,200
167.30	8,415	14,774
167.40	8,451	15,343
167.50	8,487	15,908
167.60	8,522	16,468
167.70	8,558	17,023
167.80	8,594	17,572
167.90	8,630	18,116
168.00	8,666	18,653
168.10	8,701	19,184
168.20	8,737	19,708
168.30	8,773	20,223
168.40	8,809	20,731
168.50	8,845	21,231
168.60	8,880	21,720
168.70	8,916	22,200
168.80	8,952	22,668
168.90	8,988	23,125
169.00	9,024	23,568
169.10	9,059	23,996
169.20	9,095	24,406
169.30	9,131	24,794
169.40	9,167	25,150
169.50	9,203	25,476
169.60	9,238	25,785
169.70	9,274	26,081
169.80	9,310	26,365
169.90	9,346	26,647
170.00	9,382	26,929
170.10	9,417	27,212
170.20	9,453	27,494
170.30	9,489	27,776
170.40	9,525	28,058
170.50	9,561	28,340
170.60	9,596	28,622
170.70	**9,632**	**28,905**

Water Quality Calculations

Based on the CWS June 2007 Design and Construction Standards

Treat Using Contech StormFilter Catch Basin Units: Each Cartridge Treats 15 gpm (0.033 cfs)

SF CB 1 **322,412** sf of Impervious Surface Area

Water Quality Volume (V_{wq}):

V_{wq} = Impervious Area • 0.36"

V_{wq} = 322,412 sf • 0.36 in • 1/12 ft/in

V_{wq} = 9,672 cf

Water Quality Flowrate (Q_{wq}):

Q_{wq} = V_{wq} / Time **Time = 4 hours**

Q_{wq} = 0.672 cfs < 0.700 cfs

Use Twenty-one Cartridge Catch Basin Unit(s)

II. APPENDIX

Appendix A

USDA SCS Soil Survey and Hydrologic Classification

Map Scale: 1:1,460 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

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: Washington County, Oregon
Survey Area Data: Version 14, Sep 16, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 8, 2010—Aug 23, 2014

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.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Washington County, Oregon (OR067)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
21B	Hillsboro loam, 3 to 7 percent slopes	B	9.1	91.6%
21C	Hillsboro loam, 7 to 12 percent slopes	B	0.8	8.4%
Totals for Area of Interest			**10.0**	**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.

Appendix B
TR-55 Curve Numbers

Table 2-2a Runoff curve numbers for urban areas [1/]

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area [2/]	A	B	C	D
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
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.

Table 2-2b Runoff curve numbers for cultivated agricultural lands [1/]

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment [2/]	Hydrologic condition [3/]	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T+ CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T+ CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

1 Average runoff condition, and I_a=0.2S

2 Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

3 Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good ≥ 20%), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c Runoff curve numbers for other agricultural lands [1/]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2/]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3/]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4/]	48	65	73
Woods—grass combination (orchard or tree farm). [5/]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6/]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4/]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.

2 <50%) ground cover or heavily grazed with no mulch.
50 to 75% ground cover and not heavily grazed.
> 75% ground cover and lightly or only occasionally grazed.

3 : <50% ground cover.
50 to 75% ground cover.
>75% ground cover.

4 Actual curve number is less than 30; use CN = 30 for runoff computations.

5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

6 Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Woods are grazed but not burned, and some forest litter covers the soil.
Woods are protected from grazing, and litter and brush adequately cover the soil.

Appendix C
Clean Water Services 24-Hour Rainfall Depths

24-HOUR RAINFALL DEPTHS

RECURRENCE INTERVAL (YEARS)	TOTAL PRECIPITATION DEPTH (INCHES)
2	2.5
5	3.10
10	3.45
25	3.90
50	4.20
100	4.50

24–HOURS
RAINFALL DEPTHS

DRAWING NO. 1280 REVISED 12–06

Clean Water Services

Appendix D
Stormfilter Details

STORMFILTER CATCHBASIN DESIGN NOTES

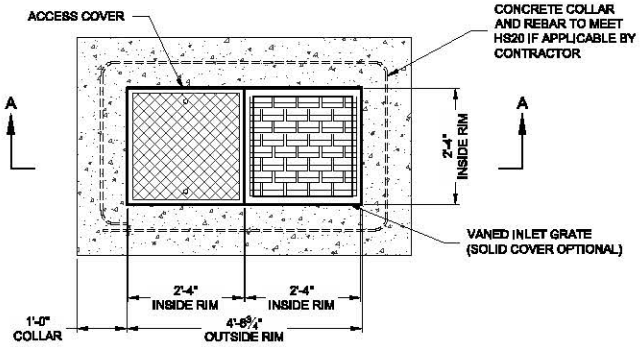
STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 1 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF ONE CARTRIDGE. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY 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

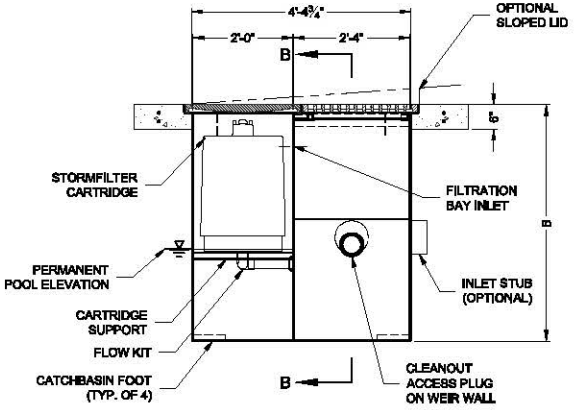
CARTRIDGE HEIGHT	27"		18"		18" DEEP	
MINIMUM HYDRAULIC DROP (H)	3.05'		2.3'		3.3'	
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/ft²	1 gpm/ft²	2 gpm/ft²	1 gpm/ft²	2 gpm/ft²	1 gpm/ft²
CARTRIDGE FLOW RATE (gpm)	22.5	11.25	15	7.5	15	7.5
PEAK HYDRAULIC CAPACITY	1.0		1.0		1.0	
INLET PERMANENT POOL LEVEL (A)	1'-0"		1'-0"		2'-0"	
OVERALL STRUCTURE HEIGHT (B)	4'-9"		3'-9"		4'-9"	

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
4. INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
5. 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.
6. 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 QUANTITY (2) #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
7. 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 37 SECONDS.
8. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

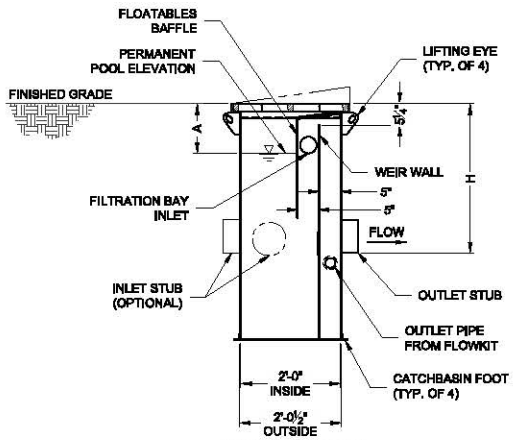
INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
C. 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 FLOW RATE (gpm)	XX
MEDIA TYPE (CSF, PERLITE, ZPG, GAC, PHS)	XXXXX
RIM ELEVATION	XXX.XX'

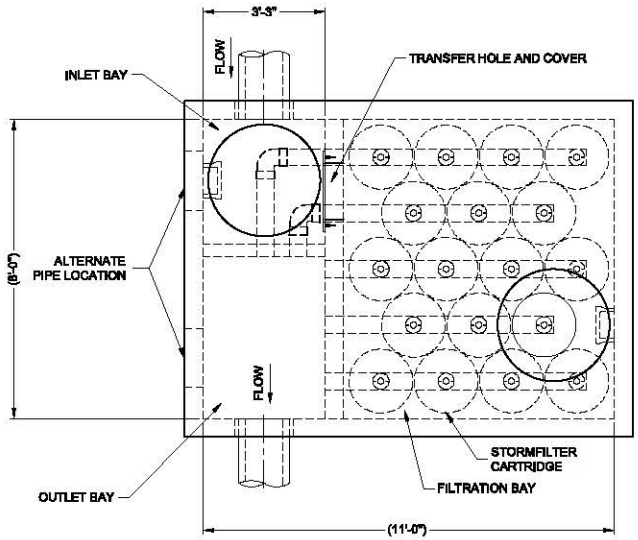
PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"

CONFIGURATION

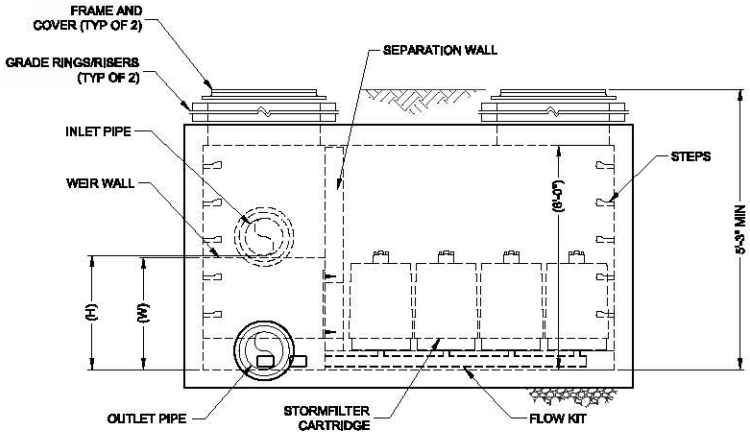
SLOPED LID	YES\NO
SOLID COVER	YES\NO
NOTES/SPECIAL REQUIREMENTS:	

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9026 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

1 CARTRIDGE CATCHBASIN STORMFILTER STANDARD DETAIL



PLAN

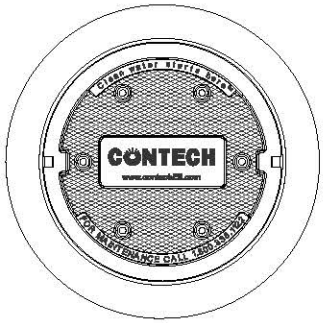


ELEVATION

STORMFILTER DESIGN TABLE

- THE 8' x 11' PEAK DIVERSION STORMFILTER TREATMENT CAPACITY VARIES BY CARTRIDGE COUNT AND LOCALLY APPROVED SURFACE AREA SPECIFIC FLOW RATE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.
- THE PEAK DIVERSION STORMFILTER IS AVAILABLE IN A LEFT INLET (AS SHOWN) OR RIGHT INLET CONFIGURATION.
- ALL PARTS AND INTERNAL ASSEMBLY PROVIDED BY CONTECH UNLESS OTHERWISE NOTED.

CARTRIDGE HEIGHT	27"		18"		LOW DROP	
SYSTEM HYDRAULIC DROP (H - REQ'D. MIN.)	3.05'		2.3'		1.8'	
HEIGHT OF WEIR (W)	3.00'		2.25'		1.75'	
TREATMENT BY MEDIA SURFACE AREA	2 gpm/ft²	1 gpm/ft²	2 gpm/ft²	1 gpm/ft²	2 gpm/ft²	1 gpm/ft²
CARTRIDGE FLOW RATE (gpm)	22.5	11.25	15	7.5	10	5



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
# OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (CSF, PERLITE, ZPG)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE	*	*	*
OUTLET PIPE	*	*	*

INLET BAY RIM ELEVATION	*
FILTER BAY RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

PERFORMANCE SPECIFICATION
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 **37 SECONDS.** SPECIFIC FLOW RATE SHALL BE **2 GPM/SF (MAXIMUM).** SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE **6 GPM/CF OF MEDIA (MAXIMUM).**

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
F. CONTRACTOR TO REMOVE THE TRANSFER HOLE COVER WHEN THE SYSTEM IS BROUGHT ONLINE.

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

THE STORMWATER MANAGEMENT STORMFILTER 8' x 11' PEAK DIVERSION STORMFILTER STANDARD DETAIL

Appendix E

StormTech MC-3500 Chamber Details

StormTech
Detention • Retention • Water Quality

MC-3500 Chamber

StormTech MC-3500 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots thus maximizing land usage for commercial and municipal applications.

StormTech MC-3500 Chamber (not to scale)

Nominal Chamber Specifications

Size (L x W x H)	90" (2286 mm) x 77" (1956 mm) x 45" (1143 mm)
Chamber Storage	109.9 ft³ (3.11 m³)
Min. Installed Storage*	178.9 ft³ (5.06 m³)
Weight	134 lbs (60.8 kg)

* This assumes a minimum of 12" (305 mm) of stone above, 9" (229 mm) of stone below chambers, 9" (229 mm) of row spacing, and 40% stone porosity.

StormTech MC-3500 End Cap (not to scale)

Nominal End Cap Specifications

Size (L x W x H)	25.7" (653 mm) x 75" (1905 mm) x 45" (1143 mm)
End Cap Storage	14.9 ft³ (0.42 m³)
Min. Installed Storage*	46.0 ft³ (1.30 m³)
Weight	49 lbs (22.2 kg)

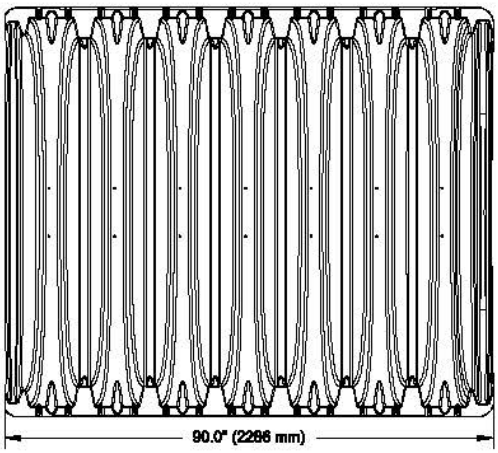
* This assumes a minimum of 12" (305mm) of stone above, 9" (229 mm) of stone below, 9" (229 mm) row spacing, 6" (152 mm) of stone perimeter, and 40% stone porosity.

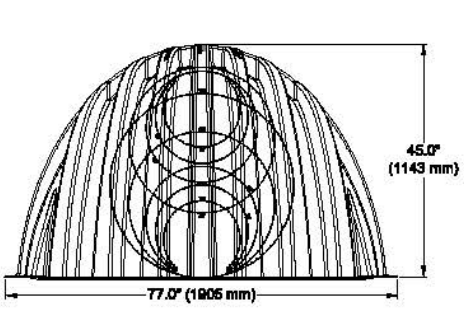
Shipping

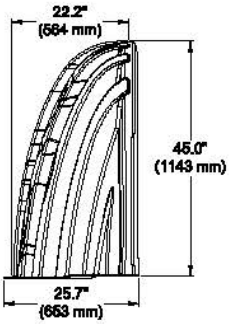
15 chambers/pallet

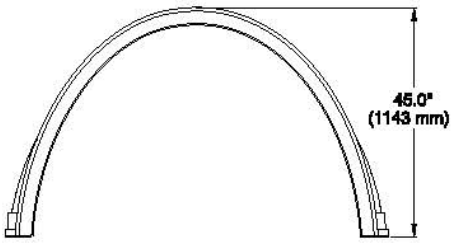
7 end caps/pallet

7 pallets/truck









Storage Volume Per Chamber/End Cap ft³ (m³)

	Bare Unit Storage	Chamber/End Cap and Stone Volume — Stone Foundation Depth In. (mm)			
	ft³ (m³)	9 (229)	12 (305)	15 (381)	18 (457)
MC-3500 Chamber	109.9 (3.11)	178.9 (5.06)	184.0 (5.21)	189.2 (5.36)	194.3 (5.5)
MC-3500 End Cap	14.9 (0.42)	46.0 (1.33)	47.7 (1.35)	49.4 (1.40)	51.1 (1.45)

NOTE: Assumes 40% porosity for the stone plus the chamber/end cap volume. End Cap volume assumes 6" (152mm) stone perimeter.

Volume of Excavation Per Chamber/End Cap in yd³ (m³)

	Stone Foundation Depth In. (mm)			
	9 (229)	12 (305)	15 (381)	18 (457)
MC-3500	12.4 (9.5)	12.8 (9.8)	13.3 (10.2)	13.8 (10.5)
End Cap	4.1 (3.1)	4.2 (3.2)	4.4 (3.3)	4.5 (3.5)

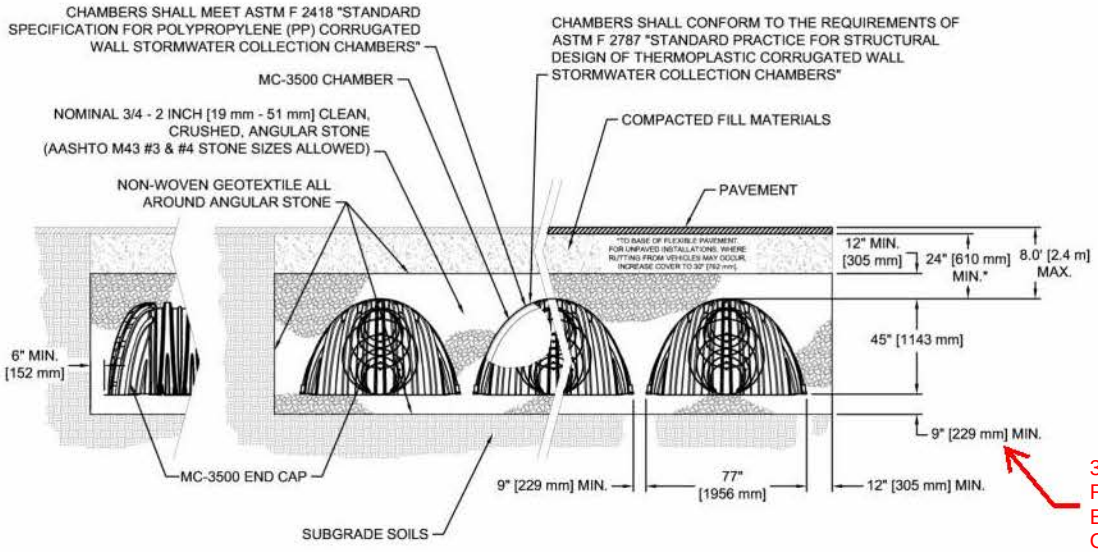
NOTE: Assumes 9" (229 mm) of separation between chamber rows, 6" (152 mm) of perimeter in front of end caps, and 24" (610 mm) of cover. The volume of excavation will vary as depth of cover increases.

Amount of Stone Per Chamber

ENGLISH tons (yd³)	Stone Foundation Depth			
	9 in.	12 in.	15 in.	18 in.
MC-3500	9.1 (6.4)	9.7 (6.9)	10.4 (7.3)	11.1 (7.8)
End Cap	4.1 (2.9)	4.3 (3.0)	4.5 (3.2)	4.7 (3.3)
METRIC kg (m³)	229 mm	305 mm	381 mm	457 mm
MC-3500	8220 (4.9)	8831 (5.3)	9443 (5.6)	10054 (6.0)
End Cap	3699 (2.2)	3900 (2.3)	4100 (2.4)	4301 (2.6)

NOTE: Assumes 12" (305 mm) of stone above, and 9" (229 mm) row spacing, and 6" (152mm) of perimeter stone in front of end caps.

General Cross Section



NOTES:

1. THIS CROSS SECTION PROVIDES GENERAL INFORMATION FOR THE MC-3500 CHAMBER. STORMTECH MC-3500 CHAMBERS MUST BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE MC-3500 DESIGN MANUAL AND MC-3500 CONSTRUCTION GUIDE.
2. PROPERLY INSTALLED MC-3500 CHAMBERS PROVIDE THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR EARTH AND LIVE LOADS WITH CONSIDERATION FOR IMPACT AND MULTIPLE PRESENCES.
3. PERIMETER STONE MUST ALWAYS BE BROUGHT UP EVENLY WITH BACKFILL OF BED. PERIMETER STONE MUST EXTEND HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH STRAIGHT OR SLOPED SIDEWALLS.

StormTech
Detention · Retention · Water Quality
A division of ADS
70 Inwood Road, Suite 3 | Rocky Hill | Connecticut | 06067
860.529.8188 | 888.892.2694 | fax 866.328.8401 | fax 860-529-8040 | www.stormtech.com

S150909 03/2014

IPT Tualatin DC LLC

SHELL BUILDING B

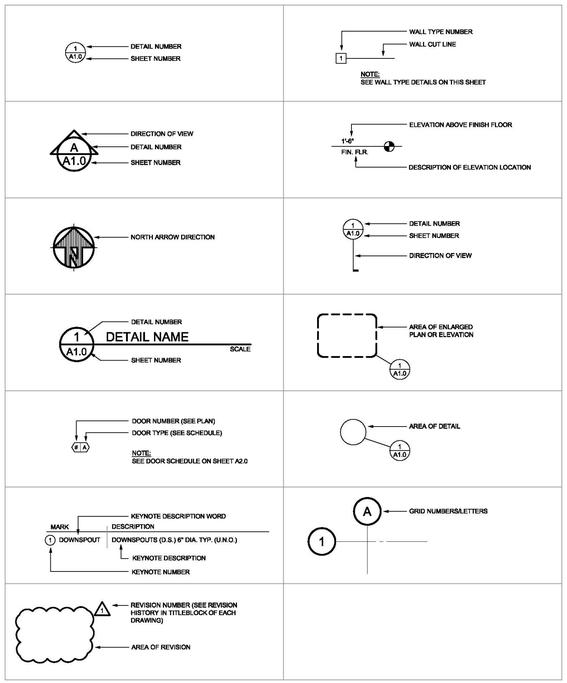
(NO TENANTS AT THIS TIME - OCCUPANT LOAD UNKNOWN)

SOUTHWEST CIMINO STREET

CITY OF TUALATIN, OREGON

PARCEL 2 (PP 2009-034), TAX PARCEL NUMBER R2168335

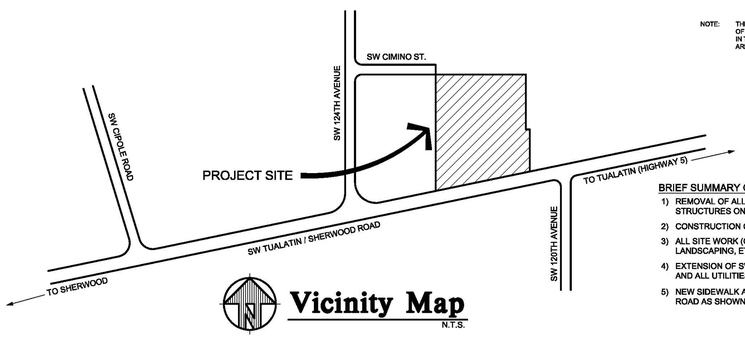
Symbols:



Abbreviations:

AB	ANCHOR BOLT	ID	INSIDE DIAMETER
A/C	AIR CONDITIONING	INFO	INFORMATION
AC	ASPHALT CONCRETE	INSUL	INSULATION
ACT	ACOUSTIC CEILING TILE	INT	INTERIOR
AD	AREA DRAIN		
ADA	AMERICANS WITH DISABILITIES ACT	JT	JOINT
ADD	ADDITION OR ADDENDUM	JST	JOIST
ADDL	ADDITIONAL		
AFF	ABOVE FINISH FLOOR	KD	KNOCKED DOWN
ALT	ALTERNATE		
AL	ALUMINUM		
ALUM	ALUMINUM	LAM	LAMINATE
AMP	AMPERIES	LAT	LATERAL
ANOD	ANODIZED	LAV	LAVATORY
ARCH	ARCHITECT	LF	LINEAR FEET
		LT	LIGHT
BC	BACK OF CURB	LTG	LIGHTING
BD	BOARD		
BLDG	BUILDING		
BLK	BLOCK, BLOCKING	MATL	MATERIAL
BM	BENCH MARK, BEAM	MAX	MAXIMUM
BOT	BOTTOM	MB	MACHINE BOLT
BOCAN	BOTTOM OF CANOPY	MDO	MEDIUM DENSITY OVERLAY
BR	BEARING	MECH	MECHANICAL
BUR	BUILT-UP ROOFING	MEPF	MECHANICAL, ELECTRICAL AND FIRE PROTECTION
CAM	CAMBER	MFG	MANUFACTURING
CB	CATCH BASIN	MFR	MANUFACTURER
CF	CUBIC FOOT	MH	MANHOLE
CI	CAST IRON	MIN	MINIMUM
CIP	CAST IN PLACE	MISC	MISCELLANEOUS
CJ	CONTROL JOINT	MO	MASONRY OPENING
CL	CENTERLINE	MR	MOISTURE RESISTANT
CLG	CEILING	MTL	METAL
CLR	CLEAR		
CMU	CONCRETE MASONRY UNIT		
CO	CLEAN OUT	(N)	NEW
COL	COLUMN	NIC	NOT IN CONTRACT
CONC	CONCRETE	NOM	NOMINAL
CONN	CONNECTION	NTS	NOT TO SCALE
CONST	CONSTRUCTION		
CONT	CONTINUOUS	OA	OVERALL
CONTR	CONTRACTOR	OC	ON CENTER
CPT	CARPET	OD	OUTSIDE DIAMETER
CY	CUBIC YARD	OH	OPPOSITE HAND
		OPNG	OPENING
d	PENNY		
(D)	DEMO	PC	PRECAST CONCRETE
DBL	DOUBLE	PERF	PERFORATED
DEMO	DEMOLITION	PERP	PERPENDICULAR
DF	DRINKING FOUNTAIN	PH	PHASE
DIA	DIAMETER	PJ	PANEL JOINT
DIAG	DIAGONAL	PL	PLATE, PROPERTY LINE
DIM	DIMENSION	PLAM	PLASTIC LAMINATE
DISP	DISPENSER	PLYWD	PLYWOOD
DL	DEAD LOAD	PR	PAIR
DN	DOWN	PREFAB	PREFABRICATED
DR	DOOR	PSF	POUNDS PER SQUARE FOOT
DS	DOWNSPOUT	PSI	POUNDS PER SQUARE INCH
DTL	DETAIL	PT	PRESERVATIVE TREATED WOOD
DW	DISHWASHER	PVC	POLYVINYL CHLORIDE
DWG	DRAWING	PWR	POWER
EXTG	EXISTING	R	RADIUS
EXIST	EXISTING	RD	ROOF DRAIN, ROAD
(E)	EXISTING	REF	REFRIGERATOR
EA	EACH	REINF	REINFORCING
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM	REQ'D	REQUIRED
		REV	REVISION
EJ	EXPANSION JOINT	RM	ROOM
ELEC	ELECTRIC	RO	ROUGH OPENING
ELECT	ELECTRICAL	ROW	RIGHT OF WAY
ELEV	ELEVATION, ELEVATOR		
EQ	EQUAL		
EQUIP	EQUIPMENT	SAN	SANITARY
ESFR	EARLY SUPPRESSION FAST RESPONSE	SAT	SUSPENDED ACOUSTICAL TILE
		SC	SOLID CORE
EW	EACH WAY	SCHED	SCHEDULE
EXP	EXPOSED OR EXPANSION	SECT	SECTION
EXT	EXTERIOR	SF	SQUARE FEET
		SHT	SHEET
FA	FIRE ALARM	SHTG	SHEATHING
FAB	FABRICATE	SIM	SIMILAR
FD	FLOOR DRAIN	SOG	SLAB ON GRADE
FDC	FIRE DEPARTMENT CONNECTION	SPEC	SPECIFICATION
FDN	FOUNDATION	SQ	SQUARE
FE	FIRE EXTINGUISHER	SQFT	SQUARE FEET
FEC	FIRE EXTINGUISHER CABINET	STD	STANDARD
FH	FIRE HYDRANT	STL	STEEL
FIN	FINISH	STS	STORM SEWER
FIN FLR	FINISH FLOOR	STRUCT	STRUCTURAL
FLR	FLOOR	SUSP	SUSPENDED
FLUOR	FLUORESCENT	SV	SHEET VINYL
FOC	FACE OF CONCRETE	SYM	SYMMETRICAL
FOS	FACE OF STUD		
FRP	FIBERGLASS REINFORCED PANEL	T&G	TONGUE AND GROOVE
FRMG	FRAMING	TB	THROUGH BOLT
FTG	FOOTING	TOC	TOP OF CURB
FURN	FURNITURE	TOCAN	TOP OF CANOPY
		TOF	TOP OF FRAMING
GA	GAUGE	TOFTG	TOP OF FOOTING
GALV	GALVANIZED	TOMULL	TOP OF MULLION
GFI	GROUND FAULT INTERRUPTOR	TOS	TOP OF SLAB
GI	GALVANIZED IRON	TOW	TOP OF WALL
GL	GLUE LAMINATED, GLASS	TP	TOILET PAPER
GLB	GLUE LAMINATED BEAM	TRANS	TRANSFORMER
GYP	GYPSUM	TS	TUBE STEEL
GYP BD	GYPSUM BOARD	TYP	TYPICAL
HB	HOSE BIBB	UNO	UNLESS NOTED OTHERWISE
HC	HOLLOW CORE	UON	UNLESS OTHERWISE NOTED
HDR	HEADER	URN	URINAL
HDWE	HARDWARE		
HGT	HEIGHT	VCT	VINYL COMPOSITION TILE
HORIZ	HORIZONTAL	VERT	VERTICAL
HM	HOLLOW METAL	VIF	VERIFY IN FIELD
HSS	HOLLOW STEEL SECTION		
HT	HEIGHT		
HTG	HEATING	WC	WATER CLOSET
HVAC	HEATING VENTILATING AND AIR CONDITIONING	WCT	WAINSCOT
		WD	WOOD
HWH	HOT WATER HEATER	WDW	WINDOW
HYD	HYDRAULIC	WH	WATER HEATER
		WH-SE	WARE-HOUSE
		WP	WEATHER PROOF
		WT	WEIGHT

NOTE: THE ABBREVIATIONS SHOWN ON THIS LIST MAY NOT ALL BE USED IN THIS SET OF DRAWINGS. THERE MAY ALSO BE SOME ABBREVIATIONS THAT ARE INCLUDED IN THIS SET OF DRAWINGS THAT ARE NOT ON THIS LIST. IF ANY ABBREVIATIONS ARE IN DOUBT, PLEASE CONTACT ENGINEER FOR CLARIFICATION.



Vicinity Map
N.T.S.

BRIEF SUMMARY OF PROJECT SCOPE OF WORK:

1) REMOVAL OF ALL EXISTING TREES AND STRUCTURES ON THE SITE.
2) CONSTRUCTION OF BUILDING B (157,230 SF.).
3) ALL SITE WORK (GRADING, WQ PONDS, PAVING, LANDSCAPING, ETC.) AS SHOWN ON CIVIL PLANS.
4) EXTENSION OF SW CIMINO STREET (3/4 PAVED) AND ALL UTILITIES AS SHOWN ON CIVIL PLANS.
5) NEW SIDEWALK ALONG TUALATIN / SHERWOOD ROAD AS SHOWN ON SITE PLANS.

Project Directory:

Owner / Developer:
Industrial Property Trust (IPT)
4675 MacArthur Court, Suite 825
Newport Beach, California 92660
(949) 892-4900
Contact: Peter Vanderburg

Development Manager:
KG Investment Management
1915 NW Amberglen Parkway, Suite 365
Beaverton, Oregon 97006
Contacts: Andrew Coates (425) 450-1550 (Bellevue, WA)
Kim Schoenfelder (503) 748-0454
Rick Gervais (425) 766-9790 (Bellevue, WA)

Jurisdiction:
City of Tualatin
P.O. Box 369
Located at: 18880 SW Martinazzi Ave.
Tualatin, Oregon 97062
Phone: (503) 692-2000
Contact: Charles Benson, Planning (503) 691-3029, Direct
Kevin Rex, Building (503) 691-3039, Direct
Tony Doran, Engineering (503) 691-3035, Direct
Ty Darby, Fire Marshal (503) 259-1409, Direct

Jurisdiction:
Washington County
155 N. 1st Avenue, Suite 350, MS 12
Hillsboro, Oregon 97124
Phone: (503) 846-7639
Contact: Naomi Vogel, Planning

Engineer:
VLMK Engineering + Design
3933 Southwest Kelly Avenue
Portland, Oregon 97239
Phone: (503) 222-4453
Contacts: Jason Sahlin, Principal In Charge
Bill Lambert, Project Coordinator

Contractor:
Sierra Construction Company, Inc.
1700 SE 11th Avenue, Suite 120
Portland, Oregon 97214
(503) 285-4310
Contact: Guy Blanchard

Landscape Architect:
Otten and Associates
3933 Southwest Kelly Avenue
Portland, Oregon 97239
Phone: (503) 972-0311
Contacts: Janet Otten, Erin Holsonback

Site Surveyor:
Westlake Consultants, Inc.
15115 SW Sequoia Parkway
Pacific Corp. Center, Suite 150
Tigard, Oregon 97224
Phone: (503) 684-0652
Contact: Gary Anderson

Traffic Engineer:
Lancaster Engineering
321 SW 4th Avenue, Suite 400
Portland, Oregon 97204
Phone: (503) 248-0313
Contacts: Todd Mobley, (503) 319-9811, Cell

Arborist:
City Wide Tree Service, Inc.
18090 SE McLoughlin Blvd.
Milwaukie, Oregon 97267
Phone: (503) 793-5087
Contacts: Chris Ritschard

Current Codes:

APPLICABLE CODES AND STANDARDS INCLUDE:

1) BUILDING = 2014 O.S.S.C
2) MECHANICAL = 2014 O.M.S.C.
3) PLUMBING = 2014 O.P.S.C.
4) ELECTRICAL = 2014 O.E.S.C.
5) FIRE = 2014 O.F.C.
6) ENERGY = 2014 O.E.E.S.C.
7) ADA = 2003 ICC/ANSI A117.1
8) N.F.P.A. (NATIONAL FIRE PROTECTION AGENCY)

CODE KEY:

OREGON
STRUCTURAL (ELECT./MECH, ETC. AS APPLIES)
SPECIALTY
CODE

O.S.S.C.

Permit Schedule:

DESCRIPTION	PERMIT/APP. NO.	SUBMITTED	RE-SUBMIT	RE-SUBMIT	RE-SUBMIT	APPROVED
ARCHITECTURAL REVIEW (AR)	AR17-0006	07-19-17	07-28-17	-	-	-
PUBLIC WORKS PERMIT (ONSITE)	-	-	-	-	-	-
PUBLIC WORKS PERMIT (OFFSITE)	-	-	-	-	-	-
WA. COUNTY PERMITS	-	-	-	-	-	-
BUILDING PERMIT	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

Deferred Submittals (Bidder Design):

NO.	SYSTEM DESCRIPTION	SUB-CONTRACTOR	SUBMITTAL
1	FIRE PROTECTION	TO BE DETERMINED	TO CITY BY SUB-CONTRACTOR
2	OPEN-WEB STEEL JOISTS / GIRDERS	TO BE DETERMINED	SHOP DRAWINGS
3	LANDSCAPE IRRIGATION	TO BE DETERMINED	TO CITY BY SUB-CONTRACTOR
4			
5			

NOTE:
1) IN ACCORDANCE WITH I.B.C. SECTION 107.3.4.2 DEFERRED SUBMITTAL ITEMS SHALL BE REVIEWED BY VLMK PRIOR TO SUBMITTAL TO THE BUILDING OFFICIAL FOR PERMIT APPROVAL. THE SUBCONTRACTOR OR VENDOR IS RESPONSIBLE TO PROVIDE CUSTOMARY DESIGN DOCUMENTS AND PERMIT COORDINATION FOR THEIR DEFERRED SUBMITTAL ITEMS. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THE DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.
2) PLANS FOR THE FIRE SPINKLER, HIGH PILED STORAGE AND FIRE MONITORING SHALL BE SUBMITTED SEPARATELY BY NEVADA LICENSED CONTRACTORS. THESE SUBMITTALS SHALL BE REVIEWED AND APPROVED PRIOR TO INSTALLATION.

Schedule of Drawings:

DRAWING SETS SENT TO: OWNER, KG INVESTMENTS, CITY OF TUALATIN, CONTRACTOR

Description of Sets: PROGRESS SET | REV. ARCH. REVIEW SET | PRICING SET | REVISED PRICING SET | REV. ARCH. REVIEW SET | REVISED PRICING SET

DATE: 6/14/2017 | 6/14/17 | 6/14/17 | 6/14/17 | 7/28/17 | 8/18/17

	SHEET	TITLE
	CVR1.0	COVER SHEET
SITE DESIGN	C1.0	MASTER SITE PLAN
	C1.1	SITE PLAN
	C2.0	SITE GRADING PLAN
	C2.1	GRADING DETAILS
	C2.2	GRADING DETAILS
	C3.0	SITE UTILITY PLAN
	C3.1	UTILITY DETAILS
	C3.2	UTILITY DETAILS
	C4.0	EROSION AND SEDIMENT CONTROL PLAN
	C4.1	EROSION AND SEDIMENT CONTROL DETAILS
	C5.0	SITE DETAILS
	C5.1	SITE DETAILS
	C6.0	CIVIL DETAILS
	C6.1	CIVIL DETAILS
	C7.0	CITY DETAILS
	EC1.0	EXISTING CONDITIONS PLAN
	1 OF 1	TOPO SURVEY
	TP1.0	TREE PRESERVATION PLAN
	LT1.0	SITE LIGHTING PLAN
LSCAPE	L1.0	SITE LANDSCAPE PLAN NORTH
	L2.0	SITE LANDSCAPE PLAN SOUTH
	L3.0	SITE LANDSCAPE SPECIFICATIONS AND DETAILS
ARCHITECTURAL	A1.0	OVERALL FLOOR PLAN
	A1.1	PARTIAL FLOOR PLAN NORTH
	A1.2	PARTIAL FLOOR PLAN SOUTH
	A1.7	DOOR SCHEDULES AND DETAILS
	A2.0	EXTERIOR ELEVATIONS
	A3.0	BUILDING SECTIONS
	A4.0	WALL SECTIONS
	A4.1	WALL SECTIONS
	A5.0	ROOF PLAN AND DETAILS
	A5.1	ROOF DETAILS
	A6.0	STOREFRONT PLANS AND ELEVATIONS
	A6.1	STOREFRONT PLANS AND ELEVATIONS
	A6.2	STOREFRONT DETAILS
	A7.0	ARCHITECTURAL DETAILS
	A7.1	ARCHITECTURAL DETAILS
	A8.0	SPECIFICATIONS
	A8.1	SPECIFICATIONS
	A8.2	SPECIFICATIONS
	A8.3	SPECIFICATIONS
	A8.4	SPECIAL INSPECTION NOTES
STRUCTURAL	S1.0	FOUNDATION PLAN
	S2.0	FOUNDATION DETAILS
	S2.1	FOUNDATION DETAILS
	S3.0	ROOF FRAMING PLAN
	S4.0	ROOF FRAMING DETAILS
	S4.1	ROOF FRAMING DETAILS
	S4.2	ROOF FRAMING DETAILS
	S5.0	WALL PANEL ELEVATIONS
	S5.1	WALL PANEL ELEVATIONS
	S5.2	WALL PANEL TYPES
	S5.3	WALL PANEL TYPES
	S6.0	WALL PANEL DETAILS
	S6.1	WALL PANEL DETAILS
	-	CIVIL CALCULATIONS
	-	STRUCTURAL CALCULATIONS
		NUMBER OF ORIGINALS IN SET: 8 | 10 | 25 | 25 | 10 | 25

Notes:

REMOVE AND REPLACE ALL PREVIOUS PRINTS UPON RECEIPT OF REVISED DRAWINGS.

- ● NEW OR REVISED DRAWING
- ○ RE-ISSUED WITH NO CHANGES
- ⓒ 8 1/2" X 11" SHEETS - SEPARATE FROM DRAWINGS (CALCULATIONS)
- ⊗ DELETED DRAWING

PROGRESS SET	☐
REV. ARCH. REVIEW INTAKE SET	☒
REVISED PRICING SET	☐
REV. BLDG. PERMIT INTAKE SET	☐
CONSTRUCTION SET	☐

IPT TUALATIN DC LLC — VLMK PROJECT NO. 20170034

DATE: JUNE, 2017
SCALE: AS NOTED | PROJ. NO.: 20170034
DRAWN: BGL | CHECKED: JS

COVER SHEET

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CVR1.0

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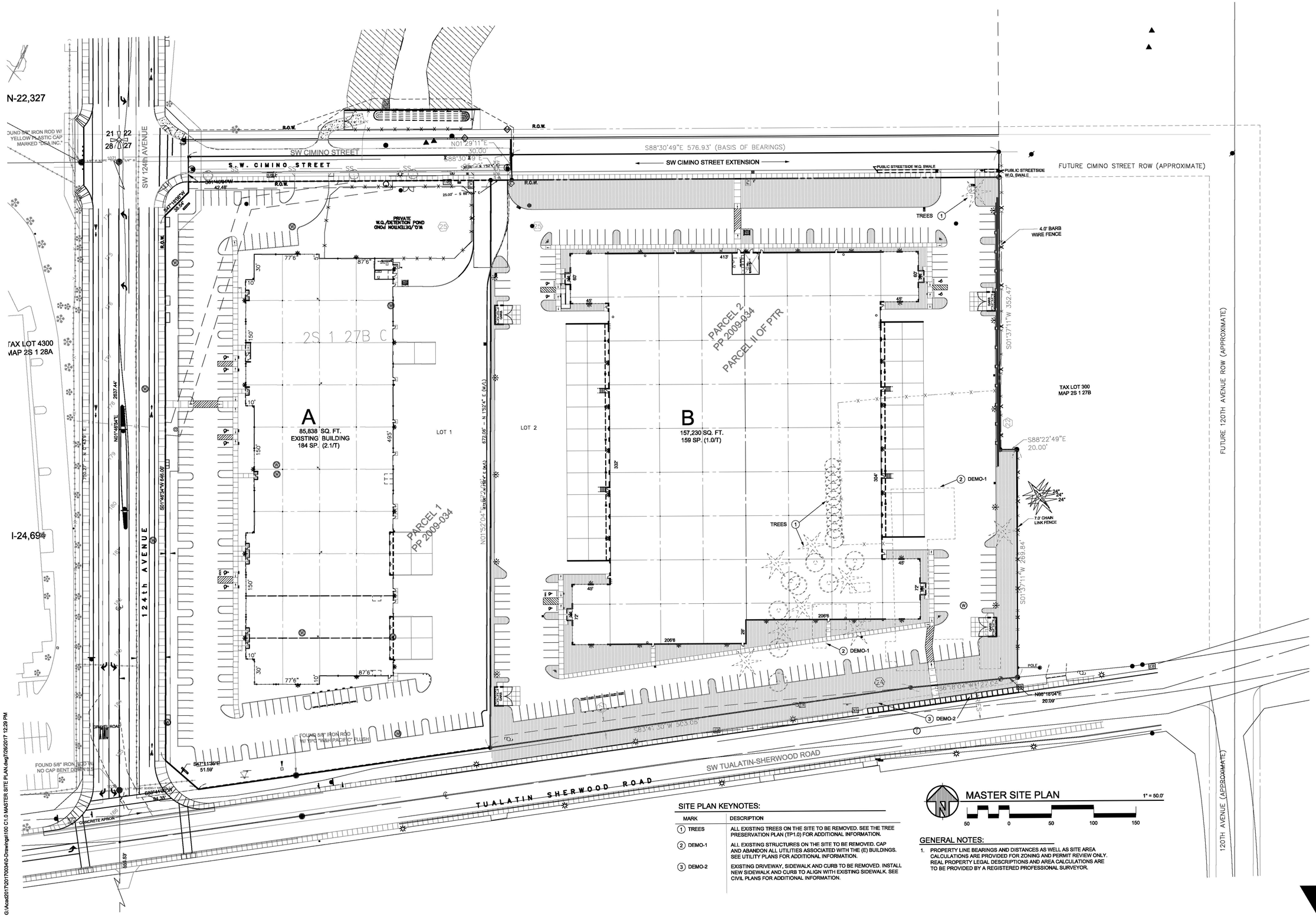

SITE PLAN KEYNOTES:

MARK	DESCRIPTION
(1) TREES	ALL EXISTING TREES ON THE SITE TO BE REMOVED. SEE THE TREE PRESERVATION PLAN (TP1.0) FOR ADDITIONAL INFORMATION.
(2) DEMO-1	ALL EXISTING STRUCTURES ON THE SITE TO BE REMOVED. CAP AND ABANDON ALL UTILITIES ASSOCIATED WITH THE (E) BUILDINGS. SEE UTILITY PLANS FOR ADDITIONAL INFORMATION.
(3) DEMO-2	EXISTING DRIVEWAY, SIDEWALK AND CURB TO BE REMOVED. INSTALL NEW SIDEWALK AND CURB TO ALIGN WITH EXISTING SIDEWALK. SEE CIVIL PLANS FOR ADDITIONAL INFORMATION.

MASTER SITE PLAN

1" = 50.0'

50 0 50 100 150

GENERAL NOTES:

1. PROPERTY LINE BEARINGS AND DISTANCES AS WELL AS SITE AREA CALCULATIONS ARE PROVIDED FOR ZONING AND PERMIT REVIEW ONLY. REAL PROPERTY LEGAL DESCRIPTIONS AND AREA CALCULATIONS ARE TO BE PROVIDED BY A REGISTERED PROFESSIONAL SURVEYOR.

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PROJECT NAME
IPT TUALATIN DC LLC

SW CIMINO STREET
TUALATIN, OR.

REVISIONS

	DATE	DESCRIPTION

DATE
JUNE 2017

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MASTER SITE PLAN

C1.0

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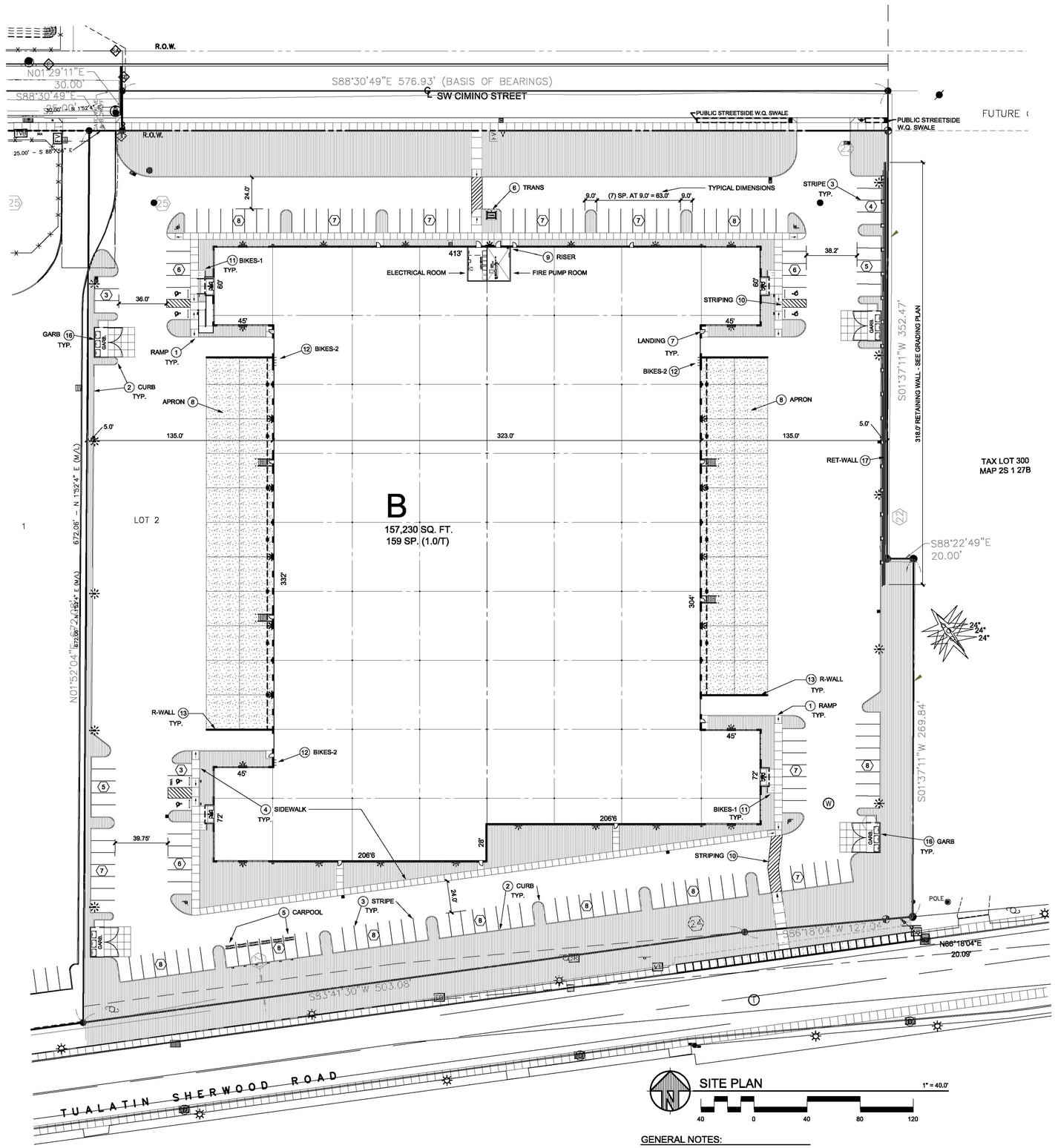

SITE PLAN

1" = 40.0'

40 0 40 80 120

GENERAL NOTES:

1. PROPERTY LINE BEARINGS AND DISTANCES AS WELL AS SITE AREA CALCULATIONS ARE PROVIDED FOR ZONING AND PERMIT REVIEW ONLY. REAL PROPERTY LEGAL DESCRIPTIONS AND AREA CALCULATIONS ARE TO BE PROVIDED BY A REGISTERED PROFESSIONAL SURVEYOR.

SITE PLANNING SYMBOLS

- ASPHALT PAVING AS NOTED THIS SHEET
- LANDSCAPED AREA - SEE SHEET L1.0
- WATER QUALITY POND
- 00.0' CONTROL DIMENSION
- GARB. GARBAGE ENCLOSURE - SEE SITE DETAIL SHEET
- DISABLED PARKING STALL. 9.0' STALL WITH 6.0' STRIPED SIDE ACCESS. PROVIDE CODE APPROVED SIGN AT EACH STALL SEE STANDARD DETAIL AT SITE DETAIL SHEET.
- VAN DISABLED VAN PARKING STALL. 9.0' STALL WITH 8.0' STRIPED SIDE ACCESS. PROVIDE CODE APPROVED SIGN AT EACH STALL SEE STANDARD DETAIL AT SITE DETAIL SHEET.
- 6 NUMBER OF STANDARD PARKING STALLS 9.0' X 18.0'
- (6) SP. AT 9.0' = 54.0' NUMBER AND WIDTH OF PARKING SPACES.

GENERAL SYMBOLS

EXIST	NEW.	
	■	CATCH BASIN (CB) -OR- AREA DRAIN (AD)
◎	●	MANHOLE (MH)
○	●	UTILITY POLE
◇	◆	FIRE HYDRANT (FH)
M	M	METER
V	V	UTILITY VAULT
T	T	TRANSFORMER AND PAD
TRAN	TRAN	TRANSFORMER
⊗	⊗	VALVE BOX COVER
☼	☼	LIGHT POLE
☼	☼	WALL MOUNTED LIGHT
⋌	⋌	FIRE DEPARTMENT CONNECTION (FDC)
⋈	⋈	GATE VALVE
C.O. ○	C.O. ⊙	CLEAN OUT (CO)

PLANNING AND ZONING REVIEW:

JURISDICTION	CITY OF TUALATIN, OREGON
LAND USE ZONE	MG (GENERAL MANUFACTURING)
OVERLAY ZONES	NONE
STREET ADDRESS	SW CIMINO STREET
LEGAL DESCRIPTION	SEE SURVEY

AREA SUMMARY:

SITE AREA:	386,007 SQFT.	8.86	ACRES (+/-)
NEW BUILDING 'B'	157,230 SQFT.	40.7%	COVERAGE
LANDSCAPE:	63,595 SQFT.	16.5%	COVERAGE
PAVING:	165,182 SQFT.	42.8%	COVERAGE
PARKING LOT LANDSCAPE AREA (REQUIRED): (25 X 159)	3,975 SQFT.		
PARKING LOT LANDSCAPE AREA (ACTUAL):	5,346 SQFT.		
PARKING (REQUIRED):	155 SPACES		
PARKING (ACTUAL):	159 SPACES	1.0	PER 1,000 SQFT.

PARKING BASED ON 15% OFFICE, 25% MANUFACTURING AND 60% WAREHOUSE
CITY PARKING REQUIREMENT = OFFICE (2.7/T), MFR. (1.6/T) AND WHSE. (0.3/T)

CARPOOL/VANPOOL PARKING (REQUIRED): (1 PER 25 REQ'D. STALLS)	6 SPACES	
CARPOOL/VANPOOL PARKING (ACTUAL):	6 SPACES	
BICYCLE PARKING (REQUIRED):	21 SPACES	(11) REQUIRED TO BE COVERED
BICYCLE PARKING (ACTUAL):	23 SPACES	(11) ARE INTERIOR (COVERED)

BIKE PARKING BASED ON 15% OFFICE, 25% MANUFACTURING AND 60% WAREHOUSE
CITY BIKE PARKING REQUIREMENT = OFFICE (2 OR 0.50/T), MFR. (NONE) AND WHSE. (2 OR 0.1/T)

GENERAL IBC REVIEW:

INTERNATIONAL BUILDING CODE (IBC) REVIEW, 2012 EDITION, OSSC AMENDMENTS 07/01/14

INTERNATIONAL FIRE CODE, 2012 EDITION, OSSC AMENDMENTS 7/01/14

OCCUPANCY	SHELL BUILDING, TENANT UNKNOWN AT THIS TIME - ASSUMED S-1 (WAREHOUSE), F-1 (MANUF.) AND B (OFFICE)
CONSTRUCTION TYPE	V-B (CONCRETE TILT-UP WITH WOOD ROOF)
FULLY SPRINKLED	YES
ALLOWABLE AREA	WITH (4) 60.0' SIDEYARDS AND FULLY SPRINKLERED ALLOWABLE AREA IS TO BE UNLIMITED

SITE PLAN KEYNOTES:

MARK	DESCRIPTION
1 RAMP	SIDEWALK RAMP. 1:12 MAXIMUM SLOPE. PROVIDE CODE APPROVED DETECTABLE WARNING.
2 CURB	EXTRUDED CONCRETE CURB. LOCATE AROUND ALL LANDSCAPE AREAS AS SHOWN (U.N.O.). 5.0' TYPICAL CURB RADIUS AT CORNERS (U.N.O.). SEE SITE DETAIL SHEET.
3 STRIPE	3" WIDE PAINT STRIPE.
4 SIDEWALK	NEW CONCRETE SIDEWALK. SEE SITE DETAIL SHEET.
5 CARPOOL	CARPOOL / VANPOOL PARKING. PROVIDE CODE APPROVED SIGN ON A 1 1/2" DIA. STEEL PIPE, 4.0' HIGH AND PAINT "CARPOOL" (IN SPACE ON A.C.).
6 TRANS	TRANSFORMER PAD AND BOLLARDS - COORDINATE WITH ELECTRICAL.
7 LANDING	5.0' X 5.0' MIN. CONCRETE LANDING (4" THICK - UNREINFORCED).
8 APRON	LOADING DOCK CONCRETE SLAB. 7 INCH THICK UNREINFORCED CONCRETE OVER 6 INCHES COMPACTED CRUSHED ROCK OVER COMPACTED SUBGRADE.
9 RISER	FIRE SPRINKLER AND DOMESTIC WATER RISER - SEE SITE UTILITY PLAN. (VERIFY WITH FLOOR PLANS FOR LOCATIONS).
10 STRIPING	PAINT STRIPING (3" WIDE AT 2.0' O.C.) DENOTING PEDESTRIAN ACCESS WALKWAY OR NO PARKING.
11 BIKES-1	BICYCLE PARKING. (3) BIKES AT EACH LOCATION. SEE SITE DETAIL SHEET.
12 BIKES-2	INDOOR BICYCLE PARKING. (1) BIKE AT EACH HOOK. SEE SITE DETAIL SHEET.
13 R-WALL	LOADING DOCK RETAINING WALL WITH GUARDRAIL - SEE SITE DETAIL SHEET.
14 PUB-WALK	NEW PUBLIC SIDEWALK - PUBLIC STANDARD PER SITE DETAIL SHEET.
15 DRIVE	NEW CONCRETE DRIVEWAY - PUBLIC RIGHT-OF-WAY STANDARD SEE SITE DETAIL SHEET.
16 GARB	CONCRETE TILT-UP GARBAGE/RECYCLING ENCLOSURES (10.0' X 23.0') WITH SIDE ACCESS OPENING AND METAL FRONT GATES - SEE SITE DETAIL SHEET.
17 RET-WALL	RETAINING WALL WITH GUARDRAIL - SEE GRADING PLAN.

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SITE PLAN

C1.1

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GENERAL NOTES

1. PRIOR TO ANY CONSTRUCTION, LOCATIONS OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR. WHEN ACTUAL CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
2. CONTRACTOR TO LEAVE ALL AREAS OF PROJECT FREE OF DEBRIS AND UNUSED CONSTRUCTION MATERIAL.
3. CONTRACTOR SHALL PROVIDE ALL MATERIALS, EQUIPMENT, SURVEYING, TESTING, PERSONNEL, TRAFFIC SAFETY CONTROL AND AS-BUILTS FOR ALL PHASES OF CONSTRUCTION.
4. PROPERTY LINE BEARINGS AND DISTANCES AS WELL AS SITE AREA CALCULATIONS ARE PROVIDED FOR ZONING AND PERMIT REVIEW ONLY. REAL PROPERTY LEGAL DESCRIPTIONS AND AREA CALCULATIONS ARE TO BE PROVIDED BY A REGISTERED PROFESSIONAL SURVEYOR.
5. CONTRACTOR SHALL COORDINATE PUBLIC IMPROVEMENTS AND INSPECTIONS WITH THE CITY OF TUALATIN
6. PROPERTY CORNER SURVEY MONUMENTS, WHICH ARE IN DANGER OF BEING DISTURBED OR DESTROYED BY THE WORK OF THIS PROJECT, SHALL BE TIED-OUT BY A REGISTERED PROFESSIONAL SURVEYOR PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, AND SHALL BE RE-SET IN ACCORDANCE WITH STATE LAW, IMMEDIATELY FOLLOWING THE COMPLETION OF ALL CONSTRUCTION.

GRADING NOTES

1. ALL NEW CONTOURS SHOWN ARE FINISH GRADES, UNLESS OTHERWISE NOTED.
2. ORGANIC AND UNDESIRABLE MATERIAL SHALL BE REMOVED FROM THE CONSTRUCTION AREA AS DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS NOT LANDSCAPED ARE TO BE HYDROSEEDED OR BEDDED IN STRAW TO PREVENT EROSION.
4. ALL FILL AREAS SHALL BE STRIPPED OF ORGANIC MATERIAL. FILL WILL BE PLACED IN 6 TO 8-INCH LIFTS AND COMPACTED TO 95 PERCENT RELATIVE MAXIMUM DENSITY ACCORDING TO ASTM D-1557 STANDARDS. BASE ROCK IN THE PAVED AREAS WILL BE COMPACTED TO 95% ASTM D-1557. LANDSCAPED AREAS WILL BE COMPACTED TO 90 PERCENT. ADDITIONAL COMPACTION TESTS MAY BE REQUIRED BY THE CITY OR THE ENGINEER OF RECORD, IF POOR COMPACTION EFFORTS ARE OBSERVED DURING CONSTRUCTION. COMPACTION REPORTS FROM A REPUTABLE TESTING LAB WILL BE SUPPLIED TO THE ENGINEER.
5. INTERIOR SIDE SLOPES SHALL BE 3 HORIZONTAL TO 1 VERTICAL IN WATER QUALITY FACILITIES, TYPICAL.
6. TOPSOIL STRIPPINGS SHALL BE REPLACED IN LANDSCAPING AREAS AFTER SITE GRADING HAS BEEN COMPLETED.

SURVEY LEGEND

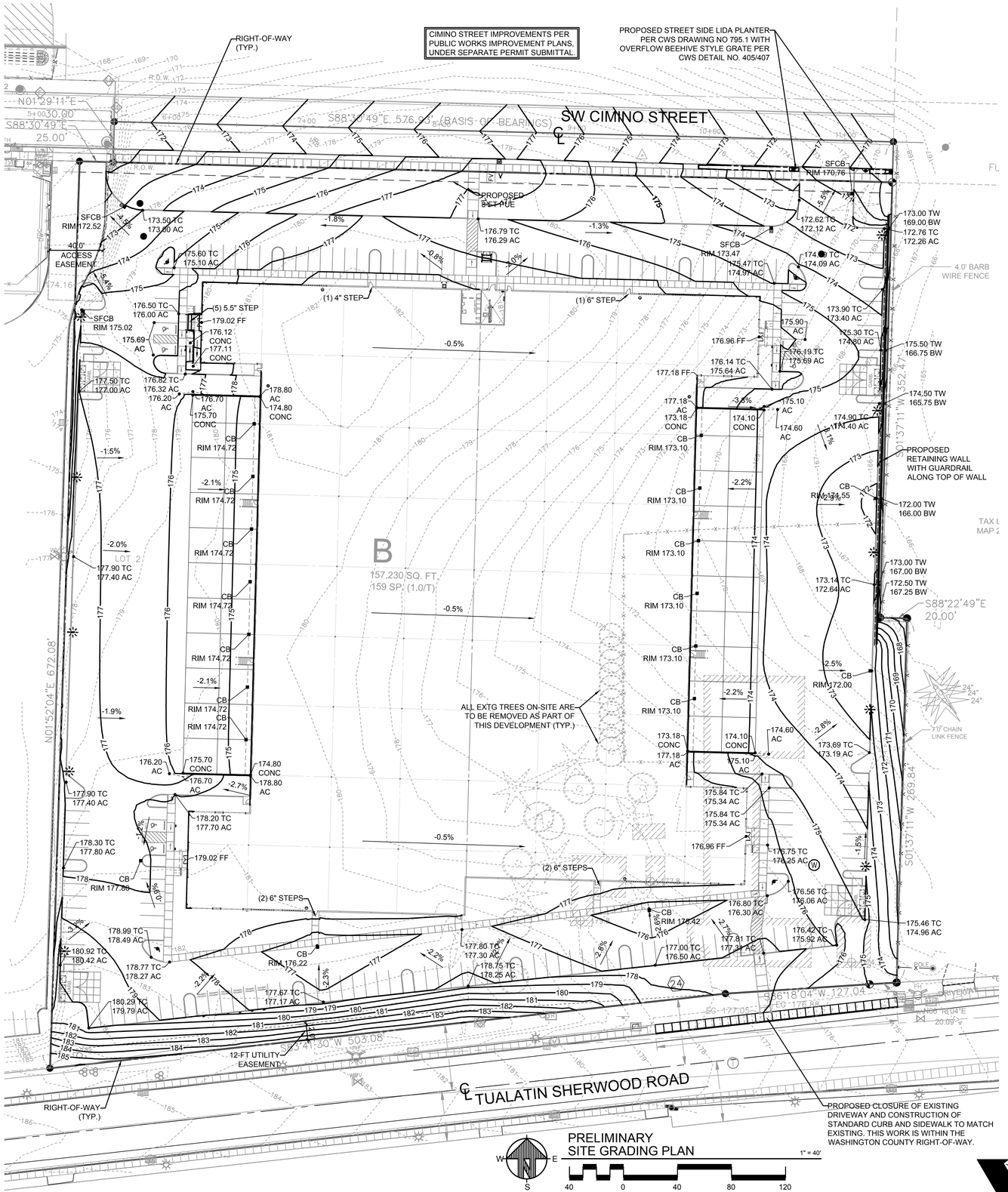
	GUY WIRE	#X	EASEMENT KEYNOTE NUMBER
	POWER POLE	(##.## RX)	RECORD DIMENSION PER R1
VI	ELECTRICAL VAULT	R/M	RECORD AND MEASURED
D	STORM DRAIN MAN HOLE	IR	IRON REBAR
	CATCH BASIN	IP	IRON PIPE
	STAND PIPE	MON	MONUMENT
S	SEWER MAN HOLE	CL	CENTERLINE
EM	ELECTRIC METER	FD	FOUND
	FOUND MONUMENT AS SHOWN ON R1	YPC	YELLOW PLASTIC CAP
	FINISHED FLOOR ELEVATION	FNC	FENCE
M	WATER MONITORING WELL	BLD	BUILDING
	RIGHT OF WAY LINE		EDGE OF GRAVEL
	EASEMENT LINE	SS	UNDERGROUND SEWER LINE
	SECTION OR DLC LINE AS NOTED	SD	UNDERGROUND STORM DRAIN LINE
	PROPERTY LINE		
	CENTER LINE		
	EDGE OF PAVEMENT		BUILDING OUTLINE
X X	FENCE AS NOTED		EXCEPTION 24 - RESTRICTED ACCESS
W	UNDERGROUND WATER LINE		
E	UNDERGROUND ELECTRIC LINE		
T	UNDERGROUND COMMUNICATION LINE		
OH	OVERHEAD UTILITY LINE		
GAS	UNDERGROUND GAS LINE		

GRADING SYMBOLS

- NEW ASPHALT PAVING AS NOTED SEE SHEET G1.0 FOR PAVEMENT SECTIONS
- EXISTING CONTOUR LINE
- NEW CONTOUR LINE
- 142.84 EXISTING SPOT ELEVATION
- 143.40 NEW SPOT ELEVATION PROVIDE STAKE.
- EL ELEVATION
- B.M. BENCH MARK
- TC TOP OF CURB
- BC BOTTOM OF CURB
- MH MANHOLE
- CB CATCH BASIN
- AC ASPHALT CONCRETE
- AD AREA DRAIN
- H.P. HIGH POINT
- GB GRADE BREAK
- T.O.W. TOP OF WALL
- EXTG EXISTING

GENERAL SYMBOLS

EXISTING	NEW	
	■	CATCH BASIN (CB) -OR- AREA DRAIN (AD)
	●	MANHOLE (MH)
	●	UTILITY POLE
	▲	FIRE HYDRANT (FH)
M	M	METER
V	V	UTILITY VAULT
T	T	TRANSFORMER AND PAD
TRAN	TRAN	TRANSFORMER
	⊗	VALVE BOX COVER
	⊠	POST INDICATOR VALVE
	✳	LIGHT POLE
	✳	WALL MOUNTED LIGHT
	⊠	FIRE DEPARTMENT CONNECTION (FDC)
	⊠	GATE VALVE
	N	CHECK VALVE
C.O.	C.O.	CLEAN OUT (CO)



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SITE GRADING PLAN

C2.0

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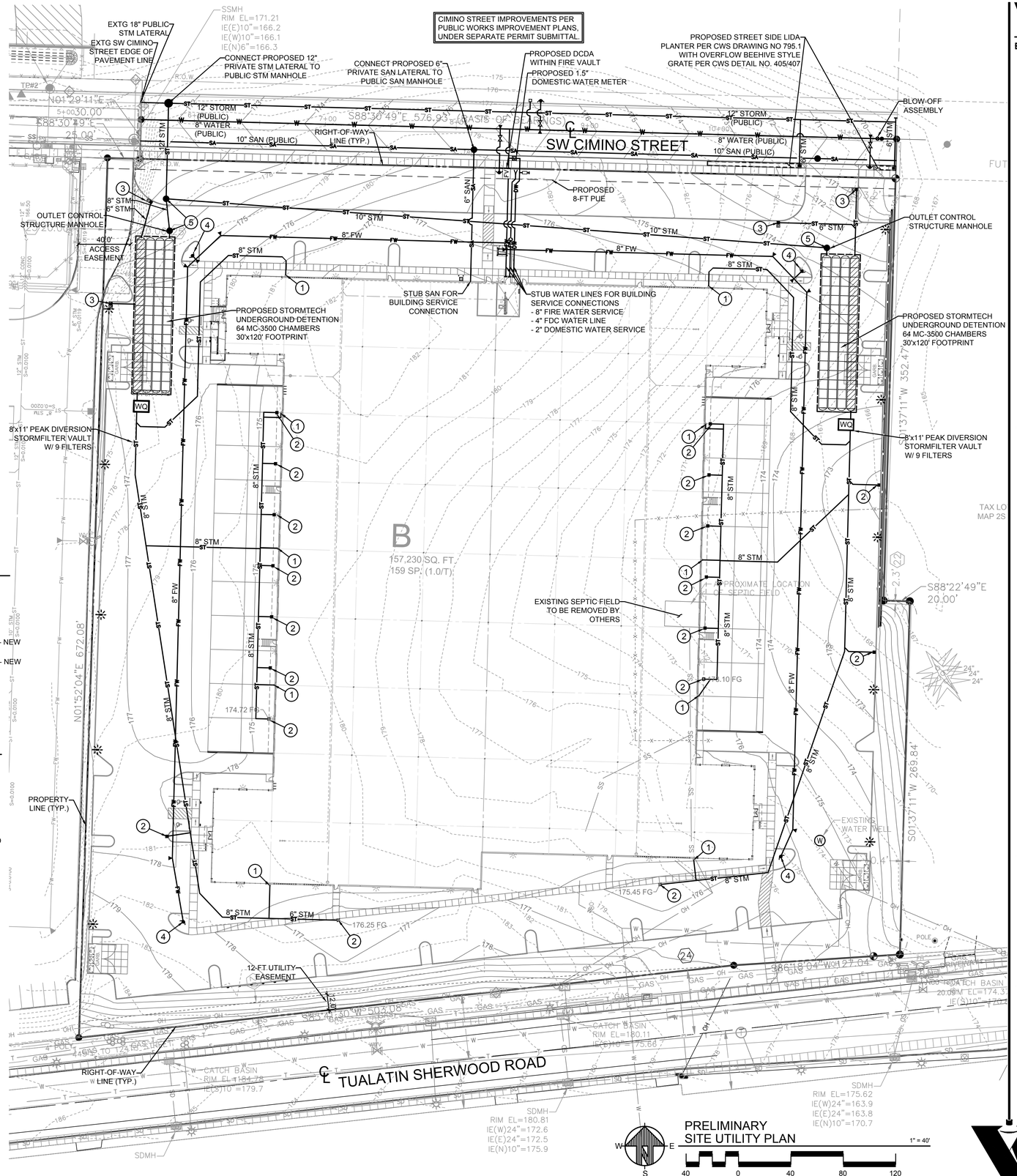

SURVEY LEGEND

	GUY WIRE	#X	EASEMENT KEYNOTE NUMBER
	POWER POLE	(##.## RX)	RECORD DIMENSION PER R1
EV	ELECTRICAL VAULT	R/M	RECORD AND MEASURED
D	STORM DRAIN MAN HOLE	IR	IRON REBAR
	CATCH BASIN	IP	IRON PIPE
	STAND PIPE	MON	MONUMENT
S	SEWER MAN HOLE	CL	CENTERLINE
EM	ELECTRIC METER	FD	FOUND
	FOUND MONUMENT AS SHOWN ON R1	YPC	YELLOW PLASTIC CAP
	FINISHED FLOOR ELEVATION	FNC	FENCE
WM	WATER MONITORING WELL	BLD	BUILDING
	RIGHT OF WAY LINE		EDGE OF GRAVEL
	EASEMENT LINE	SS	UNDERGROUND SEWER LINE
	SECTION OR DLC LINE AS NOTED	SD	UNDERGROUND STORM DRAIN LINE
	PROPERTY LINE		
	CENTER LINE		BUILDING OUTLINE
	EDGE OF PAVEMENT		
X X	FENCE AS NOTED		EXCEPTION 24 - RESTRICTED ACCESS
W	UNDERGROUND WATER LINE		
E	UNDERGROUND ELECTRIC LINE		
T	UNDERGROUND COMMUNICATION LINE		
OH	OVERHEAD UTILITY LINE		
GAS	UNDERGROUND GAS LINE		

UTILITY SYMBOLS

SA	SANITARY - NEW
ST	STORM - NEW
G	GAS - NEW
T	TELEPHONE - NEW
E	ELECTRICAL - NEW
W	WATER - NEW
DW	DOMESTIC WATER - NEW
FW	FIRE WATER - NEW
FDC	FDC SERVICE LINE - NEW
IE	INVERT ELEVATION
C.O.	CLEAN OUT
MH	MANHOLE
CB	CATCH BASIN
AD	AREA DRAIN
EXTG	EXISTING

GENERAL SYMBOLS

EXISTING	NEW.	
	■	CATCH BASIN (CB) -OR AREA DRAIN (AD)
	●	MANHOLE (MH)
	●	UTILITY POLE
	◆	FIRE HYDRANT (FH)
M	M	METER
V	FV	UTILITY VAULT
T	T	TRANSFORMER AND PAD
TRAN	TRAN	TRANSFORMER
	⊗	VALVE BOX COVER
	⊠	POST INDICATOR VALVE
	✳	LIGHT POLE
	✳	WALL MOUNTED LIGHT
		FIRE DEPARTMENT CONNECTION (FDC)
	⋈	GATE VALVE
	⋈	CHECK VALVE
C.O.	C.O.	CLEAN OUT (CO)

UTILITY KEYNOTES

1. STUB FOR DS CONNECTION.
2. STANDARD CATCH BASIN.
3. 1-CARTRIDGE STORMFILTER CATCHBASIN
4. STANDARD FIRE HYDRANT ASSEMBLY. MIN. 3-FT CLR. AROUND ALL HYDRANTS.
5. STANDARD STORM MANHOLE.
6. OVERFLOW BEEHIVE STYLE GRATE PER CWS DETAIL NO. 405/407.

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SITE UTILITY PLAN

C3.0

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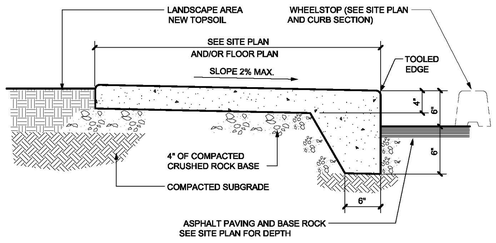
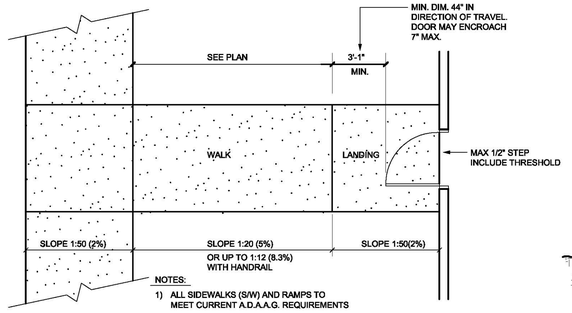


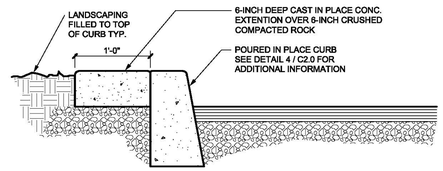
NOTES:
1) PROVIDE NEATLY TOOLED CONTROL JOINTS AT 5'-0" ON CENTER.

1 C5.0 TYPICAL SIDEWALK SECTION
GS103.dwg 1" = 1'-0"

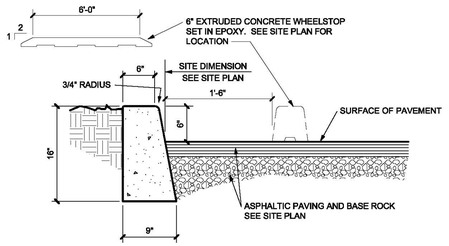


NOTES:
1) ALL SIDEWALKS (S/W) AND RAMPS TO MEET CURRENT A.D.A.A.G. REQUIREMENTS
2) SEE FLOOR PLANS FOR ALL DIMENSIONS OF SIDEWALKS AROUND BUILDING TYP.
3) FOR ALL A.D.A RAMP LOCATIONS AND TYPE SEE SITE PLAN TYP.

2 C5.0 GRADING AT ENTRY DOOR
GS105.dwg 1/4" = 1'-0"

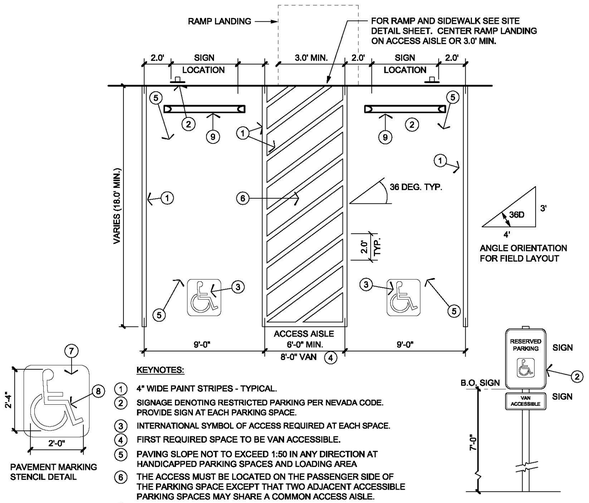


3 C5.0 BACKER CURB DETAIL
GS102.dwg 1" = 1'-0"



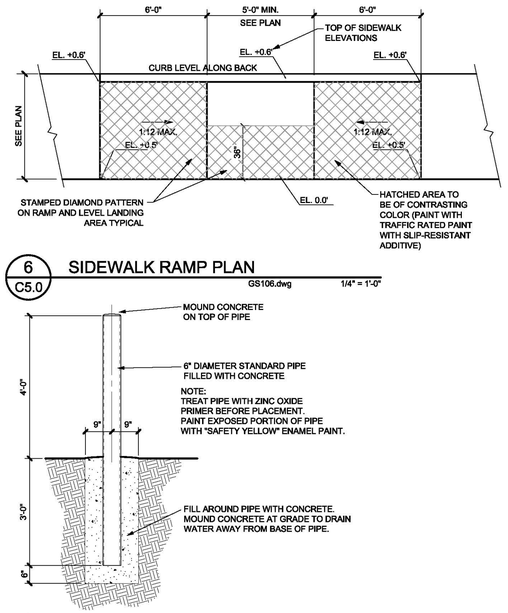
CURB NOTES:
1) FACE BATTER NORMAL AS SHOWN FOR CURB TYPE.
2) JOINT SPACING:
EXPANSION: 45' MAXIMUM AND AT ALL POINTS OF TANGENCY, COLD JOINTS AND STRUCTURES. EXPANSION JOINT TO BE 1/2" PRE-MOLDED, ASPHALT IMPREGNATED, NON-EXTRUDING MATERIAL OF SAME DIMENSION AS CURB.
CONTRACTION: 15' MAXIMUM. CONTRACTION JOINTS TO BE 1" DEEP TOOLED OR FORMED AROUND PERIMETER AT CURB.
3) TOPS OF CURBS SHALL SLOPE TOWARD THE ROADWAY 1/8" IN 6".
4) USE 3,000 PSI CONCRETE, MAXIMUM 4" SLUMP.

4 C5.0 SECTION AT CURB
GS101.dwg 1" = 1'-0"



KEYNOTES:
1) 4" WIDE PAINT STRIPES - TYPICAL.
2) SIGNAGE DENOTING RESTRICTED PARKING PER NEVADA CODE. PROVIDE SIGN AT EACH PARKING SPACE.
3) INTERNATIONAL SYMBOL OF ACCESS REQUIRED AT EACH SPACE.
4) FIRST REQUIRED SPACE TO BE VAN ACCESSIBLE.
5) PAVING SLOPE NOT TO EXCEED 1:50 IN ANY DIRECTION AT HANDICAPPED PARKING SPACES AND LOADING AREA
6) THE ACCESS MUST BE LOCATED ON THE PASSENGER SIDE OF THE PARKING SPACE EXCEPT THAT TWO ADJACENT ACCESSIBLE PARKING SPACES MAY SHARE A COMMON ACCESS AISLE.
7) BACKGROUND (RETRO-REFLECTIVE BLUE).
8) PAINT STROKE (3" WIDE RETRO-REFLECTIVE WHITE).
9) CONCRETE WHEELSTOP - SEE SITE DETAIL SHEET.
10) WHEELCHAIR SIGNAGE REQUIRED WHERE FIVE (5) OR MORE DISABLED PARKING SPACES ARE REQUIRED. POST SIGN IN SPACE DESIGNATED "VAN" ACCESSIBLE AS SHOWN.

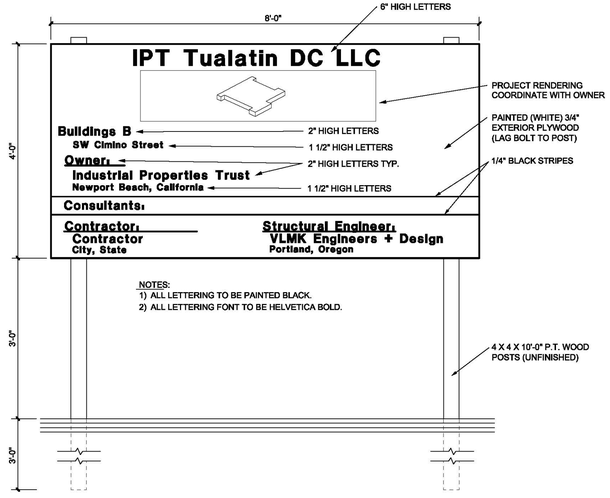
5 C5.0 ACCESSIBLE PARKING
GS104.dwg 1/4" = 1'-0"



6 C5.0 SIDEWALK RAMP PLAN
GS106.dwg 1/4" = 1'-0"

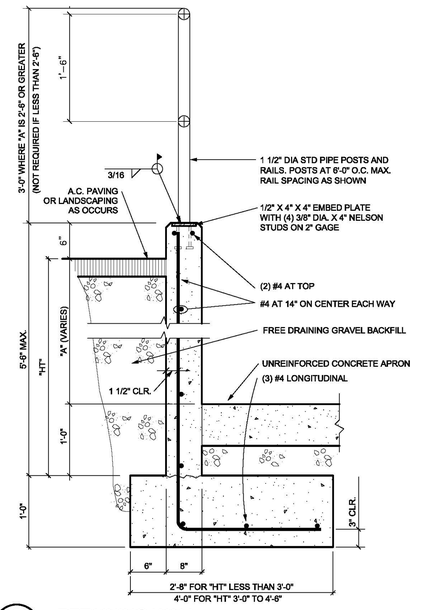
NOTE:
TREAT PIPE WITH ZINC OXIDE PRIMER BEFORE PLACEMENT. PAINT EXPOSED PORTION OF PIPE WITH "SAFETY YELLOW" ENAMEL PAINT.

7 C5.0 TYPICAL BOLLARD
GS121.dwg 1/2" = 1'-0"

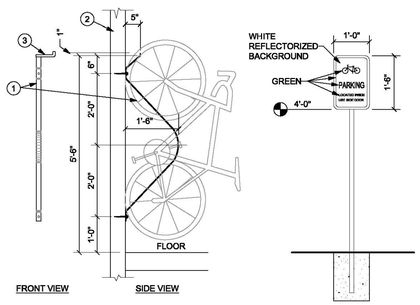


NOTES:
1) ALL LETTERING TO BE PAINTED BLACK.
2) ALL LETTERING FONT TO BE HELVETICA BOLD.

8 C5.0 PROJECT SIGN
ARC-SIGN.dwg 3/4" = 1'-0"



9 C5.0 RETAINING WALL
GS117A.dwg 1" = 1'-0"



KEYNOTES THIS DETAIL:
1) 1 1/2" X 1/8" BENT FLAT BAR WITH 1/2" ROD BENT INTO HOOK AND WELDED TO TOP AS SHOWN. SHOP PRIME WITH ZINC OXIDE PRIMER. PAINT AFTER INSTALLATION WITH OIL BASED ENAMEL. COLOR PER OWNER.
2) STANDARD STUD OR CONCRETE WALL
3) 1/2" BENT ROD

10 C5.0 INTERIOR BIKE RACK
GS111.dwg 1/2" = 1'-0"

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ENGINEERING + DESIGN
3933 SW Kelly Avenue
Portland, Oregon 97239
503.222.4453
VLMK.COM

PROJECT NAME
IPT TUALATIN DC LLC

SW CIMINO STREET
TUALATIN, OR.

REVISIONS

	DATE	DESCRIPTION

DATE
JUNE 2017

SCALE	PROJ. NO.
AS NOTED	20170034
DRAWN: BGL	CHECKED: CMP

SITE DETAILS

C5.0

REVISED AR INTAKE SET: 07-28-17

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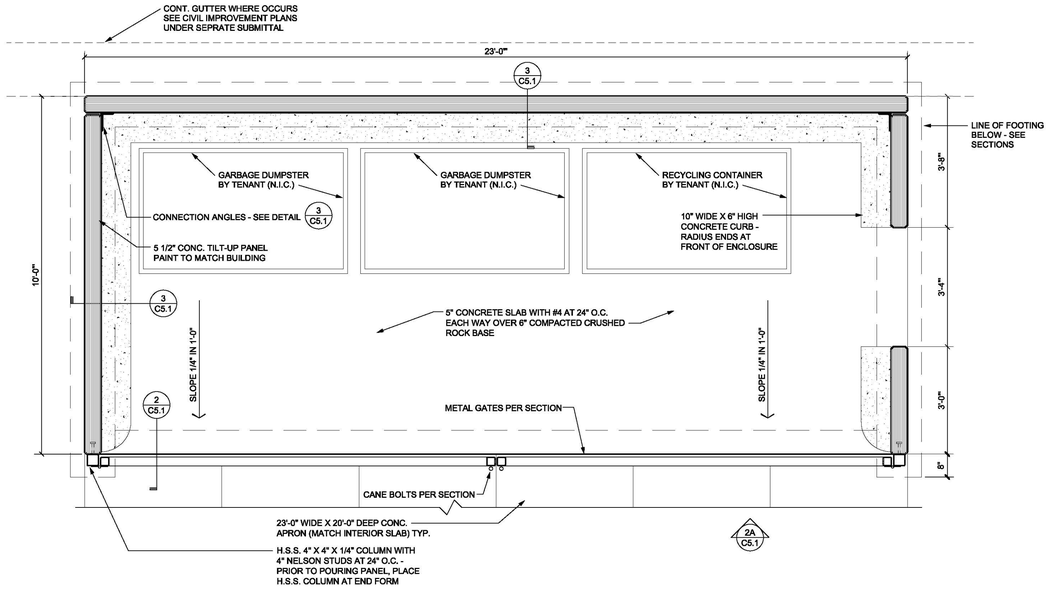
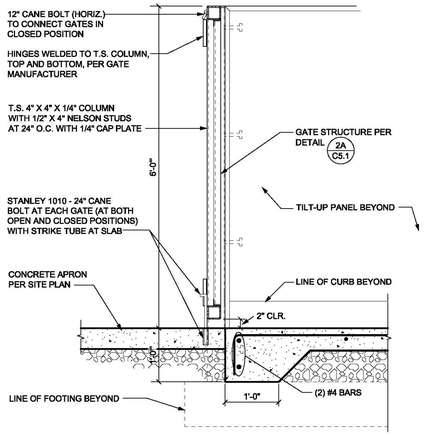
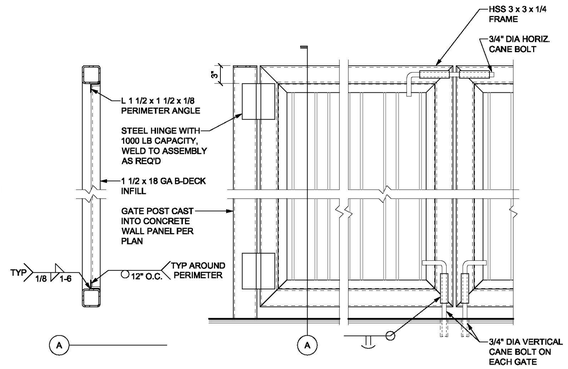


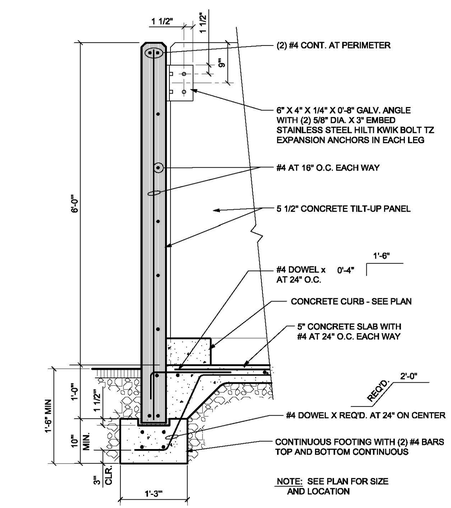
1 C5.1 GARBAGE ENCLOSURE PLAN — GARB-PLAN3.dwg — 1/2" = 1'-0"



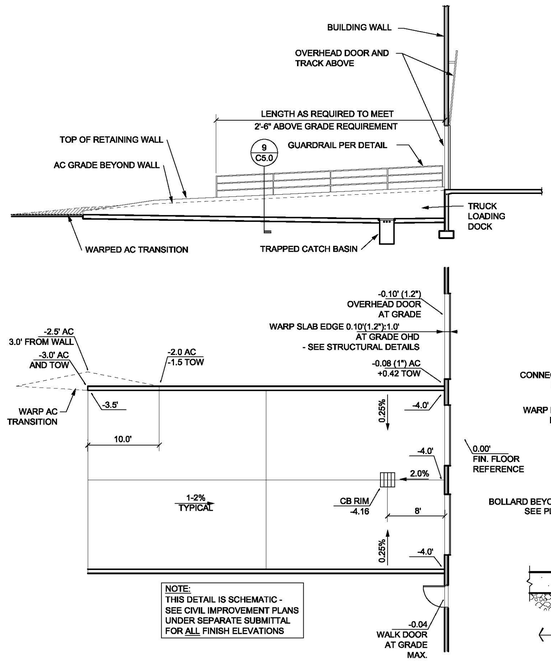
2 C5.1 GARBAGE ENCLOSURE GATE SECTION — GARB-GATE.dwg — 3/4" = 1'-0"



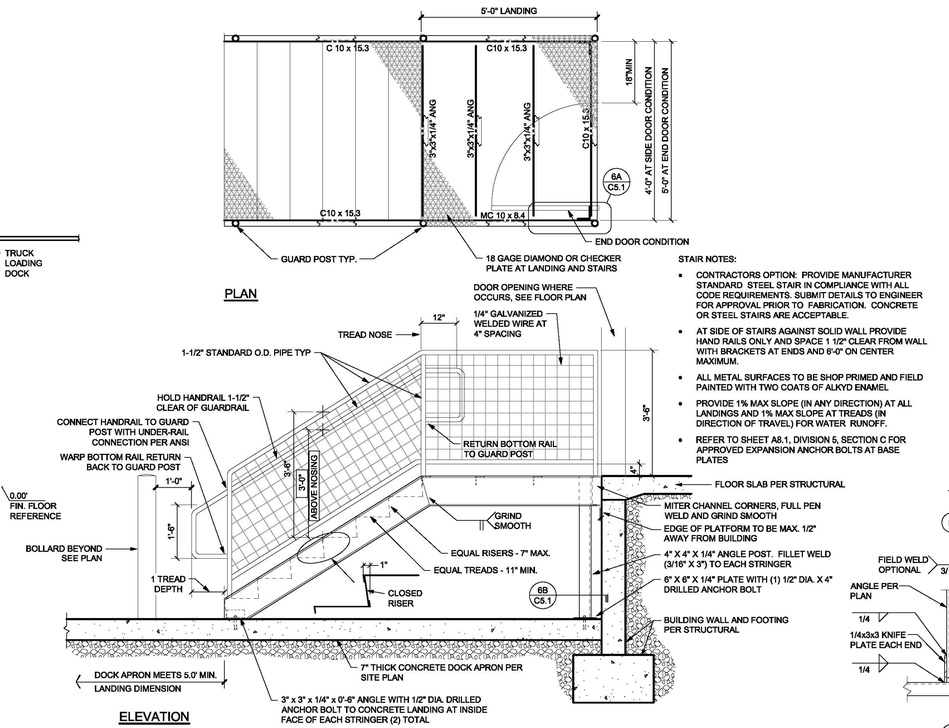
2A C5.1 GARBAGE ENCLOSURE GATE SECTION — GS124.dwg — 3/4" = 1'-0"



3 C5.1 GARBAGE ENCLOSURE WALL SECTION — GARB-WALL2.dwg — 3/4" = 1'-0"



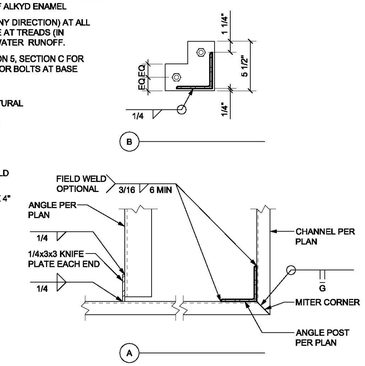
4 C5.1 SCHEMATIC DOCK PLAN AND SECTION — GS119.dwg — 1" = 10'-0"



5 C5.1 METAL STAIR DETAIL — GS206.dwg — 1/2" = 1'-0"

STAIR NOTES:

- CONTRACTORS OPTION: PROVIDE MANUFACTURER STANDARD STEEL STAIR IN COMPLIANCE WITH ALL CODE REQUIREMENTS. SUBMIT DETAILS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION. CONCRETE OR STEEL STAIRS ARE ACCEPTABLE.
- AT SIDE OF STAIRS AGAINST SOLID WALL PROVIDE HAND RAILS ONLY AND SPACE 1 1/2" CLEAR FROM WALL WITH BRACKETS AT ENDS AND 6'-0" ON CENTER MAXIMUM.
- ALL METAL SURFACES TO BE SHOP PRIMED AND FIELD PAINTED WITH TWO COATS OF ALKYD ENAMEL
- PROVIDE 1% MAX SLOPE (IN ANY DIRECTION) AT ALL LANDINGS AND 1% MAX SLOPE AT TREADS (IN DIRECTION OF TRAVEL) FOR WATER RUNOFF.
- REFER TO SHEET A8.1, DIVISION 5, SECTION C FOR APPROVED EXPANSION ANCHOR BOLTS AT BASE PLATES



6 C5.1 METAL STAIR DETAILS — C21-07.dwg — 1 1/2" = 1'-0"

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DC LLC

SW CIMINO STREET
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REVISIONS

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DATE
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SCALE	PROJ. NO.
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DRAWN	CHECKED
BGL	CMP

SITE DETAILS

C5.1

REVISED AR INTAKE SET: 07-28-17

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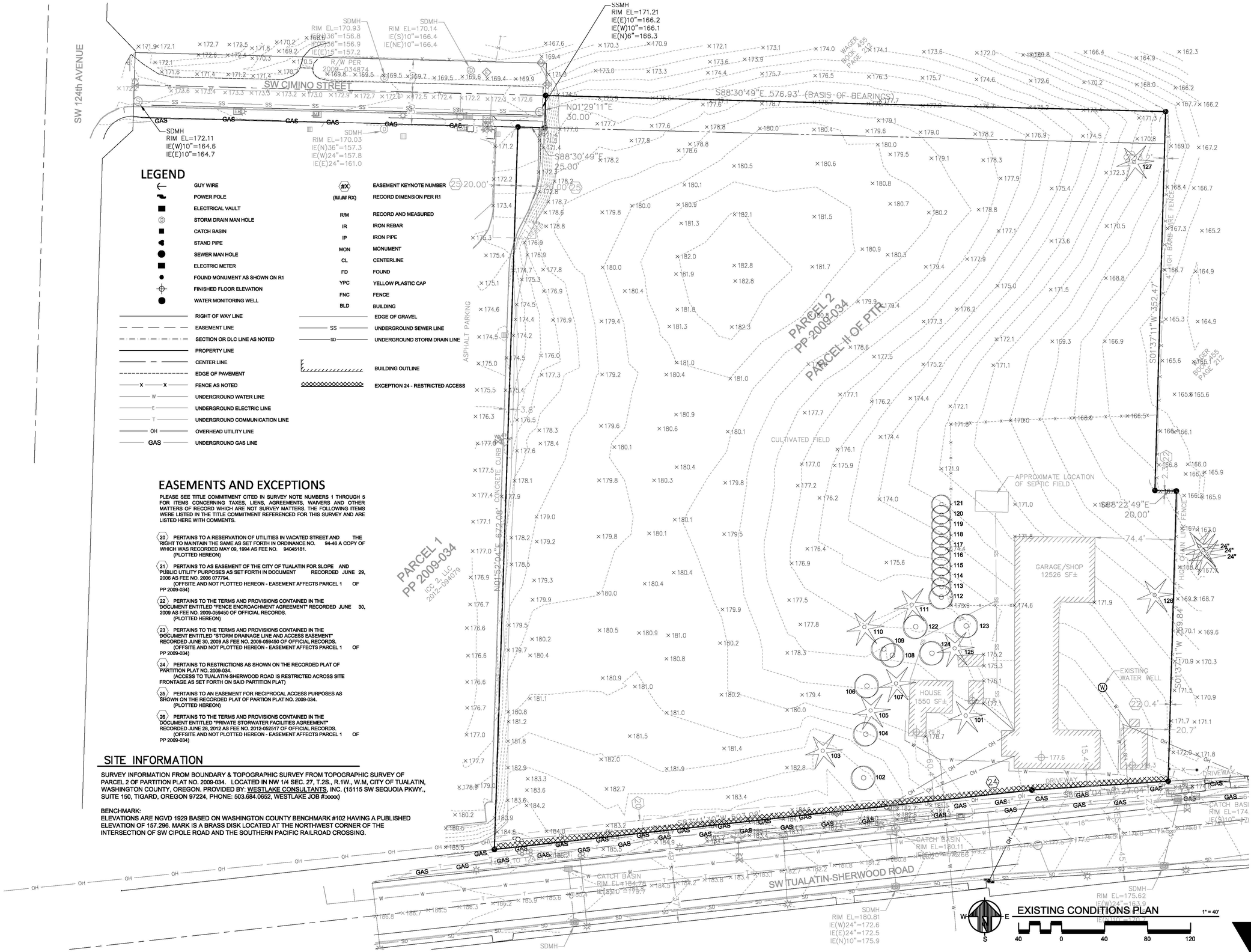

EASEMENTS AND EXCEPTIONS

PLEASE SEE TITLE COMMITMENT CITED IN SURVEY NOTE NUMBERS 1 THROUGH 5 FOR ITEMS CONCERNING TAXES, LIENS, AGREEMENTS, WAIVERS AND OTHER MATTERS OF RECORD WHICH ARE NOT 'SURVEY' MATTERS. THE FOLLOWING ITEMS WERE LISTED IN THE TITLE COMMITMENT REFERENCED FOR THIS SURVEY AND ARE LISTED HERE WITH COMMENTS.

20 PERTAINS TO A RESERVATION OF UTILITIES IN VACATED STREET AND THE RIGHT TO MAINTAIN THE SAME AS SET FORTH IN ORDINANCE NO. 94-46 A COPY OF WHICH WAS RECORDED MAY 09, 1994 AS FEE NO. 94045181. (PLOTTED HEREON)

21 PERTAINS TO AS EASEMENT OF THE CITY OF TUALATIN FOR SLOPE AND PUBLIC UTILITY PURPOSES AS SET FORTH IN DOCUMENT RECORDED JUNE 29, 2006 AS FEE NO. 2006 077784. (OFFSITE AND NOT PLOTTED HEREON - EASEMENT AFFECTS PARCEL 1 OF PP 2009-034)

22 PERTAINS TO THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "FENCE ENCROACHMENT AGREEMENT" RECORDED JUNE 30, 2009 AS FEE NO. 2009-059450 OF OFFICIAL RECORDS. (PLOTTED HEREON)

23 PERTAINS TO THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "STORM DRAINAGE LINE AND ACCESS EASEMENT" RECORDED JUNE 30, 2009 AS FEE NO. 2009-059450 OF OFFICIAL RECORDS. (OFFSITE AND NOT PLOTTED HEREON - EASEMENT AFFECTS PARCEL 1 OF PP 2009-034)

24 PERTAINS TO RESTRICTIONS AS SHOWN ON THE RECORDED PLAT OF PARTITION PLAT NO. 2009-034. (ACCESS TO TUALATIN-SHERWOOD ROAD IS RESTRICTED ACROSS SITE FRONTAGE AS SET FORTH ON SAID PARTITION PLAT)

25 PERTAINS TO AN EASEMENT FOR RECIPROCAL ACCESS PURPOSES AS SHOWN ON THE RECORDED PLAT OF PARTION PLAT NO. 2009-034. (PLOTTED HEREON)

26 PERTAINS TO THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "PRIVATE STORWATER FACILITIES AGREEMENT" RECORDED JUNE 28, 2012 AS FEE NO. 2012-052517 OF OFFICIAL RECORDS. (OFFSITE AND NOT PLOTTED HEREON - EASEMENT AFFECTS PARCEL 1 OF PP 2009-034)

SITE INFORMATION

SURVEY INFORMATION FROM BOUNDARY & TOPOGRAPHIC SURVEY FROM TOPOGRAPHIC SURVEY OF PARCEL 2 OF PARTITION PLAT NO. 2009-034. LOCATED IN NW 1/4 SEC. 27, T.2S., R.1W., W.M, CITY OF TUALATIN, WASHINGTON COUNTY, OREGON. PROVIDED BY: WESTLAKE CONSULTANTS, INC. (15115 SW SEQUOIA PKWY., SUITE 150, TIGARD, OREGON 97224, PHONE: 503.684.0652, WESTLAKE JOB #:xxxx)

BENCHMARK:
ELEVATIONS ARE NGVD 1929 BASED ON WASHINGTON COUNTY BENCHMARK #102 HAVING A PUBLISHED ELEVATION OF 157.296. MARK IS A BRASS DISK LOCATED AT THE NORTHWEST CORNER OF THE INTERSECTION OF SW CIPOLE ROAD AND THE SOUTHERN PACIFIC RAILROAD CROSSING.

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3933 SW Kelly Avenue
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PROJECT NAME
IPT TUALATIN DC LLC

SW CIMINO STREET
TUALATIN, OR.

REVISIONS

△	DATE	DESCRIPTION

DATE JUNE 2017

SCALE	PROJ. NO.
AS NOTED	20170034
DRAWN CJM	CHECKED BMD

EXISTING CONDITIONS PLAN

EC1.0

REVISED AR INTAKE SET: 07-28-17

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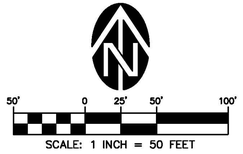


TITLE REPORT

THIS ALTA/NSPS LAND TITLE SURVEY IS BASED UPON THE FOLLOWING PRELIMINARY TITLE REPORTS (PTR):

TITLE COMPANY: FIRST AMERICAN TITLE INSURANCE COMPANY
EFFECTIVE DATE: APRIL 25, 2017
FILE NO: NCS-846323-CHI2

LEGAL DESCRIPTION

PARCEL II OF PTR:

PARCEL 2 OF PARTITION PLAT NO. 2009-034, IN THE CITY OF TUALATIN, COUNTY OF WASHINGTON AND STATE OF OREGON.

EASEMENTS AND EXCEPTIONS

PLEASE SEE TITLE COMMITMENT CITED IN SURVEY NOTE NUMBERS 1 THROUGH 5 FOR ITEMS CONCERNING TAXES, LIENS, AGREEMENTS, WAIVERS AND OTHER MATTERS OF RECORD WHICH ARE NOT SURVEY MATTERS. THE FOLLOWING ITEMS WERE LISTED IN THE TITLE COMMITMENT REFERENCED FOR THIS SURVEY AND ARE LISTED HERE WITH COMMENTS.

(20) PERTAINS TO A RESERVATION OF UTILITIES IN VACATED STREET AND THE RIGHT TO MAINTAIN THE SAME AS SET FORTH IN ORDINANCE NO. 94-46 A COPY OF WHICH WAS RECORDED MAY 09, 1994 AS FEE NO. 94045181.
(PLOTTED HEREON)

(21) PERTAINS TO AS EASEMENT OF THE CITY OF TUALATIN FOR SLOPE AND PUBLIC UTILITY PURPOSES AS SET FORTH IN DOCUMENT RECORDED JUNE 29, 2006 AS FEE NO. 2006 077794.
(OFFSITE AND NOT PLOTTED HEREON – EASEMENT AFFECTS PARCEL 1 OF PP 2009-034)

(22) PERTAINS TO THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "FENCE ENCROACHMENT AGREEMENT" RECORDED JUNE 30, 2009 AS FEE NO. 2009-059450 OF OFFICIAL RECORDS.
(PLOTTED HEREON)

(23) PERTAINS TO THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "STORM DRAINAGE LINE AND ACCESS EASEMENT" RECORDED JUNE 30, 2009 AS FEE NO. 2009-059450 OF OFFICIAL RECORDS.
(OFFSITE AND NOT PLOTTED HEREON – EASEMENT AFFECTS PARCEL 1 OF PP 2009-034)

(24) PERTAINS TO RESTRICTIONS AS SHOWN ON THE RECORDED PLAT OF PARTITION PLAT NO. 2009-034.
(ACCESS TO TUALATIN-SHERWOOD ROAD IS RESTRICTED ACROSS SITE FRONTAGE AS SET FORTH ON SAID PARTITION PLAT)

(25) PERTAINS TO AN EASEMENT FOR RECIPROCAL ACCESS PURPOSES AS SHOWN ON THE RECORDED PLAT OF PARTION PLAT NO. 2009-034.
(PLOTTED HEREON)

(26) PERTAINS TO THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "PRIVATE STORWATER FACILITIES AGREEMENT" RECORDED JUNE 28, 2012 AS FEE NO. 2012-052517 OF OFFICIAL RECORDS.
(OFFSITE AND NOT PLOTTED HEREON – EASEMENT AFFECTS PARCEL 1 OF PP 2009-034)

MAP REFERENCES

PLATS AND SURVEYS

#	NAME/TYPE	RECORDING REFERENCE
R1	PARTITION PLAT	2009-034

FLOOD ZONE INFORMATION

THE SUBJECT SITE IS LOCATED WITHIN UNSHADED ZONE X, AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, ACCORDING TO FEMA FIRM MAP NO. 41067C0606E WITH AN EFFECTIVE DATE OF NOVEMBER 4, 2016. (MAP INCLUDES CITY OF TUALATIN NUMBER 4102770606E).

ZONING NOTES

AS PER CITY OF TUALATIN PLANNING STAFF: CURRENT ZONING CLASSIFICATION FOR PROPERTY IS: "MG" – GENERAL MANUFACTURING. PLEASE REFER TO TUALATIN DEVELOPMENT CODE, SECTION 61 FOR DETAILS.

SURVEYORS NOTES

1. THE BEARINGS SHOWN HEREON ARE BASED ON THE NORTH LINE OF PARCEL 2 OF PARTITION PLAT NO. 2009-034 BEING S 88°30'49" E.
2. ELEVATIONS ARE NGVD 1929 BASED ON WASHINGTON COUNTY BENCHMARK #102 HAVING A PUBLISHED ELEVATION OF 157.296. MARK IS A BRASS DISK LOCATED AT THE NORTHWEST CORNER OF THE INTERSECTION OF SW CIPOLE ROAD AND THE SOUTHERN PACIFIC RAILROAD CROSSING.
3. SITE ADDRESS: 12155 SW TUALATIN SHERWOOD ROAD, TUALATIN OR, 97062
4. TITLE TO SAID ESTATE IS VESTED IN KENNETH E ITEL PER WARRANTY DEED RECORDED AS DOCUMENT NO. 2015-061296 OF OFFICIAL RECORDS.
5. THE SUBJECT SITE CONTAINS 9.26 ACRES, MORE OR LESS.
6. THERE WAS NO EVIDENCE OF THE SITE BEING USED AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL AT THE TIME OF THE SURVEY.
7. ACCORDING TO THE US FISH AND WILDLIFE SERVICE'S NATIONAL WETLANDS INVENTORY THERE ARE NO WETLANDS LOCATED ON THE SUBJECT SITE.
8. THE SITE IS CURRENTLY ACCESSED FROM TUALATIN-SHERWOOD ROAD.
9. NO EVIDENCE WAS OBSERVED OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS DURING THE COURSE OF THE FIELD WORK WITH THE EXCEPTION OF THE DRAINAGE PONDS LOCATED WITHIN DRAINAGE EASEMENTS ON THE EASTERLY SIDE OF THE SITE.

UTILITY NOTE

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN MAPPED FROM FIELD SURVEY INFORMATION, OBSERVED ABOVE GROUND EVIDENCE AND GROUND MARKINGS BY OTHERS, AND EXISTING DRAWINGS SUPPLIED BY OTHERS. THE SURVEYOR MAKES NO GUARANTEE 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 HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

LEGEND

GUY WIRE	EASEMENT KEYNOTE NUMBER
POWER POLE	(##.## RX) RECORD DIMENSION PER R1
ELECTRICAL VAULT	R/M RECORD AND MEASURED
STORM DRAIN MAN HOLE	IR IRON REBAR
CATCH BASIN	IP IRON PIPE
STAND PIPE	MON MONUMENT
SEWER MAN HOLE	CL CENTERLINE
ELECTRIC METER	FD FOUND
FOUND MONUMENT AS SHOWN ON R1	YPC YELLOW PLASTIC CAP
FINISHED FLOOR ELEVATION	FNC FENCE
WATER MONITORING WELL	BLD BUILDING
RIGHT OF WAY LINE	EDGE OF GRAVEL
EASEMENT LINE	SS UNDERGROUND SEWER LINE
SECTION OR DLC LINE AS NOTED	SD UNDERGROUND STORM DRAIN LINE
PROPERTY LINE	BUILDING OUTLINE
CENTER LINE	EXCEPTION 24 – RESTRICTED ACCESS
EDGE OF PAVEMENT	
FENCE AS NOTED	
UNDERGROUND WATER LINE	
UNDERGROUND ELECTRIC LINE	
UNDERGROUND COMMUNICATION LINE	
OVERHEAD UTILITY LINE	
UNDERGROUND GAS LINE	

UTILITY PROVIDERS

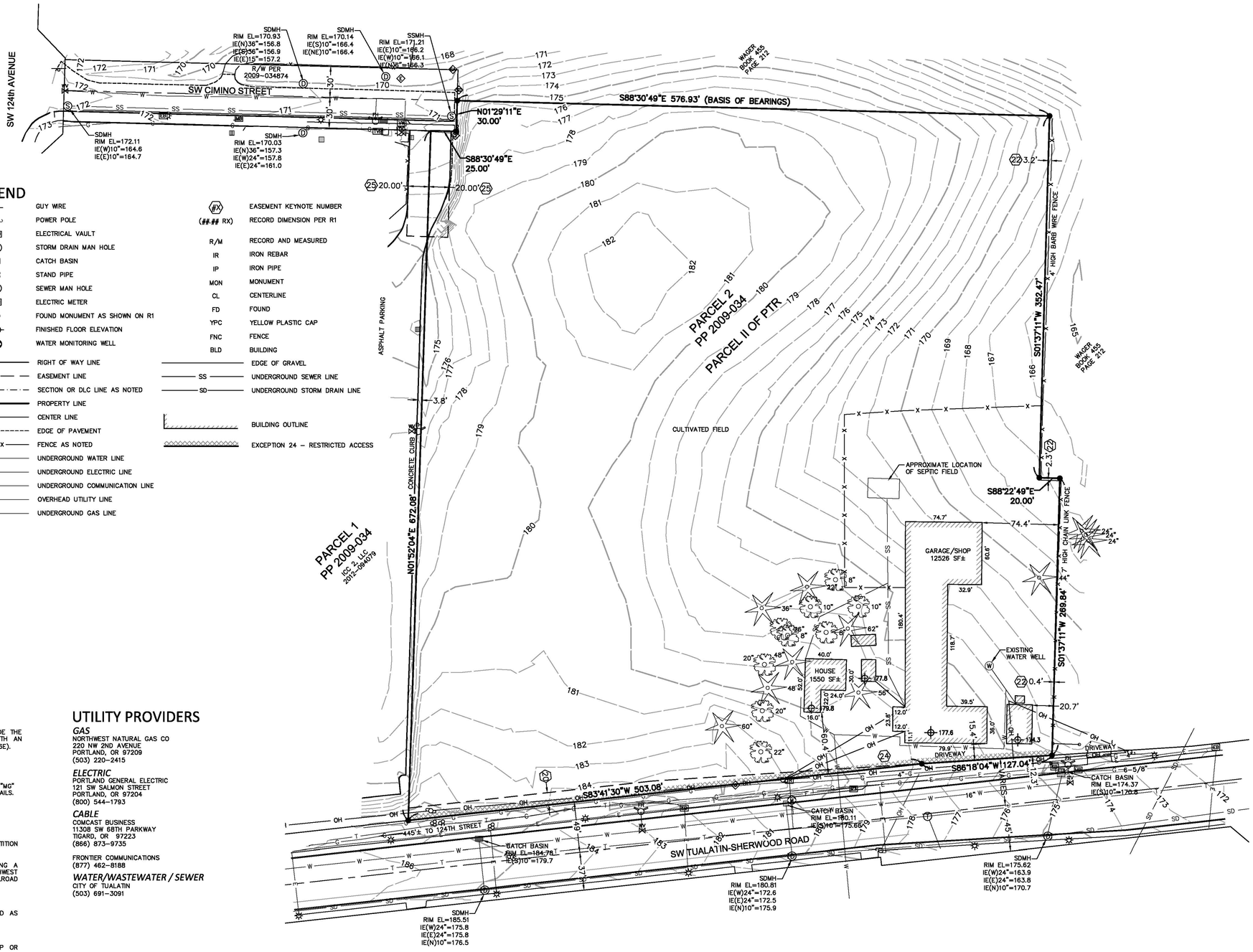
GAS
NORTHWEST NATURAL GAS CO
220 NW 2ND AVENUE
PORTLAND, OR 97209
(503) 220-2415

ELECTRIC
PORTLAND GENERAL ELECTRIC
121 SW SALMON STREET
PORTLAND, OR 97204
(800) 544-1793

CABLE
COMCAST BUSINESS
11308 SW 68TH PARKWAY
TIGARD, OR 97223
(866) 873-9735

FRONTIER COMMUNICATIONS
(877) 462-8188

WATER/WASTEWATER / SEWER
CITY OF TUALATIN
(503) 691-3091



SURVEYORS CERTIFICATE

TO INDUSTRIAL PROPERTY TRUST, AND FIRST AMERICAN TITLE INSURANCE COMPANY,

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6(a)(b), 8, 11, 13, 14, 16, 17, 19 AND 21 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED IN MAY, 2017.

GANDERSON@WESTLAKECONSULTANTS.COM

WESTLAKE CONSULTANTS INC.
ENGINEERING ◆ SURVEYING ◆ PLANNING
PACIFIC CORPORATE CENTER
15115 S.W. SEQUOIA PARKWAY, SUITE 150
TIGARD, OREGON 97224
(503) 684-0652
FAX (503) 624-0157

A.L.T.A. / N.S.P.S.. LAND TITLE SURVEY

INDUSTRIAL PROPERTY TRUST

NW 1/4 SEC 27, T2S, R1W
CITY OF TUALATIN, WASHINGTON COUNTY

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON JULY 25, 1990 GARY R. ANDERSON 2434
RENEWAL: 12-31-17

REVISIONS

NO.	DATE	DESCRIPTION	DRAFT BY:	CHECK BY:
2	7/04/2017	AMEND CIMINO C/L GRADES & CONTOURS	SLH2	GRA
1	6/23/2017	AMEND ZONING & FLOOD ZONE INFO	GRA	
0	5/26/2017	INITIAL RELEASE	CPB	GRA

SHEET 1 OF 1

JOB NO. 2720-001

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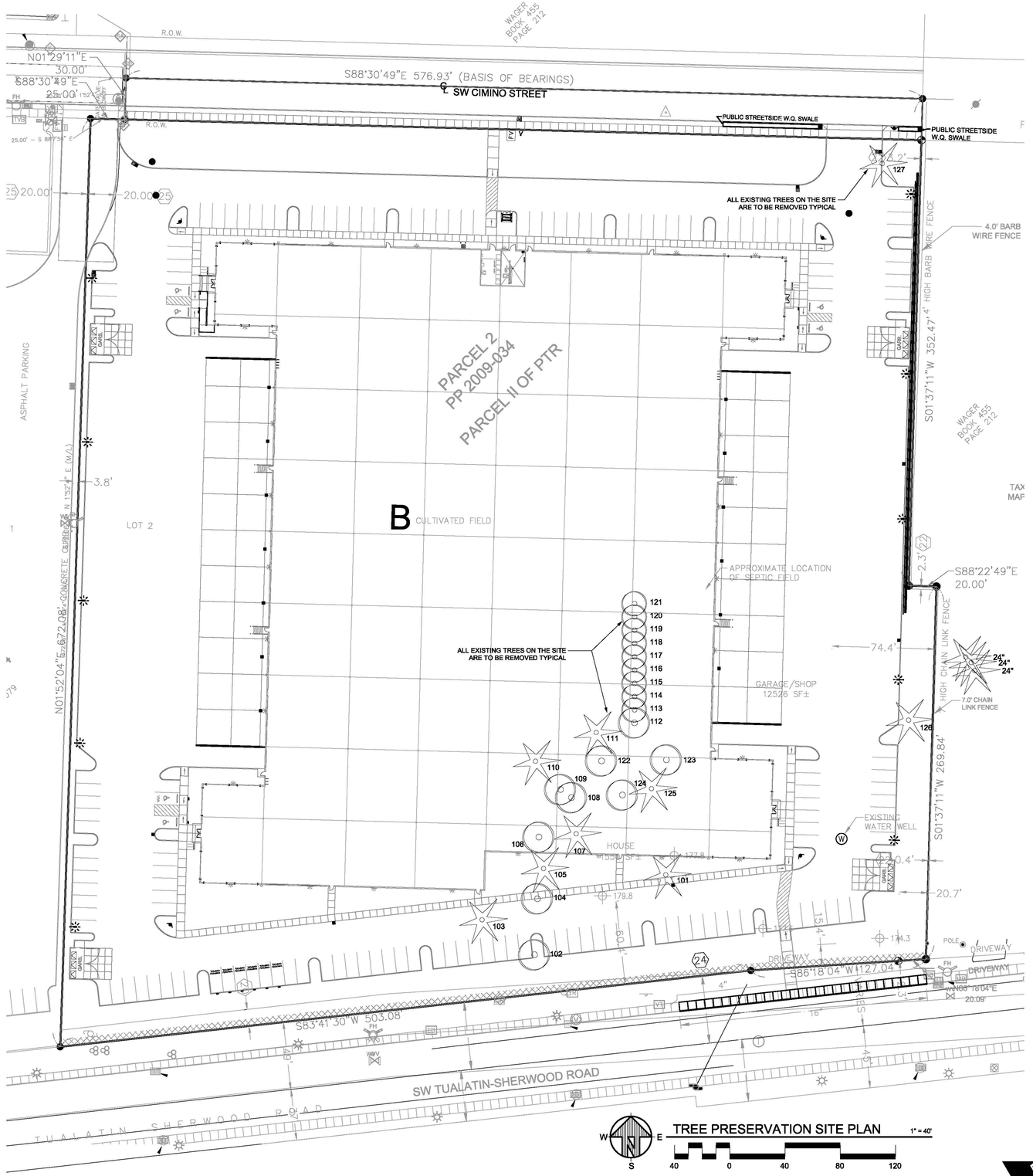
REVISED AR INTAKE SET: 07-28-17

TREE LIST FROM ARBORIST REPORT

Tree Inventory
12155 SW Tualatin Sherwood Rd

Tree #	Tree Specie	DBH in Inches	Rating	Summary of Issues and Concerns
101	Red Cedar	69	Fair	2 stem tree, multiple bark inclusions, trunk decay
102	Birch	26	Fair	Large wound on lower trunk, decay at base
103	Red Cedar	73	Fair	Multiple tops, bark inclusions, trunk and stem decay
104	Birch	21	Fair	Dieback in upper crown, bark inclusion, bronze birch borer damage
105	Red Cedar	52	Fair	Multiple tops, bark inclusions, trunk and stem decay
106	Birch	24	Fair	Dieback in upper crown, bark inclusion, bronze birch borer damage
107	Red Cedar	52	Fair	Multiple tops, bark inclusions, dead, broken and hanging branches
108	English Holly	10	Fair	Invasive, nuisance tree
109	Birch	28	Fair	2 stem, bark inclusion, dieback in upper crown, bronze birch borer damage
110	Austrian Black Pine	36	Fair	Multiple tops, bark inclusions, deadwood throughout crown
111	Blue Spruce	23	Fair	Multiple tops, bark inclusions
112	Plum	9	Fair	Poor structure, long term neglect
113	Plum	8	Poor	Dead stems, poor structure, weak tree
114	Plum	8	Poor	Dead decayed stems, poor structure.
115	Plum	8	Poor	Dead decayed stems, poor structure.
116	Plum	7	Poor	Dead tree
117	Plum	8	Poor	Multiple dead stems, long term neglect
118	Plum	12	Fair	Poor structure, long term neglect
119	Plum	6	Fair	Poor structure, long term neglect
120	Apricot	6	Poor	Dead tree
121	Asian Pear	6	Fair	Poor structure, long term neglect
122	Apple	14	Fair	2 stem, bark inclusion, long term neglect
123	Apple	10	Fair	Trunk decay, leans to the west
124	English Holly	8	Fair	Invasive, nuisance tree
125	Red Cedar	73	Fair	Multiple tops, bark inclusions, trunk and stem decay
126	Red Cedar	43	Fair	Multiple tops, bark inclusions, poor structure
127	Red Cedar	39	Fair	Far NE corner tree, multiple tops, lower trunk decay.



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TREE PRESERVATION PLAN

TP1.0

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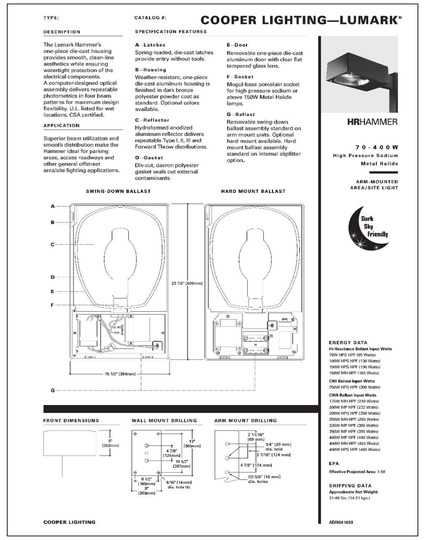


TYPE:

CATALOG #: **COOPER LIGHTING—LUMARK®**

DESCRIPTION

The Lumark Hammer's one-piece die-cast housing provides smooth, clean-line aesthetics while ensuring watertight protection of the internal optical system. A computer-designed optical assembly delivers repeatable photometrics in four beam patterns for maximum design flexibility. U.L. listed for wet locations. CSA certified.

APPLICATION

Superior beam utilization and smooth distribution make the Hammer ideal for parking areas, access roadways and other general offstreet area/site lighting applications.

SPECIFICATION FEATURES

A - Latches
Spring-loaded, die-cast latches provide entry without tools.

B - Housing
Weather-resistant, one-piece die-cast aluminum housing is finished in dark bronze polyester powder coat as standard. Optional colors available.

C - Reflector
Hydroformed anodized aluminum reflector delivers repeatable Type I, II, III and Forward Throw distributions.

D - Gasket
Die-cut, closed-cell polyester gasket seals out external contaminants.

E - Door
Removable one-piece die-cast aluminum door with clear flat tempered glass lens.

F - Socket
Mogul-base porcelain socket for high-pressure sodium or pulse 150W Metal Halide lamps.

G - Ballast
Removable swing-down ballast assembly standard on arm mount units. Optional hard mount available. Hard mount ballast assembly standard on internal slipfitter option.

HRHAMMER

70-400W
High Pressure Sodium
Metal Halide

ARM MOUNTED AREA/SITE LIGHT

Dark Sky Friendly

SWING-DOWN BALLAST

HARD MOUNT BALLAST

FRONT DIMENSIONS

WALL MOUNT DRILLING

ARM MOUNT DRILLING

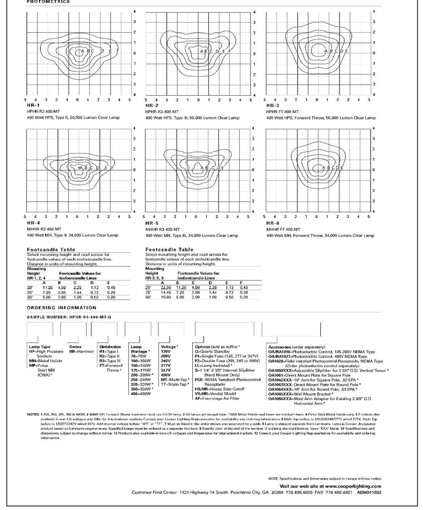
ENERGY DATA
70-Hps/Lumen Ballast Input Watts
70W HPS HPF 5Ph Watts*
100W HPS HPF (136 Watts)
150W HPS HPF (196 Watts)
150W NH MPF (185 Watts)
CWI Ballast Input Watts
250W HPS HPF (290 Watts)
CWA Ballast Input Watts
175W NH MPF (216 Watts)
250W NH HPF (322 Watts)
250W NH MPF (310 Watts)
310W NH MPF (376 Watts)
320W NP HPF (385 Watts)
360W NP HPF (435 Watts)
400W NH HPF (480 Watts)
400W NH MPF (483 Watts)
450W NP HPS (485 Watts)

EPA
Effective Projected Area: 1.54

SHIPPING DATA
Approximate Net Weight:
15 kg (33 lbs.)

COOPER LIGHTING

AEIS041033



HRHAMMER

PHOTOMETRICS

Footcandle Table
Select mounting height and read across for footcandle values of each isofootcandle line. Distance is in units of mounting height.

Mounting Height	Footcandle Values for HR-1, 2, 4	Footcandle Values for HR-3, 5, 6			
20'	11.25	4.50	2.25	1.13	0.45
25'	7.20	2.90	1.44	0.72	0.29
30'	5.00	2.00	1.00	0.50	0.20

Footcandle Table
Select mounting height and read across for footcandle values of each isofootcandle line. Distance is in units of mounting height.

Mounting Height	Footcandle Values for HR-3, 5, 6				
20'	22.50	11.25	5.63	2.25	1.13	0.45
25'	14.40	7.20	3.60	1.44	0.72	0.29
30'	10.00	5.00	2.50	1.00	0.50	0.20

ORDERING INFORMATION
EXAMPLE: NUMBER: HPMB-R2-400-MT-Q

Lamp Type	Series	Distribution	Lamp	Voltage *	Options (add as suffix) *	Accessories (order separately)
HP=High Pressure Sodium MH=Metal Halide NP=Pulse Start MH (ED28)*	HM=Hammer	R2=Type II R3=Type III FT=Forward Throw *	Wattage * 70=70W 100=100W 150=150W 200=200W * 250=250W 320=320W * 350=350W * 400=400W	Voltage * 120V 208V 240V 277V 347V * 480V MT=Multi-Tap * TT=Triple-Tap *	-G=Quartz Standby -HS=Hi-Lo Switch (120, 277 or 347V) -FS=Double Fuse (208, 240 or 480V) -LL=Lamp Included * -SF=Single Fuse (120V, 277 or 347V) Shorted Mount (Only) -PER=NEMA Twistlock Photocontrol Receptacle -HSJ=Bi-Honey Side Cutoff -VSJ=Bi-Vandal Shield -AF=Front Hinge Ad Filter -RA=Rear Adjustable	-GMJ#####=Photoelectric Control, 105-285V NEMA Type -GMJ#####=Photoelectric Control, 480V NEMA Type -GMJ#####=Field Installed Photocontrol Receptacle, NEMA Type (Order photoelectric control separately) -GM3460DDX=10' Arm for Square Pole, 23 EPA * -GM3460-=Direct Mount Plate for Square Pole -GM3460DDX=10' Arm for Square Pole, 23 EPA * -GM3460AXX=Mast Arm Adapter for Existing 2 3/8" O.D. Horizontal Tenon * -GM3460DDX=10' Arm for Round Pole, 23 EPA * -GM3460AXX=Mast Arm Adapter for Existing 2 3/8" O.D. Horizontal Tenon *

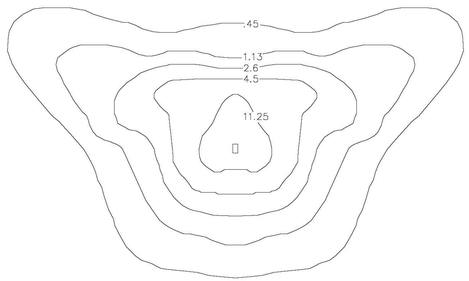
NOTES: 1 HSJ, SSJ, VSJ, SSJ & ADDS: 2 ADDS SR1 Trunnion Mount (standard on HR-1 and HR-2) 3 Mounting Arm (order separately): 4 Pole Steel Metal Halide and lower are standard black. 5 Pole Steel Metal Halide vary. 6 For shorter arm lengths, see Arm Selection Guide. 7 Not available with HR-1 or HR-2. 8 Not available with HR-1, HR-2 or HR-3. 9 Not available with HR-1, HR-2, HR-3 or HR-4. 10 Not available with HR-1, HR-2, HR-3, HR-4 or HR-5. 11 Not available with HR-1, HR-2, HR-3, HR-4, HR-5 or HR-6. 12 Consult your Cooper Lighting Representative for availability and ordering information.

NOTE: Specifications and dimensions subject to change without notice.

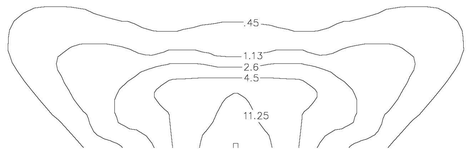
Visit our web site at www.cooperlighting.com

Customer First Center 1121 Highway 74 South Peachtree City, GA 30269 770.486.4800 FAX 770.486.4801 AEIS041033

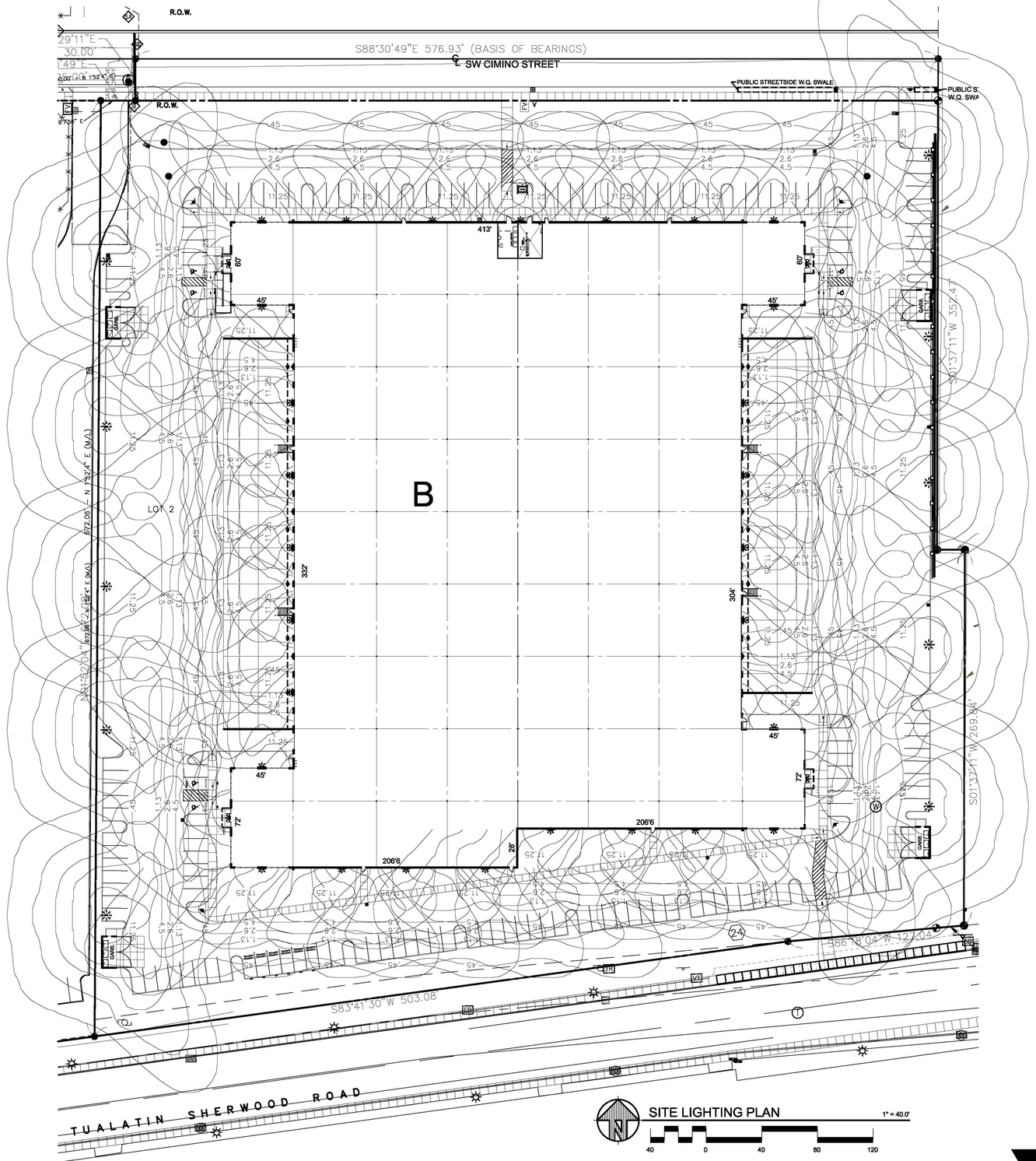
A LT1.0 **LIGHTING CUT SHEETS** N.T.S.



1 LT1.0 **SCHEMATIC LIGHT PATTERN (30' POLE MOUNT)** N.T.S.



2 LT1.0 **SCHEMATIC LIGHT PATTERN (34' WALL MOUNT)** N.T.S.



SITE LIGHTING PLAN 1" = 40.0'

40 0 40 80 120

VLMK
ENGINEERING + DESIGN
3933 SW Kelly Avenue
Portland, Oregon 97239
503.222.4453
VLMK.COM

PROJECT NAME
IPT TUALATIN DC LLC

SW CIMINO STREET
TUALATIN, OR.

REVISIONS

	DATE	DESCRIPTION
2		

DATE
JUNE 2017

SCALE	PROJ. NO.
AS NOTED	20170034
DRAWN	CHECKED
BGL	JS

SITE LIGHTING PLAN

LT1.0

REVISED AR INTAKE SET: 07-28-17

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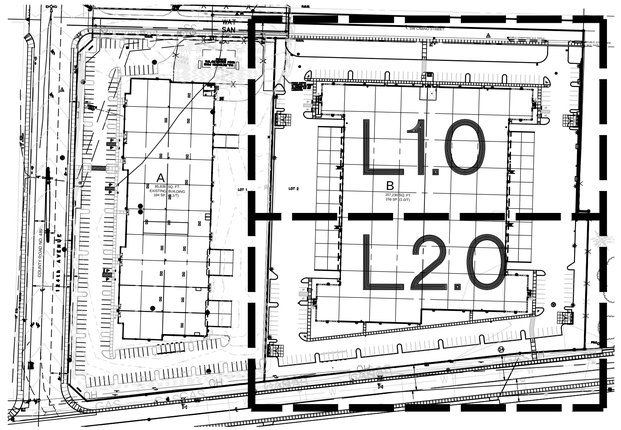
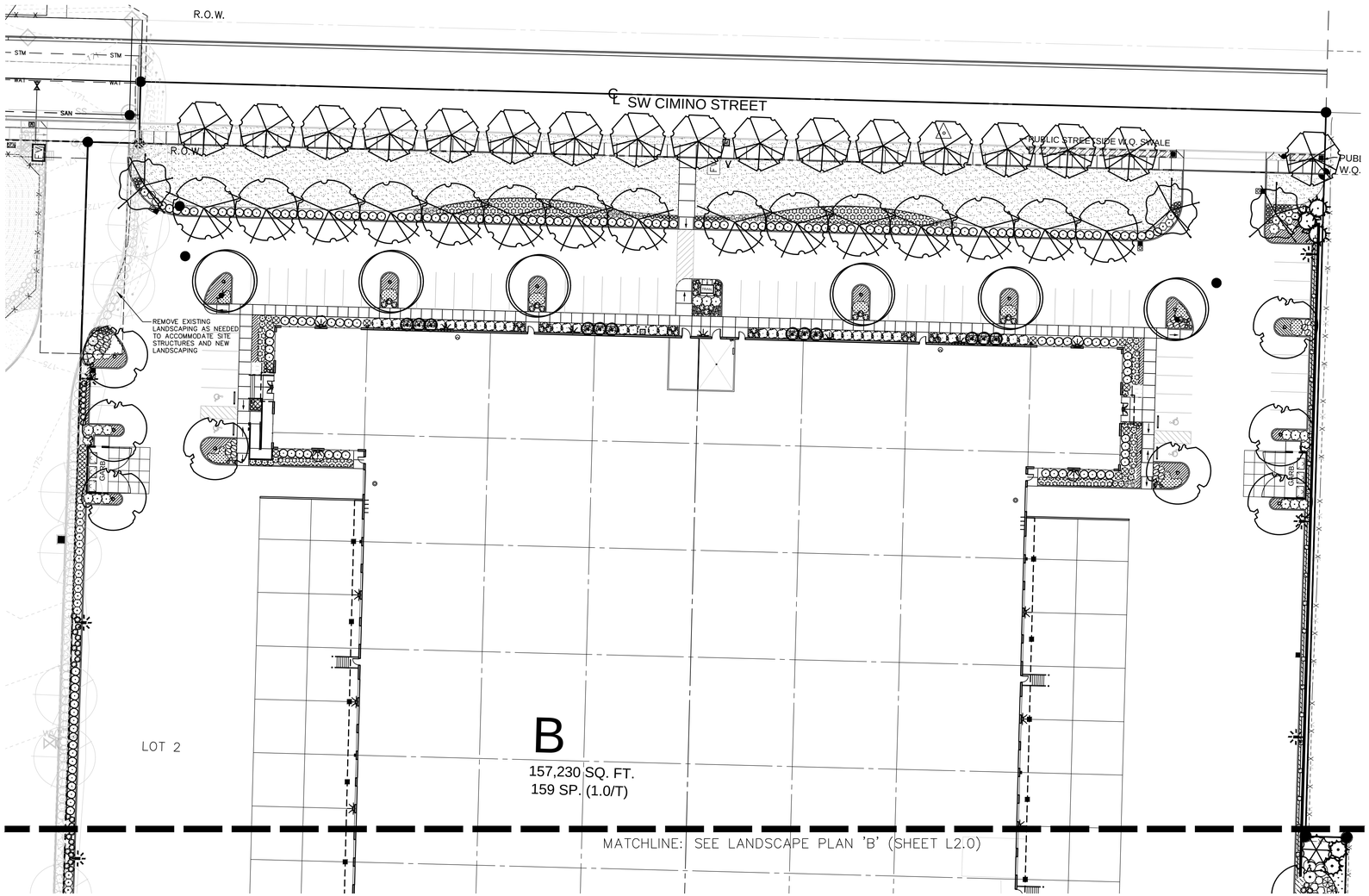
GENERAL NOTES:

1. Contractor is to verify all plant quantities.
2. Adjust plantings in the field as necessary.
3. Project is to be irrigated by an automatic, underground system, which will provide full coverage for all plant material. System is to be design/ build by Landscape Contractor. Guarantee system for a minimum one year. Show drip systems as alternate bid only.
4. All plants are to be fully foliaged, well branched and true to form.
5. Contractor is to notify Landscape Architect or Owner's Representative of any site changes or unforeseen conditions that may be detrimental to plant health, or cause future problems to any structural elements of the project.



KEY MAP

SCALE 1" = 140'-0"



LANDSCAPE PLAN 'A'

SCALE 1" = 30'-0"

PLANT LEGEND:

SYMBOL	#	SUGGESTED PLANT SPECIES	SIZE	SPACING
STREET TREES (ZONE 2)				
	35	Crimson Sentry Maple Golden Desert Ash Black Tupelo	2" cal.	30' o.c.
INTERIOR PARKING LOT TREES (43 TREES REQUIRED)				
	44	Marshall Seedless Ash Yellowood Akebono Flowering Cherry	2" cal.	As Shown
PERIMETER PARKING LOT TREES				
	29	Pyramidal European Hornbeam Pacific Sunset Maple	2" cal.	As Shown
SITE/SCREENING TREES				
	49	Hogan Cedar Weeping Alaskan Cedar Vanderwolf's Pyramid Limber Pine	6-7' ht.	As Shown
	12	Vine Maple	6-7' ht.	As Shown
LARGE SHRUBS				
	276	Pacific Wax Myrtle Dwarf Alaskan Blue Willow Variegated Redtwig Dogwood Crape Myrtle Blanche Rock Rose Variegated Aucuba Aztec Pearl Mexican Orange	5 gal.	5-6' o.c.
MEDIUM SHRUBS				
	836	Spring Bouquet Viburnum Gray Gleam Juniper Little Princess Spirea Lucky Lots Abelia Evergreen Huckleberry Gulf Stream Nandina Dwarf Deutzia Compact Oregon Grape	2-5 gal.	3-4' o.c.
SMALL SHRUBS				
	402	Crimson Pygmy Barberry Flower Carpet Rose	2 gal.	3' o.c.
PERENNIALS				
	280	Orange Sedge Alaska Fern Penstemon	1 gal.	2' o.c.
GROUNDCOVER				
	839	Beach Strawberry Coral Beauty Cotoneaster Kinnikinnick	1 gal.	3-4' o.c.
		Fine Lawn	Seed	
		Erosion Control Grass Mix	Seed	

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OTTEN LANDSCAPE ARCHITECTS Inc
3933 SW Kelly Avenue • Suite B • Portland, Oregon 97239-4393
Phone (503) 972-0311 • Fax (503) 972-0314 • www.ottenla.com

PROJECT NAME

IPT TUALATIN DC LLC

SW CIMINO STREET
TUALATIN, OR.

REVISIONS

△	DATE	DESCRIPTION

REGISTERED LANDSCAPE ARCHITECT
JANET L. OTTEN
OREGON

DATE: JUNE 2017

SCALE	PROJ. NO.
AS NOTED	20170034
DRAWN	CHECKED

LANDSCAPE PLAN

L1.0

REVISED AR INTAKE SET: 07-28-17

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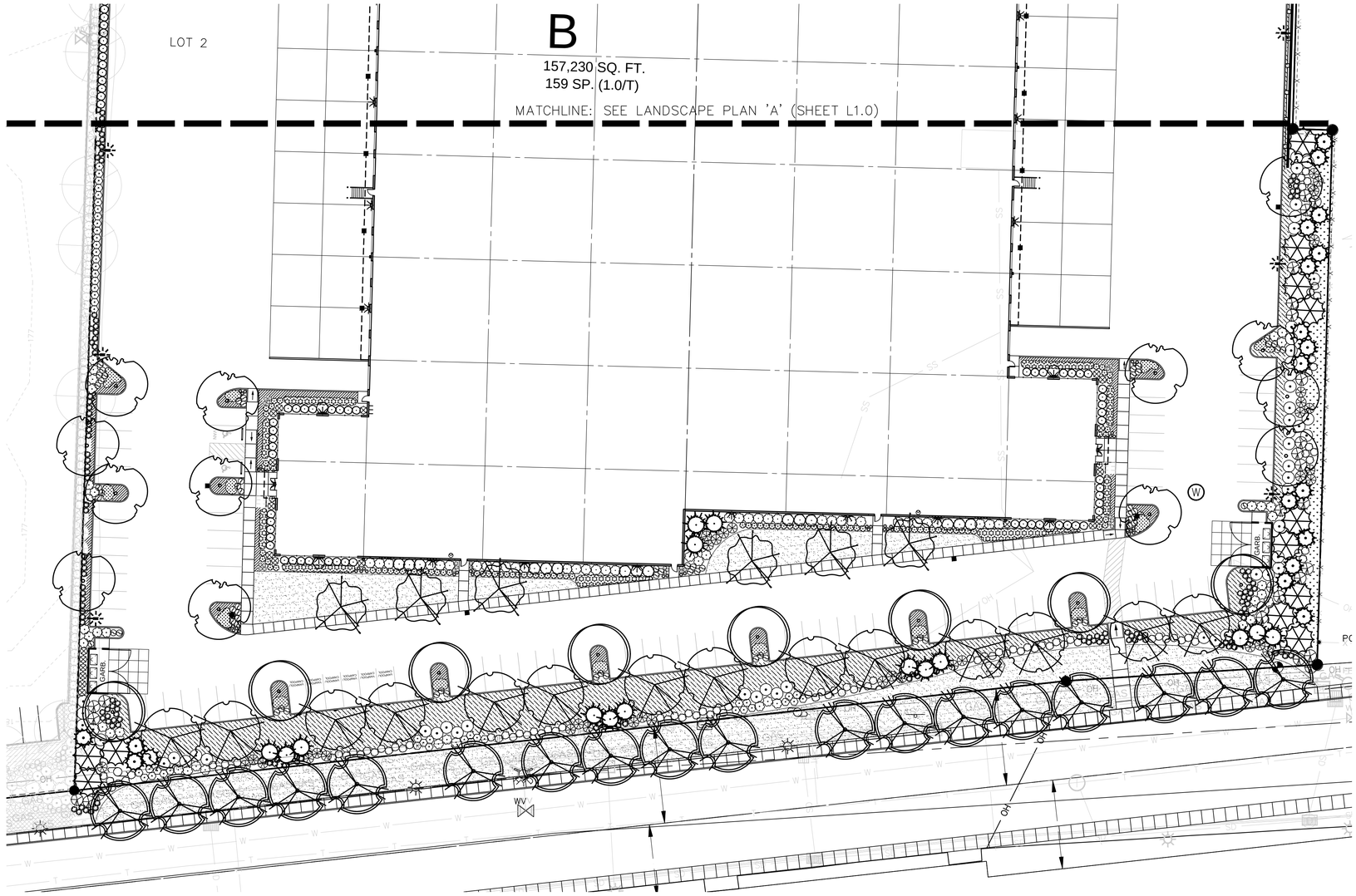

LANDSCAPE PLAN 'B'

SCALE 1" = 30'-0"

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PROJECT NAME

IPT TUALATIN
DC LLC

SW CIMINO STREET
TUALATIN, OR.

REVISIONS

	DATE	DESCRIPTION

REGISTERED LANDSCAPE ARCHITECT
212
JANET L. OTTEN
OREGON

DATE	
JUNE 2017	
SCALE AS NOTED	PROJ. NO. 20170034
DRAWN	CHECKED

LANDSCAPE PLAN

L2.0

REVISED AR INTAKE SET: 07-28-17

OUTLINE SPECIFICATIONS PLANTING AND SEEDING:

GENERAL: All plants shall conform to all applicable standards of the latest edition of the "American Association of Nurserymen Standards", A.N.S.I. Z60.1 – 1973. Meet or exceed the regulations and laws of Federal, State, and County regulations, regarding the inspection of plant materials, certified as free from hazardous insects, disease, and noxious weeds, and certified fit for sale in Oregon.

The apparent silence of the Specifications and Plans as to any detail, or the apparent omission from them of a detailed description concerning any point, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of first quality are to be used. All interpretations of these Specifications shall be made upon the basis above stated.

Landscape contractor shall perform a site visit prior to bidding to view existing conditions.

PERFORMANCE QUALITY ASSURANCE: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary horticultural practices and who are completely familiar with the specified requirements and methods needed for the proper performance of the work of this section.

NOTIFICATION: Give Landscape Architect minimum of 2 days advance notice of times for inspections. Inspections at growing site does not preclude Landscape Architect's right of rejection of deficient materials at project site. Each plant failing to meet the above mentioned "Standards" or otherwise failing to meet the specified requirements as set forth shall be rejected and removed immediately from the premises by the Contractor and at his expense, and replaced with satisfactory plants or trees conforming to the specified requirements.

SUBSTITUTIONS: Only as approved by the Landscape Architect or the Owner's Representative.

GUARANTEE AND REPLACEMENT: All plant material shall be guaranteed from final acceptance for one full growing season or one year, whichever is longer. During this period the Contractor shall replace any plant material that is not in good condition and producing new growth (except that material damaged by severe weather conditions, due to Owner's negligence, normally unforeseen peculiarities of the planting site, or lost due to vandalism). Guarantee to replace, at no cost to Owner, unacceptable plant materials with plants of same variety, age, size and quality as plant originally specified. Conditions of guarantee on replacement plant shall be same as for original plant.

Landscape Contractor shall keep on site for Owner's Representative's inspection, all receipts for soil amendment and topsoil deliveries.

PROTECTION. Protect existing roads, sidewalks, and curbs, landscaping, and other features remaining as final work. Verify location of underground utilities prior to doing work. Repair and make good any damage to service lines, existing features, etc. caused by landscaping installation.

PLANT QUALITY ASSURANCE: Deliver direct from nursery. Maintain and protect roots of plant material from drying or other possible injury. Store plants in shade and protect them from weather immediately upon delivery, if not to be planted within four hours.

Nursery stock shall be healthy, well branched and rooted, formed true to variety and species, full foliaged, free of disease, injury, defects, insects, weeds, and weed roots. Trees shall have straight trunks, symmetrical tips, and have an intact single leader. Any trees with double leaders will be rejected upon inspection. All Plants: True to name, with one of each bundle or lot tagged with the common and botanical name and size of the plants in accordance with standards of practice of the American Association of Nurserymen, and shall conform to the Standardized Plant Names, 1942 Edition.

Container grown stock: Small container–grown plants, furnished in removable containers, shall be well rooted to ensure healthy growth. **Grow container plants in containers a minimum of one year** prior to delivery, with roots filling container but not root bound. Bare root stock: Roots well–branched and fibrous. Balled and burlapped (B&B): Ball shall be of natural size to ensure healthy growth. Ball shall be firm and the burlap sound. No loose or made ball will be acceptable.

TOPSOIL AND FINAL GRADES: Landscape Contractor is to verify with the General Contractor if the on site topsoil is or is not conducive to proper plant growth. Supply alternate bid for imported topsoil.

Landscape Contractor is to supply and place 12" of topsoil in planting beds and 6" in lawn areas. If topsoil stockpiled on site is not conducive to proper plant growth, the Landscape Contractor shall import the required amount. Landscape Contractor is to submit samples of the imported soil and/or soil amendments to the Landscape Architect. The topsoil shall be a sandy loam, free of all weeds and debris inimical to lawn or plant growth.

Landscaping shall include finished grades and even distribution of topsoil to meet planting requirements. Grades and slopes shall be as indicated. Planting bed grades shall be approximately 3" below adjacent walks, paving, finished grade lines, etc., to allow for bark application. Finish grading shall remove all depressions or low areas to provide positive drainage throughout the area.

PLANTING SPECIFICATIONS:

HERBICIDES: Prior to soil preparation, all areas showing any undesirable weed or grass growth shall be treated with Round–up in strict accordance with the manufacturer's instructions.

SOIL PREPARATION: Work all areas by rototilling to a minimum depth of 8". Remove all stones (over 1½" size), sticks, mortar, large clumps of vegetation, roots, debris, or extraneous matter turned up in working. Soil shall be of a homogeneous fine texture. Level, smooth and lightly compact area to plus or minus .10 of required grades.

In groundcover areas add 2" of compost (or as approved) and till in to the top 6" of soil.

PLANTING HOLE: Lay out all plant locations and excavate all soils from planting holes to 2 1/2 times the root ball or root system width. Loosen soil inside bottom of plant hole. Dispose of any "subsoil" or debris from excavation. Check drainage of planting hole with water, and adjust any area showing drainage problems.

SOIL MIX: Prepare soil mix in each planting hole by mixing:
2 part native topsoil (no subsoil)
1 part compost (as approved)

Thoroughly mix in planting hole and add fertilizers at the following rates:
Small shrubs – 1/8 lb./ plant
Shrubs – 1/3 to 1/2 lb./ plant
Trees – 1/3 to 1 lb./ plant

FERTILIZER: For trees and shrubs use Commercial Fertilizer "A" Inorganic (5–4–3) with micro–nutrients and 50% slow releasing nitrogen. For initial application in fine seed lawn areas use Commercial Fertilizer "B" (8–16–8) with micro–nutrients and 50% slow–releasing nitrogen. For lawn maintenance use Commercial Fertilizer "C" (22–16–8) with micro–nutrients and 50% slow–releasing nitrogen. DO NOT apply fertilizer to Water Quality Swale.

PLANTING TREES AND SHRUBS: Plant upright and face to give best appearance or relationship to adjacent plants and structures. Place 6" minimum, lightly compacted layer of prepared planting soil under root system. Loosen and remove twine binding and burlap from top 1/2 of root balls. Cut off cleanly all broken or frayed roots, and spread roots out. Stagger Plants in rows. Backfill planting hole with soil mix while working each layer to eliminate voids.

When approximately 2/3 full, water thoroughly, then allow water to soak away. Place remaining backfill and dish surface around plant to hold water. Final grade should keep root ball slightly above surrounding grade, not to exceed 1". Water again until no more water is absorbed. Initial watering by irrigation system is not allowed.

STAKING OF TREES: Stake or guy all trees. Stakes shall be 2" X 2" (nom.) quality tree stakes with point. They shall be of Douglas Fir, clear and sturdy. Stake to be minimum 2/3 the height of the tree, not to exceed 8'–0". Drive stake firmly 1'–6" below the planting hole. Tree ties for deciduous trees shall be "Chainlock" (or better). For Evergreen trees use "Gro–Strait" Tree Ties (or a reinforced rubber hose and guy wires) with guy wires of a minimum 2 strand twisted 12 ga. wire. Staking and guying shall be loose enough to allow movement of tree while holding tree upright.

MULCHING OF PLANTINGS: Mulch planting areas with dark, aged, medium grind fir or hemlock bark (aged at least 6 months) to a depth of 2" in ground cover areas and 2½" in shrub beds. Apply evenly, not higher than grade of plant as it came from the nursery, and rake to a smooth finish. Water thoroughly, then hose down planting area with fine spray to wash leaves of plants.

FINE LAWN AREAS: In fine lawn area apply Commercial Fertilizer Mix "B" at 4.5 lbs. Per 1,000 sq.ft. and rake into soil surface. Establish an even, fine textured seedbed meeting grades, surfaces and texture. Sow seed with a mechanical spreader at the uniform rates as noted below. Rake seed lightly to provide cover.

ROUGH SEED AREA: In rough seeded area, establish an evenly graded seedbed. Sow seed with a mechanical spreader at the uniform rates as noted below. Rake seed lightly to provide cover.

SEED: Bluetag grass seed conforming to applicable State laws. No noxious weed seeds. Submit Guaranteed analysis.
Fine Lawn Seed Mix: To contain 50% Top Hat Perennial Ryegrass, 30% Derby Supreme Ryegrass, 20% Longfellow Chewings Fescue (Hobbs and Hopkins Pro–Time 303 Lawn Mix or as approved) Sow Seed at 5 lbs. / 1000 sq. ft.
Rough Seed Mix: To Contain: 60% Perennial Ryegrass, 15% Eureka Hard Fescue, and 20% Herbaceous Plants and Clover (Hobbs and Hopkins Pro–Time 705 PDX, or approved equal). Sow at 2 lbs. Per 1,000 sq.ft.

MAINTENANCE OF SEEDED AREAS:
Fine Lawn Areas: The lawn areas shall be maintained by watering, mowing, reseeding, and weeding for a minimum of 60 days after seeding. After 30 days, or after the second mowing, apply Commercial Fertilizer Mix "C" at 5 lbs. per 1,000 sq. ft. Mow and keep at 1½" to 2" in height. Remove clippings and dispose of off site.

GENERAL MAINTENANCE: Protect and maintain work described in these specifications against all defects of materials and workmanship, through final acceptance. Replace plants not in normal healthy condition at the end of this period. Water, weed, cultivate, mulch, reset plants to proper grade or upright position, remove dead wood and do necessary standard maintenance operations. Irrigate when necessary to avoid drying out of plant materials, and to promote healthy growth.

CLEAN–UP: At completion of each division of work all extra material, supplies, equipment, etc., shall be removed from the site. All walks, paving, or other surfaces shall be swept clean, mulch areas shall have debris removed and any soil cleared from surface. All areas of the project shall be kept clean, orderly and complete.

WATER QUALITY SWALE SPECIFICATIONS PER CLEAN WATER SERVICES PLANTING REQUIREMENTS & DETAIL 710:

SITE PREPARATIONS: Remove all nonnative plant materials, including plants, roots, and seeds prior to adding topsoils. Till the sub–grade in these areas to a depth of at least 4" and add at least 12" of clean compost–amended topsoil. The compost amended topsoil shall have the following characteristics to ensure a good growing medium:
A) Texture – material passes through 1" screen
B) Fertility – 35% organic matter
In the event of flood plain grading, over–excavate the sub grade to ensure 12" of topsoil can be applied without impacting surface water elevations.

SOIL PREPARATION: Water Quality Swale area shall be over–excavated and filled to final grade with 12" of amended topsoil. Topsoil amendments shall be garden compost, not conventional fertilizer amendments. DO NOT **apply fertilizer to the Water Quality Facility.**

TIMING: Plantings should be installed between February 1 and May 1 or between October 1 and November 15. Bare root stock shall be installed only from December 15 through April 15. When plantings must be installed outside these times, additional measures may be needed to assure survival.

EROSION CONTROL: Grading, soil preparation, and seeding shall be performed during optimal weather conditions and at low flow levels to minimize sediment impacts. Site disturbance shall be minimized and desirable vegetation retained, where possible. Slopes shall be graded to support the establishment of vegetation. Where seeding is used for erosion control, an appropriate native grass, Regreen (or its equivalent), or sterile wheat shall be used to stabilize slopes until permanent vegetation is established. Biodegradable fabrics (coir, coconut or approved jute matting (minimum 1/4" square holes) may be used to stabilize slopes and channels. Fabrics such as burlap may be used to secure plant plugs in place and to discourage floating upon inundation. No plastic mesh that can entangle wildlife is permitted. Consult CWS Chapter 6 – Erosion Prevention and Sediment Control for additional information.
A biodegradable Erosion Control Matting shall be placed over the topsoil throughout the swale cross section, fabric shall be held in place in accordance with the manufacturer's installation requirements. Use high density jute matting in the treatment area (Geojute Plus or approved equal). In all other areas use low density jute matting (Econojute or approved equal). Landscaping shall include finished grades and even distribution of topsoil to meet planting requirements. Grades and slopes shall be as indicated on civil plans. Finish grading shall remove all depressions or low areas to provide positive drainage throughout the area.

HERBICIDES: Removal of invasive non–native species is required by hand for the entire wetland buffer area. If necessary, excessive weed growth may be treated with Rodeo or Garlon 3–A (or approved equals) in strict accordance with the manufacturer's instructions.

FERTILIZER: Do not apply fertilizer to any plantings within the Wetland Buffer or Water Quality Swales.

PLANTING TREES AND SHRUBS: Plant upright and face to give best appearance or relationship to adjacent plants and structures. Loosen and remove twine binding and burlap from top one–half of root balls. Cut off cleanly all broken or frayed roots, and spread roots out. Stagger Plants in rows. Backfill planting hole with soil mix while working each layer to eliminate voids.

MULCHING: Trees, shrubs, and groundcovers planted in upland areas shall be mulched a minimum of 3" in depth and 18" in diameter, to retain moisture and discourage weed growth around newly installed plant material. Appropriate mulches are made from composted bark or leaves that have not been chemically treated. The use of mulch in frequently inundated areas shall be limited, to avoid any possible water quality impacts including the leaching of tannins and nutrients, and the migration of mulch into waterways.

WILDLIFE PROTECTION: Depending on site conditions, appropriate measures shall be taken to discourage wildlife–related damage. If deemed necessar, biodegradable plastic mesh tubing, or other approved method, shall be placed around individual trees and shrubs to prevent browsing by wildlife.

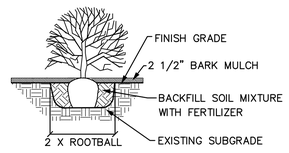
SEED: Bluetag grass seed conforming to applicable State laws. No noxious weed seeds. Submit Guaranteed analysis.
Wetland Buffer Seed: To contain 20% California Brome, 20% Blue Wildrye, 50% Native Red Fescue, and 10% Large–leafed Lupine. (Hobbs & Hopkins Clean Water Dray Area Seed Mix or approved equal). Apply at a rate of 1 lb / 1,000 sq.ft. Install seed as needed for bare soil areas larger than 25 sq.ft. following invasive species removal.
Freeboard Area Seed: To contain 40% Dwarf Tall Fescue, 30% Dwarf Perennial Rye, 25% Creeping Red Fescue and 5% Colonial Bent Grass. Apply at a rate of 2.75 lbs. / 1,000 sq.ft.
Moist Area Seed: To contain 45% American Sloughgrass, 45% Western Mannagrass, 5% Spreading Rush and 5% Slough Sedge (Hobbs & Hopkins ProTime 406 Native Water Quality Mix for Wet Areas or approved equal). Apply at a rate of 1 lb / 1,000 SF.

IRRIGATION: Is to be provided as per a separate plan design/ build by Landscape Contractor. Project is to be irrigated by a temporary, above–ground system, which will provide full coverage for all plant material. Guarantee system for a minimum one year. System is to meet CWS Detail 710 Standards.

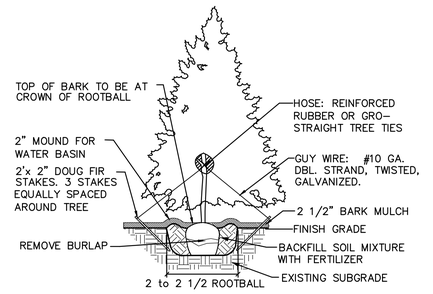
All plantings under CWS jurisdiction are to be watered one inch per week from June 15 through October 15 for the duration of the two year maintenance period.

MAINTENANCE: The permitee is responsible for the maintenance of this facility for a minimum of two years following the acceptance of the facility by Clean Water Services (CWS). Engineer or Owners Representative shall inspect the facility twice annually (Spring & Fall) throughout the two–year maintenance period. If at any time during the warranty period the landscaping falls below 80% survival of trees and shrubs, or 90% aerial coverage of herbaceous plants, or if the amount of invasive non–native species exceeds 20%, the Owner shall remove the undesirable vegetation and reinstall all deficient planting at the next appropriate time. The two–year maintenance period shall begin again from the date of replanting. The facility shall be re–excavated and planted if siltration greater than 3" in depth occurs within the 2 year maintenance period. Water Quality Facility is to be kept free of debris and maintained to insure water flow. Protect and maintain work described in these specifications against all defects of materials and workmanship, through final acceptance.

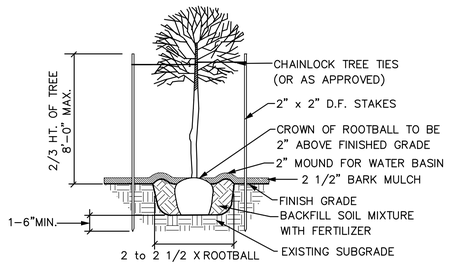
CLEAN–UP: At completion of each division of work all extra material, supplies, equipment, etc., shall be removed from the site. All walks, paving, or other surfaces shall be swept clean, mulch areas shall have debris removed and any soil cleared from surface. All areas of the project shall be kept clean, orderly and complete.



SHRUB PLANTING DETAIL
NOT TO SCALE



EVERGREEN TREE STAKING DETAIL
NOT TO SCALE



DECIDUOUS TREE PLANTING DETAIL
NOT TO SCALE

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Portland, Oregon 97239
503.222.4453
VLMK.COM

OTTEN LANDSCAPE ARCHITECTS Inc
3933 SW Kelly Avenue • Suite B • Portland, Oregon 97239-4393
Phone (503) 972-0311 • Fax (503) 972-0314 • www.ottenla.com

PROJECT NAME
IPT TUALATIN DC LLC

SW CIMINO STREET
TUALATIN, OR.

REVISIONS

⚠	DATE	DESCRIPTION

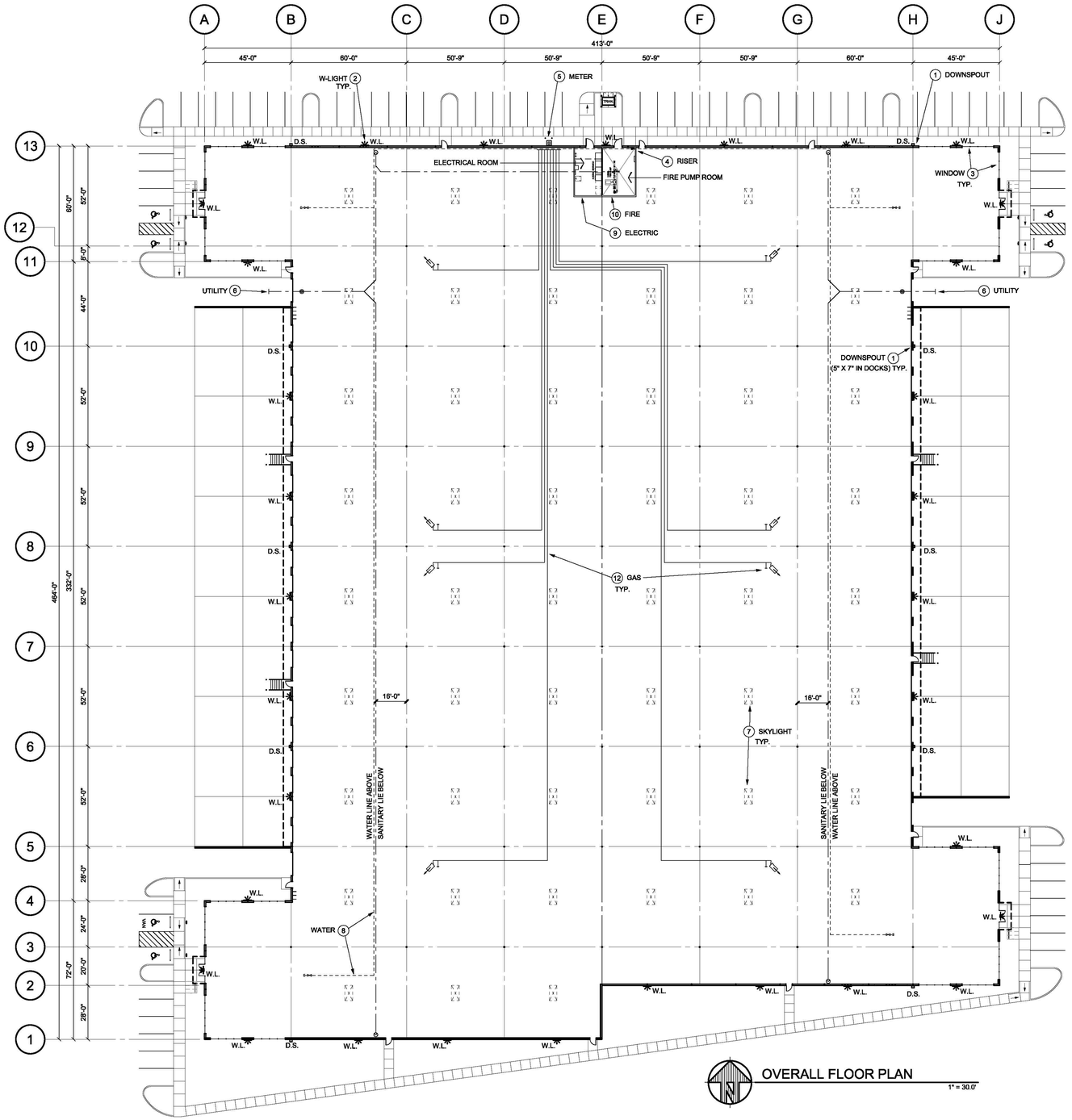
REGISTERED 2122 JANET L. OTTEN OREGON LANDSCAPE ARCHITECT

DATE	
JUNE 2017	
SCALE: AS NOTED	PROJ. NO.: 20170034
DRAWN	CHECKED

LANDSCAPE DETAILS & SPECIFICATIONS

L3.0

REVISED AR INTAKE SET: 07-28-17



OVERALL FLOOR PLAN

1" = 30.0'

STOREFRONT SAFETY GLAZING

1. PANES OVER 9 SQUARE FEET AND LESS THAN 18 INCHES ABOVE THE FLOOR WITH TOP EDGE OVER 36 INCHES ABOVE FLOOR AND WITHIN 36 INCHES OF WALKWAY ARE TO BE TEMPERED.
2. ALL GLASS WITHIN 18" OF THE FLOOR IS TO BE TEMPERED.
3. ALL GLASS WITHIN 24" OF ANY DOOR IS TO BE TEMPERED.
4. SEE ALSO SPECIFICATIONS

GENERAL NOTES:

1. SEE FOUNDATION PLANS FOR ADDITIONAL DIMENSIONS OF ALL OPENINGS (DOORS, ETC.) THAT ARE NOT SHOWN.
2. VERIFY ALL UTILITY LOCATIONS AT EXIT FROM BUILDING WITH MECHANICAL CONTRACTOR. COORDINATE ALL INTERIOR AND EXTERIOR UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
3. SEE SITE PLAN (C1.1) FOR ADDITIONAL INFORMATION ON ITEMS THAT ARE SHOWN OUTSIDE OF BUILDING (WALKS, PARKING, ETC.).
4. DIMENSIONS TAKE PRECEDENCE OVER DRAWING: DO NOT SCALE DRAWINGS TO DETERMINE ANY LOCATIONS. THE ENGINEER SHALL BE NOTIFIED IF ANY DISCREPANCY OCCURS, PRIOR TO CONTINUING WITH WORK.
5. ALL DIMENSIONS ON PLANS ARE FROM THE OUTSIDE FACE OF EXTERIOR WALLS AND CENTERLINE OF INTERIOR WALLS UNLESS OTHERWISE NOTED.

KEY NOTES:

MARK	DESCRIPTION
(1) DOWNSPOUT	DOWNSPOUTS (D.S.) 7" SQ. TYP. (U.N.O.) - SEE ROOF PLAN DETAILS. ALSO SEE UTILITY PLAN (C3.0) FOR STORM TIE IN.
(2) W-LIGHT	WALL LIGHTS (W.L.) - PER ELECTRICAL (BIDDER DESIGN). SEE EXTERIOR ELEVATIONS FOR ALL LOCATIONS.
(3) WINDOW	ALUMINUM STOREFRONT WINDOWS PER DETAILS AND SPECIFICATIONS.
(4) RISER	FIRE SPRINKLER (VERIFY WITH FIRE PROTECTION) AND DOMESTIC WATER RISERS (PER BIDDER DESIGN) THIS LOCATION.
(5) METER	GAS METERS TYPICAL - SEE MECHANICAL (BIDDER DESIGN) FOR ALL LOCATIONS.
(6) UTILITY	COORDINATE WITH SITE UTILITY PLAN (G3.0) FOR CONTINUATION OF UTILITIES BEYOND BUILDING.
(7) SKYLIGHT	4'-0" X 8'-0" (NOM.) CURB MOUNTED SKYLIGHT ABOVE - SEE ROOF FRAMING PLAN FOR EXACT LOCATIONS. ALSO SEE SPECIFICATIONS FOR TYPE.
(8) WATER	INSTALL DOMESTIC WATER LINE TIGHT TO ROOF DECK DIRECTLY ABOVE SANITARY LINE LOCATION. PROVIDE VALVE AND TEE AT EACH STOREFRONT ENTRY AS SHOWN. SIZE OF LINES PER BIDDER DESIGN.
(9) ELECTRIC	ELECTRICAL ROOM: 6" METAL STUDS AT 16" O/C. (BELOW MEZZANINE) WITH 5/8" TYPE "X" GYP. BD. EACH SIDE (WITH R-19 INSUL.). 6" METAL STUDS AT 16" ON CENTER UP TO ROOF SHEATHING (SEE TABLE ON ARCH. DETAILS FOR GAUGE). ALSO SEE SECTION ON ARCHITECTURAL DETAIL SHEET. PROVIDE EXHAUST FAN THRU ROOF AND LOUVER IN EXTERIOR MANDOOR.
(10) FIRE	FIRE PUMP ROOM: 6" METAL STUDS AT 16" O/C. (FULL HEIGHT) WITH 5/8" TYPE "X" GYP. BD. EACH SIDE (WITH R-19 INSUL.). SEE ARCH. DETAIL SHEET FOR ADDITIONAL INFORMATION. PROVIDE EXHAUST FAN THRU ROOF AND LOUVER IN EXTERIOR MANDOOR.
(11) BIKES	BICYCLE PARKING - SEE SITE PLAN AND SITE DETAIL SHEET.
(12) GAS	GAS LINES TO GAS FIRED UNIT HEATERS PER MECHANICAL (BIDDER DESIGN).

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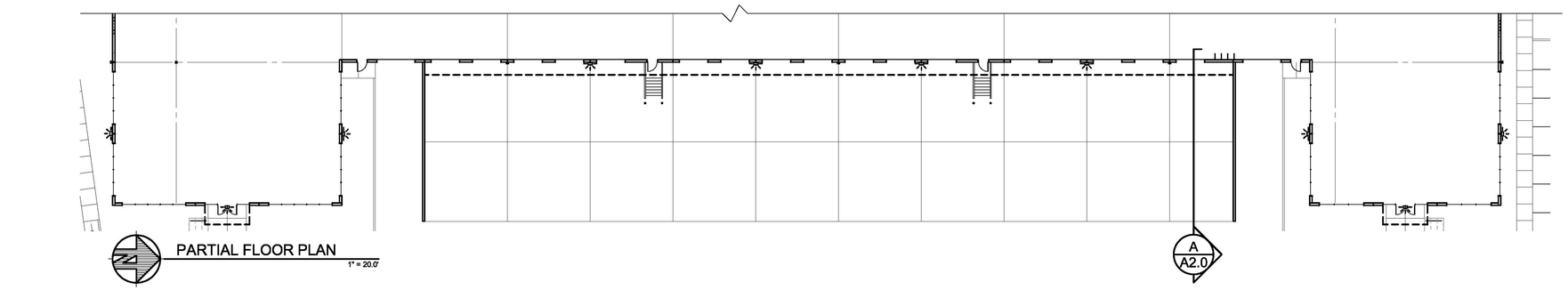
AS NOTED	20170034
DRAWN	CHECKED
BGL	JS

FLOOR PLAN

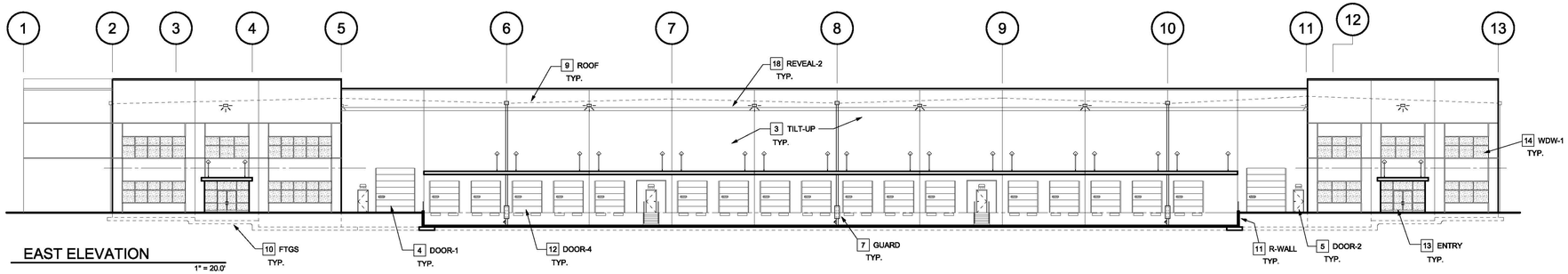
A1.0

REVISED AR INTAKE SET: 07-28-17

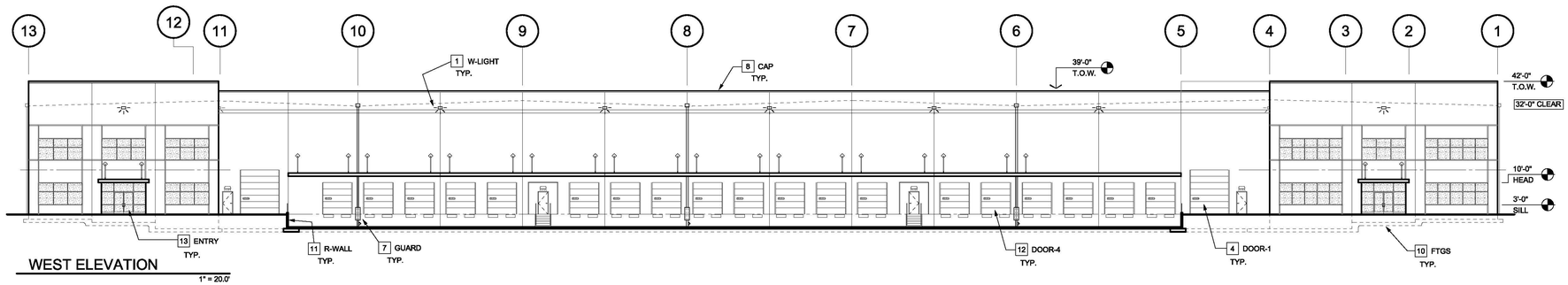


PARTIAL FLOOR PLAN
1" = 20.0'

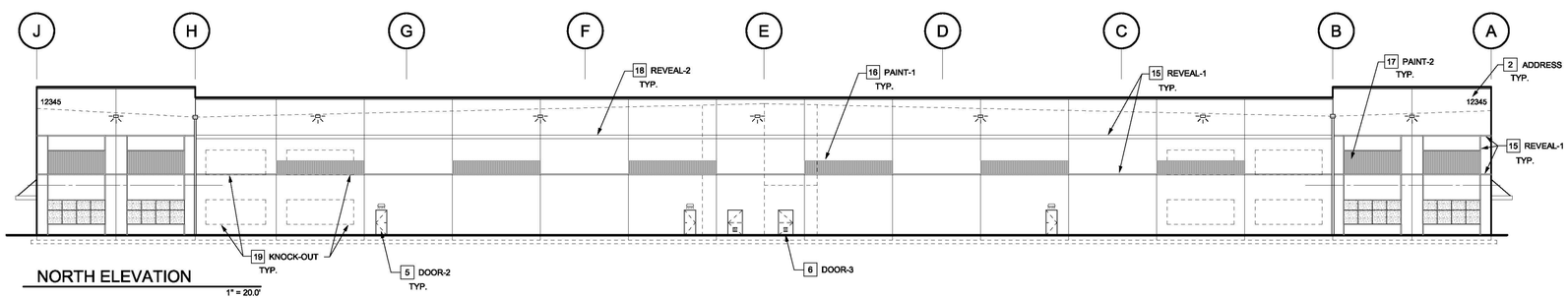
A
A2.0



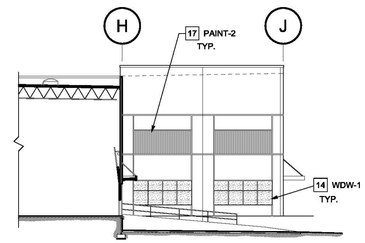
EAST ELEVATION
1" = 20.0'



WEST ELEVATION
1" = 20.0'



NORTH ELEVATION
1" = 20.0'



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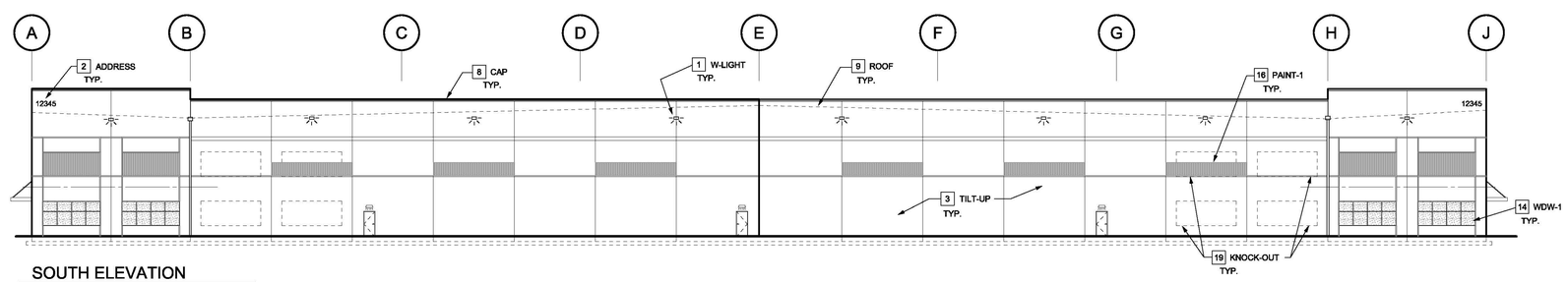
A2.0
PARTIAL SOUTH ELEVATION
(SIM. ELEVATION AT DOCK SIDE OF OFFICES) 1" = 20.0'



SOUTH ELEVATION
1" = 20.0'

ELEVATION KEYNOTES:

MARK	DESCRIPTION
1 W-LIGHT	WALL LIGHTS PER ELECTRICAL.
2 ADDRESS	24" HIGH RAISED FOAM LETTERS (BLACK FACE). VERIFY ADDRESS BEFORE INSTALLING.
3 TILT-UP	CONCRETE TILT-UP PANELS TYPICAL ON ALL SIDES. SEE STRUCTURAL FOR THICKNESS AND DETAILS.
4 DOOR-1	OVERHEAD DOOR PER DOOR SCHEDULE.
5 DOOR-2	EXTERIOR MANDOOR PER DOOR SCHEDULE.
6 DOOR-3	EXTERIOR MANDOOR PER DOOR SCHEDULE TO ELECTRICAL ROOM - SEE FLOOR PLAN
7 GUARD	STEEL GUARDS AT BOTTOM OF DOWNSPOUTS AS SHOWN. SEE DETAIL ON ARCHITECTURAL DETAIL SHEET.
8 CAP	METAL CAP FLASHING TYPICAL AT PARAPET ON ALL SIDES. SEE DETAIL ROOF DETAIL SHEET.
9 ROOF	DASHED LINE INDICATES ROOF LINE BEYOND. SHOWN SCHEMATICALLY - VERIFY ALL T.O.F. ELEVATIONS WITH THE ROOF FRAMING PLAN.
10 FTGS	DASHED LINES BELOW GRADE INDICATE FOOTINGS. SHOWN SCHEMATICALLY - VERIFY ALL FOOTING LOCATIONS WITH THE FOUNDATION PLAN.
11 R-WALL	CONCRETE RETAINING WALL WITH STEEL GUARDRAIL AT EDGE ALL LOADING DOCKS - SEE DETAIL 9/C5.0.
12 DOOR-4	DOCK DOORS PER DOOR SCHEDULE.
13 ENTRY	ALUM. STOREFRONT ENTRY TYPICAL - SEE FLOOR PLAN.
14 WDW-1	ALUM. STOREFRONT WINDOWS PER SPECIFICATIONS.
15 REVEAL-1	1/2" X 3" REVEAL TYPICAL WHERE SHOWN.
16 PAINT-1	3'-9" HIGH x PANEL WIDTH BLUE ACCENT PAINT AREAS. TYPICAL WHERE SHOWN.
17 PAINT-2	FUTURE WINDOW PAINT ACCENT AREAS IN LOCATION OF FUTURE SECOND FLOOR WINDOWS.
18 REVEAL-2	1/2" X 12" REVEAL TYPICAL WHERE SHOWN.
19 KNOCK-OUT	DASHED LINES INDICATE LOCATIONS OF FUTURE KNOCK-OUTS FOR FUTURE WINDOWS.

ITEM	COLOR
OVERHEAD DOORS	(B)
DOCK DOORS	(B)
MAIN DOORS	(B)
DOWNSPOUTS & SCUPPERS	MATCH ADJ. COLOR
DOCK WALL RAILING	(C)
DOCK WALLS	(B)
REVEALS	MATCH ADJ. COLOR
CANOPIES	(C)
ABOVE WINDOWS	(C)
BELOW WINDOWS (WAINSCOT)	(C)
FUTURE WINDOW ACCENT	(B)
BLUE ACCENT BOXES	(D)

PAINTING SCHEDULE

KEY	COLOR	PAINT MFR. AND NUMBER
(A)	MAIN BODY COLOR (LT. GRAY)	SHERWIN-WILLIAMS - SW 7667 (ZIRCON)
(B)	MEDIUM TONE (MED. GRAY)	SHERWIN-WILLIAMS - SW 7670 (GRAY SHINGLE)
(C)	DARK TONE (DK. GRAY)	SHERWIN-WILLIAMS - SW 7674 (PEPPERCORN)
(D)	ACCENT (BLUE)	SHERWIN-WILLIAMS - SW 6517 (REGATTA)

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EXTERIOR ELEVATIONS

A2.0

REVISED AR INTAKE SET: 07-28-17

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Architectural Review Checklist for Commercial, Industrial & Public

GENERAL INFORMATION	
Site Address:	12155 SW Tualatin Sherwood Road
Assessor's Map and Tax Lot #:	2S127BC00200
Planning District:	MG - General Manufacturing
Parcel Size:	8.86 acres
Property Owner:	Kenneth E. Itel
Applicant:	Jennifer Kimura - VLMK
Proposed Use:	Shell/Spec Bldg - No Tenant at this time

ARCHITECTURAL REVIEW DETAILS	
Residential ☐ Commercial ☒ Industrial	
Number of parking spaces:	159
Square footage of building(s):	157,230 sf
Square footage of landscaping:	63,595 sf
Square footage of paving:	165,182 sf
Proposed density (for residential):	

For City Personnel to complete:

Staff contact person:

Architectural Review Checklist for Commercial, Industrial & Public

CITY OF TUALATIN FACT SHEET

General

Proposed use: Shell/Speculative Bldg, no tenant at this time					
Site area: 8.86		acres	Building footprint: 157,230		sq. ft.
Development area:	7.40	acres	Paved area: 165,182		sq. ft.
	322,412	Sq. ft.	Development area coverage:	83.5	%

Parking

Spaces required (see TDC 73.400) *(example: warehouse @ 0.3/1000 GFA)* Office @ 2.7 /1000 GFA = 64 (15%) Mfg @ 1.6 /1000 GFA = 63 (25%) Whse @ .3 /1000 GFA = 28 Total (60%) parking required: 155 spaces ADA accessible = 6 Van pool = 6 Compact = *(max. 35% allowed)* 0 = Loading berths = 3	Spaces provided: 159 Total parking provided: 147 spaces Standard = 153 ADA accessible = 6 Van pool = 6 Compact = 0 Loading berths = 36

Bicycles

Covered spaces required: 11	Covered spaces provided: 11

Landscaping

Landscaping required: 15 % of dvpt. area 57,901 Square feet	Landscaping provided: 16.5 % of dvpt. area 63,595 Square feet
Landscaped parking island area required: 3,975 sf	Landscaped parking island area provided: 5,346 sf

Trash and recycling facility

Minimum standard method: 900 square feet	
Other method: N/A	square feet

For commercial/industrial projects only

Total building area:	157,230	sq. ft.	2nd floor:	0	sq. ft.
Main floor:	157,230	sq. ft.	3rd floor:	0	sq. ft.
Mezzanine:	0	sq. ft.	4th floor:	0	sq. ft.

For residential projects only

Number of buildings:	Total sq. ft. of buildings: sq. ft.
Building stories:	

City of Tualatin
www.tualatinoregon.gov

Hydraulic Modeling Fee

Water supply modeling is necessary for larger projects to determine the impact of the project's water demand on the water supply system. Water supply modeling will be performed by a consulting engineer based on the most recent version of the Tualatin Water System Master Plan.

Due to possible impacts to the water supply system, the following projects in Tualatin require hydraulic modeling based on the size and type of the project and projected water use for the finished project. The outcome of modeling could require offsite improvements to the water supply system in order to ensure that adequate water supply is available to serve the project and reduce impacts to the overall system.

Hydraulic modeling of the water supply system is required for the following project type/sizes/demand:

Project Type	Criteria	Permit Fee
Commercial or Industrial Building	Building floor area greater than 48,300 square feet **or** Anticipated daily water demand greater than 870 gallons per acre per day	$ 300 per building
Residential development	More than 49 dwelling units	$ 1,000
Multi-family development	More than 49 dwelling units **or** a combined building floor area greater than 48,300 square feet	$ 300 per building

Please complete this form and submit the form and required fee (if applicable) with your land-use application (architectural review, subdivision, etc.).

☒ Commercial or Industrial Development

- Building floor area 157,230 square feet
- Anticipated water demand (if known) _____ gallons per day
- Described planned building use _____

☐ Residential Development

- Number of dwelling units or single family home lots _____

☐ Multi-Family Residential Development

- Number of dwelling units_____
- Building floor area (sum of all building) _____
- Number of multi-family buildings_____

Permit fee required based on the information provided above $_____

- If no fee is required, enter $0.

NOTE: Water Supply Modeling does not replace the requirement for fire hydrant flow testing. Flow testing of fire hydrants will still be required to verify adequate fire flow of finished system

First American

Commitment for Title Insurance

ISSUED BY

Commitment No. 3

First American Title Insurance Company

FIRST AMERICAN TITLE INSURANCE COMPANY, a Nebraska corporation ("Company"), for a valuable consideration, commits to issue its policy or policies of title insurance, as identified in Schedule A, in favor of the Proposed Insured named in Schedule A, as owner or mortgagee of the estate or interest in the land described or referred to in Schedule A, upon payment of the premiums and charges and compliance with the Requirements; all subject to the provisions of Schedules A and B and to the Conditions of this Commitment.

This Commitment shall be effective only when the identity of the Proposed Insured and the amount of the policy or policies committed for have been inserted in Schedule A by the Company.

All liability and obligation under this Commitment shall cease and terminate 180 days after the Effective Date or when the policy or policies committed for shall issue, whichever first occurs, provided that the failure to issue the policy or policies is not the fault of the Company.

The Company will provide a sample of the policy form upon request.

In Witness Whereof, First American Title Insurance Company has caused its corporate name and seal to be affixed by its duly authorized officers on the date shown in Schedule A.

First American Title Insurance Company

Dennis J. Gilmore
President

Jeffrey S. Robinson
Secretary

(This Commitment is valid only when Schedules A and B are attached)

This jacket was created electronically and constitutes an original document

CONDITIONS

1. The term mortgage, when used herein, shall include deed of trust, trust deed, or other security instrument.

2. If the proposed Insured has or acquired actual knowledge of any defect, lien, encumbrance, adverse claim or other matter affecting the estate or interest or mortgage thereon covered by this Commitment other than those shown in Schedule B hereof, and shall fail to disclose such knowledge to the Company in writing, the Company shall be relieved from liability for any loss or damage resulting from any act of reliance hereon to the extent the Company is prejudiced by failure to so disclose such knowledge. If the proposed Insured shall disclose such knowledge to the Company, or if the Company otherwise acquires actual knowledge of any such defect, lien, encumbrance, adverse claim or other matter, the Company at its option may amend Schedule B of this Commitment accordingly, but such amendment shall not relieve the Company from liability previously incurred pursuant to paragraph 3 of these Conditions.

3. Liability of the Company under this Commitment shall be only to the named proposed Insured and such parties included under the definition of Insured in the form of policy or policies committed for and only for actual loss incurred in reliance hereon in undertaking in good faith (a) to comply with the requirements hereof, or (b) to eliminate exceptions shown in Schedule B, or (c) to acquire or create the estate or interest or mortgage thereon covered by this Commitment. In no event shall such liability exceed the amount stated in Schedule A for the policy or policies committed for and such liability is subject to the insuring provisions and Conditions and the Exclusions from Coverage of the form of policy or policies committed for in favor of the proposed Insured which are hereby incorporated by reference and are made a part of this Commitment except as expressly modified herein.

4. This Commitment is a contract to issue one or more title insurance policies and is not an abstract of title or a report of the condition of title. Any action or actions or rights of action that the proposed Insured may have or may bring against the Company arising out of the status of the title to the estate or interest or the status of the mortgage thereon covered by this Commitment must be based on and are subject to the provisions of this Commitment.

5. *The policy to be issued contains an arbitration clause. All arbitrable matters when the Amount of Insurance is $2,000,000 or less shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. You may review a copy of the arbitration rules at <http://www.alta.org/>.*

Schedule A

File No.: NCS-846323-CHI2

1. Effective Date: July 12, 2017 at 8:00 A.M.

2. Policy (or Policies) to be issued:

		AMOUNT
Extended Owner's Policy Proposed Insured: IPT Acquisitions LLC	$ TBD	$ TBD
Extended Lender's Policy Proposed Insured: To Be Determined	$ TBD	$ TBD

3. The estate or interest in the land described or referred to in this Commitment is Fee Simple

4. Title to the fee estate or interest in the land is at the Effective Date vested in: Kenneth E. Itel

5. The land referred to in this Commitment is described as follows:

PARCEL I:

INTENTIONALLY DELETED

PARCEL II:

PARCEL 2 OF PARTITION PLAT NO. 2009-034, IN THE CITY OF TUALATIN, COUNTY OF WASHINGTON AND STATE OF OREGON.

Schedule BI

File No.: NCS-846323-CHI2

REQUIREMENTS

The following requirements must be satisfied:

1. Payment of the necessary consideration for the estate or interest to be insured.

2. Pay all premiums, fees and charges for the policy.

3. Documents satisfactory to us, creating the interest in the land and/or the mortgage to be insured must be signed, delivered and recorded.

4. Payment of all taxes and/or assessments levied against the subject premises which are due and payable.

Schedule BII

File No.: NCS-846323-CHI2

EXCEPTIONS

The policy or policies to be issued will contain exceptions to the following matters unless the same are disposed of to the satisfaction of the Company:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records; proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or by making inquiry of persons in possession thereof.

3. Easements, or claims of easement, not shown by the public records; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.

4. Any encroachment (of existing improvements located on the subject land onto adjoining land or of existing improvements located on adjoining land onto the subject land), encumbrance, violation, variation, or adverse circumstance affecting the title that would be disclosed by an accurate and complete land survey of the subject land.

5. Any lien, or right to a lien, for services, labor, material, equipment rental or workers compensation heretofore or hereafter furnished, imposed by law and not shown by the public records.

6. This item has been intentionally deleted.

7. This item has been intentionally deleted.

8. This item has been intentionally deleted.

9. This item has been intentionally deleted.

10. This item has been intentionally deleted.

11. This item has been intentionally deleted.

12. This item has been intentionally deleted.

13. This item has been intentionally deleted.

14. This item has been intentionally deleted.

15. This item has been intentionally deleted.

16. This item has been intentionally deleted.

17. This item has been intentionally deleted.

18. The assessment roll and the tax roll disclose that the within described premises were specially zoned or classified for Farm use. If the land has become or becomes disqualified for such use under the statute, an additional tax or penalty may be imposed.

19. City liens, if any, for the city of Tualatin.

    Note: An inquiry has NOT been made concerning the actual status of such liens. A fee of $25.00 will be charged per tax account each time an inquiry request is made.

20. Reservation of utilities in vacated street area and the right to maintain the same as set forth in Ordinance No. 94-46 a copy of which was recorded May 09, 1994 as Fee No. 94045181

21. The terms and provisions contained in the document entitled "Fence Encroachment Agreement" recorded June 30, 2009 as Fee No. 2009 059448 of Official Records.

22. Restrictions shown on the recorded plat of Partition Plat No. 2009-034.

23. Easements for Reciprocal Access purposes as shown on the recorded plat of Partition Plat No. 2009-034.

24. Any claim that the Title is subject to a trust or lien created under The Perishable Agricultural Commodities Act, 1930 (7 U.S.C. §§499a, et seq.) or the Packers and Stockyards Act (7 U.S.C. §§181 et seq.) or under similar state laws.

25. These premises are within the boundaries of the Clean Water Services District and are subject to the levies and assessments thereof.

26. Unrecorded leases or periodic tenancies, if any.

27. General and special taxes and assessments for the fiscal year 2017-2018, a lien not yet due or payable.

28. A Deed of Trust to secure an original indebtedness of $150,000.00 recorded July 16, 2017 as Fee No. 2017 047843 of Official Records.

Dated:	June 14, 2017
Trustor:	Kenneth E. Itel
Trustee:	Fidelity National Title Company of Oregon
Beneficiary:	Bradford H. Fletcher and Michelle S. Fletcher, Trustees of the Fletcher Family Trust
Affects:	The land and other property.

INFORMATIONAL NOTES

NOTE: Evidence of the authority of the individual(s) to execute the forthcoming document for IPT Acquisitions LLC, copies of the current operating agreement should be submitted prior to closing.

NOTE: The Oregon Corporation Division has no active record of IPT Acquisitions LLC.

NOTE: This report does not include a search for Financing Statements filed in the office of the Secretary of State, or in a county other than the county wherein the premises are situated, and no liability is assumed if a Financing Statement is filed in the office of the County Clerk (Recorder) covering fixtures on the premises wherein the lands are described other than by metes and bounds or under the rectangular survey system or by recorded lot and book.

NOTE: This report does not include a search for Financing Statements filed in the office of the Secretary of State, or in a county other than the county wherein the premises are situated, and no liability is assumed if a Financing Statement is filed in the office of the County Clerk (Recorder) covering timber or crops on the premises wherein the lands are described other than by metes and bounds or under the rectangular survey system or by recorded lot and book.

NOTE: Washington County Ordinance No. 267, filed August 5, 1982 in Washington County, Oregon, imposes a tax of $1.00 per thousand or fraction thereof on the transfer of real property located within Washington County.

NOTE: Taxes for the year 2016-2017, paid in full.

Tax Amount:	$5,501.37
Code No.:	088.15
Map & Tax Lot No.	2S127BC-00200
Property ID/Key No.	R2168335

The exceptions to coverage 1-5 inclusive as set forth above will remain on any subsequently issued Standard Coverage Title Insurance Policy.

In order to remove these exceptions to coverage in the issuance of an Extended Coverage Policy the following items are required to be furnished to the Company; additional exceptions to coverage may be added upon review of such information:

A. Survey or alternative acceptable to the company
B. Affidavit regarding possession
C. Proof that there is no new construction or remodeling of any improvement located on the premises. In the event of new construction or remodeling the following is required:
   i. Satisfactory evidence that no construction liens will be filed; or
   ii. Adequate security to protect against actual or potential construction liens;
   iii. Payment of additional premiums as required by the Industry Rate Filing approved by the Insurance Division of the State of Oregon

SCHEDULE OF EXCLUSIONS FROM COVERAGE

1. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 2006
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
(i) the occupancy, use, or enjoyment of the Land;
(ii) the character, dimensions, or location of any improvement erected on the Land;
(iii) the subdivision of land; or
(iv) environmental protection;
or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
(b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
(a) created, suffered, assumed, or agreed to by the Insured Claimant;
(b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
(c) resulting in no loss or damage to the Insured Claimant;
(d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13, or 14); or
(e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.
5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.
6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors? rights laws, that the transaction creating the lien of the Insured Mortgage, is
(a) a fraudulent conveyance or fraudulent transfer, or
(b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.
7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

2. American Land Title Association OWNER POLICY - 2006
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
(i) the occupancy, use, or enjoyment of the Land;
(ii) the character, dimensions, or location of any improvement erected on the Land;
(iii) the subdivision of land; or
(iv) environmental protection;
or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
(b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
(a) created, suffered, assumed, or agreed to by the Insured Claimant;
(b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
(c) resulting in no loss or damage to the Insured Claimant;
(d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risks 9 and 10); or
(e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors. rights laws, that the transaction vesting the Title as shown in Schedule A, is
(a) a fraudulent conveyance or fraudulent transfer; or
(b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

RECORDING REQUESTED BY:
Fidelity National Title Company of Oregon
900 SW 5th Avenue
Portland, OR 97204

AFTER RECORDING RETURN TO:
Bradford H. Fletcher, Trustee of the
Fletcher Family Trust
01537 SW Comus Street
Portland, OR 97219

Washington County, Oregon **2017-047843**
D-M
Stn=0 Y LOPEZ **06/16/2017 12:05:43 PM**
$25.00 $11.00 $5.00 $20.00 **$61.00**

I, Richard Hobernicht, Director of Assessment and Taxation and Ex-Officio County Clerk for Washington County, Oregon, do hereby certify that the within instrument of writing was received and recorded in the book of records of said county.

Richard Hobernicht, Director of
Assessment and Taxation, Ex-Officio

SPACE ABOVE THIS LINE FOR RECORDER'S USE

TRUST DEED

THIS TRUST DEED, made on the 14th of June, 2017 between Kenneth E. Itel, as Grantor, Fidelity National Title Company of Oregon , as Trustee and Bradford H. Fletcher and Michelle S. Fletcher, Trustees of the Fletcher Family Trust as Beneficiary,

WITNESSETH:

Grantor irrevocably grants, bargains, sells and conveys to trustee in trust, with power of sale, the property in Washington County, Oregon described as:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF

together with all and singular the tenements, hereditaments and appurtenances and all other rights belonging or in any way now or after appertaining, and the rents, issues and profits and all fixtures used in connection with the property.

FOR THE PURPOSE OF SECURING PERFORMANCE of each agreement of grantor and payment of the sum of One Hundred Fifty Thousand and No/100 Dollars ($150,000.00) Dollars, with the interest according to the terms of a promissory note of even date, payable to beneficiary and made by grantor, the final payment of principal and interest, if not sooner paid, to be due and payable no later than June 30, 2018 or extended month to month up to 24 months until paid.

The date of maturity of the debt secured by this instrument is the date, stated above, on which the final installment of the note becomes due and payable, if not sooner under the terms of the promissory note. **In the event the within described property, or any interest therein is sold, agreed to be sold, conveyed, assigned or alienated by grantor without first having obtained the written consent or approval of the beneficiary, then at the beneficiary's option, all obligations secured by this instrument, irrespective of the maturity dates expressed, shall become immediately due and payable.**

To protect the security of this trust deed, grantor agrees:

1. To protect, preserve and maintain the property in good condition and repair; not to remove or demolish any building or improvement; not to commit or permit any waste of the property.

2. To complete or restore promptly and in good and habitable conditions any building or improvement which now exists or may be constructed, and which is damaged or destroyed, and pay when due all costs incurred.

3. To comply with all laws, ordinances, regulations, covenants, conditions and restrictions affecting the property; if the beneficiary so requests, to join in executing such financing statements pursuant to the Uniform Commercial Code as the beneficiary may require and to pay for filing the same in the proper public office or offices, as well as the cost of all lien searches made by filing officers or searching agencies as may be deemed desirable by the beneficiary.

4. To provide and continuously maintain insurance on the buildings now or hereafter erected on the property against loss or damage by fire and such other hazards as the beneficiary may from time to time require, in an amount not less than the full insurable value, written in companies acceptable to the beneficiary, with loss payable to the latter; all policies of insurance shall be delivered to the beneficiary as soon as insured; if the grantor shall fail for any reason to procure any such insurance and to deliver the policies to the beneficiary at least fifteen (15) days prior to the expiration of any policy of insurance now or hereafter placed on the buildings, the beneficiary may procure the same at grantor's expense. The amount collected under any fire or other insurance policy may be applied by beneficiary upon any indebtedness secured and in such order as beneficiary may determine, or at the option of beneficiary the entire amount so collected, or any part, may be released to grantor. Such application or release shall not cure or waive any default or notice of default or invalidate any act done pursuant to such notice.

5. To keep the property free from construction liens and to pay all taxes, assessments and other charges assessed upon or against the property before any part of such taxes, assessments and other charges become past due or delinquent and promptly delivered receipts to beneficiary; should the grantor fail to make payment of any taxes, assessments, insurance premiums, liens or other charges payable by grantor, either by direct payment or by providing beneficiary with funds with which to make such payment, beneficiary may, at its option, make payment, and the amount so paid, with interest at the rate set forth in the note secured, together with the obligations described in paragraphs 6 and 7 of this trust deed, shall be added to and become a part of the debt secured by this trust deed, without waiver of any rights arising from breach of any of the covenants and for such payments, with interest as aforesaid, the property described, as well as the grantor, shall be bound to the same extent that they are bound for the payment of the obligation described,

and all such payments shall be immediately due and payable without notice, and the nonpayable shall, at the option of the beneficiary, render all sums secured by this trust deed immediately due and payable and constitute a breach of this trust deed.

6. To pay all costs, fees and expenses of this trust including the cost of title search as well as other costs and expenses of the trustee incurred in connection with or in enforcing this obligation and trustee's fees and attorney's fees actually incurred.

7. To appear in and defend any action or proceeding purporting to affect the security rights or powers of beneficiary or trustee; and in any suit, action or proceeding in which the beneficiary or trustee may appear, including any suit for the foreclosure of this trust deed, to pay all costs and expenses, including evidence of title and the beneficiary's or trustee's attorney's fees; the amount of attorney's fees mentioned in this paragraph 7 in all cases shall be fixed by the trial court and in the event of any appeal from any judgment or decree of the trial court, grantor further agrees to pay such sum as the appellate court shall adjudge reasonable as the beneficiary's or trustee's attorney's fees on such appeal.

It is mutually agreed that:

8. In the event that any portion or all of the property shall be taken under the right of eminent domain or condemnation, beneficiary shall have the right, if it so elects, to require that all or any portion of the monies payable as compensation for such taking which are in excess of the amount required to pay all reasonable costs, expenses and attorney's fees necessarily paid by grantor in such proceedings, shall be paid to beneficiary and applied by it first upon any reasonable costs and expenses and attorney's fees, both in the trial and appellate courts, necessarily paid or incurred by beneficiary in such proceedings, and the balance applied upon the indebtedness secured; and grantor agrees, at its own expense, to take such actions and execute such instruments shall be necessary in obtaining such compensation, promptly upon beneficiary's request.

9. At any time and from time to time upon written request of beneficiary, payment of its fees and presentation of this deed and the note for endorsement (in case of full reconveyances, for cancellation), without affecting the liability of any person for the payment of the indebtedness, trustee may (a) consent to the making of any map or plat of the property; (b) join in granting any easement or creating any restriction; (c) join in any subordination or other agreement affecting this deed or the lien or charge; (d) reconvey, without warranty, all or any part of the property. The grantee in any reconveyance may be described as the "person or persons legally entitled thereto," and the recitals of any matters or facts shall be conclusive proof of their truthfulness.

10. Upon any default by grantor, beneficiary may at any time by receiver to be appointed by a court, and without regard to the adequacy of any security for the indebtedness secured, enter upon and take possession of the property or any part, in its own name sue or otherwise collect rents, issues and profits, including those past due and unpaid, and apply the same, less costs and expenses of operation and collection, including reasonable attorney's fees upon any indebtedness secured, and in such order as beneficiary may determine.

11. The entering upon and taking possession of the property, the collection of such rents, issues and profits, or the proceeds of fire and other insurance policies or compensation or awards for any taking or damage of the property, and the application or release, shall not cure or waive any default or invalidate any act done pursuant to such notice.

12. Upon default by grantor in payment of any indebtedness secured or in grantor's performance of any agreement, time being of the essence with respect to such payment and/or performance, the beneficiary may declare all sums secured immediately due and payable. In such an event the beneficiary may elect to proceed to foreclose this trust deed in equity as a mortgage or direct the trustee to foreclose this trust deed by advertisement and sale, or may direct the trustee to pursue any other right or remedy, either at law or in equity, which the beneficiary may have. In the event the beneficiary elects to foreclose by advertisement and sale, the beneficiary or the trustee shall execute and cause to be recorded a written notice of default and election to sell the property to satisfy the obligation secured and the trustee shall fix the time and place of sale, give notice as then required by law and proceed to foreclose this trust deed in the manner provided by law.

13. After the trustee has commenced foreclosure by advertisement and sale, and at any time prior to the time provided by law before the date the trustee conducts the sale, the grantor or any other person so privileged, may cure the default or defaults. If the default consists of a failure to pay, when due, sums secured by the trust deed, the default may be cured by paying the entire amount due at the time of the cure other than such portion as would not then be due had no default occurred. Any other default that is capable of being cured may be cured by tendering the performance required under the obligation or trust deed. In any case, in addition to curing the default or defaults, the person effecting the cure shall pay to the beneficiary all costs and expenses actually incurred in enforcing the obligation of the trust deed together with trustee's and attorney's fees not exceeding the amounts provided by law.

14. Otherwise, the sale shall be held on the date and at the time and place designated in the notice of sale or the time to which the sale may be postponed as provided by law. The trustee may sell the property either in one parcel or in separate parcels, and shall sell the parcel or parcels at auction to the highest bidder for cash, payable at the time of sale. Trustee shall deliver to the purchaser its deed in form as required by law conveying the property so sold, but without any covenant or warranty, express or implied. The recitals in the deed of any matters of fact shall be conclusive proof of their truthfulness. Any person, excluding the trustee, but including the grantor and beneficiary may purchase at the sale.

15. When trustee sells pursuant to the powers provided, trustee shall apply the proceeds of sale to payment of (1) the expenses of sale, including the compensation of the trustee and a reasonable charge by trustee's attorney, (2) to the obligation secured by the trust deed, (3) to all persons having recorded liens subsequent to the interest of the trustee in the trust deed as their interests may appear in the order of their priority and (4)

the surplus, if any, to the grantor or to any successor in interest entitled to such surplus.

16. Beneficiary may from time to time appoint a successor or successors to any trustee named or to any successor trustee appointed. Upon such appointment, and without conveyance to the successor trustee, the latter shall be vested with all title, powers and duties conferred upon any trustee named or appointed. Each such appointment and substitution shall be made by written instrument executed by beneficiary, which, when recorded in the records of the county or counties in which the property is situated, shall be conclusive proof of proper appointment of the successor trustee.

17. Trustee accepts this trust when this deed, duly executed and acknowledged, is made a public record as provided by law. Trustee is not obligated to notify any party of pending sale under any other deed of trust or of any action proceeding in which grantor, beneficiary or trustee shall be a party unless such action or proceeding is brought by trustee.

    The grantor covenants and agrees to and with the beneficiary and the beneficiary's successor in interest that the grantor is lawfully seized in fee simple of the real property and has a valid, unencumbered title, excepting and subject to:

    and that the grantor will warrant and forever defend the same against all persons.

    The grantor warrants that the proceeds of the loan represented by the above described note and this trust deed are:

This deed applies to, insures to the benefit of and binds all parties, their heirs, legatees, devisees, administrators, executors, personal representatives, successors and assigns. The term beneficiary shall mean the holder and owner, including pledges, of the contract secured, whether or not named as a beneficiary.

In construing this trust deed, it is understood that the Grantor or Beneficiary may be more than one person; that if the context so requires, the singular shall be taken to mean and include that plural, and that generally all grammatical changes shall be made, assumed and implied to make the provisions apply equally to corporations and to individuals.

Note: The Trust Deed Act provides that the trustee must be either an attorney, who is an active member of the Oregon State Bar, a bank, a trust company or savings and loan association authorized to do business under the laws of Oregon or the United States, a title insurance company authorized to insure title to real property of this state, its subsidiaries, affiliates, agents or branches, the United States or any agency thereof, or an escrow agent licensed under state law.

***IMPORTANT NOTICE: Delete, by lining out, whichever warranty (a) or (b) is not applicable; if warranty (a) is applicable and the beneficiary is a creditor as such word is defined in the Truth-in-Lending Act Regulation Z, the beneficiary MUST comply with the Act and Regulation by making required disclosure. If compliance with the Act is not required, disregard this notice.**

WARNING

Unless you provide us with evidence of the insurance coverage as required by our contract or loan agreement, we may purchase insurance at your expense to protect our interest. This insurance may, but need not, also protect your interest. If the collateral becomes damaged, the coverage we purchase may not pay any claim you make or any claim made against you. You may later cancel this coverage by providing evidence that you have obtained property coverage elsewhere.

You are responsible for the cost of any insurance purchased by us. The cost of this insurance may be added to your contract or loan balance. If the cost is added to your contract or loan balance, the interest rate on the underlying contract or loan will apply to this added amount. The effective date of coverage may be the date your prior coverage lapsed or the date you failed to provide proof of coverage.

The coverage we purchase may be considerably more expensive than insurance you can obtain on your own and may not satisfy any need for property damage coverage or any mandatory liability insurance requirements imposed by applicable law.

IN WITNESS WHEREOF, the undersigned have executed this document on the date(s) set forth below.

Dated: 6/14/2017

Kenneth E. Itel

Kenneth E. Itel

STATE OF OREGON
COUNTY OF Clackamas

This document was acknowledged before me on this 14th day of June, 2017, by Kenneth E. Itel.

Mary Beth Anderson

Notary Public for Oregon
Commission Expiration:

OFFICIAL STAMP
MARY BETH ANDERSON
NOTARY PUBLIC-OREGON
COMMISSION NO. 945474
MY COMMISSION EXPIRES DECEMBER 17, 2019

REQUEST FOR FULL RECONVEYANCE

Fidelity National Title Company of Oregon, TRUSTEE:

The undersigned is the legal owner and holder of all indebtedness secured by the within Deed of Trust. All sums secured by the Deed of Trust have been fully paid and satisfied; and you are requested and directed, on payment to you of any sums owing you under the terms of the Deed of Trust, to cancel all evidences of indebtedness, secured by the Deed of Trust, delivered to you, together with the Deed of Trust, and to reconvey, without warranty, to the parties designated by the terms of the Deed of Trust, all the estate now held by you under the same.

IN WITNESS WHEREOF, the undersigned have executed this document on the date(s) set forth below.

_____
Print Company Name

_____ _____
Signature Date

By: _____
Print Name

Its: _____
Print Title

_____
Print Company Name

_____ _____
Signature Date

By: _____
Print Name

Its: _____
Print Title

Please mail Reconveyance to: _____

Do not lose or destroy this Deed of Trust OR THE NOTE which it secures. Both original documents must be delivered to the Trustee for cancellation before reconveyance will be made.

EXHIBIT A

A parcel of real property situated in the northwest quarter of Section 27, Township 2 South, Range 1 West, Willamette Meridian, Washington County, Oregon, and being described as follows:

Parcel 2, PARTITION PLAT NO. 2009-034, in Washington County, State of Oregon

---

(TL 2S127C000500)
Situated in the west one half, Section 27, Township 2 South, Range 1 West, Willamette Meridian, Washington County, Oregon, and being described as follows:

Beginning at a point 975.46 feet East of the West quarter section corner between Sections 27 and 28, Township 2 South, Range 1 West, Willamette Meridian, thence North 89° 47' East along the East-West center line of said Section 27, 326.99 feet to a point; thence North 0° 03' West 689.7 feet to a point; thence South 85° 20' West to a point directly North of the beginning point hereof; thence South 662.62 feet to the place of beginning.

ALSO: Beginning at a point 462.3 feet East of the quarter section corner between Sections 27 and 28, Township 2 South, Range 1 West, Willamette Meridian, and running thence South 1315.38 feet; thence North 89° 47' East 513.16 feet; thence North 1978.0 feet to the center of the county road; thence South 85° 20' West 179.0 feet; thence South 82° 04' West, 341.6 feet; thence South 601.11 feet to the place of beginning.

(TL 2S127C000701)
Commencing at the quarter section corner between sections 27 and 28, Township 2 South, Range 1 West, Willamette Meridian, Washington County, Oregon; running thence south 1315.38 feet; thence north 89 degrees 47' east 462.3 feet; thence north 1590.39 feet to an iron which bears south 89 degrees 59' east 462.2 feet and north 275.0 feet from the west quarter corner of said section 27; thence west 150.75 feet to an iron; thence north parallel with the east line of the tract conveyed to R. A. Stevens and Celia A. Stevens, husband and wife, by deed recorded in deed book 288 page 561, on September 3, 1948, 276.6 feet to an iron; thence continuing north 28.5 feet, more or less, to the north line of said Stevens tract; thence south 82 degrees 04' west 313.3 feet to the northwest corner of said Stevens tract; thence south 537.25 feet to the place of beginning.

REPUBLIC SERVICES

July 13, 2017

Bill Lambert
Associate
VLMK Engineering +Design
3933 SW Kelly Avenue
Portland, OR 97239

Re: IPT Development in Tualatin

Dear Bill;

Thank you, for sending me your site plans for this building development in Tualatin.

My Company: Republic Services of Clackamas & Washington Counties has the franchise agreement to service this area with the City of Tualatin. We provide complete commercial waste removal and recycling services as needed on a weekly basis for this location.

It looks like the locations of the enclosures, and size of the enclosures will be fine for us to service them. It also appears that the enclosure gates can open top 180 degrees and be able to lock in the open position. Thank you for that, as we need at least 120 degrees.

Thank you Bill; for your help and concerns for our services prior to this project being developed.

Sincerely,

Frank J. Lonergan
Operations Manager
Republic Services Inc.

NEIGHBORHOOD/DEVELOPER MEETING
AFFIDAVIT OF MAILING

STATE OF OREGON)
) SS
COUNTY OF WASHINGTON)

I, Leah Lukrofka, being first duly sworn, depose and say:

That on the 27th day of June, 2017, I served upon the persons shown on Exhibit "A," attached hereto and by this reference incorporated herein, a copy of the Notice of Neighborhood/Developer meeting marked Exhibit "B," attached hereto and by this reference incorporated herein, by mailing to them a true and correct copy of the original hereof. I further certify that the addresses shown on said Exhibit "A" are their regular addresses as determined from the books and records of the Washington County and/or Clackamas County Departments of Assessment and Taxation Tax Rolls, and that said envelopes were placed in the United States Mail with postage fully prepared thereon.

Signature

SUBSCRIBED AND SWORN to before me this 27th day of June, 2017.

OFFICIAL STAMP
KIMBERLY ELLEN ALLMARAS
NOTARY PUBLIC-OREGON
COMMISSION NO. 963212
MY COMMISSION EXPIRES JUNE 04, 2021

Notary Public for Oregon
My commission expires:

RE: IPT Tualatin - 12155 SW Tualatin Sherwood Rd.

NEIGHBORHOOD / DEVELOPER MEETING
CERTIFICATION OF SIGN POSTING

In addition to the requirements of TDC 31.064(2) quoted earlier in the packet, the 18" x 24" sign that the applicant provides must display the meeting date, time, and address and a contact phone number. The block around the word "NOTICE" must remain **orange** composed of the **RGB color values Red 254, Green 127, and Blue 0**. Additionally, the potential applicant must provide a flier (or flyer) box on or near the sign and fill the box with brochures reiterating the meeting info and summarizing info about the potential project, including mention of anticipated land use application(s). Staff has a Microsoft PowerPoint 2007 template of this sign design available through the Planning Division homepage at < www.tualatinoregon.gov/planning/land-use-application-sign-templates >.

As the applicant for the

IPT Tualatin - 12155 SW Tualatin Sherwood Road project, I

hereby certify that on this day, June 28th, 2017 sign(s) was/were posted on the subject property in accordance with the requirements of the Tualatin Development Code and the Community Development Department - Planning Division.

Applicant's Name: Leah Lukrofka
(PLEASE PRINT)

Applicant's Signature: Leah Lukrofka

Date: 6-28-17

IPT - Sign Posting - 12155 SW Tualatin Sherwood Road
June 28th, 2017

July 13, 2017

NEIGHBORHOOD MEETING MINUTES

IPT Tualatin
Architectural Review – Neighborhood Meeting
Location: 18878 SW Martinazzi Avenue
Time: Wednesday, July 12th at 6:00 p.m.

The following will summarize the proceedings for the neighborhood meeting for the IPT Tualatin DC LLC project.

The meeting was administered by Jason Sahlin with VLMK Engineering + Design. Also in attendance Melinda Anderson and Charles Benson with the City of Tualatin, and Kim Schoenfelder with KG Investments. There were no other members of the community in attendance.

Exhibits presented at the meeting included a colored site plan and exterior elevations.

We presented our project details to Melinda and Charles, both liked the direction the project design is headed. Charles did mention the City has had some issues with older industrial buildings in the City changing to more intensive use and parking has become problematic, with cars parking along roadways due to limited site space. Given the issues they have had, ARB may ask for a plan showing how additional parking can be accommodated onsite should the building be leased to a more intensive use. Jason will work on a plan for our review which we can present should the issue be raised.

The meeting adjourned at 6:45 p.m.

JASON SAHLIN
Principal

Attachments:
Sign-in sheet

IPT TUALATIN - Neighborhood Meeting
18878 SW Martinazzi - July 12th, 2017

Name	Company	Address	Email	Phone
Melinda Anderson	City of Tualatin		manderson@tualatin.go	
Kim Schoenfelder	KGIP		Kschoenfelder@KGIP.com	503-572-8128
Jason Sahlin	VLMK		JasonS@VLMK.com	503-222-445
CHARLES BENSON	CITY OF TUALATIN		CBENSON@TUALATIN.GOV 503-691-3029	

June 27, 2017

IPT TUALATIN

Re: Neighborhood Meeting Notice

Dear Property Owner:

You are cordially invited to attend a meeting on Wednesday, July 12th, 2017 at 6:00 pm at the Tualatin Library Conference Room, 18878 SW Martinazzi Avenue.

This meeting shall be held to discuss a proposed project located at 12155 SW Tualatin Sherwood Road, Tualatin, Oregon 97062, Tax Lot ID 2S127BC00200. The proposed project will include a157,230 sf speculative building and associated site work.

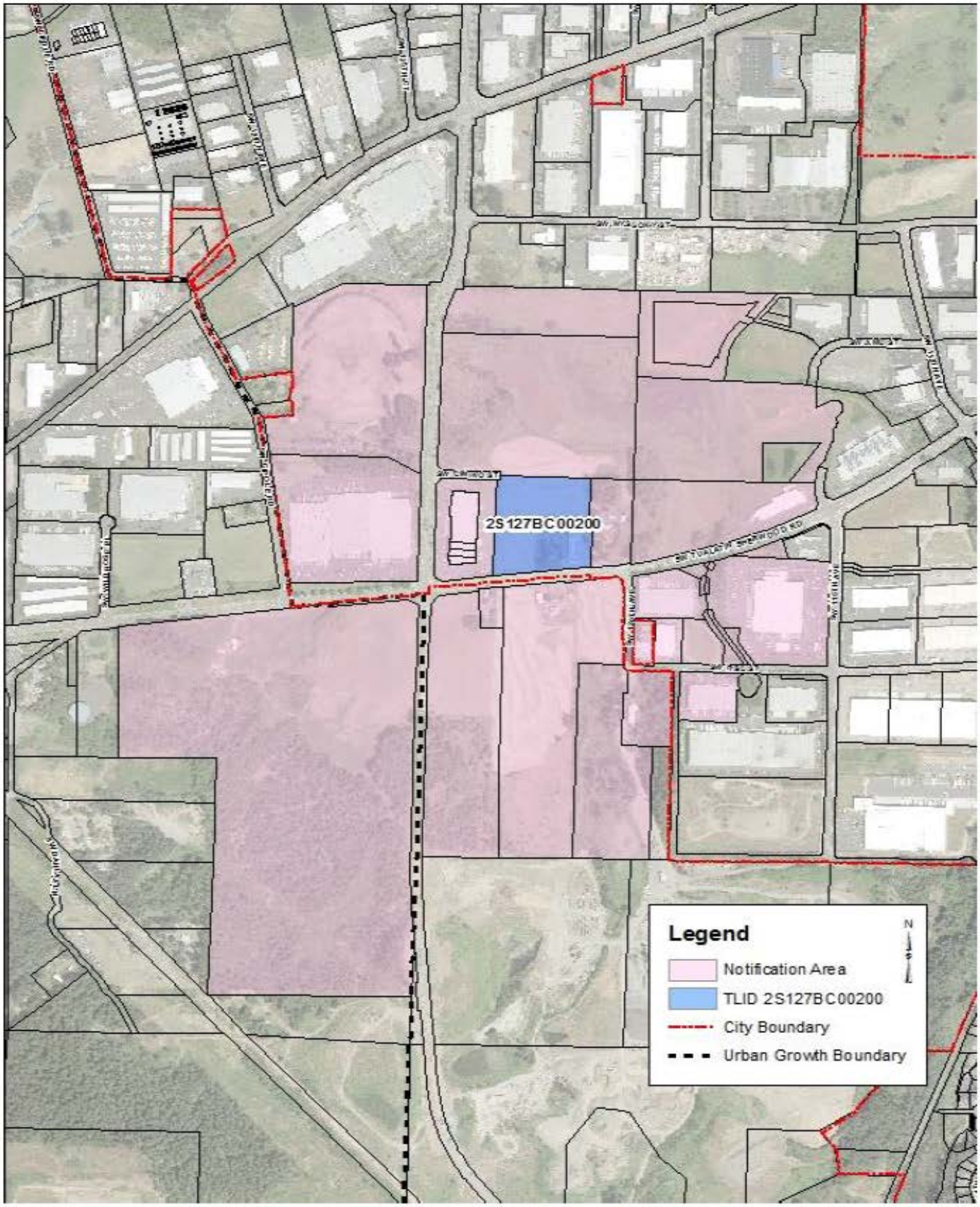
The purpose of the meeting is to provide a means for the applicant and surrounding property owners to meet and discuss this proposal.

If you have any questions regarding the proposal, please feel free to call me at 971.254.8300 or email at jenniferk@vlmk.com

Sincerely,
VLMK Engineering + Design

JENNIFER KIMURA

Attachments: Site Plan


2S127BC00200
Legend
Notification Area
TLID 2S127BC00200
City Boundary
Urban Growth Boundary
N

TLID	OWNER1	OWNER2
2S127BA00400	POWIN PACIFIC PROPERTIES LLC	
2S127BA00800	FRANKLIN BUSINESS PARK LLC	
2S127BA00900	FRANKLIN BUSINESS PARK	OWNERS ASSOCIATION
2S127BB00100	FRANKLIN BUSINESS PARK LLC	
2S127BB00200	WAGER EDWARD J	
2S127BC00100	WAGER EDWARD J	
2S127BC00200	ITEL KENNETH E	
2S127BC90000	ITEL CORPORATE CENTER	CONDOMINIUMS OWNERS OF ALL
2S127BC90111	ICC 2 LLC	STE F
2S127BC90121	ICC 2 LLC	STE F
2S127BC90131	ICC 2 LLC	STE F
2S127BC90141	SHIELDS MANUFACTURING INC	
2S127BD00200	MILGARD MANUFACTURING INC	BY RYAN TAX COMPLIANCE SRVS LLC
2S127BD00500	TUALATIN CITY OF	
2S127BD00600	TUALATIN SHERWOOD INVESTORS I	BY PANATTONI DEVELOPMENT LLC
2S127BD00700	TUALATIN SHERWOOD INVESTORS I	BY PANATTONI DEVELOPMENT LLC
2S127BD00800	TUALATIN SHERWOOD INVESTORS I	BY PANATTONI DEVELOPMENT LLC
2S127BD00900	TUALATIN SHERWOOD INVESTORS I	BY PANATTONI DEVELOPMENT LLC
2S127BD01000	G & S FAMILY LIMITED PARTNERSHII	
2S127BD01100	G & S FAMILY LIMITED PARTNERSHII	
2S127BD01200	NICOL GORHAM DOUGLAS REV TRU	NICOL ROBIN HIATT REV TRUST
2S127BD01300	ITEL MICHAEL	
2S127BD01400	G & S FAMILY LIMITED PARTNERSHII	
2S127BD01600	2003-042 PARTITION PLAT	OWNER OF LOT 1
2S127BD01700	INDOOR ARENA INVESTORS LLC	
2S127BD01800	ELLIS DAVID L &	AL-HADI FAROUK H
2S127BD01900	POWIN PACIFIC PROPERTIES LLC	
2S127C000400	TIGARD SAND & GRAVEL CO INC	
2S127C000401	ASHWOOD CONSTRUCTION INC	
2S127C000500	ITEL KENNETH E	
2S127C000700	DTI PROPERTIES LLC	BY DAYNE BARRETT INGRAM
2S127C000701	ITEL KENNETH E	
2S127C001200	WESTERN PRECISION PROPERTIES	BY WESTERN PRECISION PRODUCTS IN
2S128A000100	FORE-SIGHT BALBOA LLC	
2S128A000300	COLUMBIA CORRUGATED BOX CO IN	
2S128D000100	ORR FAMILY FARM LLC THE	

OWNER3	OWNERADDR	OWNERCITY	OWNERSTATE
	PO BOX 483	TUALATIN	OR
	1202 NW 17TH AVE STE B	PORTLAND	OR
	1202 NW 17TH AVE STE B	PORTLAND	OR
	8331 SE CARNATION ST	MILWAUKIE	OR
	8331 SE CARNATION ST	MILWAUKIE	OR
	12155 SW TUALATIN-SHERWOOD RD	TUALATIN	OR
UNITS			
	4200 SE COLUMBIA WAY	VANCOUVER	WA
	4200 SE COLUMBIA WAY	VANCOUVER	WA
	4200 SE COLUMBIA WAY	VANCOUVER	WA
	12310 SW CIMINO ST	TUALATIN	OR
DEPT 720	PO BOX 4900	SCOTTSDALE	AZ
	18880 SW MARTINAZZI AVE	TUALATIN	OR
	1400 SW FIFTH AVE #810	PORTLAND	OR
	1400 SW FIFTH AVE #810	PORTLAND	OR
	1400 SW FIFTH AVE #810	PORTLAND	OR
	1400 SW FIFTH AVE #810	PORTLAND	OR
	20752 SW 120TH AVE	TUALATIN	OR
	20752 SW 120TH AVE	TUALATIN	OR
	3891 CALAROGA DR	WEST LINN	OR
	20900 SW 120TH AVE	TUALATIN	OR
	20752 SW 120TH AVE	TUALATIN	OR
	1400 SW FIFTH AVE #810	PORTLAND	OR
	11883 SW ITEL ST	TUALATIN	OR
	155 B AVE #222	LAKE OSWEGO	OR
	PO BOX 483	TUALATIN	OR
	PO BOX 4810	TUALATIN	OR
	29772 SW HEATER RD	SHERWOOD	OR
	12155 SW TUALATIN-SHERWOOD RD	TUALATIN	OR
	15836 SW MADRONA LN	SHERWOOD	OR
	12155 SW TUALATIN-SHERWOOD RD	TUALATIN	OR
	21101 SW 115TH AVE	TUALATIN	OR
	20400 SW CIPOLE RD	TUALATIN	OR
	12777 SW TUALATIN-SHERWOOD RD	TUALATIN	OR
	16150 NW DONIN CT	BEAVERTON	OR

AR17-0006

To lessen the bulk of the notice of application and to address privacy concerns, this sheet substitutes for the photocopy of the mailing labels. A copy is available upon request.

ARCHITECTURAL REVIEW
CERTIFICATION OF SIGN POSTING

18"

24"

The applicant shall provide and post a sign pursuant to Tualatin Development Code (TDC) 31.064(2). Additionally, the 18" x 24" sign must contain the application number, and the block around the word "NOTICE" must remain **primary yellow** composed of the **RGB color values Red 255, Green 255, and Blue 0.** Additionally, the potential applicant must provide a flier (or flyer) box on or near the sign and fill the box with brochures reiterating the meeting info and summarizing info about the potential project, including mention of anticipated land use application(s). Staff has a Microsoft PowerPoint 2007 template of this sign design available through the Planning Division homepage at < www.tualatinoregon.gov/planning/land-use-application-sign-templates>.

NOTE: For larger projects, the Community Development Department may require the posting of additional signs in conspicuous locations.

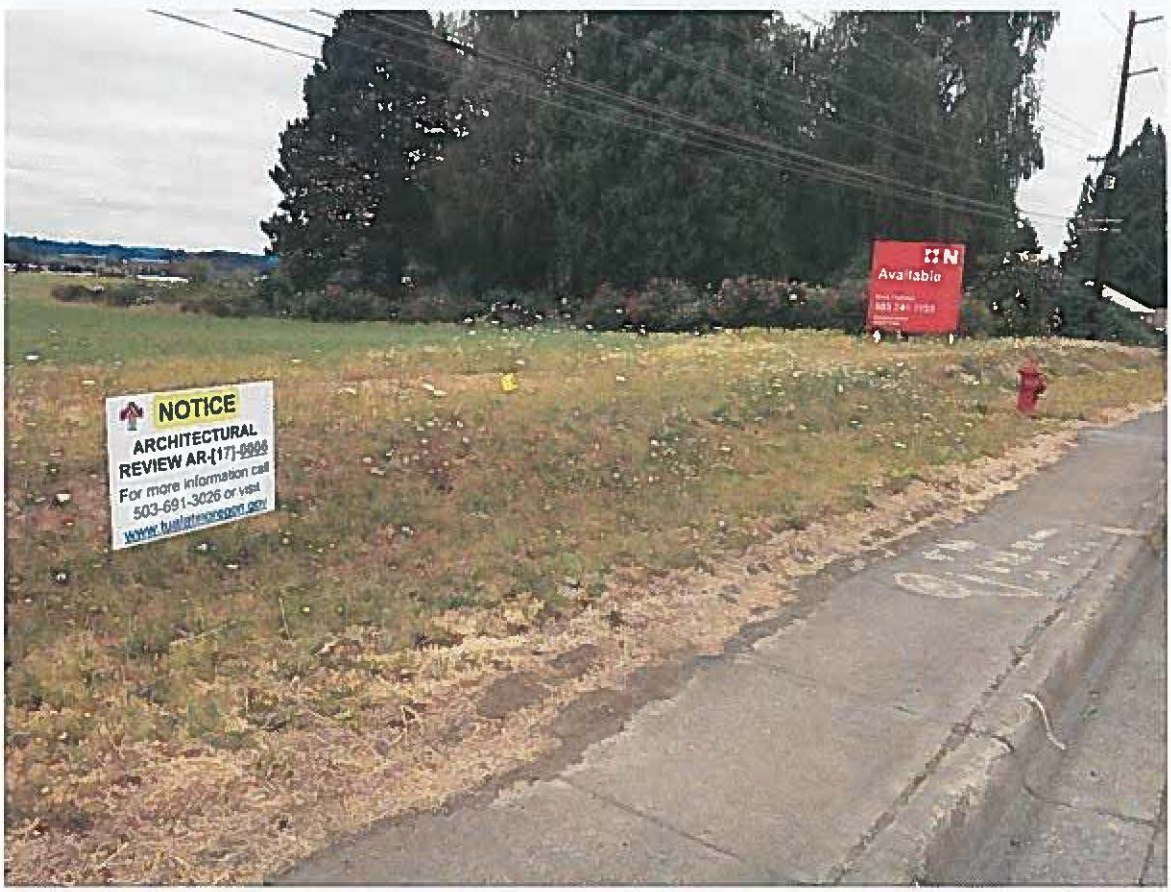
As the applicant for the IPT TUALATIN project, I hereby certify that on this day, July 27th, 2017 sign(s) was/were posted on the subject property in accordance with the requirements of the Tualatin Development Code and the Community Development Department - Planning Division.

Applicant's Name: LEAH LUKROFKA
(PLEASE PRINT)

Applicant's Signature: Leah Lukrofka

Date: 07-27-17

IPT TUALATIN - ARCHITECTURAL REVIEW - SIGN POSTING
12155 SW TUALATIN SHERWOOD ROAD



IPT TUALATIN

NEW SHELL BUILDING

Tualatin / Sherwood Road
Tualatin, Oregon 97062

ARCHITECTURAL REVIEW NARRATIVE

Prepared By: Bill Lambert
July, 2017

VLMK
ENGINEERING + DESIGN

PROJECT NARRATIVE

Architectural Review
City of Tualatin, Oregon

Project: IPT Tualatin DC LLC

Site:	Address: 12155 SW Tualatin Sherwood Road – Located on SW Cimino Street, Tualatin, Oregon
	Property ID: Parcel 2 (PP 2009-34) Tax Parcel Number R2168335
Cross Streets:	SW 124th Avenue at SW Cimino Street
Applicant:	VLMK Engineering + Design, Contact: Jennifer Kimura- 503.222.4453
Owner:	Industrial Property Trust (IPT), Contact: Peter Vanderburg - 949.892-4900
Proposal:	Construction of a new speculative warehouse shell building.
Zoning:	MG (General Manufacturing)

OVERVIEW

The IPT Tualatin DC LLC Project is an approximate 9-acre industrial development. The previous project to the west was called Itel Corporate Center and was completed in 2013 by IDM, LLC. This proposal is on the remaining land owned by the Itel family and will be developed by Industrial Property Trust (IPT). It is currently planned for construction of one building that is approximately 157,230 square feet. The project is intended to provide multi-tenant industrial lease space for a variety of warehousing and/or light industrial manufacturing activities.

This development will be well served by the proposed extension of SW Cimino Street. The site includes one existing driveway that has an existing shared access easement with the Itel Corporate Center project to the west. We are also proposing one new driveway off Cimino Street. As part of this project we will be removing the large (180.0' wide) driveway on Tualatin / Sherwood Road and closing that access. Sanitary sewer service and water service will be provided by the City of Tualatin.

This project will make available to the community state-of-the-art facilities for a large range of industrial activities. These facilities are designed to accommodate midsize businesses as well as tenants seeking large warehouse space. The project is planned to be upscale as is evidenced by the proposed building elevations, landscaping and parking accommodations. The developers have a history of long-term ownership and well-managed projects.

The current projected schedule is to begin rough grading for the entire 9-acres as soon as the approvals/permits are obtained and weather allows.

Site Condition: The site is currently occupied by the Itel family farm and has been used for farming and truck repair for several years. The site is bounded by SW Tualatin / Sherwood Road on the south, SW Cimino Street on the north, Itel Corporate Center on the west and farm buildings and land on the east.

Vehicle Access: All vehicle access will occur off of SW Cimino Street.

Parking: The proposed parking for the site is above the required minimum parking spaces in the city development code. The parking spaces are located on the north and south ends of the site to be near the future office locations and clear of the truck maneuvering areas.

Traffic and Transportation: A traffic study provided by Lancaster Engineering will show that the anticipated auto and truck trips will closely resemble a light industrial use with low access. The proposed SW Cimino Street extension and two new driveways will be sufficient to serve this industrial use site.

Jurisdictions: There are several jurisdictions having some level of authority over the proposed project including:

1. City of Tualatin (Design Review, Traffic review, Storm and Sanitary Sewer and Site/Building Permits, Public Works / Water Quality and 1200C permits).
2. Clean Water Services (CWS) (Pre-screen Site Assessment and Public Works / Water Quality permits).
3. Washington County (Public works (driveway/sidewalk) and traffic review).
4. Tualatin Valley Fire District

Construction Materials: The proposed building construction consists of tilt up concrete perimeter walls with industrial slab on grade concrete flooring. Roof structure to be steel framed and capped with a membrane roofing system.

Finishes will include new storefront entry systems with enhanced architectural features to provide articulation and announce the entries.

Site Utilities:

- Storm: The site will be fully served with an underground network of storm pipes for conveyance. Onsite water quality treatment will be provided with StormFilter vaults and catchbasins. Water quantity control will be provided by two (2) underground StormTech storage chamber facilities with engineered outlet control structures. After treatment and detention, runoff will be discharge to the public sewer within SW Cimino Street, with a small portion of runoff infiltrating to the native soil beneath the underground chamber systems. All stormwater facilities and conveyance systems for this development have been designed per the City of Tualatin and Clean Water Services Standards.
- Sanitary: The site will be fully served with private sanitary sewer tied into the new public sanitary line in SW Cimino Street extension.
- Water: The site will be fully served by new private water lines tied into the new public water line in SW Cimino Street extension and includes adequate service for on-site domestic service and fire protection systems. The proposed building will be fully sprinklered and have a fire pump for the ESFR sprinkler system.
- Gas: The site will be served by a new gas line in the SW Cimino Street extension.
- Power: The site will be served by new power lines in the SW Cimino Street extension.
- Lighting: The proposed on-site lighting systems will have energy efficient lights. Perimeter lighting will be pole mounted and shielded to prevent stray light from broadcasting to neighboring properties.
- Solid Waste & Recycling: Solid waste and recycling will be handled in the proposed garbage enclosures located on the site plan. The local garbage hauler (Republic Services) has approved the site plan and the letter is included in our AR submittal.


S88°30'48"E 576.93' (BASIS OF BEARINGS)
SW CHANDLER STREET
B
157,230 SQFT.
159 SPACES (1JVT)
LOT 2
S01°37'11"W 352.43'
S01°37'11"W 269.84'
S88°22'41
20.00'
TUALATIN SHERWOOD ROAD
SITE PLAN

CHAPTER 31 – GENERAL PROVISIONS

31.063 NEIGHBORHOOD/DEVELOPER MEETINGS

(1) This section applies to the following types of Land Use applications: Annexations; Architectural Reviews, except Level I (Clear and Objective) Single-family Architectural Review; Conditional Uses; Historic Landmark actions, including designation, removal of designation, demolition, relocation, or alteration or new construction: Industrial Master Plans; Partitions; Plan Map Amendments for a specific property; Plan Text Amendments for a specific property; Subdivisions; Tree Removal Permit; Transitional Use Permit; and Variances, except for variances to existing single family residences.

Findings: *The proposed development is applying for Architectural Review and held the Neighborhood Meeting on July 12th, 2017. Additional information of the meeting and requirements is further explained in its own section below.*

31.071 ARCHITECTURAL REVIEW PROCEDURE

(1) An applicant for a building or other permit subject to architectural review, except Level I (Clear and Objective) Single-family Architectural Review and Sign Design Review, shall discuss preliminary plans with the Community Development Director and City Engineer in a pre-application conference prior to submitting an application. An applicant for Architectural Review of a development in the Central Design District shall conduct a Neighborhood Meeting subject to TDC 31.071(5). An applicant for Architectural Review of a development in other parts of the City shall conduct a Neighborhood/Developer Meeting subject to TDC 31.063. An applicant for Single-family Architectural Review shall follow Level I (Clear and Objective) or Level II (Discretionary) Single-family Architectural Review procedures subject to TDC 31.071(7). An applicant for Sign Design Review shall follow Level 1 (Clear and Objective) Sign Design Review procedures subject to TDC 31.071(8). Following the pre-application conference and the Neighborhood/Developer Meeting, the applicant shall submit to the Community Development Director an Architectural Review Plan application which shall contain:

Findings: *This project held a Pre-Application meeting on June 26th, 2017. As noted above, the Neighborhood Meeting was completed on July 12th, 2017. We are now submitting for the required Architectural Review. The complete list of required items (project title, tax map, service provider letter, etc.) is not listed here, but all items are included in this package for AR submittal. Due to the size of the building (over 150,000 sf.), this project will be subject to attending an Architectural Board meeting.*

CHAPTER 34 – SPECIAL REGULATIONS

34.210 APPLICATIONS FOR ARCHITECTURAL REVIEW, SUB-DIVISION OR TREE REMOVAL PERMIT

(1) Architectural Review, Subdivision, or Partition. When a property owner wishes to remove trees, other than the exemptions permitted under TDC 34.200(3), to develop property, and the development is subject to Architectural Review, Subdivision Review, or Partition Review approval, the property owner shall apply for approval to remove trees as part of the Architectural Review, Subdivision Review, or Partition Review application process.

Findings: *The proposed development includes removal of approximately (27) existing trees that are located adjacent to the existing farm structures. The trees (and structures) will be removed for the development of the new building and parking lot. The AR package includes a Tree Preservation Plan and an Arborist Report that lists the trees to be removed.*

CHAPTER 61 – GENERAL MANUFACTURING PLANNING DISTRICT (MG)

61.020 PERMITTED USES

(1) No building, structure or land shall be used, except for the following uses as restricted in TDC 61.021.

Findings: *The list of allowed uses is extensive and includes most types of uses that we see in a standard industrial warehouse and/or manufacturing facility. This project is proposed as a "shell" building and the tenant is not known at this time, but it is anticipated to fall within the parameters of those items shown on the approved list.*

61.050 LOT SIZE

Except for lots for public utility facilities, natural gas pumping stations and wireless communication facility which shall be established through the Subdivision, Partition or Lot Line Adjustment process, the following requirements shall apply:

(1) The minimum lot area shall be 20,000 square feet.

(2) The minimum lot width shall be 100 feet.

(3) The minimum average lot width at the building line shall be 100 feet.

(4) The minimum lot width at the street shall be 100 feet.

(5) For flag lots, the minimum lot width at the street shall be sufficient to comply with at least the minimum access requirements contained in TDC 73.400(8) to (12).

(6) The minimum lot width at the street shall be 50 feet on a cul-de-sac street. [Ord. 866-92, 4/27/92; Ord. 965-96, 12/9/96]

Findings: *The proposed site complies as follows: the lot is over 20,000 sf (actual 386,007 sf.), the lot width (and average at the building) is greater than 100 ft. (varies with a minimum dimension of 603-feet), the lot width at the street is greater than 100 ft. (actual is 603-feet) and the last two items do not apply to this project.*

61.060 SETBACK REQUIREMENTS

(1) Front yard. The minimum setback is 30 feet. When the front yard is across the street from a residential or Manufacturing Park (MP) district, a front yard setback of 50 feet is required. When a fish and wildlife habitat area is placed in a Tract and dedicated to the City at the City's option, dedicated in a manner approved by the City to a non-profit conservation organization or is retained in private ownership by the developer, the minimum setback is 10 – 30 feet, as determined in the Architectural Review process, with the exception of front yards across the street from a residential or MP District, provided the buildings are located farther away from fish and wildlife habitat areas.

(2) Side yard. The minimum setback is 0 to 50 feet, as determined through the Architectural Review process. When the side yard is adjacent to a property line or across the street from a residential or Manufacturing Park (MP) District, a side yard setback of 50 feet is required.

(3) Rear yard. The minimum setback is 0 to 50 feet, as determined through the Architectural Review process. When the rear yard is adjacent to a property line or across the street from a residential or Manufacturing Park (MP) District, a rear yard setback of 50 feet is required.

Findings: *The proposed building is located more than 60-feet from all property lines.*

(4) The minimum parking and circulation area setback is 5 feet, except when a yard is adjacent to public streets or Residential or Manufacturing Park District, the minimum setback is 10 feet. No setback is required from lot lines within ingress and egress areas shared by abutting properties in accordance with TDC 73.400(2).

Findings: *The proposed parking is a minimum of 5-feet from all property lines and the site is surrounded by MG or MBP zones. The other items (corner lots, railroad spurs, wireless communication, etc.) in this code section do not apply to this project.*

61.075 SOUND BARRIER CONSTRUCTION

(1) Sound barrier construction shall be used to intercept all straight-line lateral paths of 450 feet or less between a residential property within a residential planning district and any side edge of an overhead door or other doorway larger than 64 square feet, at a minimum height of eight feet above the floor elevation of the doorway.

Findings: *This project is not located near a residential zone. It is surrounded by MG or MBP zones.*

61.080 STRUCTURE HEIGHT

(1) Except as provided in TDC 61.080(2) - (4), no structure shall exceed a height of 60 feet and flagpoles which display the flag of the United States of America either alone or with the State of Oregon flag shall not exceed 100 feet above grade provided that the setbacks are not less than a distance equal to the flagpole height.

Findings: *This proposed building is 42-feet high.*

CHAPTER 73 – COMMUNITY DESIGN STANDARDS

73.160 STANDARDS

The following standards are minimum requirements for commercial, industrial, public and semi-public development, and it is expected that development proposals shall meet or exceed these minimum requirements.

(1) Pedestrian and Bicycle Circulation.

(b) For Industrial Uses:

I. A walkway shall be provided from the main building entrance to sidewalks in the public right-of-way and other on-site buildings and accessways. The walkway shall be a minimum of 5 feet wide and constructed of concrete, asphalt, or a pervious surface such as pavers or grasscrete, but not gravel or woody material, and be ADA compliant, if applicable.

II. Walkways through parking areas, drive aisles and loading areas shall have a different appearance than the adjacent paved vehicular areas.

III. Accessways shall be provided as a connection between the development's walkway and bikeway circulation system and an adjacent bike lane;

IV. Accessways may be gated for security purposes;

V. Outdoor Recreation Access Routes shall be provided between the development's walkway and bikeway circulation system and parks, bikeways and greenways where a bike or pedestrian path is designated.

(c) Curb ramps shall be provided wherever a walkway or accessway crosses a curb.

(d) Accessways shall be a minimum of 8 feet wide and constructed in accordance with the Public Works Construction Code if they are public accessways, and if they are private access-ways they shall be constructed of asphalt, concrete or a pervious surface such as pervious asphalt or concrete, pavers or grasscrete, but not gravel or woody mate-rial, and be ADA compliant, if applicable.

(e) Accessways to undeveloped parcels or undeveloped transit facilities need not be constructed at the time the subject property is developed. In such cases the applicant for development of a parcel adjacent to an undeveloped parcel shall enter into a written agreement with the City guaranteeing future performance by the applicant and any successors in interest of the property being developed to construct an accessway when the adjacent undeveloped parcel is developed. The agreement shall be subject to the City's re-view and approval.

(f) Where a bridge or culvert would be necessary to span a designated greenway or wetland to provide a connection to a bike or pedestrian path, the City may limit the number and location of accessways to reduce the impact on the greenway or wetland.

(g) Accessways shall be constructed, owned and maintained by the property owner.

Findings: *We have included an 8-foot wide bicycle and pedestrian accessway from the entry to both streets (Cimino Street on the north and Tualatin/Sherwood Road on the south).*

(5) The Federal Americans with Disabilities Act (ADA) applies to development in the City of Tualatin. Although TDC, Chapter 73 does not include the Oregon Structural Specialty Code' s (OSSC) accessibility standards as requirements to be reviewed during the Architectural Review process, compliance with the OSSC is a requirement at the Building Permit step. It is strongly recommended all materials submitted for Architectural Review show compliance with the OSSC.

Findings: *This project is subject to the 2014 OSSC and the ADA code requirements and has been designed to comply with both.*

(6) (a) All industrial, institutional, retail and office development on a transit street designated in TDC Chapter 11 (Figure 11-5) shall provide either a transit stop pad on-site, or an on-site or public sidewalk connection to a transit stop along the subject property's frontage on the transit street.

Findings: *Tualatin Sherwood Road has a transit stop approximately ¼ mile east of the site. We have included a sidewalk connection from the building entry to the sidewalk along T/S Road that leads to this transit stop.*

73.200 STRUCTURE DESIGN – COMMERCIAL, INDUSTRIAL, PUBLIC AND SEMI-PUBLIC USES

The purpose of commercial, industrial, public and semi-public building design objectives and standards is to implement the purpose and objectives of TDC 73.020(2) and are intended to promote functional, safe, innovative and attractive buildings which are compatible with the surrounding environment. This concerns the building form including the articulation of walls and roof design, materials, colors, placement of elements such as windows, doors, mechanical equipment and identification features. [Ord. 705-86, §6, 9/8/86]

Findings: *We have designed the building to blend in with the industrial area that it is located with several architectural features that will provide intrigue and interest from visitors and neighbors. Some of those features include paint bands, change of colors for accent, steps in the roof parapet and steps in the building.*

73.210 OBJECTIVES

All commercial, industrial, public and semi-public projects should strive to meet the following objectives to the maximum extent practicable. Architects and developers should consider these elements in designing new projects. In the Central Design District, the Design Guidelines of TDC 73.610 shall be considered. In case of conflicts between objectives, the proposal shall provide a desirable balance between the objectives. Buildings shall be designed, to the maximum extent practicable, to:

(1) Minimize disruption of natural site features such as topography, trees and water features.

Findings: *The site has been graded to minimize steep slopes and allow good truck and auto access and maneuvering. The existing trees will be removed and new trees will be planted to enhance the new landscaping. The only water features will be the new water quality ponds located along SW Cimino Street.*

(2) Provide a composition of building elements which is cohesive and responds to use needs, site context, land form, a sense of place and identity, safety, accessibility and climatic factors. Utilize functional building elements such as arcades, awnings, entries, windows, doors, lighting, reveals, accent features and roof forms, whenever possible, to accomplish these objectives.

Findings: *The building has been designed with several architectural features that include reveals, accent paint colors, canopies at the entries and loading docks, steps in the building and plenty of storefront windows.*

(3) Where possible, locate loading and service areas so that impacts upon surrounding areas are minimized. In industrial development loading docks should be oriented inward to face other buildings or other loading docks. In commercial areas loading docks should face outward towards the public right-of-way or perimeter of the site or both.

Findings: *The loading docks on the west side of the building have been located to face the loading docks of the neighbor's building to the west. The loading docks on the east side of the building will face the east property line and farm land to the east.*

(4) Enhance energy efficiency in commercial and industrial development through the use of landscape and architectural elements such as arcades, sunscreens, lattice, trellises, roof overhangs and window orientation.

Findings: *The building is located on the site to have most of the windows on the north and west sides with limited windows on the south side to keep the heat gain at a minimum. Each office entry is provided with a canopy to help protect from weather and provide limited sun heat gain at the glass entry.*

(5) Locate and design entries and loading/service areas in consideration of climatic conditions such as prevailing winds, sun and driving rains.

Findings: *As noted in the previous two items, the loading docks face the east/west and most of the windows are on the north and west sides of the building. The entries are provided with a canopy over the entry door to provide protection from the weather.*

(6) Give consideration to organization, design and placement of windows as viewed on each elevation having windows. Surveillance over parking areas from the inside, as well as visual surveillance from the outside in, should be considered in window placement.

Findings: *The windows are oriented to face the parking lot and the loading dock to provide added security and allow views from outside for surveillance.*

(7) Select building materials which contribute to the project's identity, form and function, as well as to the surrounding environment.

Findings: *The building will have concrete tilt-up exterior walls with several paint colors, accents and storefront windows to complement the neighboring industrial buildings.*

(8) Select colors in consideration of lighting conditions and the context under which the structure is viewed, the ability of the material to absorb, reflect or transmit light and the color's functional role (e.g., to identify and attract business, aesthetic reasons, image-building).

Findings: *The exterior paint colors will be a variety of light gray, dark gray and blue accent. This combination of colors will provide less reflection (as opposed to white) and provide attractiveness for future tenants.*

(9) Where possible, locate windows and provide lighting in a manner which enables tenants, employees and police to watch over pedestrian, parking and loading areas.

Findings: *The windows are oriented to face the parking lot and the loading dock to provide added security and allow views from outside for surveillance.*

(10) Where practicable locate windows and provide lighting in a manner which enables surveillance of interior activity from the public right-of-way or other public areas. [Ord. 904-93, §51, 9/13/93; Ord. 1097-02, 2/11/02]

Findings: *The windows are oriented to face the parking lot and the loading dock to provide added security and allow views from outside for surveillance.*

73.220 STANDARDS

The following standards are minimum requirements for commercial, industrial, public and semi-public development and it is expected that development proposals shall meet or exceed these minimum requirements.

(1) Safety and Security.

(a) Locate, orient and select on-site lighting to facilitate surveillance of on-site activities from the public right-of-way or other public areas without shining into public rights-of-way or fish and wildlife habitat areas.

Findings: *The site plan indicates several site lights (along with building lights) that will provide good lighting of the parking lot and is open to good view from both streets. These lights will be shielded to prevent light from spilling over to the public way or neighbors.*

(b) Provide an identification system which clearly identifies and locates buildings and their entries.

Findings: *The project will be visible from both streets and will have the address located in several places on the building to provide good clear identification of the building.*

(c) Shrubs in parking areas shall not exceed 30 inches in height, and tree canopies must not extend below 8 feet measured from grade, except for parking structures and underground parking where this provision shall not apply. [Ord. 904-93, §52, 9/13/93; Ord. 20-94, §18, 4/11/94; Ord. 1224-06 §24, 11/13/06]

Findings: *The landscape plan has been designed to meet the intent of this requirement for shrubs and tree canopies, but the owner will hire a landscape maintenance company that will have a responsibility to maintain these clearances.*

73.240 LANDSCAPING GENERAL PROVISIONS

(1) The following standards are minimum requirements.

(3) *The minimum area requirement for landscaping for uses in CO, CR, CC, CG, ML and MG Planning Districts shall be fifteen (15) percent of the total land area to be developed, except within the Core Area Parking District, where the minimum area requirement for landscaping shall be 10 percent. When a dedication is granted in accordance with the planning district provisions on the subject property for a fish and wildlife habitat area, the minimum area requirement for landscaping may be reduced by 2.5 percent from the minimum area requirement as determined through the AR process.*

Findings: *The site is designed with 16% landscaping.*

(9) Yards adjacent to public streets, except as described in the Hedges Creek Wetlands Mitigation Agreement, TDC 73.240(7), shall be planted to lawn or live groundcover and trees and shrubs and be perpetually maintained in a manner providing a park-like character to the property as approved through the Architectural Review process.

Findings: *The site landscape plan indicates the areas along both streets is fully landscaped with a variety of lawn, ground cover, shrubs and trees. These areas will be irrigated and maintained.*

(11) Any required landscaped area shall be designed, constructed, installed, and maintained so that within three years the ground shall be covered by living grass or other plant materials. (The foliage crown of trees shall not be used to meet this requirement.) A maximum of 10% of the landscaped area may be covered with un-vegetated areas of bark chips, rock or stone. Disturbed soils are encouraged to be amended to an original or higher level of porosity to regain infiltration and storm water storage capacity.

Findings: *The site landscape plan indicates that all areas on the site that are not covered with asphalt paving are to be landscaped and irrigated. The landscaping will be maintained to provide good standing and maturity of plants at the three year timeline.*

73.250 TREE PRESERVATION

(1) Trees and other plant materials to be retained shall be identified on the landscape plan and grading plan.

Findings: *All of the existing trees on the site will be removed to allow construction of the building and parking lot. New trees will be planted in the landscaped areas as shown on the landscape plans. A Tree Preservation Plan and an Arborist Report have been included with the AR submittal package.*

73.260 TREE AND PLANT SPECIFICATIONS

(1) The following specifications are minimum standards for trees and plants:

Findings: *The landscape plans have been designed to comply with all of the items (Deciduous Trees, Coniferous Trees, Evergreen and Deciduous Shrubs, Groundcovers and Lawns) in this section.*

73.280 IRRIGATION SYSTEM REQUIRED

Except for townhouse lots, landscaped areas shall be irrigated with an automatic underground or drip irrigation system. [Ord. 1025-99, §42, 7/26/99]

Findings: *It is noted on the landscape plans that all of the landscaping is to be irrigated with an automatic underground irrigation system. This will be provided by Bidder Design.*

73.310 LANDSCAPE STANDARDS – COMMERCIAL, INDUSTRIAL, PUBLIC AND SEMI-PUBLIC USES

(1) A minimum 5-foot-wide landscaped area must be located along all building perimeters which are viewable by the general public from parking lots or the public right-of-way, excluding loading areas, bicycle parking areas and pedestrian egress/ingress locations. Pedestrian amenities such as landscaped plazas and arcades may be substituted for this requirement. This requirement shall not apply where the distance along a wall between two vehicle or pedestrian access openings (such as entry doors, garage doors, carports and pedestrian corridors) is less than 8 feet.

Findings: *The landscape plans indicate that there is a minimum of 5-feet of landscaping around the entire perimeter of the building with the exceptions of the loading dock areas and the sidewalk and pedestrian access.*

(2) Areas exclusively for pedestrian use that are developed with pavers, bricks, etc., and contain pedestrian amenities, such as benches, tables with umbrellas, children's play areas, shade trees, canopies, etc., may be included as part of the site landscape area requirement.

Findings: *Due to the industrial nature of the future building uses, these types of amenities are not included with the landscape design of this project.*

(3) All areas not occupied by buildings, parking spaces, driveways, drive aisles, pedestrian areas or undisturbed natural areas shall be landscaped. [Ord. 882-92, §16, 12/14/92; Ord. 904-93, §58, 9/13/93]

Findings: *The landscape plans have been designed to cover all areas not occupied by asphalt paving or the building.*

73.320 OFF-STREET PARKING LOT LANDSCAPING STANDARDS

General Provisions. In addition to the goals stated in TDC 73.110 and 73.140, the goals of the off-street parking lot standards are to create shaded areas in parking lots, to reduce glare and heat buildup, provide visual relief within paved parking areas, emphasize circulation patterns, reduce the total number of spaces, reduce the impervious surface area and stormwater runoff and enhance the visual environment. The design of the off-street parking area shall be the responsibility of the developer and should consider visibility of signage, traffic circulation, comfortable pedestrian access, and aesthetics. Trees shall not be cited as a reason for applying for or granting a variance on placement of signs.

(2) Application. Off-street parking lot landscaping standards shall apply to any surface vehicle parking or circulation area.
[Ord. 904-93, §59, 9/13/93; Ord. 1224-06 §28, 11/13/06]

Findings: *The site plan and landscape plans have been designed with the intent to provide shade to the asphalt parking lot, good circulation and safe maneuvering of trucks and autos on the site. The site plan indicates a good balance of parking spaces to meet the minimum requirements and landscaping to bring relief from heat buildup while providing a good visual environment.*

73.360 OFF-STREET PARKING LOT LANDSCAPE ISLANDS – COMMERCIAL, INDUSTRIAL, PUBLIC, AND SEMI-PUBLIC USES.

(1) A minimum of 25 square feet per parking stall shall be improved with landscape island areas. They may be lower than the surrounding parking surface to al-low them to receive stormwater run-off and function as water quality facilities as well as parking lot landscaping. They shall be protected from vehicles by curbs, but the curbs may have spaces to allow drainage into the islands. They shall be dispersed throughout the parking area [see TDC 73.380(3)]. They shall be planted with groundcover or shrubs that will completely cover the island area within 3 years. They shall be planted with deciduous shade trees when needed to meet the parking lot shade tree requirements. Native plant materials are encouraged. Landscape square footage requirements shall not apply to parking structures and underground parking.

Findings: *The site plan indicates a landscape island at the ends of all parking areas and at approximately every (8) parking stalls. Using the 25 sf per stall, we are required to have 3,975 sf of landscape islands (159 stalls x 25). We currently have 5,346 sf of landscape islands to comply with this requirement.*

(2) Landscaped island areas with deciduous parking lot shade trees shall be a minimum of 5 feet in width (from inside of curb to curb).

Findings: *The site plan indicates that the majority of the landscape islands are 9-feet wide and the smallest ones are 5-feet wide minimum.*

(3) A minimum of one deciduous shade tree shall be provided for every four (4) parking spaces to lessen the adverse impacts of glare, reduce heat from paved surfaces, and to emphasize circulation patterns. Required shade trees shall be uniformly distributed throughout the parking lot (see TDC 73.380(3)), except that within the Central Design District landscape islands and shade trees may be placed to frame views of the Tualatin Commons water feature or identified architectural focal elements. The trees shall meet the requirements of TDC 73.360(7). Parking lot shade tree requirements shall not apply to parking structures and underground parking.

Findings: *The landscape plan includes deciduous trees in several locations to comply with this requirement.*

(4) Landscape islands shall be utilized at aisle ends to protect parked vehicles from moving vehicles and emphasize vehicular circulation patterns. Landscape island location requirements shall not apply to parking structures and under-ground parking.

Findings: *The site plan indicates a landscape island at the ends of all parking areas to comply with this section.*

73.370 OFF-STREET PARKING AND LOADING

(1) General Provisions.

(a) At the time of establishment of a new structure or use, or change in use, or change in use of an existing structure, within any planning district of the City, off-street parking spaces, off-street vanpool and carpool parking spaces for commercial, institutional and industrial uses, off-street bicycle parking, and off-street loading berths shall be as provided in this and following sections, unless greater requirements are otherwise established by the conditional use permit or the Architectural Review process, based upon clear findings that a greater number of spaces are necessary at that location for protection of public health, safety and welfare or that a lesser number of vehicle parking spaces will be sufficient to carry out the objectives of this section. In the Central Design District, the Design Guidelines of TDC 73.610 shall be considered. In case of conflicts between guidelines or objectives in TDC Chapter 73, the proposal shall provide a balance.

Findings: *The site plan has been designed to comply with the minimum parking standards for size, layout and required amount. We currently exceed the minimum amount of parking spaces required by a few spaces. The site plan also indicates bike parking and van/carpool parking to meet the minimum standards.*

(n) Bicycle parking facilities shall include long-term parking that consists of covered, secure stationary racks, lockable enclosures, or rooms (indoor or outdoor) in which the bicycle is stored and short-term parking provided by secure stationary racks (covered or not covered), which accommodate a bicyclist's lock securing the frame and both wheels. The Community Development Director, their designee, or the Architectural Review Board may approve a form of bicycle parking not specified in these provisions but that meets the needs of long-term and/or short-term parking pursuant to Section 73.370.

Findings: *The site plan indicates the required bicycle parking for both short-term and long-term parking. The long-term parking is located inside the building. The size of each bike parking space is designed to meet the minimum requirements listed in this code section.*

73.380 OFF-STREET PARKING LOTS

A parking lot, whether an accessory or principal use, intended for the parking of automobiles or trucks, shall comply with the following:

(1) Off-street parking lot design shall comply with the dimensional standards set forth in Figure 73-1 of this section, except for parking structures and underground parking where stall length and width requirements for a standard size stall shall be reduced by .5 feet and vehicular access at the entrance if gated shall be a minimum of 18 feet in width.

Findings: *The parking lot has been designed to comply with the minimum size of a standard parking stall.*

(2) Parking stalls for sub-compact vehicles shall not exceed 35 percent of the total parking stalls required by TDC 73.370(2). Stalls in excess of the number required by TDC 73.370(2) can be sub-compact stalls.

Findings: *This project does not include compact parking stalls.*

(3) Off-street parking stalls shall not exceed eight continuous spaces in a row without a landscape separation, except for parking structures and underground parking. For parking lots within the Central Design District that are designed to frame views of the central water feature or identified architectural focal elements as provided in TDC 73.350(3), this requirement shall not apply and the location of parking lot landscape islands shall be determined through the Architectural Review process.

Findings: *The site plan has been designed to provide a landscape island at no more than every (8) parking stalls.*

(4) Parking lot drive aisles shall be constructed of asphalt or concrete, including pervious concrete. Parking stalls shall be constructed of asphalt or concrete, or a pervious surface such as pavers or grasscrete, but not gravel or woody material. Drive aisles and parking stalls shall be maintained adequately for all-weather use and drained to avoid water flow across sidewalks. Pervious surfaces such as pervious concrete, pavers and grasscrete, but not gravel or woody material, are encouraged for parking stalls in or abutting the Natural Resource Protection Overlay District, Other Natural Areas identified in Figure 3-4 of the Parks and Recreation Master Plan, or in a Clean Water Services Vegetated Corridor. Parking lot landscaping shall be provided pursuant to the requirements of TDC 73.350 and TDC 73.360. Walkways in parking lots shall be provided pursuant to TDC 73.160.

Findings: *The site plan indicates the dimensions of the drive aisles and notes that all are constructed of asphalt paving. Parking lot landscaping is provided as noted in items above.*

73.390 OFF-STREET LOADING FACILITIES

(1) The minimum number of off-street loading berths for commercial, industrial, public and semi-public uses is as follows:

Square Feet of Floor Area	Number of Berths
Less than 5,000	0
5,000 - 25,000	1
25,000 - 60,000	2
60,000 and over	3

(2) Loading berths shall conform to the following minimum size specifications.

(a) Commercial, public and semi-public uses of 5,000 to 25,000 square feet shall be 12' x 25' and uses greater than 25,000 shall be 12' x 35'

(b) Industrial uses - 12' x 60'

(c) Berths shall have an unobstructed height of 14'

(d) Loading berths shall not use the public right-of-way as part of the required off-street loading area.

Findings: *This project is providing more than the required number of loading berths. It has (36) total loading dock. The sizes of each space (12' x 60') meets the minimum requirements.*

City of Tualatin
www.tualatinoregon.gov

DRAFT, 2017

CITY ENGINEER'S REVIEW FINDING AND DECISION FOR AR17-____, IPT CIMINO

Contents

I. RECOMMENDATION

Based on the FINDINGS presented, the City Engineer approves the preliminary plans of AR17-____, IPT Cimino with the following conditions:

A. PRIOR TO ISSUANCE OF EROSION CONTROL, PUBLIC WORKS, AND WATER QUALITY PERMITS

PFR-1 Submit final sanitary sewer plans that show location of the lines, grade, materials, and other details and the public facilities that the new sewer extension will connect to in the SW Cimino Street right-of-way.

PFR-2 Submit final water system plans that show location of the water lines, grade, materials, and other details and the public facilities that the new water extension will connect to in the SW Cimino Street right-of-way.

PFR-3 Submit final stormwater and water quality plans and associated calculations, including adequate water quality treatment and detention design for onsite facilities and public improvements. Verify that the existing stormline in SW Cimino Street has capacity for the additional runoff associated with this development.

PFR-4 Obtain a NPDES Erosion Control Permit and a City of Tualatin erosion control permit in accordance with code section TMC 3-5-060.

PFR-5 Submit plans that comply with fire protection requirements as determined through the Building Division and Tualatin Valley Fire & Rescue (TVF&R.

PFR-6 Submit plans that are sufficient to obtain a Stormwater Connection Permit Authorization Letter that complies with the submitted Service Provider Letter conditions and obtain an Amended Service Provider Letter as determined by Clean Water Services for any revisions to the proposed plans.

PFR-7 Submit PDFs of final site and permit plans.

B. PRIOR TO ISSUANCE OF BUILDING PERMITS

PFR-9 Obtain Erosion Control, Public Works, and Water Quality Permits.

PFR-10 Obtain a Washington County Facility Permit for any required improvements within the SW Tualatin-Sherwood Road right-of-way.

C. PRIOR TO A CERTIFICATE OF OCCUPANCY

PFR-11 The applicant shall complete all private and public improvements plus record the public water line and access easement if the fire vault is located out of right-of-way.

II. APPEAL

Requests for review of this decision must be received by the Engineering Division within the 14-day appeal period ending on **xx, 2017 at 5 PM**. Issues must have been described with adequate clarity and detail with identification of the associated Tualatin Municipal or Development Code section to afford a decision maker an opportunity to respond to the issue. A request for review must be submitted on the form provided by the City, as detailed in TDC 31.076, and signed by the appellant.

Typed on behalf of the City Engineer, Jeff Fuchs, PE,

Tony Doran, EIT
Engineering Associate

III. STANDARDS AND APPLICABLE CRITERIA

Tualatin Municipal Code (TMC)
Title 03: Utilities and Water Quality
Title 04: Building

Tualatin Development Code (TDC)
Chapter 73: Community Design Standards
Chapter 74: Public Improvement Requirements
Chapter 75: Access Management

The record includes all submitted materials that may be requested for viewing at the Planning Counter.

IV. CONCLUSIONS

A. TMC TITLE 03: UTILITIES AND WATER QUALITY

A. TMC CHAPTER 03-02: SEWER REGULATIONS; RATES

1. TMC 3-2-020 APPLICATION, PERMIT AND INSPECTION PROCEDURE.

(1) No person shall connect to any part of the sanitary sewer system without first making an application and securing a permit from the City for such connection, nor may any person substantially increase the flow, or alter the character of sewage, without first obtaining an additional permit and paying such charges therefore as may be fixed by the City, including such charges as inspection charges, connection charges and monthly service charges.

2. TMC 3-2-030 MATERIALS AND MANNER OF CONSTRUCTION.

(1) All building sewers, side sewers and connections to the main sewer shall be so constructed as to conform to the requirements of the Oregon State Plumbing Laws and rules and regulations and specifications for sewerage construction of the City.

(3) A public works permit must be secured from the City and other agency having jurisdiction by owners or contractors intending to excavate in a public street for the purpose of installing sewers or making sewer connections.

3. TMC 3-2-160 CONSTRUCTION STANDARDS.

All sewer line construction and installation of services and equipment shall be in conformance with the City of Tualatin Public Works Construction Code. In addition, whenever a property owner extends a sewer line, the extension shall be carried to the opposite property line or to such other point as determined by the Public Works Director.

FINDING:
The previous development to the west of this site extended a 10-inch public sanitary sewer to the property line as part of extending SW Cimino Street. The proposed development will also be extending the existing 10-inch diameter sanitary sewer along the entire frontage of SW Cimino Street to the easternmost property line.

Service for the proposed building will be taken via a new lateral connecting to this sewer extension in SW Cimino Street. A manhole is shown in the public line at the point of the lateral for building service.

The applicant will submit sanitary sewer plans that show location of the lines, grade, materials, and other details prior to obtaining a Building Permit.

This criterion is satisfied with conditions of approval PFR-1.

B. TMC CHAPTER 03-03: WATER SERVICE

1. TMC 3-3-040 SEPARATE SERVICES REQUIRED.

(1) Except as authorized by the City Engineer, a separate service and meter to supply regular water service or fire protection service shall be required for each building, residential unit or structure served. For the purposes of this section, trailer parks and multi-family residences of more than four dwelling units shall constitute a single unit unless the City Engineer determines that separate services are required.

2. TMC 3-3-100 CONSTRUCTION STANDARDS.

All water line construction and installation of services and equipment shall be in conformance with the City of Tualatin Public Works Construction Code. In addition, whenever a property owner extends a water line, which upon completion, is intended to be dedicated to the City as part of the public water system, said extension shall be carried to the opposite property line or to such other point as determined by the City Engineer. Water line size shall be determined by the City Engineer in accordance with the City's Development Code or implementing ordinances and the Public Works Construction Code.

3. TMC 3-3-110 BACKFLOW PREVENTION DEVICES AND CROSS CONNECTIONS.

(2) The owner of property to which City water is furnished for human consumption shall install in accordance with City standards an appropriate backflow prevention device on the premises where any of the following circumstances exist:

(4) Except as otherwise provided in this subsection, all irrigation systems shall be installed with a double check valve assembly. Irrigation system backflow prevention device assemblies installed before the effective date of this ordinance, which were approved at the time they were installed but are not on the current list of approved device assemblies maintained by the Oregon State Health Division, shall be permitted to remain in service provided they are properly maintained, are

commensurate with the degree of hazard, are tested at least annually, and perform satisfactorily. When devices of this type are moved, or require more than minimum maintenance, they shall be replaced by device assemblies which are on the Health Division list of approved device assemblies.

4. TMC 3-3-130 CONTROL VALVES.

The customer shall install a suitable valve, as close to the meter location as practical, the operation of which will control the entire water supply from the service. The operation by the customer of the curb stop in the meter box is prohibited.

FINDING:
The previous development to the west of this site extended an 8-inch public water main to the property line as part of extending SW Cimino Street. The proposed development will also be extending the existing 8-inch diameter public water main along the entire frontage of SW Cimino Street to the easternmost property line. Three (3) new public fire hydrants are proposed along SW Cimino Street.

This project consists of one (1) building. Per the attached site utility plan (see sheet C3.0) - service for the proposed building will be taken via a new water lateral connecting to the new public water main extension in SW Cimino Street. A proposed 8-inch lateral from the main will provide service to building fire supply. An 8-inch double check detector assembly (DCDA) for backflow protection will be provided on this service. An 8-inch fire water line will supply four (4) onsite private fire hydrants. The proposed private fire hydrants provide sufficient building coverage per Fire Department requirements.

Additionally, this development proposes a 2-inch domestic service lateral to the building. The proposed service will connect to the extended main in SW Cimino. An 1.5-inch domestic meter and double check assembly with 2-inch service to building will also be provided. An irrigation stub will be installed behind the domestic water meter.

The double check assemblies for fire and domestic water service are shown to be located behind the right-of-way for inspection and maintenance access.

The applicant will submit water service that show location of the lines, grade, materials, and other details prior to obtaining a Building Permit.

The City needs access to the double checks that include fire vaults. If they are located out of right-of-way, a public easement is needed for the water line from the public water line to and including the fire vault and include access from right-of-way in case of inspection or maintenance activity.

This criterion is satisfied with conditions of approval PFR-2.

C. TMC 3-5 ADDITIONAL SURFACE WATER MANAGEMENT STANDARDS

1. TMC 3-5-010 POLICY.

It is the policy of the City to require temporary and permanent measures for all construction projects to lessen the adverse effects of construction on the environment. The contractor shall properly install, operate and maintain both temporary and permanent works as provided in this chapter or in an approved plan, to protect the environment during the term of the project. In addition, these erosion control rules apply to all properties within the City, regardless of whether that property is involved in a construction or development activity. Nothing in this chapter shall relieve any person from the obligation to comply with the regulations or permits of any federal, state, or local authority…

2. TMC 3-5-050 EROSION CONTROL PERMITS

(1) Except as noted in subsection (3) of this section, no person shall cause any change to improved or unimproved real property that causes, will cause, or is likely to cause a temporary or permanent increase in the rate of soil erosion from the site without first obtaining a permit from the City and paying prescribed fees…

3. TMC 3-5-060 PERMIT PROCESS

(1) Applications for an Erosion Control Permit. Application for an Erosion Control Permit shall include an Erosion Control Plan which contains methods and interim facilities to be constructed or used concurrently and to be operated during construction to control erosion. The plan shall include either:
- **(a) A site specific plan outlining the protection techniques to control soil erosion and sediment transport from the site to less than one ton per acre per year as calculated using the Soil Conservation Service Universal Soil Loss Equation or other equivalent method approved by the City Engineer, or**
- **(b) Techniques and methods contained and prescribed in the Soil Erosion Control Matrix and Methods, outlined in TMC 3-5.190 or the Erosion Control Plans - Technical Guidance Handbook, City of Portland and Unified Sewerage Agency, January, 1991.**

(2) Site Plan. A site specific plan, prepared by an Oregon registered professional engineer, shall be required when the site meets any of the following criteria:
- **(a) greater than five acres;**
- **(b) greater than one acre and has slopes greater than 20 percent;**
- **(c) contains or is within 100 feet of a City-identified wetland or a waterway identified on FEMA floodplain maps; or**
- **(d) greater than one acre and contains highly erodible soils.**

FINDING:
Topsoil will be stockpiled during excavation to be used for backfill of landscape areas. Additionally, amendments will be added to the topsoil at that time.

Per the attached grading plan (see Sheet C2.0), the proposed development is designed to provide positive drainage to the storm conveyance system. Planting areas will be graded consistently with the rest of the lots.

All soil, plant, and mulching materials will be contained in landscape areas and surrounded by curbing, and will not cross roadways or walkways. Stormwater on the proposed development's impervious areas will drain directly to new storm inlets (see Site Grading Plan sheet C2.0 & Site Utility Plan sheet C3.0).

As shown on the attached grading plan (see Sheet C2.0), drainage from impervious surfaces will be directed to the proposed storm drain systems. Catch basins have been placed to minimize overland flow in areas of designated walkways.

The site is approximately 8.86 acres. A site specific plan, prepared by the project civil engineer, to control erosion during the construction of the proposed improvements and will be submitted with the permit application. A DEQ 1200-C Erosion and Sedimentation Permit is required.

The Applicant will submit an erosion control plan prior to application for an erosion control permit and obtain a 1200C permit.

This criterion is satisfied with conditions of approval PFR-4 and -9.

4. TMC 3-5-200 DOWNSTREAM PROTECTION REQUIREMENT

Each new development is responsible for mitigating the impacts of that development upon the public storm water quantity system. The development may satisfy this requirement through the use of any of the following techniques, subject to the limitations and requirements in TMC 3-5-210: Construction of permanent on-site stormwater quantity detention facilities designed in accordance with this title;…

5. TMC 3-5-210 REVIEW OF DOWNSTREAM SYSTEM

For new development other than the construction of a single family house or duplex, plans shall document review by the design engineer of the downstream capacity of any existing storm drainage facilities impacted by the proposed development. That review shall extend downstream to a point where the impacts to the water surface elevation from the development will be insignificant, or to a point where the conveyance system has adequate capacity, as determined by the City Engineer. To determine the point at which the downstream impacts are

insignificant or the drainage system has adequate capacity, the design engineer shall submit an analysis using the following guidelines:

(1) evaluate the downstream drainage system for at least ¼ mile;
(2) evaluate the downstream drainage system to a point at which the runoff from the development in a build out condition is less than 10 percent of the total runoff of the basin in its current development status. Developments in the basin that have been approved may be considered in place and their conditions of approval to exist if the work has started on those projects;

(3) evaluate the downstream drainage system throughout the following range of storms: 2, 5, 10, 25 year;

(4) The City Engineer may modify items 1, 2, 3 to require additional information to determine the impacts of the development or to delete the provision of unnecessary information.

6. TMC 3-5-220 CRITERIA FOR REQUIRING ON-SITE DETENTION TO BE CONSTRUCTED

The City shall determine whether the onsite facility shall be constructed. If the onsite facility is constructed, the development shall be eligible for a credit against Storm and Surface Water System Development Charges, as provided in City ordinance. On-site facilities shall be constructed when any of the following conditions exist:

(1) There is an identified downstream deficiency, as defined in TMC 3-5-210, and detention rather than conveyance system enlargement is determined to be the more effective solution…

FINDING:
On-site stormwater quantity control (detention) provided because the City's stormwater master planning requires on-site detention at this location.

On-site detention is required because the City's stormwater master planning requires on-site detention at this location. The proposed system is designed such that the peak post-development run-off rates discharged from the site will not exceed the peak pre-development rates for the 2, 5, 10 and 25-year, 24-hour storm events. Preliminary stormwater calculations are included with the Architectural Review application (see attached Preliminary Stormwater Report).

The development of the site to the west and design of the existing SW Cimino Street took into accommodation approximately 50% of the extension of the road along the frontage of this development. The existing water quality basin along the north side of Cimino was sized to provide treatment of this area. Additionally, the onsite design for that development "over-detained" to accommodate for detention of the new impervious area in SW Cimino. That development also created the outfall into the natural drainage

channel and extended the public storm main in SW Cimino to the property corner that abuts this development. This development proposes to provide water quality for the eastern half of the road extension using a LIDA-type vegetated planter between the curb and sidewalk. These planters will provide water quality only for the southern portion of the roadway extension and will overflow to the extended public storm sewer in SW Cimino. This development will "over-detain" in the onsite detention system to accommodate the new impervious in the eastern half off the road extension.

No adverse effects on receiving waters in the basin or sub-basin are anticipated per the stormwater calculations included with the Architectural Review application

The applicant will submit final stormwater calculations and plans prior to obtaining a Building Permit.

This criterion is satisfied with conditions of approval PFR-3, -9, and -11.

D. TMC 3-5 PERMANENT ON-SITE WATER QUALITY FACILITIES

1. TMC 3-5-280 PLACEMENT OF WATER QUALITY FACILITIES

Title III specifies that certain properties shall install water quality facilities for the purpose of removing phosphorous. No such water quality facilities shall be constructed within the defined area of existing or created wetlands unless a mitigation action, approved by the City, is constructed to replace the area used for the water quality facility.

FINDING:
The site's existing and proposed water quality facilities are not located in wetlands or associated buffers.

This criterion is satisfied.

2. TMC 3-5-290 PURPOSE OF TITLE

The purpose of this title is to require new development and other activities which create impervious surfaces to construct or fund on-site or off-site permanent water quality facilities to reduce the amount of phosphorous entering the storm and surface water system.

3. TMC 3-5-300 APPLICATION OF TITLE

Title III of this Chapter shall apply to all activities which create new or additional impervious surfaces, except as provided in TMC 3-5.310.

4. TMC 3-5-310 EXCEPTIONS

(1) Those developments with application dates prior to July 1, 1990, are exempt from the requirements of Title III.
The application date shall be defined as the date on which a complete application for development approval is accepted by the City in accordance with City regulations.

(2) Construction of one and two family (duplex) dwellings are exempt from the requirements of Title III.

(3) Sewer lines, water lines, utilities or other land development that will not directly increase the amount of storm water run-off or pollution leaving the site once construction has been completed and the site is either restored to or not altered from its approximate original condition are exempt from the requirements of Title III.

5. TMC 3-5-320 DEFINITIONS

(1) "Stormwater Quality Control Facility" refers to any structure or drainage way that is designed, constructed and maintained to collect and filter, retain, or detain surface water run-off during and after a storm event for the purpose of water quality improvement. It may also include, but is not limited to, existing features such as constructed wetlands, water quality swales, low impact development approaches ("LIDA"), and ponds which are maintained as stormwater quality control facilities.

(2) "Low impact development approaches" or "LIDA: means stormwater facilities constructed utilizing low impact development approaches used to temporarily store, route or filter run-off for the purpose of improving water quality. Examples include; but are not limited to, Porous Pavement, Green Roofs, Infiltration Planters/Rain Gardens, Flow-Through Planters, LIDA Swales, Vegetated Filter Strips, Vegetated Swales, Extended Dry Basins, Constructed Water Quality Wetland, Conveyance and Stormwater Art, and Planting Design and Habitats.

(3) "Water Quality Swale" means a vegetated natural depression, wide shallow ditch, or constructed facility used to temporarily store, route or filter run-off for the purpose of improving water quality.

(4) "Existing Wetlands" means those areas identified and delineated as set forth in the Federal Manual for Identifying the Delineating Jurisdictional Wetlands, January, 1989, or as amended, by a qualified wetlands specialist.

(5) "Created Wetlands" means those wetlands developed in an area previously identified as a non-wetland to replace, or mitigate wetland destruction or displacement.

(6) "Constructed Wetlands" means those wetlands developed as a water quality or quantity facility, subject to change and maintenance as such. These areas must be clearly defined and/or separated from existing or created wetlands. This separation shall preclude a free and open connection to such other wetlands.

6. TMC 3-5-330 PERMIT REQUIRED

Except as provided in TMC 3-5-310, no person shall cause any change to improved or unimproved real property that will, or is likely to, increase the rate or quantity of run-off or pollution from the site without first obtaining a permit from the City and following the conditions of the permit.

7. TMC 3-5-340 FACILITIES REQUIRED

For new development, subject to the exemptions of TMC 3-5-310, no permit for construction, or land development, or plat or site plan shall be approved unless the conditions of the plat, plan or permit approval require permanent stormwater quality control facilities in accordance with this Title III.

8. TMC 3-5-345 INSPECTION REPORTS

The property owner or person in control of the property shall submit inspection reports annually to the City for the purpose of ensuring maintenance activities occur according to the operation and maintenance plan submitted for an approved permit or architectural review.

9. TMC 3-5-350 PHOSPHOROUS REMOVAL STANDARD

The stormwater quality control facilities shall be designed to remove 65 percent of the phosphorous from the runoff from 100 percent of the newly constructed impervious surfaces. Impervious surfaces shall include pavement, buildings, public and private roadways, and all other surfaces with similar runoff characteristics.

10. TMC 3-5-360 DESIGN STORM

The stormwater quality control facilities shall be designed to meet the removal efficiency of TMC 3-5-350 for a mean summertime storm event totaling 0.36 inches of precipitation falling in four hours with an average return period of 96 hours.

11. TMC 3-5-370 DESIGN REQUIREMENTS

The removal efficiency in TDC Chapter 35 specifies only the design requirements and are not intended as a basis for performance evaluation or compliance determination of the stormwater quality control facility installed or constructed pursuant to this Title III.

12. TMC 3-5-330 PERMIT REQUIRED

Except as provided in TMC 3-5-310, no person shall cause any change to improved or unimproved real property that will, or is likely to, increase the rate or quantity of run-off or pollution from the site without first obtaining a permit from the City and following the conditions of the permit.

13. TMC 3-5-340 FACILITIES REQUIRED

For new development, subject to the exemptions of TMC 3-5-310, no permit for construction, or land development, or plat or site plan shall be approved unless the conditions of the plat, plan or permit approval require permanent stormwater quality control facilities in accordance with this Title III.

14. TMC 3-5-390 FACILITY PERMIT APPROVAL

A stormwater quality control facility permit shall be approved only if the following are met:

(1) The plat, site plan, or permit application includes plans and a certification prepared by an Oregon registered, professional engineer that the proposed stormwater quality control facilities have been designed in accordance with criteria expected to achieve removal efficiencies for total phosphorous required by this Title III. Clean Water Services Design and Construction Standards shall be used in preparing the plan for the water quality facility; and

(2) The plat, site plan, or permit application shall be consistent with the areas used to determine the removal required in TMC 3-5-350; and

(3) A financial assurance, or equivalent security acceptable to the City, is provided by the applicant which assures that the stormwater quality control facilities are constructed according to the plans established in the plat, site plan, or permit approval. The financial assurance may be combined with our financial assurance requirements imposed by the City; and

(4) A stormwater facility agreement identifies who will be responsible for assuring the long term compliance with the operation and maintenance plan.

FINDING:

The previous development to the west of this site extended an 18-inch public storm sewer to the property line as part of extending SW Cimino Street.

The proposed development will also be extending the public storm sewer along the entire frontage of SW Cimino to the easternmost property line.

The plans show stormwater from the site captured and conveyed to a water quality treatment and detention facilities prior to release to the public system in SW Cimino Street. Stormwater Quality treatment will be provided using filtered catch basins and vaults. Stormwater Quantity Control will be provided using and underground chamber system and an outflow control structure. This system will discharge to the sewer extension in SW Cimino Street.

Detention quantities were determined based on the Clean Water Services (CWS) Design and Construction Standards for Sanitary Sewer and Surface Water Management, and the preliminary stormwater calculations that are included with the Architectural Review application.

The catch basins and stormwater quality and stormwater quantity control (detention) facilities have been designed to remove 65% of the phosphorous from impervious area runoff during a mean summertime storm event totaling 0.36 inches of precipitation falling within four hours with an average return period of 96 hours per the preliminary stormwater calculations that are included with the Architectural Review application.

Per the attached plans (see Sheet C1.1), 322,412 SF of impervious are is proposed. This is the quantity also used in the preliminary stormwater calculations that are included with the Architectural Review application.

The development of the site to the west and design of the existing SW Cimino Street took into accommodation approximately 50% of the extension of the road along the frontage of this development. The existing water quality basin along the north side of Cimino was sized to provide treatment of this area. Additionally, the onsite design for that development “over-detained” to accommodate for detention of the new impervious area in SW Cimino. That development also created the outfall into the natural drainage channel and extended the public storm main in SW Cimino to the property corner that abuts this development. This development proposes to provide water quality for the eastern half of the road extension using a LIDA-type vegetated planter between the curb and sidewalk. These planters will provide water quality only for the southern portion of the roadway extension and will overflow to the extended public storm sewer in SW Cimino. This development will “over-detain” in the onsite detention system to accommodate the new impervious in the eastern half off the road extension.

The applicant will submit final stormwater calculations and plans prior to obtaining a Building Permit.

This criterion is satisfied with conditions of approval PFR-3, -9, and -11.

C. TMC 4-1-030 GRADING

A person seeking a grading permit must submit a soil report with the permit application. The soils report submitted must be signed and sealed by an Oregon-certified soils engineer and comply with Appendix J of the Oregon Structural Specialty Code, 2014 edition. No grading activities may occur unless and until a person receives a grading permit and complies with this section.

FINDING:
Topsoil will be stockpiled during excavation to be used for backfill of landscape areas. Additionally, amendments will be added to the topsoil at that time.

Per the attached grading plan (see Sheet C2.0), the proposed development is designed to provide positive drainage to the storm conveyance system. Planting areas will be graded consistently with the rest of the lots.

All soil, plant, and mulching materials will be contained in landscape areas and surrounded by curbing, and will not cross roadways or walkways. Stormwater on the proposed development's impervious areas will drain directly to new storm inlets (see Site Grading Plan sheet C2.0 & Site Utility Plan sheet C3.0).

As shown on the attached grading plan (see Sheet C2.0), drainage from impervious surfaces will be directed to the proposed storm drain systems. Catch basins have been placed to minimize overland flow in areas of designated walkways.

The site is approximately 8.86 acres. A site specific plan, prepared by the project civil engineer, to control erosion during the construction of the proposed improvements and will be submitted with the permit application. A DEQ 1200-C Erosion and Sedimentation Permit is required.

The Applicant will submit an erosion control plan prior to application for an erosion control permit and obtain a 1200C permit.

This criterion is satisfied with conditions of approval PFR-4 and -9.

C. TMC 4-2.010 FIRE AND LIFE SAFETY

(1) Every application for a building permit and accompanying plans shall be submitted to the Building Division for review of water used for fire protection, the approximate location and size of hydrants to be connected, and the provisions for access and egress for firefighting equipment. If upon such review it is determined that the fire protection facilities are not required or that they are adequately provided for in the plans, the Fire and Life Safety Reviewer shall recommend approval to the City Building Official.

FINDING:
There is one existing public fire hydrant near the site located on SW Cimino Street,

approximately 56-feet west of the northwest property corner. As part of the SW Cimino Street improvements, three (3) additional public hydrants are proposed. Two will be approximately at the middle of the lot on either side of SW Cimino Street. The third will be on the south side of SW Cimino, approximately 20-feet west of the northeastern property corner.

Four (4) private fire hydrants are proposed on-site. The private fire hydrants are located in the landscape islands at the four corners of the proposed building. Service to the building sprinkler system will be via the water extension in SW Cimino and lateral for onsite service. A 24-ft wide fire department access lane is provided around the proposed building.

The applicant will submit plans that comply with fire protection requirements as determined through the Building Division and Tualatin Valley Fire & Rescue (TVF&R).

This criterion is satisfied with conditions of approval PFR-5, -9 and -11.

D. TDC CHAPTER 73: COMMUNITY DESIGN STANDARDS

1. TDC SECTION 73.270 GRADING

(1) After completion of site grading, top-soil is to be restored to exposed cut and fill areas to provide a suitable base for seeding and planting.

(2) All planting areas shall be graded to provide positive drainage.

(3) Neither soil, water, plant materials nor mulching materials shall be allowed to wash across roadways or walkways.

(4) Impervious surface drainage shall be directed away from pedestrian walkways, dwelling units, buildings, outdoor private and shared areas and landscape areas except where the landscape area is a water quality facility.

FINDINGS:
Topsoil will be stockpiled during excavation to be used for backfill of landscape areas. Additionally, amendments will be added to the topsoil at that time.

Per the attached grading plan (see Sheet C2.0), the proposed development is designed to provide positive drainage to the storm conveyance system. Planting areas will be graded consistently with the rest of the lots.

All soil, plant, and mulching materials will be contained in landscape areas and surrounded by curbing, and will not cross roadways or walkways. Stormwater on the proposed development's impervious areas will drain directly to new storm inlets (see Site Grading Plan sheet C2.0 & Site Utility Plan sheet C3.0).

As shown on the attached grading plan (see Sheet C2.0), drainage from impervious surfaces will be directed to the proposed storm drain systems. Catch basins have been placed to minimize overland flow in areas of designated walkways.

This criterion is satisfied with conditions of approval PFR-4, -9 and -11.

2. TDC SECTION 73.400 ACCESS

(2) Owners of two or more uses, structures, or parcels of land may agree to utilize jointly the same ingress and egress when the combined ingress and egress of both uses, structures, or parcels of land satisfies their combined requirements as designated in this code; provided that satisfactory legal evidence is presented to the City Attorney in the form of deeds, easements, leases or contracts to establish joint use. Copies of said deeds, easements, leases or contracts shall be placed on permanent file with the City Recorder.

(3) Joint and Cross Access.

(b) A system of joint use driveways and cross access easements may be required and may incorporate the following:

(i) a continuous service drive or cross access corridor extending the entire length of each block served to provide for driveway separation consistent with the access management classification system and standards.

(ii) a design speed of 10 mph and a maximum width of 24 feet to accommodate two-way travel aisles designated to accommodate automobiles, service vehicles, and loading vehicles;

(iii) stub-outs and other design features to make it visually obvious that the abutting properties may be tied in to provide cross access via a service drive;

(iv) a unified access and circulation system plan for coordinated or shared parking areas.

(c) Pursuant to this section, property owners may be required to:

(i) Record an easement with the deed allowing cross access to and from other properties served by the joint use driveways and cross access or service drive;

(ii) Record an agreement with the deed that remaining access rights along the roadway will be dedicated to the city and pre-existing driveways will be closed and eliminated after construction of the joint-use driveway;

(iii) Record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners;

(5) Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Engineer.

(6) Except as provided in TDC 53.100, all ingress and egress shall connect directly with public streets.

(8) To afford safe pedestrian access and egress for properties within the City, a sidewalk shall be constructed along all street frontage, prior to use or occupancy of the building or structure proposed for said property. The sidewalks required by this section shall be constructed to City standards, except in the case of streets with inadequate right-of-way width or where the final street design and grade have not been established, in which case the sidewalks shall be constructed to a design and in a manner approved by the City Engineer. Sidewalks approved by the City Engineer may include temporary sidewalks and sidewalks constructed on private property; provided, however, that such sidewalks shall provide continuity with sidewalks of adjoining commercial developments existing or proposed. When a sidewalk is to adjoin a future street improvement, the sidewalk construction shall include construction of the curb and gutter section to grades and alignment established by the City Engineer.

(9) The standards set forth in this Code are minimum standards for access and egress, and may be increased through the Architectural Review process in any particular instance where the standards provided herein are deemed insufficient to protect the public health, safety, and general welfare.

(10) Minimum access requirements for residential uses:

(a) Ingress and egress for single-family residential uses, including townhouses, shall be paved to a minimum width of 10 feet. Maximum driveway widths shall not exceed 26 feet for one and two car garages, and 37 feet for three or more car garages. For the purposes of this section, driveway widths shall be measured at the property line….

(11) Minimum Access Requirements for Commercial, Public and Semi-Public Uses.

…In all other cases, ingress and egress for commercial uses shall not be less than the following:

Required Parking Spaces	Minimum Number Required	Minimum Pavement Width	Minimum Pavement Walkways, Etc.
1-99	1	32 feet for first 50 feet from ROW, 24' thereafter	Curbs required; walkway 1 side only
100-249	2	32 feet for first 50 feet from ROW, 24' thereafter	Curbs required; walkway 1 side only
Over 250	As required by City Engineer	As required by City Engineer	As required by City Engineer

(12) Minimum Access Requirements for Industrial Uses. Ingress and egress for industrial uses shall not be less than the following:

Required Parking Spaces	Minimum Number Required	Minimum Pavement Width	Minimum Pavement Walkways, Etc.
1-250	1	36 feet for first 50' from ROW, 24' thereafter	No curbs or walkway required
Over 250	As required by City Engineer	As required by City Engineer	As required by City Engineer

(13) One-way Ingress or Egress.
When approved through the Architectural Review process, one-way ingress or egress may be used to satisfy the requirements of Subsections (7), (8), and (9). However, the hard surfaced pavement of one-way drives shall not be less than 16 feet for multi-family residential, commercial, or industrial uses.

(14) Maximum Driveway Widths and Other Requirements.
(a) Unless otherwise provided in this chapter, maximum driveway widths shall not exceed 40 feet.
(b) Except for townhouse lots, no driveways shall be constructed within 5 feet of an adjacent property line, except when two adjacent property owners elect to provide joint access to their respective properties, as provided by Subsection (2).

(c) There shall be a minimum distance of 40 feet between any two adjacent driveways on a single property unless a lesser distance is approved by the City Engineer.

(15) Distance between Driveways and Intersections.
Except for single-family dwellings, the minimum distance between driveways and intersections shall be as provided below. Distances listed shall be measured from the stop bar at the intersection.
(a) At the intersection of collector or arterial streets, driveways shall be located a minimum of 150 feet from the intersection.
(b) At the intersection of two local streets, driveways shall be located a minimum of 30 feet from the intersection.
(c) If the subject property is not of sufficient width to allow for the separation between driveway and intersection as provided, the driveway shall be constructed as far from the intersection as possible, while still maintaining the 5-foot setback between the driveway and property line as required by TDC 73.400(14)(b).
(d) When considering a public facilities plan that has been submitted as part of an Architectural Review plan in accordance with TDC 31.071(6), the City Engineer may approve the location of a driveway closer than 150 feet from the intersection of collector or arterial streets, based on written FINDING of fact in support of the decision. The written approval shall be incorporated into the decision of the City Engineer for the utility facilities portion of the Architectural Review plan under the process set forth in TDC 31.071 through 31.077.

FINDINGS:
Provision of vehicular and pedestrian ingress and egress is located at the northeast corner of the site and depicted on the attached plans (see Sheets C1.0 & C1.1), as consistent with the applicable TDC sections per the analysis provided in this narrative. Any future changes in use will meet applicable City standards.

The proposed development will share the existing driveway along SW Cimino at the northwest corner of the site with the adjacent property. There is an existing “reciprocal access easement” (see Topo Survey) allowing this shared driveway between the two lots.

The site abuts right-of-ways on the north and south sides.

Per the attached plans, along the north side - the building will have access to SW Cimino Street, a local connector street as designated by the City’s Transportation System Plan. Access on a street with a lower functional classification is not possible given site constraints. There are also no future local streets designated by the TSP that abut the site.

Along the south side – the property abuts Tualatin-Sherwood Highway. Vehicular access is not desired as Tualatin-Sherwood Highway has a higher classification (major

arterial, truck route) than SW Cimino Street. An existing driveway to this site along Tualatin-Sherwood Highway is proposed to be removed as part of this development.

The number of parking spaces proposed (159). This is less than 250 spaces.

The project proposed one new primary use driveway at the northeast corner of the site (40-ft wide). This development will also utilize the existing shared 40-ft wide driveway access at the northwest corner of the site.

Per the attached plans, the proposed driveway at the northeast property corner is more than 500' from the existing shared driveway at the northwest property corner.

The site is not within the vicinity of local streets.

The driveways on the site meet the driveway and intersection separation standards.

This criterion is satisfied.

E. TDC CHAPTER 74: PUBLIC IMPROVEMENT REQUIREMENTS

1. SECTION 74.110 PHASING OF IMPROVEMENTS

The applicant may build the development in phases. If the development is to be phased the applicant shall submit a phasing plan to the City Engineer for approval with the development application. The timing and extent or scope of public improvements and the conditions of development shall be determined by the City Council on subdivision applications and by the City Engineer on other development applications.

2. TDC SECTION 74.120 PUBLIC IMPROVEMENTS

(1) Except as specially provided, all public improvements shall be installed at the expense of the applicant. All public improvements installed by the applicant shall be constructed and guaranteed as to workmanship and material as required by the Public Works Construction Code prior to acceptance by the City. No work shall be undertaken on any public improvement until after the construction plans have been approved by the City Engineer and a Public Works Permit issued and the required fees paid.

FINDINGS:
SW Cimino Street is designated as a local connector road and has been 3/4 constructed to the City's Public Works standards – terminating at the northwestern property corner. The proposed development will match the extent of SW Cimino Street improvements, extending them along the northern property frontage, terminating at the northeastern property corner. Plans for the SW Cimino Street public improvements will be submitted for permit review.

No work will be undertaken until plans have been approved by the City Engineer, a Public Works Permit issued, and required fees paid, and all public improvements will be guaranteed as to workmanship and material per the Public Works Construction Code.

This criterion is satisfied with conditions of approval PFR-8, ,-9, -10 and -11.

3. TDC SECTION 74.140 CONSTRUCTION TIMING

(1) All the public improvements required under this chapter shall be completed and accepted by the City prior to the issuance of a Certificate of Occupancy; or, for subdivision and partition applications, in accordance with the requirements of the Subdivision regulations.

(2) All private improvements required under this chapter shall be approved by the City prior to the issuance of a Certificate of Occupancy; or for subdivision and partition applications, in accordance with the requirements of the Subdivision regulations.

FINDINGS:
It is noted that all required public improvements are to be completed and accepted by the City prior to Certificate of Occupancy issuance.

No work shall be undertaken on any public improvement until after approval has been granted and fees are paid. Prior to occupancy, all private and public improvements required under this chapter will be completed and accepted.

This criterion is satisfied with conditions of approval PFR-8, -9, and -10.

3. TDC SECTION 74.210 MINIMUM STREET RIGHT-OF-WAY WIDTHS

The width of streets in feet shall not be less than the width required to accommodate a street improvement needed to mitigate the impact of a proposed development. In cases where a street is required to be improved according to the standards of the TDC, the width of the right-of-way shall not be less than the minimums indicated in TDC Chapter 74, Public Improvement Requirements, Figures 74-2A through 74-2G.

(2) For development applications other than subdivisions and partitions, wherever existing or future streets adjacent to property proposed for development are of inadequate right-of-way width, the additional right-of-way necessary to comply with TDC Chapter 74, Public Improvement Requirements, Figures 74-2A through 74-2G of the Tualatin Community Plan shall be dedicated to the City for use by the public prior to issuance of any building permit for the proposed development. This right-of-way dedication shall be for the full width of the property abutting the roadway and, if required by the City

Engineer, additional dedications shall be provided for slope and utility easements if deemed necessary.

(3) For development applications that will impact existing streets not adjacent to the applicant's property, and to construct necessary street improvements to mitigate those impacts would require additional right-of-way, the applicant shall be responsible for obtaining the necessary right-of-way from the property owner. A right-of-way dedication deed form shall be obtained from the City Engineer and upon completion returned to the City Engineer for acceptance by the City. On subdivision and partition plats the right-of-way dedication shall be accepted by the City prior to acceptance of the final plat by the City. On other development applications the right-of-way dedication shall be accepted by the City prior to issuance of building permits. The City may elect to exercise eminent domain and condemn necessary off-site right-of-way at the applicant's request and expense. The City Council shall determine when condemnation proceedings are to be used.

(4) If the City Engineer deems that it is impractical to acquire the additional right-of-way as required in subsections (1)-(3) of this section from both sides of the center-line in equal amounts, the City Engineer may require that the right-of-way be dedicated in a manner that would result in unequal dedication from each side of the road. This requirement will also apply to slope and utility easements as discussed in TDC 74.320 and 74.330. The City Engineer's recommendation shall be presented to the City Council in the preliminary plat approval for subdivisions and partitions, and in the recommended decision on all other development applications, prior to finalization of the right-of-way dedication requirements.

(6) When a proposed development is adjacent to or bisected by a street proposed in TDC Chapter 11, Transportation Plan (Figure 11-3) and no street right-of-way exists at the time the development is proposed, the entire right-of-way as shown in TDC Chapter 74, Public Improvement Requirements, Figures 74-2A through 74-2G shall be dedicated by the applicant. The dedication of right-of-way required in this subsection shall be along the route of the road as determined by the City.

FINDINGS:
SW Cimino Street Avenue is designated as a Connector and has been 3/4 constructed to the City's Public Works standards – terminating at the northwestern property corner. The proposed development will match the extent of SW Cimino Street improvements, extending them along the northern property frontage, terminating at the northeastern property corner. When the property to the north of the proposed SW Cimino extension is developed, a full 60-ft right-of-way will be provided. Plans for the SW Cimino Street public improvements will be submitted for permit review.

No work will be undertaken until plans have been approved by the City Engineer, a Public Works Permit issued, and required fees paid, and all public improvements will be guaranteed as to workmanship and material per the Public Works Construction Code.

This criterion is satisfied.

4. SECTION 74.330 UTILITY EASEMENTS.

(1) Utility easements for water, sanitary sewer and storm drainage facilities, telephone, television cable, gas, electric lines and other public utilities shall be granted to the City.

(2) For subdivision and partition applications, the on-site public utility easement dedication area shall be shown to be dedicated to the City on the final subdivision or partition plat prior to approval of the plat by the City; and

(3) For subdivision and partition applications which require off-site public utility easements to serve the proposed development, a utility easement shall be granted to the City prior to approval of the final plat by the City. The City may elect to exercise eminent domain and condemn necessary off-site public utility easements at the applicant's request and expense. The City Council shall determine when condemnation proceedings are to be used.

(4) For development applications other than subdivisions and partitions, and for both on-site and off-site easement areas, a utility easement shall be granted to the City; building permits shall not be issued for the development prior to acceptance of the easement by the City. The City may elect to exercise eminent domain and condemn necessary off-site public utility easements at the applicant's request and expense. The City Council shall determine when condemnation proceedings are to be used.

(5) The width of the public utility easement shall meet the requirements of the Public Works Construction Code. All subdivisions and partitions shall have a 6-foot public utility easement adjacent to the street and a 5-foot public utility easement adjacent to all side and rear lot lines.

FINDINGS:
Utility easements for water, sanitary sewer and storm drainage facilities, telephone, television cable, gas, electrical lines and other public utilities will be granted to the City as needed. An 8-foot wide public utility easement is proposed behind the right-of-way along the SW Cimino Street frontage.

This criterion is satisfied with conditions of approval PFR-2 and -11.

5. SECTION 74.410 FUTURE STREET EXTENSIONS.

(1) Streets shall be extended to the proposed development site boundary where necessary to:
(a) give access to, or permit future development of adjoining land;
(b) provide additional access for emergency vehicles;

(c) provide for additional direct and convenient pedestrian, bicycle and vehicle circulation;
(d) eliminate the use of cul-de-sacs except where topography, barriers such as railroads or freeways, existing development, or environmental constraints such as major streams and rivers prevent street extension.
(e) eliminate circuitous routes. The resulting dead end streets may be approved without a turnaround. A reserve strip may be required to preserve the objectives of future street extensions.

(2) Proposed streets shall comply with the general location, orientation and spacing identified in the Functional Classification Plan (Figure 11-1), Local Streets Plan (TDC 11.630 and Figure 11-3) and the Street Design Standards (Figures 74-2A through 74-2G).
(a) Streets and major driveways, as defined in TDC 31.060, proposed as part of new residential or mixed residential/commercial developments shall comply with the following standards:
(i) full street connections with spacing of no more than 530 feet between connections, except where prevented by barriers;
(ii) bicycle and pedestrian accessway easements where full street connections are not possible, with spacing of no more than 330 feet, except where prevented by barriers;
(iii) limiting cul-de-sacs and other closed-end street systems to situations where barriers prevent full street extensions; and
(iv) allowing cul-de-sacs and closed-end streets to be no longer than 200 feet or with more than 25 dwelling units, except for streets stubbed to future developable areas.
(b) Streets proposed as part of new industrial or commercial development shall comply with TDC 11.630, Figure 11-1, and Figures 74-2A through 74-2G.

(3) During the development application process, the location, width, and grade of streets shall be considered in relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to the proposed use of the land to be served by the streets. The arrangement of streets in a subdivision shall either:
(a) provide for the continuation or appropriate projection of existing streets into surrounding areas; or
(b) conform to a street plan approved or adopted by the City to meet a particular situation where topographical or other conditions make continuance of or conformance to existing streets impractical.

(4) The City Engineer may require the applicant to submit a street plan showing all existing, proposed, and future streets in the area of the proposed development.

(5) The City Engineer may require the applicant to participate in the funding of future off-site street extensions when the traffic impacts of the applicant's development warrant such a condition.

FINDINGS:
The existing SW Cimino Street has been 3/4 constructed to the City's Public Works standards; provides for direct and convenient, pedestrian, bicycle, and vehicle circulation; and extends to the northwest corner of the site.

SW Cimino Street Avenue is designated as a Connector and has been 3/4 constructed to the City's Public Works standards – terminating at the northwestern property corner. The proposed development will match the extent of SW Cimino Street improvements, extending them along the northern property frontage, terminating at the northeastern property corner. When the property to the north of the proposed SW Cimino extension is developed, a full 60-ft right-of-way will be provided. Plans for the SW Cimino Street public improvements will be submitted for permit review.

Additionally, pedestrian access to the sidewalk on Tualatin-Sherwood Highway is proposed with this development.

The proposed public improvements comply with the required standards and regional plans.

This criterion is satisfied.

6. TDC SECTION 74.420 STREET IMPROVEMENTS

When an applicant proposes to develop land adjacent to an existing or proposed street, including land which has been excluded under TDC 74.220, the applicant should be responsible for the improvements to the adjacent existing or proposed street that will bring the improvement of the street into conformance with the Transportation Plan (TDC Chapter 11), TDC 74.425 (Street Design Standards), and the City's Public Works Construction Code, subject to the following provisions:

(1) For any development proposed within the City, roadway facilities within the right-of-way described in TDC 74.210 shall be improved to standards as set out in the Public Works Construction Code.

(2) The required improvements may include the rebuilding or the reconstruction of any existing facilities located within the right-of-way adjacent to the proposed development to bring the facilities into compliance with the Public Works Construction Code.

(3) The required improvements may include the construction or rebuilding of off-site improvements which are identified to mitigate the impact of the development.

(4) Where development abuts an existing street, the improvement required shall apply only to that portion of the street right-of-way located between the property line of the parcel proposed for development and the centerline of the

right-of-way, plus any additional pavement beyond the centerline deemed necessary by the City Engineer to ensure a smooth transition between a new improvement and the existing roadway (half-street improvement). Additional right-of-way and street improvements and off-site right-of-way and street improvements may be required by the City to mitigate the impact of the development. The new pavement shall connect to the existing pavement at the ends of the section being improved by tapering in accordance with the Public Works Construction Code.

(5) If additional improvements are required as part of the Access Management Plan of the City, TDC Chapter 75, the improvements shall be required in the same manner as the half-street improvement requirements.

(6) All required street improvements shall include curbs, sidewalks with appropriate buffering, storm drainage, street lights, street signs, street trees, and, where designated, bikeways and transit facilities.

(7) For subdivision and partition applications, the street improvements required by TDC Chapter 74 shall be completed and accepted by the City prior to signing the final subdivision or partition plat, or prior to releasing the security pro-vided by the applicant to assure completion of such improvements or as otherwise specified in the development application approval.

(10) Streets within, or partially within, a proposed development site shall be graded for the entire right-of-way width and constructed and surfaced in accordance with the Public Works Construction Code.

(11) Existing streets which abut the pro-posed development site shall be graded, constructed, reconstructed, surfaced or repaired as necessary in accordance with the Public Works Construction Code and TDC Chapter 11, Transportation Plan, and TDC 74.425 (Street Design Standards).

(12) Sidewalks with appropriate buffering shall be constructed along both sides of each internal street and at a minimum along the development side of each external street in accordance with the Public Works Construction Code.

(13) The applicant shall comply with the requirements of the Oregon Department of Transportation (ODOT), Tri-Met, Washington County and Clackamas County when a proposed development site is adjacent to a roadway under any of their jurisdictions, in addition to the requirements of this chapter.

(14) The applicant shall construct any required street improvements adjacent to parcels excluded from development, as set forth in TDC 74.220 of this chapter.

(15) Except as provided in TDC 74.430, whenever an applicant proposes to develop land with frontage on certain arterial streets and, due to the access management provisions of TDC Chapter 75, is not allowed direct access onto the arterial, but instead must take access from another existing or future

public street thereby providing an alternate to direct arterial access, the applicant shall be required to construct and place at a minimum street signage, a sidewalk, street trees and street lights along that portion of the arterial street adjacent to the applicant's property. The three certain arterial streets are S.W. Tualatin-Sherwood Road, S.W. Pacific Highway (99W) and S.W. 124th Avenue. In addition, the applicant may be required to construct and place on the arterial at the intersection of the arterial and an existing or future public non-arterial street warranted traffic control devices (in accordance with the Manual on Uniform Traffic Control Devices, latest edition), pavement markings, street tapers and turning lanes, in accordance with the Public Works Construction Code.

(16) The City Engineer may determine that, although concurrent construction and placement of the improvements in (14) and (15) of this section, either individually or collectively, are impractical at the time of development, the improvements will be necessary at some future date. In such a case, the applicant shall sign a written agreement guaranteeing future performance by the applicant and any successors in interest of the property being developed. The agreement shall be subject to the City's approval.

(17) Intersections should be improved to operate at a level of service of at least D and E for signalized and unsignalized intersections, respectively.

(18) Pursuant to requirements for off-site improvements as conditions of development approval in TDC 73.055(2)(e) and TDC 36.160(8), proposed multi-family residential, commercial, or institutional uses that are adjacent to a major transit stop will be required to comply with the City's Mid-Block Crossing Policy.

7. TDC SECTION 74.425 STREET DESIGN STANDARDS

(1) Street design standards are based on the functional and operational characteristics of streets such as travel volume, capacity, operating speed, and safety. They are necessary to ensure that the system of streets, as it develops, will be capable of safely and efficiently serving the traveling public while also accommodating the orderly development of adjacent lands.

(2) The proposed street design standards are shown in Figures 72A through 72G. The typical roadway cross sections comprise the following elements: right-of-way, number of travel lanes, bicycle and pedestrian facilities, and other amenities such as landscape strips. These figures are intended for planning purposes for new road construction, as well as for those locations where it is physically and economically feasible to improve existing streets

(3) In accordance with the Tualatin Basin Program for fish and wildlife habitat it is the intent of Figures 74-2A through 74-2G to allow for modifications to the

standards when deemed appropriate by the City Engineer to address fish and wildlife habitat.

(4) All streets shall be designed and constructed according to the preferred standard. The City Engineer may reduce the requirements of the preferred standard based on specific site conditions, but in no event will the requirement be less than the minimum standard. The City Engineer shall take into consideration the following factors when deciding whether the site conditions warrant a reduction of the preferred standard:

(a) Arterials:

(i) Whether adequate right-of-way exists

(ii) Impacts to properties adjacent to right-of-way

(iii) Current and future vehicle traffic at the location

(iv) Amount of heavy vehicles (buses and trucks).

(b) Collectors:

(i) Whether adequate right-of-way exists

(ii) Impacts to properties adjacent to right-of-way

(iii) Amount of heavy vehicles (buses and trucks)

(iv) Proximity to property zoned manufacturing or industrial.

(c) Local Streets:

(i) Local streets proposed within areas which have environmental constraints and/or sensitive areas and will not have direct residential access may utilize the minimum design standard. When the minimum design standard is allowed, the City Engineer may determine that no parking signs are required on one or both sides of the street.

8. <u>TDC SECTION 74.430 STREETS, MODIFICATIONS OF REQUIREMENTS IN CASES OF UNUSUAL CONDITIONS</u>

(1) When, in the opinion of the City Engineer, the construction of street improvements in accordance with TDC 74.420 would result in the creation of a hazard, or would be impractical, or would be detrimental to the City, the City Engineer may modify the scope of the required improvement to eliminate such hazardous, impractical, or detrimental results. Examples of conditions requiring modifications to improvement requirements include but are not limited to horizontal alignment, vertical alignment, significant stands of trees, fish and wildlife habitat areas, the amount of traffic generated by the proposed development, timing of the development or other conditions creating hazards for pedestrian, bicycle or motor vehicle traffic. The City Engineer may determine that, although an improvement may be impractical at the time of development, it will be necessary at some future date. In such cases, a written agreement guaranteeing future performance by the applicant in installing the required improvements must be signed by the applicant and approved by the City.

9. <u>TDC SECTION 74.440 STREETS, TRAFFIC STUDY REQUIRED</u>

(1) The City Engineer may require a traffic study to be provided by the applicant and furnished to the City as part of the development approval process as provided by this Code, when the City Engineer determines that such a study is necessary in connection with a proposed development project in order to:
(a) Assure that the existing or proposed transportation facilities in the vicinity of the proposed development are capable of accommodating the amount of traffic that is expected to be generated by the proposed development, and/or
(b) Assure that the internal traffic circulation of the proposed development will not result in conflicts between on-site parking movements and/or on-site loading movements and/or on-site traffic movements, or impact traffic on the adjacent streets.

(2) The required traffic study shall be completed prior to the approval of the development application.

(3) The traffic study shall include, at a minimum:
(a) an analysis of the existing situation, including the level of service on adjacent and impacted facilities.
(b) an analysis of any existing safety deficiencies.
(c) proposed trip generation and distribution for the proposed development.
(d) projected levels of service on adjacent and impacted facilities.
(e) recommendation of necessary improvements to ensure an acceptable level of service for roadways and a level of service of at least D and E for signalized and unsignalized intersections respectively, after the future traffic impacts are considered.
(f) The City Engineer will determine which facilities are impacted and need to be included in the study.
(g) The study shall be conducted by a registered engineer.

(4) The applicant shall implement all or a portion of the improvements called for in the traffic study as determined by the City Engineer.

FINDING:
Per the enclosed Transportation Impact Analysis, off-site street improvements requiring dedication, construction, or rebuilding of off-site improvements are not required to mitigate the impacts of the project. Intersections and roadways in the vicinity will operate at or above minimum City and Washington County standards, with or without the the extension of SW Cimino Street as shown within the TIA. All proposed intersections analyzed in the TIA will maintain an LOS of at lead D or better – see table 3, page 15 of the TIA.

This criterion is satisfied.

3. TDC SECTION 74.470 STREET LIGHTS

(1) Street light poles and luminaries shall be installed in accordance with the Public Works Construction Code.
(2) The applicant shall submit a street lighting plan for all interior streets on the proposed development prior to issuance of a Public Works Permit.

FINDING:
Existing SW Cimino Street has been fully constructed to the City's Public Works standards. All street lights and luminaries have been installed in accordance with the Public Works Construction Code. The proposed extension of SW Cimino Street associated with this development will provide street lights and luminaries to match existing lighting along SW Cimino Street.

This criterion is satisfied.

3. TDC SECTION 74.485 STREET TREES

(1) Prior to approval of a residential subdivision or partition final plat, the applicant shall pay the City a non-refundable fee equal to the cost of the purchase and installation of street trees. The location, placement, and cost of the trees shall be determined by the City. This sum shall be calculated on the interior and exterior streets as indicated on the final subdivision or partition plat.
(2) In nonresidential subdivisions and partitions street trees shall be planted by the owners of the individual lots as development occurs.
(3) The Street Tree Ordinance specifies the species of tree which is to be planted and the spacing between trees.

FINDING:
The site is located in Zone 2. A combination of Crimson Sentry Maple (Acer platoniodes 'Crimson Sentry'), Golden Desert Ash (Fraxinus excelsior "Handes'), Black Tupelo (Nyssa sylvatica) are proposed at 30' on center in a 3.5' landscape planter zone between the sidewalk and curb along SW Cimino per the attached plans (see Sheets L1.0 and L2.0), as consistent with Schedule A.

This criterion is satisfied.

4. TDC SECTION 74.610 WATER SERVICE

(1) Water lines shall be installed to serve each property in accordance with the Public Works Construction Code. Water line construction plans shall be submitted to the City Engineer for review and approval prior to construction.
(2) If there are undeveloped properties adjacent to the subject site, public water lines shall be extended by the applicant to the common boundary line of these properties. The lines shall be sized to provide service to future development, in accordance with the City's Water System Master Plan, TDC Chapter 12. This is not applicable to the site.

(3) As set forth is TDC Chapter 12, Water Service, the City has three water service levels. All development applicants shall be required to connect the proposed development site to the service level in which the development site is located. If the development site is located on a boundary line between two service levels the applicant shall be required to connect to the service level with the higher reservoir elevation. The applicant may also be required to install or provide pressure reducing valves to supply appropriate water pressure to the properties in the proposed development site. This is not applicable to this site.

FINDING:
The previous development to the west of this site extended an 8-inch public water main to the property line as part of extending SW Cimino Street. The proposed development will also be extending the existing 8-inch diameter public water main along the entire frontage of SW Cimino Street to the easternmost property line. Three (3) new public fire hydrants are proposed along SW Cimino Street.

This project consists of one (1) building. Per the attached site utility plan (see sheet C3.0) - service for the proposed building will be taken via a new water lateral connecting to the new public water main extension in SW Cimino Street. A proposed 8-inch lateral from the main will provide service to building fire supply. An 8-inch double check detector assembly (DCDA) for backflow protection will be provided on this service. An 8-inch fire water line will supply four (4) onsite private fire hydrants. The proposed private fire hydrants provide sufficient building coverage per Fire Department requirements.

Additionally, this development proposes a 2-inch domestic service lateral to the building. The proposed service will connect to the extended main in SW Cimino. An 1.5-inch domestic meter and double check assembly with 2-inch service to building will also be provided. An irrigation stub will be installed behind the domestic water meter.

The double check assemblies for fire and domestic water service are shown to be located behind the right-of-way for inspection and maintenance access.

The applicant will submit water service that show location of the lines, grade, materials, and other details prior to obtaining a Building Permit.

The City needs access to the double checks that include fire vaults. If they are located out of right-of-way, a public easement is needed for the water line from the public water line to and including the fire vault and include access from right-of-way in case of inspection or maintenance activity.

This criterion is satisfied with conditions of approval PFR-2, -9, and -11.

5. TDC SECTION 74.620 SANITARY SEWER SERVICE

(1) Sanitary sewer lines shall be installed to serve each property in accordance with the Public Works Construction Code. Sanitary sewer construction plans

and calculations shall be submitted to the City Engineer for review and approval prior to construction.

(2) If there are undeveloped properties adjacent to the proposed development site which can be served by the gravity sewer system on the proposed development site, the applicant shall extend public sanitary sewer lines to the common boundary line with these properties. The lines shall be sized to convey flows to include all future development from all up stream areas that can be expected to drain through the lines on the site, in accordance with the City's Sanitary Sewer System Master Plan, TDC Chapter 13.

FINDING:
The previous development to the west of this site extended a 10-inch public sanitary sewer to the property line as part of extending SW Cimino Street. The proposed development will also be extending the existing 10-inch diameter sanitary sewer along the entire frontage of SW Cimino Street to the easternmost property line.
Service for the proposed building will be taken via a new lateral connecting to this sewer extension in SW Cimino Street. A manhole is shown in the public line at the point of the lateral for building service.

This criterion is satisfied with conditions of approval PFR-1, -9, and -11.

6. TDC SECTION 74.630 STORM DRAINAGE SYSTEM

(1) Storm drainage lines shall be installed to serve each property in accordance with City standards. Storm drainage construction plans and calculations shall be submitted to the City Engineer for review and approval prior to construction.

(2) The storm drainage calculations shall confirm that adequate capacity exists to serve the site. The discharge from the development shall be analyzed in accordance with the City's Storm and Surface Water Regulations.

(3) If there are undeveloped properties adjacent to the proposed development site which can be served by the storm drainage system on the proposed development site, the applicant shall extend storm drainage lines to the common boundary line with these properties. The lines shall be sized to convey expected flows to include all future development from all up stream areas that will drain through the lines on the site, in accordance with the Tualatin Drainage Plan in TDC Chapter 14.

FINDING:
The previous development to the west of this site extended an 18-inch public storm sewer to the property line as part of extending SW Cimino Street.

The proposed development will also be extending the public storm sewer along the entire frontage of SW Cimino to the easternmost property line.

The plans show stormwater from the site captured and conveyed to a water quality treatment and detention facilities prior to release to the public system in SW Cimino Street. Stormwater Quality treatment will be provided using filtered catch basins and vaults. Stormwater Quantity Control will be provided using and underground chamber system and an outflow control structure. This system will discharge to the sewer extension in SW Cimino Street.

Detention quantities were determined based on the Clean Water Services (CWS) Design and Construction Standards for Sanitary Sewer and Surface Water Management, and the preliminary stormwater calculations that are included with the Architectural Review application.

The catch basins and stormwater quality and stormwater quantity control (detention) facilities have been designed to remove 65% of the phosphorous from impervious area runoff during a mean summertime storm event totaling 0.36 inches of precipitation falling within four hours with an average return period of 96 hours per the preliminary stormwater calculations that are included with the Architectural Review application.

Per the attached plans (see Sheet C1.1), 322,412 SF of impervious are is proposed. This is the quantity also used in the preliminary stormwater calculations that are included with the Architectural Review application.

The development of the site to the west and design of the existing SW Cimino Street took into accommodation approximately 50% of the extension of the road along the frontage of this development. The existing water quality basin along the north side of Cimino was sized to provide treatment of this area. Additionally, the onsite design for that development “over-detained” to accommodate for detention of the new impervious area in SW Cimino. That development also created the outfall into the natural drainage channel and extended the public storm main in SW Cimino to the property corner that abuts this development. This development proposes to provide water quality for the eastern half of the road extension using a LIDA-type vegetated planter between the curb and sidewalk. These planters will provide water quality only for the southern portion of the roadway extension and will overflow to the extended public storm sewer in SW Cimino. This development will “over-detain” in the onsite detention system to accommodate the new impervious in the eastern half off the road extension.

The stormwater calculations included with the Architectural Review application (see attached Stormwater Report) confirm that the proposed stormwater quality and detention facilities will contain adequate capacity to serve the site.

The site abuts developed property on the west and un-developed property on the west side. Given existing site topography it is not likely that the storm extension will be able to serve additional lots to the east of this development. From a feasibility standard, future extension of SW Cimino and associated lots will need to develop a new conveyance and outfall to the existing drainage channel.

This criterion is satisfied with conditions of approval PFR-3, -9, and -11.

7. TDC SECTION 74.640 GRADING

(1) Development sites shall be graded to minimize the impact of storm water runoff onto adjacent properties and to allow adjacent properties to drain as they did before the new development.

(2) A development applicant shall submit a grading plan showing that all lots in all portions of the development will be served by gravity drainage from the building crawl spaces; and that this development will not affect the drainage on adjacent properties. The City Engineer may require the applicant to remove all excess material from the development site.

FINDING:
The proposed grading plan minimizes the impact of stormwater runoff to adjacent properties and allows adjacent properties to drain as they did before the development. The site will be graded so that stormwater will be collected at catch basins that discharge to onsite stormwater quality and quantity control systems located on the west and east sides of the proposed building.

The Applicant will submit an erosion control plan prior to application for an erosion control permit and obtain a 1200C permit.

This criterion is satisfied with conditions of approval PFR-4 and -9.

8. TDC SECTION 74.650 WATER QUALITY, STORM WATER DETENTION AND EROSION CONTROL

The applicant shall comply with the water quality, storm water detention and erosion control requirements in the Surface Water Management Ordinance. If required:

(1) On subdivision and partition development applications, prior to approval of the final plat, the applicant shall arrange to construct a permanent on-site water quality facility and storm water detention facility and submit a design and calculations indicating that the requirements of the Surface Water Management Ordinance will be satisfied and obtain a Stormwater Connection Permit from Clean Water Services; or

(3) For on-site private and regional non-residential public facilities, the applicant shall submit a stormwater facility agreement, which will include an operation and maintenance plan provided by the City, for the water quality facility for the City's review and approval. The applicant shall submit an erosion control plan prior to issuance of a Public Works Permit. No construction or disturbing of the site shall occur until the erosion control plan is approved by the City and the required measures are in place and approved by the City.

FINDING:

Stormwater from the building and all impervious surfaces on-site will be collected at catch basins that discharge to onsite stormwater quality and quantity control systems located on the west and east sides of the proposed building (see Sheet C3.0). Preliminary stormwater calculations are included with the Architectural Review application. The Applicant will obtain a 1200C permit. A Clean Water Services (CWS) Service Provider Letter (SPL) indicating that no site assessment or service provider letter is required is included with the Architectural Review application.

A stormwater facility Operations & Maintenance (O&M) agreement will be submitted for the on-site stormwater quality and detention pond prior to prior to issuance of a Public Works Permit.

The applicant will submit final stormwater calculations and plans.

A CWS Service Provider Letter (SPL) indicating that wetlands do not appear to be within 200 feet of this development site is included with the Architectural Review application. A CWS Memorandum was received dated May 25, 2017 for development on this site. The applicant will submit plans that are sufficient to obtain a Stormwater Connection Permit Authorization Letter that complies with the submitted Service Provider Letter conditions.

This criterion is satisfied with conditions of approval PFR-3, -9 and -11.

9. TDC SECTION 74.660 UNDERGROUND

(1) All utility lines including, but not limited to, those required for gas, electric, communication, lighting and cable television services and related facilities shall be placed underground. Surface-mounted transformers, surface-mounted connection boxes and meter cabinets may be placed above ground. Temporary utility service facilities, high capacity electric and communication feeder lines, and utility transmission lines operating at 50,000 volts or above may be placed above ground. The applicant shall make all necessary arrangements with all utility companies to provide the underground services. The City reserves the right to approve the location of all surface-mounted transformers.

(2) Any existing overhead utilities may not be upgraded to serve any proposed development. If existing overhead utilities are not adequate to serve the proposed development, the applicant shall, at their own expense, provide an underground system. The applicant shall be responsible for obtaining any off-site deeds and/or easements necessary to provide utility service to this site; the deeds and/or easements shall be submitted to the City Engineer for acceptance by the City prior to issuance of the Public Works Permit.

FINDING:
All proposed utilities will be placed underground in accordance with this requirement. Surface-mounted transformers will be screened from adjacent right-of-way.

There are no existing overhead utilities abutting the site.

This criterion is satisfied.

10. TDC SECTION 74.765 STREET TREE SPECIES AND PLANTING LOCATIONS.

All trees, plants or shrubs planted in the right-of-way of the City shall conform in species and location and in accordance with the street tree plan in Schedule A. If the Operations Director determines that none of the species in Schedule A is appropriate or finds appropriate a species not listed, the Director may substitute an unlisted species.

FINDING:
The site is located in Zone 2. A combination of Crimson Sentry Maple (Acer platoniodes 'Crimson Sentry'), Golden Desert Ash (Fraxinus excelsior "Handes'), Black Tupelo (Nyssa sylvatica) are proposed at 30' on center in a 3.5' landscape planter zone between the sidewalk and curb along SW Cimino per the attached plans (see Sheets L1.0 and L2.0), as consistent with Schedule A.

This criterion is satisfied.

F. TDC CHAPTER 75: ACCESS MANAGEMENT

11. TDC SECTION 75.010 PURPOSE.

The purpose of this chapter is to promote the development of safe, convenient and economic transportation systems and to preserve the safety and capacity of the street system by limiting conflicts resulting from uncontrolled driveway access, street intersections, and turning movements while providing for appropriate access for all properties.

12. TDC SECTION 75.130 JOINT ACCESSES REQUIRED.

When the City Engineer determines that joint accesses are required by properties undergoing development or redevelopment, an overall access plan shall be prescribed by the City Engineer and all properties shall adhere to this. Interim accesses may be allowed in accordance with TDC 75.090 of this chapter to provide for the eventual implementation of the overall access plan. [Ord. 635-74, §55, 6/11/84]

13. TDC SECTION 75.140 COLLECTOR STREETS.

(a) Major Collectors. Direct access from newly constructed single family homes, duplexes or triplexes shall not be permitted. As major collectors in residential areas are fully improved, or adjacent land redevelops, direct access should be relocated to the nearest local street where feasible.
(b) Minor Collectors. Residential, commercial and industrial driveways where the frontage is greater or equal to 70 feet are permitted. Minimum spacing at 100 feet. Uses with less than 50 feet of frontage shall use a common (joint) access where available.
(c) If access is not able to be relocated to the nearest local street, the City Engineer may allow interim access in accordance with 75.090 of this chapter to provide for the eventual implementation of the overall access plan.

FINDINGS:
The site is accessed from SW Cimino Street and is not proposed to contain any single-family home, duplex, or triplex. No future local streets in the vicinity of the site are designated by the City's Transportation System Plan.

This criterion is satisfied.

PRE-APPLICATION MEETING MINUTES

VLMK JOB NO: 20170034

PROJECT: IPT Tualatin DC LLC

Meeting Date: June 26th, 2017

Parties involved with project:

Name	Attend	Company	Email address
Peter Vanderburg	Yes	Industrial Property Trust (IPT)	pvanderburg@industrialpropertytrust.com
Elizabeth Chester	Yes	Industrial Property Trust (IPT)	echester@industrialpropertytrust.com
Sara Butz	Yes	Black Creek Group	sara.butz@blackcreekgroup.com
Gregg Boehm	No	Industrial Property Trust (IPT)	gboehm@industrialpropertytrust.com
Andrew Coates	Yes	KG Investments	acoates@kgip.com
Kim Schoenfelder	Yes	KG Investments	kschoenfelder@kgip.com
Rick Gervais	No	KG Investments	rgervais@kgip.com
Jason Sahlin	Yes	VLMK Engineering + Design	jasons@vlmk.com
Bill Lambert	Yes	VLMK Engineering + Design	billl@vlmk.com
Jennifer Kimura	Yes	VLMK Engineering + Design	jenniferk@vlmk.com
Jake Bubacz	Yes	VLMK Engineering + Design	jakeb@vlmk.com
Todd Mobley	No	Lancaster Engineering	todd@lancasterengineering.com
Aquila Hurd-Ravich	Yes	City of Tualatin (Planning)	AHURD-RAVICH@tualatin.gov
Charles Benson	Yes	City of Tualatin (Planning)	cbenson@tualatin.gov
Tony Doran	Yes	City of Tualatin (Engineering)	TDORAN@tualatin.gov
Melinda Anderson	Yes	City of Tualatin (Econ. Devel.)	manderson@tualatin.gov
Kevin Rex	Yes	City of Tualatin (Building)	krex@tualatin.gov
Naomi Vogel	No	Washington County (Engineering)	naomi_vogel@co.washington.or.us

This meeting was to discuss the scope of the project, city process and permitting options. The following items were discussed:

Public Works:

1. We will be required to provide the following:
    a. Extension of ¾ width of Cimino Street to the east edge of the property line. Cimino Street is noted as being a Connector street.
    b. Remove existing 160.0' wide driveway to the existing farmhouse along Tualatin/Sherwood Road and infill with new sidewalk and curb/gutter to match adjacent sidewalk. A Public Facilities Permit with Washington County will be required to close this driveway.
    c. The new driveways on Cimino Street are to be 36.0' wide minimum and 40.0' wide maximum.
    d. Pedestrian access to the Public Way from the building on T/S Road. This will need to be 8.0' wide to allow for pedestrians and bikes.

Traffic Report:

a. Tony has been discussing the scope of the Traffic Report with both Todd Mobley (Lancaster) and Naomi Vogel (Washington County), they are still working through

the requirements, but Todd is working on the draft report for our AR submittal next month.

b. Tony is the main contact at the city that will review the report and Naomi at Washington County will also review the report.

Trees / Arborist:

a. Even though we are removing all the trees onsite, the city code requires that we hire an arborist and provide a copy of the report with our AR submittal.

b. We will also need to provide a Tree Preservation Plan that lists the tree species and coordinates with the arborist's report as part of our AR package.

c. The city pointed out that their code requires all of the perimeter landscaping to have trees at 30.0' on center. The perimeter landscaping will be 5.0' wide minimum with the trees as noted.

Architectural Review (AR) Process:

d. We discussed the city Development Process that was highlighted by the following:

(1) The Scoping Meeting is NOT required based on this meeting being done and the overall experience of the design team with projects in Tualatin.

(2) The pre-application process (including the Neighborhood Meeting) takes approximately 4-6 weeks. We informed the city that the Neighborhood Meeting is scheduled for July 12th.

(3) The AR process takes approximately 8-16 weeks, but the city is bound to complete the entire process within the 120-days allowed. Following submittal, the city has 30-days to deem us complete followed by the requirement of scheduling the ARB meeting within 60-days. After the ARB meeting, there is a 14-calendar day appeal period. We can submit for building permits following the ARB meeting.

(4) The Public Works and Water Quality plan review and permitting takes approximately 8-weeks.

(5) The Building Plan Review and Permitting takes approximately 4-6 weeks.

(6) Item of note: The Tree Preservation Plans listed in the AR requirements is NOT required because we are cutting down ALL the existing

b. Some of the things that the AR Board is going to be looking for are as follows:

(1) Steps in the building and/or parapet on the south side that faces Tualatin/Sherwood Road.

(2) Colors that complement the surrounding neighborhood.

(3) Draft a site section that indicates roof top HVAC not being visible from the street.

(4) A rendering of the project is very helpful to convey the overall appearance to the AR board.

(5) Having the architect or engineer and the landscape architect at the AR meeting is helpful in answering questions from the board.

(6) It was suggested that we increase the landscaping along T/S Road on the east and west ends to provide screening of the loading docks.

(7) Provide dimensions of all drive aisles and location of the building on the site.

(8) Provide truck turning templates on the site plan to show compliance with the fire truck curb radius requirements.

(9) It was suggested that we have our landscape architect (Otten) contact Tom Steger (Parks Maintenance Manager) at the city to discuss street trees.

Garbage Requirements:

a. The city has a large code section that describes their requirements, but mainly it is based on building square footage. We informed the city that we plan to add (2) garbage enclosures to the site plan that are not currently shown. We will be required to obtain an approval letter from the hauler (Republic Services).

Utilities:

a. We talked through the discharge of the storm water in the extension of Cimino Street and the assorted options to flow through the private on-site WQ pond or run through an easement on the Wager property to the north or even using street swales. VLMK will review the options as part of our design. Tony feels that taking public storm through the private pond will probably not be allowed, but he will listen to options. Tony confirmed that the existing area on the north side of Cimino Street at the wetland discharge is in a Public Easement and is there to serve our site.

b. All other utilities (Gas, sanitary, phone, water and power) will come from the extension of Cimino Street on the north side of the project.

c. As part of our Narrative, we need to explain any use of “Green Infrastructure” as part of our design.

Permits:

a. Demo Permit: We can submit for the Demo Permit at any time, but it will only include the structures, NOT the trees. It will require an Erosion Control Permit and will take approximately 4-6 weeks to review and approve and needs to be issued prior to submitting for AR. If we choose to do this, it will require its own Service Provider Letter (SPL) from Clean Water Services (CWS).

b. Public Works, Water Quality and 1200c Permit: We can submit for this permit once we are deemed complete following the AR submittal. This will not be issued until the AR is approved. Tony suggested that we contact Naomi to discuss being able to submit to Washington County for their review at the same time.

c. Building Permit: The building permits will not be allowed to be submitted until the AR board meeting is complete and has been approved by the board.

d. Other Permits: The city will require several other permits (Site Utility, Plumbing, Fire Hydrant, etc.) that will be submitted at the same time as the building permit.

Narrative:

a. The city suggested that we review a couple previous projects that have been submitted to the city and they provided their AR numbers (AR15-05 and AR17-02). VLMK will review and contact the city with any questions.

b. We asked for a list of the specific code sections that we need to respond to in our Narrative. Charles provided us with a memo that should help narrow down the sections we need.

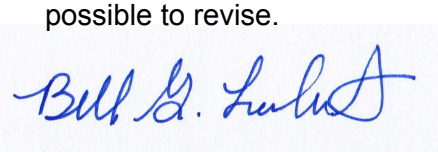
Miscellaneous items:

a. We asked about the noise ordinance and if our "industrial" project would cause any concerns with the city or neighbors. The city did not have any issues with our project, but we will need to review the city ordinance.

b. We asked if there were any LID's in place for this area. The city was not aware of any at this time.

c. The city indicated that they would not require any additional wildlife or natural resource reports for this project.

If any of these items are incorrect or need additional clarification, please email me as soon as possible to revise.



Bill G. Lambert
Associate

Copies: To all parties on list above via email.

TLID	OWNER1	OWNER2
2S127BA00400	POWIN PACIFIC PROPERTIES LLC	
2S127BA00800	FRANKLIN BUSINESS PARK LLC	
2S127BA00900	FRANKLIN BUSINESS PARK	OWNERS ASSOCIATION
2S127BB00100	FRANKLIN BUSINESS PARK LLC	
2S127BB00200	WAGER EDWARD J	
2S127BC00100	WAGER EDWARD J	
2S127BC00200	ITEL KENNETH E	
2S127BC90000	ITEL CORPORATE CENTER	CONDOMINIUMS OWNERS OF ALL
2S127BC90111	ICC 2 LLC	STE F
2S127BC90121	ICC 2 LLC	STE F
2S127BC90131	ICC 2 LLC	STE F
2S127BC90141	SHIELDS MANUFACTURING INC	
2S127BD00200	MILGARD MANUFACTURING INC	BY RYAN TAX COMPLIANCE SRVS LLC
2S127BD00500	TUALATIN CITY OF	
2S127BD00600	TUALATIN SHERWOOD INVESTORS I	BY PANATTONI DEVELOPMENT LLC
2S127BD00700	TUALATIN SHERWOOD INVESTORS I	BY PANATTONI DEVELOPMENT LLC
2S127BD00800	TUALATIN SHERWOOD INVESTORS I	BY PANATTONI DEVELOPMENT LLC
2S127BD00900	TUALATIN SHERWOOD INVESTORS I	BY PANATTONI DEVELOPMENT LLC
2S127BD01000	G & S FAMILY LIMITED PARTNERSHII	
2S127BD01100	G & S FAMILY LIMITED PARTNERSHII	
2S127BD01200	NICOL GORHAM DOUGLAS REV TRU	NICOL ROBIN HIATT REV TRUST
2S127BD01300	ITEL MICHAEL	
2S127BD01400	G & S FAMILY LIMITED PARTNERSHII	
2S127BD01600	2003-042 PARTITION PLAT	OWNER OF LOT 1
2S127BD01700	INDOOR ARENA INVESTORS LLC	
2S127BD01800	ELLIS DAVID L &	AL-HADI FAROUK H
2S127BD01900	POWIN PACIFIC PROPERTIES LLC	
2S127C000400	TIGARD SAND & GRAVEL CO INC	
2S127C000401	ASHWOOD CONSTRUCTION INC	
2S127C000500	ITEL KENNETH E	
2S127C000700	DTI PROPERTIES LLC	BY DAYNE BARRETT INGRAM
2S127C000701	ITEL KENNETH E	
2S127C001200	WESTERN PRECISION PROPERTIES	BY WESTERN PRECISION PRODUCTS IN
2S128A000100	FORE-SIGHT BALBOA LLC	
2S128A000300	COLUMBIA CORRUGATED BOX CO IN	
2S128D000100	ORR FAMILY FARM LLC THE	

OWNER3	OWNERADDR	OWNERCITY	OWNERSTATE
	PO BOX 483	TUALATIN	OR
	1202 NW 17TH AVE STE B	PORTLAND	OR
	1202 NW 17TH AVE STE B	PORTLAND	OR
	8331 SE CARNATION ST	MILWAUKIE	OR
	8331 SE CARNATION ST	MILWAUKIE	OR
	12155 SW TUALATIN-SHERWOOD RD	TUALATIN	OR
UNITS			
	4200 SE COLUMBIA WAY	VANCOUVER	WA
	4200 SE COLUMBIA WAY	VANCOUVER	WA
	4200 SE COLUMBIA WAY	VANCOUVER	WA
	12310 SW CIMINO ST	TUALATIN	OR
DEPT 720	PO BOX 4900	SCOTTSDALE	AZ
	18880 SW MARTINAZZI AVE	TUALATIN	OR
	1400 SW FIFTH AVE #810	PORTLAND	OR
	1400 SW FIFTH AVE #810	PORTLAND	OR
	1400 SW FIFTH AVE #810	PORTLAND	OR
	1400 SW FIFTH AVE #810	PORTLAND	OR
	20752 SW 120TH AVE	TUALATIN	OR
	20752 SW 120TH AVE	TUALATIN	OR
	3891 CALAROGA DR	WEST LINN	OR
	20900 SW 120TH AVE	TUALATIN	OR
	20752 SW 120TH AVE	TUALATIN	OR
	1400 SW FIFTH AVE #810	PORTLAND	OR
	11883 SW ITEL ST	TUALATIN	OR
	155 B AVE #222	LAKE OSWEGO	OR
	PO BOX 483	TUALATIN	OR
	PO BOX 4810	TUALATIN	OR
	29772 SW HEATER RD	SHERWOOD	OR
	12155 SW TUALATIN-SHERWOOD RD	TUALATIN	OR
	15836 SW MADRONA LN	SHERWOOD	OR
	12155 SW TUALATIN-SHERWOOD RD	TUALATIN	OR
	21101 SW 115TH AVE	TUALATIN	OR
	20400 SW CIPOLE RD	TUALATIN	OR
	12777 SW TUALATIN-SHERWOOD RD	TUALATIN	OR
	16150 NW DONIN CT	BEAVERTON	OR

OWNERZIP
97062-0483
97209-2445
00000
97209-2445
97267-2426
97267-2426
97062-6828
00000
98661-5572
98661-5572
98661-5572
97062-6962
85261-4900
97062-7092
97201-5506
97201-5506
97201-5506
97201-5506
97062-6961
97062-6961
97068-1071
97062-6817
97062-6961
97201-5506
97062-6855
97034-3144
97062-0483
97062-4810
97140-5005
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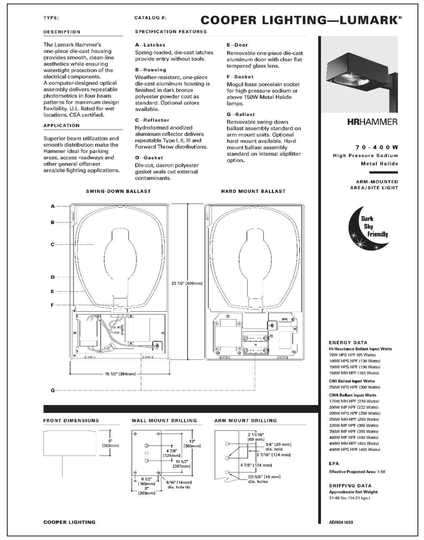
97062-8051
97006-6366



TYPE:

CATALOG #: **COOPER LIGHTING—LUMARK®**

DESCRIPTION

The Lumark Hammer's one-piece die-cast housing provides smooth, clean-line aesthetics while ensuring watertight protection of the internal optical system. A computer-designed optical assembly delivers repeatable photometrics in four beam patterns for maximum design flexibility. U.L. listed for wet locations. CSA certified.

APPLICATION

Superior beam utilization and smooth distribution make the Hammer ideal for parking areas, access roadways and other general offstreet area/site lighting applications.

SPECIFICATION FEATURES

A - Latches
Spring-loaded, die-cast latches provide entry without tools.

B - Housing
Weather-resistant, one-piece die-cast aluminum housing is finished in dark bronze polyester powder coat as standard. Optional colors available.

C - Reflector
Hydroformed anodized aluminum reflector delivers repeatable Type I, II, III and Forward Throw distributions.

D - Gasket
Die-cut, closed-cell polyester gasket seals out external contaminants.

E - Door
Removable one-piece die-cast aluminum door with clear flat tempered glass lens.

F - Socket
Mogul-base porcelain socket for high-pressure sodium or pulse 150W Metal Halide lamps.

G - Ballast
Removable swing-down ballast assembly standard on arm mount units. Optional hard mount available. Hard mount ballast assembly standard on internal slipfitter option.

HRHAMMER

70-400W
High Pressure Sodium
Metal Halide

ARM MOUNTED
AREA/SITE LIGHT

Dark Sky Friendly

SWING-DOWN BALLAST

HARD MOUNT BALLAST

FRONT DIMENSIONS

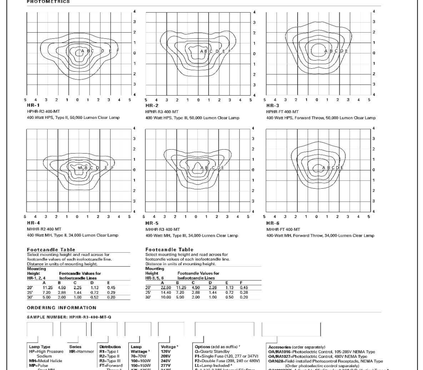
WALL MOUNT DRILLING

ARM MOUNT DRILLING

COOPER LIGHTING

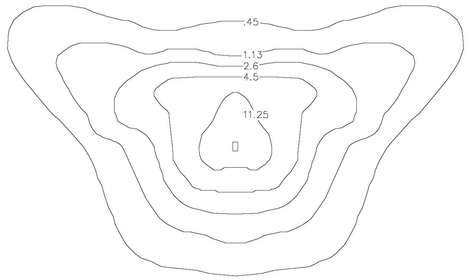
ENERGY DATA
51-Nuvolare Ballast Input Watts
100 HPS 117 (95 Watts)
150 HPS 175 (136 Watts)
200 HPS 233 (190 Watts)
250 HPS 290 (235 Watts)
310 HPS 360 (295 Watts)
400 HPS 460 (380 Watts)
CWI Ballast Input Watts
70 HPS 88 (70 Watts)
100 HPS 117 (95 Watts)
150 HPS 175 (136 Watts)
200 HPS 233 (190 Watts)
250 HPS 290 (235 Watts)
310 HPS 360 (295 Watts)
400 HPS 460 (380 Watts)
CWA Ballast Input Watts
150 HPS 175 (136 Watts)
200 HPS 233 (190 Watts)
250 HPS 290 (235 Watts)
310 HPS 360 (295 Watts)
400 HPS 460 (380 Watts)
EPA
Effective Projected Area: 1.54
SHIPPING DATA
Approximate Net Weight:
15 kg (33 lbs)

AERH41659

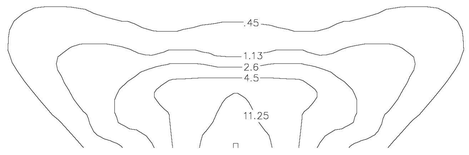


HRHAMMER

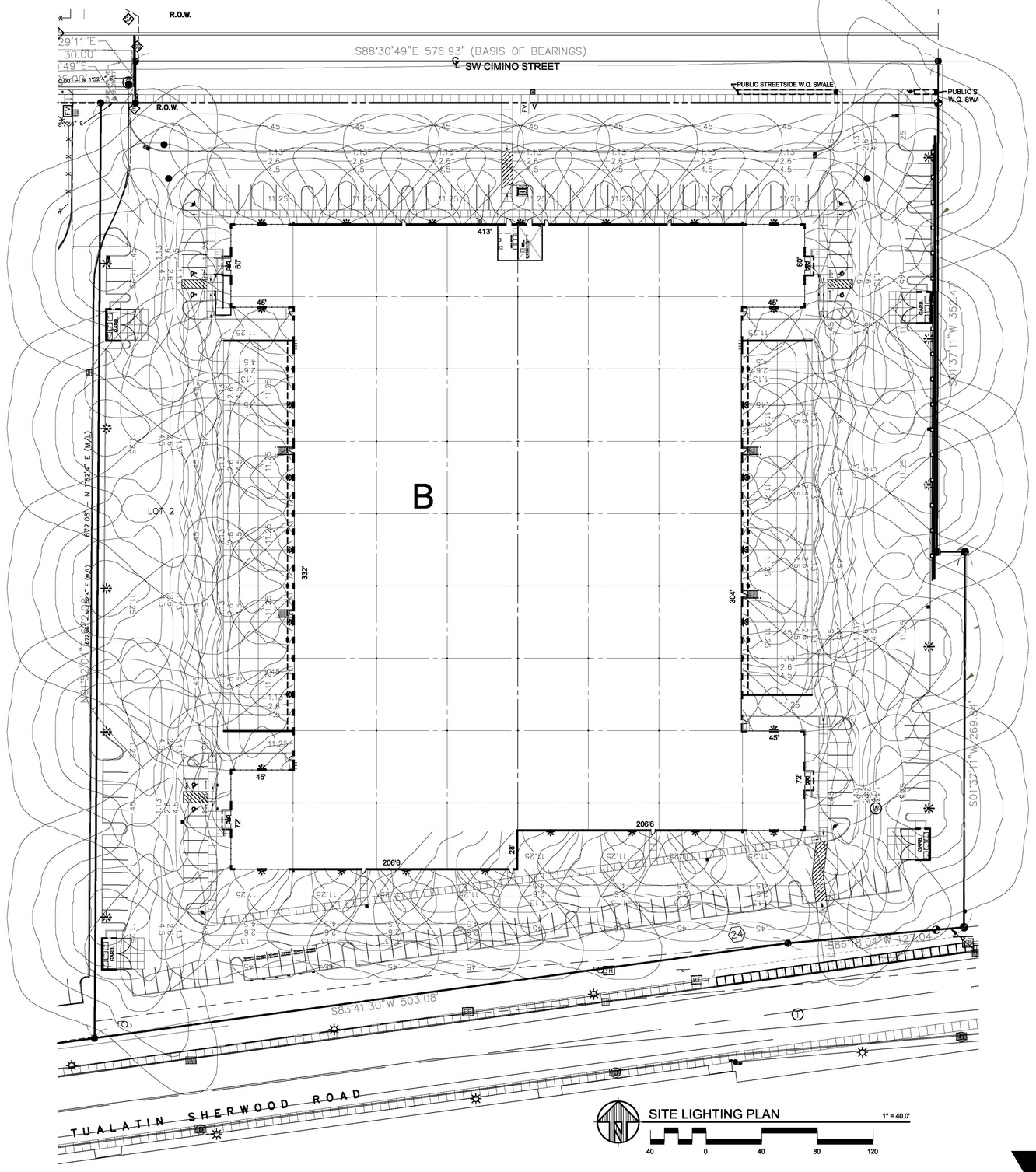
Customer First Center 1121 Highway 74 South Peachtree City, GA 30269 770.486.4800 FAX 770.486.4801 AERH41659



1 LT1.0 SCHEMATIC LIGHT PATTERN (30' POLE MOUNT) N.T.S.



2 LT1.0 SCHEMATIC LIGHT PATTERN (34' WALL MOUNT) N.T.S.



SITE LIGHTING PLAN 1" = 40.0'

40 0 40 80 120

VLMK
ENGINEERING + DESIGN
3933 SW Kelly Avenue
Portland, Oregon 97239
503.222.4453
VLMK.COM

PROJECT NAME
IPT TUALATIN DC LLC

SW CIMINO STREET
TUALATIN, OR.

REVISIONS

	DATE	DESCRIPTION

DATE
JUNE 2017

SCALE	PROJ. NO.
AS NOTED	20170034
DRAWN	CHECKED
BGL	JS

SITE LIGHTING PLAN

LT1.0

Gary Nebergall
(503) 969-7917

Daniel Nebergall
(503) 997-9757
Certified Arborist
PN 7179-A

CCB # 100699

City Wide Tree Service, Inc.

16090 SE McLoughlin Blvd.
Milwaukie, OR 97267
(503) 653-6873

Liability Policy # 52HHUOK3579

Andrew Nebergall
(503) 793-5090

Chris Ritschard
(503) 793-5087
Certified Arborist
PN 0164-A

SAIF Policy # 485761

July 12, 2017

Bill Lambert
VLMK Engineering + Design
16150 SW Upper Boones Ferry Rd
Portland, Oregon 97224
billl@vlmk.com

RE: 12155 SW Tualatin Sherwood Rd Tualatin OR 97062

Bill,

On Friday July 7th, I visited the property site listed above. My assignment was to provide a tree inventory for the existing trees on site. The tree inventory consisted of numbering, tagging, measuring and rating the trees on site per the proposed plan, which you provided.

Each tree was rated good, fair or poor with initial comments stating any issues or concerns. Attached is the tree inventory.
Please do not hesitate to contact Gary 503-969-7917 or myself if there are any questions.

Thank you for this opportunity,

Chris Ritschard

Chris Ritschard
Certified Arborist PN – 0164A
City Wide Tree Service, Inc.
Cell (503) 793-5087
chris@citywidetreeservicepdx.com

Tree Inventory
12155 SW Tualatin Sherwood Rd

Tree #	Tree Specie	DBH in Inches	Rating	Summary of Issues and Concerns
101	Red Cedar	69	Fair	2 stem tree, multiple bark inclusions, trunk decay
102	Birch	26	Fair	Large wound on lower trunk, decay at base
103	Red Cedar	73	Fair	Multiple tops, bark inclusions, trunk and stem decay
104	Birch	21	Fair	Dieback in upper crown, bark inclusion, bronze birch borer damage
105	Red Cedar	52	Fair	Multiple tops, bark inclusions, trunk and stem decay
106	Birch	24	Fair	Dieback in upper crown, bark inclusion, bronze birch borer damage
107	Red Cedar	52	Fair	Multiple tops, bark inclusions, dead, broken and hanging branches
108	English Holly	10	Fair	Invasive, nuisance tree
109	Birch	28	Fair	2 stem, bark inclusion, dieback in upper crown, bronze birch borer damage
110	Austrian Black Pine	36	Fair	Multiple tops, bark inclusions, deadwood throughout crown
111	Blue Spruce	23	Fair	Multiple tops, bark inclusions
112	Plum	9	Fair	Poor structure, long term neglect
113	Plum	8	Poor	Dead stems, poor structure, weak tree
114	Plum	8	Poor	Dead decayed stems, poor structure.
115	Plum	8	Poor	Dead decayed stems, poor structure.
116	Plum	7	Poor	Dead tree
117	Plum	8	Poor	Multiple dead stems, long term neglect
118	Plum	12	Fair	Poor structure, long term neglect
119	Plum	6	Fair	Poor structure, long term neglect
120	Apricot	6	Poor	Dead tree
121	Asian Pear	6	Fair	Poor structure, long term neglect
122	Apple	14	Fair	2 stem, bark inclusion, long term neglect
123	Apple	10	Fair	Trunk decay, leans to the west
124	English Holly	8	Fair	Invasive, nuisance tree
125	Red Cedar	73	Fair	Multiple tops, bark inclusions, trunk and stem decay
126	Red Cedar	43	Fair	Multiple tops, bark inclusions, poor structure
127	Red Cedar	39	Fair	Far NE corner tree, multiple tops, lower trunk decay.

IPT Tualatin

Transportation Impact Study

Tualatin, Oregon

Date:
July 18, 2017

Prepared for:
IPT Acquisitions, LLC

Prepared by:
Todd E. Mobley, PE
Richard Martin, EI

RENEWS: 12/31/2018

LANCASTER
ENGINEERING

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

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Executive Summary

1. A 157,230 square foot industrial building is proposed for construction on the north side of SW Tualatin-Sherwood Road, south of SW Cimino Street and west of SW 124th Avenue in Tualatin, Oregon. The project site is immediately east of the existing industrial building in the northeast corner of the intersection of SW Tualatin-Sherwood Road at SW 124th Avenue. Access to the proposed building will be via an eastern extention of SW Cimino Street along the site frontage.
2. The construction of the industrial building would result in an increase of 145 trips during the morning peak hour and 153 trips during the evening peak hour.
3. The traffic resulting from the proposed development is not projected to cause any significant impact or detriment to the operation of the transportation network in the surrounding area. Accounting for the proposed extension to SW 124th Avenue, the intersections surrounding the subject property show adequate capacity and favorable performance through year 2019 regardless of the additional trips resulting from the proposed development. No operational mitigations are recommended.
4. Based on queueing analysis detailed in the appendix, no safety issues will result from queues exceeding storage at any current or proposed intersections. The reconfiguration of the intersection of SW 124th Avenue at SW Tualatin-Sherwood Road will mitigate any existing queueing issues. No other mitigations are necessary or recommended,
5. A detailed analysis of the crash history at the study intersections shows one crash pattern that will be mitigated by the redesign of the intersection that will accompany the SW 124th Avenue extension project to accommodate dedicated east-west left- and right-turn lanes in each direction. No other patterns were found, and as such no other mitigations are required or recommended.

Introduction

A 157,230 square foot industrial building is proposed for construction on the north side of SW Tualatin-Sherwood Road, south of SW Cimino Street and west of SW 124th Avenue in Tualatin, Oregon. The project site is immediately east of the existing industrial building in the northeast corner of the intersection of SW Tualatin-Sherwood Road at SW 124th Avenue. Access to the proposed building will be via an eastern extention of SW Cimino Street along the site frontage. A detailed site plan is included in the attached appendix.

The purpose of this report is to assess the transportation impacts associated with the proposed development on the nearby street system and to recommend any necessary mitigative measures. The analysis is conducted according to the requirements of the City of Tualatin.

Scope of Report & Project Study Area

This transportation impact study (TIS) includes trip generation and distribution, traffic counts and operational analysis for existing and future conditions both with and without the project, and examination of queuing and safety. The TIS is prepared in accordance with the requirements of the City of Tualatin and Washington County. As confirmed by both agencies, this TIS includes counts and analysis at the following intersections:

- SW Herman Road at SW 124th Avenue
- SW Cimino Street at SW 124th Avenue
- SW Tualatin-Sherwood Road at SW 124th Avenue
- SW Tualatin-Sherwood Road at SW 115th Avenue

The TIS also includes analysis both with and without the completion of the SW 124th Avenue project south of SW Tualatin-Sherwood Road.

Figure 1 on page four is a vicinity map that shows the project site, the surrounding street network, and the existing configuration of the study area intersections.

Table 1 shows the study area streets, as well as their jurisdictions and vicinity features.

Table 1: Study-Area Streets Summary

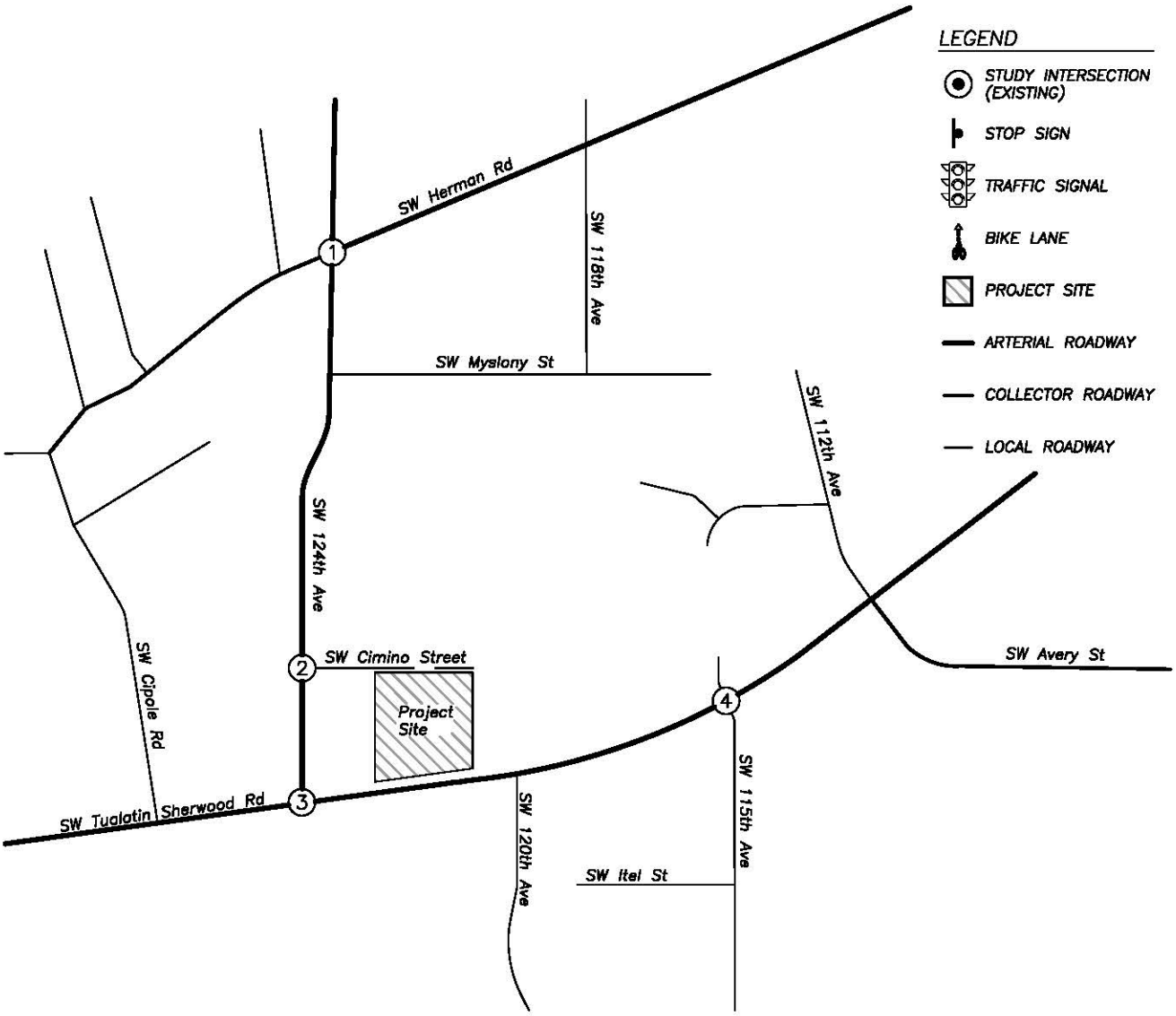
Street	Jurisdiction	Classification	Sidewalks	Bike Lanes	Posted Speed
SW Cimino Street	Tualatin	Local Road	South side	No	None
SW 124th Avenue	Tualatin	Major Arterial, Truck Route	Yes	Yes	45 mph
SW Herman Road	Tualatin	Local Road, Truck Route	North side	Yes	45 mph
SW Tualatin-Sherwood Road	Washington County	Major Arterial, Truck Route	Yes	Yes	45 mph
SW 115th Avenue	Tualatin	Local Road	Yes	Partial	30 mph

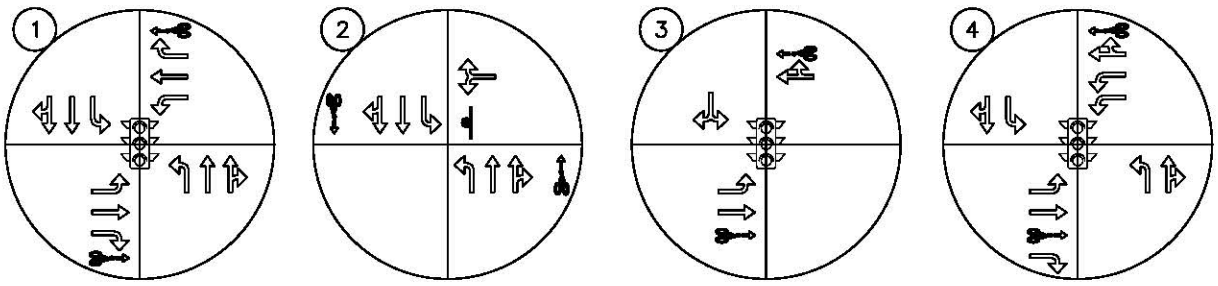
Transit Availability

Trimet Bus Line 97 runs every 30 minutes between the Tualatin WES Station and SW Langer Drive/Sherwood Plaza Monday through Friday from 6:00 AM to 7:00 PM and does not operate on weekends. This line provides service to a stop at the intersection of SW Tualatin-Sherwood Road at SW 124th Avenue. Connections to Line 97 include the WES Commuter Rail in Tualatin, as well as Line 76-Beaverton/Tualatin and Line 96-Tualatin/I-5. In Sherwood, you can connect with Line 93-Tigard/Sherwood and Line 94-Pacific Hwy/Sherwood. This is the only transit line that operates in the site vicinity. Detailed schedules are available in the appendix.

Traffic Counts

Manual turning movement counts were conducted at the study area intersections in July 2017 from 7:00 to 9:00 AM and from 4:00 to 6:00 PM. Traffic volumes from the morning and evening peak hours are shown in Figure 2 on page five. The peak hours for the study-area intersections were generally 7:15 to 8:15 AM and from 4:20 to 5:20 PM.



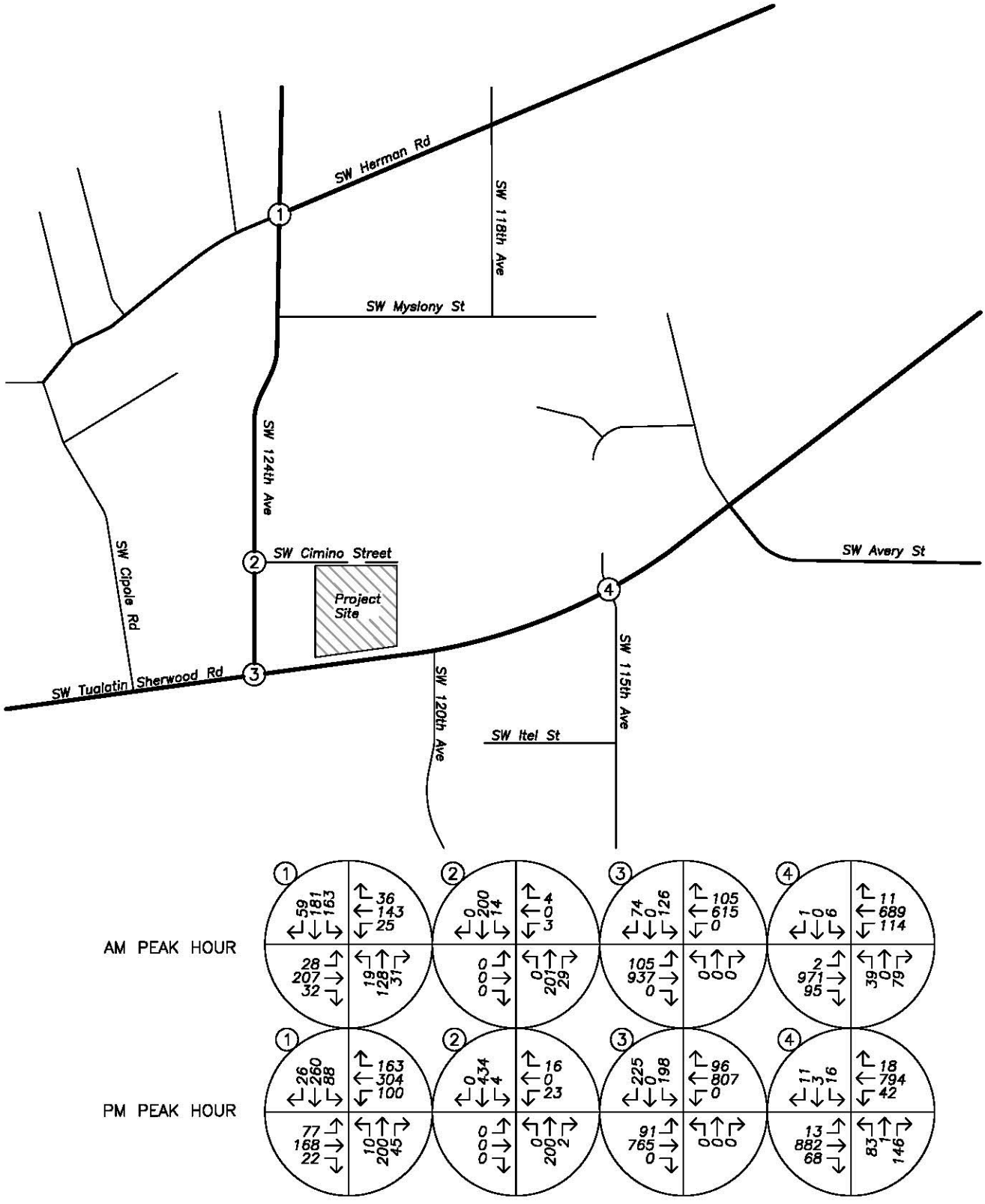


VICINITY MAP

no scale

FIGURE 1

PAGE 4



TRAFFIC VOLUMES
Existing Conditions
AM & PM Peak Hours

no scale

FIGURE 2

PAGE 5

Site Trips

The following sections describe the expected number of trips that will be generated by the propsoed industrial building during the morning and evening peak hours and on a typical weekday, as well as the distribution of these trips on the study-area roadways and intersections.

Trip Generation

Immediately adjacent to the proposed site is an established industrial building that has frontage on SW Cimino Street. Because the proposed building is similar in nature to the existing building, it is reasonable to expect that trip generation characteristics will also be similar. The existing building is approximately 88,000 square feet and generates a total of 50 trips during the morning peak hour and 45 trips during the evening peak hour. This equates trip rates of 0.57 to 0.51 trips per 1,000 square feet during the morning and evening peak hours, respectively.

However, the City of Tualatin requires that this analysis assume that the building is occupied with a "worst case" occupancy. That is, a use that would generate the most traffic of uses allowed in the zone and accommodated by the proposed building type. In the scoping process, that was identified by the City to be land-use code 110, *General Light Industrial*, from the *TRIP GENERATION MANUAL, 9th Edition.* The data in the manual for this land use shows trip rates of 0.92 and 0.97 trips per 1,000 square feet for the morning and evening peak hours. This is nearly twice the level of traffic generated by the existing building west of the site.

Although the proposed building is expected to generate trips in a manner consistent with the existing adjacent building, the higher trip generation rates from the General Light Industrial land-use code were used to meet the requirements of the City of Tualatin. Table 2 below shows the results of the trip generation calculations.

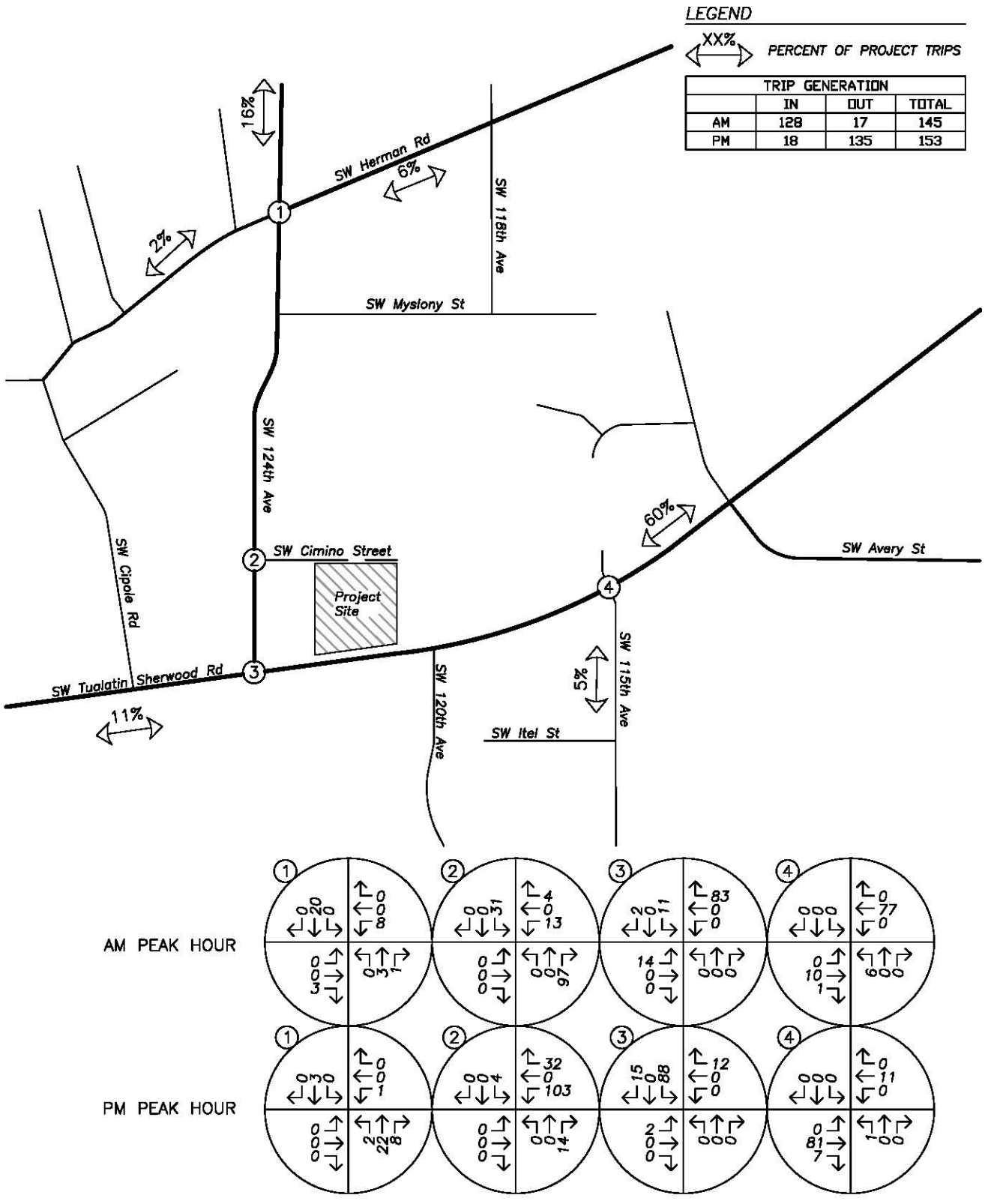
Table 2: Trip Generation Summary

	ITE Code	Size	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Weekday Total
General Light Industrial	110	157.23 ksf	128	17	145	18	135	153	1,096

Trip Distribution

The distribution of the site-generated trips was determined first by examining the direction of trips that enter and exit SW Cimino Street to and from SW 124th Avenue. Because the proposed building will be similar in nature to the existing building that is served by SW Cimino Street, it is expected that the site trips from the IPT building will have similar characteristics.

Trip distribution and assignment at other off-site intersections was estimated based on existing traffic volumes and the likely routes that employees and patrons will travel to and from the site. The trip distribution is shown in Figure 3 on page 8 and was confirmed as acceptable to the City of Tualatin and Washington County during the project scoping process.



TRIP DISTRIBUTION & ASSIGNMENT
Proposed Development Plan – Site Trips
AM & PM Peak Hours

no scale

FIGURE 3

Operational Analysis

The sections below describe how future-year traffic volumes were developed and how the study-area intersections will operate with respect to capacity, level of service, and queuing.

Background Traffic

To gauge the transportation impacts associated with the proposed building, future traffic volumes at the year of opening are estimated, then site-generated trips are added. It is expected that the building could be constructed and occupied within two years. As such, year 2019 conditions are examined. To estimate 2019 conditions, two adjustments are made. First, a 2% annual growth rate was applied to the existing traffic volumes over a two-year period. Second, "in-process" trips from the un-built portions of other surrounding develops were added. In-process trips are associated with approved but not-yet-constructed projects. In this case, trips from the un-built portions of the following developments were considered:

- Hedges Business Park
- Koch Corporate Center – Buildings 1, 5, 6, 7, and 8
- Itel Street Industrial Development
- Franklin Business Park
- Majestic Realty Industrial Development

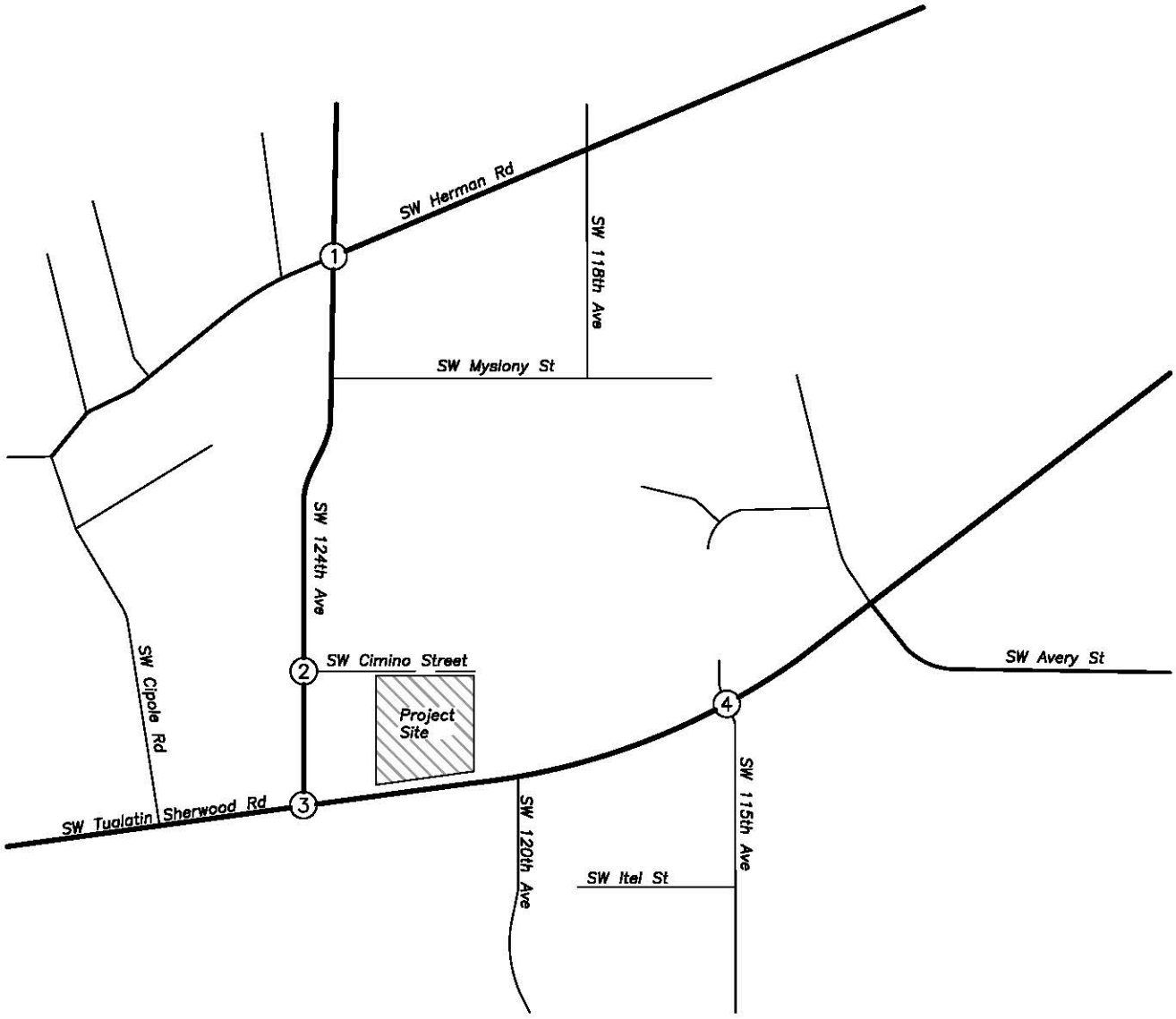
The in-process trips are shown in Figure 4 on page 10. 2019 background traffic volumes were developed for the AM and PM peak hours, as shown in Figure 5 on page 11. Site trips were added to these figures to develop a year 2019 background plus site trips scenario, as shown in Figure 6 on page 12.

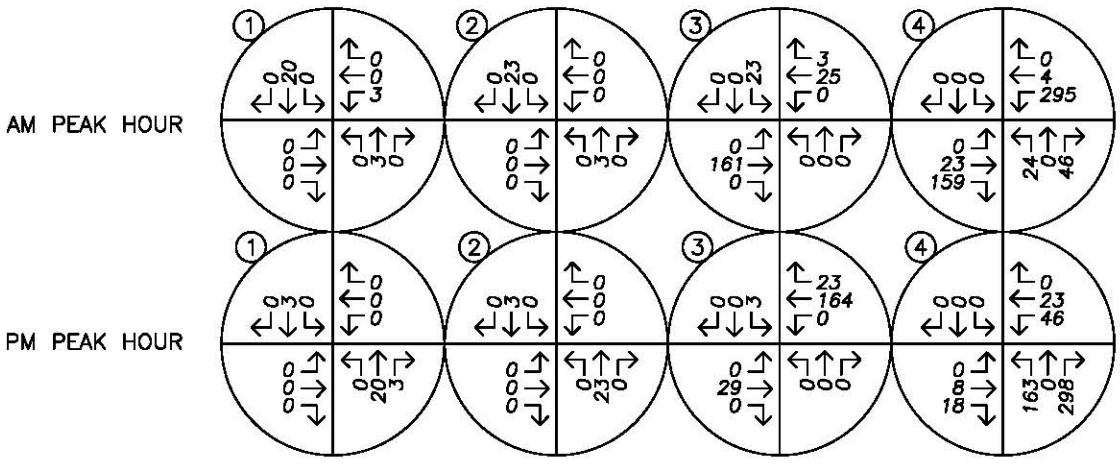
SW 124th Avenue Extension

The extension of SW 124th Avenue south of SW Tualatin-Sherwood Road is a regionally-significant project that is currently under construction. This project will impact the flow of traffic within the project study area and also to and from the proposed development.

Near-term traffic volumes with the SW 124th Avenue extension in place were recently developed as part of the TIS for the nearby Majestic Realty industrial building near SW 115th Avenue. That study was reviewed and accepted by both the City of Tualatin and Washington County. As such, the traffic volume forecasts with the SW 124th Avenue extension in place were used for this TIS. The Majestic report estimated 2017 conditions with the extension in place, but those volumes were increased using a growth rate of 2% per year for two years to estimate 2019 conditions.

Figure 7 on page 13 shows conditions with both the proposed IPT industrial building and the SW 124th Avenue extension in place.



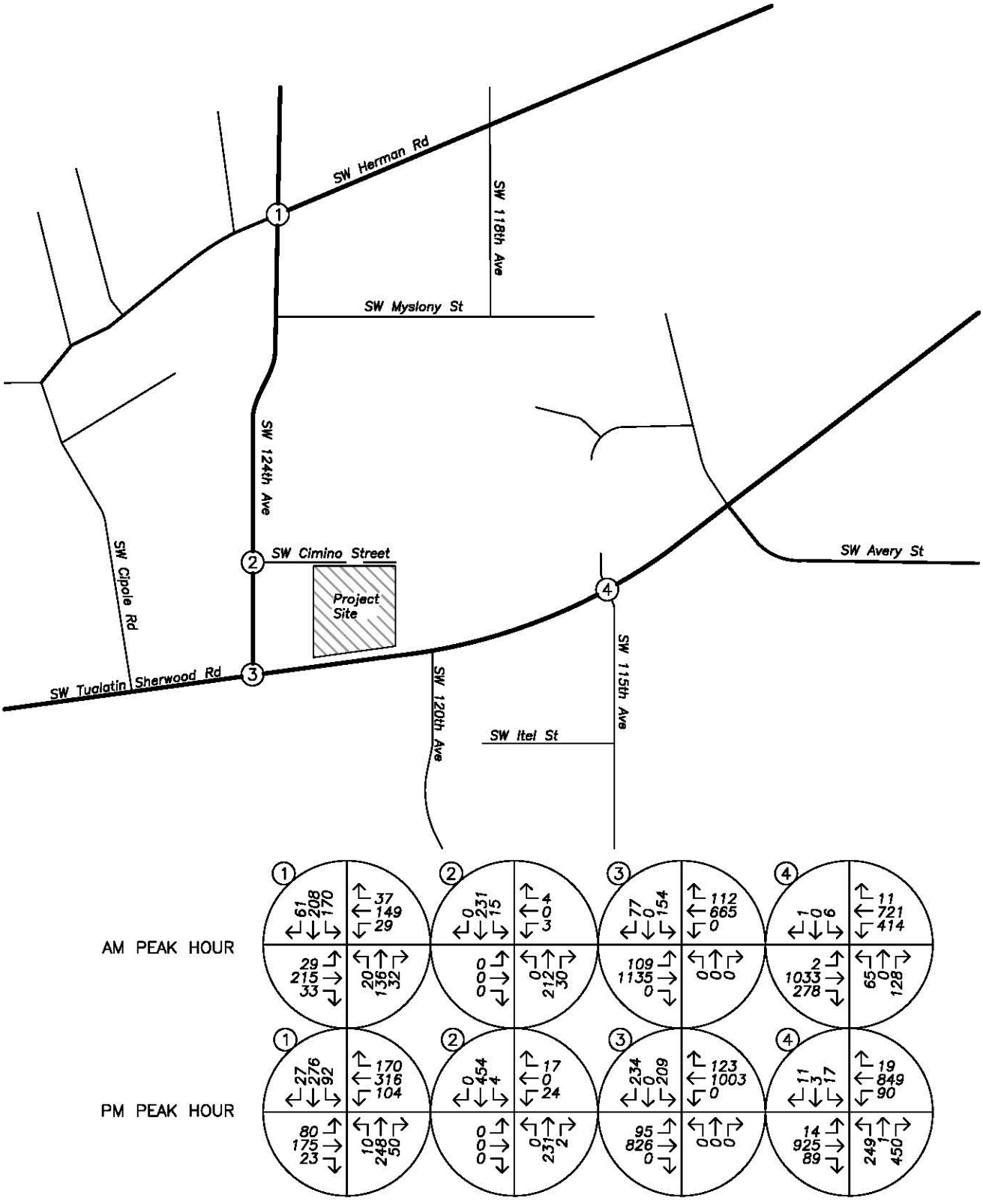


TRAFFIC VOLUMES
In-Process Trips
PM Peak Hour

no scale

FIGURE 4

PAGE 10

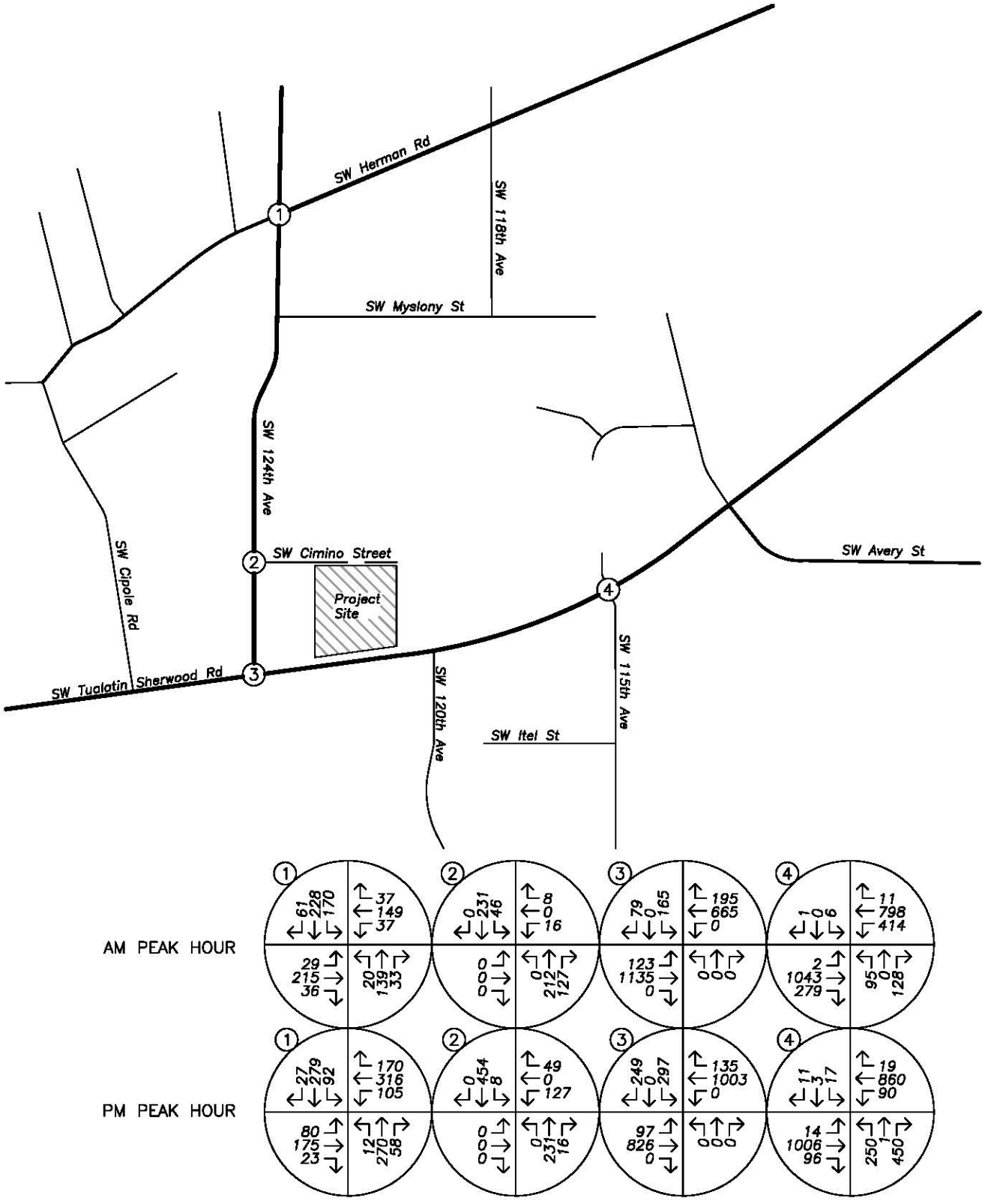


TRAFFIC VOLUMES
Year 2019 Background Conditions
AM & PM Peak Hours

no scale

FIGURE 5

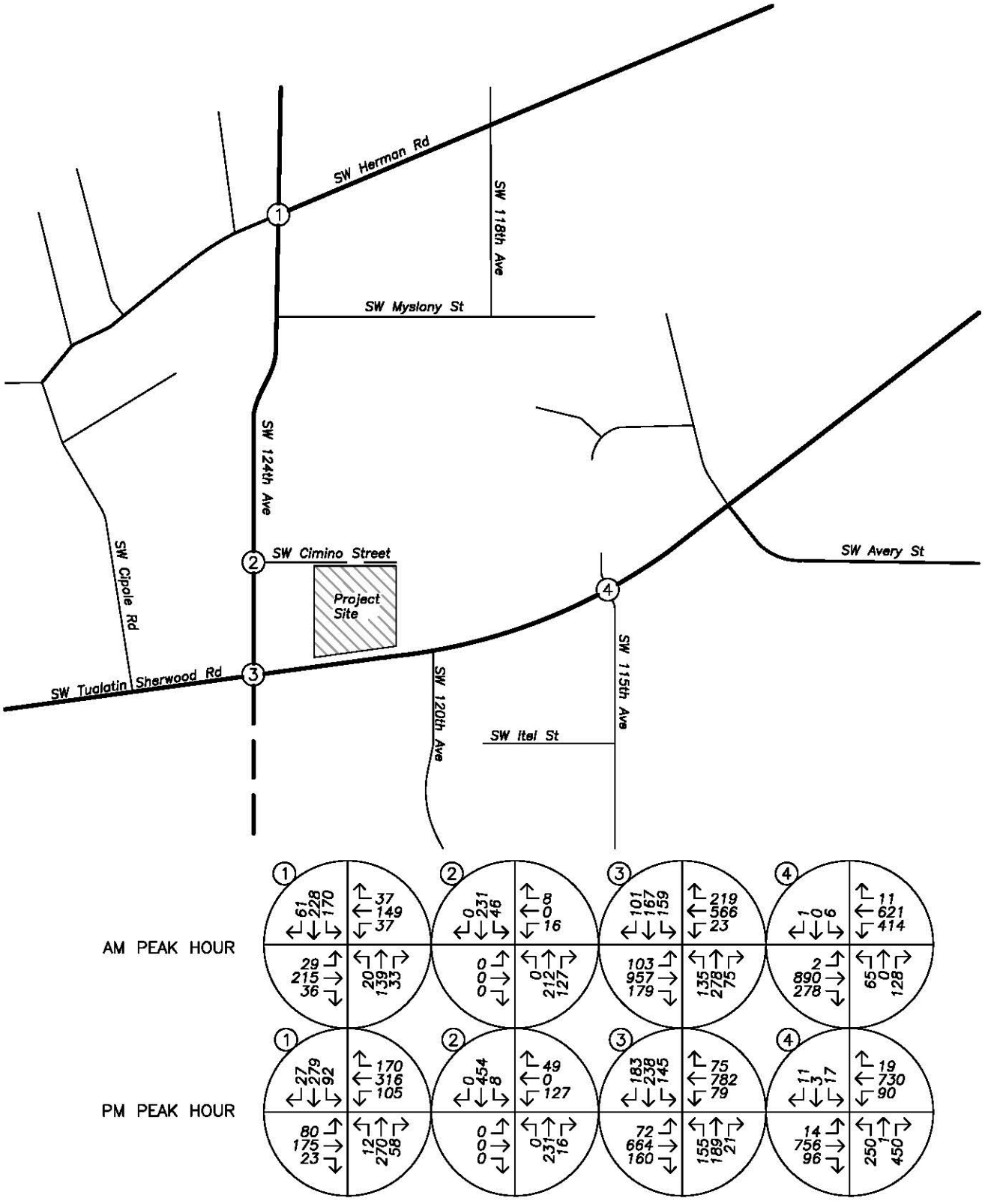
PAGE 11



TRAFFIC VOLUMES
Year 2019 Background plus Site Conditions
AM & PM Peak Hours

no scale

FIGURE 6



TRAFFIC VOLUMES
Year 2019 Background Plus Site Conditions with 124th Avenue Extension

no scale

FIGURE 7

Capacity Analysis

To determine the level of service at the study intersections, a capacity analysis was conducted. The level of service (LOS) of an intersection can range from A, which indicates very little or no delay experienced by vehicles, to F, which indicates a high degree of congestion and delay. The City of Tualatin's performance standard requires signalized intersections to operate at level of service D or better, and unsignalized intersections to operate at LOS E or better during the peak hours. Washington County standards use volume-to-capacity (v/c) ratio and require a v/c ratio of 0.99 or better during the peak hours.

The study area intersections were analyzed using the signalized and unsignalized intersection analysis methods in the *HIGHWAY CAPACITY MANUAL*, published by the Transportation Research Board. The analysis was made for the morning and evening peak hours for existing conditions, year 2019 background conditions, and year 2019 background plus site trips from the proposed development.

Each of the study intersections surrounding the IPT Tualatin development are currently operating at LOS C or better and display acceptable v/c ratios.

Under 2019 background conditions and 2019 background plus site trip conditions, three of the four study intersections are projected to operate at acceptable levels of service. The intersection of SW Tualatin-Sherwood Road at SW 115th Avenue is projected to operate at LOS E during the PM Peak hour with or without the addition of site trips, with v/c ratios over 1.0. This is mitigated by the construction of the SW 124th Avenue extension, and as such no other mitigations are required or recommended.

Under 2019 background plus site trip conditions with the extension of SW 124th Avenue, all of the study area intersection are projected to operate at LOS D or better. As such, no additional mitigations are required or recommended.

Based on the operational analysis, all study intersections are projected to operate acceptably under all SW 124th Avenue extension development scenarios. No operational mitigations are recommended.

The results of the capacity analysis, along with the levels of service, delay, and v/c ratios are shown in

Table 3. Detailed calculations, as well as tables showing the relationships between delay and level of service are included in the appendix to this report.

Table 3: Intersection Capacity & Level of Service Summary

	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
SW 124th Avenue at SW Herman Road						
2017 Existing Conditions	C	26	0.24	C	26	0.32
2019 Background Traffic	C	27	0.27	C	26	0.34
2019 Background + Site	D	45	0.31	C	22	0.32
2019 Background + Site w/ 124th Extension	D	45	0.31	C	25	0.36
SW 124th Avenue at SW Cimino Street						
2017 Existing Conditions	B	10	0.01	B	11	0.07
2019 Background Traffic	B	10	0.01	B	12	0.08
2019 Background + Site	B	12	0.05	C	15	0.35
2019 Background + Site w/ 124th Extension	B	12	0.04	A	10	0.16
SW 124th Avenue at SW Tualatin-Sherwood Rd						
2017 Existing Conditions	C	27	0.64	C	29	0.64
2019 Background Traffic	C	21	0.78	C	32	0.92
2019 Background + Site	C	20	0.80	D	39	0.98
2019 Background + Site w/ 124th Extension	D	38	0.55	D	35	0.51
SW Tualatin-Sherwood Rd at SW 115th Avenue						
2017 Existing Conditions	B	15	.69	B	17	0.74
2019 Background Traffic	C	26	0.90	C	30	0.89
2019 Background + Site	C	27	0.90	C	31	0.91
2019 Background + Site w/ 124th Extension	C	21	0.89	C	30	0.89

Queuing Analysis

An analysis of projected queuing was conducted for the study area intersections. The queue lengths for the intersections were projected based on the results of a Synchro/SimTraffic simulation, with the reported values based on the 95th-percentile queue lengths. This means that 95 percent of the time the queue lengths will be less than or equal to the reported values.

Table 4 presents the projected 95th-percentile queue lengths reported by the Synchro/SimTraffic simulation. Available lane storage was measured and rounded to the nearest five feet. For each lane group, the longest projected queue is reported, regardless of whether the queue occurred during the morning or evening peak hour. Detailed queuing analysis worksheets are included in the technical appendix.

One issue seen in the queueing analysis is the 95th percentile queue exceeding storage for the eastbound left turn lane at the intersection of SW 124th Avenue at SW Tualatin-Sherwood Road. This does not impede

through traffic on SW Tualatin-Sherwood Road, since the left turn lane also acts as a two-way left turn lane between SW 124th Avenue and SW Cipole Road, creating a possible 775 feet of storage.

The eastbound right-turn lane at SW Tualatin-Sherwood Road at SW 115th Avenue also regularly exceeds its storage. This does not result in a significant degradation of intersection performance, since the queue dissipates with the onset of green for the adjacent eastbound through movement. The queue spillback does not compromise the safety or performance of the intersection.

Table 4 below shows a summary of the queuing analysis at the study area intersections. Detailed calculations are included in the attached appendix.

Table 4: Queuing Analysis Summary

	Available Storage (ft)	2017 Existing Conditions	2019 Background Conditions	2019 Background + Site Conditions
Herman Rd at 124th Avenue				
Eastbound Left Turn	250	85	100	90
Westbound Left Turn	170	170	165	160
Northbound Left Turn	210	55	40	35
Southbound Left Turn	250	160	170	250
124th Ave at Cimino St				
Southbound Left Turn	175	20	20	40
124th Ave at Tualatin-Sherwood Rd				
Eastbound Left Turn	200	355	1020	520
Westbound Left Turn	250	-	-	270
Northbound Left Turn	250	-	-	210
Southbound Left Turn	>1000	170	390	155
Eastbound Right Turn	90	-	-	270
Westbound Right Turn	90	-	-	220
Southbound Right Turn	>1000	175	235	145
115th Ave at Tualatin-Sherwood Rd				
Eastbound Left Turn	300	65	135	125
Westbound Left Turn	460	70	305	295
Northbound Left Turn	180	90	195	195
Southbound Left Turn	130	40	125	55
Eastbound Right Turn	90	105	140	145

Safety Analysis

Per discussions with the City of Tualatin, an analysis of the most recent five years of crash history must be conducted to meet jurisdiction standards for safety analysis. Such a study was conducted and is presented in the following section.

Crash History

Using data obtained from the Oregon Department of Transportation's Crash Data System, a review was performed for the most recent five years of crash data (January 2011 to December 2015). Crash rates were calculated for each intersection under the common assumption that traffic counted during the PM peak period represents 10% of the average daily traffic (ADT). Crash rates greater than 1.0 crashes per million entering vehicles (CMEV) are generally indicative of a need for further investigation and possible mitigation.

Nine crashes were reported during the study period at the intersection of SW 124th Avenue at SW Herman Road. Three of these crashes resulted in injuries or complaints of pain, while six crashes reported property damage only. Three of the crashes were rear-end type collisions, five of them were angle- or turning-movement collisions, and one was a head-on collision. One rear-end collision resulted in a passenger receiving an Injury C – *Possible Injury or Complaint of Pain*, while another resulted in one Injury C and two Injury B – *Non-Incapacitating Injury* reports. One of the turning movement collisions resulted in one Injury C. No crash patterns were detected at this intersection.

Ten crashes were reported during the study period at the intersection of SW 115th Avenue at SW Tualatin-Sherwood Road. Six of the crashes were rear-end type collisions, while four were turning-movement collisions. Two crashes resulted in property damage only, while eight resulted in injuries or complaints of pain. Three rear-end and four turning-movement collisions resulted in Injury C – *Possible Injury or Complaint of Pain* reports, and one rear-end collision resulted in one Injury C and one Injury B - *Non-Incapacitating Injury*. No crash patterns were detected at this intersection.

There were no crashes reported at the intersection of SW 124th Avenue at SW Cimino Street during the study period.

21 crashes were reported during the study period at the intersection of SW 124th Avenue at SW Tualatin-Sherwood Road. All of the crashes were rear-end collisions, split evenly between east-west and west-east movements. Many of the collisions were caused by vehicles failing to avoid stopped vehicles in the intersection attempting to make a right turn. This issue will be mitigated by the installation of dedicated left- and right-turn lanes in both directions with the SW 124th extension project. 19 reports of Injury C – *Possible Injury or Complaint of Pain* were filed, while one crash reported an Injury A – *Incapacitating Injury*. This crash occurred in 2012 when a distracted driver using their cell phone and following too close behind the vehicle in front of them failed to avoid that vehicle when it stopped in the intersection traveling east-west. The stopped vehicle was struck and the driver received the reported Injury A. The struck vehicle was forced in to striking the vehicle in front of it as well, but no injuries were reported from the third vehicle. Each vehicle had one occupant, the drivers.

One crash pattern was detected at the intersection of SW 124th Avenue at SW Tualatin-Sherwood Road. This pattern will be mitigated by the redesign of the intersection that will accompany the SW 124th Avenue extension project to accommodate dedicated east-west left- and right-turn lanes in each direction. No other patterns were found, and as such no other mitigations are required or recommended.

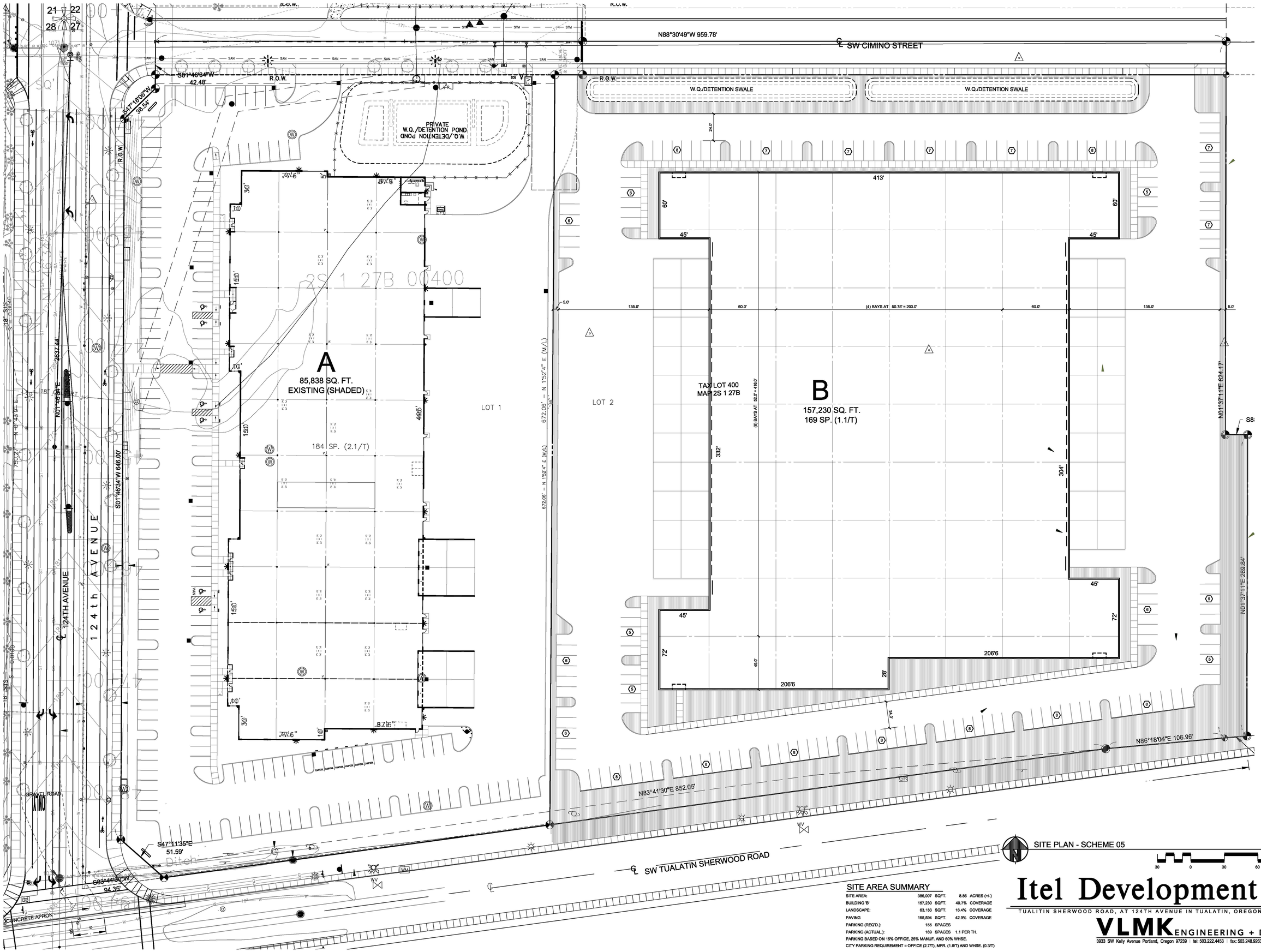
Conclusions & Recommendations

The traffic resulting from the proposed development consisting of light industrial building located on the east of SW 124th Avenue on SW Cimino Road in Tualatin, Oregon is not projected to cause any significant impact or detriment to the operation of the transportation network in the surrounding area. Accounting for the SW 124th Avenue extension, the intersections surrounding the subject property show adequate capacity and favorable performance through year 2019 regardless of the additional trips resulting from the proposed development. No operational mitigations are recommended.

A detailed analysis of the crash history at the study intersections shows no trends that are indicative of specific safety issues that need to be addressed. One crash pattern was detected at the intersection of SW 124th Avenue at SW Tualatin-Sherwood Road. This pattern will be mitigated by the redesign of the intersection that will accompany the SW 124th Avenue extension project to accommodate dedicated east-west left- and right-turn lanes in each direction. No other patterns were found, and as such no other mitigations are required or recommended.

Based on queueing analysis detailed in the appendix, no safety issues will result from queues exceeding storage at any current or proposed intersections. The reconfiguration of the intersection of SW 124th Avenue at SW Tualatin-Sherwood Road will mitigate any existing queueing issues. No other mitigations are necessary or recommended.

Appendix



SITE PLAN - SCHEME 05

1" = 30.0'

30 0 30 60 90

SITE AREA SUMMARY

SITE AREA:	386,007 SQFT.	8.86	ACRES (+/-)
BUILDING 'B'	157,230 SQFT.	40.7%	COVERAGE
LANDSCAPE:	63,183 SQFT.	16.4%	COVERAGE
PAVING	165,594 SQFT.	42.9%	COVERAGE
PARKING (REQ'D.):	155 SPACES		
PARKING (ACTUAL.):	169 SPACES	1.1 PER TH.	

PARKING BASED ON 15% OFFICE, 25% MANUF. AND 60% WHSE.
CITY PARKING REQUIREMENT = OFFICE (2.7/T), MFR. (1.6/T) AND WHSE. (0.3/T)

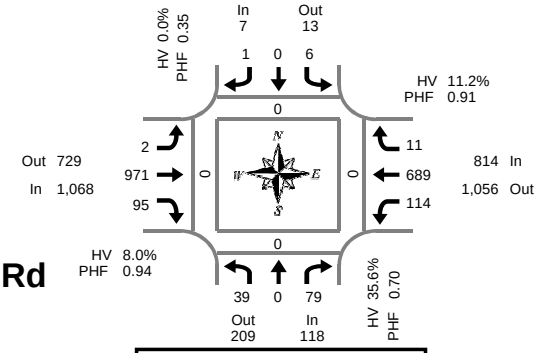
Itel Development

TUALITIN SHERWOOD ROAD, AT 124TH AVENUE IN TUALATIN, OREGON

VLMK ENGINEERING + DESIGN
3933 SW Kelly Avenue Portland, Oregon 97239 | tel: 503.222.4453 | fax: 503.248.9263 | www.vlmk.com

Total Vehicle Summary

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



SW 115th Ave & SW Tualatin Sherwood Rd

Thursday, July 13, 2017
7:00 AM to 9:00 AM

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

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

Interval Start Time	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	2	0	1	0	0	0	0	0	0	77	12	0	7	59	0	0	158	0	0	0	0
7:05 AM	5	0	6	0	1	0	0	0	0	87	4	2	3	61	0	1	167	0	0	0	0
7:10 AM	0	0	6	0	3	0	0	0	1	91	12	0	5	61	1	0	180	0	0	0	0
7:15 AM	1	0	9	0	0	0	0	0	1	79	4	0	6	65	1	0	166	0	0	0	0
7:20 AM	2	0	3	0	1	0	1	0	0	76	8	0	10	45	1	1	147	0	0	0	0
7:25 AM	7	0	7	0	1	0	0	0	0	79	7	0	11	63	1	0	176	0	0	0	0
7:30 AM	2	0	12	0	0	0	0	0	0	84	13	0	17	32	1	1	161	0	0	0	0
7:35 AM	4	0	10	0	0	0	0	0	0	80	4	0	13	68	0	0	179	0	0	0	0
7:40 AM	1	0	5	0	0	0	0	0	0	79	8	0	11	57	2	0	163	0	0	0	0
7:45 AM	6	0	4	0	0	0	0	0	0	80	5	0	14	57	2	1	168	0	0	0	0
7:50 AM	8	0	9	0	0	0	0	0	0	79	10	0	8	47	1	0	162	0	0	0	0
7:55 AM	1	0	7	0	0	0	0	0	0	80	8	0	9	74	1	0	180	0	0	0	0
8:00 AM	4	0	6	0	0	1	0	0	1	56	8	1	9	50	0	0	135	0	0	0	0
8:05 AM	4	0	8	0	0	0	1	0	1	68	10	0	10	45	2	0	149	0	0	0	0
8:10 AM	4	0	7	0	1	0	0	0	1	78	9	0	7	58	2	0	167	0	0	0	0
8:15 AM	4	0	9	0	1	0	0	0	0	88	13	0	9	57	0	0	181	0	1	0	0
8:20 AM	2	0	6	0	0	0	1	0	1	81	9	0	10	48	3	0	161	0	1	0	0
8:25 AM	2	0	10	0	0	0	0	0	0	92	5	0	7	71	3	0	190	0	0	0	0
8:30 AM	1	0	11	0	1	0	0	0	2	77	9	0	10	47	1	0	159	0	0	0	0
8:35 AM	1	0	6	0	0	0	1	0	1	74	7	0	10	72	2	0	174	0	0	0	0
8:40 AM	5	0	9	0	1	1	1	0	3	74	8	0	6	57	4	0	169	0	0	0	0
8:45 AM	6	0	5	0	0	0	0	0	0	82	2	0	5	64	0	0	164	0	0	0	0
8:50 AM	4	0	0	0	1	0	0	0	0	73	4	0	6	52	1	1	141	0	0	0	0
8:55 AM	2	0	5	0	4	0	0	0	1	78	10	0	3	56	3	0	162	0	0	0	0
Total Survey	78	0	161	0	15	2	5	0	13	1,892	189	3	206	1,366	32	5	3,959	0	2	0	0

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

Interval Start Time	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	7	0	13	0	4	0	0	0	1	255	28	2	15	181	1	1	505	0	0	0	0
7:15 AM	10	0	19	0	2	0	1	0	1	234	19	0	27	173	3	1	489	0	0	0	0
7:30 AM	7	0	27	0	0	0	0	0	0	243	25	0	41	157	3	1	503	0	0	0	0
7:45 AM	15	0	20	0	0	0	0	0	0	239	23	0	31	178	4	1	510	0	0	0	0
8:00 AM	12	0	21	0	1	1	1	0	3	202	27	1	26	153	4	0	451	0	0	0	0
8:15 AM	8	0	25	0	1	0	1	0	1	261	27	0	26	176	6	0	532	0	2	0	0
8:30 AM	7	0	26	0	2	1	2	0	6	225	24	0	26	176	7	0	502	0	0	0	0
8:45 AM	12	0	10	0	5	0	0	0	1	233	16	0	14	172	4	1	467	0	0	0	0
Total Survey	78	0	161	0	15	2	5	0	13	1,892	189	3	206	1,366	32	5	3,959	0	2	0	0

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

By Approach	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	118	209	327	0	7	13	20	0	1,068	729	1,797	2	814	1,056	1,870	4	2,007	0	0	0	0
%HV	35.6%				0.0%				8.0%				11.2%				10.9%				
PHF	0.70				0.35				0.94				0.91				0.97				

By Movement	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	39	0	79	118	6	0	1	7	2	971	95	1,068	114	689	11	814	2,007
%HV	30.8%	0.0%	38.0%	35.6%	0.0%	0.0%	0.0%	0.0%	0.0%	6.7%	21.1%	8.0%	21.9%	9.4%	9.1%	11.2%	10.9%
PHF	0.65	0.00	0.68	0.70	0.38	0.00	0.25	0.35	0.25	0.94	0.85	0.94	0.70	0.92	0.55	0.91	0.97

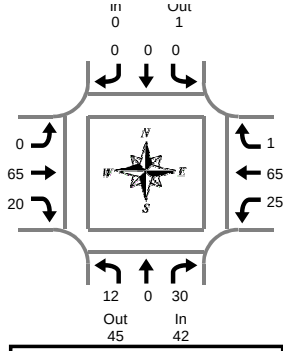
Rolling Hour Summary
7:00 AM to 9:00 AM

Interval Start Time	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	39	0	79	0	6	0	1	0	2	971	95	2	114	689	11	4	2,007	0	0	0	0
7:15 AM	44	0	87	0	3	1	2	0	4	918	94	1	125	661	14	3	1,953	0	0	0	0
7:30 AM	42	0	93	0	2	1	2	0	4	945	102	1	124	664	17	2	1,996	0	2	0	0
7:45 AM	42	0	92	0	4	2	4	0	10	927	101	1	109	683	21	1	1,995	0	2	0	0
8:00 AM	39	0	82	0	9	2	4	0	11	921	94	1	92	677	21	1	1,952	0	2	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740

Out 77
In 85



SW 115th Ave & SW Tualatin Sherwood Rd

Thursday, July 13, 2017
7:00 AM to 9:00 AM

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

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

Interval Start Time	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	8	1	9	1	2	0	3	12
7:05 AM	1	0	1	2	0	0	0	0	0	8	2	10	1	7	0	8	20
7:10 AM	0	0	3	3	0	0	0	0	0	7	3	10	1	6	0	7	20
7:15 AM	1	0	4	5	0	0	0	0	0	3	2	5	1	4	0	5	15
7:20 AM	0	0	0	0	0	0	0	0	0	5	2	7	2	3	0	5	12
7:25 AM	3	0	3	6	0	0	0	0	0	7	2	9	1	4	0	5	20
7:30 AM	0	0	6	6	0	0	0	0	0	3	4	7	5	5	0	10	23
7:35 AM	1	0	2	3	0	0	0	0	0	6	0	6	5	9	0	14	23
7:40 AM	0	0	3	3	0	0	0	0	0	3	0	3	3	2	0	5	11
7:45 AM	3	0	3	6	0	0	0	0	0	2	1	3	2	8	0	10	19
7:50 AM	3	0	3	6	0	0	0	0	0	8	1	9	1	4	0	5	20
7:55 AM	0	0	2	2	0	0	0	0	0	5	2	7	2	11	1	14	23
8:00 AM	1	0	1	2	0	0	0	0	0	3	2	5	3	7	0	10	17
8:05 AM	2	0	7	9	0	0	1	1	0	10	3	13	3	9	0	12	35
8:10 AM	3	0	4	7	0	0	0	0	0	9	0	9	0	10	0	10	26
8:15 AM	2	0	2	4	0	0	0	0	0	6	3	9	1	8	0	9	22
8:20 AM	0	0	1	1	0	0	0	0	0	9	0	9	1	9	0	10	20
8:25 AM	0	0	2	2	0	0	0	0	0	6	0	6	1	10	0	11	19
8:30 AM	1	0	3	4	0	0	0	0	1	6	2	9	3	6	0	9	22
8:35 AM	0	0	3	3	0	0	0	0	0	5	0	5	2	11	1	14	22
8:40 AM	3	0	2	5	0	1	0	1	0	2	3	5	0	7	0	7	18
8:45 AM	3	0	1	4	0	0	0	0	0	6	0	6	2	7	0	9	19
8:50 AM	1	0	0	1	0	0	0	0	0	4	1	5	2	4	0	6	12
8:55 AM	0	0	3	3	0	0	0	0	0	3	2	5	0	8	1	9	17
Total Survey	28	0	59	87	0	1	1	2	1	134	36	171	43	161	3	207	467

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

Interval Start Time	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	0	4	5	0	0	0	0	0	23	6	29	3	15	0	18	52
7:15 AM	4	0	7	11	0	0	0	0	0	15	6	21	4	11	0	15	47
7:30 AM	1	0	11	12	0	0	0	0	0	12	4	16	13	16	0	29	57
7:45 AM	6	0	8	14	0	0	0	0	0	15	4	19	5	23	1	29	62
8:00 AM	6	0	12	18	0	0	1	1	0	22	5	27	6	26	0	32	78
8:15 AM	2	0	5	7	0	0	0	0	0	21	3	24	3	27	0	30	61
8:30 AM	4	0	8	12	0	1	0	1	1	13	5	19	5	24	1	30	62
8:45 AM	4	0	4	8	0	0	0	0	0	13	3	16	4	19	1	24	48
Total Survey	28	0	59	87	0	1	1	2	1	134	36	171	43	161	3	207	467

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

By Approach	Northbound SW 115th Ave			Southbound SW 115th Ave			Eastbound SW Tualatin Sherwood Rd			Westbound SW Tualatin Sherwood Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	42	45	87	0	1	1	85	77	162	91	95	186	218
PHF	0.70			0.00			0.73			0.78			0.83

By Movement	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	12	0	30	42	0	0	0	0	0	65	20	85	25	65	1	91	218
PHF	0.50	0.00	0.68	0.70	0.00	0.00	0.00	0.00	0.00	0.71	0.63	0.73	0.48	0.71	0.25	0.78	0.83

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

Interval Start Time	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	12	0	30	42	0	0	0	0	0	65	20	85	25	65	1	91	218
7:15 AM	17	0	38	55	0	0	1	1	0	64	19	83	28	76	1	105	244
7:30 AM	15	0	36	51	0	0	1	1	0	70	16	86	27	92	1	120	258
7:45 AM	18	0	33	51	0	1	1	2	1	71	17	89	19	100	2	121	263
8:00 AM	16	0	29	45	0	1	1	2	1	69	16	86	18	96	2	116	249

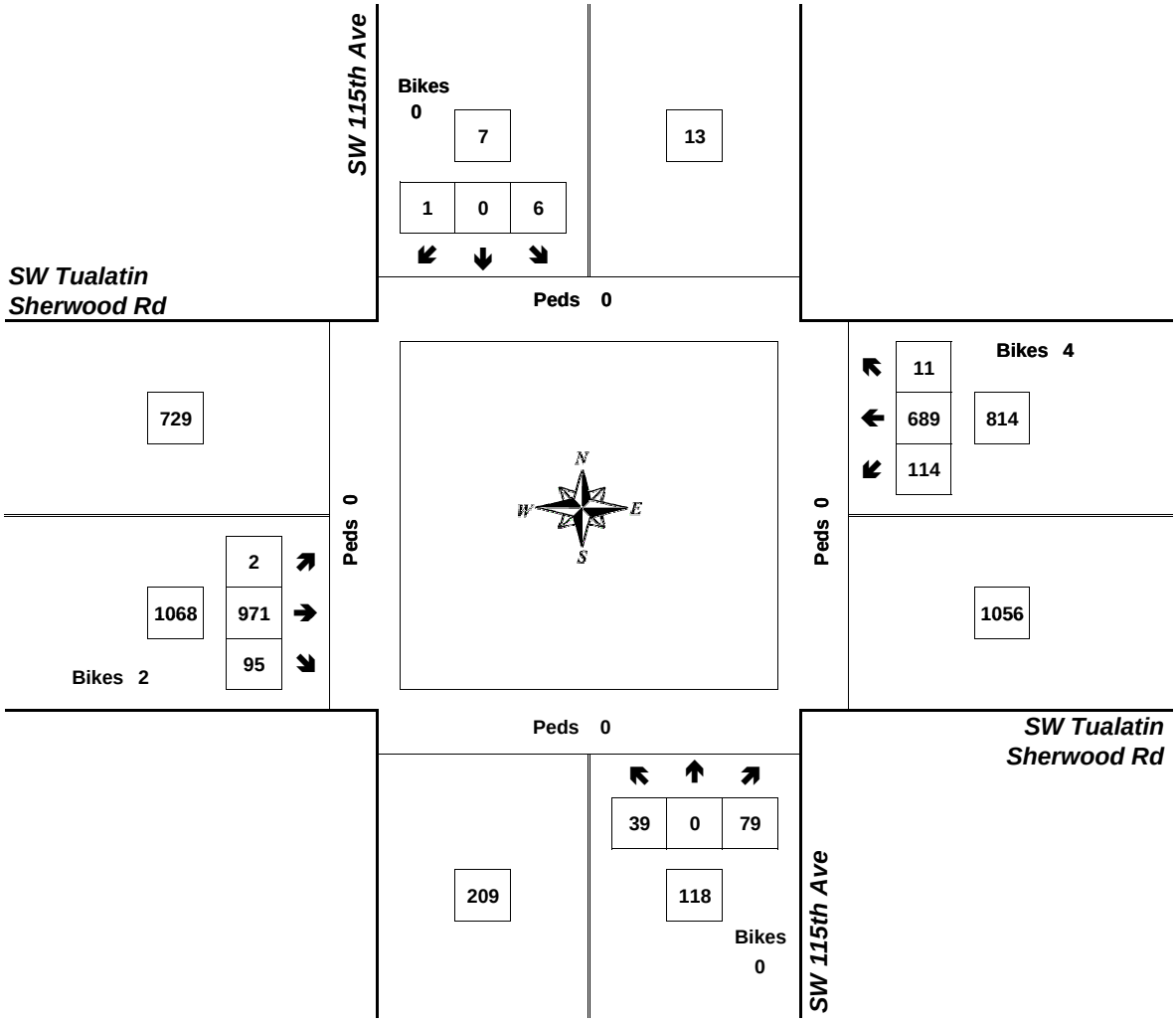
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

SW 115th Ave & SW Tualatin Sherwood Rd

7:00 AM to 8:00 AM
Thursday, July 13, 2017

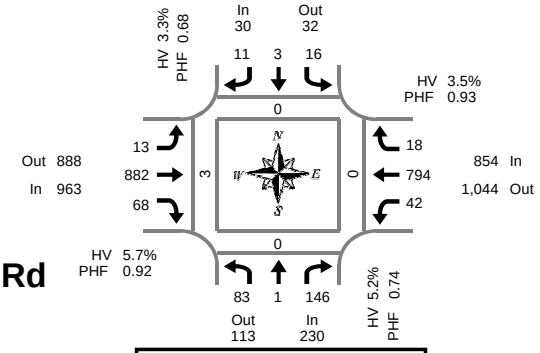


Approach	PHF	HV%	Volume
EB	0.94	8.0%	1,068
WB	0.91	11.2%	814
NB	0.70	35.6%	118
SB	0.35	0.0%	7
Intersection	0.97	10.9%	2,007

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

Total Vehicle Summary

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



SW 115th Ave & SW Tualatin Sherwood Rd

Wednesday, July 12, 2017
4:00 PM to 6:00 PM

Peak Hour Summary
4:00 PM to 5:00 PM

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

Interval Start Time	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	5	1	13	0	1	0	0	0	2	86	6	0	2	80	0	0	196	0	0	0	0
4:05 PM	10	0	24	0	2	0	1	0	0	89	9	0	3	71	1	0	210	0	0	0	0
4:10 PM	7	0	18	0	1	1	0	0	0	67	3	0	1	70	2	0	170	0	0	0	0
4:15 PM	4	0	11	0	1	0	1	0	2	80	3	0	4	67	2	0	175	0	0	0	0
4:20 PM	9	0	8	0	1	0	1	0	1	67	5	0	1	68	4	1	165	0	0	0	0
4:25 PM	6	0	15	0	0	2	1	0	1	68	3	0	4	53	0	1	153	0	0	0	0
4:30 PM	9	0	11	0	2	0	3	0	1	79	4	0	6	73	1	0	189	0	0	0	0
4:35 PM	8	0	7	0	3	0	0	0	2	75	3	0	2	66	4	1	170	0	0	0	0
4:40 PM	8	0	11	0	0	0	2	0	1	72	3	1	2	67	0	0	166	0	0	0	0
4:45 PM	5	0	9	0	1	0	1	0	0	70	10	0	4	63	2	0	165	0	0	0	1
4:50 PM	5	0	10	0	2	0	0	0	0	72	12	0	8	67	1	0	177	0	0	0	1
4:55 PM	7	0	9	0	2	0	1	0	3	57	7	1	5	49	1	0	141	0	0	0	1
5:00 PM	7	0	18	0	3	0	2	0	0	70	3	1	2	73	0	1	178	0	0	0	0
5:05 PM	10	0	19	0	0	0	0	0	0	76	6	0	3	76	0	2	190	0	0	0	0
5:10 PM	6	0	14	0	0	0	0	0	1	67	3	0	5	70	1	1	167	0	0	0	0
5:15 PM	6	0	15	0	1	0	3	0	0	69	6	0	5	65	1	0	171	0	0	0	0
5:20 PM	6	0	10	0	2	0	2	0	0	62	4	0	4	66	0	0	156	0	0	0	0
5:25 PM	9	0	11	0	0	0	1	0	0	85	4	0	1	56	2	0	169	0	0	0	0
5:30 PM	12	0	15	0	1	0	2	0	1	82	5	0	5	47	1	0	171	0	0	0	0
5:35 PM	11	0	19	0	2	0	3	0	6	85	7	0	1	52	4	0	190	0	0	0	0
5:40 PM	7	0	10	0	1	0	1	0	1	86	3	0	2	71	1	1	183	0	0	0	0
5:45 PM	7	0	12	0	0	0	0	0	1	73	3	0	4	64	3	0	167	0	0	0	0
5:50 PM	8	0	3	0	0	0	0	0	1	63	11	0	4	75	2	1	167	1	0	0	0
5:55 PM	2	0	11	0	1	0	1	0	3	61	3	0	2	67	3	0	154	0	0	0	0
Total Survey	174	1	303	0	27	3	26	0	27	1,761	126	3	80	1,576	36	9	4,140	1	0	0	3

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

Interval Start Time	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	22	1	55	0	4	1	1	0	2	242	18	0	6	221	3	0	576	0	0	0	0
4:15 PM	19	0	34	0	2	2	3	0	4	215	11	0	9	188	6	2	493	0	0	0	0
4:30 PM	25	0	29	0	5	0	5	0	4	226	10	1	10	206	5	1	525	0	0	0	0
4:45 PM	17	0	28	0	5	0	2	0	3	199	29	1	17	179	4	0	483	0	0	0	3
5:00 PM	23	0	51	0	3	0	2	0	1	213	12	1	10	219	1	4	535	0	0	0	0
5:15 PM	21	0	36	0	3	0	6	0	0	216	14	0	10	187	3	0	496	0	0	0	0
5:30 PM	30	0	44	0	4	0	6	0	8	253	15	0	8	170	6	1	544	0	0	0	0
5:45 PM	17	0	26	0	1	0	1	0	5	197	17	0	10	206	8	1	488	1	0	0	0
Total Survey	174	1	303	0	27	3	26	0	27	1,761	126	3	80	1,576	36	9	4,140	1	0	0	3

Peak Hour Summary
4:00 PM to 5:00 PM

By Approach	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	230	113	343	0	30	32	62	0	963	888	1,851	2	854	1,044	1,898	3	2,077
%HV	5.2%				3.3%				5.7%				3.5%				4.7%
PHF	0.74				0.68				0.92				0.93				0.90

Pedestrians Crosswalk			
North	South	East	West
0	0	0	3

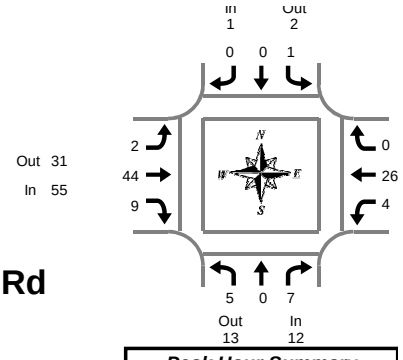
By Movement	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	83	1	146	230	16	3	11	30	13	882	68	963	42	794	18	854	2,077
%HV	6.0%	0.0%	4.8%	5.2%	6.3%	0.0%	0.0%	3.3%	15.4%	5.0%	13.2%	5.7%	9.5%	3.3%	0.0%	3.5%	4.7%
PHF	0.83	0.25	0.66	0.74	0.80	0.38	0.55	0.68	0.81	0.91	0.59	0.92	0.62	0.90	0.56	0.93	0.90

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

Interval Start Time	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	83	1	146	0	16	3	11	0	13	882	68	2	42	794	18	3	2,077	0	0	0	3
4:15 PM	84	0	142	0	15	2	12	0	12	853	62	3	46	792	16	7	2,036	0	0	0	3
4:30 PM	86	0	144	0	16	0	15	0	8	854	65	3	47	791	13	5	2,039	0	0	0	3
4:45 PM	91	0	159	0	15	0	16	0	12	881	70	2	45	755	14	5	2,058	0	0	0	3
5:00 PM	91	0	157	0	11	0	15	0	14	879	58	1	38	782	18	6	2,063	1	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



SW 115th Ave & SW Tualatin Sherwood Rd

Wednesday, July 12, 2017
4:00 PM to 6:00 PM

Peak Hour Summary
4:00 PM to 5:00 PM

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

Interval Start Time	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	1	3	2	6	1	1	0	2	8
4:05 PM	0	0	0	0	0	0	0	0	0	3	1	4	0	4	0	4	8
4:10 PM	1	0	0	1	1	0	0	1	0	5	1	6	0	2	0	2	10
4:15 PM	0	0	1	1	0	0	0	0	0	5	0	5	0	4	0	4	10
4:20 PM	3	0	2	5	0	0	0	0	0	2	1	3	1	4	0	5	13
4:25 PM	0	0	2	2	0	0	0	0	0	5	1	6	0	2	0	2	10
4:30 PM	1	0	1	2	0	0	0	0	1	5	0	6	0	1	0	1	9
4:35 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	1	0	1	5
4:40 PM	0	0	1	1	0	0	0	0	0	5	0	5	1	1	0	2	8
4:45 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
4:50 PM	0	0	0	0	0	0	0	0	0	4	1	5	1	3	0	4	9
4:55 PM	0	0	0	0	0	0	0	0	0	1	2	3	0	2	0	2	5
5:00 PM	0	0	1	1	1	0	0	1	0	0	0	0	1	5	0	6	8
5:05 PM	0	0	0	0	0	0	0	0	0	4	2	6	0	2	0	2	8
5:10 PM	0	0	1	1	0	0	0	0	0	5	0	5	2	2	0	4	10
5:15 PM	1	0	0	1	0	0	0	0	0	3	0	3	0	4	0	4	8
5:20 PM	1	0	0	1	0	0	0	0	0	1	0	1	1	2	0	3	5
5:25 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	2	4
5:30 PM	1	0	1	2	0	0	0	0	0	2	1	3	2	0	0	2	7
5:35 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
5:40 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
5:45 PM	0	0	0	0	0	0	0	0	0	6	1	7	1	1	0	2	9
5:50 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
5:55 PM	1	0	1	2	0	0	1	1	0	1	0	1	0	2	0	2	6
Total Survey	9	0	11	20	2	0	1	3	2	74	13	89	11	48	0	59	171

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

Interval Start Time	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	1	0	0	1	1	0	0	1	1	11	4	16	1	7	0	8	26
4:15 PM	3	0	5	8	0	0	0	0	0	12	2	14	1	10	0	11	33
4:30 PM	1	0	2	3	0	0	0	0	1	14	0	15	1	3	0	4	22
4:45 PM	0	0	0	0	0	0	0	0	0	7	3	10	1	6	0	7	17
5:00 PM	0	0	2	2	1	0	0	1	0	9	2	11	3	9	0	12	26
5:15 PM	2	0	0	2	0	0	0	0	0	6	0	6	1	8	0	9	17
5:30 PM	1	0	1	2	0	0	0	0	0	5	1	6	2	2	0	4	12
5:45 PM	1	0	1	2	0	0	1	1	0	10	1	11	1	3	0	4	18
Total Survey	9	0	11	20	2	0	1	3	2	74	13	89	11	48	0	59	171

Heavy Vehicle Peak Hour Summary
4:00 PM to 5:00 PM

By Approach	Northbound SW 115th Ave			Southbound SW 115th Ave			Eastbound SW Tualatin Sherwood Rd			Westbound SW Tualatin Sherwood Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	12	13	25	1	2	3	55	31	86	30	52	82	98
PHF	0.33			0.25			0.86			0.68			0.74

By Movement	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	5	0	7	12	1	0	0	1	2	44	9	55	4	26	0	30	98
PHF	0.31	0.00	0.35	0.33	0.25	0.00	0.00	0.25	0.50	0.79	0.56	0.86	0.50	0.65	0.00	0.68	0.74

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

Interval Start Time	Northbound SW 115th Ave				Southbound SW 115th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	5	0	7	12	1	0	0	1	2	44	9	55	4	26	0	30	98
4:15 PM	4	0	9	13	1	0	0	1	1	42	7	50	6	28	0	34	98
4:30 PM	3	0	4	7	1	0	0	1	1	36	5	42	6	26	0	32	82
4:45 PM	3	0	3	6	1	0	0	1	0	27	6	33	7	25	0	32	72
5:00 PM	4	0	4	8	1	0	1	2	0	30	4	34	7	22	0	29	73

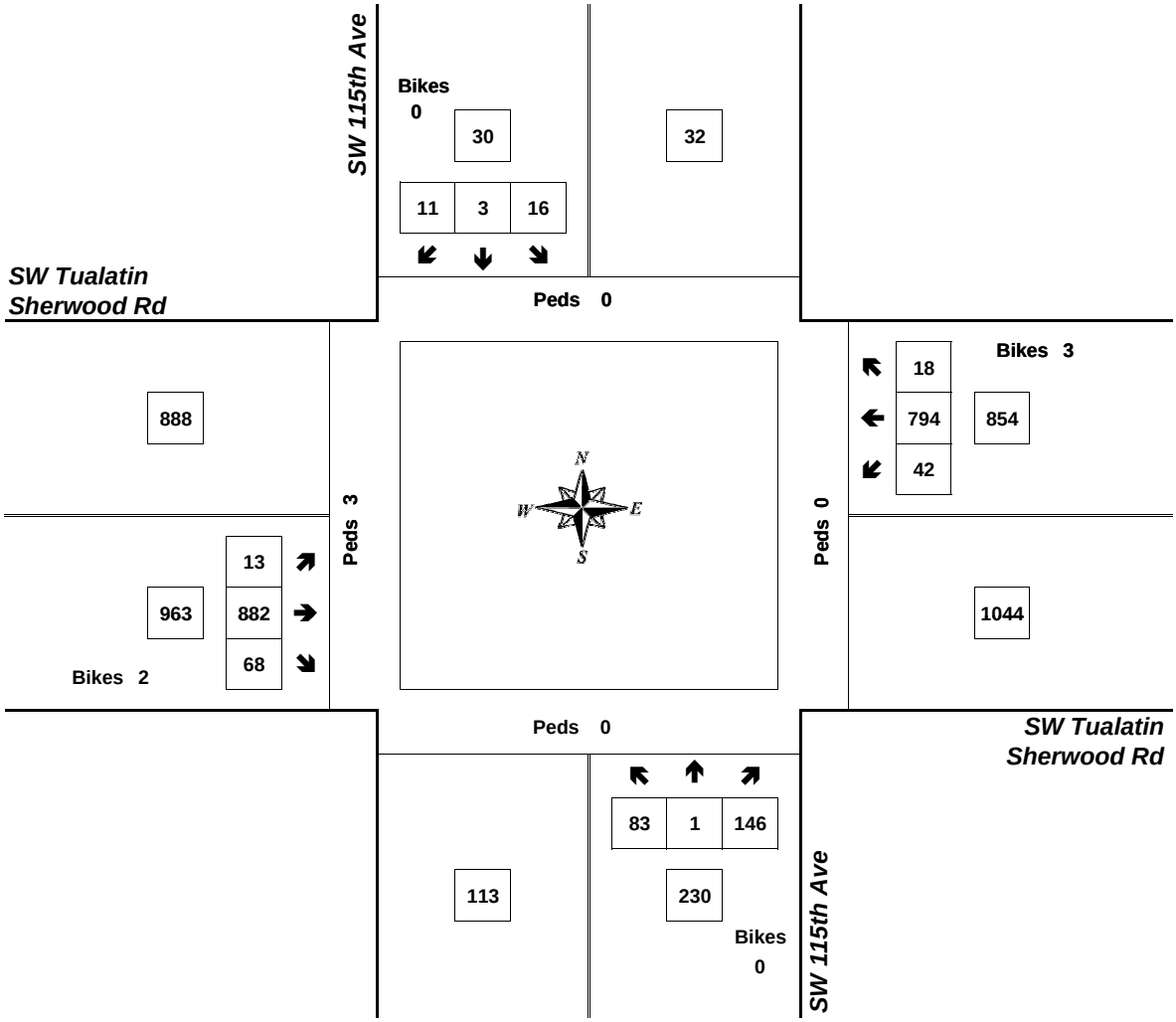
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

SW 115th Ave & SW Tualatin Sherwood Rd

4:00 PM to 5:00 PM
Wednesday, July 12, 2017

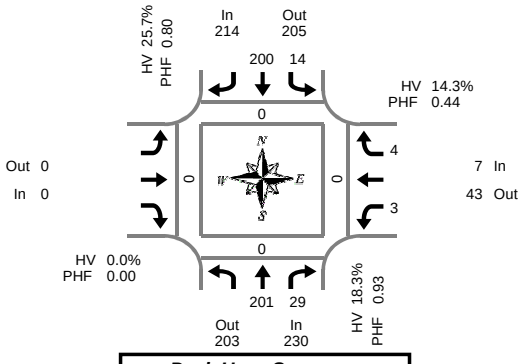


Approach	PHF	HV%	Volume
EB	0.92	5.7%	963
WB	0.93	3.5%	854
NB	0.74	5.2%	230
SB	0.68	3.3%	30
Intersection	0.90	4.7%	2,077

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

Total Vehicle Summary

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



Peak Hour Summary
7:30 AM to 8:30 AM

SW 124th Ave & SW Cimino St

Thursday, July 13, 2017
7:00 AM to 9:00 AM

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
7:00 AM	19	2	0		1	18		0				0	0		0	0	40	0	0	0	0
7:05 AM	11	2	0		0	18		0				0	0		0	0	31	0	0	0	0
7:10 AM	12	1	0		2	11		0				0	0		0	0	26	1	0	0	0
7:15 AM	14	3	0		0	8		0				0	0		1	0	26	0	0	0	0
7:20 AM	25	4	0		3	10		0				0	0		2	0	44	0	0	0	0
7:25 AM	14	2	1		0	6		0				0	0		0	0	22	0	0	0	0
7:30 AM	17	4	0		2	11		0				0	0		0	0	34	0	0	0	0
7:35 AM	13	3	0		1	17		0				0	0		0	0	34	0	0	0	0
7:40 AM	16	2	0		1	18		0				0	0		0	0	37	0	0	0	0
7:45 AM	17	1	0		2	28		0				0	0		0	0	48	0	0	0	0
7:50 AM	19	2	0		0	14		0				0	0		1	0	36	0	0	0	0
7:55 AM	19	3	0		1	10		0				0	0		1	0	34	0	0	0	0
8:00 AM	13	3	0		1	19		0				0	0		0	0	36	0	0	0	0
8:05 AM	14	4	1		4	19		0				0	1		0	0	42	0	0	0	0
8:10 AM	16	2	0		0	13		0				0	0		0	0	31	0	0	0	0
8:15 AM	17	1	0		1	18		0				0	1		1	0	39	0	0	0	0
8:20 AM	21	1	0		1	15		0				0	1		0	0	39	0	0	0	0
8:25 AM	19	3	0		0	18		0				0	0		1	0	41	0	0	0	0
8:30 AM	4	1	0		0	11		0				0	0		0	0	16	0	0	0	0
8:35 AM	12	2	0		0	9		0				0	2		1	0	26	0	0	0	0
8:40 AM	21	0	0		1	19		0				0	0		0	0	41	0	0	0	0
8:45 AM	8	0	0		1	21		0				0	0		0	0	30	0	0	0	0
8:50 AM	20	3	0		0	15		0				0	0		1	0	39	0	0	0	0
8:55 AM	11	2	0		3	15		0				0	0		0	0	31	0	0	0	0
Total Survey	372	51	2		25	361		0				0	5		9	0	823	1	0	0	0

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
7:00 AM	42	5	0		3	47		0				0	0		0	0	97	1	0	0	0
7:15 AM	53	9	1		3	24		0				0	0		3	0	92	0	0	0	0
7:30 AM	46	9	0		4	46		0				0	0		0	0	105	0	0	0	0
7:45 AM	55	6	0		3	52		0				0	0		2	0	118	0	0	0	0
8:00 AM	43	9	1		5	51		0				0	1		0	0	109	0	0	0	0
8:15 AM	57	5	0		2	51		0				0	2		2	0	119	0	0	0	0
8:30 AM	37	3	0		1	39		0				0	2		1	0	83	0	0	0	0
8:45 AM	39	5	0		4	51		0				0	0		1	0	100	0	0	0	0
Total Survey	372	51	2		25	361		0				0	5		9	0	823	1	0	0	0

Peak Hour Summary
7:30 AM to 8:30 AM

By Approach	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	230	203	433	1	214	205	419	0	0	0	0	0	7	43	50	0	451	0	0	0	0
%HV	18.3%				25.7%				0.0%				14.3%				21.7%				
PHF	0.93				0.80				0.00				0.44				0.93				

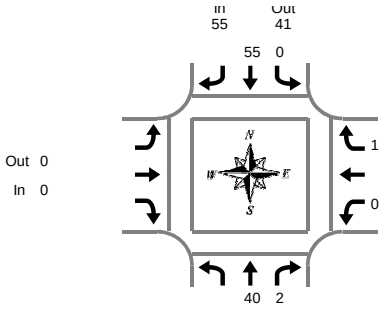
By Movement	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Total
	T	R	Total		L	T		Total				Total	L		R	Total	
Volume	201	29	230		14	200		214				0	3		4	7	451
%HV	NA	19.9%	6.9%	18.3%	0.0%	27.5%	NA	25.7%	NA	NA	NA	0.0%	0.0%	NA	25.0%	14.3%	21.7%
PHF		0.88	0.73	0.93	0.58	0.79		0.80				0.00	0.38		0.50	0.44	0.93

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
7:00 AM	196	29	1		13	169		0				0	0		5	0	412	1	0	0	0
7:15 AM	197	33	2		15	173		0				0	1		5	0	424	0	0	0	0
7:30 AM	201	29	1		14	200		0				0	3		4	0	451	0	0	0	0
7:45 AM	192	23	1		11	193		0				0	5		5	0	429	0	0	0	0
8:00 AM	176	22	1		12	192		0				0	5		4	0	411	0	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



SW 124th Ave & SW Cimino St

Thursday, July 13, 2017
7:00 AM to 9:00 AM

Peak Hour Summary
7:30 AM to 8:30 AM

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
7:00 AM		2	0	2	0	2		2				0	0		0	0	4
7:05 AM		2	0	2	0	5		5				0	0		0	0	7
7:10 AM		2	0	2	0	3		3				0	0		0	0	5
7:15 AM		4	0	4	0	3		3				0	0		0	0	7
7:20 AM		3	0	3	0	1		1				0	0		0	0	4
7:25 AM		1	0	1	0	2		2				0	0		0	0	3
7:30 AM		2	0	2	0	4		4				0	0		0	0	6
7:35 AM		4	0	4	0	3		3				0	0		0	0	7
7:40 AM		3	0	3	0	5		5				0	0		0	0	8
7:45 AM		3	0	3	0	8		8				0	0		0	0	11
7:50 AM		2	1	3	0	3		3				0	0		0	0	6
7:55 AM		2	0	2	0	3		3				0	0		1	1	6
8:00 AM		2	0	2	0	9		9				0	0		0	0	11
8:05 AM		4	0	4	0	5		5				0	0		0	0	9
8:10 AM		8	0	8	0	6		6				0	0		0	0	14
8:15 AM		4	0	4	0	2		2				0	0		0	0	6
8:20 AM		4	0	4	0	3		3				0	0		0	0	7
8:25 AM		2	1	3	0	4		4				0	0		0	0	7
8:30 AM		1	0	1	0	1		1				0	0		0	0	2
8:35 AM		1	0	1	0	2		2				0	0		0	0	3
8:40 AM		2	0	2	0	6		6				0	0		0	0	8
8:45 AM		1	0	1	0	4		4				0	0		0	0	5
8:50 AM		0	0	0	0	1		1				0	0		0	0	1
8:55 AM		4	0	4	0	2		2				0	0		0	0	6
Total Survey		63	2	65	0	87		87				0	0		1	1	153

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
7:00 AM		6	0	6	0	10		10				0	0		0	0	16
7:15 AM		8	0	8	0	6		6				0	0		0	0	14
7:30 AM		9	0	9	0	12		12				0	0		0	0	21
7:45 AM		7	1	8	0	14		14				0	0		1	1	23
8:00 AM		14	0	14	0	20		20				0	0		0	0	34
8:15 AM		10	1	11	0	9		9				0	0		0	0	20
8:30 AM		4	0	4	0	9		9				0	0		0	0	13
8:45 AM		5	0	5	0	7		7				0	0		0	0	12
Total Survey		63	2	65	0	87		87				0	0		1	1	153

Heavy Vehicle Peak Hour Summary
7:30 AM to 8:30 AM

By Approach	Northbound SW 124th Ave			Southbound SW 124th Ave			Eastbound SW Cimino St			Westbound SW Cimino St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	42	55	97	55	41	96	0	0	0	1	2	3	98
PHF	0.66			0.69			0.00			0.25			0.72

By Movement	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Total
		T	R	Total	L	T		Total				Total	L		R	Total	
Volume		40	2	42	0	55		55				0	0		1	1	98
PHF		0.63	0.50	0.66	0.00	0.69		0.69				0.00	0.00		0.25	0.25	0.72

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

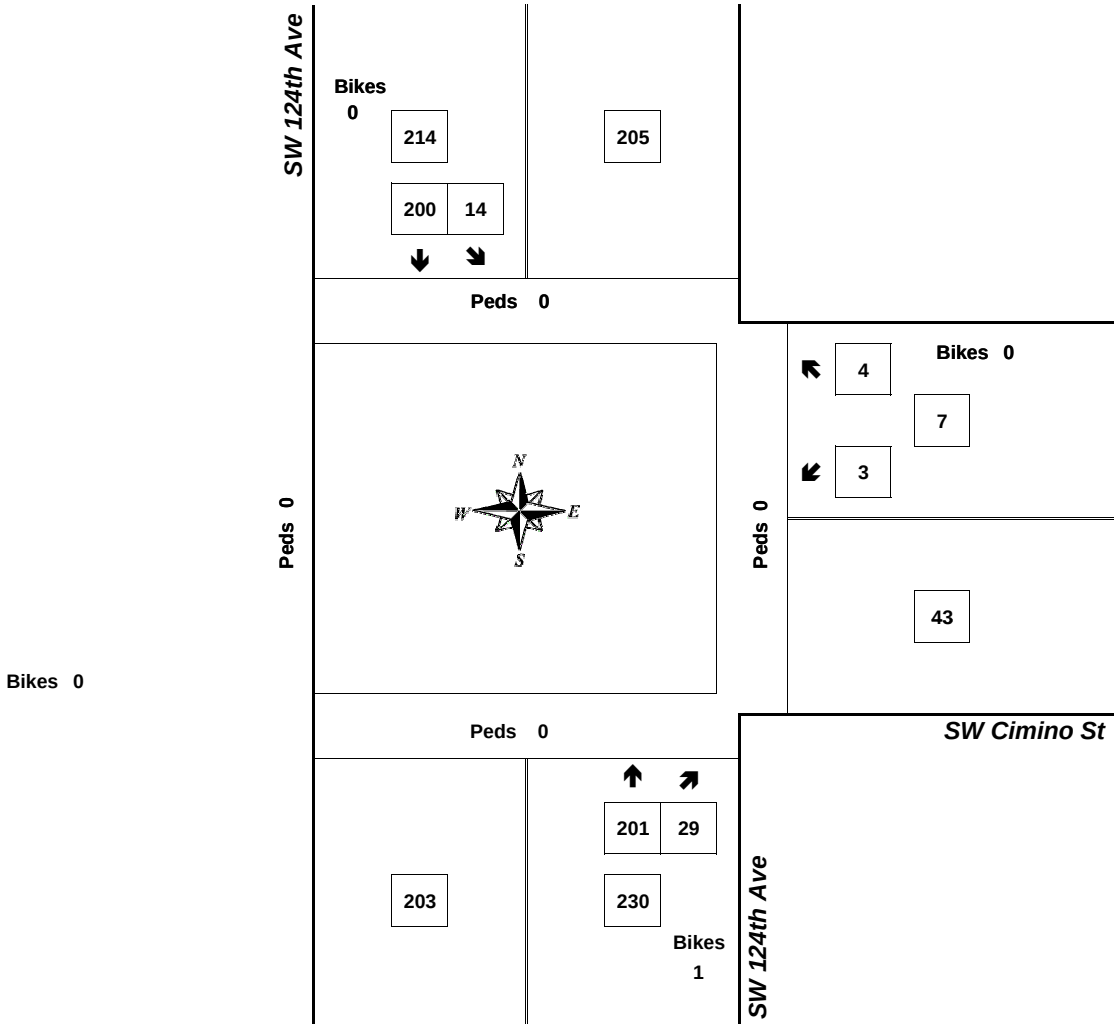
Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
7:00 AM		30	1	31	0	42		42				0	0		1	1	74
7:15 AM		38	1	39	0	52		52				0	0		1	1	92
7:30 AM		40	2	42	0	55		55				0	0		1	1	98
7:45 AM		35	2	37	0	52		52				0	0		1	1	90
8:00 AM		33	1	34	0	45		45				0	0		0	0	79

Peak Hour Summary

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

SW 124th Ave & SW Cimino St

7:30 AM to 8:30 AM
Thursday, July 13, 2017

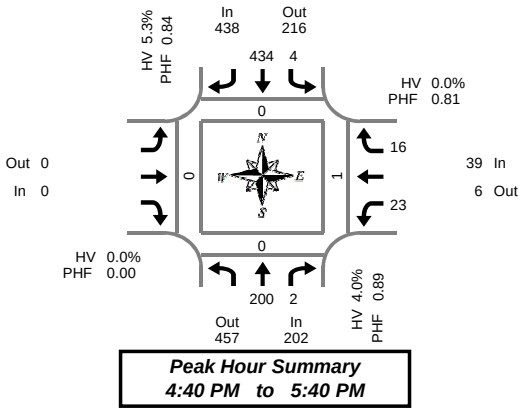


Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.44	14.3%	7
NB	0.93	18.3%	230
SB	0.80	25.7%	214
Intersection	0.93	21.7%	451

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

Total Vehicle Summary

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



SW 124th Ave & SW Cimino St

Wednesday, July 12, 2017
4:00 PM to 6:00 PM

Peak Hour Summary
4:40 PM to 5:40 PM

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
4:00 PM	14	1	0		0	32		0				0	1		1	0	49	0	0	0	0
4:05 PM	22	0	0		0	26		0				0	7		3	0	58	0	0	0	0
4:10 PM	18	0	0		0	31		0				0	3		1	0	53	0	0	1	0
4:15 PM	16	2	0		0	23		0				0	1		3	0	45	0	0	1	0
4:20 PM	13	0	0		0	17		0				0	0		0	0	30	0	0	0	0
4:25 PM	9	0	0		0	28		0				0	3		1	0	41	0	0	0	0
4:30 PM	15	0	0		0	27		0				0	5		1	0	48	0	0	0	0
4:35 PM	12	0	0		0	28		0				0	2		2	0	44	0	0	0	0
4:40 PM	20	0	0		1	32		0				0	2		1	0	56	0	0	0	0
4:45 PM	21	0	0		0	35		0				0	1		2	0	59	0	0	0	0
4:50 PM	11	0	0		0	29		0				0	2		0	0	42	0	0	0	0
4:55 PM	14	0	0		1	34		1				0	2		2	0	53	0	0	0	0
5:00 PM	18	1	0		0	40		0				0	2		1	0	62	0	0	0	0
5:05 PM	14	1	0		0	48		1				0	1		3	0	67	0	0	0	0
5:10 PM	14	0	0		2	40		0				0	5		0	0	61	0	0	0	0
5:15 PM	20	0	0		0	31		0				0	1		2	0	54	0	0	0	0
5:20 PM	20	0	0		0	45		0				0	3		1	0	69	0	0	0	0
5:25 PM	17	0	0		0	33		0				0	0		1	0	51	0	0	0	0
5:30 PM	17	0	0		0	35		2				0	3		1	0	56	0	0	0	0
5:35 PM	14	0	0		0	32		0				0	1		2	0	49	0	0	1	0
5:40 PM	13	0	0		0	26		2				0	0		1	0	40	0	0	0	0
5:45 PM	18	0	0		0	37		0				0	2		1	0	58	0	0	0	0
5:50 PM	10	0	0		1	19		0				0	2		1	0	33	0	0	0	0
5:55 PM	16	0	0		0	22		0				0	0		0	0	38	0	0	0	0
Total Survey	376	5	0		5	750		6				0	49		31	0	1,216	0	0	3	0

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
4:00 PM	54	1	0		0	89		0				0	11		5	0	160	0	0	1	0
4:15 PM	38	2	0		0	68		0				0	4		4	0	116	0	0	1	0
4:30 PM	47	0	0		1	87		0				0	9		4	0	148	0	0	0	0
4:45 PM	46	0	0		1	98		1				0	5		4	0	154	0	0	0	0
5:00 PM	46	2	0		2	128		1				0	8		4	0	190	0	0	0	0
5:15 PM	57	0	0		0	109		0				0	4		4	0	174	0	0	0	0
5:30 PM	44	0	0		0	93		4				0	4		4	0	145	0	0	1	0
5:45 PM	44	0	0		1	78		0				0	4		2	0	129	0	0	0	0
Total Survey	376	5	0		5	750		6				0	49		31	0	1,216	0	0	3	0

Peak Hour Summary
4:40 PM to 5:40 PM

By Approach	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	202	457	659	0	438	216	654	4	0	0	0	0	39	6	45	0	679	0	0	1	0
%HV	4.0%				5.3%				0.0%				0.0%				4.6%				
PHF	0.89				0.84				0.00				0.81				0.89				

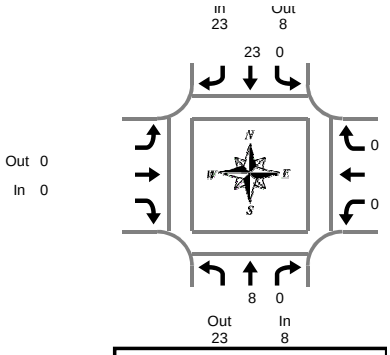
By Movement	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Total
		T	R	Total	L	T		Total				Total	L		R	Total	
Volume		200	2	202	4	434		438				0	23		16	39	679
%HV	NA	4.0%	0.0%	4.0%	0.0%	5.3%	NA	5.3%	NA	NA	NA	0.0%	0.0%	NA	0.0%	0.0%	4.6%
PHF		0.88	0.25	0.89	0.50	0.85		0.84				0.00	0.64		0.67	0.81	0.89

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Interval Total	Pedestrians Crosswalk			
	T	R	Bikes		L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
4:00 PM	185	3	0		2	342		1				0	29		17	0	578	0	0	2	0
4:15 PM	177	4	0		4	381		2				0	26		16	0	608	0	0	1	0
4:30 PM	196	2	0		4	422		2				0	26		16	0	666	0	0	0	0
4:45 PM	193	2	0		3	428		6				0	21		16	0	663	0	0	1	0
5:00 PM	191	2	0		3	408		5				0	20		14	0	638	0	0	1	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



SW 124th Ave & SW Cimino St

Wednesday, July 12, 2017
4:00 PM to 6:00 PM

Peak Hour Summary
4:40 PM to 5:40 PM

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
4:00 PM		2	0	2	0	2		2				0	0		0	0	4
4:05 PM		0	0	0	0	2		2				0	0		0	0	2
4:10 PM		1	0	1	0	0		0				0	0		0	0	1
4:15 PM		1	0	1	0	2		2				0	0		0	0	3
4:20 PM		0	0	0	0	5		5				0	0		0	0	5
4:25 PM		0	0	0	0	2		2				0	0		0	0	2
4:30 PM		1	0	1	0	1		1				0	0		0	0	2
4:35 PM		1	0	1	0	1		1				0	0		0	0	2
4:40 PM		1	0	1	0	0		0				0	0		0	0	1
4:45 PM		0	0	0	0	2		2				0	0		0	0	2
4:50 PM		1	0	1	0	2		2				0	0		0	0	3
4:55 PM		0	0	0	0	4		4				0	0		0	0	4
5:00 PM		1	0	1	0	1		1				0	0		0	0	2
5:05 PM		0	0	0	0	1		1				0	0		0	0	1
5:10 PM		0	0	0	0	3		3				0	0		0	0	3
5:15 PM		0	0	0	0	2		2				0	0		0	0	2
5:20 PM		1	0	1	0	3		3				0	0		0	0	4
5:25 PM		0	0	0	0	3		3				0	0		0	0	3
5:30 PM		3	0	3	0	1		1				0	0		0	0	4
5:35 PM		1	0	1	0	1		1				0	0		0	0	2
5:40 PM		0	0	0	0	1		1				0	0		0	0	1
5:45 PM		1	0	1	0	2		2				0	0		0	0	3
5:50 PM		0	0	0	0	0		0				0	0		0	0	0
5:55 PM		2	0	2	0	0		0				0	0		0	0	2
Total Survey		17	0	17	0	41		41				0	0		0	0	58

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
4:00 PM		3	0	3	0	4		4				0	0		0	0	7
4:15 PM		1	0	1	0	9		9				0	0		0	0	10
4:30 PM		3	0	3	0	2		2				0	0		0	0	5
4:45 PM		1	0	1	0	8		8				0	0		0	0	9
5:00 PM		1	0	1	0	5		5				0	0		0	0	6
5:15 PM		1	0	1	0	8		8				0	0		0	0	9
5:30 PM		4	0	4	0	3		3				0	0		0	0	7
5:45 PM		3	0	3	0	2		2				0	0		0	0	5
Total Survey		17	0	17	0	41		41				0	0		0	0	58

Heavy Vehicle Peak Hour Summary
4:40 PM to 5:40 PM

By Approach	Northbound SW 124th Ave			Southbound SW 124th Ave			Eastbound SW Cimino St			Westbound SW Cimino St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	8	23	31	23	8	31	0	0	0	0	0	0	31
PHF	0.50			0.72			0.00			0.00			0.70

By Movement	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Total
		T	R	Total	L	T		Total				Total	L		R	Total	
Volume		8	0	8	0	23		23				0	0		0	0	31
PHF		0.50	0.00	0.50	0.00	0.72		0.72				0.00	0.00		0.00	0.00	0.70

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

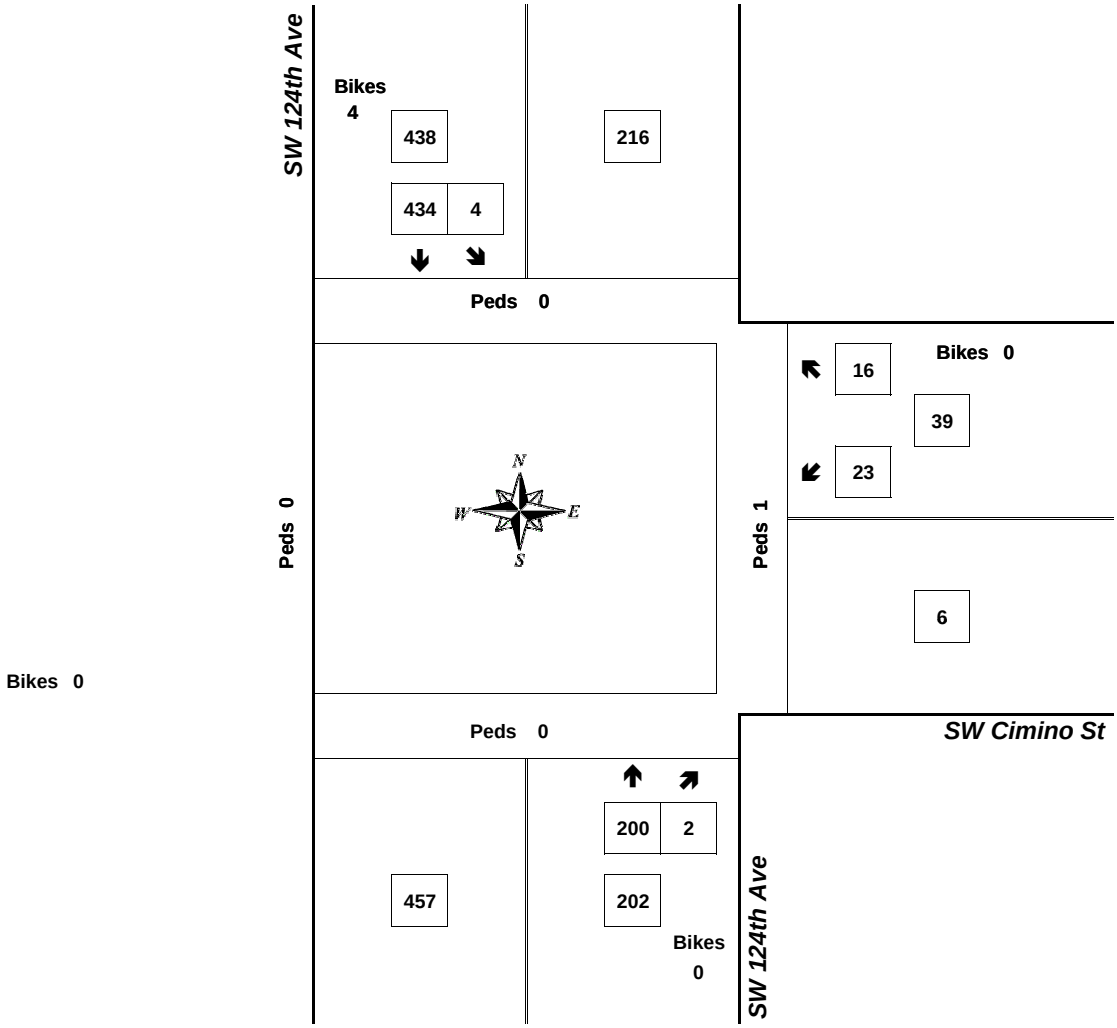
Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Cimino St				Westbound SW Cimino St				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
4:00 PM		8	0	8	0	23		23				0	0		0	0	31
4:15 PM		6	0	6	0	24		24				0	0		0	0	30
4:30 PM		6	0	6	0	23		23				0	0		0	0	29
4:45 PM		7	0	7	0	24		24				0	0		0	0	31
5:00 PM		9	0	9	0	18		18				0	0		0	0	27

Peak Hour Summary

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

SW 124th Ave & SW Cimino St

4:40 PM to 5:40 PM
Wednesday, July 12, 2017

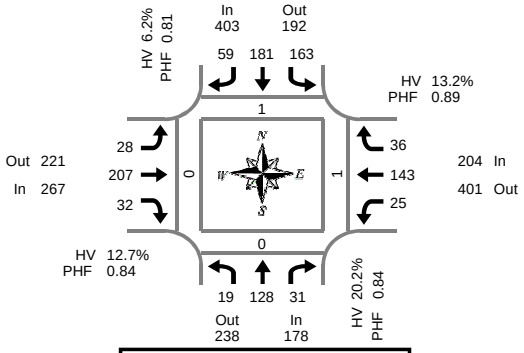


Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.81	0.0%	39
NB	0.89	4.0%	202
SB	0.84	5.3%	438
Intersection	0.89	4.6%	679

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

Total Vehicle Summary

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



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

SW 124th Ave & SW Herman Rd

Thursday, July 13, 2017
7:00 AM to 9:00 AM

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	5	8	5	0	14	24	6	0	1	14	1	0	1	18	5	0	102	1	0	1	0
7:05 AM	1	11	1	0	13	4	7	0	6	15	2	0	3	8	3	0	74	0	0	0	0
7:10 AM	0	4	0	0	11	15	6	0	0	15	4	0	4	13	1	0	73	0	0	0	0
7:15 AM	1	13	3	0	8	14	4	0	3	15	2	0	0	12	2	0	77	0	0	0	0
7:20 AM	0	17	4	0	13	14	4	0	4	21	3	0	2	16	4	0	102	0	0	0	0
7:25 AM	1	6	3	0	18	9	4	0	3	16	6	0	1	16	3	0	86	0	0	0	0
7:30 AM	3	14	5	0	6	14	3	0	2	11	2	0	4	7	4	0	75	0	0	0	0
7:35 AM	1	9	1	0	13	20	3	1	2	25	1	0	2	8	2	0	87	0	0	0	0
7:40 AM	0	10	2	0	23	25	5	0	2	19	3	0	2	12	3	0	106	0	0	0	0
7:45 AM	4	8	2	0	15	16	5	0	1	23	3	0	2	16	1	0	96	0	0	0	0
7:50 AM	3	12	3	0	13	16	6	0	2	19	2	0	4	8	7	0	95	0	0	0	0
7:55 AM	0	16	2	0	16	10	6	0	2	14	3	0	0	9	1	0	79	0	0	0	0
8:00 AM	1	6	4	0	9	21	7	0	3	15	2	0	3	9	3	0	83	0	0	0	0
8:05 AM	0	9	2	0	9	12	7	0	3	19	2	0	2	9	4	0	78	0	0	0	0
8:10 AM	2	10	3	0	7	16	1	0	6	9	3	0	4	6	2	0	69	0	0	0	0
8:15 AM	2	9	6	0	10	13	2	0	0	17	1	0	2	2	3	0	67	0	0	0	0
8:20 AM	1	12	5	0	6	15	2	1	2	14	3	0	4	5	5	0	74	0	0	0	0
8:25 AM	3	9	4	0	10	16	5	0	3	15	1	0	0	5	4	0	75	0	0	0	0
8:30 AM	0	4	1	0	5	13	3	0	1	12	4	0	1	9	4	0	57	0	0	0	0
8:35 AM	2	7	4	0	6	10	2	0	2	10	3	0	3	10	6	0	65	0	0	0	0
8:40 AM	0	14	4	0	2	13	4	1	2	14	4	0	4	6	4	0	71	0	0	0	0
8:45 AM	1	9	2	0	5	15	2	0	2	12	2	1	1	9	1	0	61	0	0	0	0
8:50 AM	2	11	5	0	4	13	2	0	2	8	3	0	4	10	2	0	66	0	0	0	0
8:55 AM	0	6	4	0	5	12	0	0	6	11	2	0	3	10	6	0	65	0	0	0	0
Total Survey	33	234	75	0	241	350	96	3	60	363	62	1	56	233	80	0	1,883	1	0	1	0

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	6	23	6	0	38	43	19	0	7	44	7	0	8	39	9	0	249	1	0	1	0
7:15 AM	2	36	10	0	39	37	12	0	10	52	11	0	3	44	9	0	265	0	0	0	0
7:30 AM	4	33	8	0	42	59	11	1	6	55	6	0	8	27	9	0	268	0	0	0	0
7:45 AM	7	36	7	0	44	42	17	0	5	56	8	0	6	33	9	0	270	0	0	0	0
8:00 AM	3	25	9	0	25	49	15	0	12	43	7	0	9	24	9	0	230	0	0	0	0
8:15 AM	6	30	15	0	26	44	9	1	5	46	5	0	6	12	12	0	216	0	0	0	0
8:30 AM	2	25	9	0	13	36	9	1	5	36	11	0	8	25	14	0	193	0	0	0	0
8:45 AM	3	26	11	0	14	40	4	0	10	31	7	1	8	29	9	0	192	0	0	0	0
Total Survey	33	234	75	0	241	350	96	3	60	363	62	1	56	233	80	0	1,883	1	0	1	0

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

By Approach	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	178	238	416	0	403	192	595	1	267	221	488	0	204	401	605	0	1,052	1	0	1	0
%HV	20.2%				6.2%				12.7%				13.2%				11.6%				
PHF	0.84				0.81				0.84				0.89				0.89				

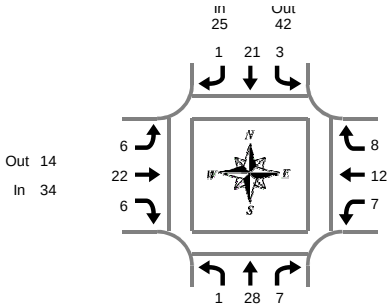
By Movement	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	19	128	31	178	163	181	59	403	28	207	32	267	25	143	36	204	1,052
%HV	5.3%	21.9%	22.6%	20.2%	1.8%	11.6%	1.7%	6.2%	21.4%	10.6%	18.8%	12.7%	28.0%	8.4%	22.2%	13.2%	11.6%
PHF	0.68	0.86	0.65	0.84	0.80	0.74	0.78	0.81	0.70	0.77	0.73	0.84	0.78	0.81	0.82	0.89	0.89

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	19	128	31	0	163	181	59	1	28	207	32	0	25	143	36	0	1,052	1	0	1	0
7:15 AM	16	130	34	0	150	187	55	1	33	206	32	0	26	128	36	0	1,033	0	0	0	0
7:30 AM	20	124	39	0	137	194	52	2	28	200	26	0	29	96	39	0	984	0	0	0	0
7:45 AM	18	116	40	0	108	171	50	2	27	181	31	0	29	94	44	0	909	0	0	0	0
8:00 AM	14	106	44	0	78	169	37	2	32	156	30	1	31	90	44	0	831	0	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



SW 124th Ave & SW Herman Rd

Thursday, July 13, 2017
7:00 AM to 9:00 AM

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

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	2	1	3	0	3	0	3	1	1	0	2	0	2	1	3	11
7:05 AM	0	1	0	1	0	0	0	0	3	1	0	4	2	1	1	4	9
7:10 AM	0	1	0	1	0	1	0	1	0	2	1	3	1	0	0	1	6
7:15 AM	0	3	1	4	0	3	0	3	1	2	1	4	0	2	0	2	13
7:20 AM	0	3	1	4	0	1	0	1	1	0	0	1	1	4	1	6	12
7:25 AM	0	1	1	2	0	1	1	2	0	0	2	2	1	0	0	1	7
7:30 AM	0	5	0	5	0	2	0	2	0	1	0	1	0	1	1	2	10
7:35 AM	0	3	1	4	1	2	0	3	0	8	0	8	1	0	1	2	17
7:40 AM	0	2	0	2	0	4	0	4	0	3	1	4	1	1	2	4	14
7:45 AM	1	2	0	3	0	2	0	2	0	3	0	3	0	0	0	0	8
7:50 AM	0	3	0	3	2	1	0	3	0	1	0	1	0	1	1	2	9
7:55 AM	0	2	2	4	0	1	0	1	0	0	1	1	0	0	0	0	6
8:00 AM	0	1	1	2	0	8	0	8	1	1	1	3	1	0	0	1	14
8:05 AM	0	4	1	5	1	1	0	2	1	3	0	4	2	0	0	2	13
8:10 AM	0	6	1	7	0	1	0	1	0	2	0	2	3	1	0	4	14
8:15 AM	1	3	0	4	0	1	0	1	0	1	0	1	1	0	1	2	8
8:20 AM	1	0	2	3	0	1	0	1	0	2	0	2	1	2	1	4	10
8:25 AM	0	1	1	2	0	3	1	4	1	2	0	3	0	0	3	3	12
8:30 AM	0	1	0	1	0	0	1	1	0	1	0	1	0	1	1	2	5
8:35 AM	1	1	0	2	0	3	0	3	0	0	1	1	0	1	4	5	11
8:40 AM	0	1	1	2	0	2	0	2	1	1	0	2	0	2	3	5	11
8:45 AM	0	3	1	4	0	2	0	2	0	1	0	1	1	1	1	3	10
8:50 AM	0	0	0	0	0	1	0	1	1	1	0	2	0	0	1	1	4
8:55 AM	0	3	0	3	0	1	0	1	1	2	0	3	1	0	2	3	10
Total Survey	4	52	15	71	4	45	3	52	12	39	8	59	17	20	25	62	244

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	4	1	5	0	4	0	4	4	4	1	9	3	3	2	8	26
7:15 AM	0	7	3	10	0	5	1	6	2	2	3	7	2	6	1	9	32
7:30 AM	0	10	1	11	1	8	0	9	0	12	1	13	2	2	4	8	41
7:45 AM	1	7	2	10	2	4	0	6	0	4	1	5	0	1	1	2	23
8:00 AM	0	11	3	14	1	10	0	11	2	6	1	9	6	1	0	7	41
8:15 AM	2	4	3	9	0	5	1	6	1	5	0	6	2	2	5	9	30
8:30 AM	1	3	1	5	0	5	1	6	1	2	1	4	0	4	8	12	27
8:45 AM	0	6	1	7	0	4	0	4	2	4	0	6	2	1	4	7	24
Total Survey	4	52	15	71	4	45	3	52	12	39	8	59	17	20	25	62	244

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

By Approach	Northbound SW 124th Ave			Southbound SW 124th Ave			Eastbound SW Herman Rd			Westbound SW Herman Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	36	34	70	25	42	67	34	14	48	27	32	59	122
PHF	0.82			0.69			0.57			0.75			0.74

By Movement	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	28	7	36	3	21	1	25	6	22	6	34	7	12	8	27	122
PHF	0.25	0.70	0.58	0.82	0.38	0.66	0.25	0.69	0.38	0.39	0.50	0.57	0.58	0.50	0.50	0.75	0.74

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

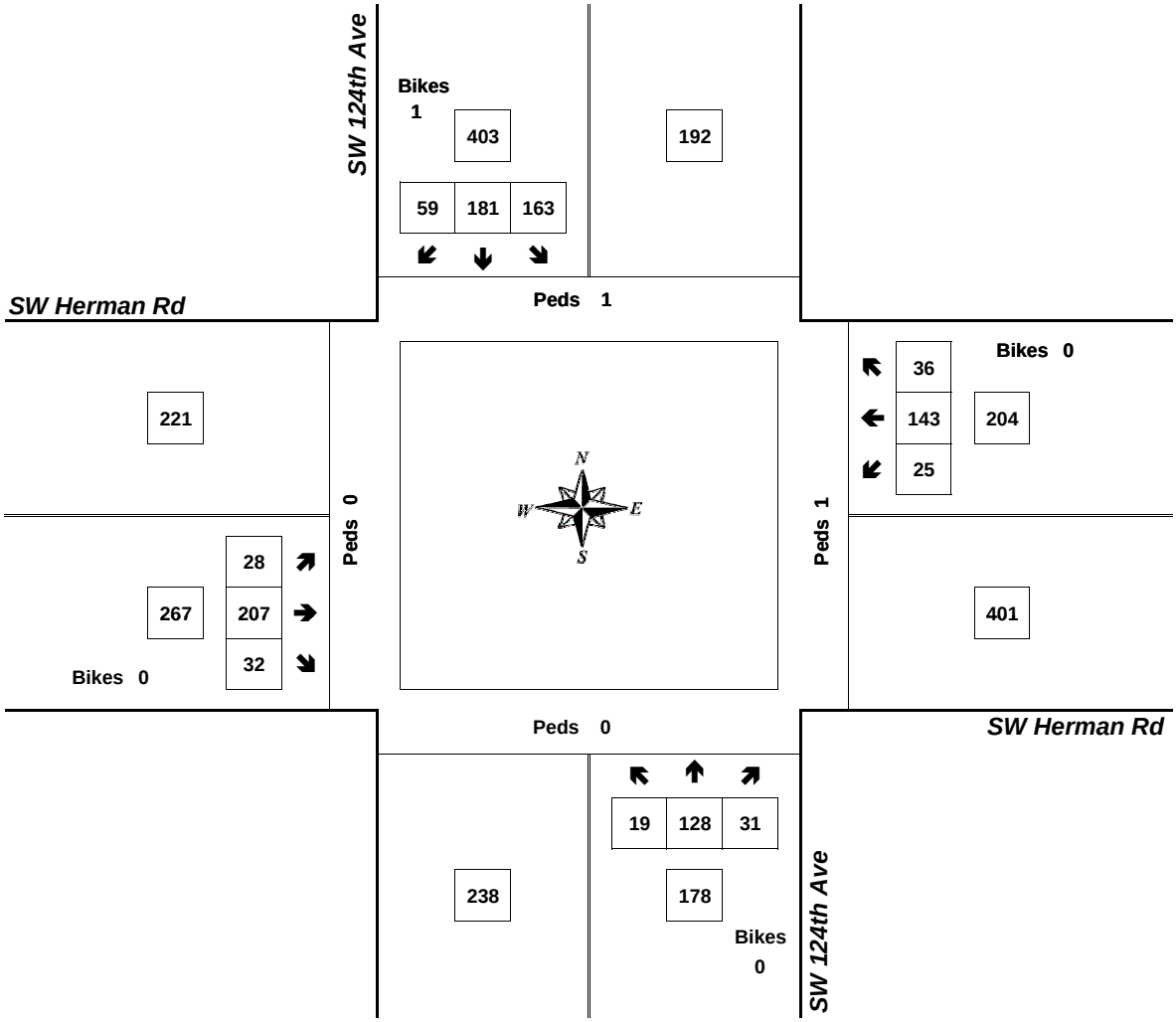
Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	28	7	36	3	21	1	25	6	22	6	34	7	12	8	27	122
7:15 AM	1	35	9	45	4	27	1	32	4	24	6	34	10	10	6	26	137
7:30 AM	3	32	9	44	4	27	1	32	3	27	3	33	10	6	10	26	135
7:45 AM	4	25	9	38	3	24	2	29	4	17	3	24	8	8	14	30	121
8:00 AM	3	24	8	35	1	24	2	27	6	17	2	25	10	8	17	35	122

Peak Hour Summary

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

SW 124th Ave & SW Herman Rd

7:00 AM to 8:00 AM
Thursday, July 13, 2017

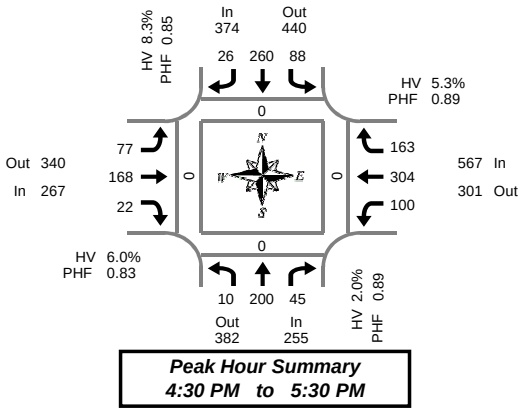


Approach	PHF	HV%	Volume
EB	0.84	12.7%	267
WB	0.89	13.2%	204
NB	0.84	20.2%	178
SB	0.81	6.2%	403
Intersection	0.89	11.6%	1,052

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

Total Vehicle Summary

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



Peak Hour Summary
4:30 PM to 5:30 PM

SW 124th Ave & SW Herman Rd

Wednesday, July 12, 2017
4:00 PM to 6:00 PM

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	1	17	3	0	8	15	1	0	7	21	3	0	6	26	16	0	124	0	0	1	0
4:05 PM	1	28	10	0	4	15	2	0	11	19	1	0	6	20	21	0	138	0	0	0	0
4:10 PM	1	26	3	0	3	17	0	0	11	12	4	0	12	20	10	0	119	0	0	1	0
4:15 PM	1	18	3	0	8	15	2	0	5	13	1	0	2	28	7	0	103	0	0	1	0
4:20 PM	2	13	3	0	5	9	1	0	1	12	2	0	6	36	13	0	103	0	0	0	0
4:25 PM	2	7	2	0	5	19	3	0	3	8	2	0	3	23	9	0	86	0	0	1	0
4:30 PM	0	20	1	0	8	20	2	0	12	11	2	0	6	24	14	0	120	0	0	0	0
4:35 PM	3	16	4	0	2	18	1	0	4	18	1	0	10	31	21	0	129	0	0	0	0
4:40 PM	1	19	3	0	11	17	1	0	5	16	1	1	10	26	17	0	127	0	0	0	0
4:45 PM	0	21	5	0	8	21	1	0	3	18	4	0	13	19	12	0	125	0	0	0	0
4:50 PM	1	11	2	0	11	26	6	0	2	17	1	0	6	26	10	0	119	0	0	0	0
4:55 PM	0	12	3	0	8	23	3	1	3	9	3	0	7	22	10	0	103	0	0	0	0
5:00 PM	1	19	4	0	5	17	1	1	9	18	0	0	8	24	12	0	118	0	0	0	0
5:05 PM	2	17	5	0	11	31	3	0	11	14	4	0	5	19	22	0	144	0	0	0	0
5:10 PM	0	18	3	0	5	25	5	0	9	15	0	0	9	21	17	0	127	0	0	0	0
5:15 PM	1	14	2	0	3	26	1	0	10	14	1	0	6	40	13	1	131	0	0	0	0
5:20 PM	1	15	8	0	10	15	2	0	7	9	4	0	9	27	6	0	113	0	0	0	0
5:25 PM	0	18	5	0	6	21	0	0	2	9	1	0	11	25	9	0	107	0	0	0	0
5:30 PM	1	11	4	0	7	30	1	1	7	7	2	0	6	26	10	0	112	0	0	0	0
5:35 PM	2	18	4	0	3	20	1	0	4	6	1	0	8	21	9	0	97	0	0	0	0
5:40 PM	1	13	1	0	7	18	0	1	6	10	1	0	8	16	14	1	95	0	0	0	1
5:45 PM	0	14	3	0	9	22	3	0	4	6	0	0	10	21	8	0	100	0	0	0	0
5:50 PM	1	9	4	0	4	13	2	0	2	12	2	0	3	23	6	0	81	1	0	0	0
5:55 PM	0	18	0	0	9	25	1	0	1	7	1	0	4	18	4	0	88	0	0	1	0
Total Survey	23	392	85	0	160	478	43	4	139	301	42	1	174	582	290	2	2,709	1	0	5	1

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	3	71	16	0	15	47	3	0	29	52	8	0	24	66	47	0	381	0	0	2	0
4:15 PM	5	38	8	0	18	43	6	0	9	33	5	0	11	87	29	0	292	0	0	2	0
4:30 PM	4	55	8	0	21	55	4	0	21	45	4	1	26	81	52	0	376	0	0	0	0
4:45 PM	1	44	10	0	27	70	10	1	8	44	8	0	26	67	32	0	347	0	0	0	0
5:00 PM	3	54	12	0	21	73	9	1	29	47	4	0	22	64	51	0	389	0	0	0	0
5:15 PM	2	47	15	0	19	62	3	0	19	32	6	0	26	92	28	1	351	0	0	0	0
5:30 PM	4	42	9	0	17	68	2	2	17	23	4	0	22	63	33	1	304	0	0	0	1
5:45 PM	1	41	7	0	22	60	6	0	7	25	3	0	17	62	18	0	269	1	0	1	0
Total Survey	23	392	85	0	160	478	43	4	139	301	42	1	174	582	290	2	2,709	1	0	5	1

Peak Hour Summary
4:30 PM to 5:30 PM

By Approach	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	255	382	637	0	374	440	814	2	267	340	607	1	567	301	868	1	1,463	0	0	0	0
%HV	2.0%				8.3%				6.0%				5.3%				5.6%				
PHF	0.89				0.85				0.83				0.89				0.91				

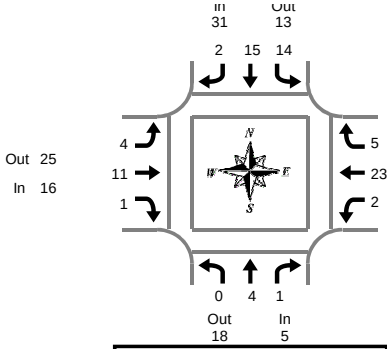
By Movement	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	10	200	45	255	88	260	26	374	77	168	22	267	100	304	163	567	1,463
%HV	0.0%	2.0%	2.2%	2.0%	15.9%	5.8%	7.7%	8.3%	5.2%	6.5%	4.5%	6.0%	2.0%	7.6%	3.1%	5.3%	5.6%
PHF	0.63	0.89	0.75	0.89	0.73	0.79	0.65	0.85	0.64	0.81	0.69	0.83	0.76	0.83	0.78	0.89	0.91

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	13	208	42	0	81	215	23	1	67	174	25	1	87	301	160	0	1,396	0	0	4	0
4:15 PM	13	191	38	0	87	241	29	2	67	169	21	1	85	299	164	0	1,404	0	0	2	0
4:30 PM	10	200	45	0	88	260	26	2	77	168	22	1	100	304	163	1	1,463	0	0	0	0
4:45 PM	10	187	46	0	84	273	24	4	73	146	22	0	96	286	144	2	1,391	0	0	0	1
5:00 PM	10	184	43	0	79	263	20	3	72	127	17	0	87	281	130	2	1,313	1	0	1	1

Heavy Vehicle Summary

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



SW 124th Ave & SW Herman Rd

Wednesday, July 12, 2017
4:00 PM to 6:00 PM

Peak Hour Summary
4:30 PM to 5:30 PM

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	1	0	1	1	1	1	3	0	2	1	3	0	3	2	5	12
4:05 PM	0	0	0	0	1	2	0	3	0	1	0	1	0	1	0	1	5
4:10 PM	0	1	0	1	1	1	0	2	1	2	1	4	0	3	0	3	10
4:15 PM	1	1	0	2	3	1	0	4	1	1	0	2	1	3	0	4	12
4:20 PM	0	0	0	0	0	1	0	1	0	0	0	0	2	3	0	5	6
4:25 PM	0	0	0	0	0	2	0	2	1	0	1	2	0	7	0	7	11
4:30 PM	0	0	0	0	2	1	0	3	1	1	0	2	0	2	0	2	7
4:35 PM	0	0	1	1	0	0	0	0	1	0	0	1	0	2	2	4	6
4:40 PM	0	1	0	1	1	0	0	1	0	2	0	2	0	0	1	1	5
4:45 PM	0	1	0	1	1	1	1	3	0	3	0	3	1	4	0	5	12
4:50 PM	0	0	0	0	2	3	1	6	0	2	0	2	0	1	1	2	10
4:55 PM	0	0	0	0	2	1	0	3	0	0	0	0	1	2	0	3	6
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	1	3	4
5:05 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1	3
5:10 PM	0	0	0	0	2	3	0	5	0	1	0	1	0	0	0	0	6
5:15 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	4	0	4	6
5:20 PM	0	0	0	0	3	2	0	5	1	1	1	3	0	3	0	3	11
5:25 PM	0	1	0	1	1	2	0	3	0	0	0	0	0	2	0	2	6
5:30 PM	0	1	0	1	0	2	0	2	1	0	0	1	0	2	0	2	6
5:35 PM	0	1	1	2	2	0	0	2	0	0	1	1	0	1	0	1	6
5:40 PM	0	0	0	0	2	1	0	3	0	1	0	1	0	3	1	4	8
5:45 PM	0	1	0	1	1	1	0	2	0	0	0	0	0	1	0	1	4
5:50 PM	0	0	0	0	0	1	0	1	0	1	0	1	0	1	0	1	3
5:55 PM	0	2	0	2	1	0	0	1	0	0	0	0	0	1	0	1	4
Total Survey	1	12	2	15	26	28	3	57	8	19	5	32	5	52	8	65	169

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	2	0	2	3	4	1	8	1	5	2	8	0	7	2	9	27
4:15 PM	1	1	0	2	3	4	0	7	2	1	1	4	3	13	0	16	29
4:30 PM	0	1	1	2	3	1	0	4	2	3	0	5	0	4	3	7	18
4:45 PM	0	1	0	1	5	5	2	12	0	5	0	5	2	7	1	10	28
5:00 PM	0	0	0	0	2	4	0	6	1	2	0	3	0	3	1	4	13
5:15 PM	0	2	0	2	4	5	0	9	1	1	1	3	0	9	0	9	23
5:30 PM	0	2	1	3	4	3	0	7	1	1	1	3	0	6	1	7	20
5:45 PM	0	3	0	3	2	2	0	4	0	1	0	1	0	3	0	3	11
Total Survey	1	12	2	15	26	28	3	57	8	19	5	32	5	52	8	65	169

Heavy Vehicle Peak Hour Summary
4:30 PM to 5:30 PM

By Approach	Northbound SW 124th Ave			Southbound SW 124th Ave			Eastbound SW Herman Rd			Westbound SW Herman Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	5	18	23	31	13	44	16	25	41	30	26	56	82
PHF	0.42			0.65			0.57			0.75			0.73

By Movement	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	4	1	5	14	15	2	31	4	11	1	16	2	23	5	30	82
PHF	0.00	0.50	0.25	0.42	0.70	0.63	0.25	0.65	0.50	0.39	0.25	0.57	0.25	0.64	0.42	0.75	0.73

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

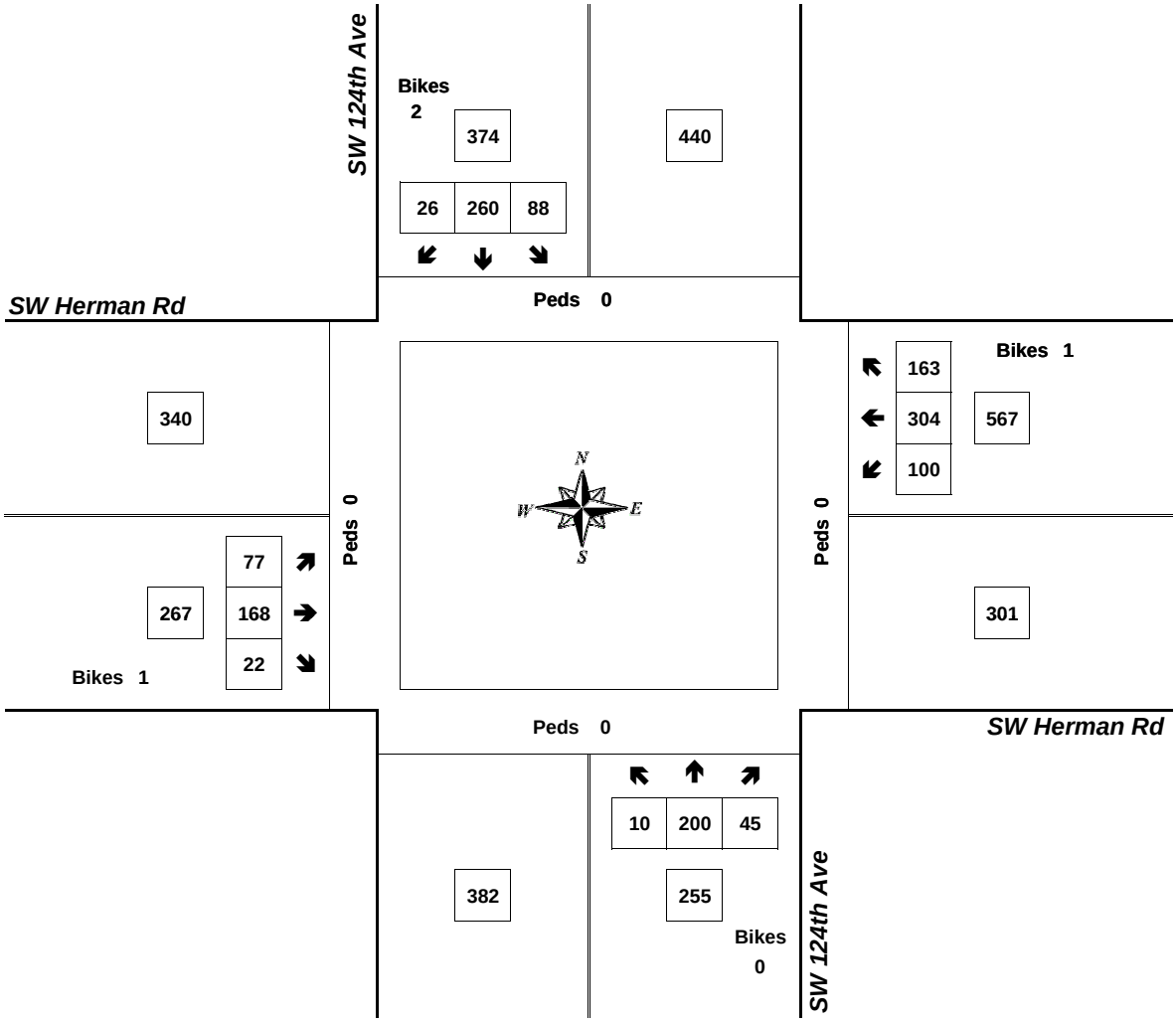
Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Herman Rd				Westbound SW Herman Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	1	5	1	7	14	14	3	31	5	14	3	22	5	31	6	42	102
4:15 PM	1	3	1	5	13	14	2	29	5	11	1	17	5	27	5	37	88
4:30 PM	0	4	1	5	14	15	2	31	4	11	1	16	2	23	5	30	82
4:45 PM	0	5	1	6	15	17	2	34	3	9	2	14	2	25	3	30	84
5:00 PM	0	7	1	8	12	14	0	26	3	5	2	10	0	21	2	23	67

Peak Hour Summary

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

SW 124th Ave & SW Herman Rd

4:30 PM to 5:30 PM
Wednesday, July 12, 2017

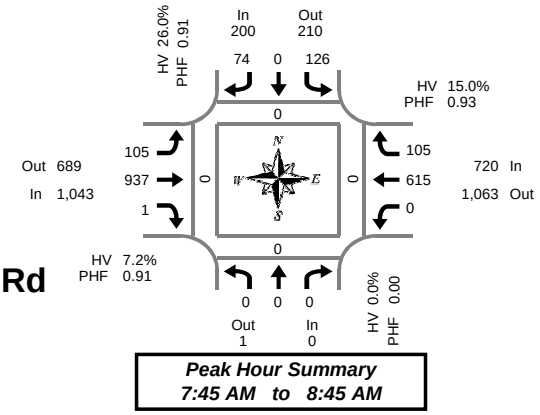


Approach	PHF	HV%	Volume
EB	0.83	6.0%	267
WB	0.89	5.3%	567
NB	0.89	2.0%	255
SB	0.85	8.3%	374
Intersection	0.91	5.6%	1,463

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

Total Vehicle Summary

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



SW 124th Ave & SW Tualatin Sherwood Rd

Thursday, July 13, 2017
7:00 AM to 9:00 AM

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	0	0	0	0	12	0	7	0	7	71	0	0	0	51	15	0	163	0	0	0	0
7:05 AM	0	0	0	0	8	0	8	0	6	98	0	2	0	45	5	0	170	0	0	0	0
7:10 AM	0	0	0	0	8	0	6	0	1	85	0	0	0	51	11	0	162	0	0	0	0
7:15 AM	0	0	0	0	3	0	2	0	13	82	0	0	0	57	5	0	162	0	0	0	0
7:20 AM	0	0	0	0	7	0	3	0	16	79	0	0	0	49	11	0	165	0	0	0	0
7:25 AM	0	0	0	0	6	0	2	0	8	90	0	1	0	44	8	2	158	1	0	0	0
7:30 AM	0	0	0	0	10	0	1	0	13	82	0	0	0	47	9	0	162	0	0	0	0
7:35 AM	0	0	0	0	6	0	7	0	6	77	0	0	0	44	9	1	149	0	0	0	0
7:40 AM	0	0	0	0	13	0	6	0	9	65	0	0	0	52	9	0	154	0	0	0	0
7:45 AM	0	0	0	0	13	0	5	0	5	84	0	0	0	58	13	1	178	0	0	0	0
7:50 AM	0	0	0	0	14	0	11	0	6	78	0	0	0	36	14	0	159	0	0	0	0
7:55 AM	0	0	0	0	4	0	5	0	10	74	0	0	0	61	12	0	166	0	0	0	0
8:00 AM	0	0	0	0	11	0	8	0	9	58	0	0	0	55	5	0	146	0	0	0	0
8:05 AM	0	0	0	0	10	0	7	0	10	71	0	1	0	42	8	0	148	0	0	0	0
8:10 AM	0	0	0	0	15	0	4	0	6	78	0	0	0	44	11	0	158	0	0	0	0
8:15 AM	0	0	0	0	10	0	5	0	10	86	0	0	0	54	8	0	173	0	0	0	0
8:20 AM	0	0	0	0	14	0	7	0	13	76	0	0	0	37	9	0	156	0	0	0	0
8:25 AM	0	0	0	0	8	0	2	0	12	90	0	0	0	63	10	0	185	0	0	0	0
8:30 AM	0	0	0	0	12	0	6	0	1	74	1	0	0	57	4	0	155	0	0	0	0
8:35 AM	0	0	0	0	5	0	4	0	11	85	0	0	0	54	3	0	162	0	0	0	0
8:40 AM	0	0	0	0	10	0	10	0	12	83	0	0	0	54	8	0	177	0	0	0	0
8:45 AM	0	0	0	0	6	0	11	0	3	74	0	0	0	71	5	0	170	0	1	0	0
8:50 AM	0	0	1	0	16	0	3	0	17	63	1	0	0	51	6	1	158	0	0	0	0
8:55 AM	0	0	0	0	6	0	5	0	5	70	0	0	0	40	8	0	134	0	0	0	0
Total Survey	0	0	1	0	227	0	135	0	209	1,873	2	4	0	1,217	206	5	3,870	1	1	0	0

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	0	0	0	0	28	0	21	0	14	254	0	2	0	147	31	0	495	0	0	0	0
7:15 AM	0	0	0	0	16	0	7	0	37	251	0	1	0	150	24	2	485	1	0	0	0
7:30 AM	0	0	0	0	29	0	14	0	28	224	0	0	0	143	27	1	465	0	0	0	0
7:45 AM	0	0	0	0	31	0	21	0	21	236	0	0	0	155	39	1	503	0	0	0	0
8:00 AM	0	0	0	0	36	0	19	0	25	207	0	1	0	141	24	0	452	0	0	0	0
8:15 AM	0	0	0	0	32	0	14	0	35	252	0	0	0	154	27	0	514	0	0	0	0
8:30 AM	0	0	0	0	27	0	20	0	24	242	1	0	0	165	15	0	494	0	0	0	0
8:45 AM	0	0	1	0	28	0	19	0	25	207	1	0	0	162	19	1	462	0	1	0	0
Total Survey	0	0	1	0	227	0	135	0	209	1,873	2	4	0	1,217	206	5	3,870	1	1	0	0

Peak Hour Summary
7:45 AM to 8:45 AM

By Approach	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	0	1	1	0	200	210	410	0	1,043	689	1,732	1	720	1,063	1,783	1	1,963	0	0	0	0
%HV	0.0%				26.0%				7.2%				15.0%				12.0%				
PHF	0.00				0.91				0.91				0.93				0.95				

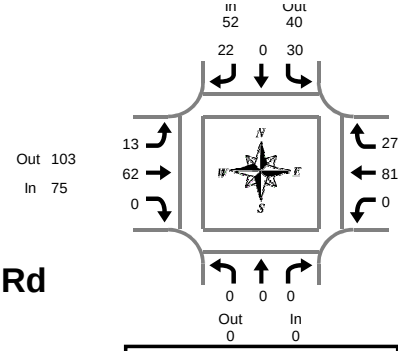
By Movement	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	126	0	74	200	105	937	1	1,043	0	615	105	720	1,963
%HV	0.0%	0.0%	0.0%	0.0%	23.8%	0.0%	29.7%	26.0%	12.4%	6.6%	0.0%	7.2%	0.0%	13.2%	25.7%	15.0%	12.0%
PHF	0.00	0.00	0.00	0.00	0.81	0.00	0.77	0.91	0.75	0.93	0.25	0.91	0.00	0.88	0.67	0.93	0.95

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	0	0	0	0	104	0	63	0	100	965	0	3	0	595	121	4	1,948	1	0	0	0
7:15 AM	0	0	0	0	112	0	61	0	111	918	0	2	0	589	114	4	1,905	1	0	0	0
7:30 AM	0	0	0	0	128	0	68	0	109	919	0	1	0	593	117	2	1,934	0	0	0	0
7:45 AM	0	0	0	0	126	0	74	0	105	937	1	1	0	615	105	1	1,963	0	0	0	0
8:00 AM	0	0	1	0	123	0	72	0	109	908	2	1	0	622	85	1	1,922	0	1	0	0

Heavy Vehicle Summary

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



SW 124th Ave & SW Tualatin Sherwood Rd

Thursday, July 13, 2017
7:00 AM to 9:00 AM

Peak Hour Summary
7:45 AM to 8:45 AM

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	2	0	0	2	0	14	0	14	0	4	2	6	22
7:05 AM	0	0	0	0	3	0	2	5	1	10	0	11	0	6	0	6	22
7:10 AM	0	0	0	0	2	0	1	3	0	9	0	9	0	5	2	7	19
7:15 AM	0	0	0	0	1	0	1	2	3	5	0	8	0	5	1	6	16
7:20 AM	0	0	0	0	3	0	0	3	1	6	0	7	0	4	1	5	15
7:25 AM	0	0	0	0	2	0	0	2	0	6	0	6	0	5	1	6	14
7:30 AM	0	0	0	0	2	0	1	3	2	6	0	8	0	5	0	5	16
7:35 AM	0	0	0	0	0	0	2	2	1	8	0	9	0	4	3	7	18
7:40 AM	0	0	0	0	2	0	4	6	0	1	0	1	0	4	3	7	14
7:45 AM	0	0	0	0	1	0	2	3	0	4	0	4	0	4	3	7	14
7:50 AM	0	0	0	0	6	0	1	7	0	7	0	7	0	3	2	5	19
7:55 AM	0	0	0	0	0	0	2	2	1	4	0	5	0	11	1	12	19
8:00 AM	0	0	0	0	3	0	4	7	4	4	0	8	0	9	0	9	24
8:05 AM	0	0	0	0	4	0	4	8	3	6	0	9	0	6	3	9	26
8:10 AM	0	0	0	0	4	0	3	7	1	6	0	7	0	4	7	11	25
8:15 AM	0	0	0	0	0	0	1	1	1	6	0	7	0	7	4	11	19
8:20 AM	0	0	0	0	3	0	2	5	1	7	0	8	0	6	3	9	22
8:25 AM	0	0	0	0	1	0	1	2	2	5	0	7	0	8	1	9	18
8:30 AM	0	0	0	0	3	0	0	3	0	6	0	6	0	8	1	9	18
8:35 AM	0	0	0	0	1	0	1	2	0	3	0	3	0	4	1	5	10
8:40 AM	0	0	0	0	4	0	1	5	0	4	0	4	0	11	1	12	21
8:45 AM	0	0	0	0	1	0	1	2	0	6	0	6	0	8	2	10	18
8:50 AM	0	0	0	0	1	0	1	2	0	6	0	6	0	6	1	7	15
8:55 AM	0	0	0	0	1	0	1	2	2	4	0	6	0	6	2	8	16
Total Survey	0	0	0	0	50	0	36	86	23	143	0	166	0	143	45	188	440

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	7	0	3	10	1	33	0	34	0	15	4	19	63
7:15 AM	0	0	0	0	6	0	1	7	4	17	0	21	0	14	3	17	45
7:30 AM	0	0	0	0	4	0	7	11	3	15	0	18	0	13	6	19	48
7:45 AM	0	0	0	0	7	0	5	12	1	15	0	16	0	18	6	24	52
8:00 AM	0	0	0	0	11	0	11	22	8	16	0	24	0	19	10	29	75
8:15 AM	0	0	0	0	4	0	4	8	4	18	0	22	0	21	8	29	59
8:30 AM	0	0	0	0	8	0	2	10	0	13	0	13	0	23	3	26	49
8:45 AM	0	0	0	0	3	0	3	6	2	16	0	18	0	20	5	25	49
Total Survey	0	0	0	0	50	0	36	86	23	143	0	166	0	143	45	188	440

Heavy Vehicle Peak Hour Summary
7:45 AM to 8:45 AM

By Approach	Northbound SW 124th Ave			Southbound SW 124th Ave			Eastbound SW Tualatin Sherwood Rd			Westbound SW Tualatin Sherwood Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	52	40	92	75	103	178	108	92	200	235
PHF	0.00			0.59			0.78			0.87			0.78

By Movement	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	30	0	22	52	13	62	0	75	0	81	27	108	235
PHF	0.00	0.00	0.00	0.00	0.68	0.00	0.50	0.59	0.41	0.82	0.00	0.78	0.00	0.78	0.48	0.87	0.78

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	24	0	16	40	9	80	0	89	0	60	19	79	208
7:15 AM	0	0	0	0	28	0	24	52	16	63	0	79	0	64	25	89	220
7:30 AM	0	0	0	0	26	0	27	53	16	64	0	80	0	71	30	101	234
7:45 AM	0	0	0	0	30	0	22	52	13	62	0	75	0	81	27	108	235
8:00 AM	0	0	0	0	26	0	20	46	14	63	0	77	0	83	26	109	232

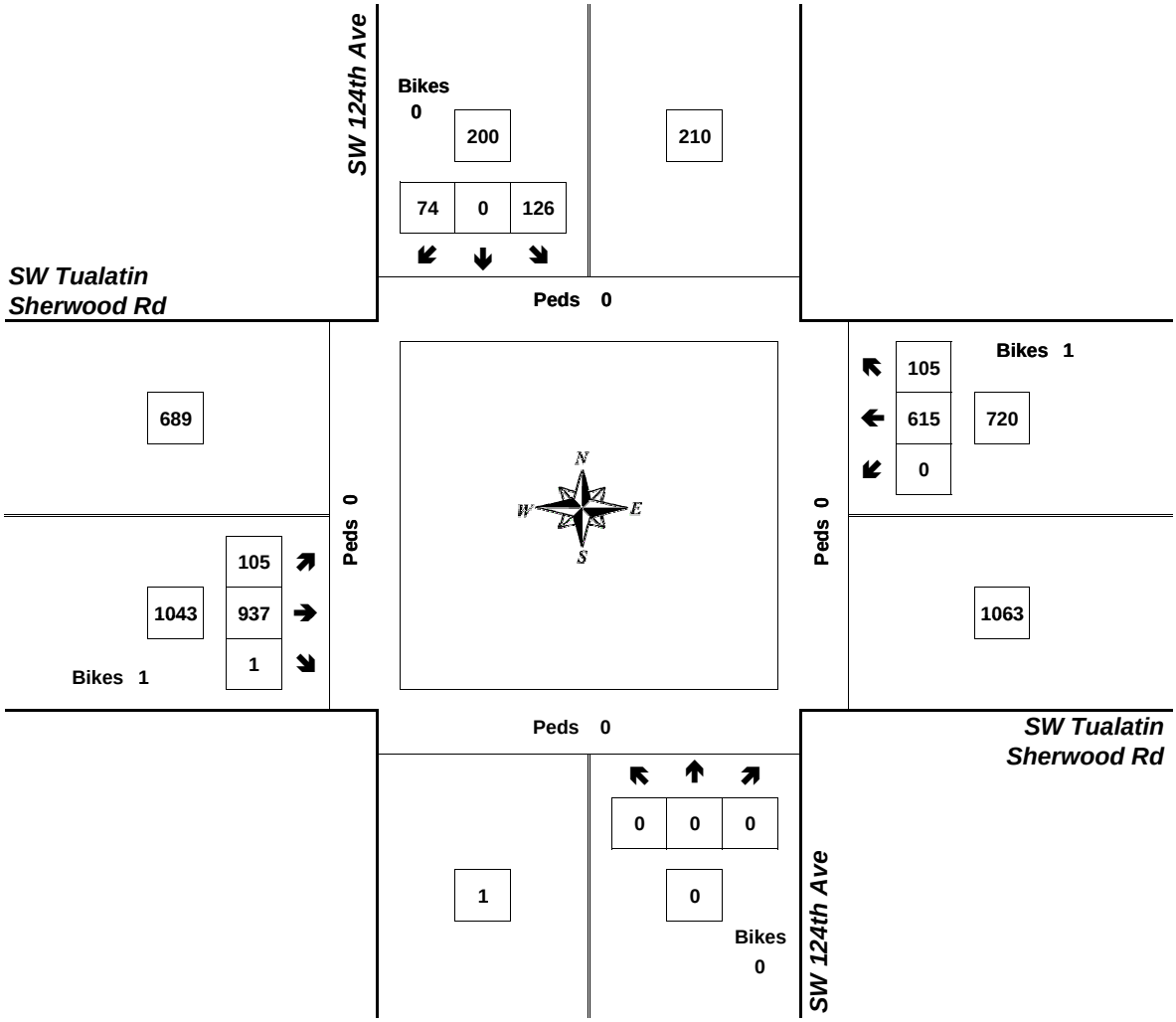
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

SW 124th Ave & SW Tualatin Sherwood Rd

7:45 AM to 8:45 AM
Thursday, July 13, 2017

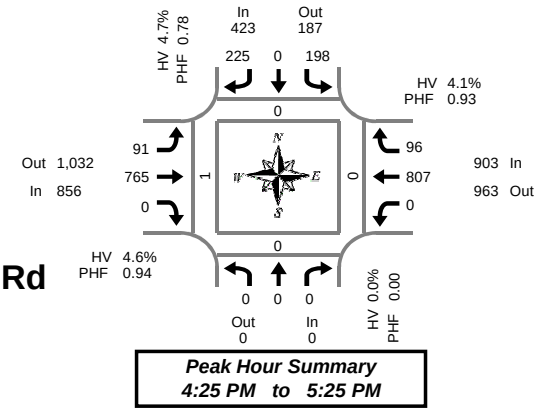


Approach	PHF	HV%	Volume
EB	0.91	7.2%	1,043
WB	0.93	15.0%	720
NB	0.00	0.0%	0
SB	0.91	26.0%	200
Intersection	0.95	12.0%	1,963

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

Total Vehicle Summary

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



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

SW 124th Ave & SW Tualatin Sherwood Rd

Wednesday, July 12, 2017
4:00 PM to 6:00 PM

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	1	0	0	0	15	0	13	0	8	71	0	0	0	67	7	0	182	0	0	0	0
4:05 PM	0	0	0	0	17	0	15	0	9	76	0	0	0	72	13	0	202	0	0	0	0
4:10 PM	0	0	0	0	15	0	17	0	7	51	0	0	0	66	10	0	166	0	0	0	0
4:15 PM	0	0	0	0	18	0	18	0	7	75	0	0	0	66	10	0	194	0	0	0	0
4:20 PM	0	0	0	0	5	0	8	0	5	60	0	0	0	66	10	0	154	0	0	0	0
4:25 PM	0	0	0	0	7	0	16	0	4	60	0	0	0	79	5	1	171	0	0	0	0
4:30 PM	0	0	0	0	17	0	7	0	8	70	0	0	0	75	7	1	184	0	0	0	0
4:35 PM	0	0	0	0	23	0	23	0	4	68	0	0	0	69	7	1	194	0	0	0	0
4:40 PM	0	0	0	0	11	0	19	0	8	70	0	1	0	68	12	0	188	0	0	0	0
4:45 PM	0	0	0	0	10	0	18	0	12	59	0	0	0	69	10	0	178	0	0	0	1
4:50 PM	0	0	0	0	27	0	17	0	8	61	0	0	0	58	3	0	174	0	0	0	0
4:55 PM	0	0	0	0	14	0	15	0	8	51	0	1	0	67	5	1	160	0	0	0	0
5:00 PM	0	0	0	0	16	0	17	1	6	63	0	0	0	69	12	1	183	0	0	0	0
5:05 PM	0	0	0	0	20	0	25	0	4	79	0	0	0	68	12	1	208	0	0	0	0
5:10 PM	0	0	0	0	21	0	26	0	9	52	0	0	0	61	6	1	175	0	0	0	0
5:15 PM	0	0	0	0	23	0	21	0	11	54	0	0	0	66	7	1	182	0	0	0	0
5:20 PM	0	0	0	0	9	0	21	0	9	78	0	0	0	58	10	0	185	0	0	0	0
5:25 PM	0	0	0	0	13	0	27	0	9	46	0	0	0	56	7	0	158	0	0	0	0
5:30 PM	0	0	0	0	20	0	20	0	14	76	0	0	0	61	3	0	194	0	0	0	0
5:35 PM	0	0	0	0	15	0	21	0	7	58	0	0	0	64	8	0	173	0	0	0	0
5:40 PM	0	0	0	0	11	0	13	0	7	75	0	0	0	71	7	1	184	0	2	0	0
5:45 PM	0	0	0	0	9	0	19	2	8	68	0	0	0	64	10	0	178	0	0	0	0
5:50 PM	0	0	0	0	14	0	19	0	5	53	0	0	0	65	5	0	161	0	0	0	0
5:55 PM	0	0	0	0	8	0	12	0	7	65	0	0	0	74	8	1	174	0	0	0	0
Total Survey	1	0	0	0	358	0	427	3	184	1,539	0	2	0	1,599	194	10	4,302	0	2	0	1

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	1	0	0	0	47	0	45	0	24	198	0	0	0	205	30	0	550	0	0	0	0
4:15 PM	0	0	0	0	30	0	42	0	16	195	0	0	0	211	25	1	519	0	0	0	0
4:30 PM	0	0	0	0	51	0	49	0	20	208	0	1	0	212	26	2	566	0	0	0	0
4:45 PM	0	0	0	0	51	0	50	0	28	171	0	1	0	194	18	1	512	0	0	0	1
5:00 PM	0	0	0	0	57	0	68	1	19	194	0	0	0	198	30	3	566	0	0	0	0
5:15 PM	0	0	0	0	45	0	69	0	29	178	0	0	0	180	24	1	525	0	0	0	0
5:30 PM	0	0	0	0	46	0	54	0	28	209	0	0	0	196	18	1	551	0	2	0	0
5:45 PM	0	0	0	0	31	0	50	2	20	186	0	0	0	203	23	1	513	0	0	0	0
Total Survey	1	0	0	0	358	0	427	3	184	1,539	0	2	0	1,599	194	10	4,302	0	2	0	1

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

By Approach	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	0	0	0	0	423	187	610	1	856	1,032	1,888	2	903	963	1,866	8	2,182	0	0	0	1
%HV	0.0%				4.7%				4.6%				4.1%				4.4%				
PHF	0.00				0.78				0.94				0.93				0.96				

By Movement	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	198	0	225	423	91	765	0	856	0	807	96	903	2,182
%HV	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	4.0%	4.7%	3.3%	4.7%	0.0%	4.6%	0.0%	4.2%	3.1%	4.1%	4.4%
PHF	0.00	0.00	0.00	0.00	0.77	0.00	0.78	0.78	0.78	0.92	0.00	0.94	0.00	0.90	0.80	0.93	0.96

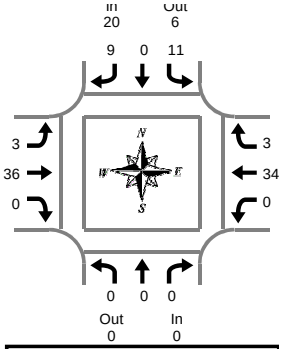
Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	1	0	0	0	179	0	186	0	88	772	0	2	0	822	99	4	2,147	0	0	0	1
4:15 PM	0	0	0	0	189	0	209	1	83	768	0	2	0	815	99	7	2,163	0	0	0	1
4:30 PM	0	0	0	0	204	0	236	1	96	751	0	2	0	784	98	7	2,169	0	0	0	1
4:45 PM	0	0	0	0	199	0	241	1	104	752	0	1	0	768	90	6	2,154	0	2	0	1
5:00 PM	0	0	0	0	179	0	241	3	96	767	0	0	0	777	95	6	2,155	0	2	0	0

Heavy Vehicle Summary

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

Out 43
In 39



SW 124th Ave & SW Tualatin Sherwood Rd

Wednesday, July 12, 2017
4:00 PM to 6:00 PM

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

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	3	0	1	4	1	2	0	3	0	3	1	4	11
4:05 PM	0	0	0	0	1	0	0	1	0	2	0	2	0	2	0	2	5
4:10 PM	0	0	0	0	1	0	0	1	0	3	0	3	0	2	1	3	7
4:15 PM	0	0	0	0	1	0	1	2	0	3	0	3	0	3	1	4	9
4:20 PM	0	0	0	0	1	0	3	4	0	3	0	3	0	7	0	7	14
4:25 PM	0	0	0	0	1	0	1	2	0	3	0	3	0	5	0	5	10
4:30 PM	0	0	0	0	2	0	0	2	1	5	0	6	0	3	0	3	11
4:35 PM	0	0	0	0	1	0	0	1	0	3	0	3	0	2	1	3	7
4:40 PM	0	0	0	0	0	0	0	0	1	4	0	5	0	1	0	1	6
4:45 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
4:50 PM	0	0	0	0	2	0	2	4	1	4	0	5	0	1	0	1	10
4:55 PM	0	0	0	0	2	0	2	4	0	0	0	0	0	3	0	3	7
5:00 PM	0	0	0	0	1	0	0	1	0	3	0	3	0	3	1	4	8
5:05 PM	0	0	0	0	0	0	1	1	0	6	0	6	0	6	0	6	13
5:10 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	2	0	2	6
5:15 PM	0	0	0	0	2	0	3	5	0	1	0	1	0	2	0	2	8
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	1	7	7
5:25 PM	0	0	0	0	2	0	3	5	0	0	0	0	0	0	0	0	5
5:30 PM	0	0	0	0	1	0	1	2	3	3	0	6	0	2	0	2	10
5:35 PM	0	0	0	0	0	0	1	1	0	1	0	1	0	0	1	1	3
5:40 PM	0	0	0	0	0	0	1	1	0	2	0	2	0	1	0	1	4
5:45 PM	0	0	0	0	0	0	0	0	1	5	0	6	0	1	0	1	7
5:50 PM	0	0	0	0	1	0	0	1	0	2	0	2	0	2	0	2	5
5:55 PM	0	0	0	0	0	0	0	0	1	1	0	2	0	2	0	2	4
Total Survey	0	0	0	0	22	0	20	42	9	63	0	72	0	59	7	66	180

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	5	0	1	6	1	7	0	8	0	7	2	9	23
4:15 PM	0	0	0	0	3	0	5	8	0	9	0	9	0	15	1	16	33
4:30 PM	0	0	0	0	3	0	0	3	2	12	0	14	0	6	1	7	24
4:45 PM	0	0	0	0	4	0	4	8	1	7	0	8	0	4	0	4	20
5:00 PM	0	0	0	0	1	0	1	2	0	13	0	13	0	11	1	12	27
5:15 PM	0	0	0	0	4	0	6	10	0	1	0	1	0	8	1	9	20
5:30 PM	0	0	0	0	1	0	3	4	3	6	0	9	0	3	1	4	17
5:45 PM	0	0	0	0	1	0	0	1	2	8	0	10	0	5	0	5	16
Total Survey	0	0	0	0	22	0	20	42	9	63	0	72	0	59	7	66	180

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

By Approach	Northbound SW 124th Ave			Southbound SW 124th Ave			Eastbound SW Tualatin Sherwood Rd			Westbound SW Tualatin Sherwood Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	20	6	26	39	43	82	37	47	84	96
PHF	0.00			0.56			0.70			0.71			0.86

By Movement	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	11	0	9	20	3	36	0	39	0	34	3	37	96
PHF	0.00	0.00	0.00	0.00	0.55	0.00	0.56	0.56	0.38	0.69	0.00	0.70	0.00	0.71	0.75	0.71	0.86

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

Interval Start Time	Northbound SW 124th Ave				Southbound SW 124th Ave				Eastbound SW Tualatin Sherwood Rd				Westbound SW Tualatin Sherwood Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	15	0	10	25	4	35	0	39	0	32	4	36	100
4:15 PM	0	0	0	0	11	0	10	21	3	41	0	44	0	36	3	39	104
4:30 PM	0	0	0	0	12	0	11	23	3	33	0	36	0	29	3	32	91
4:45 PM	0	0	0	0	10	0	14	24	4	27	0	31	0	26	3	29	84
5:00 PM	0	0	0	0	7	0	10	17	5	28	0	33	0	27	3	30	80

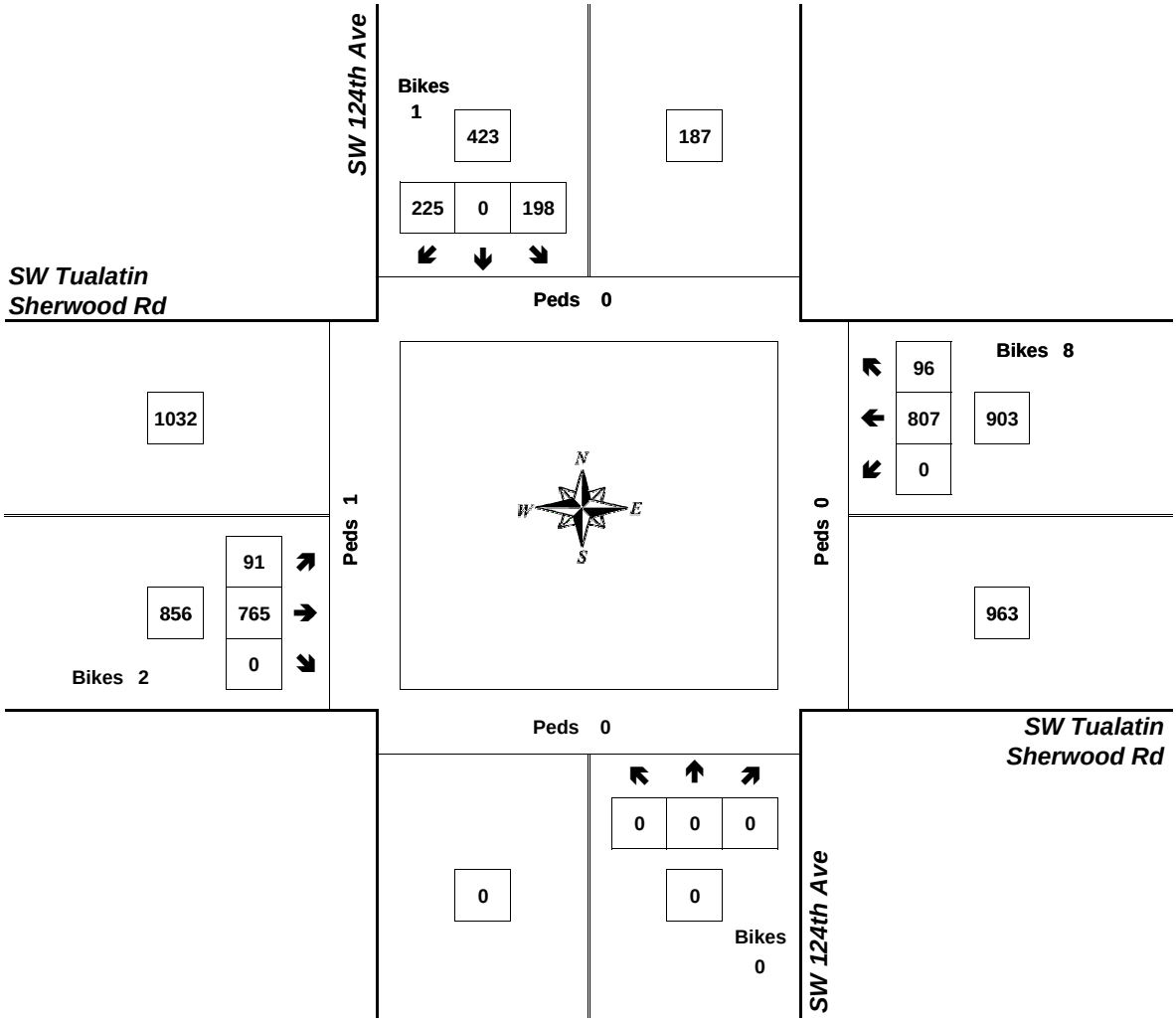
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

SW 124th Ave & SW Tualatin Sherwood Rd

4:25 PM to 5:25 PM
Wednesday, July 12, 2017



Approach	PHF	HV%	Volume
EB	0.94	4.6%	856
WB	0.93	4.1%	903
NB	0.00	0.0%	0
SB	0.78	4.7%	423
Intersection	0.96	4.4%	2,182

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

TRIP GENERATION CALCULATIONS

Land Use: General Light Industrial
Land Use Code: 110
Variable: 1,000 Square Feet
Variable Quantity: 157.2

AM PEAK HOUR

Trip Rate: 0.92

	Enter	Exit	Total
Directional Distribution	88%	12%	
Trip Ends	**128**	**17**	**145**

PM PEAK HOUR

Trip Rate: 0.97

	Enter	Exit	Total
Directional Distribution	12%	88%	
Trip Ends	**18**	**135**	**153**

WEEKDAY

Trip Rate: 6.97

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**548**	**548**	**1,096**

SATURDAY

Trip Rate: 1.32

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**104**	**104**	**208**

Source: TRIP GENERATION, Ninth Edition

LEVEL OF SERVICE

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

Level of service A: Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.

Level of service B: Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.

Level of service C: Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.

Level of service D: Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.

Level of service E: Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.

Level of service F: Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.

LEVEL OF SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

LEVEL OF SERVICE CRITERIA
FOR UNSIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	207	32	25	143	36	19	128	31	163	181	59
Future Volume (veh/h)	28	207	32	25	143	36	19	128	31	163	181	59
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1681	1681	1681	1681	1681	1681	1583	1583	1900	1792	1792	1900
Adj Flow Rate, veh/h	31	233	0	28	161	0	21	144	35	183	203	66
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	13	13	13	13	13	13	20	20	20	6	6	6
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	114	432	368	359	432	368	108	638	151	256	869	274
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.07	0.26	0.00	0.07	0.26	0.00	0.07	0.26	0.26	0.15	0.34	0.34
Ln Grp Delay, s/veh	36.5	27.2	0.0	17.0	23.8	0.0	34.6	21.4	21.6	44.0	17.3	17.5
Ln Grp LOS	D	C		B	C		C	C	C	D	B	B
Approach Vol, veh/h		264			189			200			452	
Approach Delay, s/veh		28.3			22.8			22.9			28.2	
Approach LOS		C			C			C			C	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Case No	2.0	4.0	1.1	3.0	2.0	4.0	2.0	3.0
Phs Duration (G+Y+Rc), s	15.0	23.0	9.5	22.5	9.5	28.5	9.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green (Gmax), s	10.5	18.5	5.0	18.0	5.0	24.0	5.0	18.0
Max Allow Headway (MAH), s	3.8	5.1	3.7	4.9	3.8	5.1	3.7	4.9
Max Q Clear (g_c+l1), s	9.1	5.4	2.8	10.4	2.9	6.1	3.3	7.5
Green Ext Time (g_e), s	0.1	2.0	0.0	1.2	0.0	2.3	0.0	1.5
Prob of Phs Call (p_c)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prob of Max Out (p_x)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Left-Turn Movement Data								
Assigned Mvmt	1		3		5		7	
Mvmt Sat Flow, veh/h	1707		1601		1508		1601	

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		2414		1681		2535		1681

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		571		1429		798		1429

Left Lane Group Data								
Assigned Mvmt	1	0	3	0	5	0	7	0
Lane Assignment	(Prot)		(Pr/Pm)		(Prot)		(Prot)	

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	183	0	28	0	21	0	31	0
Grp Sat Flow (s), veh/h/ln	1707	0	1601	0	1508	0	1601	0
Q Serve Time (g_s), s	7.1	0.0	0.8	0.0	0.9	0.0	1.3	0.0
Cycle Q Clear Time (g_c), s	7.1	0.0	0.8	0.0	0.9	0.0	1.3	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1031	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	9.6	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	256	0	359	0	108	0	114	0
V/C Ratio (X)	0.71	0.00	0.08	0.00	0.19	0.00	0.27	0.00
Avail Cap (c_a), veh/h	256	0	359	0	108	0	114	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	28.3	0.0	16.6	0.0	30.6	0.0	30.8	0.0
Incr Delay (d2), s/veh	15.7	0.0	0.4	0.0	4.0	0.0	5.7	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	44.0	0.0	17.0	0.0	34.6	0.0	36.5	0.0
1st-Term Q (Q1), veh/ln	3.4	0.0	0.4	0.0	0.4	0.0	0.6	0.0
2nd-Term Q (Q2), veh/ln	1.1	0.0	0.0	0.0	0.1	0.0	0.2	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
%ile Back of Q (50%), veh/ln	4.5	0.0	0.4	0.0	0.5	0.0	0.8	0.0
%ile Storage Ratio (RQ%)	0.67	0.00	0.07	0.00	0.07	0.00	0.09	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		T
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	88	0	233	0	134	0	161
Grp Sat Flow (s), veh/h/ln	0	1504	0	1681	0	1703	0	1681
Q Serve Time (g_s), s	0.0	3.2	0.0	8.4	0.0	3.9	0.0	5.5
Cycle Q Clear Time (g_c), s	0.0	3.2	0.0	8.4	0.0	3.9	0.0	5.5
Lane Grp Cap (c), veh/h	0	398	0	432	0	584	0	432
V/C Ratio (X)	0.00	0.22	0.00	0.54	0.00	0.23	0.00	0.37
Avail Cap (c_a), veh/h	0	398	0	432	0	584	0	432
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	20.1	0.0	22.4	0.0	16.4	0.0	21.4
Incr Delay (d2), s/veh	0.0	1.3	0.0	4.8	0.0	0.9	0.0	2.4
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	21.4	0.0	27.2	0.0	17.3	0.0	23.8
1st-Term Q (Q1), veh/ln	0.0	1.3	0.0	3.9	0.0	1.8	0.0	2.5

2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.6	0.0	0.1	0.0	0.3
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.5	0.0	4.5	0.0	2.0	0.0	2.8
%ile Storage Ratio (RQ%)	0.00	0.05	0.00	0.11	0.00	0.08	0.00	0.06
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	91	0	0	0	135	0	0
Grp Sat Flow (s), veh/h/ln	0	1481	0	1429	0	1630	0	1429
Q Serve Time (g_s), s	0.0	3.4	0.0	0.0	0.0	4.1	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	3.4	0.0	0.0	0.0	4.1	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.39	0.00	1.00	0.00	0.49	0.00	1.00
Lane Grp Cap (c), veh/h	0	391	0	368	0	559	0	368
V/C Ratio (X)	0.00	0.23	0.00	0.00	0.00	0.24	0.00	0.00
Avail Cap (c_a), veh/h	0	391	0	368	0	559	0	368
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	20.2	0.0	0.0	0.0	16.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.4	0.0	0.0	0.0	1.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	21.6	0.0	0.0	0.0	17.5	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	1.4	0.0	0.0	0.0	1.9	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.5	0.0	0.0	0.0	2.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.05	0.00	0.00	0.00	0.08	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.3
HCM 2010 LOS	C

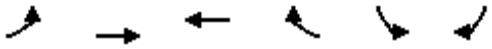
Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	201	29	14	200
Future Vol, veh/h	3	4	201	29	14	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	14	14	18	18	26	26
Mvmt Flow	3	4	216	31	15	215

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	370	124	0	0	247	0
Stage 1	232	-	-	-	-	-
Stage 2	138	-	-	-	-	-
Critical Hdwy	7.08	7.18	-	-	4.62	-
Critical Hdwy Stg 1	6.08	-	-	-	-	-
Critical Hdwy Stg 2	6.08	-	-	-	-	-
Follow-up Hdwy	3.64	3.44	-	-	2.46	-
Pot Cap-1 Maneuver	573	867	-	-	1158	-
Stage 1	750	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	566	867	-	-	1158	-
Mov Cap-2 Maneuver	566	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	828	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	706	1158	-
HCM Lane V/C Ratio	-	-	0.011	0.013	-
HCM Control Delay (s)	-	-	10.2	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	105	937	615	105	126	74
Future Volume (veh/h)	105	937	615	105	126	74
Number	7	4	8	18	1	16
Initial Q, veh	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00			0.98	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1776	1776	1652	1900	1508	1508
Adj Flow Rate, veh/h	111	986	647	111	133	78
Adj No. of Lanes	1	1	1	0	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	7	7	15	15	26	26
Opposing Right Turn Influence	Yes				Yes	
Cap, veh/h	237	1106	687	118	367	327
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.06	0.62	0.50	0.50	0.26	0.26
Ln Grp Delay, s/veh	17.8	20.8	0.0	36.2	25.4	23.6
Ln Grp LOS	B	C		D	C	C
Approach Vol, veh/h		1097	758		211	
Approach Delay, s/veh		20.5	36.2		24.7	
Approach LOS		C	D		C	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	6			4			7	8
Case No	9.0			4.0			1.2	8.0
Phs Duration (G+Y+Rc), s	23.4			50.6			9.0	41.6
Change Period (Y+Rc), s	4.5			4.5			4.5	4.5
Max Green (Gmax), s	18.9			47.1			5.1	37.5
Max Allow Headway (MAH), s	3.9			5.0			3.7	5.0
Max Q Clear (g_c+I1), s	7.6			36.8			4.1	35.0
Green Ext Time (g_e), s	0.4			7.5			0.0	2.1
Prob of Phs Call (p_c)	1.00			1.00			0.90	1.00
Prob of Max Out (p_x)	0.00			0.83			1.00	1.00

Left-Turn Movement Data								
Assigned Mvmt	1						7	3
Mvmt Sat Flow, veh/h	1436						1691	0

Through Movement Data								
Assigned Mvmt	6			4				8
Mvmt Sat Flow, veh/h	0			1776				1370

Right-Turn Movement Data								
Assigned Mvmt	16			14				18
Mvmt Sat Flow, veh/h	1282			0				235

Left Lane Group Data								
Assigned Mvmt	1	0	0	0	0	0	7	3
Lane Assignment							(Pr/Pm)	

Lanes in Grp	1	0	0	0	0	0	1	0
Grp Vol (v), veh/h	133	0	0	0	0	0	111	0
Grp Sat Flow (s), veh/h/ln	1436	0	0	0	0	0	1691	0
Q Serve Time (g_s), s	5.6	0.0	0.0	0.0	0.0	0.0	2.1	0.0
Cycle Q Clear Time (g_c), s	5.6	0.0	0.0	0.0	0.0	0.0	2.1	0.0
Perm LT Sat Flow (s_l), veh/h/ln	1436	0	0	0	0	0	671	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	39.1	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.1
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	367	0	0	0	0	0	237	0
V/C Ratio (X)	0.36	0.00	0.00	0.00	0.00	0.00	0.47	0.00
Avail Cap (c_a), veh/h	367	0	0	0	0	0	251	0
Upstream Filter (I)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	22.6	0.0	0.0	0.0	0.0	0.0	16.3	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.0	0.0	0.0	0.0	1.4	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	25.4	0.0	0.0	0.0	0.0	0.0	17.8	0.0
1st-Term Q (Q1), veh/ln	2.2	0.0	0.0	0.0	0.0	0.0	1.2	0.0
2nd-Term Q (Q2), veh/ln	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
%ile Back of Q (50%), veh/ln	2.5	0.0	0.0	0.0	0.0	0.0	1.3	0.0
%ile Storage Ratio (RQ%)	0.10	0.00	0.00	0.00	0.00	0.00	0.05	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	6	0	0	4	0	0	0	8
Lane Assignment				T				
Lanes in Grp	0	0	0	1	0	0	0	0
Grp Vol (v), veh/h	0	0	0	986	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	0	0	1776	0	0	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	34.8	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	34.8	0.0	0.0	0.0	0.0
Lane Grp Cap (c), veh/h	0	0	0	1106	0	0	0	0
V/C Ratio (X)	0.00	0.00	0.00	0.89	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	0	0	1130	0	0	0	0
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	11.8	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	20.8	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	16.7	0.0	0.0	0.0	0.0

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	19.5	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.73	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	16	0	0	14	0	0	0	18
Lane Assignment	R							T+R
Lanes in Grp	1	0	0	0	0	0	0	1
Grp Vol (v), veh/h	78	0	0	0	0	0	0	758
Grp Sat Flow (s), veh/h/ln	1282	0	0	0	0	0	0	1605
Q Serve Time (g_s), s	3.6	0.0	0.0	0.0	0.0	0.0	0.0	33.0
Cycle Q Clear Time (g_c), s	3.6	0.0	0.0	0.0	0.0	0.0	0.0	33.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
Lane Grp Cap (c), veh/h	327	0	0	0	0	0	0	805
V/C Ratio (X)	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Avail Cap (c_a), veh/h	327	0	0	0	0	0	0	813
Upstream Filter (I)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	21.8	0.0	0.0	0.0	0.0	0.0	0.0	17.4
Incr Delay (d2), s/veh	1.7	0.0	0.0	0.0	0.0	0.0	0.0	18.8
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	23.6	0.0	0.0	0.0	0.0	0.0	0.0	36.2
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5
2nd-Term Q (Q2), veh/ln	0.2	0.0	0.0	0.0	0.0	0.0	0.0	4.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.2	0.0	0.0	0.0	0.0	0.0	0.0	18.7
%ile Storage Ratio (RQ%)	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.31
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	971	95	114	689	11	39	0	79	6	0	1
Future Volume (veh/h)	2	971	95	114	689	11	39	0	79	6	0	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1759	1759	1712	1712	1900	1397	1397	1397	1900	1900	1900
Adj Flow Rate, veh/h	2	1001	98	118	710	11	40	0	81	6	0	1
Adj No. of Lanes	1	1	1	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	8	11	11	11	36	36	36	0	0	0
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	448	1143	971	200	1193	18	204	137	117	232	0	159
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.00	0.65	0.65	0.06	0.71	0.71	0.10	0.00	0.10	0.10	0.00	0.10
Ln Grp Delay, s/veh	5.2	16.6	4.7	36.0	0.0	5.9	30.7	0.0	38.4	29.2	0.0	29.1
Ln Grp LOS	A	B	A	D		A	C		D	C		C
Approach Vol, veh/h		1101			839			121			7	
Approach Delay, s/veh		15.5			10.1			35.8			29.2	
Approach LOS		B			B			D			C	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Case No		5.0	2.0	3.0		6.0	1.1	4.0
Phs Duration (G+Y+Rc), s		11.5	9.0	50.9		11.5	4.7	55.2
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green (Gmax), s		19.0	5.0	52.5		19.0	5.0	52.5
Max Allow Headway (MAH), s		4.4	3.7	4.9		4.4	3.7	4.9
Max Q Clear (g_c+I1), s		6.7	4.6	35.1		2.3	2.0	17.2
Green Ext Time (g_e), s		0.3	0.0	11.3		0.4	0.0	17.3
Prob of Phs Call (p_c)		1.00	0.90	1.00		1.00	0.04	1.00
Prob of Max Out (p_x)		0.00	1.00	0.65		0.00	1.00	0.35

Left-Turn Movement Data								
Assigned Mvmt		5	3			1	7	
Mvmt Sat Flow, veh/h		1058	3163			1338	1675	

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		1397		1759		0		1680

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		1188		1495		1615		26

Left Lane Group Data								
Assigned Mvmt	0	5	3	0	0	1	7	0
Lane Assignment			(Prot)				(Pr/Pm)	

Lanes in Grp	0	1	2	0	0	1	1	0
Grp Vol (v), veh/h	0	40	118	0	0	6	2	0
Grp Sat Flow (s), veh/h/ln	0	1058	1581	0	0	1338	1675	0
Q Serve Time (g_s), s	0.0	2.5	2.6	0.0	0.0	0.3	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	2.6	2.6	0.0	0.0	0.3	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1058	0	0	0	1338	688	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	7.0	0.0	0.0	0.0	7.0	46.4	0.0
Perm LT Serve Time (g_u), s	0.0	7.0	0.0	0.0	0.0	7.0	35.6	0.0
Perm LT Q Serve Time (g_ps), s	0.0	2.5	0.0	0.0	0.0	0.3	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Lane Grp Cap (c), veh/h	0	204	200	0	0	232	448	0
V/C Ratio (X)	0.00	0.20	0.59	0.00	0.00	0.03	0.00	0.00
Avail Cap (c_a), veh/h	0	382	221	0	0	457	561	0
Upstream Filter (I)	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d1), s/veh	0.0	30.2	32.6	0.0	0.0	29.2	5.1	0.0
Incr Delay (d2), s/veh	0.0	0.5	3.4	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	30.7	36.0	0.0	0.0	29.2	5.2	0.0
1st-Term Q (Q1), veh/ln	0.0	0.7	1.1	0.0	0.0	0.1	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.8	1.2	0.0	0.0	0.1	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.16	0.11	0.00	0.00	0.02	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T		T				
Lanes in Grp	0	1	0	1	0	0	0	0
Grp Vol (v), veh/h	0	0	0	1001	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1397	0	1759	0	0	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	33.1	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	33.1	0.0	0.0	0.0	0.0
Lane Grp Cap (c), veh/h	0	137	0	1143	0	0	0	0
V/C Ratio (X)	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	372	0	1293	0	0	0	0
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	10.2	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	6.4	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	16.6	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	15.6	0.0	0.0	0.0	0.0

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	17.6	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		R		R		T+R		T+R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	81	0	98	0	1	0	721
Grp Sat Flow (s), veh/h/ln	0	1188	0	1495	0	1615	0	1706
Q Serve Time (g_s), s	0.0	4.7	0.0	1.8	0.0	0.0	0.0	15.2
Cycle Q Clear Time (g_c), s	0.0	4.7	0.0	1.8	0.0	0.0	0.0	15.2
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.02
Lane Grp Cap (c), veh/h	0	117	0	971	0	159	0	1212
V/C Ratio (X)	0.00	0.69	0.00	0.10	0.00	0.01	0.00	0.60
Avail Cap (c_a), veh/h	0	316	0	1099	0	430	0	1254
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	31.2	0.0	4.7	0.0	29.1	0.0	5.2
Incr Delay (d2), s/veh	0.0	7.2	0.0	0.0	0.0	0.0	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	38.4	0.0	4.7	0.0	29.1	0.0	5.9
1st-Term Q (Q1), veh/ln	0.0	1.5	0.0	0.7	0.0	0.0	0.0	7.0
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.8	0.0	0.7	0.0	0.0	0.0	7.3
%ile Storage Ratio (RQ%)	0.00	0.38	0.00	0.23	0.00	0.00	0.00	0.44
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	168	22	100	304	163	10	200	45	88	260	26
Future Volume (veh/h)	77	168	22	100	304	163	10	200	45	88	260	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1810	1810	1810	1863	1863	1900	1759	1759	1900
Adj Flow Rate, veh/h	85	185	0	110	334	0	11	220	49	97	286	29
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	6	6	6	5	5	5	2	2	2	8	8	8
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	131	496	422	468	501	426	136	822	180	142	895	90
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.08	0.28	0.00	0.08	0.28	0.00	0.08	0.28	0.28	0.08	0.29	0.29
Ln Grp Delay, s/veh	51.2	21.1	0.0	15.9	27.7	0.0	29.0	19.3	19.4	52.5	19.6	19.7
Ln Grp LOS	D	C		B	C		C	B	B	D	B	B
Approach Vol, veh/h		270			444			280			412	
Approach Delay, s/veh		30.6			24.8			19.7			27.4	
Approach LOS		C			C			B			C	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Case No	2.0	4.0	1.1	3.0	2.0	4.0	2.0	3.0
Phs Duration (G+Y+Rc), s	10.0	23.0	9.5	22.5	9.5	23.5	9.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green (Gmax), s	5.5	18.5	5.0	18.0	5.0	19.0	5.0	18.0
Max Allow Headway (MAH), s	3.8	5.1	3.7	4.9	3.7	5.1	3.7	4.9
Max Q Clear (g_c+l1), s	5.7	5.9	4.9	7.4	2.4	6.8	5.1	12.6
Green Ext Time (g_e), s	0.0	2.6	0.0	2.1	0.0	2.6	0.0	1.3
Prob of Phs Call (p_c)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prob of Max Out (p_x)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Left-Turn Movement Data								
Assigned Mvmt	1		3		5		7	
Mvmt Sat Flow, veh/h	1675		1723		1774		1707	

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		2890		1792		3060		1810

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		631		1524		308		1538

Left Lane Group Data								
Assigned Mvmt	1	0	3	0	5	0	7	0
Lane Assignment	(Prot)		(Pr/Pm)		(Prot)		(Prot)	

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	97	0	110	0	11	0	85	0
Grp Sat Flow (s), veh/h/ln	1675	0	1723	0	1774	0	1707	0
Q Serve Time (g_s), s	3.7	0.0	2.9	0.0	0.4	0.0	3.1	0.0
Cycle Q Clear Time (g_c), s	3.7	0.0	2.9	0.0	0.4	0.0	3.1	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1160	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	12.6	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	142	0	468	0	136	0	131	0
V/C Ratio (X)	0.68	0.00	0.24	0.00	0.08	0.00	0.65	0.00
Avail Cap (c_a), veh/h	142	0	468	0	136	0	131	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	28.9	0.0	14.7	0.0	27.9	0.0	29.1	0.0
Incr Delay (d2), s/veh	23.6	0.0	1.2	0.0	1.2	0.0	22.1	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	52.5	0.0	15.9	0.0	29.0	0.0	51.2	0.0
1st-Term Q (Q1), veh/ln	1.7	0.0	1.3	0.0	0.2	0.0	1.5	0.0
2nd-Term Q (Q2), veh/ln	0.9	0.0	0.2	0.0	0.0	0.0	0.8	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
%ile Back of Q (50%), veh/ln	2.6	0.0	1.5	0.0	0.2	0.0	2.3	0.0
%ile Storage Ratio (RQ%)	0.40	0.00	0.24	0.00	0.03	0.00	0.25	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		T
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	133	0	185	0	155	0	334
Grp Sat Flow (s), veh/h/ln	0	1770	0	1792	0	1671	0	1810
Q Serve Time (g_s), s	0.0	3.8	0.0	5.4	0.0	4.7	0.0	10.6
Cycle Q Clear Time (g_c), s	0.0	3.8	0.0	5.4	0.0	4.7	0.0	10.6
Lane Grp Cap (c), veh/h	0	504	0	496	0	489	0	501
V/C Ratio (X)	0.00	0.26	0.00	0.37	0.00	0.32	0.00	0.67
Avail Cap (c_a), veh/h	0	504	0	496	0	489	0	501
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	18.0	0.0	18.9	0.0	17.9	0.0	20.8
Incr Delay (d2), s/veh	0.0	1.3	0.0	2.1	0.0	1.7	0.0	6.9
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	19.3	0.0	21.1	0.0	19.6	0.0	27.7
1st-Term Q (Q1), veh/ln	0.0	1.8	0.0	2.7	0.0	2.2	0.0	5.3

2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.3	0.0	0.2	0.0	1.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	2.0	0.0	3.0	0.0	2.4	0.0	6.2
%ile Storage Ratio (RQ%)	0.00	0.06	0.00	0.07	0.00	0.09	0.00	0.11
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	136	0	0	0	160	0	0
Grp Sat Flow (s), veh/h/ln	0	1751	0	1524	0	1697	0	1538
Q Serve Time (g_s), s	0.0	3.9	0.0	0.0	0.0	4.8	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	3.9	0.0	0.0	0.0	4.8	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.36	0.00	1.00	0.00	0.18	0.00	1.00
Lane Grp Cap (c), veh/h	0	498	0	422	0	496	0	426
V/C Ratio (X)	0.00	0.27	0.00	0.00	0.00	0.32	0.00	0.00
Avail Cap (c_a), veh/h	0	498	0	422	0	496	0	426
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	18.0	0.0	0.0	0.0	18.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.3	0.0	0.0	0.0	1.7	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	19.4	0.0	0.0	0.0	19.7	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	1.9	0.0	0.0	0.0	2.2	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	2.1	0.0	0.0	0.0	2.5	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.07	0.00	0.00	0.00	0.10	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	25.7
HCM 2010 LOS	C

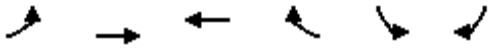
Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	23	16	200	2	4	434
Future Vol, veh/h	23	16	200	2	4	434
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	4	4	5	5
Mvmt Flow	26	18	225	2	4	488

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	480	114	0	0	228	0
Stage 1	227	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.2	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.25	-
Pot Cap-1 Maneuver	520	923	-	-	1316	-
Stage 1	795	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	518	922	-	-	1316	-
Mov Cap-2 Maneuver	518	-	-	-	-	-
Stage 1	794	-	-	-	-	-
Stage 2	770	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	632	1316	-
HCM Lane V/C Ratio	-	-	0.069	0.003	-
HCM Control Delay (s)	-	-	11.1	7.7	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	91	765	807	96	198	225
Future Volume (veh/h)	91	765	807	96	198	225
Number	7	4	8	18	1	16
Initial Q, veh	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00			0.97	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1827	1900	1810	1810
Adj Flow Rate, veh/h	95	797	841	100	206	234
Adj No. of Lanes	1	1	1	0	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	4	4	5	5
Opposing Right Turn Influence	Yes				Yes	
Cap, veh/h	198	1173	856	102	411	367
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.06	0.65	0.54	0.54	0.24	0.24
Ln Grp Delay, s/veh	20.4	10.3	0.0	42.7	30.4	35.4
Ln Grp LOS	C	B		D	C	D
Approach Vol, veh/h		892	941		440	
Approach Delay, s/veh		11.4	42.7		33.1	
Approach LOS		B	D		C	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	6			4			7	8
Case No	9.0			4.0			1.2	8.0
Phs Duration (G+Y+Rc), s	23.4			55.9			8.9	47.0
Change Period (Y+Rc), s	4.5			4.5			4.5	4.5
Max Green (Gmax), s	18.9			52.1			5.1	42.5
Max Allow Headway (MAH), s	3.8			4.9			3.7	4.9
Max Q Clear (g_c+I1), s	12.8			24.0			3.8	42.9
Green Ext Time (g_e), s	0.8			14.9			0.0	0.0
Prob of Phs Call (p_c)	1.00			1.00			0.88	1.00
Prob of Max Out (p_x)	0.00			0.42			1.00	1.00

Left-Turn Movement Data								
Assigned Mvmt	1						7	3
Mvmt Sat Flow, veh/h	1723						1723	0

Through Movement Data								
Assigned Mvmt	6			4				8
Mvmt Sat Flow, veh/h	0			1810				1598

Right-Turn Movement Data								
Assigned Mvmt	16			14				18
Mvmt Sat Flow, veh/h	1538			0				190

Left Lane Group Data								
Assigned Mvmt	1	0	0	0	0	0	7	3
Lane Assignment							(Pr/Pm)	

Lanes in Grp	1	0	0	0	0	0	1	0
Grp Vol (v), veh/h	206	0	0	0	0	0	95	0
Grp Sat Flow (s), veh/h/ln	1723	0	0	0	0	0	1723	0
Q Serve Time (g_s), s	8.2	0.0	0.0	0.0	0.0	0.0	1.8	0.0
Cycle Q Clear Time (g_c), s	8.2	0.0	0.0	0.0	0.0	0.0	1.8	0.0
Perm LT Sat Flow (s_l), veh/h/ln	1723	0	0	0	0	0	576	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	44.5	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.5
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	411	0	0	0	0	0	198	0
V/C Ratio (X)	0.50	0.00	0.00	0.00	0.00	0.00	0.48	0.00
Avail Cap (c_a), veh/h	411	0	0	0	0	0	213	0
Upstream Filter (I)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	26.1	0.0	0.0	0.0	0.0	0.0	18.6	0.0
Incr Delay (d2), s/veh	4.3	0.0	0.0	0.0	0.0	0.0	1.8	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	30.4	0.0	0.0	0.0	0.0	0.0	20.4	0.0
1st-Term Q (Q1), veh/ln	3.9	0.0	0.0	0.0	0.0	0.0	1.2	0.0
2nd-Term Q (Q2), veh/ln	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
%ile Back of Q (50%), veh/ln	4.4	0.0	0.0	0.0	0.0	0.0	1.3	0.0
%ile Storage Ratio (RQ%)	0.16	0.00	0.00	0.00	0.00	0.00	0.05	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	6	0	0	4	0	0	0	8
Lane Assignment				T				
Lanes in Grp	0	0	0	1	0	0	0	0
Grp Vol (v), veh/h	0	0	0	797	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	0	0	1810	0	0	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	22.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	22.0	0.0	0.0	0.0	0.0
Lane Grp Cap (c), veh/h	0	0	0	1173	0	0	0	0
V/C Ratio (X)	0.00	0.00	0.00	0.68	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	0	0	1189	0	0	0	0
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	8.8	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	10.3	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	10.8	0.0	0.0	0.0	0.0

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	11.4	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.42	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	16	0	0	14	0	0	0	18
Lane Assignment	R							T+R
Lanes in Grp	1	0	0	0	0	0	0	1
Grp Vol (v), veh/h	234	0	0	0	0	0	0	941
Grp Sat Flow (s), veh/h/ln	1538	0	0	0	0	0	0	1788
Q Serve Time (g_s), s	10.8	0.0	0.0	0.0	0.0	0.0	0.0	40.9
Cycle Q Clear Time (g_c), s	10.8	0.0	0.0	0.0	0.0	0.0	0.0	40.9
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
Lane Grp Cap (c), veh/h	367	0	0	0	0	0	0	958
V/C Ratio (X)	0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.98
Avail Cap (c_a), veh/h	367	0	0	0	0	0	0	958
Upstream Filter (I)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	27.1	0.0	0.0	0.0	0.0	0.0	0.0	18.0
Incr Delay (d2), s/veh	8.2	0.0	0.0	0.0	0.0	0.0	0.0	24.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	35.4	0.0	0.0	0.0	0.0	0.0	0.0	42.7
1st-Term Q (Q1), veh/ln	9.1	0.0	0.0	0.0	0.0	0.0	0.0	19.9
2nd-Term Q (Q2), veh/ln	0.8	0.0	0.0	0.0	0.0	0.0	0.0	6.6
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	9.9	0.0	0.0	0.0	0.0	0.0	0.0	26.4
%ile Storage Ratio (RQ%)	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.41
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	882	68	42	794	18	83	1	146	16	3	11
Future Volume (veh/h)	13	882	68	42	794	18	83	1	146	16	3	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.99	1.00		0.98	0.99		0.99	0.99		0.99
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1827	1827	1900	1810	1810	1810	1845	1845	1900
Adj Flow Rate, veh/h	14	980	76	47	882	20	92	1	162	18	3	12
Adj No. of Lanes	1	1	1	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	6	6	6	4	4	4	5	5	5	3	3	3
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	318	1140	956	140	1175	27	277	259	218	266	46	184
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.02	0.64	0.64	0.04	0.66	0.66	0.14	0.14	0.14	0.14	0.14	0.14
Ln Grp Delay, s/veh	8.3	16.7	5.3	36.4	0.0	10.9	30.9	27.6	35.9	28.2	0.0	28.0
Ln Grp LOS	A	B	A	D		B	C	C	D	C		C
Approach Vol, veh/h		1070			949			255			33	
Approach Delay, s/veh		15.8			12.2			34.0			28.1	
Approach LOS		B			B			C			C	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Case No		5.0	2.0	3.0		6.0	1.1	4.0
Phs Duration (G+Y+Rc), s		15.3	7.6	52.3		15.3	5.8	54.2
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green (Gmax), s		18.0	5.0	53.5		18.0	5.0	53.5
Max Allow Headway (MAH), s		4.1	3.7	4.9		4.1	3.7	4.9
Max Q Clear (g_c+I1), s		9.7	3.0	35.1		3.0	2.2	27.1
Green Ext Time (g_e), s		0.6	0.0	12.8		0.8	0.0	16.3
Prob of Phs Call (p_c)		1.00	0.63	1.00		1.00	0.25	1.00
Prob of Max Out (p_x)		0.09	1.00	0.69		0.00	1.00	0.56

Left-Turn Movement Data								
Assigned Mvmt		5	3			1	7	
Mvmt Sat Flow, veh/h		1339	3375			1196	1707	

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		1810		1792		320		1778

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		1522		1504		1282		40

Left Lane Group Data								
Assigned Mvmt	0	5	3	0	0	1	7	0
Lane Assignment			(Prot)				(Pr/Pm)	

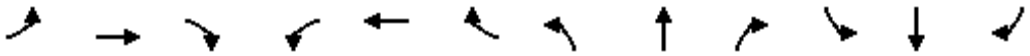
Lanes in Grp	0	1	2	0	0	1	1	0
Grp Vol (v), veh/h	0	92	47	0	0	18	14	0
Grp Sat Flow (s), veh/h/ln	0	1339	1688	0	0	1196	1707	0
Q Serve Time (g_s), s	0.0	4.8	1.0	0.0	0.0	1.0	0.2	0.0
Cycle Q Clear Time (g_c), s	0.0	5.4	1.0	0.0	0.0	1.0	0.2	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1339	0	0	0	1196	592	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	10.8	0.0	0.0	0.0	10.8	47.8	0.0
Perm LT Serve Time (g_u), s	0.0	10.2	0.0	0.0	0.0	10.7	24.6	0.0
Perm LT Q Serve Time (g_ps), s	0.0	4.8	0.0	0.0	0.0	1.0	0.6	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Lane Grp Cap (c), veh/h	0	277	140	0	0	266	318	0
V/C Ratio (X)	0.00	0.33	0.33	0.00	0.00	0.07	0.04	0.00
Avail Cap (c_a), veh/h	0	405	224	0	0	381	402	0
Upstream Filter (I)	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d1), s/veh	0.0	30.2	35.0	0.0	0.0	28.1	8.3	0.0
Incr Delay (d2), s/veh	0.0	0.7	1.4	0.0	0.0	0.1	0.1	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	30.9	36.4	0.0	0.0	28.2	8.3	0.0
1st-Term Q (Q1), veh/ln	0.0	1.8	0.5	0.0	0.0	0.3	0.1	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
%ile Back of Q (50%), veh/ln	0.0	1.8	0.5	0.0	0.0	0.3	0.1	0.0
%ile Storage Ratio (RQ%)	0.00	0.31	0.04	0.00	0.00	0.07	0.01	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T		T				
Lanes in Grp	0	1	0	1	0	0	0	0
Grp Vol (v), veh/h	0	1	0	980	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1810	0	1792	0	0	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	33.1	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	33.1	0.0	0.0	0.0	0.0
Lane Grp Cap (c), veh/h	0	259	0	1140	0	0	0	0
V/C Ratio (X)	0.00	0.00	0.00	0.86	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	433	0	1275	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	27.6	0.0	11.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	27.6	0.0	16.7	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	16.1	0.0	0.0	0.0	0.0

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	17.9	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		R		R		T+R		T+R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	162	0	76	0	15	0	902
Grp Sat Flow (s), veh/h/ln	0	1522	0	1504	0	1602	0	1819
Q Serve Time (g_s), s	0.0	7.7	0.0	1.5	0.0	0.6	0.0	25.1
Cycle Q Clear Time (g_c), s	0.0	7.7	0.0	1.5	0.0	0.6	0.0	25.1
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	1.00	0.00	0.80	0.00	0.02
Lane Grp Cap (c), veh/h	0	218	0	956	0	230	0	1201
V/C Ratio (X)	0.00	0.74	0.00	0.08	0.00	0.07	0.00	0.75
Avail Cap (c_a), veh/h	0	364	0	1070	0	383	0	1293
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	30.9	0.0	5.3	0.0	27.9	0.0	8.6
Incr Delay (d2), s/veh	0.0	4.9	0.0	0.0	0.0	0.1	0.0	2.3
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	35.9	0.0	5.3	0.0	28.0	0.0	10.9
1st-Term Q (Q1), veh/ln	0.0	3.2	0.0	0.6	0.0	0.3	0.0	12.3
2nd-Term Q (Q2), veh/ln	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.8
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	3.5	0.0	0.6	0.0	0.3	0.0	13.1
%ile Storage Ratio (RQ%)	0.00	0.61	0.00	0.19	0.00	0.02	0.00	0.75
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	215	33	29	149	37	20	136	32	170	208	61
Future Volume (vph)	29	215	33	29	149	37	20	136	32	170	208	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1597	1681	1410	1597	1681	1429	1504	2910		1703	3274	
Flt Permitted	0.95	1.00	1.00	0.49	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1597	1681	1410	819	1681	1429	1504	2910		1703	3274	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	33	242	37	33	167	42	22	153	36	191	234	69
RTOR Reduction (vph)	0	0	27	0	0	31	0	26	0	0	39	0
Lane Group Flow (vph)	33	242	10	33	167	11	22	163	0	191	264	0
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	13%	13%	13%	13%	13%	13%	20%	20%	20%	6%	6%	6%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8						
Actuated Green, G (s)	5.0	18.0	18.0	23.0	18.0	18.0	5.0	18.5		10.5	24.0	
Effective Green, g (s)	5.0	18.0	18.0	23.0	18.0	18.0	5.0	18.5		10.5	24.0	
Actuated g/C Ratio	0.07	0.26	0.26	0.33	0.26	0.26	0.07	0.26		0.15	0.34	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Grp Cap (vph)	114	432	362	324	432	367	107	769		255	1122	
v/s Ratio Prot	c0.02	c0.14		0.01	0.10		0.01	0.06		c0.11	c0.08	
v/s Ratio Perm			0.01	0.03		0.01						
v/c Ratio	0.29	0.56	0.03	0.10	0.39	0.03	0.21	0.21		0.75	0.23	
Uniform Delay, d1	30.8	22.6	19.4	16.2	21.4	19.5	30.6	20.1		28.5	16.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.3	5.2	0.1	0.6	2.6	0.1	4.3	0.6		18.1	0.5	
Delay (s)	37.1	27.7	19.6	16.8	24.0	19.6	34.9	20.7		46.6	16.9	
Level of Service	D	C	B	B	C	B	C	C		D	B	
Approach Delay (s)		27.8			22.3			22.2			28.4	
Approach LOS		C			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.47				
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	18.0		
Intersection Capacity Utilization	58.6%	ICU Level of Service	B		
Analysis Period (min)	15				

c Critical Lane Group

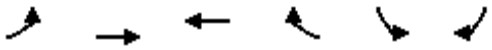
Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	212	30	15	231
Future Vol, veh/h	3	4	212	30	15	231
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	14	14	18	18	26	26
Mvmt Flow	3	4	228	32	16	248

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	400	130	0	0	260	0
Stage 1	244	-	-	-	-	-
Stage 2	156	-	-	-	-	-
Critical Hdwy	7.08	7.18	-	-	4.62	-
Critical Hdwy Stg 1	6.08	-	-	-	-	-
Critical Hdwy Stg 2	6.08	-	-	-	-	-
Follow-up Hdwy	3.64	3.44	-	-	2.46	-
Pot Cap-1 Maneuver	548	859	-	-	1144	-
Stage 1	739	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	540	859	-	-	1144	-
Mov Cap-2 Maneuver	540	-	-	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	810	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0.5
HCM LOS	B		

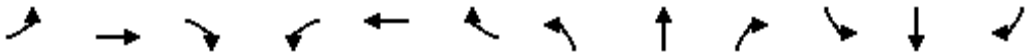
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	685	1144	-
HCM Lane V/C Ratio	-	-	0.011	0.014	-
HCM Control Delay (s)	-	-	10.3	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	109	1135	665	112	154	77
Future Volume (vph)	109	1135	665	112	154	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1687	1776	1617		1433	1282
Flt Permitted	0.18	1.00	1.00		0.95	1.00
Satd. Flow (perm)	313	1776	1617		1433	1282
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	115	1195	700	118	162	81
RTOR Reduction (vph)	0	0	6	0	0	65
Lane Group Flow (vph)	115	1195	812	0	162	16
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	7%	7%	15%	15%	26%	26%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)	73.5	73.5	62.1		20.1	20.1
Effective Green, g (s)	73.5	73.5	62.1		20.1	20.1
Actuated g/C Ratio	0.72	0.72	0.61		0.20	0.20
Clearance Time (s)	4.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	316	1272	978		280	251
v/s Ratio Prot	0.02	c0.67	0.50		c0.11	
v/s Ratio Perm	0.24					0.01
v/c Ratio	0.36	0.94	0.83		0.58	0.06
Uniform Delay, d1	11.2	12.6	16.1		37.4	33.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	13.2	6.1		8.4	0.5
Delay (s)	11.9	25.8	22.1		45.9	34.1
Level of Service	B	C	C		D	C
Approach Delay (s)		24.6	22.1		41.9	
Approach LOS		C	C		D	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	102.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

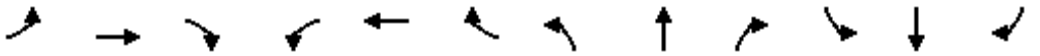
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1033	278	414	721	11	65	0	128	6	0	1
Future Volume (vph)	2	1033	278	414	721	11	65	0	128	6	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5		4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00		0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)	1671	1759	1476	3155	1707		1327		1188	1805	1615	
Flt Permitted	0.38	1.00	1.00	0.95	1.00		0.76		1.00	0.76	1.00	
Satd. Flow (perm)	667	1759	1476	3155	1707		1058		1188	1439	1615	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	2	1065	287	427	743	11	67	0	132	6	0	1
RTOR Reduction (vph)	0	0	34	0	0	0	0	0	77	0	1	0
Lane Group Flow (vph)	2	1065	253	427	754	0	67	0	55	6	0	0
Confl. Bikes (#/hr)			2			4						
Heavy Vehicles (%)	8%	8%	8%	11%	11%	11%	36%	36%	36%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	Prot	NA		Perm		pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases	4		4				2		2	6		
Actuated Green, G (s)	76.1	75.2	75.2	16.5	90.8		12.4		28.9	12.4	12.4	
Effective Green, g (s)	76.1	75.2	75.2	16.5	90.8		12.4		28.9	12.4	12.4	
Actuated g/C Ratio	0.65	0.64	0.64	0.14	0.77		0.11		0.25	0.11	0.11	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5		4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	439	1124	943	442	1317		111		337	151	170	
v/s Ratio Prot	0.00	c0.61		c0.14	0.44				0.02		0.00	
v/s Ratio Perm	0.00		0.17				c0.06		0.02	0.00		
v/c Ratio	0.00	0.95	0.27	0.97	0.57		0.60		0.16	0.04	0.00	
Uniform Delay, d1	7.3	19.4	9.2	50.3	5.5		50.3		34.9	47.3	47.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.0	15.7	0.2	33.8	0.6		8.9		0.2	0.1	0.0	
Delay (s)	7.3	35.1	9.4	84.1	6.1		59.2		35.1	47.4	47.1	
Level of Service	A	D	A	F	A		E		D	D	D	
Approach Delay (s)		29.6			34.3			43.2			47.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	117.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	175	23	104	316	170	10	248	50	92	276	27
Future Volume (vph)	80	175	23	104	316	170	10	248	50	92	276	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	1792	1504	1719	1810	1518	1770	3450		1671	3291	
Flt Permitted	0.95	1.00	1.00	0.60	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1703	1792	1504	1081	1810	1518	1770	3450		1671	3291	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	88	192	25	114	347	187	11	273	55	101	303	30
RTOR Reduction (vph)	0	0	18	0	0	127	0	26	0	0	11	0
Lane Group Flow (vph)	88	192	7	114	347	60	11	302	0	101	322	0
Confl. Bikes (#/hr)			1			1						2
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	2%	2%	2%	8%	8%	8%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8						
Actuated Green, G (s)	5.0	18.0	18.0	23.0	18.0	18.0	5.0	18.5		5.5	19.0	
Effective Green, g (s)	5.0	18.0	18.0	23.0	18.0	18.0	5.0	18.5		5.5	19.0	
Actuated g/C Ratio	0.08	0.28	0.28	0.35	0.28	0.28	0.08	0.28		0.08	0.29	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Grp Cap (vph)	131	496	416	431	501	420	136	981		141	961	
v/s Ratio Prot	c0.05	0.11		0.02	c0.19		0.01	0.09		c0.06	c0.10	
v/s Ratio Perm			0.00	0.07		0.04						
v/c Ratio	0.67	0.39	0.02	0.26	0.69	0.14	0.08	0.31		0.72	0.33	
Uniform Delay, d1	29.2	19.0	17.1	14.5	21.0	17.7	27.9	18.2		29.0	18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.2	2.3	0.1	1.5	7.7	0.7	1.2	0.8		26.7	0.9	
Delay (s)	53.4	21.3	17.1	16.0	28.7	18.4	29.0	19.0		55.7	19.0	
Level of Service	D	C	B	B	C	B	C	B		E	B	
Approach Delay (s)		30.2			23.5			19.4			27.5	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

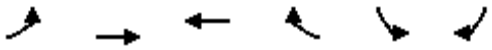
Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	17	231	2	4	454
Future Vol, veh/h	24	17	231	2	4	454
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	4	4	5	5
Mvmt Flow	27	19	260	2	4	510

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	526	132	0	0	263	0
Stage 1	262	-	-	-	-	-
Stage 2	264	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.2	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.25	-
Pot Cap-1 Maneuver	486	899	-	-	1277	-
Stage 1	764	-	-	-	-	-
Stage 2	762	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	484	898	-	-	1277	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	760	-	-	-	-	-

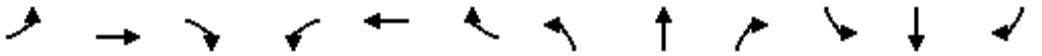
Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	598	1277	-
HCM Lane V/C Ratio	-	-	0.077	0.004	-
HCM Control Delay (s)	-	-	11.5	7.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-



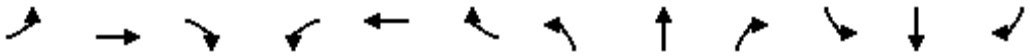
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	95	826	1003	123	209	234
Future Volume (vph)	95	826	1003	123	209	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1719	1810	1797		1719	1499
Flt Permitted	0.05	1.00	1.00		0.95	1.00
Satd. Flow (perm)	88	1810	1797		1719	1499
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	99	860	1045	128	218	244
RTOR Reduction (vph)	0	0	4	0	0	166
Lane Group Flow (vph)	99	860	1169	0	218	78
Confl. Peds. (#/hr)						1
Confl. Bikes (#/hr)				8		1
Heavy Vehicles (%)	5%	5%	4%	4%	5%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)	88.2	88.2	78.2		20.5	20.5
Effective Green, g (s)	88.2	88.2	78.2		20.5	20.5
Actuated g/C Ratio	0.75	0.75	0.66		0.17	0.17
Clearance Time (s)	4.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	142	1356	1193		299	261
v/s Ratio Prot	0.03	c0.48	c0.65		c0.13	
v/s Ratio Perm	0.49					0.05
v/c Ratio	0.70	0.63	0.98		0.73	0.30
Uniform Delay, d1	32.8	7.0	19.0		46.0	42.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	13.9	1.0	21.3		14.5	2.9
Delay (s)	46.7	8.0	40.3		60.5	45.3
Level of Service	D	A	D		E	D
Approach Delay (s)		12.0	40.3		52.4	
Approach LOS		B	D		D	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	117.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	925	89	90	849	19	249	1	450	17	3	11
Future Volume (vph)	14	925	89	90	849	19	249	1	450	17	3	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1703	1792	1504	3367	1820		1704	1810	1538	1752	1591	
Flt Permitted	0.17	1.00	1.00	0.95	1.00		0.75	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	300	1792	1504	3367	1820		1342	1810	1538	1397	1591	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	14	954	92	93	875	20	257	1	464	18	3	11
RTOR Reduction (vph)	0	0	22	0	1	0	0	0	92	0	8	0
Lane Group Flow (vph)	14	954	70	93	894	0	257	1	372	18	6	0
Confl. Peds. (#/hr)							3					3
Confl. Bikes (#/hr)			2			3						
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	5%	5%	5%	3%	3%	3%
Turn Type	pm+pt	NA	Perm	Prot	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases	4		4				2		2	6		
Actuated Green, G (s)	65.1	63.4	63.4	5.3	67.0		24.8	24.8	30.1	24.8	24.8	
Effective Green, g (s)	65.1	63.4	63.4	5.3	67.0		24.8	24.8	30.1	24.8	24.8	
Actuated g/C Ratio	0.61	0.59	0.59	0.05	0.63		0.23	0.23	0.28	0.23	0.23	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	204	1061	891	166	1139		311	419	497	323	368	
v/s Ratio Prot	0.00	c0.53		0.03	c0.49			0.00	c0.04		0.00	
v/s Ratio Perm	0.04		0.05				c0.19		0.20	0.01		
v/c Ratio	0.07	0.90	0.08	0.56	0.79		0.83	0.00	0.75	0.06	0.02	
Uniform Delay, d1	13.0	19.0	9.3	49.7	14.7		39.1	31.6	35.0	32.0	31.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	10.2	0.0	4.3	3.6		16.2	0.0	6.1	0.1	0.0	
Delay (s)	13.2	29.2	9.4	54.0	18.3		55.3	31.6	41.1	32.1	31.7	
Level of Service	B	C	A	D	B		E	C	D	C	C	
Approach Delay (s)		27.3			21.7			46.1			31.9	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	107.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	215	36	37	149	37	20	139	33	170	228	61
Future Volume (vph)	29	215	36	37	149	37	20	139	33	170	228	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3437		1770	3428	
Flt Permitted	0.95	1.00	1.00	0.53	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	982	1863	1583	1770	3437		1770	3428	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	234	39	40	162	40	22	151	36	185	248	66
RTOR Reduction (vph)	0	0	28	0	0	29	0	26	0	0	37	0
Lane Group Flow (vph)	32	234	11	40	162	11	22	161	0	185	277	0
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8						
Actuated Green, G (s)	5.0	18.0	18.0	23.0	18.0	18.0	5.0	18.5		5.5	19.0	
Effective Green, g (s)	5.0	18.0	18.0	23.0	18.0	18.0	5.0	18.5		5.5	19.0	
Actuated g/C Ratio	0.08	0.28	0.28	0.35	0.28	0.28	0.08	0.28		0.08	0.29	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Grp Cap (vph)	136	515	438	408	515	438	136	978		149	1002	
v/s Ratio Prot	c0.02	c0.13		0.01	0.09		0.01	0.05		c0.10	c0.08	
v/s Ratio Perm			0.01	0.03		0.01						
v/c Ratio	0.24	0.45	0.02	0.10	0.31	0.03	0.16	0.16		1.24	0.28	
Uniform Delay, d1	28.2	19.4	17.1	13.9	18.6	17.1	28.0	17.5		29.8	17.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	2.9	0.1	0.5	1.6	0.1	2.5	0.4		152.9	0.7	
Delay (s)	32.2	22.3	17.2	14.4	20.2	17.2	30.6	17.8		182.6	18.4	
Level of Service	C	C	B	B	C	B	C	B		F	B	
Approach Delay (s)		22.7			18.8			19.2			79.3	
Approach LOS		C			B			B			E	

Intersection Summary			
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

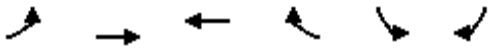
Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	8	212	127	46	231
Future Vol, veh/h	16	8	212	127	46	231
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	9	230	138	50	251

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	525	184	0	0	368	0
Stage 1	299	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	482	827	-	-	1187	-
Stage 1	726	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	462	827	-	-	1187	-
Mov Cap-2 Maneuver	462	-	-	-	-	-
Stage 1	726	-	-	-	-	-
Stage 2	757	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	1.4
HCM LOS	B		

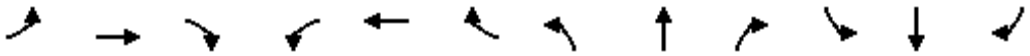
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	542	1187	-
HCM Lane V/C Ratio	-	-	0.048	0.042	-
HCM Control Delay (s)	-	-	12	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	123	1135	665	195	165	79
Future Volume (vph)	123	1135	665	195	165	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1863	1806		1770	1583
Flt Permitted	0.11	1.00	1.00		0.95	1.00
Satd. Flow (perm)	205	1863	1806		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	1234	723	212	179	86
RTOR Reduction (vph)	0	0	11	0	0	69
Lane Group Flow (vph)	134	1234	924	0	179	17
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)	71.6	71.6	61.0		20.2	20.2
Effective Green, g (s)	71.6	71.6	61.0		20.2	20.2
Actuated g/C Ratio	0.71	0.71	0.61		0.20	0.20
Clearance Time (s)	4.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	240	1323	1092		354	317
v/s Ratio Prot	0.03	c0.66	0.51		c0.10	
v/s Ratio Perm	0.36					0.01
v/c Ratio	0.56	0.93	0.85		0.51	0.05
Uniform Delay, d1	16.4	12.5	16.1		35.9	32.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.8	12.0	6.2		5.1	0.3
Delay (s)	19.2	24.5	22.3		40.9	32.9
Level of Service	B	C	C		D	C
Approach Delay (s)		24.0	22.3		38.3	
Approach LOS		C	C		D	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.8	Sum of lost time (s)	13.5
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		

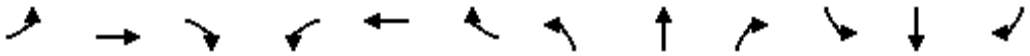
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1043	279	414	798	0	95	0	128	6	0	1
Future Volume (vph)	0	1043	279	414	798	0	95	0	128	6	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5		4.5	4.5	4.5	
Lane Util. Factor		1.00	1.00	0.97	1.00		1.00		1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00		1.00		0.85	1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		1863	1583	3433	1863		1770		1583	1770	1583	
Flt Permitted		1.00	1.00	0.95	1.00		0.76		1.00	0.76	1.00	
Satd. Flow (perm)		1863	1583	3433	1863		1410		1583	1410	1583	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1075	288	427	823	0	98	0	132	6	0	1
RTOR Reduction (vph)	0	0	37	0	0	0	0	0	74	0	1	0
Lane Group Flow (vph)	0	1075	251	427	823	0	98	0	58	6	0	0
Turn Type	pm+pt	NA	Perm	Prot	NA		Perm		pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases	4		4				2		2	6		
Actuated Green, G (s)		68.0	68.0	16.0	88.5		13.0		29.0	13.0	13.0	
Effective Green, g (s)		68.0	68.0	16.0	88.5		13.0		29.0	13.0	13.0	
Actuated g/C Ratio		0.62	0.62	0.14	0.80		0.12		0.26	0.12	0.12	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5		4.5	4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)		1146	974	497	1492		165		479	165	186	
v/s Ratio Prot		c0.58		c0.12	0.44				0.02		0.00	
v/s Ratio Perm			0.16				c0.07		0.02	0.00		
v/c Ratio		0.94	0.26	0.86	0.55		0.59		0.12	0.04	0.00	
Uniform Delay, d1		19.3	9.7	46.1	3.9		46.2		31.0	43.2	43.0	
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		14.0	0.1	13.8	0.4		5.6		0.1	0.1	0.0	
Delay (s)		33.4	9.9	59.9	4.4		51.9		31.2	43.3	43.0	
Level of Service		C	A	E	A		D		C	D	D	
Approach Delay (s)		28.4			23.4			40.0			43.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	110.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	175	23	105	316	170	12	270	58	92	297	27
Future Volume (vph)	80	175	23	105	316	170	12	270	58	92	297	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3445		1770	3495	
Flt Permitted	0.95	1.00	1.00	0.59	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1097	1863	1583	1770	3445		1770	3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	190	25	114	343	185	13	293	63	100	323	29
RTOR Reduction (vph)	0	0	19	0	0	134	0	25	0	0	9	0
Lane Group Flow (vph)	87	190	6	114	343	51	13	331	0	100	343	0
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8						
Actuated Green, G (s)	3.7	14.9	14.9	18.6	14.9	14.9	0.9	22.1		4.0	25.2	
Effective Green, g (s)	3.7	14.9	14.9	18.6	14.9	14.9	0.9	22.1		4.0	25.2	
Actuated g/C Ratio	0.06	0.24	0.24	0.30	0.24	0.24	0.01	0.35		0.06	0.40	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	104	442	376	365	442	376	25	1214		112	1404	
v/s Ratio Prot	c0.05	0.10		0.02	c0.18		0.01	c0.10		c0.06	c0.10	
v/s Ratio Perm			0.00	0.07		0.03						
v/c Ratio	0.84	0.43	0.02	0.31	0.78	0.14	0.52	0.27		0.89	0.24	
Uniform Delay, d1	29.2	20.3	18.3	16.6	22.3	18.8	30.7	14.5		29.1	12.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	41.3	0.7	0.0	0.5	8.3	0.2	18.1	0.6		52.7	0.4	
Delay (s)	70.5	21.0	18.3	17.1	30.7	19.0	48.8	15.1		81.9	12.8	
Level of Service	E	C	B	B	C	B	D	B		F	B	
Approach Delay (s)		35.0			24.9			16.3			28.1	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	62.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

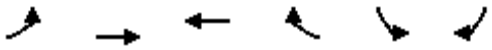
Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	127	49	231	16	8	454
Future Vol, veh/h	127	49	231	16	8	454
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	138	53	251	17	9	493

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	524	134	0	0	268	0
Stage 1	260	-	-	-	-	-
Stage 2	264	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	483	890	-	-	1293	-
Stage 1	760	-	-	-	-	-
Stage 2	756	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	480	890	-	-	1293	-
Mov Cap-2 Maneuver	480	-	-	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	751	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0.1
HCM LOS	C		

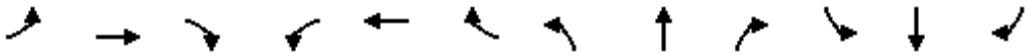
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	551	1293	-
HCM Lane V/C Ratio	-	-	0.347	0.007	-
HCM Control Delay (s)	-	-	15	7.8	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.5	0	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	97	826	1003	135	297	249
Future Volume (vph)	97	826	1003	135	297	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1863	1833		1770	1583
Flt Permitted	0.05	1.00	1.00		0.95	1.00
Satd. Flow (perm)	91	1863	1833		1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	102	869	1056	142	313	262
RTOR Reduction (vph)	0	0	4	0	0	151
Lane Group Flow (vph)	102	869	1194	0	313	111
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)	87.3	87.3	77.5		23.7	23.7
Effective Green, g (s)	87.3	87.3	77.5		23.7	23.7
Actuated g/C Ratio	0.73	0.73	0.65		0.20	0.20
Clearance Time (s)	4.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	140	1355	1183		349	312
v/s Ratio Prot	0.03	c0.47	c0.65		c0.18	
v/s Ratio Perm	0.50					0.07
v/c Ratio	0.73	0.64	1.01		0.90	0.36
Uniform Delay, d1	34.1	8.4	21.2		47.0	41.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	17.2	1.0	28.5		28.0	3.2
Delay (s)	51.3	9.4	49.7		74.9	44.7
Level of Service	D	A	D		E	D
Approach Delay (s)		13.8	49.7		61.2	
Approach LOS		B	D		E	

Intersection Summary			
HCM 2000 Control Delay	39.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1006	96	90	860	19	250	1	450	17	3	11
Future Volume (vph)	14	1006	96	90	860	19	250	1	450	17	3	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1857		1770	1863	1583	1770	1643	
Flt Permitted	0.17	1.00	1.00	0.95	1.00		0.75	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	315	1863	1583	3433	1857		1394	1863	1583	1410	1643	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	14	1037	99	93	887	20	258	1	464	18	3	11
RTOR Reduction (vph)	0	0	22	0	1	0	0	0	80	0	9	0
Lane Group Flow (vph)	14	1037	77	93	906	0	258	1	384	18	5	0
Turn Type	pm+pt	NA	Perm	Prot	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases	4		4				2		2	6		
Actuated Green, G (s)	68.3	66.5	66.5	5.2	69.9		24.3	24.3	29.5	24.3	24.3	
Effective Green, g (s)	68.3	66.5	66.5	5.2	69.9		24.3	24.3	29.5	24.3	24.3	
Actuated g/C Ratio	0.62	0.61	0.61	0.05	0.64		0.22	0.22	0.27	0.22	0.22	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	220	1131	961	163	1185		309	413	491	312	364	
v/s Ratio Prot	0.00	c0.56		0.03	c0.49			0.00	c0.04		0.00	
v/s Ratio Perm	0.04		0.05				0.19		0.21	0.01		
v/c Ratio	0.06	0.92	0.08	0.57	0.76		0.83	0.00	0.78	0.06	0.01	
Uniform Delay, d1	12.7	19.1	8.9	51.1	14.0		40.7	33.2	37.0	33.6	33.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	11.5	0.0	4.8	3.0		17.4	0.0	7.9	0.1	0.0	
Delay (s)	12.8	30.5	8.9	55.8	17.0		58.1	33.2	44.9	33.7	33.3	
Level of Service	B	C	A	E	B		E	C	D	C	C	
Approach Delay (s)		28.5			20.6			49.6			33.5	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	215	36	37	149	37	20	139	33	170	228	61
Future Volume (veh/h)	29	215	36	37	149	37	20	139	33	170	228	61
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	32	234	0	40	162	0	22	151	36	185	248	66
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	136	516	438	445	516	438	136	812	189	150	812	212
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.08	0.28	0.00	0.08	0.28	0.00	0.08	0.28	0.28	0.08	0.29	0.29
Ln Grp Delay, s/veh	32.2	22.3	0.0	14.6	20.2	0.0	30.6	18.3	18.4	178.9	19.3	19.5
Ln Grp LOS	C	C		B	C		C	B	B	F	B	B
Approach Vol, veh/h		266			202			209			499	
Approach Delay, s/veh		23.5			19.1			19.7			78.6	
Approach LOS		C			B			B			E	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Case No	2.0	4.0	1.1	3.0	2.0	4.0	2.0	3.0
Phs Duration (G+Y+Rc), s	10.0	23.0	9.5	22.5	9.5	23.5	9.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green (Gmax), s	5.5	18.5	5.0	18.0	5.0	19.0	5.0	18.0
Max Allow Headway (MAH), s	3.8	5.1	3.7	4.9	3.7	5.1	3.7	4.9
Max Q Clear (g_c+I1), s	7.5	4.7	3.0	8.8	2.8	6.6	3.1	6.5
Green Ext Time (g_e), s	0.0	2.3	0.0	1.4	0.0	2.2	0.0	1.5
Prob of Phs Call (p_c)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prob of Max Out (p_x)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Left-Turn Movement Data								
Assigned Mvmt	1		3		5		7	
Mvmt Sat Flow, veh/h	1774		1774		1774		1774	

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		2853		1863		2780		1863

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		663		1583		725		1583

Left Lane Group Data								
Assigned Mvmt	1	0	3	0	5	0	7	0
Lane Assignment	(Prot)		(Pr/Pm)		(Prot)		(Prot)	

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	185	0	40	0	22	0	32	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1774	0
Q Serve Time (g_s), s	5.5	0.0	1.0	0.0	0.8	0.0	1.1	0.0
Cycle Q Clear Time (g_c), s	5.5	0.0	1.0	0.0	0.8	0.0	1.1	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1142	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	11.2	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	150	0	445	0	136	0	136	0
V/C Ratio (X)	1.23	0.00	0.09	0.00	0.16	0.00	0.23	0.00
Avail Cap (c_a), veh/h	150	0	445	0	136	0	136	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	29.7	0.0	14.2	0.0	28.0	0.0	28.2	0.0
Incr Delay (d2), s/veh	149.2	0.0	0.4	0.0	2.5	0.0	4.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	178.9	0.0	14.6	0.0	30.6	0.0	32.2	0.0
1st-Term Q (Q1), veh/ln	2.7	0.0	0.5	0.0	0.4	0.0	0.5	0.0
2nd-Term Q (Q2), veh/ln	6.2	0.0	0.0	0.0	0.1	0.0	0.2	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
%ile Back of Q (50%), veh/ln	8.9	0.0	0.5	0.0	0.5	0.0	0.7	0.0
%ile Storage Ratio (RQ%)	1.29	0.00	0.08	0.00	0.06	0.00	0.07	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	8.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		T
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	92	0	234	0	156	0	162
Grp Sat Flow (s), veh/h/ln	0	1770	0	1863	0	1770	0	1863
Q Serve Time (g_s), s	0.0	2.6	0.0	6.8	0.0	4.4	0.0	4.5
Cycle Q Clear Time (g_c), s	0.0	2.6	0.0	6.8	0.0	4.4	0.0	4.5
Lane Grp Cap (c), veh/h	0	504	0	516	0	517	0	516
V/C Ratio (X)	0.00	0.18	0.00	0.45	0.00	0.30	0.00	0.31
Avail Cap (c_a), veh/h	0	504	0	516	0	517	0	516
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	17.5	0.0	19.4	0.0	17.9	0.0	18.6
Incr Delay (d2), s/veh	0.0	0.8	0.0	2.9	0.0	1.5	0.0	1.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	18.3	0.0	22.3	0.0	19.3	0.0	20.2
1st-Term Q (Q1), veh/ln	0.0	1.3	0.0	3.4	0.0	2.2	0.0	2.3

2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.4	0.0	0.2	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.4	0.0	3.9	0.0	2.4	0.0	2.5
%ile Storage Ratio (RQ%)	0.00	0.04	0.00	0.09	0.00	0.09	0.00	0.05
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	95	0	0	0	158	0	0
Grp Sat Flow (s), veh/h/ln	0	1746	0	1583	0	1735	0	1583
Q Serve Time (g_s), s	0.0	2.7	0.0	0.0	0.0	4.6	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	2.7	0.0	0.0	0.0	4.6	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.38	0.00	1.00	0.00	0.42	0.00	1.00
Lane Grp Cap (c), veh/h	0	497	0	438	0	507	0	438
V/C Ratio (X)	0.00	0.19	0.00	0.00	0.00	0.31	0.00	0.00
Avail Cap (c_a), veh/h	0	497	0	438	0	507	0	438
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	17.6	0.0	0.0	0.0	17.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.9	0.0	0.0	0.0	1.6	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	18.4	0.0	0.0	0.0	19.5	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	1.3	0.0	0.0	0.0	2.2	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.4	0.0	0.0	0.0	2.4	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.04	0.00	0.00	0.00	0.09	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	45.4
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	8	212	127	46	231
Future Vol, veh/h	16	8	212	127	46	231
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	9	230	138	50	251

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	525	184	0	0	368	0
Stage 1	299	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	482	827	-	-	1187	-
Stage 1	726	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	462	827	-	-	1187	-
Mov Cap-2 Maneuver	462	-	-	-	-	-
Stage 1	726	-	-	-	-	-
Stage 2	757	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	542	1187	-
HCM Lane V/C Ratio	-	-	0.048	0.042	-
HCM Control Delay (s)	-	-	12	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	957	179	23	566	189	135	178	75	159	167	101
Future Volume (veh/h)	103	957	179	23	566	189	135	178	75	159	167	101
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	108	1007	188	24	596	199	142	187	79	167	176	106
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	343	1026	872	107	989	841	333	356	145	386	381	323
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.04	0.55	0.55	0.02	0.53	0.53	0.08	0.14	0.14	0.14	0.20	0.20
Ln Grp Delay, s/veh	16.6	51.5	14.7	31.3	21.7	16.2	42.5	52.3	53.2	38.5	48.7	46.0
Ln Grp LOS	B	D	B	C	C	B	D	D	D	D	D	D
Approach Vol, veh/h		1303			819			408			449	
Approach Delay, s/veh		43.3			20.6			49.2			44.3	
Approach LOS		D			C			D			D	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Case No	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phs Duration (G+Y+Rc), s	22.5	23.0	7.4	74.9	14.9	30.6	9.9	72.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green (Gmax), s	18.0	18.5	5.0	70.5	10.4	26.1	6.5	69.0
Max Allow Headway (MAH), s	3.7	4.8	3.7	4.7	3.7	4.8	3.7	4.7
Max Q Clear (g_c+I1), s	11.3	11.4	2.8	69.5	10.6	12.6	5.5	30.2
Green Ext Time (g_e), s	0.2	1.6	0.0	0.9	0.0	2.2	0.0	18.0
Prob of Phs Call (p_c)	1.00	1.00	0.57	1.00	0.99	1.00	0.98	1.00
Prob of Max Out (p_x)	0.00	0.51	1.00	1.00	1.00	0.00	1.00	0.32

Left-Turn Movement Data								
Assigned Mvmt	1		3		5		7	
Mvmt Sat Flow, veh/h	1774		1774		1774		1774	

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		2456		1863		1863		1863

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		1000		1583		1583		1583

Left Lane Group Data								
Assigned Mvmt	1	0	3	0	5	0	7	0
Lane Assignment	(Pr/Pm)		(Pr/Pm)		(Pr/Pm)		(Pr/Pm)	

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	167	0	24	0	142	0	108	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1774	0
Q Serve Time (g_s), s	9.3	0.0	0.8	0.0	8.6	0.0	3.5	0.0
Cycle Q Clear Time (g_c), s	9.3	0.0	0.8	0.0	8.6	0.0	3.5	0.0
Perm LT Sat Flow (s_l), veh/h/ln	1109	0	466	0	1093	0	680	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	20.5	0.0	67.8	0.0	18.5	0.0	67.9	0.0
Perm LT Serve Time (g_u), s	9.1	0.0	2.9	0.0	15.5	0.0	39.6	0.0
Perm LT Q Serve Time (g_ps), s	2.0	0.0	2.9	0.0	0.4	0.0	5.3	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	386	0	107	0	333	0	343	0
V/C Ratio (X)	0.43	0.00	0.22	0.00	0.43	0.00	0.32	0.00
Avail Cap (c_a), veh/h	386	0	136	0	333	0	358	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	35.0	0.0	30.3	0.0	41.6	0.0	16.1	0.0
Incr Delay (d2), s/veh	3.5	0.0	1.1	0.0	0.9	0.0	0.5	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	38.5	0.0	31.3	0.0	42.5	0.0	16.6	0.0
1st-Term Q (Q1), veh/ln	4.5	0.0	0.4	0.0	4.2	0.0	1.7	0.0
2nd-Term Q (Q2), veh/ln	0.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
%ile Back of Q (50%), veh/ln	4.9	0.0	0.5	0.0	4.3	0.0	1.8	0.0
%ile Storage Ratio (RQ%)	0.25	0.00	0.02	0.00	0.22	0.00	0.09	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		T
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	133	0	1007	0	176	0	596
Grp Sat Flow (s), veh/h/ln	0	1770	0	1863	0	1863	0	1863
Q Serve Time (g_s), s	0.0	8.9	0.0	67.5	0.0	10.6	0.0	28.2
Cycle Q Clear Time (g_c), s	0.0	8.9	0.0	67.5	0.0	10.6	0.0	28.2
Lane Grp Cap (c), veh/h	0	256	0	1026	0	381	0	989
V/C Ratio (X)	0.00	0.52	0.00	0.98	0.00	0.46	0.00	0.60
Avail Cap (c_a), veh/h	0	256	0	1028	0	381	0	1006
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	50.5	0.0	28.0	0.0	44.7	0.0	20.7
Incr Delay (d2), s/veh	0.0	1.8	0.0	23.5	0.0	4.0	0.0	1.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	52.3	0.0	51.5	0.0	48.7	0.0	21.7
1st-Term Q (Q1), veh/ln	0.0	4.4	0.0	34.4	0.0	5.5	0.0	14.4

2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	6.7	0.0	0.4	0.0	0.3
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	4.5	0.0	41.1	0.0	5.9	0.0	14.7
%ile Storage Ratio (RQ%)	0.00	0.31	0.00	1.51	0.00	0.21	0.00	0.22
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		R		R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	133	0	188	0	106	0	199
Grp Sat Flow (s), veh/h/ln	0	1686	0	1583	0	1583	0	1583
Q Serve Time (g_s), s	0.0	9.4	0.0	7.7	0.0	7.3	0.0	8.6
Cycle Q Clear Time (g_c), s	0.0	9.4	0.0	7.7	0.0	7.3	0.0	8.6
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.59	0.00	1.00	0.00	1.00	0.00	1.00
Lane Grp Cap (c), veh/h	0	244	0	872	0	323	0	841
V/C Ratio (X)	0.00	0.55	0.00	0.22	0.00	0.33	0.00	0.24
Avail Cap (c_a), veh/h	0	244	0	874	0	323	0	855
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	50.7	0.0	14.6	0.0	43.3	0.0	16.1
Incr Delay (d2), s/veh	0.0	2.5	0.0	0.1	0.0	2.7	0.0	0.1
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	53.2	0.0	14.7	0.0	46.0	0.0	16.2
1st-Term Q (Q1), veh/ln	0.0	4.4	0.0	3.4	0.0	3.2	0.0	3.8
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	4.5	0.0	3.4	0.0	3.4	0.0	3.8
%ile Storage Ratio (RQ%)	0.00	0.31	0.00	0.43	0.00	0.12	0.00	0.64
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	38.0
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	890	278	414	621	11	65	0	128	6	0	1
Future Volume (veh/h)	2	890	278	414	621	11	65	0	128	6	0	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	2	967	302	450	675	12	71	0	139	7	0	1
Adj No. of Lanes	1	1	1	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	535	1125	956	535	1381	25	213	182	401	198	0	155
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.00	0.60	0.60	0.16	0.76	0.76	0.10	0.00	0.10	0.10	0.00	0.10
Ln Grp Delay, s/veh	7.3	20.5	9.4	46.6	0.0	4.7	41.5	0.0	29.4	38.8	0.0	38.6
Ln Grp LOS	A	C	A	D		A	D		C	D		D
Approach Vol, veh/h		1271			1137			210			8	
Approach Delay, s/veh		17.8			21.3			33.5			38.8	
Approach LOS		B			C			C			D	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Case No		5.0	2.0	3.0		6.0	1.1	4.0
Phs Duration (G+Y+Rc), s		13.8	19.2	61.7		13.8	4.8	76.2
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green (Gmax), s		19.5	18.5	68.5		19.5	5.0	82.0
Max Allow Headway (MAH), s		4.0	3.7	4.8		4.0	3.7	4.8
Max Q Clear (g_c+I1), s		8.8	14.0	42.5		2.5	2.0	15.5
Green Ext Time (g_e), s		0.5	0.7	14.7		0.6	0.0	21.4
Prob of Phs Call (p_c)		1.00	1.00	1.00		1.00	0.05	1.00
Prob of Max Out (p_x)		0.01	0.66	0.49		0.00	1.00	0.13

Left-Turn Movement Data								
Assigned Mvmt		5	3			1	7	
Mvmt Sat Flow, veh/h		1410	3442			1245	1774	

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		1863		1863		0		1825

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		1583		1583		1583		32

Left Lane Group Data								
Assigned Mvmt	0	5	3	0	0	1	7	0
Lane Assignment			(Prot)				(Pr/Pm)	

Lanes in Grp	0	1	2	0	0	1	1	0
Grp Vol (v), veh/h	0	71	450	0	0	7	2	0
Grp Sat Flow (s), veh/h/ln	0	1410	1721	0	0	1245	1774	0
Q Serve Time (g_s), s	0.0	4.5	12.0	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	4.6	12.0	0.0	0.0	0.5	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1410	0	0	0	1245	752	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	9.3	0.0	0.0	0.0	9.3	57.2	0.0
Perm LT Serve Time (g_u), s	0.0	9.2	0.0	0.0	0.0	9.3	57.2	0.0
Perm LT Q Serve Time (g_ps), s	0.0	4.5	0.0	0.0	0.0	0.5	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Lane Grp Cap (c), veh/h	0	213	535	0	0	198	535	0
V/C Ratio (X)	0.00	0.33	0.84	0.00	0.00	0.04	0.00	0.00
Avail Cap (c_a), veh/h	0	366	672	0	0	332	624	0
Upstream Filter (I)	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d1), s/veh	0.0	40.6	38.9	0.0	0.0	38.8	7.3	0.0
Incr Delay (d2), s/veh	0.0	0.9	7.7	0.0	0.0	0.1	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	41.5	46.6	0.0	0.0	38.8	7.3	0.0
1st-Term Q (Q1), veh/ln	0.0	1.8	5.7	0.0	0.0	0.2	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.6	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
%ile Back of Q (50%), veh/ln	0.0	1.8	6.3	0.0	0.0	0.2	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.31	0.55	0.00	0.00	0.04	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T		T				
Lanes in Grp	0	1	0	1	0	0	0	0
Grp Vol (v), veh/h	0	0	0	967	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1863	0	1863	0	0	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	40.5	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	40.5	0.0	0.0	0.0	0.0
Lane Grp Cap (c), veh/h	0	182	0	1125	0	0	0	0
V/C Ratio (X)	0.00	0.00	0.00	0.86	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	384	0	1347	0	0	0	0
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	15.4	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	20.5	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	20.7	0.0	0.0	0.0	0.0

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	22.3	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		R		R		T+R		T+R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	139	0	302	0	1	0	687
Grp Sat Flow (s), veh/h/ln	0	1583	0	1583	0	1583	0	1857
Q Serve Time (g_s), s	0.0	6.8	0.0	8.8	0.0	0.1	0.0	13.5
Cycle Q Clear Time (g_c), s	0.0	6.8	0.0	8.8	0.0	0.1	0.0	13.5
Prot RT Sat Flow (s_R), veh/h/ln	0.0	1583.3	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	14.7	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.02
Lane Grp Cap (c), veh/h	0	401	0	956	0	155	0	1405
V/C Ratio (X)	0.00	0.35	0.00	0.32	0.00	0.01	0.00	0.49
Avail Cap (c_a), veh/h	0	572	0	1145	0	326	0	1608
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	28.9	0.0	9.2	0.0	38.6	0.0	4.4
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.2	0.0	0.0	0.0	0.3
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	29.4	0.0	9.4	0.0	38.6	0.0	4.7
1st-Term Q (Q1), veh/ln	0.0	3.0	0.0	3.9	0.0	0.0	0.0	6.9
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	3.0	0.0	3.9	0.0	0.0	0.0	7.0
%ile Storage Ratio (RQ%)	0.00	0.51	0.00	1.17	0.00	0.00	0.00	0.40
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	175	23	105	316	170	12	270	58	92	279	27
Future Volume (veh/h)	80	175	23	105	316	170	12	270	58	92	279	27
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	87	190	0	114	343	0	13	293	63	100	303	29
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	139	524	445	488	524	445	139	818	173	139	919	87
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.08	0.28	0.00	0.08	0.28	0.00	0.08	0.28	0.28	0.08	0.28	0.28
Ln Grp Delay, s/veh	48.2	20.4	0.0	15.4	26.5	0.0	28.7	20.3	20.5	56.4	20.0	20.0
Ln Grp LOS	D	C		B	C		C	C	C	E	B	B
Approach Vol, veh/h		277			457			369			432	
Approach Delay, s/veh		29.1			23.7			20.7			28.4	
Approach LOS		C			C			C			C	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Case No	2.0	4.0	1.1	3.0	2.0	4.0	2.0	3.0
Phs Duration (G+Y+Rc), s	9.5	22.5	9.5	22.5	9.5	22.5	9.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0
Max Allow Headway (MAH), s	3.8	5.0	3.7	4.9	3.7	5.0	3.7	4.9
Max Q Clear (g_c+I1), s	5.5	7.2	4.8	7.2	2.4	6.7	5.0	12.4
Green Ext Time (g_e), s	0.0	2.8	0.0	2.1	0.0	2.9	0.0	1.4
Prob of Phs Call (p_c)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prob of Max Out (p_x)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Left-Turn Movement Data								
Assigned Mvmt	1		3		5		7	
Mvmt Sat Flow, veh/h	1774		1774		1774		1774	

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		2907		1863		3267		1863

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		616		1583		311		1583

Left Lane Group Data								
Assigned Mvmt	1	0	3	0	5	0	7	0
Lane Assignment	(Prot)		(Pr/Pm)		(Prot)		(Prot)	

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	100	0	114	0	13	0	87	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1774	0
Q Serve Time (g_s), s	3.5	0.0	2.8	0.0	0.4	0.0	3.0	0.0
Cycle Q Clear Time (g_c), s	3.5	0.0	2.8	0.0	0.4	0.0	3.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1188	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	12.8	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	139	0	488	0	139	0	139	0
V/C Ratio (X)	0.72	0.00	0.23	0.00	0.09	0.00	0.63	0.00
Avail Cap (c_a), veh/h	139	0	488	0	139	0	139	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	28.8	0.0	14.3	0.0	27.4	0.0	28.6	0.0
Incr Delay (d2), s/veh	27.6	0.0	1.1	0.0	1.3	0.0	19.6	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	56.4	0.0	15.4	0.0	28.7	0.0	48.2	0.0
1st-Term Q (Q1), veh/ln	1.7	0.0	1.3	0.0	0.2	0.0	1.5	0.0
2nd-Term Q (Q2), veh/ln	1.1	0.0	0.2	0.0	0.1	0.0	0.8	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
%ile Back of Q (50%), veh/ln	2.8	0.0	1.5	0.0	0.3	0.0	2.2	0.0
%ile Storage Ratio (RQ%)	0.40	0.00	0.24	0.00	0.03	0.00	0.24	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		T
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	177	0	190	0	163	0	343
Grp Sat Flow (s), veh/h/ln	0	1770	0	1863	0	1770	0	1863
Q Serve Time (g_s), s	0.0	5.1	0.0	5.2	0.0	4.7	0.0	10.4
Cycle Q Clear Time (g_c), s	0.0	5.1	0.0	5.2	0.0	4.7	0.0	10.4
Lane Grp Cap (c), veh/h	0	498	0	524	0	498	0	524
V/C Ratio (X)	0.00	0.35	0.00	0.36	0.00	0.33	0.00	0.65
Avail Cap (c_a), veh/h	0	498	0	524	0	498	0	524
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	18.4	0.0	18.4	0.0	18.2	0.0	20.3
Incr Delay (d2), s/veh	0.0	2.0	0.0	1.9	0.0	1.8	0.0	6.3
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	20.3	0.0	20.4	0.0	20.0	0.0	26.5
1st-Term Q (Q1), veh/ln	0.0	2.5	0.0	2.7	0.0	2.3	0.0	5.3

2nd-Term Q (Q2), veh/ln	0.0	0.3	0.0	0.3	0.0	0.2	0.0	0.9
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	2.7	0.0	3.0	0.0	2.5	0.0	6.2
%ile Storage Ratio (RQ%)	0.00	0.09	0.00	0.07	0.00	0.09	0.00	0.11
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	179	0	0	0	169	0	0
Grp Sat Flow (s), veh/h/ln	0	1754	0	1583	0	1808	0	1583
Q Serve Time (g_s), s	0.0	5.2	0.0	0.0	0.0	4.7	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	5.2	0.0	0.0	0.0	4.7	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.35	0.00	1.00	0.00	0.17	0.00	1.00
Lane Grp Cap (c), veh/h	0	493	0	445	0	508	0	445
V/C Ratio (X)	0.00	0.36	0.00	0.00	0.00	0.33	0.00	0.00
Avail Cap (c_a), veh/h	0	493	0	445	0	508	0	445
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	18.4	0.0	0.0	0.0	18.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.1	0.0	0.0	0.0	1.7	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	20.5	0.0	0.0	0.0	20.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	2.5	0.0	0.0	0.0	2.3	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.3	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	2.8	0.0	0.0	0.0	2.6	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.09	0.00	0.00	0.00	0.10	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	25.3
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	127	231	16	8	454
Future Vol, veh/h	0	127	231	16	8	454
Conflicting Peds, #/hr	49	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	138	251	17	9	493

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	573	134	0	0	268	0
Stage 1	260	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	450	890	-	-	1293	-
Stage 1	760	-	-	-	-	-
Stage 2	715	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	426	890	-	-	1293	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	677	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	890	1293	-
HCM Lane V/C Ratio	-	-	0.155	0.007	-
HCM Control Delay (s)	-	-	9.8	7.8	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	664	160	79	782	75	155	189	21	145	238	183
Future Volume (veh/h)	72	664	160	79	782	75	155	189	21	145	238	183
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	78	722	174	86	850	82	168	205	23	158	259	199
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	174	921	783	241	923	784	292	508	56	449	461	392
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.04	0.49	0.49	0.04	0.50	0.50	0.06	0.16	0.16	0.15	0.25	0.25
Ln Grp Delay, s/veh	27.1	28.6	17.0	21.2	40.9	15.8	42.9	45.2	45.3	31.5	43.4	42.5
Ln Grp LOS	C	C	B	C	D	B	D	D	D	C	D	D
Approach Vol, veh/h		974			1018			396			616	
Approach Delay, s/veh		26.4			37.3			44.3			40.1	
Approach LOS		C			D			D			D	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Case No	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phs Duration (G+Y+Rc), s	22.5	23.0	9.2	62.4	12.0	33.5	9.1	62.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green (Gmax), s	18.0	18.5	5.1	60.4	7.5	29.0	5.0	60.5
Max Allow Headway (MAH), s	3.7	4.6	3.7	4.8	3.7	4.6	3.7	4.8
Max Q Clear (g_c+I1), s	9.7	8.8	4.8	39.5	9.5	16.2	4.5	51.6
Green Ext Time (g_e), s	0.2	2.3	0.0	11.8	0.0	2.7	0.0	6.4
Prob of Phs Call (p_c)	1.00	1.00	0.94	1.00	1.00	1.00	0.92	1.00
Prob of Max Out (p_x)	0.00	0.29	1.00	0.51	1.00	0.00	1.00	0.84

Left-Turn Movement Data								
Assigned Mvmt	1		3		5		7	
Mvmt Sat Flow, veh/h	1774		1774		1774		1774	

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		3213		1863		1863		1863

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		357		1583		1583		1583

Left Lane Group Data								
Assigned Mvmt	1	0	3	0	5	0	7	0
Lane Assignment	(Pr/Pm)		(Pr/Pm)		(Pr/Pm)		(Pr/Pm)	

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	158	0	86	0	168	0	78	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1774	0
Q Serve Time (g_s), s	7.7	0.0	2.8	0.0	7.5	0.0	2.5	0.0
Cycle Q Clear Time (g_c), s	7.7	0.0	2.8	0.0	7.5	0.0	2.5	0.0
Perm LT Sat Flow (s_l), veh/h/ln	1148	0	619	0	930	0	598	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	20.5	0.0	57.9	0.0	18.5	0.0	57.9	0.0
Perm LT Serve Time (g_u), s	11.7	0.0	20.4	0.0	14.8	0.0	8.4	0.0
Perm LT Q Serve Time (g_ps), s	1.4	0.0	6.0	0.0	5.1	0.0	7.4	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	449	0	241	0	292	0	174	0
V/C Ratio (X)	0.35	0.00	0.36	0.00	0.57	0.00	0.45	0.00
Avail Cap (c_a), veh/h	449	0	247	0	292	0	180	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	29.3	0.0	20.3	0.0	40.2	0.0	25.3	0.0
Incr Delay (d2), s/veh	2.2	0.0	0.9	0.0	2.7	0.0	1.8	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	31.5	0.0	21.2	0.0	42.9	0.0	27.1	0.0
1st-Term Q (Q1), veh/ln	3.7	0.0	1.3	0.0	1.3	0.0	1.2	0.0
2nd-Term Q (Q2), veh/ln	0.3	0.0	0.1	0.0	0.2	0.0	0.1	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
%ile Back of Q (50%), veh/ln	4.0	0.0	1.4	0.0	1.5	0.0	1.3	0.0
%ile Storage Ratio (RQ%)	0.20	0.00	0.07	0.00	0.08	0.00	0.07	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		T
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	112	0	722	0	259	0	850
Grp Sat Flow (s), veh/h/ln	0	1770	0	1863	0	1863	0	1863
Q Serve Time (g_s), s	0.0	6.7	0.0	37.5	0.0	14.2	0.0	49.6
Cycle Q Clear Time (g_c), s	0.0	6.7	0.0	37.5	0.0	14.2	0.0	49.6
Lane Grp Cap (c), veh/h	0	280	0	921	0	461	0	923
V/C Ratio (X)	0.00	0.40	0.00	0.78	0.00	0.56	0.00	0.92
Avail Cap (c_a), veh/h	0	280	0	961	0	461	0	962
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	44.3	0.0	24.4	0.0	38.5	0.0	27.4
Incr Delay (d2), s/veh	0.0	0.9	0.0	4.1	0.0	4.9	0.0	13.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	45.2	0.0	28.6	0.0	43.4	0.0	40.9
1st-Term Q (Q1), veh/ln	0.0	3.3	0.0	19.3	0.0	7.3	0.0	25.5

2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	1.1	0.0	0.6	0.0	3.5
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	3.3	0.0	20.3	0.0	8.0	0.0	29.0
%ile Storage Ratio (RQ%)	0.00	0.23	0.00	0.75	0.00	0.28	0.00	0.44
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		R		R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	116	0	174	0	199	0	82
Grp Sat Flow (s), veh/h/ln	0	1800	0	1583	0	1583	0	1583
Q Serve Time (g_s), s	0.0	6.8	0.0	7.3	0.0	12.7	0.0	3.2
Cycle Q Clear Time (g_c), s	0.0	6.8	0.0	7.3	0.0	12.7	0.0	3.2
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.20	0.00	1.00	0.00	1.00	0.00	1.00
Lane Grp Cap (c), veh/h	0	284	0	783	0	392	0	784
V/C Ratio (X)	0.00	0.41	0.00	0.22	0.00	0.51	0.00	0.10
Avail Cap (c_a), veh/h	0	284	0	817	0	392	0	818
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	44.4	0.0	16.8	0.0	37.9	0.0	15.7
Incr Delay (d2), s/veh	0.0	0.9	0.0	0.1	0.0	4.6	0.0	0.1
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	45.3	0.0	17.0	0.0	42.5	0.0	15.8
1st-Term Q (Q1), veh/ln	0.0	3.4	0.0	3.2	0.0	5.5	0.0	1.4
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.5	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	3.5	0.0	3.2	0.0	6.0	0.0	1.4
%ile Storage Ratio (RQ%)	0.00	0.24	0.00	0.41	0.00	0.21	0.00	0.24
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	35.2
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	756	96	90	730	19	250	1	450	17	3	11
Future Volume (veh/h)	14	756	96	90	730	19	250	1	450	17	3	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	15	822	104	98	793	21	272	1	489	18	3	12
Adj No. of Lanes	1	1	1	2	1	0	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	230	962	817	161	986	26	483	562	552	344	98	394
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.02	0.52	0.52	0.05	0.55	0.55	0.30	0.30	0.30	0.30	0.30	0.30
Ln Grp Delay, s/veh	16.5	26.8	12.6	50.3	0.0	21.1	32.3	24.3	46.6	24.9	0.0	24.6
Ln Grp LOS	B	C	B	D		C	C	C	D	C		C
Approach Vol, veh/h		941			912			762			33	
Approach Delay, s/veh		25.1			24.3			41.5			24.8	
Approach LOS		C			C			D			C	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Case No		5.0	2.0	3.0		6.0	1.1	4.0
Phs Duration (G+Y+Rc), s		34.6	9.2	56.0		34.6	6.2	59.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green (Gmax), s		30.1	16.5	59.9		30.1	5.0	71.4
Max Allow Headway (MAH), s		4.0	3.7	4.9		4.0	3.7	4.9
Max Q Clear (g_c+I1), s		31.1	4.8	40.1		3.5	2.4	37.4
Green Ext Time (g_e), s		0.0	0.2	11.4		3.0	0.0	15.1
Prob of Phs Call (p_c)		1.00	0.93	1.00		1.00	0.34	1.00
Prob of Max Out (p_x)		1.00	0.00	0.53		0.00	1.00	0.29

Left-Turn Movement Data								
Assigned Mvmt		5	3			1	7	
Mvmt Sat Flow, veh/h		1393	3442			903	1774	

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		1863		1863		326		1806

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		1583		1583		1306		48

Left Lane Group Data								
Assigned Mvmt	0	5	3	0	0	1	7	0
Lane Assignment			(Prot)				(Pr/Pm)	

Lanes in Grp	0	1	2	0	0	1	1	0
Grp Vol (v), veh/h	0	272	98	0	0	18	15	0
Grp Sat Flow (s), veh/h/ln	0	1393	1721	0	0	903	1774	0
Q Serve Time (g_s), s	0.0	17.1	2.8	0.0	0.0	1.4	0.4	0.0
Cycle Q Clear Time (g_c), s	0.0	17.7	2.8	0.0	0.0	1.5	0.4	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1393	0	0	0	903	668	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	30.1	0.0	0.0	0.0	30.1	51.5	0.0
Perm LT Serve Time (g_u), s	0.0	29.5	0.0	0.0	0.0	30.1	19.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	17.1	0.0	0.0	0.0	1.4	0.7	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Lane Grp Cap (c), veh/h	0	483	161	0	0	344	230	0
V/C Ratio (X)	0.00	0.56	0.61	0.00	0.00	0.05	0.07	0.00
Avail Cap (c_a), veh/h	0	483	569	0	0	344	289	0
Upstream Filter (I)	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d1), s/veh	0.0	30.8	46.7	0.0	0.0	24.9	16.4	0.0
Incr Delay (d2), s/veh	0.0	1.5	3.7	0.0	0.0	0.1	0.1	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	32.3	50.3	0.0	0.0	24.9	16.5	0.0
1st-Term Q (Q1), veh/ln	0.0	6.6	1.3	0.0	0.0	0.4	0.2	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
%ile Back of Q (50%), veh/ln	0.0	6.8	1.4	0.0	0.0	0.4	0.2	0.0
%ile Storage Ratio (RQ%)	0.00	1.15	0.12	0.00	0.00	0.08	0.02	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T		T				
Lanes in Grp	0	1	0	1	0	0	0	0
Grp Vol (v), veh/h	0	1	0	822	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1863	0	1863	0	0	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	38.1	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	38.1	0.0	0.0	0.0	0.0
Lane Grp Cap (c), veh/h	0	562	0	962	0	0	0	0
V/C Ratio (X)	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	562	0	1118	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	24.3	0.0	20.9	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	5.9	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	24.3	0.0	26.8	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	19.4	0.0	0.0	0.0	0.0

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.66	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		R		R		T+R		T+R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	489	0	104	0	15	0	814
Grp Sat Flow (s), veh/h/ln	0	1583	0	1583	0	1632	0	1854
Q Serve Time (g_s), s	0.0	29.1	0.0	3.4	0.0	0.6	0.0	35.4
Cycle Q Clear Time (g_c), s	0.0	29.1	0.0	3.4	0.0	0.6	0.0	35.4
Prot RT Sat Flow (s_R), veh/h/ln	0.0	1583.3	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	1.00	0.00	0.80	0.00	0.03
Lane Grp Cap (c), veh/h	0	552	0	817	0	492	0	1012
V/C Ratio (X)	0.00	0.89	0.00	0.13	0.00	0.03	0.00	0.80
Avail Cap (c_a), veh/h	0	552	0	950	0	492	0	1327
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	30.6	0.0	12.5	0.0	24.6	0.0	18.3
Incr Delay (d2), s/veh	0.0	15.9	0.0	0.1	0.0	0.0	0.0	2.8
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	46.6	0.0	12.6	0.0	24.6	0.0	21.1
1st-Term Q (Q1), veh/ln	0.0	12.6	0.0	1.5	0.0	0.3	0.0	18.1
2nd-Term Q (Q2), veh/ln	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.8
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	15.1	0.0	1.5	0.0	0.3	0.0	18.9
%ile Storage Ratio (RQ%)	0.00	2.55	0.00	0.44	0.00	0.02	0.00	1.07
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

CITY OF TUALATIN, WASHINGTON COUNTY

115TH AVE at TUALATIN-SHERWOOD, City of Tualatin, Washington County, 01/01/2011 to 12/31/2015

Total crash records: 10

SER# / INVEST	SPEED	ALCOHOL	DRUGS	SCHL BUS	WORK ZONE	DAY / TIME	CLASS / DIST / FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
04759	N	N	N	N	N	08/20/2015	14	SW TUALATIN-SHERWOOD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
CITY						TH	0	SW 115TH AVE	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE-SW									000		00
						6P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	39	M	OR-Y OR<25		043	000		07
															02	NONE 0	STOP											
																PRVTE	NE-SW									011		00
																PSNGR CAR		01	DRVR	INJC	39	F	OR-Y OR<25		000	000		00
06976	N	N	N			12/09/2011	16	SW TUALATIN-SHERWOOD	INTER	CROSS	N	N	CLR	S-1STOP	01	UNKN 0	STRGHT												07
NONE						FR	0	SW 115TH AVE	SE		TRF SIGNAL	N	DRY	REAR		UNKN	SW-NE									000		00
						11A			06	0		N	DAY	PDO		UNKNOWN		01	DRVR	NONE	00	M	OR-Y UNK		026	000		07
															02	NONE 0	STOP											
																PRVTE	NE-SW									011		00
																PSNGR CAR		01	DRVR	NONE	43	M	OR-Y OR<25		000	000		00
01321	N	N	N			03/12/2015	16	SW TUALATIN-SHERWOOD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												07
NONE						TH	0	SW 115TH AVE	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S -N									000		00
						3P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	44	M	OR-Y OR<25		026	000		07
															02	NONE 0	STOP											
																PRVTE	S -N									011		00
																TRUCK		01	DRVR	INJC	46	M	OR-Y OR<25		000	000		00
02414	N	N	N			05/10/2013	16	SW TUALATIN-SHERWOOD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												07
NONE						FR	0	SW 115TH AVE	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW-NE									000		00
						9A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	31	F	OR-Y OR<25		026	000		07
															02	NONE 0	STOP											
																PRVTE	SW-NE									011		00
																PSNGR CAR		01	DRVR	INJC	27	M	OTH-Y OR<25		000	000		00
06202	N	N	N			11/09/2012	16	SW TUALATIN-SHERWOOD	INTER	CROSS	N	N	CLR	S-1TURN	01	NONE 0	TURN-R												08
NO RPT						FR	0	SW 115TH AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SW-S									000		00
						12P			03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	31	M	OTH-Y N-RES		006	000		08
															02	NONE 0	STRGHT											
																PRVTE	SW-NE									000		00
																PSNGR CAR		01	DRVR	INJC	21	M	OR-Y OR<25		000	000		00
06982	N	N	N	N	N	12/07/2012	16	SW TUALATIN-SHERWOOD	INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	STRGHT										013		07
CITY						FR	0	SW 115TH AVE	CN		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
						11A			04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	43	F	OR-Y OR<25		043,026	000		07
															02	NONE 0	STOP											
																PRVTE	W -E									011	013	00
																PSNGR CAR		01	DRVR	NONE	41	F	OR-Y OR<25		000	000		00
															03	NONE 0	STOP											
																PRVTE	W -E									022		00
																MOTRHOME		01	DRVR	NONE	80	M	OR-Y		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.

CITY OF TUALATIN, WASHINGTON COUNTY

115TH AVE at TUALATIN-SHERWOOD, City of Tualatin, Washington County, 01/01/2011 to 12/31/2015

Total crash records: 10

SER# / INVEST	S P E D	A L C	R U G S	S C H L	W O R K	DATE / DAY / TIME	CLASS / DIST / FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES OR<25	PED LOC	ERROR	ACT	EVENT	CAUSE
00809	N	N	N	N	N	02/15/2013	16	SW TUALATIN-SHERWOOD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
CITY						FR	0	SW 115TH AVE	CN		TRF SIGNAL	N	DRY	REAR		PRVTE	NE-SW									022		00
						1P			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	32	F	OR-Y		043,026	022		07
																							OR<25					
															02	NONE 0	STRGHT											
																PRVTE	NE-SW									000		00
																PSNGR CAR		01	DRVR	INJC	37	F	OR-Y		043,026	000		07
																							OR<25					
															03	NONE 0	STOP											
																PRVTE	NE-SW									022		00
																PSNGR CAR		01	DRVR	NONE	37	M	OR-Y		000	022		00
																							OR<25					
04799	N	N	N	N	N	08/29/2013	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	RAIN	O-1 L-TURN	01	NONE 0	TURN-L											04
CITY						TH	0	SW 115TH AVE	CN		TRF SIGNAL	N	WET	TURN		PRVTE	NE-S									000		00
						6A			03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	44	M	OR-Y		020,004	000		04
																							OR<25					
															02	NONE 0	STRGHT											
																PRVTE	SW-NE									000		00
																PSNGR CAR		01	DRVR	INJC	50	F	OR-Y		000	000		00
																							OR<25					
01843	N	N	N	N	N	04/02/2014	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
CITY						WE	0	SW 115TH AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NE-SW									000		00
						2P			02	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	INJC	37	M	OR-Y		000	000		00
																							OR<25					
															02	NONE 0	TURN-L											
																PRVTE	SW-N									019		00
																PSNGR CAR		01	DRVR	NONE	37	M	OR-Y		004,028	000		02
																							OR<25					
05554	N	N	N	N	N	09/23/2014	16	SW TUALATIN-SHERWOOD	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L											02
CITY						TU	0	SW 115TH AVE	CN		FLASHBCN-A	N	DRY	TURN		PRVTE	NE-S									000		00
						4A			03	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	56	F	OR-Y		028,004	000		02
																							OR<25					
															02	NONE 0	STRGHT											
																PRVTE	SW-NE									000		00
																PSNGR CAR		01	DRVR	INJC	22	F	OR-Y		000	000		00
																							OR<25					

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF TUALATIN, WASHINGTON COUNTY

124TH AVE at HERMAN RD, City of Tualatin, Washington County, 01/01/2011 to 12/31/2015

Total crash records: 9

SER# / INVEST	S P E D	A L C	D R U G S	S W C H L	O R K	DATE / DAY / TIME	CLASS / DIST / FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
05723	N	N	N	N	N	10/01/2014	16	SW HERMAN RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
CITY						WE	0	SW 124TH AVE	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N -S									000		00
						4P			06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	F	UNK		026	000		29
																							UNK					
															02	NONE 0	STOP											
																PRVTE	N -S									012		00
																PSNGR CAR		01	DRVR	INJC	54	F	OR-Y		000	000		00
																							OR<25					
02769	N	N	N	N	N	05/27/2013	16	SW HERMAN RD	INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	STRGHT											07
CITY						MO	0	SW 124TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
						1P			06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	35	M	OR-Y		026	000		07
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	E -W									011		00
																PSNGR CAR		01	DRVR	INJB	38	M	OR-Y		000	000		00
																							OR>25					
															02	NONE 0	STOP											
																PRVTE	E -W									011		00
																PSNGR CAR		02	PSNG	INJB	36	F			000	000		00
03577	N	N	N	N	N	06/26/2015	17	SW HERMAN RD	INTER	CROSS	N	N	CLR	S-STRGHT	01	NONE 0	STRGHT											29
CITY						FR	0	SW 124TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
						12P			06	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	28	M	OR-Y		026	000		29
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	E -W									011		00
																PSNGR CAR		01	DRVR	NONE	54	M	OR-Y		000	000		00
																							OR<25					
00070	N	N	N	N	N	01/05/2011	16	SW HERMAN RD	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											04
CITY						WE	0	SW 124TH AVE	CN		TRF SIGNAL	N	WET	ANGL		PRVTE	W -E									000		00
						9A			03	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	64	F	OR-Y		020	000		04
																							OR>25					
															01	NONE 0	STRGHT											
																PRVTE	W -E									000		00
																PSNGR CAR		02	PSNG	NO<5	04	F			000	000		00
															02	NONE 0	STRGHT											
																PRVTE	N -S									000		00
																PSNGR CAR		01	DRVR	NONE	18	M	N-VAL		000	000		00
																							OR<25					
00906	N	N	N	N	N	02/20/2013	16	SW HERMAN RD	INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT											02
CITY						WE	0	SW 124TH AVE	CN		TRF SIGNAL	N	WET	TURN		PRVTE	S -N									000		00
						3P			04	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	27	M	OR-Y		028	000		02
																							OR<25					
															02	NONE 0	TURN-L											
																PRVTE	N -E									000		00
																PSNGR CAR		01	DRVR	NONE	69	M	OR-Y		004	000		00
																							OR<25					
04215	N	N	N			08/02/2013	16	SW HERMAN RD	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NO RPT						FR	0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N -S									000		00
						7A			01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	60	M	OR-Y		000	000		00

CITY OF TUALATIN, WASHINGTON COUNTY

124TH AVE at HERMAN RD, City of Tualatin, Washington County, 01/01/2011 to 12/31/2015

Total crash records: 9

SER# / INVEST	S P E D	A L C	R U G S	S C H L	W O R K	DATE / DAY / TIME	CLASS / DIST / FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																							OR<25					
															02	NONE 0	TURN-L										
																PRVTE	S -W									000		00
																PSNGR CAR		01	DRVR	NONE	28	M	OR-Y		028	000		02
																							OR<25					
00101	N	N	N	N	N	01/07/2014	16	SW HERMAN RD	INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 0	TURN-L											02
CITY						TU	0	SW 124TH AVE	CN		TRF SIGNAL	N	WET	TURN		PRVTE	W -N									000		00
						2P			02	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y		028	000		02
																							OR<25					
															02	NONE 0	STRGHT										
																PRVTE	E -W									000		00
																PSNGR CAR		01	DRVR	INJC	35	M	OR-Y		000	000		00
																							OR>25					
05561	N	N	N			09/23/2014	16	SW HERMAN RD	INTER	CROSS	N	N	CLR	O-STRGHT	01	NONE 0	STRGHT											05
CITY						TU	0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	HEAD		PRVTE	N -S									000		00
						1P			04	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	44	F	OR-Y		039	017		05
																							OR>25					
															02	NONE 0	STRGHT										
																PRVTE	S -N									000		00
																PSNGR CAR		01	DRVR	NONE	59	M	OR-Y		000	000		00
																							OR<25					
02985	N	N	N	N	N	06/02/2015	16	SW HERMAN RD	INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT											04
CITY						TU	0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	E -W									000		00
						9A			01	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	68	M	OR-Y		020	000		04
																							OR<25					
															02	NONE 0	STRGHT										
																PUBLC	N -S									000		00
																SCHL BUS		01	DRVR	NONE	57	M	OR-Y		000	000		00
																							OR<25					

CITY OF TUALATIN, WASHINGTON COUNTY

124TH AVE at TUALATIN-SHERWOOD, City of Tualatin, Washington County, 01/01/2011 to 12/31/2015

Total crash records: 21

SER# / INVEST	SPE	ALC	DRG	SCL	WHK	DATE / DAY / TIME	CLASS / DIST / FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
80833	N	N	N			09/16/2011	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						FR	0	SW 124TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
						5P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	46	F	OR-Y OR<25		026	000		07
															02	NONE 0	STOP											
																PRVTE	E -W									011		00
																UNKNOWN		01	DRVR	NONE	00	M	UNK UNK		000	000		00
01766	N	N	N			04/06/2012	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											013,099	07
NONE						FR	0	SW 124TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
						6P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	44	F	OR-Y OR<25		016,026	038	099	27
															02	NONE 0	STOP											
																PRVTE	E -W									011	013	00
																PSNGR CAR		01	DRVR	INJA	46	M	OR-Y OR<25		000	000		00
															03	NONE 0	STOP											
																PRVTE	E -W									022		00
																PSNGR CAR		01	DRVR	NONE	41	F	OR-Y OR<25		000	000		00
04580	N	N	N	N	N	09/03/2012	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
CITY						MO	0	SW 124TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
						12P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	24	M	OR-Y OR<25		043,026	000		07
															02	NONE 0	STOP											
																PRVTE	E -W									011		00
																PSNGR CAR		01	DRVR	NONE	51	F	OR-Y OR<25		000	000		00
00435	N	N	N			01/25/2014	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											013	27,07
NO RPT						SA	0	SW 124TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
						2P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	58	M	OR-Y OR<25		016,026	038		27,07
															02	NONE 0	STOP											
																PRVTE	E -W									011	013	00
																PSNGR CAR		01	DRVR	INJC	17	F	OR-Y OR<25		000	000		00
															02	NONE 0	STOP											
																PRVTE	E -W									011	013	00
																PSNGR CAR		02	PSNG	INJC	46	F			000	000		00
															03	NONE 0	STOP											
																PRVTE	E -W									011		00
																PSNGR CAR		01	DRVR	INJC	57	F	OR-Y OR<25		000	000		00
06617	N	N	N	N	N	11/06/2014	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 0	STRGHT											27,07
CITY						TH	0	SW 124TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
						4P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	21	F	SUSP OR>25		016,043,026	038		27,07
															02	NONE 0	STOP											
																PRVTE	E -W									011		00
																PSNGR CAR		01	DRVR	INJC	57	M	OR-Y		000	000		00

CITY OF TUALATIN, WASHINGTON COUNTY

124TH AVE at TUALATIN-SHERWOOD, City of Tualatin, Washington County, 01/01/2011 to 12/31/2015

Total crash records: 21

SER# / INVEST	SPE	ALC	DRS	WCH	DATE / DAY / TIME	CLASS / DIST / FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
02778	N	N	N	N	05/22/2015	14	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 0	STRGHT										013	07
CITY					FR	0	SW 124TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
					1P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	20	M	OTH-Y OR<25		043	000		07
														02	NONE 0	STOP											
															PRVTE	E -W									011	013	00
															PSNGR CAR		01	DRVR	INJC	59	M	OR-Y OR<25		000	000		00
														03	NONE 0	STOP											
															PRVTE	E -W									022		00
															PSNGR CAR		01	DRVR	INJC	38	F	OR-Y OR<25		000	000		00
02310	N	N	N		04/29/2015	14	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE					WE	0	SW 124TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
					10A			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK OR<25		026	000		29
														02	NONE 0	STOP											
															PRVTE	E -W									011		00
															PSNGR CAR		01	DRVR	NONE	75	M	OR-Y OR<25		000	000		00
04850	N	N	N		08/25/2015	14	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLR	S-STRGHT	01	NONE 0	STRGHT												29
NONE					TU	0	SW 124TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
					2P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y OR<25		042	000		29
														02	NONE 0	STRGHT											
															PRVTE	E -W									006		00
															PSNGR CAR		01	DRVR	NONE	15	F	OR-Y OR<25		000	000		00
04562	N	N	N		08/26/2011	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												07
NO RPT					FR	0	SW 124TH AVE	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
					11A			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	32	M	OR-Y OR>25		026	000		07
														02	NONE 0	STOP											
															PRVTE	W -E									011		00
															PSNGR CAR		01	DRVR	NONE	00	M	OR-Y OR<25		000	000		00
00551	N	N	N	N	01/31/2012	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 0	STRGHT												27
CITY					TU	0	SW 124TH AVE	W		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000		00
					12P			05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	20	M	OR-Y OR<25		016,026	038		27
														02	NONE 0	STOP											
															PRVTE	E -W									011		00
															PSNGR CAR		01	DRVR	NONE	49	M	OR-Y OR<25		000	000		00
05986	N	N	N	N	10/31/2012	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 0	STRGHT										093		27
CITY					WE	0	SW 124TH AVE	W		TRF SIGNAL	N	WET	REAR		PRVTE	W -E									000		00
					5P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y OR<25		016,026	038	093	27
														02	NONE 0	STOP											
															PRVTE	W -E									011		00

CITY OF TUALATIN, WASHINGTON COUNTY

124TH AVE at TUALATIN-SHERWOOD, City of Tualatin, Washington County, 01/01/2011 to 12/31/2015

Total crash records: 21

SER# / INVEST	SPE	DAL	RUG	SCH	WOR	DAY	DATE / TIME	CLASS / DIST / FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																	PSNGR CAR		01	DRVR	INJC	53	M	OR-Y OR<25		000	000		00
06404	N	N	N	N	N		11/05/2013	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 0	STRGHT												27,32,07
CITY							TU	0	SW 124TH AVE	W		TRF SIGNAL	N	WET	REAR		PRVTE	W -E									000		00
							8A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	26	F	OR-Y OR>25		016,052,026	038		27,32,07
																02	NONE 0	STOP											
																	PRVTE	W -E									011		00
																	PSNGR CAR		01	DRVR	INJC	41	F	OR-Y OR>25		000	000		00
01274	N	N	N	N	N		03/04/2014	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 0	STRGHT												07
CITY							TU	0	SW 124TH AVE	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
							4P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	24	F	OTH-Y OR<25		043,026	000		07
																02	NONE 0	STOP											
																	PRVTE	W -E									011		00
																	PSNGR CAR		01	DRVR	INJC	34	M	OR-Y OR<25		000	000		00
02154	N	N	N				03/25/2014	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 0	STRGHT												07
NONE							TU	0	SW 124TH AVE	W		TRF SIGNAL	N	WET	REAR		PRVTE	W -E									000		00
							4P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	28	M	OR-Y UNK		026	000		07
																02	NONE 0	STOP											
																	PRVTE	W -E									011		00
																	PSNGR CAR		01	DRVR	INJC	29	F	OR-Y OR<25		000	000		00
03108	N	N	N				06/04/2014	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												07
NONE							WE	0	SW 124TH AVE	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
							3P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	41	F	OTH-Y UNK		026	000		07
																02	NONE 0	STOP											
																	PRVTE	W -E									011		00
																	PSNGR CAR		01	DRVR	NONE	46	M	OR-Y OR<25		000	000		00
04325	N	N	N				07/29/2014	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												07
NO RPT							TU	0	SW 124TH AVE	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
							8P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	46	M	OR-Y OR<25		026	000		07
																02	NONE 0	STOP											
																	PRVTE	W -E									011		00
																	PSNGR CAR		01	DRVR	NONE	49	M	OR-Y OR<25		000	000		00
07295	N	N	N				12/04/2014	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT												07
NO RPT							TH	0	SW 124TH AVE	W		TRF SIGNAL	N	WET	REAR		PRVTE	W -E									000		00
							5P			06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	18	M	OR-Y OR<25		043,026	000		07
																02	NONE 0	STOP											
																	PRVTE	W -E									012		00
																	PSNGR CAR		01	DRVR	INJC	54	F	OR-Y OR<25		000	000		00
																02	NONE 0	STOP											

CITY OF TUALATIN, WASHINGTON COUNTY

124TH AVE at TUALATIN-SHERWOOD, City of Tualatin, Washington County, 01/01/2011 to 12/31/2015

Total crash records: 21

SER# / INVEST	S P E D	A L C	R U G S	S C H L	W O R K	DATE / DAY / TIME	CLASS / DIST / FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	TYPE	SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																PRVTE	W -E									012		00
																PSNGR CAR		02	PSNG	INJC	26	F			000	000		00
05163	N	N	N	N	N	09/08/2015	14	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											32,07
CITY						TU	0	SW 124TH AVE	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
						2P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	35	M	NONE		052,043	000		32,07
																							OR<25					
															02	NONE 0	STRGHT											
																PRVTE	W -E									000		00
																PSNGR CAR		01	DRVR	INJC	27	F	OTH-Y		000	000		00
																							N-RES					
															02	NONE 0	STRGHT											
																PRVTE	W -E									000		00
																PSNGR CAR		02	PSNG	NO<5	01	M			000	000		00
04699	N	N	N	N	N	09/07/2012	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	07
CITY						FR	0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
						8A			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	17	M	OR-Y		043,026	000		07
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	W -E									011	013	00
																PSNGR CAR		01	DRVR	INJC	22	M	OR-Y		000	000		00
																							OR<25					
															03	NONE 0	STOP											
																PRVTE	W -E									022		00
																PSNGR CAR		01	DRVR	NONE	25	M	OR-Y		000	000		00
																							OR>25					
05845	N	N	N	N	N	10/26/2012	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 0	STRGHT											07
CITY						FR	0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
						7A			03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	71	M	OR-Y		043,026	000		07
																							OR>25					
															02	NONE 0	STOP											
																PRVTE	W -E									011		00
																PSNGR CAR		01	DRVR	INJC	57	F	OR-Y		000	000		00
																							OR<25					
06832	N	N	N			11/20/2012	16	SW TUALATIN-SHERWOOD	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										013	07
NONE						TU	0	SW 124TH AVE	CN		TRF SIGNAL	N	WET	REAR		UNKN	E -W									000		00
						7P			02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	42	F	OTH-Y		026	000		07
																							N-RES					
															02	NONE 0	STOP											
																PRVTE	E -W									011	013	00
																PSNGR CAR		01	DRVR	INJC	54	F	OR-Y		000	000		00
																							OR<25					
															03	UNKN 0	STOP											
																UNKN	E -W									022		00
																UNKNOWN		01	DRVR	NONE	00	M	UNK		000	000		00
																							UNK					

Intersection: 1: SW 124th Avenue & SW Herman Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	73	226	65	60	186	68	87	73	103	191	172	125
Average Queue (ft)	20	97	35	11	75	34	15	26	38	91	48	31
95th Queue (ft)	55	181	74	36	148	75	53	60	80	160	111	72
Link Distance (ft)		1094			1421			804	804		682	682
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	240		40	160		40	200			175		
Storage Blk Time (%)		28	0		20	0				1	0	
Queuing Penalty (veh)		17	1		12	1				1	0	

Intersection: 2: SW 124th Avenue & SW Cimino Street

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	65	37
Average Queue (ft)	10	2
95th Queue (ft)	41	17
Link Distance (ft)	925	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		200
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: SW Tualatin Sherwood Road & SW 124th Avenue

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	340	597	566	158	109
Average Queue (ft)	90	262	269	66	33
95th Queue (ft)	356	526	480	133	81
Link Distance (ft)	704	704	1681	726	726
Upstream Blk Time (%)	1	3			
Queuing Penalty (veh)	0	0			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: SW 115th Avenue & SW Tualatin Sherwood Road

Movement	EB	EB	EB	B15	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	T	L	L	TR	L	R	L	TR
Maximum Queue (ft)	57	652	110	12	103	156	206	109	146	31	20
Average Queue (ft)	2	311	36	1	12	81	74	37	54	5	1
95th Queue (ft)	39	643	107	13	68	139	154	88	116	23	9
Link Distance (ft)		812		1681			448				312
Upstream Blk Time (%)		1									
Queuing Penalty (veh)		11									
Storage Bay Dist (ft)	270		85		290	290		150	150	120	
Storage Blk Time (%)		22	0					0	1		
Queuing Penalty (veh)		22	0					0	0		

Network Summary

Network wide Queuing Penalty: 66

Intersection: 1: SW 124th Avenue & SW Herman Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	106	168	65	185	460	68	38	76	90	123	132	114
Average Queue (ft)	41	71	26	72	195	60	7	33	40	52	65	37
95th Queue (ft)	85	136	67	175	407	74	24	67	76	107	115	82
Link Distance (ft)		1094			1421			804	804		682	682
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	240		40	160		40	200			175		
Storage Blk Time (%)		19	0	0	44	3				0		
Queuing Penalty (veh)		19	1	0	116	11				0		

Intersection: 2: SW 124th Avenue & SW Cimino Street

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	54	9
Average Queue (ft)	25	0
95th Queue (ft)	52	5
Link Distance (ft)	925	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		200
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: SW Tualatin Sherwood Road & SW 124th Avenue

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	102	254	882	202	201
Average Queue (ft)	49	131	546	98	94
95th Queue (ft)	89	223	1073	169	167
Link Distance (ft)	704	704	1681	726	726
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: SW 115th Avenue & SW Tualatin Sherwood Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	L	TR	L	T	R	L	TR
Maximum Queue (ft)	71	600	110	15	84	359	105	12	139	53	40
Average Queue (ft)	10	237	28	0	29	121	47	1	64	15	8
95th Queue (ft)	64	488	93	6	65	249	91	7	121	42	28
Link Distance (ft)		812				448		374			312
Upstream Blk Time (%)		0									
Queuing Penalty (veh)		0									
Storage Bay Dist (ft)	270		85	290	290		150		150	120	
Storage Blk Time (%)		18	0			1	0		0		
Queuing Penalty (veh)		15	0			0	0		0		

Network Summary

Network wide Queuing Penalty: 163

Intersection: 1: SW 124th Avenue & SW Herman Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	71	251	66	64	165	66	63	81	107	193	175	103
Average Queue (ft)	21	110	41	13	74	35	12	25	40	97	51	33
95th Queue (ft)	54	203	78	42	140	74	39	60	84	169	117	74
Link Distance (ft)		1094			1421			804	804		682	682
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	240		40	160		40	200			175		
Storage Blk Time (%)		33	1		21	0				1	0	
Queuing Penalty (veh)		21	1		14	1				2	0	

Intersection: 2: SW 124th Avenue & SW Cimino Street

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	52	41
Average Queue (ft)	7	3
95th Queue (ft)	31	21
Link Distance (ft)	925	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		200
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: SW Tualatin Sherwood Road & SW 124th Avenue

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	753	760	540	434	96
Average Queue (ft)	490	570	219	195	38
95th Queue (ft)	1018	966	431	389	80
Link Distance (ft)	704	704	1681	726	726
Upstream Blk Time (%)	33	55			
Queuing Penalty (veh)	0	0			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: SW 115th Avenue & SW Tualatin Sherwood Road

Movement	EB	EB	EB	B15	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	T	L	L	TR	L	T	R	L	TR
Maximum Queue (ft)	13	934	110	1676	298	314	480	162	221	171	34	19
Average Queue (ft)	1	880	62	1320	216	262	189	65	17	87	6	1
95th Queue (ft)	8	1048	139	2219	306	339	448	134	121	163	24	8
Link Distance (ft)		812		1681			448		374			312
Upstream Blk Time (%)		38		0			3		0			
Queuing Penalty (veh)		495		3			0		0			
Storage Bay Dist (ft)	270		85		290	290		150		150	120	
Storage Blk Time (%)		35	0		0	7	0	2	0	3		
Queuing Penalty (veh)		99	4		2	54	1	3	0	2		

Network Summary

Network wide Queuing Penalty: 701

Intersection: 1: SW 124th Avenue & SW Herman Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	132	169	65	185	359	70	40	97	102	136	151	114
Average Queue (ft)	48	72	27	67	182	60	6	40	47	57	69	40
95th Queue (ft)	99	131	67	167	321	72	25	78	88	115	122	88
Link Distance (ft)		1094			1421			804	804		682	682
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	240		40	160		40	200			175		
Storage Blk Time (%)		21	0	0	46	3				1	0	
Queuing Penalty (veh)		21	1	0	126	11				1	0	

Intersection: 2: SW 124th Avenue & SW Cimino Street

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	50	13
Average Queue (ft)	23	0
95th Queue (ft)	48	6
Link Distance (ft)	925	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		200
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: SW Tualatin Sherwood Road & SW 124th Avenue

Movement	EB	EB	WB	B15	SB	SB
Directions Served	L	T	TR	T	L	R
Maximum Queue (ft)	156	433	1456	89	273	284
Average Queue (ft)	66	144	778	16	149	132
95th Queue (ft)	124	281	1514	151	250	235
Link Distance (ft)	704	704	1681	812	726	726
Upstream Blk Time (%)		0	3			
Queuing Penalty (veh)		0	28			
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: SW 115th Avenue & SW Tualatin Sherwood Road

Movement	EB	EB	EB	B15	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	T	L	L	TR	L	T	R	L	TR
Maximum Queue (ft)	251	870	110	762	158	314	476	174	430	175	122	69
Average Queue (ft)	25	653	30	241	28	111	271	126	385	169	53	10
95th Queue (ft)	136	1050	97	895	105	232	464	196	477	196	123	41
Link Distance (ft)		812		1681			448		374			312
Upstream Blk Time (%)		17					3		56			
Queuing Penalty (veh)		179					0		0			
Storage Bay Dist (ft)	270		85		290	290		150		150	120	
Storage Blk Time (%)	0	37	0				6	18	1	57	14	
Queuing Penalty (veh)	0	38	0				6	80	5	142	2	

Network Summary

Network wide Queuing Penalty: 640

Intersection: 1: SW 124th Avenue & SW Herman Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	51	164	65	60	147	64	49	60	97	200	570	522
Average Queue (ft)	17	80	36	17	64	35	12	19	33	168	296	234
95th Queue (ft)	42	138	75	44	118	73	36	44	73	248	662	597
Link Distance (ft)		1094			1421			804	804		682	682
Upstream Blk Time (%)											3	0
Queuing Penalty (veh)											0	0
Storage Bay Dist (ft)	240		40	160		40	200			175		
Storage Blk Time (%)		24	0		18	0				59	1	
Queuing Penalty (veh)		15	1		13	1				66	1	

Intersection: 2: SW 124th Avenue & SW Cimino Street

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	52	20	58
Average Queue (ft)	18	1	11
95th Queue (ft)	45	10	38
Link Distance (ft)	925	714	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			200
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: SW 124th Avenue Extension/SW 124th Avenue & SW Tualatin Sherwood Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	R
Maximum Queue (ft)	524	720	225	71	470	175	168	175	197	171	227	111
Average Queue (ft)	177	574	112	20	247	101	86	78	99	87	99	34
95th Queue (ft)	522	852	269	55	417	219	149	149	174	153	182	76
Link Distance (ft)		692			1678			1192	1192		714	714
Upstream Blk Time (%)		16										
Queuing Penalty (veh)		0										
Storage Bay Dist (ft)	500		200	500		150	500			500		
Storage Blk Time (%)	0	31	0		17	0						
Queuing Penalty (veh)	0	86	1		37	0						

Intersection: 4: SW 115th Avenue & SW Tualatin Sherwood Road

Movement	EB	EB	EB	B15	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	T	L	L	TR	L	R	L	TR
Maximum Queue (ft)	25	739	110	54	261	304	310	104	120	27	16
Average Queue (ft)	1	384	74	6	170	218	74	46	52	4	2
95th Queue (ft)	9	706	144	71	262	294	231	93	99	20	12
Link Distance (ft)		811		1678			448				312
Upstream Blk Time (%)		1					0				
Queuing Penalty (veh)		12					0				
Storage Bay Dist (ft)	270		85		290	290		150	150	120	
Storage Blk Time (%)		27	1		0	1			0		
Queuing Penalty (veh)		76	7		0	10			0		

Network Summary

Network wide Queuing Penalty: 327

Intersection: 1: SW 124th Avenue & SW Herman Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	112	134	65	168	378	70	46	101	117	136	142	91
Average Queue (ft)	48	65	27	64	168	60	8	45	61	55	67	31
95th Queue (ft)	91	117	68	160	345	73	28	89	106	113	114	71
Link Distance (ft)		1094			1421			804	804		682	682
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	240		40	160		40	200			175		
Storage Blk Time (%)		19	0	0	43	3				1		
Queuing Penalty (veh)		19	1	0	118	12				1		

Intersection: 2: SW 124th Avenue & SW Cimino Street

Movement	WB	NB	NB	SB	SB	SB
Directions Served	LR	T	TR	L	T	T
Maximum Queue (ft)	78	34	38	23	70	49
Average Queue (ft)	39	3	4	1	10	5
95th Queue (ft)	64	17	23	11	46	27
Link Distance (ft)	925	714	714		1036	1036
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				200		
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: SW 124th Avenue Extension/SW 124th Avenue & SW Tualatin Sherwood Road

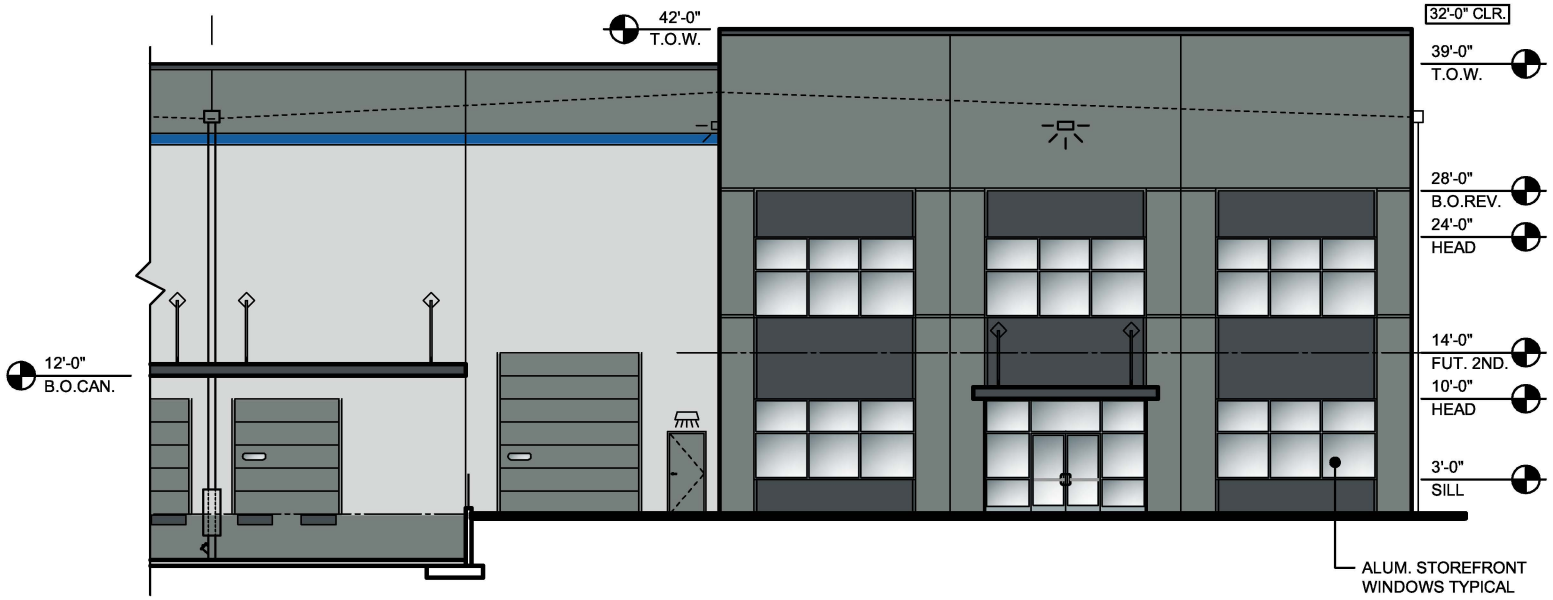
Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	R
Maximum Queue (ft)	248	571	225	454	814	175	232	144	131	194	244	185
Average Queue (ft)	52	266	93	70	429	55	114	74	53	80	130	78
95th Queue (ft)	144	461	238	269	808	169	212	131	102	151	215	148
Link Distance (ft)		692			1678			820	820		714	714
Upstream Blk Time (%)		0										
Queuing Penalty (veh)		0										
Storage Bay Dist (ft)	500		200	500		150	500			500		
Storage Blk Time (%)		13	0		31	0						
Queuing Penalty (veh)		31	0		48	0						

Intersection: 4: SW 115th Avenue & SW Tualatin Sherwood Road

Movement	EB	EB	EB	B15	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	T	L	L	TR	L	T	R	L	TR
Maximum Queue (ft)	253	770	110	77	78	178	363	174	409	175	67	37
Average Queue (ft)	22	343	38	5	5	66	149	132	220	141	21	7
95th Queue (ft)	123	684	109	69	34	128	281	197	501	210	56	27
Link Distance (ft)		811		1678			448		374			312
Upstream Blk Time (%)		1					0		11			
Queuing Penalty (veh)		11					0		0			
Storage Bay Dist (ft)	270		85		290	290		150		150	120	
Storage Blk Time (%)		29	0				1	17	0	17		
Queuing Penalty (veh)		33	0				1	77	0	44		

Network Summary

Network wide Queuing Penalty: 397



PARTIAL EAST ELEVATION

N.T.S.

Body Color

Sherwin Williams
"ZIRCON"
SW 7667

Light Gray

Sherwin Williams
"GRAY SHINGLE"
SW 7670

Dark Gray

Sherwin Williams
"PEPPERCORN"
SW 7674

Accent Stripe

Sherwin Williams
"REGATTA"
SW 6517

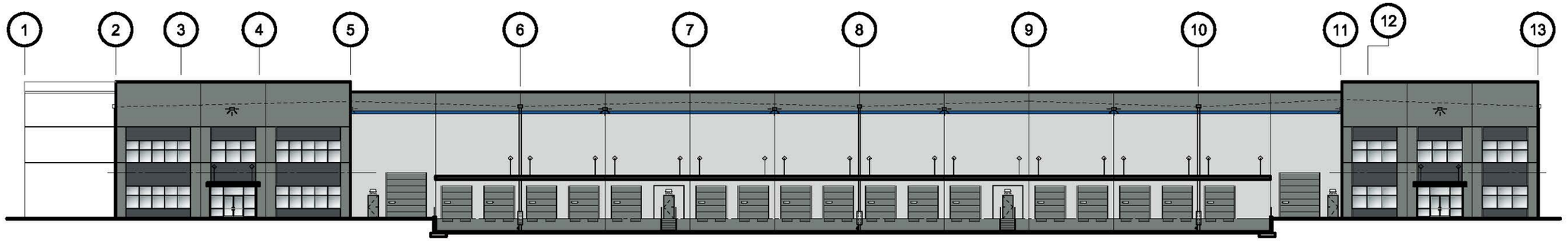
Storefront Framing
"Clear Anodized"

Storefront Glazing
"Solar Gray"

IPT Tualatin DC LLC

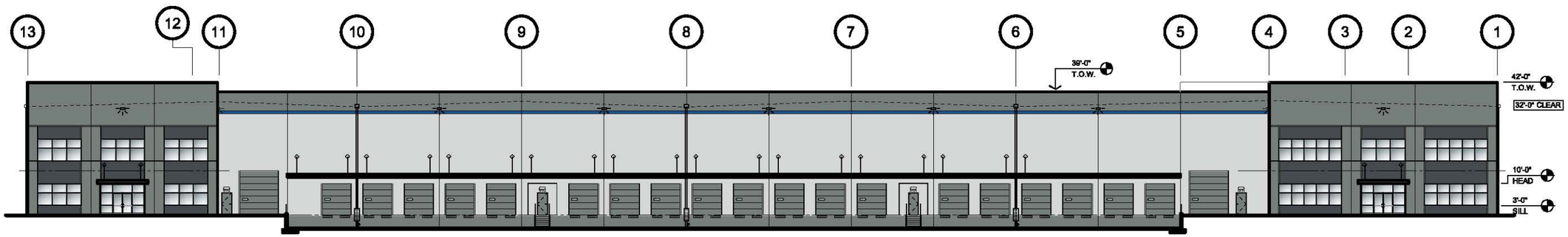
JULY 2017

VLMK
ENGINEERING + DESIGN
3933 SW Kelly Avenue - Portland, Oregon 97239
503.222.4453 www.vlmk.com



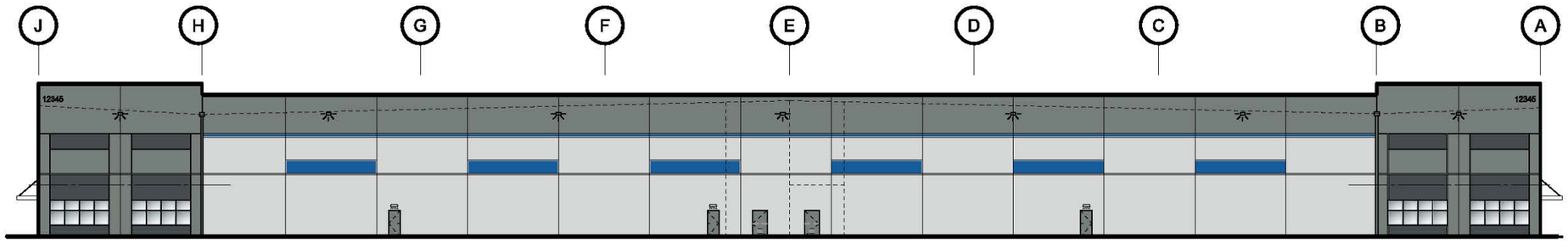
EAST ELEVATION

1" = 20.0'



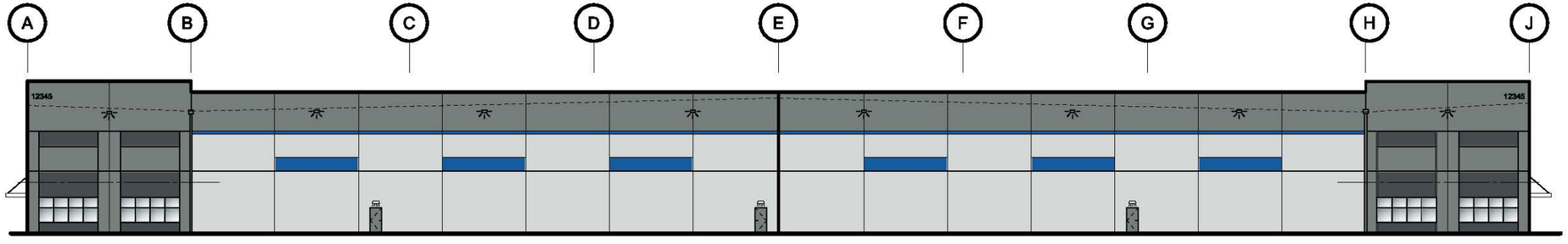
WEST ELEVATION

1" = 20.0'



NORTH ELEVATION

1" = 20.0'



SOUTH ELEVATION

1" = 20.0'

IPT Tualatin DC LLC

JULY 2017

VLMK ENGINEERING + DESIGN

M E M O R A N D U M

Date: August 28, 2017

To: Charles H. Benson, III, Associate Planner, City of Tualatin

From: Jackie Sue Humphreys, Clean Water Services (CWS)

Subject: IPT Tualatin Industrial Building, AR17-0006, 2S127BC00200

Please include the following comments when writing your conditions of approval:

PRIOR TO ANY WORK ON THE SITE

A Clean Water Services (CWS) Storm Water Connection Permit Authorization must be obtained prior to plat approval and recordation. Application for CWS Permit Authorization must be in accordance with the requirements of the Design and Construction Standards, Resolution and Order No. 17-5, (or current R&O in effect at time of Engineering plan submittal), and is to include:

a. Detailed plans prepared in accordance with Chapter 2, Section 2.04.

b. Detailed grading and erosion control plan. An Erosion Control Permit will be required. Area of Disturbance must be clearly identified on submitted construction plans. If site area and any offsite improvements required for this development exceed one-acre of disturbance, project will require a 1200-CN Erosion Control Permit. If site area and any offsite improvements required for this development exceed five-acres of disturbance, project will require a 1200-C Erosion Control Permit.

c. Detailed plans showing the development having direct access by gravity to public storm and sanitary sewer.

d. Provisions for water quality in accordance with the requirements of the above named design standards. Water Quality is required for all new development and redevelopment areas per R&O 17-5, Section 4.05. Access shall be provided for maintenance of facility per R&O 17-5, Section 4.02.4.

e. If use of an existing offsite or regional Water Quality Facility is proposed, it must be clearly identified on plans, showing its location, condition, capacity to treat this site and, any additional improvements and/or upgrades that may be needed to utilize that facility.

f. If private lot LIDA systems proposed, must comply with the current CWS Design and Construction Standards. A private maintenance agreement, for the proposed private lot LIDA systems, needs to be provided to the City for review and acceptance.

g. Show all existing and proposed easements on plans. Any required storm sewer, sanitary sewer, and water quality related easements must be granted to the City.

h. Application may require additional permitting and plan review from CWS Source Control Program. For any questions or additional information, please contact Source Control at (503) 681-5175.

i. Any proposed offsite construction activities will require an update or amendment to the current Service Provider Letter for this project.

CONCLUSION

This Land Use Review does not constitute CWS approval of storm or sanitary sewer compliance to the NPDES permit held by CWS. CWS, prior to issuance of any connection permits, must approve final construction plans and drainage calculations.

August 25, 2017

City of Tualatin
Charles Benson III - Assistant Planner
18880 SW Martinazzi Rd.
Tualatin, OR 97062

Re: AR17-0006 , 12155 SW Tualatin-Sherwood Road, Tualatin, OR 97062
Tax Lot I.D: 2S1 27BC 00200

Dear Charles,

Thank you for the opportunity to review the proposed site plan surrounding the above named development project. Tualatin Valley Fire & Rescue endorses this proposal predicated on the following criteria and conditions of approval:

FIRE APPARATUS ACCESS:

1. **FIRE APPARATUS ACCESS ROAD DISTANCE FROM BUILDINGS AND FACILITIES:** Access roads shall be within 150 feet of all portions of the exterior wall of the first story of the building as measured by an approved route around the exterior of the building or facility. An approved turnaround is required if the remaining distance to an approved intersecting roadway, as measured along the fire apparatus access road, is greater than 150 feet. (OFC 503.1.1))

2. **DEAD END ROADS AND TURNAROUNDS:** Dead end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround. Diagrams of approved turnarounds are shown below: (OFC 503.2.5 & D103.1)

3. **ADDITIONAL ACCESS ROADS – COMMERCIAL/INDUSTRIAL HEIGHT:** Buildings exceeding 30 feet in height or three stories in height shall have at least two separate means of fire apparatus access. (D104.1)

4. **ADDITIONAL ACCESS ROADS – COMMERCIAL/INDUSTRIAL SQUARE FOOTAGE:** Buildings or facilities having a gross building area of more than 62,000 square feet shall have at least two approved separate means of fire apparatus access. Exception: Projects having a gross building area of up to 124,000 square feet that have a single approved fire apparatus access road when all buildings are equipped throughout with approved automatic sprinkler systems. (OFC D104.2)

5. **AERIAL FIRE APPARATUS ROADS:** Buildings with a vertical distance between the grade plane and the highest roof surface that exceeds 30 feet in height shall be provided with a fire apparatus access road constructed for use by aerial apparatus with an unobstructed driving surface width of not less than 26 feet. For the purposes of this section, the highest roof surface shall be determined by measurement to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of the parapet walls, whichever is greater. Any portion of the building may be used for this measurement, provided that it is accessible to firefighters and is capable of supporting ground ladder placement. (OFC D105.1, D105.2)

6. **AERIAL APPARATUS OPERATIONS:** At least one of the required aerial access routes shall be located within a minimum of 15 feet and a maximum of 30 feet from the building, and shall be positioned parallel to one entire side of the building. The side of the building on which the aerial access road is positioned shall be approved by the fire code official. Overhead utility and power lines shall not be located over the aerial access road or between the aerial access road and the building. (D105.3, D105.4)

7. **MULTIPLE ACCESS ROADS SEPARATION:** Where two access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the area to be served (as identified by the Fire Code Official), measured in a straight line between accesses. (OFC D104.3) Exception: Buildings equipped throughout with an approved automatic fire sprinkler system (the approval of this alternate method of construction shall be accomplished in accordance with the provisions of ORS 455.610(5).

8. **FIRE APPARATUS ACCESS ROAD WIDTH AND VERTICAL CLEARANCE:** Fire apparatus access roads shall have an unobstructed driving surface width of not less than 20 feet (26 feet adjacent to fire hydrants (OFC D103.1)) and an unobstructed vertical clearance of not less than 13 feet 6 inches. The fire district will approve access roads of 12 feet for up to three dwelling units and accessory buildings. (OFC 503.2.1 & D103.1)

9. **NO PARKING SIGNS:** Where fire apparatus roadways are not of sufficient width to accommodate parked vehicles and 20 feet of unobstructed driving surface, "No Parking" signs shall be installed on one or both sides of the roadway and in turnarounds as needed. Signs shall read "NO PARKING - FIRE LANE" and shall be installed with a clear space above grade level of 7 feet. Signs shall be 12 inches wide by 18 inches high and shall have red letters on a white reflective background. (OFC D103.6)

10. **NO PARKING:** Parking on emergency access roads shall be as follows (OFC D103.6.1-2):
    1. 20-26 feet road width – no parking on either side of roadway
    2. 26-32 feet road width – parking is allowed on one side
    3. Greater than 32 feet road width – parking is not restricted

11. **PAINTED CURBS:** Where required, fire apparatus access roadway curbs shall be painted red (or as approved) and marked "NO PARKING FIRE LANE" at 25 foot intervals. Lettering shall have a stroke of not less than one inch wide by six inches high. Lettering shall be white on red background (or as approved). (OFC 503.3)

12. **FIRE APPARATUS ACCESS ROADS WITH FIRE HYDRANTS:** Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet and shall extend 20 feet before and after the point of the hydrant. (OFC D103.1)

13. **SURFACE AND LOAD CAPACITIES:** Fire apparatus access roads shall be of an all-weather surface that is easily distinguishable from the surrounding area and is capable of supporting not less than 12,500 pounds point load (wheel load) and 75,000 pounds live load (gross vehicle weight). Documentation from a registered engineer that the final construction is in accordance with approved plans or the requirements of the Fire Code may be requested. (OFC 503.2.3)

14. **TURNING RADIUS:** The inside turning radius and outside turning radius shall not be less than 28 feet and 48 feet respectively, measured from the same center point. (OFC 503.2.4 & D103.3)

15. **ACCESS ROAD GRADE:** Fire apparatus access roadway grades shall not exceed 12%. When fire sprinklers* are installed, a maximum grade of 15% will be allowed.

0-12%	Allowed
13-15%	Special consideration with submission of written Alternate Methods and Materials request. Ex: Automatic fire sprinkler (13-D) system* in lieu of grade.
≥16%	Special consideration on a case by case basis with submission of written Alternate Methods and Materials request Ex: Automatic fire sprinkler (13-D)

	system* plus additional engineering controls in lieu of grade.**

*The approval of fire sprinklers as an alternate shall be accomplished in accordance with the provisions of ORS 455.610(5) and OAR 918-480-0100 and installed per section 903.3.1.1, 903.3.1.2, or 903.3.1.3 of the Oregon Fire Code (OFC 503.2.7 & D103.2)
** See Forest Dwelling Access section for exceptions.

16. **ANGLE OF APPROACH/GRADE FOR TURNAROUNDS:** Turnarounds shall be as flat as possible and have a maximum of 5% grade with the exception of crowning for water run-off. (OFC 503.2.7 & D103.2)

17. **ANGLE OF APPROACH/GRADE FOR INTERSECTIONS:** Intersections shall be level (maximum 5%) with the exception of crowning for water run-off. (OFC 503.2.7 & D103.2)

18. **AERIAL APPARATUS OPERATING GRADES:** Portions of aerial apparatus roads that will be used for aerial operations shall be as flat as possible. Front to rear and side to side maximum slope shall not exceed 10%.

19. **GATES:** Gates securing fire apparatus roads shall comply with all of the following (OFC D103.5, and 503.6):
    1. Minimum unobstructed width shall be not less than 20 feet (or the required roadway surface width).
    2. Gates serving three or less single-family dwellings shall be a minimum of 12 feet in width.
    3. Gates shall be set back at minimum of 30 feet from the intersecting roadway or as approved.
    4. Electric gates shall be equipped with a means for operation by fire department personnel
    5. Electric automatic gates shall comply with ASTM F 2200 and UL 325.

20. **ACCESS DURING CONSTRUCTION:** Approved fire apparatus access roadways shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. Temporary address signage shall also be provided during construction. (OFC 3309 and 3310.1)

21. **TRAFFIC CALMING DEVICES:** Shall be prohibited on fire access routes unless approved by the Fire Code Official. (OFC 503.4.1).

FIREFIGHTING WATER SUPPLIES:

22. **MUNICIPAL FIREFIGHTING WATER SUPPLY EXCEPTIONS:** The requirements for firefighting water supplies may be modified as approved by the fire code official where any of the following apply: (OFC 507.5.1 Exceptions)
    1. Buildings are equipped throughout with an approved automatic fire sprinkler system (the approval of this alternate method of construction shall be accomplished in accordance with the provisions of ORS 455.610(5)).
    2. There are not more than three Group R-3 or Group U occupancies.

23. **COMMERCIAL BUILDINGS – REQUIRED FIRE FLOW:** The minimum fire flow and flow duration for buildings other than one- and two-family dwellings shall be determined in accordance with residual pressure (OFC Table B105.2). The required fire flow for a building shall not exceed the available GPM in the water delivery system at 20 psi.
    Note: OFC B106, Limiting Fire-Flow is also enforced, except for the following:
    - In areas where the water system is already developed, the maximum needed fire flow shall be either 3,000 GPM or the available flow in the system at 20 psi, whichever is greater.
    - In new developed areas, the maximum needed fire flow shall be 3,000 GPM at 20 psi.
    - Tualatin Valley Fire & Rescue does not adopt Occupancy Hazards Modifiers in section B105.4-B105.4.1

24. **FIRE FLOW WATER AVAILABILITY:** Applicants shall provide documentation of a fire hydrant flow test or flow test modeling of water availability from the local water purveyor if the project includes a new structure or increase in the floor area of an existing structure. Tests shall be conducted from a fire hydrant within 400 feet for commercial projects, or 600 feet for residential development. Flow tests will be accepted if they were performed within 5 years as long as no adverse modifications have been made to the supply system. Water availability information may not be required to be submitted for every project. (OFC Appendix B)

25. **WATER SUPPLY DURING CONSTRUCTION:** Approved firefighting water supplies shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. (OFC 3312.1)

FIRE HYDRANTS:

26. **FIRE HYDRANTS – COMMERCIAL BUILDINGS:** Where a portion of the building is more than 400 feet from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the building, on-site fire hydrants and mains shall be provided. (OFC 507.5.1)
    - This distance may be increased to 600 feet for buildings equipped throughout with an approved automatic sprinkler system.
    - The number and distribution of fire hydrants required for commercial structure(s) is based on Table C105.1, following any fire-flow reductions allowed by section B105.3.1. Additional fire hydrants may be required due to spacing and/or section 507.5 of the Oregon Fire Code.

27. **FIRE HYDRANT NUMBER AND DISTRIBUTION:** The minimum number and distribution of fire hydrants available to a building shall not be less than that listed in Table C 105.1. (OFC Appendix C)

28. **FIRE HYDRANT(S) PLACEMENT:** (OFC C104)
    - Existing hydrants in the area may be used to meet the required number of hydrants as approved. Hydrants that are up to 600 feet away from the nearest point of a subject building that is protected with fire sprinklers may contribute to the required number of hydrants. (OFC 507.5.1)
    - Hydrants that are separated from the subject building by railroad tracks shall not contribute to the required number of hydrants unless approved by the fire code official.
    - Hydrants that are separated from the subject building by divided highways or freeways shall not contribute to the required number of hydrants. Heavily traveled collector streets may be considered when approved by the fire code official.
    - Hydrants that are accessible only by a bridge shall be acceptable to contribute to the required number of hydrants only if approved by the fire code official.

29. **PRIVATE FIRE HYDRANT IDENTIFICATION:** Private fire hydrants shall be painted red in color. Exception: Private fire hydrants within the City of Tualatin shall be yellow in color. (OFC 507)

30. **FIRE HYDRANT DISTANCE FROM AN ACCESS ROAD:** Fire hydrants shall be located not more than 15 feet from an approved fire apparatus access roadway unless approved by the fire code official. (OFC C102.1)

31. **REFLECTIVE HYDRANT MARKERS:** Fire hydrant locations shall be identified by the installation of blue reflective markers. They shall be located adjacent and to the side of the center line of the access roadway that the fire hydrant is located on. In the case that there is no center line, then assume a center line and place the reflectors accordingly. (OFC 507)

32. **PHYSICAL PROTECTION:** Where fire hydrants are subject to impact by a motor vehicle, guard posts, bollards or other approved means of protection shall be provided. (OFC 507.5.6 & OFC 312)

33. **CLEAR SPACE AROUND FIRE HYDRANTS:** A 3 foot clear space shall be provided around the circumference of fire hydrants. (OFC 507.5.5)

34. **FIRE DEPARTMENT CONNECTION (FDC) LOCATIONS:** FDCs shall be located within 100 feet of a fire hydrant (or as approved). Hydrants and FDC's shall be located on the same side of the fire apparatus access roadway or drive aisle, fully visible, and recognizable from the street or nearest point of the fire department vehicle access or as otherwise approved. (OFC 912.2.1 & NFPA 13)
    - Fire department connections (FDCs) shall normally be located remotely and outside of the fall-line of the building when required. FDCs may be mounted on the building they serve, when approved.

- FDCs shall be plumbed on the system side of the check valve when sprinklers are served by underground lines also serving private fire hydrants.

BUILDING ACCESS AND FIRE SERVICE FEATURES

35. **EMERGENCY RESPONDER RADIO COVERAGE:** In new buildings where the design reduces the level of radio coverage for public safety communications systems below minimum performance levels, a distributed antenna system, signal booster, or other method approved by TVF&R and Washington County Consolidated Communications Agency shall be provided. (OSSC 915.1; OFC 510.1)
    a. Emergency responder radio system testing and/or system installation is required for this building. Please contact me (using my contact info below) for further information including an alternate means of compliance that is available. If the alternate method is preferred, it must be requested from TVF&R prior to issuance of building permit.

36. **KNOX BOX:** A Knox Box for building access may be required for structures and gates. See Appendix C for further information and detail on required installations. Order via www.tvfr.com or contact TVF&R for assistance and instructions regarding installation and placement. (OFC 506.1)

37. **UTILITY IDENTIFICATION:** Rooms containing controls to fire suppression and detection equipment shall be identified as "Fire Control Room." Signage shall have letters with a minimum of 4 inches high with a minimum stroke width of 1/2 inch, and be plainly legible, and contrast with its background. (OFC 509.1)

38. **PREMISES IDENTIFICATION:** New and existing buildings shall have approved address numbers; building numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property, including monument signs. These numbers shall contrast with their background. Numbers shall be a minimum of 4 inches high with a minimum stroke width of 1/2 inch. (OFC 505.1)

If you have questions or need further clarification, please feel free to contact me at (503) 649-8577.

Sincerely,

Ty Darby

Ty Darby
Deputy Fire Marshal

Cc: file

WASHINGTON COUNTY, OREGON
Department of Land Use and Transportation, Operations & Maintenance Division
1400 SW Walnut Street, MS 51, Hillsboro, Oregon 97123-5625
(503) 846-7623 · FAX: (503) 846-7620

August 31, 2017

Charles H. Benson III, AICP
City of Tualatin
18880 SW Martinazzi Avenue
Tualatin, OR 97062-7092

RE: **IPT Tualatin**
City File Number: **AR17-0006**
County File Number: 17-915
Tax Map and Lot Number: **2S127BC00200**
Location: **12155 SW Tualatin-Sherwood Road**

Washington County Department of Land Use and Transportation has reviewed this development application and submits the following conditions for the above noted development application.

1. Access to the proposed 157,230 square foot building is proposed via SW Cimino Street, a City street. The subject site has an existing access on SW Tualatin-Sherwood Road which is required to be closed as part of this development approval.

   The applicant shall close the existing access on SW Tualatin-Sherwood Road to County standards.

2. Consistent with statewide pedestrian circulation/linkage goals of the Transportation Planning Rule and the County's R&O 86-95 (road safety requirements), the County normally requires sidewalk installation as a minimum road safety improvement along site frontage of all County-maintained roads. Sidewalks further establish future street profiles, demarcate County or City right-of-way, and address drainage issues. Sidewalk requirements are not generally waived, even when sidewalk is not currently present on neighboring properties. Rather, even non-contiguous sidewalk is considered to provide some measure of pedestrian refuge and ideally, makes possible eventual connection of sidewalks (as surrounding development takes place and is likewise conditioned to

provide sidewalk). Additionally, the Washington County Road Design and Construction Standards require provision of adequate drainage along a site's frontage of a county road.

Adequate sidewalks and drainage (to County minimum standards) exist along the site's frontage of SW Tualatin-Sherwood Road. Any damaged sidewalk or curb along the site's frontage of SW Tualatin-Sherwood Road must be reconstructed to County road standards.

3. The statewide Transportation Planning Rule requires provision for adequate transportation facilities in order for development to occur. Accordingly, the County has classified roads and road segments within the County system based upon their function. The current Transportation Plan (regularly updated) contains adequate right-of-way, road width and lane provision standards based upon each roadway's classification. Subject right of way is considered deficient if half-width of the existing right of way does not meet that determined necessary within the County's current transportation plan.

The applicant is required to dedicate additional right-of-way to provide 51 feet from the centerline of SW Tualatin-Sherwood Road per the current County Transportation System Plan.

Note: *All private signage and improvements are required to be located outside of the dedicated ROW.*

REQUIRED CONDITIONS OF APPROVAL

I. PRIOR TO ISSUANCE OF A BUILDING PERMIT BY THE CITY OF TUALATIN:

A. Submit to **Washington County** Operations Division (503-846-7623):

1. Completed "Right-of-Way Permit" application form for closure of the existing driveway and any damaged sidewalk/curb on the site's frontage of SW Tualatin-Sherwood Road.

B. The following shall be recorded with Washington County (Contact Scott Young at 503.846.7933:

1. Dedication of additional right-of-way to provide **51** feet from centerline of SW Tualatin-Sherwood Road.

Thank you for the opportunity to comment. If you have any questions, please contact me at 503-846-7639.

Naomi Vogel - Associate Planner

Cc: Transportation File

City of Tualatin
www.tualatinoregon.gov

DRAFT, 2017

CITY ENGINEER'S REVIEW FINDING AND DECISION FOR AR17-0006, IPT CIMINO

Contents

I. RECOMMENDATION

Based on the FINDINGS presented, the City Engineer approves the preliminary plans of AR17-0006, IPT Cimino with the following conditions:

A. PRIOR TO ISSUANCE OF EROSION CONTROL, PUBLIC WORKS, AND WATER QUALITY PERMITS

PFR-1 Submit final sanitary sewer plans that show location of the lines, grade, materials, and other details and the public facilities that the new sewer extension will connect to in the SW Cimino Street right-of-way.

PFR-2 Submit final water system plans that show location of the water lines, grade, materials, and other details and the public facilities that the new water extension will connect to in the SW Cimino Street right-of-way with no public fire hydrant on the north side.

PFR-3 Submit final stormwater and water quality plans and associated calculations, including adequate water quality treatment and detention design for onsite facilities and public improvements. Verify that the existing stormline in SW Cimino Street has capacity for the additional runoff associated with this development.

PFR-4 Obtain a NPDES Erosion Control Permit and a City of Tualatin erosion control permit in accordance with code section TMC 3-5-060.

PFR-5 Submit plans that comply with fire protection requirements as determined through the Building Division and Tualatin Valley Fire & Rescue (TVF&R).

PFR-6 Submit plans that are sufficient to obtain a Stormwater Connection Permit Authorization Letter that complies with the submitted Service Provider Letter conditions and obtain an Amended Service Provider Letter as determined by Clean Water Services for any revisions to the proposed plans.

PFR-7 Submit PDFs of final site and permit plans.

B. PRIOR TO ISSUANCE OF BUILDING PERMITS

PFR-9 Obtain Erosion Control, Public Works, and Water Quality Permits.

PFR-10 Obtain a Washington County Facility Permit for any required improvements within the SW Tualatin-Sherwood Road right-of-way.

C. PRIOR TO A CERTIFICATE OF OCCUPANCY

PFR-11 The applicant shall complete all private and public improvements plus record the public utility easement (Is this sufficient for Terrance?).

II. APPEAL

Requests for review of this decision must be received by the Engineering Division within the 14-day appeal period ending on **xx, 2017 at 5 PM**. Issues must have been described with adequate clarity and detail with identification of the associated Tualatin Municipal or Development Code section to afford a decision maker an opportunity to respond to the issue. A request for review must be submitted on the form provided by the City, as detailed in TDC 31.076, and signed by the appellant.

Typed on behalf of the City Engineer, Jeff Fuchs, PE,

Tony Doran, EIT
Engineering Associate

III. STANDARDS AND APPLICABLE CRITERIA

Tualatin Municipal Code (TMC)
Title 03: Utilities and Water Quality
Title 04: Building

Tualatin Development Code (TDC)
Chapter 73: Community Design Standards
Chapter 74: Public Improvement Requirements
Chapter 75: Access Management

The record includes all submitted materials that may be requested for viewing at the Planning Counter.

IV. CONCLUSIONS

A. TMC TITLE 03: UTILITIES AND WATER QUALITY

A. TMC CHAPTER 03-02: SEWER REGULATIONS; RATES

1. TMC 3-2-020 APPLICATION, PERMIT AND INSPECTION PROCEDURE.

(1) No person shall connect to any part of the sanitary sewer system without first making an application and securing a permit from the City for such connection, nor may any person substantially increase the flow, or alter the character of sewage, without first obtaining an additional permit and paying such charges therefore as may be fixed by the City, including such charges as inspection charges, connection charges and monthly service charges.

2. TMC 3-2-030 MATERIALS AND MANNER OF CONSTRUCTION.

(1) All building sewers, side sewers and connections to the main sewer shall be so constructed as to conform to the requirements of the Oregon State Plumbing Laws and rules and regulations and specifications for sewerage construction of the City.

(3) A public works permit must be secured from the City and other agency having jurisdiction by owners or contractors intending to excavate in a public street for the purpose of installing sewers or making sewer connections.

3. TMC 3-2-160 CONSTRUCTION STANDARDS.

All sewer line construction and installation of services and equipment shall be in conformance with the City of Tualatin Public Works Construction Code. In addition, whenever a property owner extends a sewer line, the extension shall be carried to the opposite property line or to such other point as determined by the Public Works Director.

FINDING:
The previous development to the west of this site extended a 10-inch public sanitary sewer to the property line as part of extending SW Cimino Street. The proposed development will also be extending the existing 10-inch diameter sanitary sewer along the entire frontage of SW Cimino Street to the easternmost property line.

Service for the proposed building will be taken via a new lateral connecting to this sewer extension in SW Cimino Street. A manhole is shown in the public line at the point of the lateral for building service.

The applicant will submit sanitary sewer plans that show location of the lines, grade, materials, and other details prior to obtaining a Building Permit.

This criterion is satisfied with conditions of approval PFR-1.

B. TMC CHAPTER 03-03: WATER SERVICE

1. TMC 3-3-040 SEPARATE SERVICES REQUIRED.

(1) Except as authorized by the City Engineer, a separate service and meter to supply regular water service or fire protection service shall be required for each building, residential unit or structure served. For the purposes of this section, trailer parks and multi-family residences of more than four dwelling units shall constitute a single unit unless the City Engineer determines that separate services are required.

2. TMC 3-3-100 CONSTRUCTION STANDARDS.

All water line construction and installation of services and equipment shall be in conformance with the City of Tualatin Public Works Construction Code. In addition, whenever a property owner extends a water line, which upon completion, is intended to be dedicated to the City as part of the public water system, said extension shall be carried to the opposite property line or to such other point as determined by the City Engineer. Water line size shall be determined by the City Engineer in accordance with the City's Development Code or implementing ordinances and the Public Works Construction Code.

3. TMC 3-3-110 BACKFLOW PREVENTION DEVICES AND CROSS CONNECTIONS.

(2) The owner of property to which City water is furnished for human consumption shall install in accordance with City standards an appropriate backflow prevention device on the premises where any of the following circumstances exist:

(4) Except as otherwise provided in this subsection, all irrigation systems shall be installed with a double check valve assembly. Irrigation system backflow prevention device assemblies installed before the effective date of this ordinance, which were approved at the time they were installed but are not on the current list of approved device assemblies maintained by the Oregon State Health Division, shall be permitted to remain in service provided they are properly maintained, are

commensurate with the degree of hazard, are tested at least annually, and perform satisfactorily. When devices of this type are moved, or require more than minimum maintenance, they shall be replaced by device assemblies which are on the Health Division list of approved device assemblies.

4. TMC 3-3-130 CONTROL VALVES.

The customer shall install a suitable valve, as close to the meter location as practical, the operation of which will control the entire water supply from the service. The operation by the customer of the curb stop in the meter box is prohibited.

FINDING:
The previous development to the west of this site extended an 8-inch public water main to the property line as part of extending SW Cimino Street. The proposed development will also be extending the existing 8-inch diameter public water main along the entire frontage of SW Cimino Street to the easternmost property line. Three (3) new public fire hydrants are proposed along SW Cimino Street.

Public fire hydrant spacing in commercial/industrial areas is 250 feet apart. Two hydrants are proposed on opposing sides in the center of the site approximately 50 feet apart. To remain consistent with maintaining hydrants on the developed side of the street, the hydrant on the north side should not be installed. The applicant will submit revised plans that do not show a fire hydrant on the north side of SW Cimino Street.

This project consists of one (1) building. Per the attached site utility plan (see sheet C3.0) - service for the proposed building will be taken via a new water lateral connecting to the new public water main extension in SW Cimino Street. A proposed 8-inch lateral from the main will provide service to building fire supply. An 8-inch double check detector assembly (DCDA) for backflow protection will be provided on this service. An 8-inch fire water line will supply four (4) onsite private fire hydrants. The proposed private fire hydrants provide sufficient building coverage per Fire Department requirements.

Additionally, this development proposes a 2-inch domestic service lateral to the building. The proposed service will connect to the extended main in SW Cimino. A 1.5-inch domestic meter and double check assembly with 2-inch service to building will also be provided. An irrigation stub will be installed behind the domestic water meter.

The double check assemblies for fire and domestic water service are shown to be located behind the right-of-way for inspection and maintenance access.

The applicant will submit water service that show location of the lines, grade, materials, and other details prior to obtaining a Building Permit.

The City needs access to the double checks that include fire vaults. If they are located out of right-of-way, a public easement is needed for the water line from the public water

line to and including the fire vault and include access from right-of-way in case of inspection or maintenance activity.

This criterion is satisfied with conditions of approval PFR-2, -9, and -11.

C. TMC 3-5 ADDITIONAL SURFACE WATER MANAGEMENT STANDARDS

1. TMC 3-5-010 POLICY.

It is the policy of the City to require temporary and permanent measures for all construction projects to lessen the adverse effects of construction on the environment. The contractor shall properly install, operate and maintain both temporary and permanent works as provided in this chapter or in an approved plan, to protect the environment during the term of the project. In addition, these erosion control rules apply to all properties within the City, regardless of whether that property is involved in a construction or development activity. Nothing in this chapter shall relieve any person from the obligation to comply with the regulations or permits of any federal, state, or local authority…

2. TMC 3-5-050 EROSION CONTROL PERMITS

(1) Except as noted in subsection (3) of this section, no person shall cause any change to improved or unimproved real property that causes, will cause, or is likely to cause a temporary or permanent increase in the rate of soil erosion from the site without first obtaining a permit from the City and paying prescribed fees…

3. TMC 3-5-060 PERMIT PROCESS

(1) Applications for an Erosion Control Permit. Application for an Erosion Control Permit shall include an Erosion Control Plan which contains methods and interim facilities to be constructed or used concurrently and to be operated during construction to control erosion. The plan shall include either:
- **(a) A site specific plan outlining the protection techniques to control soil erosion and sediment transport from the site to less than one ton per acre per year as calculated using the Soil Conservation Service Universal Soil Loss Equation or other equivalent method approved by the City Engineer, or**
- **(b) Techniques and methods contained and prescribed in the Soil Erosion Control Matrix and Methods, outlined in TMC 3-5.190 or the Erosion Control Plans - Technical Guidance Handbook, City of Portland and Unified Sewerage Agency, January, 1991.**

(2) Site Plan. A site specific plan, prepared by an Oregon registered professional engineer, shall be required when the site meets any of the following criteria:
(a) greater than five acres;
(b) greater than one acre and has slopes greater than 20 percent;
(c) contains or is within 100 feet of a City-identified wetland or a waterway identified on FEMA floodplain maps; or
(d) greater than one acre and contains highly erodible soils.

FINDING:
Topsoil will be stockpiled during excavation to be used for backfill of landscape areas. Additionally, amendments will be added to the topsoil at that time.

Per the attached grading plan (see Sheet C2.0), the proposed development is designed to provide positive drainage to the storm conveyance system. Planting areas will be graded consistently with the rest of the lots.

All soil, plant, and mulching materials will be contained in landscape areas and surrounded by curbing, and will not cross roadways or walkways. Stormwater on the proposed development's impervious areas will drain directly to new storm inlets (see Site Grading Plan sheet C2.0 & Site Utility Plan sheet C3.0).

As shown on the attached grading plan (see Sheet C2.0), drainage from impervious surfaces will be directed to the proposed storm drain systems. Catch basins have been placed to minimize overland flow in areas of designated walkways.

The site is approximately 8.86 acres. A site specific plan, prepared by the project civil engineer, to control erosion during the construction of the proposed improvements and will be submitted with the permit application. A DEQ 1200-C Erosion and Sedimentation Permit is required.

The Applicant will submit an erosion control plan prior to application for an erosion control permit and obtain a 1200-C permit.

This criterion is satisfied with conditions of approval PFR-4 and -9.

4. TMC 3-5-200 DOWNSTREAM PROTECTION REQUIREMENT

Each new development is responsible for mitigating the impacts of that development upon the public storm water quantity system. The development may satisfy this requirement through the use of any of the following techniques, subject to the limitations and requirements in TMC 3-5-210: Construction of permanent on-site stormwater quantity detention facilities designed in accordance with this title;…

5. TMC 3-5-210 REVIEW OF DOWNSTREAM SYSTEM

For new development other than the construction of a single family house or duplex, plans shall document review by the design engineer of the downstream capacity of any existing storm drainage facilities impacted by the proposed development. That review shall extend downstream to a point where the impacts to the water surface elevation from the development will be insignificant, or to a point where the conveyance system has adequate capacity, as determined by the City Engineer. To determine the point at which the downstream impacts are insignificant or the drainage system has adequate capacity, the design engineer shall submit an analysis using the following guidelines:

(1) evaluate the downstream drainage system for at least ¼ mile;
(2) evaluate the downstream drainage system to a point at which the runoff from the development in a build out condition is less than 10 percent of the total runoff of the basin in its current development status. Developments in the basin that have been approved may be considered in place and their conditions of approval to exist if the work has started on those projects;

(3) evaluate the downstream drainage system throughout the following range of storms: 2, 5, 10, 25 year;

(4) The City Engineer may modify items 1, 2, 3 to require additional information to determine the impacts of the development or to delete the provision of unnecessary information.

6. TMC 3-5-220 CRITERIA FOR REQUIRING ON-SITE DETENTION TO BE CONSTRUCTED

The City shall determine whether the onsite facility shall be constructed. If the onsite facility is constructed, the development shall be eligible for a credit against Storm and Surface Water System Development Charges, as provided in City ordinance. On-site facilities shall be constructed when any of the following conditions exist:

(1) There is an identified downstream deficiency, as defined in TMC 3-5-210, and detention rather than conveyance system enlargement is determined to be the more effective solution…

FINDING:
On-site stormwater quantity control (detention) provided because the City's stormwater master planning requires on-site detention at this location. The proposed system is designed such that the peak post-development run-off rates discharged from the site will not exceed the peak pre-development rates for the 2, 5, 10 and 25-year, 24-hour storm events. Preliminary stormwater calculations are included with the Architectural Review application (see attached Preliminary Stormwater Report).

The development of the site to the west and design of the existing SW Cimino Street took into accommodation approximately 50% of the extension of the road along the

frontage of this development. The existing water quality basin along the north side of SW Cimino Street was sized to provide treatment of this area. Additionally, the onsite design for that development "over-detained" to accommodate for detention of the new impervious area in SW Cimino Street. That development also created the outfall into the natural drainage channel and extended the public storm main in SW Cimino Street to the property corner that abuts this development. This development proposes to provide water quality for the eastern half of the road extension using a LIDA-type vegetated planter between the curb and sidewalk. These planters will provide water quality only for the southern portion of the roadway extension and will overflow to the extended public storm sewer in SW Cimino Street. This development will "over-detain" in the onsite detention system to accommodate the new impervious in the eastern half off the road extension.

No adverse effects on receiving waters in the basin or sub-basin are anticipated per the stormwater calculations included with the Architectural Review application

The applicant will submit final stormwater calculations and plans prior to obtaining a Building Permit.

This criterion is satisfied with conditions of approval PFR-3, -9, and -11.

D. TMC 3-5 PERMANENT ON-SITE WATER QUALITY FACILITIES

1. TMC 3-5-280 PLACEMENT OF WATER QUALITY FACILITIES

Title III specifies that certain properties shall install water quality facilities for the purpose of removing phosphorous. No such water quality facilities shall be constructed within the defined area of existing or created wetlands unless a mitigation action, approved by the City, is constructed to replace the area used for the water quality facility.

FINDING:
The site's existing and proposed water quality facilities are not located in wetlands or associated buffers.

This criterion is satisfied.

2. TMC 3-5-290 PURPOSE OF TITLE

The purpose of this title is to require new development and other activities which create impervious surfaces to construct or fund on-site or off-site permanent water quality facilities to reduce the amount of phosphorous entering the storm and surface water system.

3. TMC 3-5-300 APPLICATION OF TITLE

Title III of this Chapter shall apply to all activities which create new or additional impervious surfaces, except as provided in TMC 3-5.310.

4. TMC 3-5-310 EXCEPTIONS

(1) Those developments with application dates prior to July 1, 1990, are exempt from the requirements of Title III.
The application date shall be defined as the date on which a complete application for development approval is accepted by the City in accordance with City regulations.

(2) Construction of one and two family (duplex) dwellings are exempt from the requirements of Title III.

(3) Sewer lines, water lines, utilities or other land development that will not directly increase the amount of storm water run-off or pollution leaving the site once construction has been completed and the site is either restored to or not altered from its approximate original condition are exempt from the requirements of Title III.

5. TMC 3-5-320 DEFINITIONS

(1) "Stormwater Quality Control Facility" refers to any structure or drainage way that is designed, constructed and maintained to collect and filter, retain, or detain surface water run-off during and after a storm event for the purpose of water quality improvement. It may also include, but is not limited to, existing features such as constructed wetlands, water quality swales, low impact development approaches ("LIDA"), and ponds which are maintained as stormwater quality control facilities.

(2) "Low impact development approaches" or "LIDA: means stormwater facilities constructed utilizing low impact development approaches used to temporarily store, route or filter run-off for the purpose of improving water quality. Examples include; but are not limited to, Porous Pavement, Green Roofs, Infiltration Planters/Rain Gardens, Flow-Through Planters, LIDA Swales, Vegetated Filter Strips, Vegetated Swales, Extended Dry Basins, Constructed Water Quality Wetland, Conveyance and Stormwater Art, and Planting Design and Habitats.

(3) "Water Quality Swale" means a vegetated natural depression, wide shallow ditch, or constructed facility used to temporarily store, route or filter run-off for the purpose of improving water quality.

(4) "Existing Wetlands" means those areas identified and delineated as set forth in the Federal Manual for Identifying the Delineating Jurisdictional Wetlands, January, 1989, or as amended, by a qualified wetlands specialist.

(5) "Created Wetlands" means those wetlands developed in an area previously identified as a non-wetland to replace, or mitigate wetland destruction or displacement.

(6) "Constructed Wetlands" means those wetlands developed as a water quality or quantity facility, subject to change and maintenance as such. These areas must be clearly defined and/or separated from existing or created wetlands. This separation shall preclude a free and open connection to such other wetlands.

6. TMC 3-5-330 PERMIT REQUIRED

Except as provided in TMC 3-5-310, no person shall cause any change to improved or unimproved real property that will, or is likely to, increase the rate or quantity of run-off or pollution from the site without first obtaining a permit from the City and following the conditions of the permit.

7. TMC 3-5-340 FACILITIES REQUIRED

For new development, subject to the exemptions of TMC 3-5-310, no permit for construction, or land development, or plat or site plan shall be approved unless the conditions of the plat, plan or permit approval require permanent stormwater quality control facilities in accordance with this Title III.

8. TMC 3-5-345 INSPECTION REPORTS

The property owner or person in control of the property shall submit inspection reports annually to the City for the purpose of ensuring maintenance activities occur according to the operation and maintenance plan submitted for an approved permit or architectural review.

9. TMC 3-5-350 PHOSPHOROUS REMOVAL STANDARD

The stormwater quality control facilities shall be designed to remove 65 percent of the phosphorous from the runoff from 100 percent of the newly constructed impervious surfaces. Impervious surfaces shall include pavement, buildings, public and private roadways, and all other surfaces with similar runoff characteristics.

10. TMC 3-5-360 DESIGN STORM

The stormwater quality control facilities shall be designed to meet the removal efficiency of TMC 3-5-350 for a mean summertime storm event totaling 0.36 inches of precipitation falling in four hours with an average return period of 96 hours.

11. TMC 3-5-370 DESIGN REQUIREMENTS

The removal efficiency in TDC Chapter 35 specifies only the design requirements and are not intended as a basis for performance evaluation or compliance determination of the stormwater quality control facility installed or constructed pursuant to this Title III.

12. TMC 3-5-330 PERMIT REQUIRED

Except as provided in TMC 3-5-310, no person shall cause any change to improved or unimproved real property that will, or is likely to, increase the rate or quantity of run-off or pollution from the site without first obtaining a permit from the City and following the conditions of the permit.

13. TMC 3-5-340 FACILITIES REQUIRED

For new development, subject to the exemptions of TMC 3-5-310, no permit for construction, or land development, or plat or site plan shall be approved unless the conditions of the plat, plan or permit approval require permanent stormwater quality control facilities in accordance with this Title III.

14. TMC 3-5-390 FACILITY PERMIT APPROVAL

A stormwater quality control facility permit shall be approved only if the following are met:

(1) The plat, site plan, or permit application includes plans and a certification prepared by an Oregon registered, professional engineer that the proposed stormwater quality control facilities have been designed in accordance with criteria expected to achieve removal efficiencies for total phosphorous required by this Title III. Clean Water Services Design and Construction Standards shall be used in preparing the plan for the water quality facility; and

(2) The plat, site plan, or permit application shall be consistent with the areas used to determine the removal required in TMC 3-5-350; and

(3) A financial assurance, or equivalent security acceptable to the City, is provided by the applicant which assures that the stormwater quality control

facilities are constructed according to the plans established in the plat, site plan, or permit approval. The financial assurance may be combined with our financial assurance requirements imposed by the City; and

(4) A stormwater facility agreement identifies who will be responsible for assuring the long term compliance with the operation and maintenance plan.

FINDING:
The previous development to the west of this site extended an 18-inch public storm sewer to the property line as part of extending SW Cimino Street.

The proposed development will also be extending the public storm sewer along the entire frontage of SW Cimino Street to the easternmost property line.

The plans show stormwater from the site captured and conveyed to a water quality treatment and detention facilities prior to release to the public system in SW Cimino Street. Stormwater Quality treatment will be provided using filtered catch basins and vaults. Stormwater Quantity Control will be provided using and underground chamber system and an outflow control structure. This system will discharge to the sewer extension in SW Cimino Street.

Detention quantities were determined based on the Clean Water Services (CWS) Design and Construction Standards for Sanitary Sewer and Surface Water Management, and the preliminary stormwater calculations that are included with the Architectural Review application.

The catch basins and stormwater quality and stormwater quantity control (detention) facilities have been designed to remove 65% of the phosphorous from impervious area runoff during a mean summertime storm event totaling 0.36 inches of precipitation falling within four hours with an average return period of 96 hours per the preliminary stormwater calculations that are included with the Architectural Review application.

Per the attached plans (see Sheet C1.1), 322,412 SF of impervious are is proposed. This is the quantity also used in the preliminary stormwater calculations that are included with the Architectural Review application.

The development of the site to the west and design of the existing SW Cimino Street took into accommodation approximately 50% of the extension of the road along the frontage of this development. The existing water quality basin along the north side of SW Cimino Street was sized to provide treatment of this area. Additionally, the onsite design for that development “over-detained” to accommodate for detention of the new impervious area in SW Cimino Street. That development also created the outfall into the natural drainage channel and extended the public storm main in SW Cimino to the property corner that abuts this development. This development proposes to provide water quality for the eastern half of the road extension using a LIDA-type vegetated planter between the curb and sidewalk. These planters will provide water quality only for the southern portion of the roadway extension and will overflow to the extended public storm sewer in SW Cimino Street. This development will “over-detain” in the

onsite detention system to accommodate the new impervious in the eastern half off the road extension.

The applicant will submit final stormwater calculations and plans prior to obtaining a Building Permit.

This criterion is satisfied with conditions of approval PFR-3, -9, and -11.

C. TMC 4-1-030 GRADING

A person seeking a grading permit must submit a soil report with the permit application. The soils report submitted must be signed and sealed by an Oregon-certified soils engineer and comply with Appendix J of the Oregon Structural Specialty Code, 2014 edition. No grading activities may occur unless and until a person receives a grading permit and complies with this section.

FINDING:
Topsoil will be stockpiled during excavation to be used for backfill of landscape areas. Additionally, amendments will be added to the topsoil at that time.

Per the attached grading plan (see Sheet C2.0), the proposed development is designed to provide positive drainage to the storm conveyance system. Planting areas will be graded consistently with the rest of the lots.

All soil, plant, and mulching materials will be contained in landscape areas and surrounded by curbing, and will not cross roadways or walkways. Stormwater on the proposed development's impervious areas will drain directly to new storm inlets (see Site Grading Plan sheet C2.0 & Site Utility Plan sheet C3.0).

As shown on the attached grading plan (see Sheet C2.0), drainage from impervious surfaces will be directed to the proposed storm drain systems. Catch basins have been placed to minimize overland flow in areas of designated walkways.

The site is approximately 8.86 acres. A site specific plan, prepared by the project civil engineer, to control erosion during the construction of the proposed improvements and will be submitted with the permit application. A DEQ 1200-C Erosion and Sedimentation Permit is required.

The Applicant will submit an erosion control plan prior to application for an erosion control permit and obtain a 1200-C permit.

This criterion is satisfied with conditions of approval PFR-4, -9, and -11.

C. TMC 4-2.010 FIRE AND LIFE SAFETY

(1) Every application for a building permit and accompanying plans shall be submitted to the Building Division for review of water used for fire protection, the

approximate location and size of hydrants to be connected, and the provisions for access and egress for firefighting equipment. If upon such review it is determined that the fire protection facilities are not required or that they are adequately provided for in the plans, the Fire and Life Safety Reviewer shall recommend approval to the City Building Official.

FINDING:
There is one existing public fire hydrant near the site located on SW Cimino Street, approximately 56-feet west of the northwest property corner. As part of the SW Cimino Street improvements, three (3) additional public hydrants are proposed. Two will be approximately at the middle of the lot on either side of SW Cimino Street. The third will be on the south side of SW Cimino Street, approximately 20-feet west of the northeastern property corner.

Public fire hydrant spacing in commercial/industrial areas is 250 feet apart. Two hydrants are proposed on opposing sides in the center of the site approximately 50 feet apart. To remain consistent with maintaining hydrants on the developed side of the street, the hydrant on the north side should not be installed. The applicant will submit revised plans that do not show a fire hydrant on the north side of SW Cimino Street.

Four (4) private fire hydrants are proposed on-site. The private fire hydrants are located in the landscape islands at the four corners of the proposed building. Service to the building sprinkler system will be via the water extension in SW Cimino Street and lateral for onsite service. A 24-ft wide fire department access lane is provided around the proposed building.

The applicant will submit plans that comply with fire protection requirements as determined through the Building Division and Tualatin Valley Fire & Rescue (TVF&R).

This criterion is satisfied with conditions of approval PFR-5, -9 and -11.

D. TDC CHAPTER 73: COMMUNITY DESIGN STANDARDS

1. TDC SECTION 73.270 GRADING

(1) After completion of site grading, top-soil is to be restored to exposed cut and fill areas to provide a suitable base for seeding and planting.

(2) All planting areas shall be graded to provide positive drainage.

(3) Neither soil, water, plant materials nor mulching materials shall be allowed to wash across roadways or walkways.

(4) Impervious surface drainage shall be directed away from pedestrian walkways, dwelling units, buildings, outdoor private and shared areas and landscape areas except where the landscape area is a water quality facility.

FINDINGS:
Topsoil will be stockpiled during excavation to be used for backfill of landscape areas. Additionally, amendments will be added to the topsoil at that time.

Per the attached grading plan (see Sheet C2.0), the proposed development is designed to provide positive drainage to the storm conveyance system. Planting areas will be graded consistently with the rest of the lots.

All soil, plant, and mulching materials will be contained in landscape areas and surrounded by curbing, and will not cross roadways or walkways. Stormwater on the proposed development's impervious areas will drain directly to new storm inlets (see Site Grading Plan sheet C2.0 & Site Utility Plan sheet C3.0).

As shown on the attached grading plan (see Sheet C2.0), drainage from impervious surfaces will be directed to the proposed storm drain systems. Catch basins have been placed to minimize overland flow in areas of designated walkways.

This criterion is satisfied with conditions of approval PFR-4, -9, and -11.

2. TDC SECTION 73.400 ACCESS

(2) Owners of two or more uses, structures, or parcels of land may agree to utilize jointly the same ingress and egress when the combined ingress and egress of both uses, structures, or parcels of land satisfies their combined requirements as designated in this code; provided that satisfactory legal evidence is presented to the City Attorney in the form of deeds, easements, leases or contracts to establish joint use. Copies of said deeds, easements, leases or contracts shall be placed on permanent file with the City Recorder.

(3) Joint and Cross Access.
(b) A system of joint use driveways and cross access easements may be required and may incorporate the following:
(i) a continuous service drive or cross access corridor extending the entire length of each block served to provide for driveway separation consistent with the access management classification system and standards.
(ii) a design speed of 10 mph and a maximum width of 24 feet to accommodate two-way travel aisles designated to accommodate automobiles, service vehicles, and loading vehicles;
(iii) stub-outs and other design features to make it visually obvious that the abutting properties may be tied in to provide cross access via a service drive;
(iv) a unified access and circulation system plan for coordinated or shared parking areas.
(c) Pursuant to this section, property owners may be required to:

(i) Record an easement with the deed allowing cross access to and from other properties served by the joint use driveways and cross access or service drive;
(ii) Record an agreement with the deed that remaining access rights along the roadway will be dedicated to the city and pre-existing driveways will be closed and eliminated after construction of the joint-use driveway;
(iii) Record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners;

(5) Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Engineer.

(6) Except as provided in TDC 53.100, all ingress and egress shall connect directly with public streets.

(8) To afford safe pedestrian access and egress for properties within the City, a sidewalk shall be constructed along all street frontage, prior to use or occupancy of the building or structure proposed for said property. The sidewalks required by this section shall be constructed to City standards, except in the case of streets with inadequate right-of-way width or where the final street design and grade have not been established, in which case the sidewalks shall be constructed to a design and in a manner approved by the City Engineer. Sidewalks approved by the City Engineer may include temporary sidewalks and sidewalks constructed on private property; provided, however, that such sidewalks shall provide continuity with sidewalks of adjoining commercial developments existing or proposed. When a sidewalk is to adjoin a future street improvement, the sidewalk construction shall include construction of the curb and gutter section to grades and alignment established by the City Engineer.

(9) The standards set forth in this Code are minimum standards for access and egress, and may be increased through the Architectural Review process in any particular instance where the standards provided herein are deemed insufficient to protect the public health, safety, and general welfare.

(10) Minimum access requirements for residential uses:
(a) Ingress and egress for single-family residential uses, including townhouses, shall be paved to a minimum width of 10 feet. Maximum driveway widths shall not exceed 26 feet for one and two car garages, and 37 feet for three or more car garages. For the purposes of this section, driveway widths shall be measured at the property line….

(11) Minimum Access Requirements for Commercial, Public and Semi-Public Uses.

…In all other cases, ingress and egress for commercial uses shall not be less than the following:

Required Parking Spaces	Minimum Number Required	Minimum Pavement Width	Minimum Pavement Walkways, Etc.
1-99	1	32 feet for first 50 feet from ROW, 24' thereafter	Curbs required; walkway 1 side only
100-249	2	32 feet for first 50 feet from ROW, 24' thereafter	Curbs required; walkway 1 side only
Over 250	As required by City Engineer	As required by City Engineer	As required by City Engineer

(12) Minimum Access Requirements for Industrial Uses. Ingress and egress for industrial uses shall not be less than the following:

Required Parking Spaces	Minimum Number Required	Minimum Pavement Width	Minimum Pavement Walkways, Etc.
1-250	1	36 feet for first 50' from ROW, 24' thereafter	No curbs or walkway required
Over 250	As required by City Engineer	As required by City Engineer	As required by City Engineer

(13) One-way Ingress or Egress.

When approved through the Architectural Review process, one-way ingress or egress may be used to satisfy the requirements of Subsections (7), (8), and (9). However, the hard surfaced pavement of one-way drives shall not be less than 16 feet for multi-family residential, commercial, or industrial uses.

(14) Maximum Driveway Widths and Other Requirements.

(a) Unless otherwise provided in this chapter, maximum driveway widths shall not exceed 40 feet.

(b) Except for townhouse lots, no driveways shall be constructed within 5 feet of an adjacent property line, except when two adjacent property owners elect to provide joint access to their respective properties, as provided by Subsection (2).

(c) There shall be a minimum distance of 40 feet between any two adjacent driveways on a single property unless a lesser distance is approved by the City Engineer.

(15) Distance between Driveways and Intersections.

Except for single-family dwellings, the minimum distance between driveways and intersections shall be as provided below. Distances listed shall be measured from the stop bar at the intersection.

(a) At the intersection of collector or arterial streets, driveways shall be located a minimum of 150 feet from the intersection.

(b) At the intersection of two local streets, driveways shall be located a minimum of 30 feet from the intersection.

(c) If the subject property is not of sufficient width to allow for the separation between driveway and intersection as provided, the driveway shall be constructed as far from the intersection as possible, while still maintaining the 5-foot setback between the driveway and property line as required by TDC 73.400(14)(b).

(d) When considering a public facilities plan that has been submitted as part of an Architectural Review plan in accordance with TDC 31.071(6), the City Engineer may approve the location of a driveway closer than 150 feet from the intersection of collector or arterial streets, based on written FINDING of fact in support of the decision. The written approval shall be incorporated into the decision of the City Engineer for the utility facilities portion of the Architectural Review plan under the process set forth in TDC 31.071 through 31.077.

FINDINGS:

Provision of vehicular and pedestrian ingress and egress is located at the northeast corner of the site and depicted on the attached plans (see Sheets C1.0 & C1.1), as consistent with the applicable TDC sections per the analysis provided in this narrative. Any future changes in use will meet applicable City standards.

The proposed development will share the existing driveway along SW Cimino Street at the northwest corner of the site with the adjacent property. There is an existing "reciprocal access easement" (see Topo Survey) allowing this shared driveway between the two lots.

The site abuts right-of-ways on the north and south sides.

Per the attached plans, along the north side - the building will have access to SW Cimino Street, a local connector street as designated by the City's Transportation System Plan. Access on a street with a lower functional classification is not possible given site constraints. There are also no future local streets designated by the TSP that abut the site.

Along the south side – the property abuts Tualatin-Sherwood Highway. Vehicular access is not desired as Tualatin-Sherwood Highway has a higher classification (major

arterial, truck route) than SW Cimino Street. An existing driveway to this site along Tualatin-Sherwood Highway is proposed to be removed as part of this development.

The number of parking spaces proposed (159). This is less than 250 spaces.

The project proposed one new primary use driveway at the northeast corner of the site (40-ft wide). This development will also utilize the existing shared 40-ft wide driveway access at the northwest corner of the site.

Per the attached plans, the proposed driveway at the northeast property corner is more than 500' from the existing shared driveway at the northwest property corner.

The site is not within the vicinity of local streets.

The driveways on the site meet the driveway width plus onsite and intersection separation standards.

This criterion is satisfied.

E. TDC CHAPTER 74: PUBLIC IMPROVEMENT REQUIREMENTS

1. SECTION 74.110 PHASING OF IMPROVEMENTS

The applicant may build the development in phases. If the development is to be phased the applicant shall submit a phasing plan to the City Engineer for approval with the development application. The timing and extent or scope of public improvements and the conditions of development shall be determined by the City Council on subdivision applications and by the City Engineer on other development applications.

2. TDC SECTION 74.120 PUBLIC IMPROVEMENTS

(1) Except as specially provided, all public improvements shall be installed at the expense of the applicant. All public improvements installed by the applicant shall be constructed and guaranteed as to workmanship and material as required by the Public Works Construction Code prior to acceptance by the City. No work shall be undertaken on any public improvement until after the construction plans have been approved by the City Engineer and a Public Works Permit issued and the required fees paid.

FINDINGS:
SW Cimino Street is designated as a local connector road and has been 3/4 constructed to the City's Public Works standards – terminating at the northwestern property corner. The proposed development will match the extent of SW Cimino Street improvements, extending them along the northern property frontage, terminating at the northeastern property corner. Plans for the SW Cimino Street public improvements will be submitted for permit review.

No work will be undertaken until plans have been approved by the City Engineer, a Public Works Permit issued, and required fees paid, and all public improvements will be guaranteed as to workmanship and material per the Public Works Construction Code.

This criterion is satisfied with conditions of approval PFR-8, -9, -10 and -11.

3. TDC SECTION 74.140 CONSTRUCTION TIMING

(1) All the public improvements required under this chapter shall be completed and accepted by the City prior to the issuance of a Certificate of Occupancy; or, for subdivision and partition applications, in accordance with the requirements of the Subdivision regulations.

(2) All private improvements required under this chapter shall be approved by the City prior to the issuance of a Certificate of Occupancy; or for subdivision and partition applications, in accordance with the requirements of the Subdivision regulations.

FINDINGS:
It is noted that all required public improvements are to be completed and accepted by the City prior to Certificate of Occupancy issuance.

No work shall be undertaken on any public improvement until after approval has been granted and fees are paid. Prior to occupancy, all private and public improvements required under this chapter will be completed and accepted.

This criterion is satisfied with conditions of approval PFR-8, -9, and -10.

3. TDC SECTION 74.210 MINIMUM STREET RIGHT-OF-WAY WIDTHS

The width of streets in feet shall not be less than the width required to accommodate a street improvement needed to mitigate the impact of a proposed development. In cases where a street is required to be improved according to the standards of the TDC, the width of the right-of-way shall not be less than the minimums indicated in TDC Chapter 74, Public Improvement Requirements, Figures 74-2A through 74-2G.

(2) For development applications other than subdivisions and partitions, wherever existing or future streets adjacent to property proposed for development are of inadequate right-of-way width, the additional right-of-way necessary to comply with TDC Chapter 74, Public Improvement Requirements, Figures 74-2A through 74-2G of the Tualatin Community Plan shall be dedicated to the City for use by the public prior to issuance of any building permit for the proposed development. This right-of-way dedication shall be for the full width of the property abutting the roadway and, if required by the City

Engineer, additional dedications shall be provided for slope and utility easements if deemed necessary.

(3) For development applications that will impact existing streets not adjacent to the applicant's property, and to construct necessary street improvements to mitigate those impacts would require additional right-of-way, the applicant shall be responsible for obtaining the necessary right-of-way from the property owner. A right-of-way dedication deed form shall be obtained from the City Engineer and upon completion returned to the City Engineer for acceptance by the City. On subdivision and partition plats the right-of-way dedication shall be accepted by the City prior to acceptance of the final plat by the City. On other development applications the right-of-way dedication shall be accepted by the City prior to issuance of building permits. The City may elect to exercise eminent domain and condemn necessary off-site right-of-way at the applicant's request and expense. The City Council shall determine when condemnation proceedings are to be used.

(4) If the City Engineer deems that it is impractical to acquire the additional right-of-way as required in subsections (1)-(3) of this section from both sides of the center-line in equal amounts, the City Engineer may require that the right-of-way be dedicated in a manner that would result in unequal dedication from each side of the road. This requirement will also apply to slope and utility easements as discussed in TDC 74.320 and 74.330. The City Engineer's recommendation shall be presented to the City Council in the preliminary plat approval for subdivisions and partitions, and in the recommended decision on all other development applications, prior to finalization of the right-of-way dedication requirements.

(6) When a proposed development is adjacent to or bisected by a street proposed in TDC Chapter 11, Transportation Plan (Figure 11-3) and no street right-of-way exists at the time the development is proposed, the entire right-of-way as shown in TDC Chapter 74, Public Improvement Requirements, Figures 74-2A through 74-2G shall be dedicated by the applicant. The dedication of right-of-way required in this subsection shall be along the route of the road as determined by the City.

FINDINGS:
SW Cimino Street Avenue is designated as a Connector and has been 3/4 constructed to the City's Public Works standards – terminating at the northwestern property corner. The proposed development will match the extent of SW Cimino Street improvements, extending them along the northern property frontage, terminating at the northeastern property corner. When the property to the north of the proposed SW Cimino extension is developed, a full 60-ft right-of-way will be provided. Plans for the SW Cimino Street public improvements will be submitted for permit review.

No work will be undertaken until plans have been approved by the City Engineer, a Public Works Permit issued, and required fees paid, and all public improvements will be guaranteed as to workmanship and material per the Public Works Construction Code.

This criterion is satisfied.

4. SECTION 74.330 UTILITY EASEMENTS.

(1) Utility easements for water, sanitary sewer and storm drainage facilities, telephone, television cable, gas, electric lines and other public utilities shall be granted to the City.

(2) For subdivision and partition applications, the on-site public utility easement dedication area shall be shown to be dedicated to the City on the final subdivision or partition plat prior to approval of the plat by the City; and

(3) For subdivision and partition applications which require off-site public utility easements to serve the proposed development, a utility easement shall be granted to the City prior to approval of the final plat by the City. The City may elect to exercise eminent domain and condemn necessary off-site public utility easements at the applicant's request and expense. The City Council shall determine when condemnation proceedings are to be used.

(4) For development applications other than subdivisions and partitions, and for both on-site and off-site easement areas, a utility easement shall be granted to the City; building permits shall not be issued for the development prior to acceptance of the easement by the City. The City may elect to exercise eminent domain and condemn necessary off-site public utility easements at the applicant's request and expense. The City Council shall determine when condemnation proceedings are to be used.

(5) The width of the public utility easement shall meet the requirements of the Public Works Construction Code. All subdivisions and partitions shall have a 6-foot public utility easement adjacent to the street and a 5-foot public utility easement adjacent to all side and rear lot lines.

FINDINGS:
Utility easements for water, sanitary sewer and storm drainage facilities, telephone, television cable, gas, electrical lines and other public utilities will be granted to the City as needed. An 8-foot wide public utility easement is proposed behind the right-of-way along the SW Cimino Street frontage.

This criterion is satisfied with conditions of approval PFR-2 and -11.

5. SECTION 74.410 FUTURE STREET EXTENSIONS.

(1) Streets shall be extended to the proposed development site boundary where necessary to:
(a) give access to, or permit future development of adjoining land;
(b) provide additional access for emergency vehicles;

(c) provide for additional direct and convenient pedestrian, bicycle and vehicle circulation;
(d) eliminate the use of cul-de-sacs except where topography, barriers such as railroads or freeways, existing development, or environmental constraints such as major streams and rivers prevent street extension.
(e) eliminate circuitous routes. The resulting dead end streets may be approved without a turnaround. A reserve strip may be required to preserve the objectives of future street extensions.

(2) Proposed streets shall comply with the general location, orientation and spacing identified in the Functional Classification Plan (Figure 11-1), Local Streets Plan (TDC 11.630 and Figure 11-3) and the Street Design Standards (Figures 74-2A through 74-2G).
(a) Streets and major driveways, as defined in TDC 31.060, proposed as part of new residential or mixed residential/commercial developments shall comply with the following standards:
(i) full street connections with spacing of no more than 530 feet between connections, except where prevented by barriers;
(ii) bicycle and pedestrian accessway easements where full street connections are not possible, with spacing of no more than 330 feet, except where prevented by barriers;
(iii) limiting cul-de-sacs and other closed-end street systems to situations where barriers prevent full street extensions; and
(iv) allowing cul-de-sacs and closed-end streets to be no longer than 200 feet or with more than 25 dwelling units, except for streets stubbed to future developable areas.
(b) Streets proposed as part of new industrial or commercial development shall comply with TDC 11.630, Figure 11-1, and Figures 74-2A through 74-2G.

(3) During the development application process, the location, width, and grade of streets shall be considered in relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to the proposed use of the land to be served by the streets. The arrangement of streets in a subdivision shall either:
(a) provide for the continuation or appropriate projection of existing streets into surrounding areas; or
(b) conform to a street plan approved or adopted by the City to meet a particular situation where topographical or other conditions make continuance of or conformance to existing streets impractical.

(4) The City Engineer may require the applicant to submit a street plan showing all existing, proposed, and future streets in the area of the proposed development.

(5) The City Engineer may require the applicant to participate in the funding of future off-site street extensions when the traffic impacts of the applicant's development warrant such a condition.

FINDINGS:
The existing SW Cimino Street has been 3/4 constructed to the City's Public Works standards; provides for direct and convenient, pedestrian, bicycle, and vehicle circulation; and extends to the northwest corner of the site.

SW Cimino Street Avenue is designated as a Connector and has been 3/4 constructed to the City's Public Works standards – terminating at the northwestern property corner. The proposed development will match the extent of SW Cimino Street improvements, extending them along the northern property frontage, terminating at the northeastern property corner. When the property to the north of the proposed SW Cimino extension is developed, a full 60-ft right-of-way will be provided. Plans for the SW Cimino Street public improvements will be submitted for permit review.

Additionally, pedestrian access to the sidewalk on SW Tualatin-Sherwood Road is proposed with this development.

The proposed public improvements comply with the required standards and regional plans.

This criterion is satisfied.

6. TDC SECTION 74.420 STREET IMPROVEMENTS

When an applicant proposes to develop land adjacent to an existing or proposed street, including land which has been excluded under TDC 74.220, the applicant should be responsible for the improvements to the adjacent existing or proposed street that will bring the improvement of the street into conformance with the Transportation Plan (TDC Chapter 11), TDC 74.425 (Street Design Standards), and the City's Public Works Construction Code, subject to the following provisions:

(1) For any development proposed within the City, roadway facilities within the right-of-way described in TDC 74.210 shall be improved to standards as set out in the Public Works Construction Code.

(2) The required improvements may include the rebuilding or the reconstruction of any existing facilities located within the right-of-way adjacent to the proposed development to bring the facilities into compliance with the Public Works Construction Code.

(3) The required improvements may include the construction or rebuilding of off-site improvements which are identified to mitigate the impact of the development.

(4) Where development abuts an existing street, the improvement required shall apply only to that portion of the street right-of-way located between the property line of the parcel proposed for development and the centerline of the

right-of-way, plus any additional pavement beyond the centerline deemed necessary by the City Engineer to ensure a smooth transition between a new improvement and the existing roadway (half-street improvement). Additional right-of-way and street improvements and off-site right-of-way and street improvements may be required by the City to mitigate the impact of the development. The new pavement shall connect to the existing pavement at the ends of the section being improved by tapering in accordance with the Public Works Construction Code.

(5) If additional improvements are required as part of the Access Management Plan of the City, TDC Chapter 75, the improvements shall be required in the same manner as the half-street improvement requirements.

(6) All required street improvements shall include curbs, sidewalks with appropriate buffering, storm drainage, street lights, street signs, street trees, and, where designated, bikeways and transit facilities.

(7) For subdivision and partition applications, the street improvements required by TDC Chapter 74 shall be completed and accepted by the City prior to signing the final subdivision or partition plat, or prior to releasing the security pro-vided by the applicant to assure completion of such improvements or as otherwise specified in the development application approval.

(10) Streets within, or partially within, a proposed development site shall be graded for the entire right-of-way width and constructed and surfaced in accordance with the Public Works Construction Code.

(11) Existing streets which abut the pro-posed development site shall be graded, constructed, reconstructed, surfaced or repaired as necessary in accordance with the Public Works Construction Code and TDC Chapter 11, Transportation Plan, and TDC 74.425 (Street Design Standards).

(12) Sidewalks with appropriate buffering shall be constructed along both sides of each internal street and at a minimum along the development side of each external street in accordance with the Public Works Construction Code.

(13) The applicant shall comply with the requirements of the Oregon Department of Transportation (ODOT), Tri-Met, Washington County and Clackamas County when a proposed development site is adjacent to a roadway under any of their jurisdictions, in addition to the requirements of this chapter.

(14) The applicant shall construct any required street improvements adjacent to parcels excluded from development, as set forth in TDC 74.220 of this chapter.

(15) Except as provided in TDC 74.430, whenever an applicant proposes to develop land with frontage on certain arterial streets and, due to the access management provisions of TDC Chapter 75, is not allowed direct access onto the arterial, but instead must take access from another existing or future

public street thereby providing an alternate to direct arterial access, the applicant shall be required to construct and place at a minimum street signage, a sidewalk, street trees and street lights along that portion of the arterial street adjacent to the applicant's property. The three certain arterial streets are S.W. Tualatin-Sherwood Road, S.W. Pacific Highway (99W) and S.W. 124th Avenue. In addition, the applicant may be required to construct and place on the arterial at the intersection of the arterial and an existing or future public non-arterial street warranted traffic control devices (in accordance with the Manual on Uniform Traffic Control Devices, latest edition), pavement markings, street tapers and turning lanes, in accordance with the Public Works Construction Code.

(16) The City Engineer may determine that, although concurrent construction and placement of the improvements in (14) and (15) of this section, either individually or collectively, are impractical at the time of development, the improvements will be necessary at some future date. In such a case, the applicant shall sign a written agreement guaranteeing future performance by the applicant and any successors in interest of the property being developed. The agreement shall be subject to the City's approval.

(17) Intersections should be improved to operate at a level of service of at least D and E for signalized and unsignalized intersections, respectively.

(18) Pursuant to requirements for off-site improvements as conditions of development approval in TDC 73.055(2)(e) and TDC 36.160(8), proposed multi-family residential, commercial, or institutional uses that are adjacent to a major transit stop will be required to comply with the City's Mid-Block Crossing Policy.

7. TDC SECTION 74.425 STREET DESIGN STANDARDS

(1) Street design standards are based on the functional and operational characteristics of streets such as travel volume, capacity, operating speed, and safety. They are necessary to ensure that the system of streets, as it develops, will be capable of safely and efficiently serving the traveling public while also accommodating the orderly development of adjacent lands.

(2) The proposed street design standards are shown in Figures 72A through 72G. The typical roadway cross sections comprise the following elements: right-of-way, number of travel lanes, bicycle and pedestrian facilities, and other amenities such as landscape strips. These figures are intended for planning purposes for new road construction, as well as for those locations where it is physically and economically feasible to improve existing streets

(3) In accordance with the Tualatin Basin Program for fish and wildlife habitat it is the intent of Figures 74-2A through 74-2G to allow for modifications to the

standards when deemed appropriate by the City Engineer to address fish and wildlife habitat.

(4) All streets shall be designed and constructed according to the preferred standard. The City Engineer may reduce the requirements of the preferred standard based on specific site conditions, but in no event will the requirement be less than the minimum standard. The City Engineer shall take into consideration the following factors when deciding whether the site conditions warrant a reduction of the preferred standard:

(a) Arterials:

(i) Whether adequate right-of-way exists

(ii) Impacts to properties adjacent to right-of-way

(iii) Current and future vehicle traffic at the location

(iv) Amount of heavy vehicles (buses and trucks).

(b) Collectors:

(i) Whether adequate right-of-way exists

(ii) Impacts to properties adjacent to right-of-way

(iii) Amount of heavy vehicles (buses and trucks)

(iv) Proximity to property zoned manufacturing or industrial.

(c) Local Streets:

(i) Local streets proposed within areas which have environmental constraints and/or sensitive areas and will not have direct residential access may utilize the minimum design standard. When the minimum design standard is allowed, the City Engineer may determine that no parking signs are required on one or both sides of the street.

8. <u>TDC SECTION 74.430 STREETS, MODIFICATIONS OF REQUIREMENTS IN CASES OF UNUSUAL CONDITIONS</u>

(1) When, in the opinion of the City Engineer, the construction of street improvements in accordance with TDC 74.420 would result in the creation of a hazard, or would be impractical, or would be detrimental to the City, the City Engineer may modify the scope of the required improvement to eliminate such hazardous, impractical, or detrimental results. Examples of conditions requiring modifications to improvement requirements include but are not limited to horizontal alignment, vertical alignment, significant stands of trees, fish and wildlife habitat areas, the amount of traffic generated by the proposed development, timing of the development or other conditions creating hazards for pedestrian, bicycle or motor vehicle traffic. The City Engineer may determine that, although an improvement may be impractical at the time of development, it will be necessary at some future date. In such cases, a written agreement guaranteeing future performance by the applicant in installing the required improvements must be signed by the applicant and approved by the City.

9. <u>TDC SECTION 74.440 STREETS, TRAFFIC STUDY REQUIRED</u>

(1) The City Engineer may require a traffic study to be provided by the applicant and furnished to the City as part of the development approval process as provided by this Code, when the City Engineer determines that such a study is necessary in connection with a proposed development project in order to:
(a) Assure that the existing or proposed transportation facilities in the vicinity of the proposed development are capable of accommodating the amount of traffic that is expected to be generated by the proposed development, and/or
(b) Assure that the internal traffic circulation of the proposed development will not result in conflicts between on-site parking movements and/or on-site loading movements and/or on-site traffic movements, or impact traffic on the adjacent streets.

(2) The required traffic study shall be completed prior to the approval of the development application.

(3) The traffic study shall include, at a minimum:
(a) an analysis of the existing situation, including the level of service on adjacent and impacted facilities.
(b) an analysis of any existing safety deficiencies.
(c) proposed trip generation and distribution for the proposed development.
(d) projected levels of service on adjacent and impacted facilities.
(e) recommendation of necessary improvements to ensure an acceptable level of service for roadways and a level of service of at least D and E for signalized and unsignalized intersections respectively, after the future traffic impacts are considered.
(f) The City Engineer will determine which facilities are impacted and need to be included in the study.
(g) The study shall be conducted by a registered engineer.

(4) The applicant shall implement all or a portion of the improvements called for in the traffic study as determined by the City Engineer.

FINDING:
Per the Transportation Impact Analysis prepared by Lancaster Engineering, off-site street improvements requiring dedication, construction, or rebuilding of off-site improvements are not required to mitigate the impacts of the project. Intersections and roadways in the vicinity will operate at or above minimum City and Washington County standards, with or without the extension of SW Cimino Street as shown within the TIA. All proposed intersections analyzed in the TIA will maintain an LOS of at least D or better – see table 3, page 15 of the TIA.

Washington County provided conditions of approval dated August 31, 2017. The applicant will submit a copy of their issued Washington County right-of-way permit.

This criterion is satisfied with conditions of approval PFR-10.

3. TDC SECTION 74.470 STREET LIGHTS

(1) Street light poles and luminaries shall be installed in accordance with the Public Works Construction Code.
(2) The applicant shall submit a street lighting plan for all interior streets on the proposed development prior to issuance of a Public Works Permit.

FINDING:
Existing SW Cimino Street has been fully constructed to the City's Public Works standards. All street lights and luminaries have been installed in accordance with the Public Works Construction Code. The proposed extension of SW Cimino Street associated with this development will provide street lights and luminaries to match existing lighting along SW Cimino Street.

This criterion is satisfied.

3. TDC SECTION 74.485 STREET TREES

(1) Prior to approval of a residential subdivision or partition final plat, the applicant shall pay the City a non-refundable fee equal to the cost of the purchase and installation of street trees. The location, placement, and cost of the trees shall be determined by the City. This sum shall be calculated on the interior and exterior streets as indicated on the final subdivision or partition plat.
(2) In nonresidential subdivisions and partitions street trees shall be planted by the owners of the individual lots as development occurs.
(3) The Street Tree Ordinance specifies the species of tree which is to be planted and the spacing between trees.

FINDING:
The site is located in Zone 2. A combination of Crimson Sentry Maple (Acer platoniodes 'Crimson Sentry'), Golden Desert Ash (Fraxinus excelsior "Handes'), Black Tupelo (Nyssa sylvatica) are proposed at 30' on center in a 3.5' landscape planter zone between the sidewalk and curb along SW Cimino per the attached plans (see Sheets L1.0 and L2.0), as consistent with Schedule A.

This criterion is satisfied.

4. TDC SECTION 74.610 WATER SERVICE

(1) Water lines shall be installed to serve each property in accordance with the Public Works Construction Code. Water line construction plans shall be submitted to the City Engineer for review and approval prior to construction.
(2) If there are undeveloped properties adjacent to the subject site, public water lines shall be extended by the applicant to the common boundary line of these properties. The lines shall be sized to provide service to future development,

in accordance with the City's Water System Master Plan, TDC Chapter 12. This is not applicable to the site.

(3) As set forth is TDC Chapter 12, Water Service, the City has three water service levels. All development applicants shall be required to connect the proposed development site to the service level in which the development site is located. If the development site is located on a boundary line between two service levels the applicant shall be required to connect to the service level with the higher reservoir elevation. The applicant may also be required to install or provide pressure reducing valves to supply appropriate water pressure to the properties in the proposed development site. This is not applicable to this site.

FINDING:
The previous development to the west of this site extended an 8-inch public water main to the property line as part of extending SW Cimino Street. The proposed development will also be extending the existing 8-inch diameter public water main along the entire frontage of SW Cimino Street to the easternmost property line. Three (3) new public fire hydrants are proposed along SW Cimino Street.

This project consists of one (1) building. Per the attached site utility plan (see sheet C3.0) - service for the proposed building will be taken via a new water lateral connecting to the new public water main extension in SW Cimino Street. A proposed 8-inch lateral from the main will provide service to building fire supply. An 8-inch double check detector assembly (DCDA) for backflow protection will be provided on this service. An 8-inch fire water line will supply four (4) onsite private fire hydrants. The proposed private fire hydrants provide sufficient building coverage per Fire Department requirements.

Additionally, this development proposes a 2-inch domestic service lateral to the building. The proposed service will connect to the extended main in SW Cimino. An 1.5-inch domestic meter and double check assembly with 2-inch service to building will also be provided. An irrigation stub will be installed behind the domestic water meter.

The double check assemblies for fire and domestic water service are shown to be located behind the right-of-way for inspection and maintenance access.

The applicant will submit water service that show location of the lines, grade, materials, and other details prior to obtaining a Building Permit.

The City needs access to the double checks that include fire vaults. If they are located out of right-of-way, a public easement is needed for the water line from the public water line to and including the fire vault and include access from right-of-way in case of inspection or maintenance activity.

This criterion is satisfied with conditions of approval PFR-2, -9, and -11.

5. TDC SECTION 74.620 SANITARY SEWER SERVICE

(1) Sanitary sewer lines shall be installed to serve each property in accordance with the Public Works Construction Code. Sanitary sewer construction plans and calculations shall be submitted to the City Engineer for review and approval prior to construction.

(2) If there are undeveloped properties adjacent to the proposed development site which can be served by the gravity sewer system on the proposed development site, the applicant shall extend public sanitary sewer lines to the common boundary line with these properties. The lines shall be sized to convey flows to include all future development from all up stream areas that can be expected to drain through the lines on the site, in accordance with the City's Sanitary Sewer System Master Plan, TDC Chapter 13.

FINDING:
The previous development to the west of this site extended a 10-inch public sanitary sewer to the property line as part of extending SW Cimino Street. The proposed development will also be extending the existing 10-inch diameter sanitary sewer along the entire frontage of SW Cimino Street to the easternmost property line.
Service for the proposed building will be taken via a new lateral connecting to this sewer extension in SW Cimino Street. A manhole is shown in the public line at the point of the lateral for building service.

This criterion is satisfied with conditions of approval PFR-1, -9, and -11.

6. TDC SECTION 74.630 STORM DRAINAGE SYSTEM

(1) Storm drainage lines shall be installed to serve each property in accordance with City standards. Storm drainage construction plans and calculations shall be submitted to the City Engineer for review and approval prior to construction.

(2) The storm drainage calculations shall confirm that adequate capacity exists to serve the site. The discharge from the development shall be analyzed in accordance with the City's Storm and Surface Water Regulations.

(3) If there are undeveloped properties adjacent to the proposed development site which can be served by the storm drainage system on the proposed development site, the applicant shall extend storm drainage lines to the common boundary line with these properties. The lines shall be sized to convey expected flows to include all future development from all up stream areas that will drain through the lines on the site, in accordance with the Tualatin Drainage Plan in TDC Chapter 14.

FINDING:
The previous development to the west of this site extended an 18-inch public storm sewer to the property line as part of extending SW Cimino Street.

The proposed development will also be extending the public storm sewer along the entire frontage of SW Cimino to the easternmost property line.

The plans show stormwater from the site captured and conveyed to a water quality treatment and detention facilities prior to release to the public system in SW Cimino Street. Stormwater Quality treatment will be provided using filtered catch basins and vaults. Stormwater Quantity Control will be provided using and underground chamber system and an outflow control structure. This system will discharge to the sewer extension in SW Cimino Street.

Detention quantities were determined based on the Clean Water Services (CWS) Design and Construction Standards for Sanitary Sewer and Surface Water Management, and the preliminary stormwater calculations that are included with the Architectural Review application.

The catch basins and stormwater quality and stormwater quantity control (detention) facilities have been designed to remove 65% of the phosphorous from impervious area runoff during a mean summertime storm event totaling 0.36 inches of precipitation falling within four hours with an average return period of 96 hours per the preliminary stormwater calculations that are included with the Architectural Review application.

Per the plans (see Sheet C1.1), 322,412 SF of impervious are is proposed. This is the quantity also used in the preliminary stormwater calculations that are included with the Architectural Review application.

The development of the site to the west and design of the existing SW Cimino Street took into accommodation approximately 50% of the extension of the road along the frontage of this development. The existing water quality basin along the north side of Cimino was sized to provide treatment of this area. Additionally, the onsite design for that development “over-detained” to accommodate for detention of the new impervious area in SW Cimino. That development also created the outfall into the natural drainage channel and extended the public storm main in SW Cimino to the property corner that abuts this development. This development proposes to provide water quality for the eastern half of the road extension using a LIDA-type vegetated planter between the curb and sidewalk. These planters will provide water quality only for the southern portion of the roadway extension and will overflow to the extended public storm sewer in SW Cimino. This development will “over-detain” in the onsite detention system to accommodate the new impervious in the eastern half off the road extension.

The stormwater calculations included with the Architectural Review application (see Stormwater Report) confirm that the proposed stormwater quality and detention facilities will contain adequate capacity to serve the site.

The site abuts developed property on the west and un-developed property on the west side. Given existing site topography it is not likely that the storm extension will be able to serve additional lots to the east of this development. From a feasibility standard, future extension of SW Cimino and associated lots will need to develop a new conveyance and outfall to the existing drainage channel.

This criterion is satisfied with conditions of approval PFR-3, -9, and -11.

7. TDC SECTION 74.640 GRADING

(1) Development sites shall be graded to minimize the impact of storm water runoff onto adjacent properties and to allow adjacent properties to drain as they did before the new development.

(2) A development applicant shall submit a grading plan showing that all lots in all portions of the development will be served by gravity drainage from the building crawl spaces; and that this development will not affect the drainage on adjacent properties. The City Engineer may require the applicant to remove all excess material from the development site.

FINDING:
The proposed grading plan minimizes the impact of stormwater runoff to adjacent properties and allows adjacent properties to drain as they did before the development. The site will be graded so that stormwater will be collected at catch basins that discharge to onsite stormwater quality and quantity control systems located on the west and east sides of the proposed building.

The applicant will submit an erosion control plan prior to application for an erosion control permit and obtain a 1200C permit.

This criterion is satisfied with conditions of approval PFR-4 and -9.

8. TDC SECTION 74.650 WATER QUALITY, STORM WATER DETENTION AND EROSION CONTROL

The applicant shall comply with the water quality, storm water detention and erosion control requirements in the Surface Water Management Ordinance. If required:

(1) On subdivision and partition development applications, prior to approval of the final plat, the applicant shall arrange to construct a permanent on-site water quality facility and storm water detention facility and submit a design and calculations indicating that the requirements of the Surface Water Management Ordinance will be satisfied and obtain a Stormwater Connection Permit from Clean Water Services; or

(3) For on-site private and regional non-residential public facilities, the applicant shall submit a stormwater facility agreement, which will include an operation and maintenance plan provided by the City, for the water quality facility for the City's review and approval. The applicant shall submit an erosion control plan prior to issuance of a Public Works Permit. No construction or disturbing of

the site shall occur until the erosion control plan is approved by the City and the required measures are in place and approved by the City.

FINDING:
Stormwater from the building and all impervious surfaces on-site will be collected at catch basins that discharge to onsite stormwater quality and quantity control systems located on the west and east sides of the proposed building (see Sheet C3.0). Preliminary stormwater calculations are included with the Architectural Review application. The applicant will obtain a 1200C permit. A Clean Water Services (CWS) Service Provider Letter (SPL) indicating that no site assessment or service provider letter is required is included with the Architectural Review application.

A stormwater facility Operations & Maintenance (O&M) agreement will be submitted for the on-site stormwater quality and detention pond prior to prior to issuance of a Public Works Permit.

The applicant will submit final stormwater calculations and plans.

A CWS Service Provider Letter (SPL) indicating that wetlands do not appear to be within 200 feet of this development site is included with the Architectural Review application. A CWS Memorandum was received dated May 25, 2017 for development on this site. The applicant will submit plans that are sufficient to obtain a Stormwater Connection Permit Authorization Letter that complies with the submitted Service Provider Letter conditions.

This criterion is satisfied with conditions of approval PFR-3, -9 and -11.

9. TDC SECTION 74.660 UNDERGROUND

(1) All utility lines including, but not limited to, those required for gas, electric, communication, lighting and cable television services and related facilities shall be placed underground. Surface-mounted transformers, surface-mounted connection boxes and meter cabinets may be placed above ground. Temporary utility service facilities, high capacity electric and communication feeder lines, and utility transmission lines operating at 50,000 volts or above may be placed above ground. The applicant shall make all necessary arrangements with all utility companies to provide the underground services. The City reserves the right to approve the location of all surface-mounted transformers.

(2) Any existing overhead utilities may not be upgraded to serve any proposed development. If existing overhead utilities are not adequate to serve the proposed development, the applicant shall, at their own expense, provide an underground system. The applicant shall be responsible for obtaining any off-site deeds and/or easements necessary to provide utility service to this site; the deeds and/or easements shall be submitted to the City Engineer for acceptance by the City prior to issuance of the Public Works Permit.

FINDING:
All proposed utilities will be placed underground in accordance with this requirement. Surface-mounted transformers will be screened from adjacent right-of-way.

There are no existing overhead utilities abutting the site.

This criterion is satisfied.

10. TDC SECTION 74.765 STREET TREE SPECIES AND PLANTING LOCATIONS.

All trees, plants or shrubs planted in the right-of-way of the City shall conform in species and location and in accordance with the street tree plan in Schedule A. If the Operations Director determines that none of the species in Schedule A is appropriate or finds appropriate a species not listed, the Director may substitute an unlisted species.

FINDING:
The site is located in Zone 2. A combination of Crimson Sentry Maple (Acer platoniodes 'Crimson Sentry'), Golden Desert Ash (Fraxinus excelsior "Handes'), Black Tupelo (Nyssa sylvatica) are proposed at 30' on center in a 3.5' landscape planter zone between the sidewalk and curb along SW Cimino per the attached plans (see Sheets L1.0 and L2.0), as consistent with Schedule A.

This criterion is satisfied.

F. TDC CHAPTER 75: ACCESS MANAGEMENT

11. TDC SECTION 75.010 PURPOSE.

The purpose of this chapter is to promote the development of safe, convenient and economic transportation systems and to preserve the safety and capacity of the street system by limiting conflicts resulting from uncontrolled driveway access, street intersections, and turning movements while providing for appropriate access for all properties.

12. TDC SECTION 75.080 ALTERNATE ACCESS.

Except as provided in 75.090 all properties which abut two roadways shall have access on the lowest classification road-way, preferable on a local street.

13. TDC SECTION 75.120 EXISTING STREETS.

The following list describes in detail the freeways and arterials as defined in TDC 75.030 with respect to access. Recommendations are made for future changes in accesses and location of future accesses. These recommendations are examples of possible solutions and shall not be construed as limiting the City' s authority to change or impose different conditions if additional studies result in different recommendations from those listed below.

(4) TUALATIN-SHERWOOD ROAD

(e) Avery Street/112th to Cipole Road: On the north side of Tualatin-Sherwood Road between 112th Avenue and Cipole Road the area will be served by the following streets or driveways:

(i) 115th Avenue which will extend north to Amu Street.

(ii) 124th Avenue which will extend north and west to an intersection at 124th Avenue approximately 800 feet north of Tualatin-Sherwood Road.

(iii) 124th Avenue.

FINDING:

The site has an existing access to SW Tualatin-Sherwood Road that is proposed to be closed. Site access will route to the adjacent lesser classified Connector SW Cimino Road.

This criterion is satisfied.