

# APPENDIX

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## TECHNICAL MEMORANDUM #1 – REFINED DRAFT

DATE: August 19, 2022

TO: Project Management Team

FROM: Kendall Flint | DKS Associates  
Lacy Brown, PhD, PE, RSP<sub>1</sub> | DKS Associates

SUBJECT: Cordon-Kuebler Corridor Plan  
Public Involvement Plan (PIP)

Project #22001-000

### PUBLIC INVOLVEMENT PLAN

The Cordon-Kuebler Corridor operates as the principal arterial along the fringe of the urban Salem-Keizer metropolitan area, serving as a gateway for vehicles and other travel modes to access nearby neighborhoods as well as commercial and industrial areas. The Cordon-Kuebler Corridor Plan will provide a comprehensive evaluation of approximately 11.8 miles along Kuebler Boulevard, Cordon Road, and Hazelgreen Road, including all modes of transportation. The study will examine opportunities for accommodating planned regional growth and addressing current traffic congestion and safety through enhancements in access management and recommended improvements, including seeking opportunities to maximize alternate modes of transportation.

The Public Involvement Plan (PIP) for the Corridor Plan highlights the importance of public outreach, key messages, key audiences, goals, tactics, and tools that will be used for this effort.

### GOALS

- Educate users of the corridor as to the purpose and need for the study to increase safety and connectivity in the area.
- Provide multiple channels for people to access information about the Plan and provide meaningful engagement opportunities.
- Document comments, concerns, and recommendations from those users to influence the development of proposed improvements.



## KEY MESSAGES

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- This plan will examine the opportunities for accommodating planned regional growth and addressing current traffic congestion and safety concerns.
- The plan will lay out the framework for the corridor to maintain its throughway/parkway classification and to serve its intended function as an efficient circumferential route for the Salem-Keizer region.
- The plan will evaluate the existing conditions and provide recommended roadway alternatives to accommodate future growth of the region.

## KEY AUDIENCES

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The primary focus of our outreach efforts will be directed to the following key audiences:

- Residents and businesses within 1-mile of the corridor
- Local schools and community organizations within 1-mile of the corridor
- Bicycle and pedestrian groups

## STAKEHOLDERS

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To best represent the impacted participants, stakeholder groups have been identified to represent a range of interests, which are listed below. The project team will coordinate efforts with these groups and other stakeholders that may be identified throughout the outreach process.

- Mill Creek Businesses
  - PacTrust Mill Creek Corporate Center
  - Amazon Distribution Center
  - Home Depot Distribution Center
  - Others
- Salem Neighborhood Associations
- Salem Keizer School District
- Cherriots Transit
- Bicycle & Pedestrian Groups
- Parish Little League
- Pictsweet Housing Development
- Capital FC Timbers
- Salem Renewable Energy & Technology Park
- Oregon State Police Headquarters
- Marion County Fire & Rescue
- EZ Orchards

## **TECHNICAL ADVISORY COMMITTEE (TAC)**

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The project team will hold regular meetings with our Technical Advisory Committee (TAC) which will include:

- Marion County, Janelle Shanahan & Carl Lund
- City of Salem, Anthony Gamallo
- Mid-Willamette Valley Council of Governments (MWVCOG), Karen Odenthal
- Cherriots, Chris French

## **STRATEGIES & TACTICS**

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We have identified several strategies to reach the widest possible audience in the most effective manner possible. These include utilization of online and social media, collaboration with key stakeholders, and interactive meetings. They are as follows:

### **PROJECT WEBSITE**

Marion County has overall good access to internet with 93% of households owning a computer and 86% having access to broadband internet – designating that social media and a project website are viable resources to reach the target community. The project website, [CordonCorridorStudy.com](http://CordonCorridorStudy.com) will include:

- Project information and overview and purpose of the Plan
- Listing of all meetings
- All presentations and materials produced for public meetings and workshops
- Fact sheets regarding the planning process
- All draft and final materials produced for the Plan
- Online surveys
- Social pinpoint map (interactive online comment capture)
- Forms for comment/questions
- eNews sign-ups

### **OPEN HOUSE EVENTS (TWO)**

Our two proposed Open House events will be an essential component of collecting community feedback to identify potential new access locations and connect existing streets to improve connectivity and mobility in the study area. The success of these is dependent upon engaging a diverse group of participants. This goal will be achieved by engaging in several different mediums of alerting the public of this outreach effort to include social media efforts, a project website, and advertisement in the local newspaper, the Statesman Journal.

Each Open House will be structured as a family-friendly event and use techniques that engage the interest of participants, maximize opportunities for input and discussion, and incorporate residents' input into the planning process. The format of the open house events will be determined in advance of each event, pending current COVID-19 pandemic response protocols. For any in-person events that may occur, handouts, display boards, and digital visual media (e.g., PowerPoint) will be prepared and presented. For any virtual events that may occur, the event will be hosted via the project website, including an interactive mapping tool and embedded survey for gathering community input.

If participation in either of the Open House events is lower than desired, the project team will send out a paper questionnaire (English and Spanish) to attempt to gather more feedback from the community.

## **SOCIAL MEDIA**

The project team will develop social media materials promoting the process, upcoming workshops, and opportunities for participation via Facebook, Next Door, and others as appropriate. This information will be provided to the City of Salem, Marion County, and other stakeholders and partners to use on their social platforms.

## **LOCAL AGENCY PARTNERS**

Over the course of the project DKS will provide content to local agencies to share on their websites and social media pages. This will include:

- Promote website launch
- Promote upcoming workshops
- Provide information regarding the Plan process
- Conduct bilingual topic-specific surveys
- Promote opportunities to review proposed strategies and Study documents

## **TRANSLATION SERVICES**

The project team will develop the following materials and make them available in English and Spanish:

- Project description
- Flyers/posters for open house events
- City of Salem staff will be assisting with Spanish translation services (either written translation for virtual events or real-time translation for in-person events)

## **DIVERSITY AND INCLUSION OUTREACH**

Our team will work collaboratively with faith-based organizations and the Spanish speaking community to ensure maximum participation across all socio-economic population groups. We will provide opportunities for Spanish language meetings and one-on-one communication throughout the engagement process.

## **EVALUATION AND SUMMARY REPORT**

DKS will prepare a summary of outreach efforts once all public involvement has been completed. Evaluation on the success of the outreach efforts will be done by detailing attributes such as those listed below:

- Number of participants for each activity, including views/visits to the in-person event or project website/virtual event.
- Diversity of participants to ensure inclusion based on socio-economic indicators.
- Summary of comments and concerns captured through all efforts.



# memo

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to **Cordon-Kuebler Corridor Plan Project Management Team and Committees**  
from **Shayna Rehberg, Brandon Crawford, and Darci Rudzinski, MIG|APG**  
re **Cordon-Kuebler Corridor Plan**  
**Vision Plan**  
date **July 28, 2022**

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## Introduction

The ultimate goal of this memorandum is to develop a strong set of vision, goals, and objectives to guide the Cordon-Kuebler Corridor Plan. Policies, standards, and projects from local transportation plans and reports provide a framework for this planning process, and input from community stakeholders inform the proposed vision, goals, and objectives.

This memorandum first presents a review of background documents and then summarizes input from community stakeholders, including the Project Management Team (PMT). The review of background documents provides an overview of policies, standards, or projects that are relevant to this planning process, as well as identifies potential conflicts between background documents and/or areas that may need reconciliation, clarification, or noting during this planning process. Input from community stakeholders consists of feedback gathered from Open House #1, comments from website and social media postings, and comments made during PMT meetings. The memorandum culminates in a proposed set of vision, goals, and objectives.

The PMT and advisory committee members will review this memorandum and provide comments and suggested revisions. Following that, a final draft of the Vision Plan will be available to provide ongoing guidance for this planning process.

## Background Document Review

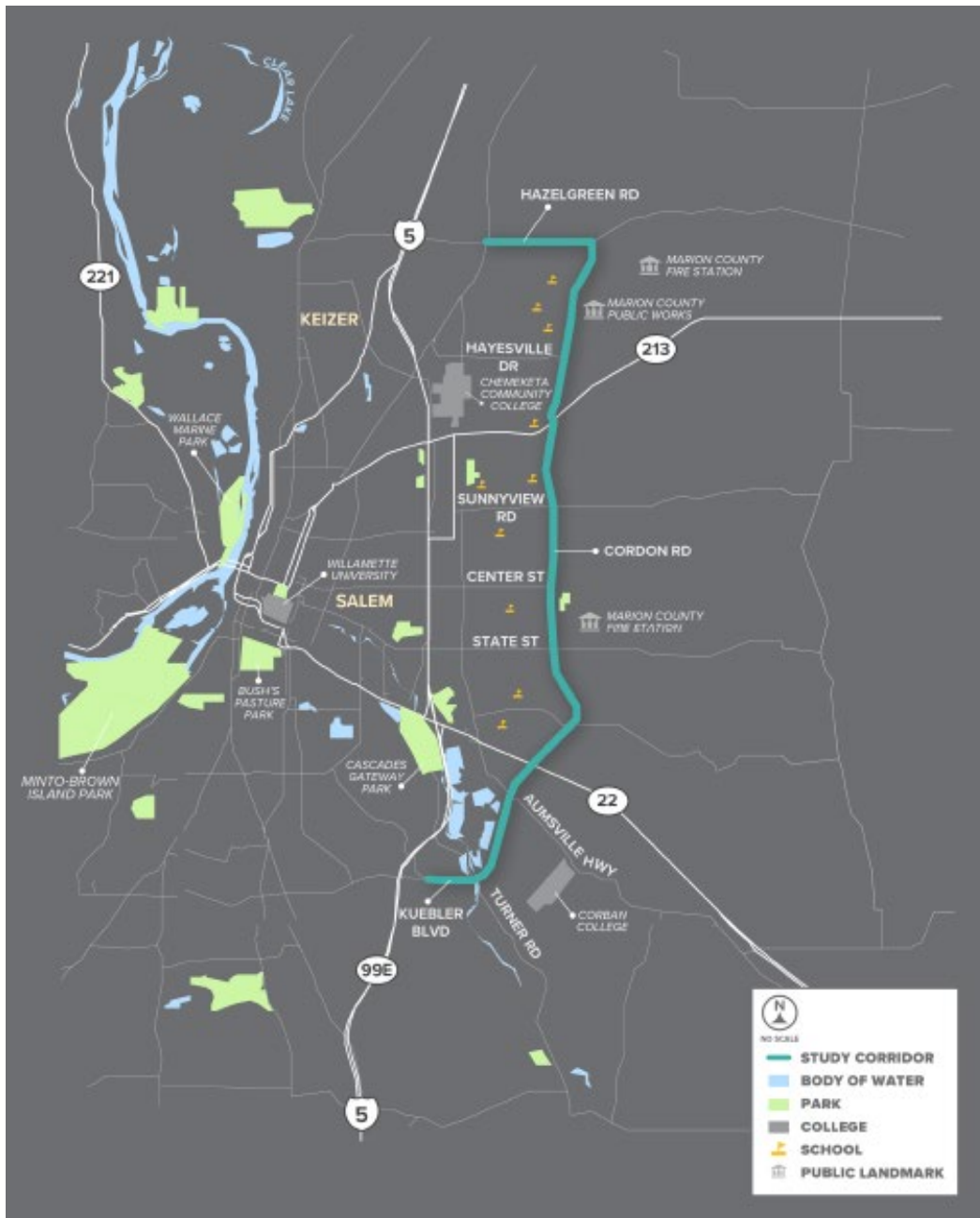
This section provides a review of the documents listed below in order to identify policies, standards, and projects relevant to the Cordon Road Corridor.

1. Marion County Rural Transportation System Plan (TSP) (2005)
2. City of Salem TSP (2020)
3. Salem-Keizer Area Transportation Study (SKATS) 2019-2043 Regional TSP
4. Interchange Study of Highway 22 and Cordon Road (2012)
5. OR 22 (East) Facility Plan (2018)
6. Kuebler Boulevard Interchange Area Management Plan (IAMP) (2009)
7. Chemawa Road IAMP (2009)

8. Kuebler Boulevard Two Bridges Feasibility Study (2018)
9. Cordon Road Resolution (1981)
10. Mill Creek Corporate Center Urban Renewal Plan (2005)
11. Mill Creek Corporate Center Traffic Impact Analysis (TIA) (2013)
12. Pictsweet Master Plan TIA (2019)
13. Draft Transportation Planning Rule (TPR) amendments (January 2022)

The reviews are compiled in Table 1, which indicates whether the documents include policies, access-related guidance, and/or projects in the study area. The study area is illustrated below in Figure 1.

Figure 1. Study Area for Cordon-Kuebler Corridor Plan



The document review found differences between policy or regulatory direction related to the corridor in the following areas. The recommendations below are intended as guidance during this planning process.

1. Access policy – Determine how to reconcile access standards for parkways in the Salem Revised Code with the 1981 County Cordon Road access policy in order to provide clear direction for access management in the corridor going forward.<sup>1</sup> This will be explored further in the Access Management Plan (Technical Memorandum #8, Task 8) later in this planning process.
2. Recommended improvements – In general, consult the most recent plans reviewed for the latest versions of recommended improvements. This includes referring to the OR 22 (East) Facility Plan for the latest recommended OR 22 interchange design, refined from the 2012 interchange study. In some cases, a plan may contain recommendations from some earlier plans but not others; for example, the 2020 Salem TSP includes projects recommended in 2019 Pictsweet TIA but not the 2019 SKATS Regional TSP.
3. Parkway cross-section – The Pictsweet TIA recommends parkway cross-section alternatives (ultimate cross-section and interim cross-section) to the parkway cross-section in the Salem TSP. Confirm that the cross-section alternatives in the TIA will be relied on for improving the corridor to parkway standards.

Findings from these document reviews have informed the draft vision, goals, and objectives that are presented in the last section of this memorandum.

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<sup>1</sup> At the April 5, 2022 Project Management Team (PMT) Meeting, City of Salem staff indicated that access standards from the Salem Revised Code govern access points in city limits in the Cordon Road corridor and that the County Cordon Road Policy governs access points otherwise in the corridor.

Table 1. Background Document Review

	Review	Policies	Access	Projects	Other
		✓	✓	✓	
1. Marion County Rural Transportation System Plan (TSP) (2005)	<ul style="list-style-type: none"> <li>The 2005 TSP is due for an update; in the meantime, passages pertaining to the corridor are summarized below.</li> <li>The County TSP classifies Hazelgreen Road, Cordon Road, and Kuebler Boulevard as County Arterials. The 2019 SKATS Regional TSP notes that the County has designated Cordon Road from OR 22E to Hazelgreen Road as a Throughway, as provided in Oregon Revised Statute (ORS) 374.420 and as part of a circumferential route around Salem and Keizer, to facilitate the free flow of traffic.<sup>2</sup></li> <li>The roadway inventory and conditions (in Chapter 5 and Appendix B) include the following information about Cordon Road, in 7 segments from Caplinger Road to Hazelgreen Road: 2 lanes, volume to capacity (V/C) ratios of 0.19-0.56, level of service (LOS) ratings of B-D, paved shoulder widths of 5-7 feet, paved travel widths of 34-39 feet, and asphalt in “good” to “very good” condition.</li> <li>Chapter 6 (Future Traffic Volume Demand Projections) estimates daily traffic volumes in 2025 on Cordon Road, in 7 segments from Caplinger Road to Hazelgreen Road, to be from 12,000-28,000.</li> <li>The TSP’s preferred 20-year strategy is a combination of inter- and intra-county mobility strategies, found to be amongst the most beneficial and effective in terms</li> </ul>	✓	✓	✓	

<sup>2</sup> ORS 374.420 County throughways; rights of abutting property owners.

(1) The county court or board of county commissioners may acquire by purchase, agreement, donation or exercise of the power of eminent domain, fee title or any interest in real property, including easements of air, view, light and access, which is necessary for the construction of a throughway or the establishment of a section of an existing county road as a throughway.

(2) When right of way is acquired for a throughway after August 13, 1965, no rights in or to the throughway, including what is known as right of access, accrue to real property merely because the property abuts upon that part of the right of way so acquired. This subsection also applies to right of way acquired, prior to August 13, 1965, pursuant to ORS 374.420 to 374.430 (1963 Replacement Parts).

(3) “Throughway,” as used in this section, means a proposed or existing county road especially designed for through traffic, which has been designated by resolution of the county court or board of county commissioners as a throughway, over, from or to which owners or occupants of abutting land or other persons have no easement of access or only a limited easement of access, light, air or view, merely because of the fact that their property abuts upon the throughway or for any other reason. [Amended by 1965 c.364 §1] ([https://www.oregonlegislature.gov/bills\\_laws/ors/ors374.html](https://www.oregonlegislature.gov/bills_laws/ors/ors374.html))



	Review	Policies ✓	Access ✓	Projects ✓	Other
	<p>of addressing the TSP’s goals and objectives. This strategy is summarized as “improvements that emphasize transportation along the County’s primary Intra- and Inter-County corridors,” including Cordon Road; improvements are detailed in Chapters 8, 9, and 11 of the TSP.</p> <ul style="list-style-type: none"> <li>• While Chapter 8 lists all of the recommended roadway improvements, Chapter 11 (Table 11-1) presents a financially constrained list of recommended improvements, including Cordon Road safety and capacity projects (left turn lanes, signals, and widening/adding lanes) and this corridor plan.</li> <li>• Recommended non-roadway improvements include a potential shared-use path along Cordon Road (Figure 9-1), consideration of Cordon Road as part of circumferential transit route around the Salem area (Section 9.2.3), and a potential park-and-ride/pool location shown at Cordon Road/Silverton Road NE (Figure 13-1).</li> <li>• Policies (Chapter 10) address access management, acknowledging that Cordon Road is not subject to standard access spacing requirements identified in the policies but to other County policies (see the Cordon Road Resolution review). Otherwise, Policy 1 under access management (Section 10.1.3) sets the following access spacing standards for new or modified accesses on County Arterials, which govern Hazelgreen Road and Kuebler Boulevard: 500’ from any intersection with a state highway, arterial, or major collector; and 400’ from any other intersection, including a private access (i.e., driveway).<sup>3</sup> The policies also address multimodal and equitable transportation, requiring the County to consider the needs of those who are transportation-disadvantaged and/or disabled when planning or reviewing transportation improvements and to support efforts to develop off-street multi-use paths or trails where appropriate.</li> <li>• The TSP includes a sub-area plan for Cordon Road from State Street to Auburn Road (Chapter 12). Referring to previous County policy to limit access on Cordon Road, the sub-area plan proposes further limiting access to Cordon Road due to high traffic volumes and accident history. A long-range plan includes closing accesses to Cordon Road and providing access to these properties in other ways, typically from</li> </ul>				

<sup>3</sup> Policy 4 provides criteria to vary from the access standards, and Policies 5 and 6 establish cases in which greater spacing may be required.

	Review	Policies	Access	Projects	Other
	a local road or access easement connecting to either Auburn Road or State Street, with an exception for the fire station; concepts of these alternative accesses are shown in Figure 12-5.	✓	✓	✓	
2. City of Salem TSP (2020)	<ul style="list-style-type: none"> <li>• Functional classification of “Parkway” in TSP. Typical street design for Parkways in Figure 3-1 and basic design guidelines for Parkways in Table 3-1.</li> <li>• General access management objective and policy in TSP’s Transportation System Management Element (Objective 3 and Policy 3.1).</li> <li>• Access and street spacing standards not in TSP but Salem’s development code (Section 804.040<sup>4</sup> and Section 803.030, respectively).New driveways are not permitted onto parkways except in limited situations (see Footnote 3), and must be at least a mile from other driveways or intersections.</li> <li>• Street improvement projects, high and medium priority (Map 3-5 and project narratives); for Northeast Salem (Map 3-7): Projects 101, 218, 274, 275, 276, and 277; for Southeast Salem (Map 3-9): Projects 100, 101, 104, 127, and 136; including improving Cordon Road to parkway standards (between Silverton Road and Highway 22) and constructing interchange at Highway 22.</li> <li>• Freight-related street improvements – High priority on Cordon Road from State to Center Streets.</li> </ul>	✓	(✓)	✓	

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<sup>4</sup> Pursuant to Salem Revised Code Section 804.040 (Access onto parkways):

(a) Number of driveway approaches. No driveway approach shall be allowed onto a parkway unless the driveway approach is for a complex that generates 10,000 or more vehicle trips per day, or the driveway approach is a service driveway approach that provides access to a site controlled by a franchised utility service provider or a governmental entity.

[...]

(c) Spacing. Driveway approaches onto a parkway shall be no less than one mile from the nearest driveway approach or street intersection, measured from centerline to centerline.

[...]

(f) No variance or adjustment. The standards set forth in this section cannot be varied or adjusted.

	Review	Policies ✓	Access ✓	Projects ✓	Other
	<ul style="list-style-type: none"> <li>• ITS projects (Table 4-2) – Detour Route Management, including mapping of detour route plans in GIS, incident signal timing plans, electronic message signs, and congestion monitoring; Cordon/Kuebler corridor is a high priority.</li> <li>• Pedestrian and bike projects – Existing or funded bike lanes and proposed shared-use path shown on Cordon Road from Kale to Kuebler (Map 7-2, Map 7-7, Map 8-5, and Map 8-5). Designated as Tier 3 projects (Maps 7-7, 7-8, 8-9, and 8-10). Cordon Road not a critical ADA route per Map 8-1.</li> <li>• Long-range transportation strategy – Highway 22 Corridor, including interchange with Cordon Road; and Salem Circumferential Travel Route, including Cordon Road but improvements not specified for Cordon Road.</li> <li>• Future studies – this corridor plan</li> </ul>				
3. Salem-Keizer Area Transportation Study (SKATS) 2019-2043 Regional TSP	<ul style="list-style-type: none"> <li>• Corridor identified as principal arterial (p. 4-12).</li> <li>• Demand/capacity mostly identified as “free flow,” with a few short segments that are “near capacity” or “at capacity” – between Center and State Streets, at the Macleay intersection, and near the Kuebler/I-5 interchange.</li> <li>• Crashes, injuries, and fatalities included on Map 4-5 (p. 4-17). Numerous identified along the corridor.</li> <li>• Corridor classified as “Existing Bicycle System &amp; Multi-Use Path” on the Regional Bicycle Network (Map 4-6, p. 4-19).</li> <li>• Forecasted funds for highways and regional roads are included on Table 6-6, p. 6-9. Table 6-9, page 6-11, includes estimated expenditures.</li> <li>• “Roads-bridges” projects, bike-ped projects, and ITS-intersection improvement projects are shown in the corridor on Map 7-3, p. 7-14 and in more detail in an East Salem map (Map 7-7, p. 7-22).</li> <li>• Table 7-3 includes numerous projects identified for the corridor, which are identified as “included” or “committed” by jurisdiction (pp. 7-25 to 7-45).</li> <li>• Table 8-3 includes several projects with “potential impacts” that are located in the corridor. Most projects specific to the corridor are roads-bridges projects, with a few bike-ped projects (pp. 8-9 to 8-11).</li> </ul>	✓		✓	

	Review	Policies ✓	Access ✓	Projects ✓	Other
	<ul style="list-style-type: none"> <li>The “Kuebler-Cordon-Hazelgreen Circumferential Route” is included as an Outstanding Issue (Chapter 9), noting that it is critical the route retain its function as a beltway and that the City and County explore strategies and solutions for maintaining its functionality.</li> </ul>				
4. Interchange Study of Highway 22 and Cordon Road (2012)	<ul style="list-style-type: none"> <li>A series of draft memos serves as the “Interchange Study of Highway 22 and Cordon Road;” per Mid-Willamette Valley Council of Governments (MWVCOG) and the County, there is no final report.</li> <li>The Project Rationale memo addresses the need for a future interchange at OR 22 and Cordon Road, demonstrating that an interchange at OR 22 and Cordon Road has transportation and economic development benefits. Transportation benefits include travel time savings; resolving geometric deficiencies and associated safety issues at the Cordon Road overpass; providing an alternative to the existing deficient interchanges at Gaffin Road and Lancaster Drive; improving facilities and access for existing and planned employment centers; and improving I-5 and OR-22 detour routes and emergency response times.</li> <li>The Transportation Issues memo presents research on transportation questions raised by stakeholders during the stakeholder interview process. Findings in the memo regarding transportation facility geometric deficiencies, system efficiency and congestion, system connectivity and accessibility, and community safety and emergency response all generally support the construction of an interchange at OR 22 and Cordon Road.</li> <li>A conceptual interchange design – a modified diamond – is provided in the final page of the series of memos (no figure number).</li> <li>Final letter from ODOT – In a June 28, 2012 letter from ODOT Region 2 to Marion County and City of Salem Public Works, the Region 2 Manager expressed appreciation for the Cordon Road Interchange Study and its recommendation that an interchange is an appropriate solution. ODOT generally concurred with the findings of the study and agreed to include the recommended interchange in the OR 22/25<sup>th</sup> to Gaffin Road Expressway Management Plan. ODOT considers the interchange to be a local project subject to ODOT review and approval given it</li> </ul>			✓	Research

	Review	Policies ✓	Access ✓	Projects ✓	Other
	connects to a state highway. The inclusion of the interchange in the Expressway Management Plan allows the County and City to pursue funding to develop, design, and construct the project.				
5. OR 22 (East) Facility Plan (2018)	<ul style="list-style-type: none"> <li>• Considers alternatives for a new interchange at Cordon Road and OR 22. Assumes a tight diamond interchange and provides a concept design (Figure 2, p. 2). Suggests future studies and consideration for an interchange.</li> <li>• Intersection study locations illustrated on Figure 5 (p. 7).</li> <li>• Notes Gaffin/Cordon intersection does not meet mobility targets and that a traffic signal was currently being constructed (p. 6). Identifies Cordon/Gaffin intersection as deficient and in need of improvements, specifically adding a shared through-right turn lane to northbound and southbound approaches (Table 1, p. 8). Formal recommendations for Gaffin/Cordon intersection improvements and Cordon interchange provided on p. 11.</li> <li>• Table 2 provides a summary table of recommended improvements by planning level cost and priority. Gaffin/Cordon intersection improvements are a long-term priority and have an estimated \$1 million planning-level cost.</li> </ul>			✓	
6. Kuebler Boulevard Interchange Area Management Plan (IAMP) (2009)	<ul style="list-style-type: none"> <li>• The Kuebler interchange with I-5 the southern terminus of the Cordon Road Corridor.</li> <li>• Table ES-1 and Table 2 recommend improvements in the Kuebler Boulevard part of the corridor (p. ES-4 and p. 2-3), including:                             <ul style="list-style-type: none"> <li>○ Installation of new ramps at the Kuebler/I-5 interchange</li> <li>○ Installation of turn lanes at Kuebler/36<sup>th</sup> and Kuebler/Turner intersections (also through lanes at intersections, p. ES-6).</li> </ul> </li> <li>• Widen Kuebler Boulevard to two lanes eastbound of the I-5 northbound ramp (p. ES-5).</li> <li>• Goals and objectives for the IAMP (p. 1-5) include:                             <ul style="list-style-type: none"> <li>○ Protect the function and operation of the interchange</li> <li>○ Limit number of conflict points on Kuebler Boulevard</li> <li>○ Monitor interchange capacity management.</li> </ul> </li> </ul>		✓	✓	

	Review	Policies ✓	Access ✓	Projects ✓	Other
	<ul style="list-style-type: none"> <li>Implementing Actions for the IAMP are included for ODOT, Salem, and SKATS (pp. 2-11 to 2-13); the actions mostly relate to adoption, interagency coordination, continued mobility and asset performance monitoring, and securing funding,</li> </ul>				
7. Chemawa Road IAMP (2012)	<ul style="list-style-type: none"> <li>The Chemawa interchange with I-5 is the northern terminus of the Cordon Road Corridor.</li> <li>Cordon Road is identified as a Primary Roadway in the IAMP, although the Cordon Road corridor is outside the IAMP study area (Table 2-1, p. 2-11).</li> <li>Section 2.3.2 (Operational Conditions) notes that the Hazelgreen/Cordon intersection fails to meet mobility standards (p. 2-12); Section 3.2 (Forecast Traffic Operations) notes Hazelgreen/Cordon intersection experiences queue lengths that exceed queue storage.</li> <li>There are no projects or policies in the IAMP that directly relate to the Cordon/Kuebler corridor; however, operations in the IAMP area will nonetheless affect the corridor and vice versa considering that they feed traffic to each other.</li> </ul>				Analysis
8. Kuebler Boulevard Two Bridges Feasibility Study (2018)	<ul style="list-style-type: none"> <li>Three alternatives were evaluated for bridge improvements on Kuebler Boulevard for the Mill Creek and Union Pacific Railroad (UPRR) bridges: Bridge widening; construction of a new roadway bridge parallel to the existing bridge; and construction of a new parallel bike/ped bridge.</li> <li>Project costs evaluated on page 6:                             <ul style="list-style-type: none"> <li>Widening – Mill Creek: \$6.1 million; UPRR: \$4.7 million</li> <li>Parallel alignment: \$15.9 million (both bridges)</li> <li>Bike/ped bridge: \$7.3 million (both bridges)</li> </ul> </li> <li>Report recommends widening the existing bridges due to flexibility for future development.</li> </ul>			✓	
9. Cordon Road Resolution (1981)	<ul style="list-style-type: none"> <li>Passed in 1981 by the Marion County Board of Commissioners.</li> <li>Establishes policies that the County must follow “in acting upon applications for land divisions, zoning approval, driveway permits and other actions affecting Cordon Road.”</li> </ul>	✓	✓		

	Review	Policies ✓	Access ✓	Projects ✓	Other
	<ul style="list-style-type: none"> <li>Allows for parcels abutting Cordon Road that were legally established prior to the date of the resolution and have no other public road access to one point of access to Cordon Road, whether or not such access existed at the time the resolution was passed.</li> <li>Affirms that “existing locations, forms and usages of these accesses” are rights that are not affected by the resolution <i>unless</i> “a change” is proposed.</li> <li>Requires that properties adjacent to Cordon Road in the county develop “in a manner that will not increase, and wherever possible will reduce, consolidate or eliminate, accesses to Cordon Road.”</li> </ul>				
10. Mill Creek Corporate Center Urban Renewal Plan (2005)	<ul style="list-style-type: none"> <li>The Mill Creek Corporate Center is located in the southern end of corridor (on Kuebler Boulevard) in the Mill Creek Urban Renewal Area (URA).</li> <li>Six transportation improvement projects are identified along the corridor (Figure 2, p. 12). Project details are provide on p. 15.                             <ul style="list-style-type: none"> <li>Signalized intersection for Kuebler and Industrial Park east-west street</li> <li>Improvements for I-5 interchanges</li> <li>Signal interconnect on Kuebler Boulevard</li> <li>Road widening and addition of turn lanes</li> </ul> </li> </ul>			✓	
11. Mill Creek Corporate Center Traffic Impact Analysis (TIA) (2013)	<ul style="list-style-type: none"> <li>Information about the proposed Mill Creek Corporate Center development:                             <ul style="list-style-type: none"> <li>650-acre site to be developed in five phases (1A, 1B, 1C, 2A, and 2B);</li> <li>General land uses: Industrial (Large User Warehouse and Distribution), Business Park (Flex Space with Light Industrial and Office), and Service Center (Locally Oriented Commercial Services);</li> <li>Projected trips (2017 Short-Term Scenario): 6,800 Daily, 728 a.m. peak hour, and 704 p.m. peak hour; projected trips (2035 Long-Term Scenario): 31,400 Daily, 3,347 a.m. peak hour, and 3,570 p.m. peak hour;</li> <li>Proposed site access points: internal roadways that intersect Kuebler Boulevard (one), Aumsville Highway (two), Turner Road (one), Deer Park Drive (one), and not Cordon Road (see Figure 1); and</li> <li>19 study intersections (on City, County, and ODOT roadways)</li> </ul> </li> </ul>		✓	✓	

	Review	Policies ✓	Access ✓	Projects ✓	Other
	<ul style="list-style-type: none"> <li>• For the 2017 short-term scenarios (assumes no Cordon Road/OR 22 interchange): Turn lanes and traffic signals needed at Cordon Road and Kuebler Boulevard intersections, as well as bringing parts of Lancaster Drive, Kuebler Boulevard, Cordon Road, Turner Road, and Deer Park Drive up to City standards; improvements outlined in narrative and in Table 4</li> <li>• Signal to be installed at proposed site access on Kuebler Boulevard as part of Phase 1A development (Table 13)</li> <li>• Once the Mill Creek Corporate Center development has reached the 6,800 daily trip generation level associated with the 2017 development assumptions, a new TIA should be done to reevaluate growth assumptions and confirm what improvements are needed for the additional development phases.</li> <li>• Improvements potentially needed for the 2035 long-term scenarios (assumes Cordon Road/OR 22 interchange; needed improvements to be reassessed per previous bullet): widening of Cordon Road and Kuebler Boulevard, widening of Turner Road leading up to Kuebler Boulevard, converting a right-turn lane to a through-right lane, and adding turn lanes at various study intersections; improvements outlined in narrative and in Table 4</li> </ul>				
<p>12. Pictsweet Master Plan Traffic Impact Analysis (TIA) (2019)</p>	<ul style="list-style-type: none"> <li>• The report identifies a need for widening Cordon Road to five lanes. The report notes the widening is necessary for Cordon Road to meet its Parkway designation.</li> <li>• Page 5 includes a map of the 2039 Transportation Improvement Needs, which includes several road widening projects, turn lane additions, and signal installations along Cordon Road between OR 22 and Silverton Road (Projects 1-10).</li> <li>• Table 10 (page 41) summarizes off-site improvement needs (for intersections).</li> <li>• Pages 45-49 address parkway cross-section alternatives. Figures 27 and 28 illustrate recommended ultimate and interim cross-sections for Cordon Road.                         <ul style="list-style-type: none"> <li>○ Ultimate cross-section: the TIA recommends that the County and City consider a narrower parkway cross-section (114-foot right-of-way versus 120-foot right-of-way) that incorporates 10-foot wide shared-use paths along one or both sides of the roadway.</li> </ul> </li> </ul>			<p style="text-align: center;">✓</p>	



	Review	Policies	Access	Projects	Other
	<ul style="list-style-type: none"> <li>Recommendations for transportation improvements to support the Pictsweet development are included on page 50. These recommendations include road widening for Cordon Road.<sup>5</sup></li> <li>As noted among the recommendations, a specific site plan will be required for each subsequent development phase to ensure consistency with the master plan and to ensure safe and functional access and transportation improvements are provided.</li> </ul>	✓	✓	✓	
13. Draft Transportation Planning Rule (TPR) Amendments (January 2022)	<ul style="list-style-type: none"> <li>The Draft TPR amendments are a component of the State’s Climate Friendly and Equitable Community (CFEC) rulemaking. The proposed amendments add an additional level of review for transportation facilities. Specifically, facility improvements that would <b>increase vehicle capacity</b> or <b>improve interchanges</b> would need to be authorized in accordance with updated TPR requirements before inclusion in a local comprehensive plan, including a TSP or other transportation plan adopted as an element of the local comprehensive plan. Projects subject to these TPR provisions would be required to investigate alternatives for:                             <ul style="list-style-type: none"> <li>Bike/ped improvements or facilities</li> <li>Transit improvements or facilities</li> <li>Transportation Demand Management (TDM) programs and options</li> <li>System pricing programs</li> </ul> </li> <li>The jurisdiction would be required to complete an authorization report that demonstrates that the following were met:                             <ul style="list-style-type: none"> <li>Public involvement strategy requirements of the new rule</li> <li>Alternatives review</li> <li>Summary of estimated long-term maintenance costs</li> </ul> </li> <li>The authorization report would need to be published and provided to each affected jurisdiction.</li> </ul>	✓			

<sup>5</sup> As stated in the TIA: “Widening of Cordon Road to the five-lane Parkway section will be required to support area growth with or without the Pictsweet site, consistent with adopted agency plans. Any required pro-rata payments for improvements along Cordon Road should be pooled and applied to the Cordon Road/State Street intersection, which serves as the most critical location within the study area.”

## Stakeholder Input

Stakeholder input opportunities thus far in the planning process have included an open house, a series of website and social media postings, and PMT meetings. Feedback gathered from those forums is summarized below.

### OPEN HOUSE FEEDBACK

Comments from the online Open House #1 regarding the proposed goals and objectives – addressed in the next section of this memorandum – focused on climate. In particular, proposed objectives were updated in response to the following comments:

- *Pay attention to the Salem Climate Action Plan and the Our Salem Project which calls for Salem to grow up and not out. Why is there no mention of the Climate Emergency in #6 and the goal that the Salem City Council has set to reach net zero emissions by 2050?*
- *Transportation is 53% of Salem's climate pollution. The plan should use a climate lens.*
- *This plan must align with Salem's climate goals to reduce greenhouse gas emissions. That means improving safety for walking, biking and using mobility aids (e.g. wheelchairs, scooters, etc.). Increasing this corridor to 4 lanes for motor vehicles will attract more cars, increasing emissions and decreasing safety.*

The climate orientation of the goals and objectives proposed for this plan has been strengthened, including adding references to governing plans and goals.

### PROJECT MANAGEMENT TEAM (PMT) FEEDBACK

#### Kick-Off Meeting (January 24, 2022)

During the kick-off meeting presentation, the prime consultant (DKS) acknowledged this plan's multiple objectives, including mobility, development support and access, and multimodal transportation.

City staff reported their primary interests to be multimodal improvements (this is a significant interest of the City Council) and prioritization of improvement projects for the corridor.

County staff addressed their multiple primary interests. They want this plan to clearly identify what projects are needed for a smooth-flowing system for all modes (e.g., consider roundabouts instead of signals). This plan should produce a phasing plan, as was done in the SKATS Regional TSP, and provide robust documentation to pursue funding opportunities. Staff noted opportunities for greater jurisdictional coordination; e.g., the overcrossing of Highway 22 needs to be replaced and the project is included in the City's TSP, but more coordination is needed between the City and Oregon Department of Transportation (ODOT) in order to identify and secure funding.

#### PMT Meeting (April 5, 2022)

The PMT discussed the background documents reviewed in this memorandum at its April 5, 2022 meeting. Elements of the reviews were clarified, including: the 2020 Salem TSP includes projects recommended in the 2019 Pictsweet Master Plan TIA but not necessarily projects in the 2019 SKATS Regional TSP; and Salem Revised Code governs access onto Cordon Road in city limits and the Cordon Road Resolution governs access otherwise. PMT members took the opportunity to emphasize that it is important that this corridor plan clearly establish what the governing projects are and what the governing access regulations should be going forward.

## Vision, Goals, and Objectives

The document reviews and stakeholder input summarized earlier in this memorandum informed the proposed vision, goals, and objectives presented below.

### VISION

The vision proposed for the Cordon-Kuebler Corridor Plan is as follows:

*The Cordon Road Corridor is a vital multimodal corridor that serves existing and planned urban development as well as rural and agricultural uses. It provides safe and efficient mobility as part of a detour network and a larger circumferential route around the Salem-Keizer region. The corridor balances local and regional traffic as well as access, safety, and mobility.*

### GOALS AND OBJECTIVES

To achieve this vision, the following goals and associated objectives are proposed for the Corridor Plan.

- A. *Goal: Safety – Provide a corridor that enhances the safety of all transportation modes and users.*

*Objectives*

- 1. Manage access to Cordon Road consistent with its parkway classification to reduce traffic conflicts and crashes while providing reasonable access to land uses.*
- 2. Support planned projects and recommend new projects, as needed, to improve safety in the corridor.*
- 3. Promote multimodal transportation in the corridor by providing safe, separated facilities (e.g., shared-use path) for pedestrians and bicyclists.*

- B. *Goal: Mobility – Optimize the performance of the corridor for the efficient movement of people and goods.*

*Objectives*

- 1. Maintain the function of the corridor as a parkway, maintaining or improving mobility consistent with adopted targets.*
- 2. Employ a combination of solutions for maintaining or improving mobility, including access management, improvements consistent with parkway standards, and innovative strategies such as roundabouts.*
- 3. Emphasize transportation options in the corridor as part of the overall mobility strategy, including separated pedestrian and bicycle facilities; regular, safe (protected) crossings; and enhanced transit service.*
- 4. Support planned Intelligent Transportation System (ITS) projects and recommend new ITS projects, as needed, to improve mobility and safety in the corridor.*

- C. *Goal: Connectivity – Develop a multimodal corridor that connects all users to destinations within and beyond the corridor.*

*Objectives*

- 1. Enhance the transportation network in areas adjacent to Cordon Road and Kuebler Boulevard – specifically in areas inside the Urban Growth Boundary – to reduce reliance on the corridor for local trips and access.*
- 2. Improve access to alternatives to single-occupancy vehicles, including access to bicycle and pedestrian facilities and enhanced transit.*
- 3. Emphasize multimodal transportation in the corridor to connect users to destinations in a way that is sustainable and consistent with local and state climate goals and plans.*

D. *Goal: Community and Economic Vitality – Provide a corridor that supports existing industry, encourages economic development, and enhances the physical and social well-being of local residents.*

*Objectives*

- 1. Update the outlook on implementation measures and funding for the more significant transportation improvements needed in the corridor (e.g., OR 22 interchange), which would serve economic development.*
- 2. Clearly establish access options for existing and new development in the near- and long-term.*
- 3. Develop projects and implementation measures in the corridor that enhance walking, biking, and transit options, improve community health outcomes, and align with state and local climate objectives and goals such as Salem's goal of net zero emissions by 2050.*

E. *Goal: Strategic Investment – Improve the corridor through informed and responsible stewardship of financial resources.*

*Objectives*

- 1. Provide a clear process for prioritizing projects that results in implementation measures and improvements that meet the objectives of this plan.*
- 2. Develop an implementation phasing plan that is based on existing and likely funding and represents the best use of public investments.*
- 3. Produce robust documentation to support the pursuit of future funding opportunities.*

F. *Goal: Coordination – Develop a corridor consistent with adopted plans, where existing and planned land uses are supported by an efficient multimodal corridor, and collaboration amongst affected jurisdictions is fostered.*

*Objectives*

- 1. Create implementation recommendations that are consistent or can be reconciled with existing policies and projects in adopted plans, including local land use, transportation, and climate plans such as the Salem Climate Action Plan.*
- 2. Develop clear short- and long-term access options for properties fronting the Cordon Road/Kuebler Boulevard Corridor.*
- 3. Strengthen collaboration between Marion County and the City of Salem on land use review and actions that may impact the corridor.*
- 4. Ensure that proposed development in the corridor is supported by existing or planned improvements and that transportation improvements are provided with development as needed and as reasonably connected and proportional to development impacts.*
- 5. Strengthen coordination between Marion County, City of Salem, and Oregon Department of Transportation when planning, implementing, and securing funding for transportation system improvements in the corridor.*



## TECHNICAL MEMORANDUM #3 – REFINED DRAFT

DATE: May 11, 2022

TO: Project Management Team

FROM: Lacy Brown, PE | DKS Associates  
Jenna Bogert, PE | DKS Associates  
Chase Hildner, EI | DKS Associates  
Travis Larson, EI | DKS Associates

SUBJECT: Cordon-Kuebler Corridor Plan  
Existing Intersection and Segment Operations Analysis

Project #22001-000

### INTRODUCTION

The primary objective of the Cordon Road Corridor Plan project is to develop a multimodal corridor plan and an access management strategy that outlines a cohesive and consistent vision for the corridor that encourages desired land development, accommodates future growth, and creates a safe and enjoyable travel experience for users of all ages and abilities. The project will also include community involvement to assure the design plan is consistent with the needs of key stakeholders (including neighborhoods, schools, and businesses).

This memorandum provides an analysis of the existing operational conditions of the Cordon Road corridor from Kuebler Boulevard/36<sup>th</sup> Avenue to OR 99E/Hazelgreen Road. The existing safety conditions and inventory for non-vehicular travel will be presented in Technical Memorandum #4.

## STUDY AREA

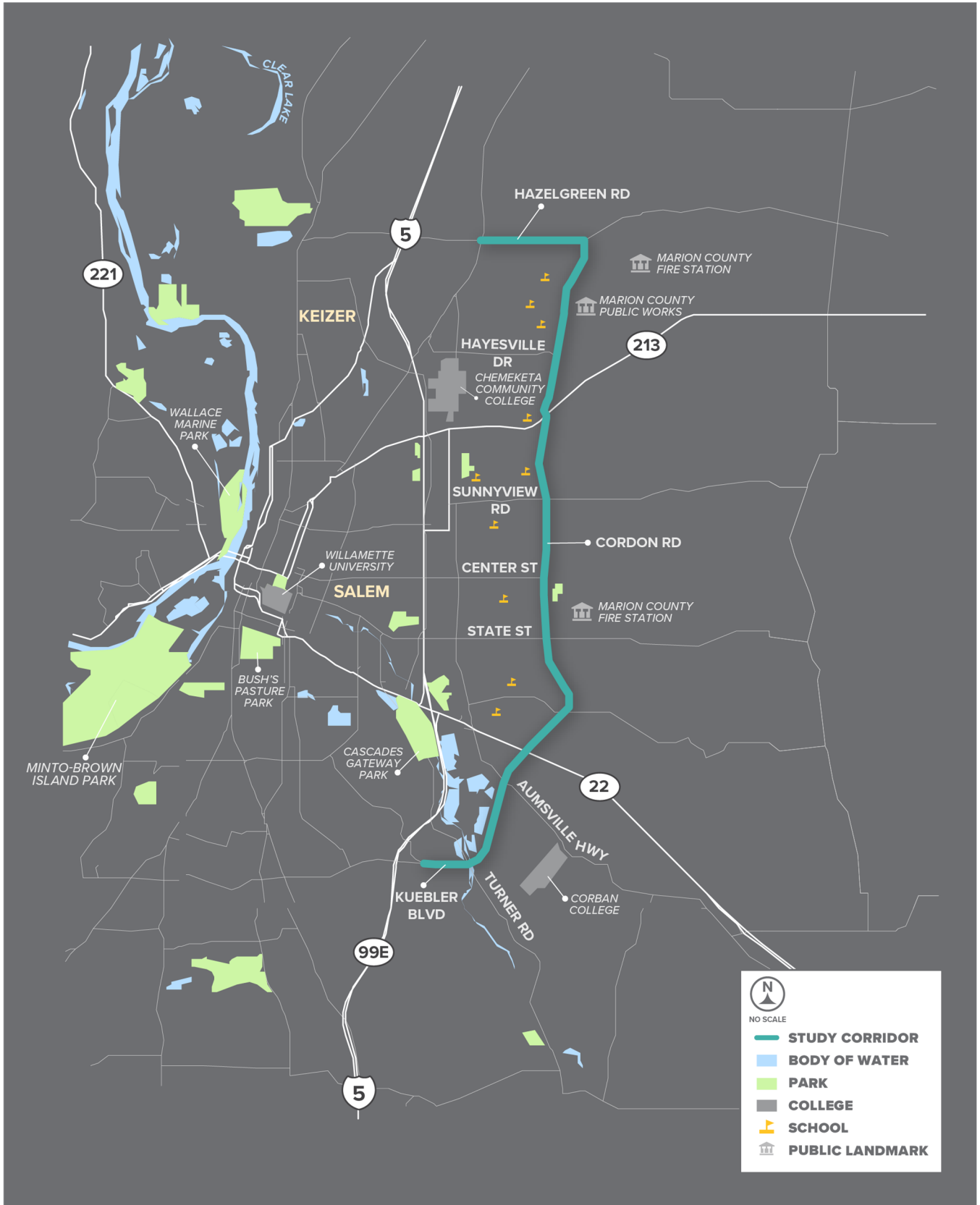
The study intersections and segments are listed below. See Figure 1 for a map of the study area and corridor extents.

### INTERSECTIONS

1. OR 99E/Hazelgreen Road
2. Hazelgreen Road/Lake Labish Road
3. Cordon Road/Hazelgreen Road
4. Cordon Road/Kale Street
5. Cordon Road/Hayesville Drive
6. Cordon Road/Ward Drive
7. Cordon Road/Herrin Road
8. Cordon Road/Silverton Road
9. Cordon Road/Sunnyview Road
10. Cordon Road/Swegle Road
11. Cordon Road/Center Street
12. Cordon Road/Auburn Road
13. Cordon Road/State Street
14. Cordon Road/Pennsylvania Avenue
15. Cordon Road/Caplinger Street
16. Cordon Road/Macleay Road
17. Cordon Road/Gaffin Road
18. Cordon Road-Kuebler Boulevard/Aumsville Highway-Lancaster Drive
19. Kuebler Boulevard/Mill Creek Drive
20. Kuebler Boulevard/Turner Road
21. Kuebler Boulevard/36<sup>th</sup> Avenue

### SEGMENTS

1. Hazelgreen Road: OR 99E to Cordon Road
2. Cordon Road: Hazelgreen Road to Silverton Road
3. Cordon Road: Silverton Road to Sunnyview Road
4. Cordon Road: Sunnyview Road to Center Street
5. Cordon Road: Center Street to State Street
6. Cordon Road: State Street to Macleay Road
7. Cordon Road: Macleay Road to Aumsville Highway/Lancaster Drive
8. Kuebler Boulevard: Aumsville Highway/Lancaster Drive to Turner Road
9. Kuebler Boulevard: Turner Road to 36<sup>th</sup> Avenue



**FIGURE 1: STUDY AREA AND PROJECT EXTENTS**

## ROADWAY NETWORK

The transportation characteristics of the key study area roadways are shown in Table 1 and include functional classification, number of travel lanes, and posted speeds. The functional classification is a key roadway characteristic because it specifies the purpose of the facility<sup>1</sup> and is a determining factor of applicable cross-section, access spacing, and intersection performance standards.

**TABLE 1: EXISTING STUDY AREA ROADWAY CHARACTERISTICS**

ROADWAY	JURISDICTION	FUNCTIONAL CLASSIFICATION	TRAVEL LANES	POSTED SPEED
KUEBLER BOULEVARD	City	Parkway	2	55 mph
CORDON ROAD	City / County <sup>a</sup>	Parkway / Arterial	2 <sup>c</sup>	45 -55 mph
HAZELGREEN ROAD	City / County <sup>b</sup>	Parkway / Arterial	2	50 mph

<sup>a</sup> City jurisdiction from Turner Road to Caplinger Road.

<sup>b</sup> City jurisdiction 350 feet east and west of Lake Labish and 1,250 feet east of OR 99E.

<sup>c</sup> Turn pockets at major intersections (e.g., Silverton Road, Sunnyview Road, Swegle Road, others).

<sup>1</sup> The primary purpose of an arterial is to provide mobility, whereas at the opposite end of the spectrum, a local road is primarily concerned with site access. Collector roadways provide a transition between arterials and local roads.



## EXISTING MOTOR VEHICLE CONDITIONS

The following sections summarize the existing conditions inventory and analyses of motor vehicle travel along the study corridor.

### EXISTING VEHICULAR VOLUME AND CLASSIFICATION

Traffic volume data was compiled from a variety of sources, and the collection dates for all traffic counts are summarized in the appendix. Table 2 presents the 2022 adjusted 24-hour segment counts at 11 locations along the corridor. This data includes bi-directional average daily vehicular volumes and heavy vehicle percentages. Because the data was collected in different months and years, adjustment factors have been applied to the raw traffic counts to estimate 2022 conditions. Refer to the section on *Volume Adjustment Factors* for more details on these factors.

As shown in Table 2, the Cordon Road corridor experiences daily traffic volumes between 9,600 and 22,500 vehicles (adjusted). The heavy vehicle percentages range between 1.7% and 5.8%, with a higher percentage of heavy vehicles on the southern third of the study corridor.

**TABLE 2: BI-DIRECTIONAL VOLUMES AND HEAVY VEHICLE PERCENTAGES (2022)**

LOCATION	ESTIMATED 2022 AVERAGE DAILY TRAFFIC (VPD)	HEAVY VEHICLE PERCENTAGES <sup>a</sup>
HAZELGREEN RD, EAST OF LAKE LABISH RD	10,300	3.7%
CORDON RD, SOUTH OF WARD DR	9,800	2.2%
CORDON RD, SOUTH OF SILVERTON RD	16,300	1.7%
CORDON RD, SOUTH OF SUNNYVIEW RD	17,500	2.0%
CORDON RD, SOUTH OF CENTER ST	19,200	2.8%
CORDON RD, SOUTH OF STATE ST	15,700	2.1%
CORDON RD, SOUTH OF MACLEAY RD	16,000	5.5%
CORDON RD, NORTH OF GAFFIN RD	15,100	2.8%
CORDON RD, SOUTH OF GAFFIN RD	14,200	3.7%
CORDON RD, NORTH OF MILL CREEK DR	17,500	4.3%
KUEBLER BLVD, WEST OF TURNER RD	18,800	5.8%

<sup>a</sup> Heavy vehicle is considered Class 6 & above.

## EXISTING 2022 TURNING MOVEMENT COUNTS

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Turning movement volumes were supplied or collected at the twenty-one study intersections along the study corridor. The intersection volumes were collected for the AM peak period and PM peak periods. The dates of data collection for intersection are listed in the Appendix.

### VOLUME ADJUSTMENT FACTORS

Because the intersection volume data was collected on different dates spanning five years (2017 to 2022), a seasonal adjustment factor and annual growth rate were calculated and applied to the traffic counts to consistently estimate 2022 existing conditions. The adjusted traffic counts for the AM and PM peak hours are shown in Figure 2.

#### Seasonal Adjustment Factors

Following methodology provided in the ODOT Analysis Procedures Manual (APM)<sup>2</sup>, the AM and PM peak hour volumes were adjusted to represent the peak month of the year. The seasonal adjustment factors were calculated using the ATR Characteristics Table Method as no ATR is directly on-site. Average Annual Daily Traffic (AADT) data from two ATRS, 24-001 (Woodburn) and 27-002 (Brush College), were averaged to determine adjustment factors for each month of the year. The calculations for the seasonal factor are shown in the Appendix. Seasonal adjustment factors were not applied to the two intersections of Kuebler Boulevard/36<sup>th</sup> Avenue and Kuebler Boulevard/Turner Road.

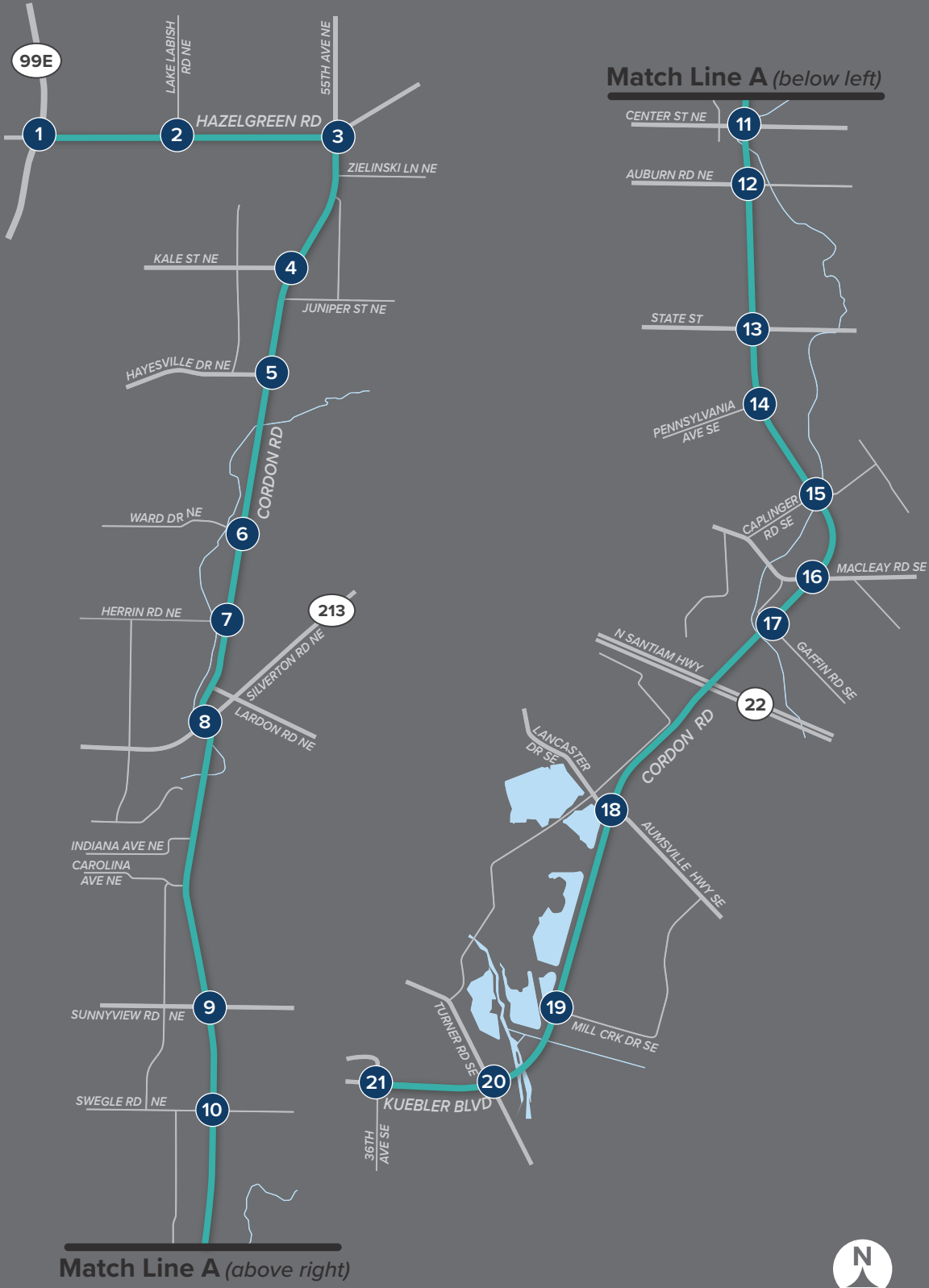
#### Annual Growth Rate

After applying seasonal adjustments to all of the traffic counts, historic and current traffic counts at multiple locations<sup>3</sup> along the corridor were used to estimate an average yearly growth rate along the corridor. The average annual growth rate for the corridor was calculated to be 2.16% between 2017 and 2022. The calculations for the annual growth rate are shown in the Appendix.

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<sup>2</sup> Analysis Procedures Manual, Oregon Department of Transportation, Updated December 2019.

<sup>3</sup> Locations include the Cordon Road segments between Herrin Rd and Silverton Rd and between Haysville Dr and Ward Dr. Intersections of Cordon Rd/Lancaster Rd and Cordon Rd/Gaffin Rd.



Match Line A (below left)

Match Line A (above right)



1 OR 99E @ Hazelgreen Rd./Chemawa Rd.

2 Hazelgreen Rd. @ Lake Labish Rd. NE

3 Cordon Rd. @ Hazelgreen Rd.

4 Cordon Rd. @ Kale St.

5 Cordon Rd. @ Hayesville Dr.

6 Cordon Rd. @ Ward Dr.

7 Cordon Rd. @ Herrin Rd.

8 Cordon Rd. @ Silverton Rd.

9 Cordon Rd. @ Sunnyview Rd.

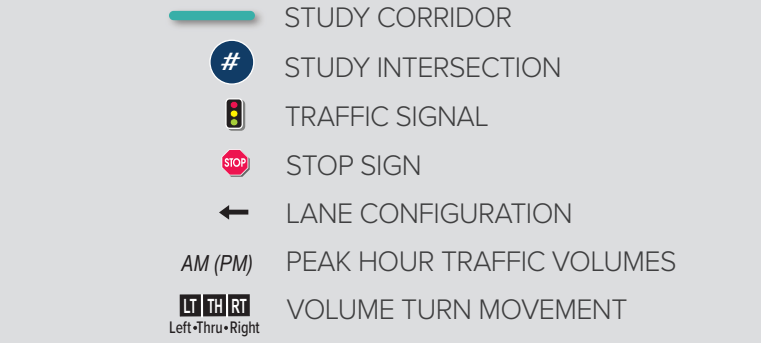
10 Cordon Rd. @ Swegle Rd.

14 Cordon Rd. @ Pennsylvania Ave.

15 Cordon Rd. @ Caplinger Rd.

19 Kuebler Blvd. @ Mill Creek Dr.

20 Kuebler Blvd. @ Turner Rd.



## INTERSECTION OPERATING STANDARDS

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Agency mobility standards often require intersections to meet level of service (LOS) or volume-to-capacity (V/C) intersection operation thresholds.

- The intersection LOS is similar to a “report card” rating based upon average vehicle delay. Level of service A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. Level of service D and E are progressively worse operating conditions. Level of service F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.
- The volume-to-capacity (v/c) ratio represents the level of saturation of the intersection or individual movement. It is determined by dividing the peak hour traffic volume by the maximum hourly capacity of an intersection or turn movement. When the V/C ratio approaches 0.95, operations become unstable and small disruptions can cause the traffic flow to break down, resulting in the formation of excessive queues.

All study intersections mobility targets/operating standards are based on the jurisdictional ownership. Three jurisdictions are represented in the list of study intersections: Oregon Department of Transportation (ODOT), Marion County, and City of Salem.

### **Oregon Department of Transportation**

The intersection under state jurisdiction must comply with the v/c ratios in the Oregon Highway Plan (OHP).<sup>4</sup> The ODOT v/c targets are based on the highway category and location. The OR 99E/Hazelgreen Rd (#1) intersection is within the Urban Growth Boundary and the MPO boundary and is categorized as a non-freight Regional Highway. The intersections, therefore, must operate at a v/c ratio of 0.95 or less.

### **Marion County**

Marion County requires that all signalized and all-way stop intersections shall operate at LOS D or better (all movements shall operate at LOS E or better) with a v/c ratio of 0.85 or less and all other unsignalized intersections shall operate at LOS E.<sup>5</sup> The County also states that if a County intersection is within an Urban Growth Boundary (UGB) of a city, the intersection must also meet the operating standards of that city. Of the intersections under County jurisdiction, only the Hazelgreen Rd/Lake Labish Rd (#2) intersection is located with the current City of Salem UGB.

### **City of Salem**

The City of Salem requires signalized intersections to maintain an LOS E and/or a v/c ratio of 0.90 or better. Unsignalized intersections are to maintain an LOS E or better.<sup>6</sup> Table 3 shows the mobility target/operating standard for each study intersection.

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<sup>4</sup> Table 6, Oregon Highway Plan, Oregon Department of Transportation, Revised May 2015.

<sup>5</sup> Traffic Impact Analysis Requirements, Marion County, [www.co.marion.or.us/PW/Engineering/Pages/analysis.aspx](http://www.co.marion.or.us/PW/Engineering/Pages/analysis.aspx).

<sup>6</sup> Table 6-32, City of Salem Administrative Rules Design Standards, Public Works Department, January 2016.

**TABLE 3: STUDY INTERSECTION MOBILITY TARGETS/OPERATING STANDARDS**

	<b>INTERSECTION</b>	<b>JURISDICTION</b>	<b>INTERSECTION CONTROL</b>	<b>MOBILITY TARGET/ OPERATING STANDARD</b>
1	OR 99E/Hazelgreen Rd	ODOT	Signalized	$v/c \leq 0.95$
2	Hazelgreen Rd/Lake Labish Rd	Marion County	Two-Way-Stop	LOS E (County & City)
3	Cordon Rd/Hazelgreen Rd	Marion County	All-Way-Stop	LOS E
4	Cordon Rd/Kale St	Marion County	Two-Way-Stop	LOS E
5	Cordon Rd/Hayesville Dr	Marion County	Two-Way-Stop	LOS E
6	Cordon Rd/Ward Dr	Marion County	Two-Way-Stop	LOS E
7	Cordon Rd/Herrin Rd	Marion County	Two-Way-Stop	LOS E
8	Cordon Rd/Silverton Rd	Marion County	Signalized	LOS D, $v/c \leq 0.85$
9	Cordon Rd/Sunnyview Rd	Marion County	Signalized	LOS D, $v/c \leq 0.85$
10	Cordon Rd/Swegle Rd	Marion County	Two-Way-Stop	LOS E
11	Cordon Rd/Center St	Marion County	Signalized	LOS D, $v/c \leq 0.85$
12	Cordon Rd/Auburn Rd	Marion County	Two-Way-Stop	LOS E
13	Cordon Rd/State St	Marion County	Signalized	LOS D, $v/c \leq 0.85$
14	Cordon Rd/Pennsylvania Ave	Marion County	Two-Way-Stop	LOS E
15	Cordon Rd/Caplinger St	Marion County	Two-Way-Stop	LOS E
16	Cordon Rd/Macleay Rd	City of Salem	Signalized	LOS E, $v/c \leq 0.90$
17	Cordon Rd/Gaffin Rd	City of Salem	Signalized	LOS E, $v/c \leq 0.90$
18	Cordon Rd-Kuebler Blvd/ Aumsville Hwy-Lancaster Dr	City of Salem	Signalized	LOS E, $v/c \leq 0.90$
19	Kuebler Blvd/Mill Creek Dr	City of Salem	Signalized	LOS E, $v/c \leq 0.90$
20	Kuebler Blvd/Turner Rd	City of Salem	Signalized	LOS E, $v/c \leq 0.90$
21	Kuebler Blvd/36th Ave	City of Salem	Signalized	LOS E, $v/c \leq 0.90$

## EXISTING 2022 VEHICLE OPERATIONS PERFORMANCE

The existing performance of the study intersections was evaluated using Synchro™ software, which employs methodology from the 6th Edition of the Highway Capacity Manual<sup>7</sup> for both unsignalized and signalized intersections and segments. The intersection operation performance standards of level of service (LOS), delay, and volume-to-capacity (V/C) ratios were calculated for the AM and PM peak hours and are reported in Table 4.

**TABLE 4: EXISTING (2022) INTERSECTION OPERATIONS**

INTERSECTION	CRITICAL MOVEMENT	OPERATING STANDARD	AM PEAK HOUR			PM PEAK HOUR			
			V/C	DELAY	LOS	V/C	DELAY	LOS	
<b>SIGNALIZED</b>									
1	OR 99E/ HAZELGREEN ROAD	N/A	v/c ≤ 0.95	0.67	38.3	D	0.83	64.7	E
8	CORDON ROAD/ SILVERTON ROAD	N/A	LOS D, v/c ≤ 0.85	0.70	28.0	C	0.84	37.3	D
9	CORDON ROAD/ SUNNYVIEW ROAD	N/A	LOS D, v/c ≤ 0.85	0.76	17.4	B	0.85	23.5	C
11	CORDON ROAD/ CENTER STREET	N/A	LOS D, v/c ≤ 0.85	0.66	16.7	B	<b>0.86</b>	22.6	C
13	CORDON ROAD/ STATE STREET	N/A	LOS D, v/c ≤ 0.85	<b>0.92</b>	30.5	C	<b>1.03</b>	47.9	D
16	CORDON ROAD/ MACLEAY ROAD	N/A	LOS E, v/c ≤ 0.90	0.60	11.7	B	0.70	12.6	B
17	CORDON ROAD/ GAFFIN ROAD	N/A	LOS E, v/c ≤ 0.90	0.56	12.4	B	0.67	14.2	B
18	CORDON ROAD- KUEBLER BOULEVARD/ AUMSVILLE HIGHWAY- LANCASTER DRIVE	N/A	LOS E, v/c ≤ 0.90	0.39	14.5	B	0.42	14.8	B
19	KUEBLER BOULEVARD/ MILL CREEK DRIVE	N/A	LOS E, v/c ≤ 0.90	0.56	5.7	A	0.55	5.8	A
20	KUEBLER BOULEVARD/ TURNER ROAD	N/A	LOS E, v/c ≤ 0.90	0.80	23.8	C	0.83	23.3	C
21	KUEBLER BOULEVARD/ 36 <sup>TH</sup> AVENUE	N/A	LOS E, v/c ≤ 0.90	0.68	8.0	A	0.71	14.6	B

<sup>7</sup> Highway Capacity Manual, 6th Edition, Highway Transportation Research Board, 2017.

INTERSECTION	CRITICAL MOVEMENT	OPERATING STANDARD	AM PEAK HOUR			PM PEAK HOUR			
			V/C	DELAY	LOS	V/C	DELAY	LOS	
<b>UNSIGNALIZED (TWO-WAY STOP AND ALL-WAY STOP)</b>									
2	HAZELGREEN ROAD/LAKE LABISH ROAD NE	SB	LOS E	0.05	14.2	A/B	0.04	15.6	A/C
3	CORDON ROAD/HAZELGREEN ROAD (AWS)	WB (AM) EB (PM)	LOS E	0.46	12.1	B	0.95	35.9	E
4	CORDON ROAD/KALE STREET	EBL	LOS E	0.07	13.1	A/B	0.10	20.5	A/C
5	CORDON ROAD/HAYESVILLE DRIVE	EB	LOS E	0.66	24.2	A/C	0.36	19.2	A/C
6	CORDON ROAD/WARD DRIVE	EB	LOS E	0.40	21.9	A/C	0.30	23.8	A/C
7	CORDON ROAD/HERRIN ROAD	EB	LOS E	0.17	16.0	A/C	0.23	19.0	A/C
10	CORDON ROAD/SWEGLE ROAD	EB	LOS E	0.78	<b>89.4</b>	<b>A/F</b>	>1.20	<b>&gt;120.0</b>	<b>B/F</b>
12	CORDON ROAD/AUBURN ROAD	WB (AM) EB (PM)	LOS E	0.41	<b>85.1</b>	<b>A/F</b>	>1.20	<b>&gt;120.0</b>	<b>B/F</b>
14	CORDON ROAD/PENNSYLVANIA AVENUE	EB	LOS E	0.54	43.3	A/E	0.69	<b>111.2</b>	<b>B/F</b>
15	CORDON ROAD/CAPLINGER STREET	EB	LOS E	1.01	<b>&gt;120.0</b>	<b>A/F</b>	>1.20	<b>&gt;120.0</b>	<b>B/F</b>

**SIGNALIZED INTERSECTION:**

Delay = Average Intersection Delay (sec.)  
v/c = Average Intersection Volume-to-Capacity Ratio  
LOS = Average Intersection Level of Service

**TWO-WAY STOP-CONTROLLED INTERSECTION:**

Delay = Critical Movement Approach Delay (sec.)  
v/c = Critical Movement Volume-to-Capacity Ratio  
LOS = Level of Service (Major/Minor Road)

**ALL-WAY STOP-CONTROLLED INTERSECTION:**

v/c = Critical Movement Volume-to-Capacity Ratio  
Delay = Average Intersection Delay (sec.)  
LOS = Average Intersection Level of Service

**Bold/Highlighted** = Does Not Meet Mobility Target/Mobility Standard

As shown, not all intersections meet the City of Salem, Marion County, or ODOT mobility standards. Two signalized intersections do not meet applicable standards based on the v/c or the LOS. Four unsignalized intersections do not meet applicable standards based on the LOS.

The segment level of service for the nine study segments is provided in Table 5. There are no identified standards or targets for segment LOS, however, segments with an LOS of E or F are highlighted in yellow as they are likely near or over capacity.

**TABLE 5: EXISTING (2022) SEGMENT LEVEL OF SERVICE**

SEGMENT	AM PEAK HOUR LOS		PM PEAK HOUR LOS	
	NB OR EB	SB OR WB	NB OR EB	SB OR WB
1 HAZELGREEN ROAD: OR 99E TO CORDON ROAD	B	B	B	B
2 CORDON ROAD: HAZELGREEN ROAD TO SILVERTON ROAD	A	A	A	A
3 CORDON ROAD: SILVERTON ROAD TO SUNNYVIEW ROAD	A	B	A	B
4 CORDON ROAD: SUNNYVIEW ROAD TO CENTER STREET	A	A	B	B
5 CORDON ROAD: CENTER STREET TO STATE STREET	A	B	B	C
6 CORDON ROAD: STATE STREET TO MACLEAY RD	B	A	C	A
7 CORDON ROAD: MACLEAY RD TO AUMSVILLE HIGHWAY-LANCASTER DRIVE	B	B	C	B
8 KUEBLER BOULEVARD: AUMSVILLE HIGHWAY-LANCASTER DRIVE TO TURNER ROAD	B	B	B	B
9 KUEBLER BOULEVARD: TURNER ROAD TO 36 <sup>TH</sup> AVENUE	E	C	D	C



## SUMMARY

This memorandum presents the existing conditions for motor vehicle travel along the Cordon Road Corridor.

- There are 21 study intersections and 9 segments in the study area. The corridor experiences a range of 9,800 to 19,200 vehicles per day and posted speeds are between 45 to 55 miles per hour. There are bicycle lanes along most of the corridor and little to no sidewalks present on the corridor.
- All segment and intersection traffic volumes were adjusted to consistently represent 2022 traffic conditions. First, a seasonal adjustment was applied to all but two study intersections to bring the traffic counts to a consistent peak month of the year. Second, a growth factor was applied to bring all counts to the current year (2022). The annual growth rate applied to the counts was 2.16%.
- Existing intersection operations were evaluated for all 21 study intersections using the adjusted 2022 peak hour traffic volumes. Six intersections did not meet applicable standards for the AM and/or PM conditions.
  - Cordon Road/Swegle Road
  - Cordon Road/Center Street
  - Cordon Road/Auburn Road
  - Cordon Road/State Street
  - Cordon Road/Pennsylvania Avenue
  - Cordon Road/Caplinger Street
- Existing segment operations were evaluated for the nine roadway segments using the adjusted 2022 peak hour traffic volumes. Only one of the segments currently operate at LOS E or worse, indicating they are near or over capacity.
  - Kuebler Boulevard: Turner Road to 36<sup>th</sup> Avenue

# APPENDIX

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**APPENDIX F – HCM SEGMENT REPORTS**



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## APPENDIX A – TRAFFIC COUNT DATA SUMMARY

#	INTERSECTION	JURISDICTION		COUNT DATE
1	OR 99E/Hazelgreen Rd	ODOT		March 16 & 17, 2022
2	Hazelgreen Rd/Lake Labish Rd	Marion County		March 10 & 15, 2022
3	Cordon Rd/Hazelgreen Rd	Marion County		July 12-13, 2018
4	Cordon Rd/Kale St	Marion County		October 2-3, 2018
5	Cordon Rd/Hayesville Dr	Marion County		October 2-3, 2018
6	Cordon Rd/Ward Dr	Marion County		February 1 & 3, 2022
7	Cordon Rd/Herrin Rd	Marion County		February 1 & 2, 2022
8	Cordon Rd/Silverton Rd	Marion County		June 6, 2017
9	Cordon Rd/Sunnyview Rd	Marion County		September 15, 2018
10	Cordon Rd/Swegle Rd	Marion County		June 6, 2017
11	Cordon Rd/Center St	Marion County		June 6, 2017
12	Cordon Rd/Auburn Rd	Marion County		June 6, 2017
13	Cordon Rd/State St	Marion County		January 11, 2022
14	Cordon Rd/Pennsylvania Ave	Marion County		June 6-7, 2017
15	Cordon Rd/Caplinger St	Marion County		January 23, 2019
16	Cordon Rd/Macleay Rd	City of Salem		June 6, 2017
17	Cordon Rd/Gaffin Rd	City of Salem		September 26, 2018
18	Cordon Rd/Kuebler Blvd/Aumsville Hwy	City of Salem		December 2, 2021
19	Kuebler Blvd/Mill Creek Dr	City of Salem		November 16, 2021
20	Kuebler Blvd/Turner Rd	City of Salem		December 8, 2021
21	Kuebler Blvd/36th Ave	City of Salem		November 17, 2021
#	SEGMENT	LENGTH	JURISDICTION	COUNT DATE
1	Hazelgreen Rd: Cordon Rd to OR 99E	1.4 miles	Marion County	July 10, 2018
2	Cordon Rd: Silverton Rd to Hazelgreen Rd	2.4 miles	Marion County	August 14, 2017

3	Cordon Rd: Sunnyview Rd to Silverton Rd	1.1 miles	Marion County	August 16, 2017
4	Cordon Rd: Center St to Sunnyview Rd	1.1 miles	Marion County	August 28, 2017
5	Cordon Rd: State St to Center St	0.8 miles	Marion County	August 23, 2017
6	Cordon Rd: Caplinger Rd to State St	0.7 miles	Marion County	August 23, 2017
7	Cordon Rd: Aumsville Hwy to Caplinger Rd	1.6 miles	City of Salem	November 16-17, 2021
8	Kuebler Blvd: Turner Rd to Aumsville Hwy	1.2 miles	City of Salem	November 16-17, 2021
9	Kuebler Blvd: 36th Ave to Turner Rd	0.4 miles	City of Salem	November 16-17, 2021

## APPENDIX B – TRAFFIC COUNT DATA SHEETS

---

Cordon at Kale  
AM Count

Time	SB Right	SB Thru	SB Left	WB Right	WB Thru	WB Left	NB Right	NB Thru	NB Left	EB Right	EB Thru	EB Left
07:00	1	32	0				0	73	9	13	0	6
07:15	4	37	0				0	56	5	28	0	11
07:30	3	61	0				0	53	2	13	0	6
07:45	2	43	0				0	37	8	12	0	4
08:00	5	44	0				0	37	7	15	0	2
08:15	3	42	0				0	49	5	12	0	9
08:30	5	43	0				0	58	12	14	0	7
08:45	0	36	0				0	45	8	13	0	2

Cordon at Kale  
PM Count

Start Time	Cordon From North				Kale From East				Cordon From South				From West				
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
03:30 PM	6	69	0	0	0	0	0	0	0	0	59	11	0	12	0	0	0
03:45 PM	4	69	0	0	0	0	0	0	0	0	53	13	0	18	0	6	0
04:00 PM	3	80	0	0	0	0	0	0	0	0	49	10	0	19	0	5	0
04:15 PM	7	80	0	0	0	0	0	0	0	0	69	18	0	16	0	2	0
04:30 PM	8	90	0	0	0	0	0	0	0	0	52	10	0	17	0	5	0
04:45 PM	6	91	0	0	0	0	0	0	0	0	53	18	0	14	0	8	0
05:00 PM	8	109	0	0	0	0	0	0	0	0	67	15	0	25	0	5	0
05:15 PM	11	85	0	0	0	0	0	0	0	0	46	19	0	15	0	4	0
05:30 PM	8	99	0	0	0	0	0	0	0	0	50	16	0	17	0	4	0
05:45 PM	7	77	0	0	0	0	0	0	0	0	49	15	0	16	0	2	0

Cordon at Hayesville  
AM Count

Start Time	Cordon From North				Cordon From South				Hayesville From West			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
07:00 AM	12	36	0	0	0	76	28	0	33	0	9	0
07:15 AM	11	59	0	0	0	63	89	0	66	0	5	0
07:30 AM	5	74	0	0	0	57	28	0	90	0	7	0
07:45 AM	3	58	0	0	0	52	16	0	26	0	3	0
08:00 AM	3	59	0	0	0	45	11	0	21	0	1	0
08:15 AM	6	54	0	0	0	57	15	0	20	0	7	0
08:30 AM	1	63	0	0	0	70	19	0	13	0	3	0
08:45 AM	5	56	0	0	0	62	9	0	11	0	0	0



Cordon at Hayesville  
PM Count

Start Time	Cordon From North				Cordon From South				Hayesville From West			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
03:30 PM	5	87	0	0	0	78	33	0	20	0	6	0
03:45 PM	4	90	0	0	0	61	32	0	30	0	9	0
04:00 PM	4	98	0	0	0	58	40	0	55	0	11	0
04:15 PM	9	97	0	0	0	81	22	0	23	0	4	0
04:30 PM	17	98	0	0	0	65	31	0	32	0	0	0
04:45 PM	7	106	0	0	0	70	18	0	19	0	6	0
05:00 PM	12	129	0	0	0	78	25	0	27	0	4	0
05:15 PM	8	93	0	0	0	65	24	0	24	0	8	0
05:30 PM	9	123	0	0	0	68	28	0	20	0	2	0
05:45 PM	3	90	0	0	0	62	25	0	30	0	3	0

**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

**TU 2660  
Trevor Mace  
Clear Dry  
Moderate Traffic**

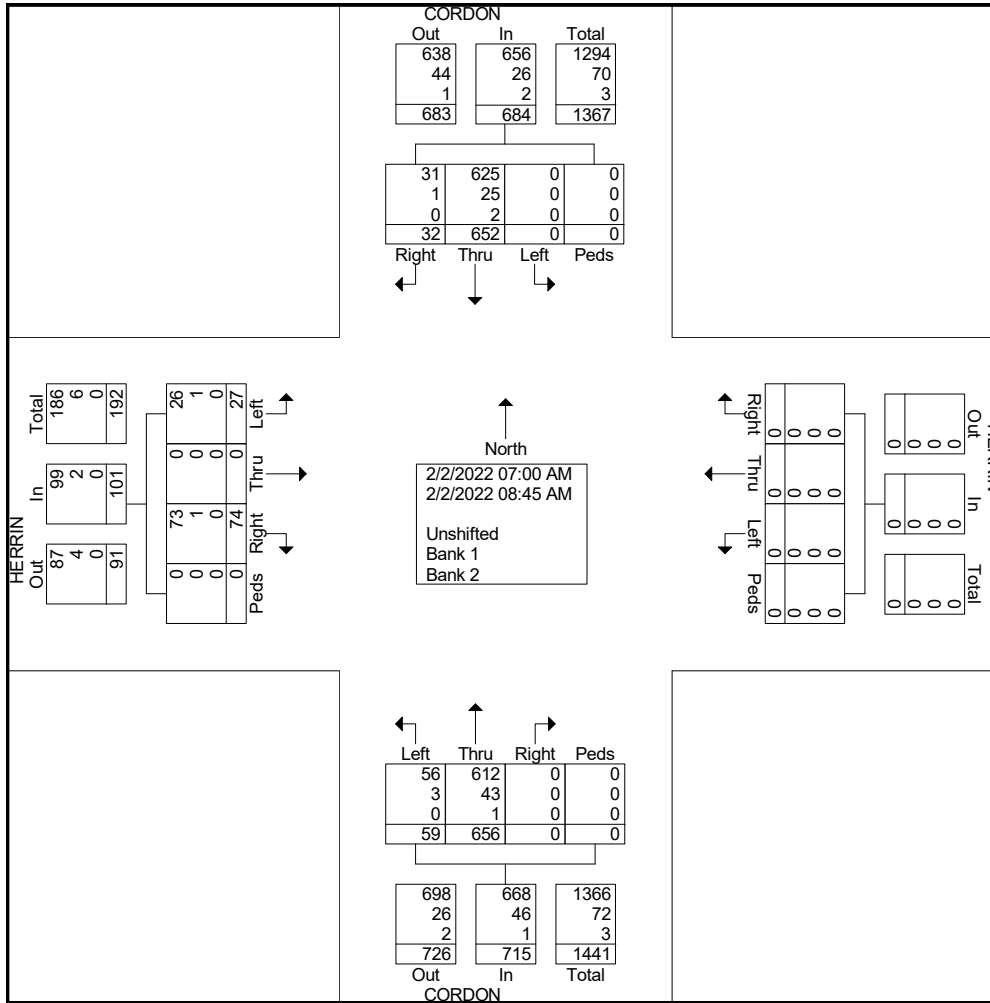
**File Name : Cordon at Herrin AM 2-2-2022  
Site Code : 00000000  
Start Date : 2/2/2022  
Page No : 1**

Groups Printed- Unshifted - Bank 1 - Bank 2

Start Time	CORDON From North					HERRIN From East					CORDON From South					HERRIN From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	1	78	0	0	79	0	0	0	0	0	0	72	3	0	75	10	0	3	0	13	167
07:15 AM	3	70	0	0	73	0	0	0	0	0	0	78	6	0	84	11	0	3	0	14	171
07:30 AM	6	95	0	0	101	0	0	0	0	0	0	86	6	0	92	15	0	3	0	18	211
07:45 AM	6	96	0	0	102	0	0	0	0	0	0	89	14	0	103	8	0	5	0	13	218
Total	16	339	0	0	355	0	0	0	0	0	0	325	29	0	354	44	0	14	0	58	767
08:00 AM	4	74	0	0	78	0	0	0	0	0	0	83	7	0	90	6	0	4	0	10	178
08:15 AM	2	85	0	0	87	0	0	0	0	0	0	84	7	0	91	7	0	3	0	10	188
08:30 AM	5	77	0	0	82	0	0	0	0	0	0	76	6	0	82	8	0	4	0	12	176
08:45 AM	5	77	0	0	82	0	0	0	0	0	0	88	10	0	98	9	0	2	0	11	191
Total	16	313	0	0	329	0	0	0	0	0	0	331	30	0	361	30	0	13	0	43	733
Grand Total	32	652	0	0	684	0	0	0	0	0	0	656	59	0	715	74	0	27	0	101	1500
Apprch %	4.7	95.3	0	0		0	0	0	0		0	91.7	8.3	0		73.3	0	26.7	0		
Total %	2.1	43.5	0	0	45.6	0	0	0	0	0	0	43.7	3.9	0	47.7	4.9	0	1.8	0	6.7	
Unshifted	31	625	0	0	656	0	0	0	0	0	0	612	56	0	668	73	0	26	0	99	1423
% Unshifted	96.9	95.9	0	0	95.9	0	0	0	0	0	0	93.3	94.9	0	93.4	98.6	0	96.3	0	98	94.9
Bank 1	1	25	0	0	26	0	0	0	0	0	0	43	3	0	46	1	0	1	0	2	74
% Bank 1	3.1	3.8	0	0	3.8	0	0	0	0	0	0	6.6	5.1	0	6.4	1.4	0	3.7	0	2	4.9
Bank 2	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
% Bank 2	0	0.3	0	0	0.3	0	0	0	0	0	0	0.2	0	0	0.1	0	0	0	0	0	0.2

**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

**File Name : Cordon at Herrin AM 2-2-2022  
Site Code : 00000000  
Start Date : 2/2/2022  
Page No : 2**



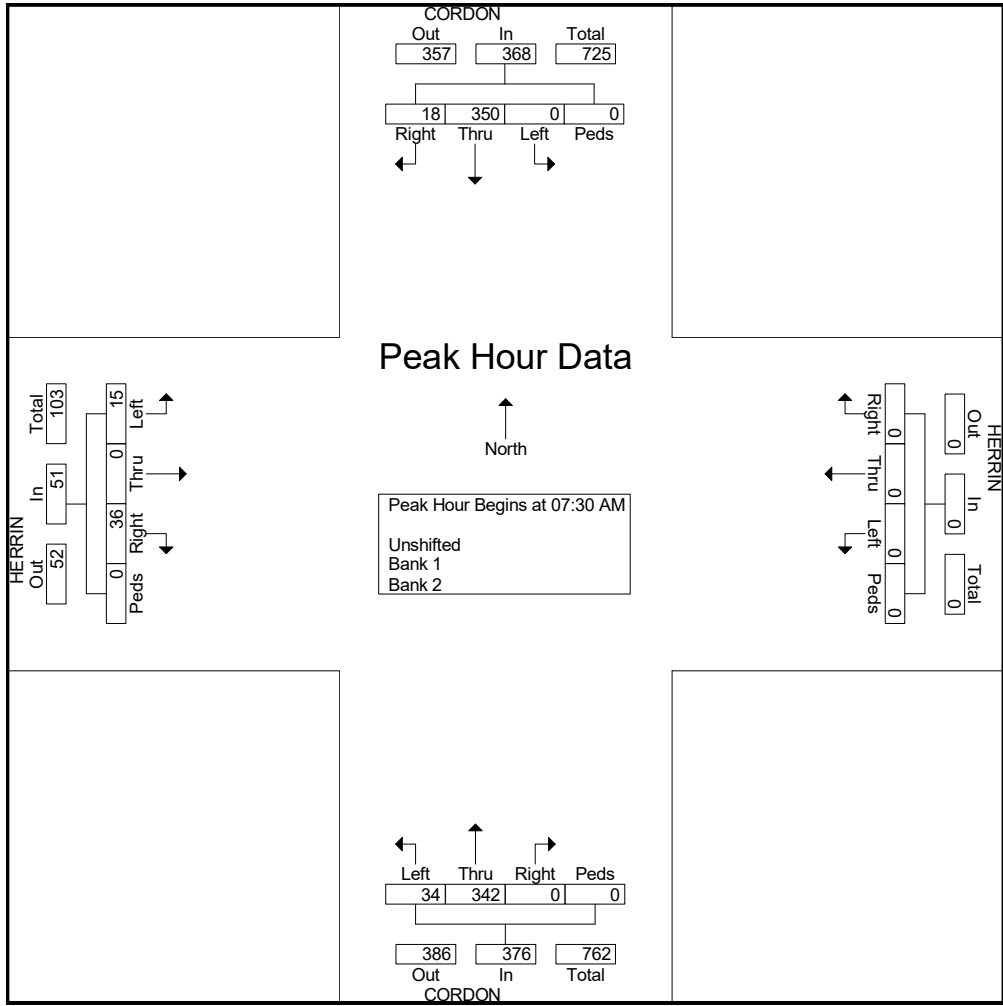
**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

**File Name : Cordon at Herrin AM 2-2-2022  
Site Code : 00000000  
Start Date : 2/2/2022  
Page No : 3**

Start Time	CORDON From North					HERRIN From East					CORDON From South					HERRIN From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	<b>6</b>															<b>15</b>					<b>18</b>
07:45 AM	6	<b>96</b>	0	0	<b>102</b>	0	0	0	0	0	0	<b>89</b>	<b>14</b>	0	<b>103</b>	8	0	<b>5</b>	0	13	<b>218</b>
08:00 AM	4	74	0	0	78	0	0	0	0	0	0	83	7	0	90	6	0	4	0	10	178
08:15 AM	2	85	0	0	87	0	0	0	0	0	0	84	7	0	91	7	0	3	0	10	188
Total Volume	18	350	0	0	368	0	0	0	0	0	0	342	34	0	376	36	0	15	0	51	795
% App. Total	4.9	95.1	0	0		0	0	0	0		0	91	9	0		70.6	0	29.4	0		
PHF	.750	.911	.000	.000	.902	.000	.000	.000	.000	.000	.000	.961	.607	.000	.913	.600	.000	.750	.000	.708	.912

**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

**File Name : Cordon at Herrin AM 2-2-2022  
Site Code : 00000000  
Start Date : 2/2/2022  
Page No : 4**



**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

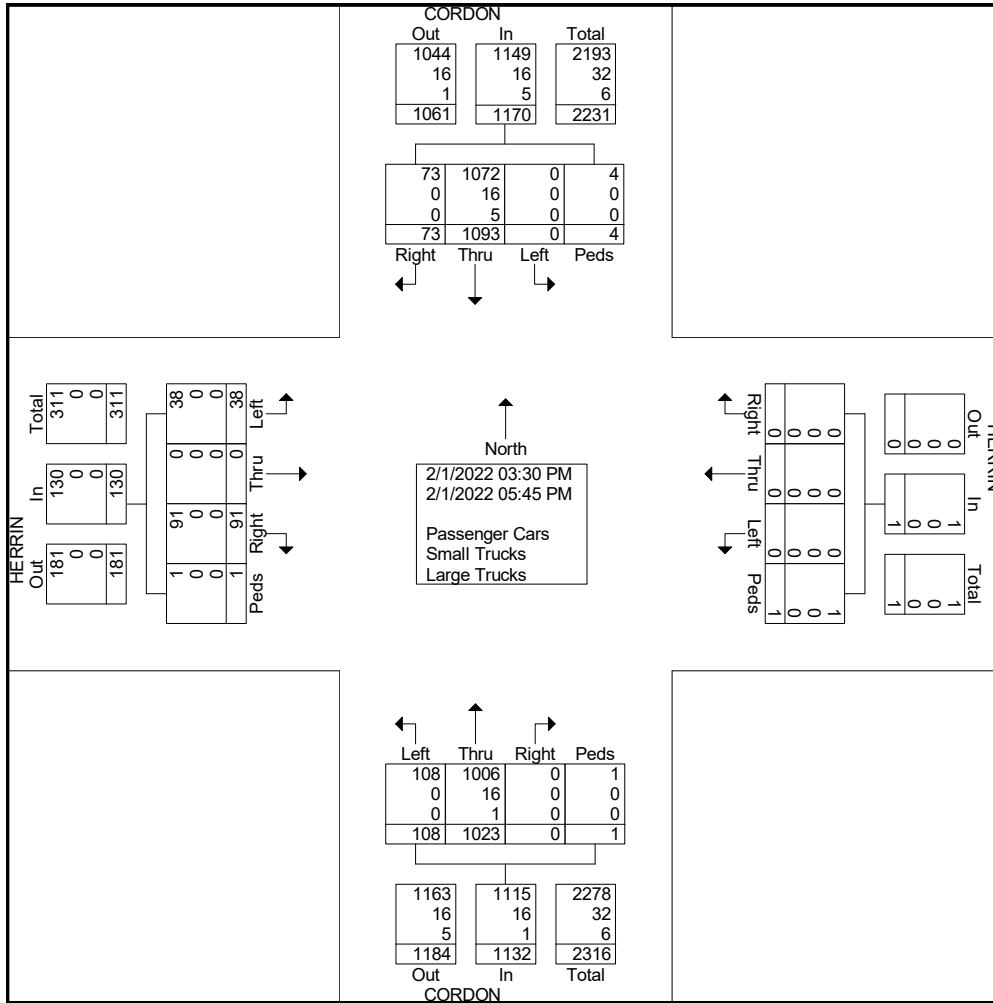
**File Name : Cordon at Herrin PM 2-1-2022  
Site Code : 00000000  
Start Date : 2/1/2022  
Page No : 1**

Groups Printed- Passenger Cars - Small Trucks - Large Trucks

Start Time	CORDON From North					HERRIN From East					CORDON From South					HERRIN From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:30 PM	6	94	0	0	100	0	0	0	0	0	0	107	11	0	118	8	0	3	0	11	229
03:45 PM	8	126	0	0	134	0	0	0	0	0	0	109	9	0	118	8	0	2	0	10	262
Total	14	220	0	0	234	0	0	0	0	0	0	216	20	0	236	16	0	5	0	21	491
04:00 PM	7	97	0	1	105	0	0	0	0	0	0	94	10	0	104	6	0	3	0	9	218
04:15 PM	10	118	0	0	128	0	0	0	0	0	0	94	8	0	102	11	0	3	0	14	244
04:30 PM	7	124	0	0	131	0	0	0	0	0	0	110	12	0	122	13	0	3	0	16	269
04:45 PM	11	126	0	0	137	0	0	0	0	0	0	102	12	0	114	9	0	4	0	13	264
Total	35	465	0	1	501	0	0	0	0	0	0	400	42	0	442	39	0	13	0	52	995
05:00 PM	8	112	0	0	120	0	0	0	0	0	0	100	11	0	111	13	0	6	0	19	250
05:15 PM	4	105	0	3	112	0	0	0	0	0	0	110	12	1	123	9	0	5	1	15	250
05:30 PM	6	97	0	0	103	0	0	0	1	1	0	111	9	0	120	10	0	4	0	14	238
05:45 PM	6	94	0	0	100	0	0	0	0	0	0	86	14	0	100	4	0	5	0	9	209
Total	24	408	0	3	435	0	0	0	1	1	0	407	46	1	454	36	0	20	1	57	947
Grand Total	73	1093	0	4	1170	0	0	0	1	1	0	1023	108	1	1132	91	0	38	1	130	2433
Apprch %	6.2	93.4	0	0.3		0	0	0	100		0	90.4	9.5	0.1		70	0	29.2	0.8		
Total %	3	44.9	0	0.2	48.1	0	0	0	0	0	0	42	4.4	0	46.5	3.7	0	1.6	0	5.3	
Passenger Cars																					
% Passenger Cars	100	98.1	0	100	98.2	0	0	0	100	100	0	98.3	100	100	98.5	100	0	100	100	100	98.4
Small Trucks	0	16	0	0	16	0	0	0	0	0	0	16	0	0	16	0	0	0	0	0	32
% Small Trucks	0	1.5	0	0	1.4	0	0	0	0	0	0	1.6	0	0	1.4	0	0	0	0	0	1.3
Large Trucks	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	6
% Large Trucks	0	0.5	0	0	0.4	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0.2

**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

**File Name : Cordon at Herrin PM 2-1-2022  
Site Code : 00000000  
Start Date : 2/1/2022  
Page No : 2**



**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

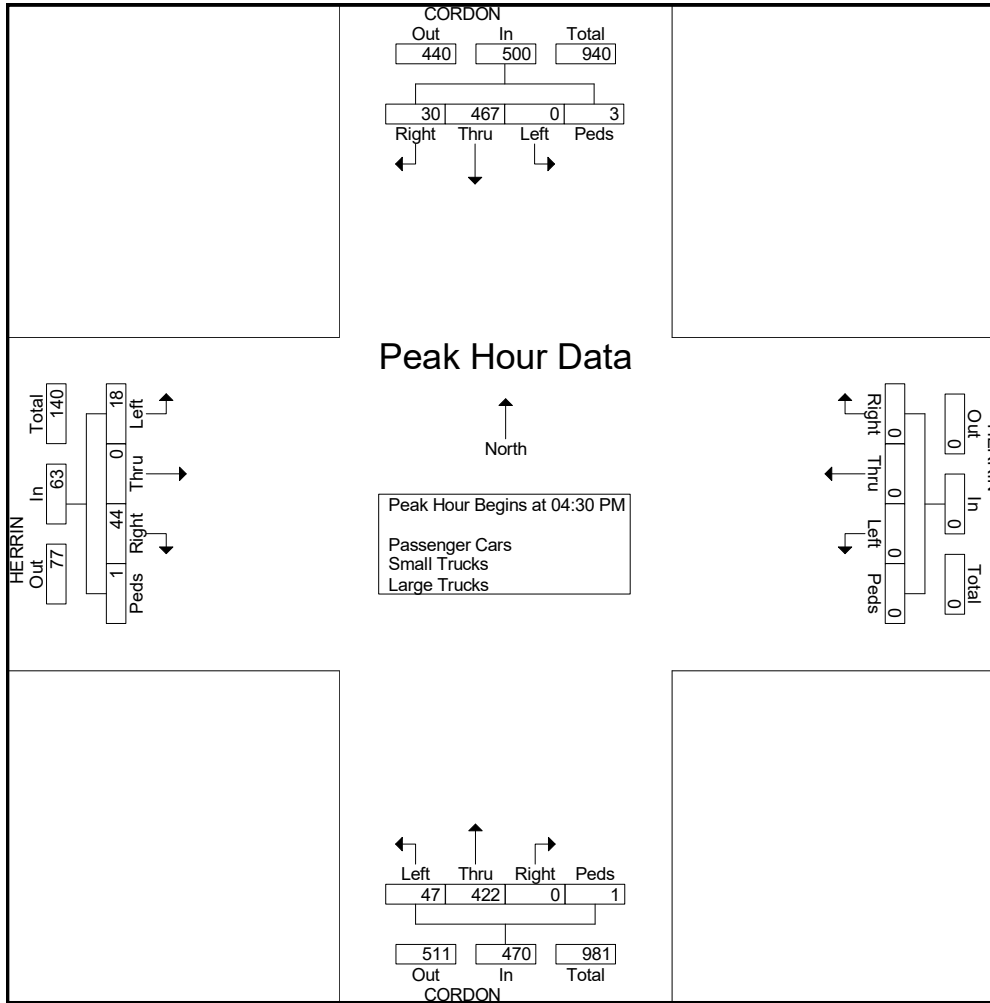
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Site Code : 00000000  
Start Date : 2/1/2022  
Page No : 3**

Start Time	CORDON From North					HERRIN From East					CORDON From South					HERRIN From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 03:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	7	124	0	0	131	0	0	0	0	0	0	<b>110</b>	<b>12</b>			<b>13</b>					<b>269</b>
04:45 PM	<b>11</b>	<b>126</b>	0	0	<b>137</b>	0	0	0	0	0	0	102	12	0	114	9	0	4	0	13	264
05:00 PM	8	112	0	0	120	0	0	0	0	0	0	100	11	0	111	13	0	<b>6</b>	0	<b>19</b>	250
05:15 PM	4	105	0	<b>3</b>	112	0	0	0	0	0	0	110	12	<b>1</b>	<b>123</b>	9	0	5	<b>1</b>	15	250
Total Volume	30	467	0	3	500	0	0	0	0	0	0	422	47	1	470	44	0	18	1	63	1033
% App. Total	6	93.4	0	0.6		0	0	0	0		0	89.8	10	0.2		69.8	0	28.6	1.6		
PHF	.682	.927	.000	.250	.912	.000	.000	.000	.000	.000	.000	.959	.979	.250	.955	.846	.000	.750	.250	.829	.960



**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

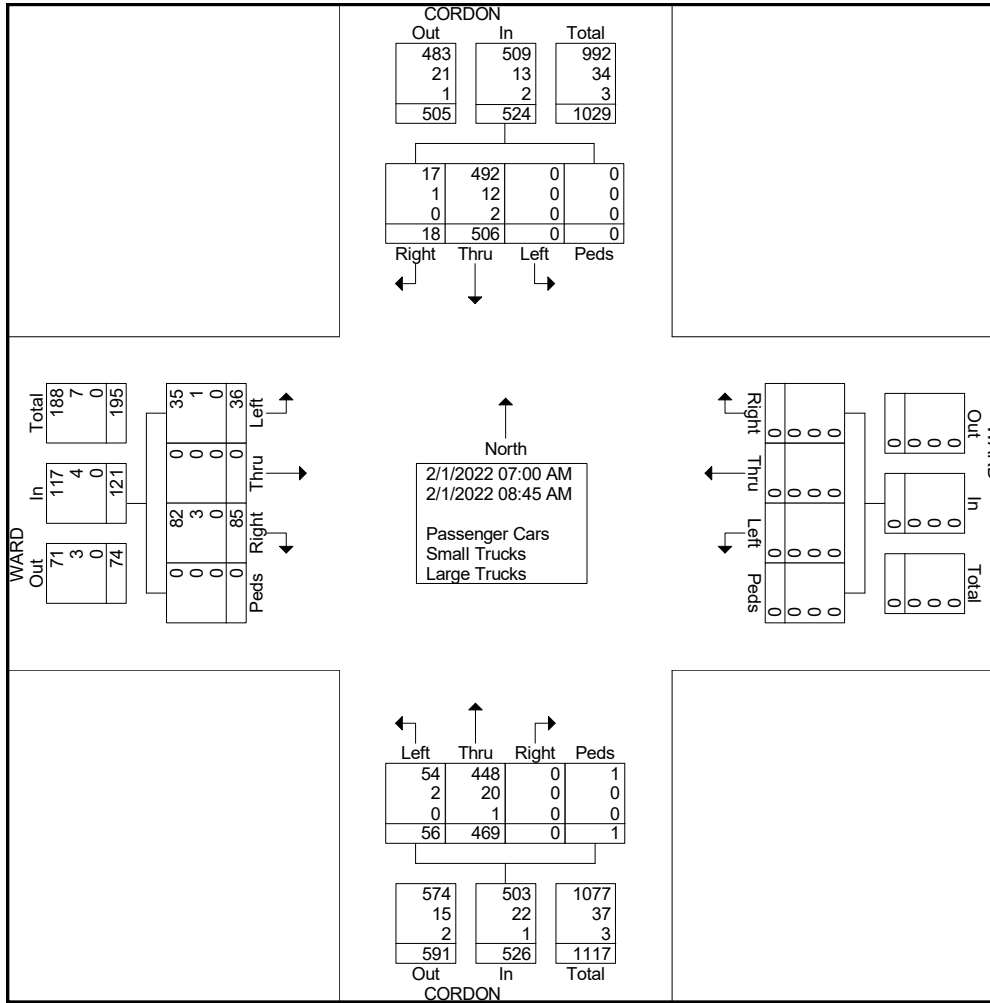
**File Name : Cordon at Herrin PM 2-1-2022  
Site Code : 00000000  
Start Date : 2/1/2022  
Page No : 4**





**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

**File Name : Cordon at Ward AM 2-1-2022  
Site Code : 00000000  
Start Date : 2/1/2022  
Page No : 2**



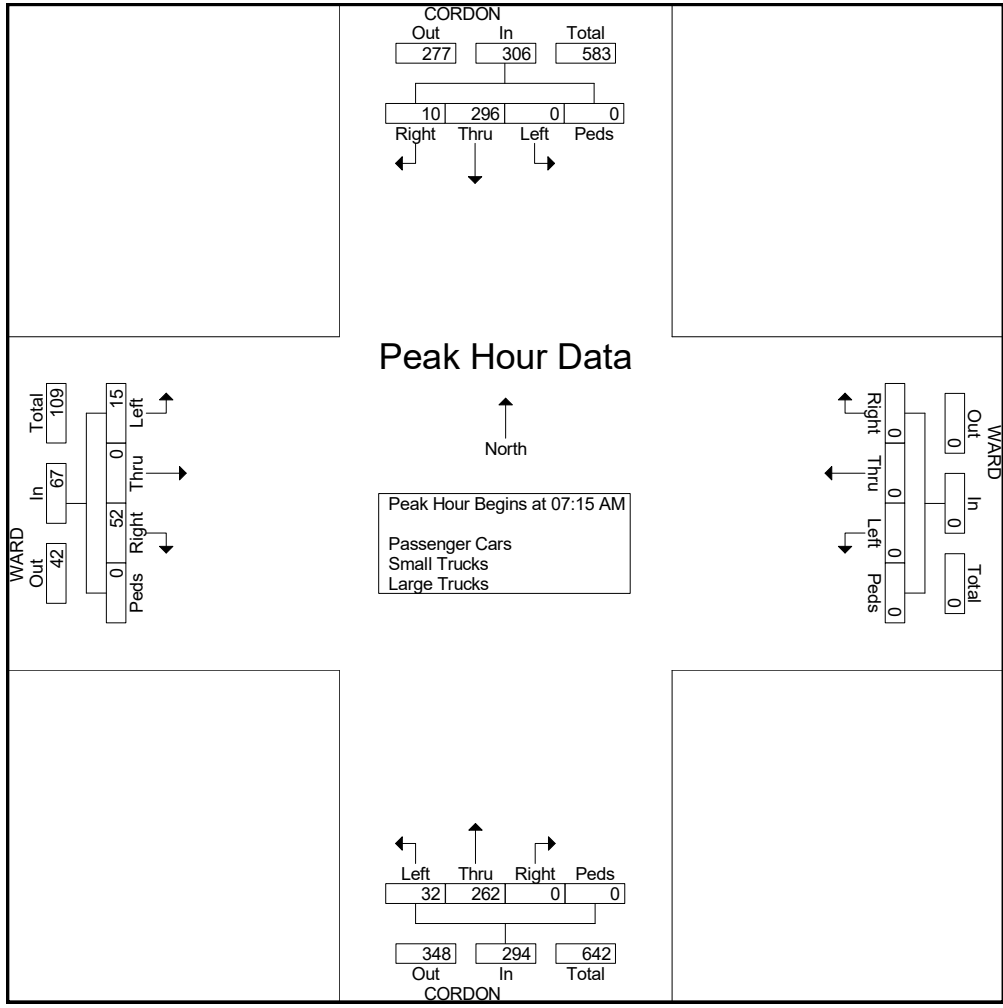
**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

File Name : Cordon at Ward AM 2-1-2022  
 Site Code : 00000000  
 Start Date : 2/1/2022  
 Page No : 3

Start Time	CORDON From North					WARD From East					CORDON From South					WARD From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	69	0	0	70	0	0	0	0	0	0	68	5	0	73	14	0	5	0	19	162
07:30 AM	1	82	0	0	83	0	0	0	0	0	0	67	5	0	72	14	0	5	0	19	174
07:45 AM	2	80	0	0	82	0	0	0	0	0	0	68	12	0	80	14	0	2	0	16	178
08:00 AM	6	65	0	0	71	0	0	0	0	0	0	59	10	0	69	10	0	3	0	13	153
<b>Total Volume</b>	<b>10</b>	<b>296</b>	<b>0</b>	<b>0</b>	<b>306</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>262</b>	<b>32</b>	<b>0</b>	<b>294</b>	<b>52</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>67</b>	<b>667</b>
<b>% App. Total</b>	<b>3.3</b>	<b>96.7</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>89.1</b>	<b>10.9</b>	<b>0</b>		<b>77.6</b>	<b>0</b>	<b>22.4</b>	<b>0</b>		
<b>PHF</b>	<b>.417</b>	<b>.902</b>	<b>.000</b>	<b>.000</b>	<b>.922</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.963</b>	<b>.667</b>	<b>.000</b>	<b>.919</b>	<b>.929</b>	<b>.000</b>	<b>.750</b>	<b>.000</b>	<b>.882</b>	<b>.937</b>

**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

**File Name : Cordon at Ward AM 2-1-2022  
Site Code : 00000000  
Start Date : 2/1/2022  
Page No : 4**



**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

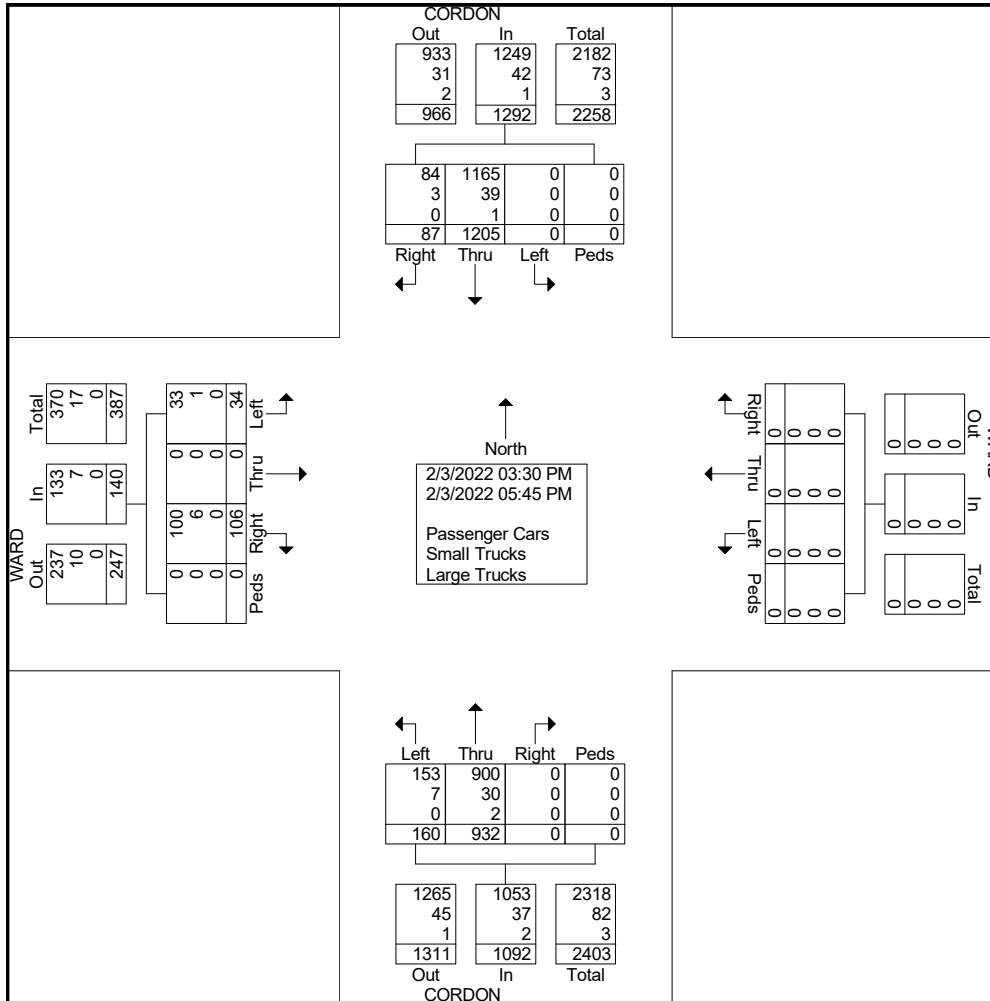
**File Name : Cordon at Ward PM 2-3-2022  
Site Code : 00000000  
Start Date : 2/3/2022  
Page No : 1**

Groups Printed- Passenger Cars - Small Trucks - Large Trucks

Start Time	CORDON From North					WARD From East					CORDON From South					WARD From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:30 PM	10	119	0	0	129	0	0	0	0	0	0	133	15	0	148	12	0	3	0	15	292
03:45 PM	4	100	0	0	104	0	0	0	0	0	0	106	12	0	118	10	0	5	0	15	237
Total	14	219	0	0	233	0	0	0	0	0	0	239	27	0	266	22	0	8	0	30	529
04:00 PM	11	146	0	0	157	0	0	0	0	0	0	116	18	0	134	15	0	3	0	18	309
04:15 PM	8	137	0	0	145	0	0	0	0	0	0	78	15	0	93	9	0	3	0	12	250
04:30 PM	7	151	0	0	158	0	0	0	0	0	0	73	15	0	88	7	0	6	0	13	259
04:45 PM	10	125	0	0	135	0	0	0	0	0	0	79	20	0	99	8	0	5	0	13	247
Total	36	559	0	0	595	0	0	0	0	0	0	346	68	0	414	39	0	17	0	56	1065
05:00 PM	14	120	0	0	134	0	0	0	0	0	0	80	17	0	97	5	0	3	0	8	239
05:15 PM	10	94	0	0	104	0	0	0	0	0	0	95	19	0	114	9	0	5	0	14	232
05:30 PM	7	116	0	0	123	0	0	0	0	0	0	91	17	0	108	8	0	1	0	9	240
05:45 PM	6	97	0	0	103	0	0	0	0	0	0	81	12	0	93	23	0	0	0	23	219
Total	37	427	0	0	464	0	0	0	0	0	0	347	65	0	412	45	0	9	0	54	930
Grand Total	87	1205	0	0	1292	0	0	0	0	0	0	932	160	0	1092	106	0	34	0	140	2524
Apprch %	6.7	93.3	0	0		0	0	0	0		0	85.3	14.7	0		75.7	0	24.3	0		
Total %	3.4	47.7	0	0	51.2	0	0	0	0	0	0	36.9	6.3	0	43.3	4.2	0	1.3	0	5.5	
Passenger Cars																					
% Passenger Cars	96.6	96.7	0	0	96.7	0	0	0	0	0	0	96.6	95.6	0	96.4	94.3	0	97.1	0	95	96.5
Small Trucks	3	39	0	0	42	0	0	0	0	0	0	30	7	0	37	6	0	1	0	7	86
% Small Trucks	3.4	3.2	0	0	3.3	0	0	0	0	0	0	3.2	4.4	0	3.4	5.7	0	2.9	0	5	3.4
Large Trucks	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
% Large Trucks	0	0.1	0	0	0.1	0	0	0	0	0	0	0.2	0	0	0.2	0	0	0	0	0	0.1

**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

**File Name : Cordon at Ward PM 2-3-2022  
Site Code : 00000000  
Start Date : 2/3/2022  
Page No : 2**



**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

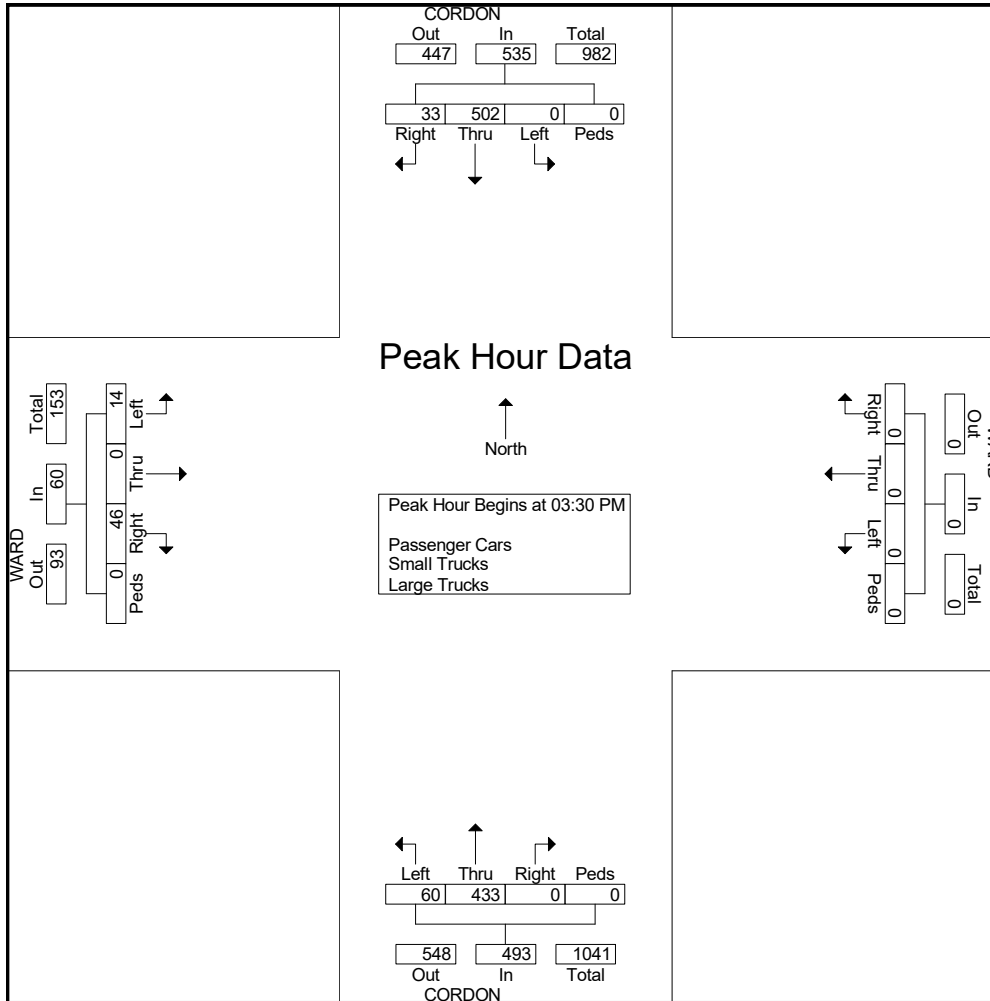
**File Name : Cordon at Ward PM 2-3-2022  
Site Code : 00000000  
Start Date : 2/3/2022  
Page No : 3**

Start Time	CORDON From North					WARD From East					CORDON From South					WARD From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 03:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:30 PM																					
03:30 PM	10	119	0	0	129	0	0	0	0	0	0	<b>133</b>			<b>148</b>						
03:45 PM	4	100	0	0	104	0	0	0	0	0	0	106	12	0	118	10	0	5	0	15	237
04:00 PM	<b>11</b>	<b>146</b>	0	0	<b>157</b>	0	0	0	0	0	0	116	<b>18</b>	0	134	<b>15</b>	0	3	0	<b>18</b>	<b>309</b>
04:15 PM	8	137	0	0	145	0	0	0	0	0	0	78	15	0	93	9	0	3	0	12	250
Total Volume	33	502	0	0	535	0	0	0	0	0	0	433	60	0	493	46	0	14	0	60	1088
% App. Total	6.2	93.8	0	0		0	0	0	0		0	87.8	12.2	0		76.7	0	23.3	0		
PHF	.750	.860	.000	.000	.852	.000	.000	.000	.000	.000	.000	.814	.833	.000	.833	.767	.000	.700	.000	.833	.880



**Cordon Rd at  
Herrin Rd  
AM Turning Movements  
Wednesday, February 2, 2022**

**File Name : Cordon at Ward PM 2-3-2022  
Site Code : 00000000  
Start Date : 2/3/2022  
Page No : 4**



Cordon at Hazelgreen  
AM Count

Start Time	Cordon Rd NE From North			Hazelgreen Rd NE From East			Cordon Rd NE From South			Hazelgreen Rd NE From West		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
07:00 AM	1	3	1	0	44	8	10	23	18	14	39	6
07:15 AM	2	6	3	1	52	8	7	23	14	21	33	4
07:30 AM	1	5	1	3	54	8	7	17	17	15	38	2
07:45 AM	2	8	2	2	51	9	8	13	26	24	44	0
08:00 AM	0	4	0	0	44	10	4	14	18	15	33	3
08:15 AM	2	5	0	2	35	10	14	7	17	11	48	2
08:30 AM	2	8	0	1	42	11	3	11	16	15	36	0
08:45 AM	2	7	2	1	43	7	10	7	11	14	37	1

Cordon at Hazelgreen  
PM Count

Start Time	Cordon From North			Hazelgreen From East			Cordon From South			Hazelgreen From West		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
03:30 PM	2	21	2	1	49	10	8	9	16	19	62	1
03:45 PM	1	11	5	3	62	12	5	10	24	26	58	0
04:00 PM	5	19	6	1	47	11	10	13	34	37	64	2
04:15 PM	4	33	2	1	49	23	10	10	32	39	70	4
04:30 PM	3	29	3	2	53	20	14	13	36	38	70	0
04:45 PM	2	40	0	2	63	19	10	9	25	25	57	2
05:00 PM	3	36	2	0	43	12	9	16	34	43	68	3
05:15 PM	2	32	1	3	54	21	18	14	28	43	75	2
05:30 PM	3	28	3	1	50	15	8	13	31	33	65	1
05:45 PM	0	28	1	1	29	10	4	17	21	28	59	1

**36th Ave at  
Kuebler Blvd  
AM Turning Movements  
Tuesday, November 17, 2021**

Eric Anderson & Trevor Mace  
Clear dry  
Moderate Traffic

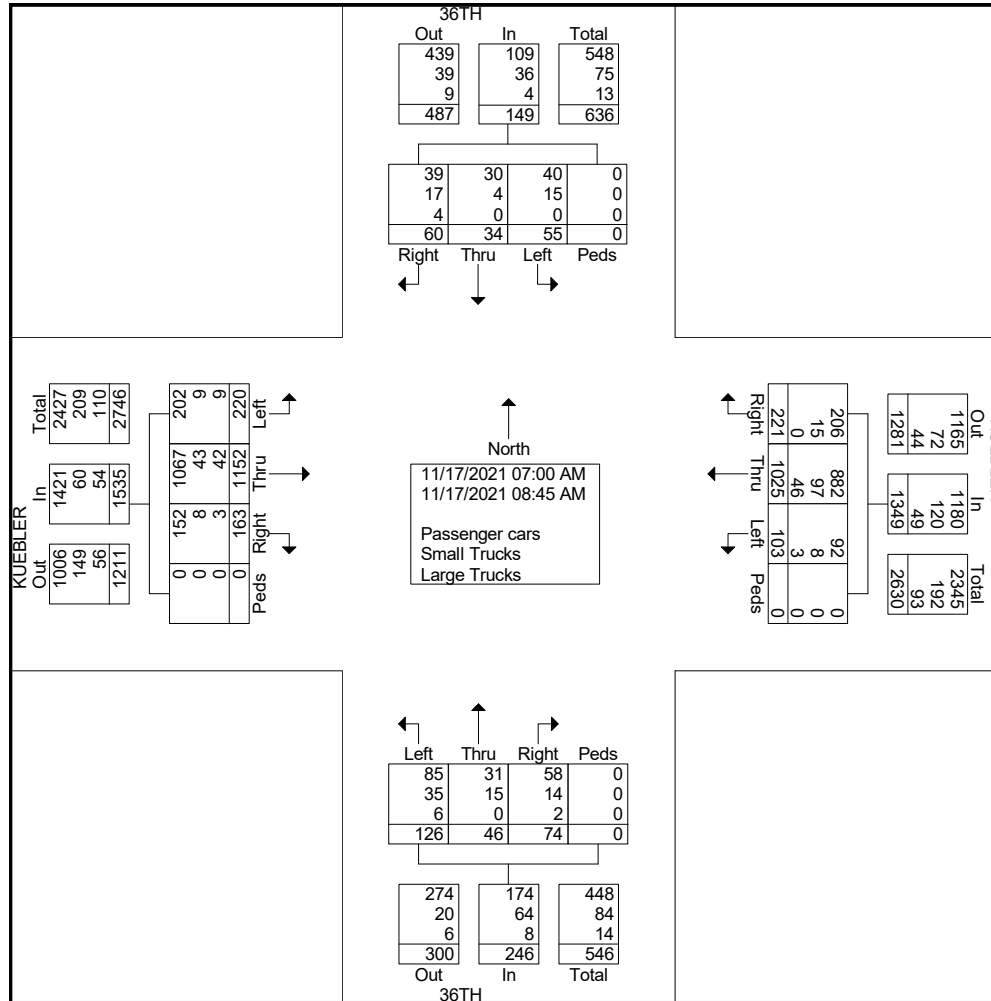
File Name : Kubler at 36th AM 11-17-2021 Combined  
Site Code : 00000000  
Start Date : 11/17/2021  
Page No : 1

**Groups Printed- Passenger cars - Small Trucks - Large Trucks**

Start Time	36TH From North					KUEBLER From East					36TH From South					KUEBLER From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	6	6	3	0	15	23	102	21	0	146	12	6	17	0	35	23	147	25	0	195	391
07:15 AM	7	1	10	0	18	24	104	13	0	141	11	10	18	0	39	15	157	31	0	203	401
07:30 AM	3	7	7	0	17	27	140	16	0	183	10	2	10	0	22	16	169	32	0	217	439
07:45 AM	11	2	7	0	20	39	150	11	0	200	12	9	24	0	45	31	169	45	0	245	510
<b>Total</b>	<b>27</b>	<b>16</b>	<b>27</b>	<b>0</b>	<b>70</b>	<b>113</b>	<b>496</b>	<b>61</b>	<b>0</b>	<b>670</b>	<b>45</b>	<b>27</b>	<b>69</b>	<b>0</b>	<b>141</b>	<b>85</b>	<b>642</b>	<b>133</b>	<b>0</b>	<b>860</b>	<b>1741</b>
08:00 AM	11	5	8	0	24	33	117	14	0	164	6	1	12	0	19	22	134	29	0	185	392
08:15 AM	8	5	5	0	18	34	146	13	0	193	7	4	11	0	22	24	141	18	0	183	416
08:30 AM	5	2	7	0	14	14	121	4	0	139	8	6	14	0	28	17	102	20	0	139	320
08:45 AM	9	6	8	0	23	27	145	11	0	183	8	8	20	0	36	15	133	20	0	168	410
<b>Total</b>	<b>33</b>	<b>18</b>	<b>28</b>	<b>0</b>	<b>79</b>	<b>108</b>	<b>529</b>	<b>42</b>	<b>0</b>	<b>679</b>	<b>29</b>	<b>19</b>	<b>57</b>	<b>0</b>	<b>105</b>	<b>78</b>	<b>510</b>	<b>87</b>	<b>0</b>	<b>675</b>	<b>1538</b>
<b>Grand Total</b>	<b>60</b>	<b>34</b>	<b>55</b>	<b>0</b>	<b>149</b>	<b>221</b>	<b>1025</b>	<b>103</b>	<b>0</b>	<b>1349</b>	<b>74</b>	<b>46</b>	<b>126</b>	<b>0</b>	<b>246</b>	<b>163</b>	<b>1152</b>	<b>220</b>	<b>0</b>	<b>1535</b>	<b>3279</b>
Apprch %	40.3	22.8	36.9	0		16.4	76	7.6	0		30.1	18.7	51.2	0		10.6	75	14.3	0		
Total %	1.8	1	1.7	0	4.5	6.7	31.3	3.1	0	41.1	2.3	1.4	3.8	0	7.5	5	35.1	6.7	0	46.8	
Passenger cars	39	30	40	0	109	206	882	92	0	1180	58	31	85	0	174	152	1067	202	0	1421	2884
% Passenger cars	65	88.2	72.7	0	73.2	93.2	86	89.3	0	87.5	78.4	67.4	67.5	0	70.7	93.3	92.6	91.8	0	92.6	88
Small Trucks	17	4	15	0	36	15	97	8	0	120	14	15	35	0	64	8	43	9	0	60	280
% Small Trucks	28.3	11.8	27.3	0	24.2	6.8	9.5	7.8	0	8.9	18.9	32.6	27.8	0	26	4.9	3.7	4.1	0	3.9	8.5
Large Trucks	4	0	0	0	4	0	46	3	0	49	2	0	6	0	8	3	42	9	0	54	115
% Large Trucks	6.7	0	0	0	2.7	0	4.5	2.9	0	3.6	2.7	0	4.8	0	3.3	1.8	3.6	4.1	0	3.5	3.5

36th Ave at  
Kuebler Blvd  
AM Turning Movements  
Tuesday, November 17, 2021

File Name : Kubler at 36th AM 11-17-2021 Combined  
Site Code : 00000000  
Start Date : 11/17/2021  
Page No : 2



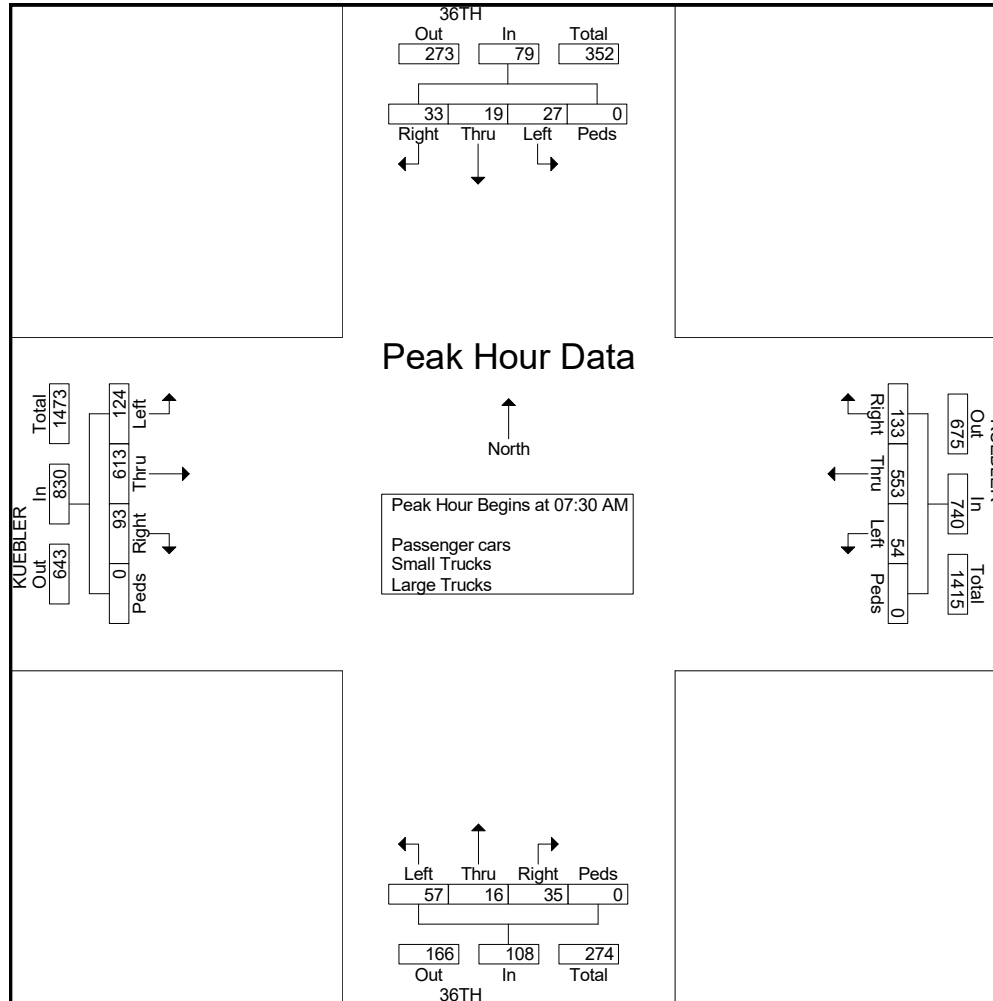
36th Ave at  
Kuebler Blvd  
AM Turning Movements  
Tuesday, November 17, 2021

File Name : Kubler at 36th AM 11-17-2021 Combined  
Site Code : 00000000  
Start Date : 11/17/2021  
Page No : 3

Start Time	36TH From North					KUEBLER From East					36TH From South					KUEBLER From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	3	7	7	0	17	27	140	16	0	183	10	2	10	0	22	16	169	32	0	217	439
07:45 AM	11	2	7	0	20	39	150	11	0	200	12	9	24	0	45	31	169	45	0	245	510
08:00 AM	11	5	8	0	24	33	117	14	0	164	6	1	12	0	19	22	134	29	0	185	392
08:15 AM	8	5	5	0	18	34	146	13	0	193	7	4	11	0	22	24	141	18	0	183	416
Total Volume	33	19	27	0	79	133	553	54	0	740	35	16	57	0	108	93	613	124	0	830	1757
% App. Total	41.8	24.1	34.2	0		18	74.7	7.3	0		32.4	14.8	52.8	0		11.2	73.9	14.9	0		
PHF	.750	.679	.844	.000	.823	.853	.922	.844	.000	.925	.729	.444	.594	.000	.600	.750	.907	.689	.000	.847	.861

36th Ave at  
Kuebler Blvd  
AM Turning Movements  
Tuesday, November 17, 2021

File Name : Kubler at 36th AM 11-17-2021 Combined  
Site Code : 00000000  
Start Date : 11/17/2021  
Page No : 4



**36th Ave at  
Kuebler Blvd  
PM Turning Movements  
Tuesday, November 17, 2021**

**Eric Anderson & Trevor Mace  
Clear Dry  
Moderate Traffic**

**File Name : Kuebler at 36th PM 11-17-2021 combied  
Site Code : 00000000  
Start Date : 11/17/2021  
Page No : 1**

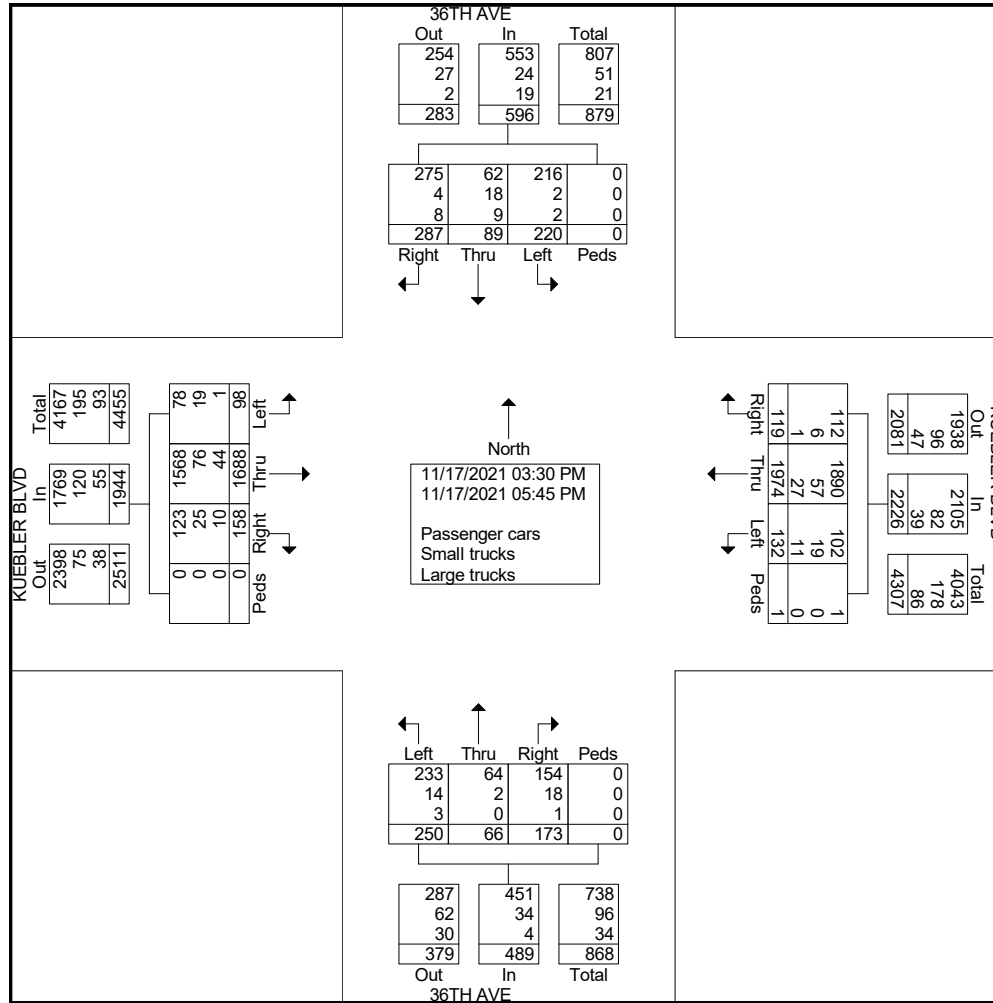
Groups Printed- Passenger cars - Small trucks - Large trucks

Start Time	36TH AVE From North					KUEBLER BLVD From East					36TH AVE From South					KUEBLER BLVD From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:30 PM	14	14	14	0	42	15	219	13	0	247	14	4	24	0	42	20	180	5	0	205	536
03:45 PM	19	6	14	0	39	8	191	16	0	215	18	13	17	0	48	15	161	12	0	188	490
Total	33	20	28	0	81	23	410	29	0	462	32	17	41	0	90	35	341	17	0	393	1026
04:00 PM	37	11	28	0	76	13	207	17	0	237	15	2	26	0	43	16	175	5	0	196	552
04:15 PM	25	9	13	0	47	13	200	15	0	228	21	2	24	0	47	18	162	8	0	188	510
04:30 PM	47	12	25	0	84	9	213	14	1	237	9	9	29	0	47	17	193	9	0	219	587
04:45 PM	21	14	25	0	60	8	194	14	0	216	15	7	19	0	41	21	169	19	0	209	526
Total	130	46	91	0	267	43	814	60	1	918	60	20	98	0	178	72	699	41	0	812	2175
05:00 PM	51	8	44	0	103	12	183	8	0	203	36	14	51	0	101	11	142	8	0	161	568
05:15 PM	28	4	27	0	59	9	222	10	0	241	19	6	26	0	51	14	172	15	0	201	552
05:30 PM	32	10	17	0	59	17	171	15	0	203	12	4	13	0	29	15	184	10	0	209	500
05:45 PM	13	1	13	0	27	15	174	10	0	199	14	5	21	0	40	11	150	7	0	168	434
Total	124	23	101	0	248	53	750	43	0	846	81	29	111	0	221	51	648	40	0	739	2054
Grand Total	287	89	220	0	596	119	1974	132	1	2226	173	66	250	0	489	158	1688	98	0	1944	5255
Apprch %	48.2	14.9	36.9	0		5.3	88.7	5.9	0		35.4	13.5	51.1	0		8.1	86.8	5	0		
Total %	5.5	1.7	4.2	0	11.3	2.3	37.6	2.5	0	42.4	3.3	1.3	4.8	0	9.3	3	32.1	1.9	0	37	
Passenger cars																					
% Passenger cars	95.8	69.7	98.2	0	92.8	94.1	95.7	77.3	100	94.6	89	97	93.2	0	92.2	77.8	92.9	79.6	0	91	92.8
Small trucks	4	18	2	0	24	6	57	19	0	82	18	2	14	0	34	25	76	19	0	120	260
% Small trucks	1.4	20.2	0.9	0	4	5	2.9	14.4	0	3.7	10.4	3	5.6	0	7	15.8	4.5	19.4	0	6.2	4.9
Large trucks	8	9	2	0	19	1	27	11	0	39	1	0	3	0	4	10	44	1	0	55	117
% Large trucks	2.8	10.1	0.9	0	3.2	0.8	1.4	8.3	0	1.8	0.6	0	1.2	0	0.8	6.3	2.6	1	0	2.8	2.2



36th Ave at  
Kuebler Blvd  
PM Turning Movements  
Tuesday, November 17, 2021

File Name : Kuebler at 36th PM 11-17-2021 combied  
Site Code : 00000000  
Start Date : 11/17/2021  
Page No : 2



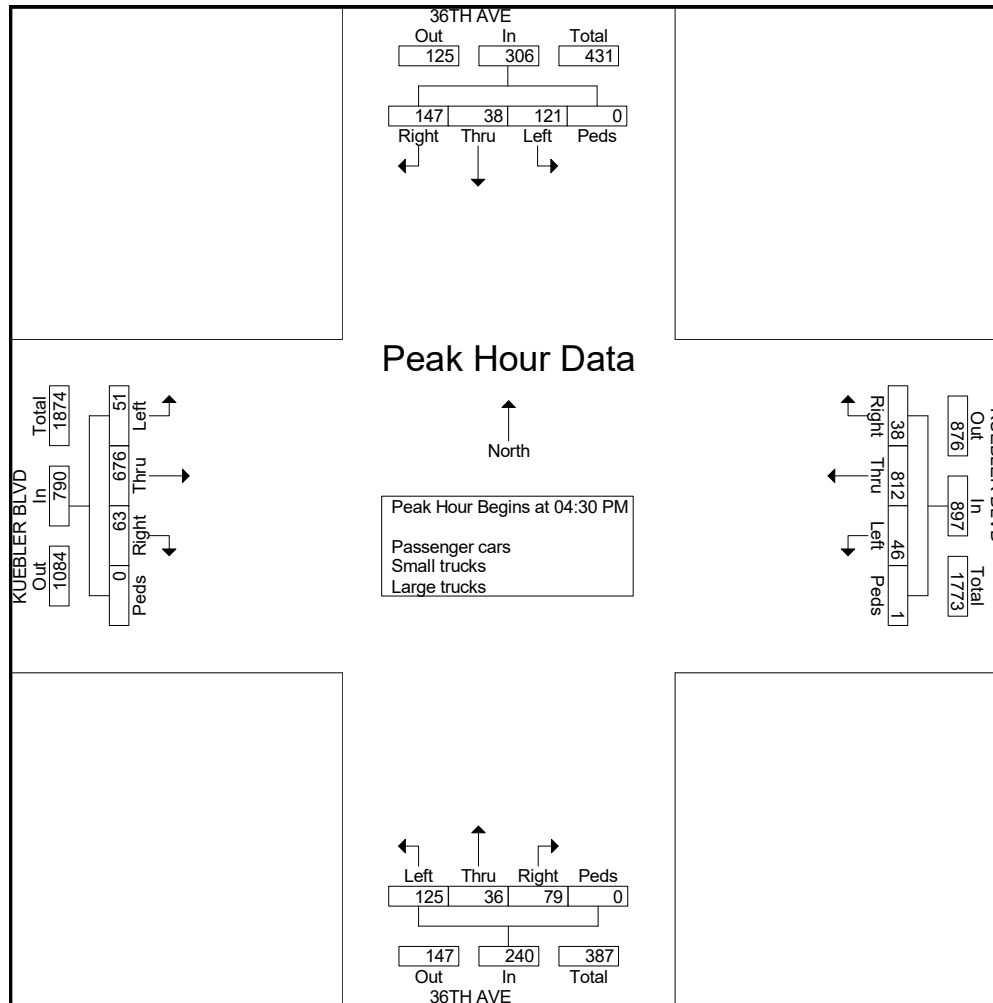
**36th Ave at  
Kuebler Blvd  
PM Turning Movements  
Tuesday, November 17, 2021**

**File Name : Kuebler at 36th PM 11-17-2021 combied  
Site Code : 00000000  
Start Date : 11/17/2021  
Page No : 3**

Start Time	36TH AVE From North					KUEBLER BLVD From East					36TH AVE From South					KUEBLER BLVD From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 03:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	47	12	25	0	84	9	213	<b>14</b>	<b>1</b>								<b>193</b>			<b>219</b>	<b>587</b>
04:45 PM	21	<b>14</b>	25	0	60	8	194	14	0	216	15	7	19	0	41	<b>21</b>	169	<b>19</b>	0	209	526
05:00 PM	<b>51</b>	8	<b>44</b>	0	<b>103</b>	<b>12</b>	183	8	0	203	<b>36</b>	<b>14</b>	<b>51</b>	0	<b>101</b>	11	142	8	0	161	568
05:15 PM	28	4	27	0	59	9	<b>222</b>	10	0	<b>241</b>	19	6	26	0	51	14	172	15	0	201	552
Total Volume	147	38	121	0	306	38	812	46	1	897	79	36	125	0	240	63	676	51	0	790	2233
% App. Total	48	12.4	39.5	0		4.2	90.5	5.1	0.1		32.9	15	52.1	0		8	85.6	6.5	0		
PHF	.721	.679	.688	.000	.743	.792	.914	.821	.250	.930	.549	.643	.613	.000	.594	.750	.876	.671	.000	.902	.951

36th Ave at  
 Kuebler Blvd  
 PM Turning Movements  
 Tuesday, November 17, 2021

File Name : Kuebler at 36th PM 11-17-2021 combied  
 Site Code : 00000000  
 Start Date : 11/17/2021  
 Page No : 4



**Kuebler Blvd at  
Aumsville Hwy  
AM Turning Movements  
Thursday, December 2, 2021**

**Trevor Mace Count Pad 2  
Clear Dry  
Moderate Traffic**

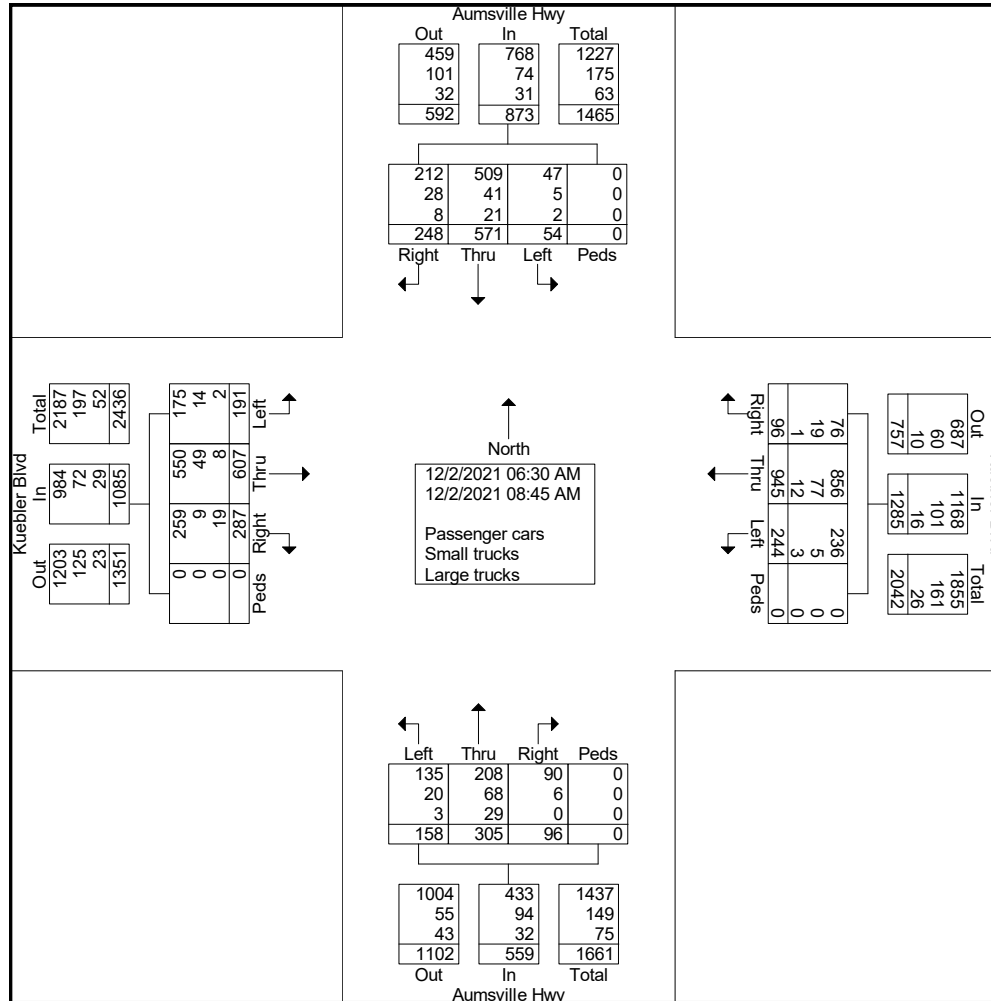
**File Name : Kuebler at Aumsville Hwy AM 2021-12-2 Combined  
Site Code :  
Start Date : 12/2/2021  
Page No : 1**

Groups Printed- Passenger cars - Small trucks - Large trucks

Start Time	Aumsville Hwy From North					Kuebler Blvd From East					Aumsville Hwy From South					Kuebler Blvd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:30 AM	21	31	5	0	57	12	79	17	0	108	2	15	7	0	24	26	57	23	0	106	295
06:45 AM	28	70	3	0	101	5	95	28	0	128	18	19	10	0	47	36	75	16	0	127	403
Total	49	101	8	0	158	17	174	45	0	236	20	34	17	0	71	62	132	39	0	233	698
07:00 AM	24	59	12	0	95	4	68	21	0	93	4	28	18	0	50	34	59	15	0	108	346
07:15 AM	23	84	2	0	109	8	100	43	0	151	15	19	12	0	46	55	82	16	0	153	459
07:30 AM	22	57	3	0	82	14	134	29	0	177	10	55	23	0	88	6	6	2	0	14	361
07:45 AM	29	44	8	0	81	15	130	24	0	169	12	41	25	0	78	30	82	29	0	141	469
Total	98	244	25	0	367	41	432	117	0	590	41	143	78	0	262	125	229	62	0	416	1635
08:00 AM	18	40	10	0	68	8	92	15	0	115	10	34	20	0	64	28	70	22	0	120	367
08:15 AM	31	53	3	0	87	13	85	17	0	115	8	31	10	0	49	23	57	19	0	99	350
08:30 AM	31	58	3	0	92	11	72	15	0	98	10	31	14	0	55	23	58	21	0	102	347
08:45 AM	21	75	5	0	101	6	90	35	0	131	7	32	19	0	58	26	61	28	0	115	405
Total	101	226	21	0	348	38	339	82	0	459	35	128	63	0	226	100	246	90	0	436	1469
Grand Total	248	571	54	0	873	96	945	244	0	1285	96	305	158	0	559	287	607	191	0	1085	3802
Apprch %	28.4	65.4	6.2	0		7.5	73.5	19	0		17.2	54.6	28.3	0		26.5	55.9	17.6	0		
Total %	6.5	15	1.4	0	23	2.5	24.9	6.4	0	33.8	2.5	8	4.2	0	14.7	7.5	16	5	0	28.5	
Passenger cars																					
% Passenger cars	85.5	89.1	87	0	88	79.2	90.6	96.7	0	90.9	93.8	68.2	85.4	0	77.5	90.2	90.6	91.6	0	90.7	88.2
Small trucks	28	41	5	0	74	19	77	5	0	101	6	68	20	0	94	9	49	14	0	72	341
% Small trucks	11.3	7.2	9.3	0	8.5	19.8	8.1	2	0	7.9	6.2	22.3	12.7	0	16.8	3.1	8.1	7.3	0	6.6	9
Large trucks	8	21	2	0	31	1	12	3	0	16	0	29	3	0	32	19	8	2	0	29	108
% Large trucks	3.2	3.7	3.7	0	3.6	1	1.3	1.2	0	1.2	0	9.5	1.9	0	5.7	6.6	1.3	1	0	2.7	2.8

**Kuebler Blvd at  
Aumsville Hwy  
AM Turning Movements  
Thursday, December 2, 2021**

**File Name : Kuebler at Aumsville Hwy AM 2021-12-2 Combined  
Site Code :  
Start Date : 12/2/2021  
Page No : 2**



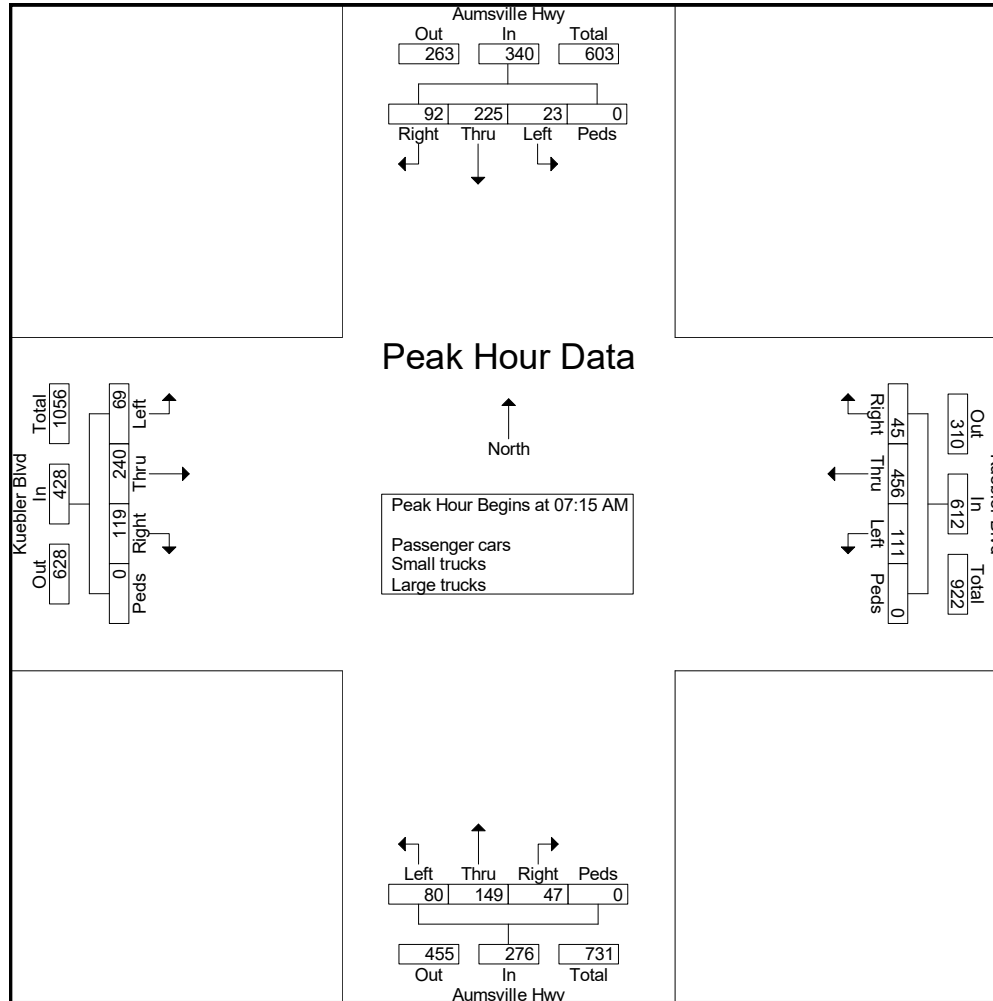
**Kuebler Blvd at  
Aumsville Hwy  
AM Turning Movements  
Thursday, December 2, 2021**

**File Name : Kuebler at Aumsville Hwy AM 2021-12-2 Combined  
Site Code :  
Start Date : 12/2/2021  
Page No : 3**

Start Time	Aumsville Hwy From North					Kuebler Blvd From East					Aumsville Hwy From South					Kuebler Blvd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	23	<b>84</b>			<b>109</b>			<b>43</b>			<b>15</b>					<b>55</b>	<b>82</b>			<b>153</b>	
07:30 AM	22	57	3	0	82	14	<b>134</b>	29	0	<b>177</b>	10	<b>55</b>	23	0	<b>88</b>	6	6	2	0	14	361
07:45 AM	<b>29</b>	44	8	0	81	<b>15</b>	130	24	0	169	12	41	<b>25</b>	0	78	30	82	<b>29</b>	0	141	<b>469</b>
08:00 AM	18	40	<b>10</b>	0	68	8	92	15	0	115	10	34	20	0	64	28	70	22	0	120	367
Total Volume	92	225	23	0	340	45	456	111	0	612	47	149	80	0	276	119	240	69	0	428	1656
% App. Total	27.1	66.2	6.8	0		7.4	74.5	18.1	0		17	54	29	0		27.8	56.1	16.1	0		
PHF	.793	.670	.575	.000	.780	.750	.851	.645	.000	.864	.783	.677	.800	.000	.784	.541	.732	.595	.000	.699	.883

**Kuebler Blvd at  
Aumsville Hwy  
AM Turning Movements  
Thursday, December 2, 2021**

**File Name : Kuebler at Aumsville Hwy AM 2021-12-2 Combined  
Site Code :  
Start Date : 12/2/2021  
Page No : 4**



**Kuebler Blvd at  
Aumsville Hwy  
PM Turning Movements  
Thursday, December 9, 2021**

**File Name : Kuebler @ Aumsville Hwy PM 12-9-2021 Combined  
Site Code :  
Start Date : 12/9/2021  
Page No : 1**

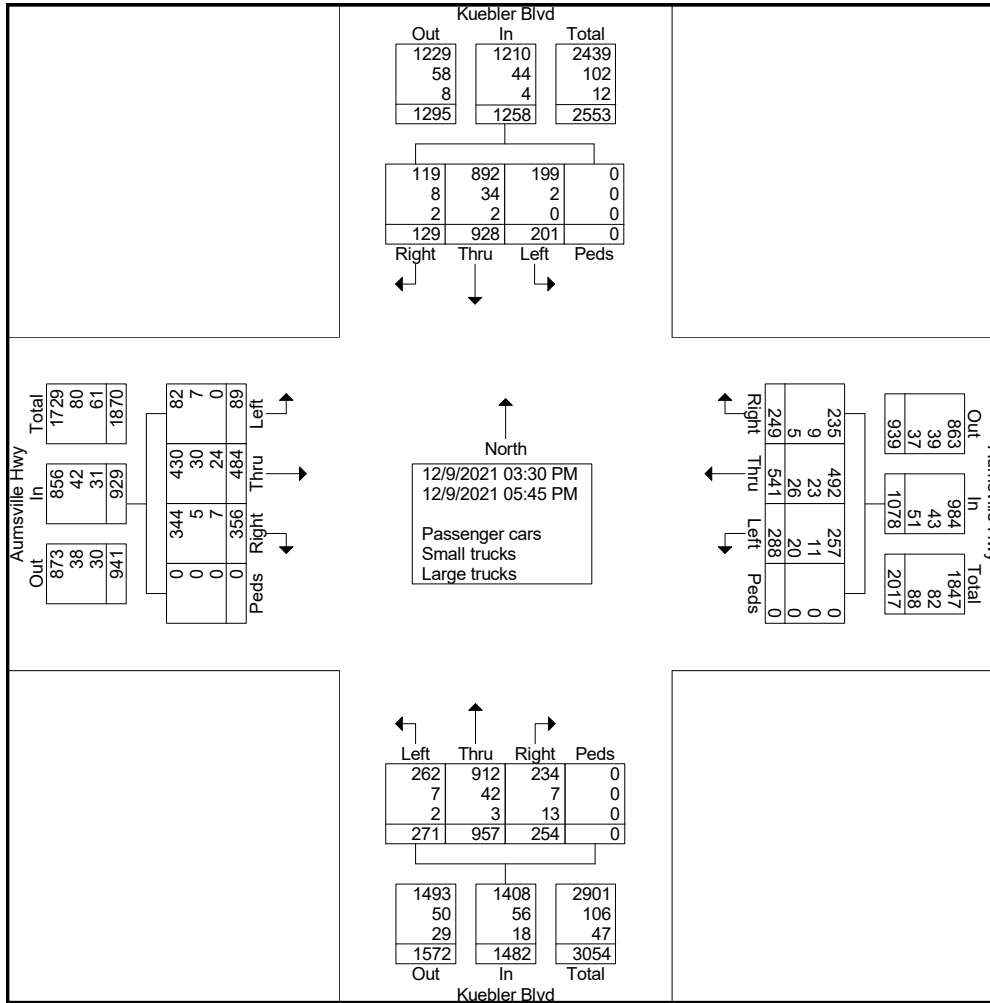
**Groups Printed- Passenger cars - Small trucks - Large trucks**

Start Time	Kuebler Blvd From North					Aumsville Hwy From East					Kuebler Blvd From South					Aumsville Hwy From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:30 PM	15	86	17	0	118	49	68	32	0	149	22	84	40	0	146	41	61	14	0	116	529
03:45 PM	10	99	28	0	137	22	52	29	0	103	24	95	37	0	156	40	59	12	0	111	507
Total	25	185	45	0	255	71	120	61	0	252	46	179	77	0	302	81	120	26	0	227	1036
04:00 PM	10	97	15	0	122	20	47	29	0	96	27	100	29	0	156	41	47	10	0	98	472
04:15 PM	8	96	17	0	121	23	40	22	0	85	25	95	18	0	138	38	50	7	0	95	439
04:30 PM	14	90	21	0	125	16	46	25	0	87	19	107	24	0	150	30	45	12	0	87	449
04:45 PM	16	89	20	0	125	21	51	26	0	98	28	99	17	0	144	42	39	6	0	87	454
Total	48	372	73	0	493	80	184	102	0	366	99	401	88	0	588	151	181	35	0	367	1814
05:00 PM	17	98	22	0	137	30	69	39	0	138	24	95	26	0	145	33	28	7	0	68	488
05:15 PM	18	95	22	0	135	12	57	28	0	97	23	103	25	0	151	30	48	7	0	85	468
05:30 PM	9	94	17	0	120	24	71	33	0	128	25	92	28	0	145	41	53	7	0	101	494
05:45 PM	12	84	22	0	118	32	40	25	0	97	37	87	27	0	151	20	54	7	0	81	447
Total	56	371	83	0	510	98	237	125	0	460	109	377	106	0	592	124	183	28	0	335	1897
Grand Total	129	928	201	0	1258	249	541	288	0	1078	254	957	271	0	1482	356	484	89	0	929	4747
Apprch %	10.3	73.8	16	0		23.1	50.2	26.7	0		17.1	64.6	18.3	0		38.3	52.1	9.6	0		
Total %	2.7	19.5	4.2	0	26.5	5.2	11.4	6.1	0	22.7	5.4	20.2	5.7	0	31.2	7.5	10.2	1.9	0	19.6	
Passenger cars																					
% Passenger cars	92.2	96.1	99	0	96.2	94.4	90.9	89.2	0	91.3	92.1	95.3	96.7	0	95	96.6	88.8	92.1	0	92.1	93.9
Small trucks	8	34	2	0	44	9	23	11	0	43	7	42	7	0	56	5	30	7	0	42	185
% Small trucks	6.2	3.7	1	0	3.5	3.6	4.3	3.8	0	4	2.8	4.4	2.6	0	3.8	1.4	6.2	7.9	0	4.5	3.9
Large trucks	2	2	0	0	4	5	26	20	0	51	13	3	2	0	18	7	24	0	0	31	104
% Large trucks	1.6	0.2	0	0	0.3	2	4.8	6.9	0	4.7	5.1	0.3	0.7	0	1.2	2	5	0	0	3.3	2.2



**Kuebler Blvd at  
Aumsville Hwy  
PM Turning Movements  
Thursday, December 9, 2021**

**File Name : Kuebler @ Aumsville Hwy PM 12-9-2021 Combined  
Site Code :  
Start Date : 12/9/2021  
Page No : 2**



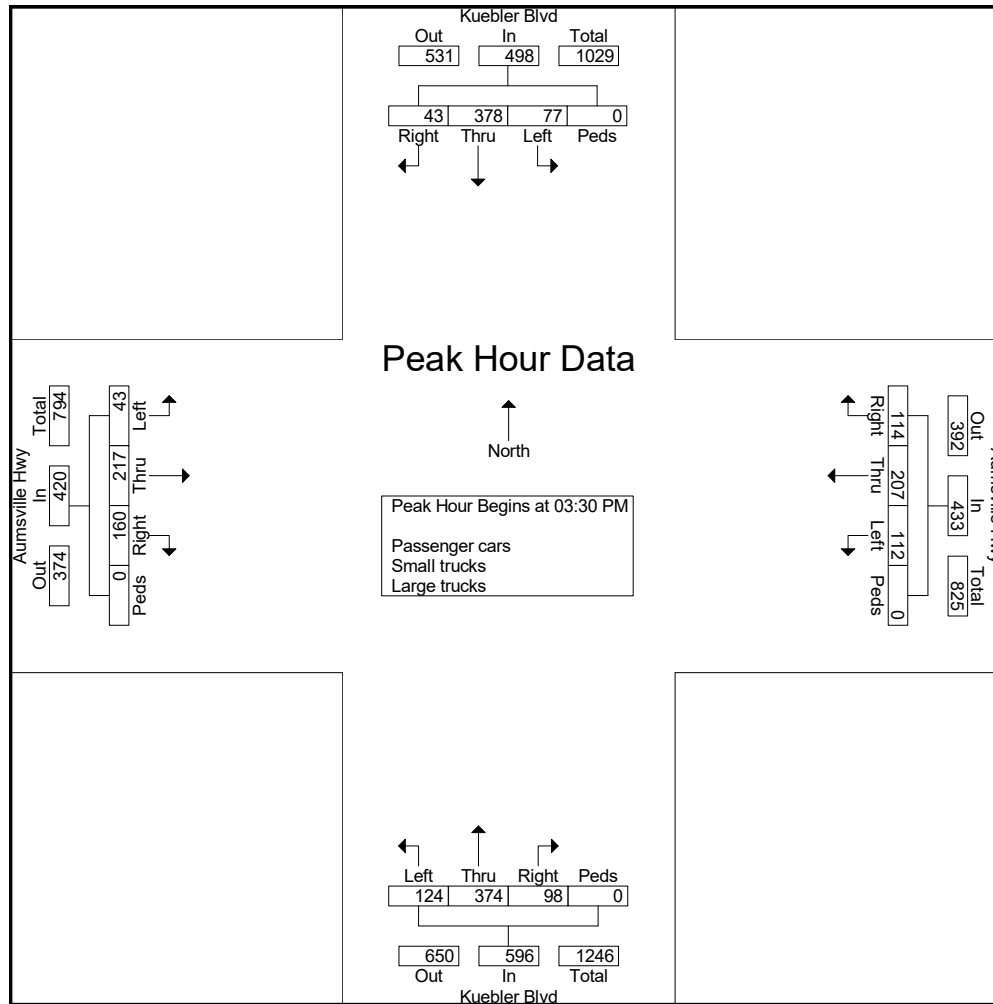
**Kuebler Blvd at  
Aumsville Hwy  
PM Turning Movements  
Thursday, December 9, 2021**

**File Name : Kuebler @ Aumsville Hwy PM 12-9-2021 Combined  
Site Code :  
Start Date : 12/9/2021  
Page No : 3**

Start Time	Kuebler Blvd From North					Aumsville Hwy From East					Kuebler Blvd From South					Aumsville Hwy From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 03:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:30 PM																					
03:30 PM	15					49	68	32		149			40			41	61	14		116	529
03:45 PM	10	99	28	0	137	22	52	29	0	103	24	95	37	0	156	40	59	12	0	111	507
04:00 PM	10	97	15	0	122	20	47	29	0	96	27	100	29	0	156	41	47	10	0	98	472
04:15 PM	8	96	17	0	121	23	40	22	0	85	25	95	18	0	138	38	50	7	0	95	439
Total Volume	43	378	77	0	498	114	207	112	0	433	98	374	124	0	596	160	217	43	0	420	1947
% App. Total	8.6	75.9	15.5	0		26.3	47.8	25.9	0		16.4	62.8	20.8	0		38.1	51.7	10.2	0		
PHF	.717	.955	.688	.000	.909	.582	.761	.875	.000	.727	.907	.935	.775	.000	.955	.976	.889	.768	.000	.905	.920

**Kuebler Blvd at  
Aumsville Hwy  
PM Turning Movements  
Thursday, December 9, 2021**

**File Name : Kuebler @ Aumsville Hwy PM 12-9-2021 Combined  
Site Code :  
Start Date : 12/9/2021  
Page No : 4**



**Kuebler Blvd at  
Mill Creek Dr  
AM Turning Movements  
Tuesday, November 16, 2021**

TU 2660  
Trevor Mace  
Clear Dry  
Moderate Traffic

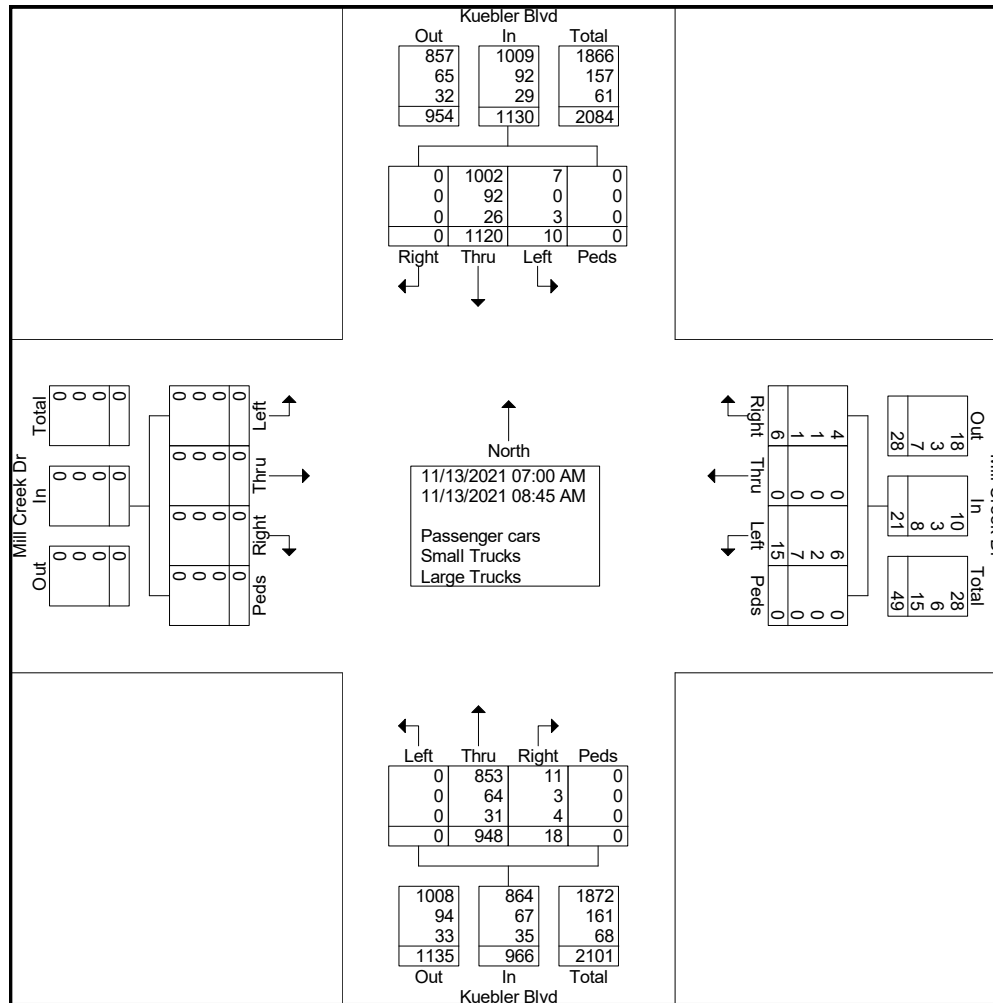
File Name : Kuebler at Mill Creek AM 11-16-2021  
Site Code : 00000000  
Start Date : 11/13/2021  
Page No : 1

**Groups Printed- Passenger cars - Small Trucks - Large Trucks**

Start Time	Kuebler Blvd From North					Mill Creek Dr From East					Kuebler Blvd From South					Mill Creek Dr From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	123	1	0	124	2	0	0	0	2	1	132	0	0	133	0	0	0	0	0	259
07:15 AM	0	121	0	0	121	1	0	1	0	2	2	156	0	0	158	0	0	0	0	0	281
07:30 AM	0	155	1	0	156	0	0	2	0	2	0	120	0	0	120	0	0	0	0	0	278
07:45 AM	0	175	3	0	178	0	0	0	0	0	6	128	0	0	134	0	0	0	0	0	312
<b>Total</b>	<b>0</b>	<b>574</b>	<b>5</b>	<b>0</b>	<b>579</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>6</b>	<b>9</b>	<b>536</b>	<b>0</b>	<b>0</b>	<b>545</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1130</b>
08:00 AM	0	138	1	0	139	0	0	4	0	4	3	97	0	0	100	0	0	0	0	0	243
08:15 AM	0	140	1	0	141	0	0	3	0	3	3	97	0	0	100	0	0	0	0	0	244
08:30 AM	0	136	2	0	138	2	0	3	0	5	2	105	0	0	107	0	0	0	0	0	250
08:45 AM	0	132	1	0	133	1	0	2	0	3	1	113	0	0	114	0	0	0	0	0	250
<b>Total</b>	<b>0</b>	<b>546</b>	<b>5</b>	<b>0</b>	<b>551</b>	<b>3</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>15</b>	<b>9</b>	<b>412</b>	<b>0</b>	<b>0</b>	<b>421</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>987</b>
<b>Grand Total</b>	<b>0</b>	<b>1120</b>	<b>10</b>	<b>0</b>	<b>1130</b>	<b>6</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>21</b>	<b>18</b>	<b>948</b>	<b>0</b>	<b>0</b>	<b>966</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2117</b>
Apprch %	0	99.1	0.9	0		28.6	0	71.4	0		1.9	98.1	0	0		0	0	0	0		
Total %	0	52.9	0.5	0	53.4	0.3	0	0.7	0	1	0.9	44.8	0	0	45.6	0	0	0	0	0	
Passenger cars	0	1002	7	0	1009	4	0	6	0	10	11	853	0	0	864	0	0	0	0	0	1883
% Passenger cars	0	89.5	70	0	89.3	66.7	0	40	0	47.6	61.1	90	0	0	89.4	0	0	0	0	0	88.9
Small Trucks	0	92	0	0	92	1	0	2	0	3	3	64	0	0	67	0	0	0	0	0	162
% Small Trucks	0	8.2	0	0	8.1	16.7	0	13.3	0	14.3	16.7	6.8	0	0	6.9	0	0	0	0	0	7.7
Large Trucks	0	26	3	0	29	1	0	7	0	8	4	31	0	0	35	0	0	0	0	0	72
% Large Trucks	0	2.3	30	0	2.6	16.7	0	46.7	0	38.1	22.2	3.3	0	0	3.6	0	0	0	0	0	3.4

**Kuebler Blvd at  
Mill Creek Dr  
AM Turning Movements  
Tuesday, November 16, 2021**

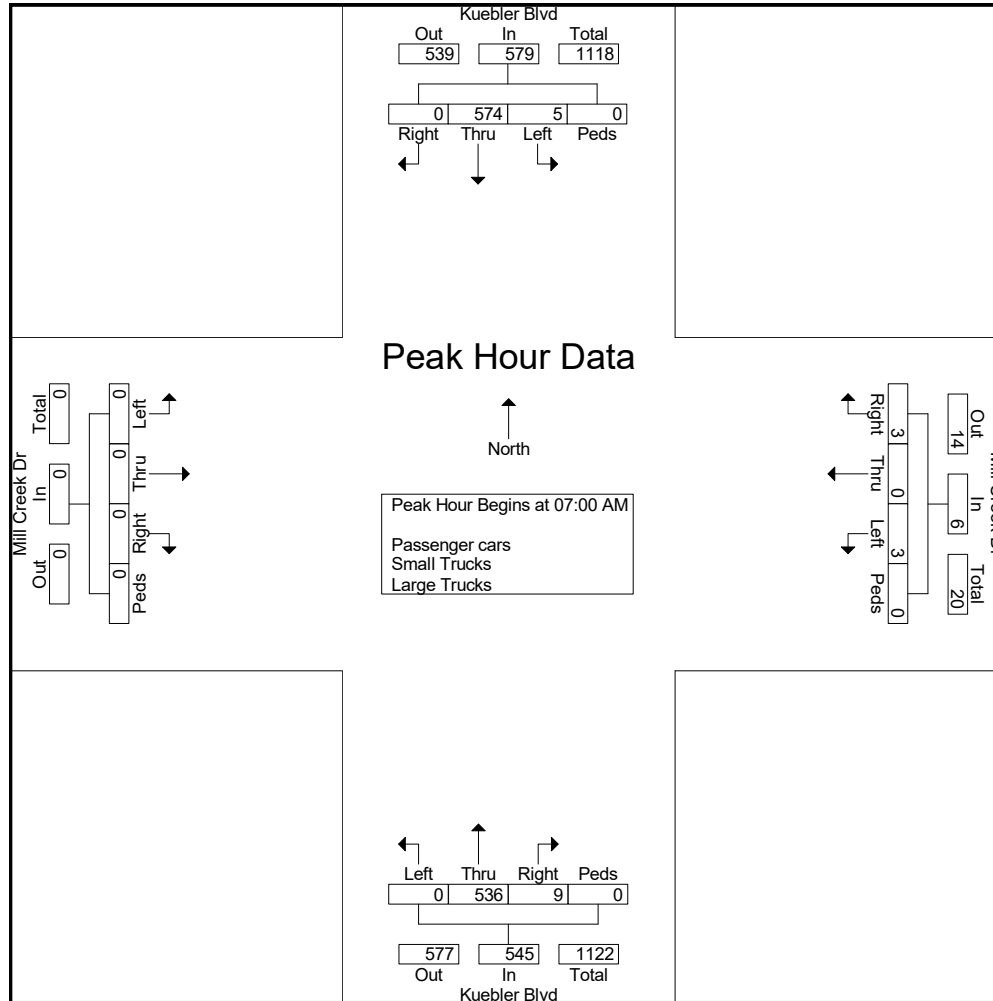
**File Name : Kuebler at Mill Creek AM 11-16-2021  
Site Code : 00000000  
Start Date : 11/13/2021  
Page No : 2**





**Kuebler Blvd at  
Mill Creek Dr  
AM Turning Movements  
Tuesday, November 16, 2021**

**File Name : Kuebler at Mill Creek AM 11-16-2021  
Site Code : 00000000  
Start Date : 11/13/2021  
Page No : 4**



**Kuebler Blvd at  
Mill Creek Dr  
PM Turning Movements  
Tuesday, November 16, 2021**

File Name : Kuebler at Mill Creek PM 11-16-2021  
Site Code : 00000000  
Start Date : 11/16/2021  
Page No : 1

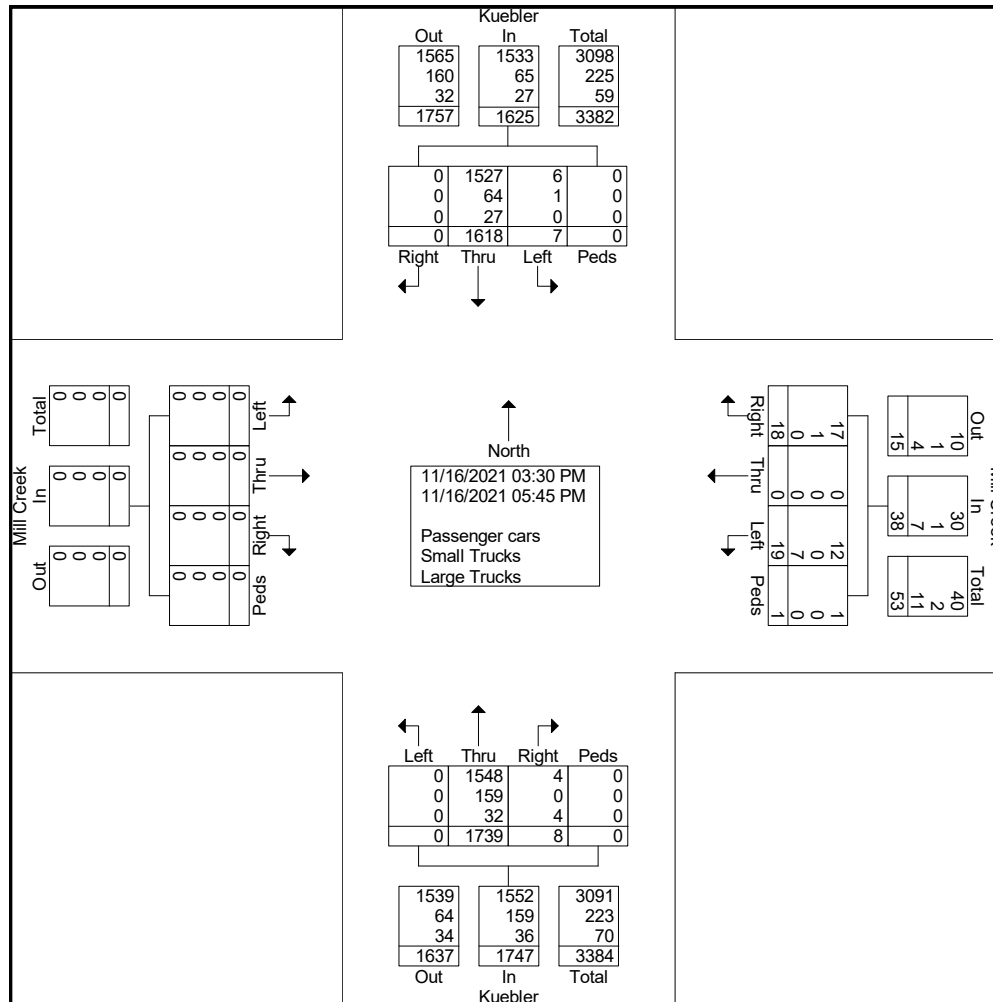
**Groups Printed- Passenger cars - Small Trucks - Large Trucks**

Start Time	Kuebler From North					Mill Creek From East					Kuebler From South					Mill Creek From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:30 PM	0	187	0	0	187	1	0	2	0	3	0	156	0	0	156	0	0	0	0	0	346
03:45 PM	0	161	4	0	165	6	0	2	0	8	2	164	0	0	166	0	0	0	0	0	339
<b>Total</b>	<b>0</b>	<b>348</b>	<b>4</b>	<b>0</b>	<b>352</b>	<b>7</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>11</b>	<b>2</b>	<b>320</b>	<b>0</b>	<b>0</b>	<b>322</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>685</b>
04:00 PM	0	132	0	0	132	1	0	2	0	3	1	144	0	0	145	0	0	0	0	0	280
04:15 PM	0	153	2	0	155	3	0	2	0	5	3	176	0	0	179	0	0	0	0	0	339
04:30 PM	0	150	0	0	150	3	0	2	0	5	0	184	0	0	184	0	0	0	0	0	339
04:45 PM	0	176	0	0	176	1	0	4	1	6	0	180	0	0	180	0	0	0	0	0	362
<b>Total</b>	<b>0</b>	<b>611</b>	<b>2</b>	<b>0</b>	<b>613</b>	<b>8</b>	<b>0</b>	<b>10</b>	<b>1</b>	<b>19</b>	<b>4</b>	<b>684</b>	<b>0</b>	<b>0</b>	<b>688</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1320</b>
05:00 PM	0	191	1	0	192	1	0	4	0	5	1	169	0	0	170	0	0	0	0	0	367
05:15 PM	0	171	0	0	171	2	0	1	0	3	1	177	0	0	178	0	0	0	0	0	352
05:30 PM	0	168	0	0	168	0	0	0	0	0	0	196	0	0	196	0	0	0	0	0	364
05:45 PM	0	129	0	0	129	0	0	0	0	0	0	193	0	0	193	0	0	0	0	0	322
<b>Total</b>	<b>0</b>	<b>659</b>	<b>1</b>	<b>0</b>	<b>660</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>8</b>	<b>2</b>	<b>735</b>	<b>0</b>	<b>0</b>	<b>737</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1405</b>
<b>Grand Total</b>	<b>0</b>	<b>1618</b>	<b>7</b>	<b>0</b>	<b>1625</b>	<b>18</b>	<b>0</b>	<b>19</b>	<b>1</b>	<b>38</b>	<b>8</b>	<b>1739</b>	<b>0</b>	<b>0</b>	<b>1747</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3410</b>
<b>Apprch %</b>	<b>0</b>	<b>99.6</b>	<b>0.4</b>	<b>0</b>		<b>47.4</b>	<b>0</b>	<b>50</b>	<b>2.6</b>		<b>0.5</b>	<b>99.5</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		
<b>Total %</b>	<b>0</b>	<b>47.4</b>	<b>0.2</b>	<b>0</b>	<b>47.7</b>	<b>0.5</b>	<b>0</b>	<b>0.6</b>	<b>0</b>	<b>1.1</b>	<b>0.2</b>	<b>51</b>	<b>0</b>	<b>0</b>	<b>51.2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
Passenger cars	0	1527	6	0	1533	17	0	12	1	30	4	1548	0	0	1552	0	0	0	0	0	3115
% Passenger cars	0	94.4	85.7	0	94.3	94.4	0	63.2	100	78.9	50	89	0	0	88.8	0	0	0	0	0	91.3
Small Trucks	0	64	1	0	65	1	0	0	0	1	0	159	0	0	159	0	0	0	0	0	225
% Small Trucks	0	4	14.3	0	4	5.6	0	0	0	2.6	0	9.1	0	0	9.1	0	0	0	0	0	6.6
Large Trucks	0	27	0	0	27	0	0	7	0	7	4	32	0	0	36	0	0	0	0	0	70
% Large Trucks	0	1.7	0	0	1.7	0	0	36.8	0	18.4	50	1.8	0	0	2.1	0	0	0	0	0	2.1



**Kuebler Blvd at  
Mill Creek Dr  
PM Turning Movements  
Tuesday, November 16, 2021**

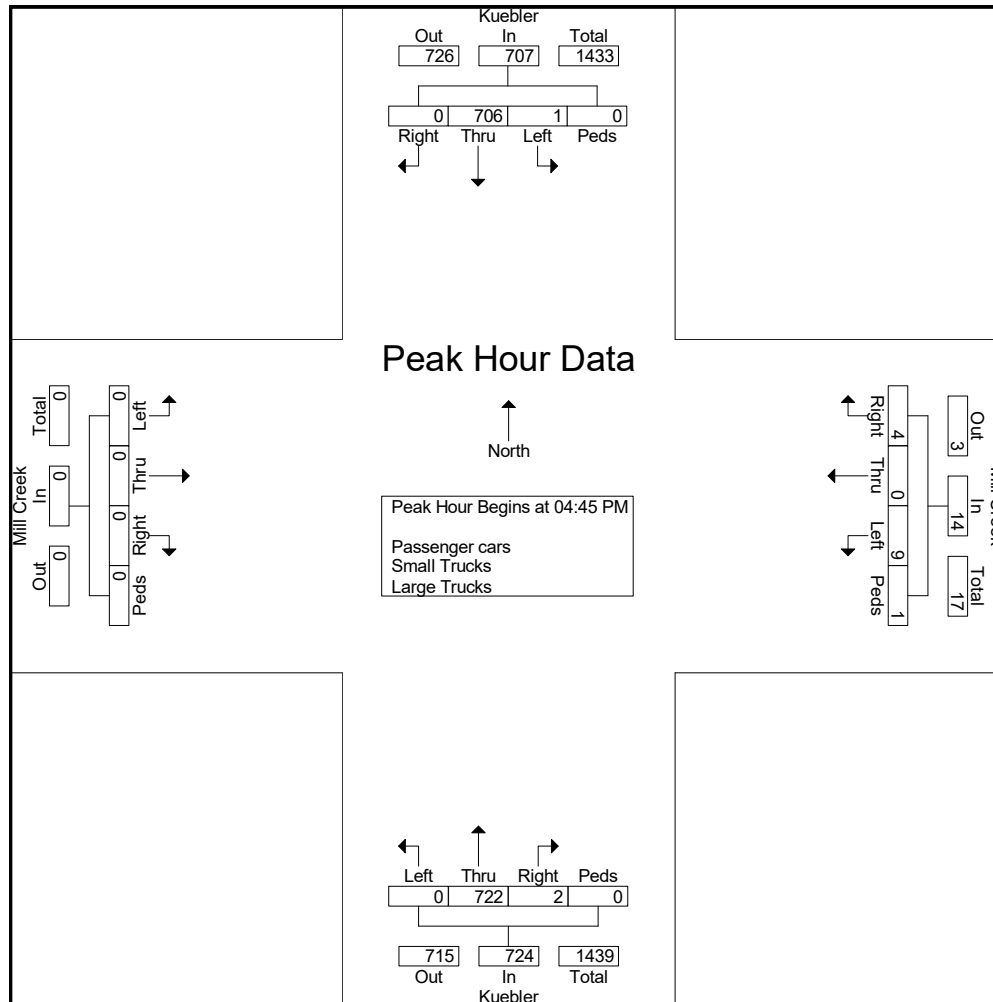
**File Name : Kuebler at Mill Creek PM 11-16-2021  
Site Code : 00000000  
Start Date : 11/16/2021  
Page No : 2**





**Kuebler Blvd at  
Mill Creek Dr  
PM Turning Movements  
Tuesday, November 16, 2021**

**File Name : Kuebler at Mill Creek PM 11-16-2021  
Site Code : 00000000  
Start Date : 11/16/2021  
Page No : 4**



**Turner Rd at  
Kuebler Blvd  
AM Turning Movements  
Thursday, November 18, 2021**

**Eric Anderson & Trevor Mace  
Clear Dry  
Moderate Traffic**

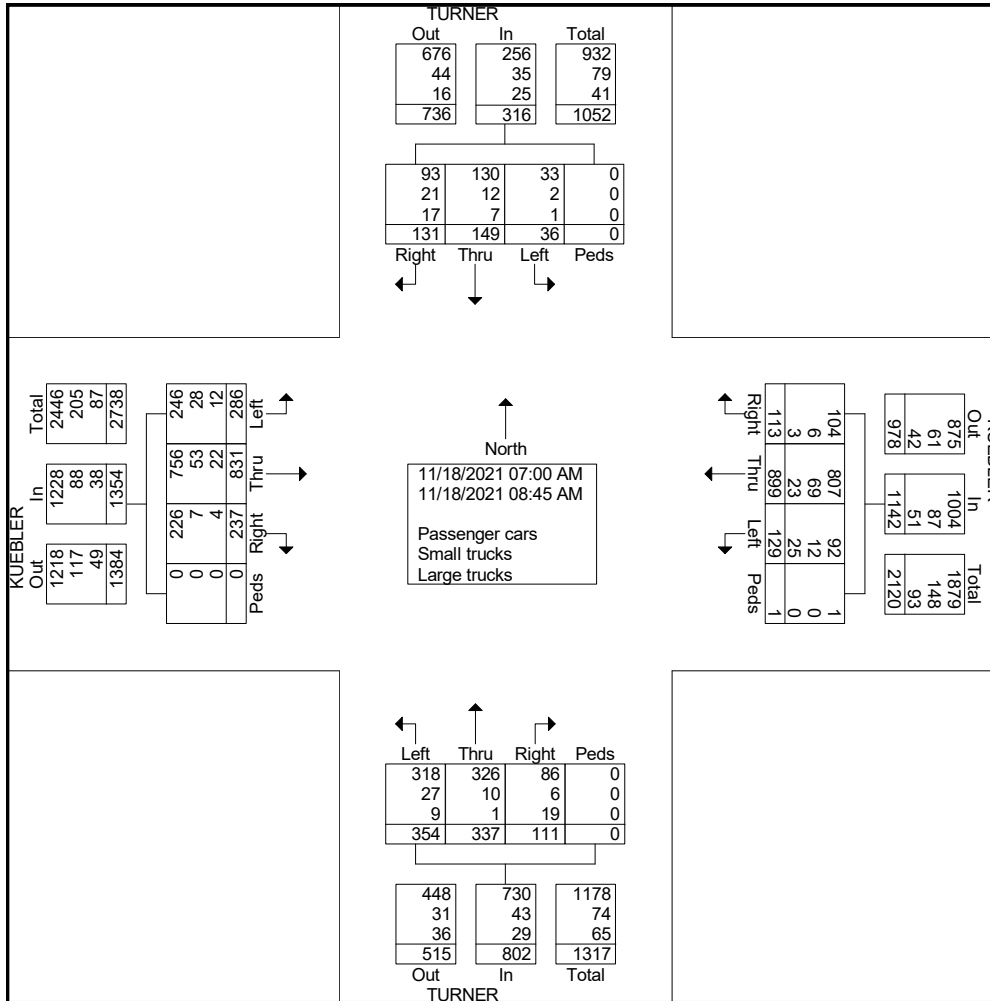
**File Name : Kuebler at Turner AM 11-18-2021 Combined  
Site Code : 00000000  
Start Date : 11/18/2021  
Page No : 1**

Groups Printed- Passenger cars - Small trucks - Large trucks

Start Time	TURNER From North					KUEBLER From East					TURNER From South					KUEBLER From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	11	20	3	0	34	19	104	18	0	141	8	26	38	0	72	16	105	40	0	161	408
07:15 AM	17	9	5	0	31	9	117	22	0	148	11	46	40	0	97	26	114	32	0	172	448
07:30 AM	13	12	6	0	31	17	110	22	0	149	6	59	56	0	121	36	108	33	0	177	478
07:45 AM	20	23	5	0	48	21	154	13	0	188	27	62	63	0	152	29	119	48	0	196	584
Total	61	64	19	0	144	66	485	75	0	626	52	193	197	0	442	107	446	153	0	706	1918
08:00 AM	19	12	5	0	36	11	118	14	0	143	20	38	51	0	109	23	93	44	0	160	448
08:15 AM	19	24	6	0	49	9	98	13	1	121	11	42	33	0	86	35	90	30	0	155	411
08:30 AM	16	19	6	0	41	6	102	11	0	119	19	30	38	0	87	26	108	31	0	165	412
08:45 AM	16	30	0	0	46	21	96	16	0	133	9	34	35	0	78	46	94	28	0	168	425
Total	70	85	17	0	172	47	414	54	1	516	59	144	157	0	360	130	385	133	0	648	1696
Grand Total	131	149	36	0	316	113	899	129	1	1142	111	337	354	0	802	237	831	286	0	1354	3614
Apprch %	41.5	47.2	11.4	0		9.9	78.7	11.3	0.1		13.8	42	44.1	0		17.5	61.4	21.1	0		
Total %	3.6	4.1	1	0	8.7	3.1	24.9	3.6	0	31.6	3.1	9.3	9.8	0	22.2	6.6	23	7.9	0	37.5	
Passenger cars																					
% Passenger cars	71	87.2	91.7	0	81	92	89.8	71.3	100	87.9	77.5	96.7	89.8	0	91	95.4	91	86	0	90.7	89
Small trucks	21	12	2	0	35	6	69	12	0	87	6	10	27	0	43	7	53	28	0	88	253
% Small trucks	16	8.1	5.6	0	11.1	5.3	7.7	9.3	0	7.6	5.4	3	7.6	0	5.4	3	6.4	9.8	0	6.5	7
Large trucks	17	7	1	0	25	3	23	25	0	51	19	1	9	0	29	4	22	12	0	38	143
% Large trucks	13	4.7	2.8	0	7.9	2.7	2.6	19.4	0	4.5	17.1	0.3	2.5	0	3.6	1.7	2.6	4.2	0	2.8	4

Turner Rd at  
Kuebler Blvd  
AM Turning Movements  
Thursday, November 18, 2021

File Name : Kuebler at Turner AM 11-18-2021 Combined  
Site Code : 00000000  
Start Date : 11/18/2021  
Page No : 2



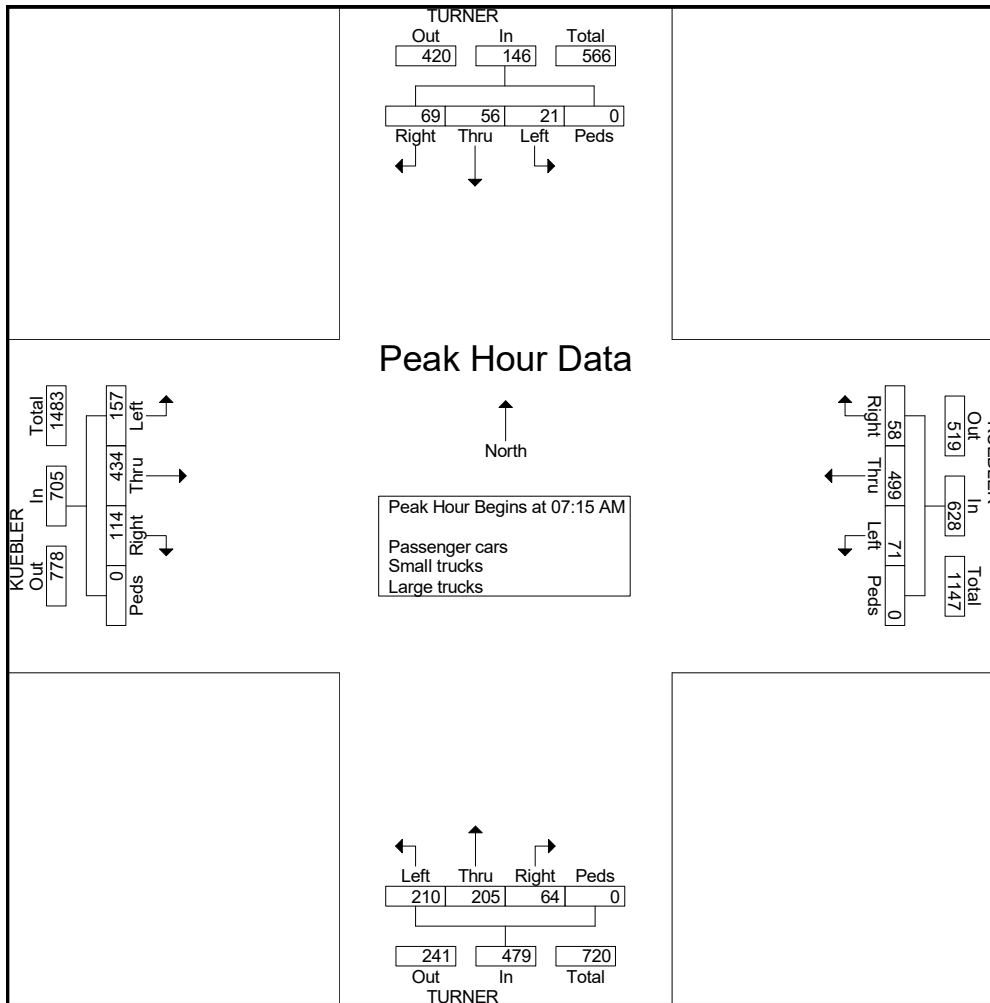
**Turner Rd at  
Kuebler Blvd  
AM Turning Movements  
Thursday, November 18, 2021**

**File Name : Kuebler at Turner AM 11-18-2021 Combined  
Site Code : 00000000  
Start Date : 11/18/2021  
Page No : 3**

Start Time	TURNER From North					KUEBLER From East					TURNER From South					KUEBLER From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	17	9	5	0	31	9	117	<b>22</b>													
07:30 AM	13	12	<b>6</b>	0	31	17	110	22	0	149	6	59	56	0	121	<b>36</b>	108	33	0	177	478
07:45 AM	<b>20</b>	<b>23</b>	5	0	<b>48</b>	<b>21</b>	<b>154</b>	13	0	<b>188</b>	<b>27</b>	<b>62</b>	<b>63</b>	0	<b>152</b>	29	<b>119</b>	<b>48</b>	0	<b>196</b>	<b>584</b>
08:00 AM	19	12	5	0	36	11	118	14	0	143	20	38	51	0	109	23	93	44	0	160	448
Total Volume	69	56	21	0	146	58	499	71	0	628	64	205	210	0	479	114	434	157	0	705	1958
% App. Total	47.3	38.4	14.4	0		9.2	79.5	11.3	0		13.4	42.8	43.8	0		16.2	61.6	22.3	0		
PHF	.863	.609	.875	.000	.760	.690	.810	.807	.000	.835	.593	.827	.833	.000	.788	.792	.912	.818	.000	.899	.838

Turner Rd at  
Kuebler Blvd  
AM Turning Movements  
Thursday, November 18, 2021

File Name : Kuebler at Turner AM 11-18-2021 Combined  
Site Code : 00000000  
Start Date : 11/18/2021  
Page No : 4



Turner Rd at  
Kuebler Blvd  
PM Turning Movements  
wednesday, December 8, 2021

Eric Anderson & Trevor Mace  
Clear Dry  
Heavy traffic on N leg of Turner Rd as  
far as can see approx 4:30-5:30

File Name : Kuebler at Turner PM 2021-12-8 Combined  
Site Code : 00000000  
Start Date : 12/8/2021  
Page No : 1

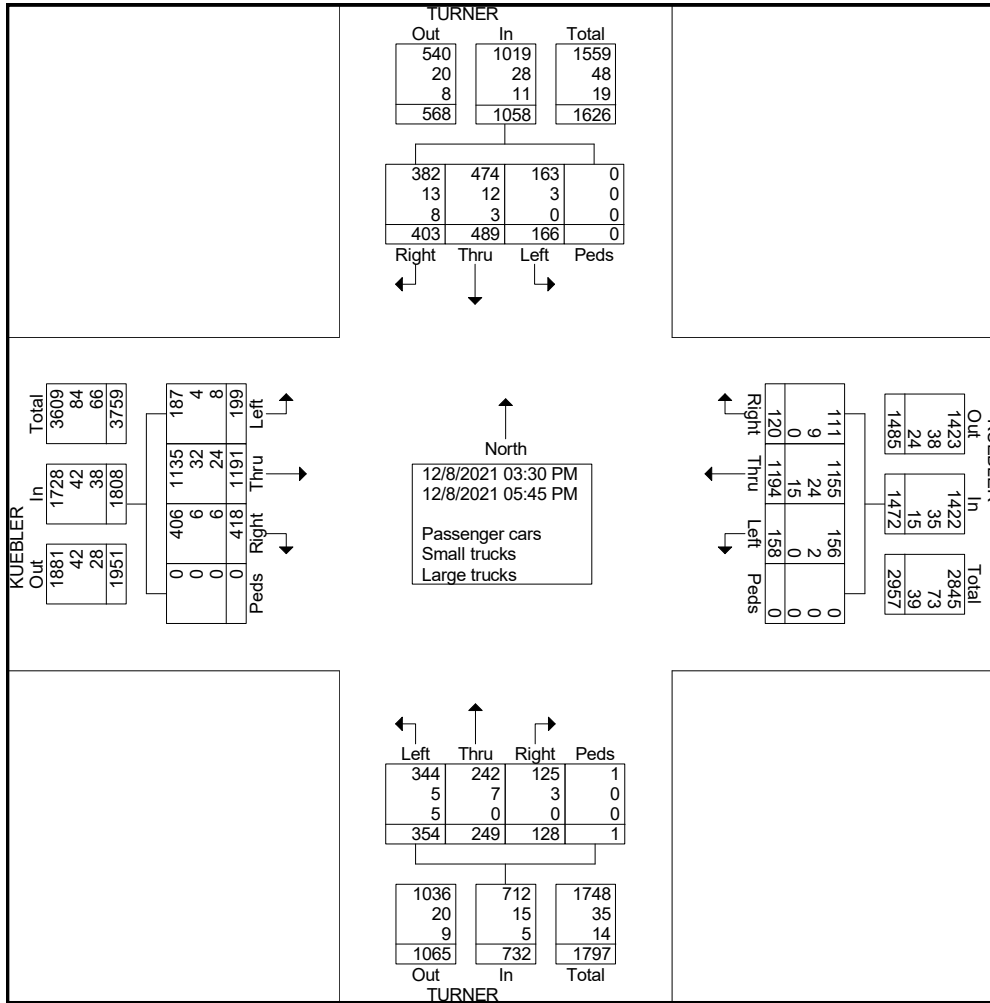
Groups Printed- Passenger cars - Small trucks - Large trucks

Start Time	TURNER From North					KUEBLER From East					TURNER From South					KUEBLER From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:30 PM	46	45	16	0	107	19	146	21	0	186	23	32	40	0	95	47	118	24	0	189	577
03:45 PM	49	48	16	0	113	19	131	22	0	172	17	29	43	0	89	36	124	26	0	186	560
<b>Total</b>	<b>95</b>	<b>93</b>	<b>32</b>	<b>0</b>	<b>220</b>	<b>38</b>	<b>277</b>	<b>43</b>	<b>0</b>	<b>358</b>	<b>40</b>	<b>61</b>	<b>83</b>	<b>0</b>	<b>184</b>	<b>83</b>	<b>242</b>	<b>50</b>	<b>0</b>	<b>375</b>	<b>1137</b>
04:00 PM	49	49	19	0	117	13	127	14	0	154	13	37	57	1	108	39	124	18	0	181	560
04:15 PM	42	56	15	0	113	12	125	18	0	155	10	23	41	0	74	43	117	23	0	183	525
04:30 PM	41	37	15	0	93	12	132	16	0	160	14	30	42	0	86	48	126	15	0	189	528
04:45 PM	34	55	22	0	111	12	150	13	0	175	13	23	30	0	66	46	103	20	0	169	521
<b>Total</b>	<b>166</b>	<b>197</b>	<b>71</b>	<b>0</b>	<b>434</b>	<b>49</b>	<b>534</b>	<b>61</b>	<b>0</b>	<b>644</b>	<b>50</b>	<b>113</b>	<b>170</b>	<b>1</b>	<b>334</b>	<b>176</b>	<b>470</b>	<b>76</b>	<b>0</b>	<b>722</b>	<b>2134</b>
05:00 PM	44	50	17	0	111	6	153	17	0	176	15	28	37	0	80	45	117	20	0	182	549
05:15 PM	37	58	17	0	112	13	118	21	0	152	17	22	26	0	65	41	121	18	0	180	509
05:30 PM	37	55	17	0	109	14	112	16	0	142	6	25	38	0	69	45	124	20	0	189	509
05:45 PM	24	36	12	0	72	0	0	0	0	0	0	0	0	0	0	28	117	15	0	160	232
<b>Total</b>	<b>142</b>	<b>199</b>	<b>63</b>	<b>0</b>	<b>404</b>	<b>33</b>	<b>383</b>	<b>54</b>	<b>0</b>	<b>470</b>	<b>38</b>	<b>75</b>	<b>101</b>	<b>0</b>	<b>214</b>	<b>159</b>	<b>479</b>	<b>73</b>	<b>0</b>	<b>711</b>	<b>1799</b>
<b>Grand Total</b>	<b>403</b>	<b>489</b>	<b>166</b>	<b>0</b>	<b>1058</b>	<b>120</b>	<b>1194</b>	<b>158</b>	<b>0</b>	<b>1472</b>	<b>128</b>	<b>249</b>	<b>354</b>	<b>1</b>	<b>732</b>	<b>418</b>	<b>1191</b>	<b>199</b>	<b>0</b>	<b>1808</b>	<b>5070</b>
<b>Apprch %</b>	<b>38.1</b>	<b>46.2</b>	<b>15.7</b>	<b>0</b>		<b>8.2</b>	<b>81.1</b>	<b>10.7</b>	<b>0</b>		<b>17.5</b>	<b>34</b>	<b>48.4</b>	<b>0.1</b>		<b>23.1</b>	<b>65.9</b>	<b>11</b>	<b>0</b>		
<b>Total %</b>	<b>7.9</b>	<b>9.6</b>	<b>3.3</b>	<b>0</b>	<b>20.9</b>	<b>2.4</b>	<b>23.6</b>	<b>3.1</b>	<b>0</b>	<b>29</b>	<b>2.5</b>	<b>4.9</b>	<b>7</b>	<b>0</b>	<b>14.4</b>	<b>8.2</b>	<b>23.5</b>	<b>3.9</b>	<b>0</b>	<b>35.7</b>	
<b>Passenger cars</b>	<b>382</b>	<b>474</b>	<b>163</b>	<b>0</b>	<b>1019</b>	<b>111</b>	<b>1155</b>	<b>156</b>	<b>0</b>	<b>1422</b>	<b>125</b>	<b>242</b>	<b>344</b>	<b>1</b>	<b>712</b>	<b>406</b>	<b>1135</b>	<b>187</b>	<b>0</b>	<b>1728</b>	<b>4881</b>
<b>% Passenger cars</b>	<b>94.8</b>	<b>96.9</b>	<b>98.2</b>	<b>0</b>	<b>96.3</b>	<b>92.5</b>	<b>96.7</b>	<b>98.7</b>	<b>0</b>	<b>96.6</b>	<b>97.7</b>	<b>97.2</b>	<b>97.2</b>	<b>100</b>	<b>97.3</b>	<b>97.1</b>	<b>95.3</b>	<b>94</b>	<b>0</b>	<b>95.6</b>	<b>96.3</b>
<b>Small trucks</b>	<b>13</b>	<b>12</b>	<b>3</b>	<b>0</b>	<b>28</b>	<b>9</b>	<b>24</b>	<b>2</b>	<b>0</b>	<b>35</b>	<b>3</b>	<b>7</b>	<b>5</b>	<b>0</b>	<b>15</b>	<b>6</b>	<b>32</b>	<b>4</b>	<b>0</b>	<b>42</b>	<b>120</b>
<b>% Small trucks</b>	<b>3.2</b>	<b>2.5</b>	<b>1.8</b>	<b>0</b>	<b>2.6</b>	<b>7.5</b>	<b>2</b>	<b>1.3</b>	<b>0</b>	<b>2.4</b>	<b>2.3</b>	<b>2.8</b>	<b>1.4</b>	<b>0</b>	<b>2</b>	<b>1.4</b>	<b>2.7</b>	<b>2</b>	<b>0</b>	<b>2.3</b>	<b>2.4</b>
<b>Large trucks</b>	<b>8</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>6</b>	<b>24</b>	<b>8</b>	<b>0</b>	<b>38</b>	<b>69</b>
<b>% Large trucks</b>	<b>2</b>	<b>0.6</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1.3</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1.4</b>	<b>0</b>	<b>0.7</b>	<b>1.4</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>2.1</b>	<b>1.4</b>



Turner Rd at  
Kuebler Blvd  
PM Turning Movements  
wednesday, December 8, 2021

File Name : Kuebler at Turner PM 2021-12-8 Combined  
Site Code : 00000000  
Start Date : 12/8/2021  
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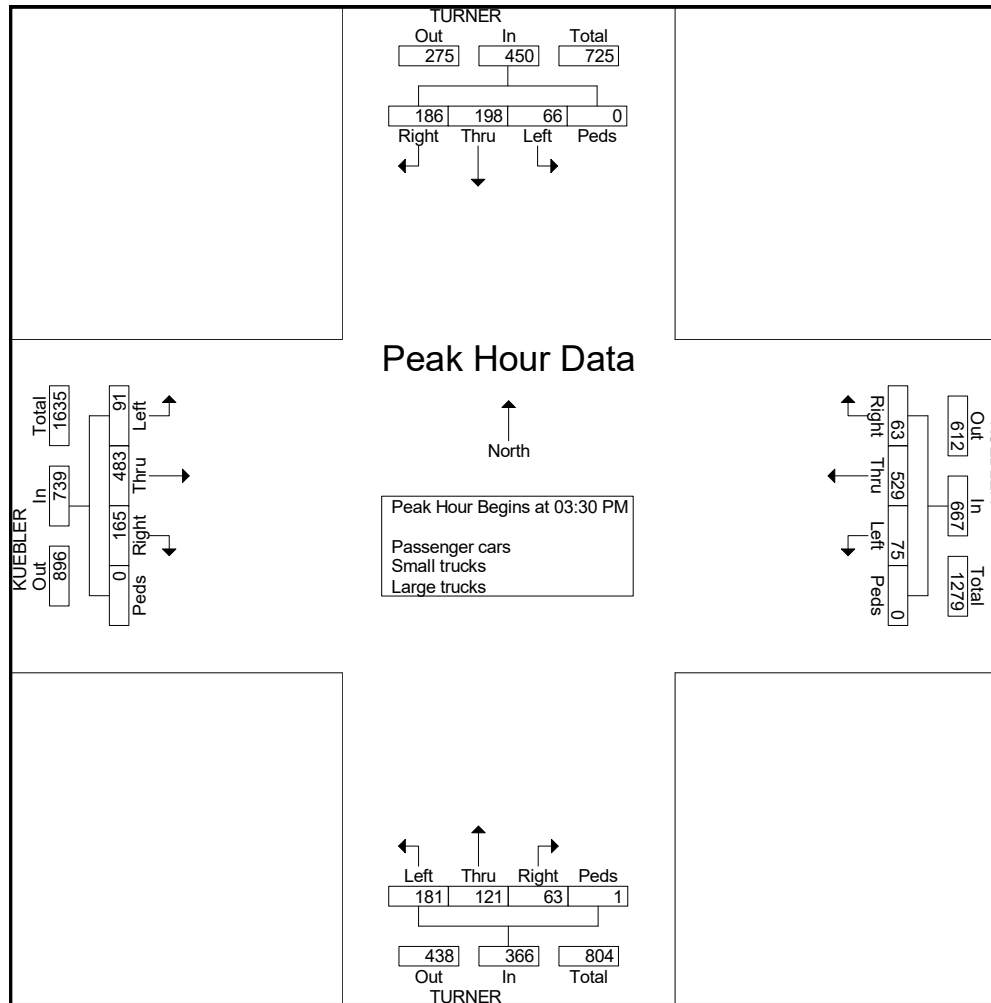
Turner Rd at  
Kuebler Blvd  
PM Turning Movements  
wednesday, December 8, 2021

File Name : Kuebler at Turner PM 2021-12-8 Combined  
Site Code : 00000000  
Start Date : 12/8/2021  
Page No : 3

Start Time	TURNER From North					KUEBLER From East					TURNER From South					KUEBLER From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 03:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:30 PM																					
03:30 PM	46	45	16	0	107	19	146	21	0	186	23	32	40	0	95	47	118	24	0	189	577
03:45 PM	49	48	16	0	113	19	131	22	0	172	17	29	43	0	89	36	124	26	0	186	560
04:00 PM	49	49	19	0	117	13	127	14	0	154	13	37	57	1	108	39	124	18	0	181	560
04:15 PM	42	56	15	0	113	12	125	18	0	155	10	23	41	0	74	43	117	23	0	183	525
Total Volume	186	198	66	0	450	63	529	75	0	667	63	121	181	1	366	165	483	91	0	739	2222
% App. Total	41.3	44	14.7	0		9.4	79.3	11.2	0		17.2	33.1	49.5	0.3		22.3	65.4	12.3	0		
PHF	.949	.884	.868	.000	.962	.829	.906	.852	.000	.897	.685	.818	.794	.250	.847	.878	.974	.875	.000	.978	.963

Turner Rd at  
Kuebler Blvd  
PM Turning Movements  
wednesday, December 8, 2021

File Name : Kuebler at Turner PM 2021-12-8 Combined  
Site Code : 00000000  
Start Date : 12/8/2021  
Page No : 4



**Lake Labish Rd at  
Hazelgreen Rd  
AM Turning Movements  
Thursday, March 10, 2022**

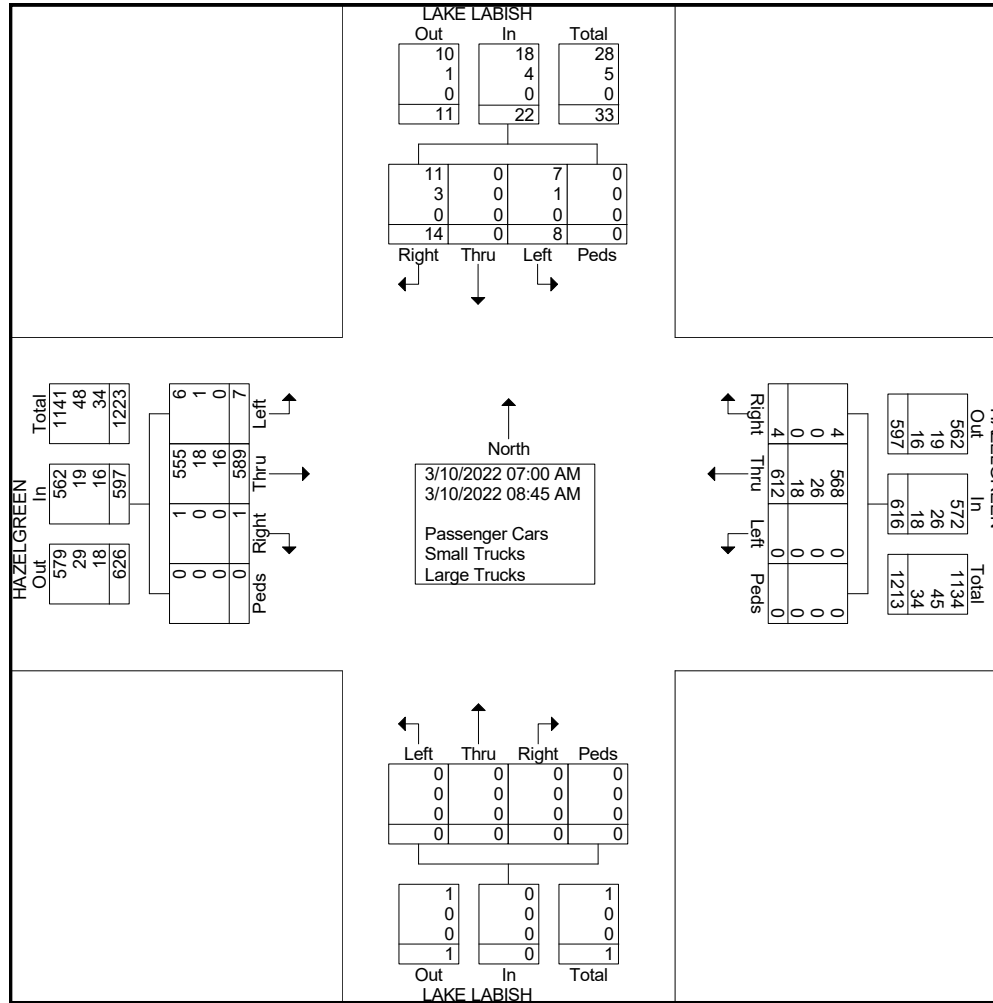
**File Name : Lake Labish at Hazelgreen 3-10-2022  
Site Code : 00000000  
Start Date : 3/10/2022  
Page No : 1**

**Groups Printed- Passenger Cars - Small Trucks - Large Trucks**

Start Time	LAKE LABISH From North					HAZELGREEN From East					LAKE LABISH From South					HAZELGREEN From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	2	0	0	0	2	1	58	0	0	59	0	0	0	0	0	1	59	0	0	60	121
07:15 AM	1	0	1	0	2	0	79	0	0	79	0	0	0	0	0	0	76	1	0	77	158
07:30 AM	3	0	1	0	4	0	70	0	0	70	0	0	0	0	0	0	87	1	0	88	162
07:45 AM	0	0	2	0	2	1	111	0	0	112	0	0	0	0	0	0	96	2	0	98	212
Total	6	0	4	0	10	2	318	0	0	320	0	0	0	0	0	1	318	4	0	323	653
08:00 AM	4	0	2	0	6	0	81	0	0	81	0	0	0	0	0	0	63	1	0	64	151
08:15 AM	1	0	0	0	1	1	65	0	0	66	0	0	0	0	0	0	86	0	0	86	153
08:30 AM	1	0	1	0	2	1	76	0	0	77	0	0	0	0	0	0	76	0	0	76	155
08:45 AM	2	0	1	0	3	0	72	0	0	72	0	0	0	0	0	0	46	2	0	48	123
Total	8	0	4	0	12	2	294	0	0	296	0	0	0	0	0	0	271	3	0	274	582
Grand Total	14	0	8	0	22	4	612	0	0	616	0	0	0	0	0	1	589	7	0	597	1235
Apprch %	63.6	0	36.4	0		0.6	99.4	0	0		0	0	0	0		0.2	98.7	1.2	0		
Total %	1.1	0	0.6	0	1.8	0.3	49.6	0	0	49.9	0	0	0	0	0	0.1	47.7	0.6	0	48.3	
Passenger Cars																					
% Passenger Cars	78.6	0	87.5	0	81.8	100	92.8	0	0	92.9	0	0	0	0	0	100	94.2	85.7	0	94.1	93.3
Small Trucks	3	0	1	0	4	0	26	0	0	26	0	0	0	0	0	0	18	1	0	19	49
% Small Trucks	21.4	0	12.5	0	18.2	0	4.2	0	0	4.2	0	0	0	0	0	0	3.1	14.3	0	3.2	4
Large Trucks	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	0	16	0	0	16	34
% Large Trucks	0	0	0	0	0	0	2.9	0	0	2.9	0	0	0	0	0	0	2.7	0	0	2.7	2.8

Lake Labish Rd at  
Hazelgreen Rd  
AM Turning Movements  
Thursday, March 10, 2022

File Name : Lake Labish at Hazelgreen 3-10-2022  
Site Code : 00000000  
Start Date : 3/10/2022  
Page No : 2



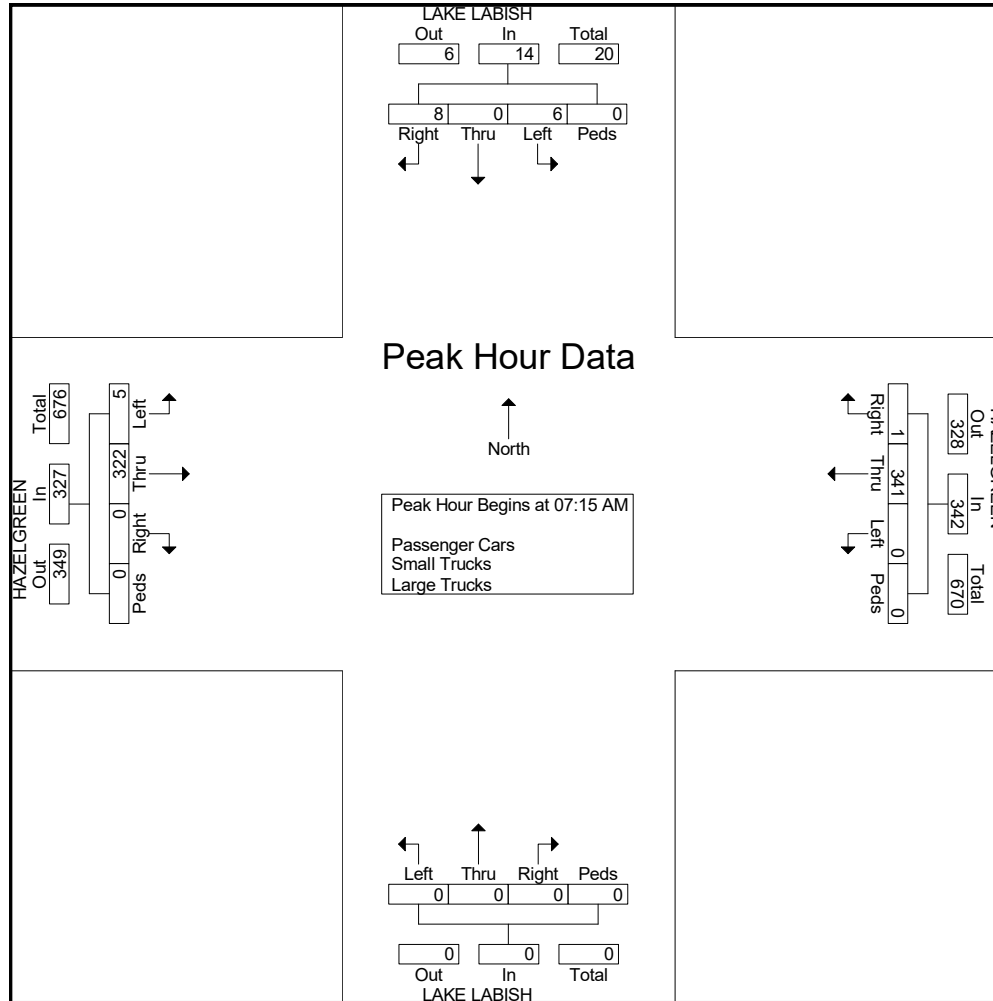
**Lake Labish Rd at  
Hazelgreen Rd  
AM Turning Movements  
Thursday, March 10, 2022**

**File Name : Lake Labish at Hazelgreen 3-10-2022  
Site Code : 00000000  
Start Date : 3/10/2022  
Page No : 3**

Start Time	LAKE LABISH From North					HAZELGREEN From East					LAKE LABISH From South					HAZELGREEN From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	0	1	0	2	0	79	0	0	79	0	0	0	0	0	0	76	1	0	77	158
07:30 AM	3	0	1	0	4	0	70	0	0	70	0	0	0	0	0	0	87	1	0	88	162
07:45 AM	0	0	<b>2</b>			<b>1</b>	<b>111</b>			<b>112</b>						<b>96</b>	<b>2</b>		<b>98</b>	<b>212</b>	
08:00 AM	<b>4</b>	0	2	0	<b>6</b>	0	81	0	0	81	0	0	0	0	0	0	63	1	0	64	151
Total Volume	8	0	6	0	14	1	341	0	0	342	0	0	0	0	0	0	322	5	0	327	683
% App. Total	57.1	0	42.9	0		0.3	99.7	0	0		0	0	0	0		0	98.5	1.5	0		
PHF	.500	.000	.750	.000	.583	.250	.768	.000	.000	.763	.000	.000	.000	.000	.000	.000	.839	.625	.000	.834	.805

Lake Labish Rd at  
Hazelgreen Rd  
AM Turning Movements  
Thursday, March 10, 2022

File Name : Lake Labish at Hazelgreen 3-10-2022  
Site Code : 00000000  
Start Date : 3/10/2022  
Page No : 4



**Lake Labish Rd at  
Hazelgreen Rd  
PM Turning Movements  
Tuesday, March 15, 2022**

**File Name : Lake Labish at Hazelgreen 3-15-2022  
Site Code : 00000000  
Start Date : 3/15/2022  
Page No : 1**

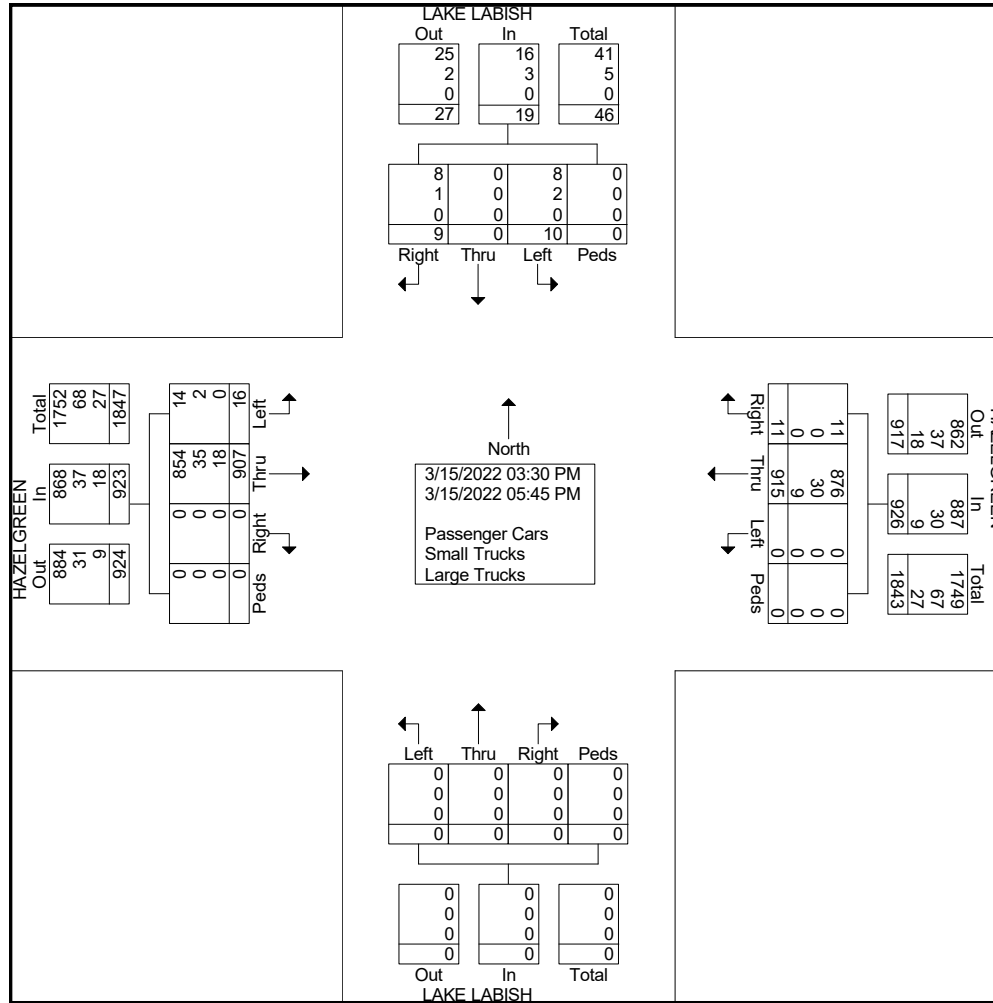
Groups Printed- Passenger Cars - Small Trucks - Large Trucks

Start Time	LAKE LABISH From North					HAZELGREEN From East					LAKE LABISH From South					HAZELGREEN From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:30 PM	0	0	0	0	0	1	82	0	0	83	0	0	0	0	0	0	90	1	0	91	174
03:45 PM	2	0	5	0	7	1	102	0	0	103	0	0	0	0	0	0	90	3	0	93	203
Total	2	0	5	0	7	2	184	0	0	186	0	0	0	0	0	0	180	4	0	184	377
04:00 PM	0	0	0	0	0	2	89	0	0	91	0	0	0	0	0	0	94	0	0	94	185
04:15 PM	2	0	0	0	2	1	107	0	0	108	0	0	0	0	0	0	93	1	0	94	204
04:30 PM	0	0	3	0	3	0	105	0	0	105	0	0	0	0	0	0	97	4	0	101	209
04:45 PM	1	0	0	0	1	0	85	0	0	85	0	0	0	0	0	0	84	2	0	86	172
Total	3	0	3	0	6	3	386	0	0	389	0	0	0	0	0	0	368	7	0	375	770
05:00 PM	2	0	1	0	3	4	95	0	0	99	0	0	0	0	0	0	100	3	0	103	205
05:15 PM	0	0	0	0	0	2	97	0	0	99	0	0	0	0	0	0	95	1	0	96	195
05:30 PM	2	0	1	0	3	0	84	0	0	84	0	0	0	0	0	0	87	0	0	87	174
05:45 PM	0	0	0	0	0	0	69	0	0	69	0	0	0	0	0	0	77	1	0	78	147
Total	4	0	2	0	6	6	345	0	0	351	0	0	0	0	0	0	359	5	0	364	721
Grand Total	9	0	10	0	19	11	915	0	0	926	0	0	0	0	0	0	907	16	0	923	1868
Apprch %	47.4	0	52.6	0		1.2	98.8	0	0		0	0	0	0		0	98.3	1.7	0		
Total %	0.5	0	0.5	0	1	0.6	49	0	0	49.6	0	0	0	0	0	0	48.6	0.9	0	49.4	
Passenger Cars																					
% Passenger Cars	88.9	0	80	0	84.2	100	95.7	0	0	95.8	0	0	0	0	0	0	94.2	87.5	0	94	94.8
Small Trucks	1	0	2	0	3	0	30	0	0	30	0	0	0	0	0	0	35	2	0	37	70
% Small Trucks	11.1	0	20	0	15.8	0	3.3	0	0	3.2	0	0	0	0	0	0	3.9	12.5	0	4	3.7
Large Trucks	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	18	0	0	18	27
% Large Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	1.4



Lake Labish Rd at  
Hazelgreen Rd  
PM Turning Movements  
Tuesday, March 15, 2022

File Name : Lake Labish at Hazelgreen 3-15-2022  
Site Code : 00000000  
Start Date : 3/15/2022  
Page No : 2



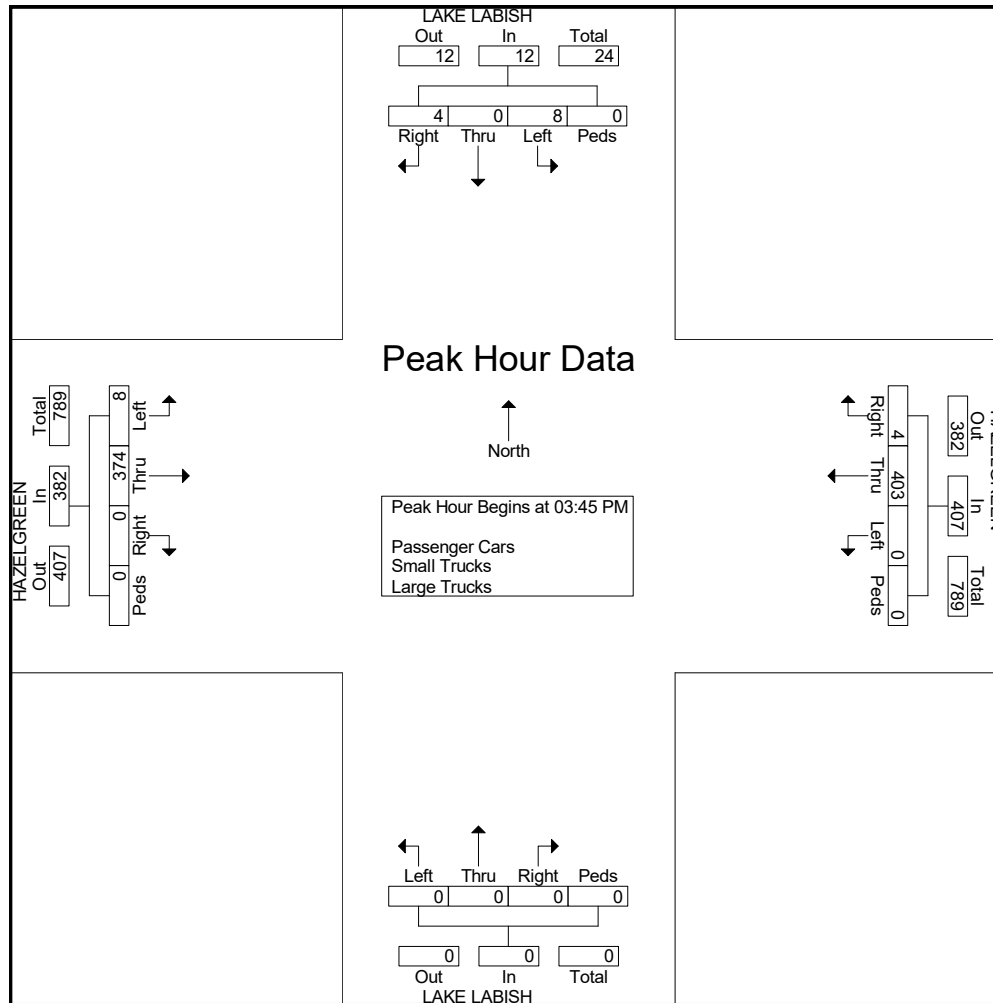
**Lake Labish Rd at  
Hazelgreen Rd  
PM Turning Movements  
Tuesday, March 15, 2022**

**File Name : Lake Labish at Hazelgreen 3-15-2022  
Site Code : 00000000  
Start Date : 3/15/2022  
Page No : 3**

Start Time	LAKE LABISH From North					HAZELGREEN From East					LAKE LABISH From South					HAZELGREEN From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 03:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	<b>2</b>		<b>5</b>		<b>7</b>																
04:00 PM	0	0	0	0	0	<b>2</b>	89	0	0	91	0	0	0	0	0	0	94	0	0	94	185
04:15 PM	2	0	0	0	2	1	<b>107</b>	0	0	<b>108</b>	0	0	0	0	0	0	93	1	0	94	204
04:30 PM	0	0	3	0	3	0	105	0	0	105	0	0	0	0	0	0	<b>97</b>	<b>4</b>	0	<b>101</b>	<b>209</b>
Total Volume	4	0	8	0	12	4	403	0	0	407	0	0	0	0	0	0	374	8	0	382	801
% App. Total	33.3	0	66.7	0		1	99	0	0		0	0	0	0		0	97.9	2.1	0		
PHF	.500	.000	.400	.000	.429	.500	.942	.000	.000	.942	.000	.000	.000	.000	.000	.000	.964	.500	.000	.946	.958

Lake Labish Rd at  
Hazelgreen Rd  
PM Turning Movements  
Tuesday, March 15, 2022

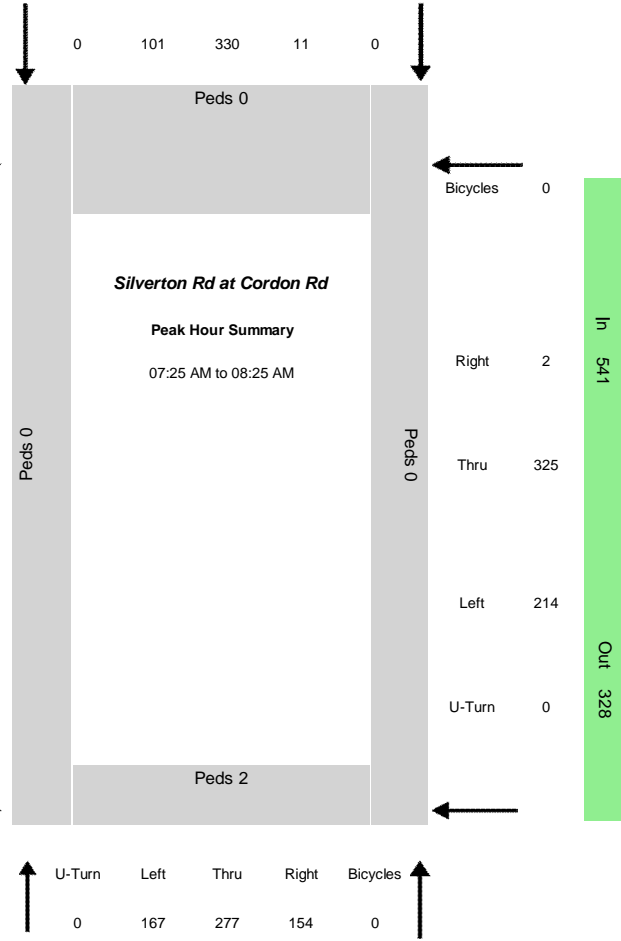
File Name : Lake Labish at Hazelgreen 3-15-2022  
Site Code : 00000000  
Start Date : 3/15/2022  
Page No : 4





Southbound  
Cordon Rd NE  
Heavy Vehicle 5.2%

In	442	Out	346
Bicycles		Right	Thru
		Left	U-Turn



Data Provided by K-D-N.com 503-594-4224

N/S street	Cordon Rd NE
E/W street	Silverton Rd NE
City, State	Salem OR
Site Notes	
Location	44.971208 - -122.958914
Start Date	Tuesday, June 06, 2017
Start Time	06:00:00 AM
Weather	
Study ID #	
Peak Hour Start	07:25:00 AM
Peak 15 Min Start	07:35:00 AM
PHF (15-Min Int)	0.87

Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
167	277	154	0	11	330	101	0	67	163	133	0	214	325	2	0	598	442	363	541	677	346	593	328
Percent Heavy Vehicles																							
7.8%	1.8%	7.8%	0.0%	18.2%	4.8%	5.0%	0.0%	9.0%	8.6%	8.3%	0.0%	4.7%	4.0%	0.0%	0.0%	5.0%	5.2%	8.5%	4.3%	5.5%	3.2%	5.2%	8.5%

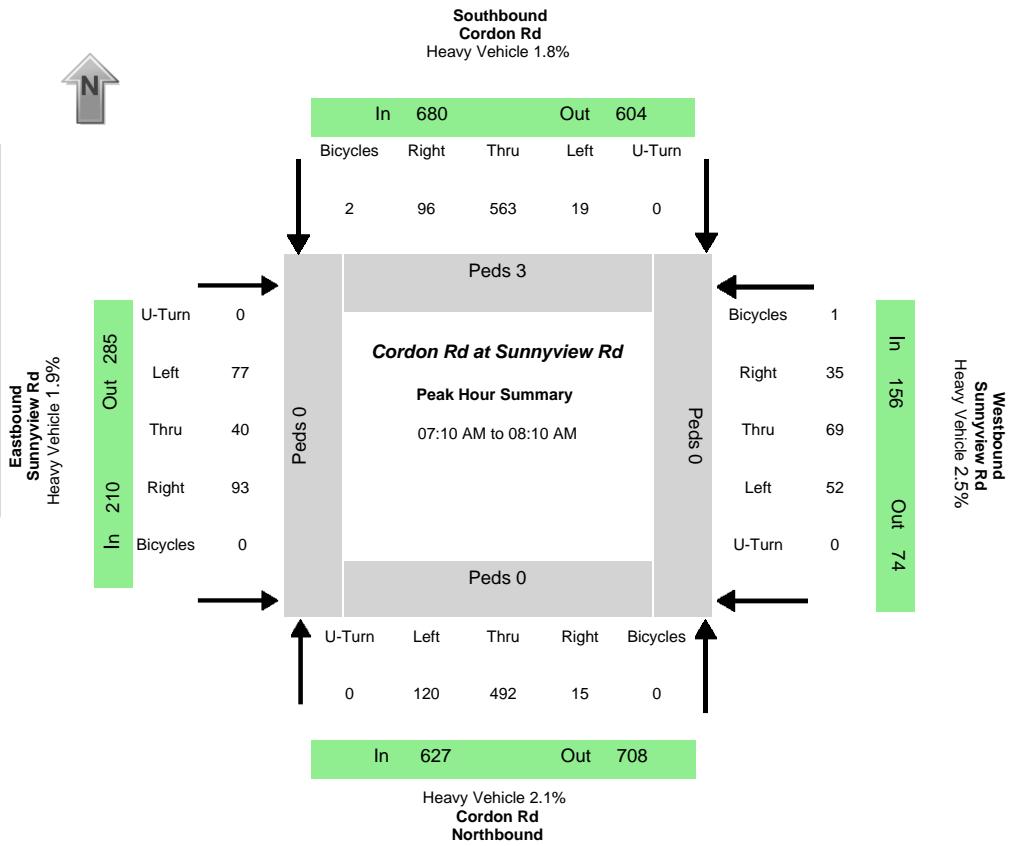
PHV - Bicycles																PHV - Pedestrians					
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2

Time	Northbound Cordon Rd NE				Southbound Cordon Rd NE				Eastbound Silverton Rd NE				Westbound Silverton Rd NE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
06:00:00 AM	4	11	8	0	0	10	0	0	4	11	3	0	9	8	0	0		
06:05:00 AM	4	14	7	0	1	4	1	0	5	15	9	0	11	8	0	0		
06:10:00 AM	2	20	11	0	0	11	1	0	1	19	5	0	5	14	0	0	236	
06:15:00 AM	9	11	14	0	0	8	2	0	4	12	4	0	8	15	0	0	255	
06:20:00 AM	7	8	11	0	1	9	2	0	5	13	7	0	12	15	0	0	266	
06:25:00 AM	3	16	17	0	0	15	0	0	4	28	1	0	16	17	0	0	294	
06:30:00 AM	9	21	18	0	0	20	2	0	4	16	5	0	16	9	0	0	327	
06:35:00 AM	9	18	15	0	0	14	8	0	5	21	6	0	11	21	0	0	365	
06:40:00 AM	9	16	18	0	1	18	2	0	1	21	6	0	26	17	0	0	383	
06:45:00 AM	5	22	13	0	2	11	3	0	10	21	8	0	18	19	0	0	395	
06:50:00 AM	10	22	18	0	0	28	7	0	7	15	10	0	20	20	0	0	424	
06:55:00 AM	1	14	7	0	0	14	3	0	5	14	5	0	20	31	0	0	403	1316
07:00:00 AM	7	22	10	0	1	15	0	0	3	6	5	0	12	11	0	0	363	1340

07:05:00 AM	4	14	10	0	1	12	7	0	9	10	8	0	12	19	0	0	312	1367
07:10:00 AM	6	24	11	0	0	21	4	0	14	12	6	0	26	24	0	0	346	1426
07:15:00 AM	8	17	18	0	0	20	6	0	10	10	7	0	16	23	0	0	389	1474
07:20:00 AM	14	28	20	0	0	20	11	0	7	7	5	0	21	23	0	0	439	1540
07:25:00 AM	6	24	18	0	1	31	12	0	10	13	15	0	16	22	0	0	459	1591
07:30:00 AM	8	27	10	0	2	32	6	0	5	14	11	0	13	39	0	0	491	1638
07:35:00 AM	13	20	10	0	0	27	16	0	6	17	15	0	20	29	0	0	508	1683
07:40:00 AM	15	20	20	0	1	39	15	0	8	15	18	0	20	30	0	0	541	1749
07:45:00 AM	15	28	16	0	1	40	10	0	6	16	6	0	14	32	1	0	559	1802
07:50:00 AM	17	20	7	0	2	33	5	0	8	14	10	0	23	22	0	0	547	1806
07:55:00 AM	12	17	12	0	4	16	7	0	2	20	19	0	14	25	0	0	494	1840
08:00:00 AM	10	16	10	0	0	18	7	0	6	6	11	0	25	21	0	0	439	1878
08:05:00 AM	20	18	10	0	0	23	4	0	2	9	9	0	19	28	1	0	421	1915
08:10:00 AM	13	22	17	0	0	26	7	0	4	6	6	0	12	17	0	0	403	1897
08:15:00 AM	15	33	13	0	0	22	6	0	3	17	8	0	22	30	0	0	442	1931
08:20:00 AM	23	32	11	0	0	23	6	0	7	16	5	0	16	30	0	0	468	1944
08:25:00 AM	12	24	14	0	1	26	10	0	7	20	11	0	15	26	1	0	505	1943
08:30:00 AM	9	39	13	0	0	20	8	0	4	18	10	0	12	23	0	0	492	1932
08:35:00 AM	11	28	11	0	4	24	13	0	6	17	13	0	12	26	0	0	488	1924
08:40:00 AM	8	14	16	0	1	17	13	0	4	7	17	0	10	19	0	0	447	1849
08:45:00 AM	14	31	12	0	0	27	8	0	4	12	10	0	16	16	1	0	442	1815
08:50:00 AM	8	17	10	0	2	19	8	0	7	20	8	0	10	18	0	0	404	1781
08:55:00 AM	6	12	9	0	1	22	2	0	5	14	21	0	26	28	0	0	424	1779

Data Provided by K-D-N.com 503-594-4224

N/S street	<b>Cordon Rd</b>
E/W street	<b>Sunnyview Rd</b>
City, State	Salem OR
Site Notes	
Location	44.954898 - -122.958893
Start Date	Tuesday, September 25, 2018
Start Time	06:00:00 AM
Weather	
Study ID #	
<b>Peak Hour Start</b>	<b>07:10:00 AM</b>
<b>Peak 15 Min Start</b>	<b>07:20:00 AM</b>
<b>PHF (15-Min Int)</b>	<b>0.94</b>



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
120	492	15	0	19	563	96	0	77	40	93	0	52	69	35	0	627	678	210	156	708	604	285	74
Percent Heavy Vehicles																							
3.3%	1.8%	0.0%	0.0%	0.0%	1.8%	2.1%	0.0%	3.9%	2.5%	0.0%	0.0%	1.9%	2.9%	2.9%	0.0%	2.1%	1.8%	1.9%	2.6%	1.6%	2.2%	2.8%	1.4%

PHV - Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	3	0	3	0	0	3

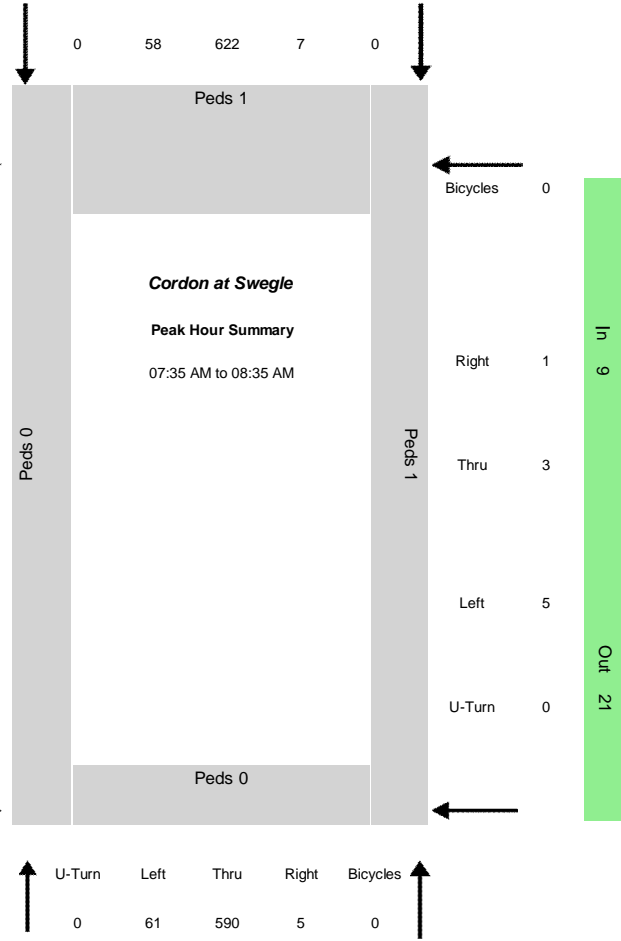
Time	Northbound Cordon Rd				Southbound Cordon Rd				Eastbound Sunnyview Rd				Westbound Sunnyview Rd				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
06:00:00 AM	2	18	1	0	0	19	1	0	1	4	3	0	1	2	3	0		
06:05:00 AM	0	20	0	0	0	25	1	0	1	3	2	0	1	1	0	0		
06:10:00 AM	3	18	2	0	0	26	1	0	6	2	4	0	4	0	0	0	175	
06:15:00 AM	5	24	2	0	1	17	2	0	2	1	6	0	1	1	1	0	183	
06:20:00 AM	1	26	2	0	3	25	2	0	0	3	5	0	3	4	2	0	205	
06:25:00 AM	4	27	1	0	0	21	2	0	3	3	3	0	2	1	1	0	207	
06:30:00 AM	4	39	0	0	0	33	1	0	6	4	6	0	0	5	2	0	244	
06:35:00 AM	2	29	2	0	2	29	2	0	8	3	12	0	4	3	2	0	266	
06:40:00 AM	3	44	2	0	3	40	2	0	7	3	10	0	4	6	1	0	323	
06:45:00 AM	5	43	0	0	2	40	4	0	5	6	8	0	6	5	1	0	348	
06:50:00 AM	3	46	6	0	2	43	3	0	8	5	7	0	2	7	3	0	385	
06:55:00 AM	6	39	0	0	2	28	3	0	4	2	7	0	3	5	4	0	363	1068
07:00:00 AM	4	32	2	0	0	30	7	0	2	4	6	0	1	3	5	0	334	1109
07:05:00 AM	3	25	2	0	2	40	3	0	12	5	8	0	2	1	0	0	302	1158
07:10:00 AM	9	42	2	0	2	39	11	0	7	3	7	0	5	3	4	0	333	1226
07:15:00 AM	7	39	3	0	2	59	1	0	4	4	8	0	3	4	3	0	374	1300
07:20:00 AM	9	43	2	0	0	48	9	0	11	2	4	0	3	4	5	0	411	1364
07:25:00 AM	12	46	2	0	2	46	13	0	13	7	4	0	5	15	1	0	443	1462
07:30:00 AM	13	45	2	0	1	41	9	0	7	5	4	0	1	8	3	0	445	1501
07:35:00 AM	11	34	1	0	2	45	5	0	5	2	14	0	5	8	3	0	440	1538
07:40:00 AM	9	44	0	0	3	67	6	0	6	2	9	0	6	4	2	0	432	1571
07:45:00 AM	12	40	0	0	0	45	4	0	5	4	10	0	9	5	5	0	432	1585
07:50:00 AM	10	42	0	0	3	49	5	0	4	4	7	0	2	6	2	0	431	1584
07:55:00 AM	12	41	0	0	2	40	8	0	3	0	9	0	5	3	1	0	397	1605

08:00:00 AM	9	41	1	0	1	42	14	0	5	4	10	0	6	5	1	0	397	1648
08:05:00 AM	7	35	2	0	1	42	11	0	7	3	7	0	2	4	5	0	389	1671
08:10:00 AM	10	49	1	0	3	30	3	0	4	2	5	0	0	4	1	0	377	1649
08:15:00 AM	3	41	0	0	6	32	3	0	4	5	7	0	1	10	1	0	351	1625
08:20:00 AM	9	38	4	0	4	30	3	0	6	4	7	0	2	7	6	0	345	1605
08:25:00 AM	9	27	0	0	4	45	6	0	4	3	9	0	5	5	5	0	355	1561
08:30:00 AM	7	50	1	0	1	33	7	0	4	3	5	0	4	5	5	0	367	1547
08:35:00 AM	12	32	0	0	0	41	2	0	6	1	3	0	0	0	1	0	345	1510
08:40:00 AM	8	16	2	0	2	48	10	0	5	3	7	0	3	4	5	0	336	1465
08:45:00 AM	11	31	2	0	1	46	4	0	1	2	5	0	2	6	2	0	324	1439
08:50:00 AM	11	37	2	0	1	35	4	0	4	4	12	0	2	8	1	0	347	1426
08:55:00 AM	9	34	1	0	1	27	5	0	5	6	8	0	1	4	0	0	335	1403



Southbound  
Cordon Rd NE  
Heavy Vehicle 7.0%

In 687 Out 621  
Bicycles Right Thru Left U-Turn



Data Provided by K-D-N.com 503-594-4224

N/S street	Cordon Rd NE
E/W street	Swegle Rd NE
City, State	Salem OR
Site Notes	
Location	44.948929 - -122.958605
Start Date	Tuesday, June 06, 2017
Start Time	06:00:00 AM
Weather	
Study ID #	
Peak Hour Start	07:35:00 AM
Peak 15 Min Start	07:35:00 AM
PHF (15-Min Int)	0.93

Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
61	590	5	0	7	622	58	0	30	9	49	0	5	3	1	0	656	687	88	9	676	621	122	21
Percent Heavy Vehicles																							
1.6%	5.4%	0.0%	0.0%	0.0%	7.4%	3.4%	0.0%	0.0%	0.0%	6.1%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	7.0%	3.4%	0.0%	7.2%	5.2%	2.5%	0.0%

PHV - Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2

Time	Northbound Cordon Rd NE				Southbound Cordon Rd NE				Eastbound Swegle Rd NE				Westbound Swegle Rd NE				15 Min Sum	1 HR Sum	
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn			
06:00:00 AM	3	21	0	0	1	20	0	0	1	0	3	0	0	0	0	0	0		
06:05:00 AM	3	22	0	0	0	30	1	0	0	0	1	0	0	0	0	0	0		
06:10:00 AM	3	32	0	0	0	20	1	0	3	0	2	0	0	1	0	0	168		
06:15:00 AM	4	26	0	0	1	22	2	0	3	0	1	0	1	1	0	0	180		
06:20:00 AM	2	34	0	0	0	30	1	0	0	0	2	0	0	1	0	0	193		
06:25:00 AM	1	35	0	0	0	31	0	0	8	0	1	0	0	0	0	0	207		
06:30:00 AM	0	36	0	0	0	40	1	0	0	0	3	0	0	0	0	0	226		
06:35:00 AM	2	35	0	0	0	41	0	0	2	0	5	0	0	0	0	0	241		
06:40:00 AM	3	39	1	0	0	41	0	0	2	0	3	0	1	0	0	0	255		
06:45:00 AM	3	34	0	0	0	49	1	0	2	0	4	0	0	2	0	0	270		
06:50:00 AM	3	35	0	0	0	45	5	0	2	0	2	0	1	0	0	0	278		
06:55:00 AM	10	27	0	0	1	44	0	0	2	0	5	0	1	0	0	0	278	908	
07:00:00 AM	5	34	1	0	1	46	3	0	1	0	1	0	0	1	0	0	276	952	



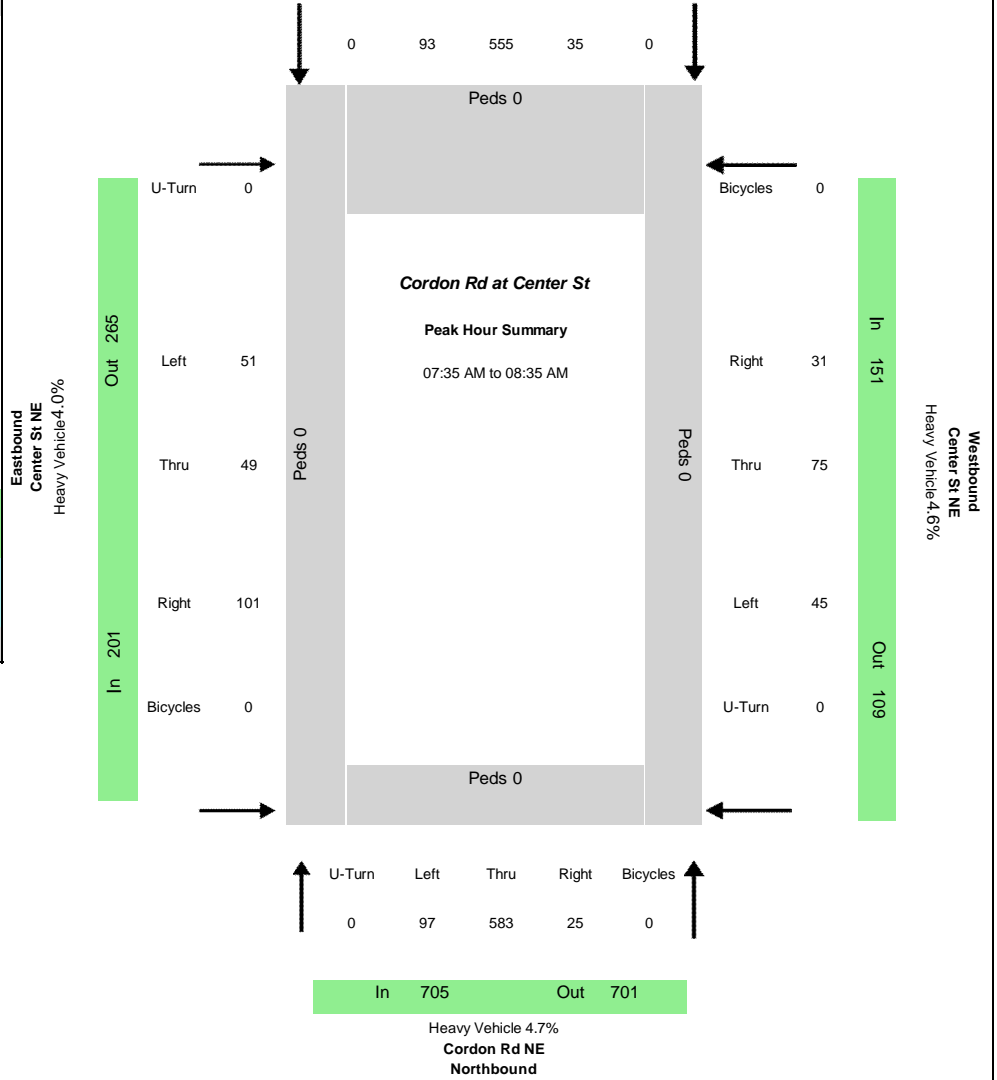
07:05:00 AM	6	29	0	0	0	28	1	0	2	0	2	0	1	0	0	0	252	964
07:10:00 AM	3	52	0	0	0	50	2	0	5	1	5	0	0	1	0	0	281	1021
07:15:00 AM	3	42	0	0	0	41	2	0	4	0	5	0	0	1	0	0	286	1058
07:20:00 AM	5	50	0	0	0	37	1	0	1	0	3	0	0	1	0	0	315	1086
07:25:00 AM	4	46	0	0	0	59	3	0	2	0	3	0	0	0	0	0	313	1127
07:30:00 AM	4	36	1	0	1	45	5	0	2	0	2	0	0	0	0	0	311	1143
07:35:00 AM	8	55	0	0	0	55	4	0	3	0	2	0	0	0	0	0	340	1185
07:40:00 AM	5	44	1	0	0	61	7	0	3	0	2	0	0	0	0	0	346	1218
07:45:00 AM	5	51	0	0	0	66	8	0	2	1	6	0	0	0	0	0	389	1262
07:50:00 AM	7	47	0	0	0	57	6	0	3	0	5	0	0	0	0	0	387	1294
07:55:00 AM	10	38	0	0	0	52	6	0	4	0	8	0	1	1	0	0	384	1324
08:00:00 AM	6	51	0	0	1	38	2	0	1	1	4	0	0	0	0	0	349	1335
08:05:00 AM	2	58	0	0	0	65	6	0	1	1	4	0	0	0	0	0	361	1403
08:10:00 AM	4	52	0	0	1	44	3	0	5	1	6	0	2	1	0	0	360	1403
08:15:00 AM	3	53	0	0	2	40	4	0	1	0	1	0	1	1	0	0	362	1411
08:20:00 AM	3	45	1	0	0	58	2	0	3	2	4	0	0	0	0	0	343	1431
08:25:00 AM	3	45	0	0	2	48	3	0	1	2	4	0	0	0	0	0	332	1422
08:30:00 AM	5	51	3	0	1	38	7	0	3	1	3	0	1	0	1	0	340	1440
08:35:00 AM	4	50	1	0	1	44	2	0	3	0	2	0	0	0	2	0	331	1422
08:40:00 AM	4	45	1	0	0	42	1	0	2	0	5	0	0	0	0	0	323	1399
08:45:00 AM	6	45	0	0	0	39	6	0	2	0	3	0	0	0	0	0	310	1361
08:50:00 AM	2	40	1	0	0	52	5	0	2	2	3	0	0	0	0	0	308	1343
08:55:00 AM	3	41	1	0	0	40	6	0	2	0	5	0	0	1	0	0	307	1322



**Southbound  
Cordon Rd NE**  
Heavy Vehicle 5.9%

In	683	Out	665
Bicycles	Right	Thru	Left
0	93	555	35
			U-Turn
			0

Data Provided by K-D-N.com 503-594-4224	
N/S street	Cordon Rd NE
E/W street	Center St NE
City, State	Salem OR
Site Notes	
Location	44.939657 - -122.959282
Start Date	Tuesday, June 06, 2017
Start Time	06:00:00 AM
Weather	
Study ID #	
Peak Hour Start	07:35:00 AM
Peak 15 Min Start	07:45:00 AM
PHF (15-Min Int)	0.91



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
97	583	25	0	35	555	93	0	51	49	101	0	45	75	31	0	705	683	201	151	701	665	265	109
3.1%	5.0%	4.0%	0.0%	0.0%	6.7%	3.2%	0.0%	2.0%	2.0%	5.9%	0.0%	4.4%	2.7%	9.7%	0.0%	4.7%	5.9%	4.0%	4.6%	6.4%	5.0%	3.0%	1.8%

PHV - Bicycles														PHV - Pedestrians						
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

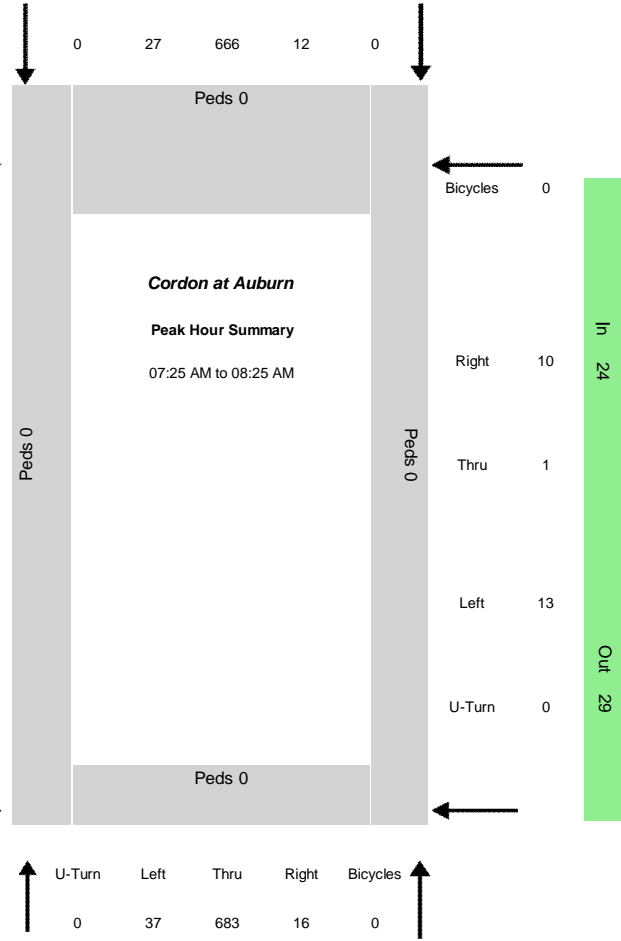
Time	Northbound Cordon Rd NE				Southbound Cordon Rd NE				Eastbound Center St NE				Westbound Center St NE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
06:00:00 AM	5	22	1	0	1	19	2	0	1	0	5	0	0	0	0	0		
06:05:00 AM	6	29	1	0	0	25	3	0	2	1	8	0	0	5	0	0		
06:10:00 AM	3	26	0	0	0	23	6	0	3	3	6	0	2	1	2	0	211	
06:15:00 AM	3	21	0	0	0	22	6	0	5	1	5	0	2	3	2	0	225	
06:20:00 AM	5	30	0	0	0	20	3	0	7	2	7	0	1	5	1	0	226	
06:25:00 AM	1	28	0	0	1	29	7	0	7	1	5	0	1	3	1	0	235	
06:30:00 AM	1	31	0	0	0	36	2	0	9	2	4	0	3	5	0	0	258	
06:35:00 AM	4	35	0	0	0	30	7	0	1	1	9	0	3	3	1	0	271	
06:40:00 AM	6	36	2	0	1	40	6	0	2	1	10	0	2	5	4	0	302	
06:45:00 AM	5	35	0	0	0	58	5	0	3	2	6	0	3	0	1	0	327	
06:50:00 AM	7	27	4	0	1	28	8	0	10	0	7	0	4	4	1	0	334	
06:55:00 AM	7	30	1	0	1	48	7	0	9	3	14	0	3	5	3	0	350	1098
07:00:00 AM	6	34	0	0	0	40	5	0	2	4	3	0	2	2	1	0	331	1141

07:05:00 AM	5	29	0	0	0	34	4	0	7	1	3	0	2	3	4	0	322	1153
07:10:00 AM	3	47	2	0	0	41	7	0	3	1	11	0	2	6	3	0	317	1204
07:15:00 AM	13	32	2	0	1	34	6	0	6	1	8	0	1	4	3	0	329	1245
07:20:00 AM	6	43	0	0	0	38	6	0	8	2	10	0	1	8	3	0	362	1289
07:25:00 AM	8	46	0	0	1	41	11	0	5	2	9	0	2	0	1	0	362	1331
07:30:00 AM	11	33	1	0	2	52	5	0	8	2	8	0	4	6	0	0	383	1370
07:35:00 AM	8	54	0	0	4	33	7	0	3	0	11	0	4	7	4	0	393	1411
07:40:00 AM	7	47	0	0	0	70	6	0	2	6	9	0	2	6	2	0	424	1453
07:45:00 AM	11	44	3	0	4	43	13	0	5	2	8	0	6	4	10	0	445	1488
07:50:00 AM	9	49	2	0	0	58	10	0	4	5	17	0	3	5	1	0	473	1550
07:55:00 AM	10	52	2	0	0	62	13	0	1	6	5	0	1	8	1	0	477	1580
08:00:00 AM	12	48	1	0	1	41	2	0	4	3	10	0	4	4	0	0	454	1611
08:05:00 AM	11	48	0	0	3	36	9	0	5	6	13	0	2	8	3	0	435	1663
08:10:00 AM	8	48	2	0	6	48	9	0	8	5	5	0	5	3	1	0	422	1685
08:15:00 AM	4	49	4	0	7	29	3	0	2	5	8	0	2	10	3	0	418	1700
08:20:00 AM	10	62	6	0	5	45	12	0	2	2	5	0	6	5	1	0	435	1736
08:25:00 AM	2	29	1	0	2	43	2	0	11	4	7	0	7	7	2	0	404	1727
08:30:00 AM	5	53	4	0	3	47	7	0	4	5	3	0	3	8	3	0	423	1740
08:35:00 AM	7	44	2	0	0	34	6	0	2	5	8	0	2	6	2	0	380	1723
08:40:00 AM	5	44	1	0	0	38	6	0	6	4	9	0	0	3	2	0	381	1684
08:45:00 AM	6	43	3	0	1	34	8	0	6	4	6	0	5	6	2	0	360	1655
08:50:00 AM	13	36	4	0	3	32	11	0	2	1	9	0	2	10	4	0	369	1619
08:55:00 AM	8	42	2	0	1	41	6	0	4	3	10	0	6	6	2	0	382	1589



Southbound  
Cordon Rd NE  
Heavy Vehicle 6.1%

In 705 Out 707  
Bicycles Right Thru Left U-Turn



Data Provided by K-D-N.com 503-594-4224

N/S street	Cordon Rd NE
E/W street	Auburn Rd NE
City, State	Salem OR
Site Notes	
Location	44.936344 - -122.95913
Start Date	Tuesday, June 06, 2017
Start Time	06:00:00 AM
Weather	
Study ID #	
Peak Hour Start	07:25:00 AM
Peak 15 Min Start	07:45:00 AM
PHF (15-Min Int)	0.90

Peak-Hour Volumes (PHV)

Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
37	683	16	0	12	666	27	0	14	1	43	0	13	1	10	0	736	705	58	24	722	707	65	29
0.0%	4.8%	25.0%	0.0%	0.0%	6.5%	0.0%	0.0%	7.1%	0.0%	9.3%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	6.1%	8.6%	0.0%	6.5%	4.8%	0.0%	13.8%

PHV - Bicycles

PHV - Bicycles												PHV - Pedestrians									
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

All Vehicle Volumes

Time	Northbound Cordon Rd NE				Southbound Cordon Rd NE				Eastbound Auburn Rd NE				Westbound Auburn Rd NE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
06:00:00 AM	0	25	0	0	0	24	1	0	1	0	1	0	0	1	1	0		
06:05:00 AM	1	30	0	0	1	31	1	0	1	0	1	0	1	0	4	0		
06:10:00 AM	1	26	0	0	0	29	2	0	2	0	1	0	0	0	0	0	186	
06:15:00 AM	0	21	1	0	0	25	0	0	0	0	2	0	2	0	1	0	184	
06:20:00 AM	1	37	1	0	0	31	1	0	2	0	2	0	1	0	0	0	189	
06:25:00 AM	2	28	0	0	0	34	0	0	0	0	0	0	0	0	1	0	193	
06:30:00 AM	0	28	1	0	0	44	0	0	3	0	5	0	0	0	0	0	222	
06:35:00 AM	1	37	1	0	0	41	2	0	0	0	1	0	1	0	0	0	230	
06:40:00 AM	2	44	0	0	0	53	1	0	1	0	0	0	0	1	0	0	267	
06:45:00 AM	1	35	0	0	0	63	1	0	2	0	4	0	0	0	1	0	293	
06:50:00 AM	2	42	0	0	1	41	0	0	0	0	6	0	1	0	0	0	302	
06:55:00 AM	1	38	0	0	1	58	6	0	1	0	4	0	0	0	1	0	310	956
07:00:00 AM	1	32	2	0	0	47	1	0	2	0	2	0	2	1	3	0	296	995

07:05:00 AM	1	36	0	0	0	38	1	0	1	0	3	0	3	0	1	0	287	1008
07:10:00 AM	1	47	0	0	0	49	3	0	0	0	1	0	0	0	1	0	279	1049
07:15:00 AM	1	50	0	0	2	42	0	0	0	0	2	0	2	0	1	0	286	1097
07:20:00 AM	1	47	5	0	0	45	2	0	2	0	2	0	0	0	0	0	306	1125
07:25:00 AM	2	48	1	0	0	50	3	0	2	0	5	0	2	0	0	0	317	1173
07:30:00 AM	2	51	1	0	1	56	1	0	0	1	3	0	0	0	1	0	334	1209
07:35:00 AM	4	62	0	0	1	52	0	0	0	0	7	0	1	0	1	0	358	1253
07:40:00 AM	2	42	1	0	0	71	6	0	3	0	3	0	2	1	2	0	378	1284
07:45:00 AM	3	62	1	0	1	57	2	0	2	0	5	0	2	0	1	0	397	1313
07:50:00 AM	5	58	2	0	0	72	3	0	1	0	5	0	2	0	1	0	418	1369
07:55:00 AM	6	56	0	0	4	63	2	0	1	0	4	0	1	0	1	0	423	1397
08:00:00 AM	2	51	4	0	1	48	2	0	4	0	0	0	1	0	1	0	401	1418
08:05:00 AM	4	67	2	0	0	56	1	0	1	0	5	0	1	0	1	0	390	1472
08:10:00 AM	3	59	0	0	1	52	1	0	0	0	1	0	0	0	0	0	369	1487
08:15:00 AM	2	63	1	0	3	37	4	0	0	0	2	0	0	0	0	0	367	1499
08:20:00 AM	2	64	3	0	0	52	2	0	0	0	3	0	1	0	1	0	357	1523
08:25:00 AM	0	39	3	0	0	60	0	0	2	1	3	0	1	0	1	0	350	1520
08:30:00 AM	4	49	1	0	0	49	4	0	4	0	3	0	0	0	1	0	353	1518
08:35:00 AM	2	48	1	0	0	42	3	0	3	0	3	0	1	0	1	0	329	1494
08:40:00 AM	2	57	0	0	1	39	6	0	1	0	4	0	1	0	0	0	330	1472
08:45:00 AM	4	46	0	0	0	42	2	0	3	0	2	0	0	0	0	0	314	1435
08:50:00 AM	4	52	1	0	1	41	1	0	0	1	7	0	0	0	1	0	319	1395
08:55:00 AM	6	57	1	0	1	55	2	0	2	0	1	0	0	0	0	0	333	1382



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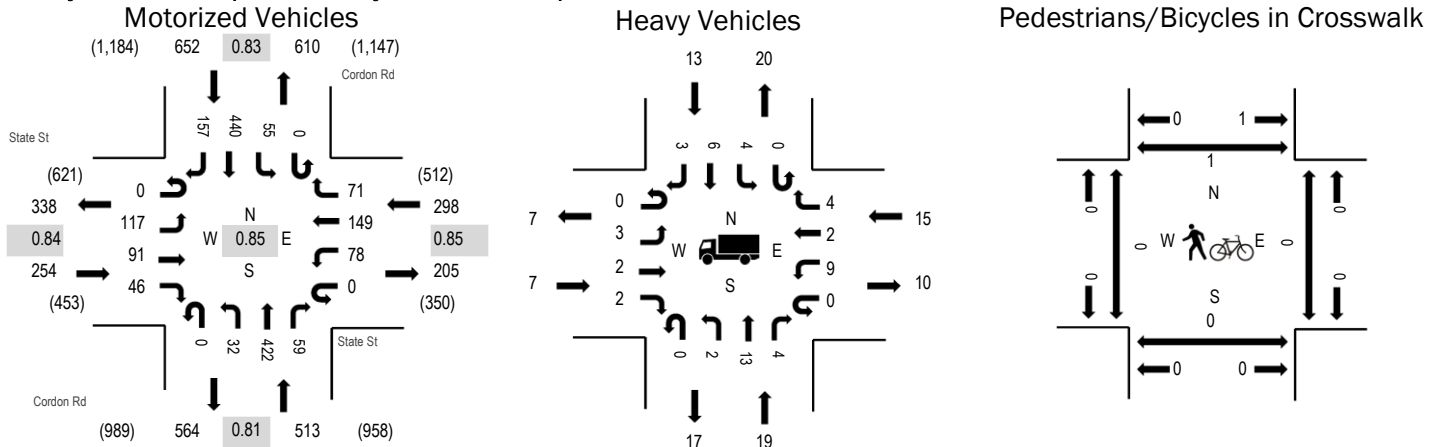
Location: 1 Cordon Rd & State St AM

Date: Tuesday, January 11, 2022

Study Peak Hour: 07:05 AM - 08:05 AM

Peak 15-Minutes in Study Peak Hour: 07:40 AM - 07:55 AM

Study Peak Hour (for all study intersections)



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	2.8%	0.84
WB	5.0%	0.85
NB	3.7%	0.81
SB	2.0%	0.83
All	3.1%	0.85

Traffic Counts - Motorized Vehicles

Interval Start Time	State St Eastbound				State St Westbound				Cordon Rd Northbound				Cordon Rd Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	10	5	1	0	3	5	2	0	2	29	4	0	6	28	5	100	1,706
7:05 AM	0	13	5	4	0	11	16	4	0	1	31	4	0	6	27	10	132	1,717
7:10 AM	0	10	6	7	0	3	5	5	0	4	34	11	0	9	40	7	141	1,710
7:15 AM	0	12	10	3	0	9	15	6	0	2	26	5	0	3	50	10	151	1,687
7:20 AM	0	2	6	2	0	9	10	5	0	2	28	3	0	8	54	16	145	1,648
7:25 AM	0	9	4	6	0	7	18	8	0	0	23	5	0	4	27	10	121	1,617
7:30 AM	0	10	5	2	0	4	10	5	0	4	38	1	0	4	27	9	119	1,602
7:35 AM	0	16	8	4	0	3	15	5	0	1	34	7	0	2	39	11	145	1,585
7:40 AM	0	7	6	8	0	4	12	3	0	0	52	7	0	4	42	25	170	1,553
7:45 AM	0	12	6	3	0	13	13	12	0	5	33	4	0	3	35	17	156	1,498
7:50 AM	0	16	14	3	0	5	16	10	0	4	49	4	0	6	33	21	181	1,479
7:55 AM	0	7	13	2	0	5	9	5	0	4	36	5	0	5	39	15	145	1,418
8:00 AM	0	3	8	2	0	5	10	3	0	5	38	3	0	1	27	6	111	1,401
8:05 AM	0	9	7	0	0	1	9	8	0	8	38	2	0	5	28	10	125	
8:10 AM	0	9	3	2	0	2	7	7	0	2	33	9	0	8	28	8	118	
8:15 AM	0	10	8	7	0	4	10	2	0	1	26	3	0	4	26	11	112	
8:20 AM	0	6	4	4	0	4	6	5	0	4	31	2	0	4	25	19	114	
8:25 AM	0	9	6	2	0	3	14	7	0	0	24	2	0	3	25	11	106	
8:30 AM	0	18	3	5	0	4	15	5	0	3	16	4	0	2	20	7	102	
8:35 AM	0	5	4	1	0	5	9	1	0	1	37	5	0	4	27	14	113	
8:40 AM	0	12	3	4	0	2	9	7	0	3	25	3	0	5	32	10	115	
8:45 AM	0	8	6	2	0	5	12	3	0	5	42	2	0	2	41	9	137	
8:50 AM	0	7	1	3	0	3	12	5	0	4	29	4	0	4	32	16	120	
8:55 AM	0	8	6	1	0	4	9	5	0	3	39	0	0	2	41	10	128	
Count Total	0	228	147	78	0	118	266	128	0	68	791	99	0	104	793	287	3,107	
Peak Hour	0	117	91	46	0	78	149	71	0	32	422	59	0	55	440	157	1,717	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	1	4	1	2	8	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	5	3	1	9	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	5	0	1	6	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	2	0	0	0	2	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	2	2	1	5	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	1	0	0	1	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	1	0	1	0	2	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	2	1	4	7	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	2	0	4	6	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	1	1	4	0	6	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	2	0	1	0	3	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	1	1
7:55 AM	1	0	3	1	5	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	1	0	1	2	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	2	1	1	4	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	0	0	1	1	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	2	2	1	1	6	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	1	1	0	2	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	1	1	2	4	8:25 AM	0	0	0	1	1	8:25 AM	0	0	0	0	0
8:30 AM	1	1	1	0	3	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	1	2	1	2	6	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	1	1	1	4	7	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	1	2	0	0	3	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	1	2	2	4	9	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	1	1	1	5	8	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	16	38	26	35	115	Count Total	0	0	0	1	1	Count Total	0	0	0	1	1
Peak Hour	7	19	15	13	54	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	1	1

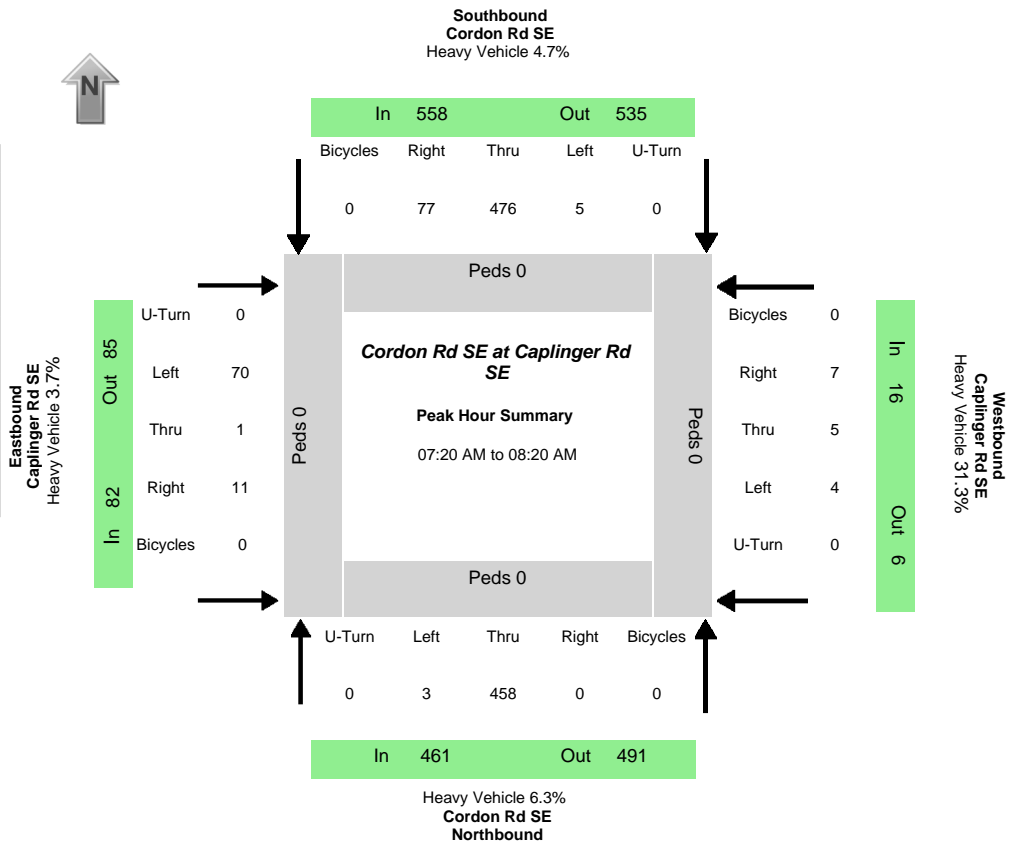




07:05:00 AM	2	41	0	0	0	33	2	0	1	0	2	0	0	0	0	0	236	823
07:10:00 AM	1	28	0	0	0	37	3	0	4	0	3	0	0	0	0	0	224	855
07:15:00 AM	2	49	0	0	0	38	1	0	3	0	5	0	0	0	0	0	255	904
07:20:00 AM	0	48	0	0	0	26	3	0	6	0	3	0	0	0	0	0	260	936
07:25:00 AM	1	40	0	0	0	49	4	0	5	0	4	0	0	0	0	0	287	980
07:30:00 AM	1	46	0	0	0	45	5	0	4	0	0	0	0	0	0	0	290	1020
07:35:00 AM	2	41	0	0	0	44	3	0	5	0	3	0	0	0	0	0	302	1052
07:40:00 AM	1	45	0	0	0	51	2	0	4	0	2	0	0	0	0	0	304	1078
07:45:00 AM	0	44	0	0	0	44	8	0	6	0	1	0	0	0	0	0	306	1088
07:50:00 AM	1	54	0	0	0	55	4	0	2	0	1	0	0	0	0	0	325	1123
07:55:00 AM	0	50	0	0	0	51	8	0	6	0	3	0	0	0	0	0	338	1153
08:00:00 AM	0	51	0	0	0	37	5	0	4	0	5	0	0	0	0	0	337	1188
08:05:00 AM	4	45	0	0	0	38	1	0	3	0	2	0	0	0	0	0	313	1200
08:10:00 AM	1	49	0	0	0	57	2	0	9	0	0	0	0	0	0	0	313	1242
08:15:00 AM	2	46	0	0	0	23	6	0	3	0	5	0	0	0	0	0	296	1229
08:20:00 AM	1	36	0	0	0	30	1	0	0	0	4	0	0	0	0	0	275	1215
08:25:00 AM	2	47	0	0	0	52	6	0	1	0	2	0	0	0	0	0	267	1222
08:30:00 AM	0	40	0	0	0	38	2	0	2	0	0	0	0	0	0	0	264	1203
08:35:00 AM	0	28	0	0	0	24	1	0	2	0	0	0	0	0	0	0	247	1160
08:40:00 AM	1	30	0	0	0	42	5	0	4	0	1	0	0	0	0	0	220	1138
08:45:00 AM	1	34	0	0	0	26	2	0	6	0	2	0	0	0	0	0	209	1106
08:50:00 AM	0	33	0	0	0	43	2	0	4	0	1	0	0	0	0	0	237	1072
08:55:00 AM	1	43	0	0	0	36	2	0	5	0	2	0	0	0	0	0	243	1043

Data Provided by K-D-N.com 503-594-4224

N/S street	<b>Cordon Rd SE</b>
E/W street	<b>Caplinger Rd SE</b>
City, State	Salem OR
Site Notes	
Location	44.918545 - -122.953738
Start Date	Wednesday, January 23, 2019
Start Time	07:00:00 AM
Weather	
Study ID #	
<b>Peak Hour Start</b>	<b>07:20:00 AM</b>
<b>Peak 15 Min Start</b>	<b>07:40:00 AM</b>
<b>PHF (15-Min Int)</b>	<b>0.90</b>



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
3	458	0	0	5	476	77	0	70	1	11	0	4	5	7	0	461	558	82	16	491	535	85	6
Percent Heavy Vehicles																							
0.0%	6.3%	0.0%	0.0%	0.0%	4.6%	5.2%	0.0%	2.9%	0.0%	9.1%	0.0%	0.0%	40.0%	42.9%	0.0%	6.3%	4.7%	3.7%	31.3%	4.7%	6.4%	7.1%	0.0%

PHV - Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Time	Northbound Cordon Rd SE				Southbound Cordon Rd SE				Eastbound Caplinger Rd SE				Westbound Caplinger Rd SE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
07:00:00 AM	0	28	2	0	3	30	4	0	4	0	0	0	0	0	0	0		
07:05:00 AM	1	34	1	0	1	37	3	0	4	0	1	0	0	0	0	0		
07:10:00 AM	0	33	0	0	2	28	6	0	7	1	1	0	1	0	0	0	232	
07:15:00 AM	0	29	1	0	0	33	3	0	8	0	0	0	1	0	1	0	237	
07:20:00 AM	2	36	0	0	1	38	4	0	5	1	2	0	0	0	2	0	246	
07:25:00 AM	0	33	0	0	0	45	8	0	6	0	0	0	0	1	1	0	261	
07:30:00 AM	0	30	0	0	2	41	9	0	6	0	2	0	0	0	2	0	277	
07:35:00 AM	0	33	0	0	0	43	8	0	8	0	1	0	1	0	0	0	280	
07:40:00 AM	0	45	0	0	1	43	2	0	4	0	2	0	0	0	0	0	283	
07:45:00 AM	0	43	0	0	0	54	6	0	6	0	1	0	1	1	1	0	304	
07:50:00 AM	0	50	0	0	0	36	6	0	6	0	1	0	0	2	0	0	311	
07:55:00 AM	1	49	0	0	0	34	8	0	4	0	1	0	0	0	0	0	311	1087
08:00:00 AM	0	39	0	0	0	28	6	0	8	0	0	0	0	0	1	0	280	1098
08:05:00 AM	0	36	0	0	0	41	6	0	5	0	0	0	1	0	0	0	268	1105
08:10:00 AM	0	39	0	0	1	37	2	0	7	0	0	0	1	0	0	0	258	1113
08:15:00 AM	0	25	0	0	0	36	12	0	5	0	1	0	0	1	0	0	256	1117
08:20:00 AM	1	45	0	0	0	25	1	0	4	0	0	0	0	0	0	0	243	1102
08:25:00 AM	0	31	0	0	0	29	2	0	4	0	0	0	0	0	0	0	222	1074
08:30:00 AM	0	27	0	0	0	35	5	0	4	0	2	0	0	0	0	0	215	1055
08:35:00 AM	3	17	0	0	0	34	8	0	4	0	0	0	0	0	0	0	205	1027
08:40:00 AM	0	30	0	0	0	30	10	0	0	0	2	0	1	0	0	0	212	1003
08:45:00 AM	0	25	0	0	0	31	6	0	3	0	0	0	1	0	0	0	205	956
08:50:00 AM	2	28	0	0	0	32	8	0	5	0	2	0	0	0	0	0	216	932
08:55:00 AM	1	32	0	0	0	40	7	0	7	0	0	0	0	0	1	0	231	923



Southbound  
Cordon Rd SE  
Heavy Vehicle 6.9%

In 493 Out 472  
Bicycles Right Thru Left U-Turn

0 14 452 27 0

Peds 0

U-Turn 0

Bicycles 0

### MacLeay at Cordon

#### Peak Hour Summary

07:10 AM to 08:10 AM

Left 25

Right 45

Thru 17

Thru 38

Right 0

Left 58

Bicycles 0

U-Turn 0

Peds 0

U-Turn Left Thru Right Bicycles  
0 6 402 19 0

In 427 Out 510

Heavy Vehicle 4.7%

Cordon Rd SE  
Northbound

Data Provided by K-D-N.com 503-594-4224	
N/S street	Cordon Rd SE
E/W street	MacLeay Rd SE
City, State	Salem OR
Site Notes	
Location	44.91364 - -122.953962
Start Date	Tuesday, June 06, 2017
Start Time	06:00:00 AM
Weather	
Study ID #	
Peak Hour Start	07:10:00 AM
Peak 15 Min Start	07:45:00 AM
PHF (15-Min Int)	0.92

Eastbound  
MacLeay Rd SE  
Heavy Vehicle 11.9%

In 42 Out 58

Westbound  
MacLeay Rd SE  
Heavy Vehicle 2.8%

In 141 Out 63

Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
6	402	19	0	27	452	14	0	25	17	0	0	58	38	45	0	427	493	42	141	510	472	58	63
Percent Heavy Vehicles																							
0.0%	4.5%	10.5%	0.0%	11.1%	6.6%	7.1%	0.0%	16.0%	5.9%	0.0%	0.0%	0.0%	7.9%	2.2%	0.0%	4.7%	6.9%	11.9%	2.8%	5.9%	4.9%	6.9%	9.5%

PHV- Bicycles														PHV - Pedestrians						
Northbound				Southbound				Eastbound				Westbound				in Crosswalk		Sum		
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB		EB	WB
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Time	Northbound Cordon Rd SE				Southbound Cordon Rd SE				Eastbound MacLeay Rd SE				Westbound MacLeay Rd SE				15 Min Sum	1 HR Sum	
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn			
06:00:00 AM	0	12	1	0	0	23	0	0	0	0	0	0	0	0	1	2	0		
06:05:00 AM	0	9	0	0	3	21	0	0	1	0	0	0	1	5	1	0			
06:10:00 AM	0	17	2	0	0	20	0	0	1	1	0	0	3	1	1	0	126		
06:15:00 AM	0	25	1	0	0	14	0	0	0	2	0	0	1	1	2	0	133		
06:20:00 AM	0	20	1	0	1	17	0	0	0	1	0	0	2	1	1	0	136		
06:25:00 AM	0	18	0	0	2	25	0	0	2	0	0	0	2	0	0	0	139		
06:30:00 AM	0	18	1	0	0	33	0	0	0	1	0	0	0	3	2	0	151		
06:35:00 AM	0	23	1	0	2	31	0	0	2	0	0	0	3	4	3	0	176		
06:40:00 AM	1	29	0	0	3	34	0	0	0	1	0	0	3	4	5	0	207		
06:45:00 AM	0	17	0	0	4	34	0	0	0	0	0	0	3	2	6	0	215		
06:50:00 AM	0	20	0	0	1	49	0	0	0	2	0	0	2	3	1	0	224		
06:55:00 AM	1	19	1	0	1	41	2	0	0	1	0	0	4	2	10	0	226	698	
07:00:00 AM	0	21	2	0	2	22	1	0	3	2	0	0	4	3	1	0	221	720	

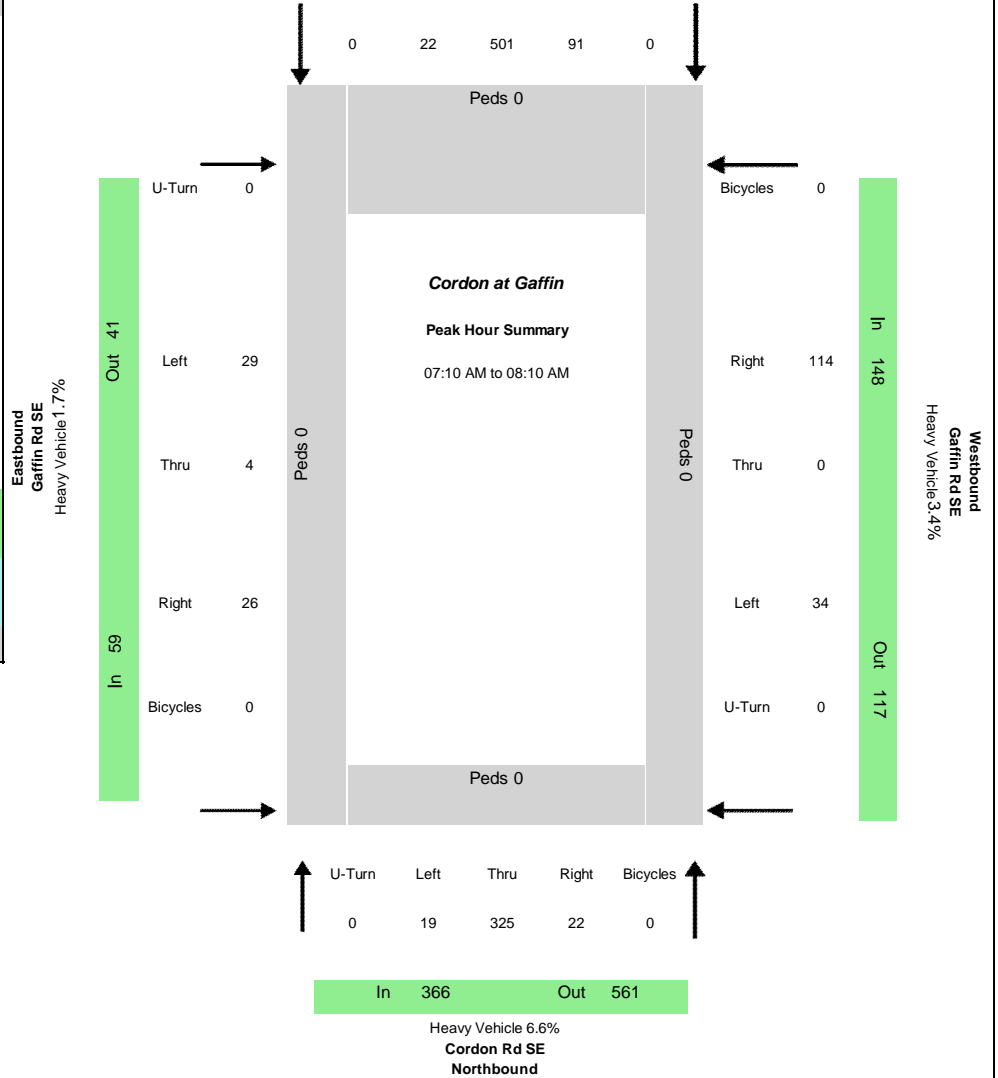
07:05:00 AM	1	29	1	0	1	32	0	0	1	0	0	0	6	2	2	0	218	754
07:10:00 AM	0	25	3	0	3	42	0	0	1	2	0	0	7	2	4	0	225	797
07:15:00 AM	1	40	1	0	3	46	1	0	1	0	0	0	5	4	4	0	270	857
07:20:00 AM	0	28	2	0	1	22	4	0	0	1	0	0	4	4	4	0	265	883
07:25:00 AM	0	30	0	0	1	35	0	0	1	0	0	0	2	1	5	0	251	909
07:30:00 AM	1	34	0	0	1	37	0	0	3	3	0	0	7	1	5	0	237	943
07:35:00 AM	0	25	5	0	3	47	0	0	2	1	0	0	5	2	2	0	259	966
07:40:00 AM	1	31	2	0	0	42	1	0	3	1	0	0	7	4	4	0	280	982
07:45:00 AM	1	31	2	0	2	39	3	0	3	1	0	0	6	6	3	0	285	1013
07:50:00 AM	0	36	1	0	3	44	1	0	2	3	0	0	6	3	6	0	298	1040
07:55:00 AM	1	39	0	0	5	37	2	0	4	2	0	0	4	2	3	0	301	1057
08:00:00 AM	0	44	2	0	3	27	1	0	1	1	0	0	2	4	2	0	291	1083
08:05:00 AM	1	39	1	0	2	34	1	0	4	2	0	0	3	5	3	0	281	1103
08:10:00 AM	1	24	0	0	1	42	2	0	4	2	0	0	2	1	4	0	265	1097
08:15:00 AM	0	34	0	0	4	28	1	0	6	0	0	0	3	3	1	0	258	1071
08:20:00 AM	0	26	1	0	2	26	1	0	2	2	0	0	1	3	2	0	229	1067
08:25:00 AM	1	37	1	0	3	37	2	0	1	0	0	0	4	2	1	0	235	1081
08:30:00 AM	1	34	1	0	4	21	2	0	0	0	0	0	3	1	1	0	223	1057
08:35:00 AM	0	20	1	0	2	10	0	0	1	4	0	0	3	5	4	0	207	1015
08:40:00 AM	1	24	2	0	4	41	4	0	1	0	0	0	5	0	2	0	202	1003
08:45:00 AM	1	25	2	0	0	27	1	0	2	0	0	0	1	3	3	0	199	971
08:50:00 AM	0	24	1	0	2	28	1	0	0	0	0	0	2	3	4	0	214	931
08:55:00 AM	0	29	3	0	1	32	1	0	0	0	0	0	4	6	1	0	207	909



**Southbound  
Cordon Rd SE**  
Heavy Vehicle 5.2%

In	614	Out	468
Bicycles	Right	Thru	Left
0	22	501	91
			0

Data Provided by K-D-N.com 503-594-4224	
N/S street	Cordon Rd SE
E/W street	Gaffin Rd SE
City, State	Salem OR
Site Notes	
Location	44.911095 - -122.957446
Start Date	Wednesday, June 07, 2017
Start Time	06:00:00 AM
Weather	
Study ID #	
Peak Hour Start	07:10:00 AM
Peak 15 Min Start	07:35:00 AM
PHF (15-Min Int)	0.90



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
19	325	22	0	91	501	22	0	29	4	26	0	34	0	114	0	366	614	59	148	561	468	41	117
15.8%	5.8%	9.1%	0.0%	4.4%	5.4%	4.5%	0.0%	0.0%	0.0%	3.8%	0.0%	5.9%	0.0%	2.6%	0.0%	6.6%	5.2%	1.7%	3.4%	5.3%	4.7%	9.8%	5.1%

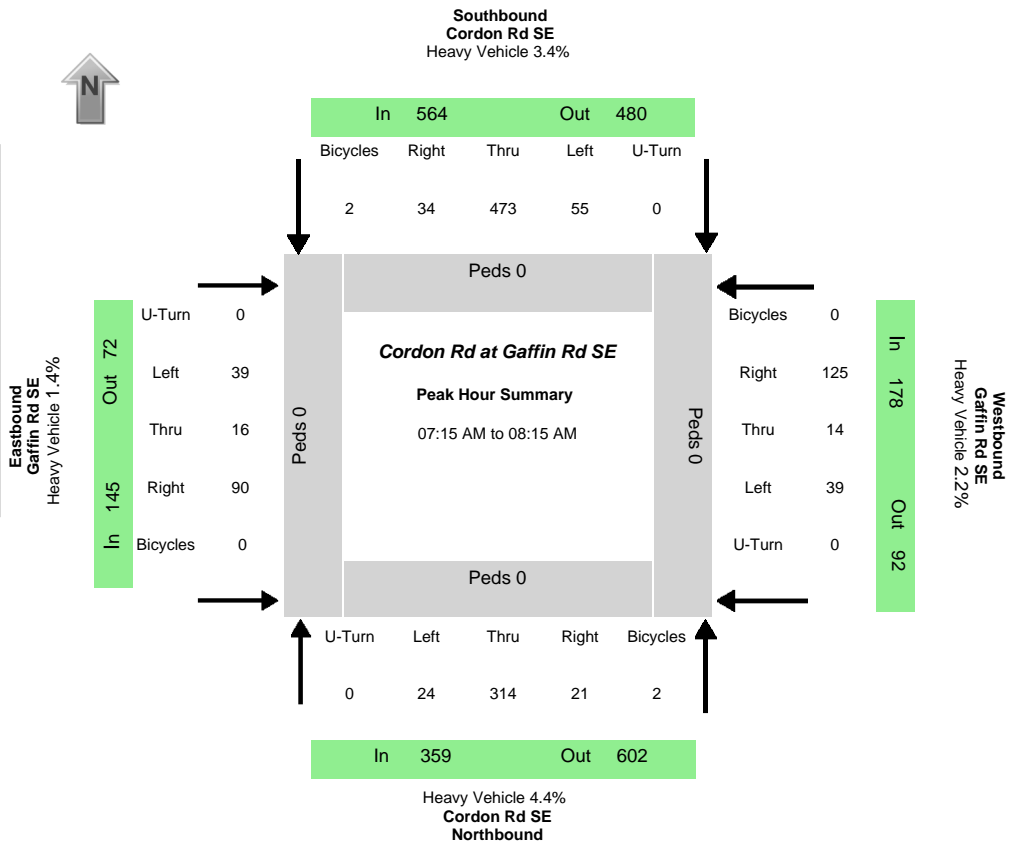
PHV - Bicycles																PHV - Pedestrians					
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Time	Northbound Cordon Rd SE				Southbound Cordon Rd SE				Eastbound Gaffin Rd SE				Westbound Gaffin Rd SE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
06:00:00 AM	0	9	4	0	9	19	0	0	3	0	1	0	3	0	3	0		
06:05:00 AM	0	11	2	0	6	20	0	0	1	0	0	0	1	0	4	0		
06:10:00 AM	0	18	1	0	7	20	0	0	2	1	3	0	1	0	4	0	153	
06:15:00 AM	1	19	0	0	7	15	1	0	0	0	2	0	4	0	3	0	154	
06:20:00 AM	0	15	5	0	4	17	2	0	1	0	4	0	3	0	5	0	165	
06:25:00 AM	0	17	1	0	8	18	4	0	0	1	4	0	2	0	4	0	167	
06:30:00 AM	1	11	3	0	6	25	2	0	2	0	0	0	7	0	8	0	180	
06:35:00 AM	1	17	1	0	9	31	0	0	0	1	0	0	5	1	7	0	197	
06:40:00 AM	1	20	2	0	5	40	1	0	2	1	3	0	5	1	11	0	230	
06:45:00 AM	0	15	3	0	3	34	4	0	4	0	0	0	2	1	6	0	237	
06:50:00 AM	0	16	2	0	6	46	3	0	1	0	2	0	2	0	4	0	246	
06:55:00 AM	1	14	2	0	5	40	2	0	2	0	3	0	3	0	7	0	233	783
07:00:00 AM	1	18	1	0	3	26	4	0	2	0	1	0	3	0	7	0	227	798

07:05:00 AM	0	24	0	0	6	41	4	0	3	1	2	0	1	0	5	0	232	840
07:10:00 AM	0	21	1	0	13	36	3	0	2	2	3	0	3	0	6	0	243	873
07:15:00 AM	0	35	0	0	6	50	2	0	4	1	0	0	0	0	9	0	284	928
07:20:00 AM	2	30	0	0	6	38	3	0	2	0	1	0	0	0	8	0	287	962
07:25:00 AM	2	22	1	0	4	41	0	0	3	1	3	0	2	0	4	0	280	986
07:30:00 AM	3	29	4	0	6	38	0	0	2	0	3	0	3	0	7	0	268	1016
07:35:00 AM	2	27	4	0	8	51	5	0	1	0	3	0	2	0	5	0	286	1051
07:40:00 AM	3	28	1	0	9	48	1	0	2	0	2	0	1	0	12	0	310	1066
07:45:00 AM	1	26	2	0	12	55	1	0	2	0	4	0	3	0	10	0	331	1110
07:50:00 AM	3	20	1	0	6	46	1	0	4	0	4	0	7	0	15	0	330	1135
07:55:00 AM	2	29	4	0	9	34	1	0	1	0	0	0	3	0	12	0	318	1151
08:00:00 AM	1	28	3	0	8	28	3	0	3	0	1	0	5	0	15	0	297	1180
08:05:00 AM	0	30	1	0	4	36	2	0	3	0	2	0	5	0	11	0	284	1187
08:10:00 AM	1	23	1	0	13	35	0	0	4	0	4	0	3	0	6	0	279	1187
08:15:00 AM	2	19	0	0	2	33	1	0	1	0	0	0	3	0	12	0	257	1153
08:20:00 AM	1	24	2	0	4	21	2	0	1	0	3	0	2	0	7	0	230	1130
08:25:00 AM	2	27	3	0	6	39	3	0	3	0	1	0	4	1	8	0	237	1144
08:30:00 AM	0	25	3	0	6	28	0	0	3	1	4	0	2	0	11	0	247	1132
08:35:00 AM	0	17	3	0	3	14	1	0	1	0	3	0	1	0	7	0	230	1074
08:40:00 AM	0	18	2	0	7	44	1	0	4	0	1	0	4	0	6	0	220	1054
08:45:00 AM	1	21	3	0	4	24	1	0	3	1	2	0	4	0	11	0	212	1013
08:50:00 AM	1	30	8	0	2	27	1	0	3	0	1	0	3	0	5	0	243	987
08:55:00 AM	0	29	3	0	4	42	1	0	3	0	2	0	2	0	11	0	253	989

Data Provided by K-D-N.com 503-594-4224

N/S street	Cordon Rd SE
E/W street	Gaffin Rd SE
City, State	Salem OR
Site Notes	
Location	44.911069 - -122.957407
Start Date	Wednesday, September 26, 2018
Start Time	07:00:00 AM
Weather	
Study ID #	
Peak Hour Start	07:15:00 AM
Peak 15 Min Start	07:40:00 AM
PHF (15-Min Int)	0.85



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
24	314	21	0	55	473	34	0	39	16	90	0	39	14	125	0	359	562	145	178	602	478	72	92
Percent Heavy Vehicles																							
8.3%	4.5%	0.0%	0.0%	1.8%	3.6%	2.9%	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%	0.0%	3.2%	0.0%	4.5%	3.4%	1.4%	2.2%	3.2%	3.8%	4.2%	1.1%

PHV - Bicycles																PHV - Pedestrians					
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB	
0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0

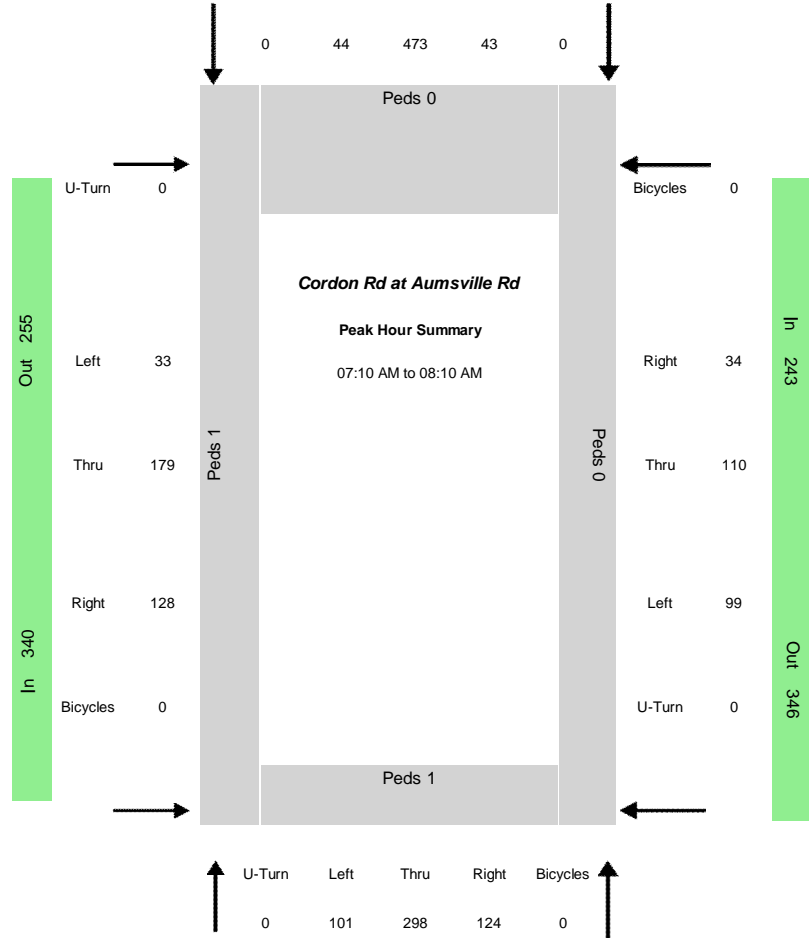
Time	Northbound Cordon Rd SE				Southbound Cordon Rd SE				Eastbound Gaffin Rd SE				Westbound Gaffin Rd SE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
07:00:00 AM	4	17	0	0	3	35	4	0	2	0	2	0	1	1	7	0		
07:05:00 AM	0	14	1	0	4	24	3	0	3	4	4	0	3	0	6	0		
07:10:00 AM	3	15	3	0	11	31	2	0	2	2	6	0	7	1	7	0	232	
07:15:00 AM	1	28	2	0	7	38	2	0	4	3	3	0	2	1	9	0	256	
07:20:00 AM	1	29	2	0	6	40	2	0	2	2	8	0	4	0	9	0	295	
07:25:00 AM	1	26	4	0	7	35	2	0	4	1	5	0	4	1	8	0	303	
07:30:00 AM	2	27	2	0	2	32	0	0	6	0	6	0	2	2	8	0	292	
07:35:00 AM	4	22	1	0	3	48	3	0	3	2	4	0	3	1	7	0	288	
07:40:00 AM	0	30	2	0	5	51	2	0	4	3	12	0	2	2	13	0	316	
07:45:00 AM	1	34	1	0	6	58	2	0	2	0	7	0	6	2	17	0	363	
07:50:00 AM	5	22	4	0	2	35	2	0	2	2	15	0	4	0	13	0	368	
07:55:00 AM	2	30	2	0	5	25	4	0	4	1	7	0	3	1	12	0	338	1189
08:00:00 AM	3	20	1	0	3	36	4	0	4	1	10	0	3	1	12	0	300	1211
08:05:00 AM	2	26	0	0	5	29	3	0	3	0	6	0	6	2	8	0	284	1235
08:10:00 AM	2	20	0	0	4	46	8	0	1	1	7	0	0	1	9	0	287	1244
08:15:00 AM	2	24	0	0	6	26	4	0	5	4	7	0	2	1	12	0	282	1237
08:20:00 AM	2	26	2	0	4	17	3	0	3	3	5	0	2	2	8	0	269	1209
08:25:00 AM	2	19	2	0	9	39	4	0	2	3	6	0	2	0	8	0	266	1207
08:30:00 AM	2	19	0	0	2	32	4	0	3	1	3	0	3	0	9	0	251	1196
08:35:00 AM	3	21	1	0	3	35	2	0	3	0	11	0	5	3	11	0	272	1193
08:40:00 AM	2	13	2	0	6	39	4	0	2	4	5	0	4	1	6	0	264	1155
08:45:00 AM	1	24	0	0	3	40	5	0	3	2	8	0	3	1	9	0	285	1118
08:50:00 AM	2	22	0	0	3	31	3	0	3	1	6	0	3	0	4	0	265	1090
08:55:00 AM	6	21	4	0	5	24	3	0	5	0	6	0	3	1	12	0	267	1084



Data Provided by K-D-N.com 503-594-4224

N/S street	Cordon Rd		
E/W street	Aumville Rd		
City, State	Salem OR		
Site Notes			
Location	44.900479 - -122.970142		
Start Date	Tuesday, June 06, 2017		
Start Time	06:00:00 AM		
Weather			
Study ID #			
Peak Hour Start	07:10:00 AM		
Peak 15 Min Start	07:35:00 AM		
PHF (15-Min Int)	0.88		

Eastbound  
Aumville Rd  
Heavy Vehicle 5.3%



Peak-Hour Volumes (PHV)

Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
101	298	124	0	43	473	44	0	33	179	128	0	99	110	34	0	523	560	340	243	700	365	255	346
6.9%	5.7%	4.8%	0.0%	2.3%	4.7%	20.5%	0.0%	3.0%	5.6%	5.5%	0.0%	6.1%	18.2%	2.9%	0.0%	5.7%	5.7%	5.3%	11.1%	5.0%	5.2%	14.1%	4.9%

PHV- Bicycles

PHV- Bicycles												PHV - Pedestrians									
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2

All Vehicle Volumes

Time	Northbound Cordon Rd				Southbound Cordon Rd				Eastbound Aumville Rd				Westbound Aumville Rd				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
06:00:00 AM	3	8	3	0	0	22	3	0	1	6	4	0	3	8	1	0		
06:05:00 AM	1	14	4	0	3	17	1	0	1	8	6	0	2	6	1	0		
06:10:00 AM	6	18	1	0	2	16	1	0	1	3	2	0	2	2	3	0	183	
06:15:00 AM	4	15	5	0	2	18	1	0	2	8	9	0	2	4	5	0	196	
06:20:00 AM	8	19	8	0	0	15	4	0	2	6	3	0	4	7	0	0	208	
06:25:00 AM	4	9	3	0	2	23	2	0	3	13	6	0	2	7	2	0	227	
06:30:00 AM	2	12	5	0	0	21	1	0	2	10	4	0	3	4	3	0	219	
06:35:00 AM	3	14	3	0	3	40	1	0	0	12	6	0	2	10	3	0	240	
06:40:00 AM	4	21	1	0	4	35	1	0	0	11	15	0	4	4	3	0	267	
06:45:00 AM	10	17	5	0	1	29	3	0	2	16	13	0	7	9	0	0	312	
06:50:00 AM	7	13	5	0	4	44	3	0	1	14	14	0	4	7	0	0	331	
06:55:00 AM	11	17	7	0	1	41	1	0	2	13	10	0	6	7	1	0	345	1022
07:00:00 AM	8	23	8	0	5	40	0	0	1	7	14	0	2	3	1	0	345	1072



07:05:00 AM	5	23	8	0	1	29	1	0	0	14	9	0	7	9	3	0	338	1117
07:10:00 AM	5	15	8	0	2	39	5	0	4	16	13	0	7	10	6	0	351	1190
07:15:00 AM	6	33	14	0	1	44	1	0	2	7	10	0	8	6	1	0	372	1248
07:20:00 AM	6	21	6	0	4	32	4	0	1	20	12	0	5	6	3	0	383	1292
07:25:00 AM	4	27	6	0	6	42	2	0	2	9	11	0	2	7	0	0	371	1334
07:30:00 AM	5	29	12	0	2	35	5	0	7	22	10	0	9	16	1	0	391	1420
07:35:00 AM	11	29	10	0	6	51	5	0	3	12	15	0	13	7	1	0	434	1486
07:40:00 AM	18	20	12	0	4	39	3	0	6	18	4	0	7	9	4	0	460	1527
07:45:00 AM	10	24	15	0	2	61	2	0	0	13	14	0	14	6	6	0	474	1582
07:50:00 AM	13	14	10	0	4	31	6	0	1	21	11	0	10	8	3	0	443	1598
07:55:00 AM	5	32	10	0	8	43	5	0	4	14	11	0	12	8	4	0	455	1637
08:00:00 AM	10	29	9	0	0	30	3	0	3	11	5	0	7	17	3	0	415	1652
08:05:00 AM	8	25	12	0	4	26	3	0	0	16	12	0	5	10	2	0	406	1666
08:10:00 AM	11	21	5	0	3	37	5	0	3	9	9	0	5	6	2	0	366	1652
08:15:00 AM	4	18	3	0	1	31	5	0	3	18	8	0	6	7	2	0	345	1625
08:20:00 AM	7	21	6	0	3	21	4	0	5	15	10	0	4	8	3	0	329	1612
08:25:00 AM	6	26	3	0	2	33	2	0	3	7	7	0	10	7	3	0	322	1603
08:30:00 AM	7	21	0	0	3	36	1	0	2	10	13	0	2	3	1	0	315	1549
08:35:00 AM	9	15	4	0	0	22	4	0	5	11	8	0	2	12	0	0	300	1478
08:40:00 AM	7	18	6	0	1	29	2	0	0	2	2	0	2	9	2	0	271	1414
08:45:00 AM	6	22	6	0	4	35	2	0	2	19	20	0	5	17	2	0	312	1387
08:50:00 AM	2	41	6	0	0	28	2	0	3	9	8	0	5	7	1	0	332	1367
08:55:00 AM	13	27	4	0	9	26	5	0	1	12	7	0	4	14	4	0	378	1337





Southbound  
Cordon Rd NE  
Heavy Vehicle 1.4%

In	572	Out	431
Bicycles	Right	Thru	Left
			U-Turn

1	138	424	9	0
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Peds 0

U-Turn 0

Bicycles 0

**Silverton Rd at Cordon Rd**

**Peak Hour Summary**

04:50 PM to 05:50 PM

Eastbound  
Silverton Rd NE  
Heavy Vehicle 0.9%

Westbound  
Silverton Rd NE  
Heavy Vehicle 2.5%

Left 103

Right 5

Thru 323

Thru 303

Right 213

Left 177

Bicycles 0

U-Turn 0

Peds 3

U-Turn	Left	Thru	Right	Bicycles
0	156	322	213	1

In	691	Out	814
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Heavy Vehicle 1.2%  
Cordon Rd NE  
Northbound

Data Provided by K-D-N.com 503-594-4224	
N/S street	Cordon Rd NE
E/W street	Silverton Rd NE
City, State	Salem OR
Site Notes	
Location	44.971208 - -122.958914
Start Date	Tuesday, June 06, 2017
Start Time	03:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:50:00 PM
Peak 15 Min Start	05:25:00 PM
PHF (15-Min Int)	0.87

Peak-Hour Volumes (PHV)

Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
156	322	213	0	9	424	138	0	103	323	213	0	177	303	5	0	691	571	639	485	814	430	597	545
1.3%	1.2%	0.9%	0.0%	0.0%	1.9%	0.0%	0.0%	1.0%	0.6%	1.4%	0.0%	2.8%	2.3%	0.0%	0.0%	1.2%	1.4%	0.9%	2.5%	2.0%	1.2%	1.5%	0.7%

PHV - Bicycles

PHV - Bicycles												PHV - Pedestrians									
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB	
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	3

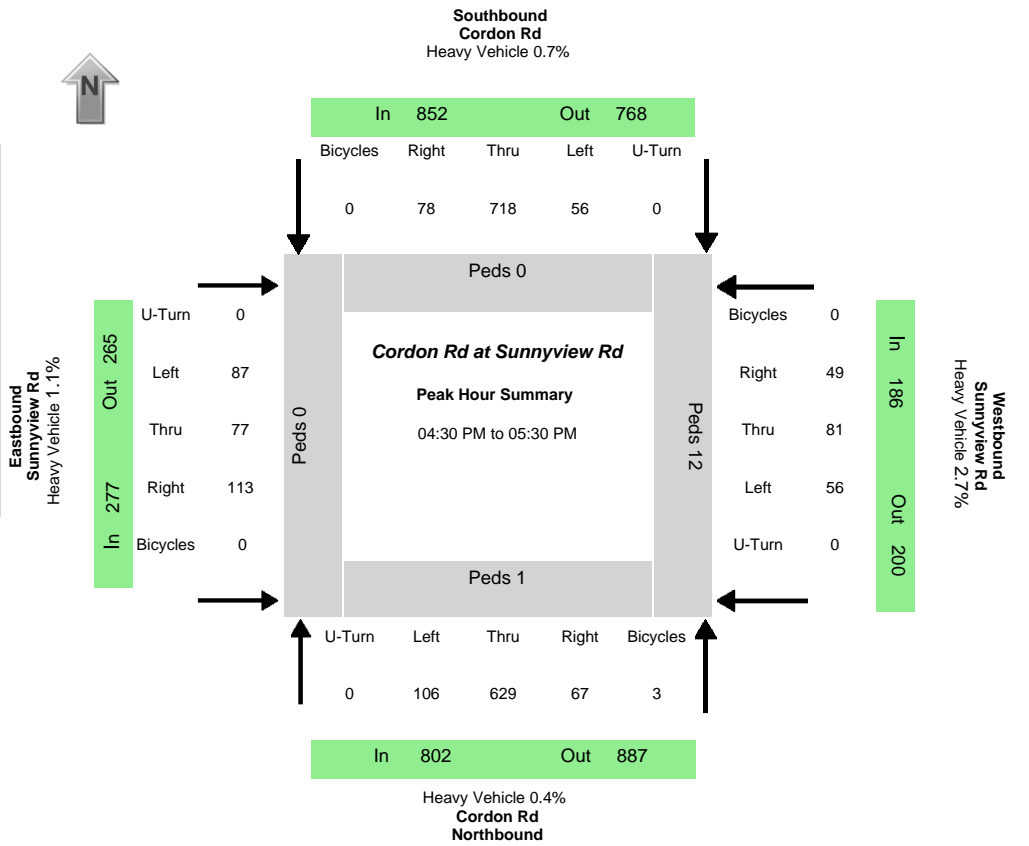
All Vehicle Volumes

Time	Northbound Cordon Rd NE				Southbound Cordon Rd NE				Eastbound Silverton Rd NE				Westbound Silverton Rd NE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
03:00:00 PM	5	32	12	0	0	22	10	0	12	17	17	0	15	26	2	0		
03:05:00 PM	10	16	15	0	0	30	11	0	8	24	15	0	11	17	2	0		
03:10:00 PM	13	24	10	0	1	43	13	0	5	18	12	0	11	23	0	0	502	
03:15:00 PM	9	21	19	0	1	37	5	0	4	29	30	0	11	25	1	0	524	
03:20:00 PM	11	22	20	0	2	50	9	0	10	21	14	0	21	25	0	0	570	
03:25:00 PM	18	19	24	0	0	21	10	0	5	22	20	0	21	24	1	0	582	
03:30:00 PM	9	28	21	0	4	34	7	0	5	19	17	0	10	18	1	0	563	
03:35:00 PM	11	30	27	0	0	29	6	0	8	22	24	0	7	14	1	0	537	
03:40:00 PM	15	42	13	0	0	35	13	0	8	32	17	0	19	27	2	0	575	
03:45:00 PM	22	24	20	0	2	21	8	0	3	16	20	0	8	18	0	0	564	
03:50:00 PM	13	22	19	0	1	33	3	0	6	26	12	0	25	32	1	0	578	
03:55:00 PM	7	20	22	0	1	36	14	0	10	27	29	0	17	22	0	0	560	2219
04:00:00 PM	17	23	19	0	0	28	10	0	3	28	17	0	7	22	0	0	572	2223

04:05:00 PM	12	32	27	0	0	31	14	0	7	25	18	0	8	24	2	0	579	2264
04:10:00 PM	14	25	32	0	2	41	9	0	3	20	19	0	18	15	0	0	572	2289
04:15:00 PM	14	19	17	0	2	26	8	0	3	34	27	0	19	24	1	0	592	2291
04:20:00 PM	12	24	25	0	0	43	6	0	8	23	14	0	13	25	0	0	585	2279
04:25:00 PM	15	22	19	0	0	29	3	0	6	12	18	0	19	18	0	0	548	2255
04:30:00 PM	10	15	25	0	1	29	7	0	6	15	19	0	9	18	1	0	509	2237
04:35:00 PM	17	31	16	0	0	33	16	0	6	18	10	0	16	17	1	0	497	2239
04:40:00 PM	15	32	15	0	1	31	7	0	6	25	12	0	8	7	1	0	496	2176
04:45:00 PM	19	22	23	0	0	34	10	0	3	28	10	0	4	8	0	0	502	2175
04:50:00 PM	17	25	18	0	1	33	12	0	12	29	23	0	9	13	1	0	514	2175
04:55:00 PM	7	19	16	0	0	35	19	0	13	25	12	0	9	21	0	0	530	2146
05:00:00 PM	12	35	17	0	1	39	5	0	7	22	9	0	10	17	0	0	543	2146
05:05:00 PM	14	22	12	0	0	30	11	0	10	29	21	0	14	25	0	0	538	2134
05:10:00 PM	15	28	20	0	0	40	15	0	11	29	23	0	14	15	0	0	572	2146
05:15:00 PM	18	25	19	0	1	36	6	0	9	30	19	0	12	35	1	0	609	2163
05:20:00 PM	17	18	22	0	0	40	13	0	8	23	17	0	15	28	0	0	622	2171
05:25:00 PM	13	25	19	0	3	43	10	0	8	24	10	0	26	32	0	0	625	2223
05:30:00 PM	12	39	21	0	2	37	13	0	3	39	20	0	16	33	0	0	649	2303
05:35:00 PM	6	24	12	0	1	40	10	0	8	36	20	0	30	46	2	0	683	2357
05:40:00 PM	11	39	23	0	0	25	11	0	5	17	22	0	12	22	1	0	658	2385
05:45:00 PM	14	23	14	0	0	26	13	0	9	20	17	0	10	16	0	0	585	2386
05:50:00 PM	13	24	21	0	0	37	6	0	5	23	15	0	10	22	0	0	526	2369
05:55:00 PM	11	23	17	0	2	23	4	0	6	32	13	0	23	24	0	0	516	2371

Data Provided by K-D-N.com 503-594-4224

N/S street	<b>Cordon Rd</b>
E/W street	<b>Sunnyview Rd</b>
City, State	Salem OR
Site Notes	
Location	44.954898 - -122.958893
Start Date	Tuesday, September 25, 2018
Start Time	03:00:00 PM
Weather	
Study ID #	
<b>Peak Hour Start</b>	<b>04:30:00 PM</b>
<b>Peak 15 Min Start</b>	<b>05:15:00 PM</b>
<b>PHF (15-Min Int)</b>	<b>0.93</b>



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
106	629	67	0	56	718	78	0	87	77	113	0	56	81	49	0	802	852	277	186	887	765	265	200
Percent Heavy Vehicles																							
0.0%	0.3%	1.5%	0.0%	0.0%	0.6%	2.6%	0.0%	1.1%	0.0%	1.8%	0.0%	1.8%	2.5%	4.1%	0.0%	0.4%	0.7%	1.1%	2.7%	0.8%	0.7%	1.5%	0.5%

PHV - Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				in Crosswalk				Sum	
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	12	13

Time	Northbound Cordon Rd				Southbound Cordon Rd				Eastbound Sunnyview Rd				Westbound Sunnyview Rd				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
03:00:00 PM	7	39	4	0	1	64	6	0	5	3	6	0	2	5	3	0		
03:05:00 PM	14	32	2	0	7	40	1	0	4	0	13	0	4	2	1	0		
03:10:00 PM	16	30	4	0	2	59	3	0	8	3	5	0	0	1	1	0	397	
03:15:00 PM	14	36	1	0	6	51	3	0	13	7	14	0	4	6	6	0	413	
03:20:00 PM	12	52	2	0	4	69	5	0	5	4	13	0	1	7	3	0	470	
03:25:00 PM	7	40	5	0	2	41	1	0	21	5	10	0	3	4	3	0	480	
03:30:00 PM	12	41	3	0	0	58	9	0	7	6	12	0	3	4	4	0	478	
03:35:00 PM	6	33	0	0	4	56	3	0	10	9	8	0	8	6	1	0	445	
03:40:00 PM	7	45	3	0	3	52	10	0	10	4	14	0	7	8	3	0	469	
03:45:00 PM	17	46	2	0	3	52	12	0	6	6	9	0	2	2	2	0	469	
03:50:00 PM	9	36	3	0	2	65	5	0	9	10	16	0	2	4	1	0	487	
03:55:00 PM	11	41	1	0	6	70	9	0	12	7	7	0	2	2	1	0	490	1836
04:00:00 PM	9	39	5	0	3	47	6	0	9	6	15	0	5	5	1	0	481	1841
04:05:00 PM	5	46	5	0	3	64	8	0	6	3	20	0	4	8	6	0	497	1899
04:10:00 PM	14	52	1	0	4	61	5	0	1	4	14	0	1	6	2	0	493	1932
04:15:00 PM	5	58	0	0	6	62	9	0	8	5	9	0	2	3	1	0	511	1939
04:20:00 PM	13	50	2	0	7	55	3	0	8	12	11	0	2	4	3	0	503	1932
04:25:00 PM	11	43	3	0	2	61	7	0	10	11	4	0	3	10	2	0	505	1957
04:30:00 PM	12	61	5	0	7	50	6	0	7	6	5	0	4	9	3	0	512	1973
04:35:00 PM	1	44	5	0	8	60	12	0	6	7	6	0	2	6	2	0	501	1988
04:40:00 PM	9	50	6	0	3	52	1	0	10	12	14	0	4	15	2	0	512	2000
04:45:00 PM	6	44	7	0	5	60	5	0	11	6	6	0	5	9	9	0	510	2014
04:50:00 PM	15	48	5	0	3	55	4	0	8	3	8	0	9	9	3	0	521	2022
04:55:00 PM	7	52	6	0	6	57	7	0	4	8	11	0	9	6	10	0	526	2036

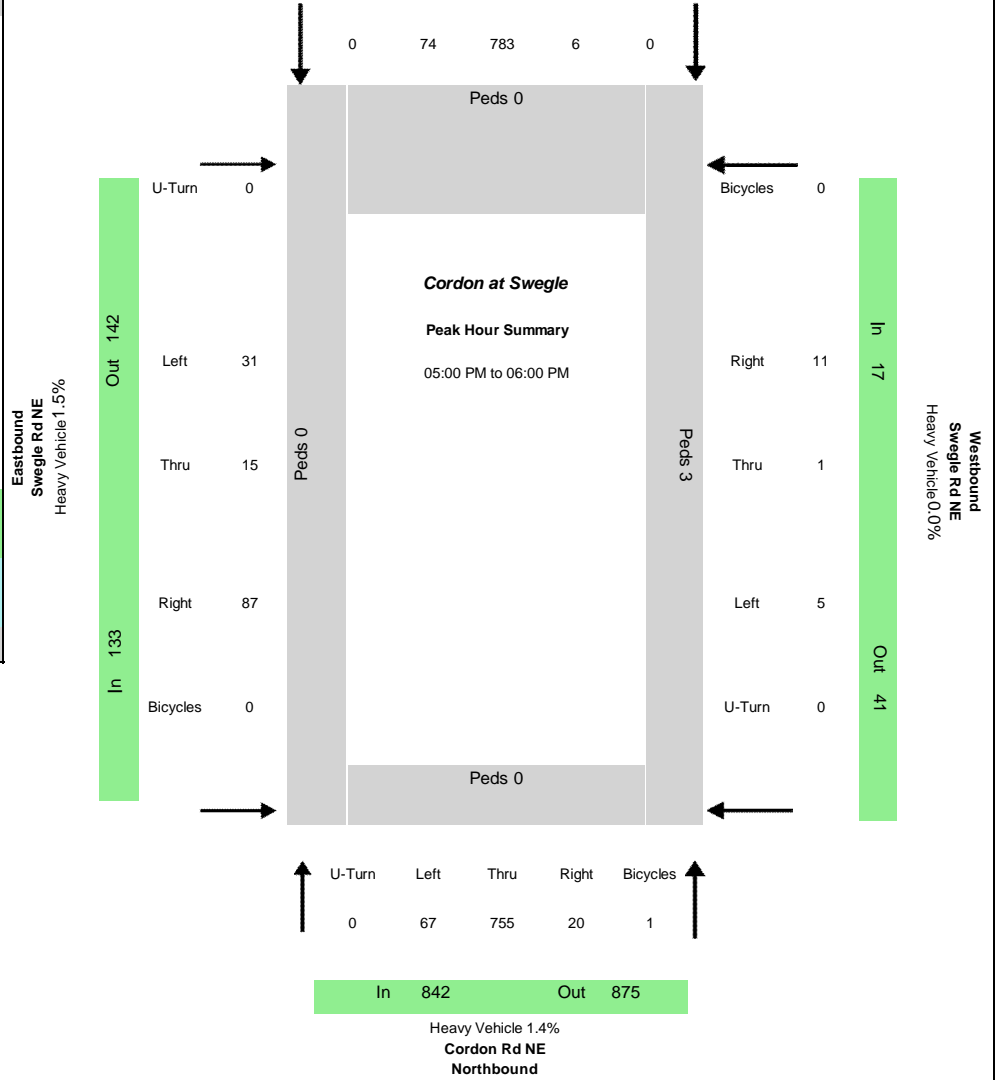
05:00:00 PM	5	57	1	0	4	68	8	0	4	7	5	0	5	5	0	0	522	2055
05:05:00 PM	10	48	3	0	1	56	6	0	5	7	13	0	7	8	6	0	522	2047
05:10:00 PM	9	50	4	0	4	58	10	0	10	4	11	0	5	2	6	0	512	2055
05:15:00 PM	11	61	8	0	4	66	7	0	9	10	10	0	1	5	4	0	539	2083
05:20:00 PM	7	58	7	0	6	65	5	0	8	3	12	0	5	2	2	0	549	2093
05:25:00 PM	14	56	10	0	5	71	7	0	5	4	12	0	0	5	2	0	567	2117
05:30:00 PM	11	33	3	0	6	52	14	0	10	6	13	0	1	5	5	0	530	2101
05:35:00 PM	16	55	3	0	1	55	7	0	8	6	10	0	2	4	1	0	518	2110
05:40:00 PM	12	56	2	0	1	64	9	0	5	2	16	0	3	4	1	0	502	2107
05:45:00 PM	11	55	3	0	2	34	4	0	11	7	17	0	2	2	3	0	494	2085
05:50:00 PM	8	43	5	0	8	63	2	0	3	7	16	0	2	1	3	0	487	2076
05:55:00 PM	9	50	1	0	4	55	8	0	6	5	13	0	7	3	4	0	477	2058



**Southbound  
Cordon Rd NE**  
Heavy Vehicle 1.6%

In	863	Out	797
Bicycles	Right	Thru	Left
0	74	783	6
			U-Turn
			0

Data Provided by K-D-N.com 503-594-4224	
N/S street	Cordon Rd NE
E/W street	Swegle Rd NE
City, State	Salem OR
Site Notes	
Location	44.948929 - -122.958605
Start Date	Tuesday, June 06, 2017
Start Time	03:00:00 PM
Weather	
Study ID #	
Peak Hour Start	05:00:00 PM
Peak 15 Min Start	05:15:00 PM
PHF (15-Min Int)	0.91



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
67	755	20	0	6	783	74	0	31	15	87	0	5	1	11	0	842	863	133	17	875	797	142	41
0.0%	1.6%	0.0%	0.0%	0.0%	1.8%	0.0%	0.0%	3.2%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	1.6%	1.5%	0.0%	1.7%	1.6%	0.0%	0.0%

PHV- Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	3

Time	Northbound Cordon Rd NE				Southbound Cordon Rd NE				Eastbound Swegle Rd NE				Westbound Swegle Rd NE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
03:00:00 PM	2	49	1	0	1	55	3	0	0	1	12	0	1	0	1	0		
03:05:00 PM	9	45	0	0	0	67	4	0	2	3	6	0	0	1	2	0		
03:10:00 PM	3	44	1	0	1	57	6	0	2	1	5	0	1	0	0	0	386	
03:15:00 PM	12	60	3	0	0	66	3	0	3	1	6	0	0	2	2	0	418	
03:20:00 PM	4	60	1	0	0	65	4	0	3	3	14	0	1	0	1	0	435	
03:25:00 PM	8	57	3	0	0	70	5	0	2	2	7	0	0	2	1	0	471	
03:30:00 PM	3	55	2	0	1	67	8	0	4	0	6	0	0	0	0	0	459	
03:35:00 PM	7	64	0	0	1	47	7	0	2	1	4	0	0	1	0	0	437	
03:40:00 PM	8	57	1	0	0	69	0	0	2	0	6	0	2	0	2	0	427	
03:45:00 PM	4	54	2	0	1	57	7	0	2	2	7	0	0	1	3	0	421	
03:50:00 PM	4	56	0	0	0	61	4	0	1	0	11	0	0	0	4	0	428	
03:55:00 PM	7	47	0	0	2	75	7	0	1	0	8	0	1	0	1	0	430	1714
04:00:00 PM	4	87	1	0	1	66	5	0	3	0	3	0	0	0	1	0	461	1759

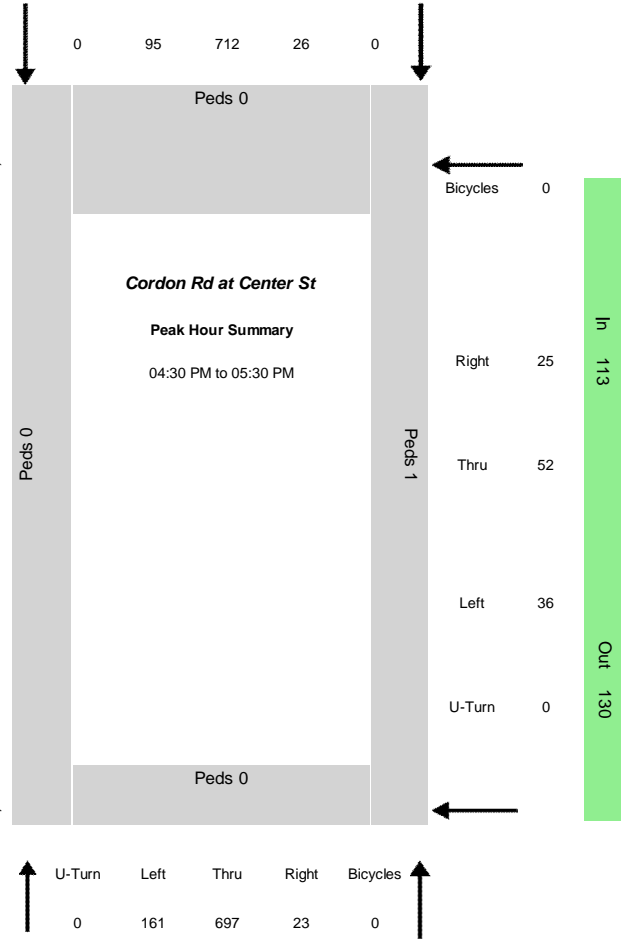
04:05:00 PM	9	64	2	0	0	56	10	0	2	1	9	0	1	0	2	0	476	1776
04:10:00 PM	9	71	0	0	1	60	2	0	3	1	4	0	0	1	1	0	480	1808
04:15:00 PM	4	62	4	0	0	70	5	0	3	0	7	0	0	0	1	0	465	1806
04:20:00 PM	6	66	1	0	1	77	6	0	0	1	4	0	0	0	1	0	472	1813
04:25:00 PM	3	58	1	0	0	69	5	0	2	0	6	0	1	0	0	0	464	1801
04:30:00 PM	7	50	2	0	1	65	6	0	3	1	4	0	0	0	0	0	447	1794
04:35:00 PM	6	67	3	0	0	48	5	0	2	1	12	0	0	1	0	0	429	1805
04:40:00 PM	1	59	2	0	1	58	6	0	2	1	7	0	0	1	0	0	422	1796
04:45:00 PM	3	68	1	0	0	64	3	0	0	0	5	0	0	1	0	0	428	1801
04:50:00 PM	6	51	2	0	4	57	4	0	2	2	9	0	1	0	1	0	422	1799
04:55:00 PM	8	59	1	0	1	62	5	0	1	0	9	0	2	1	1	0	434	1800
05:00:00 PM	7	61	5	0	0	47	6	0	3	0	7	0	2	0	1	0	428	1768
05:05:00 PM	6	62	0	0	0	61	9	0	0	5	7	0	0	0	1	0	440	1763
05:10:00 PM	4	58	1	0	0	63	1	0	3	1	5	0	0	0	0	0	426	1746
05:15:00 PM	8	69	0	0	1	70	9	0	2	0	12	0	0	0	0	0	458	1761
05:20:00 PM	6	72	3	0	2	68	5	0	3	1	5	0	0	0	1	0	473	1764
05:25:00 PM	4	73	4	0	0	66	15	0	2	1	6	0	1	0	1	0	510	1792
05:30:00 PM	9	55	1	0	1	69	8	0	2	1	8	0	0	0	2	0	495	1809
05:35:00 PM	6	61	1	0	0	78	6	0	3	1	8	0	0	1	1	0	495	1830
05:40:00 PM	3	62	2	0	0	80	6	0	4	1	2	0	0	0	0	0	482	1852
05:45:00 PM	5	58	0	0	0	59	0	0	8	0	10	0	0	0	0	0	466	1847
05:50:00 PM	3	56	2	0	1	62	2	0	1	3	7	0	2	0	1	0	440	1848
05:55:00 PM	6	68	1	0	1	60	7	0	0	1	10	0	0	0	3	0	437	1855





**Southbound  
Cordon Rd NE**  
Heavy Vehicle 3.0%

In	833	Out	851
Bicycles	Right	Thru	Left
			U-Turn



In	881	Out	932
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Heavy Vehicle 3.0%  
**Cordon Rd NE**  
Northbound

Data Provided by K-D-N.com 503-594-4224

N/S street	Cordon Rd NE		
E/W street	Center St NE		
City, State	Salem OR		
Site Notes			
Location	44.939657	-	-122.959282
Start Date	Tuesday, June 06, 2017		
Start Time	03:00:00 PM		
Weather			
Study ID #			
Peak Hour Start	04:30:00 PM		
Peak 15 Min Start	05:15:00 PM		
PHF (15-Min Int)	0.92		

Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
161	697	23	0	26	712	95	0	129	81	184	0	36	52	25	0	881	833	394	113	932	851	308	130
3.1%	2.9%	4.3%	0.0%	11.5%	2.4%	5.3%	0.0%	0.0%	2.5%	3.3%	0.0%	0.0%	1.9%	0.0%	0.0%	3.0%	3.0%	2.0%	0.9%	2.5%	2.4%	3.6%	4.6%

PHV - Bicycles																PHV - Pedestrians					
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1

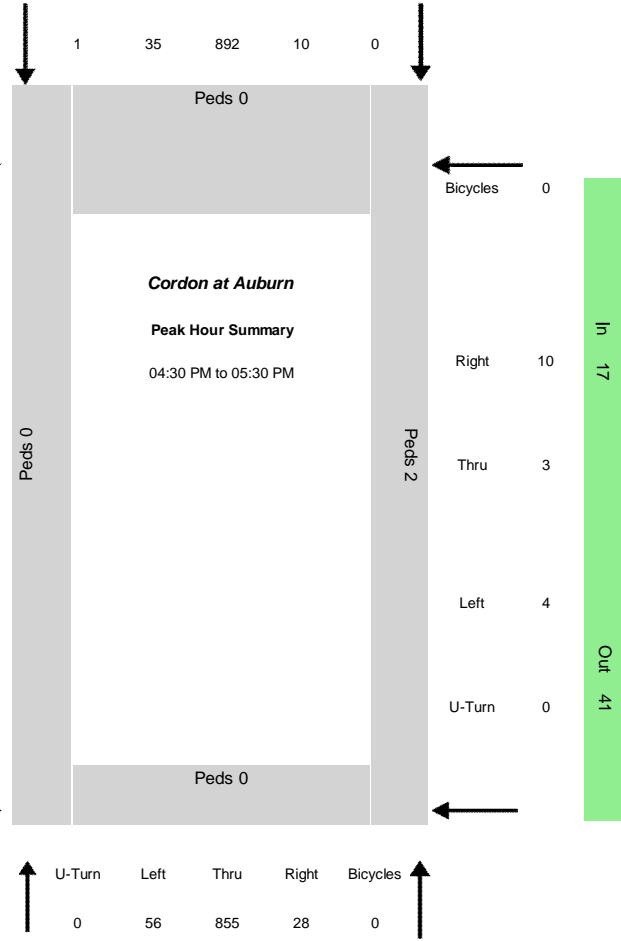
Time	Northbound Cordon Rd NE				Southbound Cordon Rd NE				Eastbound Center St NE				Westbound Center St NE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
03:00:00 PM	10	38	5	0	2	49	10	0	10	9	11	0	2	7	2	0		
03:05:00 PM	11	42	4	0	4	58	8	0	9	3	11	0	4	4	4	0		
03:10:00 PM	6	37	2	0	3	46	6	0	8	2	9	0	4	2	2	0	444	
03:15:00 PM	7	63	7	0	5	64	8	0	12	4	14	0	3	0	1	0	477	
03:20:00 PM	13	60	4	0	2	61	9	0	9	4	14	0	5	5	4	0	505	
03:25:00 PM	10	37	2	0	3	60	19	0	13	6	13	0	7	11	3	0	562	
03:30:00 PM	9	57	3	0	3	61	7	0	9	1	9	0	1	4	2	0	540	
03:35:00 PM	9	63	3	0	3	64	4	0	8	3	12	0	2	6	2	0	529	
03:40:00 PM	11	55	1	0	2	47	7	0	11	7	14	0	2	1	3	0	506	
03:45:00 PM	17	41	0	0	5	58	5	0	7	5	9	0	4	5	0	0	496	
03:50:00 PM	17	55	3	0	1	62	7	0	12	7	11	0	3	4	1	0	500	
03:55:00 PM	13	53	3	0	2	65	16	0	11	6	9	0	4	1	2	0	524	2036
04:00:00 PM	10	71	2	0	1	62	4	0	16	8	12	0	1	7	2	0	564	2077

04:05:00 PM	12	55	4	0	1	58	4	0	10	5	13	0	5	7	4	0	559	2093
04:10:00 PM	12	68	3	0	2	60	12	0	13	1	8	0	0	5	1	0	559	2151
04:15:00 PM	13	63	0	0	1	61	10	0	12	6	11	0	1	3	2	0	546	2146
04:20:00 PM	14	55	2	0	2	70	6	0	10	12	7	0	1	1	3	0	551	2139
04:25:00 PM	10	39	2	0	2	64	13	0	15	2	9	0	6	4	0	0	532	2121
04:30:00 PM	12	56	0	0	2	68	8	0	8	5	15	0	5	6	3	0	537	2143
04:35:00 PM	7	67	1	0	3	61	6	0	8	9	15	0	3	1	1	0	536	2146
04:40:00 PM	14	47	1	0	2	51	6	0	11	9	22	0	2	11	1	0	547	2162
04:45:00 PM	15	58	2	0	2	51	4	0	10	6	10	0	5	2	3	0	527	2174
04:50:00 PM	18	47	3	0	1	56	9	0	9	5	19	0	3	5	4	0	524	2170
04:55:00 PM	17	59	2	0	4	67	7	0	10	6	18	0	4	2	1	0	544	2182
05:00:00 PM	18	60	1	0	4	62	5	0	13	2	12	0	1	3	3	0	560	2170
05:05:00 PM	13	43	0	0	1	45	6	0	16	6	12	0	2	6	3	0	534	2145
05:10:00 PM	11	63	5	0	3	61	12	0	7	5	20	0	0	4	0	0	528	2151
05:15:00 PM	15	70	2	0	0	64	10	0	7	7	10	0	3	3	2	0	537	2161
05:20:00 PM	10	65	4	0	3	63	10	0	22	13	12	0	2	5	0	0	593	2187
05:25:00 PM	11	62	2	0	1	63	12	0	8	8	19	0	6	4	4	0	602	2221
05:30:00 PM	13	54	3	0	2	58	14	0	9	4	7	0	1	5	0	0	579	2203
05:35:00 PM	6	65	0	0	1	75	10	0	4	1	16	0	2	3	2	0	555	2206
05:40:00 PM	8	46	4	0	2	56	13	0	12	8	18	0	0	3	3	0	528	2202
05:45:00 PM	10	54	3	0	4	67	9	0	10	9	11	0	1	3	2	0	541	2217
05:50:00 PM	7	57	3	0	5	60	8	0	7	8	10	0	2	8	1	0	532	2214
05:55:00 PM	17	62	4	0	3	61	8	0	13	12	11	0	3	1	0	0	554	2212



**Southbound  
Cordon Rd NE**  
Heavy Vehicle 3.3%

In	938	Out	883
Bicycles	Right	Thru	Left
			U-Turn



Data Provided by K-D-N.com 503-594-4224

N/S street	Cordon Rd NE		
E/W street	Auburn Rd NE		
City, State	Salem OR		
Site Notes			
Location	44.936344	-	-122.95913
Start Date	Tuesday, June 06, 2017		
Start Time	03:00:00 PM		
Weather			
Study ID #			
Peak Hour Start	04:30:00 PM		
Peak 15 Min Start	05:15:00 PM		
PHF (15-Min Int)	0.93		

**Cordon Rd NE  
Northbound**  
Heavy Vehicle 2.4%

In	939	Out	976
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Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
56	855	28	0	10	892	35	0	18	3	80	0	4	3	10	0	939	937	101	17	976	883	94	41
Percent Heavy Vehicles																							
1.8%	2.6%	0.0%	0.0%	0.0%	3.5%	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	3.3%	2.0%	0.0%	3.4%	2.5%	1.1%	0.0%

PHV- Bicycles																PHV - Pedestrians					
Northbound				Southbound				Eastbound				Westbound				in Crosswalk		Sum			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB		EB	WB	
0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0	0	2	2

Time	Northbound Cordon Rd NE				Southbound Cordon Rd NE				Eastbound Auburn Rd NE				Westbound Auburn Rd NE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
03:00:00 PM	3	50	4	0	1	64	4	0	2	0	4	0	0	0	1	0		
03:05:00 PM	8	51	1	0	1	64	3	0	0	3	8	0	0	0	1	0		
03:10:00 PM	9	54	0	0	3	57	4	0	3	0	4	0	1	0	1	0	408	
03:15:00 PM	4	68	2	0	3	69	2	0	3	0	7	0	0	0	1	0	435	
03:20:00 PM	4	74	1	0	0	77	3	0	0	0	3	0	0	0	0	0	457	
03:25:00 PM	5	49	2	0	1	79	3	0	3	0	4	0	1	0	0	0	468	
03:30:00 PM	3	71	2	0	2	63	2	0	0	1	6	0	1	1	0	0	461	
03:35:00 PM	7	68	0	0	0	79	3	0	2	0	8	0	2	0	0	0	468	
03:40:00 PM	9	66	2	0	1	57	7	0	2	0	8	0	0	0	0	0	473	
03:45:00 PM	3	71	3	0	3	68	3	0	1	0	4	0	0	0	1	0	478	
03:50:00 PM	5	60	1	0	2	57	4	0	2	0	4	0	0	0	0	0	444	
03:55:00 PM	3	72	0	0	2	69	4	0	2	0	10	0	0	0	4	0	458	1807
04:00:00 PM	3	67	1	0	1	70	3	0	1	0	5	0	0	0	0	0	452	1826

04:05:00 PM	8	78	0	0	0	64	4	0	3	0	7	0	0	0	3	0	484	1853
04:10:00 PM	4	71	3	0	1	55	2	0	0	0	9	0	0	1	1	0	465	1864
04:15:00 PM	4	78	1	0	0	71	2	0	0	1	12	0	0	0	1	0	484	1875
04:20:00 PM	3	67	3	0	4	71	4	0	2	0	13	0	0	0	2	0	486	1882
04:25:00 PM	5	57	2	0	0	82	1	0	0	0	10	0	0	0	0	0	496	1892
04:30:00 PM	7	71	3	0	2	80	2	0	0	0	8	0	0	1	0	0	500	1914
04:35:00 PM	4	65	1	0	0	78	1	0	1	0	5	0	1	0	0	0	487	1901
04:40:00 PM	9	65	2	0	2	71	2	0	1	0	4	0	1	0	1	0	488	1907
04:45:00 PM	5	73	3	0	1	64	2	0	3	1	7	0	0	0	1	0	474	1910
04:50:00 PM	8	67	2	0	1	75	2	0	2	1	5	0	0	0	1	0	482	1939
04:55:00 PM	1	74	5	0	0	83	3	0	2	0	6	0	1	0	2	0	501	1950
05:00:00 PM	4	75	4	0	0	75	4	0	0	0	2	0	0	0	0	0	505	1963
05:05:00 PM	3	52	2	0	0	56	4	0	2	0	10	0	0	0	3	0	473	1928
05:10:00 PM	3	82	3	0	0	73	2	0	3	1	6	0	0	0	1	0	470	1955
05:15:00 PM	3	76	0	0	0	79	2	0	3	0	5	0	0	0	0	0	474	1953
05:20:00 PM	6	82	2	0	2	75	3	0	0	0	8	0	0	1	1	0	522	1964
05:25:00 PM	3	73	1	0	2	83	8	0	1	0	14	0	1	1	0	0	535	1994
05:30:00 PM	7	65	1	0	0	58	3	0	0	0	6	0	0	0	1	0	508	1961
05:35:00 PM	7	66	1	0	0	90	6	0	2	0	10	0	3	0	0	0	513	1990
05:40:00 PM	3	54	0	0	1	73	2	0	0	0	10	0	0	0	0	0	469	1975
05:45:00 PM	3	67	3	0	0	71	1	0	0	0	12	0	1	0	0	0	486	1973
05:50:00 PM	5	65	1	0	0	71	1	0	0	0	7	0	1	0	0	0	452	1960
05:55:00 PM	4	83	1	0	1	78	1	0	0	0	5	0	3	0	0	0	485	1959



(303) 216-2439

www.alltrafficdata.net

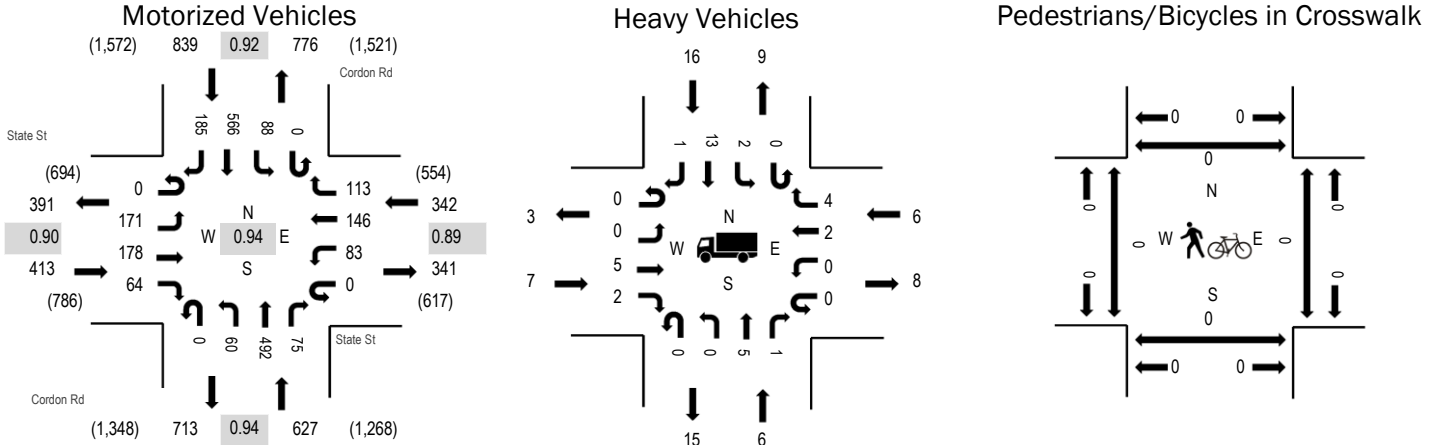
Location: 1 Cordon Rd & State St PM

Date: Tuesday, January 11, 2022

Study Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes in Study Peak Hour: 05:05 PM - 05:20 PM

Study Peak Hour (for all study intersections)



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.7%	0.90
WB	1.8%	0.89
NB	1.0%	0.94
SB	1.9%	0.92
All	1.6%	0.94

Traffic Counts - Motorized Vehicles

Interval Start Time	State St Eastbound				State St Westbound				Cordon Rd Northbound				Cordon Rd Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	21	14	9	0	7	14	6	0	4	43	3	0	6	49	9	185	2,165
4:05 PM	0	12	12	11	0	3	4	5	0	3	46	7	0	5	40	11	159	2,156
4:10 PM	0	21	13	6	0	6	7	2	0	8	56	5	0	7	38	9	178	2,187
4:15 PM	0	9	12	9	0	6	13	4	0	5	47	7	0	7	58	14	191	2,208
4:20 PM	0	15	17	5	0	5	14	12	0	7	45	3	0	5	46	12	186	2,217
4:25 PM	0	4	12	5	0	4	5	4	0	6	46	7	0	10	46	15	164	2,204
4:30 PM	0	12	17	5	0	12	16	13	0	6	38	5	0	8	42	16	190	2,221
4:35 PM	0	20	12	8	0	8	11	9	0	2	42	5	0	5	48	13	183	2,200
4:40 PM	0	12	6	4	0	5	11	11	0	6	51	6	0	9	49	21	191	2,185
4:45 PM	0	12	17	4	0	10	11	7	0	2	38	8	0	4	45	12	170	2,137
4:50 PM	0	13	12	5	0	5	13	6	0	7	47	2	0	12	59	15	196	2,115
4:55 PM	0	18	15	3	0	8	14	10	0	7	33	9	0	11	26	18	172	2,052
5:00 PM	0	15	16	7	0	4	9	7	0	6	38	8	0	7	51	8	176	2,015
5:05 PM	0	12	18	1	0	8	17	11	0	6	37	3	0	12	49	16	190	
5:10 PM	0	17	21	8	0	6	9	12	0	3	42	7	0	4	54	16	199	
5:15 PM	0	11	12	7	0	2	17	5	0	7	53	9	0	6	52	19	200	
5:20 PM	0	14	15	8	0	10	8	13	0	2	28	8	0	6	45	16	173	
5:25 PM	0	15	17	4	0	5	10	9	0	6	45	5	0	4	46	15	181	
5:30 PM	0	16	14	8	0	6	4	10	0	8	32	4	0	12	45	10	169	
5:35 PM	0	8	11	1	0	4	10	5	0	4	50	3	0	4	52	16	168	
5:40 PM	0	9	10	6	0	2	9	1	0	3	46	7	0	6	30	14	143	
5:45 PM	0	17	13	5	0	8	5	5	0	3	41	5	0	6	32	8	148	
5:50 PM	0	9	8	2	0	1	5	1	0	4	43	4	0	5	40	11	133	
5:55 PM	0	17	8	4	0	2	9	4	0	2	33	1	0	3	34	18	135	
Count Total	0	329	322	135	0	137	245	172	0	117	1,020	131	0	164	1,076	332	4,180	
Peak Hour	0	171	178	64	0	83	146	113	0	60	492	75	0	88	566	185	2,221	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

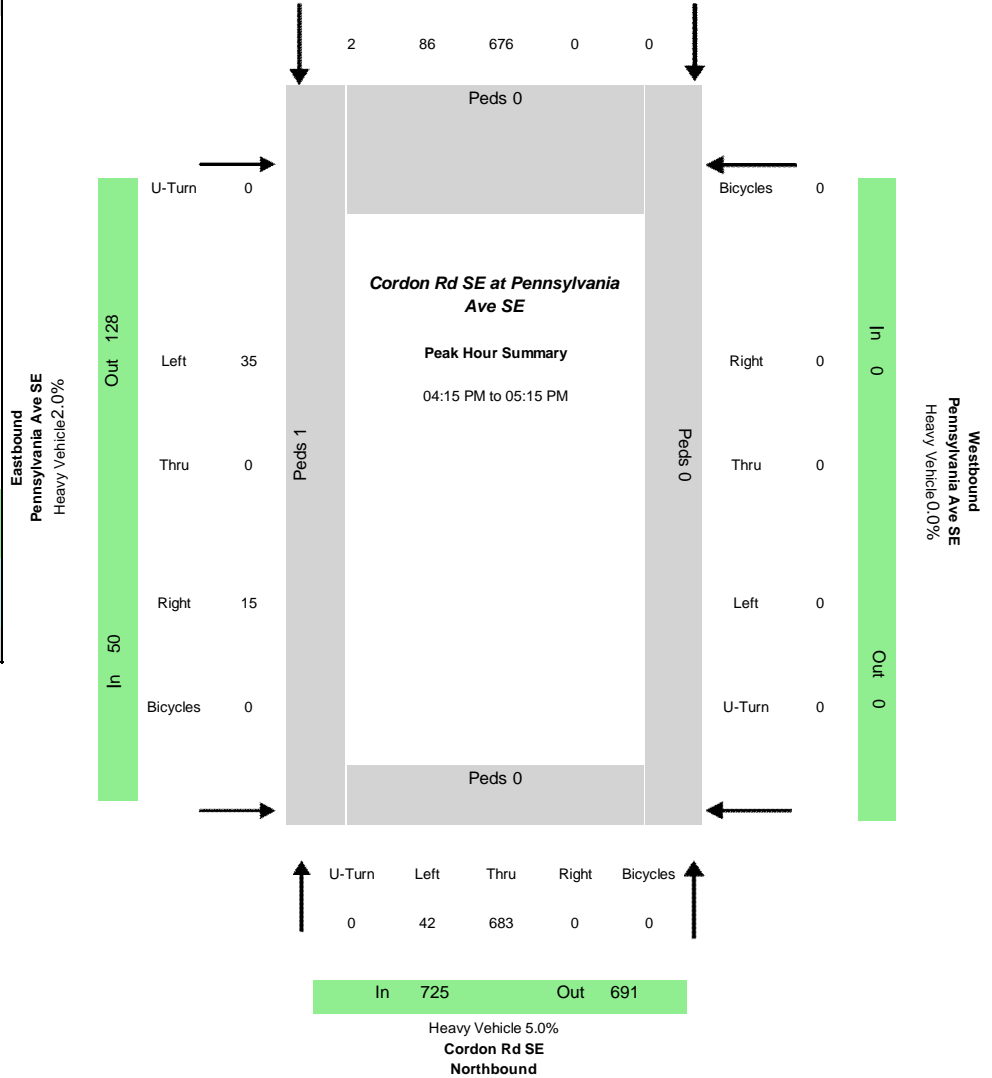
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	1	1	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	1	1	1	3	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	1	0	2	3	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	1	3	0	2	6	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	1	0	0	1	2	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	2	2	2	3	9	4:25 PM	0	0	0	0	0	4:25 PM	0	1	0	0	1
4:30 PM	1	2	1	2	6	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	1	1	0	2	4	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	2	2	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	2	0	0	2	4	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	1	1	2	4	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	0	0	4:55 PM	1	0	0	0	1	4:55 PM	0	0	0	0	0
5:00 PM	1	0	0	1	2	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	1	1	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	1	1	2	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	2	2	0	1	5	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	1	2	3	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	2	0	2	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	1	1	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	1	1	5:35 PM	12	0	0	0	12	5:35 PM	0	2	0	0	2
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	2	1	0	0	3	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	1	1	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	1	0	1	2	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	13	15	9	30	67	Count Total	13	0	0	0	13	Count Total	0	3	0	0	3
Peak Hour	7	6	6	16	35	Peak Hour	1	0	0	0	1	Peak Hour	0	0	0	0	0



Southbound  
Cordon Rd SE  
Heavy Vehicle 3.9%

In	764	Out	718
Bicycles	Right	Thru	Left U-Turn

Data Provided by K-D-N.com 503-594-4224	
N/S street	Cordon Rd SE
E/W street	Pennsylvania Ave SE
City, State	Salem OR
Site Notes	
Location	44.923707 - -122.958136
Start Date	Tuesday, June 06, 2017
Start Time	03:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:15:00 PM
Peak 15 Min Start	04:15:00 PM
PHF (15-Min Int)	0.96



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
42	683	0	0	0	676	86	0	35	0	15	0	0	0	0	0	725	762	50	0	691	718	128	0
0.0%	5.3%	0.0%	0.0%	0.0%	4.0%	3.5%	0.0%	0.0%	0.0%	6.7%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	3.9%	2.0%	0.0%	4.1%	5.0%	2.3%	0.0%

PHV - Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB	
0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0	0	1	0	1

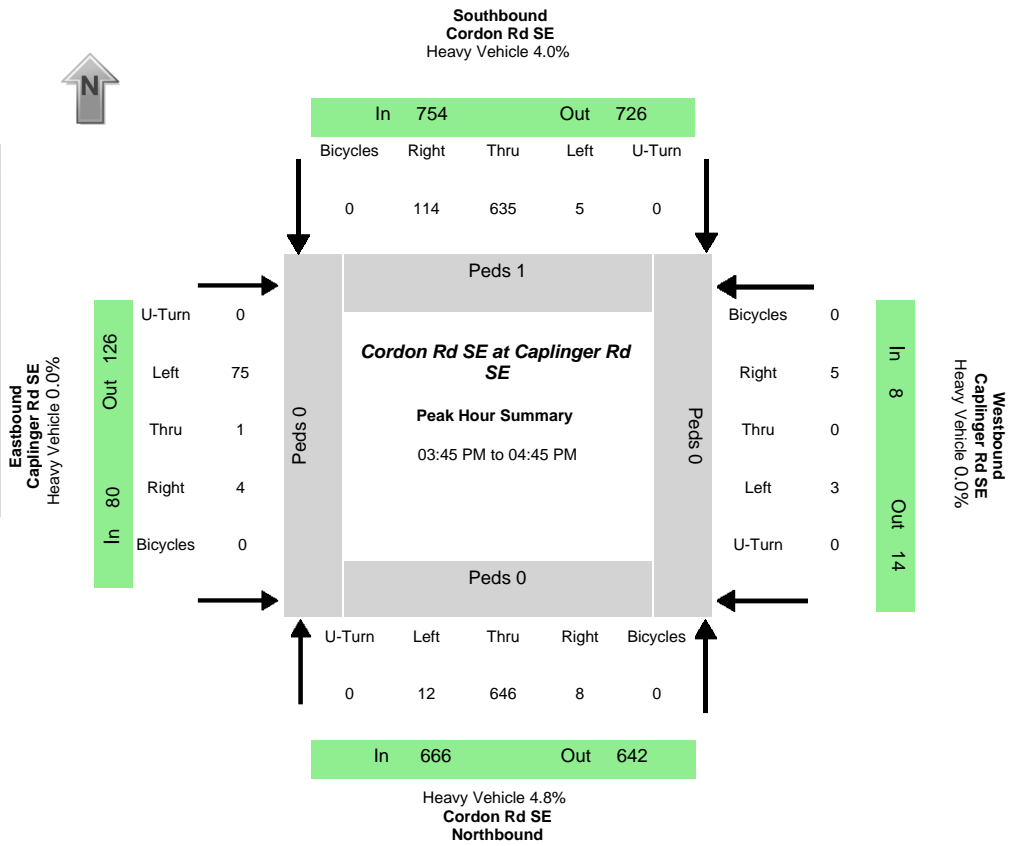
Time	Northbound Cordon Rd SE				Southbound Cordon Rd SE				Eastbound Pennsylvania Ave SE				Westbound Pennsylvania Ave SE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
03:00:00 PM	1	48	0	0	0	42	5	0	2	0	1	0	0	0	0	0		
03:05:00 PM	2	30	0	0	0	52	7	0	5	0	2	0	0	0	0	0		
03:10:00 PM	6	60	0	0	0	40	4	0	0	0	1	0	0	0	0	0	308	
03:15:00 PM	5	66	0	0	0	52	4	0	5	0	1	0	0	0	0	0	342	
03:20:00 PM	2	50	0	0	0	62	12	0	5	0	1	0	0	0	0	0	376	
03:25:00 PM	3	47	0	0	0	62	5	0	3	0	3	0	0	0	0	0	388	
03:30:00 PM	3	55	0	0	0	64	5	0	3	0	1	0	0	0	0	0	386	
03:35:00 PM	2	56	0	0	0	61	6	0	0	0	3	0	0	0	0	0	382	
03:40:00 PM	4	51	0	0	0	44	3	0	10	0	4	0	0	0	0	0	375	
03:45:00 PM	2	60	0	0	0	39	8	0	5	0	3	0	0	0	0	0	361	
03:50:00 PM	6	45	0	0	0	57	4	0	3	0	0	0	0	0	0	0	348	
03:55:00 PM	4	57	0	0	0	52	8	0	5	0	1	0	0	0	0	0	359	1430
04:00:00 PM	3	53	0	0	0	57	11	0	2	0	1	0	0	0	0	0	369	1458





Data Provided by K-D-N.com 503-594-4224

N/S street	Cordon Rd SE
E/W street	Caplinger Rd SE
City, State	Salem OR
Site Notes	
Location	44.918545 - -122.953738
Start Date	Wednesday, January 23, 2019
Start Time	03:30:00 PM
Weather	
Study ID #	
Peak Hour Start	03:45:00 PM
Peak 15 Min Start	03:50:00 PM
PHF (15-Min Int)	0.94



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
12	646	8	0	5	635	114	0	75	1	4	0	3	0	5	0	666	754	80	8	642	726	126	14
Percent Heavy Vehicles																							
0.0%	4.6%	25.0%	0.0%	20.0%	4.3%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.8%	4.0%	0.0%	0.0%	4.2%	4.1%	1.6%	21.4%

PHV - Bicycles												PHV - Pedestrians										
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum	
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1

Time	Northbound Cordon Rd SE				Southbound Cordon Rd SE				Eastbound Caplinger Rd SE				Westbound Caplinger Rd SE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
03:30:00 PM	0	57	0	0	0	48	6	0	4	0	1	0	0	0	1	0		
03:35:00 PM	1	54	0	0	1	51	9	0	12	0	1	0	0	0	0	0		
03:40:00 PM	0	41	0	0	0	59	9	0	4	0	2	0	0	0	0	0	361	
03:45:00 PM	1	49	0	0	0	50	11	0	9	0	0	0	0	0	0	0	364	
03:50:00 PM	1	61	0	0	0	55	5	0	6	0	0	0	0	0	2	0	365	
03:55:00 PM	3	60	1	0	0	44	12	0	6	0	0	0	1	0	0	0	377	
04:00:00 PM	1	68	0	0	1	54	10	0	6	0	2	0	0	0	1	0	400	
04:05:00 PM	1	50	0	0	0	52	7	0	6	0	0	0	0	0	0	0	386	
04:10:00 PM	1	44	0	0	0	52	11	0	5	1	0	0	0	0	0	0	373	
04:15:00 PM	1	60	0	0	0	54	17	0	5	0	0	0	1	0	0	0	368	
04:20:00 PM	1	63	0	0	1	53	9	0	5	0	1	0	0	0	0	0	385	
04:25:00 PM	1	37	0	0	2	53	7	0	8	0	0	0	0	0	0	0	379	1490
04:30:00 PM	1	54	4	0	0	54	7	0	11	0	0	0	1	0	0	0	373	1505
04:35:00 PM	0	46	1	0	1	54	10	0	3	0	1	0	0	0	2	0	358	1494
04:40:00 PM	0	54	2	0	0	60	8	0	5	0	0	0	0	0	0	0	379	1508
04:45:00 PM	0	57	0	0	1	44	12	0	3	1	0	0	0	0	0	0	365	1506
04:50:00 PM	1	52	0	0	3	53	10	0	6	1	0	0	1	0	0	0	374	1503
04:55:00 PM	0	52	0	0	1	47	12	0	7	0	0	0	0	0	2	0	366	1497
05:00:00 PM	1	52	1	0	0	51	12	0	4	0	0	0	2	1	2	0	374	1480
05:05:00 PM	0	56	1	0	0	38	7	0	7	0	0	0	0	1	1	0	358	1475
05:10:00 PM	1	55	1	0	0	40	12	0	5	1	0	0	1	1	0	0	354	1478
05:15:00 PM	1	63	0	0	0	40	7	0	3	0	0	0	0	1	1	0	344	1456
05:20:00 PM	0	45	0	0	1	54	17	0	2	0	1	0	0	0	0	0	353	1443
05:25:00 PM	0	69	1	0	0	42	10	0	6	0	0	0	0	0	0	0	364	1463



Southbound  
Cordon Rd SE  
Heavy Vehicle 3.9%

In 611 Out 665  
Bicycles Right Thru Left U-Turn

1 35 514 61 0

Peds 0

U-Turn 0

Bicycles 1

**MacLeay at Cordon**

**Peak Hour Summary**

04:15 PM to 05:15 PM

Left 35

Right 41

Thru 42

Thru 30

Right 1

Left 28

Bicycles 0

U-Turn 0

Peds 0

U-Turn Left Thru Right Bicycles  
0 19 589 62 0

In 670 Out 543

Heavy Vehicle 4.9%

**Cordon Rd SE Northbound**

Data Provided by K-D-N.com 503-594-4224

N/S street	Cordon Rd SE		
E/W street	MacLeay Rd SE		
City, State	Salem OR		
Site Notes			
Location	44.91364	-	-122.953962
Start Date	Tuesday, June 06, 2017		
Start Time	03:00:00 PM		
Weather			
Study ID #			
Peak Hour Start	04:15:00 PM		
Peak 15 Min Start	04:15:00 PM		
PHF (15-Min Int)	0.97		

Eastbound  
MacLeay Rd SE  
Heavy Vehicle 2.6%

Out 84  
In 78

Westbound  
MacLeay Rd SE  
Heavy Vehicle 5.0%

In 99  
Out 165

Peak-Hour Volumes (PHV)

Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
19	589	62	0	61	514	35	0	35	42	1	0	28	30	41	0	670	610	78	99	543	665	84	165
5.3%	5.3%	1.6%	0.0%	3.3%	4.1%	2.9%	0.0%	2.9%	0.0%	100.0%	0.0%	7.1%	0.0%	7.3%	0.0%	4.9%	3.9%	2.6%	5.1%	4.4%	5.3%	2.4%	1.8%

PHV - Bicycles

PHV - Bicycles												PHV - Pedestrians									
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB	
0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0

All Vehicle Volumes

Time	Northbound Cordon Rd SE				Southbound Cordon Rd SE				Eastbound MacLeay Rd SE				Westbound MacLeay Rd SE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
03:00:00 PM	0	36	4	0	3	29	2	0	3	1	0	0	1	5	4	0		
03:05:00 PM	0	19	6	0	3	38	5	0	5	3	0	0	5	3	1	0		
03:10:00 PM	1	56	4	0	2	39	1	0	4	5	0	0	2	6	8	0	304	
03:15:00 PM	1	48	4	0	2	36	4	0	2	4	0	0	3	4	4	0	328	
03:20:00 PM	2	37	5	0	3	44	3	0	3	6	0	0	2	3	5	0	353	
03:25:00 PM	1	45	3	0	7	33	0	0	3	7	0	0	2	4	3	0	333	
03:30:00 PM	1	32	2	0	4	47	6	0	6	4	0	0	0	2	6	0	331	
03:35:00 PM	1	45	6	0	9	43	2	0	8	1	0	0	4	2	1	0	340	
03:40:00 PM	0	41	6	0	5	38	2	0	9	7	0	0	3	3	3	0	349	
03:45:00 PM	0	40	1	0	7	40	1	0	7	3	0	0	2	3	4	0	347	
03:50:00 PM	0	41	8	0	5	36	2	0	4	9	0	0	4	4	4	0	342	
03:55:00 PM	1	37	5	0	6	26	1	0	0	5	0	0	0	5	3	0	314	1300
04:00:00 PM	1	45	3	0	3	36	5	0	6	9	0	0	3	6	0	0	323	1329

04:05:00 PM	1	30	4	0	7	38	3	0	3	4	0	0	4	2	1	0	303	1338
04:10:00 PM	0	44	1	0	5	33	4	0	3	4	1	0	3	3	6	0	321	1317
04:15:00 PM	3	45	6	0	5	55	2	0	4	6	0	0	3	3	3	0	339	1340
04:20:00 PM	2	50	4	0	6	34	6	0	0	3	0	0	3	5	6	0	361	1346
04:25:00 PM	0	39	4	0	5	52	4	0	7	3	1	0	2	1	5	0	377	1361
04:30:00 PM	2	37	7	0	6	43	2	0	3	5	0	0	2	5	1	0	355	1364
04:35:00 PM	0	53	8	0	3	44	2	0	2	2	0	0	3	1	3	0	357	1363
04:40:00 PM	2	54	5	0	2	37	2	0	6	4	0	0	4	3	7	0	360	1372
04:45:00 PM	2	53	2	0	5	42	7	0	4	5	0	0	2	1	6	0	376	1393
04:50:00 PM	1	51	3	0	4	42	2	0	2	4	0	0	1	3	2	0	370	1391
04:55:00 PM	3	55	9	0	4	35	1	0	3	2	0	0	1	1	4	0	362	1420
05:00:00 PM	1	46	4	0	6	48	2	0	1	2	0	0	2	4	0	0	349	1419
05:05:00 PM	0	55	4	0	6	36	4	0	0	3	0	0	3	1	2	0	348	1436
05:10:00 PM	3	51	6	0	9	46	1	0	3	3	0	0	2	2	2	0	358	1457
05:15:00 PM	1	39	6	0	5	28	3	0	3	9	0	0	5	1	4	0	346	1426
05:20:00 PM	0	45	4	0	5	36	2	0	2	3	0	0	3	6	8	0	346	1421
05:25:00 PM	2	47	6	0	8	45	1	0	4	8	0	0	3	2	5	0	349	1429
05:30:00 PM	0	31	4	0	4	46	2	0	2	5	0	0	0	3	1	0	343	1414
05:35:00 PM	2	45	8	0	6	50	0	0	3	3	0	0	0	3	0	0	349	1413
05:40:00 PM	2	50	5	0	9	59	1	0	3	3	0	0	1	7	1	0	359	1428
05:45:00 PM	0	58	5	0	7	37	2	0	7	7	0	0	0	1	7	0	392	1430
05:50:00 PM	2	48	5	0	6	34	5	0	7	14	1	0	3	3	1	0	401	1444
05:55:00 PM	2	36	3	0	9	21	1	0	1	5	0	0	4	2	7	0	351	1417



**Southbound  
Cordon Rd SE**  
Heavy Vehicle 3.8%

In	626	Out	753
Bicycles	Right	Thru	Left U-Turn

1 35 443 147 0

Peds 0

U-Turn 0

Bicycles 0

**Cordon at Gaffin**

**Peak Hour Summary**

04:15 PM to 05:15 PM

Left 28

Right 137

Thru 0

Thru 3

Right 18

Left 42

Bicycles 0

U-Turn 0

Peds 0

U-Turn	Left	Thru	Right	Bicycles
0	21	588	42	0

In	651	Out	503
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Heavy Vehicle 3.8%  
**Cordon Rd SE**  
**Northbound**

Data Provided by K-D-N.com 503-594-4224

N/S street	Cordon Rd SE		
E/W street	Gaffin Rd SE		
City, State	Salem OR		
Site Notes			
Location	44.911095	-	-122.957446
Start Date	Wednesday, June 07, 2017		
Start Time	03:00:00 PM		
Weather			
Study ID #			
Peak Hour Start	04:15:00 PM		
Peak 15 Min Start	04:35:00 PM		
PHF (15-Min Int)	0.96		

Eastbound  
Gaffin Rd SE  
Heavy Vehicle:2.2%



Westbound  
Gaffin Rd SE  
Heavy Vehicle:4.4%



Peak-Hour Volumes (PHV)

Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
21	588	42	0	147	443	35	0	28	0	18	0	42	3	137	0	651	625	46	182	503	753	59	189
0.0%	2.7%	21.4%	0.0%	6.1%	3.4%	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	7.1%	0.0%	3.6%	0.0%	3.8%	3.8%	2.2%	4.4%	3.8%	2.8%	0.0%	9.5%

PHV - Bicycles

PHV - Bicycles																PHV - Pedestrians					
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB	
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

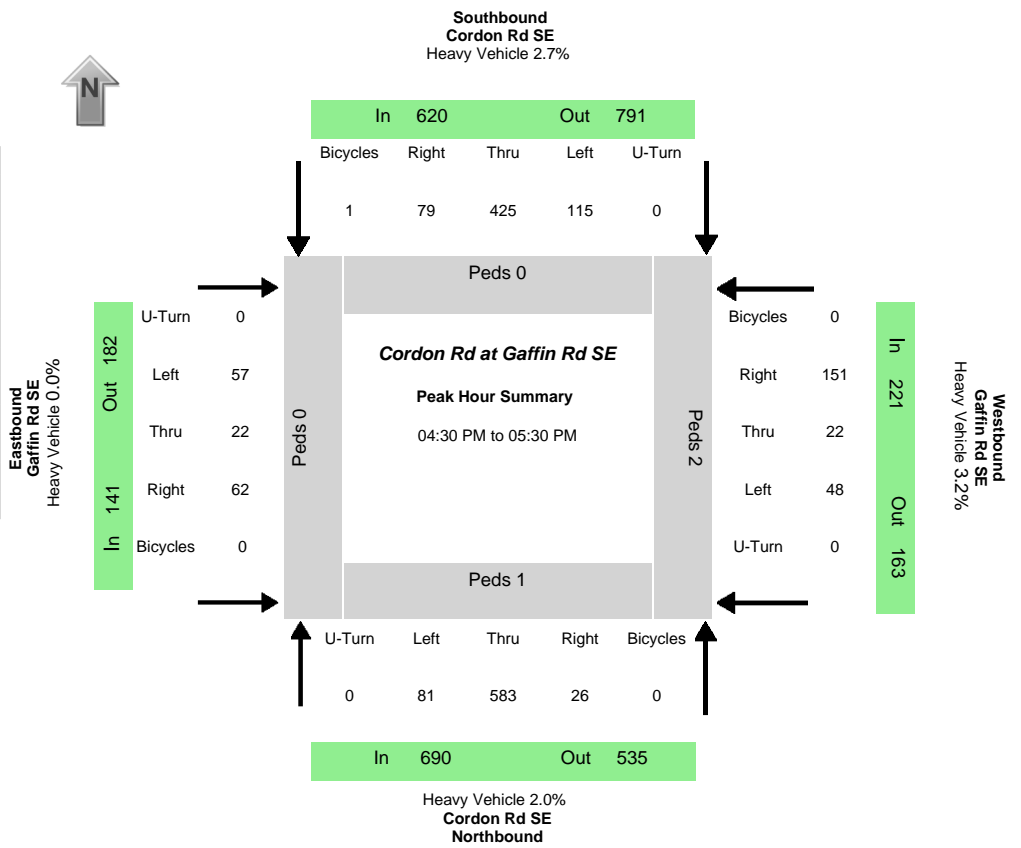
All Vehicle Volumes

Time	Northbound Cordon Rd SE				Southbound Cordon Rd SE				Eastbound Gaffin Rd SE				Westbound Gaffin Rd SE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
03:00:00 PM	2	24	2	0	10	23	1	0	3	0	3	0	5	0	13	0		
03:05:00 PM	1	25	2	0	15	36	0	0	0	0	2	0	3	0	7	0		
03:10:00 PM	1	50	2	0	12	31	4	0	2	1	2	0	5	0	12	0	299	
03:15:00 PM	1	46	3	0	9	34	0	0	1	0	0	0	3	0	13	0	323	
03:20:00 PM	1	34	3	0	8	41	2	0	3	0	1	0	4	0	11	0	340	
03:25:00 PM	2	54	2	0	6	35	1	0	1	0	0	0	5	0	8	0	332	
03:30:00 PM	1	29	1	0	13	47	2	0	1	0	2	0	0	0	11	0	329	
03:35:00 PM	2	50	3	0	10	44	1	0	0	0	1	0	3	0	8	0	343	
03:40:00 PM	2	49	5	0	11	30	0	0	0	0	0	0	3	0	10	0	339	
03:45:00 PM	1	34	2	0	5	34	2	0	2	0	0	0	6	1	7	0	326	
03:50:00 PM	3	44	3	0	12	37	1	0	1	1	2	0	3	0	10	0	321	
03:55:00 PM	2	41	2	0	6	28	3	0	0	0	1	0	0	3	6	0	303	1273
04:00:00 PM	0	44	6	0	7	41	3	0	1	0	0	0	3	1	23	0	338	1316

04:05:00 PM	1	32	1	0	5	34	3	0	5	0	2	0	3	1	7	0	315	1319
04:10:00 PM	1	45	2	0	10	35	3	0	2	0	3	0	3	0	8	0	335	1309
04:15:00 PM	1	43	6	0	14	44	4	0	4	0	4	0	3	0	13	0	342	1335
04:20:00 PM	1	58	4	0	12	38	3	0	2	0	2	0	2	0	7	0	377	1356
04:25:00 PM	2	39	1	0	17	42	2	0	2	0	2	0	5	0	8	0	385	1362
04:30:00 PM	3	42	0	0	15	27	2	0	3	0	3	0	3	0	8	0	355	1361
04:35:00 PM	0	51	6	0	10	46	2	0	3	0	1	0	5	0	15	0	365	1378
04:40:00 PM	3	50	4	0	12	43	0	0	5	0	2	0	2	0	11	0	377	1400
04:45:00 PM	2	41	4	0	8	37	7	0	1	0	0	0	3	0	18	0	392	1427
04:50:00 PM	0	51	6	0	12	32	5	0	1	0	0	0	5	0	11	0	376	1433
04:55:00 PM	3	57	3	0	16	31	1	0	1	0	1	0	1	1	12	0	371	1468
05:00:00 PM	2	49	5	0	11	31	2	0	3	0	1	0	5	1	7	0	367	1456
05:05:00 PM	2	49	1	0	12	37	4	0	2	0	1	0	4	0	17	0	373	1491
05:10:00 PM	2	58	2	0	8	35	3	0	1	0	1	0	4	1	10	0	371	1504
05:15:00 PM	2	43	3	0	11	29	2	0	1	1	2	0	5	0	7	0	360	1474
05:20:00 PM	1	46	3	0	7	42	5	0	2	0	3	0	4	1	13	0	358	1472
05:25:00 PM	3	52	2	0	8	33	5	0	1	2	0	0	2	0	11	0	352	1471
05:30:00 PM	3	30	3	0	16	31	5	0	0	0	2	0	2	0	14	0	352	1471
05:35:00 PM	0	45	4	0	8	45	2	0	4	0	3	0	1	0	13	0	350	1457
05:40:00 PM	0	53	1	0	18	49	3	0	3	0	3	0	1	1	11	0	374	1468
05:45:00 PM	3	54	1	0	12	41	3	0	4	0	1	0	2	1	6	0	396	1475
05:50:00 PM	3	54	3	0	11	31	3	0	5	2	0	0	1	1	9	0	394	1475
05:55:00 PM	1	33	3	0	8	26	1	0	2	0	2	0	4	1	7	0	339	1436

Data Provided by K-D-N.com 503-594-4224

N/S street	Cordon Rd SE
E/W street	Gaffin Rd SE
City, State	Salem OR
Site Notes	
Location	44.911069 - -122.957407
Start Date	Wednesday, September 26, 2018
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:30:00 PM
Peak 15 Min Start	04:40:00 PM
PHF (15-Min Int)	0.92



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
81	583	26	0	115	425	79	0	57	22	62	0	48	22	151	0	690	619	141	221	535	791	182	163
Percent Heavy Vehicles																							
0.0%	2.1%	7.7%	0.0%	5.2%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	4.0%	0.0%	2.0%	2.7%	0.0%	3.2%	2.2%	2.3%	0.0%	4.9%

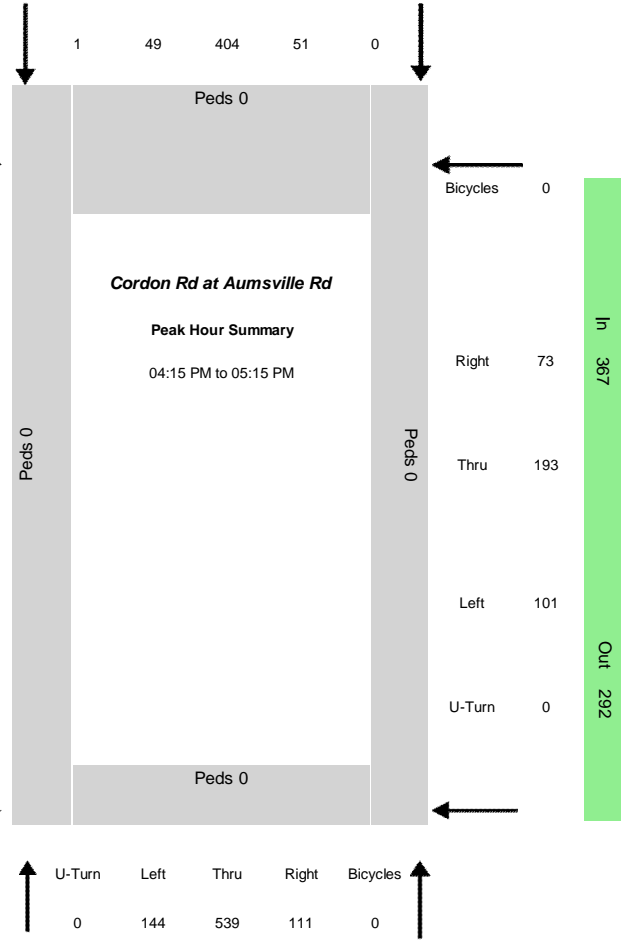
PHV - Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	3

Time	Northbound Cordon Rd SE				Southbound Cordon Rd SE				Eastbound Gaffin Rd SE				Westbound Gaffin Rd SE				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
04:00:00 PM	4	33	4	0	8	35	5	0	5	4	7	0	6	3	14	0		
04:05:00 PM	9	42	3	0	10	31	7	0	2	4	2	0	6	1	8	0		
04:10:00 PM	2	43	3	0	6	40	6	0	3	1	7	0	3	2	12	0	381	
04:15:00 PM	4	51	1	0	16	30	6	0	2	0	3	0	5	4	17	0	392	
04:20:00 PM	7	50	6	0	20	32	8	0	3	0	5	0	1	1	11	0	411	
04:25:00 PM	5	34	2	0	12	30	11	0	3	0	5	0	2	1	9	0	397	
04:30:00 PM	8	36	1	0	10	31	7	0	6	3	5	0	9	0	6	0	380	
04:35:00 PM	5	42	2	0	7	37	3	0	5	3	6	0	5	3	10	0	364	
04:40:00 PM	7	52	3	0	10	39	6	0	6	0	4	0	5	2	15	0	399	
04:45:00 PM	6	53	3	0	8	37	6	0	3	2	6	0	5	2	17	0	425	
04:50:00 PM	4	69	2	0	8	36	7	0	4	3	4	0	2	3	14	0	453	
04:55:00 PM	6	62	0	0	9	35	8	0	7	2	4	0	4	3	8	0	452	1629
05:00:00 PM	3	43	3	0	13	36	7	0	4	4	5	0	2	1	13	0	438	1635
05:05:00 PM	11	52	2	0	12	35	4	0	2	0	3	0	2	3	12	0	420	1648
05:10:00 PM	12	37	2	0	10	33	5	0	2	1	6	0	4	1	15	0	400	1648
05:15:00 PM	6	43	3	0	11	30	7	0	13	2	4	0	4	2	16	0	407	1650
05:20:00 PM	8	46	4	0	9	42	8	0	4	0	10	0	3	2	16	0	421	1658
05:25:00 PM	5	48	1	0	8	34	11	0	1	2	5	0	3	0	9	0	420	1671
05:30:00 PM	5	33	2	0	7	35	3	0	3	3	2	0	2	1	10	0	385	1655
05:35:00 PM	9	49	0	0	13	43	1	0	2	3	1	0	2	0	13	0	369	1663
05:40:00 PM	7	51	1	0	5	47	5	0	4	3	4	0	2	4	7	0	382	1654
05:45:00 PM	6	34	1	0	15	34	6	0	6	1	3	0	2	0	16	0	400	1630
05:50:00 PM	4	29	1	0	4	31	3	0	2	1	10	0	1	2	9	0	361	1571
05:55:00 PM	2	56	1	0	9	35	7	0	3	1	4	0	2	2	4	0	347	1549



Southbound  
Cordon Rd  
Heavy Vehicle 3.6%

In	505	Out	648
Bicycles	Right	Thru	Left
			U-Turn



Data Provided by K-D-N.com 503-594-4224

N/S street	Cordon Rd		
E/W street	Aumville Rd		
City, State	Salem OR		
Site Notes			
Location	44.900479 - -122.970142		
Start Date	Tuesday, June 06, 2017		
Start Time	03:00:00 PM		
Weather			
Study ID #			
Peak Hour Start	04:15:00 PM		
Peak 15 Min Start	05:00:00 PM		
PHF (15-Min Int)	0.96		

Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
144	539	111	0	51	404	49	0	36	130	177	0	101	193	73	0	794	504	343	367	682	648	386	292
2.8%	3.9%	9.0%	0.0%	3.9%	3.7%	2.0%	0.0%	16.7%	10.8%	0.6%	0.0%	5.0%	1.6%	0.0%	0.0%	4.4%	3.6%	6.1%	2.2%	3.1%	4.2%	2.1%	8.9%

PHV- Bicycles																PHV - Pedestrians					
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB	
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

Time	Northbound Cordon Rd				Southbound Cordon Rd				Eastbound Aumville Rd				Westbound Aumville Rd				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
03:00:00 PM	18	23	9	0	2	14	5	0	2	15	6	0	5	17	1	0		
03:05:00 PM	6	26	6	0	5	34	2	0	10	10	10	0	3	12	2	0		
03:10:00 PM	16	51	11	0	1	39	7	0	2	4	17	0	9	10	3	0	413	
03:15:00 PM	13	49	6	0	0	35	4	0	3	10	19	0	7	12	4	0	458	
03:20:00 PM	9	20	7	0	4	36	6	0	0	9	12	0	5	9	8	0	457	
03:25:00 PM	14	47	8	0	4	30	5	0	4	11	14	0	2	13	4	0	443	
03:30:00 PM	10	27	4	0	1	40	5	0	5	7	16	0	3	9	7	0	415	
03:35:00 PM	22	51	4	0	4	31	7	0	1	21	10	0	8	19	7	0	475	
03:40:00 PM	14	39	5	0	4	35	7	0	4	11	11	0	3	17	3	0	472	
03:45:00 PM	14	42	8	0	1	32	6	0	5	8	13	0	10	8	2	0	487	
03:50:00 PM	15	33	3	0	5	32	6	0	6	10	13	0	4	21	7	0	457	
03:55:00 PM	11	43	4	0	5	24	2	0	2	10	10	0	7	13	4	0	439	1767
04:00:00 PM	13	34	7	0	4	34	1	0	1	9	11	0	5	10	4	0	423	1783

04:05:00 PM	23	32	9	0	5	31	6	0	3	11	17	0	9	10	3	0	427	1816
04:10:00 PM	9	43	12	0	1	33	3	0	1	10	11	0	5	11	6	0	437	1791
04:15:00 PM	10	39	12	0	3	38	9	0	4	12	15	0	9	18	2	0	475	1800
04:20:00 PM	12	48	4	0	3	28	5	0	5	12	16	0	6	20	9	0	484	1843
04:25:00 PM	6	37	5	0	3	44	6	0	7	12	9	0	5	9	4	0	486	1834
04:30:00 PM	11	37	8	0	6	18	6	0	1	10	19	0	8	15	4	0	458	1843
04:35:00 PM	10	54	10	0	4	54	6	0	1	9	19	0	4	17	8	0	486	1854
04:40:00 PM	15	51	8	0	4	34	2	0	1	3	10	0	10	13	6	0	496	1858
04:45:00 PM	11	35	8	0	6	24	4	0	3	17	20	0	14	18	8	0	521	1877
04:50:00 PM	19	34	12	0	2	33	1	0	2	11	14	0	6	7	6	0	472	1869
04:55:00 PM	11	63	14	0	8	25	6	0	1	15	17	0	6	13	7	0	501	1920
05:00:00 PM	12	39	6	0	9	28	1	0	4	11	15	0	12	17	7	0	494	1948
05:05:00 PM	14	43	8	0	1	39	1	0	2	7	11	0	17	25	8	0	523	1965
05:10:00 PM	13	59	16	0	2	39	2	0	5	11	12	0	4	21	4	0	525	2008
05:15:00 PM	12	41	19	0	1	29	4	0	5	6	15	0	10	14	4	0	524	1997
05:20:00 PM	12	39	14	0	6	35	7	0	4	9	14	0	5	13	5	0	511	1992
05:25:00 PM	9	46	12	0	1	31	4	0	4	7	16	0	6	14	6	0	479	2001
05:30:00 PM	19	25	12	0	0	28	6	0	2	8	16	0	8	5	3	0	451	1990
05:35:00 PM	22	50	12	0	3	26	7	0	6	13	11	0	5	8	1	0	452	1958
05:40:00 PM	11	56	7	0	7	48	8	0	1	9	11	0	9	10	5	0	478	1983
05:45:00 PM	14	43	13	0	5	34	5	0	8	7	8	0	9	9	2	0	503	1972
05:50:00 PM	11	41	7	0	3	26	9	0	3	15	13	0	4	9	4	0	484	1970
05:55:00 PM	13	40	6	0	5	26	4	0	4	7	15	0	6	10	1	0	439	1921



**Portland Rd at  
Hazelgreen Rd  
AM Turning Movements  
Tuesday, March 15, 2022**

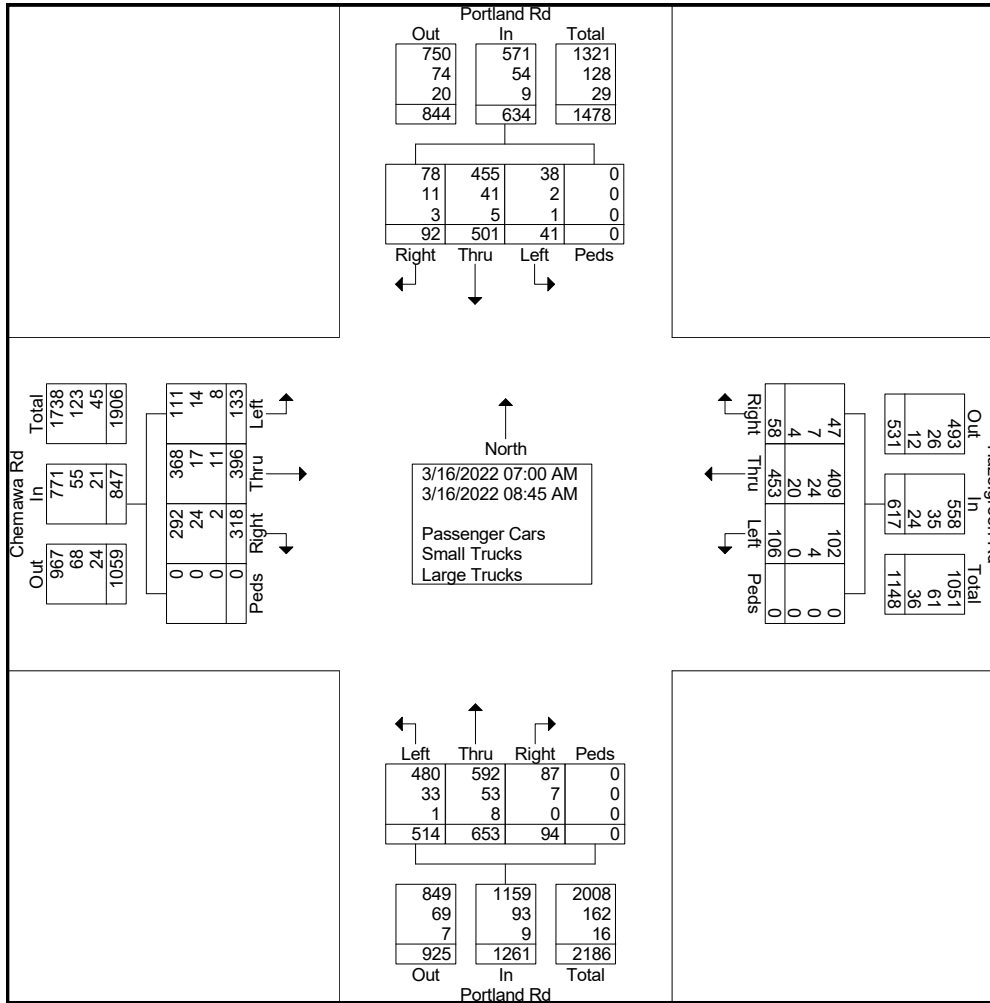
**File Name : Portland Rd at Hazelgreen Rd AM Combined  
Site Code :  
Start Date : 3/16/2022  
Page No : 1**

Groups Printed- Passenger Cars - Small Trucks - Large Trucks

Start Time	Portland Rd From North					Hazelgreen Rd From East					Portland Rd From South					Chemawa Rd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	10	42	2	0	54	7	48	8	0	63	11	110	71	0	192	25	50	13	0	88	397
07:15 AM	9	68	5	0	82	6	53	11	0	70	14	102	71	0	187	29	60	15	0	104	443
07:30 AM	14	76	5	0	95	9	55	18	0	82	11	118	63	0	192	41	64	27	0	132	501
07:45 AM	12	84	5	0	101	6	65	20	0	91	14	94	56	0	164	46	66	20	0	132	488
Total	45	270	17	0	332	28	221	57	0	306	50	424	261	0	735	141	240	75	0	456	1829
08:00 AM	10	74	10	0	94	9	59	11	0	79	11	54	76	0	141	53	27	21	0	101	415
08:15 AM	9	45	3	0	57	6	42	10	0	58	19	68	61	0	148	35	46	11	0	92	355
08:30 AM	20	52	7	0	79	7	66	13	0	86	10	61	62	0	133	37	46	15	0	98	396
08:45 AM	8	60	4	0	72	8	65	15	0	88	4	46	54	0	104	52	37	11	0	100	364
Total	47	231	24	0	302	30	232	49	0	311	44	229	253	0	526	177	156	58	0	391	1530
Grand Total	92	501	41	0	634	58	453	106	0	617	94	653	514	0	1261	318	396	133	0	847	3359
Apprch %	14.5	79	6.5	0		9.4	73.4	17.2	0		7.5	51.8	40.8	0		37.5	46.8	15.7	0		
Total %	2.7	14.9	1.2	0	18.9	1.7	13.5	3.2	0	18.4	2.8	19.4	15.3	0	37.5	9.5	11.8	4	0	25.2	
Passenger Cars																					
% Passenger Cars	84.8	90.8	92.7	0	90.1	81	90.3	96.2	0	90.4	92.6	90.7	93.4	0	91.9	91.8	92.9	83.5	0	91	91.1
Small Trucks	11	41	2	0	54	7	24	4	0	35	7	53	33	0	93	24	17	14	0	55	237
% Small Trucks	12	8.2	4.9	0	8.5	12.1	5.3	3.8	0	5.7	7.4	8.1	6.4	0	7.4	7.5	4.3	10.5	0	6.5	7.1
Large Trucks	3	5	1	0	9	4	20	0	0	24	0	8	1	0	9	2	11	8	0	21	63
% Large Trucks	3.3	1	2.4	0	1.4	6.9	4.4	0	0	3.9	0	1.2	0.2	0	0.7	0.6	2.8	6	0	2.5	1.9

Portland Rd at  
Hazelgreen Rd  
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Tuesday, March 15, 2022

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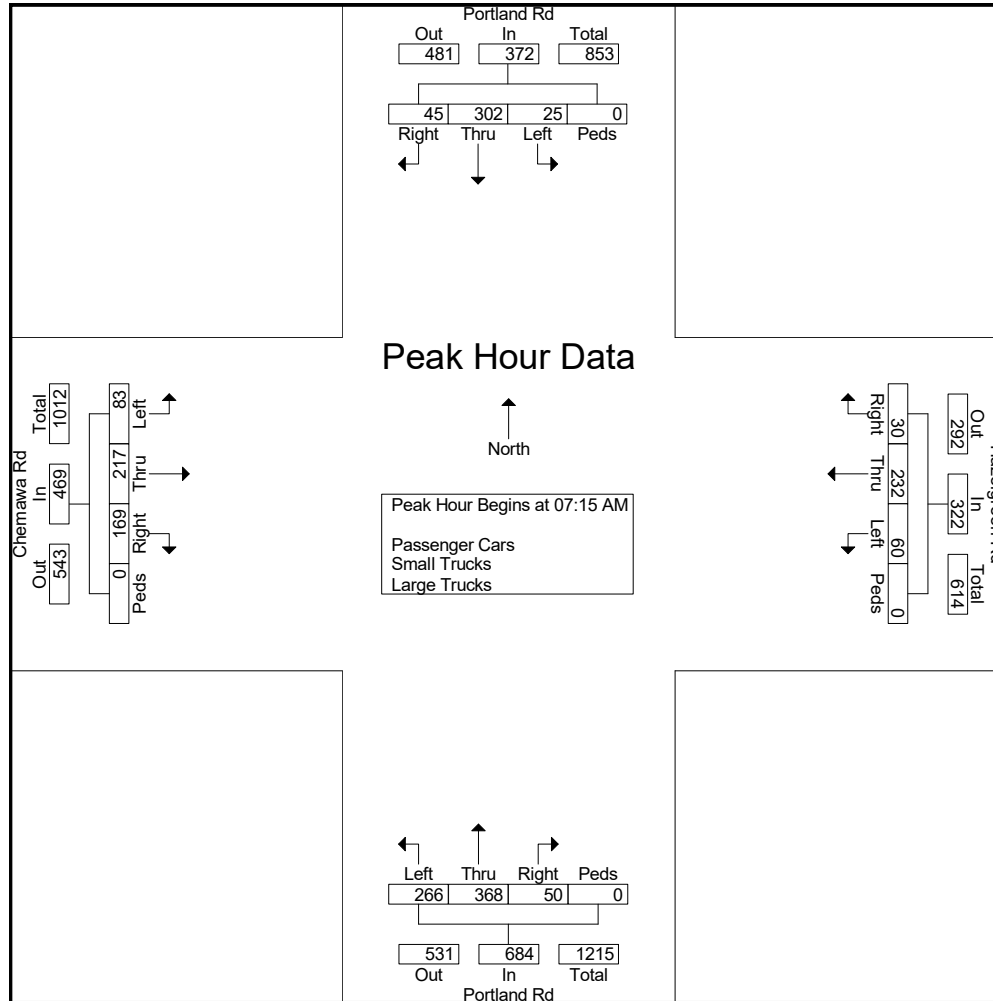
**Portland Rd at  
Hazelgreen Rd  
AM Turning Movements  
Tuesday, March 15, 2022**

**File Name : Portland Rd at Hazelgreen Rd AM Combined  
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Start Time	Portland Rd From North					Hazelgreen Rd From East					Portland Rd From South					Chemawa Rd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	9	68	5	0	82	6	53	11	0	70	<b>14</b>										
07:30 AM	<b>14</b>	76	5	0	95	<b>9</b>	55	18	0	82	11	<b>118</b>	63	0	<b>192</b>	41	64	<b>27</b>	0	<b>132</b>	<b>501</b>
07:45 AM	12	<b>84</b>	5	0	<b>101</b>	6	<b>65</b>	<b>20</b>	0	<b>91</b>	14	94	56	0	164	46	<b>66</b>	20	0	132	488
08:00 AM	10	74	<b>10</b>	0	94	9	59	11	0	79	11	54	<b>76</b>	0	141	<b>53</b>	27	21	0	101	415
Total Volume	45	302	25	0	372	30	232	60	0	322	50	368	266	0	684	169	217	83	0	469	1847
% App. Total	12.1	81.2	6.7	0		9.3	72	18.6	0		7.3	53.8	38.9	0		36	46.3	17.7	0		
PHF	.804	.899	.625	.000	.921	.833	.892	.750	.000	.885	.893	.780	.875	.000	.891	.797	.822	.769	.000	.888	.922

Portland Rd at  
Hazelgreen Rd  
AM Turning Movements  
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File Name : Portland Rd at Hazelgreen Rd AM Combined  
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**Portland Rd at  
Hazelgreen Rd  
PM Turning Movements  
Tuesday, March 15, 2022**

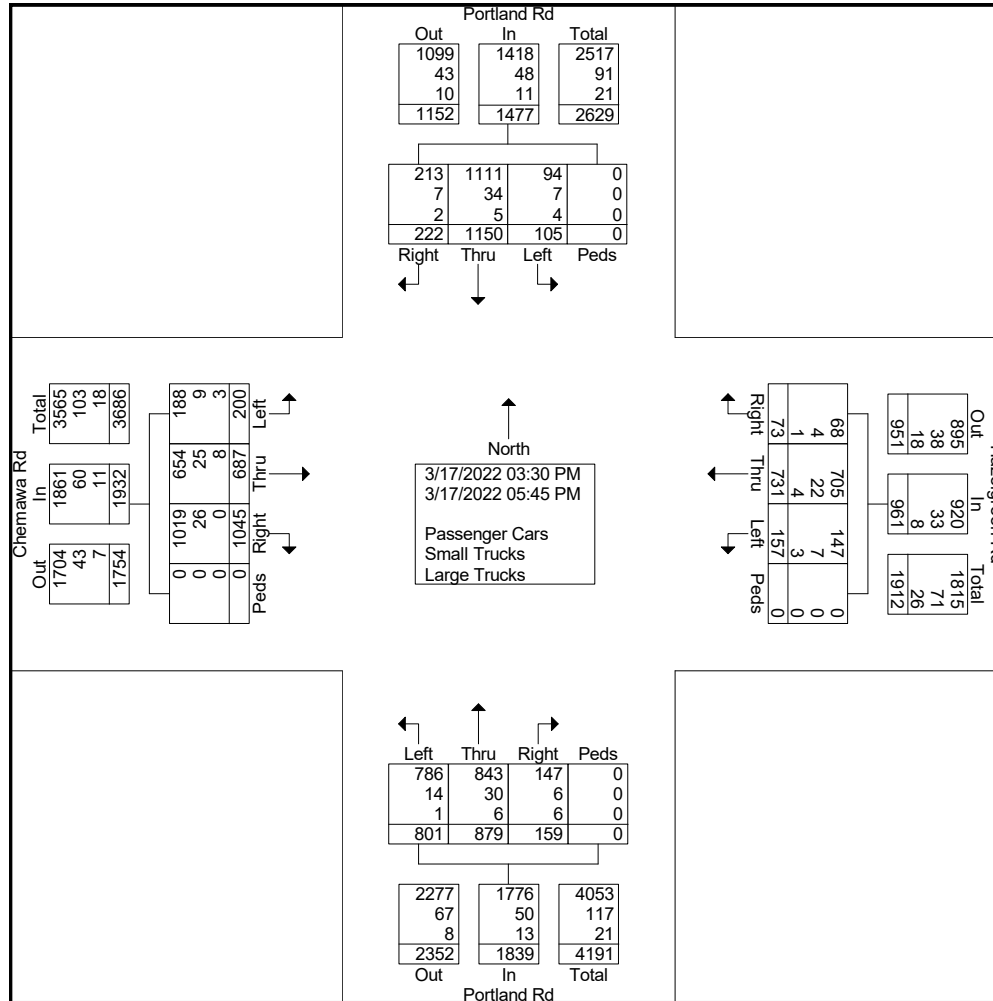
**File Name : Portland Rd at Hazelgreen PM Combined  
Site Code :  
Start Date : 3/17/2022  
Page No : 1**

Groups Printed- Passenger Cars - Small Trucks - Large Trucks

Start Time	Portland Rd From North					Hazelgreen Rd From East					Portland Rd From South					Chemawa Rd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:30 PM	19	91	9	0	119	3	66	16	0	85	16	100	86	0	202	82	67	19	0	168	574
03:45 PM	13	129	5	0	147	11	84	16	0	111	12	86	65	0	163	88	73	22	0	183	604
Total	32	220	14	0	266	14	150	32	0	196	28	186	151	0	365	170	140	41	0	351	1178
04:00 PM	26	109	7	0	142	6	61	13	0	80	21	97	70	0	188	117	72	19	0	208	618
04:15 PM	35	127	8	0	170	8	87	18	0	113	18	74	88	0	180	97	66	26	0	189	652
04:30 PM	24	137	13	0	174	8	90	9	0	107	20	79	93	0	192	95	76	20	0	191	664
04:45 PM	25	109	16	0	150	7	82	14	0	103	18	96	93	0	207	129	59	24	0	212	672
Total	110	482	44	0	636	29	320	54	0	403	77	346	344	0	767	438	273	89	0	800	2606
05:00 PM	22	131	6	0	159	6	60	20	0	86	17	89	70	0	176	129	81	20	0	230	651
05:15 PM	23	120	15	0	158	9	74	22	0	105	12	91	86	0	189	105	72	26	0	203	655
05:30 PM	21	93	12	0	126	10	76	13	0	99	11	87	83	0	181	116	69	14	0	199	605
05:45 PM	14	104	14	0	132	5	51	16	0	72	14	80	67	0	161	87	52	10	0	149	514
Total	80	448	47	0	575	30	261	71	0	362	54	347	306	0	707	437	274	70	0	781	2425
Grand Total	222	1150	105	0	1477	73	731	157	0	961	159	879	801	0	1839	1045	687	200	0	1932	6209
Apprch %	15	77.9	7.1	0		7.6	76.1	16.3	0		8.6	47.8	43.6	0		54.1	35.6	10.4	0		
Total %	3.6	18.5	1.7	0	23.8	1.2	11.8	2.5	0	15.5	2.6	14.2	12.9	0	29.6	16.8	11.1	3.2	0	31.1	
Passenger Cars																					
% Passenger Cars	95.9	96.6	89.5	0	96	93.2	96.4	93.6	0	95.7	92.5	95.9	98.1	0	96.6	97.5	95.2	94	0	96.3	96.2
Small Trucks	7	34	7	0	48	4	22	7	0	33	6	30	14	0	50	26	25	9	0	60	191
% Small Trucks	3.2	3	6.7	0	3.2	5.5	3	4.5	0	3.4	3.8	3.4	1.7	0	2.7	2.5	3.6	4.5	0	3.1	3.1
Large Trucks	2	5	4	0	11	1	4	3	0	8	6	6	1	0	13	0	8	3	0	11	43
% Large Trucks	0.9	0.4	3.8	0	0.7	1.4	0.5	1.9	0	0.8	3.8	0.7	0.1	0	0.7	0	1.2	1.5	0	0.6	0.7

Portland Rd at  
Hazelgreen Rd  
PM Turning Movements  
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File Name : Portland Rd at Hazelgreen PM Combined  
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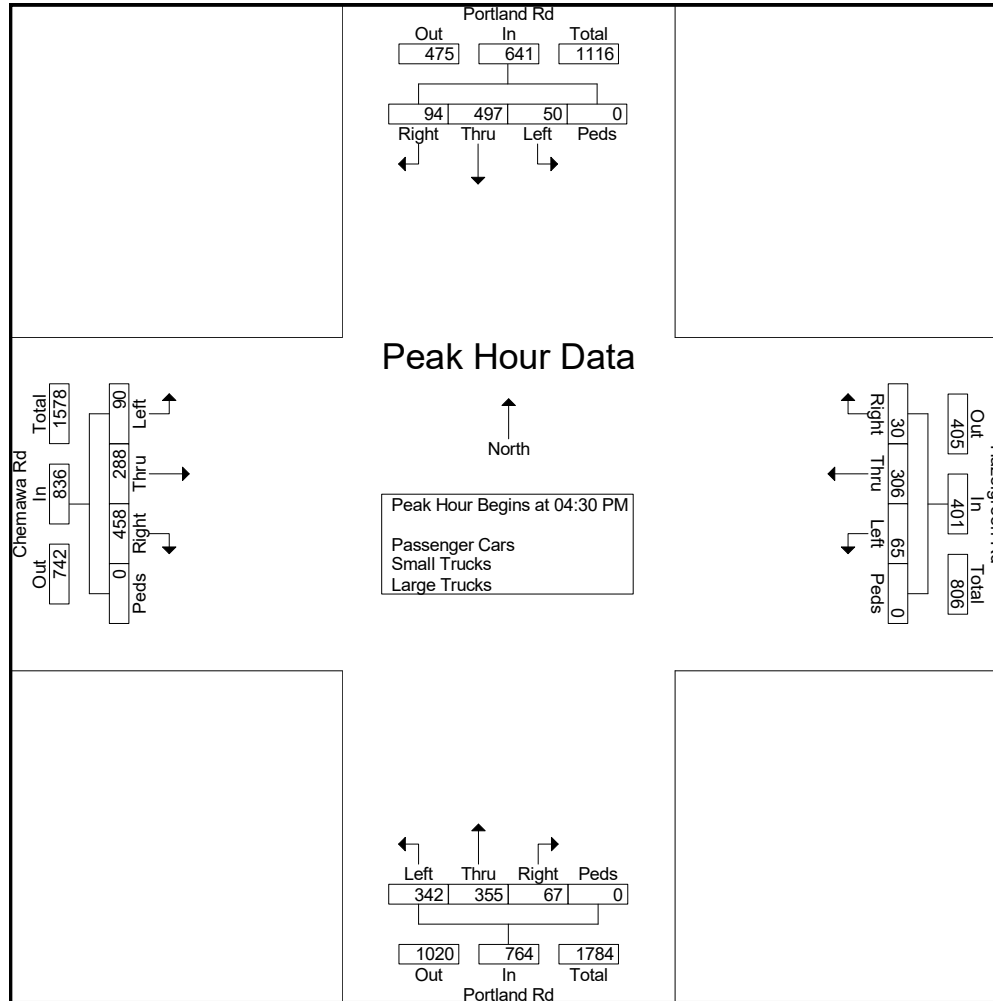
**Portland Rd at  
Hazelgreen Rd  
PM Turning Movements  
Tuesday, March 15, 2022**

**File Name : Portland Rd at Hazelgreen PM Combined  
Site Code :  
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Start Time	Portland Rd From North					Hazelgreen Rd From East					Portland Rd From South					Chemawa Rd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 03:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	24	<b>137</b>			<b>174</b>		<b>90</b>			<b>107</b>	<b>20</b>		<b>93</b>								
04:45 PM	<b>25</b>	109	<b>16</b>	0	150	7	82	14	0	103	18	<b>96</b>	93	0	<b>207</b>	<b>129</b>	59	24	0	212	<b>672</b>
05:00 PM	22	131	6	0	159	6	60	20	0	86	17	89	70	0	176	129	<b>81</b>	20	0	<b>230</b>	651
05:15 PM	23	120	15	0	158	<b>9</b>	74	<b>22</b>	0	105	12	91	86	0	189	105	72	<b>26</b>	0	203	655
Total Volume	94	497	50	0	641	30	306	65	0	401	67	355	342	0	764	458	288	90	0	836	2642
% App. Total	14.7	77.5	7.8	0		7.5	76.3	16.2	0		8.8	46.5	44.8	0		54.8	34.4	10.8	0		
PHF	.940	.907	.781	.000	.921	.833	.850	.739	.000	.937	.838	.924	.919	.000	.923	.888	.889	.865	.000	.909	.983

Portland Rd at  
Hazelgreen Rd  
PM Turning Movements  
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File Name : Portland Rd at Hazelgreen PM Combined  
Site Code :  
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## APPENDIX C – ADJUSTMENT FACTOR CALCULATIONS

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ATR Characteristic Table

Seasonal T Area Type	# of Lanes	Weekly Traffic Trend	2019 AADT	OHP Classification	ATR	County	Highway Route, Name, Location	MP	State Highway Number
Rural	2	Weekday	13031		24-001	Marion	OR 99E, Pacific Highway East, Woodburn	34.03	81
Rural		Weekday	14547		27-002	Polk	OR 221, Salem-Dayton Highway, Brush Colleg	18.6	150

24-001

2019 SEASONAL TRAFFIC DATA				
Month	Weekday		Daily	
	Average	% AADT	Average	% AADT
January	11522	88	11087	85
February	11619	89	11195	86
March	12531	96	12165	93
April	13335	102	13139	101
May	13563	104	13366	103
June	15249	117	14541	112
July	14889	114	14491	111
August	14640	112	14341	110
September	14221	109	13923	107
October	14397	110	14351	110
November	12838	99	12296	94
December	12059	93	11474	88

2018	2018	Average of 2018-2019
Weekday	Daily	Daily
91	88	86.54
96	92	88.96
100	96	94.68
105	102	101.41
106	105	103.79
109	105	108.29
109	107	109.10
109	107	108.53
106	105	105.92
106	107	108.56
100	96	95.18
93	89	88.53

\*Yellow highlight indicates highest %AADT

27-002

2019 SEASONAL TRAFFIC DATA				
Month	Weekday		Daily	
	Average	% AADT	Average	% AADT
January	14061	97	13318	92
February	13488	93	12883	89
March	14869	102	14223	98
April	15767	108	15068	104
May	15901	109	15495	107
June	16104	111	15520	107
July	15808	109	15118	104
August	16116	111	15456	106
September	15681	108	15175	104
October	15415	106	14838	102
November	14694	101	13984	96
December	14089	97	13481	93

2018	2018	Average of 2018-2019
Weekday	Daily	Daily
96	93	92.28
99	95	91.78
102	97	97.39
106	101	102.29
107	104	105.26
108	104	105.34
108	103	103.46
111	107	106.62
107	103	103.66
106	102	102.00
101	96	96.06
98	94	93.34

\*Yellow highlight indicates highest %AADT

Final Seasonal Adjustment

Month	% AADT	Seasonal Adjustment
January	89.41	1.203
February	90.37	1.190
March	96.03	1.120
April	101.85	1.056
May	104.52	1.029
June	106.82	1.007
July	106.28	1.012
August	107.58	1.000
September	104.79	1.027
October	105.28	1.022
November	95.62	1.125
December	90.93	1.183

## APPENDIX D – GROWTH FACTOR CALCULATIONS

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AM			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Total
Cordon Rd/ Gaffin Rd (2017)	6/7/2017	0.0076	19	327	22	92	505	22	29	4	26	34	0	115	1196
Cordon Rd/ Gaffin Rd (2018)	9/26/2018	0.0278	25	323	22	57	486	35	40	16	93	40	14	128	1279
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Total
Cordon Rd/ Lancaster Dr (2017)	6/6/2017	0.0076	102	300	125	43	477	44	33	180	129	100	111	34	1679
Cordon Rd/ Lancaster Dr (2021)	12/2/2021	0.1664	80	280	139	129	532	52	27	262	107	93	174	55	1932
															0.037663 Total entering volume % change per year

PM			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Total
Cordon Rd/ Gaffin Rd (2017)	6/7/2017	0.0076	21	592	42	148	446	35	28	0	18	42	3	138	1515
Cordon Rd/ Gaffin Rd (2018)	9/26/2018	0.0278	83	599	27	118	437	81	59	23	64	49	23	155	1717
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Total
Cordon Rd/ Lancaster Dr (2017)	6/6/2017	0.0076	115	543	112	51	407	49	36	131	178	102	194	74	1993
Cordon Rd/ Lancaster Dr (2021)	12/9/2021	0.1664	145	436	114	90	441	50	50	253	187	131	241	133	2271
															0.034865 Total entering volume % change per year

NOTES:

Goal was to find a growth factor for the Corridor of Cordon Rd

The counts were first seasonally adjusted separately from this spreadsheet using ATR data

Seasonally adjusted counts were used to determine the growth rate

There were two intersections with multiple sets of counts in the past 5 years, Gaffin/Cordon and Lancaster/Cordon

For these two intersections, the total entering vehicles was summed for the two different counts for each. (Column

Then the percent difference of the counts was calculated. The Lancaster intersection was divided by 4 to get the per rate increase (Column T, highlighted in orange and green)

AM			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
Cordon Rd/ Herrin Rd	2/2/2022	0.1817	40	404	0	0	414	21	18	0	43	0	0	0	
Cordon Rd/ Silverton Rd	6/6/2017	0.0076	168	279	155	11	333	102	68	164	134	216	327	2	
NB												SB			
										Herrin	444				456
										Silverton	349				445
												0.274474	0.054895	0.0241984	0.00484

% Change per year highlighted

PM			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
Cordon Rd/ Herrin Rd	2/1/2022	0.1817	56	499	0	0	552	35	21	0	52	0	0	0	
Cordon Rd/ Silverton Rd	6/6/2017	0.0076	157	324	215	9	427	139	104	325	215	178	305	5	
NB												SB			
										Herrin	554				604
										Silverton	433				575
												0.279156	0.055831	0.0495518	0.00991

% Change per year highlighted

AM			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
Cordon Rd/ Hayesville Dr	10/3/2018	0.0229	165	254	0	0	232	32	25	0	220	0	0	0	
Cordon Rd/ Ward Dr	2/1/2022	0.1817	38	310	0	0	350	12	18	0	61	0	0	0	
NB												SB			
										Hayesville	418				452
										Ward	327				362
												-0.2176	-0.0544	-0.200215	-0.05005

% Change per year highlighted

PM			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
Cordon Rd/ Hayesville Dr	10/2/2018	0.0229	98	301	0	0	440	46	14	0	103	0	0	0	
Cordon Rd/ Ward Dr	2/3/2022	0.1817	71	512	0	0	593	39	17	0	54	0	0	0	
NB												SB			
										Hayesville	399				543
										Ward	528				632
												0.324088	0.081022	0.1639473	0.040987

% Change per year highlighted

**Final growth rate = 2.16% for both methods combined**

NOTES:

Two segments were analyzed to find a growth rate.

One segment was Cordon Rd between Herrin and Silverton

Another segment was Cordon rd between Haysville and Ward

The totals used in the growth rate calculation were the entering volume from one end and the exiting volume from

Then the percent difference of the counts was calculated. They were then divided by the number of years difference counts. 5 for

To find the final growth rate the average the colored cells

The result was a growth rate of 2.16%

This growth rate will be applied to all study intersections within the study area

## APPENDIX E – HCM INTERSECTION REPORTS

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HCM 6th Signalized Intersection Summary  
 1: OR 99E & Hazelgreen Rd/Hazelgreen Rd (#1)

DKS Associates  
 04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	243	189	67	260	34	298	412	56	28	338	50
Future Volume (veh/h)	93	243	189	67	260	34	298	412	56	28	338	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1856	1900	1900	1841	1856	1900	1885	1900	1841	1885	1900
Adj Flow Rate, veh/h	101	264	39	73	283	32	324	448	49	30	367	9
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, %	7	3	0	0	4	3	0	1	0	4	1	0
Cap, veh/h	129	431	374	93	338	38	279	1028	112	35	650	292
Arrive On Green	0.08	0.23	0.23	0.05	0.21	0.21	0.15	0.32	0.32	0.02	0.18	0.18
Sat Flow, veh/h	1711	1856	1610	1810	1624	184	1810	3258	355	1753	3582	1610
Grp Volume(v), veh/h	101	264	39	73	0	315	324	245	252	30	367	9
Grp Sat Flow(s),veh/h/ln	1711	1856	1610	1810	0	1808	1810	1791	1821	1753	1791	1610
Q Serve(g_s), s	3.2	7.0	1.1	2.2	0.0	9.2	8.5	6.0	6.0	0.9	5.2	0.3
Cycle Q Clear(g_c), s	3.2	7.0	1.1	2.2	0.0	9.2	8.5	6.0	6.0	0.9	5.2	0.3
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	129	431	374	93	0	376	279	565	575	35	650	292
V/C Ratio(X)	0.78	0.61	0.10	0.79	0.00	0.84	1.16	0.43	0.44	0.85	0.56	0.03
Avail Cap(c_a), veh/h	357	976	847	246	0	820	279	812	826	239	1560	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.0	18.9	16.7	25.8	0.0	20.9	23.3	15.0	15.0	26.9	20.6	18.6
Incr Delay (d2), s/veh	7.6	1.1	0.1	5.4	0.0	1.9	104.7	0.2	0.2	32.2	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.6	0.3	1.0	0.0	3.4	11.2	2.0	2.1	0.7	1.9	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.6	20.0	16.7	31.2	0.0	22.9	128.0	15.2	15.2	59.1	21.1	18.6
LnGrp LOS	C	C	B	C	A	C	F	B	B	E	C	B
Approach Vol, veh/h		404			388			821			406	
Approach Delay, s/veh		22.8			24.4			59.7			23.9	
Approach LOS		C			C			E			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	16.0	8.6	17.5	5.6	23.4	7.3	18.8				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	8.5	24.0	11.5	25.0	7.5	25.0	7.5	29.0				
Max Q Clear Time (g_c+I1), s	10.5	7.2	5.2	11.2	2.9	8.0	4.2	9.0				
Green Ext Time (p_c), s	0.0	1.6	0.1	0.3	0.0	1.5	0.0	1.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				38.3								
HCM 6th LOS				D								

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	6	361	382	1	7	9
Future Vol, veh/h	6	361	382	1	7	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	3	3	0	0	0
Mvmt Flow	7	446	472	1	9	11

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	473	0	-	0	933
Stage 1	-	-	-	-	473
Stage 2	-	-	-	-	460
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1099	-	-	-	298
Stage 1	-	-	-	-	631
Stage 2	-	-	-	-	640
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1099	-	-	-	296
Mov Cap-2 Maneuver	-	-	-	-	296
Stage 1	-	-	-	-	626
Stage 2	-	-	-	-	640

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1099	-	-	-	413
HCM Lane V/C Ratio	0.007	-	-	-	0.048
HCM Control Delay (s)	8.3	0	-	-	14.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	186	90	40	243	7	91	92	39	8	27	7
Future Vol, veh/h	15	186	90	40	243	7	91	92	39	8	27	7
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
Heavy Vehicles, %	0	5	5	0	8	0	0	0	0	0	0	17
Mvmt Flow	16	202	98	43	264	8	99	100	42	9	29	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12	12.6	11.9	9.5
HCM LOS	B	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	41%	5%	14%	19%
Vol Thru, %	41%	64%	84%	64%
Vol Right, %	18%	31%	2%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	222	291	290	42
LT Vol	91	15	40	8
Through Vol	92	186	243	27
RT Vol	39	90	7	7
Lane Flow Rate	241	316	315	46
Geometry Grp	1	1	1	1
Degree of Util (X)	0.373	0.442	0.456	0.075
Departure Headway (Hd)	5.563	5.027	5.204	5.931
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	647	715	693	602
Service Time	3.603	3.062	3.238	3.987
HCM Lane V/C Ratio	0.372	0.442	0.455	0.076
HCM Control Delay	11.9	12	12.6	9.5
HCM Lane LOS	B	B	B	A
HCM 95th-tile Q	1.7	2.3	2.4	0.2

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	78	28	264	198	12
Future Vol, veh/h	31	78	28	264	198	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	33	84	30	284	213	13

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	564	220	226	0	-	0
Stage 1	220	-	-	-	-	-
Stage 2	344	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	490	825	1354	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	477	825	1354	-	-	-
Mov Cap-2 Maneuver	477	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	722	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1354	-	477	825	-	-
HCM Lane V/C Ratio	0.022	-	0.07	0.102	-	-
HCM Control Delay (s)	7.7	0	13.1	9.9	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	0.3	-	-

Intersection						
Int Delay, s/veh	7.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	27	239	179	275	252	34
Future Vol, veh/h	27	239	179	275	252	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	35	310	232	357	327	44

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1170	349	371	0	0
Stage 1	349	-	-	-	-
Stage 2	821	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	215	699	1199	-	-
Stage 1	719	-	-	-	-
Stage 2	436	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	163	699	1199	-	-
Mov Cap-2 Maneuver	163	-	-	-	-
Stage 1	546	-	-	-	-
Stage 2	436	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.2	3.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1199	-	524	-	-
HCM Lane V/C Ratio	0.194	-	0.659	-	-
HCM Control Delay (s)	8.7	0	24.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.7	-	4.8	-	-

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	68	62	38	387	452	32
Future Vol, veh/h	68	62	38	387	452	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	3	4	4	4	3	6
Mvmt Flow	72	66	40	412	481	34

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	990	498	515	0	-	0
Stage 1	498	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Critical Hdwy	6.43	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	272	568	1040	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	612	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	258	568	1040	-	-	-
Mov Cap-2 Maneuver	258	-	-	-	-	-
Stage 1	579	-	-	-	-	-
Stage 2	612	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.9	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1040	-	349	-	-
HCM Lane V/C Ratio	0.039	-	0.396	-	-
HCM Control Delay (s)	8.6	0	21.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.8	-	-

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	43	40	407	457	41
Future Vol, veh/h	18	43	40	407	457	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	1	5	7	4	3
Mvmt Flow	20	47	44	447	502	45

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1060	525	547	0	0
Stage 1	525	-	-	-	-
Stage 2	535	-	-	-	-
Critical Hdwy	6.44	6.21	4.15	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-
Follow-up Hdwy	3.536	3.309	2.245	-	-
Pot Cap-1 Maneuver	246	554	1007	-	-
Stage 1	589	-	-	-	-
Stage 2	583	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	232	554	1007	-	-
Mov Cap-2 Maneuver	232	-	-	-	-
Stage 1	555	-	-	-	-
Stage 2	583	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1007	-	393	-	-
HCM Lane V/C Ratio	0.044	-	0.171	-	-
HCM Control Delay (s)	8.7	0	16	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

HCM 6th Signalized Intersection Summary  
 8: Cordon Rd (#3)/Cordon Rd (#2) & Silverton Rd

DKS Associates  
 04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖	↖	↖	↖	↖
Traffic Volume (veh/h)	85	182	148	239	363	7	186	329	172	12	368	113
Future Volume (veh/h)	85	182	148	239	363	7	186	329	172	12	368	113
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1781	1826	1841	1900	1781	1870	1781	1633	1826	1826
Adj Flow Rate, veh/h	98	209	1	275	417	6	214	378	121	14	423	64
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	9	9	8	5	4	0	8	2	8	18	5	5
Cap, veh/h	123	530	3	316	929	13	253	741	872	16	469	511
Arrive On Green	0.07	0.15	0.15	0.18	0.26	0.26	0.15	0.40	0.40	0.01	0.26	0.26
Sat Flow, veh/h	1682	3425	16	1739	3529	51	1697	1870	1510	1555	1826	1547
Grp Volume(v), veh/h	98	102	108	275	206	217	214	378	121	14	423	64
Grp Sat Flow(s),veh/h/ln	1682	1678	1764	1739	1749	1831	1697	1870	1510	1555	1826	1547
Q Serve(g_s), s	4.0	3.8	3.8	10.8	6.9	6.9	8.6	10.7	2.6	0.6	15.7	2.0
Cycle Q Clear(g_c), s	4.0	3.8	3.8	10.8	6.9	6.9	8.6	10.7	2.6	0.6	15.7	2.0
Prop In Lane	1.00		0.01	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	123	260	273	316	460	482	253	741	872	16	469	511
V/C Ratio(X)	0.80	0.39	0.39	0.87	0.45	0.45	0.85	0.51	0.14	0.88	0.90	0.13
Avail Cap(c_a), veh/h	313	744	782	373	825	864	291	882	987	178	757	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.9	26.6	26.6	27.8	21.5	21.5	29.0	16.0	6.8	34.6	25.1	16.4
Incr Delay (d2), s/veh	4.3	0.4	0.3	15.6	0.3	0.2	16.2	0.2	0.0	38.9	5.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.4	1.5	5.4	2.5	2.7	4.2	3.7	0.6	0.4	6.5	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	27.0	27.0	43.4	21.8	21.8	45.2	16.2	6.8	73.5	30.9	16.4
LnGrp LOS	D	C	C	D	C	C	D	B	A	E	C	B
Approach Vol, veh/h		308			698			713			501	
Approach Delay, s/veh		29.9			30.3			23.3			30.3	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.7	15.8	14.4	23.0	9.1	23.4	4.7	32.7				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	15.0	31.0	12.0	29.0	13.0	33.0	8.0	33.0				
Max Q Clear Time (g_c+I1), s	12.8	5.8	10.6	17.7	6.0	8.9	2.6	12.7				
Green Ext Time (p_c), s	0.0	0.2	0.0	0.3	0.0	0.4	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				28.0								
HCM 6th LOS				C								



HCM 6th Signalized Intersection Summary  
 9: Cordon Rd (#4)/Cordon Rd (#3) & Sunnyview Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	45	104	58	77	39	134	549	17	21	628	107
Future Volume (veh/h)	86	45	104	58	77	39	134	549	17	21	628	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.96	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1841	1856	1900	1870	1856	1856	1856	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	91	48	7	62	82	17	143	584	17	22	668	108
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	3	0	2	3	3	3	2	0	0	2	2
Cap, veh/h	285	175	26	318	148	31	324	989	29	426	774	125
Arrive On Green	0.06	0.11	0.11	0.05	0.10	0.10	0.07	0.55	0.55	0.02	0.49	0.49
Sat Flow, veh/h	1753	1580	230	1781	1479	307	1767	1808	53	1810	1565	253
Grp Volume(v), veh/h	91	0	55	62	0	99	143	0	601	22	0	776
Grp Sat Flow(s),veh/h/ln	1753	0	1810	1781	0	1786	1767	0	1861	1810	0	1818
Q Serve(g_s), s	2.9	0.0	1.8	1.9	0.0	3.3	2.3	0.0	13.6	0.4	0.0	23.8
Cycle Q Clear(g_c), s	2.9	0.0	1.8	1.9	0.0	3.3	2.3	0.0	13.6	0.4	0.0	23.8
Prop In Lane	1.00		0.13	1.00		0.17	1.00		0.03	1.00		0.14
Lane Grp Cap(c), veh/h	285	0	201	318	0	179	324	0	1018	426	0	899
V/C Ratio(X)	0.32	0.00	0.27	0.19	0.00	0.55	0.44	0.00	0.59	0.05	0.00	0.86
Avail Cap(c_a), veh/h	329	0	631	383	0	622	375	0	1208	515	0	1123
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.4	0.0	25.7	23.5	0.0	27.1	12.1	0.0	9.6	8.4	0.0	14.1
Incr Delay (d2), s/veh	0.6	0.0	0.5	0.3	0.0	2.0	0.9	0.0	0.8	0.0	0.0	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.7	0.7	0.0	1.3	0.6	0.0	3.7	0.1	0.0	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.0	0.0	26.3	23.8	0.0	29.0	13.0	0.0	10.3	8.4	0.0	20.6
LnGrp LOS	C	A	C	C	A	C	B	A	B	A	A	C
Approach Vol, veh/h		146			161			744			798	
Approach Delay, s/veh		24.9			27.0			10.9			20.2	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	36.2	8.0	10.3	5.3	39.5	7.3	11.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	39.0	5.6	22.0	4.4	41.0	5.6	22.0				
Max Q Clear Time (g_c+1/3), s	4.0	25.8	4.9	5.3	2.4	15.6	3.9	3.8				
Green Ext Time (p_c), s	0.1	5.5	0.0	0.3	0.0	5.2	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				17.4								
HCM 6th LOS				B								

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	33	10	55	6	3	1	68	658	6	8	694	65
Future Vol, veh/h	33	10	55	6	3	1	68	658	6	8	694	65
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	210	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	6	0	0	0	2	5	0	0	7	3
Mvmt Flow	35	11	59	6	3	1	73	708	6	9	746	70

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1659	1659	781	1691	1691	712	816	0	0	714	0	0
Stage 1	799	799	-	857	857	-	-	-	-	-	-	-
Stage 2	860	860	-	834	834	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.26	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.354	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	79	99	389	75	94	436	812	-	-	895	-	-
Stage 1	382	401	-	355	377	-	-	-	-	-	-	-
Stage 2	353	376	-	365	386	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	71	89	389	53	85	436	812	-	-	895	-	-
Mov Cap-2 Maneuver	71	89	-	53	85	-	-	-	-	-	-	-
Stage 1	348	397	-	323	343	-	-	-	-	-	-	-
Stage 2	317	342	-	298	382	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	89.4		69.9		0.9		0.1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	812	-	-	136	66	895	-	-
HCM Lane V/C Ratio	0.09	-	-	0.775	0.163	0.01	-	-
HCM Control Delay (s)	9.9	-	-	89.4	69.9	9.1	-	-
HCM Lane LOS	A	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	4.7	0.5	0	-	-

HCM 6th Signalized Intersection Summary  
 11: Cordon Rd (#5)/Cordon Rd (#4) & Center St

DKS Associates  
 04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	55	113	50	84	35	108	651	28	39	619	104
Future Volume (veh/h)	57	55	113	50	84	35	108	651	28	39	619	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1811	1841	1856	1752	1856	1826	1841	1900	1796	1856
Adj Flow Rate, veh/h	62	60	5	54	91	16	117	708	29	42	673	60
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	6	4	3	10	3	5	4	0	7	3
Cap, veh/h	300	228	187	334	180	32	354	859	35	308	831	727
Arrive On Green	0.05	0.12	0.12	0.05	0.12	0.12	0.07	0.49	0.49	0.04	0.46	0.46
Sat Flow, veh/h	1781	1870	1535	1753	1537	270	1767	1742	71	1810	1796	1572
Grp Volume(v), veh/h	62	60	5	54	0	107	117	0	737	42	673	60
Grp Sat Flow(s),veh/h/ln	1781	1870	1535	1753	0	1807	1767	0	1813	1810	1796	1572
Q Serve(g_s), s	1.7	1.7	0.2	1.5	0.0	3.2	1.9	0.0	20.2	0.7	18.7	1.2
Cycle Q Clear(g_c), s	1.7	1.7	0.2	1.5	0.0	3.2	1.9	0.0	20.2	0.7	18.7	1.2
Prop In Lane	1.00		1.00	1.00		0.15	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	300	228	187	334	0	212	354	0	894	308	831	727
V/C Ratio(X)	0.21	0.26	0.03	0.16	0.00	0.50	0.33	0.00	0.82	0.14	0.81	0.08
Avail Cap(c_a), veh/h	357	708	581	397	0	684	377	0	1280	387	1268	1110
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	23.1	22.5	20.8	0.0	24.1	10.3	0.0	12.6	10.4	13.4	8.7
Incr Delay (d2), s/veh	0.1	0.5	0.0	0.1	0.0	1.4	0.2	0.0	3.7	0.1	3.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.7	0.1	0.6	0.0	1.3	0.5	0.0	6.7	0.2	5.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.9	23.6	22.5	20.9	0.0	25.4	10.5	0.0	16.3	10.4	16.5	8.8
LnGrp LOS	C	C	C	C	A	C	B	A	B	B	B	A
Approach Vol, veh/h		127			161			854			775	
Approach Delay, s/veh		22.2			23.9			15.5			15.6	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	31.9	7.2	10.8	6.5	33.7	6.9	11.1				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	41.0	5.0	22.0	5.0	41.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s	3.9	20.7	3.7	5.2	2.7	22.2	3.5	3.7				
Green Ext Time (p_c), s	0.0	5.9	0.0	0.3	0.0	6.5	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			16.7									
HCM 6th LOS			B									

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	16	1	48	15	1	11	41	762	18	13	743	30
Future Vol, veh/h	16	1	48	15	1	11	41	762	18	13	743	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	7	0	9	0	0	0	0	5	25	0	7	0
Mvmt Flow	18	1	53	17	1	12	46	847	20	14	826	33

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1827	1830	843	1847	1836	857	859	0	0	867	0	0
Stage 1	871	871	-	949	949	-	-	-	-	-	-	-
Stage 2	956	959	-	898	887	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.5	6.29	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.17	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4	3.381	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	57	77	353	58	77	360	791	-	-	785	-	-
Stage 1	339	371	-	315	342	-	-	-	-	-	-	-
Stage 2	304	338	-	337	365	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	51	71	353	46	71	360	791	-	-	785	-	-
Mov Cap-2 Maneuver	51	71	-	46	71	-	-	-	-	-	-	-
Stage 1	319	364	-	297	322	-	-	-	-	-	-	-
Stage 2	276	318	-	280	358	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	55.3		85.1		0.5		0.2	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	791	-	-	140	73	785	-	-
HCM Lane V/C Ratio	0.058	-	-	0.516	0.411	0.018	-	-
HCM Control Delay (s)	9.8	-	-	55.3	85.1	9.7	-	-
HCM Lane LOS	A	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	2.5	1.6	0.1	-	-

HCM 6th Signalized Intersection Summary  
 13: Cordon Rd (#6)/Cordon Rd (#5) & State St

DKS Associates  
 04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	109	55	94	179	85	39	578	71	66	509	189
Future Volume (veh/h)	141	109	55	94	179	85	39	578	71	66	509	189
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1870	1841	1722	1885	1811	1811	1856	1796	1796	1885	1870
Adj Flow Rate, veh/h	166	128	41	111	211	76	46	680	79	78	599	104
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	2	4	12	1	6	6	3	7	7	1	2
Cap, veh/h	256	253	81	324	242	87	297	710	82	202	842	693
Arrive On Green	0.08	0.19	0.19	0.07	0.18	0.18	0.04	0.43	0.43	0.05	0.45	0.45
Sat Flow, veh/h	1767	1357	435	1640	1323	476	1725	1632	190	1711	1885	1552
Grp Volume(v), veh/h	166	0	169	111	0	287	46	0	759	78	599	104
Grp Sat Flow(s),veh/h/ln	1767	0	1792	1640	0	1799	1725	0	1821	1711	1885	1552
Q Serve(g_s), s	6.0	0.0	6.7	4.3	0.0	12.2	1.1	0.0	31.8	1.9	20.3	3.1
Cycle Q Clear(g_c), s	6.0	0.0	6.7	4.3	0.0	12.2	1.1	0.0	31.8	1.9	20.3	3.1
Prop In Lane	1.00		0.24	1.00		0.26	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	256	0	334	324	0	329	297	0	792	202	842	693
V/C Ratio(X)	0.65	0.00	0.51	0.34	0.00	0.87	0.15	0.00	0.96	0.39	0.71	0.15
Avail Cap(c_a), veh/h	256	0	478	330	0	480	359	0	857	243	887	730
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.0	0.0	28.7	23.7	0.0	31.3	13.7	0.0	21.5	18.0	17.7	12.9
Incr Delay (d2), s/veh	4.4	0.0	0.4	0.2	0.0	8.5	0.1	0.0	20.0	0.4	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	2.8	1.5	0.0	5.5	0.4	0.0	15.8	0.6	8.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.5	0.0	29.2	23.9	0.0	39.8	13.8	0.0	41.5	18.4	19.7	12.9
LnGrp LOS	C	A	C	C	A	D	B	A	D	B	B	B
Approach Vol, veh/h		335			398			805			781	
Approach Delay, s/veh		29.3			35.4			39.9			18.7	
Approach LOS		C			D			D			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	20.7	7.2	41.1	10.0	20.4	8.1	40.2				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	6.0	21.0	6.0	37.0	6.0	21.0	6.0	37.0				
Max Q Clear Time (g_c+I1), s	6.3	8.7	3.1	22.3	8.0	14.2	3.9	33.8				
Green Ext Time (p_c), s	0.0	0.2	0.0	0.6	0.0	0.2	0.0	0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				30.5								
HCM 6th LOS				C								

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	64	32	15	627	597	51
Future Vol, veh/h	64	32	15	627	597	51
Conflicting Peds, #/hr	3	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	7	8	6	9	9
Mvmt Flow	70	35	16	682	649	55

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1394	677	704	0	-	0
Stage 1	677	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Critical Hdwy	6.45	6.27	4.18	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.363	2.272	-	-	-
Pot Cap-1 Maneuver	154	444	867	-	-	-
Stage 1	499	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	151	444	867	-	-	-
Mov Cap-2 Maneuver	151	-	-	-	-	-
Stage 1	490	-	-	-	-	-
Stage 2	478	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	43.3	0.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	867	-	194	-	-
HCM Lane V/C Ratio	0.019	-	0.538	-	-
HCM Control Delay (s)	9.2	-	43.3	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	2.8	-	-

Intersection												
Int Delay, s/veh	12											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	90	1	14	5	6	9	4	587	0	6	610	99
Future Vol, veh/h	90	1	14	5	6	9	4	587	0	6	610	99
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	0	9	0	40	43	0	6	0	0	5	5
Mvmt Flow	100	1	16	6	7	10	4	652	0	7	678	110

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1416	1407	733	1416	1462	652	788	0	0	652	0	0
Stage 1	747	747	-	660	660	-	-	-	-	-	-	-
Stage 2	669	660	-	756	802	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.29	7.1	6.9	6.63	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.381	3.5	4.36	3.687	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	114	140	409	116	107	403	840	-	-	944	-	-
Stage 1	403	423	-	455	407	-	-	-	-	-	-	-
Stage 2	445	463	-	403	347	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	104	137	409	109	105	403	840	-	-	944	-	-
Mov Cap-2 Maneuver	104	137	-	109	105	-	-	-	-	-	-	-
Stage 1	400	418	-	452	404	-	-	-	-	-	-	-
Stage 2	424	460	-	382	342	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	155.9		31.1		0.1		0.1	
HCM LOS	F		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	840	-	-	116	160	944	-	-
HCM Lane V/C Ratio	0.005	-	-	1.006	0.139	0.007	-	-
HCM Control Delay (s)	9.3	0	-	155.9	31.1	8.8	0	-
HCM Lane LOS	A	A	-	F	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	6.7	0.5	0	-	-

HCM 6th Signalized Intersection Summary  
 16: Cordon Rd (#7)/Cordon Rd (#6) & Macleay Rd

DKS Associates  
 04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	32	22	25	75	48	57	23	516	39	34	580	18
Future Volume (veh/h)	32	22	25	75	48	57	23	516	39	34	580	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1663	1811	1900	1900	1781	1870	1900	1826	1737	1737	1796	1796
Adj Flow Rate, veh/h	35	24	3	82	52	0	25	561	39	37	630	19
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, %	16	6	0	0	8	2	0	5	11	11	7	7
Cap, veh/h	247	126	11	277	95		308	671	47	339	710	21
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.00	0.03	0.40	0.40	0.04	0.41	0.41
Sat Flow, veh/h	675	893	80	850	677	0	1810	1687	117	1654	1735	52
Grp Volume(v), veh/h	62	0	0	134	0	0	25	0	600	37	0	649
Grp Sat Flow(s),veh/h/ln	1648	0	0	1527	0	0	1810	0	1805	1654	0	1787
Q Serve(g_s), s	0.0	0.0	0.0	1.8	0.0	0.0	0.3	0.0	11.1	0.5	0.0	12.5
Cycle Q Clear(g_c), s	1.1	0.0	0.0	3.0	0.0	0.0	0.3	0.0	11.1	0.5	0.0	12.5
Prop In Lane	0.56		0.05	0.61		0.00	1.00		0.06	1.00		0.03
Lane Grp Cap(c), veh/h	384	0	0	372	0		308	0	717	339	0	732
V/C Ratio(X)	0.16	0.00	0.00	0.36	0.00		0.08	0.00	0.84	0.11	0.00	0.89
Avail Cap(c_a), veh/h	1176	0	0	1157	0		502	0	1435	497	0	1421
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.1	0.0	0.0	14.9	0.0	0.0	8.1	0.0	10.1	7.7	0.0	10.1
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.0	1.0	0.1	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.8	0.0	0.0	0.1	0.0	2.6	0.1	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.2	0.0	0.0	15.1	0.0	0.0	8.3	0.0	11.1	7.8	0.0	11.6
LnGrp LOS	B	A	A	B	A		A	A	B	A	A	B
Approach Vol, veh/h		62			134	A		625			686	
Approach Delay, s/veh		14.2			15.1			11.0			11.4	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	21.1		10.2	6.1	20.7		10.2				
Change Period (Y+Rc), s	4.5	6.0		5.0	4.5	6.0		5.0				
Max Green Setting (Gmax), s	5.1	29.4		25.0	5.1	29.4		25.0				
Max Q Clear Time (g_c+I1), s	2.3	14.5		5.0	2.5	13.1		3.1				
Green Ext Time (p_c), s	0.0	0.7		0.1	0.0	0.6		0.1				

Intersection Summary

HCM 6th Ctrl Delay	11.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



HCM 6th Signalized Intersection Summary  
 17: Cordon Rd (#7) & Gaffin Rd

DKS Associates  
 04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	20	110	47	18	153	30	385	25	67	581	42
Future Volume (veh/h)	47	20	110	47	18	153	30	385	25	67	581	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1856	1781	1826	1900	1870	1841	1856
Adj Flow Rate, veh/h	55	24	0	55	21	0	35	453	25	79	684	20
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	0	0	2	0	0	3	8	5	0	2	4	3
Cap, veh/h	361	187	0	359	187	0	258	671	37	410	759	634
Arrive On Green	0.04	0.10	0.00	0.04	0.10	0.00	0.02	0.39	0.39	0.04	0.41	0.41
Sat Flow, veh/h	1810	1900	0	1810	1900	0	1697	1712	94	1781	1841	1538
Grp Volume(v), veh/h	55	24	0	55	21	0	35	0	478	79	684	20
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1810	1900	0	1697	0	1806	1781	1841	1538
Q Serve(g_s), s	1.1	0.5	0.0	1.1	0.4	0.0	0.5	0.0	9.2	1.1	14.6	0.3
Cycle Q Clear(g_c), s	1.1	0.5	0.0	1.1	0.4	0.0	0.5	0.0	9.2	1.1	14.6	0.3
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	361	187	0	359	187	0	258	0	708	410	759	634
V/C Ratio(X)	0.15	0.13	0.00	0.15	0.11	0.00	0.14	0.00	0.68	0.19	0.90	0.03
Avail Cap(c_a), veh/h	426	1134	0	424	1134	0	339	0	1337	458	1362	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.2	17.2	0.0	16.2	17.2	0.0	9.7	0.0	10.5	8.1	11.5	7.3
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.4	0.1	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.2	0.0	0.4	0.2	0.0	0.1	0.0	2.1	0.3	4.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.3	17.3	0.0	16.3	17.3	0.0	9.7	0.0	11.0	8.1	13.2	7.3
LnGrp LOS	B	B	A	B	B	A	A	A	B	A	B	A
Approach Vol, veh/h		79			76			513			783	
Approach Delay, s/veh		16.6			16.6			10.9			12.6	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.0	23.3	5.5	8.1	5.9	22.4	5.5	8.1				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	30.0	31.0	3.0	25.0	3.0	31.0	3.0	25.0				
Max Q Clear Time (g_c+1/5), s	12.5	16.6	3.1	2.4	3.1	11.2	3.1	2.5				
Green Ext Time (p_c), s	0.0	0.7	0.0	0.0	0.0	0.4	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	12.4
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary  
 18: Cordon Rd (#8)/Cordon Rd (#7) & Lancaster Dr/Aumsville Hwy

DKS Associates  
 04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	272	111	97	180	57	83	370	144	134	551	54
Future Volume (veh/h)	28	272	111	97	180	57	83	370	144	134	551	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1826	1885	1796	1900	1885	1856	1826	1870	1885	1900
Adj Flow Rate, veh/h	32	309	31	110	205	16	94	420	0	152	626	17
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	3	5	1	7	0	1	3	5	2	1	0
Cap, veh/h	40	588	298	198	687	461	172	1009		194	1238	516
Arrive On Green	0.02	0.17	0.14	0.06	0.20	0.18	0.05	0.29	0.00	0.11	0.35	0.30
Sat Flow, veh/h	1810	3526	1547	3483	3413	1610	3483	3526	1547	1781	3582	1610
Grp Volume(v), veh/h	32	309	31	110	205	16	94	420	0	152	626	17
Grp Sat Flow(s),veh/h/ln	1810	1763	1547	1742	1706	1610	1742	1763	1547	1781	1791	1610
Q Serve(g_s), s	0.7	3.4	0.7	1.3	2.1	0.3	1.1	4.1	0.0	3.5	5.8	0.3
Cycle Q Clear(g_c), s	0.7	3.4	0.7	1.3	2.1	0.3	1.1	4.1	0.0	3.5	5.8	0.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	40	588	298	198	687	461	172	1009		194	1238	516
V/C Ratio(X)	0.79	0.53	0.10	0.56	0.30	0.03	0.55	0.42		0.78	0.51	0.03
Avail Cap(c_a), veh/h	345	2858	1294	664	2766	1442	664	2605		467	2903	1264
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	16.0	14.0	19.3	14.2	10.8	19.5	12.1	0.0	18.2	10.9	9.8
Incr Delay (d2), s/veh	12.2	0.3	0.1	0.9	0.1	0.0	1.0	0.1	0.0	2.6	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	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.1	0.2	0.4	0.6	0.1	0.4	1.0	0.0	1.2	1.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.6	16.2	14.0	20.2	14.3	10.8	20.5	12.2	0.0	20.8	11.0	9.8
LnGrp LOS	C	B	B	C	B	B	C	B		C	B	A
Approach Vol, veh/h		372			331			514	A		795	
Approach Delay, s/veh		17.5			16.1			13.7			12.9	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	18.5	4.9	12.4	8.6	16.0	6.4	11.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	11.0	29.0	8.0	33.0				
Max Q Clear Time (g_c+1), s	13.5	7.8	2.7	4.1	5.5	6.1	3.3	5.4				
Green Ext Time (p_c), s	0.0	0.7	0.0	0.3	0.0	0.5	0.0	0.4				

Intersection Summary

HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Cordon Rd (#8) & Mill Creek Dr

DKS Associates  
 04/26/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↷	↕	↷	↶	↕
Traffic Volume (veh/h)	3	3	616	10	6	760
Future Volume (veh/h)	3	3	616	10	6	760
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	907	1411	1856	1411	1604	1870
Adj Flow Rate, veh/h	3	0	677	8	7	835
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	67	33	3	33	20	2
Cap, veh/h	4	13	798	514	363	1114
Arrive On Green	0.00	0.00	0.43	0.43	0.01	0.60
Sat Flow, veh/h	864	1196	1856	1196	1527	1870
Grp Volume(v), veh/h	3	0	677	8	7	835
Grp Sat Flow(s),veh/h/ln	864	1196	1856	1196	1527	1870
Q Serve(g_s), s	0.1	0.0	8.2	0.1	0.1	8.2
Cycle Q Clear(g_c), s	0.1	0.0	8.2	0.1	0.1	8.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	4	13	798	514	363	1114
V/C Ratio(X)	0.70	0.00	0.85	0.02	0.02	0.75
Avail Cap(c_a), veh/h	725	1010	2001	1289	842	2913
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.4	0.0	6.4	4.1	5.0	3.7
Incr Delay (d2), s/veh	56.0	0.0	1.0	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	0.0	0.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	68.4	0.0	7.4	4.1	5.1	4.1
LnGrp LOS	E	A	A	A	A	A
Approach Vol, veh/h	3		685			842
Approach Delay, s/veh	68.4		7.4			4.1
Approach LOS	E		A			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		20.9		4.1	4.1	16.8
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		39.0		21.0	8.0	27.0
Max Q Clear Time (g_c+I1), s		10.2		2.1	2.1	10.2
Green Ext Time (p_c), s		0.8		0.0	0.0	0.6
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			5.7			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
 20: Turner Rd & Cordon Rd (#9)/Cordon Rd (#8)

DKS Associates  
 04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	545	59	160	478	116	215	209	65	21	57	70
Future Volume (veh/h)	76	545	59	160	478	116	215	209	65	21	57	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1811	1870	1870	1633	1870	1870	1841	1900	1693	1826	1900	1752
Adj Flow Rate, veh/h	90	649	66	190	569	130	256	249	69	25	68	16
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	6	2	2	18	2	2	4	0	14	5	0	10
Cap, veh/h	290	839	85	482	791	181	425	407	113	205	409	402
Arrive On Green	0.08	1.00	0.97	0.07	0.54	0.52	0.08	0.28	0.27	0.02	0.22	0.22
Sat Flow, veh/h	1725	1670	170	1555	1473	337	1753	1432	397	1739	1900	1485
Grp Volume(v), veh/h	90	0	715	190	0	699	256	0	318	25	68	16
Grp Sat Flow(s),veh/h/ln	1725	0	1840	1555	0	1810	1753	0	1829	1739	1900	1485
Q Serve(g_s), s	3.4	0.0	0.5	7.7	0.0	38.0	11.0	0.0	19.6	1.5	3.8	1.0
Cycle Q Clear(g_c), s	3.4	0.0	0.5	7.7	0.0	38.0	11.0	0.0	19.6	1.5	3.8	1.0
Prop In Lane	1.00		0.09	1.00		0.19	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	290	0	925	482	0	971	425	0	519	205	409	402
V/C Ratio(X)	0.31	0.00	0.77	0.39	0.00	0.72	0.60	0.00	0.61	0.12	0.17	0.04
Avail Cap(c_a), veh/h	327	0	925	569	0	971	425	0	519	284	409	402
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.00	0.86	0.88	0.00	0.88	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	0.1	13.3	0.0	22.9	39.1	0.0	40.5	41.0	41.5	34.9
Incr Delay (d2), s/veh	0.2	0.0	5.4	0.2	0.0	4.1	1.7	0.0	5.3	0.1	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	1.4	2.5	0.0	15.7	1.9	0.0	9.4	0.6	1.8	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.6	0.0	5.5	13.5	0.0	26.9	40.9	0.0	45.8	41.1	42.4	35.1
LnGrp LOS	B	A	A	B	A	C	D	A	D	D	D	D
Approach Vol, veh/h		805			889			574			109	
Approach Delay, s/veh		7.1			24.1			43.6			41.0	
Approach LOS		A			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	3.7	69.3	6.1	40.9	9.2	73.8	15.0	32.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	17.5	56.0	8.0	29.0	8.0	65.0	11.0	26.0				
Max Q Clear Time (g_c+1/3), s	19.5	2.5	3.5	21.6	5.4	40.0	13.0	5.8				
Green Ext Time (p_c), s	0.0	0.7	0.0	0.2	0.0	0.7	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	23.8
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary  
 21: 36th Ave/Trelstad Ave & Cordon Rd/Cordon Rd (#9)

DKS Associates  
 04/26/2022

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	626	95	55	565	136	58	16	36	28	19	34
Future Volume (veh/h)	127	626	95	55	565	136	58	16	36	28	19	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1870	1870	1826	1900	1841	1900	1856	1900	1900	1737
Adj Flow Rate, veh/h	148	728	82	64	657	153	67	19	0	33	22	-4
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	4	2	2	5	0	4	0	3	0	0	11
Cap, veh/h	624	1409	1213	506	1077	251	171	113	0	147	67	52
Arrive On Green	0.03	0.77	0.77	0.04	1.00	1.00	0.05	0.06	0.00	0.02	0.04	0.00
Sat Flow, veh/h	1781	1841	1585	1781	1432	334	1753	1900	0	1810	1900	1472
Grp Volume(v), veh/h	148	728	82	64	0	810	67	19	0	33	22	-4
Grp Sat Flow(s),veh/h/ln	1781	1841	1585	1781	0	1766	1753	1900	0	1810	1900	1472
Q Serve(g_s), s	2.5	20.0	1.7	1.1	0.0	0.0	4.7	1.2	0.0	2.3	1.5	0.0
Cycle Q Clear(g_c), s	2.5	20.0	1.7	1.1	0.0	0.0	4.7	1.2	0.0	2.3	1.5	0.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	624	1409	1213	506	0	1328	171	113	0	147	67	52
V/C Ratio(X)	0.24	0.52	0.07	0.13	0.00	0.61	0.39	0.17	0.00	0.22	0.33	-0.08
Avail Cap(c_a), veh/h	672	1409	1213	577	0	1328	196	380	0	217	380	294
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.68	0.00	0.68	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.2	5.9	3.8	4.8	0.0	0.0	55.9	58.1	0.0	58.7	61.2	0.0
Incr Delay (d2), s/veh	0.1	1.4	0.1	0.0	0.0	1.4	0.5	0.3	0.0	0.3	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	6.5	0.5	0.3	0.0	0.5	2.1	0.6	0.0	1.0	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.3	7.3	3.9	4.8	0.0	1.4	56.4	58.3	0.0	59.0	62.2	0.0
LnGrp LOS	A	A	A	A	A	A	E	E	A	E	E	A
Approach Vol, veh/h		958			874			86			51	
Approach Delay, s/veh		6.4			1.7			56.8			65.0	
Approach LOS		A			A			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	104.5	10.1	8.6	8.5	102.8	7.0	11.7				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	71.0	71.0	8.0	26.0	8.0	71.0	8.0	26.0				
Max Q Clear Time (g_c+1), s	22.0	22.0	6.7	3.5	4.5	2.0	4.3	3.2				
Green Ext Time (p_c), s	0.0	0.8	0.0	0.0	0.0	0.8	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	8.0
HCM 6th LOS	A

HCM 6th Signalized Intersection Summary  
 1: OR 99E & Chemawa Rd/Hazelgreen Rd (#1)

04/26/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	323	513	73	343	34	383	398	75	56	557	105
Future Volume (veh/h)	101	323	513	73	343	34	383	398	75	56	557	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1856	1885	1900	1900	1885	1796	1841	1900	1885
Adj Flow Rate, veh/h	103	330	286	74	350	31	391	406	61	57	568	26
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	0	3	1	0	0	1	7	4	0	1
Cap, veh/h	133	486	412	94	401	35	247	978	146	71	783	346
Arrive On Green	0.07	0.26	0.26	0.05	0.23	0.23	0.14	0.31	0.31	0.04	0.22	0.22
Sat Flow, veh/h	1795	1900	1610	1767	1707	151	1810	3126	466	1753	3610	1598
Grp Volume(v), veh/h	103	330	286	74	0	381	391	231	236	57	568	26
Grp Sat Flow(s),veh/h/ln	1795	1900	1610	1767	0	1858	1810	1791	1801	1753	1805	1598
Q Serve(g_s), s	3.5	9.7	10.0	2.6	0.0	12.3	8.5	6.3	6.4	2.0	9.1	0.8
Cycle Q Clear(g_c), s	3.5	9.7	10.0	2.6	0.0	12.3	8.5	6.3	6.4	2.0	9.1	0.8
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	133	486	412	94	0	436	247	561	564	71	783	346
V/C Ratio(X)	0.78	0.68	0.69	0.79	0.00	0.87	1.58	0.41	0.42	0.80	0.73	0.08
Avail Cap(c_a), veh/h	217	886	751	213	0	867	247	720	724	211	1394	617
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.3	20.8	20.9	29.1	0.0	22.9	26.8	16.8	16.9	29.6	22.6	19.4
Incr Delay (d2), s/veh	7.0	1.2	1.6	5.4	0.0	2.2	279.7	0.2	0.2	14.2	1.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.8	3.3	1.1	0.0	4.8	22.5	2.2	2.3	1.0	3.5	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.3	22.1	22.5	34.5	0.0	25.1	306.5	17.0	17.1	43.8	23.6	19.5
LnGrp LOS	D	C	C	C	A	C	F	B	B	D	C	B
Approach Vol, veh/h		719			455			858			651	
Approach Delay, s/veh		24.2			26.6			149.0			25.2	
Approach LOS		C			C			F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	19.5	9.1	20.6	7.0	25.5	7.8	21.9				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	8.5	24.0	7.5	29.0	7.5	25.0	7.5	29.0				
Max Q Clear Time (g_c+I1), s	10.5	11.1	5.5	14.3	4.0	8.4	4.6	12.0				
Green Ext Time (p_c), s	0.0	2.4	0.0	0.3	0.0	1.4	0.0	1.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			64.7									
HCM 6th LOS			E									

HCM 6th TWSC  
2: Hazelgreen Rd (#1) & Lake Labish Rd

04/26/2022

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	9	419	451	4	9	4
Future Vol, veh/h	9	419	451	4	9	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	2	1	0	0	0
Mvmt Flow	9	436	470	4	9	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	474	0	-	0	926 472
Stage 1	-	-	-	-	472 -
Stage 2	-	-	-	-	454 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1099	-	-	-	301 596
Stage 1	-	-	-	-	632 -
Stage 2	-	-	-	-	644 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1099	-	-	-	298 596
Mov Cap-2 Maneuver	-	-	-	-	298 -
Stage 1	-	-	-	-	625 -
Stage 2	-	-	-	-	644 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1099	-	-	-	352
HCM Lane V/C Ratio	0.009	-	-	-	0.038
HCM Control Delay (s)	8.3	0	-	-	15.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Intersection Delay, s/veh	35.9
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	297	164	89	264	8	155	57	56	7	171	21
Future Vol, veh/h	8	297	164	89	264	8	155	57	56	7	171	21
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	2	0	0	12	0	0	0	0	0	0	10
Mvmt Flow	9	316	174	95	281	9	165	61	60	7	182	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	53.8	32.3	22.7	18.3
HCM LOS	F	D	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	58%	2%	25%	4%
Vol Thru, %	21%	63%	73%	86%
Vol Right, %	21%	35%	2%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	268	469	361	199
LT Vol	155	8	89	7
Through Vol	57	297	264	171
RT Vol	56	164	8	21
Lane Flow Rate	285	499	384	212
Geometry Grp	1	1	1	1
Degree of Util (X)	0.617	0.949	0.785	0.474
Departure Headway (Hd)	7.791	6.849	7.356	8.064
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	462	534	495	445
Service Time	5.866	4.871	5.381	6.146
HCM Lane V/C Ratio	0.617	0.934	0.776	0.476
HCM Control Delay	22.7	53.8	32.3	18.3
HCM Lane LOS	C	F	D	C
HCM 95th-tile Q	4.1	12.1	7.1	2.5



HCM 6th TWSC  
4: Cordon Rd (#2) & Kale St

04/26/2022

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	79	75	240	426	37
Future Vol, veh/h	23	79	75	240	426	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	26	91	86	276	490	43

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	960	512	533	0	-	0
Stage 1	512	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	287	566	1045	-	-	-
Stage 1	606	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	259	566	1045	-	-	-
Mov Cap-2 Maneuver	259	-	-	-	-	-
Stage 1	547	-	-	-	-	-
Stage 2	648	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	2.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1045	-	259	566	-	-
HCM Lane V/C Ratio	0.082	-	0.102	0.16	-	-
HCM Control Delay (s)	8.8	0	20.5	12.6	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.3	0.6	-	-

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	16	112	157	326	477	50
Future Vol, veh/h	16	112	157	326	477	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	18	126	176	366	536	56

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1282	564	592	0	-	0
Stage 1	564	-	-	-	-	-
Stage 2	718	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	184	529	994	-	-	-
Stage 1	573	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	143	529	994	-	-	-
Mov Cap-2 Maneuver	143	-	-	-	-	-
Stage 1	446	-	-	-	-	-
Stage 2	487	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.2	3.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	994	-	396	-	-
HCM Lane V/C Ratio	0.177	-	0.363	-	-
HCM Control Delay (s)	9.4	0	19.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.6	-	1.6	-	-

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	17	55	71	515	598	39
Future Vol, veh/h	17	55	71	515	598	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	6	4	3	3	3
Mvmt Flow	19	63	81	585	680	44

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1449	702	724	0	0
Stage 1	702	-	-	-	-
Stage 2	747	-	-	-	-
Critical Hdwy	6.43	6.26	4.14	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.354	2.236	-	-
Pot Cap-1 Maneuver	144	431	869	-	-
Stage 1	490	-	-	-	-
Stage 2	466	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	124	431	869	-	-
Mov Cap-2 Maneuver	124	-	-	-	-
Stage 1	422	-	-	-	-
Stage 2	466	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.8	1.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	869	-	272	-	-
HCM Lane V/C Ratio	0.093	-	0.301	-	-
HCM Control Delay (s)	9.6	0	23.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	1.2	-	-

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	21	52	56	502	556	36
Future Vol, veh/h	21	52	56	502	556	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	22	54	58	523	579	38

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1237	598	617	0	0
Stage 1	598	-	-	-	-
Stage 2	639	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	196	506	973	-	-
Stage 1	553	-	-	-	-
Stage 2	530	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	180	506	973	-	-
Mov Cap-2 Maneuver	180	-	-	-	-
Stage 1	507	-	-	-	-
Stage 2	530	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	973	-	333	-	-
HCM Lane V/C Ratio	0.06	-	0.228	-	-
HCM Control Delay (s)	8.9	0	19	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

HCM 6th Signalized Intersection Summary  
 8: Cordon Rd (#3)/Cordon Rd (#2) & Silverton Rd

04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕		↖	↕	↖	↖	↕	↖
Traffic Volume (veh/h)	115	360	238	198	338	6	174	409	238	10	473	154
Future Volume (veh/h)	115	360	238	198	338	6	174	409	238	10	473	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1870	1900	1885	1885	1885	1900	1870	1900
Adj Flow Rate, veh/h	132	414	110	228	389	5	200	470	182	11	544	114
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	1	1	1	3	2	0	1	1	1	0	2	0
Cap, veh/h	167	542	143	204	776	10	207	797	851	15	590	651
Arrive On Green	0.09	0.19	0.19	0.12	0.22	0.22	0.12	0.42	0.42	0.01	0.32	0.32
Sat Flow, veh/h	1795	2800	737	1767	3592	46	1795	1885	1578	1810	1870	1590
Grp Volume(v), veh/h	132	263	261	228	192	202	200	470	182	11	544	114
Grp Sat Flow(s),veh/h/ln	1795	1791	1746	1767	1777	1862	1795	1885	1578	1810	1870	1590
Q Serve(g_s), s	5.0	9.6	9.8	8.0	6.6	6.6	7.7	13.3	4.2	0.4	19.4	3.2
Cycle Q Clear(g_c), s	5.0	9.6	9.8	8.0	6.6	6.6	7.7	13.3	4.2	0.4	19.4	3.2
Prop In Lane	1.00		0.42	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	167	347	338	204	384	402	207	797	851	15	590	651
V/C Ratio(X)	0.79	0.76	0.77	1.12	0.50	0.50	0.96	0.59	0.21	0.74	0.92	0.18
Avail Cap(c_a), veh/h	259	828	807	204	770	807	207	797	851	209	783	816
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.7	26.4	26.5	30.6	23.8	23.9	30.5	15.4	8.3	34.3	22.9	13.1
Incr Delay (d2), s/veh	3.8	1.3	1.4	97.7	0.4	0.4	51.7	0.8	0.0	22.5	11.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	3.8	3.8	8.6	2.5	2.6	5.9	4.6	1.0	0.3	9.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.5	27.7	27.9	128.3	24.2	24.2	82.2	16.2	8.4	56.8	34.7	13.1
LnGrp LOS	C	C	C	F	C	C	F	B	A	E	C	B
Approach Vol, veh/h		656			622			852			669	
Approach Delay, s/veh		29.1			62.4			30.0			31.4	
Approach LOS		C			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	18.4	12.0	26.8	10.4	20.0	4.6	34.3				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	8.0	32.0	8.0	29.0	10.0	30.0	8.0	29.0				
Max Q Clear Time (g_c+I1), s	10.0	11.8	9.7	21.4	7.0	8.6	2.4	15.3				
Green Ext Time (p_c), s	0.0	0.5	0.0	0.4	0.0	0.4	0.0	0.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				37.3								
HCM 6th LOS				D								

HCM 6th Signalized Intersection Summary  
 9: Cordon Rd (#4)/Cordon Rd (#3) & Sunnyview Rd

04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	86	126	62	90	55	118	702	75	62	801	87
Future Volume (veh/h)	97	86	126	62	90	55	118	702	75	62	801	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1870	1870	1856	1841	1900	1900	1870	1900	1885	1856
Adj Flow Rate, veh/h	104	92	48	67	97	22	127	755	77	67	861	89
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	0	2	2	3	4	0	0	2	0	1	3
Cap, veh/h	256	138	72	230	142	32	257	982	100	324	942	97
Arrive On Green	0.07	0.12	0.12	0.05	0.10	0.10	0.06	0.58	0.58	0.04	0.56	0.56
Sat Flow, veh/h	1795	1174	613	1781	1462	332	1810	1690	172	1810	1678	173
Grp Volume(v), veh/h	104	0	140	67	0	119	127	0	832	67	0	950
Grp Sat Flow(s),veh/h/ln	1795	0	1787	1781	0	1794	1810	0	1862	1810	0	1852
Q Serve(g_s), s	4.1	0.0	6.0	2.7	0.0	5.1	2.3	0.0	26.9	1.2	0.0	36.8
Cycle Q Clear(g_c), s	4.1	0.0	6.0	2.7	0.0	5.1	2.3	0.0	26.9	1.2	0.0	36.8
Prop In Lane	1.00		0.34	1.00		0.18	1.00		0.09	1.00		0.09
Lane Grp Cap(c), veh/h	256	0	210	230	0	174	257	0	1083	324	0	1039
V/C Ratio(X)	0.41	0.00	0.67	0.29	0.00	0.68	0.49	0.00	0.77	0.21	0.00	0.91
Avail Cap(c_a), veh/h	259	0	495	269	0	497	295	0	1195	354	0	1142
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.5	0.0	33.6	30.3	0.0	34.7	16.8	0.0	12.6	11.1	0.0	15.7
Incr Delay (d2), s/veh	1.0	0.0	2.7	0.7	0.0	3.5	1.5	0.0	3.1	0.1	0.0	11.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	2.6	1.1	0.0	2.2	1.1	0.0	8.8	0.3	0.0	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	0.0	36.3	31.0	0.0	38.2	18.3	0.0	15.7	11.2	0.0	26.8
LnGrp LOS	C	A	D	C	A	D	B	A	B	B	A	C
Approach Vol, veh/h		244			186			959			1017	
Approach Delay, s/veh		33.9			35.6			16.0			25.7	
Approach LOS		C			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	49.6	9.5	11.7	7.1	51.2	7.9	13.3				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	49.0	5.6	22.0	4.4	51.0	5.6	22.0				
Max Q Clear Time (g_c+14), s	4.0	38.8	6.1	7.1	3.2	28.9	4.7	8.0				
Green Ext Time (p_c), s	0.1	5.8	0.0	0.3	0.0	7.9	0.0	0.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											23.5	
HCM 6th LOS											C	

HCM 6th TWSC  
 10: Cordon Rd (#4) & Swegle Rd

04/26/2022

Intersection												
Int Delay, s/veh	46.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	35	17	97	6	1	12	75	842	22	7	874	83
Future Vol, veh/h	35	17	97	6	1	12	75	842	22	7	874	83
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	210	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	0	1	0	0	0	0	2	0	0	2	0
Mvmt Flow	38	19	107	7	1	13	82	925	24	8	960	91

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2130	2138	1006	2189	2171	940	1051	0	0	952	0	0
Stage 1	1022	1022	-	1104	1104	-	-	-	-	-	-	-
Stage 2	1108	1116	-	1085	1067	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.21	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.309	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 36	50	294	33	47	322	670	-	-	730	-	-
Stage 1	283	316	-	258	289	-	-	-	-	-	-	-
Stage 2	254	285	-	265	301	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 30	43	294	13	41	321	670	-	-	728	-	-
Mov Cap-2 Maneuver	~ 30	43	-	13	41	-	-	-	-	-	-	-
Stage 1	248	313	-	226	253	-	-	-	-	-	-	-
Stage 2	213	249	-	157	298	-	-	-	-	-	-	-

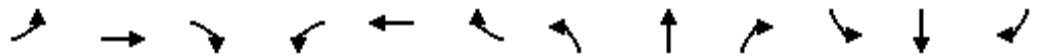
Approach	EB	WB	NB	SB
HCM Control Delay, s	609.3	197.7	0.9	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	670	-	-	79	36	728	-	-
HCM Lane V/C Ratio	0.123	-	-	2.073	0.58	0.011	-	-
HCM Control Delay (s)	11.1	-	-	609.3	197.7	10	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	14.8	2	0	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th Signalized Intersection Summary  
 11: Cordon Rd (#5)/Cordon Rd (#4) & Center St

04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	90	205	40	58	28	180	778	26	29	794	106
Future Volume (veh/h)	144	90	205	40	58	28	180	778	26	29	794	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1870	1900	1856	1856	1841	1722	1870	1826
Adj Flow Rate, veh/h	157	98	25	43	63	3	196	846	27	32	863	45
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, %	0	3	3	0	2	0	3	3	4	12	2	5
Cap, veh/h	320	240	204	280	175	8	291	992	32	247	966	799
Arrive On Green	0.07	0.13	0.13	0.04	0.10	0.10	0.07	0.55	0.55	0.03	0.52	0.52
Sat Flow, veh/h	1810	1856	1572	1810	1771	84	1767	1788	57	1640	1870	1546
Grp Volume(v), veh/h	157	98	25	43	0	66	196	0	873	32	863	45
Grp Sat Flow(s),veh/h/ln	1810	1856	1572	1810	0	1855	1767	0	1845	1640	1870	1546
Q Serve(g_s), s	5.0	3.4	1.0	1.5	0.0	2.3	3.5	0.0	28.1	0.6	29.1	1.0
Cycle Q Clear(g_c), s	5.0	3.4	1.0	1.5	0.0	2.3	3.5	0.0	28.1	0.6	29.1	1.0
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	320	240	204	280	0	183	291	0	1024	247	966	799
V/C Ratio(X)	0.49	0.41	0.12	0.15	0.00	0.36	0.67	0.00	0.85	0.13	0.89	0.06
Avail Cap(c_a), veh/h	320	582	493	336	0	582	291	0	1078	310	1093	903
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	28.1	27.0	26.7	0.0	29.6	15.0	0.0	13.2	12.1	15.2	8.4
Incr Delay (d2), s/veh	0.4	0.8	0.2	0.1	0.0	0.9	4.9	0.0	6.8	0.1	9.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.4	0.4	0.6	0.0	1.0	1.7	0.0	10.4	0.2	11.2	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.0	28.9	27.2	26.7	0.0	30.4	19.9	0.0	20.0	12.2	24.5	8.5
LnGrp LOS	C	C	C	C	A	C	B	A	C	B	C	A
Approach Vol, veh/h		280			109			1069			940	
Approach Delay, s/veh		27.7			29.0			20.0			23.3	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	41.3	9.0	10.9	6.3	43.9	6.8	13.1				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	41.0	5.0	22.0	5.0	41.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s	5.5	31.1	7.0	4.3	2.6	30.1	3.5	5.4				
Green Ext Time (p_c), s	0.0	5.2	0.0	0.2	0.0	5.7	0.0	0.3				

Intersection Summary

HCM 6th Ctrl Delay	22.6
HCM 6th LOS	C



HCM 6th TWSC  
12: Cordon Rd (#5) & Auburn Rd

04/26/2022

Intersection												
Int Delay, s/veh	17.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	20	3	89	4	3	11	62	954	31	11	995	39
Future Vol, veh/h	20	3	89	4	3	11	62	954	31	11	995	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	3	0	0	0	2	3	0	0	4	0
Mvmt Flow	22	3	96	4	3	12	67	1026	33	12	1070	42

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2299	2310	1091	2344	2315	1045	1112	0	0	1061	0	0
Stage 1	1115	1115	-	1179	1179	-	-	-	-	-	-	-
Stage 2	1184	1195	-	1165	1136	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.23	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.327	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	28	39	260	26	38	280	628	-	-	664	-	-
Stage 1	255	286	-	234	267	-	-	-	-	-	-	-
Stage 2	233	262	-	239	279	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	23	34	260	14	33	279	628	-	-	663	-	-
Mov Cap-2 Maneuver	23	34	-	14	33	-	-	-	-	-	-	-
Stage 1	228	281	-	209	238	-	-	-	-	-	-	-
Stage 2	197	233	-	147	274	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	322.7	144.6	0.7	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	628	-	-	86	43	663	-	-
HCM Lane V/C Ratio	0.106	-	-	1.4	0.45	0.018	-	-
HCM Control Delay (s)	11.4	-	-	322.7	144.6	10.5	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.4	-	-	9.2	1.6	0.1	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th Signalized Intersection Summary  
 13: Cordon Rd (#6)/Cordon Rd (#5) & State St

04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	206	214	77	100	176	136	72	692	90	106	781	223
Future Volume (veh/h)	206	214	77	100	176	136	72	692	90	106	781	223
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1885	1841	1900	1885	1885	1870	1870	1885
Adj Flow Rate, veh/h	219	228	68	106	187	115	77	736	91	113	831	159
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	3	3	0	1	4	0	1	1	2	2	1
Cap, veh/h	244	273	81	246	210	129	179	727	90	185	837	715
Arrive On Green	0.07	0.20	0.20	0.06	0.19	0.19	0.05	0.44	0.44	0.06	0.45	0.45
Sat Flow, veh/h	1810	1365	407	1810	1092	672	1810	1645	203	1781	1870	1598
Grp Volume(v), veh/h	219	0	296	106	0	302	77	0	827	113	831	159
Grp Sat Flow(s),veh/h/ln	1810	0	1772	1810	0	1764	1810	0	1849	1781	1870	1598
Q Serve(g_s), s	6.0	0.0	13.4	3.9	0.0	14.0	1.9	0.0	37.0	2.9	37.0	5.1
Cycle Q Clear(g_c), s	6.0	0.0	13.4	3.9	0.0	14.0	1.9	0.0	37.0	2.9	37.0	5.1
Prop In Lane	1.00		0.23	1.00		0.38	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	244	0	354	246	0	340	179	0	817	185	837	715
V/C Ratio(X)	0.90	0.00	0.84	0.43	0.00	0.89	0.43	0.00	1.01	0.61	0.99	0.22
Avail Cap(c_a), veh/h	244	0	444	259	0	442	219	0	817	214	837	715
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	0.0	32.2	25.7	0.0	32.9	19.5	0.0	23.4	19.5	23.0	14.2
Incr Delay (d2), s/veh	31.5	0.0	8.9	0.4	0.0	13.9	0.6	0.0	34.7	2.0	29.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	6.4	1.5	0.0	6.7	0.7	0.0	21.7	1.1	20.7	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.9	0.0	41.1	26.1	0.0	46.8	20.1	0.0	58.1	21.5	52.3	14.3
LnGrp LOS	E	A	D	C	A	D	C	A	F	C	D	B
Approach Vol, veh/h		515			408			904			1103	
Approach Delay, s/veh		49.9			41.4			54.9			43.7	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	22.7	8.2	43.5	10.0	22.1	8.6	43.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	6.0	21.0	6.0	37.0	6.0	21.0	6.0	37.0				
Max Q Clear Time (g_c+I1), s	5.9	15.4	3.9	39.0	8.0	16.0	4.9	39.0				
Green Ext Time (p_c), s	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			47.9									
HCM 6th LOS			D									

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	39	17	47	862	879	96
Future Vol, veh/h	39	17	47	862	879	96
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	7	0	5	4	4
Mvmt Flow	41	18	49	898	916	100

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1963	967	1017	0	-	0
Stage 1	967	-	-	-	-	-
Stage 2	996	-	-	-	-	-
Critical Hdwy	6.4	6.27	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.363	2.2	-	-	-
Pot Cap-1 Maneuver	70	302	690	-	-	-
Stage 1	372	-	-	-	-	-
Stage 2	360	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	65	302	689	-	-	-
Mov Cap-2 Maneuver	65	-	-	-	-	-
Stage 1	345	-	-	-	-	-
Stage 2	360	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	111.2	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	689	-	85	-	-
HCM Lane V/C Ratio	0.071	-	0.686	-	-
HCM Control Delay (s)	10.6	-	111.2	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.2	-	3.3	-	-

HCM 6th TWSC  
15: Cordon Rd (#6) & Caplinger Rd

04/26/2022

Intersection												
Int Delay, s/veh	34.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	96	1	5	4	0	6	15	828	10	6	814	146
Future Vol, veh/h	96	1	5	4	0	6	15	828	10	6	814	146
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	5	25	20	4	2
Mvmt Flow	102	1	5	4	0	6	16	881	11	6	866	155

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1879	1880	944	1878	1952	888	1021	0	0	892	0	0
Stage 1	956	956	-	919	919	-	-	-	-	-	-	-
Stage 2	923	924	-	959	1033	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.38	-	-
Pot Cap-1 Maneuver	~ 55	72	321	55	65	345	688	-	-	690	-	-
Stage 1	313	339	-	328	353	-	-	-	-	-	-	-
Stage 2	326	351	-	311	312	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 51	67	321	51	61	345	688	-	-	690	-	-
Mov Cap-2 Maneuver	~ 51	67	-	51	61	-	-	-	-	-	-	-
Stage 1	299	332	-	313	337	-	-	-	-	-	-	-
Stage 2	305	335	-	298	305	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	652.3	43.5	0.2	0.1
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	688	-	-	53	104	690	-	-
HCM Lane V/C Ratio	0.023	-	-	2.047	0.102	0.009	-	-
HCM Control Delay (s)	10.4	0	-	652.3	43.5	10.3	0	-
HCM Lane LOS	B	A	-	F	E	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	10.7	0.3	0	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th Signalized Intersection Summary  
 16: Cordon Rd (#7)/Cordon Rd (#6) & Macleay Rd

04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (veh/h)	39	47	1	31	33	46	51	757	69	68	654	89
Future Volume (veh/h)	39	47	1	31	33	46	51	757	69	68	654	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	418	1796	1900	1796	1826	1826	1870	1856	1841	1856
Adj Flow Rate, veh/h	40	48	0	32	34	0	53	780	68	70	674	87
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, %	3	0	100	7	0	7	5	5	2	3	4	3
Cap, veh/h	177	118	0	180	119		351	835	73	303	820	106
Arrive On Green	0.11	0.11	0.00	0.11	0.11	0.00	0.05	0.50	0.50	0.06	0.51	0.51
Sat Flow, veh/h	622	1085	0	629	1091	0	1739	1656	144	1767	1593	206
Grp Volume(v), veh/h	88	0	0	66	0	0	53	0	848	70	0	761
Grp Sat Flow(s),veh/h/ln	1707	0	0	1720	0	0	1739	0	1800	1767	0	1799
Q Serve(g_s), s	0.6	0.0	0.0	0.0	0.0	0.0	0.7	0.0	21.2	0.9	0.0	17.1
Cycle Q Clear(g_c), s	2.2	0.0	0.0	1.5	0.0	0.0	0.7	0.0	21.2	0.9	0.0	17.1
Prop In Lane	0.45		0.00	0.48		0.00	1.00		0.08	1.00		0.11
Lane Grp Cap(c), veh/h	295	0	0	299	0		351	0	908	303	0	926
V/C Ratio(X)	0.30	0.00	0.00	0.22	0.00		0.15	0.00	0.93	0.23	0.00	0.82
Avail Cap(c_a), veh/h	968	0	0	961	0		445	0	1667	379	0	1665
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.0	0.0	0.0	19.7	0.0	0.0	7.9	0.0	11.1	9.9	0.0	9.8
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.0	2.5	0.4	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	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	0.6	0.0	0.0	0.1	0.0	5.5	0.2	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	0.0	0.0	19.9	0.0	0.0	8.1	0.0	13.6	10.3	0.0	10.5
LnGrp LOS	C	A	A	B	A		A	A	B	B	A	B
Approach Vol, veh/h		88			66	A		901				831
Approach Delay, s/veh		20.2			19.9			13.3				10.5
Approach LOS		C			B			B				B
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	30.7		10.2	7.5	30.2		10.2				
Change Period (Y+Rc), s	4.5	6.0		5.0	4.5	6.0		5.0				
Max Green Setting (Gmax), s	5.1	44.4		25.0	5.1	44.4		25.0				
Max Q Clear Time (g_c+I1), s	2.7	19.1		3.5	2.9	23.2		4.2				
Green Ext Time (p_c), s	0.0	0.9		0.0	0.0	1.0		0.1				

Intersection Summary

HCM 6th Ctrl Delay	12.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 17: Cordon Rd (#7) & Gaffin Rd

04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	25	69	54	25	168	90	650	29	128	474	88
Future Volume (veh/h)	64	25	69	54	25	168	90	650	29	128	474	88
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1900	1841	1900	1870	1781	1826	1856	1900
Adj Flow Rate, veh/h	70	27	4	59	27	9	98	707	30	139	515	37
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, %	0	0	0	2	0	4	0	2	8	5	3	0
Cap, veh/h	342	179	26	341	141	47	439	763	32	301	830	704
Arrive On Green	0.05	0.11	0.11	0.04	0.10	0.10	0.05	0.43	0.43	0.07	0.45	0.45
Sat Flow, veh/h	1810	1616	239	1781	1362	454	1810	1781	76	1739	1856	1573
Grp Volume(v), veh/h	70	0	31	59	0	36	98	0	737	139	515	37
Grp Sat Flow(s),veh/h/ln	1810	0	1856	1781	0	1816	1810	0	1857	1739	1856	1573
Q Serve(g_s), s	1.8	0.0	0.8	1.5	0.0	0.9	1.5	0.0	19.3	2.2	10.9	0.7
Cycle Q Clear(g_c), s	1.8	0.0	0.8	1.5	0.0	0.9	1.5	0.0	19.3	2.2	10.9	0.7
Prop In Lane	1.00		0.13	1.00		0.25	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	342	0	205	341	0	187	439	0	795	301	830	704
V/C Ratio(X)	0.20	0.00	0.15	0.17	0.00	0.19	0.22	0.00	0.93	0.46	0.62	0.05
Avail Cap(c_a), veh/h	365	0	905	376	0	886	522	0	1449	313	1412	1197
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.3	0.0	20.6	19.5	0.0	21.0	8.4	0.0	13.9	11.3	10.8	8.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	0.2	0.1	0.0	2.6	0.4	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.3	0.5	0.0	0.3	0.4	0.0	5.6	0.6	3.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.4	0.0	20.7	19.6	0.0	21.2	8.5	0.0	16.4	11.7	11.1	8.0
LnGrp LOS	B	A	C	B	A	C	A	A	B	B	B	A
Approach Vol, veh/h		101			95			835			691	
Approach Delay, s/veh		19.8			20.2			15.5			11.1	
Approach LOS		B			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.7	28.9	6.4	9.3	7.6	27.9	6.0	9.7				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	39.0	3.0	25.0	4.0	40.0	3.0	25.0				
Max Q Clear Time (g_c+1), s	13.5	12.9	3.8	2.9	4.2	21.3	3.5	2.8				
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	0.7	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				14.2								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
 18: Cordon Rd (#8)/Cordon Rd (#7) & Lancaster Dr/Aumsville Hwy

04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷	↷	↶	↷	↷	↶	↷	↷	↶	↷	↷
Traffic Volume (veh/h)	52	262	193	135	250	138	150	552	118	93	457	52
Future Volume (veh/h)	52	262	193	135	250	138	150	552	118	93	457	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1811	1856	1796	1811	1841	1870	1885	1885	1900	1900	1870
Adj Flow Rate, veh/h	57	285	90	147	272	36	163	600	0	101	497	17
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, %	0	6	3	7	6	4	2	1	1	0	0	2
Cap, veh/h	69	582	353	248	707	394	276	1069		129	1046	444
Arrive On Green	0.04	0.17	0.14	0.07	0.21	0.18	0.08	0.30	0.00	0.07	0.29	0.24
Sat Flow, veh/h	1810	3441	1572	3319	3441	1560	3456	3582	1598	1810	3610	1585
Grp Volume(v), veh/h	57	285	90	147	272	36	163	600	0	101	497	17
Grp Sat Flow(s),veh/h/ln	1810	1721	1572	1659	1721	1560	1728	1791	1598	1810	1805	1585
Q Serve(g_s), s	1.3	3.1	1.9	1.8	2.8	0.7	1.9	5.8	0.0	2.3	4.7	0.3
Cycle Q Clear(g_c), s	1.3	3.1	1.9	1.8	2.8	0.7	1.9	5.8	0.0	2.3	4.7	0.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	69	582	353	248	707	394	276	1069		129	1046	444
V/C Ratio(X)	0.82	0.49	0.25	0.59	0.38	0.09	0.59	0.56		0.79	0.47	0.04
Avail Cap(c_a), veh/h	350	2743	1341	722	2826	1354	668	2682		481	2965	1286
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.8	15.6	13.2	18.5	14.2	11.8	18.4	12.2	0.0	18.9	12.1	10.9
Incr Delay (d2), s/veh	8.7	0.2	0.1	0.8	0.1	0.0	0.8	0.2	0.0	3.9	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	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.0	0.5	0.6	0.8	0.2	0.6	1.5	0.0	0.9	1.2	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.4	15.8	13.3	19.4	14.3	11.9	19.1	12.4	0.0	22.8	12.2	10.9
LnGrp LOS	C	B	B	B	B	B	B	B		C	B	B
Approach Vol, veh/h		432			455			763	A		615	
Approach Delay, s/veh		17.0			15.8			13.8			13.9	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.3	16.0	5.6	12.5	6.9	16.4	7.1	11.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	11.0	29.0	9.0	32.0				
Max Q Clear Time (g_c+1), s	13.5	6.7	3.3	4.8	4.3	7.8	3.8	5.1				
Green Ext Time (p_c), s	0.0	0.6	0.0	0.4	0.0	0.7	0.0	0.4				

Intersection Summary

HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Cordon Rd (#8) & Mill Creek Dr

04/26/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↕	↷	↶	↷
Traffic Volume (veh/h)	10	5	830	2	1	811
Future Volume (veh/h)	10	5	830	2	1	811
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1885	1900	1885	1900	1900	1885
Adj Flow Rate, veh/h	10	0	847	2	1	828
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	1	0	0	1
Cap, veh/h	29	27	947	808	317	1208
Arrive On Green	0.02	0.00	0.50	0.50	0.00	0.64
Sat Flow, veh/h	1795	1610	1885	1609	1810	1885
Grp Volume(v), veh/h	10	0	847	2	1	828
Grp Sat Flow(s),veh/h/ln	1795	1610	1885	1609	1810	1885
Q Serve(g_s), s	0.2	0.0	11.8	0.0	0.0	8.2
Cycle Q Clear(g_c), s	0.2	0.0	11.8	0.0	0.0	8.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	29	27	947	808	317	1208
V/C Ratio(X)	0.35	0.00	0.89	0.00	0.00	0.69
Avail Cap(c_a), veh/h	1294	1162	2395	2043	808	3171
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	6.5	3.6	5.9	3.4
Incr Delay (d2), s/veh	2.6	0.0	1.3	0.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.3	0.0	0.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.8	0.0	7.8	3.6	5.9	3.6
LnGrp LOS	B	A	A	A	A	A
Approach Vol, veh/h	10		849			829
Approach Delay, s/veh	16.8		7.8			3.6
Approach LOS	B		A			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		24.7		4.5	4.0	20.6
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		49.0		21.0	8.0	37.0
Max Q Clear Time (g_c+I1), s		10.2		2.2	2.0	13.8
Green Ext Time (p_c), s		0.8		0.0	0.0	0.8
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			5.8			
HCM 6th LOS			A			



HCM 6th Signalized Intersection Summary  
 20: Turner Rd & Cordon Rd (#9)/Cordon Rd (#8)

04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	669	175	65	659	47	146	100	56	77	222	160
Future Volume (veh/h)	80	669	175	65	659	47	146	100	56	77	222	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1885	1870	1870	1900	1870	1900	1870	1900	1900	1900	1870	1841
Adj Flow Rate, veh/h	83	697	175	68	686	47	152	104	42	80	231	46
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	2	2	0	2	0	2	0	0	0	2	4
Cap, veh/h	301	812	204	459	965	66	277	305	123	336	403	414
Arrive On Green	0.07	1.00	1.00	0.03	0.56	0.54	0.07	0.24	0.22	0.05	0.22	0.22
Sat Flow, veh/h	1795	1443	362	1810	1730	119	1781	1287	520	1810	1870	1560
Grp Volume(v), veh/h	83	0	872	68	0	733	152	0	146	80	231	46
Grp Sat Flow(s),veh/h/ln	1795	0	1805	1810	0	1849	1781	0	1806	1810	1870	1560
Q Serve(g_s), s	2.7	0.0	0.0	2.2	0.0	37.8	8.8	0.0	8.8	4.5	14.4	2.9
Cycle Q Clear(g_c), s	2.7	0.0	0.0	2.2	0.0	37.8	8.8	0.0	8.8	4.5	14.4	2.9
Prop In Lane	1.00		0.20	1.00		0.06	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	301	0	1016	459	0	1032	277	0	428	336	403	414
V/C Ratio(X)	0.28	0.00	0.86	0.15	0.00	0.71	0.55	0.00	0.34	0.24	0.57	0.11
Avail Cap(c_a), veh/h	350	0	1016	517	0	1032	277	0	428	362	403	414
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.00	0.80	0.89	0.00	0.89	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.7	0.0	0.0	12.4	0.0	21.1	38.3	0.0	41.4	38.7	45.7	36.2
Incr Delay (d2), s/veh	0.1	0.0	7.7	0.0	0.0	3.7	1.3	0.0	2.2	0.1	5.8	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	2.2	0.8	0.0	15.6	3.8	0.0	4.1	2.0	7.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	0.0	7.7	12.4	0.0	24.8	39.6	0.0	43.6	38.8	51.5	36.7
LnGrp LOS	B	A	A	B	A	C	D	A	D	D	D	D
Approach Vol, veh/h		955			801			298			357	
Approach Delay, s/veh		8.6			23.8			41.6			46.7	
Approach LOS		A			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.8	77.2	10.2	34.8	8.5	76.5	13.0	32.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	3.0	67.0	8.0	27.0	8.0	67.0	9.0	26.0				
Max Q Clear Time (g_c+1/2), s	14.2	2.0	6.5	10.8	4.7	39.8	10.8	16.4				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.1	0.0	0.7	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay	23.3
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary  
 21: 36th Ave/Trelstad Ave & Cordon Rd/Cordon Rd (#9)

04/26/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	691	64	47	830	39	128	37	81	124	39	150
Future Volume (veh/h)	52	691	64	47	830	39	128	37	81	124	39	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1856	1826	1767	1885	1900	1885	1900	1900	1900	1737	1885
Adj Flow Rate, veh/h	55	727	46	49	874	40	135	39	11	131	41	3
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, %	1	3	5	9	1	0	1	0	0	0	11	1
Cap, veh/h	546	1374	1146	465	1323	61	200	68	19	196	84	76
Arrive On Green	0.02	0.74	0.74	0.04	1.00	1.00	0.06	0.05	0.05	0.06	0.05	0.05
Sat Flow, veh/h	1795	1856	1547	1682	1789	82	1795	1422	401	1810	1737	1581
Grp Volume(v), veh/h	55	727	46	49	0	914	135	0	50	131	41	3
Grp Sat Flow(s),veh/h/ln	1795	1856	1547	1682	0	1870	1795	0	1823	1810	1737	1581
Q Serve(g_s), s	1.0	21.7	1.0	1.0	0.0	0.0	8.0	0.0	3.5	8.0	3.0	0.2
Cycle Q Clear(g_c), s	1.0	21.7	1.0	1.0	0.0	0.0	8.0	0.0	3.5	8.0	3.0	0.2
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	546	1374	1146	465	0	1383	200	0	88	196	84	76
V/C Ratio(X)	0.10	0.53	0.04	0.11	0.00	0.66	0.67	0.00	0.57	0.67	0.49	0.04
Avail Cap(c_a), veh/h	621	1374	1146	536	0	1383	200	0	365	196	347	316
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.72	0.00	0.72	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	3.9	7.2	4.5	5.7	0.0	0.0	56.2	0.0	60.6	56.0	60.3	59.0
Incr Delay (d2), s/veh	0.0	1.5	0.1	0.0	0.0	1.8	7.1	0.0	2.1	6.9	1.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	7.5	0.3	0.2	0.0	0.7	4.7	0.0	1.6	4.6	1.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.9	8.7	4.6	5.8	0.0	1.8	63.4	0.0	62.7	62.9	62.0	59.1
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	E	E
Approach Vol, veh/h		828			963			185			175	
Approach Delay, s/veh		8.1			2.0			63.2			62.6	
Approach LOS		A			A			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	101.3	12.0	10.3	6.6	101.2	12.0	10.3				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	71.0	8.0	26.0	8.0	71.0	8.0	26.0				
Max Q Clear Time (g_c+1), s	13.0	23.7	10.0	5.0	3.0	2.0	10.0	5.5				
Green Ext Time (p_c), s	0.0	0.8	0.0	0.0	0.0	0.9	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											14.6	
HCM 6th LOS											B	

## APPENDIX F – HCM SEGMENT REPORTS

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**Arterial Level of Service: SB Cordon Rd (#2)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Silverton Rd	I	55	158.2	42.3	200.5	2.42	43.4	A
Total	I		158.2	42.3	200.5	2.42	43.4	A

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**Arterial Level of Service: NB Cordon Rd (#3)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Silverton Rd	I	55	74.7	17.0	91.7	1.14	44.8	A
Total	I		74.7	17.0	91.7	1.14	44.8	A

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**Arterial Level of Service: SB Cordon Rd (#3)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Sunnyview Rd	I	55	74.7	26.7	101.4	1.14	40.5	B
Total	I		74.7	26.7	101.4	1.14	40.5	B

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**Arterial Level of Service: NB Cordon Rd (#4)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Sunnyview Rd	I	55	69.6	12.8	82.4	1.06	46.4	A
Total	I		69.6	12.8	82.4	1.06	46.4	A

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**Arterial Level of Service: SB Cordon Rd (#4)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Center St	I	55	69.6	16.8	86.4	1.06	44.3	A
Total	I		69.6	16.8	86.4	1.06	44.3	A

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**Arterial Level of Service: NB Cordon Rd (#5)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Center St	II	45	64.0	16.8	80.8	0.80	35.7	A
Total	II		64.0	16.8	80.8	0.80	35.7	A

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**Arterial Level of Service: SB Cordon Rd (#5)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
State St	II	45	64.0	23.5	87.5	0.80	33.0	B
Total	II		64.0	23.5	87.5	0.80	33.0	B

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**Arterial Level of Service: NB Cordon Rd (#6)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
State St	II	45	88.0	43.7	131.7	1.10	30.1	B
Total	II		88.0	43.7	131.7	1.10	30.1	B

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**Arterial Level of Service: SB Cordon Rd (#6)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Macleay Rd	II	45	88.0	15.1	103.1	1.10	38.4	A
Total	II		88.0	15.1	103.1	1.10	38.4	A

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**Arterial Level of Service: NB Cordon Rd (#7)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Gaffin Rd	I	50	69.2	12.5	81.7	0.97	42.7	A
Macleay Rd	I	45	25.4	15.7	41.1	0.24	21.4	D
Total	I		94.6	28.2	122.8	1.21	35.6	B

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**Arterial Level of Service: SB Cordon Rd (#7)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Gaffin Rd	III	45	25.4	15.8	41.2	0.24	21.4	C
Lancaster Dr	III	32	110.7	16.4	127.1	0.97	27.5	B
Total	III		136.1	32.2	168.3	1.21	26.0	B

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**Arterial Level of Service: NB Cordon Rd (#8)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Mill Creek Dr	II	55	32.6	3.1	35.7	0.40	40.1	A
Aumsville Hwy	II	32	93.6	19.2	112.8	0.83	26.4	C
Total	II		126.2	22.3	148.5	1.22	29.7	B

Arterial Level of Service: SB Cordon Rd (#8)

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Mill Creek Dr	I	50	59.7	2.2	61.9	0.83	48.1	A
Turner Rd	I	55	32.6	34.1	66.7	0.40	21.5	D
Total	I		92.3	36.3	128.6	1.22	34.3	B

Arterial Level of Service: EB Cordon Rd (#9)

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Turner Rd	I	55	34.2	49.2	83.4	0.44	18.9	E
Total	I		34.2	49.2	83.4	0.44	18.9	E

Arterial Level of Service: WB Cordon Rd (#9)

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Trelstad Ave	I	55	34.2	15.9	50.1	0.44	31.5	C
Total	I		34.2	15.9	50.1	0.44	31.5	C

Arterial Level of Service: WB Hazelgreen Rd (#1)

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
OR 99E	I	50	99.0	37.2	136.2	1.37	36.3	B
Total	I		99.0	37.2	136.2	1.37	36.3	B

**Arterial Level of Service: SB Cordon Rd (#2)**

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Silverton Rd	I	55	158.2	37.6	195.8	2.42	44.4	A
Total	I		158.2	37.6	195.8	2.42	44.4	A

**Arterial Level of Service: NB Cordon Rd (#3)**

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Silverton Rd	I	55	74.7	17.7	92.4	1.14	44.5	A
Total	I		74.7	17.7	92.4	1.14	44.5	A

**Arterial Level of Service: SB Cordon Rd (#3)**

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Sunnyview Rd	I	55	74.7	38.7	113.4	1.14	36.2	B
Total	I		74.7	38.7	113.4	1.14	36.2	B

**Arterial Level of Service: NB Cordon Rd (#4)**

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Sunnyview Rd	I	55	69.6	22.2	91.8	1.06	41.7	B
Total	I		69.6	22.2	91.8	1.06	41.7	B

**Arterial Level of Service: SB Cordon Rd (#4)**

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Center St	I	55	69.6	26.0	95.6	1.06	40.0	B
Total	I		69.6	26.0	95.6	1.06	40.0	B

**Arterial Level of Service: NB Cordon Rd (#5)**

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Center St	II	45	64.0	19.7	83.7	0.80	34.4	B
Total	II		64.0	19.7	83.7	0.80	34.4	B

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**Arterial Level of Service: SB Cordon Rd (#5)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
State St	II	45	64.0	56.1	120.1	0.80	24.0	C
Total	II		64.0	56.1	120.1	0.80	24.0	C

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**Arterial Level of Service: NB Cordon Rd (#6)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
State St	II	45	88.0	58.3	146.3	1.10	27.1	C
Total	II		88.0	58.3	146.3	1.10	27.1	C

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**Arterial Level of Service: SB Cordon Rd (#6)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Macleay Rd	II	45	88.0	11.5	99.5	1.10	39.8	A
Total	II		88.0	11.5	99.5	1.10	39.8	A

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**Arterial Level of Service: NB Cordon Rd (#7)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Gaffin Rd	I	50	69.2	23.6	92.8	0.97	37.6	B
Macleay Rd	I	45	25.4	15.3	40.7	0.24	21.6	D
Total	I		94.6	38.9	133.5	1.21	32.8	C

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**Arterial Level of Service: SB Cordon Rd (#7)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Gaffin Rd	III	45	25.4	13.8	39.2	0.24	22.5	C
Lancaster Dr	III	32	110.7	16.9	127.6	0.97	27.4	B
Total	III		136.1	30.7	166.8	1.21	26.2	B

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**Arterial Level of Service: NB Cordon Rd (#8)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Mill Creek Dr	II	55	32.6	3.3	35.9	0.40	39.9	A
Aumsville Hwy	II	32	93.6	19.1	112.7	0.83	26.4	C
Total	II		126.2	22.4	148.6	1.22	29.7	B



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**Arterial Level of Service: SB Cordon Rd (#8)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Mill Creek Dr	I	50	59.7	1.9	61.6	0.83	48.3	A
Turner Rd	I	55	32.6	30.6	63.2	0.40	22.7	D
Total	I		92.3	32.5	124.8	1.22	35.3	B

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**Arterial Level of Service: EB Cordon Rd (#9)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Turner Rd	I	55	34.2	39.6	73.8	0.44	21.4	D
Total	I		34.2	39.6	73.8	0.44	21.4	D

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**Arterial Level of Service: WB Cordon Rd (#9)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Trelstad Ave	I	55	34.2	23.9	58.1	0.44	27.2	C
Total	I		34.2	23.9	58.1	0.44	27.2	C

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**Arterial Level of Service: WB Hazelgreen Rd (#1)**


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Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
OR 99E	I	50	98.6	37.5	136.1	1.37	36.2	B
Total	I		98.6	37.5	136.1	1.37	36.2	B



## TECHNICAL MEMORANDUM #4 – REFINED DRAFT

DATE: May 18, 2022

TO: Project Management Team

FROM: Lacy Brown, PhD, PE, RSP<sub>1</sub> | DKS Associates  
Jenna Bogert, PE | DKS Associates  
Travis Larson, EI | DKS Associates  
Chase Hildner, EI | DKS Associates

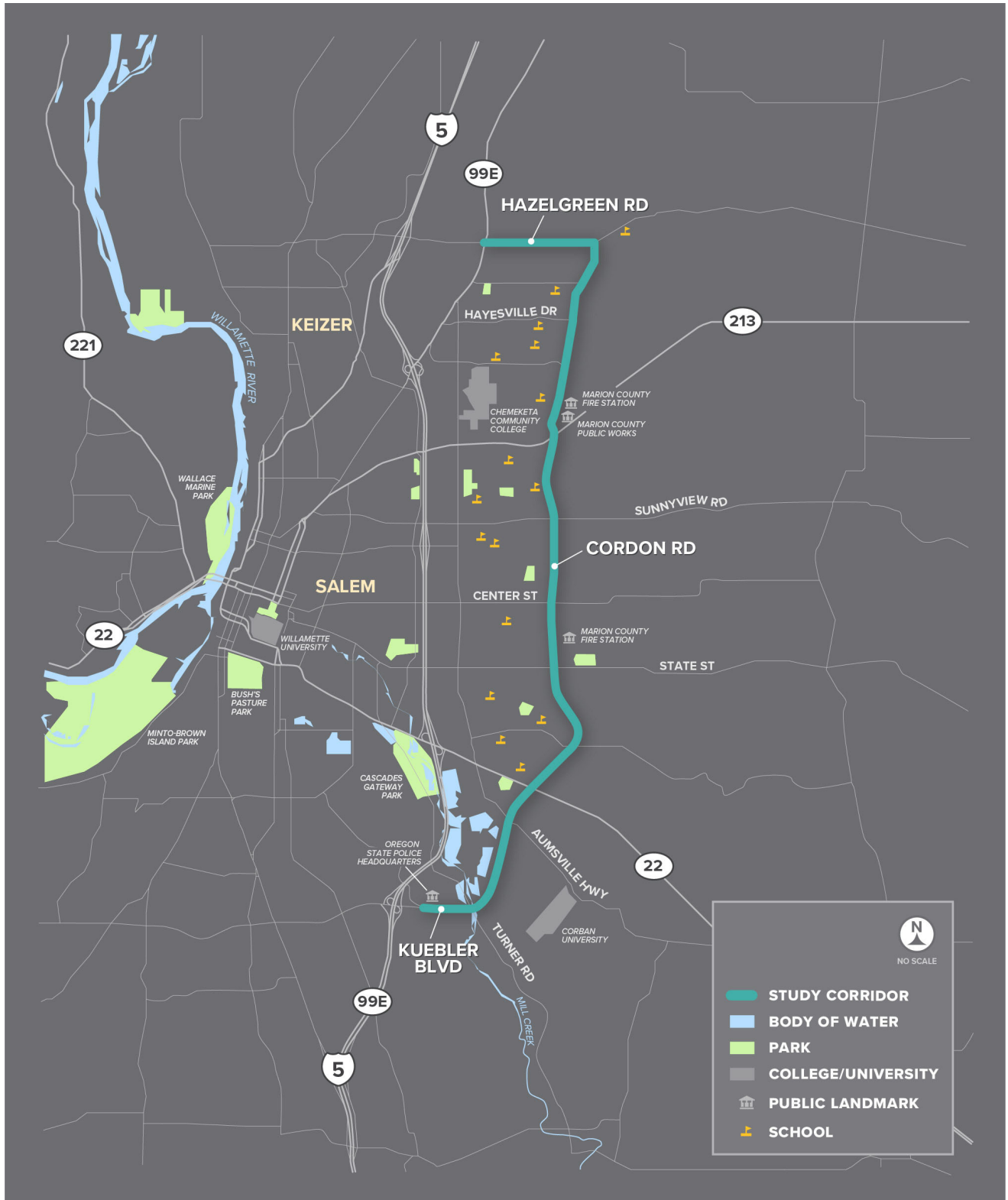
SUBJECT: Cordon-Kuebler Corridor Plan Existing Safety, Emergency, and Multimodal Analysis Project #22001-000

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### INTRODUCTION

The primary objective of the Cordon Road Corridor Plan project is to develop a multimodal corridor plan and an access management strategy that outlines a cohesive and consistent vision for the corridor that encourages desired land development, accommodates future growth, and creates a safe and enjoyable travel experience for users of all ages and abilities.

This memorandum focuses on the existing safety performance, detour routing, and multimodal characteristics of the corridor.



**FIGURE 1: STUDY AREA MAP**

## SAFETY ANALYSIS

This section contains an evaluation of the existing safety conditions based on available crash data along the corridor from the six most recent years of data (2015-2020). Crash data was obtained from the Oregon Department of Transportation (ODOT) Crash Analysis and Reporting Unit, and trends and crash rates are summarized below. Six years of crash data were used to better understand historical crash trends amidst the fluctuations in traffic volumes and crash occurrences related to the Covid-19 pandemic. Crash analyses typically use the five most recent years of released crash data in Oregon, which would include 2016-2020 data for this analysis. The study period was extended to include 2015 to provide a more comprehensive assessment of safety deficiencies that are present in more typical (pre-pandemic) conditions as well as during disruptive events (the Covid-19 pandemic).

### BASIC CRASH STATISTICS

Between 2015 and 2020, 745 crashes were reported along the project corridor. Of those crashes, 558 occurred at intersections (75% of total) and 187 occurred at non-intersection locations (25% of total).

An average of 124 crashes occurred per year as shown in Table 1. Consistent with statewide crash trends in 2020, there was a lower overall crash frequency in 2020, while the number of fatal and serious injury crashes remained consistent and the number of Property Damage Only (PDO) crashes dropped.

**TABLE 1: CRASH SEVERITY PER YEAR (2015-2020)**

SEVERITY	2015	2016	2017	2018	2019	2020	TOTAL	YEARLY AVERAGE
FATAL	1	2	2	3	1	1	<b>10</b>	<b>2</b>
SERIOUS INJURY	4	3	4	10	4	6	<b>31</b>	<b>5</b>
MINOR INJURY	22	28	19	20	19	21	<b>129</b>	<b>22</b>
POSSIBLE INJURY	53	44	47	48	58	50	<b>300</b>	<b>50</b>
PDO	47	51	48	43	50	36	<b>275</b>	<b>46</b>
<b>TOTAL</b>	<b>127</b>	<b>128</b>	<b>120</b>	<b>124</b>	<b>132</b>	<b>114</b>	<b>745</b>	<b>124</b>

The primary crash types recorded were rear-end crashes (438 crashes, 59% of total), turning movement crashes (149 crashes, 20% of total), angle crashes (65 crashes, 9% of total), and fixed object crashes (42 crashes, 6% of total). A breakdown of all crash types per severity level are provided in Table 2.

Of the 438 rear-end crashes along the corridor, 269 of the crashes (61% of all rear-end crashes) occurred at signalized intersections. The remaining 169 crashes (39% of all rear-end crashes) occurred at un-signalized intersections, driveways, or segments.

**TABLE 2: CRASH TYPE PER SEVERITY (2015-2020)**

	FATAL	SERIOUS INJURY	MINOR INJURY	POSSIBLE INJURY	PDO	TOTAL
ANGLE	2	6	12	20	25	<b>65</b>
BIKE	-	-	5	-	-	<b>5</b>
FIXED OBJECT	-	4	11	9	18	<b>42</b>
HEAD-ON	4	3	1	-	-	<b>8</b>
PEDESTRIAN	1	1	1	-	-	<b>3</b>
REAR-END	1	7	60	213	157	<b>438</b>
SIDESWIPE - MEETING	-	1	1	5	6	<b>13</b>
SIDESWIPE - OVERTAKING	-	-	-	3	7	<b>10</b>
TURNING MOVEMENT	2	8	36	48	55	<b>149</b>
OTHER	-	1	2	2	7	<b>12</b>
<b>TOTAL</b>	<b>10</b>	<b>31</b>	<b>129</b>	<b>300</b>	<b>275</b>	<b>745</b>

The primary contributing factors that were attributed to recorded crashes included 'Failed to Avoid' (35.0% of all crashes), 'Did Not Yield' (15.3% of all crashes), 'Followed Too Closely' (12.8% of all crashes), 'Inattention' (8.7% of all crashes), and 'Disregarded Traffic Signal' (7.2% of all crashes). The approximately 20 other primary contributing factors assigned to crashes were each attributed to less than 5.0% of all crashes. A percentage breakdown of the top primary contributing factors as shared above per severity level are provided in Table 3. Driver impairment from alcohol, drugs, or marijuana was present in 25 of the crashes (3.4% of all crashes).

**TABLE 3: CRASH CAUSE PER SEVERITY (2015-2020)**

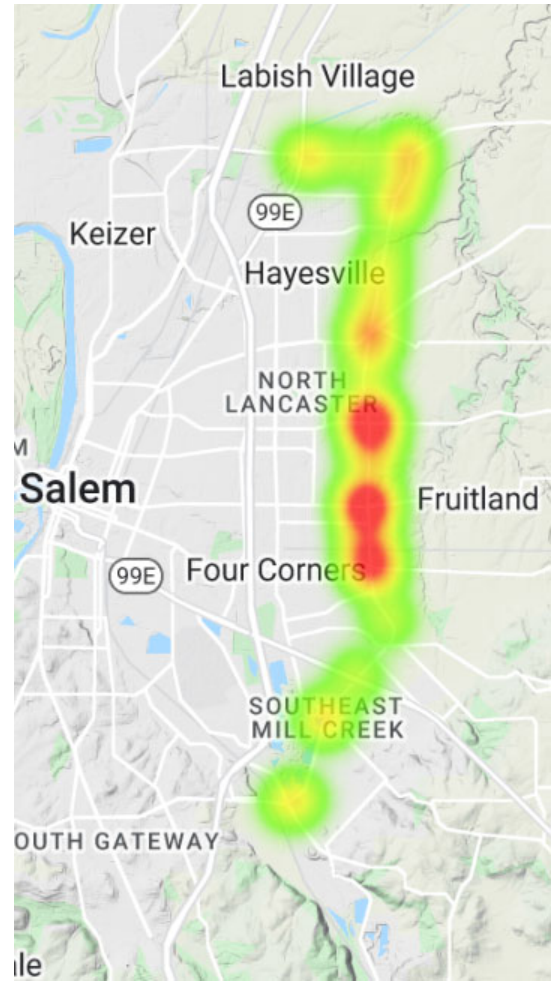
	FATAL	SERIOUS INJURY	MINOR INJURY	POSSIBLE INJURY	PDO	TOTAL
<b>FAILED TO AVOID</b>	-	0.3%	3.1%	15.0%	16.6%	<b>35.0%</b>
<b>DID NOT YIELD</b>	0.1%	0.9%	4.2%	5.2%	4.8%	<b>15.3%</b>
<b>FOLLOWED TOO CLOSELY</b>	-	0.4%	2.7%	8.1%	1.6%	<b>12.8%</b>
<b>INATTENTION</b>	0.3%	0.1%	1.9%	4.0%	2.4%	<b>8.7%</b>
<b>DISREGARDED TRAFFIC SIGNAL</b>	0.3%	0.5%	0.7%	2.3%	3.5%	<b>7.2%</b>
<b>OTHER <sup>A</sup></b>	0.6%	2.0%	4.7%	5.7%	8.0%	<b>21.0%</b>
<b>TOTAL</b>	<b>1.3%</b>	<b>4.2%</b>	<b>17.3%</b>	<b>40.3%</b>	<b>36.9%</b>	<b>100.0%</b>

<sup>A</sup> 'Other' includes all other contributing factors that account for less than 5% each of the overall crash total. This includes factors such as 'Careless Driving', 'Improper Turning', 'Speed', 'Fatigue', and 'Illness.'

## FATAL AND SERIOUS INJURY CRASHES

As shown in the three previous tables, 10 fatal crashes and 31 serious injury crashes were recorded on the study corridor during the study period. Five (50%) of the fatal crashes and 20 (65%) of the serious injury crashes occurred at intersections. A heatmap of both the fatal and serious injury crashes is presented in Figure 2, and the fatal crashes are described in detail below.

- A fatal angle crash occurred at the OR 99E/Hazelgreen Road intersection in 2017 during daytime conditions when a northbound vehicle disregarded the traffic signal and was struck by a westbound vehicle. Driver impairment was a contributing factor.
- A fatal head-on crash occurred along a straight roadway segment of Cordon Road between Kale Street and Hayesville Drive in 2017 during daytime conditions when a northbound driver attempting a passing maneuver struck a southbound vehicle. Driver impairment was a contributing factor.
- A fatal head-on crash occurred along a straight roadway segment of Cordon Road between Ward Drive and Herrin Road in 2015 during nighttime conditions when a northbound driver crossed the centerline and struck a southbound vehicle. Driver impairment was a contributing factor.
- A fatal rear-end crash occurred at the Herrin Road/Cordon Road intersection in 2018 during daytime conditions when a northbound driver, due to inattention, struck another northbound vehicle that had slowed down.
- A fatal pedestrian crash occurred along a straight roadway segment of Cordon Road just north of Sunnyview Road in 2016 during nighttime conditions when a northbound driver struck a pedestrian who was walking in the travel lane. This crash is also detailed as a pedestrian crash below.
- A fatal turning movement crash occurred at the Sunnyview Road/Cordon Road intersection in 2019 during nighttime conditions when an eastbound driver attempting to turn left onto Cordon Road was struck by a westbound driver after failing to yield. Driver impairment was a contributing factor.



**FIGURE 2: FATAL AND SERIOUS INJURY CRASH HEATMAP**

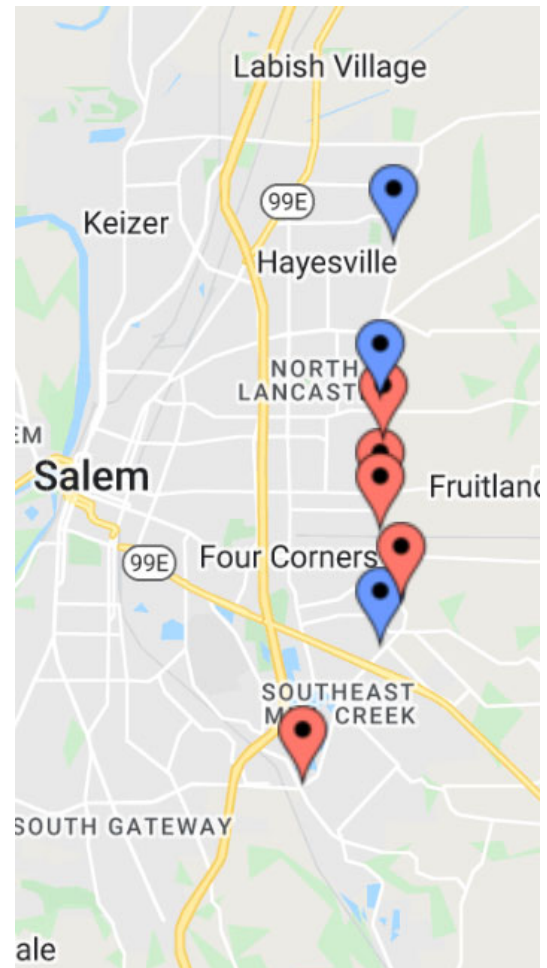
- A fatal angle crash occurred at the Center Street/Cordon Road intersection in 2020 during daytime conditions when a westbound driver disregarded the traffic signal and was struck by a northbound driver. Driver impairment was a contributing factor.
- A fatal turning movement crash occurred along a straight roadway segment of Cordon Road between Auburn Road and State Street in 2018 during daytime conditions when a southbound driver attempting to turn left into a driveway struck a northbound motorcycle due to inattention.
- A fatal head-on crash occurred on the Cordon Road – OR 22 overpass bridge in 2016 during daytime conditions when a southbound driver crossed the centerline and struck a northbound vehicle. Driver impairment was a contributing factor.
- A fatal head-on crash occurred at the Lancaster Drive/Kuebler Boulevard intersection in 2018 during nighttime conditions when a northbound driver failed to maintain their lane trajectory through the intersection and struck a southbound vehicle waiting to turn left. Driver impairment was a contributing factor.



## BICYCLE AND PEDESTRIAN CRASHES

There were five bicycle crashes and three pedestrian crashes recorded within the study corridor, which are discussed below. Three of the bicycle crashes occurred at intersections and the other two occurred at non-intersection locations. All three pedestrian crashes occurred at non-intersection locations. The pedestrian and bicycle crashes are displayed on Figure 3 and described in detail below.

- A serious injury pedestrian crash occurred along a straight roadway segment of Cordon Road between Hayesville Drive and Ward Drive in 2020 during daytime conditions when a southbound driver struck a pedestrian attempting to cross the road. Speed was not a contributing factor.
- A fatal pedestrian crash occurred along a straight roadway segment of Cordon Road just north of Sunnyview Road in 2016 during nighttime conditions when a northbound driver struck a pedestrian who was walking in the travel lane. This crash is also detailed as a fatal crash above.
- A minor injury bicycle crash occurred at the Swegle Road/Cordon Road intersection in 2019 during daytime conditions when an eastbound driver attempting to turn north onto Cordon Road did not yield to and struck a bicyclist crossing Cordon Road westbound.
- A minor injury bicycle crash occurred along a straight roadway segment of Cordon Road just south of Auburn Road in 2015 during nighttime conditions when a northbound vehicle was struck by a bicyclist attempting to cross the road.
- A minor injury bicycle crash occurred along a straight roadway segment of Cordon Road between Auburn Road and State Street in 2015 during nighttime conditions when a southbound driver rear-ended a bicyclist in the roadway.
- A minor injury bicycle crash occurred at the Caplinger Road/Cordon Road intersection in 2017 during nighttime conditions when a westbound driver attempting to turn south onto Cordon Road did not yield to and struck a bicyclist traveling northbound on Cordon Road.



**FIGURE 3: BICYCLE (RED) AND PEDESTRIAN (BLUE) CRASHES**

- A minor injury pedestrian crash occurred along a straight roadway segment of Cordon Road just south of the Gaffin Road intersection in 2017 during daytime conditions when a northbound driver left the roadway and struck a pedestrian traveling northbound in the bicycle lane. The crash was a hit and run.
- A minor injury bicycle crash occurred at the Turner Road/Kuebler Boulevard intersection in 2016 during daytime conditions when an eastbound driver attempting to turn south onto Turner Road did not yield to and struck a bicyclist traveling eastbound on Kuebler Boulevard.

## CRITICAL CRASH RATE CALCULATIONS

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ODOT guidance was followed to evaluate the critical crash rates at the study intersections and segments. Table 4 and Table 5 show the results of the evaluation. The purpose of comparing calculated (actual) crash rates with critical crash rates is to identify any sites where crashes occur at a higher frequency than expected and should be flagged for further investigation.

The analysis utilizes a few key metrics. The intersection types were determined by their respective geometries, traffic control, and land use, while the segment types were determined by their respective land uses and functional classification. The crash rate is then calculated based on crash frequency and vehicle volume, with crash rates at intersections given in units of crashes per million entering vehicles (crashes/MEV) and crash rates for segments given in units of crashes per million vehicle miles traveled (crashes/MVMT). The Calculated Crash Rates are then compared to a Critical Crash Rate (if a reference population is applicable) and the Statewide Comparison Crash Rates, which contain statewide average crash rates for each of the last five years and are published annually by the ODOT Crash Analysis and Reporting (CAR) Unit. Statewide Comparison crash rates for intersections can be found in Exhibit 4-1 in the ODOT Analysis Procedures Manual<sup>1</sup> and Statewide Comparison crash rates for segments can be found in Table II on the ODOT Crash Statistics and Reports website.<sup>2</sup>

The number of crashes per intersection is determined based on fields within each crash record (Road Characteristic = Intersection and Intersection Related Flag = Yes), making it easy to identify crashes per intersection for the critical crash rate analysis. For the segment critical crash rates, however, crash data must be analyzed in further detail as ODOT crash data for segments includes all crashes along a roadway, even intersection crashes. Therefore, the intersection crashes must be assigned to applicable segments for the segment critical crash rate analysis. For minor intersections that fall within a study segment, those intersection crashes are assigned to that segment. For major study intersections at the beginning or end of a segment, the number of crashes are split in half and applied equally between the two segments it rests between. For the two intersections at the beginning and end of the study corridor, half of the respective intersection crashes are applied to their respective segments and the other half of the crashes are not applied to any segment.

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<sup>1</sup> Analysis Procedures Manual, Oregon Department of Transportation, Updated 2020.

<sup>2</sup> Crash Statistics & Reports, Oregon Department of Transportation, Oregon.gov.

**TABLE 4: INTERSECTION CRITICAL CRASH RATE RESULTS**

INTERSECTION	GROUPING TYPE	AADT	NUMBER OF CRASHES	CRITICAL CRASH RATE (REFERENCE POPULATION)	STATEWIDE COMPARISON CRASH RATE (90 <sup>TH</sup> %ILE)	CALCULATED CRASH RATE <sup>A</sup>
OR 99E/ HAZELGREEN RD	Urban 4SG	29,600	52	0.974	0.860	0.802
LAKE LABISH RD/ HAZELGREEN RD	Rural 3ST	9,000	6	0.771	0.475	0.304
HAZELGREEN RD/ CORDON RD	Rural 4ST	13,000	11	-	1.080	0.386
KALE ST/ CORDON RD	Rural 3ST	8,800	13	0.774	<b>0.475</b>	0.675
HAYESVILLE DR/ CORDON RD	Rural 3ST	11,400	18	0.737	<b>0.475</b>	0.721
WARD DR/ CORDON RD	Rural 3ST	13,000	11	0.720	0.475	0.386
HERRIN RD/ CORDON RD	Rural 3ST	12,200	10	0.728	0.475	0.412
SILVERTON RD/ CORDON RD	Urban 4SG	27,100	28	0.983	0.860	0.472
SUNNYVIEW RD/ CORDON RD	Urban 4SG	23,600	53	<b>0.998</b>	<b>0.860</b>	<b>1.025</b>
SWEGLE RD/ CORDON RD	Urban 4ST	20,700	13	-	0.408	0.287
CENTER ST/ CORDON RD	Urban 4SG	24,800	58	<b>0.992</b>	<b>0.860</b>	<b>1.068</b>
AUBURN RD/ CORDON RD	Urban 4ST	22,200	10	-	0.408	0.206
STATE ST/ CORDON RD	Urban 4SG	30,400	57	0.972	0.860	0.856
PENNSYLVANIA AVE/CORDON RD	Urban 3ST	20,200	7	-	0.293	0.158
CAPLINGER ST/ CORDON RD	Urban 4ST	19,300	9	-	0.408	0.213
MACLEAY RD/ CORDON RD	Urban 4SG	18,900	16	1.024	0.860	0.387
GAFFIN RD/ CORDON RD	Urban 4SG	18,600	18	1.026	0.860	0.442

INTERSECTION	GROUPING TYPE	AADT	NUMBER OF CRASHES	CRITICAL CRASH RATE (REFERENCE POPULATION)	STATEWIDE COMPARISON CRASH RATE (90 <sup>TH</sup> %ILE)	CALCULATED CRASH RATE <sup>A</sup>
LANCASTER DR/ KUEBLER BLVD	Urban 4SG	24,500	21	0.994	0.860	0.391
MILL CREEK DR/ KUEBLER BLVD	Urban 3SG	16,600	2	-	0.509	0.055
TURNER RD/ KUEBLER BLVD	Urban 4SG	26,800	77	<b>0.984</b>	<b>0.860</b>	<b>1.312</b>
36 <sup>TH</sup> AVE/ KUEBLER BLVD	Urban 4SG	25,700	50	0.989	<b>0.860</b>	0.888

**BOLD/HIGHLIGHTED** = CALCULATED RATE EXCEEDS THE CRITICAL CRASH RATE AND THE STATEWIDE COMPARISON CRASH RATE

**BOLD/HIGHLIGHTED** = CALCULATED RATE ONLY EXCEEDS THE STATEWIDE COMPARISON CRASH RATE

<sup>A</sup> = WHERE REFERENCE POPULATIONS ARE AVAILABLE, COMPARISONS TO THE CALCULATED CRASH RATE SHOULD BE MADE TO THE CRITICAL CRASH RATE IN LIEU OF THE STATEWIDE COMPARISON CRASH RATE

As shown above, three study intersections had a calculated crash rate greater than both their critical crash rates and the statewide comparison rates, and three study intersections had calculated crash rates greater than their statewide comparison crash rates.

- The Kale Street/Cordon Road intersection had a calculated crash rate higher than the comparison crash rate. The 13 total crashes included six rear-end crashes, five turning movement crashes, one fixed object crash, and one other crash. None of the crashes were fatal or involved bicycles or pedestrians. While this intersection is rural and is not built-out like an urban intersection, it is adjacent to larger housing developments. Systemic stop-controlled safety enhancements could be considered at this location.
- The Hayesville Drive/Cordon Road intersection had a calculated crash rate higher than the comparison crash rate. The 18 total crashes included 13 rear-end crashes, 4 turning movement crashes, and one fixed object crash. None of the crashes were fatal or involved bicycles or pedestrians. While this intersection is rural and is not built-out like an urban intersection, it is adjacent to larger housing developments. Systemic stop-controlled safety enhancements could be considered at this location.
- The Sunnyview Road/Cordon Road intersection had a calculated crash rate higher than both the critical and comparison crash rate. The 53 total crashes included 26 rear-end crashes, 20 turning movement crashes, five angle crashes, one backing crash, and one fixed object crash. One of the turning movement crashes was fatal, but none of the crashes involved bicycles or pedestrians. Systemic signal visibility safety enhancements could be considered at this location.
- The Center Street/Cordon Road intersection had a calculated crash rate higher than both the critical and comparison crash rate. The 58 total crashes included 35 rear-end crashes, 12 turning movement crashes, nine angle crashes, one backing crash, and one fixed object crash. One of the angles crashes was fatal, but none of the crashes involved bicycles or

pedestrians. Systemic signal visibility safety enhancements could be considered at this location.

- The Turner Road/Kuebler Boulevard intersection had a calculated crash rate higher than both the critical and comparison crash rate. The 77 total crashes included 56 rear-end crashes, 12 turning movement crashes, six angle crashes, one bicycle crash, one sideswipe-meeting crash, and one sideswipe-overtaking crash. None of the crashes were fatal nor involved pedestrians. Systemic signal visibility safety enhancements could be considered at this location.
- The 36<sup>th</sup> Avenue/Kuebler Boulevard intersection had a calculated crash rate higher than the comparison crash rate. The 50 total crashes included 41 rear-end crashes, seven turning movement crashes, one angle crash, and one fixed object crash. None of the crashes were fatal nor involved pedestrians or bicyclists. Safety enhancements that would mitigate the high prevalence of rear-end crashes could be considered.

**TABLE 5: SEGMENT CRITICAL CRASH RATE RESULTS**

SEGMENT	REFERENCE POPULATION	AADT	SEGMENT LENGTH (MILES)	NUMBER OF CRASHES	CRITICAL CRASH RATE (REFERENCE POPULATION)	STATEWIDE COMPARISON CRASH RATE (90 <sup>TH</sup> %ILE)	CALCULATED CRASH RATE
OR 99E -> CORDON RD	Rural Principal Arterial	19,700	1.37	58	-	0.847	0.981
HAZELGREEN RD -> SILVERTON RD	Rural Principal Arterial	18,700	2.44	112	-	0.847	1.121
SILVERTON RD -> SUNNYVIEW RD	Urban Fringe Principal Arterial	31,000	1.15	69	1.252	1.277	0.884
SUNNYVIEW RD -> CENTER ST	Urban Fringe Principal Arterial	33,300	1.06	89	1.253	1.277	1.151
CENTER ST -> STATE ST	Urban Fringe Principal Arterial	36,500	0.80	107	<b>1.274</b>	<b>1.277</b>	<b>1.673</b>
STATE ST -> MACLEAY RD	Urban Fringe Principal Arterial	29,900	1.10	64	1.261	1.277	0.889
MACLEAY RD -> LANCASTER DR	Urban Fringe Principal Arterial	27,400	1.23	44	1.258	1.277	0.596
LANCASTER DR -> 36 <sup>TH</sup> AVE	Urban Fringe Principal Arterial	36,200	1.66	151	1.206	1.277	1.147

**BOLD/HIGHLIGHTED** = CALCULATED RATE EXCEEDS THE CRITICAL CRASH RATE AND THE STATEWIDE COMPARISON CRASH RATE

**BOLD/HIGHLIGHTED** = CALCULATED RATE ONLY EXCEEDS THE STATEWIDE COMPARISON CRASH RATE

As shown above, one roadway segment had a calculated crash rate greater than both its critical crash rate and the statewide comparison rate, and two segments had calculated crash rates greater than their statewide comparison crash rates.

- The two rural roadway segments, OR 99E to Cordon Road and Hazelgreen Road to Silverton Road, had calculated crash rates greater than their statewide comparison crash rates. While the area around these segments is more rural in nature, the segment has a higher prevalence of intersections and non-intersection accesses than a very rural roadway. Thirty-seven of the 58 crashes (64%) assigned to the OR 99E to Cordon Road segment and 72 of the 107 crashes (67%) assigned to the Hazelgreen Road to Silverton Road segment were crashes at study intersections. Therefore, the segment crash rate is over-inflated due to the corridor being analyzed as a rural segment while having relatively dense spacing of intersections and access points. No segment-specific safety improvements are recommended at this time.
- The Center Street to State Street segment had a calculated crash rate greater than both its critical crash rate and the statewide comparison rate. The segment is relatively short (0.80-mile long) with two major intersections on either end of the segment. Thirty-nine of the 107 crashes (36%) were non-intersection related, while the remaining 69 crashes occurred at intersections. Therefore, while a number of crashes occurred along the segment, the crash rate is over-inflated due to the short segment length and major intersections at the beginning and end of the segment. No segment-specific safety improvements are recommended at this time.

## ODOT OFF-STATE HIGHWAY SPIS REPORTS

The Safety Priority Index System (SPIS) is the ranking system developed by ODOT to identify potential safety problems on state highways. SPIS scores are developed based upon crash frequency, severity, and rate for a 0.01 mile or variable length segment along the state highway over a rolling three-year window, which creates a prioritized list of the top 15% of statewide SPIS sites for each region. For this project, the three most recent SPIS cycle lists were reviewed: SPIS 2019 (2016-2018 crashes), SPIS 2018 (2015-2017 crashes), and SPIS 2017 (2014-2016 crashes).

Based on these lists, the following intersections and roadway segments in Table 6 were identified. Of the 11 locations, 10 are study intersections and one is on a segment.

**TABLE 6: SPIS RANKINGS**

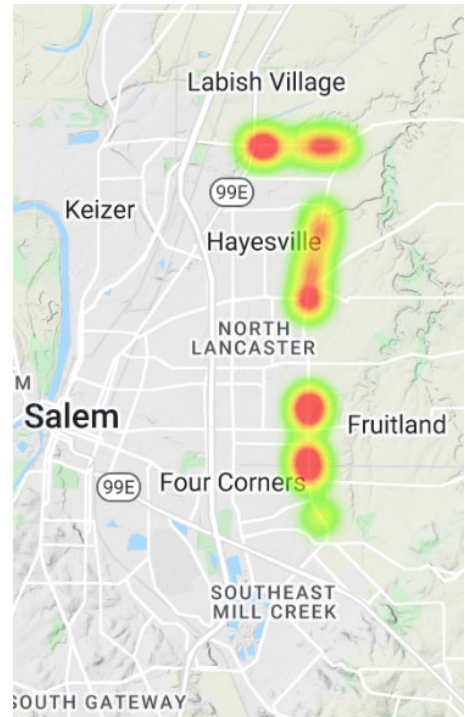
LOCATION	SPIS 2019 (2016-2018 CRASHES)	SPIS 2018 (2015-2017 CRASHES)	SPIS 2017 (2014-2016 CRASHES)
HAZELGREEN RD/ CORDON RD INTERSECTION	Top 5%	Top 15%	Top 10%
HERRIN RD/ CORDON RD INTERSECTION	Top 10%	-	-
SILVERTON RD/ CORDON RD INTERSECTION	Top 5%	-	Top 10%
SUNNYVIEW RD/ CORDON RD INTERSECTION	Top 5%	Top 5%	Top 5%
SWEGLE RD/ CORDON RD INTERSECTION	Top 5%	Top 10%	Top 15%
CENTER ST/ CORDON RD INTERSECTION	Top 5%	Top 5%	Top 5%
MARION COUNTY FIRE DISTRICT #1 - FOUR CORNERS STATION DRIVEWAY	Top 15%	-	-
STATE ST/ CORDON RD INTERSECTION	Top 5%	Top 5%	Top 5%
CAPLINGER RD/ CORDON RD INTERSECTION	-	-	Top 15%
LANCASTER DR/ KUEBLER BLVD INTERSECTION	Top 10%	-	Top 15%
TURNER RD/ KUEBLER BLVD INTERSECTION	Top 5%	Top 5%	Top 10%



## ACCESS-RELATED CRASHES

Varying levels of access currently exist along the Cordon Road corridor. Kuebler Boulevard between 36<sup>th</sup> Avenue and Lancaster Drive only has access at study intersections, while Cordon Road between Center Street and State Street has multiple driveway access points for private residences, businesses, a sports complex, and a fire station. Driveway and alley (non-intersection) crash data was analyzed to determine crash hotspots and trends. Figure 4 shows the hotspot locations of the access-related crashes and Table 7 provides the crash types per severity level.

There were 38 access-related (non-intersection) crashes along the corridor. The crashes consisted of either rear-end (21 crashes, 55%) or turning movement (17 crashes, 45%) crashes. No access-related crashes were recorded south of the Caplinger Road/Cordon Road intersection. The primary crash causes were 'Not Yielding' (12 crashes, 32%) 'Failed to Avoid' (12 crashes, 32%).



**FIGURE 4: ACCESS-RELATED CRASHES (NON-INTERSECTION) HEATMAP**

**TABLE 7: ACCESS-RELATED CRASHES (NON-INTERSECTION)**

	FATAL	SERIOUS INJURY	MINOR INJURY	POSSIBLE INJURY	PDO	TOTAL
REAR-END	-	-	4	9	8	<b>21</b>
TURNING MOVEMENT	1	1	3	7	5	<b>17</b>
<b>TOTAL</b>	<b>1</b>	<b>1</b>	<b>7</b>	<b>16</b>	<b>13</b>	<b>38</b>

## SAFETY SUMMARY

Table 8 below identifies the study area intersections and segments that were flagged in the safety evaluation as having a fatal or serious injury crash, exceeding the expected crash rate, involving a SPIS site, or having documented access-related crash patterns. Special consideration should be given to incorporate proven safety countermeasures during the development of alternatives for those locations with a higher number of safety performance flags.

**TABLE 8: STUDY AREA SAFETY EVALUATION SUMMARY**

STUDY SITES	FATAL OR SERIOUS INJURY CRASH?	EXCEEDS EXPECTED CRASH RATE?	ODOT SPIS SITE?	ACCESS-RELATED CRASH? <sup>A</sup>
<b>INTERSECTIONS</b>				
OR 99E/ HAZELGREEN RD	YES	-	YES	N/A
LAKE LABISH RD/ HAZELGREEN RD	YES	-	-	N/A
HAZELGREEN RD/ CORDON RD	YES	-	-	N/A
KALE ST/ CORDON RD	YES	YES	-	N/A
HAYESVILLE DR/ CORDON RD	-	YES	-	N/A
WARD DR/ CORDON RD	-	-	-	N/A
HERRIN RD/ CORDON RD	YES	-	YES	N/A
SILVERTON RD/ CORDON RD	YES	-	YES	N/A
SUNNYVIEW RD/ CORDON RD	YES	YES	YES	N/A
SWEGLE RD/ CORDON RD	YES	-	YES	N/A
CENTER ST/ CORDON RD	YES	YES	YES	N/A
AUBURN RD/ CORDON RD	-	-	-	N/A
STATE ST/ CORDON RD	YES	-	YES	N/A

STUDY SITES	FATAL OR SERIOUS INJURY CRASH?	EXCEEDS EXPECTED CRASH RATE?	ODOT SPIS SITE?	ACCESS-RELATED CRASH? <sup>A</sup>
PENNSYLVANIA AVE/ CORDON RD	-	-	-	N/A
CAPLINGER ST/ CORDON RD	-	-	YES	N/A
MACLEAY RD/ CORDON RD	-	-	-	N/A
GAFFIN RD/ CORDON RD	-	-	-	N/A
LANCASTER DR/ KUEBLER BLVD	YES	-	YES	N/A
MILL CREEK DR/ KUEBLER BLVD	-	-	-	N/A
TURNER RD/ KUEBLER BLVD	YES	YES	YES	N/A
36 <sup>TH</sup> AVE/ KUEBLER BLVD	-	YES	-	N/A
<b>SEGMENTS</b>				
OR 99E -> CORDON RD	YES	YES	-	YES
HAZELGREEN RD -> SILVERTON RD	YES	YES	-	YES
SILVERTON RD -> SUNNYVIEW RD	YES	-	-	YES
SUNNYVIEW RD -> CENTER ST	-	-	-	YES
CENTER ST -> STATE ST	YES	YES	YES	YES
STATE ST -> MACLEAY RD	YES	-	-	YES
MACLEAY RD -> LANCASTER DR	YES	-	-	-
LANCASTER DR -> 36 <sup>TH</sup> AVE	-	-	-	-

<sup>A</sup> = ACCESS-RELATED CRASHES ARE ONLY PRESENT AT NON-INTERSECTION LOCATIONS LIKE DRIVEWAYS AND ALLEYS

## EMERGENCY ROUTE ANALYSIS

In the late 1990s, Cordon Road was designated as a necessary detour route due to a major realignment project along I-5. The construction required full closure of I-5 at various times and traffic was directed to use the Cordon Road corridor as a detour route. Due to the high volume of trucks using the detour route during the time, a free eastbound right turn was constructed and opened at the intersection of Cordon Road/Hazelgreen Road during reroute events to accommodate efficient movement and the wide turning radii of larger trucks. At the conclusion of the I-5 realignment project, the eastbound right turn was gated and the detour route has never been officially utilized for any I-5 closures.

Although not officially used for detour routes, the Cordon Road study corridor is still utilized as an unofficial detour route for traffic traveling north-south through Salem when events cause delays on I-5 and GPS-based apps direct drivers to Cordon Road.

Based on data provided by the Oregon Department of Transportation (ODOT), the total number of documented closures on I-5 near the study corridor was 21 events from 2017 to 2021. The events included any closure on I-5 that closed at least one lane of traffic between milepost (MP) 252 and 260. See Table 9 for a summary of these events.

The majority of the I-5 closures were due to fatal crashes (62%) and agency assists (24%), which is a situation where the highway needs to be closed for a non-traffic-related issue.

**TABLE 9: I-5 CLOSURE SUMMARY DATA (MP 252-260)**

CLOSURE TYPE	TOTAL NUMBER OF CLOSURES (2017-2021)	AVERAGE CLOSURE FREQUENCY	AVERAGE CLOSURE DURATION	MAXIMUM CLOSURE DURATION
FATAL CRASH	13	2.6 Events / Year	1 hour, 23 mins	3 hours, 46 mins
AGENCY ASSIST	5	1 Event / Year	49 mins	2 hours, 35 mins
VEHICLE FIRE	1	0.2 Events / Year	8 mins	-
CLOSURE	1	0.2 Events / Year	23 hours, 36 mins	-
CONSTRUCTION	1	0.2 Events / Year	13 days, 15 hours, 18 mins	-
<b>TOTAL</b>	<b>21</b>	<b>4.2 Events / Year</b>	-	-

Of the 21 closures, four were selected for further evaluation in order to quantify the travel time and travel speed impacts to the Cordon Road corridor during these events using INRIX data and the RITIS platform. The four events included two fatal crashes that caused closures of I-5 over 2 hours, one non-fatal crash in the northbound direction that lasted for 1.5 hours, and one agency assist in which both directions of I-5 were closed for over 3 hours due to a person in distress on the D Street overpass.

In general, there were negligible travel time impacts to the Cordon Road corridor during the three crash events on I-5. This is likely due to the existence of multiple, shorter, parallel detour routes (Lancaster Drive, Hawthorne Avenue, etc.) that are available to drivers.

There were significant increases in congestion and decreases in travel speed (approximately 21%) along the Cordon Road corridor during the 3.7-hour closure agency assist event near the D Street overpass.

## **EMERGENCY ROUTE SUMMARY**

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In summary, incidents that result in a notable shift in traffic from I-5 to Cordon Road are infrequent and result in inconsistent changes in congestion, travel time, and speeds. It is not recommended that future transportation solutions for Cordon Road be designed to specifically account for potential detour traffic events.

## MULTIMODAL INVENTORY & ANALYSIS

A multimodal inventory examination and qualitative analysis was conducted on the existing conditions and future possibilities of the Cordon Road Corridor. This included evaluating existing pedestrian and bicycles facilities, transit services, and general roadway conditions. Then future opportunities and constraints were identified based on the current conditions. An Inventory Figure, Figure 5 on the following page, provides a corridor-long graphic of the locations of multimodal infrastructure and highlights constraints and opportunities.

### PEDESTRIAN AND BICYCLE FACILITIES

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The Cordon Road corridor has limited pedestrian and bicycle infrastructure, as shown on Figure 5. The majority of the approximately 10-mile corridor is under-developed and currently caters predominantly to vehicular traffic. There is an absence of curbs and gutters throughout the corridor.

There are a few existing segments of sidewalk intermittently along the corridor, but pedestrian facilities are absent for the majority of the corridor. The longest stretch of sidewalk is a multi-use path approximately 1,400 feet long on the west side of Cordon Road near Chavez Elementary School. The path is not directly accessible from the school and dead-ends at farm land, thereby not providing any real connectivity. Other small bits of sidewalk and pedestrian ramps can be found at some major intersections along the corridor. Overall, the corridor provides poor pedestrian connectivity with numerous segments lacking sidewalk on either side of the road.

There are, however, existing shoulder bicycle lanes on both sides of the road for the entire corridor except in one area. The only section of roadway without adequate shoulder width is at the Cordon Road – OR 22 overpass bridge. For the rest of the corridor, the bike lane widths vary between 5-feet to 6-feet wide and are standard bicycle lanes (not buffered or otherwise enhanced). Bicycle lane pavement markings are found at a few major intersections at the southern end of the corridor, but the rest of the bicycle lanes are unmarked.



Match Line A (below left)

Match Line A (above right)

**SCHOOL**

**Pedestrian & Bicycle Facilities**

- SIDEWALKS
- BIKE LANES

**Transit Routes**

- RT 4
- RT 5
- RT 6
- RT 11
- RT 12
- RT 10X
- RT 20X
- RT 30X
- BUS STOP

figure 5  
INVENTORY ANALYSIS

## NEARBY SCHOOLS

While the corridor is relatively under-developed for multimodal traffic, there are a significant number of primary and secondary schools that are within a short walk or bike ride of the corridor. All schools within a 1-mile walk of the Cordon Road corridor are listed below, and schools within approximately 1/2-mile of the corridor are displayed on Figure 5. As shown, a significant number of schools are located close to the corridor, with 11 of the 16 schools being elementary schools.

- Valley Inquiry Charter School – 0.3-mile walk
- Hammond Elementary School – 0.7-mile walk
- Adam Stephens Middle School – 0.3-mile walk
- Yoshikai Elementary School – 0.8-mile walk
- Hayesville Elementary School – 0.7-mile walk
- Lamb Elementary School – 0.1-mile walk
- Scott Elementary School – 0.8-mile walk
- Chavez Elementary School – 0.2-mile walk
- McKay High School – 1.0-mile walk
- Blanchet Catholic School – 1.0-mile walk
- Swegle Elementary School – 0.8-mile walk
- Auburn Elementary School – 0.6-mile walk
- Four Corners Elementary School – 1.0-mile walk
- Mary Eyre Elementary School – 0.3-mile walk
- Houck Middle School – 0.9-mile walk
- Miller Elementary School – 1.0-mile walk



## TRANSIT SERVICES

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Existing transit service and bus stops do not currently provide service along the Cordon Road study corridor. However, a range of transit routes either cross or get close to the study corridor. Cherriots provides bus service all over the Salem, Keizer, and Mid-Willamette Valley area. This includes local transit routes within the urban city limits of Salem and Keizer, as well as regional routes that connect the Salem-Keizer area with the great Mid-Willamette Valley region. Five Cherriots local routes are located close to the study corridor and have transit stops within a walkable distance to the study corridor, and another three Cherriots regional routes cross over the study corridor without any nearby transit stops. These transit routes and applicable transit stops are shown in Figure 5 and listed below.

- *Route 4: State Street* – Connects the Salem Downtown Transit Center to the Pennsylvania Avenue area with 30-minute headways on average. The closest transit stop is approximately 200 feet west of Cordon Road.
- *Route 5: Center Street* – Connects the Salem Downtown Transit Center to the Sunnyview Road area with 15-minute headways on average. The closest transit stop is approximately 1,000 feet west of Cordon Road.
- *Route 6: Fairview Industrial* – Connects the Salem Downtown Transit Center to the South Salem area with 60-minute headways on average. The closest transit stop is approximately 2,500 feet northwest of Kuebler Boulevard.
- *Route 11: Lancaster/Verde* – Connects the Keizer Transit Center to the Aumsville Highway area with 15-minute headways on average. The closest transit stop is approximately 600 feet northwest of Cordon Road.
- *Route 12: Hayesville Drive* – Connects the Keizer Transit Center to Chemeketa Community College with 60-minute headways on average. The closest transit stop is approximately 2,000 feet west of Cordon Road.
- *Route 10X: Woodburn/Salem Express* – Connects the Salem Downtown Transit Center to Woodburn via OR 99E with approximately 10 roundtrips per day. The route only crosses the study corridor and provides no transit stops near the corridor.
- *Route 20X: North Marion County/Salem Express* – Connects the Salem Downtown Transit Center to Woodburn via Silverton Road with approximately 5 roundtrips per day. The route only crosses the study corridor and provides no transit stops near the corridor.
- *Route 30X: Santiam/Salem Express* – Connects the Salem Downtown Transit Center to Gates via Turner Road with less than 5 roundtrips per day. The route only crosses the study corridor and provides no transit stops near the corridor.

## FUTURE IMPROVEMENTS – CONSTRAINTS AND OPPORTUNITIES

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Key opportunities and constraints to improving the multimodal facilities and conditions along the corridor are listed below.

### Opportunities

- *Wide Right-of-Way* – The existing right-of-way along the corridor is wide, with plenty of under-utilized public right-of-way currently. This provides flexibility in cross-section designs that can accommodate multi-modal facilities with minimal impacts to private property.
- *Undeveloped Land* – As the study corridor is relatively undeveloped, there is the great opportunity to create a cohesive plan for the entire corridor with fewer constraints and in-situ factors related to existing land uses. There is an opportunity to develop a corridor plan that aligns multimodal facilities with desired/anticipated future land uses adjacent to the corridor, which will result in a cohesive transportation and land development environment.
- *Regional Multi-Use Path* – With the available right-of-way, a separated multi-use path (or similar separated/protected facility for bicycles) extending the entire length of the corridor is a feasible consideration. Due to the limited current development, corridor roadway cross sections can be developed that facilitate and encourage multimodal travel.
- *Corridor Transit Service* – As no transit service currently exists along the corridor, proposals can be made for creating multimodal transit stops and hubs that have amenities for when growth along the corridor justifies a new transit line.

### Constraints

- *Bridge Replacement* – One of the most significant current constraints of the study corridor are three bridges on the southern end of the corridor that limit the cross-sectional width of any future proposed roadway cross-sections. The OR 22 overpass bridge is approximately 25-feet wide, the Union Pacific railroad overpass bridge is approximately 45-feet wide, and the Mill Creek bridge is approximately 60-feet wide. The corridor plan will need to factor in the timeline and feasibility of these bridges being replaced or retrofitted.
- *Speed Limit and Vehicle-Dominance* – It will take time and effort to help the community realize a greater vision of the Cordon Road corridor that is more balanced and provides opportunities for all modes of travel. With the corridor currently oriented to primarily serve vehicles at higher speeds, traffic safety and access measures will need to be implemented to ensure that the facilities created for all modes of travel are connected, safe, and accessible.
- *Limited Current Infrastructure* – While limited infrastructure can make it easier for providing a more cohesive plan for the whole corridor, it will take time for the vision to be fully realized and built-out. This means that interim and phased multimodal improvements need to be individually effective as well as cohesive to the greater corridor vision.

## SUMMARY

This memorandum presents the findings of the safety analysis, emergency route analysis, and multimodal inventory and analysis.

### Safety Analysis

- During the six-year study period, 745 crashes were reported along the project corridor, amounting to an average of 124 crashes per year. A total of 10 crashes resulted in a fatality and 31 crashes resulted in a serious injury. Three crashes involved pedestrians and five crashes involved bicyclists.
- The most common crash types were rear-end crashes (59% of total) and turning movement crashes (20% of total).
- The most common primary contributing factors were 'Failed to Avoid' (35% of total) and 'Did Not Yield' (15% of total).
- Safety concerns were identified at study intersections and study segments along the corridor and are summarized per safety category in Table 8 of the Safety Summary. Of these safety concerns, 10 of the intersections and three of the segments from the table are highlighted below as they displayed safety concerns that included both a fatal or serious injury at the location and either exceeded the expected crash rate and/or were flagged as an ODOT SPIS site. Special consideration should be given to incorporate proven safety countermeasures during the development of alternatives for these locations.
  - OR 99E/Hazelgreen Road Intersection
  - OR 99E to Cordon Road Segment
  - Hazelgreen Road to Silverton Road Segment
  - Kale Street/Cordon Road Intersection
  - Herrin Road/Cordon Road Intersection
  - Silverton Road/Cordon Road Intersection
  - Sunnyview Road/Cordon Road Intersection
  - Swegle Road/Cordon Road Intersection
  - Center Street/Cordon Road Intersection
  - Center Street to State Street Segment
  - State Street/Cordon Road Intersection
  - Lancaster Drive/Kuebler Boulevard Intersection
  - Turner Road/Kuebler Boulevard Intersection

## **Emergency Route Analysis**

- There have been 21 documented closures on I-5 between milepost (MP) 252 and 260 from 2017 to 2021, which is an average of 4.2 closure events per year.
- Four closure events were selected for further evaluation in order to quantify the travel time and travel speed impacts to the Cordon Road corridor during these events.
- Because of the existence of multiple, shorter, parallel detour routes (Lancaster Drive, Hawthorne Avenue, etc.) that are available to drivers, three of the four closure events that were evaluated resulted in insignificant impacts.
- Incidents that result in a notable shift in traffic from I-5 to Cordon Road are infrequent and it is not recommended that future transportation solutions for Cordon Road be designed to specifically account for potential detour traffic events.

## **Multimodal Inventory & Analysis**

- There are very few sidewalks along the corridor and, as such, there is not a safe and comfortable travel path for walking along the Cordon Road corridor.
- Standard bicycle lanes are present for most of the corridor length. These bicycle lanes are not buffered or protected from the vehicular lanes and few bicycle-related pavement markings and signs are present.
- A large quantity of primary and secondary schools are present near the corridor.
- Transit service is present in many of the areas surrounding the study corridor, but no routes currently travel on the corridor directly.
- While the multimodal infrastructure along the Cordon Road corridor is limited today and there are notable constraints to providing continuous biking and walking paths, the amount of adjacent land that is slated to be developed or redeveloped in the future introduces significant opportunities to fund and implement multimodal improvements along the corridor.

# APPENDIX

## CONTENTS

**APPENDIX A: CRASH DATA**

**APPENDIX B: INCIDENT LOG**

**APPENDIX C: RITIS DATA**



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# APPENDIX A: CRASH DATA

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	Q	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC																																																	
1	000	Crash	015 Street	016 Intersect	028 Crash	029 Collis	031	Wea	032	Road	033 Light	034 Traffic	035 Crash	114 Road	117 Severn	118 Inte	126 Bike	002 Year	001 Date	004	Cras	021 Road	022 Off	023 Insc	024 Usv	025	Drwyw	027 Medin	030	Crash	035	Crash	039	Alcohol	040	Drug	041	Manjju	042	051	Lane	052	054	055	056	057	058	059	060	061	062	063	064	065	066	067	068	069	070	071	072	073	074	075	076	077	078	079	080	081	082	083	084	085	086	087	088	089	090	091	092	093	094	095	096	097	098	099	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116
1	000	Crash	015 Street	016 Intersect	028 Crash	029 Collis	031	Wea	032	Road	033 Light	034 Traffic	035 Crash	114 Road	117 Severn	118 Inte	126 Bike	002 Year	001 Date	004	Cras	021 Road	022 Off	023 Insc	024 Usv	025	Drwyw	027 Medin	030	Crash	035	Crash	039	Alcohol	040	Drug	041	Manjju	042	051	Lane	052	054	055	056	057	058	059	060	061	062	063	064	065	066	067	068	069	070	071	072	073	074	075	076	077	078	079	080	081	082	083	084	085	086	087	088	089	090	091	092	093	094	095	096	097	098	099	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116
1	000	Crash	015 Street	016 Intersect	028 Crash	029 Collis	031	Wea	032	Road	033 Light	034 Traffic	035 Crash	114 Road	117 Severn	118 Inte	126 Bike	002 Year	001 Date	004	Cras	021 Road	022 Off	023 Insc	024 Usv	025	Drwyw	027 Medin	030	Crash	035	Crash	039	Alcohol	040	Drug	041	Manjju	042	051	Lane	052	054	055	056	057	058	059	060	061	062	063	064	065	066	067	068	069	070	071	072	073	074	075	076	077	078	079	080	081	082	083	084	085	086	087	088	089	090	091	092	093	094	095	096	097	098	099	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116















# APPENDIX B: INCIDENT LOG

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## Closure Events 2017 - 2021

Event ID	Closure Duration (Hours)	SubType	Impact	Travel Lanes Impacted	Route	Start MP	Created Date	DirectionCode
19T099635	0.037777778	Agency Assist	Closure	5	I-5	258	11/3/2019 15:59	BTH, NB, B
21T052544	0.486111111	Agency Assist	Closure	3	I-5	252.99	6/10/2021 19:22	SB
21T057890	0.174166667	Agency Assist	Closure	3	I-5	253	6/25/2021 22:50	SB
21T085979	2.584166667	Agency Assist	Closure	6	I-5	256	9/17/2021 15:53	SB, NB
21T089763		Agency Assist	2 hrs or greater	6	I-5	258.62	9/28/2021 17:06	NB, SB
21T019005	23.598055556	Closure	Closure	6	I-5	252	2/20/2021 22:00	NB, SB
17T069236	2.957777778	Crash	Closure	2	I-5	258	7/24/2017 18:13	BTH, NB
18T074479	0.713333333	Crash	Closure with Detour	3	I-5	260	9/4/2018 22:09	SB
18T074483	0.616388889	Crash	Closure	3	I-5	253	9/4/2018 22:14	SB
19T082770		Crash	2 hrs or greater	3	I-5	259	9/8/2019 17:10	SB
20T082979	0.254166667	Crash	2 hrs or greater, Closure	3	I-5	252	10/11/2020 14:08	NB
21T010067	1.571111111	Crash	Closure with Detour	3	I-5	258	1/30/2021 3:23	NB
21T027711	0.429166667	Crash	Closure	1	I-5	253	3/20/2021 23:05	NB, SB
21T100109	1.060833333	Crash	2 hrs or greater, Closure	3	I-5	256	10/30/2021 15:14	SB
17T105744	3.774722222	Fatal Crash	Closure with Detour	2	I-5	256	11/12/2017 4:51	BTH
19T018697	0.500833333	Fatal Crash	Closure with Detour	3	I-5	256.5	2/23/2019 4:59	SB
20T069494		Fatal Crash	2 hrs or greater	2	I-5	256	8/29/2020 8:54	NB
21T001715	0.43	Fatal Crash	Closure	2	I-5	256	1/6/2021 4:13	NB
21T104021	2.884444444	Fatal Crash	2 hrs or greater, Closure	3	I-5	260	11/10/2021 19:38	NB
19T043439	327.3055556	Road Construction	Closure with Detour	7	I-5	259	5/9/2019 12:08	NB, SB
17T022826	0.126944444	Vehicle Fire	Closure	5	I-5	260	2/21/2017 8:13	NB

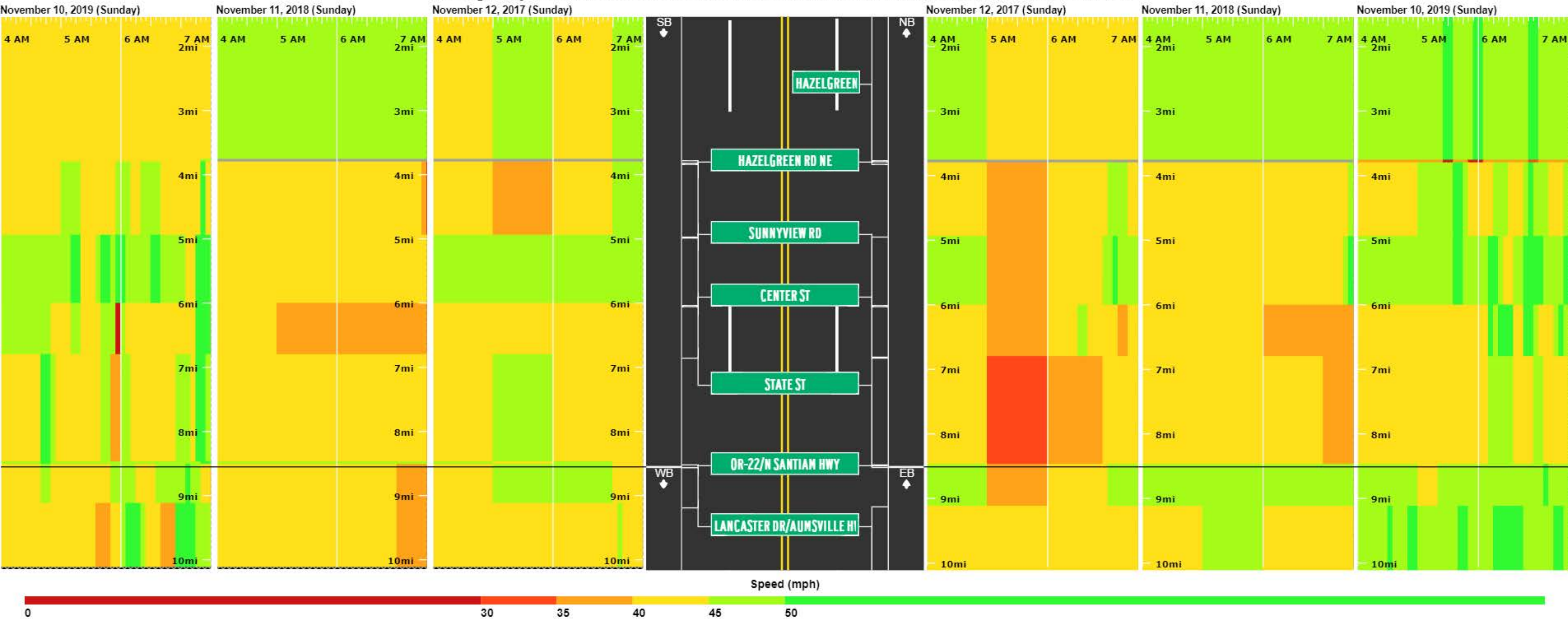
# APPENDIX C: RITIS DATA

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# Speed for HAZELGREEN RD NE, CORDON RD, and KUEBLER BLVD between OR-22/N Santiam Hwy and I-5/OR-99E using INRIX data

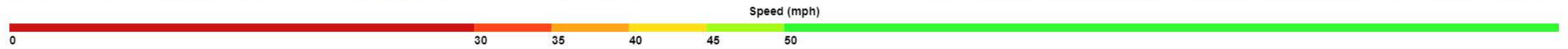
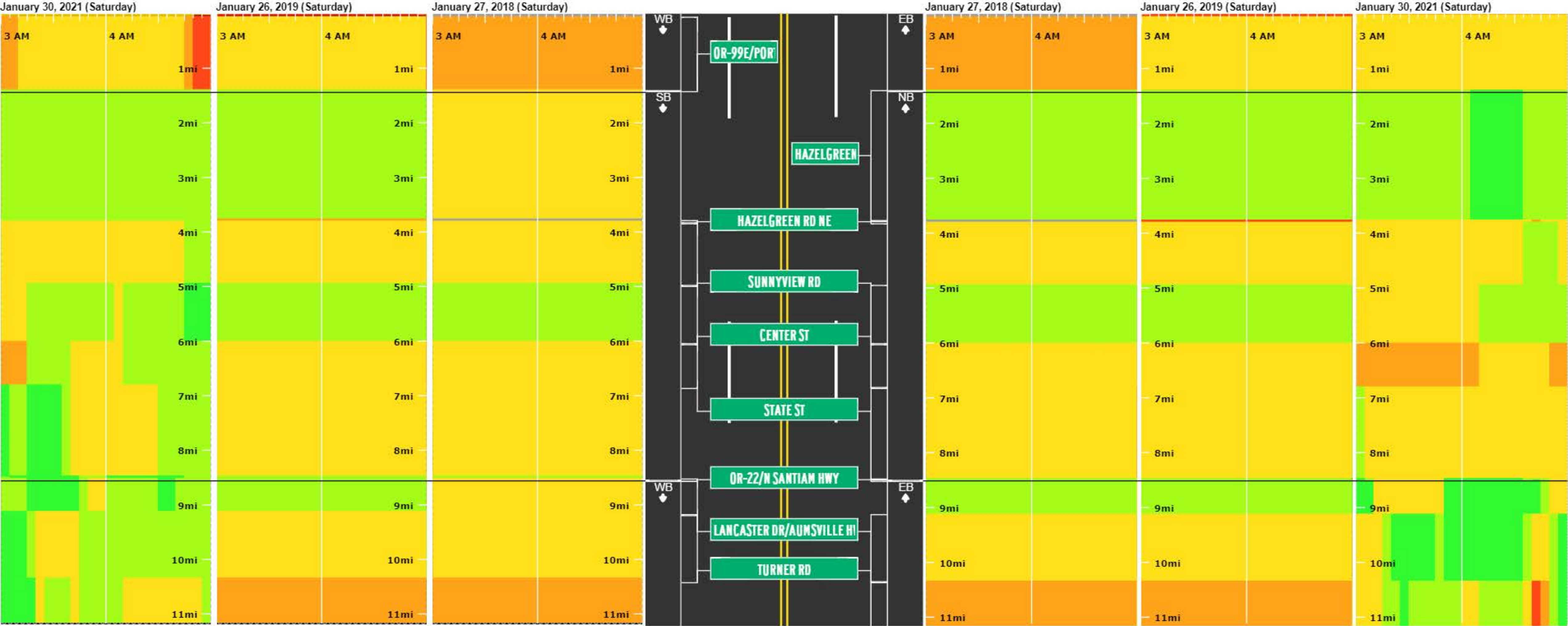
Averaged by 5 minutes for November 12, 2017, November 11, 2018, and November 10, 2019





# Speed for HAZELGREEN RD NE, CORDON RD, and KUEBLER BLVD between OR-22/N Santiam Hwy and I-5/OR-99E using INRIX data

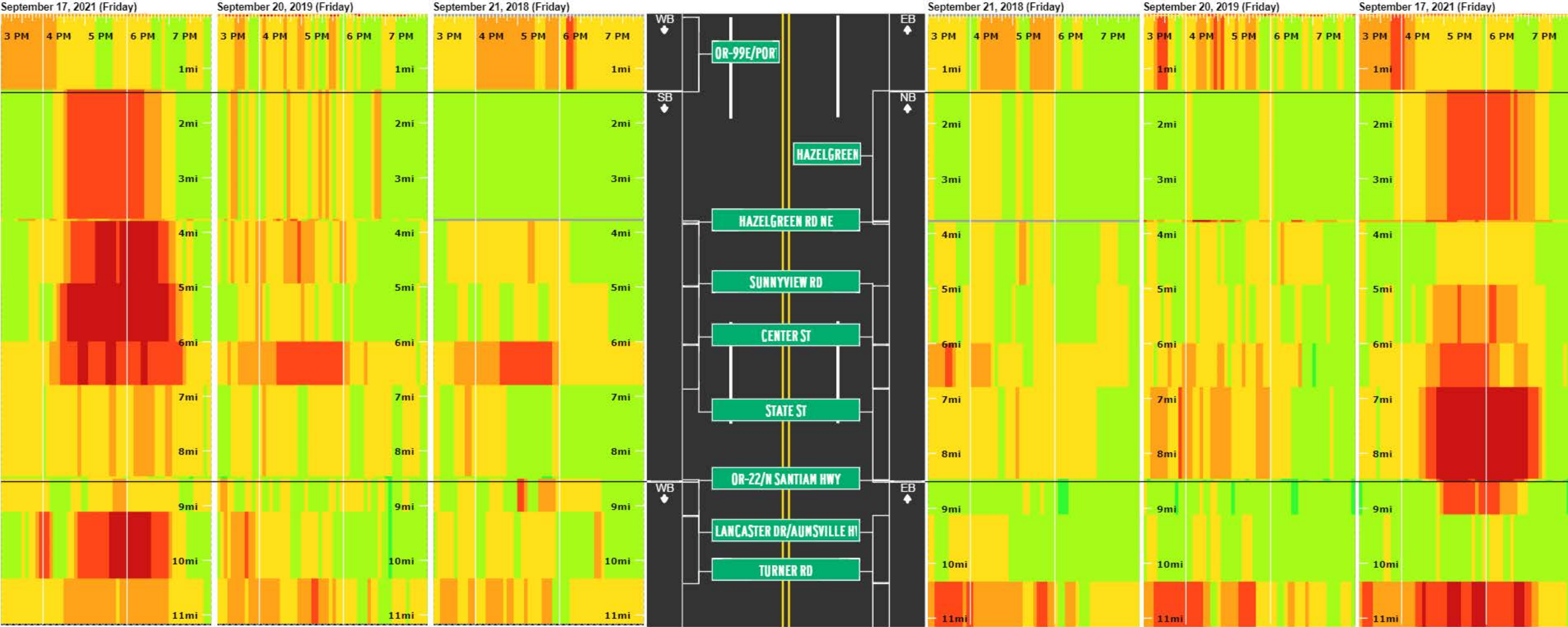
Averaged by 5 minutes for January 27, 2018, January 26, 2019, and January 30, 2021



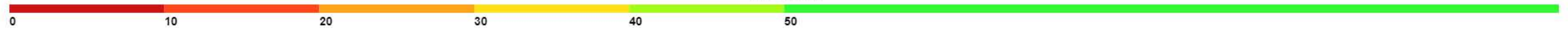


# Speed for HAZELGREEN RD NE, CORDON RD, and KUEBLER BLVD between OR-22/N Santiam Hwy and I-5/OR-99E using INRIX data

Averaged by 5 minutes for September 21, 2018, September 20, 2019, and September 17, 2021



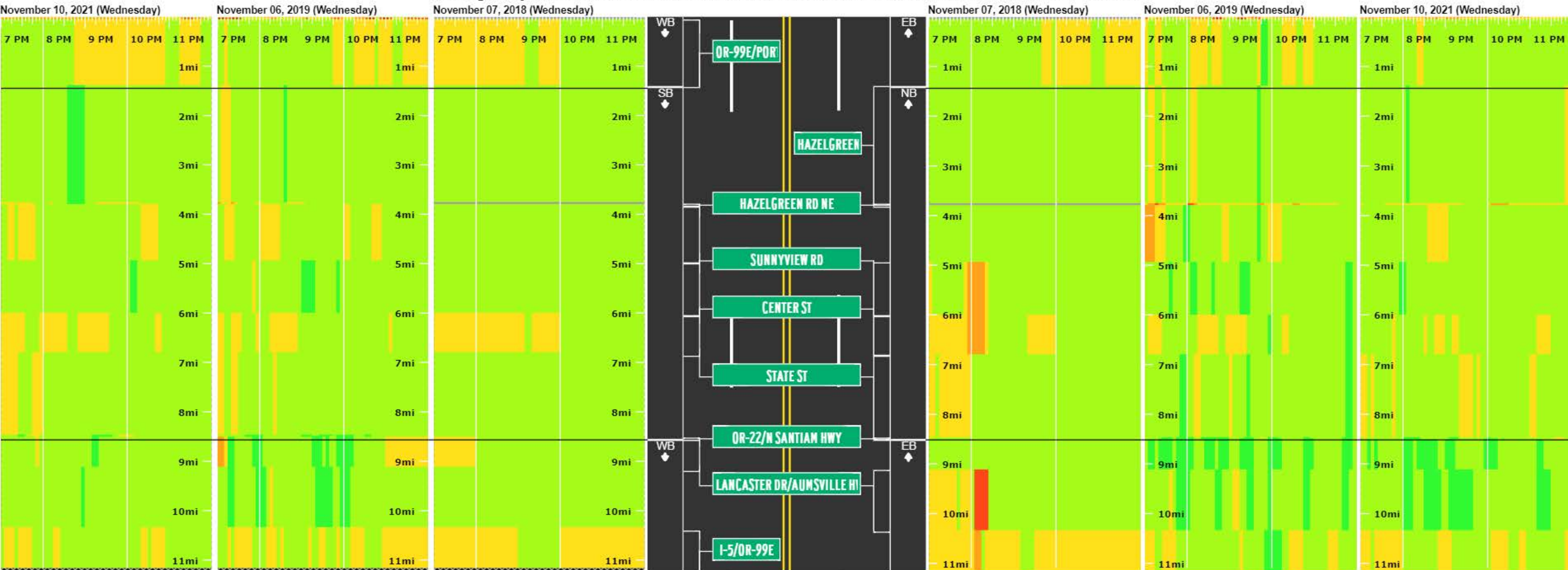
Speed (mph)





# Speed for HAZELGREEN RD NE, CORDON RD, and KUEBLER BLVD between OR-22/N Santiam Hwy and I-5/OR-99E using INRIX data

Averaged by 5 minutes for November 07, 2018, November 06, 2019, and November 10, 2021



Speed (mph)





## TECHNICAL MEMORANDUM #5 – REFINED DRAFT

DATE: August 19, 2022

TO: Project Management Team

FROM: Lacy Brown, PhD, PE, RSP<sub>1</sub> | DKS Associates  
Jenna Bogert, PE | DKS Associates  
Travis Larson, EI | DKS Associates  
Chase Hildner, EI | DKS Associates

SUBJECT: Cordon-Kuebler Corridor Plan  
Future Forecasts and Traffic Operations Analysis

Project #22001-000

### INTRODUCTION

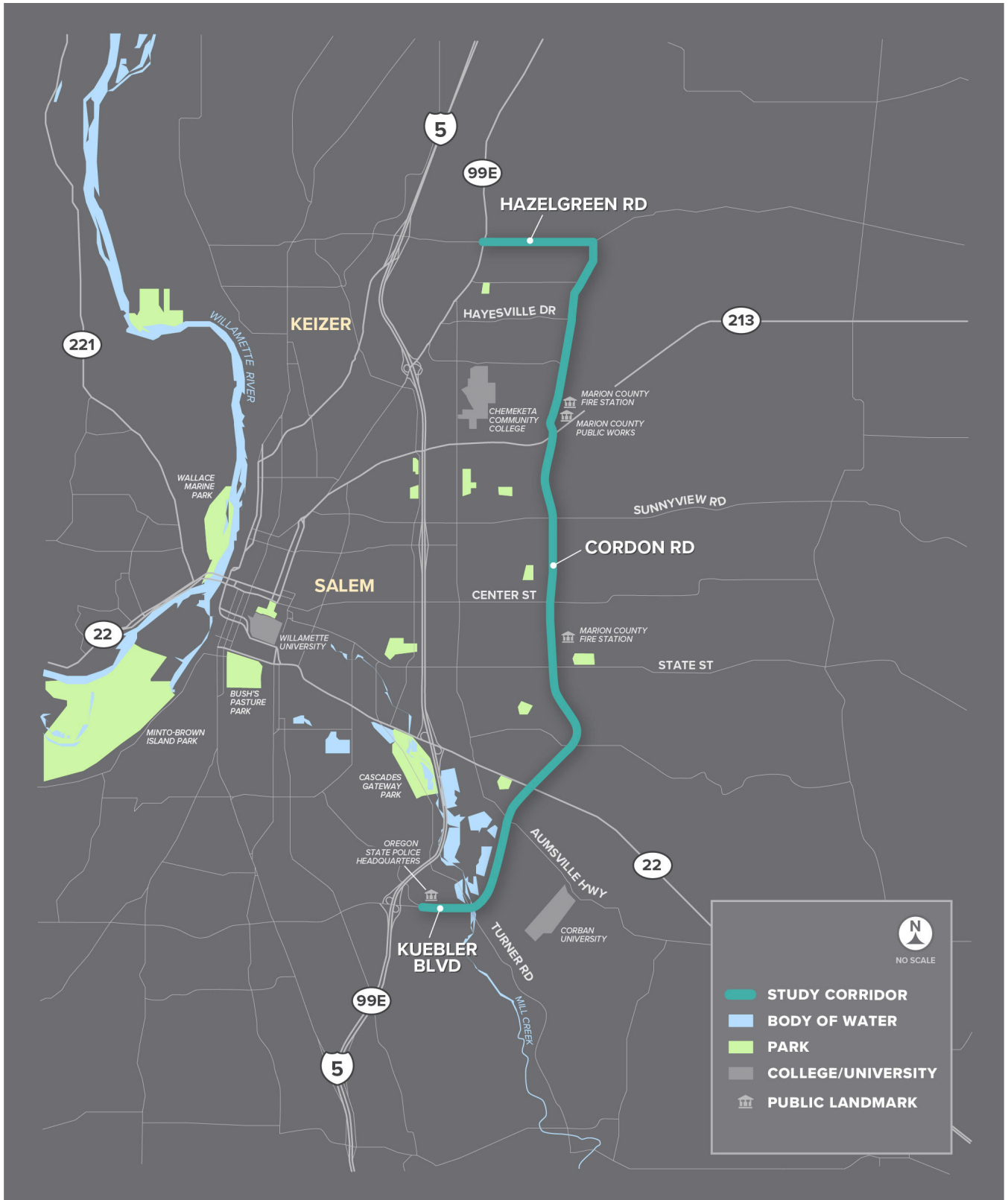
The primary objective of the Cordon-Kuebler Corridor Plan project is to develop a multimodal corridor plan and an access management strategy that outlines a cohesive and consistent vision for the corridor that encourages desired land development, accommodates future growth, and creates a safe and enjoyable travel experience for users of all ages and abilities. The project also incorporates community involvement to assure the design plan is consistent with the needs of key stakeholders (including neighborhoods, schools, and businesses).

This memorandum provides an analysis of the forecast Future 2043 operating conditions of the Cordon-Kuebler Corridor under different analysis scenarios. The existing operating conditions were presented in Technical Memorandum #3 and many of the same assumptions and standards apply to this analysis.

### STUDY AREA

The study area and all associated roadway intersections and segments were previously noted and inventoried in Technical Memorandum #3. The corridor includes approximately 10.8 miles of roadway segments and 21 study intersections. Parts of the corridor are under City of Salem ownership, while the majority of the corridor is under Marion County ownership. See Figure 1 for an overview of the study area.





**FIGURE 1: STUDY AREA AND PROJECT EXTENTS**

## FUTURE SCENARIOS

The Future 2043 operating conditions were analyzed at the study intersections for the following traffic scenarios. The comparison of the following scenarios assists in determining the worthiness of currently planned projects and the need for additional improvements.

- No Build – No Interchange (AM & PM Peak)
- No Build – Yes Interchange (AM & PM Peak)
- Yes Build – No Interchange (AM & PM Peak)
- Yes Build – Yes Interchange (AM & PM Peak)

A high-level summary of the scenarios is provided below, while additional details on the roadway cross section, traffic control, and future projects assumed in each scenario is provided in later sections.

- No Build vs. Yes Build: The Yes Build scenario primarily includes roadway and traffic control improvements documented in adopted plans and conditioned on private development. The No Build scenario primarily assumes that the no improvements have been made and the existing infrastructure is still in place in 2043. The specific differences between the two alternatives are documented in a later section.
- No Interchange vs. Yes Interchange: The *OR22 (East) Facility Plan for Cordon/OR 22 Interchange*, adopted by the Oregon Transportation Commission in 2018, highlighted the need for a new interchange on OR 22 at Cordon Road. While no funding for this project has been identified, the potential travel patterns with and without this new interchange were considered in this evaluation.
- AM Peak vs. PM Peak: Similar to the existing conditions transportation operations analysis, both the AM and PM peak hours were analyzed. This was especially important as it is a commuter corridor with notable directionality in travel patterns.

## FUTURE VOLUMES

Future year study intersection volumes were developed using the Mid-Willamette Valley Council of Governments (MWVCOG) travel demand models, known as the SKATS (Salem-Keizer Area Transportation Study) models. These models include existing (2017) and horizon (2043) years for both the AM and PM peak hours. These models incorporate land use assumptions and roadway networks to model travel behavior at a regional level. Using existing intersection count data and NCHRP 765<sup>1</sup> methodologies, future year volumes were post-processed from the models for the eight future year scenarios.

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<sup>1</sup> National Cooperative Highway Research Program Report 765: Analytical Travel Forecasting Approaches for Project-Level Planning and Design, September 2014.

After the travel demand model volumes were post-processed, the intersection volumes were balanced between adjacent intersections along the corridor. In general, the balancing process aimed to maintain the same discrepancies in trips between the intersections as was present in the existing year volume set. Small, manual adjustments were applied as needed.

## MODEL ASSUMPTIONS

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The travel demand models are maintained by MWVCOG, who prepared future year models for each of the eight scenarios. The following modeling assumptions were used:

- **2043 No Build Models:** Uses the SKATS 2017 roadway network with the following assumptions:
  - 2043 Population, employment, and household data applied
  - Assumes the corridor geometry and lane configurations are the same as existing conditions
  - Assumes that 49th Avenue will be built as the fourth leg to the Lake Labish Road at Hazelgreen Road intersection and will be open to serve the already developed streets north of Kale Street
  - Assumes Cordon Road at Auburn Road will be signalized and the eastbound lane on Auburn Road will have a dedicated right turn lane
  - Assumes the Mill Creek Drive roadway network is in the model and the intersection of Mill Creek Drive at Cordon Road is open, as modeled in the Yes Build scenarios
- **2043 Yes Build Models:** Uses the SKATS 2043 roadway network with the following assumptions:
  - 2043 Population, employment, and household data applied
  - Kuebler Boulevard is widened to four travel lanes with left turn pockets at signalized intersections and a median at all other intersections between 36th Avenue and Lancaster Drive based on the City of Salem's Transportation System Plan (TSP)
  - Cordon Road is widened to four travel lanes with left turn pockets at signalized intersections and a median at all other intersections between Lancaster Drive and Silverton Road based on the Marion County Rural TSP
  - Assumes that the Cordon Road/Hazelgreen Road, Cordon Road/Swegle Road, and Cordon Road/Auburn Road intersections are all signalized

## FUTURE VOLUME RESULTS

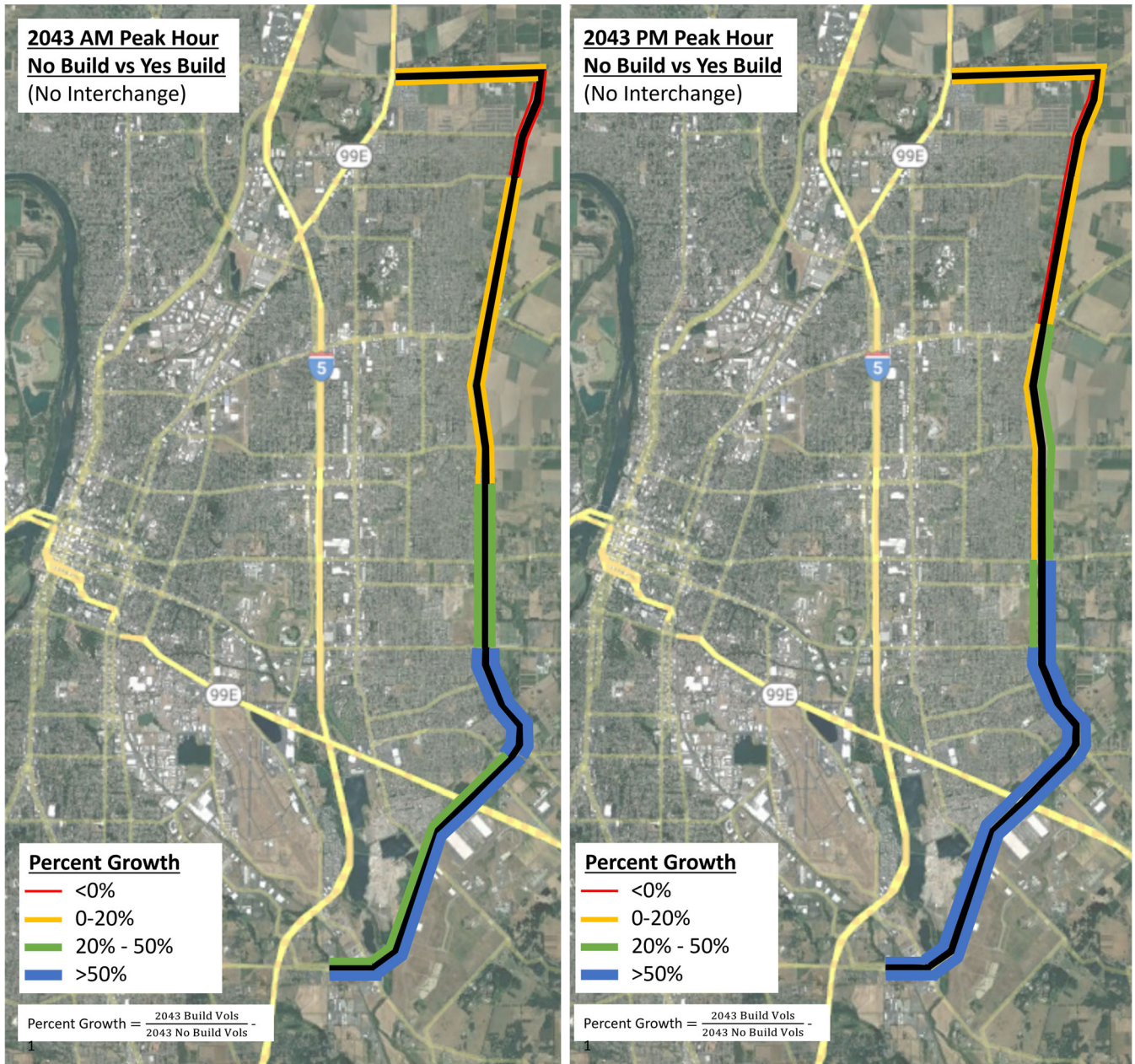
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In general, there is projected to be a large amount of growth in vehicle trips on the Cordon-Kuebler Corridor in the future. Different travel patterns are observed between the Yes Build and No Build scenarios due to a difference in roadway improvements. The Yes Build model has more capacity along the Cordon-Kuebler Corridor due to the various assumed future improvements listed above.



Specifically, the widening projects on Kuebler Boulevard and Cordon Road in the Yes Build scenario, which are discussed in following sections, produce significantly higher vehicle volumes (over 50% higher compared to the No Build) near the south end of the corridor (between State Street and 36<sup>th</sup> Avenue), while the northern end of the corridor sees minimal or slightly negative traffic volume growth. This is depicted in Figure 2.

The traffic volumes for all eight scenarios are presented in the appendix.



**FIGURE 2: 2043 VOLUME COMPARISON (NO BUILD VS YES BUILD)**

## FUTURE VOLUME DISCUSSION

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Two major traffic patterns were identified between the No Build and Yes Build alternatives that resulted in significant differences in turning movement volumes at intersections and consequently the operations results. From the No Build to Yes Build alternatives in the SKATS models, there was a shift in vehicles off of Interstate-5 to other roadways. This was most evident at the intersections of Hazelgreen Road/OR 99E, Kuebler Boulevard/Turner Road, and Kuebler Boulevard/36<sup>th</sup> Avenue.

At Hazelgreen Road/OR 99E, there was a shift in vehicles that resulted in more minor street vehicles and major left-turning vehicles. Sensitivity tests were performed in the model to determine that it was a set of global changes in the model that resulted in the change and not necessarily changes directly adjacent to the intersection.

At Kuebler Boulevard/Turner Road and Kuebler Boulevard/36<sup>th</sup> Avenue, traffic volumes increased for the majority of all movements. This is expected for the major street through volumes, as the corridor was widened from two lanes to four lanes between the two alternative model sets. However, this also shifted traffic from Interstate-5 to 36<sup>th</sup> Avenue and Turner Road, significantly increasing the minor street volumes. Sensitivity tests were performed that showed that the shift and increase in traffic was reasonable.

When looking at the effects of the potential Cordon Road/OR 22 interchange, the difference between the scenarios with without the interchange is concentrated around the immediately adjacent study intersections at Lancaster Drive, Gaffin Road, and Macleay Road. The other study intersections not significantly impacted.

## FUTURE ROADWAY GEOMETRY & TRAFFIC CONTROL

The future analysis scenarios included consistent study area corridor and intersection geometries between the AM, PM, Yes Interchange, and No Interchange alternatives; intersection geometry only varied between the No Build and Yes Build alternatives.

The primary holistic corridor change along the Cordon-Kuebler Corridor in the Yes Build alternative was the widening of Kuebler Boulevard and Cordon Road from two lanes to four lanes with a raised median from 36<sup>th</sup> Avenue to Silverton Road. This improvement impacted all study intersections and segments south of Silverton Road by adding an additional northbound and southbound through lane.

Based on the forecasted future segment volumes and associated capacity analysis north of Silverton Road along Cordon Road and Hazelgreen Road, it was determined that two travel lanes provided sufficient segment capacity and that the benefit gained by providing four lanes would not justify the right-of-way impacts.

These infrastructure assumptions are summarized in Table 1 and Table 2 below.

**TABLE 1: FUTURE SCENARIOS – SEGMENT CROSS-SECTION**

	<b>CORRIDOR SECTIONS</b>	<b>NO BUILD CROSS-SECTION</b>	<b>YES BUILD CROSS-SECTION</b>
1	OR 99E -> Cordon Road (Marion County)	<i>Existing two-lane</i>	<i>Existing two-lane</i>
2	Hazelgreen Road -> Silverton Road (Marion County)	<i>Existing two-lane</i>	<i>Existing two-lane</i>
3	Silverton Road -> Macleay Road (Marion County)	<i>Existing two-lane</i>	<b>New</b> four-lane with raised median (per County’s Throughway TSP cross-section)
4	Macleay Road -> 36 <sup>th</sup> Avenue (City of Salem)	<i>Existing two-lane</i>	<b>New</b> four-lane with raised median (per City’s Parkway TSP cross-section)

The study intersection geometry adjustments between the scenarios were primarily based on projects that have already been funded or are identified in City of Salem or Marion County TSPs or other regional plans. For the No Build scenario, all intersections were analyzed with existing characteristics except for two intersections that are currently under construction or will be soon. For the Yes Build scenario, all lane configuration and traffic control changes from existing conditions are noted in bold in Table 2 below.

**TABLE 2: FUTURE SCENARIOS – INTERSECTION GEOMETRY & TRAFFIC CONTROL**

	<b>INTERSECTION</b>	<b>NO BUILD CONDITIONS</b>	<b>YES BUILD CONDITIONS</b>
1	Hazelgreen Rd/ OR 99E	<i>Existing Traffic Signal</i>	<i>No Changes</i>
2	Hazelgreen Rd/ Lake Labish Rd	<b>New</b> southern leg and an EBR turn lane	<b>New</b> southern leg, EBR turn lane, and left turn lanes at all approaches
3	Cordon Rd/ Hazelgreen Rd	<i>Existing All-Way Stop-Control</i>	<b>Traffic Signal</b> w/ new left turn lanes at all approaches and a NBR turn lane
4	Cordon Rd/ Kale St	<i>Existing Two-Way Stop-Control</i>	<b>New</b> NBL turn lane and minor street two-stage left turn
5	Cordon Rd/ Hayesville Dr	<i>Existing Two-Way Stop-Control</i>	<b>New</b> NBL turn lane and minor street two-stage left turn
6	Cordon Rd/ Ward Dr	<i>Existing Two-Way Stop-Control</i>	<b>New</b> NBL turn lane and minor street two-stage left turn
7	Cordon Rd/ Herrin Rd	<i>Existing Two-Way Stop-Control</i>	<b>New</b> NBL turn lane and minor street two-stage left turn

	<b>INTERSECTION</b>	<b>NO BUILD CONDITIONS</b>	<b>YES BUILD CONDITIONS</b>
8	Cordon Rd/ Silverton Rd	<i>Existing Traffic Signal</i>	<b>New</b> dual EB & WB left turn lanes, EBR turn lane, and additional NB & SB through lanes
9	Cordon Rd/ Sunnyview Rd	<i>Existing Traffic Signal</i>	<b>New</b> additional NB & SB through lanes
10	Cordon Rd/ Swegle Rd	<i>Existing Two-Way Stop-Control</i>	<b>Traffic Signal</b> w/ new additional NB & SB through lanes
11	Cordon Rd/ Center St	<i>Existing Traffic Signal</i>	<b>New</b> additional NB & SB through lanes
12	Cordon Rd/ Auburn Rd	<b>Traffic Signal</b> w/ new EBR turn lane	<b>New</b> additional NB & SB through lanes
13	Cordon Rd/ State St	<b>New</b> dual EBL turn lanes	<b>New</b> dual EBL turn lanes and additional NB & SB through lanes
14	Cordon Rd/ Pennsylvania Ave	<i>Existing Two-Way Stop-Control</i>	<b>Median Restriction</b> w/ right-in, right-out only and additional NB & SB through lanes
15	Cordon Rd/ Caplinger St	<i>Existing Two-Way Stop-Control</i>	<b>Median Restriction</b> w/ right-in, right-out only and additional NB & SB through lanes
16	Cordon Rd/ Macleay Rd	<i>Existing Traffic Signal</i>	<b>New</b> additional NB & SB through lanes
17	Cordon Rd/ Gaffin Rd	<i>Existing Traffic Signal</i>	<b>New</b> additional NB & SB through lanes
18	Kuebler Blvd/ Lancaster Drive	<i>Existing Traffic Signal</i>	<i>No Changes</i>
19	Kuebler Blvd/ Mill Creek Dr	<i>Existing Traffic Signal</i>	<b>New</b> additional NB & SB through lanes
20	Kuebler Blvd/ Turner Rd	<i>Existing Traffic Signal</i>	<b>New</b> additional EB & WB through lanes
21	Kuebler Blvd/ 36th Ave	<i>Existing Traffic Signal</i>	<b>New</b> additional EB & WB through lanes



## FUTURE SIGNAL TIMING ASSUMPTIONS

Signal timing adjustments were necessary at some of the study intersections to more realistically plan for future intersection volumes, geometries, and coordination when compared to the existing conditions analysis. These changes reflect best practices and recommendations made by Marion County and the City of Salem.

- Signal coordination was assumed between any signals within ½-mile distance from one another. With the addition of new traffic signals in the Yes Build scenarios, many signals were within ½-mile of one another.
- Signal cycle lengths were limited to a maximum of 130 seconds (whether coordinated or uncoordinated).
- Protected-permitted left-turn phasing was assumed for all intersections with existing protected-permitted phasing as well as the three new traffic signals. The signalized intersections of Hazelgreen Road/OR 99E, Cordon Road/Silverton Road, and Kuebler Boulevard/Lancaster Drive each allow only protected left turn phasing (under all scenarios).

## FUTURE OPERATIONS

The Future 2043 intersection operations were analyzed for the eight traffic analysis scenarios at all study intersections using Highway Capacity Manual (HCM) 6th Edition methodology.<sup>2</sup> All previously identified mobility targets/operating standards from ODOT, the City of Salem, and Marion County are carried over from Technical Memorandum #3 and the future operations are compared against these standards and targets.

The measles chart below in Table 3 provides a visual representation of the operating conditions of the study intersections to show patterns, similarities, and differences between analysis scenarios. The four Build and Interchange alternatives are shown, with the worst-case result for either the AM and PM peak period shown for each alternative.

- Green checkmarks indicate that an intersection's vehicle operations are well within the jurisdictional operating standard.
- Yellow bars indicate that the intersection is approaching the jurisdictional operating standard (within +/- 0.03 v/c or at LOS standard).
- Red "X"s indicate that the intersection is projected to fail to meet the jurisdictional operating standard.




The volume to capacity (v/c) ratio, delay, and level of service (LOS) for each study intersection and each analysis scenario are provided in the appendix.

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<sup>2</sup> Highway Capacity Manual, 6th Edition, Transportation Research Board, 2017.

**TABLE 3: FUTURE 2043 INTERSECTION OPERATIONS**

INTERSECTION		NO BUILD NO INTERCHANGE	NO BUILD YES INTERCHANGE	YES BUILD NO INTERCHANGE	YES BUILD YES INTERCHANGE
1	HAZELGREEN ROAD/ OR 99E	■	■	✗	✗
2	HAZELGREEN ROAD/ LAKE LABISH ROAD	✓	✓	✓	✓
3	CORDON ROAD/ HAZELGREEN ROAD	✗	✗	■	■
4	CORDON ROAD/ KALE STREET	✗	✗	✓	✓
5	CORDON ROAD/ HAYESVILLE DRIVE	✗	✗	✓	✓
6	CORDON ROAD/ WARD DRIVE	✗	✗	✓	✓
7	CORDON ROAD/ HERRIN ROAD	✗	✗	✓	✓
8	CORDON ROAD/ SILVERTON ROAD	✗	✗	✓	✓
9	CORDON ROAD/ SUNNYVIEW ROAD	✗	✗	✓	✓
10	CORDON ROAD/ SWEGLE ROAD	✗	✗	✓	✓
11	CORDON ROAD/ CENTER STREET	✗	✗	■	■
12	CORDON ROAD/ AUBURN ROAD	✗	✗	✓	✓
13	CORDON ROAD/ STATE STREET	✗	✗	✗	✗
14	CORDON ROAD/ PENNSYLVANIA AVENUE	✗	✗	✓	✓
15	CORDON ROAD/ CAPLINGER STREET	✗	✗	✓	✓
16	CORDON ROAD/ MACLEAY ROAD	✗	✗	✗	✗
17	CORDON ROAD/ GAFFIN ROAD	✓	✓	✗	■
18	KUEBLER BOULEVARD/ LANCASTER DRIVE	✓	✓	✓	■
19	KUEBLER BOULEVARD/ MILL CREEK DRIVE	✓	✓	✓	✓
20	KUEBLER BOULEVARD/ TURNER ROAD	■	■	✗	✗
21	KUEBLER BOULEVARD/ 36 <sup>TH</sup> AVENUE	✗	✗	✗	✗

 = well below standard     
  = within +/- 0.03 v/c or at LOS standard     
  = well above standard

As shown, the intersection operations for the Yes Build scenarios for both interchange options notably improved when compared to the No Build scenarios. However, there are still intersections that had volume to capacity ratios, delay, or levels of service greater than the applicable operating standards. The primary areas of continuing deficiencies are discussed below.

- Hazegreen Road/OR 99E: While this intersection is expected to be close to the operating standard in the future No Build scenarios, it is expected to surpass the operating standard in the Build scenarios. This is partially due to global changes between the SKATS 2017 and 2043 models and partially due to the expected shift in traffic from parallel routes to the study corridor once additional capacity is provided along Cordon Road.
- Cordon Street/State Street: This intersection is expected to significantly surpass its operating standard under all future scenarios, with nearly all movements projected to experience high average delay and capacity constraints.
- Cordon Road/Macleay Road & Cordon Road/Gaffin Road: Traffic volumes at these adjacent intersections are expected to surpass the available capacity under the Build scenarios.
- Kuebler Boulevard/Turner Road & Kuebler Boulevard/36<sup>th</sup> Avenue: Traffic volumes at these adjacent intersections are expected to significantly surpass the available capacity under the Build scenarios. The operational deficiencies increase from the No Built to Yes Build scenario due to the shift in travel patterns once Kuebler Boulevard and Cordon Road are widened and additional capacity is provided.

Alternative improvements aimed at multi-modal solutions to these operations deficiencies, previously identified safety deficiencies, and community concerns will be evaluated in Technical Memorandum #6. All future analysis of corridor alternatives will be completed using the Yes Build – No Interchange traffic volume scenario.

## SUMMARY

This technical memorandum presents the future operating conditions for motor vehicle travel along the Cordon-Kuebler Corridor at the study intersections under different traffic analysis scenarios. These results will guide the recommendation process for future transportation alternatives and improvements along the corridor.

- Eight different traffic analysis scenarios were analyzed to comprehensively capture the range of possible Future 2043 traffic conditions, each with varying assumptions for roadway and intersection geometry, traffic control, and regional connections (e.g., the OR22/Cordon Road interchange).
- The SKATS travel demand models were used to estimate future peak hour intersection volumes under the eight traffic analysis scenarios.
- Operations analysis was conducted for all 21 study intersections across the eight scenarios. Six study intersections are expected to have insufficient capacity for future travel demand, even with improvements that are already planned.
  - Hazelgreen Road/OR 99E
  - Cordon Street/State Street
  - Cordon Road/Macleay Road
  - Cordon Road/Gaffin Road
  - Kuebler Boulevard/Turner Road
  - Kuebler Boulevard/36th Avenue

## NEXT STEPS

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These operational results will guide the identification of additional transportation improvements in Technical Memorandum #6: Transportation Alternatives. The AM and PM Peak hour results of the Yes Build – No Interchange scenario will be used for the evaluation of alternatives as it presents the most plausible future condition of the corridor based on existing conditions and planned, funded, and obligated projects from public municipalities and private developers. The alternatives will consider the operations results in this memo in conjunction with the previously identified safety concerns and multimodal project goals to evaluate cohesive solutions for the corridor.



# APPENDIX

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**APPENDIX A – FUTURE 2043 TRAFFIC VOLUMES**

**APPENDIX B – INTERSECTION OPERATIONS TABLES**

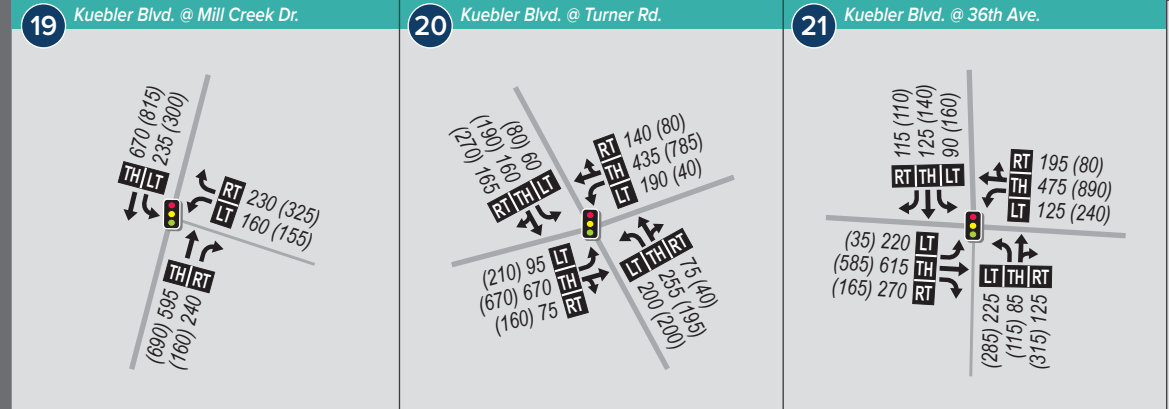
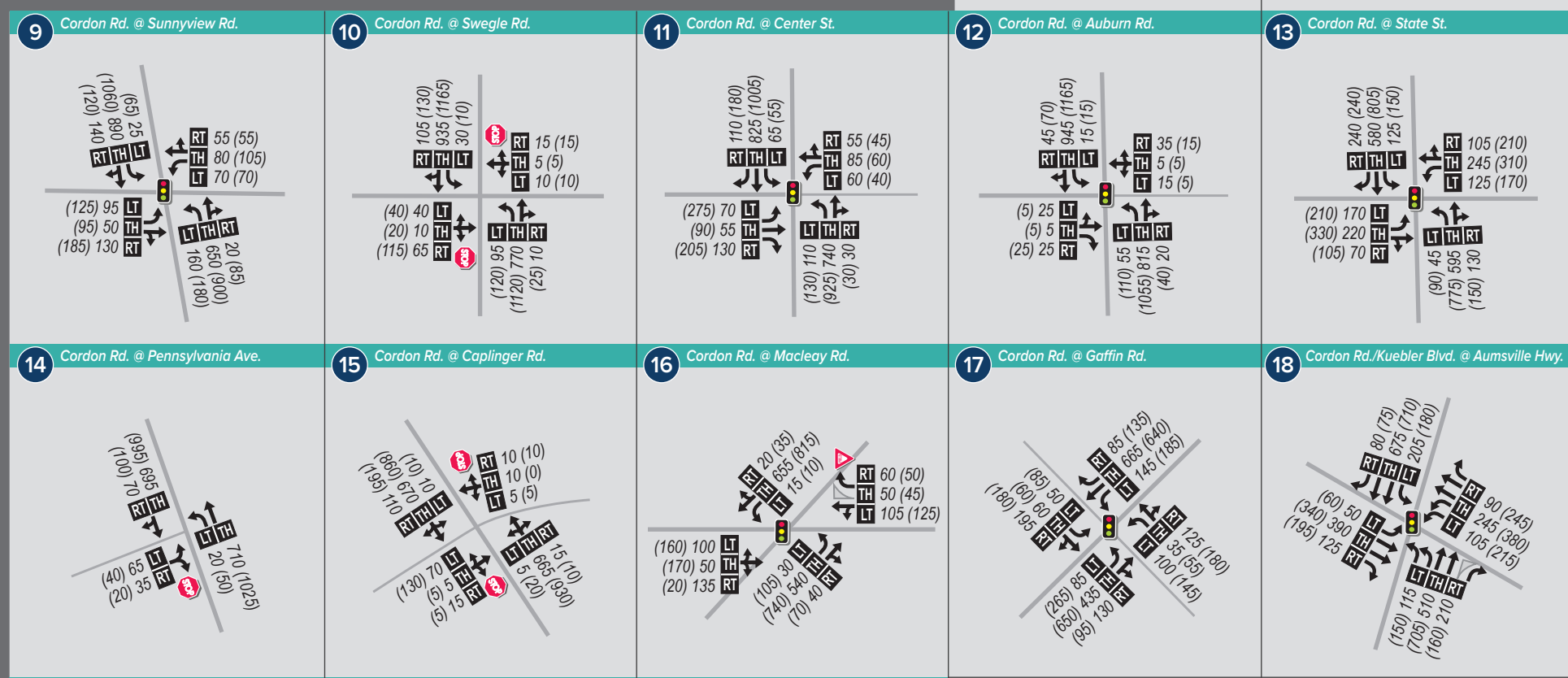
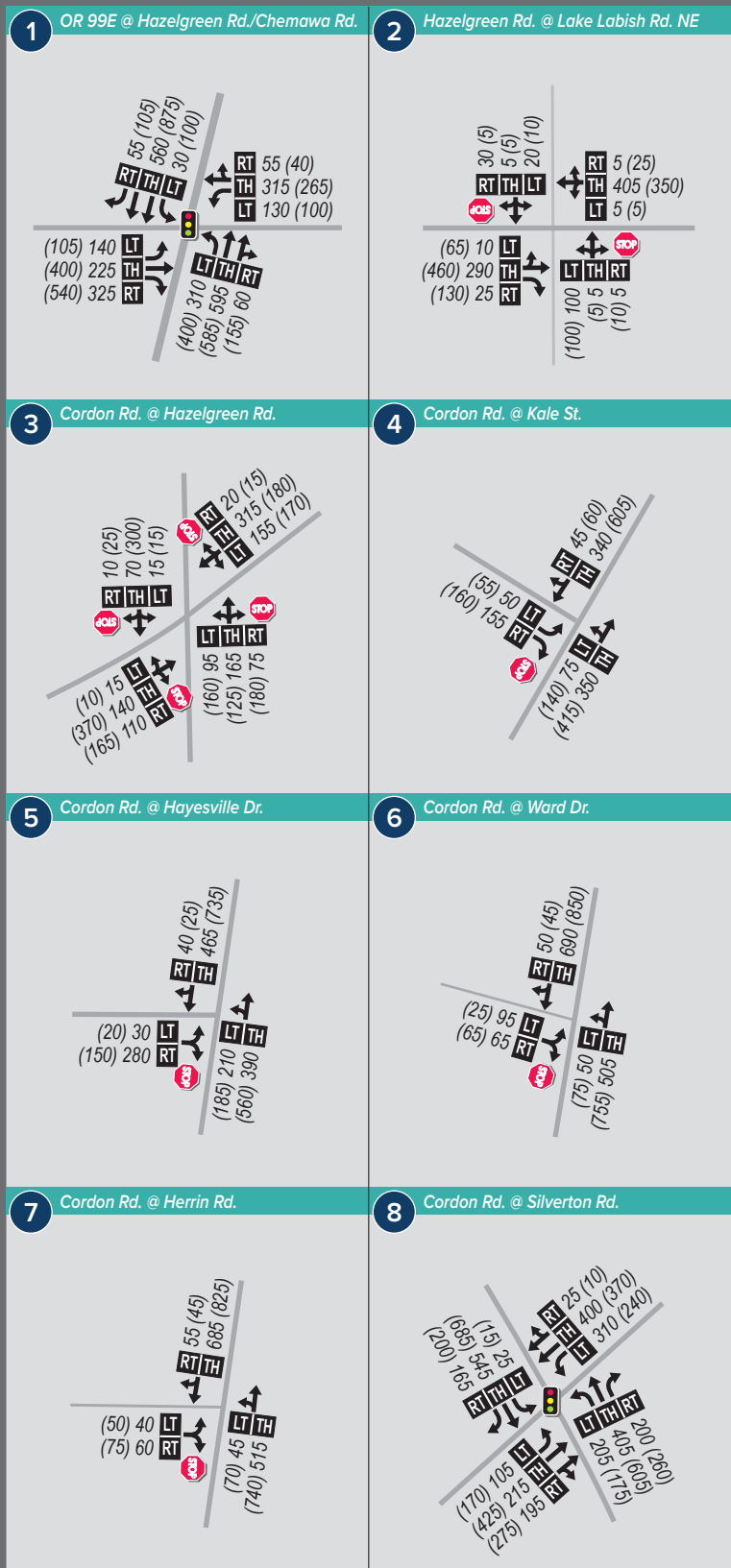
**APPENDIX C – HCM OPERATIONS REPORTS**



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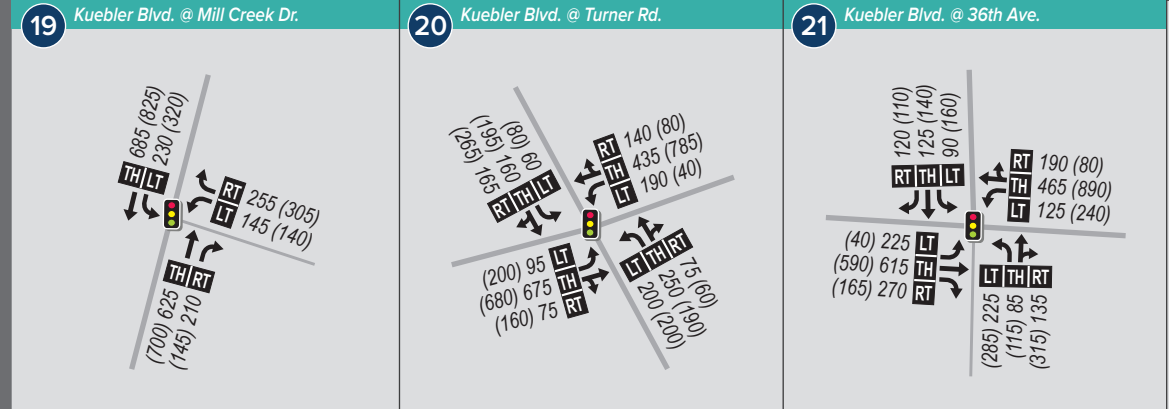
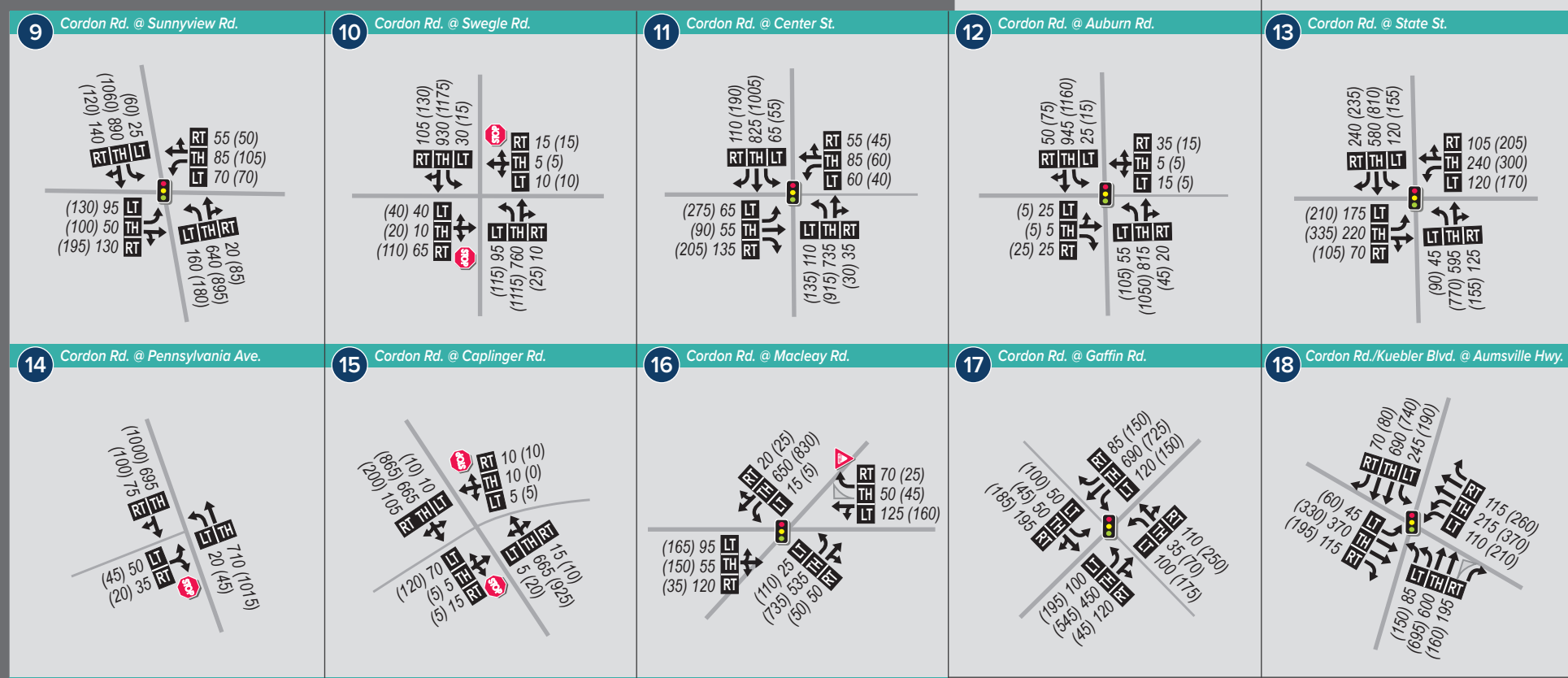
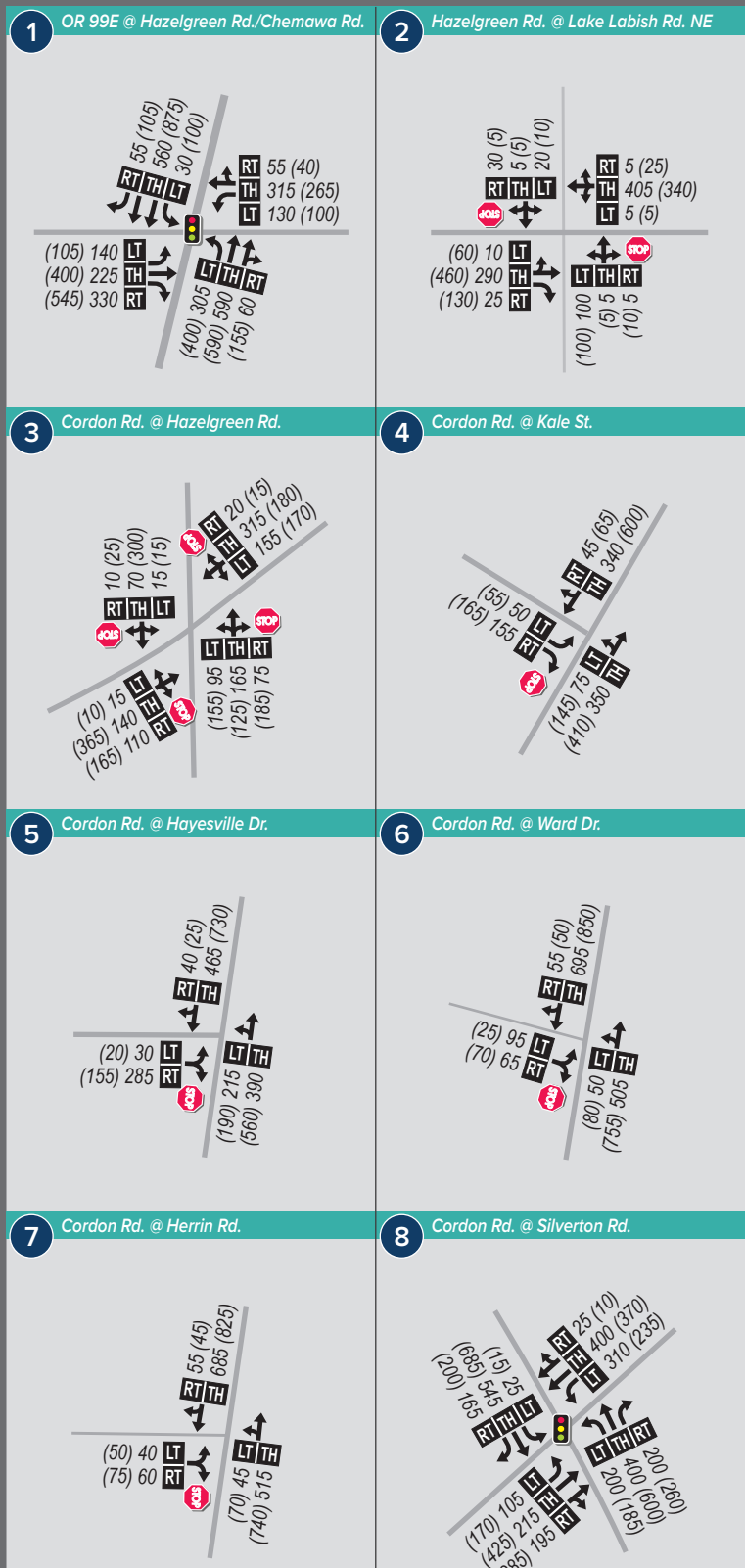
## APPENDIX A – FUTURE 2043 TRAFFIC VOLUMES

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- STUDY CORRIDOR
- STUDY INTERSECTION
- TRAFFIC SIGNAL
- STOP SIGN
- YIELD SIGN
- LANE CONFIGURATION
- PEAK HOUR TRAFFIC VOLUMES
- VOLUME TURN MOVEMENT

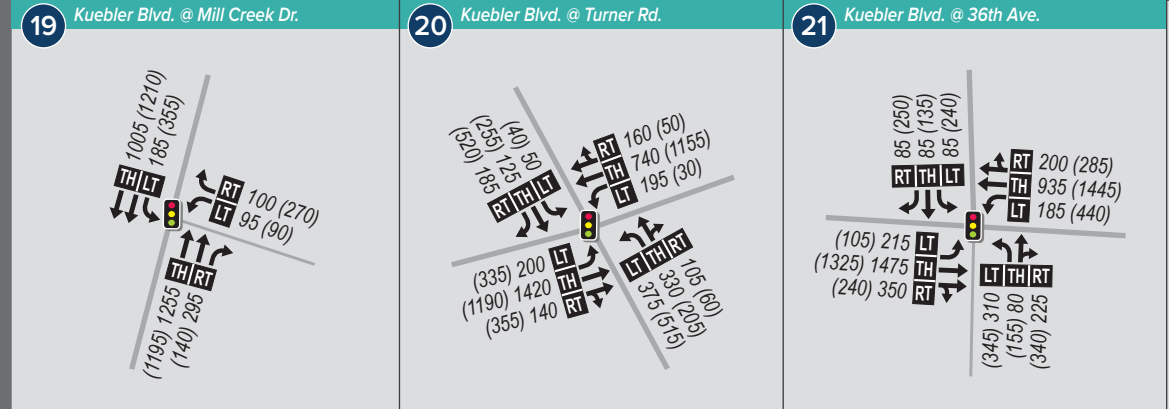
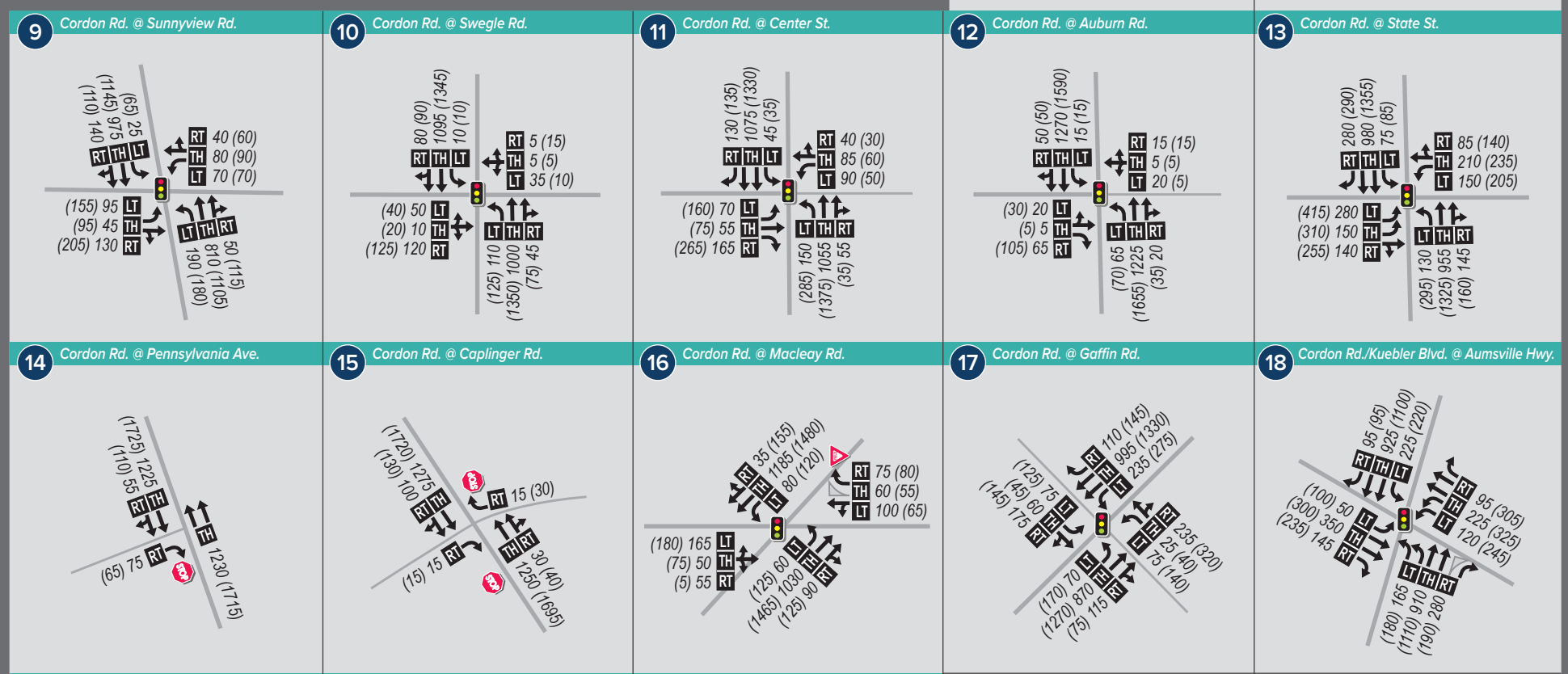
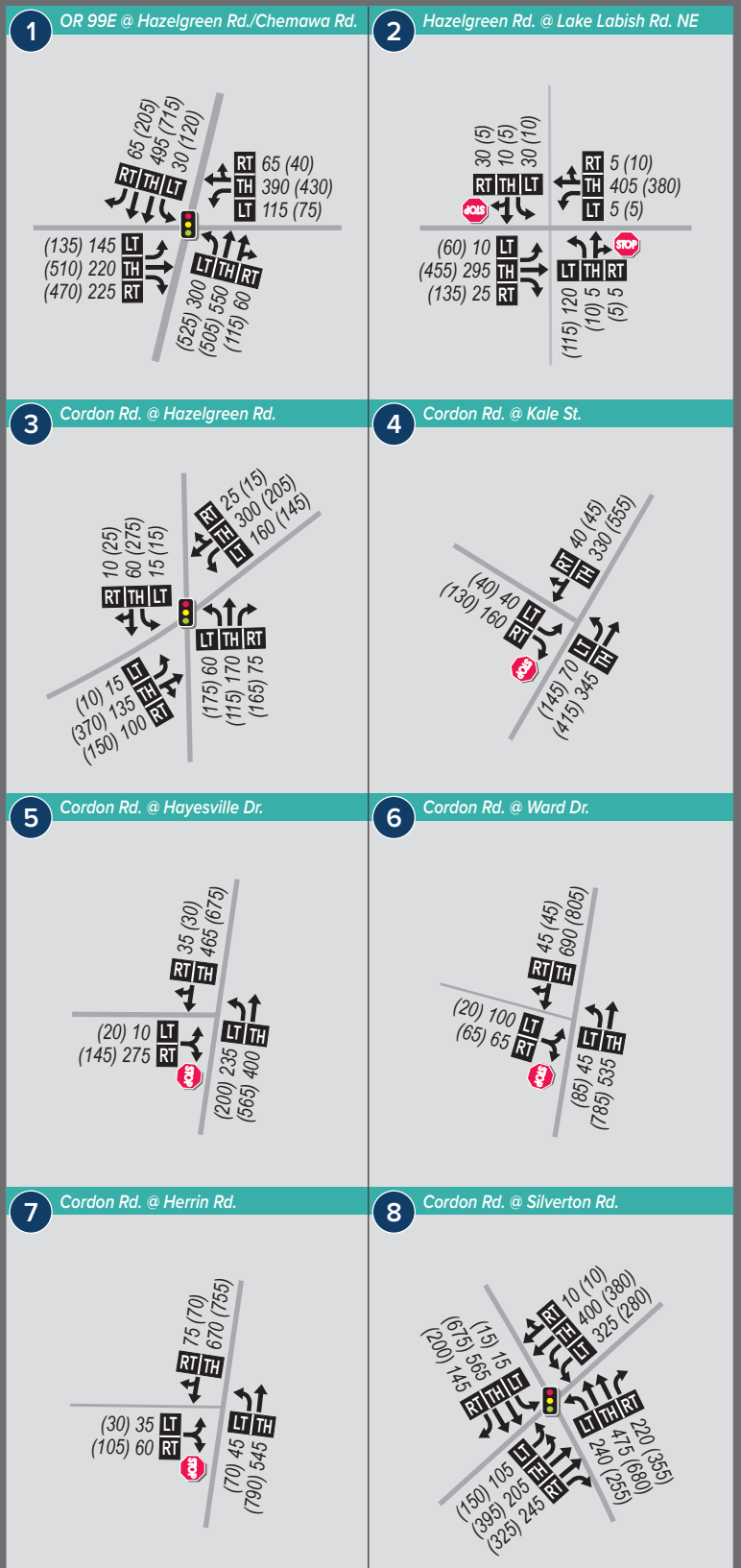
figure A1  
**NO BUILD — NO INTERCHANGE**  
 AM/PM Peak Hour Traffic Volumes & Lane Configurations  
 August 2022



- STUDY CORRIDOR
- STUDY INTERSECTION
- TRAFFIC SIGNAL
- STOP SIGN
- YIELD SIGN
- LANE CONFIGURATION
- AM (PM) PEAK HOUR TRAFFIC VOLUMES
- LT TH RT VOLUME TURN MOVEMENT

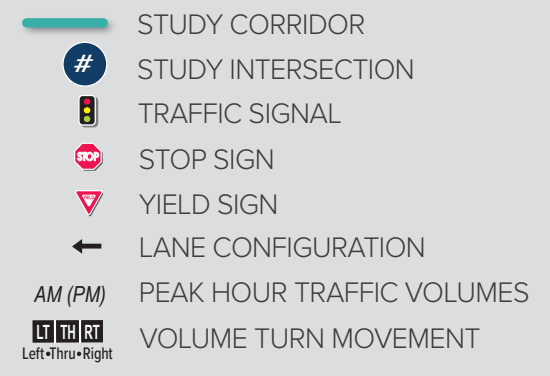
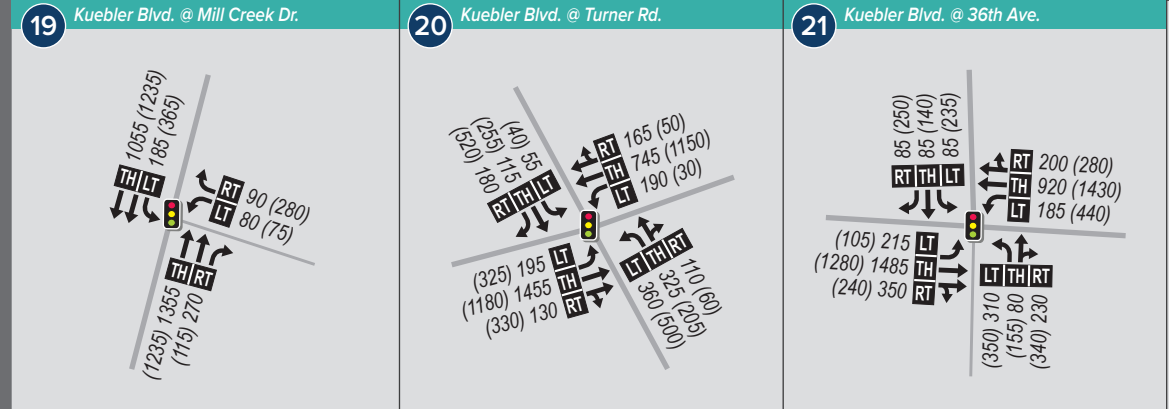
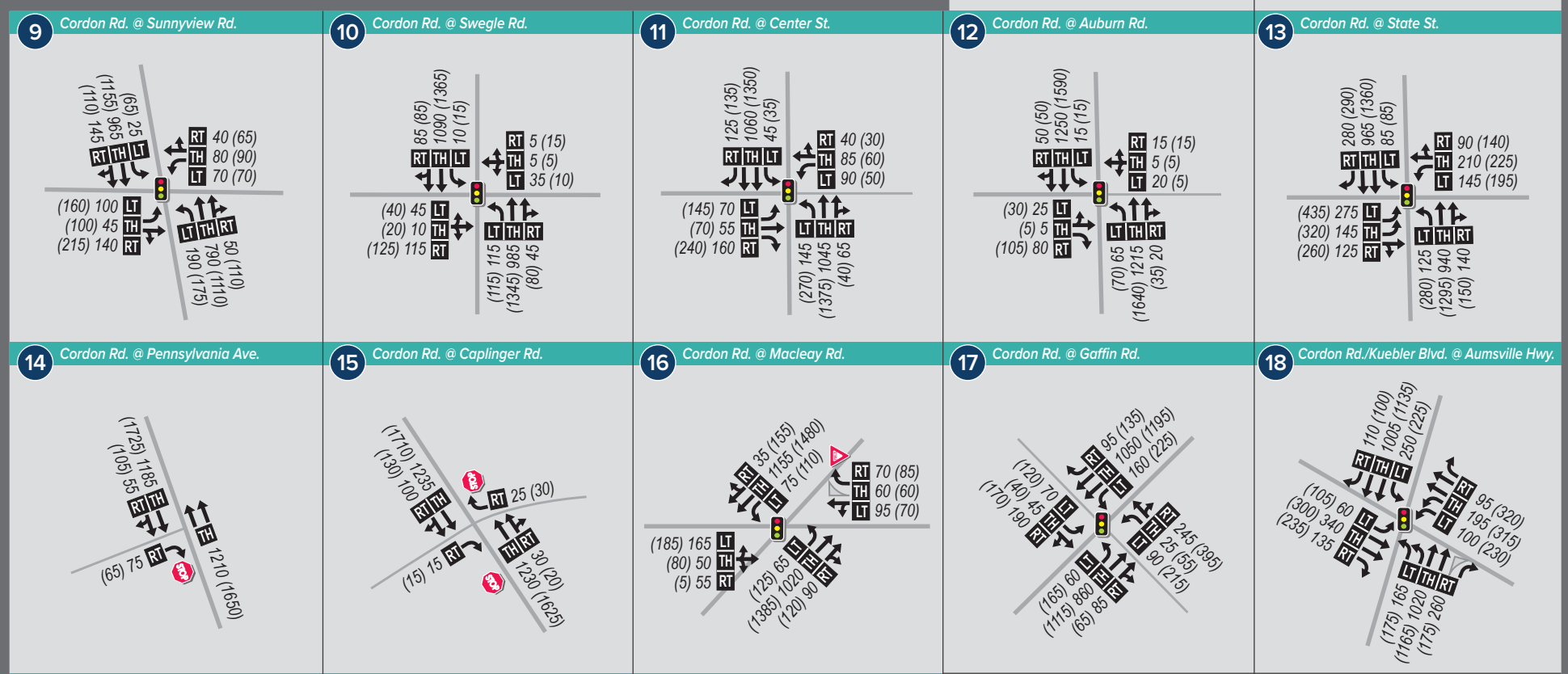
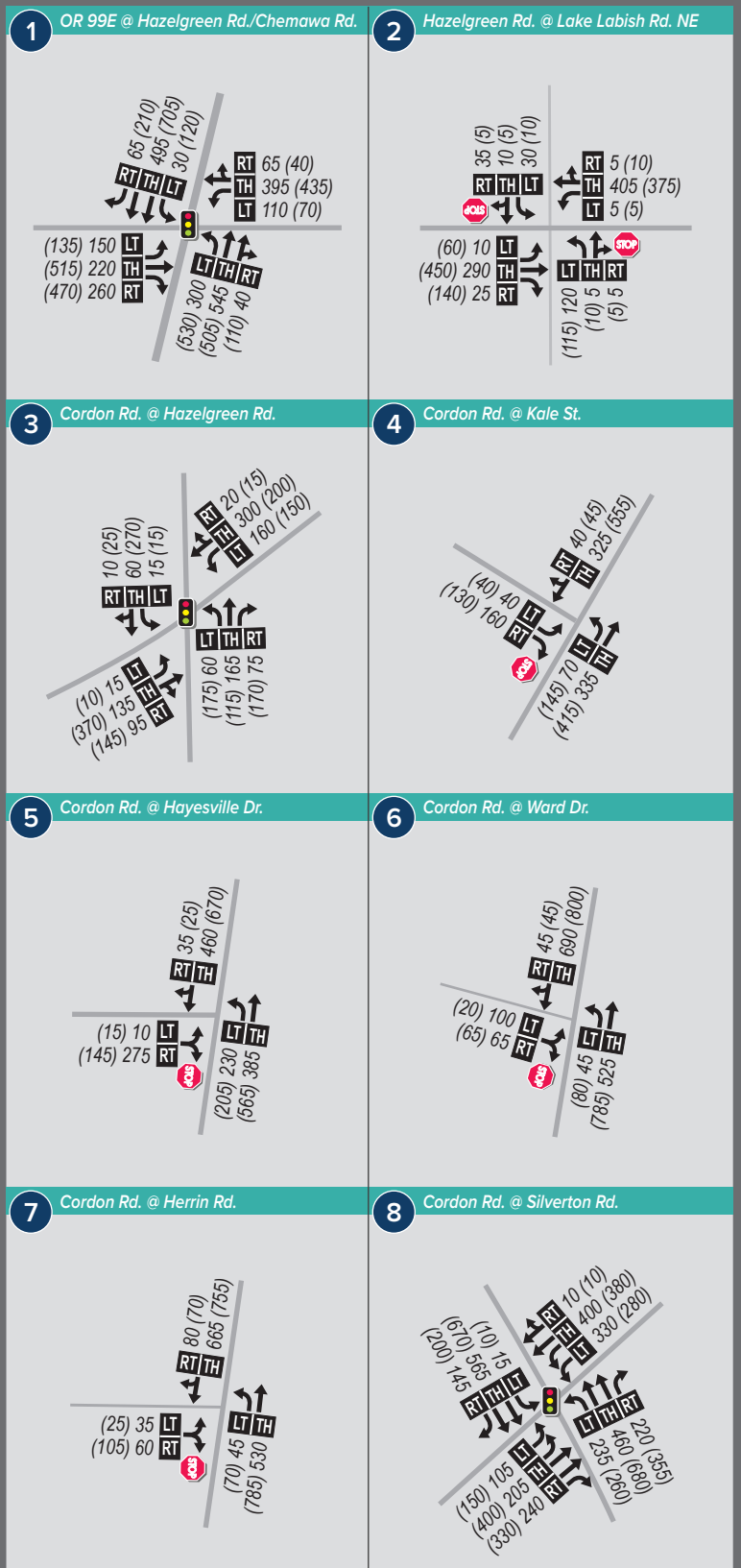
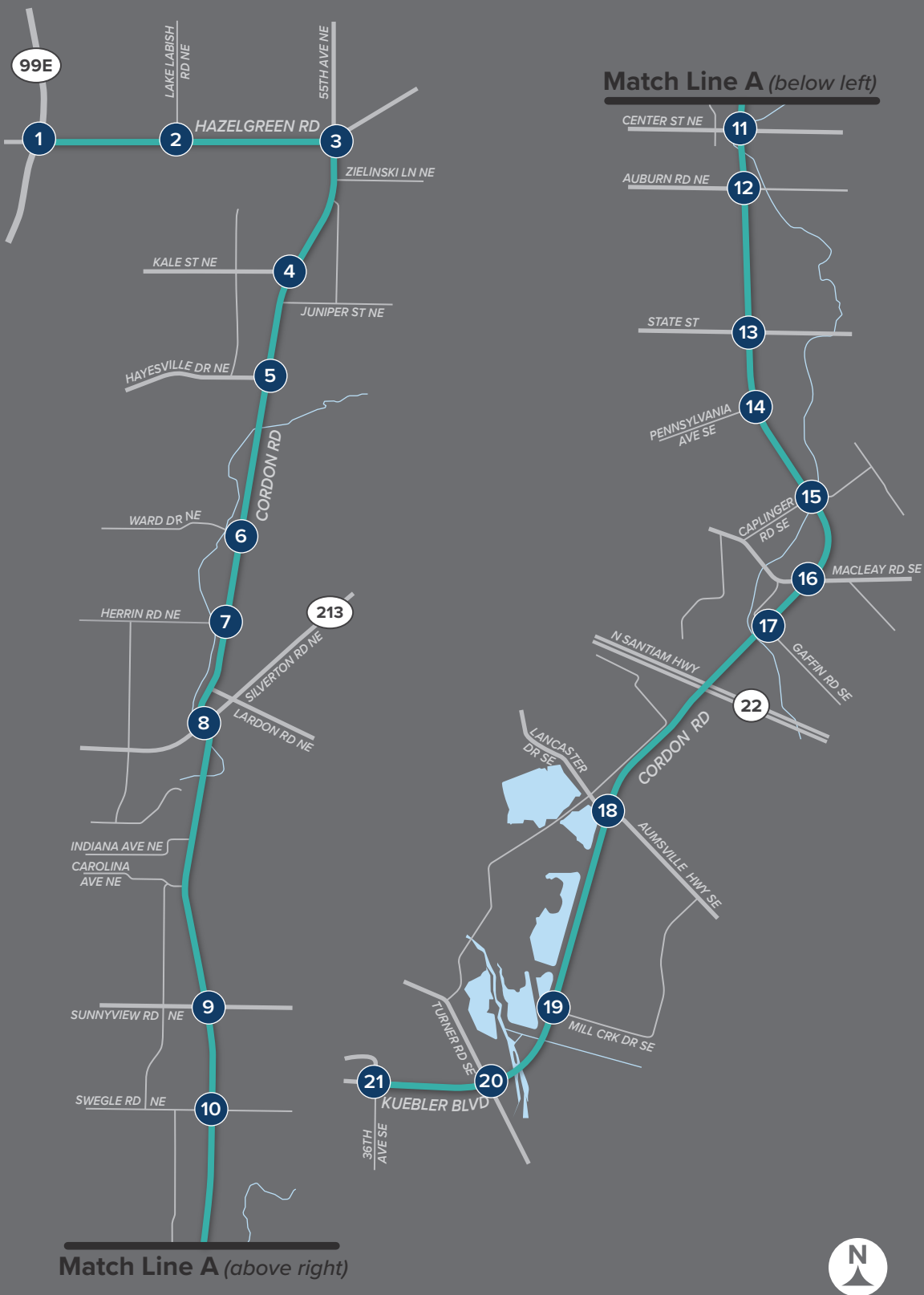
figure A2  
 NO BUILD — YES INTERCHANGE  
 AM/PM Peak Hour Traffic Volumes & Lane Configurations  
 August 2022





- STUDY CORRIDOR
  - STUDY INTERSECTION
  - TRAFFIC SIGNAL
  - STOP SIGN
  - YIELD SIGN
  - LANE CONFIGURATION
  - PEAK HOUR TRAFFIC VOLUMES
  - VOLUME TURN MOVEMENT
- Left•Thru•Right

figure A3  
**YES BUILD — NO INTERCHANGE**  
 AM/PM Peak Hour Traffic Volumes & Lane Configurations  
 August 2022



**figure A4**  
**YES BUILD — YES INTERCHANGE**  
 AM/PM Peak Hour Traffic Volumes & Lane Configurations  
 August 2022

## APPENDIX B – INTERSECTION OPERATIONS TABLES

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TABLE 2: FUTURE 2043 (AM PEAK) INTERSECTION OPERATIONS

INTERSECTION	CRITICAL MOVEMENT	OPERATING STANDARD	NO BUILD NO INTERCHANGE			NO BUILD YES INTERCHANGE			YES BUILD NO INTERCHANGE			YES BUILD YES INTERCHANGE			
			V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS	
			<b>SIGNALIZED</b>												
1	HAZELGREEN ROAD/ OR 99E	N/A	v/c ≤ 0.95	0.87	58.8	E	0.86	57.3	E	0.90	66.6	E	0.91	68.5	E
3	CORDON ROAD/ HAZELGREEN ROAD	N/A	LOS D, v/c ≤ 0.85							0.43	12.1	B	0.42	12.0	B
8	CORDON ROAD/ SILVERTON ROAD	N/A	LOS D, v/c ≤ 0.85	0.85	40.4	D	0.85	39.7	D	0.62	28.9	C	0.62	28.3	C
9	CORDON ROAD/ SUNNYVIEW ROAD	N/A	LOS D, v/c ≤ 0.85	<b>0.95</b>	27.7	C	<b>0.95</b>	28.3	C	0.71	18.0	B	0.71	18.0	B
10	CORDON ROAD/ SWEGLE ROAD	N/A	LOS D, v/c ≤ 0.85							0.61	4.2	A	0.61	3.9	A
11	CORDON ROAD/ CENTER STREET	N/A	LOS D, v/c ≤ 0.85	0.83	15.3	B	0.83	15.1	B	0.69	10.3	B	0.68	10.2	B
12	CORDON ROAD/ AUBURN ROAD	N/A	LOS D, v/c ≤ 0.85	0.81	5.4	A	0.82	5.6	A	0.61	3.6	A	0.61	3.6	A
13	CORDON ROAD/ STATE STREET	N/A	LOS D, v/c ≤ 0.85	<b>0.99</b>	40.7	D	<b>0.97</b>	39.3	D	0.85	27.8	C	0.85	27.4	C
16	CORDON ROAD/ MACLEAY ROAD	N/A	LOS E, v/c ≤ 0.90	0.80	15.7	B	0.78	15.6	B	0.82	13.5	B	0.81	13.3	B
17	CORDON ROAD/ GAFFIN ROAD	N/A	LOS E, v/c ≤ 0.90	0.71	11.6	B	0.71	10.2	B	0.70	9.2	A	0.65	9.9	A
18	KUEBLER BOULEVARD/ LANCASTER DRIVE	N/A	LOS E, v/c ≤ 0.90	0.54	16.6	B	0.60	19.4	B	0.70	20.5	C	0.75	26.0	C
19	KUEBLER BOULEVARD/ MILL CREEK DRIVE	N/A	LOS E, v/c ≤ 0.90	0.67	15.6	B	0.71	16.5	B	0.58	13.4	B	0.61	10.4	B
20	KUEBLER BOULEVARD/ TURNER ROAD	N/A	LOS E, v/c ≤ 0.90	<b>0.91</b>	26.2	C	<b>0.91</b>	26.2	C	<b>0.91</b>	62.9	E	0.90	60.1	E
21	KUEBLER BOULEVARD/ 36 <sup>TH</sup> AVENUE	N/A	LOS E, v/c ≤ 0.90	0.87	27.3	C	0.87	26.8	C	<b>1.08</b>	44.8	D	<b>1.08</b>	45.7	D
<b>UNSIGNALIZED (TWO-WAY STOP AND ALL-WAY STOP)</b>															
2	HAZELGREEN ROAD/ LAKE LABISH ROAD	NB	LOS E	0.46	29.3	A/D	0.46	29.3	A/D	0.54	34.5	A/D	0.54	34.9	A/D
3	CORDON ROAD/ HAZELGREEN ROAD	WB	LOS E	0.92	29.7	D	0.92	29.7	D						
4	CORDON ROAD/ KALE STREET	EB	LOS E	0.20	21.4	A/C	0.20	21.4	A/C	0.10	14.6	A/B	0.10	14.4	A/B
5	CORDON ROAD/ HAYESVILLE DRIVE	EB	LOS E	0.94	<b>66.8</b>	<b>A/F</b>	0.96	<b>70.8</b>	<b>A/F</b>	0.63	23.2	A/C	0.62	22.8	A/C
6	CORDON ROAD/ WARD DRIVE	EB	LOS E	0.90	<b>92.3</b>	<b>A/F</b>	0.91	<b>95.1</b>	<b>A/F</b>	0.56	29.7	A/D	0.55	29.4	A/D
7	CORDON ROAD/ HERRIN ROAD	EB	LOS E	0.50	37.2	A/E	0.50	37.2	A/E	0.31	20.5	A/C	0.31	20.3	A/C
10	CORDON ROAD/ SWEGLE ROAD	EB	LOS E	>1.2	<b>&gt;120</b>	<b>B/F</b>	>1.2	<b>&gt;120</b>	<b>B/F</b>						
14	CORDON ROAD/ PENNSYLVANIA AVENUE	EB	LOS E	0.74	<b>79.7</b>	<b>A/F</b>	0.60	<b>58.4</b>	<b>A/F</b>	0.22	17.3	A/C	0.21	16.8	A/C
15	CORDON ROAD/ CAPLINGER STREET	EB	LOS E	1.10	<b>&gt;120</b>	<b>A/F</b>	1.05	<b>&gt;120</b>	<b>A/F</b>	0.05	16.1	A/C	0.05	15.7	A/C

**SIGNALIZED INTERSECTION:**  
 Delay = Average Intersection Delay (sec)  
 v/c = Average Intersection Volume-to-Capacity Ratio  
 LOS = Average Intersection Level of Service

**TWO-WAY STOP-CONTROLLED INTERSECTION:**  
 Delay = Critical Movement Approach Delay (sec)  
 v/c = Critical Movement Volume-to-Capacity Ratio  
 LOS = Level of Service (Major/Minor Road)

**ALL-WAY STOP-CONTROLLED INTERSECTION:**  
 Delay = Average Intersection Delay (sec.)  
 v/c = Critical Movement Volume-to-Capacity Ratio  
 LOS = Average Intersection Level of Service

**Bold/Highlighted** = Does Not Meet Mobility Target/Mobility Standard



**TABLE 1: FUTURE 2043 (PM PEAK) INTERSECTION OPERATIONS**

INTERSECTION	CRITICAL MOVEMENT	OPERATING STANDARD	NO BUILD NO INTERCHANGE			NO BUILD YES INTERCHANGE			YES BUILD NO INTERCHANGE			YES BUILD YES INTERCHANGE			
			V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS	
<b>SIGNALIZED</b>															
1	HAZELGREEN ROAD/ OR 99E	N/A	v/c ≤ 0.95	0.94	51.6	D	0.94	51.6	D	<b>1.01</b>	69.9	E	<b>1.01</b>	69.8	E
3	CORDON ROAD/ HAZELGREEN ROAD	N/A	LOS D, v/c ≤ 0.85							0.84	20.8	C	0.83	20.6	C
8	CORDON ROAD/ SILVERTON ROAD	N/A	LOS D, v/c ≤ 0.85	<b>0.95</b>	54.0	D	<b>0.95</b>	55.0	D	0.68	24.5	C	0.68	24.9	C
9	CORDON ROAD/ SUNNYVIEW ROAD	N/A	LOS D, v/c ≤ 0.85	<b>1.10</b>	<b>65.7</b>	<b>E</b>	<b>1.11</b>	<b>68.4</b>	<b>E</b>	0.80	14.0	B	0.81	24.3	C
10	CORDON ROAD/ SWEGLE ROAD	N/A	LOS D, v/c ≤ 0.85							0.70	4.2	A	0.70	4.3	A
11	CORDON ROAD/ CENTER STREET	N/A	LOS D, v/c ≤ 0.85	<b>0.99</b>	39.8	D	<b>0.99</b>	39.8	D	<b>0.86</b>	13.2	B	0.84	12.6	B
12	CORDON ROAD/ AUBURN ROAD	N/A	LOS D, v/c ≤ 0.85	<b>0.92</b>	5.9	A	<b>0.92</b>	5.9	A	0.68	3.4	A	0.68	3.5	A
13	CORDON ROAD/ STATE STREET	N/A	LOS D, v/c ≤ 0.85	<b>1.16</b>	<b>82.5</b>	<b>F</b>	<b>1.15</b>	<b>83.4</b>	<b>F</b>	<b>&gt;1.2</b>	<b>79.6</b>	<b>E</b>	<b>&gt;1.2</b>	<b>77.9</b>	<b>E</b>
16	CORDON ROAD/ MACLEAY ROAD	N/A	LOS E, v/c ≤ 0.90	<b>0.99</b>	21.9	C	<b>0.99</b>	22.3	C	<b>0.94</b>	14.8	B	<b>0.95</b>	16.1	B
17	CORDON ROAD/ GAFFIN ROAD	N/A	LOS E, v/c ≤ 0.90	0.85	15.4	B	0.85	14.3	B	<b>0.95</b>	16.1	B	<b>0.93</b>	19.3	B
18	KUEBLER BOULEVARD/ LANCASTER DRIVE	N/A	LOS E, v/c ≤ 0.90	0.60	17.7	B	0.60	17.7	B	0.84	26.3	C	0.88	31.6	C
19	KUEBLER BOULEVARD/ MILL CREEK DRIVE	N/A	LOS E, v/c ≤ 0.90	0.79	9.0	A	0.78	8.5	A	0.64	16.7	B	0.66	18.1	B
20	KUEBLER BOULEVARD/ TURNER ROAD	N/A	LOS E, v/c ≤ 0.90	0.83	38.3	D	0.82	36.8	D	<b>&gt;1.2</b>	<b>82.4</b>	<b>F</b>	<b>1.20</b>	75.7	E
21	KUEBLER BOULEVARD/ 36 <sup>TH</sup> AVENUE	N/A	LOS E, v/c ≤ 0.90	<b>1.01</b>	52.7	D	<b>1.02</b>	52.9	D	<b>&gt;1.2</b>	<b>93.7</b>	<b>F</b>	<b>&gt;1.2</b>	<b>86.8</b>	<b>F</b>
<b>UNSIGNALIZED (TWO-WAY STOP AND ALL-WAY STOP)</b>															
2	HAZELGREEN ROAD/ LAKE LABISH ROAD	NB	LOS E	0.57	42.0	A/E	0.55	39.3	A/E	0.59	45.9	A/E	0.58	44.2	A/E
3	CORDON ROAD/ HAZELGREEN ROAD	EB	LOS E	>1.2	<b>&gt;120</b>	<b>F</b>	>1.2	<b>&gt;120</b>	<b>F</b>						
4	CORDON ROAD/ KALE STREET	EB	LOS E	0.57	<b>76.2</b>	<b>A/F</b>	0.58	<b>78.7</b>	<b>B/F</b>	0.17	21.7	A/C	0.17	21.7	A/C
5	CORDON ROAD/ HAYESVILLE DRIVE	EB	LOS E	0.90	<b>85.8</b>	<b>B/F</b>	0.92	<b>90.4</b>	<b>B/F</b>	0.52	25.7	B/D	0.49	23.8	B/C
6	CORDON ROAD/ WARD DRIVE	EB	LOS E	0.76	<b>90.0</b>	<b>B/F</b>	0.81	<b>99.5</b>	<b>B/F</b>	0.35	25.1	B/D	0.35	24.9	B/C
7	CORDON ROAD/ HERRIN ROAD	EB	LOS E	0.93	<b>119.9</b>	<b>B/F</b>	0.93	<b>119.9</b>	<b>B/F</b>	0.44	24.7	B/C	0.41	23.5	B/C
10	CORDON ROAD/ SWEGLE ROAD	EB	LOS E	>1.2	<b>&gt;120</b>	<b>B/F</b>	>1.2	<b>&gt;120</b>	<b>B/F</b>						
14	CORDON ROAD/ PENNSYLVANIA AVENUE	EB	LOS E	1.08	<b>&gt;120</b>	<b>B/F</b>	1.17	<b>&gt;120</b>	<b>B/F</b>	0.27	24.8	A/C	0.27	24.7	A/C
15	CORDON ROAD/ CAPLINGER STREET	EB	LOS E	>1.2	<b>&gt;120</b>	<b>B/F</b>	>1.2	<b>&gt;120</b>	<b>B/F</b>	0.06	20.0	A/C	0.06	19.9	A/C

**SIGNALIZED INTERSECTION:**  
 Delay = Average Intersection Delay (sec)  
 v/c = Average Intersection Volume-to-Capacity Ratio  
 LOS = Average Intersection Level of Service

**TWO-WAY STOP-CONTROLLED INTERSECTION:**  
 Delay = Critical Movement Approach Delay (sec)  
 v/c = Critical Movement Volume-to-Capacity Ratio  
 LOS = Level of Service (Major/Minor Road)

**ALL-WAY STOP-CONTROLLED INTERSECTION:**  
 Delay = Average Intersection Delay (sec.)  
 v/c = Critical Movement Volume-to-Capacity Ratio  
 LOS = Average Intersection Level of Service

**Bold/Highlighted** = Does Not Meet Mobility Target/Mobility Standard























## APPENDIX C – HCM OPERATIONS REPORTS

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**FUTURE 2043 – NO BUILD – NO INTERCHANGE – AM PEAK**  
**HCM Results**

HCM 6th Signalized Intersection Summary  
 1: OR 99E & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - No Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	225	325	130	315	55	310	595	60	30	560	55
Future Volume (veh/h)	140	225	325	130	315	55	310	595	60	30	560	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1856	1900	1900	1841	1856	1900	1885	1900	1841	1885	1900
Adj Flow Rate, veh/h	152	245	201	141	342	51	337	647	56	33	609	12
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, %	7	3	0	0	4	3	0	1	0	4	1	0
Cap, veh/h	189	476	413	177	382	57	221	1072	93	39	795	357
Arrive On Green	0.11	0.26	0.26	0.10	0.24	0.24	0.12	0.32	0.32	0.02	0.22	0.22
Sat Flow, veh/h	1711	1856	1610	1810	1565	233	1810	3336	288	1753	3582	1610
Grp Volume(v), veh/h	152	245	201	141	0	393	337	347	356	33	609	12
Grp Sat Flow(s),veh/h/ln	1711	1856	1610	1810	0	1799	1810	1791	1833	1753	1791	1610
Q Serve(g_s), s	6.0	7.9	7.4	5.3	0.0	14.7	8.5	11.4	11.4	1.3	11.1	0.4
Cycle Q Clear(g_c), s	6.0	7.9	7.4	5.3	0.0	14.7	8.5	11.4	11.4	1.3	11.1	0.4
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	189	476	413	177	0	439	221	576	589	39	795	357
V/C Ratio(X)	0.80	0.51	0.49	0.79	0.00	0.89	1.53	0.60	0.60	0.84	0.77	0.03
Avail Cap(c_a), veh/h	282	772	670	195	0	646	221	643	658	189	1234	555
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	22.2	22.0	30.7	0.0	25.5	30.6	19.9	19.9	33.9	25.4	21.2
Incr Delay (d2), s/veh	8.1	0.6	0.7	16.4	0.0	8.3	258.5	0.7	0.7	27.5	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.1	2.5	2.9	0.0	6.5	19.2	4.2	4.3	0.8	4.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.3	22.8	22.7	47.1	0.0	33.8	289.1	20.6	20.6	61.5	26.6	21.3
LnGrp LOS	D	C	C	D	A	C	F	C	C	E	C	C
Approach Vol, veh/h		598			534			1040			654	
Approach Delay, s/veh		26.7			37.3			107.6			28.2	
Approach LOS		C			D			F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	21.5	12.2	23.0	6.1	28.4	11.3	23.9				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	8.5	24.0	11.5	25.0	7.5	25.0	7.5	29.0				
Max Q Clear Time (g_c+I1), s	10.5	13.1	8.0	16.7	3.3	13.4	7.3	9.9				
Green Ext Time (p_c), s	0.0	2.4	0.1	0.3	0.0	2.0	0.0	1.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			58.8									
HCM 6th LOS			E									

HCM 6th TWSC  
2: Lake Labish Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - No Build - No Interchange

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Vol, veh/h	10	290	25	5	405	5	100	5	5	20	5	30
Future Vol, veh/h	10	290	25	5	405	5	100	5	5	20	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	0	0	3	0	0	0	0	0	0	0
Mvmt Flow	11	330	28	6	460	6	114	6	6	23	6	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	466	0	0	358	0	0	847	830	330	847	855	463
Stage 1	-	-	-	-	-	-	352	352	-	475	475	-
Stage 2	-	-	-	-	-	-	495	478	-	372	380	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1106	-	-	1212	-	-	284	308	716	284	298	603
Stage 1	-	-	-	-	-	-	669	635	-	574	561	-
Stage 2	-	-	-	-	-	-	560	559	-	653	617	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1106	-	-	1212	-	-	260	302	716	274	292	603
Mov Cap-2 Maneuver	-	-	-	-	-	-	260	302	-	274	292	-
Stage 1	-	-	-	-	-	-	661	627	-	567	557	-
Stage 2	-	-	-	-	-	-	519	555	-	634	610	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			29.3			15.9		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	270	1106	-	-	1212	-	-	393
HCM Lane V/C Ratio	0.463	0.01	-	-	0.005	-	-	0.159
HCM Control Delay (s)	29.3	8.3	0	-	8	0	-	15.9
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.3	0	-	-	0	-	-	0.6

Intersection	
Intersection Delay, s/veh	29.7
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	140	110	155	315	20	95	165	75	15	70	10
Future Vol, veh/h	15	140	110	155	315	20	95	165	75	15	70	10
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
Heavy Vehicles, %	0	5	5	0	8	0	0	0	0	0	0	10
Mvmt Flow	16	152	120	168	342	22	103	179	82	16	76	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.4	45.2	22.4	12.8
HCM LOS	C	E	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	28%	6%	32%	16%
Vol Thru, %	49%	53%	64%	74%
Vol Right, %	22%	42%	4%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	335	265	490	95
LT Vol	95	15	155	15
Through Vol	165	140	315	70
RT Vol	75	110	20	10
Lane Flow Rate	364	288	533	103
Geometry Grp	1	1	1	1
Degree of Util (X)	0.672	0.517	0.919	0.219
Departure Headway (Hd)	6.64	6.456	6.21	7.64
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	539	553	581	473
Service Time	4.726	4.553	4.289	5.64
HCM Lane V/C Ratio	0.675	0.521	0.917	0.218
HCM Control Delay	22.4	16.4	45.2	12.8
HCM Lane LOS	C	C	E	B
HCM 95th-tile Q	5	2.9	11.4	0.8

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	155	75	350	340	45
Future Vol, veh/h	50	155	75	350	340	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	54	167	81	376	366	48

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	928	390	414	0	0
Stage 1	390	-	-	-	-
Stage 2	538	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	300	663	1156	-	-
Stage 1	689	-	-	-	-
Stage 2	589	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	273	663	1156	-	-
Mov Cap-2 Maneuver	273	-	-	-	-
Stage 1	628	-	-	-	-
Stage 2	589	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1156	-	273	663	-	-
HCM Lane V/C Ratio	0.07	-	0.197	0.251	-	-
HCM Control Delay (s)	8.3	0	21.4	12.2	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	1	-	-

Intersection						
Int Delay, s/veh	16.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	30	280	210	390	465	40
Future Vol, veh/h	30	280	210	390	465	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	34	318	239	443	528	45

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1472	551	573	0	0
Stage 1	551	-	-	-	-
Stage 2	921	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	141	538	1010	-	-
Stage 1	581	-	-	-	-
Stage 2	391	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	97	538	1010	-	-
Mov Cap-2 Maneuver	97	-	-	-	-
Stage 1	399	-	-	-	-
Stage 2	391	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	66.8	3.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1010	-	374	-	-
HCM Lane V/C Ratio	0.236	-	0.942	-	-
HCM Control Delay (s)	9.7	0	66.8	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.9	-	10.2	-	-



Intersection						
Int Delay, s/veh	10.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	95	65	50	505	690	50
Future Vol, veh/h	95	65	50	505	690	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	3	4	4	4	3	6
Mvmt Flow	101	69	53	537	734	53

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1404	761	787	0	-	0
Stage 1	761	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Critical Hdwy	6.43	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	153	402	823	-	-	-
Stage 1	459	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	139	402	823	-	-	-
Mov Cap-2 Maneuver	139	-	-	-	-	-
Stage 1	417	-	-	-	-	-
Stage 2	522	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	92.3	0.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	823	-	189	-	-
HCM Lane V/C Ratio	0.065	-	0.901	-	-
HCM Control Delay (s)	9.7	0	92.3	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.2	-	6.9	-	-

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	40	60	45	515	685	55
Future Vol, veh/h	40	60	45	515	685	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	1	5	7	4	3
Mvmt Flow	44	66	49	566	753	60























Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1447	783	813	0	-	0
Stage 1	783	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Critical Hdwy	6.44	6.21	4.15	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.309	2.245	-	-	-
Pot Cap-1 Maneuver	143	395	801	-	-	-
Stage 1	447	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	130	395	801	-	-	-
Mov Cap-2 Maneuver	130	-	-	-	-	-
Stage 1	407	-	-	-	-	-
Stage 2	508	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	37.2	0.8	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	801	-	218	-	-
HCM Lane V/C Ratio	0.062	-	0.504	-	-
HCM Control Delay (s)	9.8	0	37.2	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0.2	-	2.6	-	-

HCM 6th Signalized Intersection Summary  
8: Cordon Rd & Silverton Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - No Build - No Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	215	195	310	400	25	205	405	200	25	545	165
Future Volume (veh/h)	105	215	195	310	400	25	205	405	200	25	545	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1781	1826	1841	1900	1781	1870	1781	1752	1826	1826
Adj Flow Rate, veh/h	114	234	51	337	435	23	223	440	160	27	592	111
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, %	9	9	8	5	4	0	8	2	8	10	5	5
Cap, veh/h	140	325	69	366	829	44	252	880	1028	32	622	656
Arrive On Green	0.08	0.12	0.12	0.21	0.25	0.25	0.15	0.47	0.47	0.02	0.34	0.34
Sat Flow, veh/h	1682	2746	587	1739	3378	178	1697	1870	1510	1668	1826	1547
Grp Volume(v), veh/h	114	141	144	337	225	233	223	440	160	27	592	111
Grp Sat Flow(s),veh/h/ln	1682	1678	1655	1739	1749	1808	1697	1870	1510	1668	1826	1547
Q Serve(g_s), s	6.6	8.0	8.3	18.8	11.0	11.1	12.8	16.1	3.7	1.6	31.3	4.4
Cycle Q Clear(g_c), s	6.6	8.0	8.3	18.8	11.0	11.1	12.8	16.1	3.7	1.6	31.3	4.4
Prop In Lane	1.00		0.35	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	198	196	366	429	444	252	880	1028	32	622	656
V/C Ratio(X)	0.81	0.71	0.73	0.92	0.52	0.53	0.88	0.50	0.16	0.85	0.95	0.17
Avail Cap(c_a), veh/h	272	542	535	422	707	730	274	907	1050	135	738	754
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	42.0	42.1	38.3	32.3	32.4	41.3	18.1	5.6	48.4	31.8	17.7
Incr Delay (d2), s/veh	4.3	1.8	2.0	22.2	0.4	0.4	24.2	0.2	0.0	19.8	19.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	3.3	3.4	9.9	4.5	4.7	6.7	6.1	0.9	0.8	15.7	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.9	43.8	44.2	60.5	32.7	32.7	65.5	18.3	5.7	68.2	51.1	17.7
LnGrp LOS	D	D	D	E	C	C	E	B	A	E	D	B
Approach Vol, veh/h		399			795			823			730	
Approach Delay, s/veh		45.4			44.5			28.6			46.6	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.8	16.7	18.7	38.7	12.2	29.3	5.9	51.6				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	24.0	32.0	16.0	40.0	16.0	40.0	8.0	48.0				
Max Q Clear Time (g_c+I1), s	20.8	10.3	14.8	33.3	8.6	13.1	3.6	18.1				
Green Ext Time (p_c), s	0.0	0.3	0.0	0.4	0.0	0.4	0.0	0.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			40.4									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary  
 9: Cordon Rd & Sunnyview Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	50	130	70	80	55	160	650	20	25	890	140
Future Volume (veh/h)	95	50	130	70	80	55	160	650	20	25	890	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1841	1856	1900	1870	1856	1856	1856	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	101	53	57	74	85	38	170	691	20	27	947	145
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	3	0	2	3	3	3	2	0	0	2	2
Cap, veh/h	198	83	90	205	116	52	209	1213	35	454	1011	155
Arrive On Green	0.06	0.10	0.10	0.05	0.10	0.10	0.05	0.67	0.67	0.02	0.64	0.64
Sat Flow, veh/h	1753	813	875	1781	1200	537	1767	1809	52	1810	1579	242
Grp Volume(v), veh/h	101	0	110	74	0	123	170	0	711	27	0	1092
Grp Sat Flow(s),veh/h/ln	1753	0	1688	1781	0	1737	1767	0	1861	1810	0	1821
Q Serve(g_s), s	5.6	0.0	6.8	4.0	0.0	7.5	3.4	0.0	22.1	0.6	0.0	58.5
Cycle Q Clear(g_c), s	5.6	0.0	6.8	4.0	0.0	7.5	3.4	0.0	22.1	0.6	0.0	58.5
Prop In Lane	1.00		0.52	1.00		0.31	1.00		0.03	1.00		0.13
Lane Grp Cap(c), veh/h	198	0	173	205	0	168	209	0	1249	454	0	1166
V/C Ratio(X)	0.51	0.00	0.64	0.36	0.00	0.73	0.82	0.00	0.57	0.06	0.00	0.94
Avail Cap(c_a), veh/h	198	0	344	214	0	352	281	0	1388	484	0	1258
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.7	0.0	46.8	41.5	0.0	47.7	26.7	0.0	9.5	8.0	0.0	17.5
Incr Delay (d2), s/veh	2.2	0.0	2.9	1.1	0.0	4.5	12.6	0.0	0.6	0.0	0.0	12.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	3.0	1.7	0.0	3.3	3.4	0.0	7.0	0.2	0.0	22.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.9	0.0	49.6	42.5	0.0	52.2	39.3	0.0	10.1	8.0	0.0	30.4
LnGrp LOS	D	A	D	D	A	D	D	A	B	A	A	C
Approach Vol, veh/h		211			197			881			1119	
Approach Delay, s/veh		46.9			48.6			15.8			29.9	
Approach LOS		D			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	74.5	10.0	14.5	6.2	77.8	9.4	15.1				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	10.0	75.0	6.0	22.0	4.0	81.0	5.9	22.1				
Max Q Clear Time (g_c+1/4), s	15.4	60.5	7.6	9.5	2.6	24.1	6.0	8.8				
Green Ext Time (p_c), s	0.2	9.0	0.0	0.3	0.0	7.7	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				27.7								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	47.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	40	10	65	10	5	15	95	770	10	30	935	105
Future Vol, veh/h	40	10	65	10	5	15	95	770	10	30	935	105
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	210	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	6	0	0	0	2	5	0	0	7	3
Mvmt Flow	43	11	70	11	5	16	102	828	11	32	1005	113

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2175	2169	1062	2204	2220	835	1118	0	0	839	0	0
Stage 1	1126	1126	-	1038	1038	-	-	-	-	-	-	-
Stage 2	1049	1043	-	1166	1182	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.26	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.354	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 34	47	267	32	44	371	625	-	-	804	-	-
Stage 1	251	282	-	281	311	-	-	-	-	-	-	-
Stage 2	277	309	-	238	266	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 24	38	267	16	35	371	625	-	-	804	-	-
Mov Cap-2 Maneuver	~ 24	38	-	16	35	-	-	-	-	-	-	-
Stage 1	210	271	-	235	260	-	-	-	-	-	-	-
Stage 2	217	259	-	162	255	-	-	-	-	-	-	-























Approach	EB	WB	NB	SB
HCM Control Delay, s	774.5	271	1.3	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	625	-	-	53	37	804	-	-
HCM Lane V/C Ratio	0.163	-	-	2.333	0.872	0.04	-	-
HCM Control Delay (s)	11.9	-	-	774.5	271	9.7	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	12.5	3.2	0.1	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th Signalized Intersection Summary  
 11: Cordon Rd & Center St

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - No Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	55	130	60	85	55	110	740	30	65	825	110
Future Volume (veh/h)	70	55	130	60	85	55	110	740	30	65	825	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1811	1841	1856	1752	1856	1826	1841	1900	1796	1856
Adj Flow Rate, veh/h	76	60	7	65	92	26	120	804	32	71	897	68
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	6	4	3	10	3	5	4	0	7	3
Cap, veh/h	204	181	149	246	125	35	309	1087	43	575	1108	970
Arrive On Green	0.05	0.10	0.10	0.04	0.09	0.09	0.11	1.00	1.00	0.05	0.62	0.62
Sat Flow, veh/h	1781	1870	1535	1753	1392	393	1767	1744	69	1810	1796	1572
Grp Volume(v), veh/h	76	60	7	65	0	118	120	0	836	71	897	68
Grp Sat Flow(s),veh/h/ln	1781	1870	1535	1753	0	1785	1767	0	1813	1810	1796	1572
Q Serve(g_s), s	3.4	2.7	0.4	3.0	0.0	5.8	2.2	0.0	0.0	1.2	34.4	1.6
Cycle Q Clear(g_c), s	3.4	2.7	0.4	3.0	0.0	5.8	2.2	0.0	0.0	1.2	34.4	1.6
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	204	181	149	246	0	161	309	0	1131	575	1108	970
V/C Ratio(X)	0.37	0.33	0.05	0.26	0.00	0.73	0.39	0.00	0.74	0.12	0.81	0.07
Avail Cap(c_a), veh/h	212	457	375	265	0	436	314	0	1131	592	1108	970
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.73	0.00	0.73	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	37.9	36.9	35.0	0.0	39.9	12.7	0.0	0.0	5.3	13.2	6.9
Incr Delay (d2), s/veh	0.4	0.8	0.1	0.2	0.0	4.8	0.2	0.0	3.2	0.0	6.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.2	0.1	1.2	0.0	2.6	0.9	0.0	1.0	0.3	12.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.3	38.7	37.0	35.2	0.0	44.7	12.9	0.0	3.2	5.4	19.6	7.0
LnGrp LOS	D	D	D	D	A	D	B	A	A	A	B	A
Approach Vol, veh/h		143			183			956			1036	
Approach Delay, s/veh		36.8			41.3			4.4			17.8	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	60.5	8.6	12.1	8.2	61.1	8.0	12.7				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	41.0	5.0	22.0	5.0	41.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s	4.2	36.4	5.4	7.8	3.2	2.0	5.0	4.7				
Green Ext Time (p_c), s	0.0	2.9	0.0	0.3	0.0	10.3	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			15.3									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary  
 12: Cordon Rd & Auburn Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↖		↗	↖	
Traffic Volume (veh/h)	25	5	25	15	5	35	55	815	20	15	945	45
Future Volume (veh/h)	25	5	25	15	5	35	55	815	20	15	945	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1900	1767	1900	1900	1900	1900	1826	1604	1900	1796	1900
Adj Flow Rate, veh/h	27	5	0	16	5	0	60	886	22	16	1027	48
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, %	7	0	9	0	0	0	0	5	20	0	7	0
Cap, veh/h	140	20	83	130	31	0	559	1377	34	458	1279	60
Arrive On Green	0.06	0.06	0.00	0.06	0.06	0.00	0.04	0.78	0.78	0.04	1.00	1.00
Sat Flow, veh/h	1199	361	1497	1067	564	0	1810	1774	44	1810	1702	80
Grp Volume(v), veh/h	32	0	0	21	0	0	60	0	908	16	0	1075
Grp Sat Flow(s),veh/h/ln1560	0	1497	1631	0	0	1810	0	1818	1810	0	1782	
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	0.6	0.0	20.1	0.2	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	0.0	1.0	0.0	0.0	0.6	0.0	20.1	0.2	0.0	0.0
Prop In Lane	0.84		1.00	0.76		0.00	1.00		0.02	1.00		0.04
Lane Grp Cap(c), veh/h	160	0	83	161	0	0	559	0	1411	458	0	1339
V/C Ratio(X)	0.20	0.00	0.00	0.13	0.00	0.00	0.11	0.00	0.64	0.03	0.00	0.80
Avail Cap(c_a), veh/h	377	0	301	383	0	0	583	0	1411	527	0	1339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.50	0.00	0.50
Uniform Delay (d), s/veh	40.9	0.0	0.0	40.6	0.0	0.0	2.0	0.0	4.5	4.2	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.4	0.0	0.0	0.1	0.0	2.3	0.0	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln0.7	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0	4.6	0.0	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.5	0.0	0.0	41.0	0.0	0.0	2.1	0.0	6.8	4.2	0.0	2.7
LnGrp LOS	D	A	A	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		32			21			968			1091	
Approach Delay, s/veh		41.5			41.0			6.5			2.7	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s6.1	74.4			9.5	8.4	72.1		9.5				
Change Period (Y+Rc), s 4.5	4.5			4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s 5.1	53.3			18.1	5.1	53.3		18.1				
Max Q Clear Time (g_c+1/2), s 12.2	22.1			3.6	2.6	2.0		3.0				
Green Ext Time (p_c), s 0.0	7.4			0.1	0.0	11.5		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				5.4								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary  
13: Cordon Rd & State St

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↗		↖ ↗	↗		↖ ↗	↗		↖ ↗	↗	↖ ↗
Traffic Volume (veh/h)	170	220	70	125	245	105	45	595	130	125	580	240
Future Volume (veh/h)	170	220	70	125	245	105	45	595	130	125	580	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1870	1841	1752	1885	1811	1811	1856	1796	1796	1885	1870
Adj Flow Rate, veh/h	185	239	62	136	266	96	49	647	131	136	630	139
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, %	3	2	4	10	1	6	6	3	7	7	1	2
Cap, veh/h	429	308	80	255	291	105	267	634	128	193	844	695
Arrive On Green	0.06	0.22	0.22	0.07	0.22	0.22	0.04	0.42	0.42	0.06	0.45	0.45
Sat Flow, veh/h	3428	1432	371	1668	1322	477	1725	1498	303	1711	1885	1552
Grp Volume(v), veh/h	185	0	301	136	0	362	49	0	778	136	630	139
Grp Sat Flow(s),veh/h/ln	1714	0	1803	1668	0	1799	1725	0	1801	1711	1885	1552
Q Serve(g_s), s	3.6	0.0	13.8	5.6	0.0	17.2	1.4	0.0	37.0	3.9	24.2	4.7
Cycle Q Clear(g_c), s	3.6	0.0	13.8	5.6	0.0	17.2	1.4	0.0	37.0	3.9	24.2	4.7
Prop In Lane	1.00		0.21	1.00		0.27	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	429	0	388	255	0	396	267	0	762	193	844	695
V/C Ratio(X)	0.43	0.00	0.78	0.53	0.00	0.91	0.18	0.00	1.02	0.71	0.75	0.20
Avail Cap(c_a), veh/h	447	0	433	255	0	432	316	0	762	200	844	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.8	0.0	32.3	25.7	0.0	33.3	16.0	0.0	25.2	20.3	20.0	14.6
Incr Delay (d2), s/veh	0.3	0.0	6.6	1.1	0.0	21.6	0.1	0.0	38.0	8.7	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4	0.0	6.5	2.1	0.0	9.1	0.5	0.0	21.8	1.8	10.1	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.1	0.0	39.0	26.8	0.0	54.9	16.1	0.0	63.2	29.0	23.3	14.7
LnGrp LOS	C	A	D	C	A	D	B	A	F	C	C	B
Approach Vol, veh/h		486		498		827		905				
Approach Delay, s/veh		34.1		47.2		60.4		22.8				
Approach LOS		C		D		E		C				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	24.8	7.5	45.2	9.5	25.3	9.6	43.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	6.0	21.0	6.0	37.0	6.0	21.0	6.0	37.0				
Max Q Clear Time (g_c+1), s	6.0	15.8	3.4	26.2	5.6	19.2	5.9	39.0				
Green Ext Time (p_c), s	0.0	0.2	0.0	0.6	0.0	0.1	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	40.7
HCM 6th LOS	D



Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	65	35	20	710	695	70
Future Vol, veh/h	65	35	20	710	695	70
Conflicting Peds, #/hr	2	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	7	8	6	9	9
Mvmt Flow	71	38	22	772	755	76

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1611	793	831	0	-	0
Stage 1	793	-	-	-	-	-
Stage 2	818	-	-	-	-	-
Critical Hdwy	6.45	6.27	4.18	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.363	2.272	-	-	-
Pot Cap-1 Maneuver	113	381	776	-	-	-
Stage 1	440	-	-	-	-	-
Stage 2	429	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	110	381	776	-	-	-
Mov Cap-2 Maneuver	110	-	-	-	-	-
Stage 1	428	-	-	-	-	-
Stage 2	429	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	79.7	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	776	-	146	-	-
HCM Lane V/C Ratio	0.028	-	0.744	-	-
HCM Control Delay (s)	9.8	-	79.7	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.1	-	4.5	-	-

Intersection												
Int Delay, s/veh	12.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	70	5	15	5	10	10	5	665	15	10	670	110
Future Vol, veh/h	70	5	15	5	10	10	5	665	15	10	670	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	0	9	0	20	20	0	6	0	0	5	5
Mvmt Flow	76	5	16	5	11	11	5	723	16	11	728	120

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1562	1559	788	1562	1611	731	848	0	0	739	0	0
Stage 1	810	810	-	741	741	-	-	-	-	-	-	-
Stage 2	752	749	-	821	870	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.29	7.1	6.7	6.4	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.381	3.5	4.18	3.48	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	90	113	380	92	95	393	798	-	-	876	-	-
Stage 1	372	396	-	411	397	-	-	-	-	-	-	-
Stage 2	401	422	-	371	345	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	77	109	380	82	92	393	798	-	-	876	-	-
Mov Cap-2 Maneuver	77	109	-	82	92	-	-	-	-	-	-	-
Stage 1	368	386	-	406	393	-	-	-	-	-	-	-
Stage 2	375	417	-	342	337	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	200.8		40.6		0.1		0.1			
HCM LOS	F		E							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	798	-	-	91	128	876	-	-
HCM Lane V/C Ratio	0.007	-	-	1.075	0.212	0.012	-	-
HCM Control Delay (s)	9.5	0	-	200.8	40.6	9.2	0	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	6.5	0.8	0	-	-

HCM 6th Signalized Intersection Summary  
16: Cordon Rd & Macleay Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (veh/h)	100	50	135	105	50	60	30	540	40	15	655	20
Future Volume (veh/h)	100	50	135	105	50	60	30	540	40	15	655	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1811	1900	1900	1781	1870	1900	1826	1737	1737	1796	1796
Adj Flow Rate, veh/h	109	54	105	114	54	0	33	587	41	16	712	21
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, %	10	6	0	0	8	2	0	5	11	11	7	7
Cap, veh/h	166	71	117	197	80		376	1038	72	557	1045	31
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.00	0.06	1.00	1.00	0.02	0.60	0.60
Sat Flow, veh/h	566	367	602	670	414	0	1810	1687	118	1654	1736	51
Grp Volume(v), veh/h	268	0	0	168	0	0	33	0	628	16	0	733
Grp Sat Flow(s),veh/h/ln	1535	0	0	1084	0	0	1810	0	1805	1654	0	1787
Q Serve(g_s), s	1.5	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.3	0.0	24.9
Cycle Q Clear(g_c), s	15.2	0.0	0.0	13.7	0.0	0.0	0.6	0.0	0.0	0.3	0.0	24.9
Prop In Lane	0.41		0.39	0.68		0.00	1.00		0.07	1.00		0.03
Lane Grp Cap(c), veh/h	355	0	0	278	0		376	0	1110	557	0	1076
V/C Ratio(X)	0.76	0.00	0.00	0.60	0.00		0.09	0.00	0.57	0.03	0.00	0.68
Avail Cap(c_a), veh/h	478	0	0	387	0		422	0	1110	620	0	1076
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.79	0.00	0.79	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	0.0	34.4	0.0	0.0	9.4	0.0	0.0	6.5	0.0	12.1
Incr Delay (d2), s/veh	2.9	0.0	0.0	0.8	0.0	0.0	0.1	0.0	1.7	0.0	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	0.0	3.4	0.0	0.0	0.2	0.0	0.5	0.1	0.0	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	0.0	0.0	35.2	0.0	0.0	9.5	0.0	1.7	6.6	0.0	15.6
LnGrp LOS	D	A	A	D	A		A	A	A	A	A	B
Approach Vol, veh/h		268			168			661				749
Approach Delay, s/veh		38.2			35.2			2.0				15.4
Approach LOS		D			D			A				B
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	60.2		22.5	6.1	61.4		22.5				
Change Period (Y+Rc), s	4.5	6.0		5.0	4.5	6.0		5.0				
Max Green Setting (Gmax), s	5.1	44.4		25.0	5.1	44.4		25.0				
Max Q Clear Time (g_c+I1), s	2.6	26.9		15.7	2.3	2.0		17.2				
Green Ext Time (p_c), s	0.0	0.8		0.1	0.0	0.7		0.3				

Intersection Summary

HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 17: Cordon Rd & Gaffin Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	60	195	100	35	125	85	435	130	145	665	85
Future Volume (veh/h)	50	60	195	100	35	125	85	435	130	145	665	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1856	1781	1826	1900	1870	1841	1856
Adj Flow Rate, veh/h	54	65	37	109	38	7	92	473	131	158	723	51
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, %	0	0	2	0	0	3	8	5	0	2	4	3
Cap, veh/h	218	90	51	171	123	23	558	869	241	535	1205	1007
Arrive On Green	0.03	0.08	0.08	0.03	0.08	0.08	0.03	0.63	0.63	0.11	1.00	1.00
Sat Flow, veh/h	1810	1137	647	1810	1561	288	1697	1369	379	1781	1841	1539
Grp Volume(v), veh/h	54	0	102	109	0	45	92	0	604	158	723	51
Grp Sat Flow(s),veh/h/ln	1810	0	1784	1810	0	1848	1697	0	1748	1781	1841	1539
Q Serve(g_s), s	2.5	0.0	5.0	3.0	0.0	2.1	1.7	0.0	17.4	2.9	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	5.0	3.0	0.0	2.1	1.7	0.0	17.4	2.9	0.0	0.0
Prop In Lane	1.00		0.36	1.00		0.16	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	218	0	141	171	0	146	558	0	1109	535	1205	1007
V/C Ratio(X)	0.25	0.00	0.72	0.64	0.00	0.31	0.17	0.00	0.54	0.30	0.60	0.05
Avail Cap(c_a), veh/h	218	0	495	171	0	513	558	0	1109	559	1205	1007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.63	0.63	0.63
Uniform Delay (d), s/veh	36.6	0.0	40.5	39.9	0.0	39.1	5.2	0.0	9.2	6.5	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	2.6	6.0	0.0	0.4	0.1	0.0	1.9	0.1	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	2.3	1.1	0.0	0.9	0.4	0.0	5.3	0.7	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.8	0.0	43.1	46.0	0.0	39.6	5.3	0.0	11.1	6.6	1.4	0.1
LnGrp LOS	D	A	D	D	A	D	A	A	B	A	A	A
Approach Vol, veh/h		156			154			696			932	
Approach Delay, s/veh		40.9			44.1			10.3			2.2	
Approach LOS		D			D			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	64.9	7.0	11.1	8.8	63.1	7.0	11.1				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	3.0	41.0	3.0	25.0	6.0	38.0	3.0	25.0				
Max Q Clear Time (g_c+1/3), s	1.5	2.0	4.5	4.1	4.9	19.4	5.0	7.0				
Green Ext Time (p_c), s	0.0	0.8	0.0	0.0	0.0	0.6	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			11.6									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary  
 18: Kuebler Blvd/Cordon Rd & Lancaster Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	390	125	105	245	90	115	510	210	205	675	80
Future Volume (veh/h)	50	390	125	105	245	90	115	510	210	205	675	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1826	1885	1796	1900	1885	1856	1826	1870	1885	1900
Adj Flow Rate, veh/h	54	424	70	114	266	32	125	554	0	223	734	30
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, %	0	3	5	1	7	0	1	3	5	2	1	0
Cap, veh/h	66	664	355	202	715	553	218	905		276	1251	552
Arrive On Green	0.04	0.19	0.17	0.06	0.21	0.19	0.06	0.26	0.00	0.16	0.35	0.31
Sat Flow, veh/h	1810	3526	1547	3483	3413	1610	3483	3526	1547	1781	3582	1610
Grp Volume(v), veh/h	54	424	70	114	266	32	125	554	0	223	734	30
Grp Sat Flow(s),veh/h/ln	1810	1763	1547	1742	1706	1610	1742	1763	1547	1781	1791	1610
Q Serve(g_s), s	1.4	5.2	1.7	1.5	3.1	0.6	1.6	6.5	0.0	5.7	7.8	0.6
Cycle Q Clear(g_c), s	1.4	5.2	1.7	1.5	3.1	0.6	1.6	6.5	0.0	5.7	7.8	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	66	664	355	202	715	553	218	905		276	1251	552
V/C Ratio(X)	0.82	0.64	0.20	0.57	0.37	0.06	0.57	0.61		0.81	0.59	0.05
Avail Cap(c_a), veh/h	310	2563	1189	596	2481	1386	596	2337		419	2604	1161
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	17.5	14.5	21.5	15.8	10.3	21.3	15.3	0.0	19.1	12.5	10.3
Incr Delay (d2), s/veh	8.8	0.4	0.1	0.9	0.1	0.0	0.9	0.3	0.0	3.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.8	0.5	0.5	1.0	0.2	0.6	1.9	0.0	2.1	2.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.1	17.9	14.6	22.4	16.0	10.3	22.2	15.6	0.0	22.7	12.6	10.3
LnGrp LOS	C	B	B	C	B	B	C	B		C	B	B
Approach Vol, veh/h		548			412			679			987	
Approach Delay, s/veh		18.8			17.3			16.8			14.8	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.9	20.3	5.7	13.8	11.3	16.0	6.7	12.8				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	11.0	29.0	8.0	33.0				
Max Q Clear Time (g_c+1), s	13.6	9.8	3.4	5.1	7.7	8.5	3.5	7.2				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.3	0.0	0.6	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	16.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Kuebler Blvd & Mill Creek Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - No Interchange



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	160	230	595	240	235	670
Future Volume (veh/h)	160	230	595	240	235	670
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1604	1604	1856	1604	1752	1870
Adj Flow Rate, veh/h	174	185	647	129	255	728
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	20	3	20	10	2
Cap, veh/h	231	329	1007	738	405	1300
Arrive On Green	0.15	0.15	0.18	0.18	0.09	0.69
Sat Flow, veh/h	1527	1359	1856	1359	1668	1870
Grp Volume(v), veh/h	174	185	647	129	255	728
Grp Sat Flow(s),veh/h/ln	1527	1359	1856	1359	1668	1870
Q Serve(g_s), s	7.1	7.8	21.0	5.2	3.9	12.6
Cycle Q Clear(g_c), s	7.1	7.8	21.0	5.2	3.9	12.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	231	329	1007	738	405	1300
V/C Ratio(X)	0.75	0.56	0.64	0.17	0.63	0.56
Avail Cap(c_a), veh/h	493	562	1007	738	459	1300
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.31	0.31	1.00	1.00
Uniform Delay (d), s/veh	26.4	21.6	20.8	14.3	11.0	5.0
Incr Delay (d2), s/veh	1.9	0.6	1.0	0.2	1.4	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	5.9	10.2	1.2	1.2	2.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.3	22.2	21.8	14.5	12.4	6.7
LnGrp LOS	C	C	C	B	B	A
Approach Vol, veh/h	359		776			983
Approach Delay, s/veh	25.2		20.6			8.2
Approach LOS	C		C			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		51.2		13.8	9.9	41.3
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		34.0		21.0	8.0	22.0
Max Q Clear Time (g_c+I1), s		14.6		9.8	5.9	23.0
Green Ext Time (p_c), s		0.6		0.1	0.0	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			15.6			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary  
 20: Turner Rd & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	670	75	190	435	140	200	255	75	60	160	165
Future Volume (veh/h)	95	670	75	190	435	140	200	255	75	60	160	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1811	1870	1870	1678	1870	1870	1841	1900	1693	1826	1900	1752
Adj Flow Rate, veh/h	103	728	79	207	473	142	217	277	73	65	174	43
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, %	6	2	2	15	2	2	4	0	14	5	0	10
Cap, veh/h	363	856	93	480	758	227	315	354	93	176	409	408
Arrive On Green	0.09	1.00	1.00	0.08	0.55	0.53	0.07	0.24	0.23	0.04	0.22	0.22
Sat Flow, veh/h	1725	1658	180	1598	1381	415	1753	1449	382	1739	1900	1485
Grp Volume(v), veh/h	103	0	807	207	0	615	217	0	350	65	174	43
Grp Sat Flow(s),veh/h/ln	1725	0	1838	1598	0	1796	1753	0	1831	1739	1900	1485
Q Serve(g_s), s	3.8	0.0	0.0	7.9	0.0	30.7	9.0	0.0	23.2	3.8	10.3	2.8
Cycle Q Clear(g_c), s	3.8	0.0	0.0	7.9	0.0	30.7	9.0	0.0	23.2	3.8	10.3	2.8
Prop In Lane	1.00		0.10	1.00		0.23	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	363	0	949	480	0	985	315	0	447	176	409	408
V/C Ratio(X)	0.28	0.00	0.85	0.43	0.00	0.62	0.69	0.00	0.78	0.37	0.43	0.11
Avail Cap(c_a), veh/h	407	0	949	543	0	985	315	0	447	213	409	408
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.00	0.77	0.77	0.00	0.77	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	0.0	12.4	0.0	20.3	42.6	0.0	46.1	40.5	44.0	35.2
Incr Delay (d2), s/veh	0.1	0.0	7.5	0.2	0.0	2.3	5.2	0.0	12.9	0.5	3.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	2.0	2.6	0.0	12.2	2.6	0.0	11.9	1.6	5.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	0.0	7.5	12.6	0.0	22.7	47.7	0.0	59.0	41.0	47.3	35.7
LnGrp LOS	B	A	A	B	A	C	D	A	E	D	D	D
Approach Vol, veh/h		910			822			567			282	
Approach Delay, s/veh		8.5			20.1			54.7			44.1	
Approach LOS		A			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.9	71.1	9.3	35.7	9.7	75.3	13.0	32.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	15.0	60.0	8.0	27.0	9.0	66.0	9.0	26.0				
Max Q Clear Time (g_c+1), s	19.9	2.0	5.8	25.2	5.8	32.7	11.0	12.3				
Green Ext Time (p_c), s	0.0	0.8	0.0	0.1	0.0	0.6	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				26.2								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary  
 21: 36th Ave & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	615	270	125	475	195	225	85	125	90	125	115
Future Volume (veh/h)	220	615	270	125	475	195	225	85	125	90	125	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1870	1870	1826	1900	1841	1900	1856	1900	1900	1737
Adj Flow Rate, veh/h	239	668	176	136	516	202	245	92	87	98	136	3
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	4	2	2	5	0	4	0	3	0	0	11
Cap, veh/h	628	1191	1025	424	783	307	234	105	100	187	179	139
Arrive On Green	0.06	0.65	0.65	0.09	1.00	1.00	0.08	0.12	0.12	0.06	0.09	0.09
Sat Flow, veh/h	1781	1841	1585	1781	1249	489	1753	898	849	1810	1900	1472
Grp Volume(v), veh/h	239	668	176	136	0	718	245	0	179	98	136	3
Grp Sat Flow(s),veh/h/ln	1781	1841	1585	1781	0	1738	1753	0	1747	1810	1900	1472
Q Serve(g_s), s	6.2	26.1	5.7	3.7	0.0	0.0	11.0	0.0	13.1	6.3	9.1	0.2
Cycle Q Clear(g_c), s	6.2	26.1	5.7	3.7	0.0	0.0	11.0	0.0	13.1	6.3	9.1	0.2
Prop In Lane	1.00		1.00	1.00		0.28	1.00		0.49	1.00		1.00
Lane Grp Cap(c), veh/h	628	1191	1025	424	0	1090	234	0	205	187	179	139
V/C Ratio(X)	0.38	0.56	0.17	0.32	0.00	0.66	1.05	0.00	0.87	0.52	0.76	0.02
Avail Cap(c_a), veh/h	735	1191	1025	469	0	1090	234	0	390	187	380	294
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.77	0.00	0.77	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.0	12.7	9.1	9.9	0.0	0.0	52.9	0.0	56.4	49.4	57.4	53.4
Incr Delay (d2), s/veh	0.1	1.9	0.4	0.1	0.0	2.4	72.0	0.0	4.5	1.3	2.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	10.3	1.9	1.1	0.0	0.7	6.9	0.0	5.9	2.9	4.5	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.1	14.6	9.5	10.0	0.0	2.4	124.9	0.0	60.9	50.7	59.9	53.5
LnGrp LOS	A	B	A	A	A	A	F	A	E	D	E	D
Approach Vol, veh/h		1083			854			424			237	
Approach Delay, s/veh		12.1			3.6			97.9			56.0	
Approach LOS		B			A			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	89.1	15.0	16.3	12.2	86.5	12.0	19.3				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	67.0	67.0	11.0	26.0	16.0	60.0	8.0	29.0				
Max Q Clear Time (g_c+1/3), s	28.1	28.1	13.0	11.1	8.2	2.0	8.3	15.1				
Green Ext Time (p_c), s	0.0	0.7	0.0	0.1	0.0	0.7	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											27.3	
HCM 6th LOS											C	

























<b>ID</b>	<b>Software/Method</b>	<b>Intersection</b>	<b>Control Type</b>	<b>LOS</b>	<b>Delay</b>	<b>V/C Ratio</b>
1	Synchro HCM 6th Signal	OR 99E & Hazelgreen Rd	Signal	E	58.8	0.87
8	Synchro HCM 6th Signal	Cordon Rd & Silverton Rd	Signal	D	40.4	0.85
9	Synchro HCM 6th Signal	Cordon Rd & Sunnyview Rd	Signal	C	27.7	0.95
11	Synchro HCM 6th Signal	Cordon Rd & Center St	Signal	B	15.3	0.83
12	Synchro HCM 6th Signal	Cordon Rd & Auburn Rd	Signal	A	5.4	0.81
13	Synchro HCM 6th Signal	Cordon Rd & State St	Signal	D	40.7	0.99
16	Synchro HCM 6th Signal	Cordon Rd & Macleay Rd	Signal	B	15.7	0.80
17	Synchro HCM 6th Signal	Cordon Rd & Gaffin Rd	Signal	B	11.6	0.71
18	Synchro HCM 6th Signal	Kuebler Blvd/Cordon Rd & Lancaster Dr	Signal	B	16.6	0.54
19	Synchro HCM 6th Signal	Kuebler Blvd & Mill Creek Dr	Signal	B	15.6	0.67
20	Synchro HCM 6th Signal	Turner Rd & Kuebler Blvd	Signal	C	26.2	0.91
21	Synchro HCM 6th Signal	36th Ave & Kuebler Blvd	Signal	C	27.3	0.87

**FUTURE 2043 – NO BUILD – NO INTERCHANGE – PM PEAK**  
**HCM Results**

HCM 6th Signalized Intersection Summary  
 1: OR 99E & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - No Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	400	540	100	265	40	400	585	155	100	875	105
Future Volume (veh/h)	105	400	540	100	265	40	400	585	155	100	875	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1856	1885	1900	1900	1885	1796	1841	1900	1885
Adj Flow Rate, veh/h	107	408	270	102	270	35	408	597	136	102	893	26
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	0	3	1	0	0	1	7	4	0	1
Cap, veh/h	135	466	395	128	397	51	360	1110	252	129	931	412
Arrive On Green	0.08	0.25	0.25	0.07	0.24	0.24	0.20	0.38	0.38	0.07	0.26	0.26
Sat Flow, veh/h	1795	1900	1610	1767	1635	212	1810	2899	659	1753	3610	1598
Grp Volume(v), veh/h	107	408	270	102	0	305	408	368	365	102	893	26
Grp Sat Flow(s),veh/h/ln	1795	1900	1610	1767	0	1847	1810	1791	1767	1753	1805	1598
Q Serve(g_s), s	5.5	19.2	14.2	5.3	0.0	13.9	18.5	14.9	14.9	5.3	22.7	1.1
Cycle Q Clear(g_c), s	5.5	19.2	14.2	5.3	0.0	13.9	18.5	14.9	14.9	5.3	22.7	1.1
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	135	466	395	128	0	448	360	686	676	129	931	412
V/C Ratio(X)	0.79	0.88	0.68	0.79	0.00	0.68	1.13	0.54	0.54	0.79	0.96	0.06
Avail Cap(c_a), veh/h	164	592	502	142	0	556	360	686	676	235	931	412
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	33.8	31.9	42.5	0.0	32.0	37.3	22.3	22.3	42.4	34.1	26.1
Incr Delay (d2), s/veh	17.8	10.9	2.2	21.0	0.0	1.4	89.1	0.5	0.5	7.7	20.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	9.6	5.3	2.9	0.0	5.9	16.6	5.8	5.8	2.5	11.9	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.1	44.7	34.1	63.5	0.0	33.4	126.4	22.8	22.8	50.1	54.3	26.1
LnGrp LOS	E	D	C	E	A	C	F	C	C	D	D	C
Approach Vol, veh/h		785			407			1141			1021	
Approach Delay, s/veh		43.1			41.0			59.8			53.1	
Approach LOS		D			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.0	30.0	11.5	28.6	11.4	41.6	11.3	28.8				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	18.5	24.0	8.5	28.0	12.5	30.0	7.5	29.0				
Max Q Clear Time (g_c+I1), s	20.5	24.7	7.5	15.9	7.3	16.9	7.3	21.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.1	2.2	0.0	1.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			51.6									
HCM 6th LOS			D									

HCM 6th TWSC  
2: Lake Labish Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - No Build - No Interchange

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Vol, veh/h	65	460	130	5	350	25	100	5	10	10	5	5
Future Vol, veh/h	65	460	130	5	350	25	100	5	10	10	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	68	479	135	5	365	26	104	5	10	10	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	391	0	0	614	0	0	1008	1016	479	1078	1138	378
Stage 1	-	-	-	-	-	-	615	615	-	388	388	-
Stage 2	-	-	-	-	-	-	393	401	-	690	750	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1179	-	-	975	-	-	221	240	591	198	203	673
Stage 1	-	-	-	-	-	-	482	485	-	640	612	-
Stage 2	-	-	-	-	-	-	636	604	-	439	422	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1179	-	-	975	-	-	199	217	591	177	184	673
Mov Cap-2 Maneuver	-	-	-	-	-	-	199	217	-	177	184	-
Stage 1	-	-	-	-	-	-	439	441	-	582	608	-
Stage 2	-	-	-	-	-	-	621	600	-	388	384	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.1			42			23.1		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	212	1179	-	-	975	-	-	220
HCM Lane V/C Ratio	0.565	0.057	-	-	0.005	-	-	0.095
HCM Control Delay (s)	42	8.2	0	-	8.7	0	-	23.1
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	3.1	0.2	-	-	0	-	-	0.3

Intersection	
Intersection Delay, s/veh	161.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	370	165	170	180	15	160	125	180	15	300	25
Future Vol, veh/h	10	370	165	170	180	15	160	125	180	15	300	25
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
Heavy Vehicles, %	0	2	0	0	12	0	0	0	0	0	0	10
Mvmt Flow	11	389	174	179	189	16	168	132	189	16	316	26
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	256.1	89.6	170.9	74.6
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	34%	2%	47%	4%
Vol Thru, %	27%	68%	49%	88%
Vol Right, %	39%	30%	4%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	465	545	365	340
LT Vol	160	10	170	15
Through Vol	125	370	180	300
RT Vol	180	165	15	25
Lane Flow Rate	489	574	384	358
Geometry Grp	1	1	1	1
Degree of Util (X)	1.263	1.478	1.007	0.944
Departure Headway (Hd)	10.724	10.172	11.814	11.924
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	343	361	311	308
Service Time	8.724	8.172	9.814	9.924
HCM Lane V/C Ratio	1.426	1.59	1.235	1.162
HCM Control Delay	170.9	256.1	89.6	74.6
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	19.3	28.1	10.9	9.3

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	160	140	415	605	60
Future Vol, veh/h	55	160	140	415	605	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	61	178	156	461	672	67

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1479	706	739	0	-	0
Stage 1	706	-	-	-	-	-
Stage 2	773	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	140	439	876	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	459	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	107	439	876	-	-	-
Mov Cap-2 Maneuver	107	-	-	-	-	-
Stage 1	375	-	-	-	-	-
Stage 2	459	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.4	2.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	876	-	107	439	-	-
HCM Lane V/C Ratio	0.178	-	0.571	0.405	-	-
HCM Control Delay (s)	10	0	76.2	18.7	-	-
HCM Lane LOS	A	A	F	C	-	-
HCM 95th %tile Q(veh)	0.6	-	2.7	1.9	-	-

Intersection						
Int Delay, s/veh	9.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	20	150	185	560	735	25
Future Vol, veh/h	20	150	185	560	735	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	22	167	206	622	817	28

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1865	831	845	0	0
Stage 1	831	-	-	-	-
Stage 2	1034	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	81	373	800	-	-
Stage 1	431	-	-	-	-
Stage 2	346	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	49	373	800	-	-
Mov Cap-2 Maneuver	49	-	-	-	-
Stage 1	261	-	-	-	-
Stage 2	346	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	85.8	2.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	800	-	210	-	-
HCM Lane V/C Ratio	0.257	-	0.899	-	-
HCM Control Delay (s)	11	0	85.8	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	1	-	7.2	-	-

Intersection						
Int Delay, s/veh	4.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	25	65	75	755	850	45
Future Vol, veh/h	25	65	75	755	850	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	6	4	3	3	3
Mvmt Flow	28	72	83	839	944	50

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1974	969	994	0	-	0
Stage 1	969	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Critical Hdwy	6.43	6.26	4.14	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.354	2.236	-	-	-
Pot Cap-1 Maneuver	68	302	688	-	-	-
Stage 1	367	-	-	-	-	-
Stage 2	352	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	53	302	688	-	-	-
Mov Cap-2 Maneuver	53	-	-	-	-	-
Stage 1	284	-	-	-	-	-
Stage 2	352	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	90	1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	688	-	131	-	-
HCM Lane V/C Ratio	0.121	-	0.763	-	-
HCM Control Delay (s)	11	0	90	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0.4	-	4.5	-	-



Intersection						
Int Delay, s/veh	8.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	50	75	70	740	825	45
Future Vol, veh/h	50	75	70	740	825	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	52	78	73	771	859	47


























Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1800	883	906	0	0
Stage 1	883	-	-	-	-
Stage 2	917	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	89	348	759	-	-
Stage 1	408	-	-	-	-
Stage 2	393	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	74	348	759	-	-
Mov Cap-2 Maneuver	74	-	-	-	-
Stage 1	339	-	-	-	-
Stage 2	393	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	119.9	0.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	759	-	140	-	-
HCM Lane V/C Ratio	0.096	-	0.93	-	-
HCM Control Delay (s)	10.2	0	119.9	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0.3	-	6.4	-	-

HCM 6th Signalized Intersection Summary  
8: Cordon Rd & Silverton Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - No Build - No Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (veh/h)	170	425	275	240	370	10	175	605	260	15	685	200
Future Volume (veh/h)	170	425	275	240	370	10	175	605	260	15	685	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1870	1900	1885	1885	1885	1900	1870	1900
Adj Flow Rate, veh/h	179	447	200	253	389	9	184	637	220	16	721	166
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, %	1	1	1	3	2	0	1	1	1	0	2	0
Cap, veh/h	205	500	222	257	849	20	189	925	1007	19	741	814
Arrive On Green	0.11	0.21	0.21	0.15	0.24	0.24	0.11	0.49	0.49	0.01	0.40	0.40
Sat Flow, veh/h	1795	2407	1067	1767	3550	82	1795	1885	1578	1810	1870	1590
Grp Volume(v), veh/h	179	332	315	253	194	204	184	637	220	16	721	166
Grp Sat Flow(s),veh/h/ln	1795	1791	1684	1767	1777	1855	1795	1885	1578	1810	1870	1590
Q Serve(g_s), s	12.1	22.3	22.6	17.7	11.6	11.6	12.6	32.2	7.3	1.1	46.9	7.1
Cycle Q Clear(g_c), s	12.1	22.3	22.6	17.7	11.6	11.6	12.6	32.2	7.3	1.1	46.9	7.1
Prop In Lane	1.00		0.63	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	372	350	257	425	443	189	925	1007	19	741	814
V/C Ratio(X)	0.87	0.89	0.90	0.98	0.46	0.46	0.98	0.69	0.22	0.84	0.97	0.20
Avail Cap(c_a), veh/h	305	449	422	257	425	443	189	925	1007	117	756	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.9	47.7	47.8	52.7	40.2	40.3	55.2	24.2	9.5	61.1	36.7	16.6
Incr Delay (d2), s/veh	12.0	15.6	18.0	51.5	0.3	0.3	58.0	1.8	0.0	27.9	25.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	11.2	10.9	11.3	5.0	5.2	8.5	13.5	2.2	0.6	24.9	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.9	63.2	65.8	104.2	40.5	40.5	113.3	26.1	9.6	89.0	62.4	16.6
LnGrp LOS	E	E	E	F	D	D	F	C	A	F	E	B
Approach Vol, veh/h		826			651			1041			903	
Approach Delay, s/veh		64.8			65.3			38.0			54.4	
Approach LOS		E			E			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	30.7	17.0	54.0	18.1	34.6	5.3	65.7				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	18.0	31.0	13.0	50.0	21.0	28.0	8.0	55.0				
Max Q Clear Time (g_c+I1), s	19.7	24.6	14.6	48.9	14.1	13.6	3.1	34.2				
Green Ext Time (p_c), s	0.0	0.5	0.0	0.2	0.0	0.4	0.0	0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			54.0									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary  
 9: Cordon Rd & Sunnyview Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	125	95	185	70	105	55	180	900	85	65	1060	120
Future Volume (veh/h)	125	95	185	70	105	55	180	900	85	65	1060	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1870	1870	1856	1841	1900	1900	1870	1900	1885	1856
Adj Flow Rate, veh/h	132	100	138	74	111	43	189	947	86	68	1116	123
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, %	1	0	2	2	3	4	0	0	2	0	1	3
Cap, veh/h	225	111	154	154	197	76	205	1097	100	217	979	108
Arrive On Green	0.04	0.15	0.15	0.04	0.15	0.15	0.08	0.64	0.64	0.03	0.59	0.59
Sat Flow, veh/h	1795	721	996	1781	1272	493	1810	1712	155	1810	1668	184
Grp Volume(v), veh/h	132	0	238	74	0	154	189	0	1033	68	0	1239
Grp Sat Flow(s),veh/h/ln	1795	0	1717	1781	0	1765	1810	0	1868	1810	0	1852
Q Serve(g_s), s	5.5	0.0	17.4	4.4	0.0	10.3	9.2	0.0	56.8	1.9	0.0	75.0
Cycle Q Clear(g_c), s	5.5	0.0	17.4	4.4	0.0	10.3	9.2	0.0	56.8	1.9	0.0	75.0
Prop In Lane	1.00		0.58	1.00		0.28	1.00		0.08	1.00		0.10
Lane Grp Cap(c), veh/h	225	0	265	154	0	273	205	0	1197	217	0	1087
V/C Ratio(X)	0.59	0.00	0.90	0.48	0.00	0.56	0.92	0.00	0.86	0.31	0.00	1.14
Avail Cap(c_a), veh/h	225	0	296	154	0	304	205	0	1197	257	0	1087
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.0	0.0	53.0	44.2	0.0	50.0	44.7	0.0	18.4	20.9	0.0	26.4
Incr Delay (d2), s/veh	3.9	0.0	25.6	2.3	0.0	1.5	41.5	0.0	6.9	0.3	0.0	74.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	9.3	2.0	0.0	4.5	5.7	0.0	22.5	0.8	0.0	50.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.9	0.0	78.6	46.5	0.0	51.5	86.2	0.0	25.3	21.2	0.0	100.6
LnGrp LOS	D	A	E	D	A	D	F	A	C	C	A	F
Approach Vol, veh/h		370			228			1222			1307	
Approach Delay, s/veh		69.1			49.9			34.7			96.4	
Approach LOS		E			D			C			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.5	80.0	9.5	23.7	7.6	86.9	9.5	23.7				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	10.5	75.0	5.5	22.0	6.5	79.0	5.5	22.0				
Max Q Clear Time (g_c+I1), s	11.2	77.0	7.5	12.3	3.9	58.8	6.4	19.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.0	10.4	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			65.7									
HCM 6th LOS			E									

Intersection												
Int Delay, s/veh	257.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	40	20	115	10	5	15	120	1120	25	10	1165	130
Future Vol, veh/h	40	20	115	10	5	15	120	1120	25	10	1165	130
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	210	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	0	1	0	0	0	0	2	0	0	2	0
Mvmt Flow	42	21	121	11	5	16	126	1179	26	11	1226	137

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	2772	2777	1295	2835	2832	1195	1363	0	0	1208	0	0
Stage 1	1317	1317	-	1447	1447	-	-	-	-	-	-	-
Stage 2	1455	1460	-	1388	1385	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.21	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.309	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 12	~ 19	199	11	18	229	511	-	-	585	-	-
Stage 1	193	229	-	165	198	-	-	-	-	-	-	-
Stage 2	161	196	-	178	213	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 6	~ 14	199	-	13	228	511	-	-	583	-	-
Mov Cap-2 Maneuver	~ 6	~ 14	-	-	13	-	-	-	-	-	-	-
Stage 1	145	225	-	124	149	-	-	-	-	-	-	-
Stage 2	109	147	-	62	209	-	-	-	-	-	-	-























Approach	EB	WB	NB	SB
HCM Control Delay, \$	4071.7		1.4	0.1
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	511	-	-	20	-	583	-	-
HCM Lane V/C Ratio	0.247	-	-	9.211	-	0.018	-	-
HCM Control Delay (s)	14.3	-	-	\$ 4071.7	-	11.3	-	-
HCM Lane LOS	B	-	-	F	-	B	-	-
HCM 95th %tile Q(veh)	1	-	-	23.5	-	0.1	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th Signalized Intersection Summary  
 11: Cordon Rd & Center St

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - No Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	90	205	40	60	45	130	925	30	55	1005	180
Future Volume (veh/h)	275	90	205	40	60	45	130	925	30	55	1005	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1870	1900	1856	1856	1841	1722	1870	1826
Adj Flow Rate, veh/h	289	95	32	42	63	22	137	974	31	58	1058	154
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, %	0	3	3	0	2	0	3	3	4	12	2	5
Cap, veh/h	205	186	158	183	86	30	259	1236	39	472	1282	1060
Arrive On Green	0.07	0.10	0.10	0.03	0.07	0.07	0.08	1.00	1.00	0.04	0.69	0.69
Sat Flow, veh/h	1810	1856	1572	1810	1325	463	1767	1788	57	1640	1870	1546
Grp Volume(v), veh/h	289	95	32	42	0	85	137	0	1005	58	1058	154
Grp Sat Flow(s),veh/h/ln	1810	1856	1572	1810	0	1787	1767	0	1845	1640	1870	1546
Q Serve(g_s), s	8.0	5.8	2.2	2.6	0.0	5.6	2.9	0.0	0.0	1.2	49.2	4.2
Cycle Q Clear(g_c), s	8.0	5.8	2.2	2.6	0.0	5.6	2.9	0.0	0.0	1.2	49.2	4.2
Prop In Lane	1.00		1.00	1.00		0.26	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	205	186	158	183	0	116	259	0	1275	472	1282	1060
V/C Ratio(X)	1.41	0.51	0.20	0.23	0.00	0.73	0.53	0.00	0.79	0.12	0.83	0.15
Avail Cap(c_a), veh/h	205	387	328	202	0	328	260	0	1275	482	1282	1060
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.58	0.00	0.58	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.7	51.2	49.6	50.2	0.0	55.1	18.2	0.0	0.0	4.8	13.7	6.6
Incr Delay (d2), s/veh	210.4	1.6	0.5	0.2	0.0	6.4	0.6	0.0	3.0	0.0	6.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.1	2.7	0.9	1.2	0.0	2.7	1.9	0.0	1.0	0.3	18.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	262.2	52.8	50.0	50.4	0.0	61.5	18.8	0.0	3.0	4.9	19.8	6.9
LnGrp LOS	F	D	D	D	A	E	B	A	A	A	B	A
Approach Vol, veh/h		416			127			1142			1270	
Approach Delay, s/veh		198.1			57.8			4.9			17.6	
Approach LOS		F			E			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	87.2	12.0	11.8	8.3	87.9	7.8	16.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	68.0	8.0	22.0	5.0	68.0	5.0	25.0				
Max Q Clear Time (g_c+I1), s	4.9	51.2	10.0	7.6	3.2	2.0	4.6	7.8				
Green Ext Time (p_c), s	0.0	10.1	0.0	0.2	0.0	16.5	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				39.8								
HCM 6th LOS				D								

HCM 6th Signalized Intersection Summary  
 12: Cordon Rd & Auburn Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↘	↕	↗	↘	↕	↗	↘
Traffic Volume (veh/h)	5	5	25	5	5	15	110	1055	40	15	1165	70
Future Volume (veh/h)	5	5	25	5	5	15	110	1055	40	15	1165	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1856	1900	1900	1900	1870	1856	1900	1900	1841	1900
Adj Flow Rate, veh/h	5	5	0	5	5	0	116	1111	41	16	1226	73
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, %	0	0	3	0	0	0	2	3	0	0	4	0
Cap, veh/h	68	49	66	68	49	0	474	1473	54	360	1383	82
Arrive On Green	0.04	0.04	0.00	0.04	0.04	0.00	0.04	0.83	0.83	0.03	1.00	1.00
Sat Flow, veh/h	548	1174	1572	548	1174	0	1781	1778	66	1810	1717	102
Grp Volume(v), veh/h	10	0	0	10	0	0	116	0	1152	16	0	1299
Grp Sat Flow(s),veh/h/ln	1722	0	1572	1722	0	0	1781	0	1844	1810	0	1820
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	34.3	0.2	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	0.0	0.6	0.0	0.0	1.3	0.0	34.3	0.2	0.0	0.0
Prop In Lane	0.50		1.00	0.50		0.00	1.00		0.04	1.00		0.06
Lane Grp Cap(c), veh/h	117	0	66	117	0	0	474	0	1528	360	0	1465
V/C Ratio(X)	0.09	0.00	0.00	0.09	0.00	0.00	0.24	0.00	0.75	0.04	0.00	0.89
Avail Cap(c_a), veh/h	295	0	237	295	0	0	492	0	1528	406	0	1465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.39	0.00	0.39
Uniform Delay (d), s/veh	55.4	0.0	0.0	55.4	0.0	0.0	1.5	0.0	4.7	6.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.3	0.0	0.0	0.3	0.0	3.5	0.0	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.3	0.0	0.0	0.2	0.0	8.1	0.1	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.7	0.0	0.0	55.7	0.0	0.0	1.7	0.0	8.2	6.1	0.0	3.5
LnGrp LOS	E	A	A	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		10			10			1268			1315	
Approach Delay, s/veh		55.7			55.7			7.6			3.5	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6			9.5	9.4	101.1		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	83.3		18.1	6.1	82.3		18.1				
Max Q Clear Time (g_c+1/2), s	12.2	36.3		2.6	3.3	2.0		2.6				
Green Ext Time (p_c), s	0.0	13.3		0.0	0.1	20.8		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				5.9								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary  
 13: Cordon Rd & State St

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (veh/h)	210	330	105	170	310	210	90	775	150	150	805	240
Future Volume (veh/h)	210	330	105	170	310	210	90	775	150	150	805	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1885	1841	1900	1885	1885	1870	1870	1885
Adj Flow Rate, veh/h	221	347	102	179	326	201	95	816	153	158	847	189
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, %	0	3	3	0	1	4	0	1	1	2	2	1
Cap, veh/h	273	337	99	181	294	181	167	736	138	151	917	783
Arrive On Green	0.05	0.25	0.25	0.07	0.27	0.27	0.04	0.48	0.48	0.05	0.49	0.49
Sat Flow, veh/h	3510	1370	403	1810	1091	673	1810	1544	289	1781	1870	1598
Grp Volume(v), veh/h	221	0	449	179	0	527	95	0	969	158	847	189
Grp Sat Flow(s),veh/h/ln	1755	0	1773	1810	0	1764	1810	0	1833	1781	1870	1598
Q Serve(g_s), s	6.0	0.0	32.0	9.0	0.0	35.0	3.5	0.0	62.0	7.0	54.9	8.9
Cycle Q Clear(g_c), s	6.0	0.0	32.0	9.0	0.0	35.0	3.5	0.0	62.0	7.0	54.9	8.9
Prop In Lane	1.00		0.23	1.00		0.38	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	273	0	436	181	0	475	167	0	874	151	917	783
V/C Ratio(X)	0.81	0.00	1.03	0.99	0.00	1.11	0.57	0.00	1.11	1.04	0.92	0.24
Avail Cap(c_a), veh/h	273	0	436	181	0	475	176	0	874	151	917	783
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	0.0	49.0	38.8	0.0	47.5	29.0	0.0	34.0	37.9	30.9	19.2
Incr Delay (d2), s/veh	15.5	0.0	50.7	64.1	0.0	74.7	2.1	0.0	64.7	85.4	14.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	20.1	7.3	0.0	24.4	1.5	0.0	41.3	5.8	26.6	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.8	0.0	99.7	102.8	0.0	122.2	31.1	0.0	98.7	123.3	45.4	19.2
LnGrp LOS	D	A	F	F	A	F	C	A	F	F	D	B
Approach Vol, veh/h		670			706			1064			1194	
Approach Delay, s/veh		84.9			117.3			92.6			51.5	
Approach LOS		F			F			F			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	38.0	9.3	69.7	10.0	41.0	11.0	68.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	30.0	32.0	6.0	63.0	6.0	35.0	7.0	62.0				
Max Q Clear Time (g_c+ll), s	30.0	34.0	5.5	56.9	8.0	37.0	9.0	64.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				82.5								
HCM 6th LOS				F								

Intersection						
Int Delay, s/veh	7.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	20	50	1025	995	100
Future Vol, veh/h	40	20	50	1025	995	100
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	7	0	5	4	4
Mvmt Flow	42	21	52	1068	1036	104

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2261	1089	1141	0	-	0
Stage 1	1089	-	-	-	-	-
Stage 2	1172	-	-	-	-	-
Critical Hdwy	6.4	6.27	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.363	2.2	-	-	-
Pot Cap-1 Maneuver	46	256	620	-	-	-
Stage 1	326	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	42	256	619	-	-	-
Mov Cap-2 Maneuver	42	-	-	-	-	-
Stage 1	298	-	-	-	-	-
Stage 2	297	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	258.9	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	619	-	58	-	-
HCM Lane V/C Ratio	0.084	-	1.078	-	-
HCM Control Delay (s)	11.3	-	258.9	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.3	-	5.1	-	-



HCM 6th TWSC  
15: Cordon Rd & Caplinger Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - No Build - No Interchange

Intersection												
Int Delay, s/veh	97.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	130	5	5	5	0	10	20	930	10	10	860	195
Future Vol, veh/h	130	5	5	5	0	10	20	930	10	10	860	195
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	5	20	10	4	2
Mvmt Flow	137	5	5	5	0	11	21	979	11	11	905	205

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2063	2062	1008	2062	2159	986	1110	0	0	990	0	0
Stage 1	1030	1030	-	1027	1027	-	-	-	-	-	-	-
Stage 2	1033	1032	-	1035	1132	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.2	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	~ 41	55	295	41	48	303	637	-	-	668	-	-
Stage 1	284	313	-	285	314	-	-	-	-	-	-	-
Stage 2	283	313	-	282	281	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 36	49	295	34	42	303	637	-	-	668	-	-
Mov Cap-2 Maneuver	~ 36	49	-	34	42	-	-	-	-	-	-	-
Stage 1	263	299	-	264	291	-	-	-	-	-	-	-
Stage 2	253	290	-	260	268	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s \$	1512	58.3	0.2	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	637	-	-	38	83	668	-	-
HCM Lane V/C Ratio	0.033	-	-	3.878	0.19	0.016	-	-
HCM Control Delay (s)	10.8	0	-	\$ 1512	58.3	10.5	0	-
HCM Lane LOS	B	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	16.9	0.7	0	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th Signalized Intersection Summary  
 16: Cordon Rd & Macleay Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	160	170	20	125	45	50	105	740	70	10	815	35
Future Volume (veh/h)	160	170	20	125	45	50	105	740	70	10	815	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1752	1796	1900	1796	1826	1826	1870	1856	1841	1856
Adj Flow Rate, veh/h	165	175	19	129	46	0	108	763	69	10	840	35
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, %	3	0	10	7	0	7	5	5	2	3	4	3
Cap, veh/h	231	196	21	254	81		239	952	86	454	942	39
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.00	0.10	1.00	1.00	0.01	0.54	0.54
Sat Flow, veh/h	726	823	87	774	339	0	1739	1650	149	1767	1753	73
Grp Volume(v), veh/h	359	0	0	175	0	0	108	0	832	10	0	875
Grp Sat Flow(s),veh/h/ln	1635	0	0	1113	0	0	1739	0	1799	1767	0	1826
Q Serve(g_s), s	6.3	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.2	0.0	38.3
Cycle Q Clear(g_c), s	19.2	0.0	0.0	12.9	0.0	0.0	2.4	0.0	0.0	0.2	0.0	38.3
Prop In Lane	0.46		0.05	0.74		0.00	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	448	0	0	335	0		239	0	1038	454	0	982
V/C Ratio(X)	0.80	0.00	0.00	0.52	0.00		0.45	0.00	0.80	0.02	0.00	0.89
Avail Cap(c_a), veh/h	511	0	0	387	0		252	0	1038	532	0	982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.55	0.00	0.55	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.3	0.0	0.0	30.8	0.0	0.0	17.0	0.0	0.0	9.2	0.0	18.5
Incr Delay (d2), s/veh	6.8	0.0	0.0	0.5	0.0	0.0	0.7	0.0	3.7	0.0	0.0	12.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	0.0	3.3	0.0	0.0	0.9	0.0	1.1	0.1	0.0	16.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.1	0.0	0.0	31.3	0.0	0.0	17.7	0.0	3.7	9.2	0.0	30.6
LnGrp LOS	D	A	A	C	A		B	A	A	A	A	C
Approach Vol, veh/h		359			175			940				885
Approach Delay, s/veh		40.1			31.3			5.3				30.3
Approach LOS		D			C			A				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	54.4		26.5	5.6	57.9		26.5				
Change Period (Y+Rc), s	4.5	6.0		5.0	4.5	6.0		5.0				
Max Green Setting (Gmax), s	5.3	44.2		25.0	5.1	44.4		25.0				
Max Q Clear Time (g_c+I1), s	4.4	40.3		14.9	2.2	2.0		21.2				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	1.0		0.2				

Intersection Summary

HCM 6th Ctrl Delay	21.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
17: Cordon Rd & Gaffin Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	60	180	145	55	180	265	650	95	185	640	135
Future Volume (veh/h)	85	60	180	145	55	180	265	650	95	185	640	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1900	1841	1900	1870	1781	1826	1856	1900
Adj Flow Rate, veh/h	89	63	34	153	58	23	279	684	95	195	674	82
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, %	0	0	0	2	0	4	0	2	8	5	3	0
Cap, veh/h	191	94	51	176	105	42	660	995	138	423	1124	953
Arrive On Green	0.03	0.08	0.08	0.03	0.08	0.08	0.08	0.62	0.62	0.13	1.00	1.00
Sat Flow, veh/h	1810	1158	625	1781	1292	512	1810	1607	223	1739	1856	1574
Grp Volume(v), veh/h	89	0	97	153	0	81	279	0	779	195	674	82
Grp Sat Flow(s),veh/h/ln	1810	0	1783	1781	0	1804	1810	0	1830	1739	1856	1574
Q Serve(g_s), s	3.0	0.0	4.8	3.0	0.0	3.9	5.2	0.0	25.4	4.0	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	4.8	3.0	0.0	3.9	5.2	0.0	25.4	4.0	0.0	0.0
Prop In Lane	1.00		0.35	1.00		0.28	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	191	0	145	176	0	147	660	0	1133	423	1124	953
V/C Ratio(X)	0.47	0.00	0.67	0.87	0.00	0.55	0.42	0.00	0.69	0.46	0.60	0.09
Avail Cap(c_a), veh/h	191	0	495	176	0	501	696	0	1133	443	1124	953
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.26	0.26	0.26
Uniform Delay (d), s/veh	38.2	0.0	40.2	41.3	0.0	39.8	5.3	0.0	11.4	9.2	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	2.0	32.8	0.0	1.2	0.2	0.0	3.4	0.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	2.2	3.4	0.0	1.7	1.3	0.0	8.5	0.9	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.9	0.0	42.1	74.0	0.0	41.0	5.4	0.0	14.8	9.3	0.6	0.0
LnGrp LOS	D	A	D	E	A	D	A	A	B	A	A	A
Approach Vol, veh/h		186			234			1058			951	
Approach Delay, s/veh		40.6			62.6			12.3			2.4	
Approach LOS		D			E			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.2	60.5	7.0	11.3	9.9	61.7	7.0	11.3				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	35.0	35.0	3.0	25.0	7.0	37.0	3.0	25.0				
Max Q Clear Time (g_c+1), s	17.2	2.0	5.0	5.9	6.0	27.4	5.0	6.8				
Green Ext Time (p_c), s	0.0	0.7	0.0	0.1	0.0	0.7	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				15.4								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
18: Kuebler Blvd/Cordon Rd & Lancaster Dr

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	340	195	215	380	245	150	705	160	180	710	75
Future Volume (veh/h)	60	340	195	215	380	245	150	705	160	180	710	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1811	1856	1796	1811	1841	1870	1885	1885	1900	1900	1870
Adj Flow Rate, veh/h	63	358	146	226	400	181	158	742	0	189	747	28
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, %	0	6	3	7	6	4	2	1	1	0	0	2
Cap, veh/h	79	572	348	337	772	524	259	1017		238	1228	545
Arrive On Green	0.04	0.17	0.15	0.10	0.22	0.20	0.08	0.28	0.00	0.13	0.34	0.30
Sat Flow, veh/h	1810	3441	1572	3319	3441	1560	3456	3582	1598	1810	3610	1585
Grp Volume(v), veh/h	63	358	146	226	400	181	158	742	0	189	747	28
Grp Sat Flow(s),veh/h/ln	1810	1721	1572	1659	1721	1560	1728	1791	1598	1810	1805	1585
Q Serve(g_s), s	1.7	4.9	4.0	3.3	5.2	4.4	2.2	9.4	0.0	5.1	8.7	0.6
Cycle Q Clear(g_c), s	1.7	4.9	4.0	3.3	5.2	4.4	2.2	9.4	0.0	5.1	8.7	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	79	572	348	337	772	524	259	1017		238	1228	545
V/C Ratio(X)	0.80	0.63	0.42	0.67	0.52	0.35	0.61	0.73		0.80	0.61	0.05
Avail Cap(c_a), veh/h	287	2045	1021	789	2318	1225	548	2199		394	2431	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	19.6	16.9	21.9	17.2	12.6	22.6	16.3	0.0	21.3	13.9	11.1
Incr Delay (d2), s/veh	6.8	0.4	0.3	0.9	0.2	0.1	0.9	0.4	0.0	2.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.7	1.2	1.1	1.7	1.2	0.8	2.9	0.0	1.9	2.5	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.7	20.0	17.2	22.7	17.4	12.7	23.5	16.7	0.0	23.6	14.0	11.1
LnGrp LOS	C	C	B	C	B	B	C	B		C	B	B
Approach Vol, veh/h		567			807			900			964	
Approach Delay, s/veh		20.5			17.8			17.9			15.8	
Approach LOS		C			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.8	21.2	6.2	15.3	10.6	18.3	9.1	12.4				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	11.0	29.0	12.0	29.0				
Max Q Clear Time (g_c+1/2), s	11.2	10.7	3.7	7.2	7.1	11.4	5.3	6.9				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.5	0.0	0.9	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	17.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Kuebler Blvd & Mill Creek Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - No Interchange



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	155	325	690	160	300	815
Future Volume (veh/h)	155	325	690	160	300	815
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1885	1900	1885	1900	1900	1885
Adj Flow Rate, veh/h	158	282	704	96	306	832
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	1	0	0	1
Cap, veh/h	329	465	935	798	636	1250
Arrive On Green	0.18	0.18	0.99	0.99	0.11	0.66
Sat Flow, veh/h	1795	1610	1885	1609	1810	1885
Grp Volume(v), veh/h	158	282	704	96	306	832
Grp Sat Flow(s),veh/h/ln	1795	1610	1885	1609	1810	1885
Q Serve(g_s), s	5.1	9.8	0.8	0.0	4.9	17.3
Cycle Q Clear(g_c), s	5.1	9.8	0.8	0.0	4.9	17.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	329	465	935	798	636	1250
V/C Ratio(X)	0.48	0.61	0.75	0.12	0.48	0.67
Avail Cap(c_a), veh/h	580	690	935	798	668	1250
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.51	0.51	1.00	1.00
Uniform Delay (d), s/veh	23.8	19.9	0.1	0.1	5.4	6.6
Incr Delay (d2), s/veh	0.4	0.5	2.9	0.2	0.2	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	8.8	0.8	0.0	1.0	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.2	20.4	3.0	0.3	5.6	9.4
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	440		800			1138
Approach Delay, s/veh	21.8		2.7			8.4
Approach LOS	C		A			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.1		15.9	10.9	38.2
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		34.0		21.0	8.0	22.0
Max Q Clear Time (g_c+I1), s		19.3		11.8	6.9	2.8
Green Ext Time (p_c), s		0.7		0.1	0.0	0.6
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			9.0			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
 20: Turner Rd & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	670	160	40	785	80	200	195	40	80	190	270
Future Volume (veh/h)	210	670	160	40	785	80	200	195	40	80	190	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1885	1870	1870	1900	1870	1900	1870	1900	1900	1900	1870	1841
Adj Flow Rate, veh/h	219	698	161	42	818	80	208	203	37	83	198	189
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	2	2	0	2	0	2	0	0	0	2	4
Cap, veh/h	235	839	194	405	825	81	285	369	67	267	403	516
Arrive On Green	0.20	1.00	1.00	0.02	0.49	0.48	0.07	0.24	0.22	0.05	0.22	0.22
Sat Flow, veh/h	1795	1470	339	1810	1677	164	1781	1564	285	1810	1870	1560
Grp Volume(v), veh/h	219	0	859	42	0	898	208	0	240	83	198	189
Grp Sat Flow(s),veh/h/ln	1795	0	1809	1810	0	1841	1781	0	1849	1810	1870	1560
Q Serve(g_s), s	11.5	0.0	0.0	1.5	0.0	62.9	9.0	0.0	14.8	4.7	12.1	12.0
Cycle Q Clear(g_c), s	11.5	0.0	0.0	1.5	0.0	62.9	9.0	0.0	14.8	4.7	12.1	12.0
Prop In Lane	1.00		0.19	1.00		0.09	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	235	0	1033	405	0	906	285	0	436	267	403	516
V/C Ratio(X)	0.93	0.00	0.83	0.10	0.00	0.99	0.73	0.00	0.55	0.31	0.49	0.37
Avail Cap(c_a), veh/h	235	0	1033	478	0	906	285	0	436	290	403	516
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.00	0.60	0.78	0.00	0.78	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.5	0.0	0.0	16.8	0.0	32.8	43.2	0.0	43.8	39.0	44.8	33.1
Incr Delay (d2), s/veh	28.6	0.0	4.9	0.0	0.0	24.3	8.0	0.0	4.9	0.2	4.2	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	1.4	0.6	0.0	31.3	2.5	0.0	7.2	2.1	6.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	0.0	4.9	16.8	0.0	57.1	51.1	0.0	48.7	39.3	49.0	35.1
LnGrp LOS	E	A	A	B	A	E	D	A	D	D	D	D
Approach Vol, veh/h		1078		940		448		470				
Approach Delay, s/veh		17.1		55.3		49.8		41.7				
Approach LOS		B		E		D		D				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	78.2	10.4	34.6	17.0	68.0	13.0	32.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	6.0	67.0	8.0	27.0	13.0	62.0	9.0	26.0				
Max Q Clear Time (g_c+1/3), s	13.5	2.0	6.7	16.8	13.5	64.9	11.0	14.1				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.2	0.0	0.0	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				38.3								
HCM 6th LOS				D								

HCM 6th Signalized Intersection Summary  
21: 36th Ave & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - No Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	585	165	240	890	80	285	115	315	160	140	110
Future Volume (veh/h)	35	585	165	240	890	80	285	115	315	160	140	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1856	1826	1767	1885	1900	1885	1900	1900	1900	1826	1885
Adj Flow Rate, veh/h	37	616	89	253	937	82	300	121	252	168	147	18
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, %	1	3	5	9	1	0	1	0	0	0	5	1
Cap, veh/h	111	945	788	381	980	86	353	118	246	167	365	319
Arrive On Green	0.02	0.51	0.51	0.06	0.38	0.38	0.08	0.22	0.22	0.06	0.20	0.20
Sat Flow, veh/h	1795	1856	1547	1682	1709	150	1795	549	1143	1810	1826	1594
Grp Volume(v), veh/h	37	616	89	253	0	1019	300	0	373	168	147	18
Grp Sat Flow(s),veh/h/ln	1795	1856	1547	1682	0	1858	1795	0	1691	1810	1826	1594
Q Serve(g_s), s	1.3	31.7	3.9	8.8	0.0	69.4	10.0	0.0	28.0	8.0	9.1	1.2
Cycle Q Clear(g_c), s	1.3	31.7	3.9	8.8	0.0	69.4	10.0	0.0	28.0	8.0	9.1	1.2
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.68	1.00		1.00
Lane Grp Cap(c), veh/h	111	945	788	381	0	1066	353	0	364	167	365	319
V/C Ratio(X)	0.33	0.65	0.11	0.66	0.00	0.96	0.85	0.00	1.02	1.01	0.40	0.06
Avail Cap(c_a), veh/h	188	945	788	436	0	1066	353	0	364	167	365	319
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.44	0.00	0.44	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	23.4	16.6	19.2	0.0	38.4	46.2	0.0	51.0	45.0	45.2	42.1
Incr Delay (d2), s/veh	0.6	3.5	0.3	0.9	0.0	10.5	16.7	0.0	53.4	71.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	14.0	1.4	3.2	0.0	34.6	6.1	0.0	16.9	4.8	4.1	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.8	26.9	16.9	20.2	0.0	48.9	62.9	0.0	104.4	116.6	45.5	42.1
LnGrp LOS	C	C	B	C	A	D	E	A	F	F	D	D
Approach Vol, veh/h		742			1272			673			333	
Approach Delay, s/veh		25.9			43.2			85.9			81.2	
Approach LOS		C			D			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.8	71.2	14.0	30.0	6.4	79.6	12.0	32.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	15.0	62.0	10.0	26.0	8.0	69.0	8.0	28.0				
Max Q Clear Time (g_c+10), s	11.0	33.7	12.0	11.1	3.3	71.4	10.0	30.0				
Green Ext Time (p_c), s	0.0	0.6	0.0	0.1	0.0	0.0	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	52.7
HCM 6th LOS	D

<b>ID</b>	<b>Software/Method</b>	<b>Intersection</b>	<b>Control Type</b>	<b>LOS</b>	<b>Delay</b>	<b>V/C Ratio</b>
1	Synchro HCM 6th Signal	OR 99E & Hazelgreen Rd	Signal	D	51.6	0.94
8	Synchro HCM 6th Signal	Cordon Rd & Silverton Rd	Signal	D	54.0	0.95
9	Synchro HCM 6th Signal	Cordon Rd & Sunnyview Rd	Signal	E	65.7	1.10
11	Synchro HCM 6th Signal	Cordon Rd & Center St	Signal	D	39.8	0.99
12	Synchro HCM 6th Signal	Cordon Rd & Auburn Rd	Signal	A	5.9	0.92
13	Synchro HCM 6th Signal	Cordon Rd & State St	Signal	F	82.5	1.16
16	Synchro HCM 6th Signal	Cordon Rd & Macleay Rd	Signal	C	21.9	0.99
17	Synchro HCM 6th Signal	Cordon Rd & Gaffin Rd	Signal	B	15.4	0.85
18	Synchro HCM 6th Signal	Kuebler Blvd/Cordon Rd & Lancaster Dr	Signal	B	17.7	0.60
19	Synchro HCM 6th Signal	Kuebler Blvd & Mill Creek Dr	Signal	A	9.0	0.79
20	Synchro HCM 6th Signal	Turner Rd & Kuebler Blvd	Signal	D	38.3	0.83
21	Synchro HCM 6th Signal	36th Ave & Kuebler Blvd	Signal	D	52.7	1.01



**FUTURE 2043 – NO BUILD – YES INTERCHANGE – AM PEAK**  
**HCM Results**

HCM 6th Signalized Intersection Summary  
 1: OR 99E & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	225	330	130	315	55	305	590	60	30	560	55
Future Volume (veh/h)	140	225	330	130	315	55	305	590	60	30	560	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1856	1900	1900	1841	1856	1900	1885	1900	1841	1885	1900
Adj Flow Rate, veh/h	152	245	207	141	342	51	332	641	56	33	609	12
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, %	7	3	0	0	4	3	0	1	0	4	1	0
Cap, veh/h	189	476	413	177	382	57	221	1071	93	39	795	357
Arrive On Green	0.11	0.26	0.26	0.10	0.24	0.24	0.12	0.32	0.32	0.02	0.22	0.22
Sat Flow, veh/h	1711	1856	1610	1810	1565	233	1810	3333	291	1753	3582	1610
Grp Volume(v), veh/h	152	245	207	141	0	393	332	344	353	33	609	12
Grp Sat Flow(s),veh/h/ln	1711	1856	1610	1810	0	1799	1810	1791	1833	1753	1791	1610
Q Serve(g_s), s	6.0	7.9	7.6	5.3	0.0	14.7	8.5	11.2	11.3	1.3	11.1	0.4
Cycle Q Clear(g_c), s	6.0	7.9	7.6	5.3	0.0	14.7	8.5	11.2	11.3	1.3	11.1	0.4
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	189	476	413	177	0	439	221	576	589	39	795	357
V/C Ratio(X)	0.80	0.51	0.50	0.79	0.00	0.89	1.50	0.60	0.60	0.84	0.77	0.03
Avail Cap(c_a), veh/h	282	772	670	195	0	646	221	643	658	189	1234	555
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	22.2	22.1	30.7	0.0	25.5	30.6	19.9	19.9	33.9	25.4	21.2
Incr Delay (d2), s/veh	8.1	0.6	0.7	16.4	0.0	8.3	248.8	0.7	0.7	27.5	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.1	2.6	2.9	0.0	6.5	18.6	4.2	4.3	0.8	4.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.3	22.8	22.8	47.1	0.0	33.8	279.4	20.5	20.5	61.5	26.6	21.3
LnGrp LOS	D	C	C	D	A	C	F	C	C	E	C	C
Approach Vol, veh/h		604			534			1029			654	
Approach Delay, s/veh		26.7			37.3			104.1			28.2	
Approach LOS		C			D			F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	21.5	12.2	23.0	6.1	28.4	11.3	23.9				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	8.5	24.0	11.5	25.0	7.5	25.0	7.5	29.0				
Max Q Clear Time (g_c+I1), s	10.5	13.1	8.0	16.7	3.3	13.3	7.3	9.9				
Green Ext Time (p_c), s	0.0	2.4	0.1	0.3	0.0	2.0	0.0	1.4				

Intersection Summary												
HCM 6th Ctrl Delay				57.3								
HCM 6th LOS				E								

HCM 6th TWSC  
2: Lake Labish Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - No Build - Yes Interchange

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕			↕			↕	
Traffic Vol, veh/h	10	290	25	5	405	5	100	5	5	20	5	30
Future Vol, veh/h	10	290	25	5	405	5	100	5	5	20	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	0	0	3	0	0	0	0	0	0	0
Mvmt Flow	11	330	28	6	460	6	114	6	6	23	6	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	466	0	0	358	0	0	847	830	330	847	855	463
Stage 1	-	-	-	-	-	-	352	352	-	475	475	-
Stage 2	-	-	-	-	-	-	495	478	-	372	380	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1106	-	-	1212	-	-	284	308	716	284	298	603
Stage 1	-	-	-	-	-	-	669	635	-	574	561	-
Stage 2	-	-	-	-	-	-	560	559	-	653	617	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1106	-	-	1212	-	-	260	302	716	274	292	603
Mov Cap-2 Maneuver	-	-	-	-	-	-	260	302	-	274	292	-
Stage 1	-	-	-	-	-	-	661	627	-	567	557	-
Stage 2	-	-	-	-	-	-	519	555	-	634	610	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			29.3			15.9		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	270	1106	-	-	1212	-	-	393
HCM Lane V/C Ratio	0.463	0.01	-	-	0.005	-	-	0.159
HCM Control Delay (s)	29.3	8.3	0	-	8	0	-	15.9
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.3	0	-	-	0	-	-	0.6

HCM 6th AWSC  
3: Cordon Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - No Build - Yes Interchange

Intersection	
Intersection Delay, s/veh	29.7
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	140	110	155	315	20	95	165	75	15	70	10
Future Vol, veh/h	15	140	110	155	315	20	95	165	75	15	70	10
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
Heavy Vehicles, %	0	5	5	0	8	0	0	0	0	0	0	10
Mvmt Flow	16	152	120	168	342	22	103	179	82	16	76	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.4	45.2	22.4	12.8
HCM LOS	C	E	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	28%	6%	32%	16%
Vol Thru, %	49%	53%	64%	74%
Vol Right, %	22%	42%	4%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	335	265	490	95
LT Vol	95	15	155	15
Through Vol	165	140	315	70
RT Vol	75	110	20	10
Lane Flow Rate	364	288	533	103
Geometry Grp	1	1	1	1
Degree of Util (X)	0.672	0.517	0.919	0.219
Departure Headway (Hd)	6.64	6.456	6.21	7.64
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	539	553	581	473
Service Time	4.726	4.553	4.289	5.64
HCM Lane V/C Ratio	0.675	0.521	0.917	0.218
HCM Control Delay	22.4	16.4	45.2	12.8
HCM Lane LOS	C	C	E	B
HCM 95th-tile Q	5	2.9	11.4	0.8

HCM 6th TWSC  
4: Cordon Rd & Kale St

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - No Build - Yes Interchange

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	155	75	350	340	45
Future Vol, veh/h	50	155	75	350	340	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	54	167	81	376	366	48

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	928	390	414	0	0
Stage 1	390	-	-	-	-
Stage 2	538	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	300	663	1156	-	-
Stage 1	689	-	-	-	-
Stage 2	589	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	273	663	1156	-	-
Mov Cap-2 Maneuver	273	-	-	-	-
Stage 1	628	-	-	-	-
Stage 2	589	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1156	-	273	663	-	-
HCM Lane V/C Ratio	0.07	-	0.197	0.251	-	-
HCM Control Delay (s)	8.3	0	21.4	12.2	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	1	-	-

Intersection						
Int Delay, s/veh	17.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	30	285	215	390	465	40
Future Vol, veh/h	30	285	215	390	465	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	34	324	244	443	528	45

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1482	551	573	0	-	0
Stage 1	551	-	-	-	-	-
Stage 2	931	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	139	538	1010	-	-	-
Stage 1	581	-	-	-	-	-
Stage 2	387	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	95	538	1010	-	-	-
Mov Cap-2 Maneuver	95	-	-	-	-	-
Stage 1	395	-	-	-	-	-
Stage 2	387	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	70.8	3.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1010	-	373	-	-
HCM Lane V/C Ratio	0.242	-	0.96	-	-
HCM Control Delay (s)	9.7	0	70.8	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.9	-	10.7	-	-

Intersection						
Int Delay, s/veh	10.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	95	65	50	505	695	55
Future Vol, veh/h	95	65	50	505	695	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	3	4	4	4	3	6
Mvmt Flow	101	69	53	537	739	59

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1412	769	798	0	-	0
Stage 1	769	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Critical Hdwy	6.43	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	151	398	816	-	-	-
Stage 1	456	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	137	398	816	-	-	-
Mov Cap-2 Maneuver	137	-	-	-	-	-
Stage 1	414	-	-	-	-	-
Stage 2	522	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	95.1	0.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	816	-	187	-	-
HCM Lane V/C Ratio	0.065	-	0.91	-	-
HCM Control Delay (s)	9.7	0	95.1	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.2	-	7	-	-

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	40	60	45	515	685	55
Future Vol, veh/h	40	60	45	515	685	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	1	5	7	4	3
Mvmt Flow	44	66	49	566	753	60

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1447	783	813	0	0
Stage 1	783	-	-	-	-
Stage 2	664	-	-	-	-
Critical Hdwy	6.44	6.21	4.15	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-
Follow-up Hdwy	3.536	3.309	2.245	-	-
Pot Cap-1 Maneuver	143	395	801	-	-
Stage 1	447	-	-	-	-
Stage 2	508	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	130	395	801	-	-
Mov Cap-2 Maneuver	130	-	-	-	-
Stage 1	407	-	-	-	-
Stage 2	508	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	37.2	0.8	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	801	-	218	-	-
HCM Lane V/C Ratio	0.062	-	0.504	-	-
HCM Control Delay (s)	9.8	0	37.2	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0.2	-	2.6	-	-



HCM 6th Signalized Intersection Summary  
 8: Cordon Rd & Silverton Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	215	195	310	400	25	200	400	200	25	545	165
Future Volume (veh/h)	105	215	195	310	400	25	200	400	200	25	545	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1781	1826	1841	1900	1781	1870	1781	1752	1826	1826
Adj Flow Rate, veh/h	114	234	51	337	435	23	217	435	159	27	592	111
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, %	9	9	8	5	4	0	8	2	8	10	5	5
Cap, veh/h	140	326	70	366	831	44	247	874	1024	32	623	657
Arrive On Green	0.08	0.12	0.12	0.21	0.25	0.25	0.15	0.47	0.47	0.02	0.34	0.34
Sat Flow, veh/h	1682	2746	587	1739	3378	178	1697	1870	1510	1668	1826	1547
Grp Volume(v), veh/h	114	141	144	337	225	233	217	435	159	27	592	111
Grp Sat Flow(s),veh/h/ln	1682	1678	1655	1739	1749	1808	1697	1870	1510	1668	1826	1547
Q Serve(g_s), s	6.5	7.9	8.2	18.5	10.9	10.9	12.2	15.8	3.7	1.6	30.9	4.3
Cycle Q Clear(g_c), s	6.5	7.9	8.2	18.5	10.9	10.9	12.2	15.8	3.7	1.6	30.9	4.3
Prop In Lane	1.00		0.35	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	199	196	366	430	445	247	874	1024	32	623	657
V/C Ratio(X)	0.81	0.71	0.73	0.92	0.52	0.52	0.88	0.50	0.16	0.85	0.95	0.17
Avail Cap(c_a), veh/h	276	550	542	427	716	740	278	919	1060	137	748	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.0	41.4	41.6	37.8	31.9	31.9	40.9	18.0	5.7	47.8	31.4	17.4
Incr Delay (d2), s/veh	4.3	1.7	2.0	21.6	0.4	0.4	22.4	0.2	0.0	19.9	18.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	3.2	3.3	9.7	4.4	4.6	6.3	6.0	0.8	0.8	15.4	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.3	43.2	43.5	59.3	32.2	32.3	63.3	18.2	5.7	67.7	50.1	17.5
LnGrp LOS	D	D	D	E	C	C	E	B	A	E	D	B
Approach Vol, veh/h		399			795			811			730	
Approach Delay, s/veh		44.8			43.7			27.8			45.8	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.6	16.6	18.2	38.3	12.1	29.0	5.9	50.7				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	24.0	32.0	16.0	40.0	16.0	40.0	8.0	48.0				
Max Q Clear Time (g_c+I1), s	20.5	10.2	14.2	32.9	8.5	12.9	3.6	17.8				
Green Ext Time (p_c), s	0.0	0.3	0.0	0.4	0.0	0.4	0.0	0.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				39.7								
HCM 6th LOS				D								

HCM 6th Signalized Intersection Summary  
 9: Cordon Rd & Sunnyview Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	50	130	70	85	55	160	640	20	25	890	140
Future Volume (veh/h)	95	50	130	70	85	55	160	640	20	25	890	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1856	1900	1870	1856	1856	1856	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	101	53	57	74	90	39	170	681	20	27	947	145
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	3	0	2	3	3	3	2	0	0	2	2
Cap, veh/h	196	86	92	208	121	52	206	1210	36	459	1009	154
Arrive On Green	0.05	0.11	0.11	0.05	0.10	0.10	0.05	0.67	0.67	0.02	0.64	0.64
Sat Flow, veh/h	1753	813	875	1781	1214	526	1767	1808	53	1810	1579	242
Grp Volume(v), veh/h	101	0	110	74	0	129	170	0	701	27	0	1092
Grp Sat Flow(s),veh/h/ln	1753	0	1688	1781	0	1739	1767	0	1861	1810	0	1821
Q Serve(g_s), s	5.7	0.0	6.8	4.0	0.0	7.9	3.5	0.0	21.8	0.6	0.0	59.2
Cycle Q Clear(g_c), s	5.7	0.0	6.8	4.0	0.0	7.9	3.5	0.0	21.8	0.6	0.0	59.2
Prop In Lane	1.00		0.52	1.00		0.30	1.00		0.03	1.00		0.13
Lane Grp Cap(c), veh/h	196	0	178	208	0	173	206	0	1246	459	0	1163
V/C Ratio(X)	0.52	0.00	0.62	0.36	0.00	0.74	0.82	0.00	0.56	0.06	0.00	0.94
Avail Cap(c_a), veh/h	196	0	341	217	0	350	277	0	1378	488	0	1249
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.8	0.0	46.8	41.5	0.0	47.9	27.0	0.0	9.6	8.1	0.0	17.8
Incr Delay (d2), s/veh	2.3	0.0	2.6	1.0	0.0	4.6	13.7	0.0	0.6	0.0	0.0	13.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	3.0	1.7	0.0	3.5	3.5	0.0	7.0	0.2	0.0	23.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.1	0.0	49.4	42.5	0.0	52.5	40.7	0.0	10.2	8.1	0.0	31.1
LnGrp LOS	D	A	D	D	A	D	D	A	B	A	A	C
Approach Vol, veh/h		211			203			871			1119	
Approach Delay, s/veh		46.9			48.9			16.1			30.5	
Approach LOS		D			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	74.9	10.0	14.9	6.2	78.2	9.4	15.5				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	10.0	75.0	6.0	22.0	4.0	81.0	5.9	22.1				
Max Q Clear Time (g_c+1/5), s	15.5	61.2	7.7	9.9	2.6	23.8	6.0	8.8				
Green Ext Time (p_c), s	0.2	8.7	0.0	0.3	0.0	7.5	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				28.3								
HCM 6th LOS				C								

HCM 6th TWSC  
10: Cordon Rd & Swegle Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - No Build - Yes Interchange

Intersection												
Int Delay, s/veh	45.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	40	10	65	10	5	15	95	760	10	30	930	105
Future Vol, veh/h	40	10	65	10	5	15	95	760	10	30	930	105
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	210	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	6	0	0	0	2	5	0	0	7	3
Mvmt Flow	43	11	70	11	5	16	102	817	11	32	1000	113

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2159	2153	1057	2188	2204	824	1113	0	0	828	0	0
Stage 1	1121	1121	-	1027	1027	-	-	-	-	-	-	-
Stage 2	1038	1032	-	1161	1177	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.26	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.354	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 35	49	268	33	45	376	627	-	-	812	-	-
Stage 1	253	284	-	285	314	-	-	-	-	-	-	-
Stage 2	281	313	-	240	267	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 25	39	268	16	36	376	627	-	-	812	-	-
Mov Cap-2 Maneuver	~ 25	39	-	16	36	-	-	-	-	-	-	-
Stage 1	212	273	-	239	263	-	-	-	-	-	-	-
Stage 2	220	262	-	164	257	-	-	-	-	-	-	-























Approach	EB	WB	NB	SB
HCM Control Delay, s	732.2	271	1.3	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	627	-	-	55	37	812	-	-
HCM Lane V/C Ratio	0.163	-	-	2.248	0.872	0.04	-	-
HCM Control Delay (s)	11.9	-	-	732.2	271	9.6	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	12.3	3.2	0.1	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th Signalized Intersection Summary  
 11: Cordon Rd & Center St

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - Yes Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	55	135	60	85	55	110	735	35	65	825	110
Future Volume (veh/h)	65	55	135	60	85	55	110	735	35	65	825	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1811	1841	1856	1752	1856	1826	1841	1900	1796	1856
Adj Flow Rate, veh/h	71	60	8	65	92	26	120	799	37	71	897	68
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	6	4	3	10	3	5	4	0	7	3
Cap, veh/h	198	175	144	242	125	35	313	1085	50	577	1114	975
Arrive On Green	0.05	0.09	0.09	0.04	0.09	0.09	0.11	1.00	1.00	0.05	0.62	0.62
Sat Flow, veh/h	1781	1870	1535	1753	1392	393	1767	1731	80	1810	1796	1572
Grp Volume(v), veh/h	71	60	8	65	0	118	120	0	836	71	897	68
Grp Sat Flow(s),veh/h/ln	1781	1870	1535	1753	0	1785	1767	0	1811	1810	1796	1572
Q Serve(g_s), s	3.2	2.7	0.4	3.0	0.0	5.8	2.2	0.0	0.0	1.2	34.1	1.5
Cycle Q Clear(g_c), s	3.2	2.7	0.4	3.0	0.0	5.8	2.2	0.0	0.0	1.2	34.1	1.5
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	198	175	144	242	0	161	313	0	1135	577	1114	975
V/C Ratio(X)	0.36	0.34	0.06	0.27	0.00	0.73	0.38	0.00	0.74	0.12	0.81	0.07
Avail Cap(c_a), veh/h	212	457	375	261	0	436	318	0	1135	595	1114	975
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.70	0.00	0.70	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	38.2	37.2	35.0	0.0	39.9	12.5	0.0	0.0	5.2	13.0	6.8
Incr Delay (d2), s/veh	0.4	0.9	0.1	0.2	0.0	4.8	0.2	0.0	3.0	0.0	6.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.2	0.2	1.2	0.0	2.6	0.9	0.0	1.0	0.3	11.8	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.4	39.1	37.3	35.2	0.0	44.7	12.7	0.0	3.0	5.3	19.2	6.9
LnGrp LOS	D	D	D	D	A	D	B	A	A	A	B	A
Approach Vol, veh/h		139			183			956			1036	
Approach Delay, s/veh		37.1			41.3			4.2			17.4	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	60.8	8.3	12.1	8.2	61.4	8.0	12.4				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	41.0	5.0	22.0	5.0	41.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s	4.2	36.1	5.2	7.8	3.2	2.0	5.0	4.7				
Green Ext Time (p_c), s	0.0	3.1	0.0	0.3	0.0	10.3	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			15.1									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary  
 12: Cordon Rd & Auburn Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↖		↗	↖	
Traffic Volume (veh/h)	25	5	25	15	5	35	55	815	20	25	945	50
Future Volume (veh/h)	25	5	25	15	5	35	55	815	20	25	945	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1900	1767	1900	1900	1900	1900	1826	1604	1900	1796	1900
Adj Flow Rate, veh/h	27	5	0	16	5	0	60	886	21	27	1027	53
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, %	7	0	9	0	0	0	0	5	20	0	7	0
Cap, veh/h	140	20	83	130	31	0	557	1363	32	464	1272	66
Arrive On Green	0.06	0.06	0.00	0.06	0.06	0.00	0.04	0.77	0.77	0.05	1.00	1.00
Sat Flow, veh/h	1199	361	1497	1067	564	0	1810	1776	42	1810	1693	87
Grp Volume(v), veh/h	32	0	0	21	0	0	60	0	907	27	0	1080
Grp Sat Flow(s),veh/h/ln1560	0	1497	1631	0	0	1810	0	1818	1810	0	1781	
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	0.6	0.0	20.9	0.3	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	0.0	1.0	0.0	0.0	0.6	0.0	20.9	0.3	0.0	0.0
Prop In Lane	0.84		1.00	0.76		0.00	1.00		0.02	1.00		0.05
Lane Grp Cap(c), veh/h	160	0	83	161	0	0	557	0	1395	464	0	1338
V/C Ratio(X)	0.20	0.00	0.00	0.13	0.00	0.00	0.11	0.00	0.65	0.06	0.00	0.81
Avail Cap(c_a), veh/h	377	0	301	383	0	0	581	0	1395	517	0	1338
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.50	0.00	0.50
Uniform Delay (d), s/veh	40.9	0.0	0.0	40.6	0.0	0.0	2.0	0.0	4.9	4.3	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.4	0.0	0.0	0.1	0.0	2.4	0.0	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln0.7	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0	5.0	0.1	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.5	0.0	0.0	41.0	0.0	0.0	2.1	0.0	7.2	4.3	0.0	2.7
LnGrp LOS	D	A	A	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		32			21			967			1107	
Approach Delay, s/veh		41.5			41.0			6.9			2.8	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s7.0	73.5			9.5	8.4	72.1		9.5				
Change Period (Y+Rc), s 4.5	4.5			4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s 5.1	53.3			18.1	5.1	53.3		18.1				
Max Q Clear Time (g_c+12,3) 12.3	22.9			3.6	2.6	2.0		3.0				
Green Ext Time (p_c), s 0.0	7.4			0.1	0.0	11.6		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				5.6								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary  
 13: Cordon Rd & State St

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↘		↖ ↗	↘		↖ ↗	↘		↖ ↗	↘	↖ ↗
Traffic Volume (veh/h)	175	220	70	120	240	105	45	595	125	120	580	240
Future Volume (veh/h)	175	220	70	120	240	105	45	595	125	120	580	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1870	1841	1752	1885	1811	1811	1856	1796	1796	1885	1870
Adj Flow Rate, veh/h	190	239	62	130	261	94	49	647	127	130	630	140
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, %	3	2	4	10	1	6	6	3	7	7	1	2
Cap, veh/h	436	304	79	253	287	103	268	642	126	189	845	696
Arrive On Green	0.06	0.21	0.21	0.07	0.22	0.22	0.04	0.43	0.43	0.06	0.45	0.45
Sat Flow, veh/h	3428	1432	371	1668	1323	476	1725	1507	296	1711	1885	1552
Grp Volume(v), veh/h	190	0	301	130	0	355	49	0	774	130	630	140
Grp Sat Flow(s),veh/h/ln	1714	0	1803	1668	0	1799	1725	0	1802	1711	1885	1552
Q Serve(g_s), s	3.7	0.0	13.7	5.3	0.0	16.7	1.4	0.0	37.0	3.7	24.1	4.8
Cycle Q Clear(g_c), s	3.7	0.0	13.7	5.3	0.0	16.7	1.4	0.0	37.0	3.7	24.1	4.8
Prop In Lane	1.00		0.21	1.00		0.26	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	436	0	383	253	0	390	268	0	768	189	845	696
V/C Ratio(X)	0.44	0.00	0.79	0.51	0.00	0.91	0.18	0.00	1.01	0.69	0.75	0.20
Avail Cap(c_a), veh/h	450	0	436	253	0	435	318	0	768	201	845	696
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.7	0.0	32.3	25.6	0.0	33.2	15.8	0.0	24.9	20.2	19.9	14.5
Incr Delay (d2), s/veh	0.3	0.0	6.9	0.8	0.0	20.5	0.1	0.0	34.5	6.9	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	6.5	1.9	0.0	8.8	0.5	0.0	21.1	1.6	10.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.0	0.0	39.2	26.3	0.0	53.7	15.9	0.0	59.5	27.1	23.1	14.6
LnGrp LOS	C	A	D	C	A	D	B	A	F	C	C	B
Approach Vol, veh/h		491			485			823			900	
Approach Delay, s/veh		34.1			46.4			56.9			22.3	
Approach LOS		C			D			E			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	24.5	7.5	44.9	9.6	24.8	9.4	43.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	10.0	21.0	6.0	37.0	6.0	21.0	6.0	37.0				
Max Q Clear Time (g_c+1), s	17.3	15.7	3.4	26.1	5.7	18.7	5.7	39.0				
Green Ext Time (p_c), s	0.0	0.2	0.0	0.6	0.0	0.1	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	39.3
HCM 6th LOS	D

HCM 6th TWSC  
 14: Cordon Rd & Pennsylvania Ave

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - Yes Interchange

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	35	20	710	695	75
Future Vol, veh/h	50	35	20	710	695	75
Conflicting Peds, #/hr	2	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	7	8	6	9	9
Mvmt Flow	54	38	22	772	755	82

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1614	796	837	0	-	0
Stage 1	796	-	-	-	-	-
Stage 2	818	-	-	-	-	-
Critical Hdwy	6.45	6.27	4.18	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.363	2.272	-	-	-
Pot Cap-1 Maneuver	112	379	772	-	-	-
Stage 1	439	-	-	-	-	-
Stage 2	429	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	109	379	772	-	-	-
Mov Cap-2 Maneuver	109	-	-	-	-	-
Stage 1	427	-	-	-	-	-
Stage 2	429	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	58.4	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	772	-	154	-	-
HCM Lane V/C Ratio	0.028	-	0.6	-	-
HCM Control Delay (s)	9.8	-	58.4	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.1	-	3.2	-	-

Intersection												
Int Delay, s/veh	11.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	70	5	15	5	10	10	5	665	15	10	665	105
Future Vol, veh/h	70	5	15	5	10	10	5	665	15	10	665	105
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	0	9	0	20	20	0	6	0	0	5	5
Mvmt Flow	76	5	16	5	11	11	5	723	16	11	723	114

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1554	1551	780	1554	1600	731	837	0	0	739	0	0
Stage 1	802	802	-	741	741	-	-	-	-	-	-	-
Stage 2	752	749	-	813	859	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.29	7.1	6.7	6.4	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.381	3.5	4.18	3.48	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	92	115	384	93	97	393	806	-	-	876	-	-
Stage 1	376	399	-	411	397	-	-	-	-	-	-	-
Stage 2	401	422	-	375	349	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	79	111	384	83	94	393	806	-	-	876	-	-
Mov Cap-2 Maneuver	79	111	-	83	94	-	-	-	-	-	-	-
Stage 1	372	389	-	406	393	-	-	-	-	-	-	-
Stage 2	375	417	-	346	341	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	191.3		39.9		0.1		0.1	
HCM LOS	F		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	806	-	-	93	130	876	-	-
HCM Lane V/C Ratio	0.007	-	-	1.052	0.209	0.012	-	-
HCM Control Delay (s)	9.5	0	-	191.3	39.9	9.2	0	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	6.4	0.7	0	-	-



HCM 6th Signalized Intersection Summary  
 16: Cordon Rd & Macleay Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (veh/h)	95	55	120	125	50	70	25	535	50	15	650	20
Future Volume (veh/h)	95	55	120	125	50	70	25	535	50	15	650	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1811	1900	1900	1781	1870	1900	1826	1737	1737	1796	1796
Adj Flow Rate, veh/h	103	60	94	136	54	0	27	582	51	16	707	21
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, %	10	6	0	0	8	2	0	5	11	11	7	7
Cap, veh/h	167	86	114	212	73		372	1012	89	555	1046	31
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.00	0.05	1.00	1.00	0.02	0.60	0.60
Sat Flow, veh/h	563	434	575	726	367	0	1810	1655	145	1654	1735	52
Grp Volume(v), veh/h	257	0	0	190	0	0	27	0	633	16	0	728
Grp Sat Flow(s),veh/h/ln	1571	0	0	1093	0	0	1810	0	1800	1654	0	1787
Q Serve(g_s), s	0.0	0.0	0.0	1.7	0.0	0.0	0.5	0.0	0.0	0.3	0.0	24.6
Cycle Q Clear(g_c), s	14.0	0.0	0.0	15.7	0.0	0.0	0.5	0.0	0.0	0.3	0.0	24.6
Prop In Lane	0.40		0.37	0.72		0.00	1.00		0.08	1.00		0.03
Lane Grp Cap(c), veh/h	367	0	0	285	0		372	0	1101	555	0	1077
V/C Ratio(X)	0.70	0.00	0.00	0.67	0.00		0.07	0.00	0.58	0.03	0.00	0.68
Avail Cap(c_a), veh/h	485	0	0	389	0		426	0	1101	618	0	1077
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.81	0.00	0.81	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.5	0.0	0.0	35.2	0.0	0.0	9.5	0.0	0.0	6.5	0.0	12.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	1.0	0.0	0.0	0.1	0.0	1.8	0.0	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	0.0	3.9	0.0	0.0	0.2	0.0	0.5	0.1	0.0	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.0	0.0	0.0	36.2	0.0	0.0	9.5	0.0	1.8	6.6	0.0	15.4
LnGrp LOS	D	A	A	D	A		A	A	A	A	A	B
Approach Vol, veh/h		257			190			660				744
Approach Delay, s/veh		36.0			36.2			2.1				15.2
Approach LOS		D			D			A				B
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	60.2		22.8	6.1	61.0		22.8				
Change Period (Y+Rc), s	4.5	6.0		5.0	4.5	6.0		5.0				
Max Green Setting (Gmax), s	5.1	44.4		25.0	5.1	44.4		25.0				
Max Q Clear Time (g_c+I1), s	2.5	26.6		17.7	2.3	2.0		16.0				
Green Ext Time (p_c), s	0.0	0.8		0.1	0.0	0.7		0.3				

Intersection Summary

HCM 6th Ctrl Delay	15.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 17: Cordon Rd & Gaffin Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	50	195	100	35	110	100	450	120	120	690	85
Future Volume (veh/h)	50	50	195	100	35	110	100	450	120	120	690	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1856	1781	1826	1900	1870	1841	1856
Adj Flow Rate, veh/h	54	54	9	109	38	4	109	489	121	130	750	51
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, %	0	0	2	0	0	3	8	5	0	2	4	3
Cap, veh/h	203	105	18	186	112	12	561	922	228	542	1228	1027
Arrive On Green	0.03	0.07	0.07	0.03	0.07	0.07	0.03	0.66	0.66	0.09	1.00	1.00
Sat Flow, veh/h	1810	1588	265	1810	1690	178	1697	1406	348	1781	1841	1539
Grp Volume(v), veh/h	54	0	63	109	0	42	109	0	610	130	750	51
Grp Sat Flow(s),veh/h/ln	1810	0	1852	1810	0	1868	1697	0	1754	1781	1841	1539
Q Serve(g_s), s	2.5	0.0	3.0	3.0	0.0	1.9	1.9	0.0	16.5	2.2	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	3.0	3.0	0.0	1.9	1.9	0.0	16.5	2.2	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.10	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	203	0	123	186	0	124	561	0	1151	542	1228	1027
V/C Ratio(X)	0.27	0.00	0.51	0.59	0.00	0.34	0.19	0.00	0.53	0.24	0.61	0.05
Avail Cap(c_a), veh/h	203	0	515	186	0	519	561	0	1151	542	1228	1027
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.66	0.66	0.66
Uniform Delay (d), s/veh	37.6	0.0	40.6	40.2	0.0	40.1	4.6	0.0	8.2	5.9	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	1.2	3.2	0.0	0.6	0.1	0.0	1.8	0.1	1.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.4	2.5	0.0	0.9	0.4	0.0	4.9	0.5	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.9	0.0	41.8	43.5	0.0	40.7	4.7	0.0	9.9	5.9	1.5	0.1
LnGrp LOS	D	A	D	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		117			151			719			931	
Approach Delay, s/veh		40.0			42.7			9.1			2.0	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	66.0	7.0	10.0	8.0	65.0	7.0	10.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	3.0	41.0	3.0	25.0	4.0	40.0	3.0	25.0				
Max Q Clear Time (g_c+1), s	13.5	2.0	4.5	3.9	4.2	18.5	5.0	5.0				
Green Ext Time (p_c), s	0.0	0.8	0.0	0.0	0.0	0.6	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			10.2									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary  
 18: Kuebler Blvd/Cordon Rd & Lancaster Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	370	115	110	215	115	85	600	195	245	690	70
Future Volume (veh/h)	45	370	115	110	215	115	85	600	195	245	690	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1826	1885	1796	1900	1885	1856	1826	1870	1885	1900
Adj Flow Rate, veh/h	49	402	64	120	234	35	92	652	0	266	750	26
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, %	0	3	5	1	7	0	1	3	5	2	1	0
Cap, veh/h	60	633	320	209	705	565	166	935		294	1370	603
Arrive On Green	0.03	0.18	0.16	0.06	0.21	0.19	0.05	0.27	0.00	0.17	0.38	0.34
Sat Flow, veh/h	1810	3526	1547	3483	3413	1610	3483	3526	1547	1781	3582	1610
Grp Volume(v), veh/h	49	402	64	120	234	35	92	652	0	266	750	26
Grp Sat Flow(s),veh/h/ln	1810	1763	1547	1742	1706	1610	1742	1763	1547	1781	1791	1610
Q Serve(g_s), s	1.3	5.1	1.7	1.6	2.8	0.7	1.3	8.1	0.0	7.1	7.9	0.5
Cycle Q Clear(g_c), s	1.3	5.1	1.7	1.6	2.8	0.7	1.3	8.1	0.0	7.1	7.9	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	60	633	320	209	705	565	166	935		294	1370	603
V/C Ratio(X)	0.82	0.64	0.20	0.57	0.33	0.06	0.55	0.70		0.90	0.55	0.04
Avail Cap(c_a), veh/h	299	2473	1127	575	2394	1362	575	2473		294	2512	1116
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	18.4	15.9	22.2	16.4	10.4	22.6	16.1	0.0	19.9	11.7	9.6
Incr Delay (d2), s/veh	9.9	0.4	0.1	0.9	0.1	0.0	1.1	0.4	0.0	28.7	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	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.8	0.5	0.6	0.9	0.2	0.4	2.4	0.0	4.6	2.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.2	18.8	16.0	23.1	16.5	10.4	23.6	16.4	0.0	48.6	11.8	9.7
LnGrp LOS	C	B	B	C	B	B	C	B		D	B	A
Approach Vol, veh/h		515			389			744			1042	
Approach Delay, s/veh		19.8			18.0			17.3			21.1	
Approach LOS		B			B			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.3	22.5	5.6	14.0	12.0	16.9	6.9	12.7				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	8.0	32.0	8.0	33.0				
Max Q Clear Time (g_c+1), s	13.3	9.9	3.3	4.8	9.1	10.1	3.6	7.1				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.3	0.0	0.8	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	19.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Kuebler Blvd & Mill Creek Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - Yes Interchange



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	145	255	625	210	230	685
Future Volume (veh/h)	145	255	625	210	230	685
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1604	1604	1856	1604	1752	1870
Adj Flow Rate, veh/h	158	217	679	125	250	745
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	20	3	20	10	2
Cap, veh/h	262	359	965	707	377	1262
Arrive On Green	0.17	0.17	0.17	0.17	0.09	0.67
Sat Flow, veh/h	1527	1359	1856	1359	1668	1870
Grp Volume(v), veh/h	158	217	679	125	250	745
Grp Sat Flow(s),veh/h/ln	1527	1359	1856	1359	1668	1870
Q Serve(g_s), s	6.2	9.1	22.4	5.1	4.1	14.0
Cycle Q Clear(g_c), s	6.2	9.1	22.4	5.1	4.1	14.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	262	359	965	707	377	1262
V/C Ratio(X)	0.60	0.60	0.70	0.18	0.66	0.59
Avail Cap(c_a), veh/h	493	565	965	707	427	1262
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.30	0.30	1.00	1.00
Uniform Delay (d), s/veh	24.9	20.9	22.2	15.0	12.2	5.7
Incr Delay (d2), s/veh	0.8	0.6	1.3	0.2	2.2	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	6.9	10.9	1.2	1.4	3.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.7	21.5	23.5	15.2	14.4	7.8
LnGrp LOS	C	C	C	B	B	A
Approach Vol, veh/h	375		804			995
Approach Delay, s/veh	23.3		22.2			9.4
Approach LOS	C		C			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.8		15.2	10.0	39.8
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		34.0		21.0	8.0	22.0
Max Q Clear Time (g_c+I1), s		16.0		11.1	6.1	24.4
Green Ext Time (p_c), s		0.7		0.1	0.0	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			16.5			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary  
20: Turner Rd & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	675	75	190	435	140	200	250	75	60	160	165
Future Volume (veh/h)	95	675	75	190	435	140	200	250	75	60	160	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1811	1870	1870	1678	1870	1870	1841	1900	1693	1826	1900	1752
Adj Flow Rate, veh/h	103	734	79	207	473	142	217	272	73	65	174	43
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, %	6	2	2	15	2	2	4	0	14	5	0	10
Cap, veh/h	363	856	92	479	758	227	315	352	95	179	409	408
Arrive On Green	0.09	1.00	1.00	0.08	0.55	0.53	0.07	0.24	0.23	0.04	0.22	0.22
Sat Flow, veh/h	1725	1660	179	1598	1381	415	1753	1443	387	1739	1900	1485
Grp Volume(v), veh/h	103	0	813	207	0	615	217	0	345	65	174	43
Grp Sat Flow(s),veh/h/ln	1725	0	1838	1598	0	1796	1753	0	1830	1739	1900	1485
Q Serve(g_s), s	3.8	0.0	0.0	7.9	0.0	30.7	9.0	0.0	22.9	3.8	10.3	2.8
Cycle Q Clear(g_c), s	3.8	0.0	0.0	7.9	0.0	30.7	9.0	0.0	22.9	3.8	10.3	2.8
Prop In Lane	1.00		0.10	1.00		0.23	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	363	0	949	479	0	985	315	0	447	179	409	408
V/C Ratio(X)	0.28	0.00	0.86	0.43	0.00	0.62	0.69	0.00	0.77	0.36	0.43	0.11
Avail Cap(c_a), veh/h	407	0	949	541	0	985	315	0	447	216	409	408
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.77	0.00	0.77	0.80	0.00	0.80	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	0.0	12.4	0.0	20.3	42.6	0.0	46.0	40.4	44.0	35.2
Incr Delay (d2), s/veh	0.1	0.0	7.8	0.2	0.0	2.4	5.2	0.0	12.2	0.5	3.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	2.1	2.6	0.0	12.3	2.6	0.0	11.6	1.6	5.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	0.0	7.8	12.6	0.0	22.7	47.7	0.0	58.2	40.9	47.3	35.7
LnGrp LOS	B	A	A	B	A	C	D	A	E	D	D	D
Approach Vol, veh/h		916			822			562			282	
Approach Delay, s/veh		8.8			20.2			54.2			44.0	
Approach LOS		A			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.9	71.1	9.3	35.7	9.7	75.3	13.0	32.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	15.0	60.0	8.0	27.0	9.0	66.0	9.0	26.0				
Max Q Clear Time (g_c+1), s	19.9	2.0	5.8	24.9	5.8	32.7	11.0	12.3				
Green Ext Time (p_c), s	0.0	0.8	0.0	0.1	0.0	0.6	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay	26.2
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary  
 21: 36th Ave & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	225	615	270	125	465	190	225	85	135	90	125	120
Future Volume (veh/h)	225	615	270	125	465	190	225	85	135	90	125	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1870	1870	1826	1900	1841	1900	1856	1900	1900	1737
Adj Flow Rate, veh/h	245	668	175	136	505	197	245	92	95	98	136	3
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	4	2	2	5	0	4	0	3	0	0	11
Cap, veh/h	633	1181	1017	419	776	303	240	105	108	187	189	146
Arrive On Green	0.06	0.64	0.64	0.09	1.00	1.00	0.08	0.12	0.12	0.06	0.10	0.10
Sat Flow, veh/h	1781	1841	1585	1781	1250	488	1753	856	884	1810	1900	1472
Grp Volume(v), veh/h	245	668	175	136	0	702	245	0	187	98	136	3
Grp Sat Flow(s),veh/h/ln	1781	1841	1585	1781	0	1738	1753	0	1741	1810	1900	1472
Q Serve(g_s), s	6.4	26.6	5.8	3.8	0.0	0.0	11.0	0.0	13.7	6.2	9.0	0.2
Cycle Q Clear(g_c), s	6.4	26.6	5.8	3.8	0.0	0.0	11.0	0.0	13.7	6.2	9.0	0.2
Prop In Lane	1.00		1.00	1.00		0.28	1.00		0.51	1.00		1.00
Lane Grp Cap(c), veh/h	633	1181	1017	419	0	1078	240	0	213	187	189	146
V/C Ratio(X)	0.39	0.57	0.17	0.32	0.00	0.65	1.02	0.00	0.88	0.52	0.72	0.02
Avail Cap(c_a), veh/h	723	1181	1017	464	0	1078	240	0	388	187	380	294
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.77	0.00	0.77	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.2	13.1	9.4	10.2	0.0	0.0	52.7	0.0	56.1	48.9	56.8	52.8
Incr Delay (d2), s/veh	0.1	2.0	0.4	0.1	0.0	2.4	63.1	0.0	4.5	1.3	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	10.5	1.9	1.1	0.0	0.7	6.7	0.0	6.2	2.9	4.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.3	15.1	9.8	10.3	0.0	2.4	115.9	0.0	60.6	50.2	58.8	52.9
LnGrp LOS	A	B	A	B	A	A	F	A	E	D	E	D
Approach Vol, veh/h		1088			838			432			237	
Approach Delay, s/veh		12.5			3.7			91.9			55.1	
Approach LOS		B			A			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	88.4	15.0	16.9	12.4	85.7	12.0	19.9				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	9.0	67.0	11.0	26.0	15.0	61.0	8.0	29.0				
Max Q Clear Time (g_c+I), s	15.8	28.6	13.0	11.0	8.4	2.0	8.2	15.7				
Green Ext Time (p_c), s	0.0	0.7	0.0	0.1	0.0	0.7	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											26.8	
HCM 6th LOS											C	























<b>ID</b>	<b>Software/Method</b>	<b>Intersection</b>	<b>Control Type</b>	<b>LOS</b>	<b>Delay</b>	<b>V/C Ratio</b>
1	Synchro HCM 6th Signal	OR 99E & Hazelgreen Rd	Signal	E	57.3	0.86
8	Synchro HCM 6th Signal	Cordon Rd & Silverton Rd	Signal	D	39.7	0.85
9	Synchro HCM 6th Signal	Cordon Rd & Sunnyview Rd	Signal	C	28.3	0.95
11	Synchro HCM 6th Signal	Cordon Rd & Center St	Signal	B	15.1	0.83
12	Synchro HCM 6th Signal	Cordon Rd & Auburn Rd	Signal	A	5.6	0.82
13	Synchro HCM 6th Signal	Cordon Rd & State St	Signal	D	39.3	0.97
16	Synchro HCM 6th Signal	Cordon Rd & Macleay Rd	Signal	B	15.6	0.78
17	Synchro HCM 6th Signal	Cordon Rd & Gaffin Rd	Signal	B	10.2	0.71
18	Synchro HCM 6th Signal	Kuebler Blvd/Cordon Rd & Lancaster Dr	Signal	B	19.4	0.60
19	Synchro HCM 6th Signal	Kuebler Blvd & Mill Creek Dr	Signal	B	16.5	0.71
20	Synchro HCM 6th Signal	Turner Rd & Kuebler Blvd	Signal	C	26.2	0.91
21	Synchro HCM 6th Signal	36th Ave & Kuebler Blvd	Signal	C	26.8	0.87

**FUTURE 2043 – NO BUILD – YES INTERCHANGE – PM PEAK**  
**HCM Results**



HCM 6th Signalized Intersection Summary  
1: OR 99E & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - No Build - Yes Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	400	545	100	265	40	400	590	155	100	875	105
Future Volume (veh/h)	105	400	545	100	265	40	400	590	155	100	875	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1856	1885	1900	1900	1885	1796	1841	1900	1885
Adj Flow Rate, veh/h	107	408	275	102	270	35	408	602	136	102	893	26
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	0	3	1	0	0	1	7	4	0	1
Cap, veh/h	135	466	395	128	397	51	360	1112	251	129	931	412
Arrive On Green	0.08	0.25	0.25	0.07	0.24	0.24	0.20	0.38	0.38	0.07	0.26	0.26
Sat Flow, veh/h	1795	1900	1610	1767	1635	212	1810	2904	655	1753	3610	1598
Grp Volume(v), veh/h	107	408	275	102	0	305	408	371	367	102	893	26
Grp Sat Flow(s),veh/h/ln	1795	1900	1610	1767	0	1847	1810	1791	1767	1753	1805	1598
Q Serve(g_s), s	5.5	19.2	14.5	5.3	0.0	13.9	18.5	15.0	15.1	5.3	22.7	1.1
Cycle Q Clear(g_c), s	5.5	19.2	14.5	5.3	0.0	13.9	18.5	15.0	15.1	5.3	22.7	1.1
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	135	466	395	128	0	448	360	686	677	129	931	412
V/C Ratio(X)	0.79	0.88	0.70	0.79	0.00	0.68	1.13	0.54	0.54	0.79	0.96	0.06
Avail Cap(c_a), veh/h	164	592	502	142	0	556	360	686	677	235	931	412
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	33.8	32.0	42.5	0.0	32.0	37.3	22.4	22.4	42.4	34.1	26.1
Incr Delay (d2), s/veh	17.8	10.9	2.5	21.0	0.0	1.4	89.2	0.5	0.5	7.7	20.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	9.6	5.5	2.9	0.0	6.0	16.6	5.9	5.8	2.5	11.9	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.1	44.7	34.5	63.5	0.0	33.4	126.5	22.8	22.9	50.1	54.3	26.1
LnGrp LOS	E	D	C	E	A	C	F	C	C	D	D	C
Approach Vol, veh/h		790			407			1146			1021	
Approach Delay, s/veh		43.2			41.0			59.8			53.2	
Approach LOS		D			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.0	30.0	11.5	28.6	11.4	41.6	11.3	28.8				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	18.5	24.0	8.5	28.0	12.5	30.0	7.5	29.0				
Max Q Clear Time (g_c+I1), s	20.5	24.7	7.5	15.9	7.3	17.1	7.3	21.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.1	2.2	0.0	1.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			51.6									
HCM 6th LOS			D									

HCM 6th TWSC  
2: Lake Labish Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - No Build - Yes Interchange

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Vol, veh/h	60	460	130	5	340	25	100	5	10	10	5	5
Future Vol, veh/h	60	460	130	5	340	25	100	5	10	10	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	63	479	135	5	354	26	104	5	10	10	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	380	0	0	614	0	0	987	995	479	1057	1117	367
Stage 1	-	-	-	-	-	-	605	605	-	377	377	-
Stage 2	-	-	-	-	-	-	382	390	-	680	740	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1190	-	-	975	-	-	228	247	591	205	209	683
Stage 1	-	-	-	-	-	-	488	491	-	649	619	-
Stage 2	-	-	-	-	-	-	645	611	-	444	426	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1190	-	-	975	-	-	207	225	591	185	191	683
Mov Cap-2 Maneuver	-	-	-	-	-	-	207	225	-	185	191	-
Stage 1	-	-	-	-	-	-	448	451	-	596	615	-
Stage 2	-	-	-	-	-	-	630	607	-	396	391	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.1			39.3			22.4		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	220	1190	-	-	975	-	-	228
HCM Lane V/C Ratio	0.545	0.053	-	-	0.005	-	-	0.091
HCM Control Delay (s)	39.3	8.2	0	-	8.7	0	-	22.4
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.9	0.2	-	-	0	-	-	0.3

Intersection	
Intersection Delay, s/veh	159.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	365	165	170	180	15	155	125	185	15	300	25
Future Vol, veh/h	10	365	165	170	180	15	155	125	185	15	300	25
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
Heavy Vehicles, %	0	2	0	0	12	0	0	0	0	0	0	10
Mvmt Flow	11	384	174	179	189	16	163	132	195	16	316	26
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	250.2	89.4	170.3	74.4
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	2%	47%	4%
Vol Thru, %	27%	68%	49%	88%
Vol Right, %	40%	31%	4%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	465	540	365	340
LT Vol	155	10	170	15
Through Vol	125	365	180	300
RT Vol	185	165	15	25
Lane Flow Rate	489	568	384	358
Geometry Grp	1	1	1	1
Degree of Util (X)	1.262	1.464	1.007	0.944
Departure Headway (Hd)	10.679	10.168	11.769	11.878
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	343	364	311	308
Service Time	8.679	8.168	9.769	9.878
HCM Lane V/C Ratio	1.426	1.56	1.235	1.162
HCM Control Delay	170.3	250.2	89.4	74.4
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	19.3	27.6	10.9	9.4

Intersection						
Int Delay, s/veh	6.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	165	145	410	600	65
Future Vol, veh/h	55	165	145	410	600	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	61	183	161	456	667	72

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1481	703	739	0	-	0
Stage 1	703	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	139	441	876	-	-	-
Stage 1	495	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	105	441	876	-	-	-
Mov Cap-2 Maneuver	105	-	-	-	-	-
Stage 1	373	-	-	-	-	-
Stage 2	456	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.8	2.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	876	-	105	441	-	-
HCM Lane V/C Ratio	0.184	-	0.582	0.416	-	-
HCM Control Delay (s)	10	0	78.7	18.8	-	-
HCM Lane LOS	B	A	F	C	-	-
HCM 95th %tile Q(veh)	0.7	-	2.8	2	-	-

Intersection						
Int Delay, s/veh	10.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	20	155	190	560	730	25
Future Vol, veh/h	20	155	190	560	730	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	22	172	211	622	811	28

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1869	825	839	0	0
Stage 1	825	-	-	-	-
Stage 2	1044	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	80	376	804	-	-
Stage 1	434	-	-	-	-
Stage 2	342	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	48	376	804	-	-
Mov Cap-2 Maneuver	48	-	-	-	-
Stage 1	260	-	-	-	-
Stage 2	342	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	90.4	2.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	804	-	211	-	-
HCM Lane V/C Ratio	0.263	-	0.922	-	-
HCM Control Delay (s)	11.1	0	90.4	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	1.1	-	7.6	-	-

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	25	70	80	755	850	50
Future Vol, veh/h	25	70	80	755	850	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	6	4	3	3	3
Mvmt Flow	28	78	89	839	944	56

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1989	972	1000	0	0
Stage 1	972	-	-	-	-
Stage 2	1017	-	-	-	-
Critical Hdwy	6.43	6.26	4.14	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.354	2.236	-	-
Pot Cap-1 Maneuver	66	301	684	-	-
Stage 1	365	-	-	-	-
Stage 2	348	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	50	301	684	-	-
Mov Cap-2 Maneuver	50	-	-	-	-
Stage 1	276	-	-	-	-
Stage 2	348	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	99.5	1.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	684	-	130	-	-
HCM Lane V/C Ratio	0.13	-	0.812	-	-
HCM Control Delay (s)	11	0	99.5	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0.4	-	4.9	-	-

Intersection						
Int Delay, s/veh	8.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	50	75	70	740	825	45
Future Vol, veh/h	50	75	70	740	825	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	52	78	73	771	859	47























Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1800	883	906	0	0
Stage 1	883	-	-	-	-
Stage 2	917	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	89	348	759	-	-
Stage 1	408	-	-	-	-
Stage 2	393	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	74	348	759	-	-
Mov Cap-2 Maneuver	74	-	-	-	-
Stage 1	339	-	-	-	-
Stage 2	393	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	119.9	0.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	759	-	140	-	-
HCM Lane V/C Ratio	0.096	-	0.93	-	-
HCM Control Delay (s)	10.2	0	119.9	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0.3	-	6.4	-	-

HCM 6th Signalized Intersection Summary  
8: Cordon Rd & Silverton Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - No Build - Yes Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	425	285	235	370	10	185	600	260	15	685	200
Future Volume (veh/h)	170	425	285	235	370	10	185	600	260	15	685	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1870	1900	1885	1885	1885	1900	1870	1900
Adj Flow Rate, veh/h	179	447	203	247	389	9	195	632	220	16	721	166
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, %	1	1	1	3	2	0	1	1	1	0	2	0
Cap, veh/h	205	499	225	254	845	20	201	930	1008	19	733	807
Arrive On Green	0.11	0.21	0.21	0.14	0.24	0.24	0.11	0.49	0.49	0.01	0.39	0.39
Sat Flow, veh/h	1795	2395	1078	1767	3550	82	1795	1885	1578	1810	1870	1590
Grp Volume(v), veh/h	179	333	317	247	194	204	195	632	220	16	721	166
Grp Sat Flow(s),veh/h/ln	1795	1791	1682	1767	1777	1855	1795	1885	1578	1810	1870	1590
Q Serve(g_s), s	12.3	22.6	23.0	17.4	11.7	11.7	13.5	32.0	7.4	1.1	47.7	7.2
Cycle Q Clear(g_c), s	12.3	22.6	23.0	17.4	11.7	11.7	13.5	32.0	7.4	1.1	47.7	7.2
Prop In Lane	1.00		0.64	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	373	350	254	423	442	201	930	1008	19	733	807
V/C Ratio(X)	0.87	0.89	0.90	0.97	0.46	0.46	0.97	0.68	0.22	0.84	0.98	0.21
Avail Cap(c_a), veh/h	302	444	417	254	423	442	201	930	1008	116	733	807
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	48.1	48.3	53.3	40.7	40.8	55.3	24.2	9.6	61.8	37.6	17.0
Incr Delay (d2), s/veh	12.6	16.3	18.8	48.0	0.3	0.3	54.4	1.7	0.0	27.8	29.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	11.5	11.2	10.9	5.0	5.3	8.9	13.4	2.2	0.6	26.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.1	64.5	67.1	101.2	41.0	41.0	109.7	25.8	9.6	89.5	66.7	17.1
LnGrp LOS	E	E	E	F	D	D	F	C	A	F	E	B
Approach Vol, veh/h		829			645			1047			903	
Approach Delay, s/veh		66.0			64.1			38.0			57.9	
Approach LOS		E			E			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	31.0	18.0	54.0	18.3	34.8	5.3	66.7				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	18.0	31.0	14.0	49.0	21.0	28.0	8.0	55.0				
Max Q Clear Time (g_c+I1), s	19.4	25.0	15.5	49.7	14.3	13.7	3.1	34.0				
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	0.4	0.0	0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			55.0									
HCM 6th LOS			D									



HCM 6th Signalized Intersection Summary  
 9: Cordon Rd & Sunnyview Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	100	195	70	105	50	180	895	85	60	1060	120
Future Volume (veh/h)	130	100	195	70	105	50	180	895	85	60	1060	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1870	1870	1856	1841	1900	1900	1870	1900	1885	1856
Adj Flow Rate, veh/h	137	105	148	74	111	38	189	942	86	63	1116	123
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, %	1	0	2	2	3	4	0	0	2	0	1	3
Cap, veh/h	239	115	163	151	214	73	203	1088	99	212	971	107
Arrive On Green	0.04	0.16	0.16	0.04	0.16	0.16	0.08	0.64	0.64	0.03	0.58	0.58
Sat Flow, veh/h	1795	712	1004	1781	1320	452	1810	1711	156	1810	1668	184
Grp Volume(v), veh/h	137	0	253	74	0	149	189	0	1028	63	0	1239
Grp Sat Flow(s),veh/h/ln	1795	0	1716	1781	0	1773	1810	0	1868	1810	0	1852
Q Serve(g_s), s	5.5	0.0	18.7	4.4	0.0	9.9	9.4	0.0	57.5	1.8	0.0	75.0
Cycle Q Clear(g_c), s	5.5	0.0	18.7	4.4	0.0	9.9	9.4	0.0	57.5	1.8	0.0	75.0
Prop In Lane	1.00		0.58	1.00		0.26	1.00		0.08	1.00		0.10
Lane Grp Cap(c), veh/h	239	0	278	151	0	287	203	0	1187	212	0	1078
V/C Ratio(X)	0.57	0.00	0.91	0.49	0.00	0.52	0.93	0.00	0.87	0.30	0.00	1.15
Avail Cap(c_a), veh/h	239	0	293	151	0	303	203	0	1187	267	0	1078
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.9	0.0	53.1	44.0	0.0	49.4	45.1	0.0	19.0	21.4	0.0	26.9
Incr Delay (d2), s/veh	3.3	0.0	29.3	2.4	0.0	1.1	43.7	0.0	7.1	0.3	0.0	78.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	10.2	2.0	0.0	4.3	5.8	0.0	23.0	0.7	0.0	51.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.2	0.0	82.4	46.4	0.0	50.5	88.8	0.0	26.2	21.6	0.0	105.3
LnGrp LOS	D	A	F	D	A	D	F	A	C	C	A	F
Approach Vol, veh/h		390			223			1217			1302	
Approach Delay, s/veh		71.4			49.1			35.9			101.3	
Approach LOS		E			D			D			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.5	80.0	9.5	24.9	7.6	86.9	9.5	24.9				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	10.5	75.0	5.5	22.0	7.5	78.0	5.5	22.0				
Max Q Clear Time (g_c+I1), s	11.4	77.0	7.5	11.9	3.8	59.5	6.4	20.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.0	9.7	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				68.4								
HCM 6th LOS				E								

HCM 6th TWSC  
10: Cordon Rd & Swegle Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - No Build - Yes Interchange

Intersection												
Int Delay, s/veh	242.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	40	20	110	10	5	15	115	1115	25	15	1175	130
Future Vol, veh/h	40	20	110	10	5	15	115	1115	25	15	1175	130
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	210	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	0	1	0	0	0	0	2	0	0	2	0
Mvmt Flow	42	21	116	11	5	16	121	1174	26	16	1237	137

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2778	2783	1306	2838	2838	1190	1374	0	0	1203	0	0
Stage 1	1338	1338	-	1432	1432	-	-	-	-	-	-	-
Stage 2	1440	1445	-	1406	1406	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.21	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.309	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 12	~ 19	196	11	18	231	506	-	-	587	-	-
Stage 1	188	224	-	168	202	-	-	-	-	-	-	-
Stage 2	164	199	-	174	208	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 6	~ 14	196	-	13	230	506	-	-	585	-	-
Mov Cap-2 Maneuver	~ 6	~ 14	-	-	13	-	-	-	-	-	-	-
Stage 1	143	218	-	128	153	-	-	-	-	-	-	-
Stage 2	112	151	-	63	202	-	-	-	-	-	-	-























Approach	EB	WB	NB	SB
HCM Control Delay, \$ 3953.6			1.3	0.1
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	506	-	-	20	-	585	-	-
HCM Lane V/C Ratio	0.239	-	-	8.947	-	0.027	-	-
HCM Control Delay (s)	14.3	-	-	\$ 3953.6	-	11.3	-	-
HCM Lane LOS	B	-	-	F	-	B	-	-
HCM 95th %tile Q(veh)	0.9	-	-	22.8	-	0.1	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th Signalized Intersection Summary  
 11: Cordon Rd & Center St

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - Yes Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	90	205	40	60	45	135	915	30	55	1005	190
Future Volume (veh/h)	275	90	205	40	60	45	135	915	30	55	1005	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1870	1900	1856	1856	1841	1722	1870	1826
Adj Flow Rate, veh/h	289	95	32	42	63	22	142	963	31	58	1058	164
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, %	0	3	3	0	2	0	3	3	4	12	2	5
Cap, veh/h	205	186	158	183	86	30	258	1235	40	476	1282	1060
Arrive On Green	0.07	0.10	0.10	0.03	0.07	0.07	0.08	1.00	1.00	0.04	0.69	0.69
Sat Flow, veh/h	1810	1856	1572	1810	1325	463	1767	1788	58	1640	1870	1546
Grp Volume(v), veh/h	289	95	32	42	0	85	142	0	994	58	1058	164
Grp Sat Flow(s),veh/h/ln	1810	1856	1572	1810	0	1787	1767	0	1845	1640	1870	1546
Q Serve(g_s), s	8.0	5.8	2.2	2.6	0.0	5.6	3.0	0.0	0.0	1.2	49.2	4.5
Cycle Q Clear(g_c), s	8.0	5.8	2.2	2.6	0.0	5.6	3.0	0.0	0.0	1.2	49.2	4.5
Prop In Lane	1.00		1.00	1.00		0.26	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	205	186	158	183	0	116	258	0	1275	476	1282	1060
V/C Ratio(X)	1.41	0.51	0.20	0.23	0.00	0.73	0.55	0.00	0.78	0.12	0.83	0.15
Avail Cap(c_a), veh/h	205	387	328	202	0	328	258	0	1275	486	1282	1060
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.58	0.00	0.58	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.7	51.2	49.6	50.2	0.0	55.1	18.5	0.0	0.0	4.8	13.7	6.6
Incr Delay (d2), s/veh	210.4	1.6	0.5	0.2	0.0	6.4	0.8	0.0	2.8	0.0	6.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.1	2.7	0.9	1.2	0.0	2.7	2.0	0.0	1.0	0.3	18.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	262.2	52.8	50.0	50.4	0.0	61.5	19.3	0.0	2.8	4.9	19.8	7.0
LnGrp LOS	F	D	D	D	A	E	B	A	A	A	B	A
Approach Vol, veh/h		416			127			1136			1280	
Approach Delay, s/veh		198.1			57.8			4.9			17.5	
Approach LOS		F			E			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	87.2	12.0	11.8	8.3	87.9	7.8	16.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	68.0	8.0	22.0	5.0	68.0	5.0	25.0				
Max Q Clear Time (g_c+I1), s	5.0	51.2	10.0	7.6	3.2	2.0	4.6	7.8				
Green Ext Time (p_c), s	0.0	10.1	0.0	0.2	0.0	16.1	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				39.8								
HCM 6th LOS				D								

HCM 6th Signalized Intersection Summary  
 12: Cordon Rd & Auburn Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↕	↗		↕	↗	
Traffic Volume (veh/h)	5	5	25	5	5	15	105	1050	45	15	1160	75
Future Volume (veh/h)	5	5	25	5	5	15	105	1050	45	15	1160	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1856	1900	1900	1900	1870	1856	1900	1900	1841	1900
Adj Flow Rate, veh/h	5	5	0	5	5	0	111	1105	46	16	1221	78
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, %	0	0	3	0	0	0	2	3	0	0	4	0
Cap, veh/h	68	49	66	68	49	0	474	1465	61	361	1376	88
Arrive On Green	0.04	0.04	0.00	0.04	0.04	0.00	0.04	0.83	0.83	0.03	1.00	1.00
Sat Flow, veh/h	548	1174	1572	548	1174	0	1781	1769	74	1810	1709	109
Grp Volume(v), veh/h	10	0	0	10	0	0	111	0	1151	16	0	1299
Grp Sat Flow(s),veh/h/ln	1722	0	1572	1722	0	0	1781	0	1842	1810	0	1818
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	34.2	0.2	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	0.0	0.6	0.0	0.0	1.2	0.0	34.2	0.2	0.0	0.0
Prop In Lane	0.50		1.00	0.50		0.00	1.00		0.04	1.00		0.06
Lane Grp Cap(c), veh/h	117	0	66	117	0	0	474	0	1526	361	0	1464
V/C Ratio(X)	0.09	0.00	0.00	0.09	0.00	0.00	0.23	0.00	0.75	0.04	0.00	0.89
Avail Cap(c_a), veh/h	295	0	237	295	0	0	489	0	1526	406	0	1464
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.38	0.00	0.38
Uniform Delay (d), s/veh	55.4	0.0	0.0	55.4	0.0	0.0	1.5	0.0	4.7	6.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.3	0.0	0.0	0.3	0.0	3.5	0.0	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.3	0.0	0.0	0.2	0.0	8.1	0.1	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.7	0.0	0.0	55.7	0.0	0.0	1.7	0.0	8.2	6.1	0.0	3.4
LnGrp LOS	E	A	A	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		10			10			1262			1315	
Approach Delay, s/veh		55.7			55.7			7.6			3.5	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6			9.5	9.4	101.1		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	83.3			18.1	5.9	82.5		18.1				
Max Q Clear Time (g_c+1/2), s	36.2			2.6	3.2	2.0		2.6				
Green Ext Time (p_c), s	0.0	13.2		0.0	0.1	20.8		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				5.9								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary  
 13: Cordon Rd & State St

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (veh/h)	210	335	105	170	300	205	90	770	155	155	810	235
Future Volume (veh/h)	210	335	105	170	300	205	90	770	155	155	810	235
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1885	1841	1900	1885	1885	1870	1870	1885
Adj Flow Rate, veh/h	221	353	103	179	316	196	95	811	157	163	853	185
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, %	0	3	3	0	1	4	0	1	1	2	2	1
Cap, veh/h	273	327	96	181	285	177	171	732	142	165	931	795
Arrive On Green	0.05	0.24	0.24	0.07	0.26	0.26	0.04	0.48	0.48	0.06	0.50	0.50
Sat Flow, veh/h	3510	1373	400	1810	1089	675	1810	1535	297	1781	1870	1598
Grp Volume(v), veh/h	221	0	456	179	0	512	95	0	968	163	853	185
Grp Sat Flow(s),veh/h/ln	1755	0	1773	1810	0	1764	1810	0	1832	1781	1870	1598
Q Serve(g_s), s	6.0	0.0	31.0	9.0	0.0	34.0	3.5	0.0	62.0	7.8	54.7	8.6
Cycle Q Clear(g_c), s	6.0	0.0	31.0	9.0	0.0	34.0	3.5	0.0	62.0	7.8	54.7	8.6
Prop In Lane	1.00		0.23	1.00		0.38	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	273	0	423	181	0	461	171	0	874	165	931	795
V/C Ratio(X)	0.81	0.00	1.08	0.99	0.00	1.11	0.55	0.00	1.11	0.99	0.92	0.23
Avail Cap(c_a), veh/h	273	0	423	181	0	461	181	0	874	165	931	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	0.0	49.5	39.5	0.0	48.0	28.5	0.0	34.0	39.4	30.1	18.5
Incr Delay (d2), s/veh	15.5	0.0	66.4	64.1	0.0	75.4	1.6	0.0	64.6	66.2	13.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	0.0	21.3	7.3	0.0	23.8	1.5	0.0	41.2	8.3	26.3	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.6	0.0	115.9	103.5	0.0	123.4	30.1	0.0	98.6	105.6	43.4	18.6
LnGrp LOS	E	A	F	F	A	F	C	A	F	F	D	B
Approach Vol, veh/h		677			691			1063			1201	
Approach Delay, s/veh		96.2			118.2			92.4			48.0	
Approach LOS		F			F			F			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	37.0	9.3	70.7	10.0	40.0	12.0	68.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	30.0	31.0	6.0	64.0	6.0	34.0	8.0	62.0				
Max Q Clear Time (g_c+I1), s	30.0	33.0	5.5	56.7	8.0	36.0	9.8	64.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				83.4								
HCM 6th LOS				F								

HCM 6th TWSC  
 14: Cordon Rd & Pennsylvania Ave

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - Yes Interchange

Intersection						
Int Delay, s/veh	8.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Traffic Vol, veh/h	45	20	45	1015	1000	100
Future Vol, veh/h	45	20	45	1015	1000	100
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	7	0	5	4	4
Mvmt Flow	47	21	47	1057	1042	104

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2246	1095	1147	0	-	0
Stage 1	1095	-	-	-	-	-
Stage 2	1151	-	-	-	-	-
Critical Hdwy	6.4	6.27	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.363	2.2	-	-	-
Pot Cap-1 Maneuver	47	254	616	-	-	-
Stage 1	323	-	-	-	-	-
Stage 2	304	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 43	254	615	-	-	-
Mov Cap-2 Maneuver	~ 43	-	-	-	-	-
Stage 1	298	-	-	-	-	-
Stage 2	304	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	289.2	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	615	-	58	-	-
HCM Lane V/C Ratio	0.076	-	1.167	-	-
HCM Control Delay (s)	11.3	-	289.2	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.2	-	5.7	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th TWSC  
15: Cordon Rd & Caplinger Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - No Build - Yes Interchange

Intersection												
Int Delay, s/veh	86.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	120	5	5	5	0	10	20	925	10	10	865	200
Future Vol, veh/h	120	5	5	5	0	10	20	925	10	10	865	200
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	5	20	10	4	2
Mvmt Flow	126	5	5	5	0	11	21	974	11	11	911	211

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2067	2066	1017	2066	2166	981	1122	0	0	985	0	0
Stage 1	1039	1039	-	1022	1022	-	-	-	-	-	-	-
Stage 2	1028	1027	-	1044	1144	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.2	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	~ 40	55	291	41	48	305	630	-	-	670	-	-
Stage 1	281	310	-	287	316	-	-	-	-	-	-	-
Stage 2	285	314	-	279	277	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 35	49	291	34	42	305	630	-	-	670	-	-
Mov Cap-2 Maneuver	~ 35	49	-	34	42	-	-	-	-	-	-	-
Stage 1	260	296	-	266	293	-	-	-	-	-	-	-
Stage 2	255	291	-	257	264	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB		
HCM Control Delay, \$	1437.8		58.3		0.2		0.1		
HCM LOS	F		F						

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	630	-	-	37	83	670	-	-
HCM Lane V/C Ratio	0.033	-	-	3.698	0.19	0.016	-	-
HCM Control Delay (s)	10.9	0		\$ 1437.8	58.3	10.5	0	-
HCM Lane LOS	B	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	15.7	0.7	0	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th Signalized Intersection Summary  
 16: Cordon Rd & Macleay Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	165	150	35	160	45	25	110	735	50	5	830	25
Future Volume (veh/h)	165	150	35	160	45	25	110	735	50	5	830	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1752	1796	1900	1796	1826	1826	1870	1856	1841	1856
Adj Flow Rate, veh/h	170	155	32	165	46	0	113	758	50	5	856	25
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, %	3	0	10	7	0	7	5	5	2	3	4	3
Cap, veh/h	239	173	35	264	65		244	997	66	455	965	28
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.00	0.10	1.00	1.00	0.01	0.54	0.54
Sat Flow, veh/h	772	743	149	827	281	0	1739	1694	112	1767	1778	52
Grp Volume(v), veh/h	357	0	0	211	0	0	113	0	808	5	0	881
Grp Sat Flow(s),veh/h/ln	1665	0	0	1107	0	0	1739	0	1806	1767	0	1830
Q Serve(g_s), s	2.1	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.1	0.0	38.2
Cycle Q Clear(g_c), s	18.7	0.0	0.0	16.7	0.0	0.0	2.5	0.0	0.0	0.1	0.0	38.2
Prop In Lane	0.48		0.09	0.78		0.00	1.00		0.06	1.00		0.03
Lane Grp Cap(c), veh/h	447	0	0	329	0		244	0	1062	455	0	993
V/C Ratio(X)	0.80	0.00	0.00	0.64	0.00		0.46	0.00	0.76	0.01	0.00	0.89
Avail Cap(c_a), veh/h	518	0	0	388	0		255	0	1062	543	0	993
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.74	0.00	0.74	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	0.0	32.7	0.0	0.0	16.9	0.0	0.0	9.2	0.0	18.2
Incr Delay (d2), s/veh	6.4	0.0	0.0	1.5	0.0	0.0	1.0	0.0	3.8	0.0	0.0	11.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	0.0	0.0	4.2	0.0	0.0	1.0	0.0	1.1	0.0	0.0	16.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.0	0.0	0.0	34.2	0.0	0.0	17.9	0.0	3.8	9.2	0.0	29.8
LnGrp LOS	D	A	A	C	A		B	A	A	A	A	C
Approach Vol, veh/h		357			211			921				886
Approach Delay, s/veh		40.0			34.2			5.6				29.6
Approach LOS		D			C			A				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	54.8		26.0	5.1	59.0		26.0				
Change Period (Y+Rc), s	4.5	6.0		5.0	4.5	6.0		5.0				
Max Green Setting (Gmax), s	5.3	44.2		25.0	5.1	44.4		25.0				
Max Q Clear Time (g_c+I1), s	4.5	40.2		18.7	2.1	2.0		20.7				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	1.0		0.2				

Intersection Summary

HCM 6th Ctrl Delay	22.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



HCM 6th Signalized Intersection Summary  
 17: Cordon Rd & Gaffin Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	45	185	175	70	250	195	545	45	150	725	150
Future Volume (veh/h)	100	45	185	175	70	250	195	545	45	150	725	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1900	1841	1900	1870	1781	1826	1856	1900
Adj Flow Rate, veh/h	105	47	20	184	74	89	205	574	44	158	763	98
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, %	0	0	0	2	0	4	0	2	8	5	3	0
Cap, veh/h	175	151	64	253	94	113	564	1010	77	481	1097	931
Arrive On Green	0.03	0.12	0.12	0.03	0.12	0.12	0.06	0.59	0.59	0.12	1.00	1.00
Sat Flow, veh/h	1810	1263	537	1781	783	942	1810	1715	131	1739	1856	1574
Grp Volume(v), veh/h	105	0	67	184	0	163	205	0	618	158	763	98
Grp Sat Flow(s),veh/h/ln	1810	0	1801	1781	0	1726	1810	0	1846	1739	1856	1574
Q Serve(g_s), s	3.0	0.0	3.1	3.0	0.0	8.3	4.1	0.0	18.6	3.3	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	3.1	3.0	0.0	8.3	4.1	0.0	18.6	3.3	0.0	0.0
Prop In Lane	1.00		0.30	1.00		0.55	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	175	0	216	253	0	207	564	0	1087	481	1097	931
V/C Ratio(X)	0.60	0.00	0.31	0.73	0.00	0.79	0.36	0.00	0.57	0.33	0.70	0.11
Avail Cap(c_a), veh/h	175	0	500	253	0	479	564	0	1087	516	1097	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.17	0.17	0.17
Uniform Delay (d), s/veh	37.5	0.0	36.2	38.6	0.0	38.5	6.4	0.0	11.4	8.0	0.0	0.0
Incr Delay (d2), s/veh	4.0	0.0	0.3	8.7	0.0	2.5	0.1	0.0	2.2	0.0	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.4	3.0	0.0	3.5	1.1	0.0	6.5	0.8	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.5	0.0	36.5	47.4	0.0	41.0	6.6	0.0	13.6	8.1	0.6	0.0
LnGrp LOS	D	A	D	D	A	D	A	A	B	A	A	A
Approach Vol, veh/h		172			347			823			1019	
Approach Delay, s/veh		39.6			44.4			11.8			1.7	
Approach LOS		D			D			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	59.2	7.0	14.8	9.2	59.0	7.0	14.8				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	39.0	3.0	25.0	7.0	37.0	3.0	25.0				
Max Q Clear Time (g_c+1/10), s	10.5	2.0	5.0	10.3	5.3	20.6	5.0	5.1				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.1	0.0	0.5	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				14.3								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
 18: Kuebler Blvd/Cordon Rd & Lancaster Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	330	195	210	370	260	150	695	160	190	740	80
Future Volume (veh/h)	60	330	195	210	370	260	150	695	160	190	740	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1811	1856	1796	1811	1841	1870	1885	1885	1900	1900	1870
Adj Flow Rate, veh/h	63	347	146	221	389	196	158	732	0	200	779	31
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, %	0	6	3	7	6	4	2	1	1	0	0	2
Cap, veh/h	79	561	343	332	755	527	259	1007		250	1243	552
Arrive On Green	0.04	0.16	0.14	0.10	0.22	0.20	0.08	0.28	0.00	0.14	0.34	0.30
Sat Flow, veh/h	1810	3441	1572	3319	3441	1560	3456	3582	1598	1810	3610	1585
Grp Volume(v), veh/h	63	347	146	221	389	196	158	732	0	200	779	31
Grp Sat Flow(s),veh/h/ln	1810	1721	1572	1659	1721	1560	1728	1791	1598	1810	1805	1585
Q Serve(g_s), s	1.7	4.7	4.0	3.2	5.0	4.8	2.2	9.3	0.0	5.4	9.1	0.7
Cycle Q Clear(g_c), s	1.7	4.7	4.0	3.2	5.0	4.8	2.2	9.3	0.0	5.4	9.1	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	79	561	343	332	755	527	259	1007		250	1243	552
V/C Ratio(X)	0.80	0.62	0.43	0.67	0.51	0.37	0.61	0.73		0.80	0.63	0.06
Avail Cap(c_a), veh/h	287	2048	1023	790	2322	1237	549	2203		395	2436	1075
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	19.6	17.0	21.9	17.3	12.6	22.6	16.4	0.0	21.0	13.8	10.9
Incr Delay (d2), s/veh	6.8	0.4	0.3	0.9	0.2	0.2	0.9	0.4	0.0	2.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.6	1.3	1.1	1.6	1.3	0.8	2.8	0.0	2.0	2.6	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.7	20.0	17.3	22.7	17.5	12.8	23.5	16.7	0.0	23.6	14.0	10.9
LnGrp LOS	C	C	B	C	B	B	C	B		C	B	B
Approach Vol, veh/h		556			806			890			1010	
Approach Delay, s/veh		20.5			17.8			17.9			15.8	
Approach LOS		C			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.8	21.4	6.2	15.1	11.0	18.2	9.0	12.2				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	11.0	29.0	12.0	29.0				
Max Q Clear Time (g_c+1/2), s	11.2	11.1	3.7	7.0	7.4	11.3	5.2	6.7				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.5	0.0	0.9	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	17.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Kuebler Blvd & Mill Creek Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - Yes Interchange



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	140	305	700	145	320	825
Future Volume (veh/h)	140	305	700	145	320	825
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1885	1900	1885	1900	1900	1885
Adj Flow Rate, veh/h	143	264	714	87	327	842
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	1	0	0	1
Cap, veh/h	310	454	947	808	655	1270
Arrive On Green	0.17	0.17	1.00	1.00	0.11	0.67
Sat Flow, veh/h	1795	1610	1885	1609	1810	1885
Grp Volume(v), veh/h	143	264	714	87	327	842
Grp Sat Flow(s),veh/h/ln	1795	1610	1885	1609	1810	1885
Q Serve(g_s), s	4.7	9.1	0.0	0.0	5.1	17.1
Cycle Q Clear(g_c), s	4.7	9.1	0.0	0.0	5.1	17.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	310	454	947	808	655	1270
V/C Ratio(X)	0.46	0.58	0.75	0.11	0.50	0.66
Avail Cap(c_a), veh/h	580	697	947	808	680	1270
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.48	0.48	1.00	1.00
Uniform Delay (d), s/veh	24.2	20.0	0.0	0.0	5.1	6.3
Incr Delay (d2), s/veh	0.4	0.4	2.7	0.1	0.2	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9	8.2	0.7	0.0	1.0	3.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.6	20.5	2.7	0.1	5.3	9.0
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	407		801			1169
Approach Delay, s/veh	21.9		2.4			8.0
Approach LOS	C		A			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.8		15.2	11.1	38.7
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		34.0		21.0	8.0	22.0
Max Q Clear Time (g_c+I1), s		19.1		11.1	7.1	2.0
Green Ext Time (p_c), s		0.8		0.1	0.0	0.6
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			8.5			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
 20: Turner Rd & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	680	160	40	785	80	200	190	60	80	195	265
Future Volume (veh/h)	200	680	160	40	785	80	200	190	60	80	195	265
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1885	1870	1870	1900	1870	1900	1870	1900	1900	1900	1870	1841
Adj Flow Rate, veh/h	208	708	161	42	818	80	208	198	54	83	203	182
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	2	2	0	2	0	2	0	0	0	2	4
Cap, veh/h	226	842	191	407	838	82	283	339	92	256	403	504
Arrive On Green	0.18	1.00	1.00	0.02	0.50	0.48	0.07	0.24	0.22	0.05	0.22	0.22
Sat Flow, veh/h	1795	1474	335	1810	1677	164	1781	1437	392	1810	1870	1560
Grp Volume(v), veh/h	208	0	869	42	0	898	208	0	252	83	203	182
Grp Sat Flow(s),veh/h/ln	1795	0	1810	1810	0	1841	1781	0	1829	1810	1870	1560
Q Serve(g_s), s	10.3	0.0	0.0	1.5	0.0	61.9	9.0	0.0	15.9	4.7	12.4	11.6
Cycle Q Clear(g_c), s	10.3	0.0	0.0	1.5	0.0	61.9	9.0	0.0	15.9	4.7	12.4	11.6
Prop In Lane	1.00		0.19	1.00		0.09	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	226	0	1034	407	0	920	283	0	431	256	403	504
V/C Ratio(X)	0.92	0.00	0.84	0.10	0.00	0.98	0.73	0.00	0.58	0.32	0.50	0.36
Avail Cap(c_a), veh/h	226	0	1034	480	0	920	283	0	431	279	403	504
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.59	0.00	0.59	0.78	0.00	0.78	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	0.0	0.0	16.3	0.0	31.8	43.3	0.0	44.2	39.2	44.9	33.7
Incr Delay (d2), s/veh	26.4	0.0	5.1	0.0	0.0	21.0	8.4	0.0	5.7	0.3	4.4	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	1.5	0.6	0.0	30.0	2.6	0.0	7.7	2.1	6.1	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.7	0.0	5.1	16.3	0.0	52.8	51.7	0.0	49.9	39.4	49.3	35.7
LnGrp LOS	E	A	A	B	A	D	D	A	D	D	D	D
Approach Vol, veh/h		1077			940			460			468	
Approach Delay, s/veh		16.0			51.2			50.7			42.3	
Approach LOS		B			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	78.2	10.4	34.6	16.0	69.0	13.0	32.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	6.0	67.0	8.0	27.0	12.0	63.0	9.0	26.0				
Max Q Clear Time (g_c+1/3), s	13.5	2.0	6.7	17.9	12.3	63.9	11.0	14.4				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.2	0.0	0.0	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay	36.8
HCM 6th LOS	D

HCM 6th Signalized Intersection Summary  
 21: 36th Ave & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - No Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	590	165	240	890	80	285	115	315	160	140	110
Future Volume (veh/h)	40	590	165	240	890	80	285	115	315	160	140	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1856	1826	1767	1885	1900	1885	1900	1900	1900	1826	1885
Adj Flow Rate, veh/h	42	621	90	253	937	82	300	121	252	168	147	18
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, %	1	3	5	9	1	0	1	0	0	0	5	1
Cap, veh/h	113	945	788	378	977	85	353	118	246	167	365	319
Arrive On Green	0.02	0.51	0.51	0.06	0.38	0.38	0.08	0.22	0.22	0.06	0.20	0.20
Sat Flow, veh/h	1795	1856	1547	1682	1709	150	1795	549	1143	1810	1826	1594
Grp Volume(v), veh/h	42	621	90	253	0	1019	300	0	373	168	147	18
Grp Sat Flow(s),veh/h/ln	1795	1856	1547	1682	0	1858	1795	0	1691	1810	1826	1594
Q Serve(g_s), s	1.5	32.1	3.9	8.8	0.0	69.5	10.0	0.0	28.0	8.0	9.1	1.2
Cycle Q Clear(g_c), s	1.5	32.1	3.9	8.8	0.0	69.5	10.0	0.0	28.0	8.0	9.1	1.2
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.68	1.00		1.00
Lane Grp Cap(c), veh/h	113	945	788	378	0	1062	353	0	364	167	365	319
V/C Ratio(X)	0.37	0.66	0.11	0.67	0.00	0.96	0.85	0.00	1.02	1.01	0.40	0.06
Avail Cap(c_a), veh/h	186	945	788	445	0	1062	353	0	364	167	365	319
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.45	0.00	0.45	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	23.5	16.6	19.4	0.0	38.6	46.2	0.0	51.0	45.0	45.2	42.1
Incr Delay (d2), s/veh	0.7	3.6	0.3	0.9	0.0	11.2	16.7	0.0	53.4	71.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	14.2	1.4	3.2	0.0	34.9	6.1	0.0	16.9	4.8	4.1	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.1	27.1	16.9	20.3	0.0	49.8	62.9	0.0	104.4	116.6	45.5	42.1
LnGrp LOS	C	C	B	C	A	D	E	A	F	F	D	D
Approach Vol, veh/h		753			1272			673			333	
Approach Delay, s/veh		26.1			44.0			85.9			81.2	
Approach LOS		C			D			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.8	71.2	14.0	30.0	6.7	79.3	12.0	32.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	10.0	61.0	10.0	26.0	8.0	69.0	8.0	28.0				
Max Q Clear Time (g_c+10), s	10.0	34.1	12.0	11.1	3.5	71.5	10.0	30.0				
Green Ext Time (p_c), s	0.0	0.7	0.0	0.1	0.0	0.0	0.0	0.0				

Intersection Summary























HCM 6th Ctrl Delay	52.9
HCM 6th LOS	D

<b>ID</b>	<b>Software/Method</b>	<b>Intersection</b>	<b>Control Type</b>	<b>LOS</b>	<b>Delay</b>	<b>V/C Ratio</b>
1	Synchro HCM 6th Signal	OR 99E & Hazelgreen Rd	Signal	D	51.6	0.94
8	Synchro HCM 6th Signal	Cordon Rd & Silverton Rd	Signal	D	55.0	0.95
9	Synchro HCM 6th Signal	Cordon Rd & Sunnyview Rd	Signal	E	68.4	1.11
11	Synchro HCM 6th Signal	Cordon Rd & Center St	Signal	D	39.8	0.99
12	Synchro HCM 6th Signal	Cordon Rd & Auburn Rd	Signal	A	5.9	0.92
13	Synchro HCM 6th Signal	Cordon Rd & State St	Signal	F	83.4	1.15
16	Synchro HCM 6th Signal	Cordon Rd & Macleay Rd	Signal	C	22.3	0.99
17	Synchro HCM 6th Signal	Cordon Rd & Gaffin Rd	Signal	B	14.3	0.85
18	Synchro HCM 6th Signal	Kuebler Blvd/Cordon Rd & Lancaster Dr	Signal	B	17.7	0.60
19	Synchro HCM 6th Signal	Kuebler Blvd & Mill Creek Dr	Signal	A	8.5	0.78
20	Synchro HCM 6th Signal	Turner Rd & Kuebler Blvd	Signal	D	36.8	0.82
21	Synchro HCM 6th Signal	36th Ave & Kuebler Blvd	Signal	D	52.9	1.02

**FUTURE 2043 – YES BUILD – NO INTERCHANGE – AM PEAK**  
**HCM Results**

HCM 6th Signalized Intersection Summary  
 1: OR 99E & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - No Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	220	255	115	390	65	300	550	60	30	495	65
Future Volume (veh/h)	145	220	255	115	390	65	300	550	60	30	495	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1856	1900	1900	1841	1856	1900	1885	1900	1841	1885	1900
Adj Flow Rate, veh/h	158	239	73	125	424	63	326	598	55	33	538	12
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, %	7	3	0	0	4	3	0	1	0	4	1	0
Cap, veh/h	193	592	514	158	460	68	207	957	88	40	706	317
Arrive On Green	0.11	0.32	0.32	0.09	0.29	0.29	0.11	0.29	0.29	0.02	0.20	0.20
Sat Flow, veh/h	1711	1856	1610	1810	1566	233	1810	3317	305	1753	3582	1610
Grp Volume(v), veh/h	158	239	73	125	0	487	326	322	331	33	538	12
Grp Sat Flow(s),veh/h/ln	1711	1856	1610	1810	0	1799	1810	1791	1830	1753	1791	1610
Q Serve(g_s), s	6.7	7.5	2.4	5.0	0.0	19.5	8.5	11.6	11.7	1.4	10.6	0.4
Cycle Q Clear(g_c), s	6.7	7.5	2.4	5.0	0.0	19.5	8.5	11.6	11.7	1.4	10.6	0.4
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	193	592	514	158	0	528	207	517	528	40	706	317
V/C Ratio(X)	0.82	0.40	0.14	0.79	0.00	0.92	1.58	0.62	0.63	0.83	0.76	0.04
Avail Cap(c_a), veh/h	219	723	628	182	0	653	207	602	615	177	1156	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.2	19.8	18.1	33.3	0.0	25.5	32.9	23.0	23.0	36.2	28.2	24.2
Incr Delay (d2), s/veh	18.3	0.3	0.1	15.4	0.0	15.1	281.4	0.8	0.8	26.7	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	2.9	0.8	2.7	0.0	9.4	19.6	4.5	4.6	0.9	4.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.5	20.1	18.2	48.7	0.0	40.6	314.3	23.8	23.8	62.9	29.5	24.2
LnGrp LOS	D	C	B	D	A	D	F	C	C	E	C	C
Approach Vol, veh/h		470			612			979			583	
Approach Delay, s/veh		30.0			42.2			120.5			31.3	
Approach LOS		C			D			F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	20.7	12.9	27.8	6.2	27.5	11.0	29.7				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	8.5	24.0	9.5	27.0	7.5	25.0	7.5	29.0				
Max Q Clear Time (g_c+I1), s	10.5	12.6	8.7	21.5	3.4	13.7	7.0	9.5				
Green Ext Time (p_c), s	0.0	2.1	0.0	0.3	0.0	1.8	0.0	1.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			66.6									
HCM 6th LOS			E									



HCM 6th TWSC  
2: Lake Labish Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - Yes Build - No Interchange

Intersection												
Int Delay, s/veh	5.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
Traffic Vol, veh/h	10	295	25	5	405	5	120	5	5	30	10	30
Future Vol, veh/h	10	295	25	5	405	5	120	5	5	30	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	150	-	-	100	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	0	0	3	0	0	0	0	0	0	0
Mvmt Flow	11	335	28	6	460	6	136	6	6	34	11	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	466	0	0	363	0	0	855	835	335	852	860	463
Stage 1	-	-	-	-	-	-	357	357	-	475	475	-
Stage 2	-	-	-	-	-	-	498	478	-	377	385	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1106	-	-	1207	-	-	281	306	712	282	296	603
Stage 1	-	-	-	-	-	-	665	632	-	574	561	-
Stage 2	-	-	-	-	-	-	558	559	-	649	614	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1106	-	-	1207	-	-	254	301	712	273	292	603
Mov Cap-2 Maneuver	-	-	-	-	-	-	254	301	-	273	292	-
Stage 1	-	-	-	-	-	-	658	626	-	568	558	-
Stage 2	-	-	-	-	-	-	513	556	-	632	608	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			32.9			16.3		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	254	423	1106	-	-	1207	-	-	273	476
HCM Lane V/C Ratio	0.537	0.027	0.01	-	-	0.005	-	-	0.125	0.095
HCM Control Delay (s)	34.5	13.7	8.3	-	-	8	-	-	20.1	13.4
HCM Lane LOS	D	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	2.9	0.1	0	-	-	0	-	-	0.4	0.3

HCM 6th Signalized Intersection Summary  
3: Cordon Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	135	100	160	300	25	60	170	75	15	60	10
Future Volume (veh/h)	15	135	100	160	300	25	60	170	75	15	60	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1826	1826	1900	1781	1900	1900	1900	1900	1900	1900	1752
Adj Flow Rate, veh/h	16	147	71	174	326	24	65	185	10	16	65	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, %	0	5	5	0	8	0	0	0	0	0	0	10
Cap, veh/h	384	235	113	531	493	36	479	350	296	367	256	4
Arrive On Green	0.02	0.20	0.20	0.12	0.30	0.30	0.07	0.18	0.18	0.02	0.14	0.14
Sat Flow, veh/h	1810	1163	562	1810	1639	121	1810	1900	1610	1810	1866	29
Grp Volume(v), veh/h	16	0	218	174	0	350	65	185	10	16	0	66
Grp Sat Flow(s),veh/h/ln	1810	0	1725	1810	0	1760	1810	1900	1610	1810	0	1895
Q Serve(g_s), s	0.2	0.0	3.9	2.3	0.0	5.9	1.0	3.0	0.2	0.3	0.0	1.1
Cycle Q Clear(g_c), s	0.2	0.0	3.9	2.3	0.0	5.9	1.0	3.0	0.2	0.3	0.0	1.1
Prop In Lane	1.00		0.33	1.00		0.07	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	384	0	348	531	0	529	479	350	296	367	0	260
V/C Ratio(X)	0.04	0.00	0.63	0.33	0.00	0.66	0.14	0.53	0.03	0.04	0.00	0.25
Avail Cap(c_a), veh/h	668	0	1124	718	0	1225	652	1070	907	624	0	1067
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.4	0.0	12.3	8.1	0.0	10.3	11.1	12.4	11.3	12.1	0.0	13.0
Incr Delay (d2), s/veh	0.0	0.0	1.8	0.4	0.0	1.4	0.1	1.2	0.0	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.1	0.5	0.0	1.4	0.2	0.9	0.0	0.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.4	0.0	14.1	8.5	0.0	11.7	11.2	13.7	11.3	12.2	0.0	13.5
LnGrp LOS	B	A	B	A	A	B	B	B	B	B	A	B
Approach Vol, veh/h		234			524			260				82
Approach Delay, s/veh		13.9			10.6			13.0				13.3
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.7	10.2	8.0	10.8	6.3	8.6	4.7	14.1				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	5.5	19.0	7.5	22.0	5.5	19.0	6.0	23.5				
Max Q Clear Time (g_c+I1), s	2.3	5.0	4.3	5.9	3.0	3.1	2.2	7.9				
Green Ext Time (p_c), s	0.0	0.7	0.1	0.9	0.0	0.2	0.0	1.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				12.1								
HCM 6th LOS				B								

HCM 6th TWSC  
4: Cordon Rd & Kale St

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - Yes Build - No Interchange

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	160	70	345	330	40
Future Vol, veh/h	40	160	70	345	330	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	43	172	75	371	355	43

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	898	377	398	0	-	0
Stage 1	377	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	312	674	1172	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	600	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	292	674	1172	-	-	-
Mov Cap-2 Maneuver	418	-	-	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	600	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	1.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1172	-	418	674	-	-
HCM Lane V/C Ratio	0.064	-	0.103	0.255	-	-
HCM Control Delay (s)	8.3	-	14.6	12.2	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.3	1	-	-

Intersection						
Int Delay, s/veh	6.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	275	235	400	465	35
Future Vol, veh/h	10	275	235	400	465	35
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	11	313	267	455	528	40

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1537	548	568	0	-	0
Stage 1	548	-	-	-	-	-
Stage 2	989	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	129	540	1014	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	363	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	95	540	1014	-	-	-
Mov Cap-2 Maneuver	223	-	-	-	-	-
Stage 1	430	-	-	-	-	-
Stage 2	363	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.2	3.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1014	-	514	-	-
HCM Lane V/C Ratio	0.263	-	0.63	-	-
HCM Control Delay (s)	9.8	-	23.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	1.1	-	4.3	-	-

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	100	65	45	535	690	45
Future Vol, veh/h	100	65	45	535	690	45
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	3	4	4	4	3	6
Mvmt Flow	106	69	48	569	734	48

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1423	758	782	0	-	0
Stage 1	758	-	-	-	-	-
Stage 2	665	-	-	-	-	-
Critical Hdwy	6.43	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	149	404	827	-	-	-
Stage 1	461	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	140	404	827	-	-	-
Mov Cap-2 Maneuver	277	-	-	-	-	-
Stage 1	434	-	-	-	-	-
Stage 2	509	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.7	0.7	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	827	-	316	-	-
HCM Lane V/C Ratio	0.058	-	0.555	-	-
HCM Control Delay (s)	9.6	-	29.7	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	3.2	-	-

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	60	45	545	670	75
Future Vol, veh/h	35	60	45	545	670	75
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	1	5	7	4	3
Mvmt Flow	38	66	49	599	736	82






























Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1474	777	818	0	-	0
Stage 1	777	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Critical Hdwy	6.44	6.21	4.15	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.309	2.245	-	-	-
Pot Cap-1 Maneuver	138	398	797	-	-	-
Stage 1	450	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	130	398	797	-	-	-
Mov Cap-2 Maneuver	266	-	-	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	490	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.5	0.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	797	-	336	-	-
HCM Lane V/C Ratio	0.062	-	0.311	-	-
HCM Control Delay (s)	9.8	-	20.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.3	-	-

HCM 6th Signalized Intersection Summary  
8: Cordon Rd & Silverton Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - Yes Build - No Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 			 			 	
Traffic Volume (veh/h)	105	205	245	325	400	10	240	475	220	15	565	145
Future Volume (veh/h)	105	205	245	325	400	10	240	475	220	15	565	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1781	1826	1841	1900	1781	1870	1781	1752	1826	1826
Adj Flow Rate, veh/h	114	223	49	353	435	9	261	516	80	16	614	47
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, %	9	9	8	5	4	0	8	2	8	10	5	5
Cap, veh/h	189	632	283	458	933	19	240	1229	522	20	751	425
Arrive On Green	0.06	0.19	0.19	0.14	0.27	0.27	0.14	0.35	0.35	0.01	0.22	0.22
Sat Flow, veh/h	3264	3357	1505	3374	3504	72	1697	3554	1510	1668	3469	1547
Grp Volume(v), veh/h	114	223	49	353	217	227	261	516	80	16	614	47
Grp Sat Flow(s),veh/h/ln	1632	1678	1505	1687	1749	1827	1697	1777	1510	1668	1735	1547
Q Serve(g_s), s	1.9	3.3	1.5	5.7	5.9	5.9	8.0	6.3	2.1	0.5	9.5	1.3
Cycle Q Clear(g_c), s	1.9	3.3	1.5	5.7	5.9	5.9	8.0	6.3	2.1	0.5	9.5	1.3
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	189	632	283	458	466	487	240	1229	522	20	751	425
V/C Ratio(X)	0.60	0.35	0.17	0.77	0.47	0.47	1.09	0.42	0.15	0.81	0.82	0.11
Avail Cap(c_a), veh/h	461	1898	851	477	989	1033	240	1821	773	236	1777	883
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	20.0	19.3	23.6	17.4	17.4	24.3	14.2	12.8	27.9	21.1	15.4
Incr Delay (d2), s/veh	1.1	0.1	0.1	6.5	0.3	0.3	83.7	0.1	0.0	24.7	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.1	0.5	2.4	2.0	2.1	8.2	1.9	0.5	0.3	3.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.2	20.1	19.4	30.1	17.7	17.7	108.0	14.2	12.8	52.6	22.0	15.4
LnGrp LOS	C	C	B	C	B	B	F	B	B	D	C	B
Approach Vol, veh/h		386			797			857			677	
Approach Delay, s/veh		22.1			23.2			42.7			22.2	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	15.7	12.0	17.2	7.3	20.1	4.7	24.6				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	8.0	32.0	8.0	29.0	8.0	32.0	8.0	29.0				
Max Q Clear Time (g_c+I1), s	7.7	5.3	10.0	11.5	3.9	7.9	2.5	8.3				
Green Ext Time (p_c), s	0.0	0.3	0.0	0.7	0.0	0.4	0.0	0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				28.9								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary  
 9: Cordon Rd & Sunnyview Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
Traffic Volume (veh/h)	95	45	130	70	80	40	190	810	50	25	975	140
Future Volume (veh/h)	95	45	130	70	80	40	190	810	50	25	975	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1841	1856	1900	1870	1856	1856	1856	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	101	48	8	74	85	14	202	862	49	27	1037	136
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	3	0	2	3	3	3	2	0	0	2	2
Cap, veh/h	256	166	28	285	138	23	375	2076	118	372	1770	232
Arrive On Green	0.07	0.11	0.11	0.05	0.09	0.09	0.02	0.20	0.20	0.02	0.56	0.56
Sat Flow, veh/h	1753	1549	258	1781	1548	255	1767	3418	194	1810	3150	413
Grp Volume(v), veh/h	101	0	56	74	0	99	202	448	463	27	585	588
Grp Sat Flow(s),veh/h/ln	1753	0	1807	1781	0	1803	1767	1777	1835	1810	1777	1785
Q Serve(g_s), s	4.1	0.0	2.3	3.0	0.0	4.2	3.5	17.6	17.6	0.5	17.2	17.2
Cycle Q Clear(g_c), s	4.1	0.0	2.3	3.0	0.0	4.2	3.5	17.6	17.6	0.5	17.2	17.2
Prop In Lane	1.00		0.14	1.00		0.14	1.00		0.11	1.00		0.23
Lane Grp Cap(c), veh/h	256	0	193	285	0	161	375	1079	1115	372	998	1003
V/C Ratio(X)	0.39	0.00	0.29	0.26	0.00	0.62	0.54	0.42	0.42	0.07	0.59	0.59
Avail Cap(c_a), veh/h	259	0	497	320	0	496	387	1079	1115	422	998	1003
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.90	0.90	0.90	0.61	0.61	0.61
Uniform Delay (d), s/veh	30.3	0.0	32.9	30.9	0.0	35.1	10.0	19.6	19.6	8.3	11.4	11.5
Incr Delay (d2), s/veh	1.0	0.0	0.6	0.5	0.0	2.8	1.3	1.1	1.0	0.0	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	1.0	1.2	0.0	1.8	1.0	8.4	8.6	0.1	5.4	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.2	0.0	33.5	31.4	0.0	38.0	11.2	20.6	20.6	8.3	13.0	13.0
LnGrp LOS	C	A	C	C	A	D	B	C	C	A	B	B
Approach Vol, veh/h		157			173			1113			1200	
Approach Delay, s/veh		32.1			35.1			18.9			12.9	
Approach LOS		C			D			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	50.0	9.5	11.1	5.8	53.6	8.0	12.6				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	29.4	5.6	22.0	4.0	31.4	5.6	22.0				
Max Q Clear Time (g_c+1/5), s	15.5	19.2	6.1	6.2	2.5	19.6	5.0	4.3				
Green Ext Time (p_c), s	0.0	6.1	0.0	0.2	0.0	5.2	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				18.0								
HCM 6th LOS				B								



HCM 6th Signalized Intersection Summary  
 10: Cordon Rd & Swegle Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Volume (veh/h)	50	10	120	35	5	5	110	1000	45	10	1095	80
Future Volume (veh/h)	50	10	120	35	5	5	110	1000	45	10	1095	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1900	1870	1826	1900	1900	1796	1856
Adj Flow Rate, veh/h	54	11	13	38	5	1	118	1075	45	11	1177	81
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	6	0	0	0	2	5	0	0	7	3
Cap, veh/h	154	20	20	184	20	3	505	2548	107	439	2289	157
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.75	0.75	0.03	1.00	1.00
Sat Flow, veh/h	1067	277	269	1368	280	38	1781	3393	142	1810	3240	223
Grp Volume(v), veh/h	78	0	0	44	0	0	118	549	571	11	619	639
Grp Sat Flow(s),veh/h/ln1614	0	0	1686	0	0	1781	1735	1800	1810	1706	1756	
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.0	1.2	9.2	9.2	0.1	0.0	0.0
Cycle Q Clear(g_c), s	3.6	0.0	0.0	1.8	0.0	0.0	1.2	9.2	9.2	0.1	0.0	0.0
Prop In Lane	0.69		0.17	0.86		0.02	1.00		0.08	1.00		0.13
Lane Grp Cap(c), veh/h	194	0	0	207	0	0	505	1302	1352	439	1206	1241
V/C Ratio(X)	0.40	0.00	0.00	0.21	0.00	0.00	0.23	0.42	0.42	0.03	0.51	0.51
Avail Cap(c_a), veh/h	439	0	0	443	0	0	602	1302	1352	541	1206	1241
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.77	0.77	0.77	0.66	0.66	0.66
Uniform Delay (d), s/veh	36.0	0.0	0.0	35.2	0.0	0.0	2.0	3.6	3.6	3.3	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.5	0.0	0.0	0.2	0.8	0.7	0.0	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln1.5	0.0	0.0	0.0	0.8	0.0	0.0	0.1	1.5	1.5	0.0	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.3	0.0	0.0	35.7	0.0	0.0	2.2	4.4	4.4	3.3	1.0	1.0
LnGrp LOS	D	A	A	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		78			44			1238			1269	
Approach Delay, s/veh		37.3			35.7			4.2			1.0	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s5.1	65.1			9.8	8.6	61.5		9.8				
Change Period (Y+Rc), s 4.0	5.0			4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s 5.6	42.6			18.8	9.0	39.2		18.8				
Max Q Clear Time (g_c+1/2), s 11.2	11.2			5.6	3.2	2.0		3.8				
Green Ext Time (p_c), s 0.0	7.2			0.2	0.1	9.0		0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				4.2								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary  
 11: Cordon Rd & Center St

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	55	165	90	85	40	150	1055	55	45	1075	130
Future Volume (veh/h)	70	55	165	90	85	40	150	1055	55	45	1075	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1811	1841	1856	1752	1856	1826	1841	1900	1796	1856
Adj Flow Rate, veh/h	76	60	11	98	92	13	163	1147	56	49	1168	67
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	6	4	3	10	3	5	4	0	7	3
Cap, veh/h	257	174	142	295	169	24	352	1923	94	432	1873	863
Arrive On Green	0.05	0.09	0.09	0.07	0.11	0.11	0.13	1.00	1.00	0.04	0.55	0.55
Sat Flow, veh/h	1781	1870	1535	1753	1590	225	1767	3367	164	1810	3413	1572
Grp Volume(v), veh/h	76	60	11	98	0	105	163	591	612	49	1168	67
Grp Sat Flow(s),veh/h/ln	1781	1870	1535	1753	0	1815	1767	1735	1796	1810	1706	1572
Q Serve(g_s), s	2.9	2.3	0.5	3.7	0.0	4.1	3.0	0.0	0.0	0.9	17.6	1.5
Cycle Q Clear(g_c), s	2.9	2.3	0.5	3.7	0.0	4.1	3.0	0.0	0.0	0.9	17.6	1.5
Prop In Lane	1.00		1.00	1.00		0.12	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	257	174	142	295	0	193	352	991	1026	432	1873	863
V/C Ratio(X)	0.30	0.35	0.08	0.33	0.00	0.54	0.46	0.60	0.60	0.11	0.62	0.08
Avail Cap(c_a), veh/h	281	549	450	295	0	532	354	991	1026	476	1873	863
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.84	0.84	0.84	0.79	0.79	0.79
Uniform Delay (d), s/veh	28.6	31.9	31.1	28.1	0.0	31.8	8.7	0.0	0.0	6.4	11.6	8.0
Incr Delay (d2), s/veh	0.2	0.9	0.2	0.2	0.0	1.8	0.3	2.2	2.2	0.0	1.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.0	0.2	1.5	0.0	1.8	0.8	0.6	0.6	0.2	5.1	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.9	32.8	31.3	28.3	0.0	33.6	9.0	2.2	2.2	6.5	12.8	8.1
LnGrp LOS	C	C	C	C	A	C	A	A	A	A	B	A
Approach Vol, veh/h		147			203			1366			1284	
Approach Delay, s/veh		30.6			31.0			3.0			12.4	
Approach LOS		C			C			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	46.2	8.0	12.0	7.2	47.8	9.0	11.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	26.0	5.0	22.0	5.0	26.0	5.0	22.0				
Max Q Clear Time (g_c+1/3), s	15.0	19.6	4.9	6.1	2.9	2.0	5.7	4.3				
Green Ext Time (p_c), s	0.0	4.5	0.0	0.3	0.0	11.4	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				10.3								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
 12: Cordon Rd & Auburn Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕		↗	↕	
Traffic Volume (veh/h)	20	5	65	20	5	15	65	1225	20	15	1270	50
Future Volume (veh/h)	20	5	65	20	5	15	65	1225	20	15	1270	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1796	1900	1767	1900	1900	1900	1900	1826	1604	1900	1796	1900
Adj Flow Rate, veh/h	22	5	1	22	5	0	71	1332	21	16	1380	52
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, %	7	0	9	0	0	0	0	5	20	0	7	0
Cap, veh/h	166	29	100	152	26	0	458	2591	41	368	2376	89
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.00	0.05	0.74	0.74	0.04	1.00	1.00
Sat Flow, veh/h	1183	439	1497	970	391	0	1810	3496	55	1810	3354	126
Grp Volume(v), veh/h	27	0	1	27	0	0	71	661	692	16	701	731
Grp Sat Flow(s),veh/h/ln	1622	0	1497	1361	0	0	1810	1735	1816	1810	1706	1774
Q Serve(g_s), s	0.0	0.0	0.0	0.7	0.0	0.0	0.7	11.9	12.0	0.2	0.0	0.0
Cycle Q Clear(g_c), s	1.0	0.0	0.0	1.8	0.0	0.0	0.7	11.9	12.0	0.2	0.0	0.0
Prop In Lane	0.81		1.00	0.81		0.00	1.00		0.03	1.00		0.07
Lane Grp Cap(c), veh/h	195	0	100	178	0	0	458	1286	1346	368	1209	1257
V/C Ratio(X)	0.14	0.00	0.01	0.15	0.00	0.00	0.16	0.51	0.51	0.04	0.58	0.58
Avail Cap(c_a), veh/h	476	0	379	458	0	0	510	1286	1346	479	1209	1257
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.45	0.45	0.45	0.70	0.70	0.70
Uniform Delay (d), s/veh	33.1	0.0	32.7	33.5	0.0	0.0	2.1	4.1	4.1	3.4	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.4	0.0	0.0	0.1	0.7	0.6	0.0	1.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.5	0.0	0.0	0.1	2.2	2.3	0.0	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.5	0.0	32.7	33.9	0.0	0.0	2.2	4.7	4.7	3.4	1.4	1.4
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		28			27			1424			1448	
Approach Delay, s/veh		33.4			33.9			4.6			1.4	
Approach LOS		C			C			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	60.6		9.0	7.9	58.1		9.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	6.0	37.0		19.0	6.0	37.0		19.0				
Max Q Clear Time (g_c+1/2), s	12.2	14.0		3.0	2.7	2.0		3.8				
Green Ext Time (p_c), s	0.0	9.3		0.1	0.0	11.9		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				3.6								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary  
 13: Cordon Rd & State St

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔		↔	↔		↔	↕↕		↔	↕↕	↔
Traffic Volume (veh/h)	280	150	140	150	210	85	130	955	145	75	980	280
Future Volume (veh/h)	280	150	140	150	210	85	130	955	145	75	980	280
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1870	1841	1752	1885	1811	1811	1856	1796	1796	1885	1870
Adj Flow Rate, veh/h	304	163	103	163	228	70	141	1038	143	82	1065	120
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, %	3	2	4	10	1	6	6	3	7	7	1	2
Cap, veh/h	590	206	130	306	266	82	268	1125	155	226	1233	534
Arrive On Green	0.09	0.19	0.19	0.09	0.19	0.19	0.08	0.36	0.36	0.06	0.34	0.34
Sat Flow, veh/h	3428	1071	677	1668	1384	425	1725	3113	428	1711	3582	1552
Grp Volume(v), veh/h	304	0	266	163	0	298	141	587	594	82	1065	120
Grp Sat Flow(s),veh/h/ln	1714	0	1748	1668	0	1809	1725	1763	1778	1711	1791	1552
Q Serve(g_s), s	4.7	0.0	9.7	5.2	0.0	10.7	3.5	21.4	21.4	2.0	18.6	3.7
Cycle Q Clear(g_c), s	4.7	0.0	9.7	5.2	0.0	10.7	3.5	21.4	21.4	2.0	18.6	3.7
Prop In Lane	1.00		0.39	1.00		0.23	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	590	0	336	306	0	347	268	637	643	226	1233	534
V/C Ratio(X)	0.52	0.00	0.79	0.53	0.00	0.86	0.53	0.92	0.92	0.36	0.86	0.22
Avail Cap(c_a), veh/h	590	0	548	306	0	567	292	710	717	280	1444	625
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	0.0	25.8	20.0	0.0	26.2	15.8	20.5	20.5	16.2	20.5	15.6
Incr Delay (d2), s/veh	0.3	0.0	1.6	0.9	0.0	3.8	0.6	15.7	15.9	0.4	4.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	3.9	1.8	0.0	4.3	1.2	10.1	10.3	0.7	7.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	0.0	27.4	20.9	0.0	29.9	16.4	36.2	36.4	16.6	25.0	15.7
LnGrp LOS	C	A	C	C	A	C	B	D	D	B	C	B
Approach Vol, veh/h		570			461			1322			1267	
Approach Delay, s/veh		23.6			26.7			34.2			23.5	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	18.9	9.1	29.1	10.0	18.9	7.9	30.2				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	10.0	21.0	6.0	27.0	6.0	21.0	6.0	27.0				
Max Q Clear Time (g_c+1), s	11.7	11.7	5.5	20.6	6.7	12.7	4.0	23.4				
Green Ext Time (p_c), s	0.0	0.3	0.0	1.2	0.0	0.2	0.0	0.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				27.8								
HCM 6th LOS				C								

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	75	0	1230	1225	55
Future Vol, veh/h	0	75	0	1230	1225	55
Conflicting Peds, #/hr	2	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	7	8	6	9	9
Mvmt Flow	0	82	0	1337	1332	60

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	696	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	7.04	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.37	-
Pot Cap-1 Maneuver	0	373	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	373	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 373	-	-
HCM Lane V/C Ratio	- 0.219	-	-
HCM Control Delay (s)	- 17.3	-	-
HCM Lane LOS	- C	-	-
HCM 95th %tile Q(veh)	- 0.8	-	-

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕			↕	
Traffic Vol, veh/h	0	0	15	0	0	15	0	1250	30	0	1275	100
Future Vol, veh/h	0	0	15	0	0	15	0	1250	30	0	1275	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	0	9	0	20	20	0	6	0	0	5	5
Mvmt Flow	0	0	16	0	0	16	0	1359	33	0	1386	109

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	748	-	-	696	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.08	-	-	7.3	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.39	-	-	3.5	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	340	0	0	345	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	340	-	-	345	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.1		16		0		0	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	340	345	-	-
HCM Lane V/C Ratio	-	-	0.048	0.047	-	-
HCM Control Delay (s)	-	-	16.1	16	-	-
HCM Lane LOS	-	-	C	C	-	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	-

HCM 6th Signalized Intersection Summary  
 16: Cordon Rd & Macleay Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Traffic Volume (veh/h)	165	50	55	100	60	75	60	1030	90	80	1185	35
Future Volume (veh/h)	165	50	55	100	60	75	60	1030	90	80	1185	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1811	1900	1900	1781	1870	1900	1826	1737	1737	1796	1796
Adj Flow Rate, veh/h	179	54	47	109	65	0	65	1120	90	87	1288	35
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, %	10	6	0	0	8	2	0	5	11	11	7	7
Cap, veh/h	269	64	52	246	130		284	1731	139	407	1826	50
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.00	0.10	1.00	1.00	0.05	0.54	0.54
Sat Flow, veh/h	887	290	237	784	588	0	1810	3252	261	1654	3394	92
Grp Volume(v), veh/h	280	0	0	174	0	0	65	597	613	87	647	676
Grp Sat Flow(s),veh/h/ln	1415	0	0	1371	0	0	1810	1735	1779	1654	1706	1780
Q Serve(g_s), s	6.5	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.8	22.6	22.6
Cycle Q Clear(g_c), s	15.4	0.0	0.0	8.9	0.0	0.0	1.2	0.0	0.0	1.8	22.6	22.6
Prop In Lane	0.64		0.17	0.63		0.00	1.00		0.15	1.00		0.05
Lane Grp Cap(c), veh/h	386	0	0	376	0		284	923	947	407	918	957
V/C Ratio(X)	0.73	0.00	0.00	0.46	0.00		0.23	0.65	0.65	0.21	0.70	0.71
Avail Cap(c_a), veh/h	515	0	0	504	0		313	923	947	428	918	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.75	0.75	0.75	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	0.0	27.6	0.0	0.0	10.4	0.0	0.0	7.2	13.8	13.8
Incr Delay (d2), s/veh	1.9	0.0	0.0	0.3	0.0	0.0	0.3	2.6	2.6	0.3	4.5	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.0	0.0	2.8	0.0	0.0	0.4	0.7	0.7	0.5	8.1	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	0.0	0.0	28.0	0.0	0.0	10.7	2.6	2.6	7.5	18.3	18.1
LnGrp LOS	C	A	A	C	A		B	A	A	A	B	B
Approach Vol, veh/h		280			174			1275			1410	
Approach Delay, s/veh		32.2			28.0			3.0			17.5	
Approach LOS		C			C			A			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	49.0		22.6	8.8	48.6		22.6				
Change Period (Y+Rc), s	4.5	6.0		5.0	4.5	6.0		5.0				
Max Green Setting (Gmax), s	5.1	34.4		25.0	5.3	34.2		25.0				
Max Q Clear Time (g_c+I1), s	3.2	24.6		10.9	3.8	2.0		17.4				
Green Ext Time (p_c), s	0.0	1.4		0.2	0.0	1.4		0.3				

Intersection Summary

HCM 6th Ctrl Delay	13.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 17: Cordon Rd & Gaffin Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	60	175	75	25	235	70	870	115	235	995	110
Future Volume (veh/h)	75	60	175	75	25	235	70	870	115	235	995	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1856	1781	1826	1900	1870	1841	1856
Adj Flow Rate, veh/h	82	65	7	82	27	59	76	946	114	255	1082	65
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, %	0	0	2	0	0	3	8	5	0	2	4	3
Cap, veh/h	192	127	14	209	40	87	420	1803	217	448	2194	965
Arrive On Green	0.04	0.08	0.08	0.04	0.08	0.08	0.04	0.58	0.58	0.16	1.00	1.00
Sat Flow, veh/h	1810	1686	182	1810	531	1160	1697	3109	375	1781	3497	1539
Grp Volume(v), veh/h	82	0	72	82	0	86	76	528	532	255	1082	65
Grp Sat Flow(s),veh/h/ln	1810	0	1867	1810	0	1691	1697	1735	1749	1781	1749	1539
Q Serve(g_s), s	3.0	0.0	3.0	3.0	0.0	4.0	1.4	14.7	14.7	4.6	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	3.0	3.0	0.0	4.0	1.4	14.7	14.7	4.6	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.69	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	192	0	140	209	0	127	420	1006	1014	448	2194	965
V/C Ratio(X)	0.43	0.00	0.51	0.39	0.00	0.68	0.18	0.52	0.52	0.57	0.49	0.07
Avail Cap(c_a), veh/h	192	0	584	209	0	528	446	1006	1014	479	2194	965
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.64	0.64	0.64	0.49	0.49	0.49
Uniform Delay (d), s/veh	33.5	0.0	35.6	33.4	0.0	36.0	6.2	10.1	10.1	7.0	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	1.1	0.4	0.0	2.3	0.0	1.3	1.2	0.4	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	1.4	1.4	0.0	1.6	0.4	4.4	4.4	1.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.1	0.0	36.7	33.8	0.0	38.4	6.3	11.4	11.4	7.4	0.4	0.1
LnGrp LOS	C	A	D	C	A	D	A	B	B	A	A	A
Approach Vol, veh/h		154			168			1136			1402	
Approach Delay, s/veh		35.3			36.2			11.1			1.6	
Approach LOS		D			D			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	56.2	7.0	10.0	10.6	52.4	7.0	10.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	30.0	3.0	25.0	8.0	26.0	3.0	25.0				
Max Q Clear Time (g_c+1), s	13.4	2.0	5.0	6.0	6.6	16.7	5.0	5.0				
Green Ext Time (p_c), s	0.0	1.7	0.0	0.1	0.0	0.9	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			9.2									
HCM 6th LOS			A									



HCM 6th Signalized Intersection Summary  
 18: Kuebler Blvd/Cordon Rd & Lancaster Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	350	145	120	225	95	165	910	280	225	925	95
Future Volume (veh/h)	50	350	145	120	225	95	165	910	280	225	925	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1826	1885	1796	1900	1885	1856	1826	1870	1885	1900
Adj Flow Rate, veh/h	54	380	97	130	245	29	179	989	0	245	1005	41
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, %	0	3	5	1	7	0	1	3	5	2	1	0
Cap, veh/h	68	568	346	216	634	536	277	1211		292	1534	695
Arrive On Green	0.04	0.16	0.14	0.06	0.19	0.17	0.08	0.34	0.00	0.16	0.43	0.39
Sat Flow, veh/h	1810	3526	1547	3483	3413	1610	3483	3526	1547	1781	3582	1610
Grp Volume(v), veh/h	54	380	97	130	245	29	179	989	0	245	1005	41
Grp Sat Flow(s),veh/h/ln	1810	1763	1547	1742	1706	1610	1742	1763	1547	1781	1791	1610
Q Serve(g_s), s	1.8	6.0	3.1	2.2	3.7	0.7	3.0	15.2	0.0	7.9	13.2	0.9
Cycle Q Clear(g_c), s	1.8	6.0	3.1	2.2	3.7	0.7	3.0	15.2	0.0	7.9	13.2	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	68	568	346	216	634	536	277	1211		292	1534	695
V/C Ratio(X)	0.80	0.67	0.28	0.60	0.39	0.05	0.65	0.82		0.84	0.66	0.06
Avail Cap(c_a), veh/h	244	2018	983	469	1954	1159	469	1899		300	2050	928
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	23.4	19.1	27.1	21.2	13.5	26.5	17.8	0.0	24.1	13.5	9.8
Incr Delay (d2), s/veh	7.8	0.5	0.2	1.0	0.1	0.0	0.9	0.8	0.0	17.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.3	1.0	0.8	1.3	0.2	1.1	4.8	0.0	4.2	3.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	23.9	19.3	28.1	21.4	13.5	27.5	18.6	0.0	41.2	13.7	9.8
LnGrp LOS	D	C	B	C	C	B	C	B		D	B	A
Approach Vol, veh/h		531			404			1168			1291	
Approach Delay, s/veh		24.3			23.0			19.9			18.8	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	29.4	6.2	15.0	13.7	24.4	7.7	13.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	10.0	30.0	8.0	33.0				
Max Q Clear Time (g_c+1/2g), s	15.0	15.2	3.8	5.7	9.9	17.2	4.2	8.0				
Green Ext Time (p_c), s	0.0	1.3	0.0	0.3	0.0	1.2	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	20.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Kuebler Blvd & Mill Creek Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - No Interchange



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	95	100	1255	295	185	1005
Future Volume (veh/h)	95	100	1255	295	185	1005
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1604	1604	1856	1604	1752	1870
Adj Flow Rate, veh/h	103	106	1364	204	201	1092
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	20	3	20	10	2
Cap, veh/h	152	228	2175	838	305	2653
Arrive On Green	0.10	0.10	0.20	0.20	0.07	0.75
Sat Flow, veh/h	1527	1359	3618	1359	1668	3647
Grp Volume(v), veh/h	103	106	1364	204	201	1092
Grp Sat Flow(s),veh/h/ln	1527	1359	1763	1359	1668	1777
Q Serve(g_s), s	4.2	4.6	23.0	8.2	2.5	7.3
Cycle Q Clear(g_c), s	4.2	4.6	23.0	8.2	2.5	7.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	152	228	2175	838	305	2653
V/C Ratio(X)	0.68	0.47	0.63	0.24	0.66	0.41
Avail Cap(c_a), veh/h	493	532	2175	838	397	2653
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.09	0.09	0.76	0.76
Uniform Delay (d), s/veh	28.3	24.4	19.1	13.2	13.2	3.0
Incr Delay (d2), s/veh	2.0	0.5	0.1	0.1	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	3.5	10.2	1.8	1.6	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.2	25.0	19.2	13.2	14.0	3.4
LnGrp LOS	C	C	B	B	B	A
Approach Vol, veh/h	209		1568			1293
Approach Delay, s/veh	27.6		18.4			5.0
Approach LOS	C		B			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		54.5		10.5	8.4	46.1
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		34.0		21.0	8.0	22.0
Max Q Clear Time (g_c+I1), s		9.3		6.6	4.5	25.0
Green Ext Time (p_c), s		1.4		0.0	0.0	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			13.4			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary  
 20: Turner Rd & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	1420	140	195	740	160	375	330	105	50	125	185
Future Volume (veh/h)	200	1420	140	195	740	160	375	330	105	50	125	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1811	1870	1870	1678	1870	1870	1841	1900	1693	1826	1900	1752
Adj Flow Rate, veh/h	217	1543	145	212	804	160	408	359	105	54	136	135
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, %	6	2	2	15	2	2	4	0	14	5	0	10
Cap, veh/h	338	1466	137	215	1367	272	410	419	122	152	409	466
Arrive On Green	0.03	0.15	0.14	0.10	0.46	0.45	0.12	0.30	0.28	0.03	0.22	0.22
Sat Flow, veh/h	1725	3286	306	1598	2954	588	1753	1413	413	1739	1900	1485
Grp Volume(v), veh/h	217	828	860	212	484	480	408	0	464	54	136	135
Grp Sat Flow(s),veh/h/ln	1725	1777	1815	1598	1777	1765	1753	0	1826	1739	1900	1485
Q Serve(g_s), s	8.8	58.0	58.0	12.7	26.1	26.3	15.0	0.0	31.2	3.2	7.9	8.9
Cycle Q Clear(g_c), s	8.8	58.0	58.0	12.7	26.1	26.3	15.0	0.0	31.2	3.2	7.9	8.9
Prop In Lane	1.00		0.17	1.00		0.33	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	338	793	810	215	822	817	410	0	541	152	409	466
V/C Ratio(X)	0.64	1.04	1.06	0.99	0.59	0.59	1.00	0.00	0.86	0.35	0.33	0.29
Avail Cap(c_a), veh/h	473	793	810	215	822	817	410	0	541	200	409	466
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.91	0.91	0.91	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	55.4	55.5	40.8	25.8	26.1	44.0	0.0	43.4	41.1	43.1	33.6
Incr Delay (d2), s/veh	0.1	24.1	30.8	54.1	2.8	2.8	43.2	0.0	16.0	0.5	2.2	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	32.7	34.9	9.9	10.9	10.9	10.9	0.0	16.1	1.4	3.9	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.6	79.5	86.3	94.9	28.6	28.9	87.2	0.0	59.3	41.6	45.3	35.2
LnGrp LOS	C	F	F	F	C	C	F	A	E	D	D	D
Approach Vol, veh/h		1905			1176			872			325	
Approach Delay, s/veh		76.1			40.7			72.4			40.5	
Approach LOS		E			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	62.0	8.5	42.5	14.8	64.2	19.0	32.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	13.0	56.0	8.0	33.0	21.0	48.0	15.0	26.0				
Max Q Clear Time (g_c+1/4), s	14.5	60.0	5.2	33.2	10.8	28.3	17.0	10.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay	62.9
HCM 6th LOS	E

HCM 6th Signalized Intersection Summary  
 21: 36th Ave & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - No Interchange

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	1475	350	185	935	200	310	80	225	85	85	85
Future Volume (veh/h)	215	1475	350	185	935	200	310	80	225	85	85	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1870	1841	1870	1870	1826	1900	1841	1900	1856	1900	1900	1737
Adj Flow Rate, veh/h	234	1603	364	201	1016	204	337	87	156	92	92	6
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	4	2	2	5	0	4	0	3	0	0	11
Cap, veh/h	443	1651	361	192	1689	338	309	96	172	177	260	201
Arrive On Green	0.07	0.58	0.58	0.15	1.00	1.00	0.08	0.16	0.16	0.06	0.14	0.14
Sat Flow, veh/h	1781	2853	624	1781	2880	577	1753	610	1093	1810	1900	1472
Grp Volume(v), veh/h	234	958	1009	201	611	609	337	0	243	92	92	6
Grp Sat Flow(s),veh/h/ln	1781	1749	1728	1781	1735	1722	1753	0	1703	1810	1900	1472
Q Serve(g_s), s	6.9	66.4	75.2	10.0	0.0	0.0	10.0	0.0	18.2	5.6	5.7	0.5
Cycle Q Clear(g_c), s	6.9	66.4	75.2	10.0	0.0	0.0	10.0	0.0	18.2	5.6	5.7	0.5
Prop In Lane	1.00		0.36	1.00		0.34	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	443	1012	1000	192	1018	1010	309	0	268	177	260	201
V/C Ratio(X)	0.53	0.95	1.01	1.04	0.60	0.60	1.09	0.00	0.91	0.52	0.35	0.03
Avail Cap(c_a), veh/h	553	1012	1000	192	1018	1010	309	0	367	186	380	294
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.67	0.67	0.67	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.3	25.5	27.4	40.7	0.0	0.0	52.5	0.0	53.9	45.6	50.9	48.6
Incr Delay (d2), s/veh	0.4	18.1	30.5	65.3	1.8	1.8	78.0	0.0	17.6	0.9	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	29.8	36.2	9.0	0.5	0.5	11.9	0.0	8.9	2.6	2.7	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.7	43.6	57.9	105.9	1.8	1.8	130.5	0.0	71.5	46.5	51.2	48.7
LnGrp LOS	A	D	F	F	A	A	F	A	E	D	D	D
Approach Vol, veh/h		2201			1421			580			190	
Approach Delay, s/veh		46.6			16.5			105.8			48.8	
Approach LOS		D			B			F			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.0	80.2	14.0	21.8	13.0	81.3	11.3	24.4				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	10.0	67.0	10.0	26.0	17.0	60.0	8.0	28.0				
Max Q Clear Time (g_c+1/2g), s	11.0	77.2	12.0	7.7	8.9	2.0	7.6	20.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.0	1.2	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				44.8								
HCM 6th LOS				D								

<b>ID</b>	<b>Software/Method</b>	<b>Intersection</b>	<b>Control Type</b>	<b>LOS</b>	<b>Delay</b>	<b>V/C Ratio</b>
1	Synchro HCM 6th Signal	OR 99E & Hazelgreen Rd	Signal	E	66.6	0.90
3	Synchro HCM 6th Signal	Cordon Rd & Hazelgreen Rd	Signal	B	12.1	0.43
8	Synchro HCM 6th Signal	Cordon Rd & Silverton Rd	Signal	C	28.9	0.62
9	Synchro HCM 6th Signal	Cordon Rd & Sunnyview Rd	Signal	B	18.0	0.71
10	Synchro HCM 6th Signal	Cordon Rd & Swegle Rd	Signal	A	4.2	0.61
11	Synchro HCM 6th Signal	Cordon Rd & Center St	Signal	B	10.3	0.69
12	Synchro HCM 6th Signal	Cordon Rd & Auburn Rd	Signal	A	3.6	0.61
13	Synchro HCM 6th Signal	Cordon Rd & State St	Signal	C	27.8	0.85
16	Synchro HCM 6th Signal	Cordon Rd & Macleay Rd	Signal	B	13.5	0.82
17	Synchro HCM 6th Signal	Cordon Rd & Gaffin Rd	Signal	A	9.2	0.70
18	Synchro HCM 6th Signal	Kuebler Blvd/Cordon Rd & Lancaster Dr	Signal	C	20.5	0.70
19	Synchro HCM 6th Signal	Kuebler Blvd & Mill Creek Dr	Signal	B	13.4	0.58
20	Synchro HCM 6th Signal	Turner Rd & Kuebler Blvd	Signal	E	62.9	0.91
21	Synchro HCM 6th Signal	36th Ave & Kuebler Blvd	Signal	D	44.8	1.08

**FUTURE 2043 – YES BUILD – NO INTERCHANGE – PM PEAK**  
**HCM Results**

HCM 6th Signalized Intersection Summary  
 1: OR 99E & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - No Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	510	470	75	430	40	525	505	115	120	715	205
Future Volume (veh/h)	135	510	470	75	430	40	525	505	115	120	715	205
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1856	1885	1900	1900	1885	1796	1841	1900	1885
Adj Flow Rate, veh/h	138	520	273	77	439	38	536	515	101	122	730	88
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	0	3	1	0	0	1	7	4	0	1
Cap, veh/h	142	521	441	97	428	37	520	1229	240	148	752	333
Arrive On Green	0.08	0.27	0.27	0.06	0.25	0.25	0.29	0.41	0.41	0.08	0.21	0.21
Sat Flow, veh/h	1795	1900	1610	1767	1710	148	1810	2988	583	1753	3610	1598
Grp Volume(v), veh/h	138	520	273	77	0	477	536	308	308	122	730	88
Grp Sat Flow(s),veh/h/ln	1795	1900	1610	1767	0	1859	1810	1791	1780	1753	1805	1598
Q Serve(g_s), s	9.2	32.8	17.8	5.2	0.0	30.0	34.5	14.7	14.8	8.2	24.1	5.5
Cycle Q Clear(g_c), s	9.2	32.8	17.8	5.2	0.0	30.0	34.5	14.7	14.8	8.2	24.1	5.5
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	142	521	441	97	0	465	520	737	732	148	752	333
V/C Ratio(X)	0.97	1.00	0.62	0.79	0.00	1.03	1.03	0.42	0.42	0.82	0.97	0.26
Avail Cap(c_a), veh/h	142	521	441	110	0	465	520	737	732	226	752	333
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.1	43.5	38.1	56.0	0.0	45.0	42.7	25.1	25.1	54.1	47.1	39.8
Incr Delay (d2), s/veh	66.3	39.1	2.3	24.5	0.0	48.7	47.4	0.1	0.1	11.3	25.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	20.3	7.0	2.9	0.0	19.4	21.6	6.0	6.0	4.0	13.1	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	121.4	82.6	40.4	80.5	0.0	93.7	90.2	25.2	25.3	65.4	72.7	40.1
LnGrp LOS	F	F	D	F	A	F	F	C	C	E	E	D
Approach Vol, veh/h		931			554			1152			940	
Approach Delay, s/veh		76.0			91.9			55.5			68.7	
Approach LOS		E			F			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	39.0	31.0	14.0	36.0	14.6	55.4	11.1	38.9				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	34.5	25.0	9.5	30.0	15.5	44.0	7.5	32.0				
Max Q Clear Time (g_c+I1), s	36.5	26.1	11.2	32.0	10.2	16.8	7.2	34.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	2.1	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				69.9								
HCM 6th LOS				E								

HCM 6th TWSC  
2: Lake Labish Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - Yes Build - No Interchange

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
Traffic Vol, veh/h	60	455	135	5	380	10	115	10	5	10	5	5
Future Vol, veh/h	60	455	135	5	380	10	115	10	5	10	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	150	-	-	100	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	63	474	141	5	396	10	120	10	5	10	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	406	0	0	615	0	0	1016	1016	474	1089	1152	401
Stage 1	-	-	-	-	-	-	600	600	-	411	411	-
Stage 2	-	-	-	-	-	-	416	416	-	678	741	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1164	-	-	974	-	-	218	240	595	195	199	653
Stage 1	-	-	-	-	-	-	491	493	-	622	598	-
Stage 2	-	-	-	-	-	-	618	595	-	445	426	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1164	-	-	974	-	-	202	226	595	178	187	653
Mov Cap-2 Maneuver	-	-	-	-	-	-	202	226	-	178	187	-
Stage 1	-	-	-	-	-	-	464	466	-	588	595	-
Stage 2	-	-	-	-	-	-	605	592	-	408	403	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.1			42.7			22.2		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	202	285	1164	-	-	974	-	-	178	291
HCM Lane V/C Ratio	0.593	0.055	0.054	-	-	0.005	-	-	0.059	0.036
HCM Control Delay (s)	45.9	18.4	8.3	-	-	8.7	-	-	26.5	17.8
HCM Lane LOS	E	C	A	-	-	A	-	-	D	C
HCM 95th %tile Q(veh)	3.3	0.2	0.2	-	-	0	-	-	0.2	0.1



HCM 6th Signalized Intersection Summary  
3: Cordon Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	370	150	145	205	15	175	115	165	15	275	25
Future Volume (veh/h)	10	370	150	145	205	15	175	115	165	15	275	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1900	1722	1900	1900	1900	1900	1900	1900	1752
Adj Flow Rate, veh/h	11	389	136	153	216	12	184	121	53	16	289	22
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, %	0	2	0	0	12	0	0	0	0	0	0	10
Cap, veh/h	514	446	156	324	651	36	356	543	460	416	362	28
Arrive On Green	0.01	0.34	0.34	0.08	0.40	0.40	0.10	0.29	0.29	0.02	0.21	0.21
Sat Flow, veh/h	1810	1324	463	1810	1616	90	1810	1900	1610	1810	1743	133
Grp Volume(v), veh/h	11	0	525	153	0	228	184	121	53	16	0	311
Grp Sat Flow(s),veh/h/ln	1810	0	1787	1810	0	1706	1810	1900	1610	1810	0	1876
Q Serve(g_s), s	0.2	0.0	15.9	2.9	0.0	5.3	4.3	2.8	1.4	0.4	0.0	9.1
Cycle Q Clear(g_c), s	0.2	0.0	15.9	2.9	0.0	5.3	4.3	2.8	1.4	0.4	0.0	9.1
Prop In Lane	1.00		0.26	1.00		0.05	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	514	0	602	324	0	687	356	543	460	416	0	390
V/C Ratio(X)	0.02	0.00	0.87	0.47	0.00	0.33	0.52	0.22	0.12	0.04	0.00	0.80
Avail Cap(c_a), veh/h	677	0	739	356	0	694	356	631	535	554	0	620
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.2	0.0	17.9	12.9	0.0	11.8	15.2	15.7	15.2	17.3	0.0	21.6
Incr Delay (d2), s/veh	0.0	0.0	9.5	1.1	0.0	0.3	1.3	0.2	0.1	0.0	0.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	6.6	0.9	0.0	1.6	1.5	1.0	0.4	0.1	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	0.0	27.4	13.9	0.0	12.1	16.5	15.9	15.3	17.4	0.0	25.4
LnGrp LOS	B	A	C	B	A	B	B	B	B	B	A	C
Approach Vol, veh/h		536			381			358				327
Approach Delay, s/veh		27.1			12.9			16.1				25.0
Approach LOS		C			B			B				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.1	20.4	8.6	23.4	9.6	16.0	4.8	27.2				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	5.5	19.1	5.6	23.8	5.6	19.0	6.0	23.4				
Max Q Clear Time (g_c+I1), s	2.4	4.8	4.9	17.9	6.3	11.1	2.2	7.3				
Green Ext Time (p_c), s	0.0	0.5	0.0	1.5	0.0	0.9	0.0	0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			20.8									
HCM 6th LOS			C									

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	130	145	415	555	45
Future Vol, veh/h	40	130	145	415	555	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	44	144	161	461	617	50

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1425	642	667	0	-	0
Stage 1	642	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	151	478	932	-	-	-
Stage 1	528	-	-	-	-	-
Stage 2	454	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	125	478	932	-	-	-
Mov Cap-2 Maneuver	260	-	-	-	-	-
Stage 1	437	-	-	-	-	-
Stage 2	454	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.2	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	932	-	260	478	-	-
HCM Lane V/C Ratio	0.173	-	0.171	0.302	-	-
HCM Control Delay (s)	9.7	-	21.7	15.8	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0.6	-	0.6	1.3	-	-

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	145	200	565	675	30
Future Vol, veh/h	20	145	200	565	675	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	22	161	222	628	750	33

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1839	767	783	0	-	0
Stage 1	767	-	-	-	-	-
Stage 2	1072	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	84	405	844	-	-	-
Stage 1	462	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	62	405	844	-	-	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	340	-	-	-	-	-
Stage 2	332	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.7	2.8	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	844	-	353	-	-
HCM Lane V/C Ratio	0.263	-	0.519	-	-
HCM Control Delay (s)	10.8	-	25.7	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	1.1	-	2.9	-	-

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	65	85	785	805	45
Future Vol, veh/h	20	65	85	785	805	45
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	6	4	3	3	3
Mvmt Flow	22	72	94	872	894	50

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1979	919	944	0	-	0
Stage 1	919	-	-	-	-	-
Stage 2	1060	-	-	-	-	-
Critical Hdwy	6.43	6.26	4.14	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.354	2.236	-	-	-
Pot Cap-1 Maneuver	67	323	719	-	-	-
Stage 1	387	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	58	323	719	-	-	-
Mov Cap-2 Maneuver	179	-	-	-	-	-
Stage 1	336	-	-	-	-	-
Stage 2	332	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.1	1.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	719	-	272	-	-
HCM Lane V/C Ratio	0.131	-	0.347	-	-
HCM Control Delay (s)	10.8	-	25.1	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.5	-	1.5	-	-

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	105	70	790	755	70
Future Vol, veh/h	30	105	70	790	755	70
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	31	109	73	823	786	73



































Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1792	823	859	0	0
Stage 1	823	-	-	-	-
Stage 2	969	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	90	377	791	-	-
Stage 1	435	-	-	-	-
Stage 2	371	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	82	377	791	-	-
Mov Cap-2 Maneuver	212	-	-	-	-
Stage 1	395	-	-	-	-
Stage 2	371	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.7	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	791	-	321	-	-
HCM Lane V/C Ratio	0.092	-	0.438	-	-
HCM Control Delay (s)	10	-	24.7	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.1	-	-

HCM 6th Signalized Intersection Summary  
8: Cordon Rd & Silverton Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - Yes Build - No Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 	 	 	 		 	 	 	 	 	 
Traffic Volume (veh/h)	150	395	325	280	380	10	255	680	355	15	675	200
Future Volume (veh/h)	150	395	325	280	380	10	255	680	355	15	675	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1870	1900	1885	1885	1885	1900	1870	1900
Adj Flow Rate, veh/h	158	416	147	295	400	9	268	716	203	16	711	94
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, %	1	1	1	3	2	0	1	1	1	0	2	0
Cap, veh/h	252	670	297	399	821	18	274	1359	598	21	847	495
Arrive On Green	0.07	0.19	0.19	0.12	0.23	0.23	0.15	0.38	0.38	0.01	0.24	0.24
Sat Flow, veh/h	3483	3582	1590	3428	3553	80	1795	3582	1578	1810	3554	1589
Grp Volume(v), veh/h	158	416	147	295	200	209	268	716	203	16	711	94
Grp Sat Flow(s),veh/h/ln	1742	1791	1590	1714	1777	1856	1795	1791	1578	1810	1777	1589
Q Serve(g_s), s	2.6	6.3	4.9	4.9	5.7	5.8	8.8	9.1	5.4	0.5	11.2	2.6
Cycle Q Clear(g_c), s	2.6	6.3	4.9	4.9	5.7	5.8	8.8	9.1	5.4	0.5	11.2	2.6
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	252	670	297	399	411	429	274	1359	598	21	847	495
V/C Ratio(X)	0.63	0.62	0.49	0.74	0.49	0.49	0.98	0.53	0.34	0.75	0.84	0.19
Avail Cap(c_a), veh/h	473	1884	836	465	935	976	274	1823	803	246	1748	899
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	22.0	21.5	25.2	19.6	19.6	24.9	14.2	13.0	29.0	21.4	14.9
Incr Delay (d2), s/veh	1.0	0.4	0.5	4.0	0.3	0.3	47.8	0.1	0.1	17.9	0.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.3	1.5	2.0	2.1	2.2	6.7	2.8	1.4	0.3	3.9	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	22.4	21.9	29.2	20.0	20.0	72.7	14.3	13.2	46.9	22.2	14.9
LnGrp LOS	C	C	C	C	B	B	E	B	B	D	C	B
Approach Vol, veh/h		721			704			1187			821	
Approach Delay, s/veh		23.4			23.8			27.3			21.9	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	16.0	13.0	19.1	8.3	18.6	4.7	27.4				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	8.0	31.0	9.0	29.0	8.0	31.0	8.0	30.0				
Max Q Clear Time (g_c+I1), s	6.9	8.3	10.8	13.2	4.6	7.8	2.5	11.1				
Green Ext Time (p_c), s	0.0	0.5	0.0	0.8	0.0	0.4	0.0	0.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				24.5								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary  
 9: Cordon Rd & Sunnyview Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	95	205	70	90	60	180	1105	115	65	1145	110
Future Volume (veh/h)	155	95	205	70	90	60	180	1105	115	65	1145	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1870	1870	1856	1841	1900	1900	1870	1900	1885	1856
Adj Flow Rate, veh/h	163	100	102	74	95	28	189	1163	113	68	1205	108
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, %	1	0	2	2	3	4	0	0	2	0	1	3
Cap, veh/h	298	127	130	222	173	51	324	1825	177	388	1716	154
Arrive On Green	0.07	0.15	0.15	0.05	0.13	0.13	0.15	1.00	1.00	0.04	0.52	0.52
Sat Flow, veh/h	1795	861	878	1781	1376	406	1810	3317	322	1810	3325	297
Grp Volume(v), veh/h	163	0	202	74	0	123	189	632	644	68	648	665
Grp Sat Flow(s),veh/h/ln	1795	0	1740	1781	0	1781	1810	1805	1833	1810	1791	1831
Q Serve(g_s), s	5.8	0.0	9.0	2.9	0.0	5.2	3.9	0.0	0.0	1.4	21.9	22.1
Cycle Q Clear(g_c), s	5.8	0.0	9.0	2.9	0.0	5.2	3.9	0.0	0.0	1.4	21.9	22.1
Prop In Lane	1.00		0.50	1.00		0.23	1.00		0.18	1.00		0.16
Lane Grp Cap(c), veh/h	298	0	257	222	0	224	324	993	1009	388	925	945
V/C Ratio(X)	0.55	0.00	0.78	0.33	0.00	0.55	0.58	0.64	0.64	0.18	0.70	0.70
Avail Cap(c_a), veh/h	298	0	483	257	0	490	328	993	1009	408	925	945
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.79	0.79	0.79	0.57	0.57	0.57
Uniform Delay (d), s/veh	28.9	0.0	32.9	28.7	0.0	32.8	11.7	0.0	0.0	8.2	14.7	14.7
Incr Delay (d2), s/veh	2.1	0.0	3.9	0.9	0.0	1.6	2.0	2.5	2.5	0.0	2.6	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	3.9	1.2	0.0	2.1	1.1	0.7	0.7	0.4	7.5	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.0	0.0	36.8	29.5	0.0	34.4	13.8	2.5	2.5	8.3	17.2	17.2
LnGrp LOS	C	A	D	C	A	C	B	A	A	A	B	B
Approach Vol, veh/h		365			197			1465			1381	
Approach Delay, s/veh		34.2			32.6			3.9			16.8	
Approach LOS		C			C			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.8	46.3	9.8	14.1	7.1	49.0	8.0	15.8				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	29.2	5.8	22.0	4.0	31.2	5.6	22.2				
Max Q Clear Time (g_c+1/3), s	4.0	24.1	7.8	7.2	3.4	2.0	4.9	11.0				
Green Ext Time (p_c), s	0.0	3.8	0.0	0.3	0.0	12.9	0.0	0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				14.0								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
 10: Cordon Rd & Swegle Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Traffic Volume (veh/h)	40	20	125	10	5	15	125	1350	75	10	1345	90
Future Volume (veh/h)	40	20	125	10	5	15	125	1350	75	10	1345	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1885	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	42	21	18	11	5	1	132	1421	76	11	1416	90
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, %	3	0	1	0	0	0	0	2	0	0	2	0
Cap, veh/h	124	40	27	144	55	8	445	2561	137	317	2381	151
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.06	0.75	0.75	0.03	1.00	1.00
Sat Flow, veh/h	723	522	356	913	717	102	1810	3427	183	1810	3393	215
Grp Volume(v), veh/h	81	0	0	17	0	0	132	735	762	11	739	767
Grp Sat Flow(s),veh/h/ln1600	0	0	1731	0	0	1810	1777	1833	1810	1777	1831	
Q Serve(g_s), s	3.2	0.0	0.0	0.0	0.0	0.0	1.4	14.3	14.4	0.1	0.0	0.0
Cycle Q Clear(g_c), s	3.9	0.0	0.0	0.7	0.0	0.0	1.4	14.3	14.4	0.1	0.0	0.0
Prop In Lane	0.52		0.22	0.65		0.06	1.00		0.10	1.00		0.12
Lane Grp Cap(c), veh/h	191	0	0	207	0	0	445	1328	1369	317	1247	1285
V/C Ratio(X)	0.42	0.00	0.00	0.08	0.00	0.00	0.30	0.55	0.56	0.03	0.59	0.60
Avail Cap(c_a), veh/h	440	0	0	448	0	0	496	1328	1369	419	1247	1285
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.68	0.68	0.68	0.43	0.43	0.43
Uniform Delay (d), s/veh	35.9	0.0	0.0	34.4	0.0	0.0	2.1	4.4	4.4	4.0	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.2	0.0	0.0	0.3	1.1	1.1	0.0	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln1.6	0.0	0.0	0.0	0.3	0.0	0.0	0.1	2.4	2.5	0.0	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.3	0.0	0.0	34.6	0.0	0.0	2.3	5.5	5.5	4.0	0.9	0.9
LnGrp LOS	D	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		81			17			1629			1517	
Approach Delay, s/veh		37.3			34.6			5.2			0.9	
Approach LOS		D			C			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	64.8		10.1	8.7	61.1		10.1				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	5.6	42.6		18.8	7.0	41.2		18.8				
Max Q Clear Time (g_c+1/2), s	12.1	16.4		5.9	3.4	2.0		2.7				
Green Ext Time (p_c), s	0.0	10.6		0.2	0.1	12.2		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				4.2								
HCM 6th LOS				A								



HCM 6th Signalized Intersection Summary  
 11: Cordon Rd & Center St

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	75	265	50	60	30	285	1375	35	35	1330	135
Future Volume (veh/h)	160	75	265	50	60	30	285	1375	35	35	1330	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1870	1900	1856	1856	1841	1722	1870	1826
Adj Flow Rate, veh/h	168	79	66	53	63	7	300	1447	35	37	1400	58
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, %	0	3	3	0	2	0	3	3	4	12	2	5
Cap, veh/h	236	172	145	220	128	14	358	2267	55	327	2080	905
Arrive On Green	0.06	0.09	0.09	0.04	0.08	0.08	0.18	1.00	1.00	0.03	0.59	0.59
Sat Flow, veh/h	1810	1856	1572	1810	1654	184	1767	3518	85	1640	3554	1546
Grp Volume(v), veh/h	168	79	66	53	0	70	300	724	758	37	1400	58
Grp Sat Flow(s),veh/h/ln	1810	1856	1572	1810	0	1837	1767	1763	1840	1640	1777	1546
Q Serve(g_s), s	5.0	3.6	3.6	2.4	0.0	3.3	6.2	0.0	0.0	0.8	24.3	1.5
Cycle Q Clear(g_c), s	5.0	3.6	3.6	2.4	0.0	3.3	6.2	0.0	0.0	0.8	24.3	1.5
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	236	172	145	220	0	143	358	1136	1186	327	2080	905
V/C Ratio(X)	0.71	0.46	0.45	0.24	0.00	0.49	0.84	0.64	0.64	0.11	0.67	0.06
Avail Cap(c_a), veh/h	236	454	384	246	0	449	391	1136	1186	363	2080	905
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.72	0.72	0.72	0.70	0.70	0.70
Uniform Delay (d), s/veh	38.7	38.7	38.7	36.1	0.0	39.8	14.0	0.0	0.0	6.7	12.8	8.0
Incr Delay (d2), s/veh	8.3	1.4	1.6	0.2	0.0	1.9	9.6	2.0	1.9	0.0	1.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.6	1.4	1.0	0.0	1.5	4.1	0.6	0.6	0.2	7.7	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	40.1	40.3	36.3	0.0	41.7	23.6	2.0	1.9	6.7	14.0	8.1
LnGrp LOS	D	D	D	D	A	D	C	A	A	A	B	A
Approach Vol, veh/h		313			123			1782			1495	
Approach Delay, s/veh		43.9			39.4			5.6			13.6	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	57.7	9.0	11.0	7.0	63.0	7.7	12.3				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	10.0	36.0	5.0	22.0	5.0	41.0	5.0	22.0				
Max Q Clear Time (g_c+1/2), s	10.2	26.3	7.0	5.3	2.8	2.0	4.4	5.6				
Green Ext Time (p_c), s	0.1	7.2	0.0	0.2	0.0	19.3	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				13.2								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
 12: Cordon Rd & Auburn Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕		↗	↕	
Traffic Volume (veh/h)	30	5	105	5	5	15	70	1655	35	15	1590	50
Future Volume (veh/h)	30	5	105	5	5	15	70	1655	35	15	1590	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1856	1900	1900	1900	1870	1856	1900	1900	1841	1900
Adj Flow Rate, veh/h	32	5	5	5	5	0	74	1742	36	16	1674	51
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, %	0	0	3	0	0	0	2	3	0	0	4	0
Cap, veh/h	146	18	86	89	64	0	375	2761	57	268	2608	79
Arrive On Green	0.06	0.06	0.06	0.06	0.06	0.00	0.05	0.78	0.78	0.04	1.00	1.00
Sat Flow, veh/h	1287	319	1547	530	1156	0	1781	3532	73	1810	3463	105
Grp Volume(v), veh/h	37	0	5	10	0	0	74	867	911	16	842	883
Grp Sat Flow(s),veh/h/ln1606	0	1547	1685	0	0	1781	1763	1842	1810	1749	1819	
Q Serve(g_s), s	0.0	0.0	0.3	0.0	0.0	0.0	0.8	19.0	19.2	0.2	0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	0.3	1.7	0.0	0.0	0.8	19.0	19.2	0.2	0.0	0.0
Prop In Lane	0.86		1.00	0.50		0.00	1.00		0.04	1.00		0.06
Lane Grp Cap(c), veh/h	164	0	86	154	0	0	375	1378	1440	268	1317	1370
V/C Ratio(X)	0.23	0.00	0.06	0.07	0.00	0.00	0.20	0.63	0.63	0.06	0.64	0.64
Avail Cap(c_a), veh/h	394	0	327	407	0	0	411	1378	1440	355	1317	1370
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.18	0.18	0.18	0.47	0.47	0.47
Uniform Delay (d), s/veh	41.0	0.0	40.3	40.4	0.0	0.0	1.8	4.2	4.2	3.9	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.3	0.2	0.0	0.0	0.0	0.4	0.4	0.0	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln0.8	0.0	0.0	0.1	0.2	0.0	0.0	0.1	3.4	3.6	0.0	0.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.7	0.0	40.5	40.5	0.0	0.0	1.8	4.6	4.6	4.0	1.1	1.1
LnGrp LOS	D	A	D	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		42			10			1852			1741	
Approach Delay, s/veh		41.5			40.5			4.5			1.1	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s5.6	75.4			9.0	8.2	72.8		9.0				
Change Period (Y+Rc), s 4.0	5.0			4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s 5.0	52.0			19.0	6.0	52.0		19.0				
Max Q Clear Time (g_c+1/2), s 12.2	21.2			3.7	2.8	2.0		3.7				
Green Ext Time (p_c), s 0.0	16.0			0.1	0.0	18.6		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			3.4									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary  
 13: Cordon Rd & State St

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔		↔	↔		↔	↕↕		↔	↕↕	↔
Traffic Volume (veh/h)	415	310	255	205	235	140	295	1325	160	85	1355	290
Future Volume (veh/h)	415	310	255	205	235	140	295	1325	160	85	1355	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1885	1841	1900	1885	1885	1870	1870	1885
Adj Flow Rate, veh/h	437	326	240	216	247	126	311	1395	160	89	1426	203
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, %	0	3	3	0	1	4	0	1	1	2	2	1
Cap, veh/h	508	269	198	164	289	147	246	1446	165	153	1389	625
Arrive On Green	0.08	0.27	0.27	0.05	0.25	0.25	0.10	0.45	0.45	0.04	0.39	0.39
Sat Flow, veh/h	3510	987	727	1810	1177	600	1810	3241	369	1781	3554	1598
Grp Volume(v), veh/h	437	0	566	216	0	373	311	767	788	89	1426	203
Grp Sat Flow(s),veh/h/ln1755		0	1714	1810	0	1777	1810	1791	1819	1781	1777	1598
Q Serve(g_s), s	9.0	0.0	30.0	6.0	0.0	22.0	11.0	45.6	46.6	3.3	43.0	9.8
Cycle Q Clear(g_c), s	9.0	0.0	30.0	6.0	0.0	22.0	11.0	45.6	46.6	3.3	43.0	9.8
Prop In Lane	1.00		0.42	1.00		0.34	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	508	0	467	164	0	436	246	799	812	153	1389	625
V/C Ratio(X)	0.86	0.00	1.21	1.32	0.00	0.86	1.26	0.96	0.97	0.58	1.03	0.33
Avail Cap(c_a), veh/h	508	0	467	164	0	436	246	799	812	170	1389	625
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.1	0.0	40.0	37.0	0.0	39.6	33.7	29.5	29.8	26.7	33.5	23.4
Incr Delay (d2), s/veh	13.4	0.0	113.5	178.5	0.0	14.6	146.3	22.2	24.6	2.0	31.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln5.2	0.0	0.0	27.0	9.5	0.0	10.8	13.3	22.8	24.1	1.4	23.2	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.6	0.0	153.5	215.5	0.0	54.2	180.0	51.7	54.4	28.8	64.6	23.5
LnGrp LOS	D	A	F	F	A	D	F	D	D	C	F	C
Approach Vol, veh/h		1003			589			1866			1718	
Approach Delay, s/veh		106.9			113.4			74.2			57.9	
Approach LOS		F			F			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	36.0	15.0	49.0	13.0	33.0	8.9	55.1				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	30.0	30.0	11.0	43.0	9.0	27.0	6.0	48.0				
Max Q Clear Time (g_c+1), s	30.0	32.0	13.0	45.0	11.0	24.0	5.3	48.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											79.6	
HCM 6th LOS											E	

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	65	0	1715	1725	110
Future Vol, veh/h	0	65	0	1715	1725	110
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	7	0	5	4	4
Mvmt Flow	0	68	0	1786	1797	115

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	957	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.04	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.37	-	-	-	-
Pot Cap-1 Maneuver	0	249	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	249	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	249	-	-
HCM Lane V/C Ratio	-	0.272	-	-
HCM Control Delay (s)	-	24.8	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	1.1	-	-

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕↔			↕↔	
Traffic Vol, veh/h	0	0	15	0	0	30	0	1695	40	0	1720	130
Future Vol, veh/h	0	0	15	0	0	30	0	1695	40	0	1720	130
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	5	20	10	4	2
Mvmt Flow	0	0	16	0	0	32	0	1784	42	0	1811	137

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	974	-	-	914	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	255	0	0	279	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	255	-	-	279	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	20		19.5		0		0	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	255	279	-	-
HCM Lane V/C Ratio	-	-	0.062	0.113	-	-
HCM Control Delay (s)	-	-	20	19.5	-	-
HCM Lane LOS	-	-	C	C	-	-
HCM 95th %tile Q(veh)	-	-	0.2	0.4	-	-

HCM 6th Signalized Intersection Summary  
 16: Cordon Rd & Macleay Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Traffic Volume (veh/h)	180	75	5	65	55	80	125	1465	125	120	1480	155
Future Volume (veh/h)	180	75	5	65	55	80	125	1465	125	120	1480	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1752	1796	1900	1796	1826	1826	1870	1856	1841	1856
Adj Flow Rate, veh/h	186	77	4	67	57	0	129	1510	122	124	1526	152
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, %	3	0	10	7	0	7	5	5	2	3	4	3
Cap, veh/h	275	86	4	211	163		226	1879	151	350	1853	183
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.00	0.11	1.00	1.00	0.05	0.58	0.58
Sat Flow, veh/h	1051	435	23	756	826	0	1739	3252	261	1767	3208	316
Grp Volume(v), veh/h	267	0	0	124	0	0	129	801	831	124	825	853
Grp Sat Flow(s),veh/h/ln	1509	0	0	1582	0	0	1739	1735	1779	1767	1749	1776
Q Serve(g_s), s	9.6	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	2.5	33.9	35.2
Cycle Q Clear(g_c), s	15.5	0.0	0.0	5.9	0.0	0.0	2.7	0.0	0.0	2.5	33.9	35.2
Prop In Lane	0.70		0.01	0.54		0.00	1.00		0.15	1.00		0.18
Lane Grp Cap(c), veh/h	365	0	0	373	0		226	1002	1028	350	1010	1025
V/C Ratio(X)	0.73	0.00	0.00	0.33	0.00		0.57	0.80	0.81	0.35	0.82	0.83
Avail Cap(c_a), veh/h	486	0	0	498	0		240	1002	1028	361	1010	1025
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.25	0.25	0.25	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.2	0.0	0.0	31.3	0.0	0.0	16.9	0.0	0.0	6.6	15.2	15.5
Incr Delay (d2), s/veh	2.3	0.0	0.0	0.2	0.0	0.0	0.7	1.8	1.8	0.6	7.3	7.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	0.0	2.2	0.0	0.0	1.4	0.5	0.5	0.8	13.0	13.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.4	0.0	0.0	31.5	0.0	0.0	17.6	1.8	1.8	7.2	22.5	23.3
LnGrp LOS	D	A	A	C	A		B	A	A	A	C	C
Approach Vol, veh/h		267			124			1761			1802	
Approach Delay, s/veh		37.4			31.5			2.9			21.9	
Approach LOS		D			C			A			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	58.0		22.7	9.3	58.0		22.7				
Change Period (Y+Rc), s	4.5	6.0		5.0	4.5	6.0		5.0				
Max Green Setting (Gmax), s	5.5	44.0		25.0	5.3	44.2		25.0				
Max Q Clear Time (g_c+I1), s	4.7	37.2		7.9	4.5	2.0		17.5				
Green Ext Time (p_c), s	0.0	1.7		0.1	0.0	2.1		0.2				

Intersection Summary

HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 17: Cordon Rd & Gaffin Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	45	145	140	40	320	170	1270	75	275	1130	145
Future Volume (veh/h)	125	45	145	140	40	320	170	1270	75	275	1130	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1900	1841	1900	1870	1781	1826	1856	1900
Adj Flow Rate, veh/h	132	47	19	147	42	166	179	1337	74	289	1189	97
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, %	0	0	0	2	0	4	0	2	8	5	3	0
Cap, veh/h	173	192	78	296	50	198	426	1758	97	335	1937	865
Arrive On Green	0.03	0.15	0.15	0.03	0.15	0.15	0.07	0.51	0.51	0.21	1.00	1.00
Sat Flow, veh/h	1810	1286	520	1781	335	1324	1810	3424	189	1739	3526	1574
Grp Volume(v), veh/h	132	0	66	147	0	208	179	693	718	289	1189	97
Grp Sat Flow(s),veh/h/ln	1810	0	1805	1781	0	1659	1810	1777	1836	1739	1763	1574
Q Serve(g_s), s	3.0	0.0	2.9	3.0	0.0	11.0	4.1	28.0	28.1	7.3	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	2.9	3.0	0.0	11.0	4.1	28.0	28.1	7.3	0.0	0.0
Prop In Lane	1.00		0.29	1.00		0.80	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	173	0	270	296	0	248	426	912	943	335	1937	865
V/C Ratio(X)	0.76	0.00	0.24	0.50	0.00	0.84	0.42	0.76	0.76	0.86	0.61	0.11
Avail Cap(c_a), veh/h	173	0	501	296	0	461	445	912	943	348	1937	865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.57	0.57	0.57	0.18	0.18	0.18
Uniform Delay (d), s/veh	37.8	0.0	33.8	34.6	0.0	37.2	8.8	17.5	17.5	15.4	0.0	0.0
Incr Delay (d2), s/veh	16.1	0.0	0.2	0.5	0.0	2.9	0.1	3.4	3.4	4.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	1.3	1.4	0.0	4.4	1.3	10.1	10.5	2.8	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.0	0.0	33.9	35.0	0.0	40.1	8.9	20.9	20.9	19.3	0.3	0.0
LnGrp LOS	D	A	C	D	A	D	A	C	C	B	A	A
Approach Vol, veh/h		198			355			1590			1575	
Approach Delay, s/veh		47.3			38.0			19.5			3.7	
Approach LOS		D			D			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.1	55.5	7.0	17.5	13.3	52.2	7.0	17.5				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	37.0	3.0	25.0	10.0	34.0	3.0	25.0					
Max Q Clear Time (g_c+1/3), s	2.0	5.0	13.0	9.3	30.1	5.0	4.9					
Green Ext Time (p_c), s	0.0	1.9	0.0	0.2	0.0	0.8	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				16.1								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
 18: Kuebler Blvd/Cordon Rd & Lancaster Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	300	235	245	325	305	180	1110	190	220	1100	95
Future Volume (veh/h)	100	300	235	245	325	305	180	1110	190	220	1100	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1811	1856	1796	1811	1841	1870	1885	1885	1900	1900	1870
Adj Flow Rate, veh/h	105	316	185	258	342	265	189	1168	0	232	1158	52
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, %	0	6	3	7	6	4	2	1	1	0	0	2
Cap, veh/h	135	541	350	341	639	502	273	1333		271	1599	777
Arrive On Green	0.07	0.16	0.14	0.10	0.19	0.17	0.08	0.37	0.00	0.15	0.44	0.42
Sat Flow, veh/h	1810	3441	1572	3319	3441	1560	3456	3582	1598	1810	3610	1585
Grp Volume(v), veh/h	105	316	185	258	342	265	189	1168	0	232	1158	52
Grp Sat Flow(s),veh/h/ln	1810	1721	1572	1659	1721	1560	1728	1791	1598	1810	1805	1585
Q Serve(g_s), s	4.2	6.3	7.6	5.6	6.6	10.2	3.9	22.3	0.0	9.2	19.3	1.3
Cycle Q Clear(g_c), s	4.2	6.3	7.6	5.6	6.6	10.2	3.9	22.3	0.0	9.2	19.3	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	135	541	350	341	639	502	273	1333		271	1599	777
V/C Ratio(X)	0.78	0.58	0.53	0.76	0.54	0.53	0.69	0.88		0.86	0.72	0.07
Avail Cap(c_a), veh/h	197	1406	745	543	1594	935	377	1513		271	1672	809
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.4	28.7	25.1	32.0	27.0	20.3	32.9	21.5	0.0	30.4	16.8	9.9
Incr Delay (d2), s/veh	6.2	0.4	0.5	1.3	0.3	0.3	1.2	5.1	0.0	21.7	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.4	0.0	2.1	2.5	3.4	1.5	8.6	0.0	5.2	6.5	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	29.1	25.6	33.3	27.3	20.7	34.2	26.6	0.0	52.1	18.0	9.9
LnGrp LOS	D	C	C	C	C	C	C	C		D	B	A
Approach Vol, veh/h		606			865			1357			1442	
Approach Delay, s/veh		29.8			27.1			27.6			23.2	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.8	36.5	9.5	17.6	15.0	31.3	11.6	15.5				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	11.0	29.0	12.0	29.0				
Max Q Clear Time (g_c+1/3), s	11.9	21.3	6.2	12.2	11.2	24.3	7.6	9.6				
Green Ext Time (p_c), s	0.0	1.4	0.0	0.4	0.0	1.0	0.0	0.4				

Intersection Summary

HCM 6th Ctrl Delay	26.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



HCM 6th Signalized Intersection Summary  
 19: Kuebler Blvd & Mill Creek Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - No Interchange



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	90	270	1195	140	355	1210
Future Volume (veh/h)	90	270	1195	140	355	1210
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1885	1900	1885	1900	1900	1885
Adj Flow Rate, veh/h	92	271	1219	75	362	1235
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	1	0	0	1
Cap, veh/h	312	478	1747	784	405	2408
Arrive On Green	0.17	0.17	0.16	0.16	0.12	0.67
Sat Flow, veh/h	1795	1610	3676	1609	1810	3676
Grp Volume(v), veh/h	92	271	1219	75	362	1235
Grp Sat Flow(s),veh/h/ln	1795	1610	1791	1609	1810	1791
Q Serve(g_s), s	2.9	9.2	20.9	2.6	6.1	11.2
Cycle Q Clear(g_c), s	2.9	9.2	20.9	2.6	6.1	11.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	312	478	1747	784	405	2408
V/C Ratio(X)	0.29	0.57	0.70	0.10	0.89	0.51
Avail Cap(c_a), veh/h	580	718	1747	784	405	2408
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.09	0.09	0.68	0.68
Uniform Delay (d), s/veh	23.4	19.3	22.7	15.1	13.3	5.3
Incr Delay (d2), s/veh	0.2	0.4	0.2	0.0	15.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	8.4	9.6	0.7	3.7	2.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.6	19.7	23.0	15.1	28.7	5.9
LnGrp LOS	C	B	C	B	C	A
Approach Vol, veh/h	363		1294			1597
Approach Delay, s/veh	20.7		22.5			11.0
Approach LOS	C		C			B
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.7		15.3	12.0	37.7
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		34.0		21.0	8.0	22.0
Max Q Clear Time (g_c+I1), s		13.2		11.2	8.1	22.9
Green Ext Time (p_c), s		1.7		0.1	0.0	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			16.7			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary  
20: Turner Rd & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - Yes Build - No Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	↖
Traffic Volume (veh/h)	335	1190	355	30	1155	50	515	205	60	40	255	520
Future Volume (veh/h)	335	1190	355	30	1155	50	515	205	60	40	255	520
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1885	1870	1870	1900	1870	1900	1870	1900	1900	1900	1870	1841
Adj Flow Rate, veh/h	349	1240	349	31	1203	49	536	214	54	42	266	482
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	2	2	0	2	0	2	0	0	0	2	4
Cap, veh/h	290	1219	337	88	1151	47	462	570	144	329	403	564
Arrive On Green	0.04	0.15	0.14	0.02	0.33	0.32	0.20	0.39	0.37	0.03	0.22	0.22
Sat Flow, veh/h	1795	2750	759	1810	3480	142	1781	1464	369	1810	1870	1560
Grp Volume(v), veh/h	349	793	796	31	614	638	536	0	268	42	266	482
Grp Sat Flow(s),veh/h/ln	1795	1777	1733	1810	1777	1845	1781	0	1834	1810	1870	1560
Q Serve(g_s), s	17.0	57.6	57.6	1.5	43.0	43.0	26.0	0.0	13.6	2.4	16.9	28.0
Cycle Q Clear(g_c), s	17.0	57.6	57.6	1.5	43.0	43.0	26.0	0.0	13.6	2.4	16.9	28.0
Prop In Lane	1.00		0.44	1.00		0.08	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	290	788	768	88	588	610	462	0	713	329	403	564
V/C Ratio(X)	1.20	1.01	1.04	0.35	1.04	1.05	1.16	0.00	0.38	0.13	0.66	0.85
Avail Cap(c_a), veh/h	290	788	768	167	588	610	462	0	713	393	403	564
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.90	0.90	0.90	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	55.5	55.6	35.8	43.5	43.6	32.9	0.0	28.6	39.8	46.6	38.3
Incr Delay (d2), s/veh	94.4	11.1	21.2	0.8	47.4	47.1	94.2	0.0	1.5	0.1	8.2	15.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.6	29.7	31.1	0.7	25.4	26.4	23.0	0.0	6.1	1.1	8.6	16.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	141.6	66.6	76.8	36.6	90.9	90.7	127.1	0.0	30.1	39.9	54.9	53.6
LnGrp LOS	F	F	F	D	F	F	F	A	C	D	D	D
Approach Vol, veh/h		1938			1283			804			790	
Approach Delay, s/veh		84.3			89.5			94.8			53.3	
Approach LOS		F			F			F			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.4	61.6	7.4	54.6	21.0	47.0	30.0	32.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	30.0	50.0	8.0	44.0	17.0	41.0	26.0	26.0				
Max Q Clear Time (g_c+1), s	13.5	59.6	4.4	15.6	19.0	45.0	28.0	30.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				82.4								
HCM 6th LOS				F								

HCM 6th Signalized Intersection Summary  
 21: 36th Ave & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - No Interchange

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	1325	240	440	1445	285	345	155	340	240	135	250
Future Volume (veh/h)	105	1325	240	440	1445	285	345	155	340	240	135	250
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1885	1856	1826	1767	1885	1900	1885	1900	1900	1900	1826	1885
Adj Flow Rate, veh/h	111	1395	240	463	1521	287	363	163	294	253	142	145
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, %	1	3	5	9	1	0	1	0	0	0	5	1
Cap, veh/h	148	1159	197	340	1516	280	404	140	253	208	379	331
Arrive On Green	0.05	0.38	0.38	0.34	1.00	1.00	0.11	0.23	0.23	0.08	0.21	0.21
Sat Flow, veh/h	1795	3015	512	1682	3019	557	1795	607	1094	1810	1826	1595
Grp Volume(v), veh/h	111	808	827	463	887	921	363	0	457	253	142	145
Grp Sat Flow(s),veh/h/ln	1795	1763	1763	1682	1791	1785	1795	0	1701	1810	1826	1595
Q Serve(g_s), s	4.8	50.0	50.0	22.0	0.0	65.3	14.0	0.0	30.0	11.0	8.7	10.3
Cycle Q Clear(g_c), s	4.8	50.0	50.0	22.0	0.0	65.3	14.0	0.0	30.0	11.0	8.7	10.3
Prop In Lane	1.00		0.29	1.00		0.31	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	148	678	678	340	899	897	404	0	393	208	379	331
V/C Ratio(X)	0.75	1.19	1.22	1.36	0.99	1.03	0.90	0.00	1.16	1.21	0.37	0.44
Avail Cap(c_a), veh/h	166	678	678	340	899	897	404	0	393	208	379	331
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.6	40.0	40.0	32.1	0.0	0.0	42.4	0.0	50.0	41.1	44.2	44.9
Incr Delay (d2), s/veh	12.8	100.4	111.8	164.4	6.4	17.0	21.9	0.0	98.2	131.8	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	39.5	41.6	19.2	1.6	4.2	6.9	0.0	23.1	12.9	3.9	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.4	140.4	151.8	196.5	6.4	17.0	64.3	0.0	148.2	172.9	44.5	45.2
LnGrp LOS	D	F	F	F	A	F	E	A	F	F	D	D
Approach Vol, veh/h		1746			2271			820			540	
Approach Delay, s/veh		139.7			49.4			111.1			104.9	
Approach LOS		F			D			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	36.0	55.0	18.0	31.0	10.7	70.3	15.0	34.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	22.0	50.0	14.0	27.0	8.0	64.0	11.0	30.0				
Max Q Clear Time (g_c+Y), s	24.0	52.0	16.0	12.3	6.8	67.3	13.0	32.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											93.7	
HCM 6th LOS											F	

<b>ID</b>	<b>Software/Method</b>	<b>Intersection</b>	<b>Control Type</b>	<b>LOS</b>	<b>Delay</b>	<b>V/C Ratio</b>
1	Synchro HCM 6th Signal	OR 99E & Hazelgreen Rd	Signal	E	69.9	1.01
3	Synchro HCM 6th Signal	Cordon Rd & Hazelgreen Rd	Signal	C	20.8	0.84
8	Synchro HCM 6th Signal	Cordon Rd & Silverton Rd	Signal	C	24.5	0.68
9	Synchro HCM 6th Signal	Cordon Rd & Sunnyview Rd	Signal	B	14.0	0.80
10	Synchro HCM 6th Signal	Cordon Rd & Swegle Rd	Signal	A	4.2	0.70
11	Synchro HCM 6th Signal	Cordon Rd & Center St	Signal	B	13.2	0.86
12	Synchro HCM 6th Signal	Cordon Rd & Auburn Rd	Signal	A	3.4	0.68
13	Synchro HCM 6th Signal	Cordon Rd & State St	Signal	E	79.6	1.25
16	Synchro HCM 6th Signal	Cordon Rd & Macleay Rd	Signal	B	14.8	0.94
17	Synchro HCM 6th Signal	Cordon Rd & Gaffin Rd	Signal	B	16.1	0.95
18	Synchro HCM 6th Signal	Kuebler Blvd/Cordon Rd & Lancaster Dr	Signal	C	26.3	0.84
19	Synchro HCM 6th Signal	Kuebler Blvd & Mill Creek Dr	Signal	B	16.7	0.64
20	Synchro HCM 6th Signal	Turner Rd & Kuebler Blvd	Signal	F	82.4	1.22
21	Synchro HCM 6th Signal	36th Ave & Kuebler Blvd	Signal	F	93.7	1.33

**FUTURE 2043 – YES BUILD – YES INTERCHANGE – AM PEAK**  
**HCM Results**

HCM 6th Signalized Intersection Summary  
1: OR 99E & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - Yes Build - Yes Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	220	260	110	395	65	300	545	40	30	495	65
Future Volume (veh/h)	150	220	260	110	395	65	300	545	40	30	495	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1856	1900	1900	1841	1856	1900	1885	1900	1841	1885	1900
Adj Flow Rate, veh/h	163	239	75	120	429	64	326	592	36	33	538	12
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, %	7	3	0	0	4	3	0	1	0	4	1	0
Cap, veh/h	198	609	528	152	464	69	204	982	60	40	703	316
Arrive On Green	0.12	0.33	0.33	0.08	0.30	0.30	0.11	0.29	0.29	0.02	0.20	0.20
Sat Flow, veh/h	1711	1856	1610	1810	1565	234	1810	3430	208	1753	3582	1610
Grp Volume(v), veh/h	163	239	75	120	0	493	326	309	319	33	538	12
Grp Sat Flow(s),veh/h/ln	1711	1856	1610	1810	0	1799	1810	1791	1848	1753	1791	1610
Q Serve(g_s), s	7.0	7.5	2.5	4.9	0.0	20.0	8.5	11.2	11.2	1.4	10.7	0.5
Cycle Q Clear(g_c), s	7.0	7.5	2.5	4.9	0.0	20.0	8.5	11.2	11.2	1.4	10.7	0.5
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	198	609	528	152	0	533	204	513	529	40	703	316
V/C Ratio(X)	0.82	0.39	0.14	0.79	0.00	0.93	1.60	0.60	0.60	0.83	0.77	0.04
Avail Cap(c_a), veh/h	216	714	620	180	0	645	204	594	613	175	1141	513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	19.5	17.8	33.8	0.0	25.7	33.4	23.2	23.2	36.7	28.6	24.5
Incr Delay (d2), s/veh	19.8	0.3	0.1	14.7	0.0	16.0	290.4	0.6	0.6	26.5	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	2.9	0.8	2.6	0.0	9.8	19.9	4.3	4.5	0.9	4.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.4	19.8	17.9	48.5	0.0	41.7	323.8	23.8	23.8	63.2	30.0	24.6
LnGrp LOS	D	B	B	D	A	D	F	C	C	E	C	C
Approach Vol, veh/h		477			613			954			583	
Approach Delay, s/veh		30.7			43.1			126.3			31.7	
Approach LOS		C			D			F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	20.8	13.2	28.3	6.2	27.6	10.8	30.7				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	8.5	24.0	9.5	27.0	7.5	25.0	7.5	29.0				
Max Q Clear Time (g_c+I1), s	10.5	12.7	9.0	22.0	3.4	13.2	6.9	9.5				
Green Ext Time (p_c), s	0.0	2.1	0.0	0.3	0.0	1.7	0.0	1.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			68.5									
HCM 6th LOS			E									

HCM 6th TWSC  
2: Lake Labish Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - Yes Build - Yes Interchange

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↑		↙	↗		↙	↗	
Traffic Vol, veh/h	10	290	25	5	405	5	120	5	5	30	10	35
Future Vol, veh/h	10	290	25	5	405	5	120	5	5	30	10	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	150	-	-	100	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	0	0	3	0	0	0	0	0	0	0
Mvmt Flow	11	330	28	6	460	6	136	6	6	34	11	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	466	0	0	358	0	0	853	830	330	847	855	463
Stage 1	-	-	-	-	-	-	352	352	-	475	475	-
Stage 2	-	-	-	-	-	-	501	478	-	372	380	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1106	-	-	1212	-	-	281	308	716	284	298	603
Stage 1	-	-	-	-	-	-	669	635	-	574	561	-
Stage 2	-	-	-	-	-	-	556	559	-	653	617	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1106	-	-	1212	-	-	252	303	716	275	294	603
Mov Cap-2 Maneuver	-	-	-	-	-	-	252	303	-	275	294	-
Stage 1	-	-	-	-	-	-	662	629	-	568	558	-
Stage 2	-	-	-	-	-	-	506	556	-	636	611	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			33.3			15.9		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	252	426	1106	-	-	1212	-	-	275	489
HCM Lane V/C Ratio	0.541	0.027	0.01	-	-	0.005	-	-	0.124	0.105
HCM Control Delay (s)	34.9	13.7	8.3	-	-	8	-	-	19.9	13.2
HCM Lane LOS	D	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	2.9	0.1	0	-	-	0	-	-	0.4	0.3

HCM 6th Signalized Intersection Summary  
 3: Cordon Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	135	95	160	300	20	60	165	75	15	60	10
Future Volume (veh/h)	15	135	95	160	300	20	60	165	75	15	60	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1826	1826	1900	1781	1900	1900	1900	1900	1900	1900	1752
Adj Flow Rate, veh/h	16	147	67	174	326	19	65	179	10	16	65	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, %	0	5	5	0	8	0	0	0	0	0	0	10
Cap, veh/h	386	237	108	533	497	29	480	350	296	372	256	4
Arrive On Green	0.02	0.20	0.20	0.12	0.30	0.30	0.07	0.18	0.18	0.02	0.14	0.14
Sat Flow, veh/h	1810	1187	541	1810	1667	97	1810	1900	1610	1810	1866	29
Grp Volume(v), veh/h	16	0	214	174	0	345	65	179	10	16	0	66
Grp Sat Flow(s),veh/h/ln	1810	0	1728	1810	0	1764	1810	1900	1610	1810	0	1895
Q Serve(g_s), s	0.2	0.0	3.8	2.3	0.0	5.7	1.0	2.9	0.2	0.3	0.0	1.0
Cycle Q Clear(g_c), s	0.2	0.0	3.8	2.3	0.0	5.7	1.0	2.9	0.2	0.3	0.0	1.0
Prop In Lane	1.00		0.31	1.00		0.06	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	386	0	345	533	0	526	480	350	296	372	0	260
V/C Ratio(X)	0.04	0.00	0.62	0.33	0.00	0.66	0.14	0.51	0.03	0.04	0.00	0.25
Avail Cap(c_a), veh/h	672	0	1132	721	0	1234	654	1075	911	631	0	1072
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.4	0.0	12.3	8.1	0.0	10.3	11.0	12.3	11.3	12.0	0.0	13.0
Incr Delay (d2), s/veh	0.0	0.0	1.8	0.4	0.0	1.4	0.1	1.2	0.0	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.1	0.5	0.0	1.4	0.2	0.8	0.0	0.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.4	0.0	14.1	8.5	0.0	11.7	11.2	13.5	11.3	12.1	0.0	13.5
LnGrp LOS	B	A	B	A	A	B	B	B	B	B	A	B
Approach Vol, veh/h		230			519			254				82
Approach Delay, s/veh		13.9			10.6			12.8				13.2
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.7	10.2	8.0	10.7	6.3	8.6	4.7	14.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	5.5	19.0	7.5	22.0	5.5	19.0	6.0	23.5				
Max Q Clear Time (g_c+I1), s	2.3	4.9	4.3	5.8	3.0	3.0	2.2	7.7				
Green Ext Time (p_c), s	0.0	0.6	0.1	0.9	0.0	0.2	0.0	1.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				12.0								
HCM 6th LOS				B								



Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	160	70	335	325	40
Future Vol, veh/h	40	160	70	335	325	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	43	172	75	360	349	43

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	881	371	392	0	-	0
Stage 1	371	-	-	-	-	-
Stage 2	510	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	320	679	1178	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	607	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	300	679	1178	-	-	-
Mov Cap-2 Maneuver	425	-	-	-	-	-
Stage 1	657	-	-	-	-	-
Stage 2	607	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.6	1.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1178	-	425	679	-	-
HCM Lane V/C Ratio	0.064	-	0.101	0.253	-	-
HCM Control Delay (s)	8.3	-	14.4	12.1	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.3	1	-	-

Intersection						
Int Delay, s/veh	6.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	275	230	385	460	35
Future Vol, veh/h	10	275	230	385	460	35
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	11	313	261	438	523	40

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1503	543	563	0	-	0
Stage 1	543	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	135	544	1019	-	-	-
Stage 1	586	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	100	544	1019	-	-	-
Mov Cap-2 Maneuver	229	-	-	-	-	-
Stage 1	436	-	-	-	-	-
Stage 2	375	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.8	3.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1019	-	519	-	-
HCM Lane V/C Ratio	0.256	-	0.624	-	-
HCM Control Delay (s)	9.7	-	22.8	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	1	-	4.2	-	-

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	100	65	45	525	690	45
Future Vol, veh/h	100	65	45	525	690	45
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	3	4	4	4	3	6
Mvmt Flow	106	69	48	559	734	48

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1413	758	782	0	-	0
Stage 1	758	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Critical Hdwy	6.43	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	151	404	827	-	-	-
Stage 1	461	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	142	404	827	-	-	-
Mov Cap-2 Maneuver	279	-	-	-	-	-
Stage 1	434	-	-	-	-	-
Stage 2	515	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.4	0.8	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	827	-	318	-	-
HCM Lane V/C Ratio	0.058	-	0.552	-	-
HCM Control Delay (s)	9.6	-	29.4	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	3.1	-	-

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	60	45	530	665	80
Future Vol, veh/h	35	60	45	530	665	80
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	1	5	7	4	3
Mvmt Flow	38	66	49	582	731	88
























Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1455	775	819	0	-	0
Stage 1	775	-	-	-	-	-
Stage 2	680	-	-	-	-	-
Critical Hdwy	6.44	6.21	4.15	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.309	2.245	-	-	-
Pot Cap-1 Maneuver	142	400	797	-	-	-
Stage 1	451	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	133	400	797	-	-	-
Mov Cap-2 Maneuver	269	-	-	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	499	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.3	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	797	-	339	-	-
HCM Lane V/C Ratio	0.062	-	0.308	-	-
HCM Control Delay (s)	9.8	-	20.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.3	-	-

HCM 6th Signalized Intersection Summary  
8: Cordon Rd & Silverton Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - Yes Build - Yes Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	205	240	330	400	10	235	460	220	15	565	145
Future Volume (veh/h)	105	205	240	330	400	10	235	460	220	15	565	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1781	1826	1841	1900	1781	1870	1781	1752	1826	1826
Adj Flow Rate, veh/h	114	223	44	359	435	9	255	500	80	16	614	47
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, %	9	9	8	5	4	0	8	2	8	10	5	5
Cap, veh/h	189	631	283	464	937	19	239	1228	522	20	750	424
Arrive On Green	0.06	0.19	0.19	0.14	0.27	0.27	0.14	0.35	0.35	0.01	0.22	0.22
Sat Flow, veh/h	3264	3357	1505	3374	3504	72	1697	3554	1510	1668	3469	1547
Grp Volume(v), veh/h	114	223	44	359	217	227	255	500	80	16	614	47
Grp Sat Flow(s),veh/h/ln	1632	1678	1505	1687	1749	1827	1697	1777	1510	1668	1735	1547
Q Serve(g_s), s	1.9	3.3	1.4	5.8	5.9	5.9	8.0	6.1	2.1	0.5	9.6	1.3
Cycle Q Clear(g_c), s	1.9	3.3	1.4	5.8	5.9	5.9	8.0	6.1	2.1	0.5	9.6	1.3
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	189	631	283	464	468	489	239	1228	522	20	750	424
V/C Ratio(X)	0.60	0.35	0.16	0.77	0.46	0.46	1.07	0.41	0.15	0.81	0.82	0.11
Avail Cap(c_a), veh/h	460	1893	849	476	986	1031	239	1816	772	235	1773	881
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.1	20.0	19.3	23.6	17.4	17.4	24.4	14.1	12.8	28.0	21.2	15.4
Incr Delay (d2), s/veh	1.1	0.1	0.1	6.8	0.3	0.3	76.8	0.1	0.1	24.7	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.1	0.4	2.5	2.0	2.1	7.8	1.8	0.5	0.3	3.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.2	20.2	19.4	30.4	17.6	17.6	101.1	14.2	12.9	52.7	22.0	15.5
LnGrp LOS	C	C	B	C	B	B	F	B	B	D	C	B
Approach Vol, veh/h		381			803			835			677	
Approach Delay, s/veh		22.2			23.4			40.6			22.3	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.8	15.7	12.0	17.3	7.3	20.2	4.7	24.6				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	8.0	32.0	8.0	29.0	8.0	32.0	8.0	29.0				
Max Q Clear Time (g_c+I1), s	7.8	5.3	10.0	11.6	3.9	7.9	2.5	8.1				
Green Ext Time (p_c), s	0.0	0.3	0.0	0.7	0.0	0.4	0.0	0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			28.3									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary  
 9: Cordon Rd & Sunnyview Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	45	140	70	80	40	190	790	50	25	965	145
Future Volume (veh/h)	100	45	140	70	80	40	190	790	50	25	965	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1841	1856	1900	1870	1856	1856	1856	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	106	48	10	74	85	14	202	840	49	27	1027	141
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	3	0	2	3	3	3	2	0	0	2	2
Cap, veh/h	259	162	34	285	138	23	375	2067	121	379	1753	240
Arrive On Green	0.07	0.11	0.11	0.05	0.09	0.09	0.02	0.20	0.20	0.02	0.56	0.56
Sat Flow, veh/h	1753	1488	310	1781	1548	255	1767	3412	199	1810	3130	429
Grp Volume(v), veh/h	106	0	58	74	0	99	202	437	452	27	583	585
Grp Sat Flow(s),veh/h/ln	1753	0	1798	1781	0	1803	1767	1777	1835	1810	1777	1782
Q Serve(g_s), s	4.3	0.0	2.4	3.0	0.0	4.2	3.5	17.1	17.2	0.5	17.2	17.2
Cycle Q Clear(g_c), s	4.3	0.0	2.4	3.0	0.0	4.2	3.5	17.1	17.2	0.5	17.2	17.2
Prop In Lane	1.00		0.17	1.00		0.14	1.00		0.11	1.00		0.24
Lane Grp Cap(c), veh/h	259	0	195	285	0	161	375	1076	1111	379	995	998
V/C Ratio(X)	0.41	0.00	0.30	0.26	0.00	0.62	0.54	0.41	0.41	0.07	0.59	0.59
Avail Cap(c_a), veh/h	259	0	494	320	0	496	387	1076	1111	429	995	998
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.90	0.90	0.90	0.61	0.61	0.61
Uniform Delay (d), s/veh	30.2	0.0	32.8	30.9	0.0	35.1	10.0	19.5	19.5	8.3	11.5	11.5
Incr Delay (d2), s/veh	1.0	0.0	0.6	0.5	0.0	2.8	1.3	1.0	1.0	0.0	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	1.0	1.2	0.0	1.8	1.0	8.2	8.4	0.1	5.4	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.3	0.0	33.5	31.4	0.0	38.0	11.3	20.5	20.5	8.3	13.1	13.1
LnGrp LOS	C	A	C	C	A	D	B	C	C	A	B	B
Approach Vol, veh/h		164			173			1091			1195	
Approach Delay, s/veh		32.0			35.1			18.8			13.0	
Approach LOS		C			D			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.5	49.8	9.6	11.1	5.8	53.5	8.0	12.7				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	29.4	5.6	22.0	4.0	31.4	5.6	22.0				
Max Q Clear Time (g_c+1/5), s	4.0	19.2	6.3	6.2	2.5	19.2	5.0	4.4				
Green Ext Time (p_c), s	0.0	6.1	0.0	0.2	0.0	5.2	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				18.0								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
 10: Cordon Rd & Swegle Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Volume (veh/h)	45	10	115	35	5	5	115	985	45	10	1090	85
Future Volume (veh/h)	45	10	115	35	5	5	115	985	45	10	1090	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1900	1870	1826	1900	1900	1796	1856
Adj Flow Rate, veh/h	48	11	8	38	5	1	124	1059	45	11	1172	86
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	6	0	0	0	2	5	0	0	7	3
Cap, veh/h	151	20	13	172	19	2	509	2572	109	451	2300	169
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.76	0.76	0.03	1.00	1.00
Sat Flow, veh/h	1130	303	194	1349	288	38	1781	3391	144	1810	3224	236
Grp Volume(v), veh/h	67	0	0	44	0	0	124	542	562	11	620	638
Grp Sat Flow(s),veh/h/ln1627		0	0	1676	0	0	1781	1735	1800	1810	1706	1754
Q Serve(g_s), s	1.2	0.0	0.0	0.0	0.0	0.0	1.2	8.8	8.8	0.1	0.0	0.0
Cycle Q Clear(g_c), s	3.1	0.0	0.0	1.8	0.0	0.0	1.2	8.8	8.8	0.1	0.0	0.0
Prop In Lane	0.72		0.12	0.86		0.02	1.00		0.08	1.00		0.13
Lane Grp Cap(c), veh/h	184	0	0	194	0	0	509	1316	1365	451	1218	1251
V/C Ratio(X)	0.36	0.00	0.00	0.23	0.00	0.00	0.24	0.41	0.41	0.02	0.51	0.51
Avail Cap(c_a), veh/h	440	0	0	441	0	0	607	1316	1365	553	1218	1251
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.77	0.77	0.77	0.67	0.67	0.67
Uniform Delay (d), s/veh 36.3	0.0	0.0	35.8	0.0	0.0	1.9	3.4	3.4	3.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	0.6	0.0	0.0	0.2	0.7	0.7	0.0	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln1.3	0.0	0.0	0.8	0.0	0.0	0.1	1.4	1.4	1.4	0.0	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.5	0.0	0.0	36.4	0.0	0.0	2.1	4.1	4.1	3.1	1.0	1.0
LnGrp LOS	D	A	A	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		67			44			1228			1269	
Approach Delay, s/veh		37.5			36.4			3.9			1.0	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s5.1	65.7			9.2	8.7	62.1		9.2				
Change Period (Y+Rc), s 4.0	5.0			4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s 5.6	42.6			18.8	9.1	39.1		18.8				
Max Q Clear Time (g_c+1/2), s 10.8	10.8			5.1	3.2	2.0		3.8				
Green Ext Time (p_c), s 0.0	7.1			0.2	0.1	9.0		0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				3.9								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary  
 11: Cordon Rd & Center St

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	55	160	90	85	40	145	1045	65	45	1060	125
Future Volume (veh/h)	70	55	160	90	85	40	145	1045	65	45	1060	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1811	1841	1856	1752	1856	1826	1841	1900	1796	1856
Adj Flow Rate, veh/h	76	60	10	98	92	13	158	1136	67	49	1152	62
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	6	4	3	10	3	5	4	0	7	3
Cap, veh/h	257	174	142	295	169	24	356	1902	112	433	1876	865
Arrive On Green	0.05	0.09	0.09	0.07	0.11	0.11	0.13	1.00	1.00	0.04	0.55	0.55
Sat Flow, veh/h	1781	1870	1535	1753	1590	225	1767	3329	196	1810	3413	1572
Grp Volume(v), veh/h	76	60	10	98	0	105	158	592	611	49	1152	62
Grp Sat Flow(s),veh/h/ln	1781	1870	1535	1753	0	1815	1767	1735	1791	1810	1706	1572
Q Serve(g_s), s	2.9	2.3	0.4	3.7	0.0	4.1	2.9	0.0	0.0	0.9	17.2	1.4
Cycle Q Clear(g_c), s	2.9	2.3	0.4	3.7	0.0	4.1	2.9	0.0	0.0	0.9	17.2	1.4
Prop In Lane	1.00		1.00	1.00		0.12	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	257	174	142	295	0	193	356	991	1023	433	1876	865
V/C Ratio(X)	0.30	0.35	0.07	0.33	0.00	0.54	0.44	0.60	0.60	0.11	0.61	0.07
Avail Cap(c_a), veh/h	281	549	450	295	0	532	360	991	1023	476	1876	865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.84	0.84	0.84	0.79	0.79	0.79
Uniform Delay (d), s/veh	28.6	31.9	31.1	28.1	0.0	31.8	8.4	0.0	0.0	6.4	11.5	7.9
Incr Delay (d2), s/veh	0.2	0.9	0.2	0.2	0.0	1.8	0.3	2.2	2.2	0.0	1.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.0	0.2	1.5	0.0	1.8	0.7	0.6	0.6	0.2	5.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.9	32.8	31.2	28.4	0.0	33.6	8.7	2.2	2.2	6.4	12.7	8.0
LnGrp LOS	C	C	C	C	A	C	A	A	A	A	B	A
Approach Vol, veh/h	146			203			1361			1263		
Approach Delay, s/veh	30.6			31.0			3.0			12.2		
Approach LOS	C			C			A			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	46.2	8.0	12.0	7.2	47.8	9.0	11.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	26.0	5.0	22.0	5.0	26.0	5.0	22.0				
Max Q Clear Time (g_c+14.5), s	14.5	19.2	4.9	6.1	2.9	2.0	5.7	4.3				
Green Ext Time (p_c), s	0.0	4.6	0.0	0.3	0.0	11.4	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay	10.2											
HCM 6th LOS	B											



HCM 6th Signalized Intersection Summary  
 12: Cordon Rd & Auburn Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕↗		↗	↕↗	
Traffic Volume (veh/h)	25	5	80	20	5	15	65	1215	20	15	1250	50
Future Volume (veh/h)	25	5	80	20	5	15	65	1215	20	15	1250	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1796	1900	1767	1900	1900	1900	1900	1826	1604	1900	1796	1900
Adj Flow Rate, veh/h	27	5	1	22	5	1	71	1321	21	16	1359	52
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, %	7	0	9	0	0	0	0	5	20	0	7	0
Cap, veh/h	172	25	100	145	26	3	463	2590	41	372	2375	91
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.05	0.74	0.74	0.04	1.00	1.00
Sat Flow, veh/h	1251	371	1497	890	397	48	1810	3495	56	1810	3352	128
Grp Volume(v), veh/h	32	0	1	28	0	0	71	655	687	16	691	720
Grp Sat Flow(s),veh/h/ln	1622	0	1497	1334	0	0	1810	1735	1816	1810	1706	1773
Q Serve(g_s), s	0.0	0.0	0.0	0.7	0.0	0.0	0.7	11.8	11.8	0.2	0.0	0.0
Cycle Q Clear(g_c), s	1.2	0.0	0.0	1.9	0.0	0.0	0.7	11.8	11.8	0.2	0.0	0.0
Prop In Lane	0.84		1.00	0.79		0.04	1.00		0.03	1.00		0.07
Lane Grp Cap(c), veh/h	197	0	100	175	0	0	463	1286	1346	372	1209	1256
V/C Ratio(X)	0.16	0.00	0.01	0.16	0.00	0.00	0.15	0.51	0.51	0.04	0.57	0.57
Avail Cap(c_a), veh/h	475	0	379	455	0	0	515	1286	1346	482	1209	1256
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.45	0.45	0.45	0.72	0.72	0.72
Uniform Delay (d), s/veh	33.2	0.0	32.7	33.5	0.0	0.0	2.1	4.0	4.0	3.4	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.4	0.0	0.0	0.1	0.7	0.6	0.0	1.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	0.5	0.0	0.0	0.1	2.2	2.3	0.0	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.6	0.0	32.7	33.9	0.0	0.0	2.2	4.7	4.7	3.4	1.4	1.4
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		33			28			1413			1427	
Approach Delay, s/veh		33.6			33.9			4.6			1.4	
Approach LOS		C			C			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	60.6		9.0	7.9	58.1		9.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	30.0	37.0		19.0	6.0	37.0		19.0				
Max Q Clear Time (g_c+1/2), s	12.2	13.8		3.2	2.7	2.0		3.9				
Green Ext Time (p_c), s	0.0	9.2		0.1	0.0	11.6		0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			3.6									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary  
 13: Cordon Rd & State St

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔		↔	↔		↔	↕↕		↔	↕↕	↔
Traffic Volume (veh/h)	275	145	125	145	210	90	125	940	140	85	965	280
Future Volume (veh/h)	275	145	125	145	210	90	125	940	140	85	965	280
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1870	1841	1752	1885	1811	1811	1856	1796	1796	1885	1870
Adj Flow Rate, veh/h	299	158	90	158	228	75	136	1022	137	92	1049	115
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, %	3	2	4	10	1	6	6	3	7	7	1	2
Cap, veh/h	590	218	124	323	265	87	267	1111	149	232	1230	533
Arrive On Green	0.09	0.20	0.20	0.09	0.20	0.20	0.07	0.36	0.36	0.06	0.34	0.34
Sat Flow, veh/h	3428	1119	637	1668	1358	447	1725	3124	418	1711	3582	1552
Grp Volume(v), veh/h	299	0	248	158	0	303	136	576	583	92	1049	115
Grp Sat Flow(s),veh/h/ln	1714	0	1756	1668	0	1805	1725	1763	1780	1711	1791	1552
Q Serve(g_s), s	4.6	0.0	8.9	5.0	0.0	10.9	3.3	21.0	21.0	2.3	18.2	3.5
Cycle Q Clear(g_c), s	4.6	0.0	8.9	5.0	0.0	10.9	3.3	21.0	21.0	2.3	18.2	3.5
Prop In Lane	1.00		0.36	1.00		0.25	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	590	0	343	323	0	352	267	627	633	232	1230	533
V/C Ratio(X)	0.51	0.00	0.72	0.49	0.00	0.86	0.51	0.92	0.92	0.40	0.85	0.22
Avail Cap(c_a), veh/h	590	0	550	323	0	566	295	710	718	280	1444	625
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.8	0.0	25.3	19.6	0.0	26.1	15.7	20.7	20.7	16.2	20.4	15.6
Incr Delay (d2), s/veh	0.3	0.0	1.1	0.4	0.0	4.3	0.6	15.1	15.2	0.4	4.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	3.5	1.7	0.0	4.4	1.1	9.8	10.0	0.8	7.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.1	0.0	26.4	20.0	0.0	30.4	16.3	35.7	35.8	16.6	24.4	15.7
LnGrp LOS	C	A	C	C	A	C	B	D	D	B	C	B
Approach Vol, veh/h		547			461			1295			1256	
Approach Delay, s/veh		22.9			26.8			33.7			23.0	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	19.1	8.9	29.0	10.0	19.1	8.1	29.8				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	10.0	21.0	6.0	27.0	6.0	21.0	6.0	27.0				
Max Q Clear Time (g_c+1), s	10.9	10.9	5.3	20.2	6.6	12.9	4.3	23.0				
Green Ext Time (p_c), s	0.0	0.2	0.0	1.2	0.0	0.2	0.0	0.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				27.4								
HCM 6th LOS				C								

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	75	0	1210	1185	55
Future Vol, veh/h	0	75	0	1210	1185	55
Conflicting Peds, #/hr	2	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	7	8	6	9	9
Mvmt Flow	0	82	0	1315	1288	60

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	674	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	7.04	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.37	-
Pot Cap-1 Maneuver	0	386	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	386	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 386	-	-
HCM Lane V/C Ratio	- 0.211	-	-
HCM Control Delay (s)	- 16.8	-	-
HCM Lane LOS	- C	-	-
HCM 95th %tile Q(veh)	- 0.8	-	-

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕↔			↕↔	
Traffic Vol, veh/h	0	0	15	0	0	25	0	1230	30	0	1235	100
Future Vol, veh/h	0	0	15	0	0	25	0	1230	30	0	1235	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	0	9	0	20	20	0	6	0	0	5	5
Mvmt Flow	0	0	16	0	0	27	0	1337	33	0	1342	109

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	726	-	-	685	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.08	-	-	7.3	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.39	-	-	3.5	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	352	0	0	351	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	352	-	-	351	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.7		16.1		0		0	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	352	351	-	-
HCM Lane V/C Ratio	-	-	0.046	0.077	-	-
HCM Control Delay (s)	-	-	15.7	16.1	-	-
HCM Lane LOS	-	-	C	C	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.2	-	-

HCM 6th Signalized Intersection Summary  
 16: Cordon Rd & Macleay Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Traffic Volume (veh/h)	165	50	55	95	60	70	65	1020	90	75	1155	35
Future Volume (veh/h)	165	50	55	95	60	70	65	1020	90	75	1155	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1811	1900	1900	1781	1870	1900	1826	1737	1737	1796	1796
Adj Flow Rate, veh/h	179	54	47	103	65	0	71	1109	90	82	1255	35
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, %	10	6	0	0	8	2	0	5	11	11	7	7
Cap, veh/h	269	64	52	242	135		294	1734	141	408	1819	51
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.00	0.10	1.00	1.00	0.05	0.54	0.54
Sat Flow, veh/h	888	290	238	768	612	0	1810	3250	264	1654	3391	95
Grp Volume(v), veh/h	280	0	0	168	0	0	71	592	607	82	631	659
Grp Sat Flow(s),veh/h/ln	1415	0	0	1380	0	0	1810	1735	1778	1654	1706	1779
Q Serve(g_s), s	6.9	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	1.7	21.8	21.8
Cycle Q Clear(g_c), s	15.4	0.0	0.0	8.5	0.0	0.0	1.3	0.0	0.0	1.7	21.8	21.8
Prop In Lane	0.64		0.17	0.61		0.00	1.00		0.15	1.00		0.05
Lane Grp Cap(c), veh/h	386	0	0	377	0		294	925	949	408	915	954
V/C Ratio(X)	0.73	0.00	0.00	0.45	0.00		0.24	0.64	0.64	0.20	0.69	0.69
Avail Cap(c_a), veh/h	515	0	0	506	0		320	925	949	431	915	954
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	0.0	27.5	0.0	0.0	10.1	0.0	0.0	7.2	13.7	13.7
Incr Delay (d2), s/veh	1.9	0.0	0.0	0.3	0.0	0.0	0.3	2.7	2.7	0.2	4.2	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.0	0.0	2.7	0.0	0.0	0.4	0.7	0.7	0.5	7.8	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	0.0	0.0	27.8	0.0	0.0	10.5	2.7	2.7	7.5	17.9	17.7
LnGrp LOS	C	A	A	C	A		B	A	A	A	B	B
Approach Vol, veh/h		280			168			1270			1372	
Approach Delay, s/veh		32.2			27.8			3.1			17.2	
Approach LOS		C			C			A			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	48.9		22.6	8.7	48.7		22.6				
Change Period (Y+Rc), s	4.5	6.0		5.0	4.5	6.0		5.0				
Max Green Setting (Gmax), s	5.1	34.4		25.0	5.3	34.2		25.0				
Max Q Clear Time (g_c+I1), s	3.3	23.8		10.5	3.7	2.0		17.4				
Green Ext Time (p_c), s	0.0	1.4		0.2	0.0	1.3		0.3				

Intersection Summary

HCM 6th Ctrl Delay	13.3
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 17: Cordon Rd & Gaffin Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	45	190	90	25	245	60	860	85	160	1050	95
Future Volume (veh/h)	70	45	190	90	25	245	60	860	85	160	1050	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1856	1781	1826	1900	1870	1841	1856
Adj Flow Rate, veh/h	76	49	55	98	27	101	65	935	84	174	1141	53
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, %	0	0	2	0	0	3	8	5	0	2	4	3
Cap, veh/h	192	83	93	216	36	133	398	1838	165	423	2116	931
Arrive On Green	0.04	0.10	0.10	0.04	0.10	0.10	0.03	0.57	0.57	0.13	1.00	1.00
Sat Flow, veh/h	1810	817	917	1810	351	1313	1697	3213	289	1781	3497	1539
Grp Volume(v), veh/h	76	0	104	98	0	128	65	505	514	174	1141	53
Grp Sat Flow(s),veh/h/ln	1810	0	1735	1810	0	1664	1697	1735	1767	1781	1749	1539
Q Serve(g_s), s	3.0	0.0	4.6	3.0	0.0	6.0	1.3	14.1	14.1	3.2	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	4.6	3.0	0.0	6.0	1.3	14.1	14.1	3.2	0.0	0.0
Prop In Lane	1.00		0.53	1.00		0.79	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	192	0	176	216	0	169	398	992	1011	423	2116	931
V/C Ratio(X)	0.40	0.00	0.59	0.45	0.00	0.76	0.16	0.51	0.51	0.41	0.54	0.06
Avail Cap(c_a), veh/h	192	0	542	216	0	520	409	992	1011	465	2116	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.66	0.66	0.66	0.53	0.53	0.53
Uniform Delay (d), s/veh	31.2	0.0	34.4	32.6	0.0	35.0	6.5	10.3	10.3	7.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	1.2	0.6	0.0	2.6	0.0	1.2	1.2	0.1	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	2.0	1.8	0.0	2.4	0.3	4.3	4.3	0.8	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.7	0.0	35.5	33.1	0.0	37.6	6.6	11.6	11.5	7.2	0.5	0.1
LnGrp LOS	C	A	D	C	A	D	A	B	B	A	A	A
Approach Vol, veh/h		180			226			1084			1368	
Approach Delay, s/veh		33.9			35.7			11.3			1.4	
Approach LOS		C			D			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	54.4	7.0	12.1	9.1	51.8	7.0	12.1				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	3.0	31.0	3.0	25.0	7.0	27.0	3.0	25.0				
Max Q Clear Time (g_c+1), s	13.3	2.0	5.0	8.0	5.2	16.1	5.0	6.6				
Green Ext Time (p_c), s	0.0	1.8	0.0	0.1	0.0	0.8	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			9.9									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary  
 18: Kuebler Blvd/Cordon Rd & Lancaster Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	340	135	100	195	95	165	1020	260	250	1005	110
Future Volume (veh/h)	60	340	135	100	195	95	165	1020	260	250	1005	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1826	1885	1796	1900	1885	1856	1826	1870	1885	1900
Adj Flow Rate, veh/h	65	370	85	109	212	36	179	1109	0	272	1092	52
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, %	0	3	5	1	7	0	1	3	5	2	1	0
Cap, veh/h	82	560	343	188	570	462	278	1331		243	1556	718
Arrive On Green	0.05	0.16	0.14	0.05	0.17	0.15	0.08	0.38	0.00	0.14	0.43	0.40
Sat Flow, veh/h	1810	3526	1547	3483	3413	1610	3483	3526	1547	1781	3582	1610
Grp Volume(v), veh/h	65	370	85	109	212	36	179	1109	0	272	1092	52
Grp Sat Flow(s),veh/h/ln	1810	1763	1547	1742	1706	1610	1742	1763	1547	1781	1791	1610
Q Serve(g_s), s	2.1	5.8	2.7	1.8	3.2	1.0	2.9	16.7	0.0	8.0	14.5	1.1
Cycle Q Clear(g_c), s	2.1	5.8	2.7	1.8	3.2	1.0	2.9	16.7	0.0	8.0	14.5	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	82	560	343	188	570	462	278	1331		243	1556	718
V/C Ratio(X)	0.79	0.66	0.25	0.58	0.37	0.08	0.64	0.83		1.12	0.70	0.07
Avail Cap(c_a), veh/h	247	2046	995	476	1981	1127	476	2046		243	2079	953
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	23.2	18.8	27.1	21.7	15.2	26.2	16.6	0.0	25.3	13.5	9.3
Incr Delay (d2), s/veh	6.1	0.5	0.1	1.1	0.1	0.0	0.9	1.0	0.0	93.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.2	0.9	0.7	1.1	0.3	1.1	5.2	0.0	9.1	4.2	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.8	23.7	18.9	28.1	21.8	15.3	27.1	17.6	0.0	118.5	13.8	9.3
LnGrp LOS	C	C	B	C	C	B	C	B		F	B	A
Approach Vol, veh/h		520			357			1288			1416	
Approach Delay, s/veh		24.2			23.1			18.9			33.8	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	29.5	6.7	13.8	12.0	26.1	7.2	13.3				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	8.0	32.0	8.0	33.0				
Max Q Clear Time (g_c+14.5), s	14.5	16.5	4.1	5.2	10.0	18.7	3.8	7.8				
Green Ext Time (p_c), s	0.0	1.4	0.0	0.3	0.0	1.4	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Kuebler Blvd & Mill Creek Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - Yes Interchange



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	80	90	1355	270	185	1055
Future Volume (veh/h)	80	90	1355	270	185	1055
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1604	1604	1856	1604	1752	1870
Adj Flow Rate, veh/h	87	96	1473	196	201	1147
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	20	3	20	10	2
Cap, veh/h	140	216	2206	850	303	2681
Arrive On Green	0.09	0.09	0.42	0.42	0.07	0.75
Sat Flow, veh/h	1527	1359	3618	1359	1668	3647
Grp Volume(v), veh/h	87	96	1473	196	201	1147
Grp Sat Flow(s),veh/h/ln	1527	1359	1763	1359	1668	1777
Q Serve(g_s), s	3.6	4.2	21.9	6.0	2.5	7.6
Cycle Q Clear(g_c), s	3.6	4.2	21.9	6.0	2.5	7.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	140	216	2206	850	303	2681
V/C Ratio(X)	0.62	0.44	0.67	0.23	0.66	0.43
Avail Cap(c_a), veh/h	493	530	2206	850	396	2681
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.09	0.09	0.75	0.75
Uniform Delay (d), s/veh	28.4	24.7	13.4	8.8	13.1	2.9
Incr Delay (d2), s/veh	1.7	0.5	0.1	0.1	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	3.2	8.0	1.1	1.6	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.1	25.3	13.6	8.9	13.9	3.3
LnGrp LOS	C	C	B	A	B	A
Approach Vol, veh/h	183		1669			1348
Approach Delay, s/veh	27.6		13.0			4.9
Approach LOS	C		B			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		55.0		10.0	8.4	46.7
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		34.0		21.0	8.0	22.0
Max Q Clear Time (g_c+I1), s		9.6		6.2	4.5	23.9
Green Ext Time (p_c), s		1.5		0.0	0.0	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			10.4			
HCM 6th LOS			B			



HCM 6th Signalized Intersection Summary  
20: Turner Rd & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
Future 2043 - AM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	1455	130	190	745	165	360	325	110	55	115	180
Future Volume (veh/h)	195	1455	130	190	745	165	360	325	110	55	115	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1811	1870	1870	1678	1870	1870	1841	1900	1693	1826	1900	1752
Adj Flow Rate, veh/h	212	1582	136	207	810	165	391	353	110	60	125	130
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, %	6	2	2	15	2	2	4	0	14	5	0	10
Cap, veh/h	337	1529	130	203	1394	284	404	396	124	145	409	461
Arrive On Green	0.03	0.15	0.15	0.09	0.47	0.46	0.11	0.29	0.27	0.04	0.22	0.22
Sat Flow, veh/h	1725	3314	282	1598	2940	599	1753	1389	433	1739	1900	1485
Grp Volume(v), veh/h	212	842	876	207	489	486	391	0	463	60	125	130
Grp Sat Flow(s),veh/h/ln	1725	1777	1820	1598	1777	1763	1753	0	1822	1739	1900	1485
Q Serve(g_s), s	8.4	60.0	60.0	12.0	26.0	26.1	14.0	0.0	31.7	3.5	7.2	8.6
Cycle Q Clear(g_c), s	8.4	60.0	60.0	12.0	26.0	26.1	14.0	0.0	31.7	3.5	7.2	8.6
Prop In Lane	1.00		0.16	1.00		0.34	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	337	820	840	203	842	835	404	0	520	145	409	461
V/C Ratio(X)	0.63	1.03	1.04	1.02	0.58	0.58	0.97	0.00	0.89	0.41	0.31	0.28
Avail Cap(c_a), veh/h	465	820	840	203	842	835	404	0	520	186	409	461
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.91	0.91	0.91	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.6	55.1	55.2	41.0	24.8	25.1	44.2	0.0	44.7	41.2	42.8	33.9
Incr Delay (d2), s/veh	0.1	17.3	23.3	65.6	2.7	2.7	35.9	0.0	20.0	0.7	1.9	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	32.2	34.5	6.6	10.8	10.8	9.9	0.0	16.8	1.5	3.5	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.7	72.4	78.5	106.6	27.5	27.8	80.1	0.0	64.8	41.9	44.8	35.4
LnGrp LOS	C	F	F	F	C	C	F	A	E	D	D	D
Approach Vol, veh/h		1930			1182			854			315	
Approach Delay, s/veh		69.6			41.5			71.8			40.3	
Approach LOS		E			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	60.0	64.0	8.9	41.1	14.4	65.6	18.0	32.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	12.0	58.0	8.0	32.0	20.0	50.0	14.0	26.0				
Max Q Clear Time (g_c+1/4), s	14.0	62.0	5.5	33.7	10.4	28.1	16.0	10.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay	60.1
HCM 6th LOS	E

HCM 6th Signalized Intersection Summary  
 21: 36th Ave & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Future 2043 - AM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	1485	350	185	920	200	310	80	230	85	85	85
Future Volume (veh/h)	215	1485	350	185	920	200	310	80	230	85	85	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1870	1870	1826	1900	1841	1900	1856	1900	1900	1737
Adj Flow Rate, veh/h	234	1614	364	201	1000	204	337	87	159	92	92	7
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	4	2	2	5	0	4	0	3	0	0	11
Cap, veh/h	447	1649	358	192	1678	342	311	96	175	177	263	204
Arrive On Green	0.07	0.58	0.58	0.15	1.00	1.00	0.08	0.16	0.16	0.06	0.14	0.14
Sat Flow, veh/h	1781	2857	620	1781	2871	584	1753	602	1100	1810	1900	1472
Grp Volume(v), veh/h	234	964	1014	201	603	601	337	0	246	92	92	7
Grp Sat Flow(s),veh/h/ln	1781	1749	1729	1781	1735	1721	1753	0	1702	1810	1900	1472
Q Serve(g_s), s	7.0	67.5	75.0	10.0	0.0	0.0	10.0	0.0	18.5	5.6	5.7	0.5
Cycle Q Clear(g_c), s	7.0	67.5	75.0	10.0	0.0	0.0	10.0	0.0	18.5	5.6	5.7	0.5
Prop In Lane	1.00		0.36	1.00		0.34	1.00		0.65	1.00		1.00
Lane Grp Cap(c), veh/h	447	1009	998	192	1014	1006	311	0	271	177	263	204
V/C Ratio(X)	0.52	0.96	1.02	1.04	0.60	0.60	1.08	0.00	0.91	0.52	0.35	0.03
Avail Cap(c_a), veh/h	584	1009	998	192	1014	1006	311	0	367	186	380	294
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.70	0.70	0.70	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.4	25.9	27.5	40.6	0.0	0.0	52.3	0.0	53.7	45.4	50.7	48.5
Incr Delay (d2), s/veh	0.4	19.4	32.8	66.4	1.8	1.8	75.3	0.0	18.2	0.9	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	30.6	36.7	9.1	0.5	0.5	11.8	0.0	9.1	2.6	2.7	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.7	45.3	60.3	107.0	1.8	1.8	127.6	0.0	72.0	46.3	51.0	48.5
LnGrp LOS	A	D	F	F	A	A	F	A	E	D	D	D
Approach Vol, veh/h		2212			1405			583			191	
Approach Delay, s/veh		48.4			16.9			104.2			48.7	
Approach LOS		D			B			F			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.0	80.0	14.0	22.0	13.0	81.0	11.3	24.7				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	10.0	67.0	10.0	26.0	19.0	58.0	8.0	28.0				
Max Q Clear Time (g_c+1/2g), s	11.0	77.0	12.0	7.7	9.0	2.0	7.6	20.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.0	1.1	0.0	0.2				

Intersection Summary























HCM 6th Ctrl Delay	45.7
HCM 6th LOS	D

<b>ID</b>	<b>Software/Method</b>	<b>Intersection</b>	<b>Control Type</b>	<b>LOS</b>	<b>Delay</b>	<b>V/C Ratio</b>
1	Synchro HCM 6th Signal	OR 99E & Hazelgreen Rd	Signal	E	68.5	0.91
3	Synchro HCM 6th Signal	Cordon Rd & Hazelgreen Rd	Signal	B	12.0	0.42
8	Synchro HCM 6th Signal	Cordon Rd & Silverton Rd	Signal	C	28.3	0.62
9	Synchro HCM 6th Signal	Cordon Rd & Sunnyview Rd	Signal	B	18.0	0.71
10	Synchro HCM 6th Signal	Cordon Rd & Swegle Rd	Signal	A	3.9	0.61
11	Synchro HCM 6th Signal	Cordon Rd & Center St	Signal	B	10.2	0.68
12	Synchro HCM 6th Signal	Cordon Rd & Auburn Rd	Signal	A	3.6	0.61
13	Synchro HCM 6th Signal	Cordon Rd & State St	Signal	C	27.4	0.85
16	Synchro HCM 6th Signal	Cordon Rd & Macleay Rd	Signal	B	13.3	0.81
17	Synchro HCM 6th Signal	Cordon Rd & Gaffin Rd	Signal	A	9.9	0.65
18	Synchro HCM 6th Signal	Kuebler Blvd/Cordon Rd & Lancaster Dr	Signal	C	26.0	0.75
19	Synchro HCM 6th Signal	Kuebler Blvd & Mill Creek Dr	Signal	B	10.4	0.61
20	Synchro HCM 6th Signal	Turner Rd & Kuebler Blvd	Signal	E	60.1	0.90
21	Synchro HCM 6th Signal	36th Ave & Kuebler Blvd	Signal	D	45.7	1.08

**FUTURE 2043 – YES BUILD – YES INTERCHANGE – PM PEAK**  
**HCM Results**

HCM 6th Signalized Intersection Summary  
 1: OR 99E & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - Yes Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	515	470	70	435	40	530	505	110	120	705	210
Future Volume (veh/h)	135	515	470	70	435	40	530	505	110	120	705	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1856	1885	1900	1900	1885	1796	1841	1900	1885
Adj Flow Rate, veh/h	138	526	279	71	444	38	541	515	97	122	719	93
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	0	3	1	0	0	1	7	4	0	1
Cap, veh/h	142	528	448	90	428	37	520	1238	232	148	752	333
Arrive On Green	0.08	0.28	0.28	0.05	0.25	0.25	0.29	0.41	0.41	0.08	0.21	0.21
Sat Flow, veh/h	1795	1900	1610	1767	1712	147	1810	3010	564	1753	3610	1598
Grp Volume(v), veh/h	138	526	279	71	0	482	541	305	307	122	719	93
Grp Sat Flow(s),veh/h/ln	1795	1900	1610	1767	0	1859	1810	1791	1784	1753	1805	1598
Q Serve(g_s), s	9.2	33.2	18.2	4.8	0.0	30.0	34.5	14.5	14.7	8.2	23.6	5.9
Cycle Q Clear(g_c), s	9.2	33.2	18.2	4.8	0.0	30.0	34.5	14.5	14.7	8.2	23.6	5.9
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	142	528	448	90	0	465	520	737	734	148	752	333
V/C Ratio(X)	0.97	1.00	0.62	0.79	0.00	1.04	1.04	0.41	0.42	0.82	0.96	0.28
Avail Cap(c_a), veh/h	142	528	448	110	0	465	520	737	734	226	752	333
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.1	43.2	37.8	56.3	0.0	45.0	42.7	25.1	25.1	54.1	47.0	39.9
Incr Delay (d2), s/veh	66.3	38.0	2.4	20.7	0.0	51.7	50.2	0.1	0.1	11.3	22.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	20.3	7.1	2.6	0.0	19.8	22.0	5.9	6.0	4.0	12.6	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	121.4	81.2	40.2	77.0	0.0	96.7	93.0	25.2	25.2	65.4	69.5	40.3
LnGrp LOS	F	F	D	E	A	F	F	C	C	E	E	D
Approach Vol, veh/h		943			553			1153			934	
Approach Delay, s/veh		75.0			94.2			57.0			66.0	
Approach LOS		E			F			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	39.0	31.0	14.0	36.0	14.6	55.4	10.6	39.4				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	34.5	25.0	9.5	30.0	15.5	44.0	7.5	32.0				
Max Q Clear Time (g_c+I1), s	36.5	25.6	11.2	32.0	10.2	16.7	6.8	35.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	2.1	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			69.8									
HCM 6th LOS			E									

HCM 6th TWSC  
2: Lake Labish Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - Yes Build - Yes Interchange

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
Traffic Vol, veh/h	60	450	140	5	375	10	115	10	5	10	5	5
Future Vol, veh/h	60	450	140	5	375	10	115	10	5	10	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	150	-	-	100	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	63	469	146	5	391	10	120	10	5	10	5	5























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	401	0	0	615	0	0	1006	1006	469	1082	1147	396
Stage 1	-	-	-	-	-	-	595	595	-	406	406	-
Stage 2	-	-	-	-	-	-	411	411	-	676	741	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1169	-	-	974	-	-	222	243	598	197	201	658
Stage 1	-	-	-	-	-	-	494	496	-	626	601	-
Stage 2	-	-	-	-	-	-	622	598	-	446	426	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1169	-	-	974	-	-	206	229	598	180	189	658
Mov Cap-2 Maneuver	-	-	-	-	-	-	206	229	-	180	189	-
Stage 1	-	-	-	-	-	-	467	469	-	592	598	-
Stage 2	-	-	-	-	-	-	609	595	-	409	403	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.1			41.2			22		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	206	288	1169	-	-	974	-	-	180	294
HCM Lane V/C Ratio	0.582	0.054	0.053	-	-	0.005	-	-	0.058	0.035
HCM Control Delay (s)	44.2	18.2	8.3	-	-	8.7	-	-	26.2	17.7
HCM Lane LOS	E	C	A	-	-	A	-	-	D	C
HCM 95th %tile Q(veh)	3.2	0.2	0.2	-	-	0	-	-	0.2	0.1

HCM 6th Signalized Intersection Summary  
3: Cordon Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - Yes Build - Yes Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	370	145	150	200	15	175	115	170	15	270	25
Future Volume (veh/h)	10	370	145	150	200	15	175	115	170	15	270	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1900	1722	1900	1900	1900	1900	1900	1900	1752
Adj Flow Rate, veh/h	11	389	132	158	211	12	184	121	55	16	284	22
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, %	0	2	0	0	12	0	0	0	0	0	0	10
Cap, veh/h	519	448	152	328	649	37	359	540	457	414	358	28
Arrive On Green	0.01	0.34	0.34	0.08	0.40	0.40	0.10	0.28	0.28	0.02	0.21	0.21
Sat Flow, veh/h	1810	1336	453	1810	1614	92	1810	1900	1610	1810	1741	135
Grp Volume(v), veh/h	11	0	521	158	0	223	184	121	55	16	0	306
Grp Sat Flow(s),veh/h/ln	1810	0	1789	1810	0	1706	1810	1900	1610	1810	0	1876
Q Serve(g_s), s	0.2	0.0	15.6	3.0	0.0	5.1	4.3	2.8	1.4	0.4	0.0	8.8
Cycle Q Clear(g_c), s	0.2	0.0	15.6	3.0	0.0	5.1	4.3	2.8	1.4	0.4	0.0	8.8
Prop In Lane	1.00		0.25	1.00		0.05	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	519	0	600	328	0	686	359	540	457	414	0	386
V/C Ratio(X)	0.02	0.00	0.87	0.48	0.00	0.32	0.51	0.22	0.12	0.04	0.00	0.79
Avail Cap(c_a), veh/h	684	0	745	359	0	698	359	635	538	553	0	624
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.2	0.0	17.8	12.8	0.0	11.7	15.2	15.6	15.2	17.3	0.0	21.5
Incr Delay (d2), s/veh	0.0	0.0	9.1	1.1	0.0	0.3	1.2	0.2	0.1	0.0	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	6.5	1.0	0.0	1.5	1.4	1.0	0.4	0.1	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	0.0	26.9	13.8	0.0	12.0	16.4	15.9	15.3	17.3	0.0	25.3
LnGrp LOS	B	A	C	B	A	B	B	B	B	B	A	C
Approach Vol, veh/h		532			381			360			322	
Approach Delay, s/veh		26.6			12.8			16.0			24.9	
Approach LOS		C			B			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.1	20.2	8.6	23.2	9.6	15.8	4.8	27.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	5.5	19.1	5.6	23.8	5.6	19.0	6.0	23.4				
Max Q Clear Time (g_c+I1), s	2.4	4.8	5.0	17.6	6.3	10.8	2.2	7.1				
Green Ext Time (p_c), s	0.0	0.5	0.0	1.6	0.0	0.9	0.0	0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			20.6									
HCM 6th LOS			C									

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗	↙	↑	↗	
Traffic Vol, veh/h	40	130	145	415	555	45
Future Vol, veh/h	40	130	145	415	555	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	44	144	161	461	617	50

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1425	642	667	0	-	0
Stage 1	642	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	151	478	932	-	-	-
Stage 1	528	-	-	-	-	-
Stage 2	454	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	125	478	932	-	-	-
Mov Cap-2 Maneuver	260	-	-	-	-	-
Stage 1	437	-	-	-	-	-
Stage 2	454	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.2	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	932	-	260	478	-	-
HCM Lane V/C Ratio	0.173	-	0.171	0.302	-	-
HCM Control Delay (s)	9.7	-	21.7	15.8	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0.6	-	0.6	1.3	-	-



Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Traffic Vol, veh/h	15	145	205	565	670	25
Future Vol, veh/h	15	145	205	565	670	25
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	161	228	628	744	28

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1842	758	772	0	0
Stage 1	758	-	-	-	-
Stage 2	1084	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	84	410	852	-	-
Stage 1	466	-	-	-	-
Stage 2	327	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	61	410	852	-	-
Mov Cap-2 Maneuver	180	-	-	-	-
Stage 1	341	-	-	-	-
Stage 2	327	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.8	2.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	852	-	366	-	-
HCM Lane V/C Ratio	0.267	-	0.486	-	-
HCM Control Delay (s)	10.8	-	23.8	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	1.1	-	2.6	-	-

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	65	80	785	800	45
Future Vol, veh/h	20	65	80	785	800	45
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	6	4	3	3	3
Mvmt Flow	22	72	89	872	889	50

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1964	914	939	0	-	0
Stage 1	914	-	-	-	-	-
Stage 2	1050	-	-	-	-	-
Critical Hdwy	6.43	6.26	4.14	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.354	2.236	-	-	-
Pot Cap-1 Maneuver	69	325	722	-	-	-
Stage 1	389	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	61	325	722	-	-	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	341	-	-	-	-	-
Stage 2	335	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.9	1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	722	-	274	-	-
HCM Lane V/C Ratio	0.123	-	0.345	-	-
HCM Control Delay (s)	10.7	-	24.9	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	1.5	-	-

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	105	70	785	755	70
Future Vol, veh/h	25	105	70	785	755	70
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	26	109	73	818	786	73






























Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1787	823	859	0	0
Stage 1	823	-	-	-	-
Stage 2	964	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	90	377	791	-	-
Stage 1	435	-	-	-	-
Stage 2	373	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	82	377	791	-	-
Mov Cap-2 Maneuver	212	-	-	-	-
Stage 1	395	-	-	-	-
Stage 2	373	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.5	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	791	-	328	-	-
HCM Lane V/C Ratio	0.092	-	0.413	-	-
HCM Control Delay (s)	10	-	23.5	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2	-	-

HCM 6th Signalized Intersection Summary  
8: Cordon Rd & Silverton Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - Yes Build - Yes Interchange

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 			 			 	
Traffic Volume (veh/h)	150	400	330	280	380	10	260	680	355	10	670	200
Future Volume (veh/h)	150	400	330	280	380	10	260	680	355	10	670	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1870	1900	1885	1885	1885	1900	1870	1900
Adj Flow Rate, veh/h	158	421	152	295	400	9	274	716	203	11	705	93
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, %	1	1	1	3	2	0	1	1	1	0	2	0
Cap, veh/h	252	672	298	399	823	18	275	1366	602	15	841	493
Arrive On Green	0.07	0.19	0.19	0.12	0.23	0.23	0.15	0.38	0.38	0.01	0.24	0.24
Sat Flow, veh/h	3483	3582	1590	3428	3553	80	1795	3582	1578	1810	3554	1589
Grp Volume(v), veh/h	158	421	152	295	200	209	274	716	203	11	705	93
Grp Sat Flow(s),veh/h/ln	1742	1791	1590	1714	1777	1856	1795	1791	1578	1810	1777	1589
Q Serve(g_s), s	2.6	6.4	5.0	4.9	5.7	5.7	9.0	9.1	5.4	0.4	11.1	2.5
Cycle Q Clear(g_c), s	2.6	6.4	5.0	4.9	5.7	5.7	9.0	9.1	5.4	0.4	11.1	2.5
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	252	672	298	399	412	430	275	1366	602	15	841	493
V/C Ratio(X)	0.63	0.63	0.51	0.74	0.49	0.49	1.00	0.52	0.34	0.72	0.84	0.19
Avail Cap(c_a), veh/h	474	1889	838	466	937	978	275	1828	805	246	1753	901
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	22.0	21.5	25.1	19.6	19.6	24.9	14.1	12.9	29.1	21.4	14.9
Incr Delay (d2), s/veh	1.0	0.4	0.5	4.0	0.3	0.3	53.4	0.1	0.1	21.3	0.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.3	1.6	2.0	2.1	2.2	7.2	2.7	1.4	0.2	3.8	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.4	22.4	22.0	29.1	19.9	19.9	78.3	14.2	13.0	50.4	22.2	15.0
LnGrp LOS	C	C	C	C	B	B	E	B	B	D	C	B
Approach Vol, veh/h		731			704			1193			809	
Approach Delay, s/veh		23.4			23.7			28.7			21.8	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	16.0	13.0	18.9	8.3	18.6	4.5	27.4				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	8.0	31.0	9.0	29.0	8.0	31.0	8.0	30.0				
Max Q Clear Time (g_c+I1), s	6.9	8.4	11.0	13.1	4.6	7.7	2.4	11.1				
Green Ext Time (p_c), s	0.0	0.5	0.0	0.8	0.0	0.4	0.0	0.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				24.9								
HCM 6th LOS				C								

# HCM 6th Signalized Intersection Summary

## 9: Cordon Rd & Sunnyview Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	100	215	70	90	65	175	1110	110	65	1155	110
Future Volume (veh/h)	160	100	215	70	90	65	175	1110	110	65	1155	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1870	1870	1856	1841	1900	1900	1870	1900	1885	1856
Adj Flow Rate, veh/h	168	105	114	74	95	30	184	1168	108	68	1216	108
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, %	1	0	2	2	3	4	0	0	2	0	1	3
Cap, veh/h	310	131	143	222	184	58	311	1800	166	255	1695	150
Arrive On Green	0.07	0.16	0.16	0.05	0.14	0.14	0.02	0.18	0.18	0.04	0.51	0.51
Sat Flow, veh/h	1795	832	903	1781	1351	427	1810	3333	308	1810	3328	295
Grp Volume(v), veh/h	168	0	219	74	0	125	184	632	644	68	653	671
Grp Sat Flow(s),veh/h/ln	1795	0	1735	1781	0	1778	1810	1805	1836	1810	1791	1832
Q Serve(g_s), s	5.8	0.0	9.7	2.8	0.0	5.2	3.7	26.0	26.1	1.4	22.5	22.7
Cycle Q Clear(g_c), s	5.8	0.0	9.7	2.8	0.0	5.2	3.7	26.0	26.1	1.4	22.5	22.7
Prop In Lane	1.00		0.52	1.00		0.24	1.00		0.17	1.00		0.16
Lane Grp Cap(c), veh/h	310	0	274	222	0	242	311	975	992	255	912	933
V/C Ratio(X)	0.54	0.00	0.80	0.33	0.00	0.52	0.59	0.65	0.65	0.27	0.72	0.72
Avail Cap(c_a), veh/h	310	0	482	257	0	489	321	975	992	275	912	933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.79	0.79	0.79	0.57	0.57	0.57
Uniform Delay (d), s/veh	28.4	0.0	32.5	28.1	0.0	32.1	14.5	25.8	25.8	12.6	15.2	15.2
Incr Delay (d2), s/veh	1.9	0.0	4.0	0.9	0.0	1.3	2.2	2.6	2.6	0.1	2.8	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	4.2	1.1	0.0	2.1	1.3	12.8	13.1	0.4	7.8	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.3	0.0	36.5	28.9	0.0	33.4	16.7	28.4	28.5	12.7	17.9	18.0
LnGrp LOS	C	A	D	C	A	C	B	C	C	B	B	B
Approach Vol, veh/h		387			199			1460			1392	
Approach Delay, s/veh		33.8			31.7			27.0			17.7	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	45.7	9.8	14.9	7.1	48.2	8.0	16.6				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	30.0	29.2	5.8	22.0	4.0	31.2	5.6	22.2				
Max Q Clear Time (g_c+1/3), s	11.7	24.7	7.8	7.2	3.4	28.1	4.8	11.7				
Green Ext Time (p_c), s	0.0	3.4	0.0	0.3	0.0	2.4	0.0	0.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				24.3								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary  
 10: Cordon Rd & Swegle Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Volume (veh/h)	40	20	125	10	5	15	115	1345	80	15	1365	85
Future Volume (veh/h)	40	20	125	10	5	15	115	1345	80	15	1365	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1885	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	42	21	18	11	5	1	121	1416	81	16	1437	85
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, %	3	0	1	0	0	0	0	2	0	0	2	0
Cap, veh/h	124	40	27	144	55	8	440	2532	144	323	2395	141
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.06	0.74	0.74	0.04	1.00	1.00
Sat Flow, veh/h	723	522	356	913	717	102	1810	3412	195	1810	3409	201
Grp Volume(v), veh/h	81	0	0	17	0	0	121	735	762	16	747	775
Grp Sat Flow(s),veh/h/ln1600	0	0	1731	0	0	1810	1777	1830	1810	1777	1834	
Q Serve(g_s), s	3.2	0.0	0.0	0.0	0.0	0.0	1.3	14.6	14.7	0.2	0.0	0.0
Cycle Q Clear(g_c), s	3.9	0.0	0.0	0.7	0.0	0.0	1.3	14.6	14.7	0.2	0.0	0.0
Prop In Lane	0.52		0.22	0.65		0.06	1.00		0.11	1.00		0.11
Lane Grp Cap(c), veh/h	191	0	0	207	0	0	440	1319	1358	323	1248	1288
V/C Ratio(X)	0.42	0.00	0.00	0.08	0.00	0.00	0.28	0.56	0.56	0.05	0.60	0.60
Avail Cap(c_a), veh/h	440	0	0	448	0	0	493	1319	1358	416	1248	1288
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.69	0.69	0.69	0.41	0.41	0.41
Uniform Delay (d), s/veh	35.9	0.0	0.0	34.4	0.0	0.0	2.2	4.5	4.6	3.9	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.2	0.0	0.0	0.2	1.2	1.2	0.0	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln1.6	0.0	0.0	0.3	0.0	0.0	0.0	0.2	2.6	2.7	0.0	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.3	0.0	0.0	34.6	0.0	0.0	2.4	5.7	5.7	4.0	0.9	0.9
LnGrp LOS	D	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		81			17			1618			1538	
Approach Delay, s/veh		37.3			34.6			5.5			0.9	
Approach LOS		D			C			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	64.4		10.1	8.7	61.2		10.1				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	5.6	42.6		18.8	7.0	41.2		18.8				
Max Q Clear Time (g_c+1), s	12.2	16.7		5.9	3.3	2.0		2.7				
Green Ext Time (p_c), s	0.0	10.5		0.2	0.1	12.4		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				4.3								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary  
 11: Cordon Rd & Center St

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	70	240	50	60	30	270	1375	40	35	1350	135
Future Volume (veh/h)	145	70	240	50	60	30	270	1375	40	35	1350	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1870	1900	1856	1856	1841	1722	1870	1826
Adj Flow Rate, veh/h	153	74	59	53	63	7	284	1447	40	37	1421	79
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, %	0	3	3	0	2	0	3	3	4	12	2	5
Cap, veh/h	236	171	145	224	128	14	344	2258	62	328	2100	913
Arrive On Green	0.06	0.09	0.09	0.04	0.08	0.08	0.17	1.00	1.00	0.03	0.59	0.59
Sat Flow, veh/h	1810	1856	1572	1810	1654	184	1767	3504	97	1640	3554	1546
Grp Volume(v), veh/h	153	74	59	53	0	70	284	727	760	37	1421	79
Grp Sat Flow(s),veh/h/ln	1810	1856	1572	1810	0	1837	1767	1763	1838	1640	1777	1546
Q Serve(g_s), s	5.0	3.4	3.2	2.4	0.0	3.3	5.8	0.0	0.0	0.8	24.5	2.0
Cycle Q Clear(g_c), s	5.0	3.4	3.2	2.4	0.0	3.3	5.8	0.0	0.0	0.8	24.5	2.0
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	236	171	145	224	0	143	344	1136	1184	328	2100	913
V/C Ratio(X)	0.65	0.43	0.41	0.24	0.00	0.49	0.82	0.64	0.64	0.11	0.68	0.09
Avail Cap(c_a), veh/h	236	454	384	250	0	449	367	1136	1184	364	2100	913
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.73	0.73	0.73	0.69	0.69	0.69
Uniform Delay (d), s/veh	38.1	38.6	38.5	36.1	0.0	39.8	14.2	0.0	0.0	6.5	12.6	7.9
Incr Delay (d2), s/veh	4.8	1.3	1.4	0.2	0.0	1.9	9.4	2.0	2.0	0.0	1.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	1.5	1.2	1.0	0.0	1.5	3.9	0.6	0.6	0.2	7.7	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.9	39.9	39.9	36.3	0.0	41.7	23.5	2.0	2.0	6.5	13.8	8.1
LnGrp LOS	D	D	D	D	A	D	C	A	A	A	B	A
Approach Vol, veh/h		286			123			1771			1537	
Approach Delay, s/veh		41.5			39.4			5.5			13.3	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.8	58.2	9.0	11.0	7.0	63.0	7.7	12.3				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	37.0	37.0	5.0	22.0	5.0	41.0	5.0	22.0				
Max Q Clear Time (g_c+1), s	26.5	26.5	7.0	5.3	2.8	2.0	4.4	5.4				
Green Ext Time (p_c), s	0.1	7.7	0.0	0.2	0.0	19.4	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											12.6	
HCM 6th LOS											B	

HCM 6th Signalized Intersection Summary  
 12: Cordon Rd & Auburn Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕↗		↗	↕↗	
Traffic Volume (veh/h)	30	5	105	5	5	15	70	1640	35	15	1590	50
Future Volume (veh/h)	30	5	105	5	5	15	70	1640	35	15	1590	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1856	1900	1900	1900	1870	1856	1900	1900	1841	1900
Adj Flow Rate, veh/h	32	5	5	5	5	0	74	1726	36	16	1674	51
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, %	0	0	3	0	0	0	2	3	0	0	4	0
Cap, veh/h	146	18	86	89	64	0	375	2761	57	271	2608	79
Arrive On Green	0.06	0.06	0.06	0.06	0.06	0.00	0.05	0.78	0.78	0.04	1.00	1.00
Sat Flow, veh/h	1287	319	1547	530	1156	0	1781	3531	73	1810	3463	105
Grp Volume(v), veh/h	37	0	5	10	0	0	74	860	902	16	842	883
Grp Sat Flow(s),veh/h/ln1606	0	1547	1685	0	0	1781	1763	1842	1810	1749	1819	
Q Serve(g_s), s	0.0	0.0	0.3	0.0	0.0	0.0	0.8	18.7	18.9	0.2	0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	0.3	1.7	0.0	0.0	0.8	18.7	18.9	0.2	0.0	0.0
Prop In Lane	0.86		1.00	0.50		0.00	1.00		0.04	1.00		0.06
Lane Grp Cap(c), veh/h	164	0	86	154	0	0	375	1378	1440	271	1317	1370
V/C Ratio(X)	0.23	0.00	0.06	0.07	0.00	0.00	0.20	0.62	0.63	0.06	0.64	0.64
Avail Cap(c_a), veh/h	394	0	327	407	0	0	411	1378	1440	358	1317	1370
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.22	0.22	0.22	0.48	0.48	0.48
Uniform Delay (d), s/veh	41.0	0.0	40.3	40.4	0.0	0.0	1.8	4.2	4.2	3.9	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.3	0.2	0.0	0.0	0.1	0.5	0.5	0.0	1.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln0.8	0.0	0.0	0.1	0.2	0.0	0.0	0.1	3.4	3.6	0.0	0.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.7	0.0	40.5	40.5	0.0	0.0	1.8	4.7	4.7	3.9	1.2	1.1
LnGrp LOS	D	A	D	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		42			10			1836			1741	
Approach Delay, s/veh		41.5			40.5			4.5			1.2	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s5.6	75.4			9.0	8.2	72.8		9.0				
Change Period (Y+Rc), s 4.0	5.0			4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s 5.0	52.0			19.0	6.0	52.0		19.0				
Max Q Clear Time (g_c+1), s 12.2	20.9			3.7	2.8	2.0		3.7				
Green Ext Time (p_c), s 0.0	15.9			0.1	0.0	18.6		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			3.5									
HCM 6th LOS			A									



HCM 6th Signalized Intersection Summary  
 13: Cordon Rd & State St

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔		↔	↔		↔	↕↕		↔	↕↕	↔
Traffic Volume (veh/h)	435	320	260	195	225	140	280	1295	150	85	1360	290
Future Volume (veh/h)	435	320	260	195	225	140	280	1295	150	85	1360	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1885	1841	1900	1885	1885	1870	1870	1885
Adj Flow Rate, veh/h	458	337	246	205	237	126	295	1363	150	89	1432	203
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, %	0	3	3	0	1	4	0	1	1	2	2	1
Cap, veh/h	553	279	204	164	284	151	230	1423	156	155	1389	625
Arrive On Green	0.09	0.28	0.28	0.05	0.25	0.25	0.09	0.44	0.44	0.04	0.39	0.39
Sat Flow, veh/h	3510	991	723	1810	1158	616	1810	3256	356	1781	3554	1598
Grp Volume(v), veh/h	458	0	583	205	0	363	295	746	767	89	1432	203
Grp Sat Flow(s),veh/h/ln1755		0	1714	1810	0	1774	1810	1791	1821	1781	1777	1598
Q Serve(g_s), s	10.0	0.0	31.0	6.0	0.0	21.3	10.0	44.2	45.0	3.3	43.0	9.8
Cycle Q Clear(g_c), s	10.0	0.0	31.0	6.0	0.0	21.3	10.0	44.2	45.0	3.3	43.0	9.8
Prop In Lane	1.00		0.42	1.00		0.35	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	553	0	483	164	0	436	230	783	796	155	1389	625
V/C Ratio(X)	0.83	0.00	1.21	1.25	0.00	0.83	1.28	0.95	0.96	0.58	1.03	0.33
Avail Cap(c_a), veh/h	553	0	483	164	0	436	230	783	796	172	1389	625
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.7	0.0	39.5	37.0	0.0	39.4	32.9	29.9	30.1	26.7	33.5	23.4
Incr Delay (d2), s/veh	9.5	0.0	111.2	152.4	0.0	12.3	156.2	21.3	23.1	1.7	32.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln5.1	0.0	0.0	27.6	8.3	0.0	10.2	13.1	22.1	23.2	1.4	23.4	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.2	0.0	150.7	189.4	0.0	51.7	189.1	51.2	53.2	28.4	65.9	23.5
LnGrp LOS	D	A	F	F	A	D	F	D	D	C	F	C
Approach Vol, veh/h		1041			568			1808			1724	
Approach Delay, s/veh		102.1			101.4			74.5			59.0	
Approach LOS		F			F			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	37.0	14.0	49.0	14.0	33.0	8.9	54.1				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	30.0	31.0	10.0	43.0	10.0	27.0	6.0	47.0				
Max Q Clear Time (g_c+10), s	10.0	33.0	12.0	45.0	12.0	23.3	5.3	47.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											77.9	
HCM 6th LOS											E	

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	65	0	1650	1725	105
Future Vol, veh/h	0	65	0	1650	1725	105
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	7	0	5	4	4
Mvmt Flow	0	68	0	1719	1797	109

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	954	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.04	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.37	-	-	-	-
Pot Cap-1 Maneuver	0	250	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	250	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	250	-	-
HCM Lane V/C Ratio	-	0.271	-	-
HCM Control Delay (s)	-	24.7	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	1.1	-	-

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕↔			↕↔	
Traffic Vol, veh/h	0	0	15	0	0	30	0	1625	20	0	1710	130
Future Vol, veh/h	0	0	15	0	0	30	0	1625	20	0	1710	130
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	5	20	10	4	2
Mvmt Flow	0	0	16	0	0	32	0	1711	21	0	1800	137

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	969	-	-	867	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-
Pot Cap-1 Maneuver	0	0	257	0	0	300	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	257	-	-	300	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.9	18.4	0	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	257 300	-	-
HCM Lane V/C Ratio	-	-	0.061 0.105	-	-
HCM Control Delay (s)	-	-	19.9 18.4	-	-
HCM Lane LOS	-	-	C C	-	-
HCM 95th %tile Q(veh)	-	-	0.2 0.3	-	-

HCM 6th Signalized Intersection Summary  
 16: Cordon Rd & Macleay Rd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Traffic Volume (veh/h)	185	80	5	70	60	85	125	1385	120	110	1480	155
Future Volume (veh/h)	185	80	5	70	60	85	125	1385	120	110	1480	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1752	1796	1900	1796	1826	1826	1870	1856	1841	1856
Adj Flow Rate, veh/h	191	82	4	72	62	0	129	1428	117	113	1526	152
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, %	3	0	10	7	0	7	5	5	2	3	4	3
Cap, veh/h	279	91	4	216	169		222	1851	151	361	1825	180
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.00	0.11	1.00	1.00	0.05	0.57	0.57
Sat Flow, veh/h	1030	442	22	750	823	0	1739	3248	265	1767	3208	316
Grp Volume(v), veh/h	277	0	0	134	0	0	129	759	786	113	825	853
Grp Sat Flow(s),veh/h/ln	1494	0	0	1573	0	0	1739	1735	1778	1767	1749	1776
Q Serve(g_s), s	9.9	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	2.3	34.6	35.9
Cycle Q Clear(g_c), s	16.3	0.0	0.0	6.4	0.0	0.0	2.8	0.0	0.0	2.3	34.6	35.9
Prop In Lane	0.69		0.01	0.54		0.00	1.00		0.15	1.00		0.18
Lane Grp Cap(c), veh/h	375	0	0	385	0		222	989	1014	361	995	1010
V/C Ratio(X)	0.74	0.00	0.00	0.35	0.00		0.58	0.77	0.78	0.31	0.83	0.84
Avail Cap(c_a), veh/h	482	0	0	496	0		235	989	1014	373	995	1010
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.41	0.41	0.41	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	0.0	0.0	30.8	0.0	0.0	17.4	0.0	0.0	6.9	15.8	16.1
Incr Delay (d2), s/veh	2.9	0.0	0.0	0.2	0.0	0.0	1.3	2.4	2.5	0.5	8.0	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.0	0.0	2.4	0.0	0.0	1.4	0.7	0.7	0.8	13.5	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.7	0.0	0.0	31.0	0.0	0.0	18.7	2.4	2.5	7.4	23.8	24.7
LnGrp LOS	D	A	A	C	A		B	A	A	A	C	C
Approach Vol, veh/h		277			134			1674			1791	
Approach Delay, s/veh		37.7			31.0			3.7			23.2	
Approach LOS		D			C			A			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	57.2		23.5	9.2	57.3		23.5				
Change Period (Y+Rc), s	4.5	6.0		5.0	4.5	6.0		5.0				
Max Green Setting (Gmax), s	5.5	44.0		25.0	5.3	44.2		25.0				
Max Q Clear Time (g_c+I1), s	4.8	37.9		8.4	4.3	2.0		18.3				
Green Ext Time (p_c), s	0.0	1.6		0.1	0.0	1.9		0.2				

Intersection Summary

HCM 6th Ctrl Delay	16.1
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
17: Cordon Rd & Gaffin Rd

Cordon-Kuebler Corridor Plan  
Future 2043 - PM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	40	170	215	55	395	165	1115	65	225	1195	135
Future Volume (veh/h)	120	40	170	215	55	395	165	1115	65	225	1195	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1900	1841	1900	1870	1781	1826	1856	1900
Adj Flow Rate, veh/h	126	42	34	226	58	271	174	1174	64	237	1258	78
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, %	0	0	0	2	0	4	0	2	8	5	3	0
Cap, veh/h	189	214	173	404	64	300	363	1498	82	314	1652	737
Arrive On Green	0.04	0.22	0.22	0.04	0.22	0.22	0.07	0.44	0.44	0.20	0.94	0.94
Sat Flow, veh/h	1810	971	786	1781	291	1361	1810	3426	187	1739	3526	1573
Grp Volume(v), veh/h	126	0	76	226	0	329	174	608	630	237	1258	78
Grp Sat Flow(s),veh/h/ln	1810	0	1757	1781	0	1653	1810	1777	1836	1739	1763	1573
Q Serve(g_s), s	4.0	0.0	3.2	4.0	0.0	17.4	4.8	26.4	26.4	6.8	7.0	0.3
Cycle Q Clear(g_c), s	4.0	0.0	3.2	4.0	0.0	17.4	4.8	26.4	26.4	6.8	7.0	0.3
Prop In Lane	1.00		0.45	1.00		0.82	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	189	0	387	404	0	364	363	777	803	314	1652	737
V/C Ratio(X)	0.67	0.00	0.20	0.56	0.00	0.90	0.48	0.78	0.78	0.76	0.76	0.11
Avail Cap(c_a), veh/h	189	0	488	404	0	459	363	777	803	317	1652	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.58	0.58	0.58	0.15	0.15	0.15
Uniform Delay (d), s/veh	30.8	0.0	28.6	30.1	0.0	34.2	12.4	21.7	21.7	16.0	1.7	1.5
Incr Delay (d2), s/veh	7.1	0.0	0.1	1.1	0.0	16.2	0.2	4.6	4.5	1.4	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	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	1.3	2.3	0.0	8.2	1.6	10.3	10.6	2.0	0.9	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.9	0.0	28.7	31.2	0.0	50.3	12.6	26.3	26.2	17.4	2.2	1.6
LnGrp LOS	D	A	C	C	A	D	B	C	C	B	A	A
Approach Vol, veh/h		202		555		1412		1573				
Approach Delay, s/veh		34.4		42.5		24.6		4.5				
Approach LOS		C		D		C		A				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	40.0	48.2	8.0	23.8	12.8	45.4	8.0	23.8				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	30.0	37.0	4.0	25.0	9.0	34.0	4.0	25.0				
Max Q Clear Time (g_c+I), s	10.8	9.0	6.0	19.4	8.8	28.4	6.0	5.2				
Green Ext Time (p_c), s	0.0	2.0	0.0	0.2	0.0	0.9	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				19.3								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
 18: Kuebler Blvd/Cordon Rd & Lancaster Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	300	235	230	315	320	175	1165	175	225	1135	100
Future Volume (veh/h)	105	300	235	230	315	320	175	1165	175	225	1135	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1811	1856	1796	1811	1841	1870	1885	1885	1900	1900	1870
Adj Flow Rate, veh/h	111	316	185	242	332	277	184	1226	0	237	1195	57
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, %	0	6	3	7	6	4	2	1	1	0	0	2
Cap, veh/h	142	618	383	326	686	462	269	1399		200	1528	752
Arrive On Green	0.08	0.18	0.17	0.10	0.20	0.19	0.08	0.39	0.00	0.11	0.42	0.40
Sat Flow, veh/h	1810	3441	1572	3319	3441	1560	3456	3582	1598	1810	3610	1585
Grp Volume(v), veh/h	111	316	185	242	332	277	184	1226	0	237	1195	57
Grp Sat Flow(s),veh/h/ln	1810	1721	1572	1659	1721	1560	1728	1791	1598	1810	1805	1585
Q Serve(g_s), s	4.4	6.0	7.3	5.1	6.2	11.0	3.8	23.0	0.0	8.0	20.7	1.4
Cycle Q Clear(g_c), s	4.4	6.0	7.3	5.1	6.2	11.0	3.8	23.0	0.0	8.0	20.7	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	142	618	383	326	686	462	269	1399		200	1528	752
V/C Ratio(X)	0.78	0.51	0.48	0.74	0.48	0.60	0.69	0.88		1.18	0.78	0.08
Avail Cap(c_a), veh/h	200	1426	752	550	1616	884	382	1683		200	1696	825
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.7	26.8	23.5	31.7	25.7	21.8	32.5	20.4	0.0	32.2	18.0	10.4
Incr Delay (d2), s/veh	7.6	0.2	0.4	1.3	0.2	0.5	1.2	4.2	0.0	122.4	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	2.3	2.5	2.0	2.3	3.7	1.5	8.5	0.0	9.9	7.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.4	27.1	23.8	33.0	25.9	22.3	33.7	24.7	0.0	154.6	19.9	10.4
LnGrp LOS	D	C	C	C	C	C	C	C		F	B	B
Approach Vol, veh/h		612			851			1410			1489	
Approach Delay, s/veh		28.5			26.7			25.9			41.0	
Approach LOS		C			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	34.6	9.7	18.4	12.0	32.3	11.1	17.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	8.0	32.0	12.0	29.0				
Max Q Clear Time (g_c+1/3), s	15.8	22.7	6.4	13.0	10.0	25.0	7.1	9.3				
Green Ext Time (p_c), s	0.0	1.4	0.0	0.4	0.0	1.3	0.0	0.4				

Intersection Summary

HCM 6th Ctrl Delay	31.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Kuebler Blvd & Mill Creek Dr

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - Yes Interchange



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	75	280	1235	115	365	1235
Future Volume (veh/h)	75	280	1235	115	365	1235
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1885	1900	1885	1900	1900	1885
Adj Flow Rate, veh/h	77	282	1260	62	372	1260
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	1	0	0	1
Cap, veh/h	323	487	1726	775	396	2387
Arrive On Green	0.18	0.18	0.16	0.16	0.12	0.67
Sat Flow, veh/h	1795	1610	3676	1608	1810	3676
Grp Volume(v), veh/h	77	282	1260	62	372	1260
Grp Sat Flow(s),veh/h/ln	1795	1610	1791	1608	1810	1791
Q Serve(g_s), s	2.4	9.6	21.8	2.1	6.9	11.8
Cycle Q Clear(g_c), s	2.4	9.6	21.8	2.1	6.9	11.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	323	487	1726	775	396	2387
V/C Ratio(X)	0.24	0.58	0.73	0.08	0.94	0.53
Avail Cap(c_a), veh/h	580	718	1726	775	396	2387
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.16	0.16	0.66	0.66
Uniform Delay (d), s/veh	22.9	19.2	23.3	15.1	14.6	5.6
Incr Delay (d2), s/veh	0.1	0.4	0.4	0.0	22.8	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0	8.7	10.0	0.6	4.5	2.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.0	19.6	23.8	15.1	37.4	6.1
LnGrp LOS	C	B	C	B	D	A
Approach Vol, veh/h	359		1322			1632
Approach Delay, s/veh	20.3		23.4			13.3
Approach LOS	C		C			B
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.3		15.7	12.0	37.3
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		34.0		21.0	8.0	22.0
Max Q Clear Time (g_c+I1), s		13.8		11.6	8.9	23.8
Green Ext Time (p_c), s		1.7		0.1	0.0	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			18.1			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary  
 20: Turner Rd & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	325	1180	330	30	1150	50	500	205	60	40	255	520
Future Volume (veh/h)	325	1180	330	30	1150	50	500	205	60	40	255	520
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1885	1870	1870	1900	1870	1900	1870	1900	1900	1900	1870	1841
Adj Flow Rate, veh/h	339	1229	325	31	1198	49	521	214	55	42	266	483
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	2	2	0	2	0	2	0	0	0	2	4
Cap, veh/h	304	1258	327	88	1151	47	448	556	143	329	403	576
Arrive On Green	0.05	0.15	0.14	0.02	0.33	0.32	0.19	0.38	0.37	0.03	0.22	0.22
Sat Flow, veh/h	1795	2790	726	1810	3479	142	1781	1458	375	1810	1870	1560
Grp Volume(v), veh/h	339	776	778	31	612	635	521	0	269	42	266	483
Grp Sat Flow(s),veh/h/ln	1795	1777	1739	1810	1777	1844	1781	0	1833	1810	1870	1560
Q Serve(g_s), s	18.0	56.4	58.1	1.5	43.0	43.0	25.0	0.0	13.9	2.4	16.9	28.0
Cycle Q Clear(g_c), s	18.0	56.4	58.1	1.5	43.0	43.0	25.0	0.0	13.9	2.4	16.9	28.0
Prop In Lane	1.00		0.42	1.00		0.08	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	304	801	784	88	588	610	448	0	699	329	403	576
V/C Ratio(X)	1.12	0.97	0.99	0.35	1.04	1.04	1.16	0.00	0.38	0.13	0.66	0.84
Avail Cap(c_a), veh/h	304	801	784	167	588	610	448	0	699	392	403	576
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.90	0.90	0.90	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.8	54.4	55.2	35.8	43.5	43.6	33.5	0.0	29.3	39.8	46.6	37.5
Incr Delay (d2), s/veh	56.6	4.6	8.1	0.8	46.2	45.9	95.6	0.0	1.6	0.1	8.2	13.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	27.7	28.7	0.7	25.2	26.2	22.6	0.0	6.3	1.1	8.6	15.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	104.4	59.0	63.3	36.6	89.7	89.4	129.1	0.0	30.9	39.9	54.9	51.1
LnGrp LOS	F	E	E	D	F	F	F	A	C	D	D	D
Approach Vol, veh/h		1893			1278			790			791	
Approach Delay, s/veh		68.9			88.3			95.7			51.8	
Approach LOS		E			F			F			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.4	62.6	7.4	53.6	22.0	47.0	29.0	32.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	3.0	51.0	8.0	43.0	18.0	41.0	25.0	26.0				
Max Q Clear Time (g_c+1), s	13.5	60.1	4.4	15.9	20.0	45.0	27.0	30.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay												75.7
HCM 6th LOS												E



HCM 6th Signalized Intersection Summary  
 21: 36th Ave & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Future 2043 - PM Peak - Yes Build - Yes Interchange



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	1280	240	440	1430	280	350	155	340	235	140	250
Future Volume (veh/h)	105	1280	240	440	1430	280	350	155	340	235	140	250
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1885	1856	1826	1767	1885	1900	1885	1900	1900	1900	1826	1885
Adj Flow Rate, veh/h	111	1347	240	463	1505	282	368	163	294	247	147	146
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, %	1	3	5	9	1	0	1	0	0	0	5	1
Cap, veh/h	251	1152	203	353	1541	282	391	140	253	195	365	319
Arrive On Green	0.05	0.38	0.38	0.35	1.00	1.00	0.11	0.23	0.23	0.08	0.20	0.20
Sat Flow, veh/h	1795	2996	527	1682	3022	554	1795	607	1094	1810	1826	1595
Grp Volume(v), veh/h	111	786	801	463	878	909	368	0	457	247	147	146
Grp Sat Flow(s),veh/h/ln	1795	1763	1761	1682	1791	1785	1795	0	1701	1810	1826	1595
Q Serve(g_s), s	4.8	50.0	50.0	23.0	0.0	0.0	14.0	0.0	30.0	10.0	9.1	10.5
Cycle Q Clear(g_c), s	4.8	50.0	50.0	23.0	0.0	0.0	14.0	0.0	30.0	10.0	9.1	10.5
Prop In Lane	1.00		0.30	1.00		0.31	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	251	678	677	353	913	910	391	0	393	195	365	319
V/C Ratio(X)	0.44	1.16	1.18	1.31	0.96	1.00	0.94	0.00	1.16	1.27	0.40	0.46
Avail Cap(c_a), veh/h	269	678	677	353	913	910	391	0	393	195	365	319
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.0	40.0	40.0	31.6	0.0	0.0	43.3	0.0	50.0	42.8	45.2	45.8
Incr Delay (d2), s/veh	0.5	87.4	97.0	142.0	3.7	8.6	30.6	0.0	98.2	155.3	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	37.0	38.8	17.7	0.9	2.2	8.3	0.0	23.1	13.4	4.1	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	127.4	137.0	173.6	3.7	8.6	73.9	0.0	148.2	198.1	45.5	46.2
LnGrp LOS	C	F	F	F	A	A	E	A	F	F	D	D
Approach Vol, veh/h		1698			2250			825			540	
Approach Delay, s/veh		125.1			40.6			115.1			115.5	
Approach LOS		F			D			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	37.0	55.0	18.0	30.0	10.7	71.3	14.0	34.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	23.0	50.0	14.0	26.0	8.0	65.0	10.0	30.0				
Max Q Clear Time (g_c+2p_c), s	23.0	52.0	16.0	12.5	6.8	2.0	12.0	32.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.0	1.9	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				86.8								
HCM 6th LOS				F								

<b>ID</b>	<b>Software/Method</b>	<b>Intersection</b>	<b>Control Type</b>	<b>LOS</b>	<b>Delay</b>	<b>V/C Ratio</b>
1	Synchro HCM 6th Signal	OR 99E & Hazelgreen Rd	Signal	E	69.8	1.01
3	Synchro HCM 6th Signal	Cordon Rd & Hazelgreen Rd	Signal	C	20.6	0.83
8	Synchro HCM 6th Signal	Cordon Rd & Silverton Rd	Signal	C	24.9	0.68
9	Synchro HCM 6th Signal	Cordon Rd & Sunnyview Rd	Signal	C	24.3	0.81
10	Synchro HCM 6th Signal	Cordon Rd & Swegle Rd	Signal	A	4.3	0.70
11	Synchro HCM 6th Signal	Cordon Rd & Center St	Signal	B	12.6	0.84
12	Synchro HCM 6th Signal	Cordon Rd & Auburn Rd	Signal	A	3.5	0.68
13	Synchro HCM 6th Signal	Cordon Rd & State St	Signal	E	77.9	1.25
16	Synchro HCM 6th Signal	Cordon Rd & Macleay Rd	Signal	B	16.1	0.95
17	Synchro HCM 6th Signal	Cordon Rd & Gaffin Rd	Signal	B	19.3	0.93
18	Synchro HCM 6th Signal	Kuebler Blvd/Cordon Rd & Lancaster Dr	Signal	C	31.6	0.88
19	Synchro HCM 6th Signal	Kuebler Blvd & Mill Creek Dr	Signal	B	18.1	0.66
20	Synchro HCM 6th Signal	Turner Rd & Kuebler Blvd	Signal	E	75.7	1.20
21	Synchro HCM 6th Signal	36th Ave & Kuebler Blvd	Signal	F	86.8	1.31



## TECHNICAL MEMORANDUM #6 – REFINED DRAFT

DATE: October 31, 2022

TO: Project Management Team

FROM: Lacy Brown, PhD, PE, RSP<sub>1</sub> | DKS Associates  
Jenna Bogert, PE | DKS Associates  
Travis Larson, EI | DKS Associates  
Chase Hildner, EI | DKS Associates

SUBJECT: Cordon-Kuebler Corridor Plan  
Transportation Alternatives

Project #22001-000

### INTRODUCTION

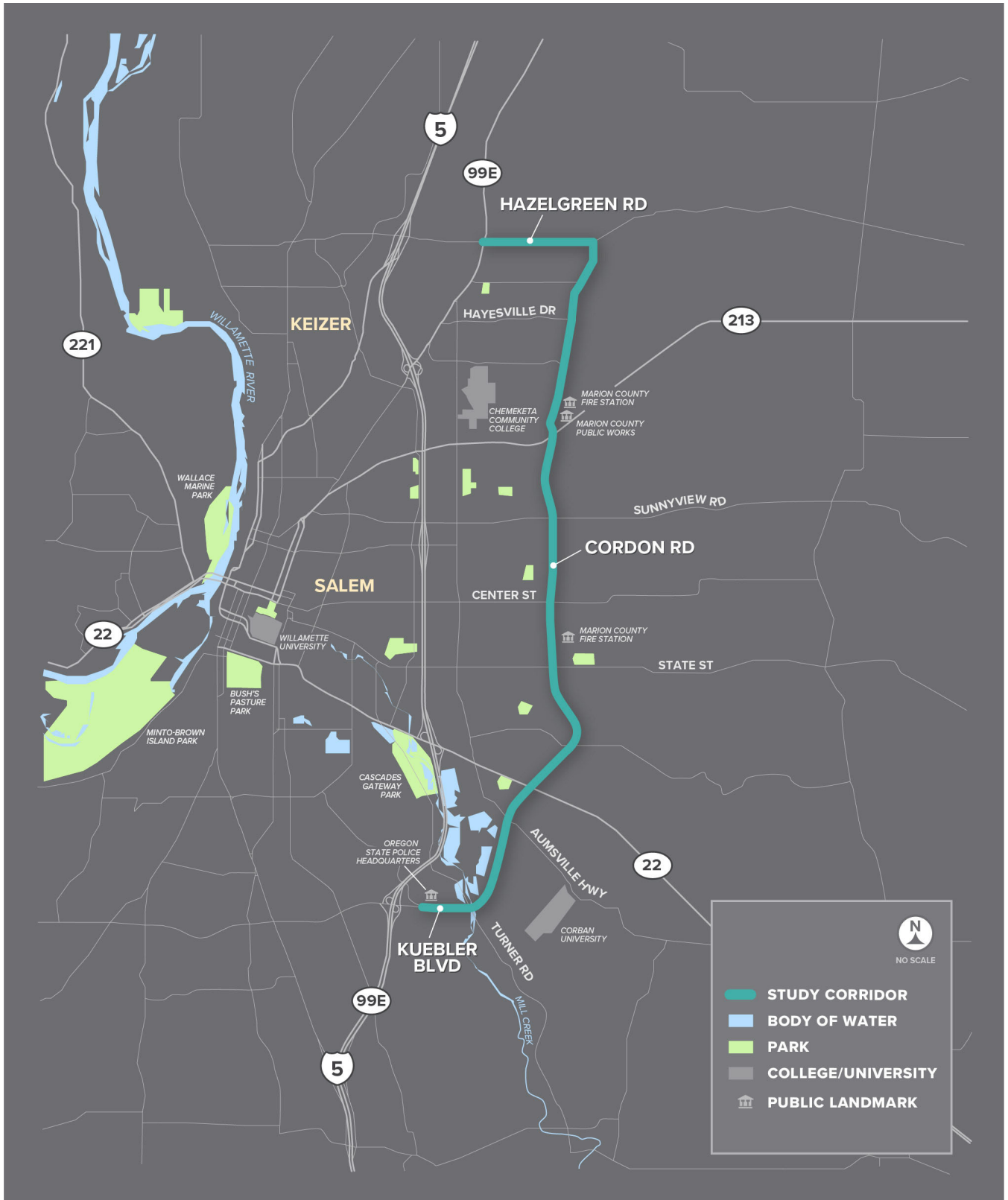
The primary objective of the Cordon-Kuebler Corridor Plan project is to develop a multimodal corridor plan and an access management strategy that outlines a cohesive and consistent vision for the corridor that encourages desired land development, accommodates future growth, and creates a safe and enjoyable travel experience for users of all ages and abilities. The project also incorporates community involvement to assure the design plan is consistent with the needs of key stakeholders (including neighborhoods, schools, and businesses).

This memorandum explores and compares three prospective corridor design alternatives to improve safety and mobility for all road users. The conceptual design alternatives all incorporate necessary access management strategies that will ensure the corridor functions safely and efficiently as future growth occurs.

The document includes background information on the existing corridor, a description and evaluation of the three design alternatives, and a toolbox of solutions that can be combined with any alternative.

### STUDY AREA

The study area and all associated roadway intersections and segments were previously noted and inventoried in Technical Memorandum #3. The corridor includes approximately 10.8 miles of roadway segments and 21 study intersections. Some of the corridor is under City of Salem ownership, while the majority of the corridor is under Marion County ownership. See Figure 1 for an overview of the study area.



**FIGURE 1: STUDY AREA AND PROJECT EXTENTS**

## CORRIDOR PLAN PURPOSE

One of the primary purposes of the Cordon-Kuebler Corridor Plan is to create a consistent framework to ensure the future corridor serves its intended function as a circumferential route around the Salem area that is accessible and beneficial to the community. There has been increasing pressure and demand from new developments to create new access points along the corridor, which could compromise the intended function of the corridor and introduce safety and operational concerns. While the Cordon Road Resolution and similar ordinances have affected access decisions over the last several decades, this plan will create a cohesive access management document for Marion County and the City of Salem by recommending short-term and long-term strategies to manage access.

As such, these alternatives include strategies to limit and manage access systemically along the corridor. All corridor alternatives include some form of a raised center median that extends most of the length of the corridor that will restrict turning movements and thereby reduce conflicts. Unless otherwise specified, the raised center median only has breaks allowing turning movements at signalized or roundabout public street intersection locations. Specific location-based access solutions are presented in the Toolbox Solutions section of the memo.

## ALTERNATIVES BACKGROUND INFORMATION

Each of the proposed alternatives includes a unique set of traffic volumes, traffic control, and cross-sectional elements that work together to make a cohesive corridor. These groups of information are discussed below to provide context for the alternatives.

## CORRIDOR SEGMENTS

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The corridor was separated into four segments based on similar context, traffic levels, and jurisdictional ownership. While the Cordon-Kuebler Corridor Plan will provide a holistic blueprint for the corridor, each segment may have unique attributes that require different solutions to achieve the desired goals for the corridor. Therefore, each alternative has a recommended cross-section for each of the following roadway segments:

- Segment 1: Hazelgreen (OR 99E to Cordon Road) – Partial Marion County and City of Salem jurisdiction
- Segment 2: Cordon North (Hazelgreen Road to Silverton Road) – Marion County jurisdiction
- Segment 3: Cordon South (Silverton Road to Caplinger Road) – Marion County jurisdiction
- Segment 4: Salem Cordon-Kuebler (Caplinger Road to 36<sup>th</sup> Ave) – City of Salem jurisdiction

## TRAFFIC VOLUME ESTIMATES AND ASSOCIATED TRAVEL LANES

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Future traffic volumes were forecasted and refined in the previous technical memo using the SKATS (Salem-Keizer Area Transportation Study) travel demand models.<sup>1</sup> These models incorporate future land use and roadway network assumptions to model travel behavior at a regional level. This traffic analysis showed the inability for the existing two-lane corridor to manage the future peak hour traffic volumes along certain stretches of the corridor, which aligned with the current understanding that Cordon Road and Kuebler Boulevard would need to be a four-lane roadway to accommodate future growth. However, it was also determined that the segments of the corridor north of Silverton Road could remain as two-lane roadways and still accommodate future growth.

For each alternative, operations analysis was based on the SKATS model scenario with a roadway network that most closely matches the alternative cross-section. Alternatives with a four-lane primary cross-section utilized the “Yes Build – No Interchange” volume scenario, while alternatives with a two-lane primary cross-section utilized the “No Build – No Interchange” volume scenario. Based on existing lack of funding for the OR 22 interchange at Cordon Road, the alternatives analysis utilized the “No Interchange” volume sets and not the “Yes Interchange” volume sets. Additional details on all volume scenarios were presented in Technical Memorandum #3.<sup>2</sup>

## EXISTING GEOMETRIC STANDARDS

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Both Marion County and the City of Salem have existing guidance for roadway geometric cross-sections along the Cordon-Kuebler corridor. The Marion County Rural Transportation System Plan (TSP) identifies the entire corridor as an Arterial outside of the Salem Urban Growth Boundary (UGB).<sup>3</sup> The County has also designated the portion of Cordon Road from Hazelgreen Road to OR 22 as a Throughway.<sup>4</sup> While no specific cross-section is stated for the corridor, the road’s future context and volume, once included in the UGB, can be used to infer the High Volume Arterial categorization from the Engineering Standards which includes four to five travel lanes including a median, no parking, and sidewalks and bicycle lanes on both sides of the road. The existing conditions of the corridor, with the roadway being outside the UGB, indicate a Rural Arterial classification.<sup>5</sup> The City of Salem TSP identifies the entire corridor as a Parkway.<sup>6</sup> The Parkway designation includes the same attributes as stated above for Marion County, but with the additional specification of a planter strip between the sidewalk and bicycle lanes. The City’s cross-section also includes dimensions for each cross-sectional element.<sup>7</sup> These geometric standards were used as baselines for establishing the alternative cross-sections.

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<sup>1</sup> Future Forecasts and Traffic Operations Analysis, Cordon-Kuebler Corridor Plan, DKS Associates, August 2022.

<sup>2</sup> Existing Intersection and Segment Operations Analysis, Cordon-Kuebler Corridor Plan, DKS Associates, May 2022.

<sup>3</sup> Rural Road Functional Classification, Figure 5-1, Rural Transportation System Plan, Marion County, 2005 Update.

<sup>4</sup> SKATS 2019-2043 Regional Transportation Systems Plan, Salem-Keizer Area Transportation Study, May 2019.

<sup>5</sup> Urban & Rural Geometric Design Standards, Engineering Standards, Marion County Department of Public Works, April 1990.

<sup>6</sup> Street Plan, Map 3-1, Transportation System Plan, City of Salem, January 2020.

<sup>7</sup> Parkway Cross Sections, Figure 3-1, Transportation System Plan, City of Salem, January 2020.

## EXISTING RIGHT-OF-WAY WIDTH

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The Cordon-Kuebler corridor currently has public right-of-way (ROW) width that extends beyond the existing paved roadway area in most places. The ROW width was estimated at key locations along the corridor to determine the extent of infrastructure changes that could be possible with no or limited impacts to existing property lines.<sup>8</sup> The existing conceptual widths per corridor segments are designated below:

- Segment 1: Hazelgreen Road – This segment of road provides highly variable ROW widths ranging from 50 feet to over 100 feet due to a mix of older properties and recent property development that has widened the ROW. With the mixed presence of existing infrastructure close to the property line and some under-developed land, a conceptual design width of 90 feet was chosen.
- Segment 2: Cordon Road North – This segment has a relatively consistent ROW width of approximately 100 feet; a conceptual design width of 100 feet was chosen.
- Segment 3: Cordon Road South – This segment has a relatively consistent ROW width of approximately 100 feet to 120 feet; a conceptual design width of 110 feet was chosen.
- Segment 4: Salem Cordon-Kuebler – This segment of roadway consistently provides a minimum ROW width of 100 feet, and up to 150 feet in many other places. A conceptual design width of 120 feet was chosen (which also matches the City of Salem’s Parkway designation’s 120-foot ROW).

## CORRIDOR ALTERNATIVES

The project team developed three alternatives that seek to balance the needs of maintaining the corridor as a throughway while providing connectivity and access for all modes of traffic. The three overarching alternatives are introduced below:

- Alternative #1: Traffic Signal-Centric with Added Capacity
- Alternative #2: Roundabout-Centric with Added Capacity
- Alternative #3: Ped/Bike-Centric with Current Capacity

### ALTERNATIVE #1: TRAFFIC SIGNAL-CENTRIC WITH ADDED CAPACITY

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Alternative #1 seeks to provide a corridor that adequately handles future estimated traffic volumes with traffic signals at major intersections while providing enhanced pedestrian and bicyclist facilities. This alternative provides four travel lanes for the corridor south of Silverton Road and two travel lanes for the corridor north of Silverton Road, traffic signals at all major intersections, a

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<sup>8</sup> No survey data was collected for this task, but was estimated using the Marion County Property Records Viewer: <https://gis-marioncounty.opendata.arcgis.com/apps/property-records-viewer/explore>



continuous center median with breaks only at signalized intersections, buffered bicycle lanes, sidewalk, and a multi-use path, all matching the roadway context and future active transportation possibilities. The multi-use path is designed to be located on the west side of Cordon Road for the County-owned portions of the corridor, with options in the City-owned portions of the corridor for the path to be on the west side or east side depending on the adjacent land uses, existing infrastructure, and available right-of-way. U-turn opportunities to offset the center median turn restrictions may include median midblock U-turns or signalized intersection U-turns. Figure 2 provides the layout of the cross-sectional areas and Figure 4 provides the recommended traffic control for each study intersection for Alternative #1.

### **ALTERNATIVE #2: ROUNDABOUT-CENTRIC WITH ADDED CAPACITY**

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Alternative #2 is similar to Alternative #1 except that the primary intersection control method is switched from traffic signals to roundabouts and the majority of U-turn opportunities will be accommodated by the roundabouts. Overall, this alternative seeks to provide a corridor that adequately handles future estimated traffic volumes with roundabouts at major intersections while also providing enhanced pedestrian and bicyclist facilities. This alternative provides four travel lanes for the corridor south of Silverton Road and two travel lanes for the corridor north of Silverton Road, roundabouts at the majority of all major intersections, a continuous center median with breaks only at major intersections, buffered bicycle lanes, sidewalk, and a multi-use path, all matching the roadway context and future active transportation possibilities. The multi-use path is designed to be located on the west side of Cordon Road for the County-owned portions of the corridor, with options in the City-owned portions of the corridor for the path to be on the west side or east side depending on the adjacent land uses, existing infrastructure, and available right-of-way. Figure 2 provides the layout of the cross-sectional areas and Figure 5 provides the recommended traffic control for each study intersection for Alternative #2.

### **ALTERNATIVE #3: PED/BIKE-CENTRIC WITH CURRENT CAPACITY**

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Alternative #3 seeks to provide a corridor that allocates approximately half of the roadway width to bicyclists, pedestrians, and transit while maintaining the existing vehicular capacity. The State of Oregon and Salem area have launched plans and policies to attempt to decelerate vehicular traffic growth and eventually reduce the overall volume of vehicle traffic. This alternative presents an option where the roadway caters primarily to forms of active transportation and assumes the future goal of vehicular traffic reduction is achieved.

This alternative provides two travel lanes along the entire length of the corridor, traffic signals at many major intersections, a continuous center median with breaks at key intersection locations, wide bicycle lanes with separation treatments (buffer, protection, or separation), and multi-use paths on both sides of the roadway. These characteristics align with the roadway context and future needs for enhanced bicycle and pedestrian facilities to facilitate non-vehicular travel choices. U-turn opportunities to offset center median turn restrictions may include median midblock U-turns or signalized intersection U-turns. Figure 3 provides the layout of the cross-sectional areas and Figure 6 provides the recommended traffic control for each study intersection for Alternative #3.



## ACCESS MANAGEMENT & TURN RESTRICTIONS

As described previously, all alternatives include strategies to limit and manage access systemically along the corridor. All corridor alternatives include some form of a raised center median that extends the majority of the length of the corridor that will restrict turning movements at many intersections and private driveways, thereby reducing conflicts. For all alternatives, a center turn lane is proposed instead of a center median along Hazelgreen Road due to ROW constraints and the high density of access points along this portion of the corridor.

For Alternatives #1 and #2, this center median involves implementing turn restrictions (allowing right-turn movements only) at all non-signalized or roundabout intersection locations. In addition to the study intersections of Pennsylvania Avenue and Caplinger Road being stop-controlled with turn restrictions, all other public non-study intersections including 55<sup>th</sup> Avenue, Juniper Street, Lardon Road, Indiana Avenue, Carolina Avenue, and Wagon Wheel Drive are proposed to stay as stop-controlled with left-turns prohibited. In addition, all private access points are proposed to have turn restrictions. For Alternative #3, similar turn restrictions (allowing right-turn movements only) will also apply at the above intersections. Additional consideration and evaluation will be needed to determine the appropriate median treatment at the study intersections of Kale Street, Hayesville Drive, Ward Drive, Herrin Road, and Swegle Road.

## ALTERNATIVES SUMMARY

Table 1 compares the main attributes of each alternative.

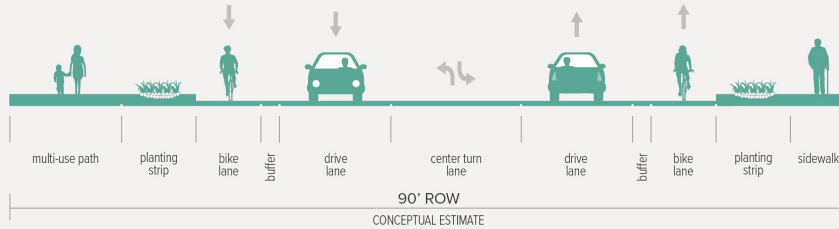
**TABLE 1: ALTERNATIVE ATTRIBUTES**

ATTRIBUTES	ALTERNATIVE #1: TRAFFIC SIGNAL-CENTRIC	ALTERNATIVE #2: ROUNDBOUT-CENTRIC	ALTERNATIVE #3: PED/BIKE-CENTRIC
NUMBER OF LANES	Two lanes north of Silverton Road; four lanes south of Silverton Road	Two lanes north of Silverton Road; four lanes south of Silverton Road	Two lanes for the entire corridor
CONTROL AT MAJOR INTERSECTIONS	Traffic signals	Primarily roundabouts with some traffic signals at key locations	Traffic signals
CONTROL AT MINOR INTERSECTIONS	Stop-Control w/ Left-Turn Restrictions	Stop-Control w/ Left-Turn Restrictions	Stop-Control; some w/ No Restrictions and some w/ Left-Turn Restrictions
ACCESS MANAGEMENT	Continuous median with breaks only at major intersections	Continuous median with breaks only at major intersections	Continuous median with breaks at key intersections
PEDESTRIAN FACILITIES	Sidewalk & Multi-Use Path	Sidewalk & Multi-Use Path	Wide Multi-Use Paths
BICYCLE FACILITIES	Buffered Bike Lanes & Multi-Use Path	Buffered Bike Lanes & Multi-Use Path	Bike Lanes w/ Separation Treatment & Multi-Use Paths

**ALTERNATIVE #1: TRAFFIC SIGNAL-CENTRIC WITH ADDED CAPACITY**  
**ALTERNATIVE #2: ROUNDABOUT-CENTRIC WITH ADDED CAPACITY**

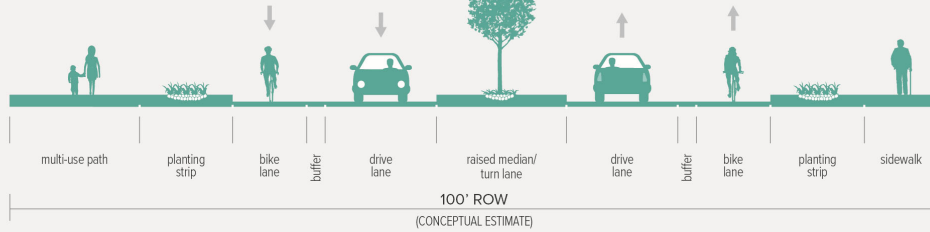
**Segment #1:**

Hazelgreen (OR 99E to Cordon Road)



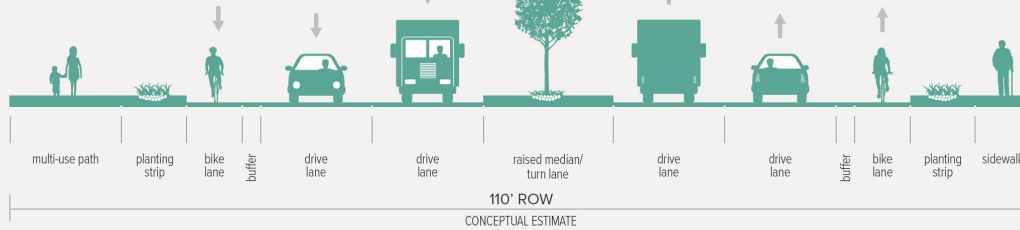
**Segment #2:**

Cordon North (Hazelgreen Road to Silverton Road)



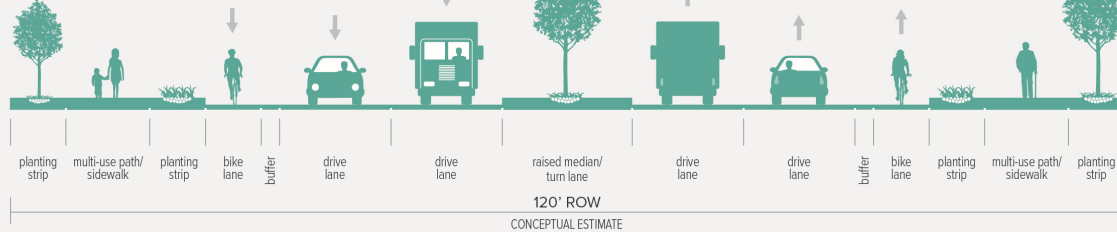
**Segment #3:**

Cordon South (Silverton Road to Caplinger Road)



**Segment #4:**

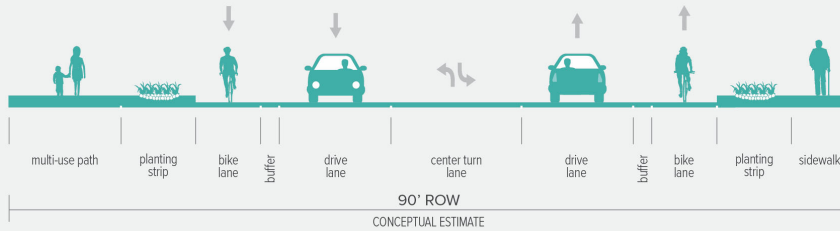
Salem Cordon-Kuebler (Caplinger Road to 36<sup>th</sup> Ave)



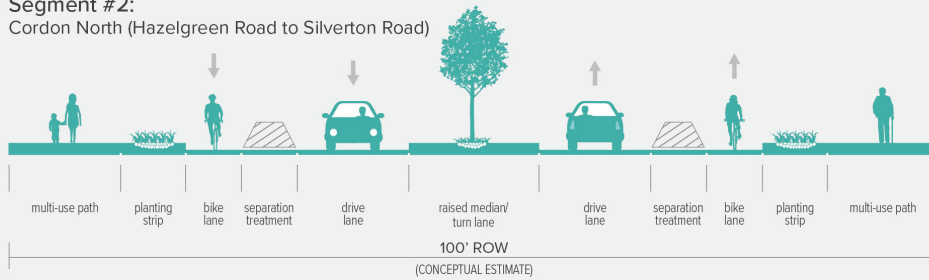
**FIGURE 2: ALTERNATIVE #1 & #2 CROSS-SECTIONS**

# ALTERNATIVE #3: PED/BIKE-CENTRIC WITH CURRENT CAPACITY

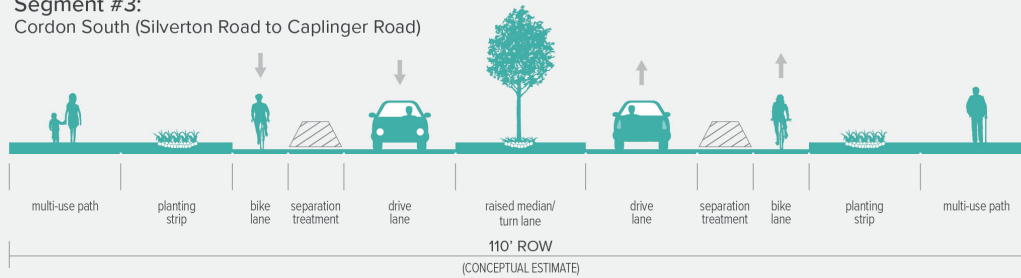
**Segment #1:**  
Hazelgreen (OR 99E to Cordon Road)



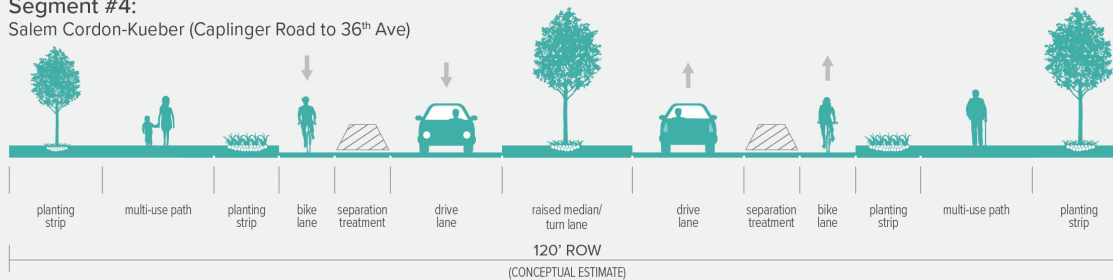
**Segment #2:**  
Cordon North (Hazelgreen Road to Silverton Road)



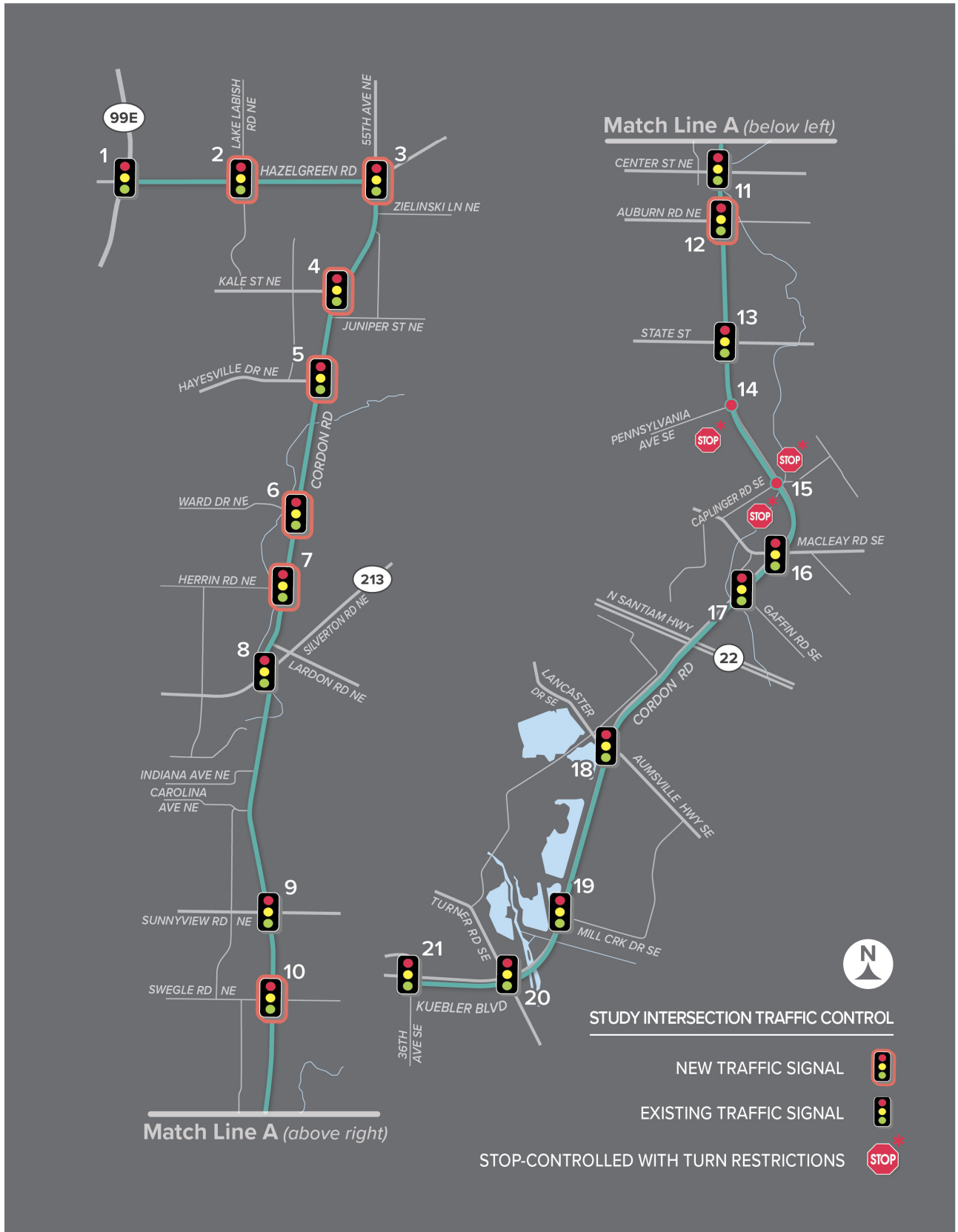
**Segment #3:**  
Cordon South (Silverton Road to Caplinger Road)



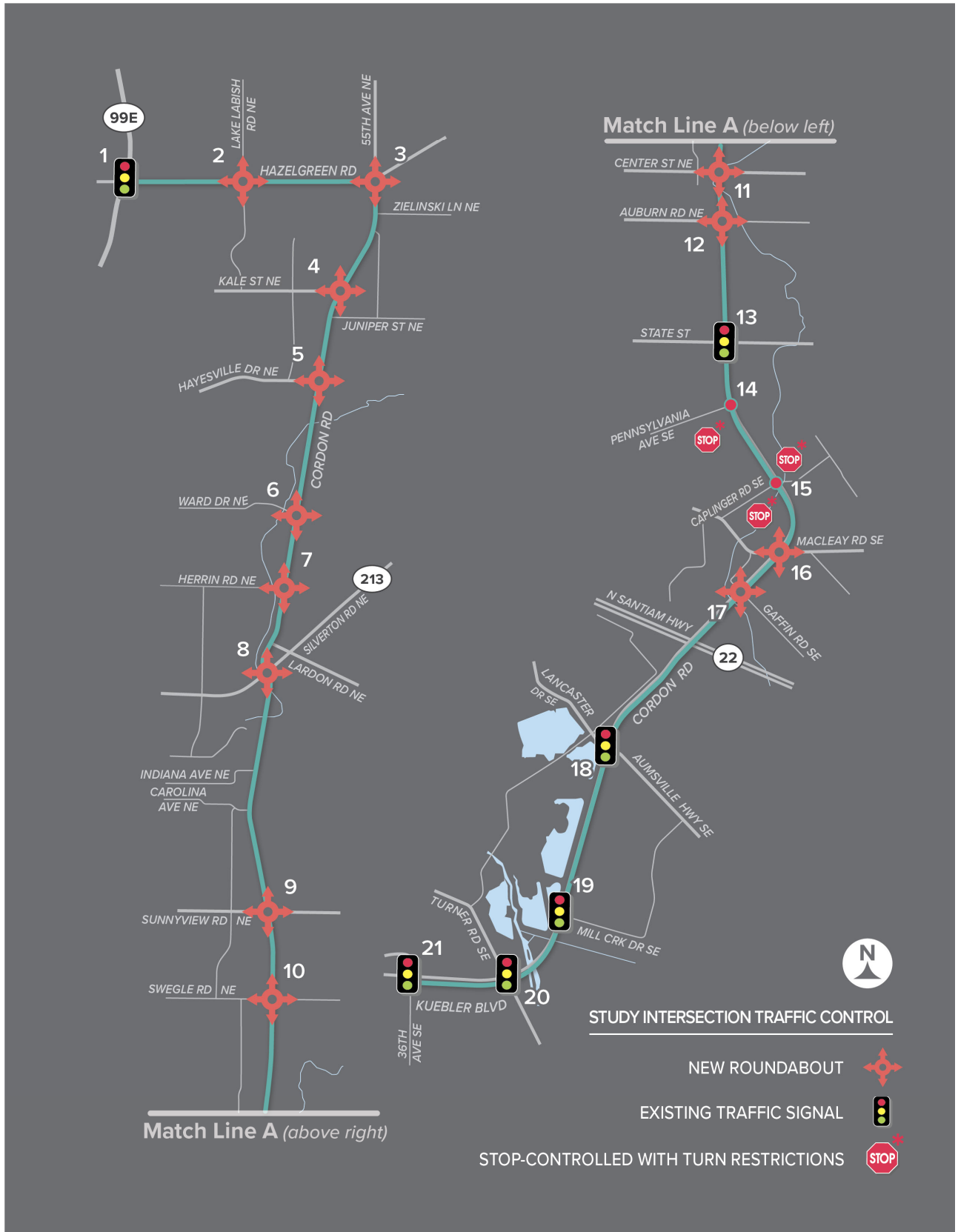
**Segment #4:**  
Salem Cordon-Kueber (Caplinger Road to 36<sup>th</sup> Ave)



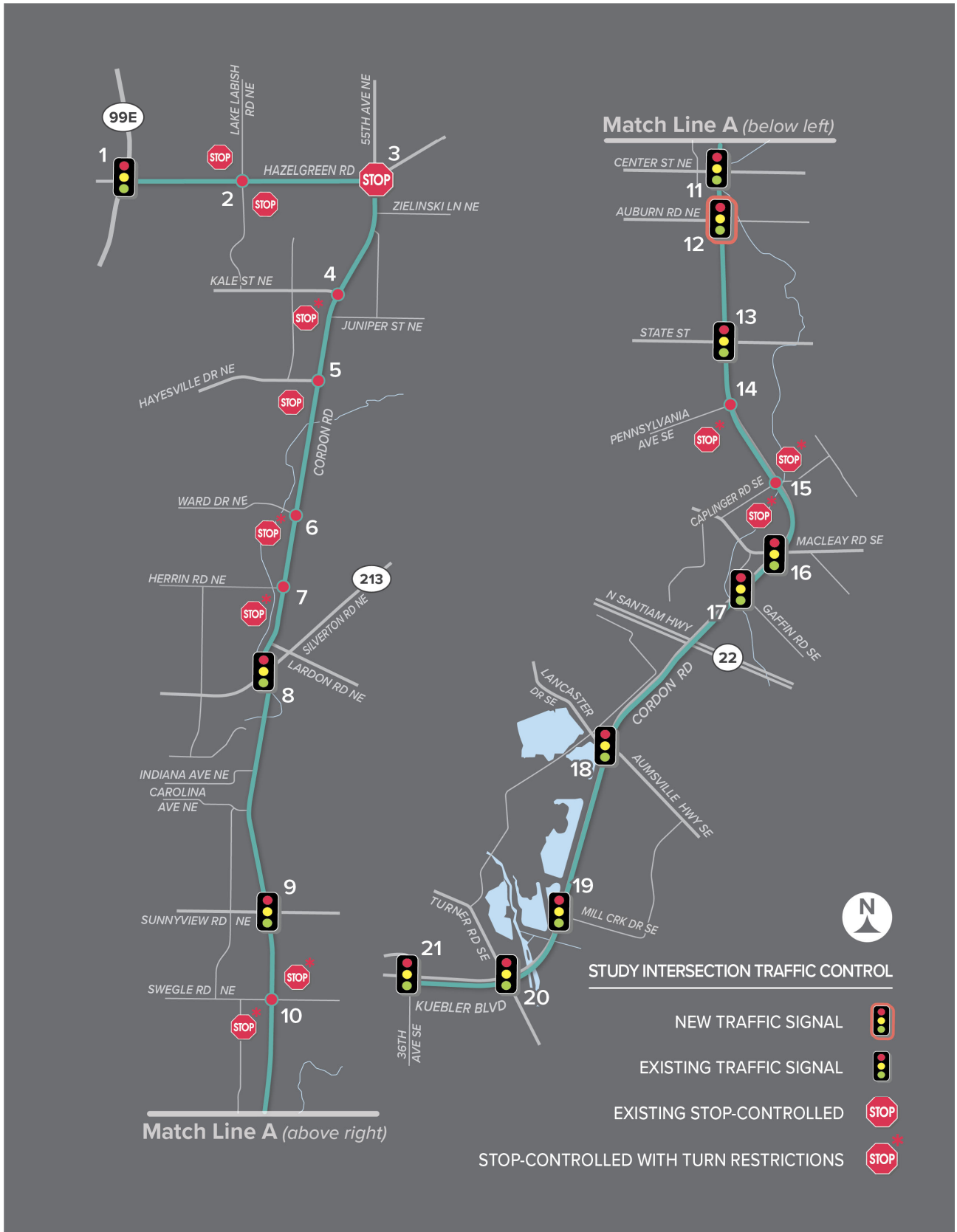
**FIGURE 3: ALTERNATIVE #3 CROSS-SECTION**



**FIGURE 4: ALTERNATIVE #1 TRAFFIC CONTROL**



**FIGURE 5: ALTERNATIVE #2 TRAFFIC CONTROL**



**FIGURE 6: ALTERNATIVE #3 TRAFFIC CONTROL**

## ALTERNATIVES ANALYSIS

The following section contains the intersection operations, pedestrian and bicycle facilities, and safety benefits of each of the three design alternatives.

### INTERSECTION OPERATION CONSIDERATIONS

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The Future 2043 intersection operations were analyzed for the three alternatives at all study intersections using Highway Capacity Manual (HCM) 6th Edition methodology.<sup>9</sup> All previously identified mobility targets/operating standards from ODOT, the City of Salem, and Marion County are carried over from Technical Memorandum #3 and the future operations are compared against these standards and targets.

For Alternatives #1 and #2, reasonable intersection improvements were made (e.g., signal phasing changes or additional turn lanes) to determine the feasibility of the intersection control for the location and corridor. For Alternative #3, the pre-existing intersection control with minimal improvements is presented.

The matrix shown in Table 2 provides a visual representation of the operating conditions of the study intersections to show patterns, similarities, and differences between the alternatives with the worst-case result for either the AM and PM peak period shown for each alternative. The volume to capacity (v/c) ratio, delay, and level of service (LOS) for each study intersection and each analysis scenario are provided in the appendix.

- Green checkmarks indicate that an intersection's vehicle operations are well within the jurisdictional operating standard.
- Yellow bars indicate that the intersection is approaching the jurisdictional operating standard (within +/- 0.03 v/c or at LOS standard).
- Red "X"s indicate that the intersection is projected to fail to meet the jurisdictional operating standard.

As shown, the intersection operations for the study intersections under Alternatives #1 and #2 are either below or near City/County standards with relatively similar results between the two alternatives. For Alternative #3, because the cross-section remains as two travel lanes, most intersections will fail under projected 2043 traffic volumes (No Build, No Interchange conditions).

It should be noted that the cross-section and identified design characteristics of Alternative #3 were selected with pedestrian and bicycle-centric facilities at the forefront and vehicle operations as a lower priority. ***In order to meet operating standards under the Alternative #3 design, vehicle volumes along Cordon Road would need to be reduced by approximately 10% from current 2022 levels and maintain that level of vehicle volume (0% growth) into the planning horizon. This will require significant modal shift (e.g., converting vehicle trips to bicycle, pedestrian, and transit trips).***

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<sup>9</sup> Highway Capacity Manual, 6th Edition, Transportation Research Board, 2017.

**TABLE 2: FUTURE 2043 INTERSECTION OPERATIONS**

INTERSECTION		ALTERNATIVE #1	ALTERNATIVE #2	ALTERNATIVE #3
1	HAZELGREEN ROAD/ OR 99E	■	■	■
2	HAZELGREEN ROAD/ LAKE LABISH ROAD	✓	✓	✓
3	CORDON ROAD/ HAZELGREEN ROAD	✓	✓	✗
4	CORDON ROAD/ KALE STREET	✓	✓	✗
5	CORDON ROAD/ HAYESVILLE DRIVE	✓	✓	✗
6	CORDON ROAD/ WARD DRIVE	✓	✓	✗
7	CORDON ROAD/ HERRIN ROAD	✓	✓	✗
8	CORDON ROAD/ SILVERTON ROAD	✓	■	✗
9	CORDON ROAD/ SUNNYVIEW ROAD	✓	✓	✗
10	CORDON ROAD/ SWEGLE ROAD	✓	✓	✗
11	CORDON ROAD/ CENTER STREET	■	■	■
12	CORDON ROAD/ AUBURN ROAD	✓	✓	✗
13	CORDON ROAD/ STATE STREET	■	■	✗
14	CORDON ROAD/ PENNSYLVANIA AVENUE	✓	✓	✗
15	CORDON ROAD/ CAPLINGER STREET	✓	✓	✗
16	CORDON ROAD/ MACLEAY ROAD	✓	■	✗
17	CORDON ROAD/ GAFFIN ROAD	■	✓	■
18	KUEBLER BOULEVARD/ LANCASTER DRIVE	✓	✓	■
19	KUEBLER BOULEVARD/ MILL CREEK DRIVE	■	■	✓
20	KUEBLER BOULEVARD/ TURNER ROAD	■	■	✗
21	KUEBLER BOULEVARD/ 36 <sup>TH</sup> AVENUE	✓	✓	✗

 = well below standard     
  = within +/- 0.03 v/c or at LOS standard     
  = well above standard



## SAFETY CONSIDERATIONS

A qualitative safety considerations investigation was performed to compare the potential safety improvements of each alternative. While evaluating capacity and intersection operations for intersections is relatively straightforward and provides quantitative results, safety performance, on the other hand, can sometimes be more qualitative and involves trade-offs. For example, adding landscaping and on-street bicycle lanes generally reduces vehicle speeds while adding through lanes is usually associated with an increase in vehicle speeds. The combined effect may result in no speed reduction, and thus no change in safety performance.

As shown in the table below, all alternatives show a great improvement over current safety conditions. Alternatives #2 and #3 appear to have similar levels of significant safety improvement, although for different reasons. Alternative #2's roundabouts have the potential to reduce a significant number of crashes, and Alternative #3's pedestrian and bicycle facilities provide the most separation from vehicular travel lanes. Alternatives #1 and #3 have similar safety considerations with the only difference being the increased safety benefit of roundabouts compared to traffic signals.

**TABLE 3: SAFETY CONSIDERATIONS**

	<b>ALTERNATIVE #1: TRAFFIC SIGNAL- CENTRIC</b>	<b>ALTERNATIVE #2: ROUNDAABOUT-CENTRIC</b>	<b>ALTERNATIVE #3: PED/BIKE-CENTRIC</b>
<b>OVERALL SAFETY IMPACT</b>	<b>IMPROVEMENT</b>	<b>SIGNIFICANT IMPROVEMENT</b>	<b>SIGNIFICANT IMPROVEMENT</b>
<b>VEHICLE CONFLICTS</b>	<p><b>Minor Improvement</b></p> <p>Center median along the majority of the corridor reduces conflict points between all users</p> <p>Two-way-center turn lane on Hazelgreen Road provides left turn pockets reducing rear-end crashes</p> <p>Traffic Signals reduce angle crashes, but can increase rear-end crashes</p>	<p><b>Significant Improvement</b></p> <p>Center median along the majority of the corridor reduces conflict points between all users</p> <p>Two-way-center turn lane on Hazelgreen Road provides left turn pockets reducing rear-end crashes</p> <p>Roundabouts reduce fatal and injury crashes by up to 82%</p>	<p><b>Neutral</b></p> <p>Center median along the majority of the corridor, with some exceptions, reduces conflict points between all users</p> <p>Two-way-center turn lane on Hazelgreen Road provides left turn pockets reducing rear-end crashes</p> <p>Crashes tend to increase as congestion increases</p>
<b>VEHICLE SPEEDS</b>	<p><b>Neutral</b></p> <p>Center median and on-street bicycle facilities typically reduce vehicle speeds, but four travel lanes allows passing and may increase speeds</p>	<p><b>Neutral</b></p> <p>Center median and on-street bicycle facilities typically reduce vehicle speeds, but four travel lanes allows passing and may increase speeds</p>	<p><b>Minor Improvement</b></p> <p>Center median and on-street bicycle facilities with only two travel lanes may reduce vehicle speeds</p>
<b>PEDESTRIAN FACILITIES</b>	<p><b>Significant Improvement</b></p> <p>Separated sidewalk and Multi-Use Path</p>	<p><b>Significant Improvement</b></p> <p>Separated sidewalk and Multi-Use Path</p>	<p><b>Significant Improvement</b></p> <p>Multi-Use Paths</p>

	<b>ALTERNATIVE #1: TRAFFIC SIGNAL- CENTRIC</b>	<b>ALTERNATIVE #2: ROUNDBOUT-CENTRIC</b>	<b>ALTERNATIVE #3: PED/BIKE-CENTRIC</b>
<b>PEDESTRIAN AND BICYCLE CROSSING DISTANCES</b>	<b>Minor Decline</b> Increased pedestrian and bicycle crossing distance	<b>Minor Decline</b> Increased pedestrian and bicycle crossing distance	<b>Neutral</b> Minimal change to crossing distance
<b>BICYCLE FACILITIES</b>	<b>Significant Improvement</b> Buffered Bike Lanes and Multi-use Path	<b>Significant Improvement</b> Buffered Bike Lanes and Multi-use Path	<b>Significant Improvement</b> Bike Lanes with Separation Treatments and Multi-use Paths

## ACCESS MANAGEMENT CONSIDERATIONS

A mix of capacity improvements, safety improvements, multi-modal improvements, and access management improvements are incorporated into the three conceptual design alternatives. While each treatment can be evaluated in isolation, the trade-offs of combined treatments is more challenging to quantify. As such, the Access Management Rating (AMR), which was originally developed from the research effort “Quantifying Access management on Arterial Roadways”<sup>10</sup>, was applied to the three alternatives to provide an analysis of the proposed access considerations. The AMR quantifies access management performance on a scale from 1-5, with 1 being poor access management and 5 being excellent access management. The AMR takes into consideration the length of the segment, roadway characteristics, intersection control, the number and type of access points, median type, and multi-modal facilities.

The evaluation assumed construction of the center median with U-turn treatments as well as frontage and backage roads used to minimize direct access to the corridor, resulting in approximately 40 access points being removed, consolidated, or restricted. All three alternatives were analyzed with the same access management strategies. Table 6 shows the AMR rating for each segment and alternative. Alternative #1 and Alternative #2 have the same AMR rating for all segments because this tool analyzes traffic signals and roundabouts with the same criteria. Alternative #3 has a lower rating due to fewer vehicle lanes on segment 3 and 4. Due to the installation of median treatments and reduction in direct access points, all three alternatives have higher AMR ratings than the existing conditions.

**TABLE 6: ACCESS MANAGEMENT RATING**

<b>SEGMENT</b>	<b>EXISTING</b>	<b>ALTERNATIVE #1</b>	<b>ALTERNATIVE #2</b>	<b>ALTERNATIVE #3</b>
<b>SEGMENT 1: HAZELGREEN</b>	1.8	2.0	2.0	2.0
<b>SEGMENT 2: CORDON NORTH</b>	2.4	2.7	2.7	2.7

<sup>10</sup> Quantifying Access Management on Arterial Roadways, by Lacy Brown, Karen Dixon and Gene Hawkins Jr., August 2017.

SEGMENT	EXISTING	ALTERNATIVE #1	ALTERNATIVE #2	ALTERNATIVE #3
SEGMENT 3: CORDON SOUTH	2.2	3.3	3.3	3.0
SEGMENT 4: SALEM CORDON-KUEBLER	2.4	3.5	3.5	3.2

## TOOLBOX SOLUTIONS

The following sections include recommended improvements and opportunities that can be included with any of the transportation alternatives. These include access considerations, intersection crossing treatments, systemic safety improvements, and transit needs.

### ACCESS CONSIDERATIONS

Due to the presence of raised medians along portions of the corridor for all three Alternatives, some of the public street intersections and private driveways along Cordon Road will have reduced access to Cordon Road (e.g., right-in, right-out access only). Some exceptions will be made for driveway access to emergency services (i.e., Marion County Fire Stations). Therefore, access management strategies should be considered, including the use of backage and frontage roads, midblock median U-turns, and U-turns at traffic signals to limit out-of-direction travel. Further exploration of these and other strategies will be provided in a subsequent Access Management Plan report.

A map showing the location of suggested frontage and backage roads, midblock median U-turns, and traffic signal U-turns is provided in the Appendix. Access management strategies should be selected based on several factors including the adjacent land uses, access density, available right-of-way, and out-of-direction travel. A list of considerations is provided in Table 4 below.

**TABLE 4: ACCESS MANAGEMENT STRATEGY CONSIDERATIONS**

ACCESS MANAGEMENT STRATEGY	CONSIDERATION
Frontage Road/Backage Road	Requires property right-of-way dedication for all involved properties. Improves safety and operations by shifting conflict points from arterial roadways to local streets, which have low volume and speed.
Midblock Median U-Turns	Some design configurations require additional right-of-way (approximately 120 feet – 140 feet for a four-lane cross-section). Reduces out-of-direction travel. Better multi-modal safety performance than U-turns at signalized intersections.

ACCESS MANAGEMENT STRATEGY	CONSIDERATION
U-Turns at Signalized Intersections	<p>Requires protected movements at traffic signal (i.e., no flashing yellow arrows) and no overlap right turns with the paired U-turn</p> <p>Requires sufficient turning radius and right-of-way for larger vehicles to make U-turn, comparable to midblock median U-turns.</p>

## PEDESTRIAN AND BICYCLE FACILITIES

Alternatives #1 and #2 provide buffered bike lanes along the entire corridor. The bike lanes would be standard width (typically 5 feet) and have buffers between the travel lane and bicycle lane (typically 2 feet). For more experienced cyclists, this is sufficient separation from the higher-speed, higher-volume travel lanes along Cordon Road. For less experienced bicyclists, the multi-use path provides adequate width and separation from the vehicle travel lanes for a more comfortable ride.

Alternative #3 has additional right-of-way available for enhanced bicycle facilities. With this additional space, the bicycle lanes could be widened ( $\geq 6$  feet) and instead of a buffer, include some combination of greater horizontal and vertical separation, referred to as the separation treatment. This separation treatment could be as simple as a larger buffer width with vertical flexible delineators between the vehicle lane and bicycle lane or as complex as a raised bikeway with a planting strip for separation, all of which would increase cyclist comfort while riding adjacent to traffic. In this alternative, a wide multi-use path is also present on both sides of the road.

Multi-use paths can be built for a variety of reasons including weekday commuter cyclists or weekend recreational fun. The ODOT Highway Design Manual (HDM) provides recommended guidance for multi-use paths (shared use paths) based on volume and context.<sup>11</sup> The standard multi-use path clear width is 10 feet with 12 feet or more recommended for areas of high use. These widths include no formal distinction or separation between mode choice (i.e., walking or biking).

An alternative consideration for on-street bicycle facilities along Cordon Road or Hazelgreen Road would be protected bicycle lanes or two-way cycle tracks. Per guidance from NACTO and the ODOT Highway Design Manual, protected bike lanes are recommended for higher-speed, higher-volume roadways as they use a combination of horizontal separation (buffer distance) and vertical separation (e.g., flexible posts, grade differences, or curbs) to protect from motor vehicle traffic. Both the necessary right-of-way, ongoing maintenance, and cost of protected bike lanes or cycle tracks should be considered in addition to the safety benefits and reduced level of rider stress in the ultimate selection of treatments.

<sup>11</sup> Highway Design Manual, Sections 845 & 960, Oregon Department of Transportation, January 2023.

## INTERSECTION & ROADWAY CROSSING TREATMENTS

Intersections can be the most difficult part of a roadway network for pedestrians and bicyclists to navigate. It puts them directly into conflict with motorized vehicles and increases the level of stress they feel. When there are long distances between adjacent intersections, this can also be challenging for pedestrians and bicyclists because their crossing opportunities can be limited. Toolbox solutions on how to best address crossing concerns are presented below in Table 5. The ODOT-approved crash reduction factors (CRFs) for the below treatments are included in the following section. Solutions like raised crosswalks and curb extensions, which were deemed not context-appropriate or applicable, are not included.

For the Cordon-Kuebler Corridor, the center median will be utilized as a pedestrian refuge island. Whether at a mid-block crossing or for larger intersection crossings, the ability to break the crossings into two-stage crossings will greatly benefit pedestrians, as needed.

**TABLE 5: CROSSING TREATMENTS PER INTERSECTION CONTROL**

CROSSING TREATMENT	INTERSECTIONS	MID-BLOCK
ILLUMINATION	Yes	Yes
ENHANCED CROSSWALK MARKINGS	Yes	Yes
PEDESTRIAN MEDIAN REFUGE ISLAND	Yes	Yes
LEADING PEDESTRIAN INTERVAL	Yes, traffic signals	-
RRFB (RECTANGULAR RAPID FLASHING BEACON)	Yes, roundabouts	Yes
PHB (PEDESTRIAN HYBRID BEACON) OR HAWK (HIGH-INTENSITY ACTIVATED CROSSWALK)	Yes, roundabouts	Yes
GREEN BIKE LANES AT CONFLICT POINTS	Yes	-
BIKE BOX AT CONFLICT POINTS	Yes	-
BIKE SIGNALS	Yes	-

## SYSTEMIC SAFETY IMPROVEMENTS

Systemic safety analysis looks at a corridor’s typical crash types and situations, and then identifies types of mitigation tools that can be readily applied across numerous sites to reduce crash risk. The toolbox of adaptable solutions enables transportation agencies to select appropriate countermeasures based on the considerations of each site.

Table 6 provides a list of safety solutions that can apply across the Cordon-Kuebler Corridor that are context-appropriate. The table lists the treatment, what it is, where it can be used, and the current estimated safety benefit (ODOT-approved CRF). These treatments are solutions previously identified and quantified by the ARTS (All Road Transportation Safety) program.<sup>12</sup>

**TABLE 6: SYSTEMIC SAFETY TOOLBOX**

<b>TREATMENT (ODOT ID)</b>	<b>DESCRIPTION</b>	<b>LOCATION(S) USED</b>	<b>TYPES OF CRASHES TREATED</b>	<b>ODOT CRF VALUE(S)</b>
<b>SPEED FEEDBACK SIGNS (RD12)</b>	Feedback signs that alert drivers of their speed as they pass the sign	Any locations with high rates of speed related crashes	All Crashes at All Severities	10%
<b>UNSIGNALIZED INTERSECTION UPGRADES (I21)</b>	Low-cost unsignalized intersection improvements including oversize advance warning and STOP signs, foliage removal, properly placed stop bar, and new striping	Unsignalized intersections with high rates of angle or turning movement crashes	All Crashes at All Severities	20%-30%
<b>ACTUATED FLASHING ADVANCE SIGNAL WARNING SIGNS (I16)</b>	Flashing beacon on an advance warning sign to alert drivers of an upcoming traffic signal	Traffic signal intersection approaches with high rates of rear-end crashes	Rear End Crashes at All Severities	36%
<b>INTERSECTION ILLUMINATION (BIKES &amp; PEDS) (BP2)</b>	Permanent source of light at an intersection that provides greater visibility for pedestrians and bicyclists	Intersections with high rates of pedestrian and bicycle crashes at night	Nighttime Pedestrian and Bicycle Crashes at All Severities	42%
<b>LEADING PEDESTRIAN OR BICYCLE INTERVAL (BP3)</b>	An initial green indication given to pedestrians and bicyclists before vehicles to give them a head start at crossing	Traffic signal intersection with frequency of vehicles failing to yield	Pedestrian and Bicycle Crashes at All Severities	37%
<b>GREEN BIKE LANES AT CONFLICT POINTS (BP6)</b>	Green bike lanes placed at conflict points to better alert vehicles of the possible presence of bikes	Any intersection with high vehicular and bicycle volumes	Bicycle Crashes at All Severities	39%
<b>BIKE BOX AT CONFLICT POINTS (BP7)</b>	A designated space for bicyclists to queue at an intersection that is ahead of vehicular traffic	Any intersection with high right-turn vehicular volume and bicycles	Bicycle Crashes at All Severities	35%

<sup>12</sup> HSIP Countermeasures and Crash Reduction Factors, CRF Appendix, Oregon Department of Transportation.

TREATMENT (ODOT ID)	DESCRIPTION	LOCATION(S) USED	TYPES OF CRASHES TREATED	ODOT CRF VALUE(S)
<b>PEDESTRIAN REFUGE ISLAND (BP8)</b>	A roadway median with specific pedestrian crossing and waiting areas that enable pedestrians to cross the street in two stages	Unsignalized or midblock crossings with high rates of pedestrian crashes	Pedestrian Crashes at All Severities	31%
<b>RECTANGULAR RAPID FLASHING BEACON (RRFB) (BP9 - BP11) <sup>A</sup></b>	User-activated flashing warning lights that supplement warning signs at crosswalks to alert drivers of a crossing pedestrian	Unsignalized or midblock crossings with high rates of pedestrian crashes	Pedestrian Crashes at All Severities	10%-56%
<b>PEDESTRIAN HYBRID BEACON (BP19) <sup>B</sup></b>	A pedestrian-activated warning device that displays a steady red indication to drivers and a WALK symbol to pedestrians	Intersections or segments with high pedestrian or bicycle activity and a prevalence of crashes	Pedestrian and Bicycle Crashes at All Severities	55%
<b>BIKE SIGNAL (BP21)</b>	A traffic signal specifically for bicycles that have all the same indications as a vehicular traffic signal	Any intersection with high vehicular and bicycle volumes	Bicycle Crashes at All Severities	45%
<b>BIKE LANES (BP22)</b>	Construct or stripe exclusive-use bicycle lanes	Any roadway segment with high vehicular volumes and bicycle crashes	Bicycle Crashes at All Severities	36%
<b>SIDEWALK (BP29)</b>	Construct a paved path for pedestrians to be separated from the vehicular travel lanes	Any roadway segment without sidewalks and high rates of pedestrian crashes	Pedestrian – walking along Crashes at All Severities	20%

<sup>a</sup> Current City of Salem policy limits the use of RRFBs to roadways or intersections with two or more travel lanes in the same direction.

<sup>b</sup> City of Salem does not currently permit the use of Pedestrian Hybrid Beacons

## TRANSIT NEEDS

Salem is home to Cherriots, a transit bus service which covers over 75 square-miles in the Salem, Keizer, and mid-Willamette Valley area. As the Salem-Keizer metropolitan area continues to grow and spread east across Cordon Road, future considerations for more transit along and around the corridor should be considered. While Cherriots currently has no immediate plans for expansion of transit service onto/along the Cordon-Kuebler Corridor, an understanding of the future goals and expectations of transit service are discussed below.

## ROUTING

The Cordon-Kuebler Corridor is a circumferential throughway route along the eastern extents of Salem that currently has minimal commercial or industrial presence, except for the southern end

near Lancaster Drive and Turner Road. While no current transit service expansion is planned, Cherriots will look for ways to connect directly to neighborhoods and places of business. For transit service to be effective, the distance between transit stops and final destinations need to be within a reasonable distance. Therefore, it is important that access be maintained to local streets from the corridor so that the most effective and reasonable routes can be created in the future. Future routes may include transit stops on the corridor, or future transit routes may just use the corridor as part of the route and then turn onto other streets for the actual stops.

## **BUS STOP ZONE DESIGN**

The design of bus stops can be serious attractors or detractors when people consider using transit services. Cherriots recently embarked on their Bus Stop Improvement Project, realizing the need for safer and more comfortable waiting areas with better signage and directions. Stops can be as simple as a sign denoting the stop, or as elaborate as a full-service transit center. Stops that see 20 or more boardings per day are usually considered for bus shelters.<sup>13</sup>

For speeds under 40 mph, Cherriots uses curbside transit stops for bus service. This is where the bus stop is directly adjacent to the vehicle lane, and vehicles behind the transit bus must queue behind the bus (or make a maneuver around it) while people are disembarking and boarding the bus. However, for roadways over 40 mph like Cordon Road and Kuebler Boulevard, it is standard for Cherriots to use bus bays (bus pullouts) when possible. These types of stops separate the bus waiting area from the vehicle travel lane, thus allowing free-flow movement for the vehicle travel lane. While it can be difficult for buses to merge back into the travel lane with these stops, it maintains free-flow for the vehicle travel lanes and minimizes high-speed rear-end crashes when buses are stopped in the lane to let passengers embark and disembark off buses.

Due to the corridor's speed, therefore, Cordon-Kuebler Corridor cross-sections should consider the need for right-of-way space for bus bays along the corridor to facilitate any future potential transit stops. However, as previously stated, no current transit service expansion is planned for the corridor.

## **NEARBY PEDESTRIAN AND BICYCLE IMPROVEMENTS**

With the addition of any new transit stop on or near the Cordon-Kuebler Corridor, it is necessary that the appropriate pedestrian and bicycle connections be present that allow the users to travel from the transit stop to their destination. Safe and adequate sidewalks and street crossings must be present that allow the pedestrians from the bus to cross the street or walk along the street to get to their destination after disembarking. Bus stops should not be a disconnected island that does not provide access to the destinations that the stop is attempting to serve.

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<sup>13</sup> Bus Stop Improvement Project, Cherriots, <https://www.cherriots.org/busstopproject/>



## SUMMARY

This technical memorandum presents three unique alternatives for the Cordon-Kuebler Corridor and a suite of toolbox solutions that can be attached to any of the alternatives.

- Alternative #1 creates a corridor that meets future traffic demands, creates space for active transportation (pedestrians and bicyclists), mitigates access along the corridor, and provides traffic signals as the primary intersection control.
- Alternative #2 creates a similar corridor as Alternative #1, except that it provides roundabouts as the primary intersection control, where feasible.
- Alternative #3 creates a plan that prioritizes active transportation equally with vehicles. However, the corridor is not expected to meet operational standards in the future without significant modal shift.

An initial assessment of the alternatives is in Table 7. A full ranking process will be conducted after community feedback is gathered at the next open house event.

**TABLE 7: INITIAL ASSESSMENT OF ALTERNATIVES**

CONSIDERATION	ALTERNATIVE #1	ALTERNATIVE #2	ALTERNATIVE #3 <sup>A</sup>
VEHICLE OPERATIONS	★ ★ ★	★ ★ ★	★ ★ ★ ★
MULTI-MODAL SAFETY PERFORMANCE	★ ★	★ ★ ★	★ ★ ★
BICYCLE & PEDESTRIAN CONNECTIVITY	★ ★	★ ★	★ ★ ★
ACCESS MANAGEMENT	★ ★	★ ★	★ ★
OVERALL	★ ★	★ ★ ★	★ ★ ★ ★ ★

<sup>A</sup> First rating is based on forecasted operations without the required mode shift; second rating is if mode shift goals are met.

## NEXT STEPS

These transportation alternatives will guide the recommendation and ranking process in Technical Memorandum #7: Evaluate and Prioritize Recommended Projects. The results of this memorandum and the future forecasts memorandum will be presented to the public at the Open House #2 to hear the priorities and preferences of the community.

# APPENDIX

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**APPENDIX A – MAP OF ACCESS CONSIDERATIONS**

**APPENDIX B – INTERSECTION OPERATIONS TABLES**

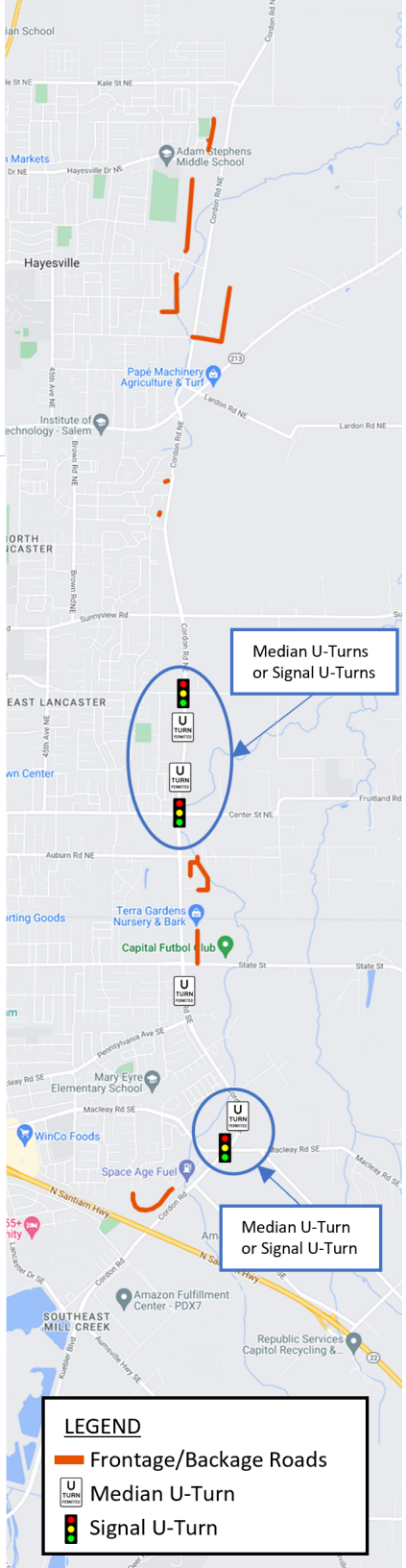
**APPENDIX C – HCM OPERATIONS REPORTS**



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## APPENDIX A – MAP OF ACCESS CONSIDERATIONS




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Median U-Turns  
or Signal U-Turns

Median U-Turn  
or Signal U-Turn

**LEGEND**

-  Frontage/Backage Roads
-  Median U-Turn
-  Signal U-Turn

## APPENDIX B – INTERSECTION OPERATIONS TABLES

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**TABLE 1: FUTURE ALTERNATIVES 2043 INTERSECTION OPERATIONS – AM PEAK**

INTERSECTION	OPERATING STANDARD	ALTERNATIVE #1			ALTERNATIVE #2			OPERATING STANDARD	ALTERNATIVE #3			
		V/C	DELAY	LOS	V/C	DELAY	LOS		V/C	DELAY	LOS	
<b>STUDY INTERSECTIONS</b>												
1	HAZELGREEN ROAD/ OR 99E	v/c ≤ 0.95	0.74	39.3	C	0.74	39.3	C	v/c ≤ 0.95	<b>0.87</b>	58.8	E
2	HAZELGREEN ROAD/ LAKE LABISH ROAD	LOS D, v/c ≤ 0.85	0.41	12.0	B	0.41	6.3	A	LOS E	0.46	29.3	A/D
3	CORDON ROAD/ HAZELGREEN ROAD	LOS D, v/c ≤ 0.85	0.43	12.4	B	0.53	7.8	A	LOS E	0.92	29.7	D
4	CORDON ROAD/ KALE STREET	LOS D, v/c ≤ 0.85	0.32	5.9	A	0.34	5.8	A	LOS E	0.20	21.4	A/C
5	CORDON ROAD/ HAYESVILLE DRIVE	LOS D, v/c ≤ 0.85	0.53	5.9	A	0.54	9.2	A	LOS E	0.94	<b>66.8</b>	<b>A/F</b>
6	CORDON ROAD/ WARD DRIVE	LOS D, v/c ≤ 0.85	0.60	8.2	A	0.62	9.7	A	LOS E	0.90	<b>92.3</b>	<b>A/F</b>
7	CORDON ROAD/ HERRIN ROAD	LOS D, v/c ≤ 0.85	0.58	7.8	A	0.65	10.0	A	LOS E	0.50	37.2	A/E
8	CORDON ROAD/ SILVERTON ROAD	LOS D, v/c ≤ 0.85	0.70	27.5	C	0.79	21.7	C	LOS D, v/c ≤ 0.85	0.85	40.4	D
9	CORDON ROAD/ SUNNYVIEW ROAD	LOS D, v/c ≤ 0.85	0.69	11.6	B	0.63	11.1	B	LOS D, v/c ≤ 0.85	<b>0.95</b>	27.7	C
10	CORDON ROAD/ SWEGLE ROAD	LOS D, v/c ≤ 0.85	0.57	5.8	A	0.57	9.9	A	LOS E	>1.2	<b>&gt;120</b>	<b>B/F</b>
11	CORDON ROAD/ CENTER STREET	LOS D, v/c ≤ 0.85	0.66	9.8	A	0.68	12.4	B	LOS D, v/c ≤ 0.85	0.83	15.3	B
12	CORDON ROAD/ AUBURN ROAD	LOS D, v/c ≤ 0.85	0.57	5.0	A	0.62	10.3	B	LOS D, v/c ≤ 0.85	0.81	5.4	A
13	CORDON ROAD/ STATE STREET	LOS D, v/c ≤ 0.85	0.63	18.4	B	0.63	18.4	B	LOS D, v/c ≤ 0.85	<b>0.99</b>	40.7	D
14	CORDON ROAD/ PENNSYLVANIA AVENUE	LOS E	0.22	17.3	A/C	0.22	17.3	A/C	LOS E	0.74	<b>79.7</b>	<b>A/F</b>
15	CORDON ROAD/ CAPLINGER STREET	LOS E	0.05	16.1	A/C	0.05	16.1	A/C	LOS E	1.10	<b>&gt;120</b>	<b>A/F</b>
16	CORDON ROAD/ MACLEAY ROAD	LOS E, v/c ≤ 0.90	0.64	22.5	C	0.85	17.7	C	LOS E, v/c ≤ 0.90	0.80	15.7	B
17	CORDON ROAD/ GAFFIN ROAD	LOS E, v/c ≤ 0.90	0.64	17.0	B	0.65	12.7	B	LOS E, v/c ≤ 0.90	0.71	11.6	B
18	KUEBLER BOULEVARD/ LANCASTER DRIVE	LOS E, v/c ≤ 0.90	0.67	20.5	C	0.67	20.5	C	LOS E, v/c ≤ 0.90	0.54	16.6	B
19	KUEBLER BOULEVARD/ MILL CREEK DRIVE	LOS E, v/c ≤ 0.90	0.57	13.1	B	0.57	13.1	B	LOS E, v/c ≤ 0.90	0.67	15.6	B
20	KUEBLER BOULEVARD/ TURNER ROAD	LOS E, v/c ≤ 0.90	0.90	53.1	D	0.90	53.1	D	LOS E, v/c ≤ 0.90	<b>0.91</b>	26.2	C
21	KUEBLER BOULEVARD/ 36 <sup>TH</sup> AVENUE	LOS E, v/c ≤ 0.90	0.76	41.7	D	0.76	41.7	D	LOS E, v/c ≤ 0.90	0.87	27.3	C

**SIGNALIZED INTERSECTION:**

Delay = Average Intersection Delay (sec)  
v/c = Average Intersection Volume-to-Capacity Ratio  
LOS = Average Intersection Level of Service

**ROUNDBABOUT INTERSECTION:**

Delay = Average Intersection Delay (sec)  
v/c = Critical Lane Volume-to-Capacity Ratio  
LOS = Average Intersection Level of Service

**TWO-WAY STOP-CONTROLLED INTERSECTION:**

Delay = Critical Movement Approach Delay (sec)  
v/c = Critical Movement Volume-to-Capacity Ratio  
LOS = Level of Service (Major/Minor Road)

**Bold/Highlighted** = Does Not Meet Mobility Target/Mobility Standard

**Grey/Highlighted** = Alternative #2 signalized/stop-controlled intersection operation results are copied from Alternative #1

**TABLE 2: FUTURE ALTERNATIVES 2043 INTERSECTION OPERATIONS – PM PEAK**

INTERSECTION	OPERATING STANDARD	ALTERNATIVE #1			ALTERNATIVE #2			OPERATING STANDARD	ALTERNATIVE #3			
		V/C	DELAY	LOS	V/C	DELAY	LOS		V/C	DELAY	LOS	
<b>STUDY INTERSECTIONS</b>												
1	HAZELGREEN ROAD/ OR 99E	v/c ≤ 0.95	0.83	40.7	D	0.83	40.7	D	v/c ≤ 0.95	0.94	51.6	D
2	HAZELGREEN ROAD/ LAKE LABISH ROAD	LOS D, v/c ≤ 0.85	0.50	12.3	B	0.51	7.4	A	LOS E	0.57	42.0	A/E
3	CORDON ROAD/ HAZELGREEN ROAD	LOS D, v/c ≤ 0.85	0.68	16.6	B	0.65	11.8	B	LOS E	>1.2	<b>&gt;120</b>	<b>F</b>
4	CORDON ROAD/ KALE STREET	LOS D, v/c ≤ 0.85	0.55	6.7	A	0.57	8.6	A	LOS E	0.57	<b>76.2</b>	<b>A/F</b>
5	CORDON ROAD/ HAYESVILLE DRIVE	LOS D, v/c ≤ 0.85	0.64	6.4	A	0.71	12.0	B	LOS E	0.90	<b>85.8</b>	<b>B/F</b>
6	CORDON ROAD/ WARD DRIVE	LOS D, v/c ≤ 0.85	0.68	8.2	A	0.78	14.9	B	LOS E	0.76	<b>90.0</b>	<b>B/F</b>
7	CORDON ROAD/ HERRIN ROAD	LOS D, v/c ≤ 0.85	0.61	7.9	A	0.68	11.8	B	LOS E	0.93	<b>119.9</b>	<b>B/F</b>
8	CORDON ROAD/ SILVERTON ROAD	LOS D, v/c ≤ 0.85	0.74	24.9	C	0.84	32.0	D	LOS D, v/c ≤ 0.85	<b>0.95</b>	54.0	D
9	CORDON ROAD/ SUNNYVIEW ROAD	LOS D, v/c ≤ 0.85	0.78	14.5	B	0.72	17.6	C	LOS D, v/c ≤ 0.85	<b>1.10</b>	<b>65.7</b>	<b>E</b>
10	CORDON ROAD/ SWEGLE ROAD	LOS D, v/c ≤ 0.85	0.64	6.0	A	0.65	11.9	B	LOS E	>1.2	<b>&gt;120</b>	<b>B/F</b>
11	CORDON ROAD/ CENTER STREET	LOS D, v/c ≤ 0.85	0.84	12.6	B	0.82	22.6	C	LOS D, v/c ≤ 0.85	<b>0.99</b>	39.8	D
12	CORDON ROAD/ AUBURN ROAD	LOS D, v/c ≤ 0.85	0.67	6.1	A	0.73	14.0	B	LOS D, v/c ≤ 0.85	<b>0.92</b>	5.9	A
13	CORDON ROAD/ STATE STREET	LOS D, v/c ≤ 0.85	0.85	32.1	C	0.85	32.1	C	LOS D, v/c ≤ 0.85	<b>1.16</b>	<b>82.5</b>	<b>F</b>
14	CORDON ROAD/ PENNSYLVANIA AVENUE	LOS E	0.27	24.8	A/C	0.27	24.8	A/C	LOS E	1.08	<b>&gt;120</b>	<b>B/F</b>
15	CORDON ROAD/ CAPLINGER STREET	LOS E	0.11	20.0	A/C	0.11	20.0	A/C	LOS E	>1.2	<b>&gt;120</b>	<b>B/F</b>
16	CORDON ROAD/ MACLEAY ROAD	LOS E, v/c ≤ 0.90	0.81	19.3	B	0.89	30.2	D	LOS E, v/c ≤ 0.90	<b>0.99</b>	21.9	C
17	CORDON ROAD/ GAFFIN ROAD	LOS E, v/c ≤ 0.90	0.87	21.9	C	0.86	30.0	D	LOS E, v/c ≤ 0.90	0.85	15.4	B
18	KUEBLER BOULEVARD/ LANCASTER DRIVE	LOS E, v/c ≤ 0.90	0.81	26.3	C	0.81	26.3	C	LOS E, v/c ≤ 0.90	0.60	17.7	B
19	KUEBLER BOULEVARD/ MILL CREEK DRIVE	LOS E, v/c ≤ 0.90	0.63	16.7	B	0.63	16.7	B	LOS E, v/c ≤ 0.90	0.79	9.0	A
20	KUEBLER BOULEVARD/ TURNER ROAD	LOS E, v/c ≤ 0.90	0.78	54.1	D	0.78	54.1	D	LOS E, v/c ≤ 0.90	0.83	38.3	D
21	KUEBLER BOULEVARD/ 36 <sup>TH</sup> AVENUE	LOS E, v/c ≤ 0.90	0.83	54.3	D	0.83	54.3	D	LOS E, v/c ≤ 0.90	<b>1.01</b>	52.7	D

**SIGNALIZED INTERSECTION:**

Delay = Average Intersection Delay (sec)  
v/c = Average Intersection Volume-to-Capacity Ratio  
LOS = Average Intersection Level of Service

**ROUNDBOUT INTERSECTION:**

Delay = Average Intersection Delay (sec)  
v/c = Critical Lane Volume-to-Capacity Ratio  
LOS = Average Intersection Level of Service

**TWO-WAY STOP-CONTROLLED INTERSECTION:**

Delay = Critical Movement Approach Delay (sec)  
v/c = Critical Movement Volume-to-Capacity Ratio  
LOS = Level of Service (Major/Minor Road)

**Bold/Highlighted** = Does Not Meet Mobility Target/Mobility Standard

**Grey/Highlighted** = Alternative #2 signalized/stop-controlled intersection operation results are copied from Alternative #1

## APPENDIX C – HCM OPERATIONS REPORTS

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# **ALTERNATIVE 1 – TRAFFIC SIGNAL-CENTRIC**

## **HCM Results**

HCM 6th Signalized Intersection Summary  
1: OR 99E & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (AM Peak)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	220	255	115	390	65	300	550	60	30	495	65
Future Volume (veh/h)	145	220	255	115	390	65	300	550	60	30	495	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1856	1900	1900	1841	1856	1900	1885	1900	1841	1885	1900
Adj Flow Rate, veh/h	158	239	78	125	424	64	326	598	57	33	538	11
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, %	7	3	0	0	4	3	0	1	0	4	1	0
Cap, veh/h	195	596	517	158	460	69	428	978	93	40	705	317
Arrive On Green	0.11	0.32	0.32	0.09	0.29	0.29	0.12	0.30	0.30	0.02	0.20	0.20
Sat Flow, veh/h	1711	1856	1610	1810	1562	236	3510	3305	314	1753	3582	1610
Grp Volume(v), veh/h	158	239	78	125	0	488	326	324	331	33	538	11
Grp Sat Flow(s),veh/h/ln	1711	1856	1610	1810	0	1798	1755	1791	1829	1753	1791	1610
Q Serve(g_s), s	6.9	7.7	2.7	5.2	0.0	20.2	6.9	12.0	12.0	1.4	10.9	0.4
Cycle Q Clear(g_c), s	6.9	7.7	2.7	5.2	0.0	20.2	6.9	12.0	12.0	1.4	10.9	0.4
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	195	596	517	158	0	530	428	530	541	40	705	317
V/C Ratio(X)	0.81	0.40	0.15	0.79	0.00	0.92	0.76	0.61	0.61	0.83	0.76	0.03
Avail Cap(c_a), veh/h	366	1011	878	364	0	957	706	790	807	171	1209	543
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.3	20.4	18.6	34.5	0.0	26.3	32.8	23.3	23.3	37.5	29.2	25.0
Incr Delay (d2), s/veh	5.9	0.3	0.1	3.3	0.0	3.5	2.1	0.4	0.4	26.2	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	3.0	0.9	2.3	0.0	8.1	2.9	4.6	4.7	0.9	4.4	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.2	20.7	18.7	37.8	0.0	29.9	34.9	23.7	23.7	63.8	30.6	25.1
LnGrp LOS	D	C	B	D	A	C	C	C	C	E	C	C
Approach Vol, veh/h		475			613			981			582	
Approach Delay, s/veh		26.5			31.5			27.4			32.3	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.9	21.2	13.3	28.7	6.2	28.8	11.2	30.8				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	15.5	26.0	16.5	41.0	7.5	34.0	15.5	42.0				
Max Q Clear Time (g_c+I1), s	8.9	12.9	8.9	22.2	3.4	14.0	7.2	9.7				
Green Ext Time (p_c), s	0.5	2.2	0.2	0.5	0.0	2.1	0.0	1.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				29.3								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary  
 2: Lake Labish Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	295	25	5	405	5	120	5	5	30	10	30
Future Volume (veh/h)	10	295	25	5	405	5	120	5	5	30	10	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1856	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	11	335	25	6	460	5	136	6	0	34	11	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	3	0	0	3	0	0	0	0	0	0	0
Cap, veh/h	330	591	44	400	623	7	526	202	0	544	225	0
Arrive On Green	0.01	0.35	0.35	0.01	0.34	0.34	0.10	0.11	0.00	0.11	0.12	0.00
Sat Flow, veh/h	1810	1705	127	1810	1832	20	1810	1900	0	1810	1900	0
Grp Volume(v), veh/h	11	0	360	6	0	465	136	6	0	34	11	0
Grp Sat Flow(s),veh/h/ln	1810	0	1833	1810	0	1852	1810	1900	0	1810	1900	0
Q Serve(g_s), s	0.1	0.0	6.0	0.1	0.0	8.3	2.4	0.1	0.0	0.6	0.2	0.0
Cycle Q Clear(g_c), s	0.1	0.0	6.0	0.1	0.0	8.3	2.4	0.1	0.0	0.6	0.2	0.0
Prop In Lane	1.00		0.07	1.00		0.01	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	330	0	635	400	0	630	526	202	0	544	225	0
V/C Ratio(X)	0.03	0.00	0.57	0.01	0.00	0.74	0.26	0.03	0.00	0.06	0.05	0.00
Avail Cap(c_a), veh/h	574	0	1528	656	0	1544	681	936	0	1237	1524	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.8	0.0	10.0	8.4	0.0	10.9	12.8	15.0	0.0	11.7	14.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.8	0.0	0.0	1.7	0.3	0.1	0.0	0.0	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	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.5	0.0	0.0	2.2	0.9	0.0	0.0	0.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.8	0.0	10.8	8.5	0.0	12.6	13.0	15.1	0.0	11.7	14.8	0.0
LnGrp LOS	A	A	B	A	A	B	B	B	A	B	B	A
Approach Vol, veh/h		371			471			142			45	
Approach Delay, s/veh		10.7			12.6			13.1			12.5	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	8.0	4.3	17.0	7.8	8.4	4.5	16.8				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	18.6	18.5	5.6	31.3	7.0	30.1	5.6	31.3				
Max Q Clear Time (g_c+I), s	12.6	2.1	2.1	8.0	4.4	2.2	2.1	10.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.9	0.1	0.0	0.0	2.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											12.0	
HCM 6th LOS											B	

HCM 6th Signalized Intersection Summary  
3: Cordon Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	135	100	160	300	25	60	170	75	15	60	10
Future Volume (veh/h)	15	135	100	160	300	25	60	170	75	15	60	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1826	1826	1900	1781	1900	1900	1900	1900	1900	1900	1752
Adj Flow Rate, veh/h	16	147	24	174	326	23	65	185	64	16	65	3
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, %	0	5	5	0	8	0	0	0	0	0	0	10
Cap, veh/h	363	350	297	569	474	33	507	282	98	341	293	14
Arrive On Green	0.02	0.19	0.19	0.12	0.29	0.29	0.07	0.21	0.21	0.02	0.16	0.16
Sat Flow, veh/h	1810	1826	1547	1810	1645	116	1810	1349	467	1810	1802	83
Grp Volume(v), veh/h	16	147	24	174	0	349	65	0	249	16	0	68
Grp Sat Flow(s),veh/h/ln	1810	1826	1547	1810	0	1761	1810	0	1816	1810	0	1885
Q Serve(g_s), s	0.2	2.5	0.4	2.4	0.0	6.1	1.0	0.0	4.4	0.3	0.0	1.1
Cycle Q Clear(g_c), s	0.2	2.5	0.4	2.4	0.0	6.1	1.0	0.0	4.4	0.3	0.0	1.1
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.26	1.00		0.04
Lane Grp Cap(c), veh/h	363	350	297	569	0	508	507	0	379	341	0	306
V/C Ratio(X)	0.04	0.42	0.08	0.31	0.00	0.69	0.13	0.00	0.66	0.05	0.00	0.22
Avail Cap(c_a), veh/h	639	1791	1518	879	0	1930	698	0	1257	617	0	1305
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.0	12.3	11.5	8.4	0.0	10.9	10.7	0.0	12.6	11.8	0.0	12.6
Incr Delay (d2), s/veh	0.0	0.8	0.1	0.3	0.0	1.7	0.1	0.0	1.9	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.7	0.1	0.5	0.0	1.6	0.2	0.0	1.2	0.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.0	13.1	11.6	8.7	0.0	12.6	10.8	0.0	14.5	11.8	0.0	13.0
LnGrp LOS	B	B	B	A	A	B	B	A	B	B	A	B
Approach Vol, veh/h		187			523			314				84
Approach Delay, s/veh		12.7			11.3			13.7				12.8
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.7	11.2	8.1	10.6	6.3	9.6	4.7	14.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	24.0	10.0	34.0	6.0	24.0	6.0	38.0				
Max Q Clear Time (g_c+1), s	12.3	6.4	4.4	4.5	3.0	3.1	2.2	8.1				
Green Ext Time (p_c), s	0.0	1.1	0.2	0.8	0.0	0.2	0.0	1.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				12.4								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
4: Cordon Rd & Kale St

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	160	70	345	330	40
Future Volume (veh/h)	40	160	70	345	330	40
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1900	1900
Adj Flow Rate, veh/h	43	12	75	371	355	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	2	0	0
Cap, veh/h	115	102	598	1085	574	61
Arrive On Green	0.06	0.06	0.08	0.58	0.34	0.34
Sat Flow, veh/h	1810	1610	1810	1870	1687	181
Grp Volume(v), veh/h	43	12	75	371	0	393
Grp Sat Flow(s),veh/h/ln	1810	1610	1810	1870	0	1867
Q Serve(g_s), s	0.6	0.2	0.5	2.6	0.0	4.4
Cycle Q Clear(g_c), s	0.6	0.2	0.5	2.6	0.0	4.4
Prop In Lane	1.00	1.00	1.00			0.10
Lane Grp Cap(c), veh/h	115	102	598	1085	0	635
V/C Ratio(X)	0.37	0.12	0.13	0.34	0.00	0.62
Avail Cap(c_a), veh/h	1578	1404	1097	4374	0	3405
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	11.1	4.2	2.8	0.0	7.0
Incr Delay (d2), s/veh	2.0	0.5	0.1	0.2	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.1	0.0	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.4	11.7	4.3	3.0	0.0	7.9
LnGrp LOS	B	B	A	A	A	A
Approach Vol, veh/h	55			446	393	
Approach Delay, s/veh	13.0			3.2	7.9	
Approach LOS	B			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		19.6		5.6	6.0	13.6
Change Period (Y+Rc), s		5.0		4.0	4.0	5.0
Max Green Setting (Gmax), s		59.0		22.0	9.0	46.0
Max Q Clear Time (g_c+I1), s		4.6		2.6	2.5	6.4
Green Ext Time (p_c), s		2.0		0.1	0.1	2.1
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			5.9			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
5: Cordon Rd & Hayesville Dr

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	275	235	400	465	35
Future Volume (veh/h)	10	275	235	400	465	35
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1900	1900
Adj Flow Rate, veh/h	11	5	267	455	528	37
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	2	0	0
Cap, veh/h	38	33	636	1293	735	51
Arrive On Green	0.02	0.02	0.14	0.69	0.42	0.42
Sat Flow, veh/h	1810	1610	1810	1870	1755	123
Grp Volume(v), veh/h	11	5	267	455	0	565
Grp Sat Flow(s),veh/h/ln	1810	1610	1810	1870	0	1878
Q Serve(g_s), s	0.2	0.1	2.0	3.1	0.0	7.8
Cycle Q Clear(g_c), s	0.2	0.1	2.0	3.1	0.0	7.8
Prop In Lane	1.00	1.00	1.00			0.07
Lane Grp Cap(c), veh/h	38	33	636	1293	0	786
V/C Ratio(X)	0.29	0.15	0.42	0.35	0.00	0.72
Avail Cap(c_a), veh/h	1275	1134	1360	3533	0	2285
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.1	15.0	4.8	2.0	0.0	7.5
Incr Delay (d2), s/veh	4.2	2.0	0.4	0.2	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	0.1	0.0	1.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.3	17.1	5.2	2.1	0.0	8.8
LnGrp LOS	B	B	A	A	A	A
Approach Vol, veh/h	16			722	565	
Approach Delay, s/veh	18.6			3.3	8.8	
Approach LOS	B			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		26.6		4.6	8.5	18.1
Change Period (Y+Rc), s		5.0		4.0	4.0	5.0
Max Green Setting (Gmax), s		59.0		22.0	17.0	38.0
Max Q Clear Time (g_c+I1), s		5.1		2.2	4.0	9.8
Green Ext Time (p_c), s		2.6		0.0	0.6	3.3
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			5.9			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
6: Cordon Rd & Ward Dr

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	65	45	535	690	45
Future Volume (veh/h)	100	65	45	535	690	45
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1841	1841	1841	1856	1811
Adj Flow Rate, veh/h	106	8	48	569	734	45
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	4	4	4	3	6
Cap, veh/h	208	184	378	1233	908	56
Arrive On Green	0.12	0.12	0.05	0.67	0.52	0.52
Sat Flow, veh/h	1767	1560	1753	1841	1730	106
Grp Volume(v), veh/h	106	8	48	569	0	779
Grp Sat Flow(s),veh/h/ln	1767	1560	1753	1841	0	1836
Q Serve(g_s), s	2.4	0.2	0.5	6.3	0.0	14.9
Cycle Q Clear(g_c), s	2.4	0.2	0.5	6.3	0.0	14.9
Prop In Lane	1.00	1.00	1.00			0.06
Lane Grp Cap(c), veh/h	208	184	378	1233	0	963
V/C Ratio(X)	0.51	0.04	0.13	0.46	0.00	0.81
Avail Cap(c_a), veh/h	800	706	529	2683	0	2252
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.5	16.6	6.7	3.3	0.0	8.3
Incr Delay (d2), s/veh	1.9	0.1	0.1	0.3	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.1	0.0	2.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.5	16.7	6.9	3.6	0.0	10.0
LnGrp LOS	B	B	A	A	A	A
Approach Vol, veh/h	114			617	779	
Approach Delay, s/veh	19.3			3.9	10.0	
Approach LOS	B			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		33.4		9.0	6.2	27.2
Change Period (Y+Rc), s		5.0		4.0	4.0	5.0
Max Green Setting (Gmax), s		61.8		19.2	5.8	52.0
Max Q Clear Time (g_c+I1), s		8.3		4.4	2.5	16.9
Green Ext Time (p_c), s		3.4		0.2	0.0	5.4
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			8.2			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
 7: Cordon Rd & Herrin Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	60	45	545	670	75
Future Volume (veh/h)	35	60	45	545	670	75
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1885	1826	1796	1841	1856
Adj Flow Rate, veh/h	38	4	49	599	736	77
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	1	5	7	4	3
Cap, veh/h	192	175	358	1244	890	93
Arrive On Green	0.11	0.11	0.05	0.69	0.54	0.54
Sat Flow, veh/h	1753	1598	1739	1796	1638	171
Grp Volume(v), veh/h	38	4	49	599	0	813
Grp Sat Flow(s),veh/h/ln	1753	1598	1739	1796	0	1810
Q Serve(g_s), s	0.9	0.1	0.5	7.0	0.0	17.0
Cycle Q Clear(g_c), s	0.9	0.1	0.5	7.0	0.0	17.0
Prop In Lane	1.00	1.00	1.00			0.09
Lane Grp Cap(c), veh/h	192	175	358	1244	0	983
V/C Ratio(X)	0.20	0.02	0.14	0.48	0.00	0.83
Avail Cap(c_a), veh/h	739	673	472	2437	0	2066
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.5	18.1	7.3	3.2	0.0	8.6
Incr Delay (d2), s/veh	0.5	0.1	0.2	0.3	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	0.1	0.1	0.0	3.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.9	18.1	7.5	3.5	0.0	10.5
LnGrp LOS	B	B	A	A	A	B
Approach Vol, veh/h	42			648	813	
Approach Delay, s/veh	18.9			3.8	10.5	
Approach LOS	B			A	B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		36.6		9.0	6.8	29.7
Change Period (Y+Rc), s		5.0		4.0	4.5	5.0
Max Green Setting (Gmax), s		61.8		19.2	5.3	52.0
Max Q Clear Time (g_c+I1), s		9.0		2.9	2.5	19.0
Green Ext Time (p_c), s		3.7		0.1	0.0	5.8
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			7.8			
HCM 6th LOS			A			



HCM 6th Signalized Intersection Summary  
8: Cordon Rd & Silverton Rd

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	205	245	325	400	10	240	475	220	15	565	145
Future Volume (veh/h)	105	205	245	325	400	10	240	475	220	15	565	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1781	1826	1841	1900	1781	1870	1781	1752	1826	1826
Adj Flow Rate, veh/h	114	223	13	353	435	10	261	516	148	16	614	59
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, %	9	9	8	5	4	0	8	2	8	10	5	5
Cap, veh/h	143	539	221	392	1052	24	299	1363	899	19	758	448
Arrive On Green	0.08	0.16	0.15	0.23	0.30	0.29	0.18	0.38	0.37	0.01	0.22	0.20
Sat Flow, veh/h	1682	3357	1504	1739	3495	80	1697	3554	1510	1668	3469	1547
Grp Volume(v), veh/h	114	223	13	353	217	228	261	516	148	16	614	59
Grp Sat Flow(s),veh/h/ln	1682	1678	1504	1739	1749	1826	1697	1777	1510	1668	1735	1547
Q Serve(g_s), s	4.9	4.4	0.5	14.4	7.2	7.3	10.9	7.6	3.2	0.7	12.3	2.1
Cycle Q Clear(g_c), s	4.9	4.4	0.5	14.4	7.2	7.3	10.9	7.6	3.2	0.7	12.3	2.1
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	143	539	221	392	526	550	299	1363	899	19	758	448
V/C Ratio(X)	0.80	0.41	0.06	0.90	0.41	0.41	0.87	0.38	0.16	0.84	0.81	0.13
Avail Cap(c_a), veh/h	323	1379	597	476	862	900	349	1801	1084	160	1378	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.8	27.6	26.8	27.5	20.4	20.4	29.3	16.2	6.6	36.0	27.1	19.2
Incr Delay (d2), s/veh	3.9	0.2	0.0	16.1	0.2	0.2	17.0	0.1	0.0	28.8	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	1.6	0.2	7.1	2.7	2.8	5.3	2.6	0.7	0.4	4.5	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.7	27.7	26.8	43.6	20.6	20.6	46.2	16.3	6.7	64.8	27.9	19.2
LnGrp LOS	D	C	C	D	C	C	D	B	A	E	C	B
Approach Vol, veh/h		350			798			925			689	
Approach Delay, s/veh		30.6			30.8			23.2			28.0	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.4	15.7	16.9	20.0	10.2	26.0	4.8	32.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	20.0	29.0	15.0	28.0	14.0	35.0	7.0	36.0				
Max Q Clear Time (g_c+1/6), s	10.4	6.4	12.9	14.3	6.9	9.3	2.7	9.6				
Green Ext Time (p_c), s	0.0	0.3	0.0	0.7	0.0	0.4	0.0	0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				27.5								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary  
 9: Cordon Rd & Sunnyview Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
Traffic Volume (veh/h)	95	45	130	70	80	40	190	810	50	25	975	140
Future Volume (veh/h)	95	45	130	70	80	40	190	810	50	25	975	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1856	1900	1870	1856	1856	1856	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	101	48	8	74	85	17	202	862	50	27	1037	138
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	3	0	2	3	3	3	2	0	0	2	2
Cap, veh/h	239	162	27	271	132	26	379	2166	126	478	1845	245
Arrive On Green	0.07	0.10	0.10	0.05	0.09	0.09	0.14	1.00	1.00	0.02	0.59	0.58
Sat Flow, veh/h	1753	1549	258	1781	1495	299	1767	3414	198	1810	3143	418
Grp Volume(v), veh/h	101	0	56	74	0	102	202	449	463	27	586	589
Grp Sat Flow(s),veh/h/ln	1753	0	1807	1781	0	1794	1767	1777	1835	1810	1777	1784
Q Serve(g_s), s	4.7	0.0	2.6	3.4	0.0	4.9	4.1	0.0	0.0	0.5	18.3	18.4
Cycle Q Clear(g_c), s	4.7	0.0	2.6	3.4	0.0	4.9	4.1	0.0	0.0	0.5	18.3	18.4
Prop In Lane	1.00		0.14	1.00		0.17	1.00		0.11	1.00		0.23
Lane Grp Cap(c), veh/h	239	0	189	271	0	158	379	1128	1164	478	1043	1048
V/C Ratio(X)	0.42	0.00	0.30	0.27	0.00	0.65	0.53	0.40	0.40	0.06	0.56	0.56
Avail Cap(c_a), veh/h	239	0	462	300	0	458	452	1128	1164	539	1043	1048
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.89	0.89	0.89	0.55	0.55	0.55
Uniform Delay (d), s/veh	34.3	0.0	37.2	34.9	0.0	39.7	8.8	0.0	0.0	7.4	11.4	11.5
Incr Delay (d2), s/veh	1.2	0.0	0.6	0.5	0.0	3.3	1.0	0.9	0.9	0.0	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	1.1	1.4	0.0	2.2	1.0	0.3	0.3	0.2	5.9	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.5	0.0	37.9	35.4	0.0	43.0	9.8	0.9	0.9	7.4	12.7	12.8
LnGrp LOS	D	A	D	D	A	D	A	A	A	A	B	B
Approach Vol, veh/h		157			176			1114			1202	
Approach Delay, s/veh		36.3			39.8			2.5			12.6	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.2	57.8	10.0	11.9	6.0	62.1	8.5	13.4				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	10.0	33.0	6.0	23.0	5.0	38.0	6.0	23.0				
Max Q Clear Time (g_c+1/3), s	10.0	20.4	6.7	6.9	2.5	2.0	5.4	4.6				
Green Ext Time (p_c), s	0.2	7.2	0.0	0.3	0.0	8.6	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				11.6								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
 10: Cordon Rd & Swegle Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	10	120	35	5	5	110	1000	45	10	1095	80
Future Volume (veh/h)	50	10	120	35	5	5	110	1000	45	10	1095	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1900	1870	1826	1900	1900	1796	1856
Adj Flow Rate, veh/h	54	11	5	38	5	0	118	1075	45	11	1177	81
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	6	0	0	0	2	5	0	0	7	3
Cap, veh/h	231	77	35	219	106	0	456	2341	98	377	2108	145
Arrive On Green	0.04	0.06	0.06	0.03	0.06	0.00	0.05	0.69	0.68	0.03	1.00	1.00
Sat Flow, veh/h	1810	1237	562	1810	1900	0	1781	3393	142	1810	3240	223
Grp Volume(v), veh/h	54	0	16	38	5	0	118	549	571	11	619	639
Grp Sat Flow(s),veh/h/ln	1810	0	1799	1810	1900	0	1781	1735	1800	1810	1706	1756
Q Serve(g_s), s	2.5	0.0	0.8	1.8	0.2	0.0	1.9	12.9	13.0	0.2	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	0.8	1.8	0.2	0.0	1.9	12.9	13.0	0.2	0.0	0.0
Prop In Lane	1.00		0.31	1.00		0.00	1.00		0.08	1.00		0.13
Lane Grp Cap(c), veh/h	231	0	113	219	106	0	456	1197	1242	377	1110	1143
V/C Ratio(X)	0.23	0.00	0.14	0.17	0.05	0.00	0.26	0.46	0.46	0.03	0.56	0.56
Avail Cap(c_a), veh/h	277	0	360	278	380	0	501	1197	1242	474	1110	1143
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.85	0.85	0.85	0.73	0.73	0.73
Uniform Delay (d), s/veh	37.8	0.0	39.9	38.1	40.2	0.0	4.1	6.3	6.4	5.9	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.6	0.4	0.2	0.0	0.3	1.1	1.0	0.0	1.5	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.3	0.7	0.1	0.0	0.4	3.4	3.5	0.1	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.4	0.0	40.5	38.5	40.4	0.0	4.3	7.4	7.4	5.9	1.5	1.4
LnGrp LOS	D	A	D	D	D	A	A	A	A	A	A	A
Approach Vol, veh/h		70			43			1238			1269	
Approach Delay, s/veh		38.8			38.7			7.1			1.5	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.2	67.1	7.1	10.6	8.7	63.6	7.7	10.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	6.0	41.0	6.0	18.0	7.0	40.0	6.0	18.0				
Max Q Clear Time (g_c+1/2), s	12.2	15.0	3.8	2.8	3.9	2.0	4.5	2.2				
Green Ext Time (p_c), s	0.0	6.9	0.0	0.0	0.1	9.0	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			5.8									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary  
 11: Cordon Rd & Center St

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	55	165	90	85	40	150	1055	55	45	1075	130
Future Volume (veh/h)	70	55	165	90	85	40	150	1055	55	45	1075	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1811	1841	1856	1752	1856	1826	1841	1900	1796	1856
Adj Flow Rate, veh/h	76	60	7	98	92	19	163	1147	33	49	1168	84
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	6	4	3	10	3	5	4	0	7	3
Cap, veh/h	214	145	119	259	138	28	359	2216	962	439	2115	940
Arrive On Green	0.05	0.08	0.08	0.07	0.09	0.09	0.12	1.00	1.00	0.04	0.62	0.60
Sat Flow, veh/h	1781	1870	1535	1753	1492	308	1767	3469	1560	1810	3413	1572
Grp Volume(v), veh/h	76	60	7	98	0	111	163	1147	33	49	1168	84
Grp Sat Flow(s),veh/h/ln	1781	1870	1535	1753	0	1800	1767	1735	1560	1810	1706	1572
Q Serve(g_s), s	3.5	2.8	0.4	4.6	0.0	5.4	3.3	0.0	0.0	0.9	17.8	2.0
Cycle Q Clear(g_c), s	3.5	2.8	0.4	4.6	0.0	5.4	3.3	0.0	0.0	0.9	17.8	2.0
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	145	119	259	0	166	359	2216	962	439	2115	940
V/C Ratio(X)	0.35	0.41	0.06	0.38	0.00	0.67	0.45	0.52	0.03	0.11	0.55	0.09
Avail Cap(c_a), veh/h	241	478	392	259	0	460	393	2216	962	489	2115	940
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.84	0.84	0.84	0.74	0.74	0.74
Uniform Delay (d), s/veh	35.7	39.6	38.5	35.0	0.0	39.5	8.1	0.0	0.0	6.1	9.9	7.7
Incr Delay (d2), s/veh	0.4	1.4	0.2	0.3	0.0	3.4	0.3	0.7	0.1	0.0	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	1.3	0.1	1.9	0.0	2.4	0.9	0.2	0.0	0.3	5.1	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.1	40.9	38.6	35.3	0.0	42.9	8.3	0.7	0.1	6.1	10.7	7.8
LnGrp LOS	D	D	D	D	A	D	A	A	A	A	B	A
Approach Vol, veh/h		143			209			1343			1301	
Approach Delay, s/veh		38.2			39.3			1.6			10.3	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	59.8	8.7	12.3	7.5	61.5	10.0	11.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	36.0	6.0	23.0	6.0	37.0	6.0	23.0					
Max Q Clear Time (g_c+1/3), s	19.8	5.5	7.4	2.9	2.0	6.6	4.8					
Green Ext Time (p_c), s	0.0	9.2	0.0	0.3	0.0	13.8	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay	9.8
HCM 6th LOS	A

HCM 6th Signalized Intersection Summary  
 12: Cordon Rd & Auburn Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	5	65	20	5	15	65	1225	20	15	1270	50
Future Volume (veh/h)	20	5	65	20	5	15	65	1225	20	15	1270	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1900	1767	1900	1900	1900	1900	1826	1604	1900	1796	1900
Adj Flow Rate, veh/h	22	5	0	22	5	0	71	1332	21	16	1380	52
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, %	7	0	9	0	0	0	0	5	20	0	7	0
Cap, veh/h	192	106	0	199	106	0	420	2495	39	328	2300	87
Arrive On Green	0.02	0.06	0.00	0.02	0.06	0.00	0.05	0.71	0.70	0.04	1.00	1.00
Sat Flow, veh/h	1711	1900	0	1810	1900	0	1810	3496	55	1810	3354	126
Grp Volume(v), veh/h	22	5	0	22	5	0	71	661	692	16	701	731
Grp Sat Flow(s),veh/h/ln	1711	1900	0	1810	1900	0	1810	1735	1816	1810	1706	1774
Q Serve(g_s), s	1.1	0.2	0.0	1.0	0.2	0.0	1.0	15.9	15.9	0.2	0.0	0.0
Cycle Q Clear(g_c), s	1.1	0.2	0.0	1.0	0.2	0.0	1.0	15.9	15.9	0.2	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.03	1.00		0.07
Lane Grp Cap(c), veh/h	192	106	0	199	106	0	420	1238	1296	328	1170	1216
V/C Ratio(X)	0.11	0.05	0.00	0.11	0.05	0.00	0.17	0.53	0.53	0.05	0.60	0.60
Avail Cap(c_a), veh/h	266	401	0	277	401	0	457	1238	1296	416	1170	1216
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.68	0.68	0.68	0.77	0.77	0.77
Uniform Delay (d), s/veh	38.7	40.2	0.0	38.6	40.2	0.0	3.5	6.0	6.0	5.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.2	0.0	0.2	0.2	0.0	0.1	1.1	1.1	0.0	1.8	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.1	0.0	0.5	0.1	0.0	0.3	4.2	4.4	0.1	0.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.9	40.4	0.0	38.9	40.4	0.0	3.6	7.1	7.0	5.3	1.8	1.7
LnGrp LOS	D	D	A	D	D	A	A	A	A	A	A	A
Approach Vol, veh/h		27			27			1424			1448	
Approach Delay, s/veh		39.2			39.2			6.9			1.8	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.6	69.2	6.1	9.0	8.2	66.7	6.1	9.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	41.0	41.0	6.0	19.0	6.0	41.0	6.0	19.0				
Max Q Clear Time (g_c+1/2), s	17.9	17.9	3.0	2.2	3.0	2.0	3.1	2.2				
Green Ext Time (p_c), s	0.0	9.3	0.0	0.0	0.0	12.2	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			5.0									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary  
 13: Cordon Rd & State St

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑	↖	↖↗	↑	↖	↖↗	↑↑	↖	↖↗	↑↑	↖
Traffic Volume (veh/h)	280	150	140	150	210	85	130	955	145	75	980	280
Future Volume (veh/h)	280	150	140	150	210	85	130	955	145	75	980	280
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1870	1841	1752	1885	1811	1811	1856	1796	1796	1885	1870
Adj Flow Rate, veh/h	304	163	107	163	228	17	141	1038	81	82	1065	189
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, %	3	2	4	10	1	6	6	3	7	7	1	2
Cap, veh/h	415	363	425	262	291	334	262	1343	650	211	1312	710
Arrive On Green	0.12	0.19	0.19	0.08	0.15	0.15	0.08	0.38	0.35	0.06	0.37	0.33
Sat Flow, veh/h	3428	1870	1560	3237	1885	1535	3346	3526	1522	3319	3582	1565
Grp Volume(v), veh/h	304	163	107	163	228	17	141	1038	81	82	1065	189
Grp Sat Flow(s),veh/h/ln	1714	1870	1560	1618	1885	1535	1673	1763	1522	1659	1791	1565
Q Serve(g_s), s	4.9	4.4	3.1	2.8	6.6	0.5	2.3	14.8	1.8	1.4	15.3	4.3
Cycle Q Clear(g_c), s	4.9	4.4	3.1	2.8	6.6	0.5	2.3	14.8	1.8	1.4	15.3	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	415	363	425	262	291	334	262	1343	650	211	1312	710
V/C Ratio(X)	0.73	0.45	0.25	0.62	0.78	0.05	0.54	0.77	0.12	0.39	0.81	0.27
Avail Cap(c_a), veh/h	1201	1114	1051	680	858	797	586	3766	1696	407	3638	1726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	20.3	16.2	25.4	23.2	17.7	25.3	15.5	9.9	25.7	16.3	9.7
Incr Delay (d2), s/veh	0.9	0.3	0.1	0.9	1.8	0.0	0.6	0.4	0.0	0.4	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	1.8	0.9	0.9	2.6	0.2	0.8	4.7	0.5	0.5	5.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.1	20.6	16.3	26.3	25.0	17.7	26.0	15.9	9.9	26.1	16.8	9.8
LnGrp LOS	C	C	B	C	C	B	C	B	A	C	B	A
Approach Vol, veh/h		574			408			1260			1336	
Approach Delay, s/veh		22.2			25.2			16.6			16.4	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	15.1	8.5	24.9	10.9	12.8	7.6	25.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	6.0	4.0	4.0	4.0	6.0				
Max Green Setting (Gmax), s	12.0	34.0	10.0	56.0	20.0	26.0	7.0	59.0				
Max Q Clear Time (g_c+1/4), s	14.8	6.4	4.3	17.3	6.9	8.6	3.4	16.8				
Green Ext Time (p_c), s	0.0	0.2	0.0	1.6	0.1	0.2	0.0	1.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				18.4								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	75	0	1230	1225	55
Future Vol, veh/h	0	75	0	1230	1225	55
Conflicting Peds, #/hr	2	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	7	8	6	9	9
Mvmt Flow	0	82	0	1337	1332	60

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	696	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	7.04	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.37	-	-	-
Pot Cap-1 Maneuver	0	373	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	373	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 373	-	-
HCM Lane V/C Ratio	- 0.219	-	-
HCM Control Delay (s)	- 17.3	-	-
HCM Lane LOS	- C	-	-
HCM 95th %tile Q(veh)	- 0.8	-	-

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕			↕	
Traffic Vol, veh/h	0	0	15	0	0	15	0	1250	30	0	1275	100
Future Vol, veh/h	0	0	15	0	0	15	0	1250	30	0	1275	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	0	9	0	20	20	0	6	0	0	5	5
Mvmt Flow	0	0	16	0	0	16	0	1359	33	0	1386	109

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	748	-	-	696	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.08	-	-	7.3	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.39	-	-	3.5	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	340	0	0	345	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	-	-	340	-	-	345	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-























Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.1		16		0		0	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	340	345	-	-
HCM Lane V/C Ratio	-	-	0.048	0.047	-	-
HCM Control Delay (s)	-	-	16.1	16	-	-
HCM Lane LOS	-	-	C	C	-	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	-



HCM 6th Signalized Intersection Summary  
16: Cordon Rd & Macleay Rd

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (AM Peak)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	50	55	100	60	75	60	1030	90	80	1185	35
Future Volume (veh/h)	165	50	55	100	60	75	60	1030	90	80	1185	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1811	1900	1900	1781	1870	1900	1826	1737	1737	1796	1796
Adj Flow Rate, veh/h	179	54	3	109	65	14	65	1120	93	87	1288	36
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, %	10	6	0	0	8	2	0	5	11	11	7	7
Cap, veh/h	238	134	7	267	96	21	320	2000	166	287	2107	59
Arrive On Green	0.08	0.08	0.08	0.07	0.07	0.07	0.01	0.20	0.20	0.05	0.62	0.61
Sat Flow, veh/h	1668	1700	94	1810	1420	306	1810	3243	269	1654	3391	95
Grp Volume(v), veh/h	179	0	57	109	0	79	65	599	614	87	648	676
Grp Sat Flow(s),veh/h/ln	1668	0	1794	1810	0	1726	1810	1735	1777	1654	1706	1779
Q Serve(g_s), s	7.0	0.0	2.7	5.0	0.0	4.0	1.2	27.9	28.0	1.7	20.9	20.9
Cycle Q Clear(g_c), s	7.0	0.0	2.7	5.0	0.0	4.0	1.2	27.9	28.0	1.7	20.9	20.9
Prop In Lane	1.00		0.05	1.00		0.18	1.00		0.15	1.00		0.05
Lane Grp Cap(c), veh/h	238	0	141	267	0	116	320	1070	1096	287	1060	1105
V/C Ratio(X)	0.75	0.00	0.40	0.41	0.00	0.68	0.20	0.56	0.56	0.30	0.61	0.61
Avail Cap(c_a), veh/h	238	0	518	267	0	480	352	1070	1096	309	1060	1105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.84	0.84	0.84	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.9	0.0	39.5	35.9	0.0	41.0	8.8	24.9	24.9	11.1	10.4	10.4
Incr Delay (d2), s/veh	12.7	0.0	0.7	1.0	0.0	2.6	0.3	1.8	1.7	0.6	2.6	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	1.2	2.2	0.0	1.7	0.4	13.2	13.6	0.5	6.9	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.6	0.0	40.2	36.9	0.0	43.6	9.0	26.6	26.6	11.7	13.0	13.0
LnGrp LOS	D	A	D	D	A	D	A	C	C	B	B	B
Approach Vol, veh/h		236			188			1278			1411	
Approach Delay, s/veh		48.0			39.7			25.7			12.9	
Approach LOS		D			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	60.9	11.0	10.1	8.4	60.5	10.0	11.1				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	5.6	34.4	7.0	25.0	5.6	34.4	6.0	26.0				
Max Q Clear Time (g_c+I1), s	3.2	22.9	9.0	6.0	3.7	30.0	7.0	4.7				
Green Ext Time (p_c), s	0.0	1.4	0.0	0.1	0.0	0.9	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				22.5								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary  
 17: Cordon Rd & Gaffin Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	60	175	75	25	235	70	870	115	235	995	110
Future Volume (veh/h)	75	60	175	75	25	235	70	870	115	235	995	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1856	1781	1826	1900	1870	1841	1856
Adj Flow Rate, veh/h	82	65	33	82	27	8	76	946	63	255	1082	73
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, %	0	0	2	0	0	3	8	5	0	2	4	3
Cap, veh/h	229	91	46	171	146	120	316	2192	996	473	2338	1029
Arrive On Green	0.03	0.08	0.08	0.03	0.08	0.08	0.03	0.63	0.63	0.02	0.22	0.22
Sat Flow, veh/h	1810	1188	603	1810	1900	1572	1697	3469	1576	1781	3497	1539
Grp Volume(v), veh/h	82	0	98	82	27	8	76	946	63	255	1082	73
Grp Sat Flow(s),veh/h/ln	1810	0	1791	1810	1900	1572	1697	1735	1576	1781	1749	1539
Q Serve(g_s), s	3.0	0.0	4.8	3.0	1.2	0.4	1.5	12.4	1.4	4.2	24.2	3.4
Cycle Q Clear(g_c), s	3.0	0.0	4.8	3.0	1.2	0.4	1.5	12.4	1.4	4.2	24.2	3.4
Prop In Lane	1.00		0.34	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	229	0	137	171	146	120	316	2192	996	473	2338	1029
V/C Ratio(X)	0.36	0.00	0.71	0.48	0.19	0.07	0.24	0.43	0.06	0.54	0.46	0.07
Avail Cap(c_a), veh/h	229	0	498	171	528	437	354	2192	996	607	2338	1029
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.64	0.64	0.64	0.70	0.70	0.70
Uniform Delay (d), s/veh	37.6	0.0	40.6	38.5	38.9	38.6	8.6	8.4	6.3	6.9	21.0	12.9
Incr Delay (d2), s/veh	0.4	0.0	2.6	0.8	0.2	0.1	0.1	0.4	0.1	0.2	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	2.2	1.8	0.5	0.2	0.4	3.5	0.4	1.2	11.2	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	0.0	43.2	39.2	39.1	38.6	8.6	8.8	6.4	7.1	21.5	13.0
LnGrp LOS	D	A	D	D	D	D	A	A	A	A	C	B
Approach Vol, veh/h		180			117			1085			1410	
Approach Delay, s/veh		40.8			39.2			8.6			18.5	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.9	65.2	7.0	10.9	10.2	61.9	7.0	10.9				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	39.0	3.0	25.0	13.0	31.0	3.0	25.0				
Max Q Clear Time (g_c+1), s	13.5	26.2	5.0	3.2	6.2	14.4	5.0	6.8				
Green Ext Time (p_c), s	0.0	1.6	0.0	0.0	0.0	1.2	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											17.0	
HCM 6th LOS											B	

HCM 6th Signalized Intersection Summary  
 18: Kuebler Blvd/Cordon Rd & Lancaster Dr

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	350	145	120	225	95	165	910	280	225	925	95
Future Volume (veh/h)	50	350	145	120	225	95	165	910	280	225	925	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1826	1885	1796	1900	1885	1856	1826	1870	1885	1900
Adj Flow Rate, veh/h	54	380	97	130	245	29	179	989	0	245	1005	41
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, %	0	3	5	1	7	0	1	3	5	2	1	0
Cap, veh/h	68	568	346	216	634	536	277	1211		292	1534	695
Arrive On Green	0.04	0.16	0.14	0.06	0.19	0.17	0.08	0.34	0.00	0.16	0.43	0.39
Sat Flow, veh/h	1810	3526	1547	3483	3413	1610	3483	3526	1547	1781	3582	1610
Grp Volume(v), veh/h	54	380	97	130	245	29	179	989	0	245	1005	41
Grp Sat Flow(s),veh/h/ln	1810	1763	1547	1742	1706	1610	1742	1763	1547	1781	1791	1610
Q Serve(g_s), s	1.8	6.0	3.1	2.2	3.7	0.7	3.0	15.2	0.0	7.9	13.2	0.9
Cycle Q Clear(g_c), s	1.8	6.0	3.1	2.2	3.7	0.7	3.0	15.2	0.0	7.9	13.2	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	68	568	346	216	634	536	277	1211		292	1534	695
V/C Ratio(X)	0.80	0.67	0.28	0.60	0.39	0.05	0.65	0.82		0.84	0.66	0.06
Avail Cap(c_a), veh/h	244	2018	983	469	1954	1159	469	1899		300	2050	928
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	23.4	19.1	27.1	21.2	13.5	26.5	17.8	0.0	24.1	13.5	9.8
Incr Delay (d2), s/veh	7.8	0.5	0.2	1.0	0.1	0.0	0.9	0.8	0.0	17.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.3	1.0	0.8	1.3	0.2	1.1	4.8	0.0	4.2	3.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	23.9	19.3	28.1	21.4	13.5	27.5	18.6	0.0	41.2	13.7	9.8
LnGrp LOS	D	C	B	C	C	B	C	B		D	B	A
Approach Vol, veh/h		531			404			1168			1291	
Approach Delay, s/veh		24.3			23.0			19.9			18.8	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	29.4	6.2	15.0	13.7	24.4	7.7	13.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	10.0	30.0	8.0	33.0				
Max Q Clear Time (g_c+1/2g), s	15.0	15.2	3.8	5.7	9.9	17.2	4.2	8.0				
Green Ext Time (p_c), s	0.0	1.3	0.0	0.3	0.0	1.2	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	20.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Kuebler Blvd & Mill Creek Dr

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (AM Peak)



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	95	100	1255	295	185	1005
Future Volume (veh/h)	95	100	1255	295	185	1005
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1604	1604	1856	1604	1752	1870
Adj Flow Rate, veh/h	103	105	1364	204	201	1092
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	20	3	20	10	2
Cap, veh/h	151	227	2232	840	306	2710
Arrive On Green	0.10	0.10	0.21	0.20	0.07	0.76
Sat Flow, veh/h	1527	1359	3618	1359	1668	3647
Grp Volume(v), veh/h	103	105	1364	204	201	1092
Grp Sat Flow(s),veh/h/ln	1527	1359	1763	1359	1668	1777
Q Serve(g_s), s	4.2	4.5	22.8	8.2	2.5	6.8
Cycle Q Clear(g_c), s	4.2	4.5	22.8	8.2	2.5	6.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	151	227	2232	840	306	2710
V/C Ratio(X)	0.68	0.46	0.61	0.24	0.66	0.40
Avail Cap(c_a), veh/h	493	532	2232	840	398	2710
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.26	0.26	0.76	0.76
Uniform Delay (d), s/veh	28.3	24.4	18.5	13.1	13.1	2.6
Incr Delay (d2), s/veh	2.0	0.5	0.3	0.2	0.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	3.5	10.3	1.8	1.6	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.3	25.0	18.8	13.3	13.9	3.0
LnGrp LOS	C	C	B	B	B	A
Approach Vol, veh/h	208		1568			1293
Approach Delay, s/veh	27.6		18.1			4.7
Approach LOS	C		B			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		54.6		10.4	8.4	46.2
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		34.0		21.0	8.0	22.0
Max Q Clear Time (g_c+I1), s		8.8		6.5	4.5	24.8
Green Ext Time (p_c), s		1.4		0.0	0.0	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			13.1			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary  
 20: Turner Rd & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	1420	140	195	740	160	375	330	105	50	125	185
Future Volume (veh/h)	200	1420	140	195	740	160	375	330	105	50	125	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1870	1870	1678	1870	1870	1841	1900	1693	1826	1900	1752
Adj Flow Rate, veh/h	217	1543	98	212	804	87	408	359	18	54	136	131
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, %	6	2	2	15	2	2	4	0	14	5	0	10
Cap, veh/h	242	1816	969	197	1756	759	392	386	291	69	242	699
Arrive On Green	0.09	0.34	0.33	0.12	0.49	0.48	0.12	0.20	0.20	0.04	0.13	0.13
Sat Flow, veh/h	1725	3554	1585	1598	3554	1585	3401	1900	1434	1739	1900	2613
Grp Volume(v), veh/h	217	1543	98	212	804	87	408	359	18	54	136	131
Grp Sat Flow(s),veh/h/ln	1725	1777	1585	1598	1777	1585	1700	1900	1434	1739	1900	1306
Q Serve(g_s), s	16.2	52.3	4.3	16.0	19.2	3.9	15.0	24.1	1.3	4.0	8.7	5.0
Cycle Q Clear(g_c), s	16.2	52.3	4.3	16.0	19.2	3.9	15.0	24.1	1.3	4.0	8.7	5.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	242	1816	969	197	1756	759	392	386	291	69	242	699
V/C Ratio(X)	0.90	0.85	0.10	1.08	0.46	0.11	1.04	0.93	0.06	0.78	0.56	0.19
Avail Cap(c_a), veh/h	358	1816	969	197	1756	759	392	512	386	107	409	929
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.52	0.52	0.52	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	38.1	14.1	57.0	21.5	18.7	57.5	50.9	41.8	61.9	53.3	36.7
Incr Delay (d2), s/veh	8.0	2.8	0.1	83.8	0.8	0.3	56.1	17.9	0.0	7.8	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	23.6	1.5	10.8	7.6	1.5	9.4	13.1	0.5	1.9	4.1	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.9	40.9	14.2	140.8	22.3	19.0	113.6	68.7	41.8	69.6	54.1	36.8
LnGrp LOS	E	D	B	F	C	B	F	E	D	E	D	D
Approach Vol, veh/h		1858			1103			785			321	
Approach Delay, s/veh		42.4			44.8			91.4			49.6	
Approach LOS		D			D			F			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	70.4	9.1	30.4	22.2	68.2	19.0	20.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	10.0	53.0	8.0	35.0	27.0	42.0	15.0	28.0				
Max Q Clear Time (g_c+1/3g), s	11.0	54.3	6.0	26.1	18.2	21.2	17.0	10.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.0	1.0	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay					53.1							
HCM 6th LOS					D							

HCM 6th Signalized Intersection Summary  
 21: 36th Ave & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (AM Peak)

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	1475	350	185	935	200	310	80	225	85	85	85
Future Volume (veh/h)	215	1475	350	185	935	200	310	80	225	85	85	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1870	1870	1826	1900	1841	1900	1856	1900	1900	1737
Adj Flow Rate, veh/h	234	1603	270	201	1016	130	337	87	173	92	92	15
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	4	2	2	5	0	4	0	3	0	0	11
Cap, veh/h	258	2091	1082	206	1972	954	340	235	376	140	121	307
Arrive On Green	0.14	0.60	0.58	0.04	0.19	0.18	0.10	0.12	0.12	0.04	0.06	0.06
Sat Flow, veh/h	1781	3497	1585	1781	3469	1610	3401	1900	1572	3510	1900	1472
Grp Volume(v), veh/h	234	1603	270	201	1016	130	337	87	173	92	92	15
Grp Sat Flow(s),veh/h/ln	1781	1749	1585	1781	1735	1610	1700	1900	1572	1755	1900	1472
Q Serve(g_s), s	16.8	44.2	8.5	14.7	34.2	8.0	12.9	5.5	12.2	3.4	6.2	1.1
Cycle Q Clear(g_c), s	16.8	44.2	8.5	14.7	34.2	8.0	12.9	5.5	12.2	3.4	6.2	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	258	2091	1082	206	1972	954	340	235	376	140	121	307
V/C Ratio(X)	0.91	0.77	0.25	0.98	0.52	0.14	0.99	0.37	0.46	0.66	0.76	0.05
Avail Cap(c_a), veh/h	356	2091	1082	206	1972	954	340	453	556	216	380	508
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.7	19.4	7.9	62.4	36.7	22.7	58.4	52.3	42.3	61.5	59.9	41.1
Incr Delay (d2), s/veh	17.5	2.8	0.6	47.9	0.7	0.2	46.2	0.4	0.3	2.0	3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	17.0	2.7	9.7	16.0	3.2	7.6	2.6	4.7	1.5	3.1	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.2	22.2	8.5	110.3	37.4	22.9	104.6	52.6	42.6	63.5	63.5	41.2
LnGrp LOS	E	C	A	F	D	C	F	D	D	E	E	D
Approach Vol, veh/h		2107			1347			597			199	
Approach Delay, s/veh		26.0			46.9			79.1			61.8	
Approach LOS		C			D			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	81.7	17.0	12.3	22.8	77.9	9.2	20.1				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	15.0	58.0	13.0	26.0	26.0	47.0	8.0	31.0				
Max Q Clear Time (g_c+1/3), s	11.0	46.2	14.9	8.2	18.8	36.2	5.4	14.2				
Green Ext Time (p_c), s	0.0	2.6	0.0	0.1	0.0	1.2	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay					41.7							
HCM 6th LOS					D							

ID	Software/Method	Intersection	Control Type	LOS	Delay	V/C Ratio
1	Synchro HCM 6th Signal	OR 99E & Hazelgreen Rd	Signal	C	29.3	0.74
2	Synchro HCM 6th Signal	Lake Labish Rd & Hazelgreen Rd	Signal	B	12.0	0.41
3	Synchro HCM 6th Signal	Cordon Rd & Hazelgreen Rd	Signal	B	12.4	0.43
4	Synchro HCM 6th Signal	Cordon Rd & Kale St	Signal	A	5.9	0.32
5	Synchro HCM 6th Signal	Cordon Rd & Hayesville Dr	Signal	A	5.9	0.53
6	Synchro HCM 6th Signal	Cordon Rd & Ward Dr	Signal	A	8.2	0.60
7	Synchro HCM 6th Signal	Cordon Rd & Herrin Rd	Signal	A	7.8	0.58
8	Synchro HCM 6th Signal	Cordon Rd & Silverton Rd	Signal	C	27.5	0.70
9	Synchro HCM 6th Signal	Cordon Rd & Sunnyview Rd	Signal	B	11.6	0.69
10	Synchro HCM 6th Signal	Cordon Rd & Swegle Rd	Signal	A	5.8	0.57
11	Synchro HCM 6th Signal	Cordon Rd & Center St	Signal	A	9.8	0.66
12	Synchro HCM 6th Signal	Cordon Rd & Auburn Rd	Signal	A	5.0	0.57
13	Synchro HCM 6th Signal	Cordon Rd & State St	Signal	B	18.4	0.63
16	Synchro HCM 6th Signal	Cordon Rd & Macleay Rd	Signal	C	22.5	0.64
17	Synchro HCM 6th Signal	Cordon Rd & Gaffin Rd	Signal	B	17.0	0.64
18	Synchro HCM 6th Signal	Kuebler Blvd/Cordon Rd & Lancaster Dr	Signal	C	20.5	0.67
19	Synchro HCM 6th Signal	Kuebler Blvd & Mill Creek Dr	Signal	B	13.1	0.57
20	Synchro HCM 6th Signal	Turner Rd & Kuebler Blvd	Signal	D	53.1	0.90
21	Synchro HCM 6th Signal	36th Ave & Kuebler Blvd	Signal	D	41.7	0.76



HCM 6th Signalized Intersection Summary  
 1: OR 99E & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (PM Peak)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	510	470	75	430	40	525	505	115	120	715	205
Future Volume (veh/h)	135	510	470	75	430	40	525	505	115	120	715	205
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1856	1885	1900	1900	1885	1796	1841	1900	1885
Adj Flow Rate, veh/h	138	520	224	77	439	38	536	515	101	122	730	61
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	0	3	1	0	0	1	7	4	0	1
Cap, veh/h	169	595	504	98	470	41	619	987	193	152	868	384
Arrive On Green	0.09	0.31	0.31	0.06	0.27	0.27	0.18	0.33	0.33	0.09	0.24	0.24
Sat Flow, veh/h	1795	1900	1610	1767	1710	148	3510	2988	583	1753	3610	1598
Grp Volume(v), veh/h	138	520	224	77	0	477	536	308	308	122	730	61
Grp Sat Flow(s),veh/h/ln	1795	1900	1610	1767	0	1859	1755	1791	1780	1753	1805	1598
Q Serve(g_s), s	7.4	25.4	10.9	4.2	0.0	24.5	14.5	13.6	13.7	6.7	18.9	3.0
Cycle Q Clear(g_c), s	7.4	25.4	10.9	4.2	0.0	24.5	14.5	13.6	13.7	6.7	18.9	3.0
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	169	595	504	98	0	510	619	592	588	152	868	384
V/C Ratio(X)	0.82	0.87	0.44	0.78	0.00	0.93	0.87	0.52	0.52	0.80	0.84	0.16
Avail Cap(c_a), veh/h	229	775	657	135	0	664	770	658	654	277	1105	489
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.5	31.8	26.9	45.7	0.0	34.7	39.2	26.5	26.6	43.9	35.4	29.4
Incr Delay (d2), s/veh	13.5	8.2	0.5	12.2	0.0	15.8	8.1	0.3	0.3	7.2	4.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	12.0	3.9	2.1	0.0	12.5	6.7	5.5	5.5	3.1	8.4	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.0	40.0	27.3	57.9	0.0	50.5	47.3	26.8	26.8	51.2	39.9	29.5
LnGrp LOS	E	D	C	E	A	D	D	C	C	D	D	C
Approach Vol, veh/h		882			554			1152			913	
Approach Delay, s/veh		39.4			51.5			36.4			40.7	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.8	29.6	13.7	32.9	13.0	38.4	10.0	36.7				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	21.5	30.0	12.5	35.0	15.5	36.0	7.5	40.0				
Max Q Clear Time (g_c+I1), s	16.5	20.9	9.4	26.5	8.7	15.7	6.2	27.4				
Green Ext Time (p_c), s	0.7	2.7	0.1	0.4	0.1	2.0	0.0	2.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				40.7								
HCM 6th LOS				D								



HCM 6th Signalized Intersection Summary  
2: Lake Labish Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	455	135	5	380	10	115	10	5	10	5	5
Future Volume (veh/h)	60	455	135	5	380	10	115	10	5	10	5	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1900	1870	1900	1900	1885	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	62	474	133	5	396	9	120	10	0	10	5	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	2	0	0	1	0	0	0	0	0	0	0
Cap, veh/h	475	593	166	290	674	15	470	180	0	471	189	0
Arrive On Green	0.06	0.42	0.42	0.01	0.37	0.37	0.09	0.09	0.00	0.09	0.10	0.00
Sat Flow, veh/h	1810	1405	394	1810	1836	42	1810	1900	0	1810	1900	0
Grp Volume(v), veh/h	62	0	607	5	0	405	120	10	0	10	5	0
Grp Sat Flow(s),veh/h/ln	1810	0	1799	1810	0	1878	1810	1900	0	1810	1900	0
Q Serve(g_s), s	0.8	0.0	12.3	0.1	0.0	7.3	2.4	0.2	0.0	0.2	0.1	0.0
Cycle Q Clear(g_c), s	0.8	0.0	12.3	0.1	0.0	7.3	2.4	0.2	0.0	0.2	0.1	0.0
Prop In Lane	1.00		0.22	1.00		0.02	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	475	0	759	290	0	690	470	180	0	471	189	0
V/C Ratio(X)	0.13	0.00	0.80	0.02	0.00	0.59	0.26	0.06	0.00	0.02	0.03	0.00
Avail Cap(c_a), veh/h	607	0	1350	519	0	1408	584	840	0	1100	1389	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.6	0.0	10.6	9.4	0.0	10.7	14.9	17.3	0.0	13.8	17.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	2.0	0.0	0.0	0.8	0.3	0.1	0.0	0.0	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	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	3.1	0.0	0.0	2.0	0.9	0.1	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.8	0.0	12.6	9.5	0.0	11.5	15.2	17.4	0.0	13.9	17.1	0.0
LnGrp LOS	A	A	B	A	A	B	B	B	A	B	B	A
Approach Vol, veh/h		669			410			130				15
Approach Delay, s/veh		12.1			11.5			15.4				14.9
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	8.0	4.3	21.7	7.8	8.2	6.6	19.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	18.5	18.5	5.6	31.4	6.4	30.6	5.6	31.4				
Max Q Clear Time (g_c+1), s	12.2	2.2	2.1	14.3	4.4	2.1	2.8	9.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	3.3	0.1	0.0	0.0	2.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			12.3									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary  
 3: Cordon Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	370	150	145	205	15	175	115	165	15	275	25
Future Volume (veh/h)	10	370	150	145	205	15	175	115	165	15	275	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1900	1722	1900	1900	1900	1900	1900	1900	1752
Adj Flow Rate, veh/h	11	389	42	153	216	13	184	121	118	16	289	22
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, %	0	2	0	0	12	0	0	0	0	0	0	10
Cap, veh/h	451	507	436	377	553	33	405	270	264	405	381	29
Arrive On Green	0.01	0.27	0.27	0.09	0.34	0.34	0.11	0.31	0.31	0.02	0.22	0.22
Sat Flow, veh/h	1810	1870	1610	1810	1608	97	1810	883	862	1810	1743	133
Grp Volume(v), veh/h	11	389	42	153	0	229	184	0	239	16	0	311
Grp Sat Flow(s),veh/h/ln	1810	1870	1610	1810	0	1705	1810	0	1745	1810	0	1876
Q Serve(g_s), s	0.2	9.7	1.0	2.8	0.0	5.2	3.6	0.0	5.6	0.3	0.0	7.9
Cycle Q Clear(g_c), s	0.2	9.7	1.0	2.8	0.0	5.2	3.6	0.0	5.6	0.3	0.0	7.9
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.49	1.00		0.07
Lane Grp Cap(c), veh/h	451	507	436	377	0	586	405	0	534	405	0	410
V/C Ratio(X)	0.02	0.77	0.10	0.41	0.00	0.39	0.45	0.00	0.45	0.04	0.00	0.76
Avail Cap(c_a), veh/h	640	1112	957	538	0	1111	640	0	1013	569	0	852
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.0	17.0	13.8	11.8	0.0	12.6	12.5	0.0	14.1	14.8	0.0	18.5
Incr Delay (d2), s/veh	0.0	2.5	0.1	0.7	0.0	0.4	0.8	0.0	0.6	0.0	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.5	0.3	0.9	0.0	1.5	1.1	0.0	1.7	0.1	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	19.5	13.9	12.5	0.0	13.0	13.3	0.0	14.7	14.9	0.0	21.4
LnGrp LOS	B	B	B	B	A	B	B	A	B	B	A	C
Approach Vol, veh/h		442			382			423			327	
Approach Delay, s/veh		18.8			12.8			14.1			21.1	
Approach LOS		B			B			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.0	19.5	8.4	17.7	9.4	15.1	4.7	21.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	5.6	29.4	8.9	30.1	12.0	23.0	6.0	33.0				
Max Q Clear Time (g_c+1), s	12.3	7.6	4.8	11.7	5.6	9.9	2.2	7.2				
Green Ext Time (p_c), s	0.0	1.1	0.1	2.0	0.2	1.2	0.0	1.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay					16.6							
HCM 6th LOS					B							

HCM 6th Signalized Intersection Summary  
4: Cordon Rd & Kale St

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	130	145	415	555	45
Future Volume (veh/h)	40	130	145	415	555	45
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	44	1	161	461	617	46
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	91	81	547	1319	817	61
Arrive On Green	0.05	0.05	0.11	0.69	0.47	0.47
Sat Flow, veh/h	1810	1610	1810	1900	1746	130
Grp Volume(v), veh/h	44	1	161	461	0	663
Grp Sat Flow(s),veh/h/ln	1810	1610	1810	1900	0	1877
Q Serve(g_s), s	0.8	0.0	1.2	3.5	0.0	10.2
Cycle Q Clear(g_c), s	0.8	0.0	1.2	3.5	0.0	10.2
Prop In Lane	1.00	1.00	1.00			0.07
Lane Grp Cap(c), veh/h	91	81	547	1319	0	878
V/C Ratio(X)	0.48	0.01	0.29	0.35	0.00	0.75
Avail Cap(c_a), veh/h	667	594	908	3665	0	2822
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	15.9	5.2	2.2	0.0	7.7
Incr Delay (d2), s/veh	3.9	0.1	0.3	0.2	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.1	0.0	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.2	16.0	5.5	2.3	0.0	9.1
LnGrp LOS	C	B	A	A	A	A
Approach Vol, veh/h	45			622	663	
Approach Delay, s/veh	20.1			3.2	9.1	
Approach LOS	C			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		29.5		5.8	8.0	21.5
Change Period (Y+Rc), s		5.0		4.0	4.0	5.0
Max Green Setting (Gmax), s		68.0		13.0	11.0	53.0
Max Q Clear Time (g_c+I1), s		5.5		2.8	3.2	12.2
Green Ext Time (p_c), s		2.6		0.0	0.2	4.3
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			6.7			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
5: Cordon Rd & Hayesville Dr

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	145	200	565	675	30
Future Volume (veh/h)	20	145	200	565	675	30
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	22	2	222	628	750	31
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	53	47	524	1407	946	39
Arrive On Green	0.03	0.03	0.12	0.74	0.52	0.52
Sat Flow, veh/h	1810	1610	1810	1900	1812	75
Grp Volume(v), veh/h	22	2	222	628	0	781
Grp Sat Flow(s),veh/h/ln	1810	1610	1810	1900	0	1887
Q Serve(g_s), s	0.5	0.0	1.7	5.0	0.0	13.2
Cycle Q Clear(g_c), s	0.5	0.0	1.7	5.0	0.0	13.2
Prop In Lane	1.00	1.00	1.00			0.04
Lane Grp Cap(c), veh/h	53	47	524	1407	0	985
V/C Ratio(X)	0.41	0.04	0.42	0.45	0.00	0.79
Avail Cap(c_a), veh/h	924	823	868	2960	0	2168
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.7	18.5	6.5	2.0	0.0	7.6
Incr Delay (d2), s/veh	5.1	0.4	0.5	0.2	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.1	0.0	2.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.8	18.8	7.0	2.2	0.0	9.1
LnGrp LOS	C	B	A	A	A	A
Approach Vol, veh/h	24			850	781	
Approach Delay, s/veh	23.3			3.4	9.1	
Approach LOS	C			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		34.0		5.1	8.6	25.4
Change Period (Y+Rc), s		5.0		4.0	4.0	5.0
Max Green Setting (Gmax), s		61.0		20.0	12.0	45.0
Max Q Clear Time (g_c+I1), s		7.0		2.5	3.7	15.2
Green Ext Time (p_c), s		3.9		0.0	0.4	5.2
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			6.4			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
6: Cordon Rd & Ward Dr

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	65	85	785	805	45
Future Volume (veh/h)	20	65	85	785	805	45
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1811	1841	1856	1856	1856
Adj Flow Rate, veh/h	22	1	94	872	894	48
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	6	4	3	3	3
Cap, veh/h	165	143	356	1372	1037	56
Arrive On Green	0.09	0.09	0.07	0.74	0.59	0.59
Sat Flow, veh/h	1767	1535	1753	1856	1745	94
Grp Volume(v), veh/h	22	1	94	872	0	942
Grp Sat Flow(s),veh/h/ln	1767	1535	1753	1856	0	1839
Q Serve(g_s), s	0.6	0.0	0.9	12.4	0.0	22.9
Cycle Q Clear(g_c), s	0.6	0.0	0.9	12.4	0.0	22.9
Prop In Lane	1.00	1.00	1.00			0.05
Lane Grp Cap(c), veh/h	165	143	356	1372	0	1093
V/C Ratio(X)	0.13	0.01	0.26	0.64	0.00	0.86
Avail Cap(c_a), veh/h	639	555	416	2129	0	1781
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.4	22.1	9.4	3.4	0.0	9.1
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.5	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.4	0.2	0.0	4.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.7	22.1	9.8	3.9	0.0	11.6
LnGrp LOS	C	C	A	A	A	B
Approach Vol, veh/h	23			966	942	
Approach Delay, s/veh	22.7			4.5	11.6	
Approach LOS	C			A	B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		44.7		9.0	7.8	36.9
Change Period (Y+Rc), s		5.0		4.0	4.0	5.0
Max Green Setting (Gmax), s		61.6		19.4	5.6	52.0
Max Q Clear Time (g_c+I1), s		14.4		2.6	2.9	24.9
Green Ext Time (p_c), s		6.7		0.0	0.0	7.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			8.2			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
7: Cordon Rd & Herrin Rd

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	105	70	790	755	70
Future Volume (veh/h)	30	105	70	790	755	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1900
Adj Flow Rate, veh/h	31	10	73	823	786	69
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	2	2	0
Cap, veh/h	187	166	375	1330	939	82
Arrive On Green	0.10	0.10	0.06	0.71	0.55	0.55
Sat Flow, veh/h	1810	1610	1810	1870	1695	149
Grp Volume(v), veh/h	31	10	73	823	0	855
Grp Sat Flow(s),veh/h/ln	1810	1610	1810	1870	0	1844
Q Serve(g_s), s	0.8	0.3	0.7	11.0	0.0	18.7
Cycle Q Clear(g_c), s	0.8	0.3	0.7	11.0	0.0	18.7
Prop In Lane	1.00	1.00	1.00			0.08
Lane Grp Cap(c), veh/h	187	166	375	1330	0	1021
V/C Ratio(X)	0.17	0.06	0.19	0.62	0.00	0.84
Avail Cap(c_a), veh/h	761	678	449	2338	0	1939
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.8	19.6	7.9	3.6	0.0	9.0
Incr Delay (d2), s/veh	0.4	0.2	0.2	0.5	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.3	0.2	0.2	0.0	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.3	19.8	8.2	4.1	0.0	10.9
LnGrp LOS	C	B	A	A	A	B
Approach Vol, veh/h	41			896	855	
Approach Delay, s/veh	20.1			4.4	10.9	
Approach LOS	C			A	B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		39.5		9.0	7.6	31.9
Change Period (Y+Rc), s		5.0		4.0	4.5	5.0
Max Green Setting (Gmax), s		60.6		20.4	5.1	51.0
Max Q Clear Time (g_c+I1), s		13.0		2.8	2.7	20.7
Green Ext Time (p_c), s		6.0		0.1	0.0	6.1
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			7.9			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
8: Cordon Rd & Silverton Rd

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	395	325	280	380	10	255	680	355	15	675	200
Future Volume (veh/h)	150	395	325	280	380	10	255	680	355	15	675	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1870	1900	1885	1885	1885	1900	1870	1900
Adj Flow Rate, veh/h	158	416	82	295	400	9	268	716	271	16	711	113
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, %	1	1	1	3	2	0	1	1	1	0	2	0
Cap, veh/h	196	618	252	336	900	20	310	1446	919	21	861	539
Arrive On Green	0.11	0.17	0.16	0.19	0.25	0.24	0.17	0.40	0.39	0.01	0.24	0.23
Sat Flow, veh/h	1795	3582	1589	1767	3553	80	1795	3582	1578	1810	3554	1589
Grp Volume(v), veh/h	158	416	82	295	200	209	268	716	271	16	711	113
Grp Sat Flow(s),veh/h/ln	1795	1791	1589	1767	1777	1856	1795	1791	1578	1810	1777	1589
Q Serve(g_s), s	6.2	7.8	3.3	11.7	6.8	6.8	10.4	10.7	6.3	0.6	13.6	3.6
Cycle Q Clear(g_c), s	6.2	7.8	3.3	11.7	6.8	6.8	10.4	10.7	6.3	0.6	13.6	3.6
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	196	618	252	336	450	470	310	1446	919	21	861	539
V/C Ratio(X)	0.81	0.67	0.33	0.88	0.44	0.44	0.86	0.50	0.30	0.77	0.83	0.21
Avail Cap(c_a), veh/h	424	1444	618	467	766	800	424	1942	1137	176	1433	794
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	27.9	26.9	28.3	22.6	22.6	28.9	16.0	7.7	35.5	25.8	17.0
Incr Delay (d2), s/veh	2.9	0.5	0.3	10.4	0.3	0.2	10.2	0.1	0.1	20.0	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	3.1	1.1	5.4	2.6	2.7	4.8	3.6	1.4	0.4	5.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.2	28.4	27.1	38.8	22.8	22.9	39.2	16.1	7.7	55.5	26.6	17.1
LnGrp LOS	C	C	C	D	C	C	D	B	A	E	C	B
Approach Vol, veh/h		656			704			1255			840	
Approach Delay, s/veh		29.6			29.5			19.2			25.9	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.7	16.4	16.4	21.4	11.9	22.2	4.8	33.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	19.0	28.0	17.0	28.0	17.0	30.0	7.0	38.0				
Max Q Clear Time (g_c+1/3), s	11.7	9.8	12.4	15.6	8.2	8.8	2.6	12.7				
Green Ext Time (p_c), s	0.0	0.5	0.0	0.8	0.0	0.4	0.0	0.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				24.9								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary  
 9: Cordon Rd & Sunnyview Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
Traffic Volume (veh/h)	155	95	205	70	90	60	180	1105	115	65	1145	110
Future Volume (veh/h)	155	95	205	70	90	60	180	1105	115	65	1145	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1870	1870	1856	1841	1900	1900	1870	1900	1885	1856
Adj Flow Rate, veh/h	163	100	118	74	95	32	189	1163	114	68	1205	108
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, %	1	0	2	2	3	4	0	0	2	0	1	3
Cap, veh/h	288	122	144	204	180	61	319	1896	185	378	1791	160
Arrive On Green	0.07	0.15	0.15	0.05	0.14	0.14	0.14	1.00	1.00	0.04	0.54	0.53
Sat Flow, veh/h	1795	793	936	1781	1327	447	1810	3314	324	1810	3325	297
Grp Volume(v), veh/h	163	0	218	74	0	127	189	633	644	68	648	665
Grp Sat Flow(s),veh/h/ln	1795	0	1729	1781	0	1774	1810	1805	1833	1810	1791	1831
Q Serve(g_s), s	6.0	0.0	11.0	3.2	0.0	6.0	4.3	0.0	0.0	1.5	23.5	23.7
Cycle Q Clear(g_c), s	6.0	0.0	11.0	3.2	0.0	6.0	4.3	0.0	0.0	1.5	23.5	23.7
Prop In Lane	1.00		0.54	1.00		0.25	1.00		0.18	1.00		0.16
Lane Grp Cap(c), veh/h	288	0	266	204	0	241	319	1033	1049	378	965	986
V/C Ratio(X)	0.57	0.00	0.82	0.36	0.00	0.53	0.59	0.61	0.61	0.18	0.67	0.67
Avail Cap(c_a), veh/h	288	0	442	236	0	453	333	1033	1049	413	965	986
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.79	0.79	0.79	0.53	0.53	0.53
Uniform Delay (d), s/veh	32.6	0.0	36.8	31.7	0.0	36.2	12.5	0.0	0.0	8.9	15.0	15.1
Incr Delay (d2), s/veh	2.6	0.0	4.6	1.1	0.0	1.3	2.1	2.2	2.1	0.0	2.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	4.8	1.3	0.0	2.5	1.3	0.6	0.6	0.5	8.2	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.2	0.0	41.5	32.8	0.0	37.5	14.6	2.2	2.1	8.9	17.0	17.1
LnGrp LOS	D	A	D	C	A	D	B	A	A	A	B	B
Approach Vol, veh/h		381			201			1466			1381	
Approach Delay, s/veh		38.8			35.8			3.7			16.6	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.3	53.5	10.0	16.2	7.3	56.5	8.4	17.9				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	36.0	6.0	23.0	5.0	38.0	6.0	23.0					
Max Q Clear Time (g_c+1/3), s	25.7	8.0	8.0	3.5	2.0	5.2	13.0					
Green Ext Time (p_c), s	0.0	6.8	0.0	0.3	0.0	14.1	0.0	0.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				14.7								
HCM 6th LOS				B								



HCM 6th Signalized Intersection Summary  
 10: Cordon Rd & Swegle Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	20	125	10	5	15	125	1350	75	10	1345	90
Future Volume (veh/h)	40	20	125	10	5	15	125	1350	75	10	1345	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1885	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	42	21	10	11	5	1	132	1421	76	11	1416	91
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, %	3	0	1	0	0	0	0	2	0	0	2	0
Cap, veh/h	217	95	45	182	85	17	404	2381	127	270	2220	142
Arrive On Green	0.04	0.08	0.08	0.01	0.06	0.06	0.05	0.69	0.68	0.03	1.00	1.00
Sat Flow, veh/h	1767	1216	579	1810	1537	307	1810	3427	183	1810	3390	217
Grp Volume(v), veh/h	42	0	31	11	0	6	132	735	762	11	740	767
Grp Sat Flow(s),veh/h/ln	1767	0	1796	1810	0	1845	1810	1777	1832	1810	1777	1831
Q Serve(g_s), s	2.0	0.0	1.5	0.5	0.0	0.3	2.0	19.4	19.6	0.2	0.0	0.0
Cycle Q Clear(g_c), s	2.0	0.0	1.5	0.5	0.0	0.3	2.0	19.4	19.6	0.2	0.0	0.0
Prop In Lane	1.00		0.32	1.00		0.17	1.00		0.10	1.00		0.12
Lane Grp Cap(c), veh/h	217	0	141	182	0	102	404	1235	1274	270	1164	1199
V/C Ratio(X)	0.19	0.00	0.22	0.06	0.00	0.06	0.33	0.60	0.60	0.04	0.64	0.64
Avail Cap(c_a), veh/h	271	0	359	278	0	369	428	1235	1274	367	1164	1199
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.72	0.72	0.72	0.54	0.54	0.54
Uniform Delay (d), s/veh	38.0	0.0	38.9	39.3	0.0	40.3	4.0	7.1	7.2	6.7	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.8	0.1	0.0	0.2	0.3	1.5	1.5	0.0	1.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.7	0.2	0.0	0.1	0.5	5.1	5.3	0.1	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.4	0.0	39.7	39.4	0.0	40.5	4.3	8.7	8.7	6.7	1.4	1.4
LnGrp LOS	D	A	D	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		73			17			1629			1518	
Approach Delay, s/veh		39.0			39.8			8.3			1.5	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.2	67.5	5.2	12.0	8.8	63.9	7.3	10.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	6.0	41.0	6.0	18.0	6.0	41.0	6.0	18.0				
Max Q Clear Time (g_c+1/2), s	12.2	21.6	2.5	3.5	4.0	2.0	4.0	2.3				
Green Ext Time (p_c), s	0.0	9.2	0.0	0.1	0.1	12.2	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			6.0									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary  
 11: Cordon Rd & Center St

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	75	265	50	60	30	285	1375	35	35	1330	135
Future Volume (veh/h)	160	75	265	50	60	30	285	1375	35	35	1330	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1870	1900	1856	1856	1841	1722	1870	1826
Adj Flow Rate, veh/h	168	79	43	53	63	7	300	1447	21	37	1400	75
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, %	0	3	3	0	2	0	3	3	4	12	2	5
Cap, veh/h	256	192	163	236	128	14	352	2272	970	321	2067	865
Arrive On Green	0.07	0.10	0.10	0.04	0.08	0.08	0.19	1.00	1.00	0.03	0.58	0.56
Sat Flow, veh/h	1810	1856	1572	1810	1654	184	1767	3526	1559	1640	3554	1546
Grp Volume(v), veh/h	168	79	43	53	0	70	300	1447	21	37	1400	75
Grp Sat Flow(s),veh/h/ln	1810	1856	1572	1810	0	1837	1767	1763	1559	1640	1777	1546
Q Serve(g_s), s	6.0	3.6	2.3	2.4	0.0	3.3	6.7	0.0	0.0	0.8	24.5	2.0
Cycle Q Clear(g_c), s	6.0	3.6	2.3	2.4	0.0	3.3	6.7	0.0	0.0	0.8	24.5	2.0
Prop In Lane	1.00		1.00	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	256	192	163	236	0	143	352	2272	970	321	2067	865
V/C Ratio(X)	0.66	0.41	0.26	0.22	0.00	0.49	0.85	0.64	0.02	0.12	0.68	0.09
Avail Cap(c_a), veh/h	256	474	402	283	0	470	359	2272	970	375	2067	865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.67	0.67	0.67	0.65	0.65	0.65
Uniform Delay (d), s/veh	37.0	37.8	37.2	36.0	0.0	39.8	14.3	0.0	0.0	7.6	13.0	9.2
Incr Delay (d2), s/veh	4.8	1.0	0.6	0.2	0.0	1.9	11.6	0.9	0.0	0.0	1.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	1.6	0.9	1.0	0.0	1.5	4.1	0.3	0.0	0.2	7.8	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.8	38.8	37.8	36.2	0.0	41.7	26.0	0.9	0.0	7.7	14.2	9.3
LnGrp LOS	D	D	D	D	A	D	C	A	A	A	B	A
Approach Vol, veh/h		290			123			1768			1512	
Approach Delay, s/veh		40.4			39.4			5.2			13.8	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.7	56.3	10.0	11.0	7.0	62.0	7.7	13.3				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	34.0	34.0	6.0	23.0	6.0	37.0	6.0	23.0				
Max Q Clear Time (g_c+1/3), s	19.7	26.5	8.0	5.3	2.8	2.0	4.4	5.6				
Green Ext Time (p_c), s	0.0	5.8	0.0	0.2	0.0	18.7	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											12.6	
HCM 6th LOS											B	

HCM 6th Signalized Intersection Summary  
 12: Cordon Rd & Auburn Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
Traffic Volume (veh/h)	30	5	105	5	5	15	70	1655	35	15	1590	50
Future Volume (veh/h)	30	5	105	5	5	15	70	1655	35	15	1590	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1856	1900	1900	1900	1870	1856	1900	1900	1841	1900
Adj Flow Rate, veh/h	32	5	8	5	5	0	74	1742	36	16	1674	51
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, %	0	0	3	0	0	0	2	3	0	0	4	0
Cap, veh/h	211	52	83	171	106	0	351	2496	51	224	2348	71
Arrive On Green	0.03	0.08	0.08	0.01	0.06	0.00	0.05	0.71	0.70	0.04	1.00	1.00
Sat Flow, veh/h	1810	652	1042	1810	1900	0	1781	3532	73	1810	3463	105
Grp Volume(v), veh/h	32	0	13	5	5	0	74	867	911	16	842	883
Grp Sat Flow(s),veh/h/ln	1810	0	1694	1810	1900	0	1781	1763	1842	1810	1749	1819
Q Serve(g_s), s	1.5	0.0	0.6	0.2	0.2	0.0	1.1	25.6	25.8	0.3	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.6	0.2	0.2	0.0	1.1	25.6	25.8	0.3	0.0	0.0
Prop In Lane	1.00		0.62	1.00		0.00	1.00		0.04	1.00		0.06
Lane Grp Cap(c), veh/h	211	0	135	171	106	0	351	1246	1302	224	1186	1234
V/C Ratio(X)	0.15	0.00	0.10	0.03	0.05	0.00	0.21	0.70	0.70	0.07	0.71	0.72
Avail Cap(c_a), veh/h	277	0	358	280	401	0	387	1246	1302	312	1186	1234
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.56	0.56	0.56	0.46	0.46	0.46
Uniform Delay (d), s/veh	38.1	0.0	38.4	39.7	40.2	0.0	3.7	7.6	7.7	7.5	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.3	0.1	0.2	0.0	0.2	1.8	1.8	0.1	1.7	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.3	0.1	0.1	0.0	0.3	7.1	7.5	0.1	0.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.4	0.0	38.7	39.8	40.4	0.0	3.8	9.5	9.5	7.6	1.7	1.7
LnGrp LOS	D	A	D	D	D	A	A	A	A	A	A	A
Approach Vol, veh/h		45			10			1852			1741	
Approach Delay, s/veh		38.5			40.1			9.2			1.7	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.6	68.6	4.6	11.2	8.2	66.0	6.8	9.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	41.0	6.0	19.0	6.0	41.0	6.0	19.0				
Max Q Clear Time (g_c+1/3), s	12.3	27.8	2.2	2.6	3.1	2.0	3.5	2.2				
Green Ext Time (p_c), s	0.0	9.2	0.0	0.0	0.0	17.0	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			6.1									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary  
 13: Cordon Rd & State St

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑	↗	↔↔	↑	↗	↔↔	↑↑	↗	↔↔	↑↑	↗
Traffic Volume (veh/h)	415	310	255	205	235	140	295	1325	160	85	1355	290
Future Volume (veh/h)	415	310	255	205	235	140	295	1325	160	85	1355	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1885	1841	1900	1885	1885	1870	1870	1885
Adj Flow Rate, veh/h	437	326	227	216	247	43	311	1395	116	89	1426	248
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, %	0	3	3	0	1	4	0	1	1	2	2	1
Cap, veh/h	502	394	498	282	282	305	377	1793	896	159	1561	898
Arrive On Green	0.14	0.21	0.21	0.08	0.15	0.15	0.11	0.50	0.48	0.05	0.44	0.42
Sat Flow, veh/h	3510	1856	1552	3510	1885	1560	3510	3582	1598	3456	3554	1598
Grp Volume(v), veh/h	437	326	227	216	247	43	311	1395	116	89	1426	248
Grp Sat Flow(s),veh/h/ln	1755	1856	1552	1755	1885	1560	1755	1791	1598	1728	1777	1598
Q Serve(g_s), s	12.1	16.7	11.6	6.0	12.8	2.3	8.6	31.7	3.4	2.5	37.4	8.0
Cycle Q Clear(g_c), s	12.1	16.7	11.6	6.0	12.8	2.3	8.6	31.7	3.4	2.5	37.4	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	502	394	498	282	282	305	377	1793	896	159	1561	898
V/C Ratio(X)	0.87	0.83	0.46	0.77	0.87	0.14	0.83	0.78	0.13	0.56	0.91	0.28
Avail Cap(c_a), veh/h	670	597	668	353	436	432	494	2339	1140	243	2071	1127
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.8	37.5	27.0	44.8	41.4	33.1	43.5	20.3	10.3	46.5	26.1	11.3
Incr Delay (d2), s/veh	7.7	3.5	0.2	5.7	7.9	0.1	6.7	0.9	0.0	1.1	4.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	7.8	4.1	2.7	6.2	0.8	3.9	11.9	1.1	1.1	15.2	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.4	40.9	27.2	50.5	49.3	33.2	50.2	21.2	10.4	47.6	30.8	11.4
LnGrp LOS	D	D	C	D	D	C	D	C	B	D	C	B
Approach Vol, veh/h		990			506			1822			1763	
Approach Delay, s/veh		41.5			48.5			25.5			28.9	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	25.1	14.7	47.7	18.2	18.9	8.6	53.8				
Change Period (Y+Rc), s	4.0	4.0	4.0	6.0	4.0	4.0	4.0	6.0				
Max Green Setting (Gmax), s	10.0	32.0	14.0	56.0	19.0	23.0	7.0	63.0				
Max Q Clear Time (g_c+1/2g), s	10.0	18.7	10.6	39.4	14.1	14.8	4.5	33.7				
Green Ext Time (p_c), s	0.0	0.4	0.0	2.3	0.1	0.1	0.0	2.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				32.1								
HCM 6th LOS				C								

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	65	0	1715	1725	110
Future Vol, veh/h	0	65	0	1715	1725	110
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	7	0	5	4	4
Mvmt Flow	0	68	0	1786	1797	115

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	957	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.04	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.37	-	-	-	-
Pot Cap-1 Maneuver	0	249	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	249	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 249	-	-
HCM Lane V/C Ratio	- 0.272	-	-
HCM Control Delay (s)	- 24.8	-	-
HCM Lane LOS	- C	-	-
HCM 95th %tile Q(veh)	- 1.1	-	-

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕↔			↕↔	
Traffic Vol, veh/h	0	0	15	0	0	30	0	1695	40	0	1720	130
Future Vol, veh/h	0	0	15	0	0	30	0	1695	40	0	1720	130
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	5	20	10	4	2
Mvmt Flow	0	0	16	0	0	32	0	1784	42	0	1811	137

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	974	-	-	914	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	255	0	0	279	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	255	-	-	279	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20	19.5	0	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	255	279	-
HCM Lane V/C Ratio	-	-	0.062	0.113	-
HCM Control Delay (s)	-	-	20	19.5	-
HCM Lane LOS	-	-	C	C	-
HCM 95th %tile Q(veh)	-	-	0.2	0.4	-

HCM 6th Signalized Intersection Summary  
 16: Cordon Rd & Macleay Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	75	5	65	55	80	125	1465	125	120	1480	155
Future Volume (veh/h)	180	75	5	65	55	80	125	1465	125	120	1480	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1752	1796	1900	1796	1826	1826	1870	1856	1841	1856
Adj Flow Rate, veh/h	186	77	1	67	57	8	129	1510	124	124	1526	153
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, %	3	0	10	7	0	7	5	5	2	3	4	3
Cap, veh/h	260	181	2	235	108	15	243	1994	163	254	1967	195
Arrive On Green	0.08	0.10	0.10	0.05	0.07	0.07	0.05	0.61	0.60	0.05	0.61	0.60
Sat Flow, veh/h	1767	1871	24	1711	1626	228	1739	3248	265	1767	3206	318
Grp Volume(v), veh/h	186	0	78	67	0	65	129	802	832	124	825	854
Grp Sat Flow(s),veh/h/ln	1767	0	1896	1711	0	1855	1739	1735	1778	1767	1749	1776
Q Serve(g_s), s	7.0	0.0	3.5	3.3	0.0	3.1	2.5	29.9	30.6	2.3	31.1	32.3
Cycle Q Clear(g_c), s	7.0	0.0	3.5	3.3	0.0	3.1	2.5	29.9	30.6	2.3	31.1	32.3
Prop In Lane	1.00		0.01	1.00		0.12	1.00		0.15	1.00		0.18
Lane Grp Cap(c), veh/h	260	0	183	235	0	123	243	1065	1092	254	1073	1090
V/C Ratio(X)	0.71	0.00	0.43	0.29	0.00	0.53	0.53	0.75	0.76	0.49	0.77	0.78
Avail Cap(c_a), veh/h	260	0	548	267	0	515	256	1065	1092	268	1073	1090
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.50	0.50	0.50	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	38.3	36.8	0.0	40.7	16.1	12.5	12.7	14.5	12.7	13.0
Incr Delay (d2), s/veh	8.9	0.0	0.6	0.7	0.0	1.3	0.9	2.5	2.6	1.5	5.3	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	1.6	1.3	0.0	1.4	1.3	9.9	10.4	1.1	11.1	11.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	0.0	38.9	37.4	0.0	42.0	17.1	15.0	15.2	16.0	18.0	18.7
LnGrp LOS	D	A	D	D	A	D	B	B	B	B	B	B
Approach Vol, veh/h		264			132			1763			1803	
Approach Delay, s/veh		43.9			39.7			15.3			18.2	
Approach LOS		D			D			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	60.2	11.0	10.0	8.8	60.3	8.3	12.7				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	5.5	34.5	7.0	25.0	5.5	34.5	6.0	26.0				
Max Q Clear Time (g_c+I1), s	4.5	34.3	9.0	5.1	4.3	32.6	5.3	5.5				
Green Ext Time (p_c), s	0.0	0.1	0.0	0.0	0.0	0.7	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				19.3								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
 17: Cordon Rd & Gaffin Rd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	45	145	140	40	320	170	1270	75	275	1130	145
Future Volume (veh/h)	125	45	145	140	40	320	170	1270	75	275	1130	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1900	1841	1900	1870	1781	1826	1856	1900
Adj Flow Rate, veh/h	132	47	14	147	42	139	179	1337	35	289	1189	101
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, %	0	0	0	2	0	4	0	2	8	5	3	0
Cap, veh/h	255	160	48	251	217	177	317	2050	869	351	2120	947
Arrive On Green	0.03	0.11	0.11	0.03	0.11	0.11	0.06	0.58	0.58	0.03	0.20	0.20
Sat Flow, veh/h	1810	1405	418	1781	1900	1556	1810	3554	1507	1739	3526	1574
Grp Volume(v), veh/h	132	0	61	147	42	139	179	1337	35	289	1189	101
Grp Sat Flow(s),veh/h/ln	1810	0	1823	1781	1900	1556	1810	1777	1507	1739	1763	1574
Q Serve(g_s), s	3.0	0.0	2.8	3.0	1.8	7.8	3.7	23.0	0.9	5.8	27.4	4.7
Cycle Q Clear(g_c), s	3.0	0.0	2.8	3.0	1.8	7.8	3.7	23.0	0.9	5.8	27.4	4.7
Prop In Lane	1.00		0.23	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	255	0	208	251	217	177	317	2050	869	351	2120	947
V/C Ratio(X)	0.52	0.00	0.29	0.59	0.19	0.78	0.56	0.65	0.04	0.82	0.56	0.11
Avail Cap(c_a), veh/h	255	0	506	251	528	432	345	2050	869	393	2120	947
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.57	0.57	0.57	0.37	0.37	0.37
Uniform Delay (d), s/veh	36.5	0.0	36.6	37.6	36.1	38.8	12.9	12.9	8.2	16.4	25.3	16.3
Incr Delay (d2), s/veh	0.9	0.0	0.3	2.4	0.2	2.9	0.5	0.9	0.0	4.3	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	1.2	1.7	0.8	3.1	1.1	7.3	0.3	3.7	12.7	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.4	0.0	36.8	39.9	36.3	41.7	13.4	13.8	8.3	20.7	25.7	16.4
LnGrp LOS	D	A	D	D	D	D	B	B	A	C	C	B
Approach Vol, veh/h		193			328			1551			1579	
Approach Delay, s/veh		37.2			40.2			13.7			24.2	
Approach LOS		D			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	59.1	7.0	14.3	11.8	56.9	7.0	14.3				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	37.0	3.0	25.0	10.0	34.0	3.0	25.0					
Max Q Clear Time (g_c+1/3), s	29.4	5.0	9.8	7.8	25.0	5.0	4.8					
Green Ext Time (p_c), s	0.0	1.5	0.0	0.1	0.0	1.6	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											21.9	
HCM 6th LOS											C	



HCM 6th Signalized Intersection Summary  
18: Kuebler Blvd/Cordon Rd & Lancaster Dr

Cordon-Kuebler Corridor Plan  
Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	300	235	245	325	305	180	1110	190	220	1100	95
Future Volume (veh/h)	100	300	235	245	325	305	180	1110	190	220	1100	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1811	1856	1796	1811	1841	1870	1885	1885	1900	1900	1870
Adj Flow Rate, veh/h	105	316	185	258	342	265	189	1168	0	232	1158	52
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, %	0	6	3	7	6	4	2	1	1	0	0	2
Cap, veh/h	135	541	350	341	639	502	273	1333		271	1599	777
Arrive On Green	0.07	0.16	0.14	0.10	0.19	0.17	0.08	0.37	0.00	0.15	0.44	0.42
Sat Flow, veh/h	1810	3441	1572	3319	3441	1560	3456	3582	1598	1810	3610	1585
Grp Volume(v), veh/h	105	316	185	258	342	265	189	1168	0	232	1158	52
Grp Sat Flow(s),veh/h/ln	1810	1721	1572	1659	1721	1560	1728	1791	1598	1810	1805	1585
Q Serve(g_s), s	4.2	6.3	7.6	5.6	6.6	10.2	3.9	22.3	0.0	9.2	19.3	1.3
Cycle Q Clear(g_c), s	4.2	6.3	7.6	5.6	6.6	10.2	3.9	22.3	0.0	9.2	19.3	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	135	541	350	341	639	502	273	1333		271	1599	777
V/C Ratio(X)	0.78	0.58	0.53	0.76	0.54	0.53	0.69	0.88		0.86	0.72	0.07
Avail Cap(c_a), veh/h	197	1406	745	543	1594	935	377	1513		271	1672	809
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.4	28.7	25.1	32.0	27.0	20.3	32.9	21.5	0.0	30.4	16.8	9.9
Incr Delay (d2), s/veh	6.2	0.4	0.5	1.3	0.3	0.3	1.2	5.1	0.0	21.7	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.4	0.0	2.1	2.5	3.4	1.5	8.6	0.0	5.2	6.5	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	29.1	25.6	33.3	27.3	20.7	34.2	26.6	0.0	52.1	18.0	9.9
LnGrp LOS	D	C	C	C	C	C	C	C		D	B	A
Approach Vol, veh/h		606			865			1357			1442	
Approach Delay, s/veh		29.8			27.1			27.6			23.2	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.8	36.5	9.5	17.6	15.0	31.3	11.6	15.5				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	11.0	29.0	12.0	29.0				
Max Q Clear Time (g_c+1/3), s	11.9	21.3	6.2	12.2	11.2	24.3	7.6	9.6				
Green Ext Time (p_c), s	0.0	1.4	0.0	0.4	0.0	1.0	0.0	0.4				

Intersection Summary

HCM 6th Ctrl Delay	26.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Kuebler Blvd & Mill Creek Dr

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (PM Peak)



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	90	270	1195	140	355	1210
Future Volume (veh/h)	90	270	1195	140	355	1210
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1885	1900	1885	1900	1900	1885
Adj Flow Rate, veh/h	92	270	1219	75	362	1235
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	1	0	0	1
Cap, veh/h	311	477	1804	785	406	2465
Arrive On Green	0.17	0.17	0.17	0.16	0.12	0.69
Sat Flow, veh/h	1795	1610	3676	1609	1810	3676
Grp Volume(v), veh/h	92	270	1219	75	362	1235
Grp Sat Flow(s),veh/h/ln	1795	1610	1791	1609	1810	1791
Q Serve(g_s), s	2.9	9.2	20.8	2.6	6.0	10.7
Cycle Q Clear(g_c), s	2.9	9.2	20.8	2.6	6.0	10.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	311	477	1804	785	406	2465
V/C Ratio(X)	0.30	0.57	0.68	0.10	0.89	0.50
Avail Cap(c_a), veh/h	580	718	1804	785	406	2465
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.76	0.76	0.68	0.68
Uniform Delay (d), s/veh	23.4	19.3	22.1	15.0	13.2	4.8
Incr Delay (d2), s/veh	0.2	0.4	1.6	0.2	15.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	8.3	9.8	0.7	3.6	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.6	19.7	23.7	15.2	28.2	5.3
LnGrp LOS	C	B	C	B	C	A
Approach Vol, veh/h	362		1294			1597
Approach Delay, s/veh	20.7		23.2			10.5
Approach LOS	C		C			B
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.7		15.3	12.0	37.7
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		34.0		21.0	8.0	22.0
Max Q Clear Time (g_c+I1), s		12.7		11.2	8.0	22.8
Green Ext Time (p_c), s		1.7		0.1	0.0	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			16.7			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary  
 20: Turner Rd & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	335	1190	355	30	1155	50	515	205	60	40	255	520
Future Volume (veh/h)	335	1190	355	30	1155	50	515	205	60	40	255	520
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1870	1900	1870	1900	1870	1900	1900	1900	1870	1841
Adj Flow Rate, veh/h	349	1240	266	31	1203	15	536	214	14	42	266	485
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	2	2	0	2	0	2	0	0	0	2	4
Cap, veh/h	331	1954	1078	40	1375	597	505	523	443	54	298	944
Arrive On Green	0.06	0.18	0.18	0.02	0.39	0.37	0.15	0.28	0.28	0.03	0.16	0.16
Sat Flow, veh/h	1795	3554	1584	1810	3554	1608	3456	1900	1610	1810	1870	2745
Grp Volume(v), veh/h	349	1240	266	31	1203	15	536	214	14	42	266	485
Grp Sat Flow(s),veh/h/ln	1795	1777	1584	1810	1777	1608	1728	1900	1610	1810	1870	1373
Q Serve(g_s), s	24.0	42.0	13.1	2.2	40.8	0.8	19.0	12.0	0.8	3.0	18.1	18.3
Cycle Q Clear(g_c), s	24.0	42.0	13.1	2.2	40.8	0.8	19.0	12.0	0.8	3.0	18.1	18.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	331	1954	1078	40	1375	597	505	523	443	54	298	944
V/C Ratio(X)	1.05	0.63	0.25	0.78	0.87	0.03	1.06	0.41	0.03	0.77	0.89	0.51
Avail Cap(c_a), veh/h	331	1954	1078	111	1375	597	505	570	483	111	403	1098
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.17	0.17	0.17	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.0	41.1	15.4	63.3	36.9	25.9	55.5	38.5	34.4	62.6	53.6	34.0
Incr Delay (d2), s/veh	36.0	0.3	0.1	10.7	7.3	0.1	57.3	0.2	0.0	8.4	14.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.8	19.9	5.4	1.1	17.9	0.3	12.1	5.5	0.3	1.5	9.5	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	97.0	41.4	15.5	74.0	44.2	26.0	112.8	38.7	34.4	71.0	68.1	34.2
LnGrp LOS	F	D	B	E	D	C	F	D	C	E	E	C
Approach Vol, veh/h		1855			1249			764			793	
Approach Delay, s/veh		48.2			44.7			90.6			47.5	
Approach LOS		D			D			F			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	75.5	7.9	39.8	28.0	54.3	23.0	24.7				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	3.0	57.0	8.0	39.0	24.0	41.0	19.0	28.0				
Max Q Clear Time (g_c+1/2), s	14.2	44.0	5.0	14.0	26.0	42.8	21.0	20.3				
Green Ext Time (p_c), s	0.0	1.6	0.0	0.2	0.0	0.0	0.0	0.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											54.1	
HCM 6th LOS											D	

HCM 6th Signalized Intersection Summary  
 21: 36th Ave & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Alternative #1 - Traffic Signals (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	1325	240	440	1445	285	345	155	340	240	135	250
Future Volume (veh/h)	105	1325	240	440	1445	285	345	155	340	240	135	250
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1856	1826	1767	1885	1900	1885	1900	1900	1900	1826	1885
Adj Flow Rate, veh/h	111	1395	155	463	1521	212	363	163	323	253	142	185
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, %	1	3	5	9	1	0	1	0	0	0	5	1
Cap, veh/h	135	1385	715	388	1966	995	295	320	643	297	308	389
Arrive On Green	0.07	0.39	0.38	0.46	1.00	1.00	0.08	0.17	0.17	0.08	0.17	0.17
Sat Flow, veh/h	1795	3526	1547	1682	3582	1610	3483	1900	1607	3510	1826	1595
Grp Volume(v), veh/h	111	1395	155	463	1521	212	363	163	323	253	142	185
Grp Sat Flow(s),veh/h/ln	1795	1763	1547	1682	1791	1610	1742	1900	1607	1755	1826	1595
Q Serve(g_s), s	7.9	51.1	7.8	30.0	0.0	0.0	11.0	10.1	19.6	9.2	9.1	12.9
Cycle Q Clear(g_c), s	7.9	51.1	7.8	30.0	0.0	0.0	11.0	10.1	19.6	9.2	9.1	12.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	135	1385	715	388	1966	995	295	320	643	297	308	389
V/C Ratio(X)	0.82	1.01	0.22	1.19	0.77	0.21	1.23	0.51	0.50	0.85	0.46	0.48
Avail Cap(c_a), veh/h	152	1385	715	388	1966	995	295	380	693	297	365	439
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.34	0.34	0.34	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.3	39.5	20.9	35.0	0.0	0.0	59.5	49.1	29.3	58.7	48.7	42.1
Incr Delay (d2), s/veh	24.3	25.9	0.7	95.5	1.1	0.2	130.2	0.5	0.2	19.6	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	26.0	2.9	18.5	0.3	0.0	10.1	4.8	7.4	4.9	4.2	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	83.5	65.3	21.6	130.5	1.1	0.2	189.7	49.6	29.6	78.3	49.1	42.4
LnGrp LOS	F	F	C	F	A	A	F	D	C	E	D	D
Approach Vol, veh/h		1661			2196			849			580	
Approach Delay, s/veh		62.5			28.3			101.9			59.7	
Approach LOS		E			C			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	34.0	55.1	15.0	25.9	13.7	75.3	15.0	25.9				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	30.0	45.0	11.0	26.0	11.0	64.0	11.0	26.0				
Max Q Clear Time (g_c+Rc), s	30.0	53.1	13.0	14.9	9.9	2.0	11.2	21.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.0	2.2	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											54.3	
HCM 6th LOS											D	

ID	Software/Method	Intersection	Control Type	LOS	Delay	V/C Ratio
1	Synchro HCM 6th Signal	OR 99E & Hazelgreen Rd	Signal	D	40.7	0.83
2	Synchro HCM 6th Signal	Lake Labish Rd & Hazelgreen Rd	Signal	B	12.3	0.50
3	Synchro HCM 6th Signal	Cordon Rd & Hazelgreen Rd	Signal	B	16.6	0.68
4	Synchro HCM 6th Signal	Cordon Rd & Kale St	Signal	A	6.7	0.55
5	Synchro HCM 6th Signal	Cordon Rd & Hayesville Dr	Signal	A	6.4	0.64
6	Synchro HCM 6th Signal	Cordon Rd & Ward Dr	Signal	A	8.2	0.68
7	Synchro HCM 6th Signal	Cordon Rd & Herrin Rd	Signal	A	7.9	0.61
8	Synchro HCM 6th Signal	Cordon Rd & Silverton Rd	Signal	C	24.9	0.74
9	Synchro HCM 6th Signal	Cordon Rd & Sunnyview Rd	Signal	B	14.7	0.78
10	Synchro HCM 6th Signal	Cordon Rd & Swegle Rd	Signal	A	6.0	0.64
11	Synchro HCM 6th Signal	Cordon Rd & Center St	Signal	B	12.6	0.84
12	Synchro HCM 6th Signal	Cordon Rd & Auburn Rd	Signal	A	6.1	0.67
13	Synchro HCM 6th Signal	Cordon Rd & State St	Signal	C	32.1	0.85
16	Synchro HCM 6th Signal	Cordon Rd & Macleay Rd	Signal	B	19.3	0.81
17	Synchro HCM 6th Signal	Cordon Rd & Gaffin Rd	Signal	C	21.9	0.87
18	Synchro HCM 6th Signal	Kuebler Blvd/Cordon Rd & Lancaster Dr	Signal	C	26.3	0.81
19	Synchro HCM 6th Signal	Kuebler Blvd & Mill Creek Dr	Signal	B	16.7	0.63
20	Synchro HCM 6th Signal	Turner Rd & Kuebler Blvd	Signal	D	54.1	0.78
21	Synchro HCM 6th Signal	36th Ave & Kuebler Blvd	Signal	D	54.3	0.83

# **ALTERNATIVE 2 – ROUNDABOUT-CENTRIC**

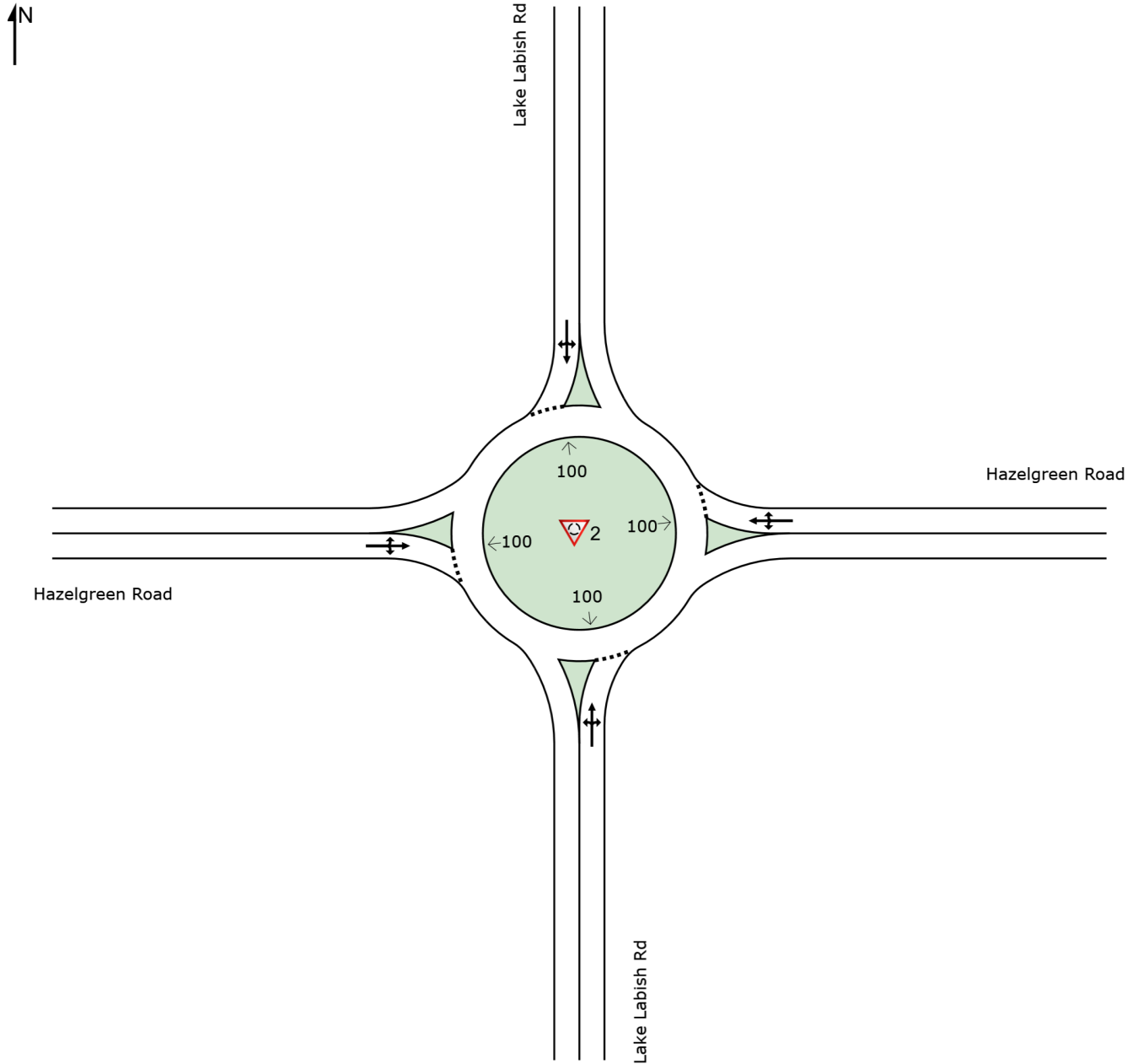
## **HCM Results**

# SITE LAYOUT

## Site: 2 [Hazelgreen Rd/Lake Labish Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

Site: 2 [Hazelgreen Rd/Lake Labish Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] ft				
South: Lake Labish Rd														
3	L2	120	0.0	136	0.0	0.160	5.4	LOS A	0.7	17.6	0.50	0.41	0.50	28.3
8	T1	5	0.0	6	0.0	0.160	5.4	LOS A	0.7	17.6	0.50	0.41	0.50	23.3
18	R2	5	0.0	6	0.0	0.160	5.4	LOS A	0.7	17.6	0.50	0.41	0.50	27.8
Approach		130	0.0	148	0.0	0.160	5.4	LOS A	0.7	17.6	0.50	0.41	0.50	28.1
East: Hazelgreen Road														
1	L2	5	0.0	6	0.0	0.412	7.3	LOS A	2.5	63.7	0.42	0.27	0.42	30.4
6	T1	405	3.0	460	3.0	0.412	7.4	LOS A	2.5	63.7	0.42	0.27	0.42	38.2
16	R2	5	0.0	6	0.0	0.412	7.3	LOS A	2.5	63.7	0.42	0.27	0.42	28.8
Approach		415	2.9	472	2.9	0.412	7.4	LOS A	2.5	63.7	0.42	0.27	0.42	37.9
North: Lake Labish Rd														
7	L2	30	0.0	34	0.0	0.108	6.0	LOS A	0.4	10.9	0.58	0.53	0.58	29.0
4	T1	10	0.0	11	0.0	0.108	6.0	LOS A	0.4	10.9	0.58	0.53	0.58	23.7
14	R2	30	0.0	34	0.0	0.108	6.0	LOS A	0.4	10.9	0.58	0.53	0.58	28.4
Approach		70	0.0	80	0.0	0.108	6.0	LOS A	0.4	10.9	0.58	0.53	0.58	27.9
West: Hazelgreen Road														
5	L2	10	0.0	11	0.0	0.294	5.4	LOS A	1.6	41.8	0.20	0.08	0.20	31.2
2	T1	295	3.0	335	3.0	0.294	5.5	LOS A	1.6	41.8	0.20	0.08	0.20	39.4
12	R2	25	0.0	28	0.0	0.294	5.4	LOS A	1.6	41.8	0.20	0.08	0.20	29.4
Approach		330	2.7	375	2.7	0.294	5.5	LOS A	1.6	41.8	0.20	0.08	0.20	38.1
All Vehicles		945	2.2	1074	2.2	0.412	6.3	LOS A	2.5	63.7	0.37	0.24	0.37	35.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: S:\Projects\2022\22001-000 (Marion Co Cordon Road Corridor Plan)\02\_Work Tasks\6.0 - Transportation Alternatives (TM#6)\04\_Analysis \Operations Analysis\\_Alternative 2\_ - Roundabouts\Cordon-Kuebler Corridor Plan - Alternative 2 - Roundabout.sip9

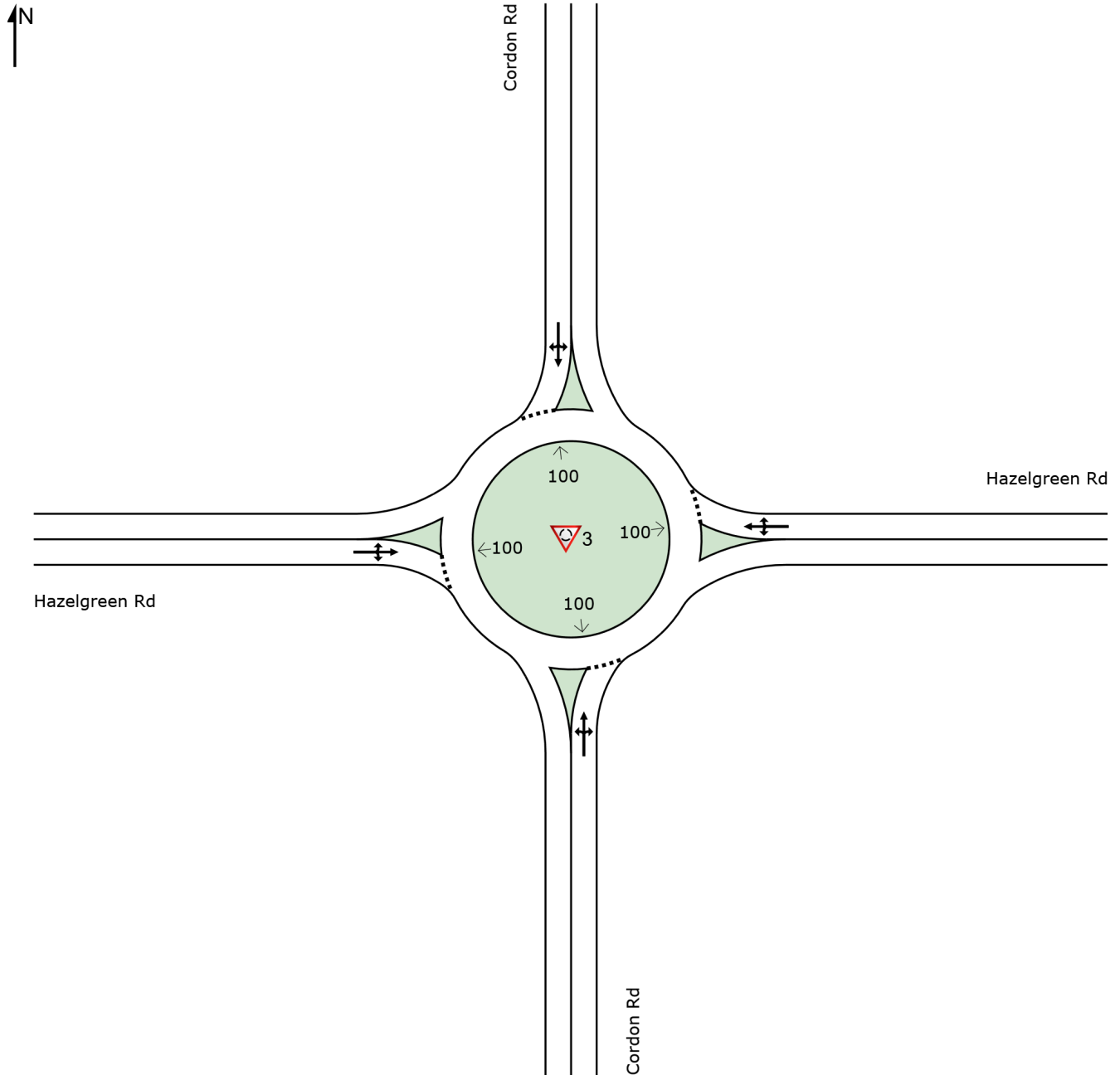


# SITE LAYOUT

Site: 3 [Cordon Rd/Hazalgreen Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

Site: 3 [Cordon Rd/Hazelgreen Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	60	0.0	65	0.0	0.291	5.9	LOS A	1.6	39.0	0.41	0.27	0.41	39.8
8	T1	170	0.0	185	0.0	0.291	5.9	LOS A	1.6	39.0	0.41	0.27	0.41	40.8
18	R2	75	0.0	82	0.0	0.291	5.9	LOS A	1.6	39.0	0.41	0.27	0.41	39.6
Approach		305	0.0	332	0.0	0.291	5.9	LOS A	1.6	39.0	0.41	0.27	0.41	40.3
East: Hazelgreen Rd														
1	L2	160	0.0	174	0.0	0.526	10.0	LOS A	3.5	91.7	0.60	0.50	0.64	37.3
6	T1	300	8.0	326	8.0	0.526	10.3	LOS B	3.5	91.7	0.60	0.50	0.64	35.7
16	R2	25	0.0	27	0.0	0.526	10.0	LOS A	3.5	91.7	0.60	0.50	0.64	36.4
Approach		485	4.9	527	4.9	0.526	10.2	LOS B	3.5	91.7	0.60	0.50	0.64	36.2
North: Cordon Rd														
7	L2	15	0.0	16	0.0	0.124	6.1	LOS A	0.5	12.7	0.57	0.53	0.57	40.6
4	T1	60	0.0	65	0.0	0.124	6.1	LOS A	0.5	12.7	0.57	0.53	0.57	40.7
14	R2	10	10.0	11	10.0	0.124	6.6	LOS A	0.5	12.7	0.57	0.53	0.57	37.1
Approach		85	1.2	92	1.2	0.124	6.1	LOS A	0.5	12.7	0.57	0.53	0.57	40.2
West: Hazelgreen Rd														
5	L2	15	0.0	16	0.0	0.268	6.0	LOS A	1.3	33.3	0.45	0.34	0.45	40.0
2	T1	135	5.0	147	5.0	0.268	6.2	LOS A	1.3	33.3	0.45	0.34	0.45	39.4
12	R2	100	5.0	109	5.0	0.268	6.2	LOS A	1.3	33.3	0.45	0.34	0.45	38.3
Approach		250	4.7	272	4.7	0.268	6.2	LOS A	1.3	33.3	0.45	0.34	0.45	39.0
All Vehicles		1125	3.3	1223	3.3	0.526	7.8	LOS A	3.5	91.7	0.51	0.40	0.53	38.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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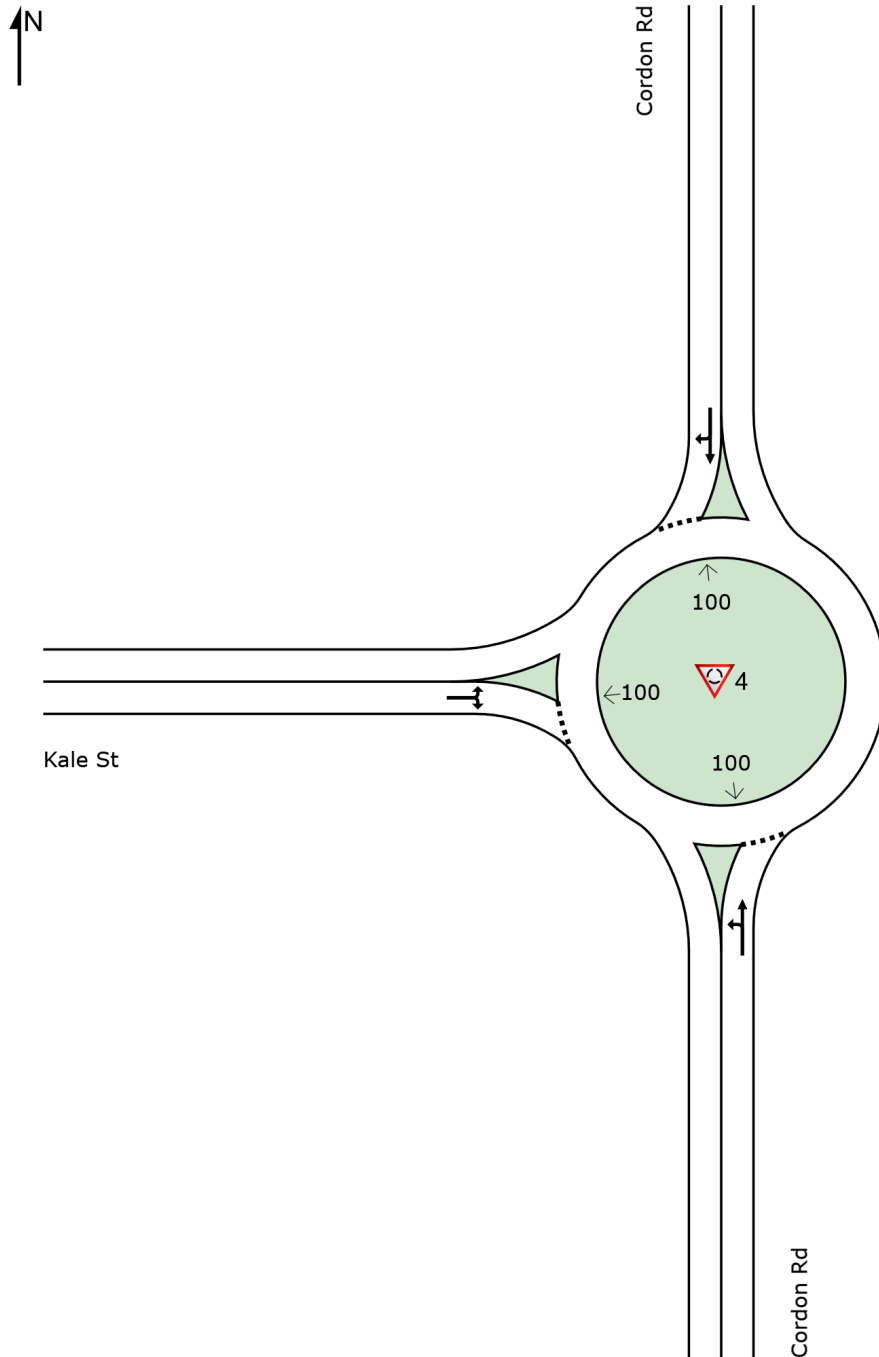
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# SITE LAYOUT

Site: 4 [Cordon Rd/Kale St (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 Site: 4 [Cordon Rd/Kale St (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	70	0.0	75	0.0	0.344	5.9	LOS A	2.1	52.8	0.20	0.08	0.20	36.0
8	T1	345	2.0	371	2.0	0.344	5.9	LOS A	2.1	52.8	0.20	0.08	0.20	40.5
Approach		415	1.7	446	1.7	0.344	5.9	LOS A	2.1	52.8	0.20	0.08	0.20	39.7
North: Cordon Rd														
4	T1	330	0.0	355	0.0	0.312	5.6	LOS A	1.8	45.4	0.26	0.12	0.26	41.8
14	R2	40	0.0	43	0.0	0.312	5.6	LOS A	1.8	45.4	0.26	0.12	0.26	35.1
Approach		370	0.0	398	0.0	0.312	5.6	LOS A	1.8	45.4	0.26	0.12	0.26	40.9
West: Kale St														
5	L2	40	0.0	43	0.0	0.224	5.9	LOS A	1.1	26.3	0.51	0.42	0.51	35.1
12	R2	160	0.0	172	0.0	0.224	5.9	LOS A	1.1	26.3	0.51	0.42	0.51	34.3
Approach		200	0.0	215	0.0	0.224	5.9	LOS A	1.1	26.3	0.51	0.42	0.51	34.5
All Vehicles		985	0.7	1059	0.7	0.344	5.8	LOS A	2.1	52.8	0.29	0.16	0.29	39.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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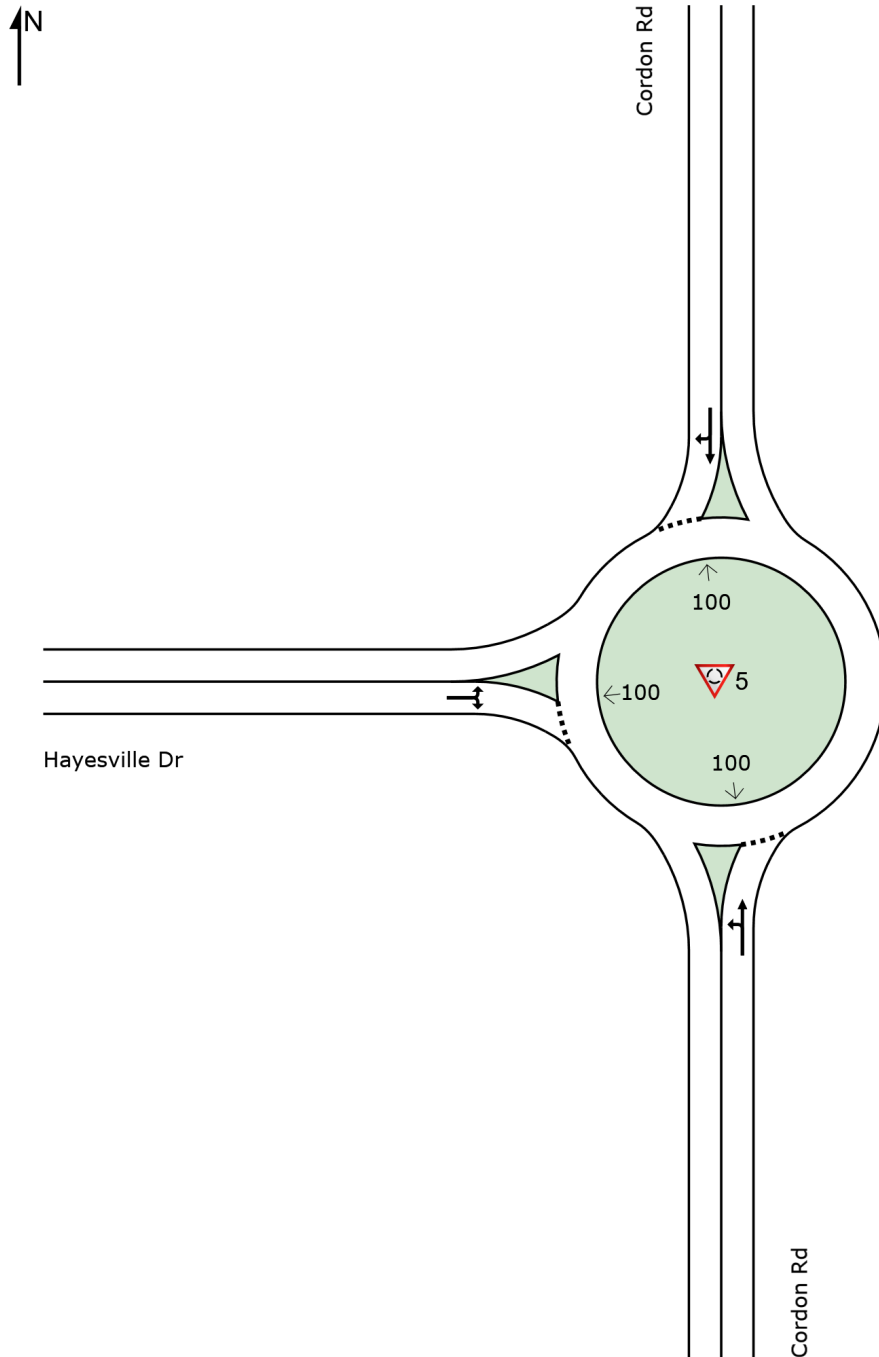
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# SITE LAYOUT

## Site: 5 [Cordon Rd/Hayesville Dr (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 Site: 5 [Cordon Rd/Hayesville Dr (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	235	0.0	267	0.0	0.536	8.4	LOS A	4.6	117.3	0.13	0.03	0.13	34.2
8	T1	400	2.0	455	2.0	0.536	8.4	LOS A	4.6	117.3	0.13	0.03	0.13	38.1
Approach		635	1.3	722	1.3	0.536	8.4	LOS A	4.6	117.3	0.13	0.03	0.13	36.6
North: Cordon Rd														
4	T1	465	0.0	528	0.0	0.541	10.1	LOS B	4.2	106.1	0.63	0.54	0.70	38.6
14	R2	35	0.0	40	0.0	0.541	10.1	LOS B	4.2	106.1	0.63	0.54	0.70	32.9
Approach		500	0.0	568	0.0	0.541	10.1	LOS B	4.2	106.1	0.63	0.54	0.70	38.1
West: Hayesville Dr														
5	L2	10	0.0	11	0.0	0.403	9.5	LOS A	2.2	56.2	0.67	0.70	0.76	33.8
12	R2	275	0.0	313	0.0	0.403	9.5	LOS A	2.2	56.2	0.67	0.70	0.76	33.0
Approach		285	0.0	324	0.0	0.403	9.5	LOS A	2.2	56.2	0.67	0.70	0.76	33.0
All Vehicles		1420	0.6	1614	0.6	0.541	9.2	LOS A	4.6	117.3	0.41	0.34	0.46	36.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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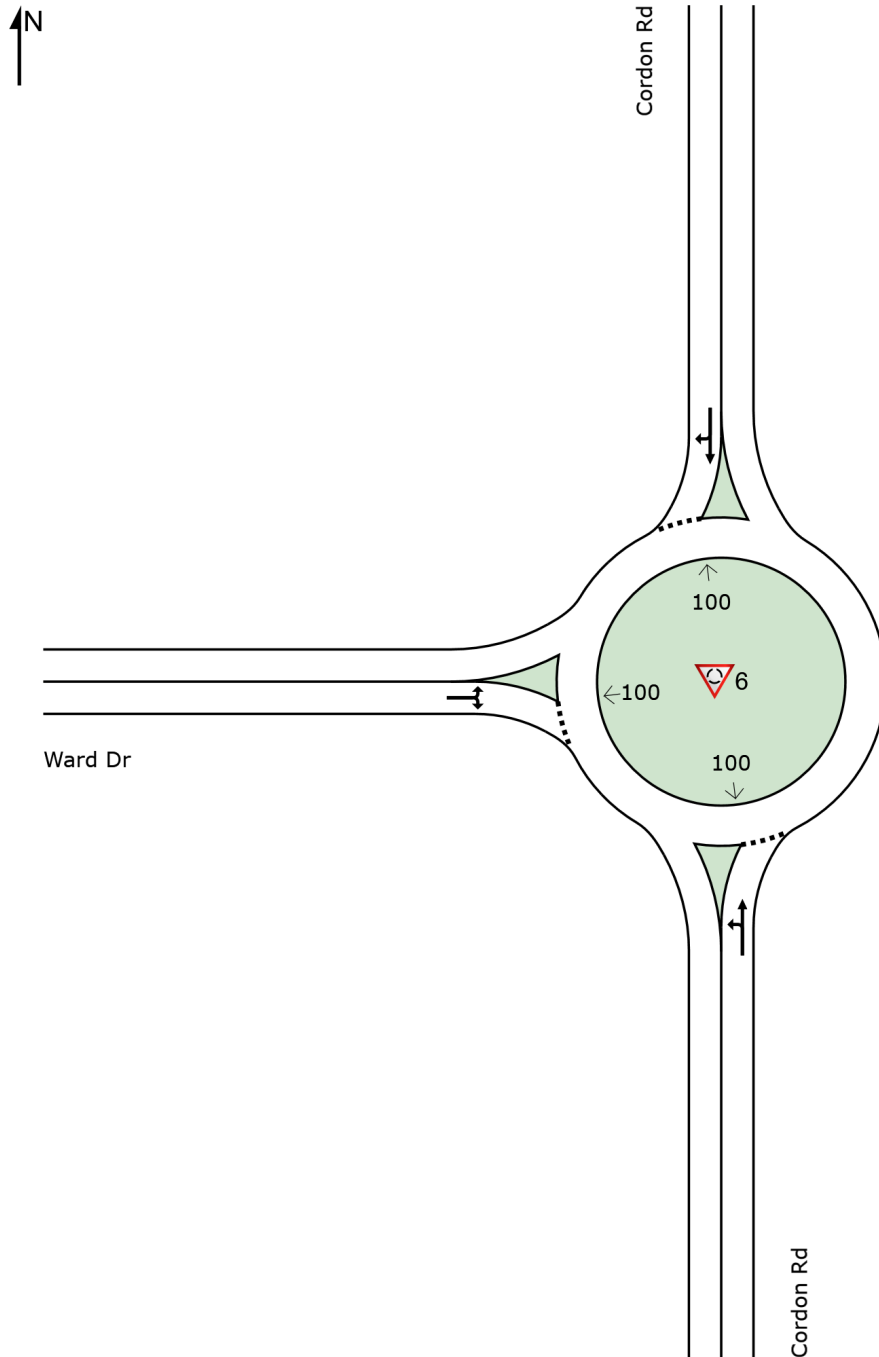
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# SITE LAYOUT

Site: 6 [Cordon Rd/Ward Dr (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 Site: 6 [Cordon Rd/Ward Dr (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	45	4.0	48	4.0	0.525	9.0	LOS A	3.7	97.0	0.42	0.24	0.42	30.3
8	T1	535	5.0	569	5.0	0.525	9.0	LOS A	3.7	97.0	0.42	0.24	0.42	38.3
Approach		580	4.9	617	4.9	0.525	9.0	LOS A	3.7	97.0	0.42	0.24	0.42	37.6
North: Cordon Rd														
4	T1	690	3.0	734	3.0	0.616	10.3	LOS B	5.7	146.9	0.34	0.15	0.34	38.0
14	R2	45	6.0	48	6.0	0.616	10.4	LOS B	5.7	146.9	0.34	0.15	0.34	28.3
Approach		735	3.2	782	3.2	0.616	10.3	LOS B	5.7	146.9	0.34	0.15	0.34	37.2
West: Ward Dr														
5	L2	100	3.0	106	3.0	0.285	9.5	LOS A	1.2	30.2	0.67	0.67	0.67	27.7
12	R2	65	4.0	69	4.0	0.285	9.6	LOS A	1.2	30.2	0.67	0.67	0.67	27.1
Approach		165	3.4	176	3.4	0.285	9.6	LOS A	1.2	30.2	0.67	0.67	0.67	27.5
All Vehicles		1480	3.9	1574	3.9	0.616	9.7	LOS A	5.7	146.9	0.41	0.24	0.41	35.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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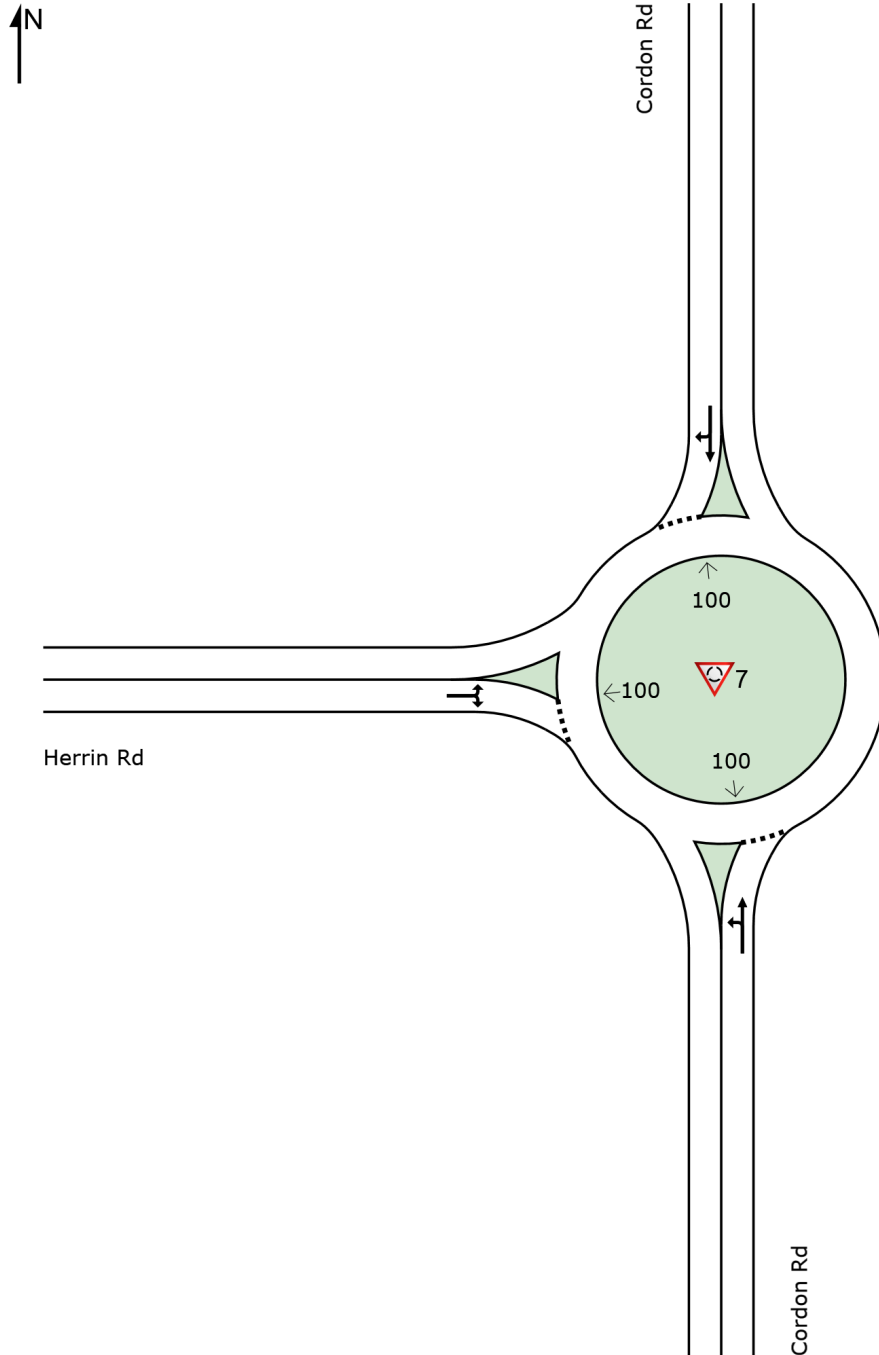


# SITE LAYOUT

## Site: 7 [Cordon Rd/Herrin Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 Site: 7 [Cordon Rd/Herrin Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h	HV % ]	[ Total veh/h	HV % ]				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	45	5.0	49	5.0	0.523	8.6	LOS A	3.9	101.6	0.24	0.09	0.24	30.4
8	T1	545	7.0	599	7.0	0.523	8.7	LOS A	3.9	101.6	0.24	0.09	0.24	38.3
Approach		590	6.8	648	6.8	0.523	8.7	LOS A	3.9	101.6	0.24	0.09	0.24	37.5
North: Cordon Rd														
4	T1	670	4.0	736	4.0	0.650	11.3	LOS B	6.4	165.2	0.37	0.16	0.37	37.3
14	R2	75	3.0	82	3.0	0.650	11.2	LOS B	6.4	165.2	0.37	0.16	0.37	27.9
Approach		745	3.9	819	3.9	0.650	11.3	LOS B	6.4	165.2	0.37	0.16	0.37	36.1
West: Herrin Rd														
5	L2	35	4.0	38	4.0	0.169	8.0	LOS A	0.7	16.9	0.64	0.64	0.64	28.6
12	R2	60	1.0	66	1.0	0.169	7.8	LOS A	0.7	16.9	0.64	0.64	0.64	28.3
Approach		95	2.1	104	2.1	0.169	7.8	LOS A	0.7	16.9	0.64	0.64	0.64	28.4
All Vehicles		1430	5.0	1571	5.0	0.650	10.0	LOS A	6.4	165.2	0.34	0.17	0.34	36.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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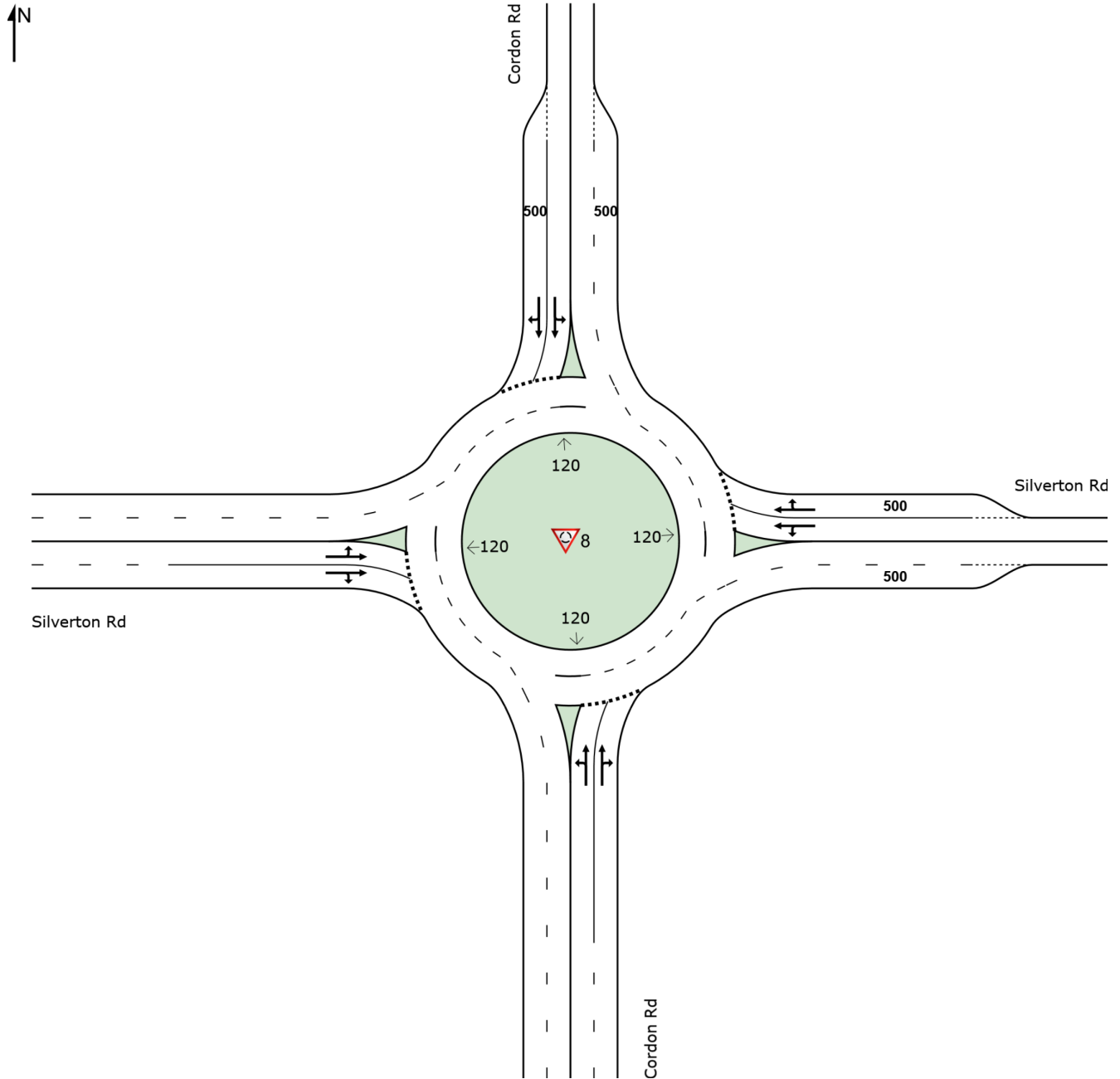
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# SITE LAYOUT

## Site: 8 [Cordon Rd/Silverton Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

Site: 8 [Cordon Rd/Silverton Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	240	8.0	261	8.0	0.546	11.6	LOS B	4.2	109.3	0.63	0.68	0.91	33.9
8	T1	475	2.0	516	2.0	0.546	13.3	LOS B	4.2	109.3	0.62	0.66	0.89	37.4
18	R2	220	8.0	239	8.0	0.546	14.6	LOS B	4.2	108.4	0.62	0.64	0.87	34.5
Approach		935	5.0	1016	5.0	0.546	13.2	LOS B	4.2	109.3	0.62	0.66	0.89	35.7
East: Silverton Rd														
1	L2	325	5.0	353	5.0	0.686	23.2	LOS C	5.0	129.2	0.81	1.05	1.67	28.2
6	T1	400	4.0	435	4.0	0.686	21.1	LOS C	5.2	134.0	0.81	1.04	1.65	29.9
16	R2	10	0.0	11	0.0	0.686	24.9	LOS C	5.2	134.0	0.81	1.04	1.65	30.8
Approach		735	4.4	799	4.4	0.686	22.1	LOS C	5.2	134.0	0.81	1.05	1.66	29.1
North: Cordon Rd														
7	L2	15	10.0	16	10.0	0.794	35.8	LOS E	6.4	167.4	0.88	1.18	2.20	25.7
4	T1	565	5.0	614	5.0	0.794	34.0	LOS D	6.7	175.5	0.87	1.17	2.20	27.4
14	R2	145	5.0	158	5.0	0.794	32.1	LOS D	6.7	175.5	0.86	1.17	2.20	26.3
Approach		725	5.1	788	5.1	0.794	33.7	LOS D	6.7	175.5	0.87	1.17	2.20	27.1
West: Silverton Rd														
5	L2	105	9.0	114	9.0	0.589	20.7	LOS C	3.2	86.5	0.78	0.95	1.41	29.8
2	T1	205	9.0	223	9.0	0.589	21.1	LOS C	3.3	88.9	0.77	0.94	1.41	29.2
12	R2	245	8.0	266	8.0	0.589	18.6	LOS C	3.3	88.9	0.76	0.93	1.39	30.8
Approach		555	8.6	603	8.6	0.589	19.9	LOS C	3.3	88.9	0.77	0.94	1.40	30.0
All Vehicles		2950	5.5	3207	5.5	0.794	21.7	LOS C	6.7	175.5	0.76	0.93	1.50	30.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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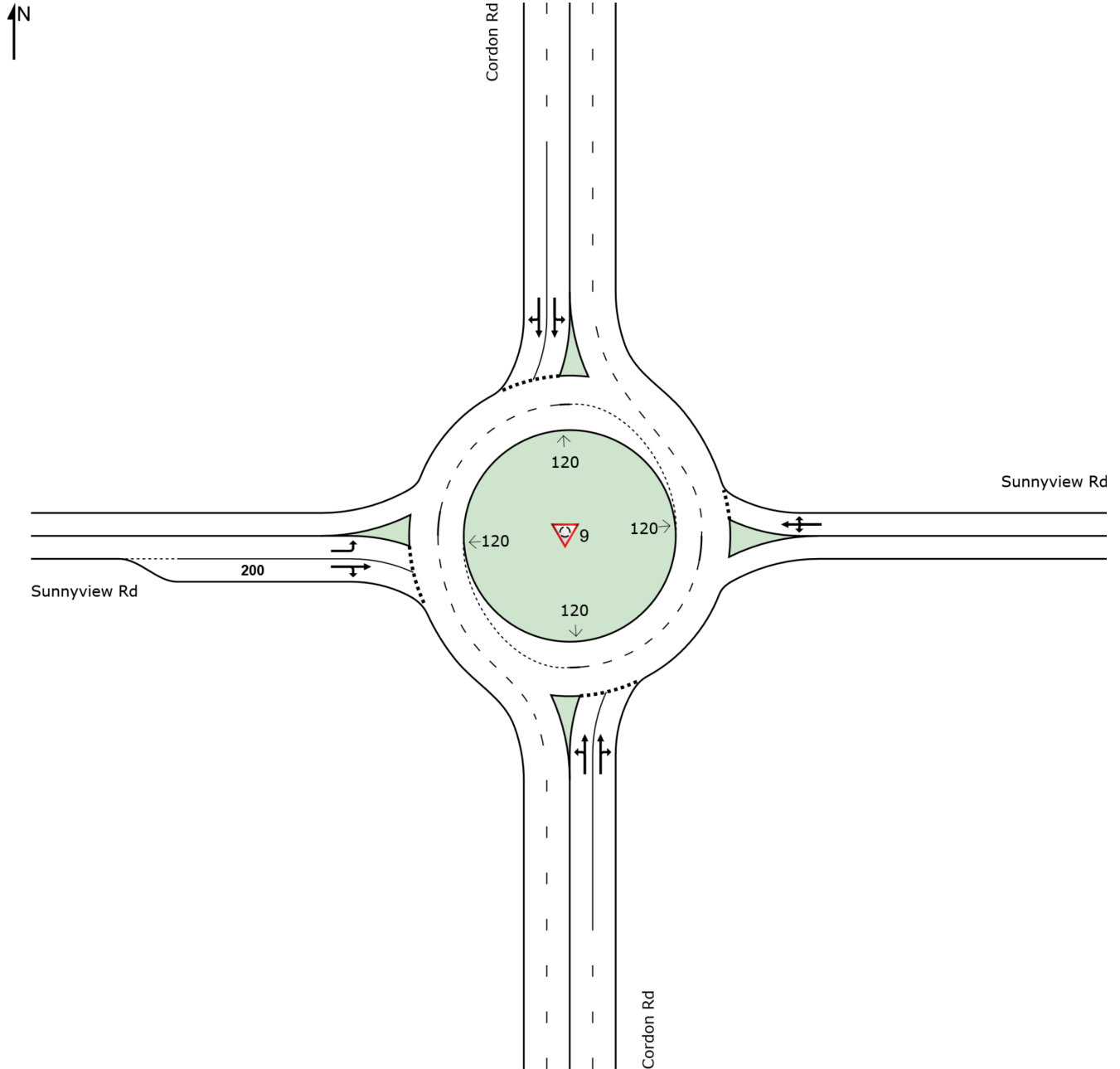
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# SITE LAYOUT

Site: 9 [Cordon Rd/Sunnyview Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

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\Operations Analysis\\_Alternative 2\_ - Roundabouts\Cordon-Kuebler Corridor Plan - Alternative 2 - Roundabout.sip9

# MOVEMENT SUMMARY

Site: 9 [Cordon Rd/Sunnyview Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	190	3.0	202	3.0	0.488	8.8	LOS A	2.9	72.9	0.46	0.32	0.46	34.5
8	T1	810	2.0	862	2.0	0.488	8.5	LOS A	2.9	72.9	0.45	0.31	0.45	39.4
18	R2	50	0.0	53	0.0	0.488	8.3	LOS A	2.8	72.0	0.44	0.30	0.44	39.0
Approach		1050	2.1	1117	2.1	0.488	8.5	LOS A	2.9	72.9	0.45	0.31	0.45	38.4
East: Sunnyview Rd														
1	L2	70	2.0	74	2.0	0.402	13.9	LOS B	1.7	43.8	0.74	0.81	1.03	35.2
6	T1	80	3.0	85	3.0	0.402	14.0	LOS B	1.7	43.8	0.74	0.81	1.03	31.6
16	R2	40	3.0	43	3.0	0.402	14.0	LOS B	1.7	43.8	0.74	0.81	1.03	34.2
Approach		190	2.6	202	2.6	0.402	13.9	LOS B	1.7	43.8	0.74	0.81	1.03	33.4
North: Cordon Rd														
7	L2	25	0.0	27	0.0	0.625	13.1	LOS B	6.6	166.7	0.70	0.79	1.13	37.0
4	T1	975	2.0	1037	2.0	0.625	12.9	LOS B	6.6	167.6	0.69	0.78	1.11	37.1
14	R2	140	2.0	149	2.0	0.625	12.5	LOS B	6.6	167.6	0.68	0.76	1.09	32.0
Approach		1140	2.0	1213	2.0	0.625	12.8	LOS B	6.6	167.6	0.69	0.77	1.11	36.4
West: Sunnyview Rd														
5	L2	95	4.0	101	4.0	0.226	11.5	LOS B	0.8	19.8	0.71	0.71	0.71	30.4
2	T1	45	3.0	48	3.0	0.354	12.5	LOS B	1.5	36.7	0.72	0.78	0.92	32.6
12	R2	130	0.0	138	0.0	0.354	12.3	LOS B	1.5	36.7	0.72	0.78	0.92	32.0
Approach		270	1.9	287	1.9	0.354	12.1	LOS B	1.5	36.7	0.72	0.76	0.85	31.4
All Vehicles		2650	2.1	2819	2.1	0.625	11.1	LOS B	6.6	167.6	0.60	0.59	0.82	36.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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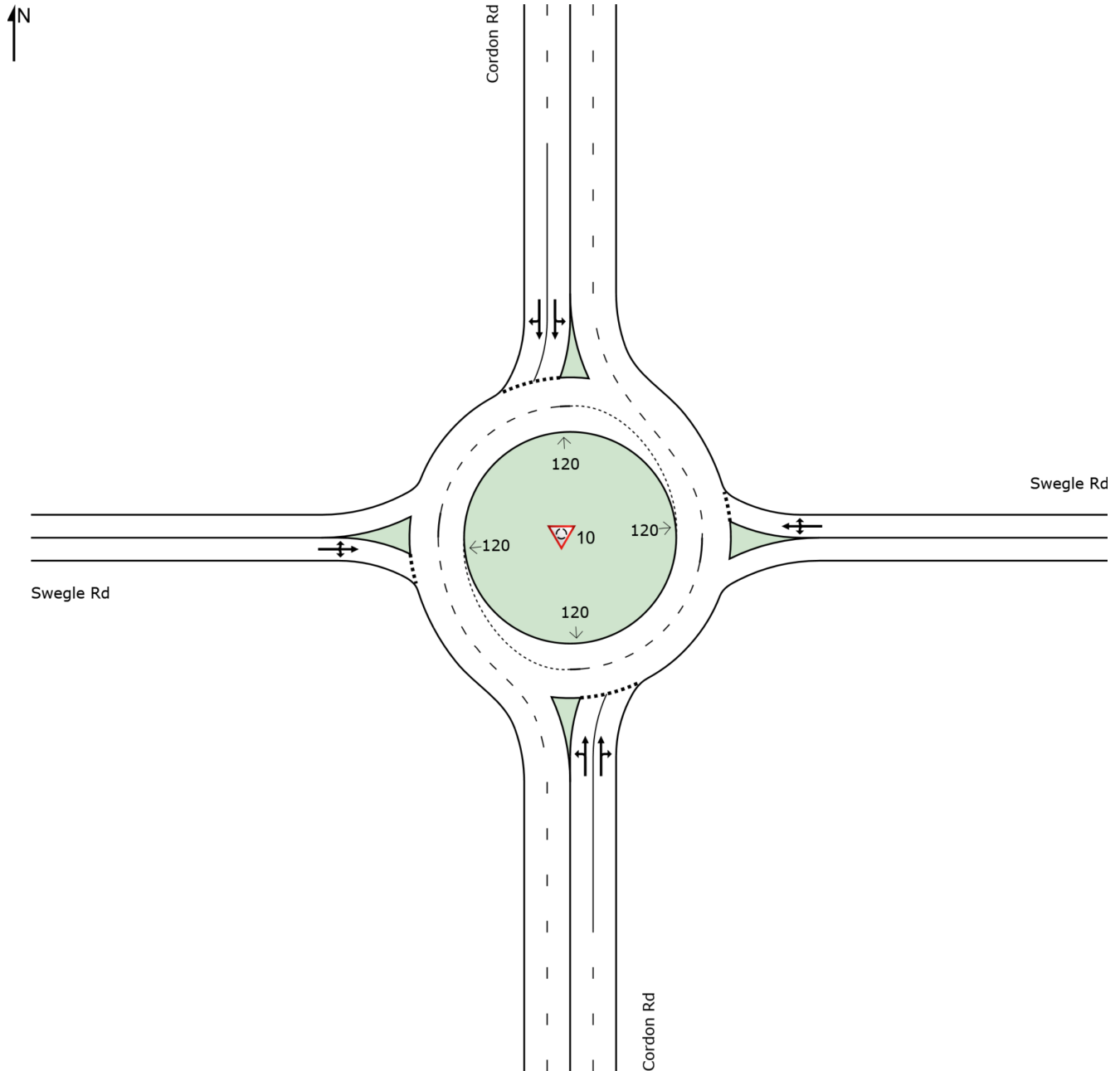
Project: S:\Projects\2022\22001-000 (Marion Co Cordon Road Corridor Plan)\02\_Work Tasks\6.0 - Transportation Alternatives (TM#6)\04\_Analysis \Operations Analysis\\_Alternative 2\_ - Roundabouts\Cordon-Kuebler Corridor Plan - Alternative 2 - Roundabout.sip9

# SITE LAYOUT

Site: 10 [Cordon Rd/Swegle Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 Site: 10 [Cordon Rd/Swegle Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	110	2.0	118	2.0	0.507	8.5	LOS A	3.2	82.7	0.30	0.15	0.30	35.1
8	T1	1000	5.0	1075	5.0	0.507	8.4	LOS A	3.2	82.7	0.29	0.15	0.29	39.2
18	R2	45	0.0	48	0.0	0.507	8.2	LOS A	3.1	80.6	0.29	0.14	0.29	39.0
Approach		1155	4.5	1242	4.5	0.507	8.4	LOS A	3.2	82.7	0.29	0.15	0.29	38.8
East: Swegle Rd														
1	L2	35	0.0	38	0.0	0.103	9.1	LOS A	0.3	8.5	0.69	0.69	0.69	36.9
6	T1	5	0.0	5	0.0	0.103	9.1	LOS A	0.3	8.5	0.69	0.69	0.69	32.8
16	R2	5	0.0	5	0.0	0.103	9.1	LOS A	0.3	8.5	0.69	0.69	0.69	35.9
Approach		45	0.0	48	0.0	0.103	9.1	LOS A	0.3	8.5	0.69	0.69	0.69	36.3
North: Cordon Rd														
7	L2	10	0.0	11	0.0	0.573	10.4	LOS B	3.6	93.9	0.48	0.33	0.48	38.7
4	T1	1095	7.0	1177	7.0	0.573	10.4	LOS B	3.6	93.9	0.47	0.32	0.47	38.0
14	R2	80	3.0	86	3.0	0.573	10.0	LOS B	3.5	92.8	0.46	0.31	0.46	33.1
Approach		1185	6.7	1274	6.7	0.573	10.4	LOS B	3.6	93.9	0.47	0.32	0.47	37.6
West: Swegle Rd														
5	L2	50	0.0	54	0.0	0.431	15.8	LOS C	1.8	46.8	0.78	0.88	1.13	30.5
2	T1	10	0.0	11	0.0	0.431	15.8	LOS C	1.8	46.8	0.78	0.88	1.13	30.5
12	R2	120	6.0	129	6.0	0.431	16.3	LOS C	1.8	46.8	0.78	0.88	1.13	29.3
Approach		180	4.0	194	4.0	0.431	16.1	LOS C	1.8	46.8	0.78	0.88	1.13	29.7
All Vehicles		2565	5.4	2758	5.4	0.573	9.9	LOS A	3.6	93.9	0.42	0.29	0.44	37.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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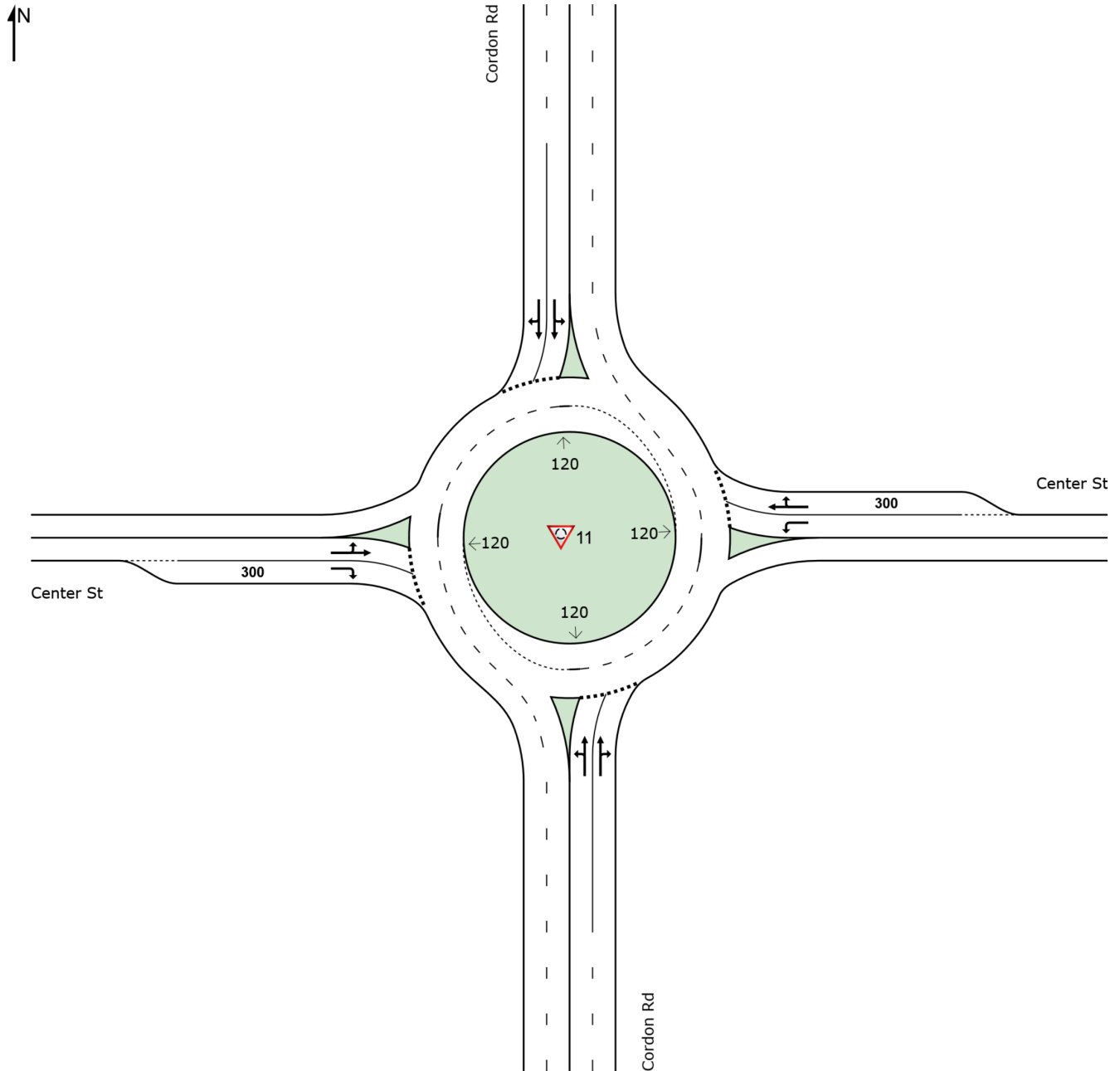


# SITE LAYOUT

Site: 11 [Cordon Rd/Center St (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

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\Operations Analysis\\_Alternative 2\_ - Roundabouts\Cordon-Kuebler Corridor Plan - Alternative 2 - Roundabout.sip9

# MOVEMENT SUMMARY

Site: 11 [Cordon Rd/Center St (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	150	3.0	163	3.0	0.539	9.3	LOS A	5.1	133.0	0.68	0.45	0.68	35.1
8	T1	1055	5.0	1147	5.0	0.539	8.7	LOS A	5.5	143.9	0.70	0.46	0.70	37.0
18	R2	55	4.0	60	4.0	0.539	9.0	LOS A	5.5	143.9	0.72	0.46	0.72	34.6
Approach		1260	4.7	1370	4.7	0.539	8.8	LOS A	5.5	143.9	0.70	0.46	0.70	36.6
East: Center St														
1	L2	90	4.0	98	4.0	0.286	16.1	LOS C	1.0	25.4	0.79	0.83	0.93	29.8
6	T1	85	3.0	92	3.0	0.345	15.4	LOS C	1.3	32.7	0.78	0.84	1.01	32.4
16	R2	40	10.0	43	10.0	0.345	16.0	LOS C	1.3	32.7	0.78	0.84	1.01	32.1
Approach		215	4.7	234	4.7	0.345	15.8	LOS C	1.3	32.7	0.79	0.83	0.98	31.2
North: Cordon Rd														
7	L2	45	0.0	49	0.0	0.677	14.3	LOS B	10.3	271.1	0.97	0.99	1.42	34.9
4	T1	1075	7.0	1168	7.0	0.677	14.1	LOS B	10.3	271.1	0.95	0.98	1.41	34.0
14	R2	130	3.0	141	3.0	0.677	14.1	LOS B	10.1	265.2	0.94	0.97	1.40	33.5
Approach		1250	6.3	1359	6.3	0.677	14.2	LOS B	10.3	271.1	0.95	0.98	1.41	34.0
West: Center St														
5	L2	70	2.0	76	2.0	0.373	17.5	LOS C	1.4	36.6	0.81	0.87	1.07	31.5
2	T1	55	2.0	60	2.0	0.373	17.5	LOS C	1.4	36.6	0.81	0.87	1.07	30.4
12	R2	165	6.0	179	6.0	0.440	17.8	LOS C	1.8	46.7	0.80	0.89	1.18	30.0
Approach		290	4.3	315	4.3	0.440	17.7	LOS C	1.8	46.7	0.80	0.88	1.13	30.4
All Vehicles		3015	5.3	3277	5.3	0.677	12.4	LOS B	10.3	271.1	0.82	0.74	1.06	34.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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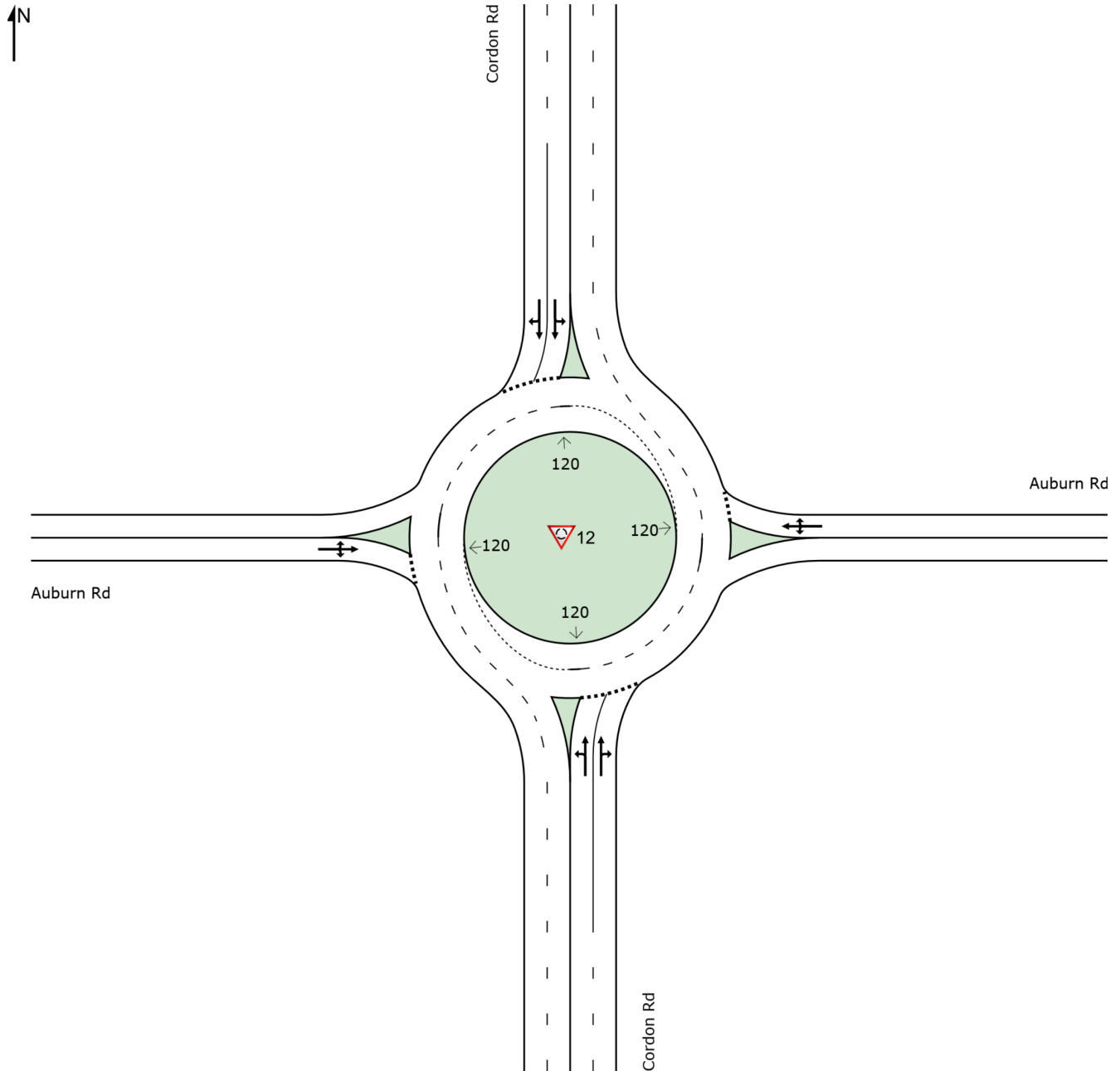
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# SITE LAYOUT

 Site: 12 [Cordon Rd/Auburn Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 Site: 12 [Cordon Rd/Auburn Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	65	0.0	71	0.0	0.568	9.4	LOS A	4.1	106.0	0.26	0.11	0.26	34.9
8	T1	1225	5.0	1332	5.0	0.568	9.4	LOS A	4.1	106.0	0.25	0.10	0.25	38.7
18	R2	20	20.0	22	20.0	0.568	9.7	LOS A	3.9	102.3	0.24	0.10	0.24	33.4
Approach		1310	5.0	1424	5.0	0.568	9.4	LOS A	4.1	106.0	0.25	0.10	0.25	38.4
East: Auburn Rd														
1	L2	20	0.0	22	0.0	0.109	10.7	LOS B	0.3	8.7	0.74	0.74	0.74	32.3
6	T1	5	0.0	5	0.0	0.109	10.7	LOS B	0.3	8.7	0.74	0.74	0.74	29.1
16	R2	15	0.0	16	0.0	0.109	10.7	LOS B	0.3	8.7	0.74	0.74	0.74	31.6
Approach		40	0.0	43	0.0	0.109	10.7	LOS B	0.3	8.7	0.74	0.74	0.74	31.6
North: Cordon Rd														
7	L2	15	0.0	16	0.0	0.616	10.9	LOS B	4.4	115.2	0.41	0.23	0.41	34.3
4	T1	1270	7.0	1380	7.0	0.616	10.9	LOS B	4.4	115.2	0.40	0.22	0.40	37.7
14	R2	50	0.0	54	0.0	0.616	10.5	LOS B	4.3	113.5	0.39	0.22	0.39	32.9
Approach		1335	6.7	1451	6.7	0.616	10.9	LOS B	4.4	115.2	0.40	0.22	0.40	37.4
West: Auburn Rd														
5	L2	20	7.0	22	7.0	0.270	14.8	LOS B	0.9	23.1	0.78	0.81	0.88	30.4
2	T1	5	0.0	5	0.0	0.270	14.2	LOS B	0.9	23.1	0.78	0.81	0.88	28.0
12	R2	65	9.0	71	9.0	0.270	15.0	LOS B	0.9	23.1	0.78	0.81	0.88	29.6
Approach		90	8.1	98	8.1	0.270	14.9	LOS B	0.9	23.1	0.78	0.81	0.88	29.7
All Vehicles		2775	5.8	3016	5.8	0.616	10.3	LOS B	4.4	115.2	0.34	0.19	0.35	37.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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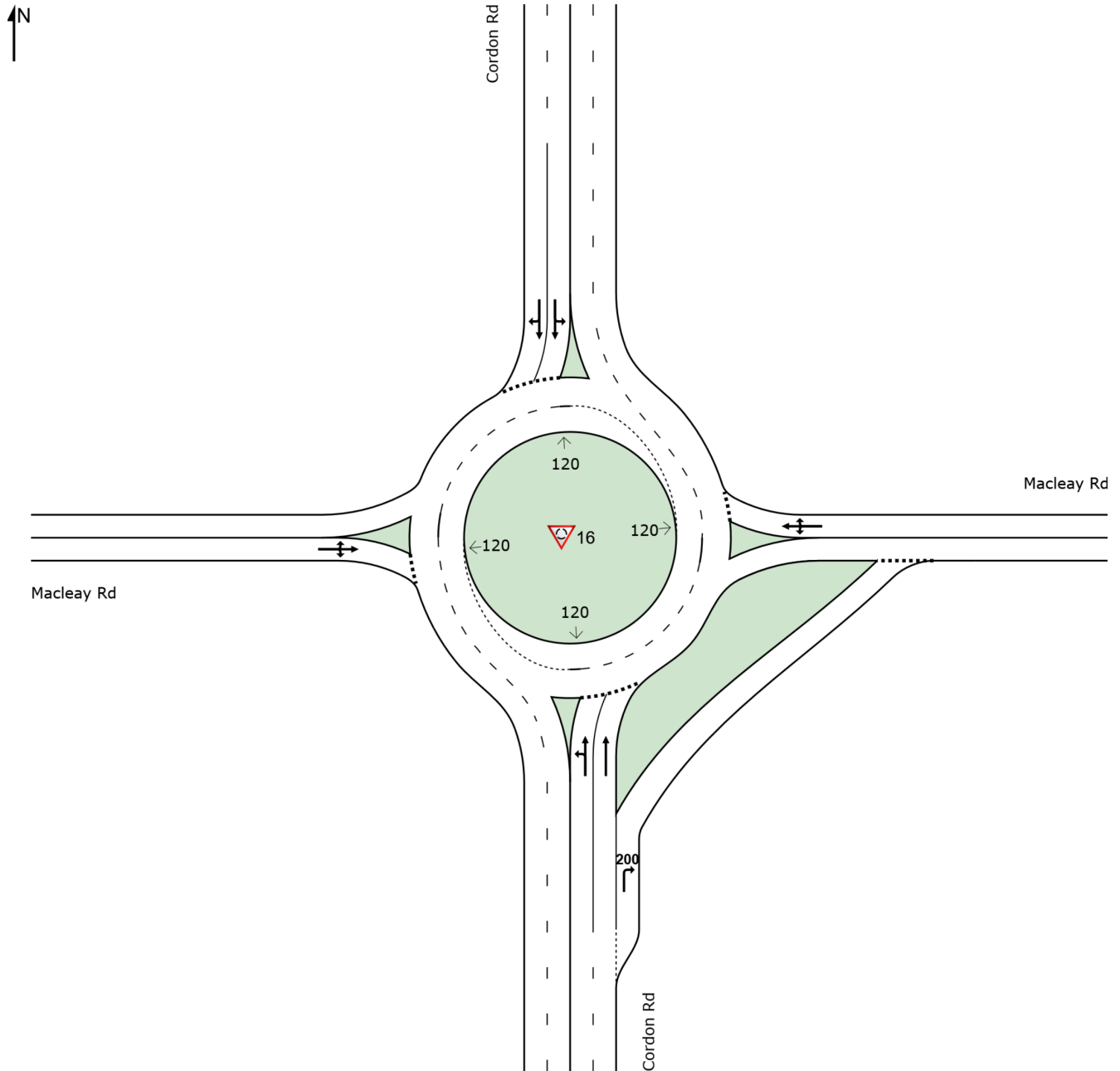
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# SITE LAYOUT

Site: 16 [Cordon Rd/Macleay Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 Site: 16 [Cordon Rd/Macleay Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	60	0.0	65	0.0	0.616	12.8	LOS B	6.2	160.1	0.67	0.77	1.07	31.7
8	T1	1030	5.0	1120	5.0	0.616	12.6	LOS B	6.2	160.1	0.66	0.75	1.04	33.5
18	R2	90	11.0	98	11.0	0.088	4.0	LOS A	0.3	8.2	0.26	0.14	0.26	36.1
Approach		1180	5.2	1283	5.2	0.616	12.0	LOS B	6.2	160.1	0.63	0.70	0.98	33.6
East: Macleay Rd														
1	L2	100	0.0	109	0.0	0.627	25.5	LOS D	3.2	82.9	0.86	1.04	1.58	27.8
6	T1	60	8.0	65	8.0	0.627	26.2	LOS D	3.2	82.9	0.86	1.04	1.58	26.1
16	R2	75	2.0	82	2.0	0.627	25.7	LOS D	3.2	82.9	0.86	1.04	1.58	26.9
Approach		235	2.7	255	2.7	0.627	25.7	LOS D	3.2	82.9	0.86	1.04	1.58	27.1
North: Cordon Rd														
7	L2	80	11.0	87	11.0	0.686	14.7	LOS B	9.1	240.3	0.65	0.70	1.05	31.7
4	T1	1185	7.0	1288	7.0	0.686	14.1	LOS B	9.1	240.3	0.64	0.68	1.02	32.5
14	R2	35	7.0	38	7.0	0.686	13.8	LOS B	9.0	237.1	0.63	0.67	0.99	30.2
Approach		1300	7.2	1413	7.2	0.686	14.2	LOS B	9.1	240.3	0.64	0.68	1.02	32.4
West: Macleay Rd														
5	L2	165	10.0	179	10.0	0.851	53.1	LOS F	6.1	161.3	0.93	1.44	2.66	19.4
2	T1	50	6.0	54	6.0	0.851	52.7	LOS F	6.1	161.3	0.93	1.44	2.66	19.6
12	R2	55	0.0	60	0.0	0.851	52.1	LOS F	6.1	161.3	0.93	1.44	2.66	19.5
Approach		270	7.2	293	7.2	0.851	52.8	LOS F	6.1	161.3	0.93	1.44	2.66	19.5
All Vehicles		2985	6.1	3245	6.1	0.851	17.7	LOS C	9.1	240.3	0.68	0.79	1.20	30.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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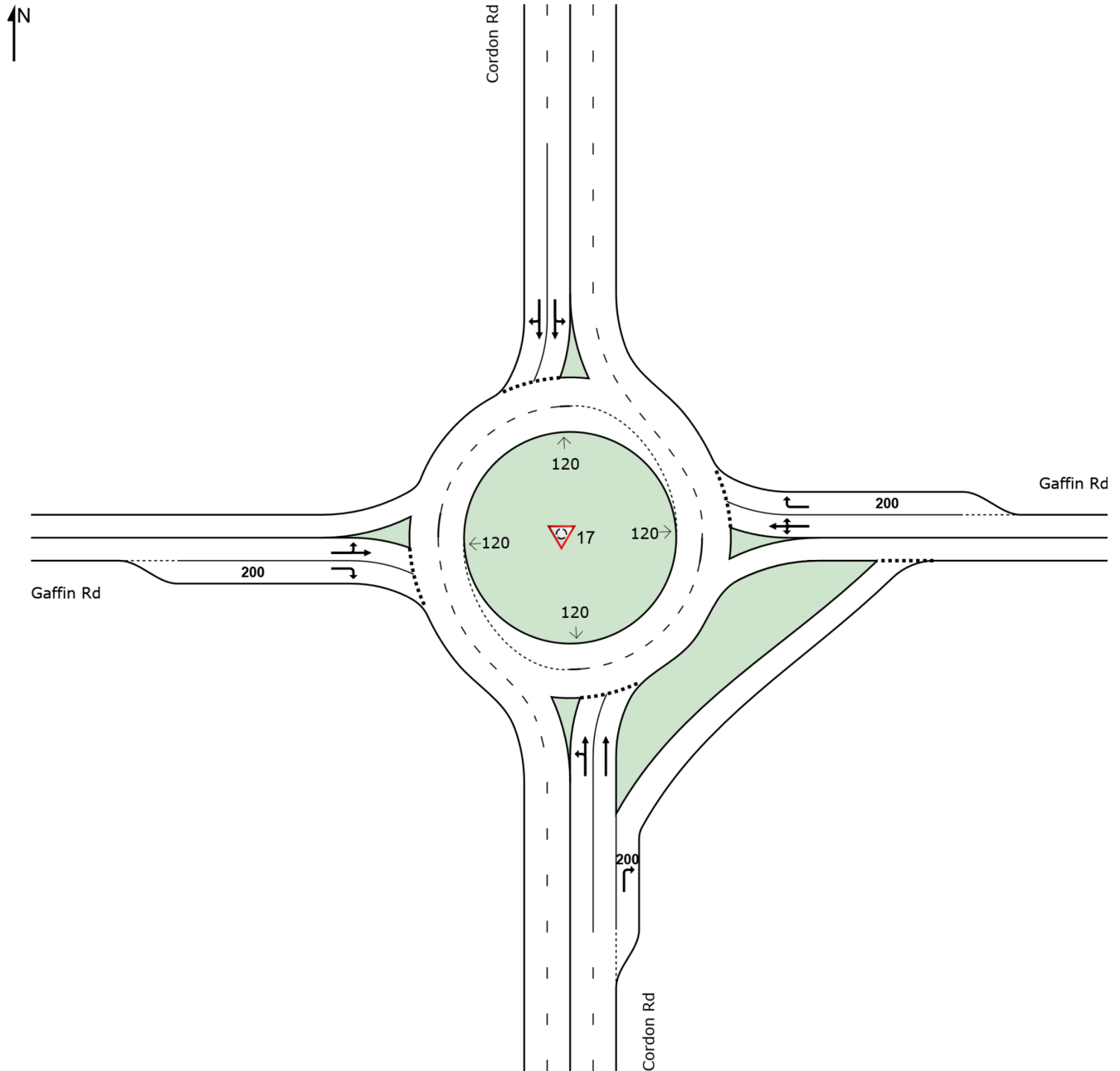
Project: S:\Projects\2022\22001-000 (Marion Co Cordon Road Corridor Plan)\02\_Work Tasks\6.0 - Transportation Alternatives (TM#6)\04\_Analysis  
\Operations Analysis\\_Alternative 2\_ - Roundabouts\Cordon-Kuebler Corridor Plan - Alternative 2 - Roundabout.sip9

# SITE LAYOUT

Site: 17 [Cordon Rd/Gaffin Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

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\Operations Analysis\\_Alternative 2\_ - Roundabouts\Cordon-Kuebler Corridor Plan - Alternative 2 - Roundabout.sip9

# MOVEMENT SUMMARY

Site: 17 [Cordon Rd/Gaffin Rd (Site Folder: AM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	70	8.0	76	8.0	0.561	12.2	LOS B	4.5	117.0	0.65	0.74	0.98	28.4
8	T1	870	5.0	946	5.0	0.561	11.6	LOS B	4.5	116.9	0.64	0.72	0.96	33.9
18	R2	115	0.0	125	0.0	0.117	4.4	LOS A	0.4	11.2	0.39	0.29	0.39	37.5
Approach		1055	4.7	1147	4.7	0.561	10.9	LOS B	4.5	117.0	0.62	0.68	0.90	33.8
East: Gaffin Rd														
1	L2	75	0.0	82	0.0	0.373	14.2	LOS B	1.6	39.3	0.75	0.81	0.99	32.1
6	T1	25	0.0	27	0.0	0.373	14.2	LOS B	1.6	39.3	0.75	0.81	0.99	24.9
16	R2	235	3.0	255	3.0	0.373	13.3	LOS B	1.6	39.3	0.73	0.79	0.97	32.0
Approach		335	2.1	364	2.1	0.373	13.6	LOS B	1.6	39.4	0.74	0.80	0.97	31.3
North: Cordon Rd														
7	L2	235	2.0	255	2.0	0.651	12.5	LOS B	6.4	164.8	0.59	0.49	0.70	33.1
4	T1	995	4.0	1082	4.0	0.651	12.3	LOS B	6.4	164.8	0.58	0.46	0.66	33.5
14	R2	110	3.0	120	3.0	0.651	12.0	LOS B	5.8	148.3	0.57	0.44	0.64	26.9
Approach		1340	3.6	1457	3.6	0.651	12.3	LOS B	6.4	164.8	0.58	0.46	0.67	32.7
West: Gaffin Rd														
5	L2	75	0.0	82	0.0	0.419	19.6	LOS C	1.7	42.5	0.83	0.96	1.17	24.6
2	T1	60	0.0	65	0.0	0.419	19.6	LOS C	1.7	42.5	0.83	0.96	1.17	24.5
12	R2	175	2.0	190	2.0	0.475	19.3	LOS C	2.0	51.8	0.82	0.99	1.25	24.4
Approach		310	1.1	337	1.1	0.475	19.4	LOS C	2.0	51.8	0.83	0.98	1.21	24.5
All Vehicles		3040	3.5	3304	3.5	0.651	12.7	LOS B	6.4	164.8	0.63	0.63	0.84	31.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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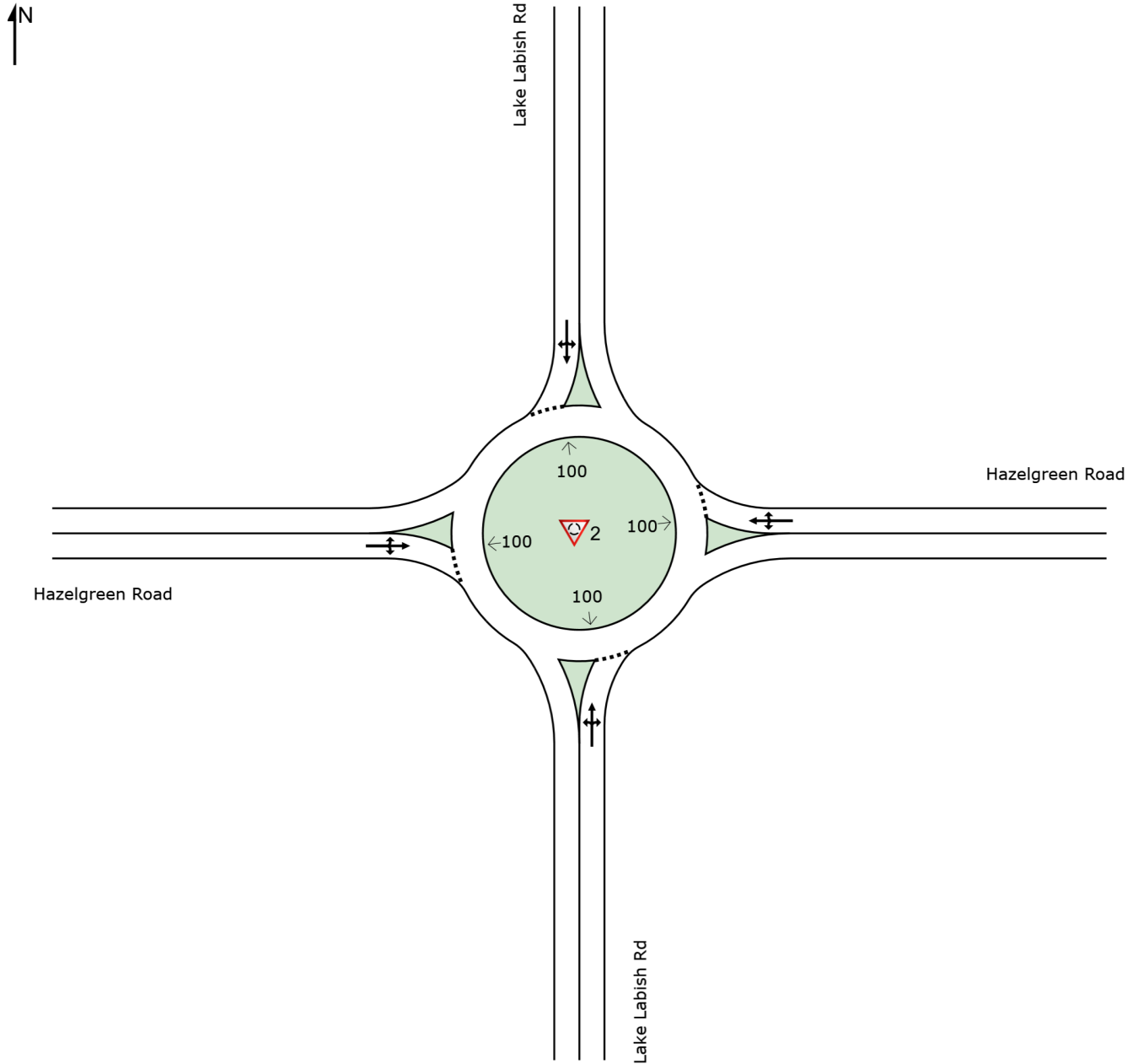


# SITE LAYOUT

## Site: 2 [Hazelgreen Rd/Lake Labish Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 Site: 2 [Hazelgreen Rd/Lake Labish Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Lake Labish Rd														
3	L2	115	0.0	120	0.0	0.173	6.4	LOS A	0.7	18.5	0.58	0.54	0.58	28.0
8	T1	10	0.0	10	0.0	0.173	6.4	LOS A	0.7	18.5	0.58	0.54	0.58	23.1
18	R2	5	0.0	5	0.0	0.173	6.4	LOS A	0.7	18.5	0.58	0.54	0.58	27.5
Approach		130	0.0	135	0.0	0.173	6.4	LOS A	0.7	18.5	0.58	0.54	0.58	27.6
East: Hazelgreen Road														
1	L2	5	0.0	5	0.0	0.367	6.9	LOS A	2.1	53.1	0.45	0.31	0.45	30.6
6	T1	380	1.0	396	1.0	0.367	6.9	LOS A	2.1	53.1	0.45	0.31	0.45	38.8
16	R2	10	0.0	10	0.0	0.367	6.9	LOS A	2.1	53.1	0.45	0.31	0.45	28.9
Approach		395	1.0	411	1.0	0.367	6.9	LOS A	2.1	53.1	0.45	0.31	0.45	38.4
North: Lake Labish Rd														
7	L2	10	0.0	10	0.0	0.026	4.7	LOS A	0.1	2.5	0.52	0.39	0.52	29.4
4	T1	5	0.0	5	0.0	0.026	4.7	LOS A	0.1	2.5	0.52	0.39	0.52	24.0
14	R2	5	0.0	5	0.0	0.026	4.7	LOS A	0.1	2.5	0.52	0.39	0.52	28.8
Approach		20	0.0	21	0.0	0.026	4.7	LOS A	0.1	2.5	0.52	0.39	0.52	27.7
West: Hazelgreen Road														
5	L2	60	0.0	63	0.0	0.509	8.0	LOS A	4.1	104.1	0.17	0.05	0.17	30.0
2	T1	455	2.0	474	2.0	0.509	8.0	LOS A	4.1	104.1	0.17	0.05	0.17	37.7
12	R2	135	0.0	141	0.0	0.509	8.0	LOS A	4.1	104.1	0.17	0.05	0.17	28.4
Approach		650	1.4	677	1.4	0.509	8.0	LOS A	4.1	104.1	0.17	0.05	0.17	34.5
All Vehicles		1195	1.1	1245	1.1	0.509	7.4	LOS A	4.1	104.1	0.31	0.20	0.31	34.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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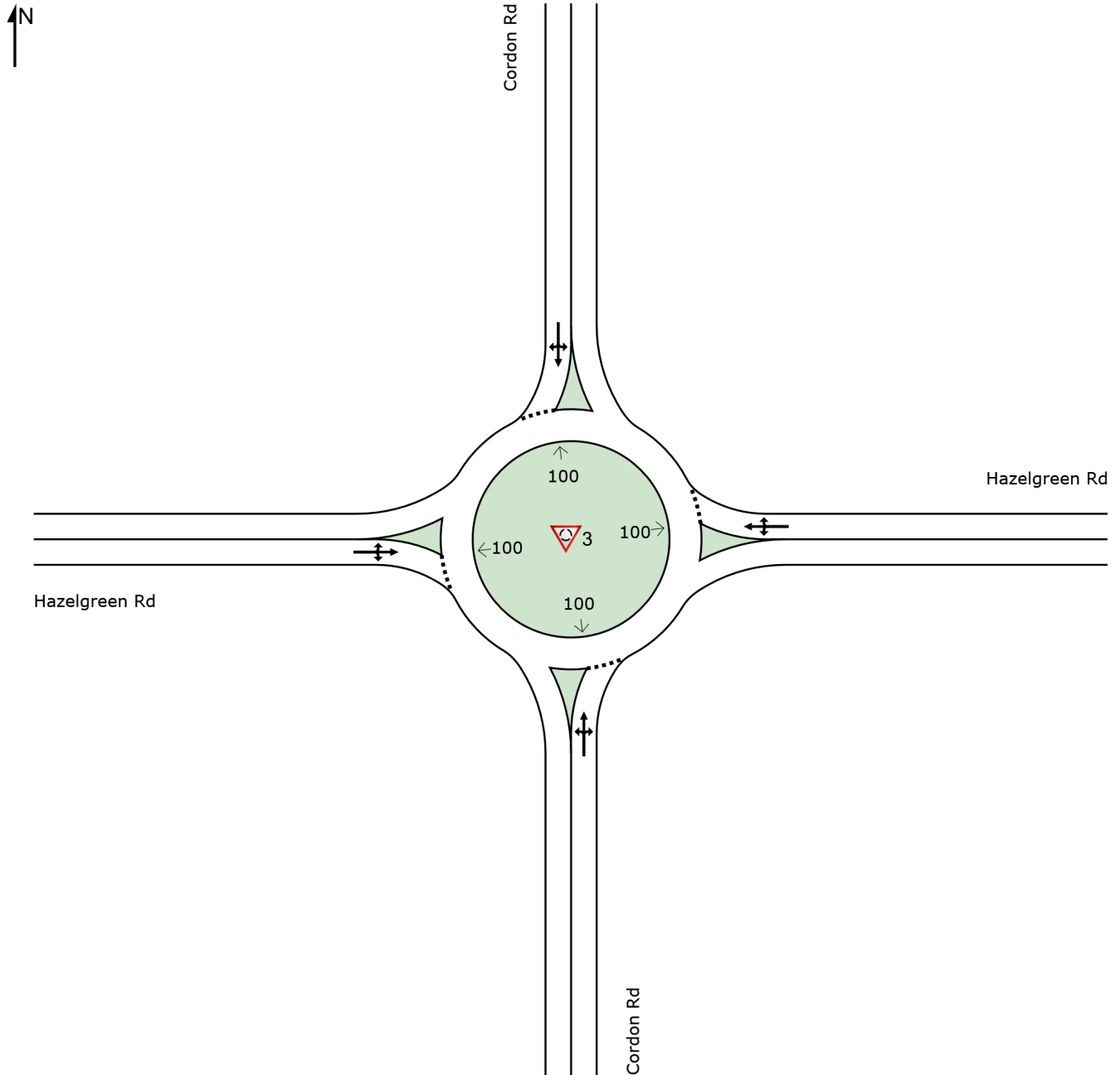
Project: S:\Projects\2022\22001-000 (Marion Co Cordon Road Corridor Plan)\02\_Work Tasks\6.0 - Transportation Alternatives (TM#6)\04\_Analysis \Operations Analysis\\_Alternative 2\_ - Roundabouts\Cordon-Kuebler Corridor Plan - Alternative 2 - Roundabout.sip9

# SITE LAYOUT

Site: 3 [Cordon Rd/Hazalgreen Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 Site: 3 [Cordon Rd/Hazelgreen Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	175	0.0	184	0.0	0.535	11.2	LOS B	4.4	110.7	0.71	0.76	0.98	35.9
8	T1	115	0.0	121	0.0	0.535	11.2	LOS B	4.4	110.7	0.71	0.76	0.98	36.7
18	R2	165	0.0	174	0.0	0.535	11.2	LOS B	4.4	110.7	0.71	0.76	0.98	35.7
Approach		455	0.0	479	0.0	0.535	11.2	LOS B	4.4	110.7	0.71	0.76	0.98	36.0
East: Hazelgreen Rd														
1	L2	145	0.0	153	0.0	0.410	8.3	LOS A	2.1	56.1	0.56	0.47	0.56	38.1
6	T1	205	12.0	216	12.0	0.410	8.7	LOS A	2.1	56.1	0.56	0.47	0.56	35.8
16	R2	15	0.0	16	0.0	0.410	8.3	LOS A	2.1	56.1	0.56	0.47	0.56	37.1
Approach		365	6.7	384	6.7	0.410	8.5	LOS A	2.1	56.1	0.56	0.47	0.56	36.7
North: Cordon Rd														
7	L2	15	0.0	16	0.0	0.437	10.5	LOS B	2.6	65.8	0.70	0.75	0.89	38.0
4	T1	275	0.0	289	0.0	0.437	10.5	LOS B	2.6	65.8	0.70	0.75	0.89	38.1
14	R2	25	10.0	26	10.0	0.437	11.0	LOS B	2.6	65.8	0.70	0.75	0.89	35.0
Approach		315	0.8	332	0.8	0.437	10.6	LOS B	2.6	65.8	0.70	0.75	0.89	37.9
West: Hazelgreen Rd														
5	L2	10	0.0	11	0.0	0.654	15.1	LOS C	7.3	184.4	0.81	0.99	1.38	34.7
2	T1	370	2.0	389	2.0	0.654	15.1	LOS C	7.3	184.4	0.81	0.99	1.38	34.6
12	R2	150	0.0	158	0.0	0.654	15.1	LOS C	7.3	184.4	0.81	0.99	1.38	33.9
Approach		530	1.4	558	1.4	0.654	15.1	LOS C	7.3	184.4	0.81	0.99	1.38	34.4
All Vehicles		1665	2.1	1753	2.1	0.654	11.8	LOS B	7.3	184.4	0.71	0.77	1.00	36.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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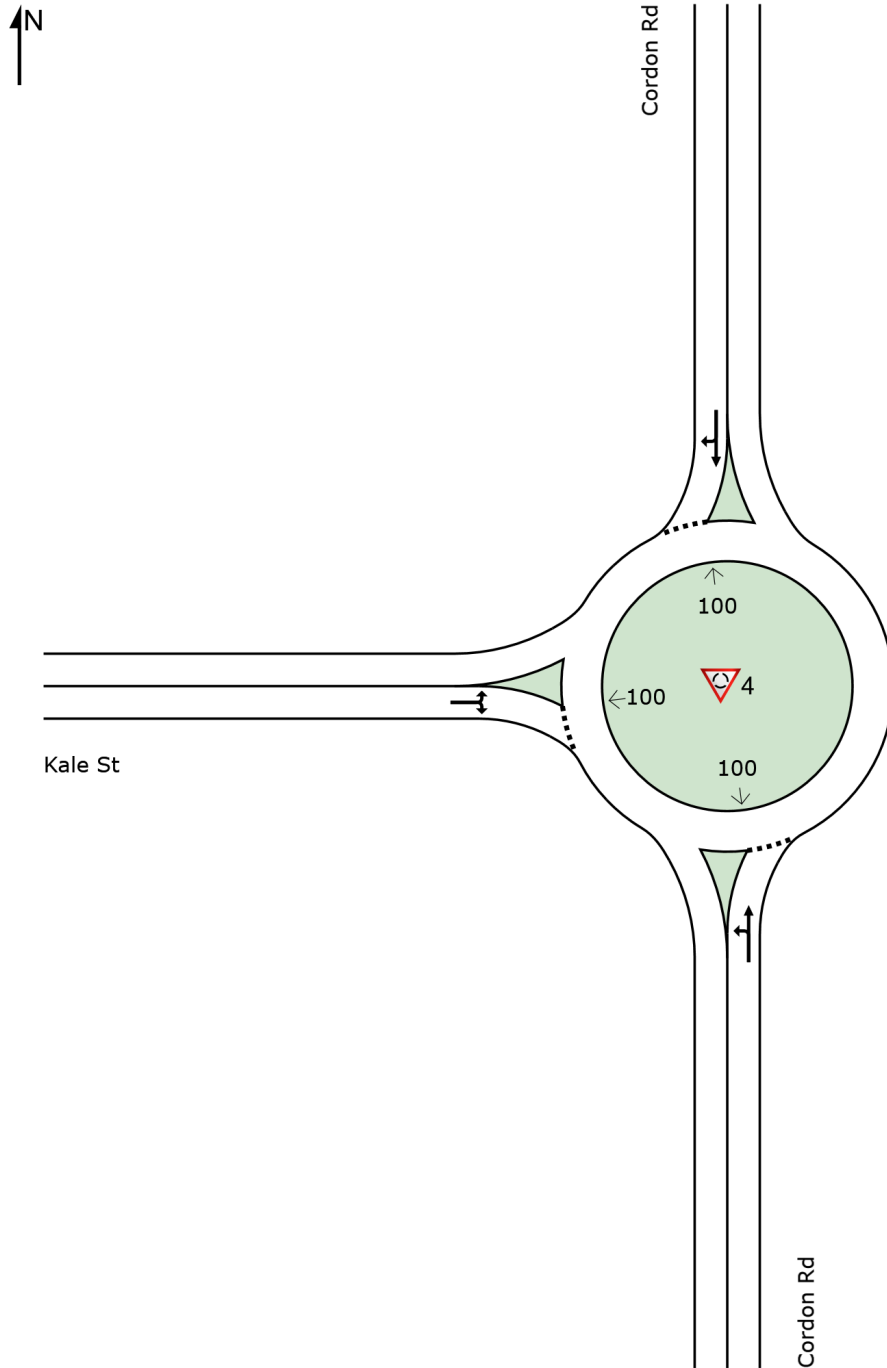
Project: S:\Projects\2022\22001-000 (Marion Co Cordon Road Corridor Plan)\02\_Work Tasks\6.0 - Transportation Alternatives (TM#6)\04\_Analysis \Operations Analysis\\_Alternative 2\_ - Roundabouts\Cordon-Kuebler Corridor Plan - Alternative 2 - Roundabout.sip9

# SITE LAYOUT

## Site: 4 [Cordon Rd/Kale St (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

**Site: 4 [Cordon Rd/Kale St (Site Folder: PM Peak)]**

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	145	0.0	161	0.0	0.472	7.5	LOS A	3.6	89.6	0.25	0.10	0.25	34.9
8	T1	415	0.0	461	0.0	0.472	7.5	LOS A	3.6	89.6	0.25	0.10	0.25	39.4
Approach		560	0.0	622	0.0	0.472	7.5	LOS A	3.6	89.6	0.25	0.10	0.25	38.1
North: Cordon Rd														
4	T1	555	0.0	617	0.0	0.570	9.9	LOS A	4.5	112.8	0.55	0.37	0.55	38.7
14	R2	45	0.0	50	0.0	0.570	9.9	LOS A	4.5	112.8	0.55	0.37	0.55	33.0
Approach		600	0.0	667	0.0	0.570	9.9	LOS A	4.5	112.8	0.55	0.37	0.55	38.2
West: Kale St														
5	L2	40	0.0	44	0.0	0.257	7.9	LOS A	1.1	28.3	0.63	0.63	0.63	34.0
12	R2	130	0.0	144	0.0	0.257	7.9	LOS A	1.1	28.3	0.63	0.63	0.63	33.3
Approach		170	0.0	189	0.0	0.257	7.9	LOS A	1.1	28.3	0.63	0.63	0.63	33.4
All Vehicles		1330	0.0	1478	0.0	0.570	8.6	LOS A	4.5	112.8	0.44	0.29	0.44	37.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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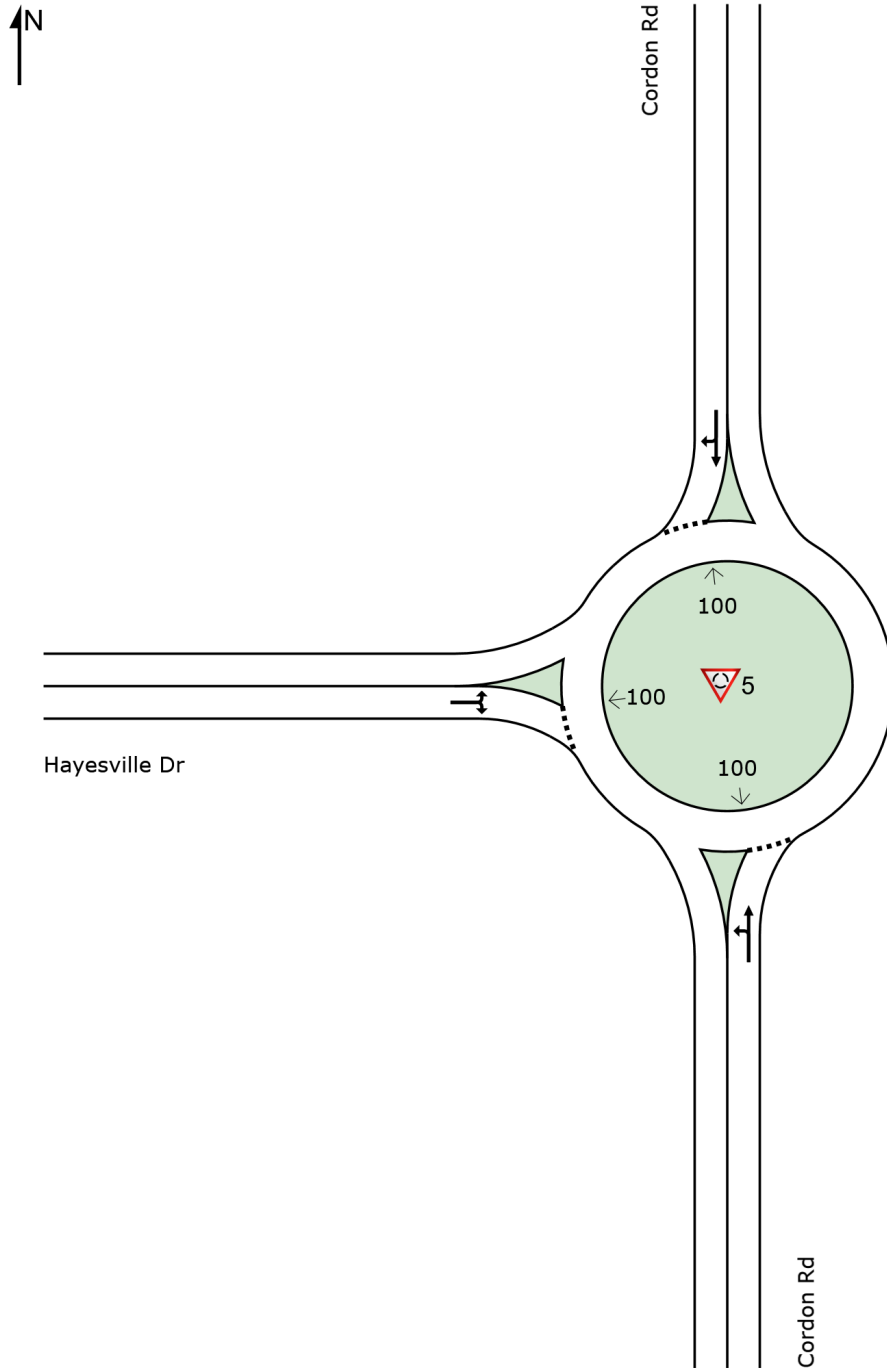
# SITE LAYOUT

 Site: 5 [Cordon Rd/Hayesville Dr (Site Folder: PM Peak)]

---

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

Site: 5 [Cordon Rd/Hayesville Dr (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	200	0.0	222	0.0	0.631	10.3	LOS B	6.9	171.6	0.24	0.07	0.24	33.5
8	T1	565	0.0	628	0.0	0.631	10.3	LOS B	6.9	171.6	0.24	0.07	0.24	37.6
Approach		765	0.0	850	0.0	0.631	10.3	LOS B	6.9	171.6	0.24	0.07	0.24	36.5
North: Cordon Rd														
4	T1	675	0.0	750	0.0	0.713	14.5	LOS B	12.3	306.4	0.78	0.75	1.15	35.9
14	R2	30	0.0	33	0.0	0.713	14.5	LOS B	12.3	306.4	0.78	0.75	1.15	30.9
Approach		705	0.0	783	0.0	0.713	14.5	LOS B	12.3	306.4	0.78	0.75	1.15	35.7
West: Hayesville Dr														
5	L2	20	0.0	22	0.0	0.286	9.3	LOS A	1.2	30.7	0.68	0.68	0.68	33.6
12	R2	145	0.0	161	0.0	0.286	9.3	LOS A	1.2	30.7	0.68	0.68	0.68	32.9
Approach		165	0.0	183	0.0	0.286	9.3	LOS A	1.2	30.7	0.68	0.68	0.68	33.0
All Vehicles		1635	0.0	1817	0.0	0.713	12.0	LOS B	12.3	306.4	0.52	0.43	0.68	35.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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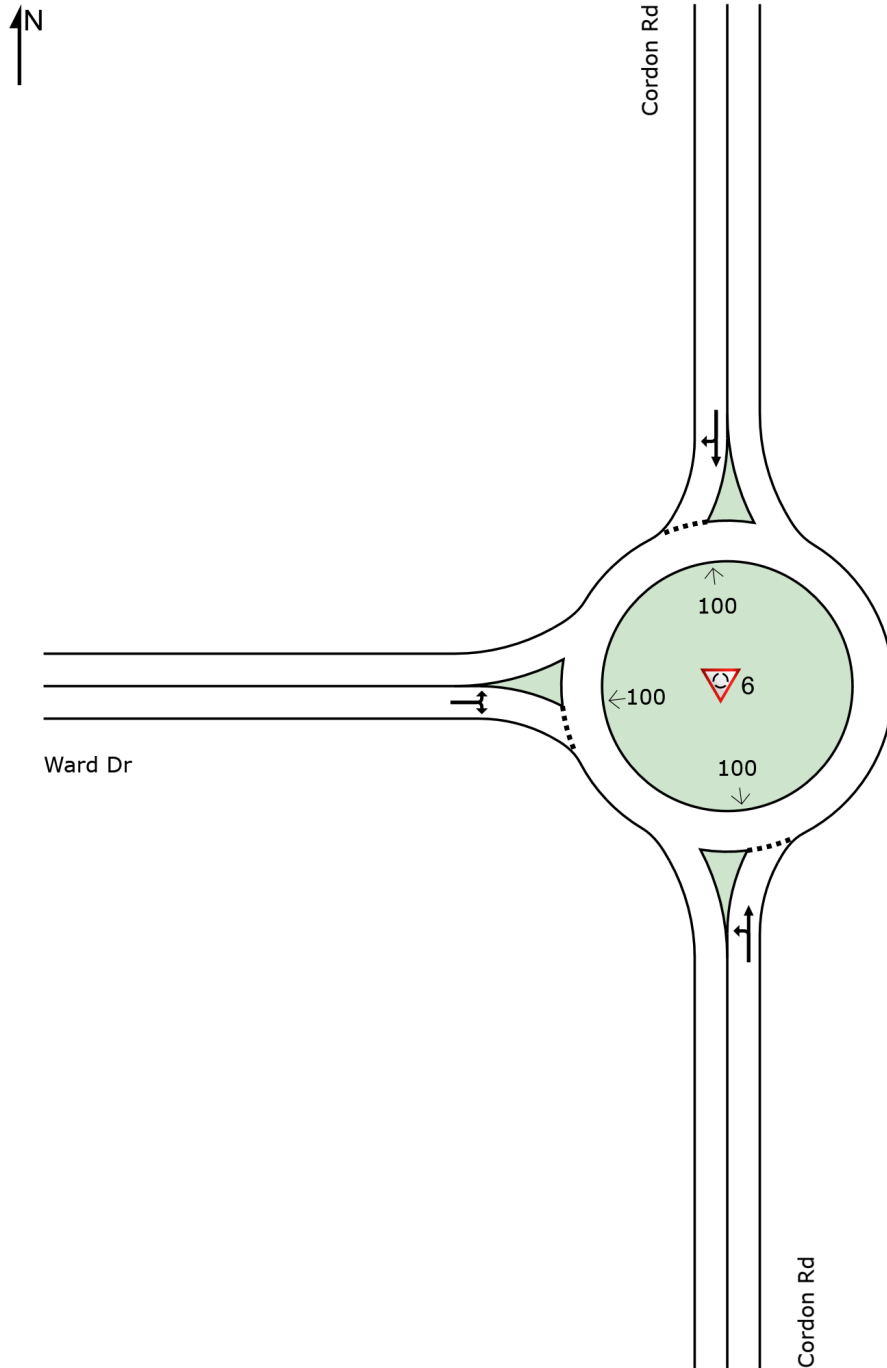
# SITE LAYOUT

 Site: 6 [Cordon Rd/Ward Dr (Site Folder: PM Peak)]

---

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 Site: 6 [Cordon Rd/Ward Dr (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h ]	[ HV % ]	[ Total veh/h ]	[ HV % ]				[ Veh. veh ]	[ Dist ft ]				
South: Cordon Rd														
3	L2	85	4.0	94	4.0	0.740	13.8	LOS B	10.0	256.6	0.31	0.10	0.31	28.5
8	T1	785	3.0	872	3.0	0.740	13.8	LOS B	10.0	256.6	0.31	0.10	0.31	35.7
Approach		870	3.1	967	3.1	0.740	13.8	LOS B	10.0	256.6	0.31	0.10	0.31	34.8
North: Cordon Rd														
4	T1	805	3.0	894	3.0	0.780	16.5	LOS C	9.9	253.8	0.69	0.40	0.69	34.5
14	R2	45	3.0	50	3.0	0.780	16.5	LOS C	9.9	253.8	0.69	0.40	0.69	26.3
Approach		850	3.0	944	3.0	0.780	16.5	LOS C	9.9	253.8	0.69	0.40	0.69	33.9
West: Ward Dr														
5	L2	20	3.0	22	3.0	0.184	9.4	LOS A	0.7	17.8	0.67	0.67	0.67	28.3
12	R2	65	6.0	72	6.0	0.184	9.6	LOS A	0.7	17.8	0.67	0.67	0.67	27.6
Approach		85	5.3	94	5.3	0.184	9.5	LOS A	0.7	17.8	0.67	0.67	0.67	27.7
All Vehicles		1805	3.2	2006	3.2	0.780	14.9	LOS B	10.0	256.6	0.51	0.27	0.51	34.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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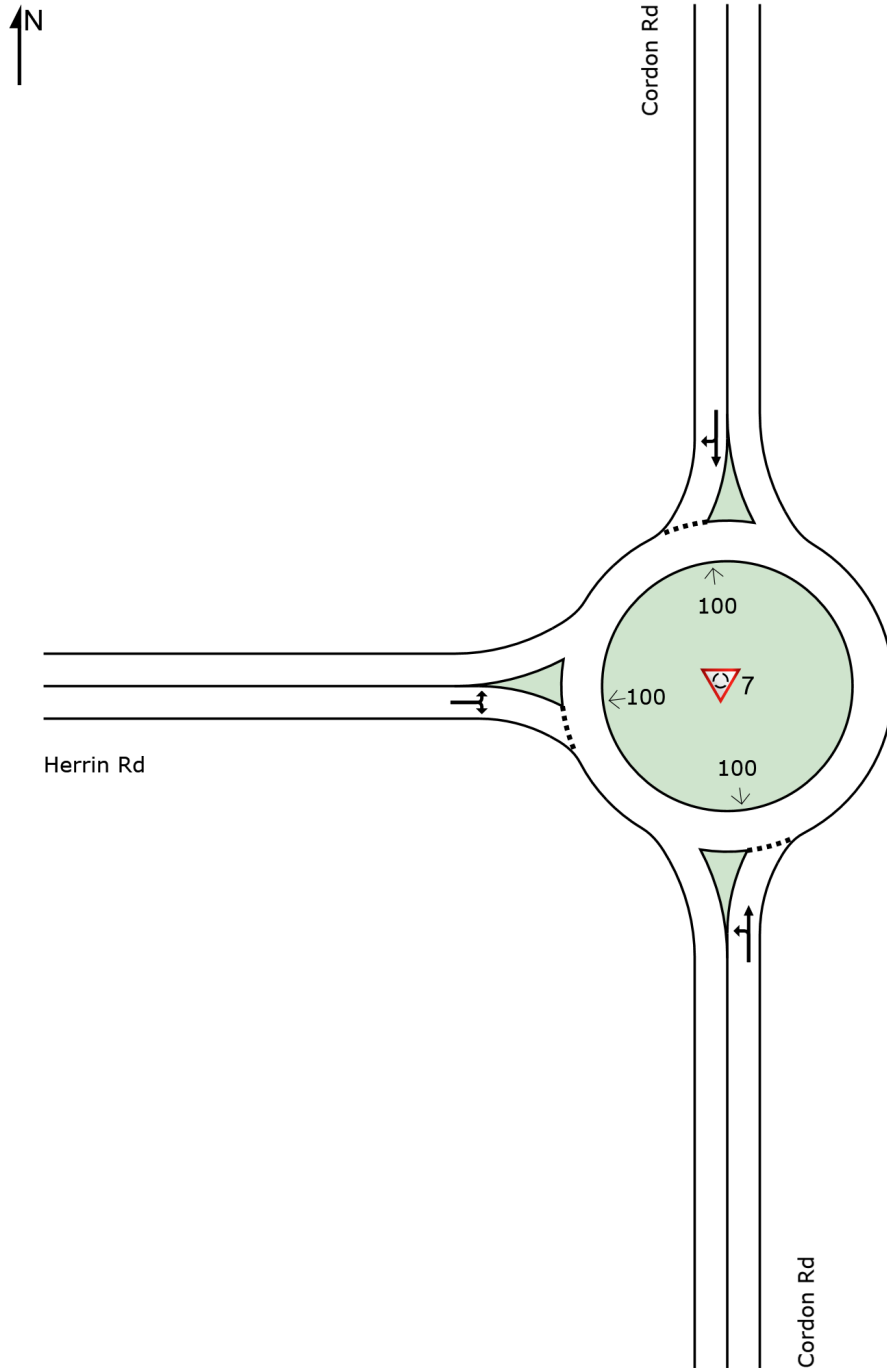
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\Operations Analysis\\_Alternative 2\_ - Roundabouts\Cordon-Kuebler Corridor Plan - Alternative 2 - Roundabout.sip9

# SITE LAYOUT

## Site: 7 [Cordon Rd/Herrin Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

**Site: 7 [Cordon Rd/Herrin Rd (Site Folder: PM Peak)]**

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	70	0.0	73	0.0	0.683	11.8	LOS B	8.0	202.5	0.32	0.12	0.32	29.2
8	T1	790	2.0	823	2.0	0.683	11.9	LOS B	8.0	202.5	0.32	0.12	0.32	37.0
Approach		860	1.8	896	1.8	0.683	11.8	LOS B	8.0	202.5	0.32	0.12	0.32	36.2
North: Cordon Rd														
4	T1	755	2.0	786	2.0	0.684	12.2	LOS B	7.4	187.3	0.49	0.25	0.49	37.0
14	R2	70	0.0	73	0.0	0.684	12.2	LOS B	7.4	187.3	0.49	0.25	0.49	27.6
Approach		825	1.8	859	1.8	0.684	12.2	LOS B	7.4	187.3	0.49	0.25	0.49	36.0
West: Herrin Rd														
5	L2	30	0.0	31	0.0	0.231	8.8	LOS A	1.0	23.8	0.67	0.67	0.67	28.9
12	R2	105	0.0	109	0.0	0.231	8.8	LOS A	1.0	23.8	0.67	0.67	0.67	28.3
Approach		135	0.0	141	0.0	0.231	8.8	LOS A	1.0	23.8	0.67	0.67	0.67	28.4
All Vehicles		1820	1.7	1896	1.7	0.684	11.8	LOS B	8.0	202.5	0.42	0.22	0.42	35.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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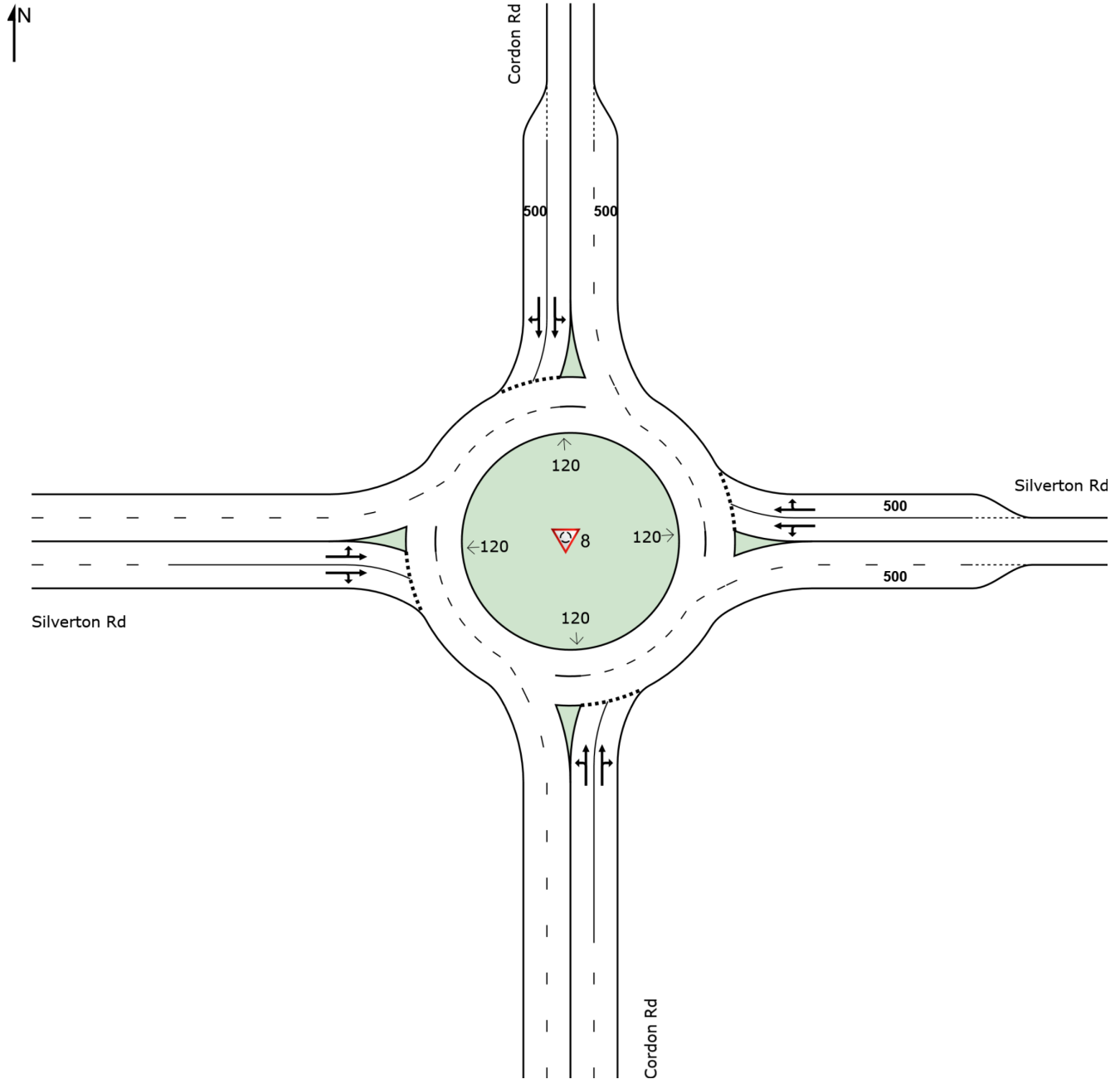
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\Operations Analysis\\_Alternative 2\_ - Roundabouts\Cordon-Kuebler Corridor Plan - Alternative 2 - Roundabout.sip9

# SITE LAYOUT

Site: 8 [Cordon Rd/Silverton Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 Site: 8 [Cordon Rd/Silverton Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	255	1.0	268	1.0	0.842	28.5	LOS D	13.8	346.6	0.95	1.35	2.44	28.0
8	T1	680	1.0	716	1.0	0.842	30.0	LOS D	14.4	363.2	0.95	1.36	2.43	29.6
18	R2	355	1.0	374	1.0	0.842	31.9	LOS D	14.4	363.2	0.95	1.36	2.43	28.4
Approach		1290	1.0	1358	1.0	0.842	30.2	LOS D	14.4	363.2	0.95	1.36	2.43	28.9
East: Silverton Rd														
1	L2	280	3.0	295	3.0	0.722	29.6	LOS D	4.9	125.8	0.86	1.12	1.85	26.5
6	T1	380	2.0	400	2.0	0.722	26.6	LOS D	5.2	131.0	0.85	1.11	1.83	28.0
16	R2	10	0.0	11	0.0	0.722	31.2	LOS D	5.2	131.0	0.85	1.11	1.83	28.7
Approach		670	2.4	705	2.4	0.722	27.9	LOS D	5.2	131.0	0.86	1.11	1.84	27.3
North: Cordon Rd														
7	L2	15	0.0	16	0.0	0.818	34.1	LOS D	8.1	204.6	0.88	1.21	2.31	26.8
4	T1	675	2.0	711	2.0	0.818	33.0	LOS D	8.5	215.3	0.89	1.21	2.31	27.9
14	R2	200	0.0	211	0.0	0.818	31.1	LOS D	8.5	215.3	0.89	1.22	2.31	27.0
Approach		890	1.5	937	1.5	0.818	32.6	LOS D	8.5	215.3	0.89	1.22	2.31	27.7
West: Silverton Rd														
5	L2	150	1.0	158	1.0	0.840	38.1	LOS E	8.5	213.1	0.91	1.32	2.47	25.0
2	T1	395	1.0	416	1.0	0.840	38.8	LOS E	8.9	224.6	0.90	1.32	2.47	24.6
12	R2	325	1.0	342	1.0	0.840	34.8	LOS D	8.9	224.6	0.89	1.32	2.47	25.7
Approach		870	1.0	916	1.0	0.840	37.2	LOS E	8.9	224.6	0.90	1.32	2.47	25.1
All Vehicles		3720	1.4	3916	1.4	0.842	32.0	LOS D	14.4	363.2	0.91	1.27	2.30	27.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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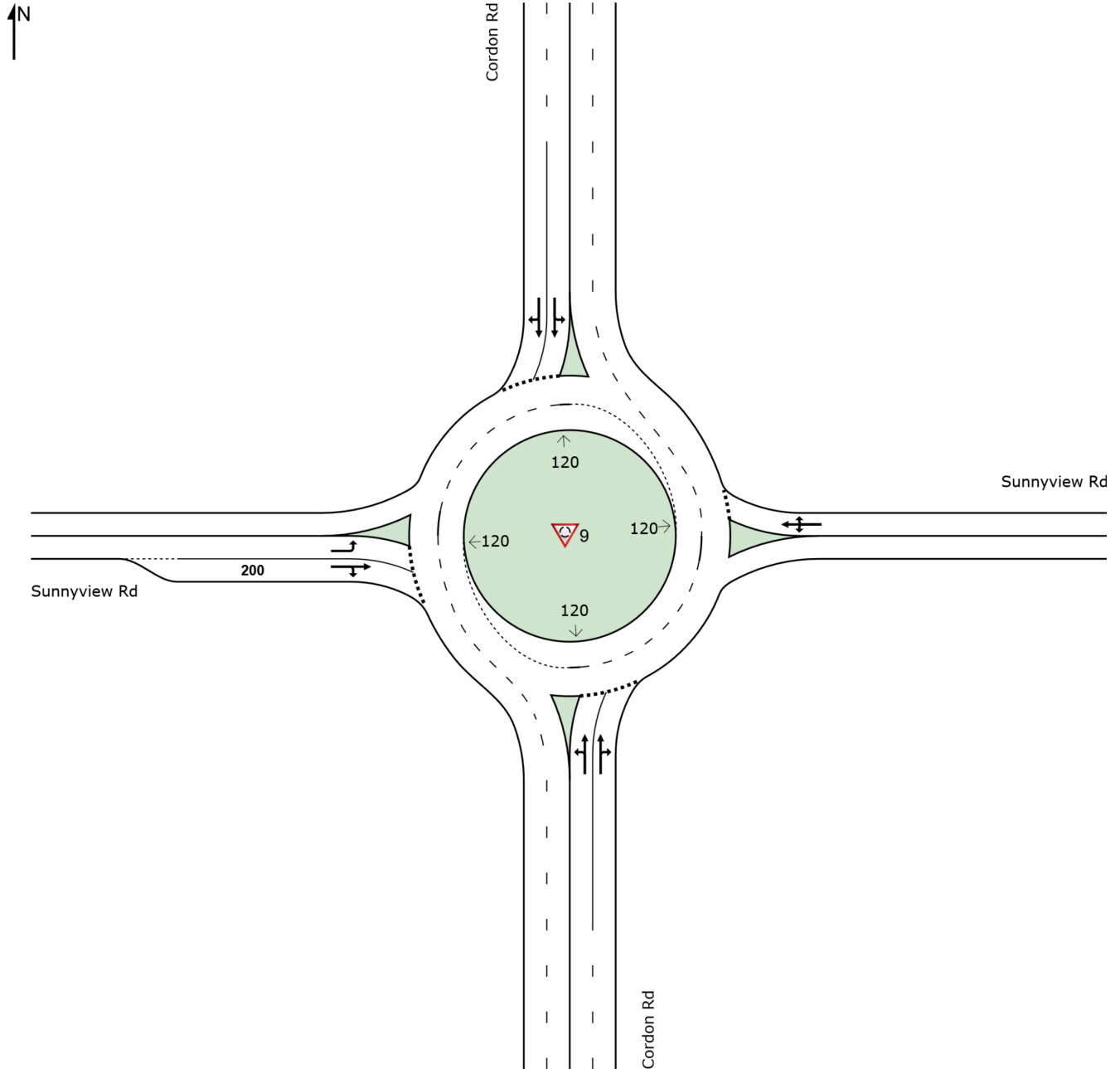
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# SITE LAYOUT

 Site: 9 [Cordon Rd/Sunnyview Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

Site: 9 [Cordon Rd/Sunnyview Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	180	0.0	189	0.0	0.722	16.1	LOS C	11.3	283.6	0.80	0.94	1.45	31.4
8	T1	1105	0.0	1163	0.0	0.722	15.7	LOS C	11.5	288.1	0.79	0.92	1.43	35.4
18	R2	115	2.0	121	2.0	0.722	15.4	LOS C	11.5	288.1	0.78	0.91	1.41	34.6
Approach		1400	0.2	1474	0.2	0.722	15.7	LOS C	11.5	288.1	0.79	0.92	1.43	34.7
East: Sunnyview Rd														
1	L2	70	2.0	74	2.0	0.610	26.2	LOS D	3.0	76.1	0.87	1.01	1.55	29.7
6	T1	90	3.0	95	3.0	0.610	26.3	LOS D	3.0	76.1	0.87	1.01	1.55	27.1
16	R2	60	4.0	63	4.0	0.610	26.4	LOS D	3.0	76.1	0.87	1.01	1.55	28.9
Approach		220	3.0	232	3.0	0.610	26.3	LOS D	3.0	76.1	0.87	1.01	1.55	28.4
North: Cordon Rd														
7	L2	65	0.0	68	0.0	0.705	15.8	LOS C	9.9	249.8	0.78	0.94	1.42	35.3
4	T1	1145	1.0	1205	1.0	0.705	15.4	LOS C	10.1	253.9	0.77	0.92	1.40	35.6
14	R2	110	3.0	116	3.0	0.705	15.0	LOS C	10.1	253.9	0.76	0.90	1.38	31.0
Approach		1320	1.1	1389	1.1	0.705	15.4	LOS C	10.1	253.9	0.77	0.92	1.40	35.2
West: Sunnyview Rd														
5	L2	155	1.0	163	1.0	0.427	18.4	LOS C	1.8	45.0	0.81	0.91	1.16	28.2
2	T1	95	0.0	100	0.0	0.717	29.8	LOS D	4.5	113.9	0.88	1.17	1.85	26.2
12	R2	205	2.0	216	2.0	0.717	29.9	LOS D	4.5	113.9	0.88	1.17	1.85	25.5
Approach		455	1.2	479	1.2	0.717	26.0	LOS D	4.5	113.9	0.86	1.08	1.61	26.5
All Vehicles		3395	0.9	3574	0.9	0.722	17.6	LOS C	11.5	288.1	0.79	0.95	1.45	33.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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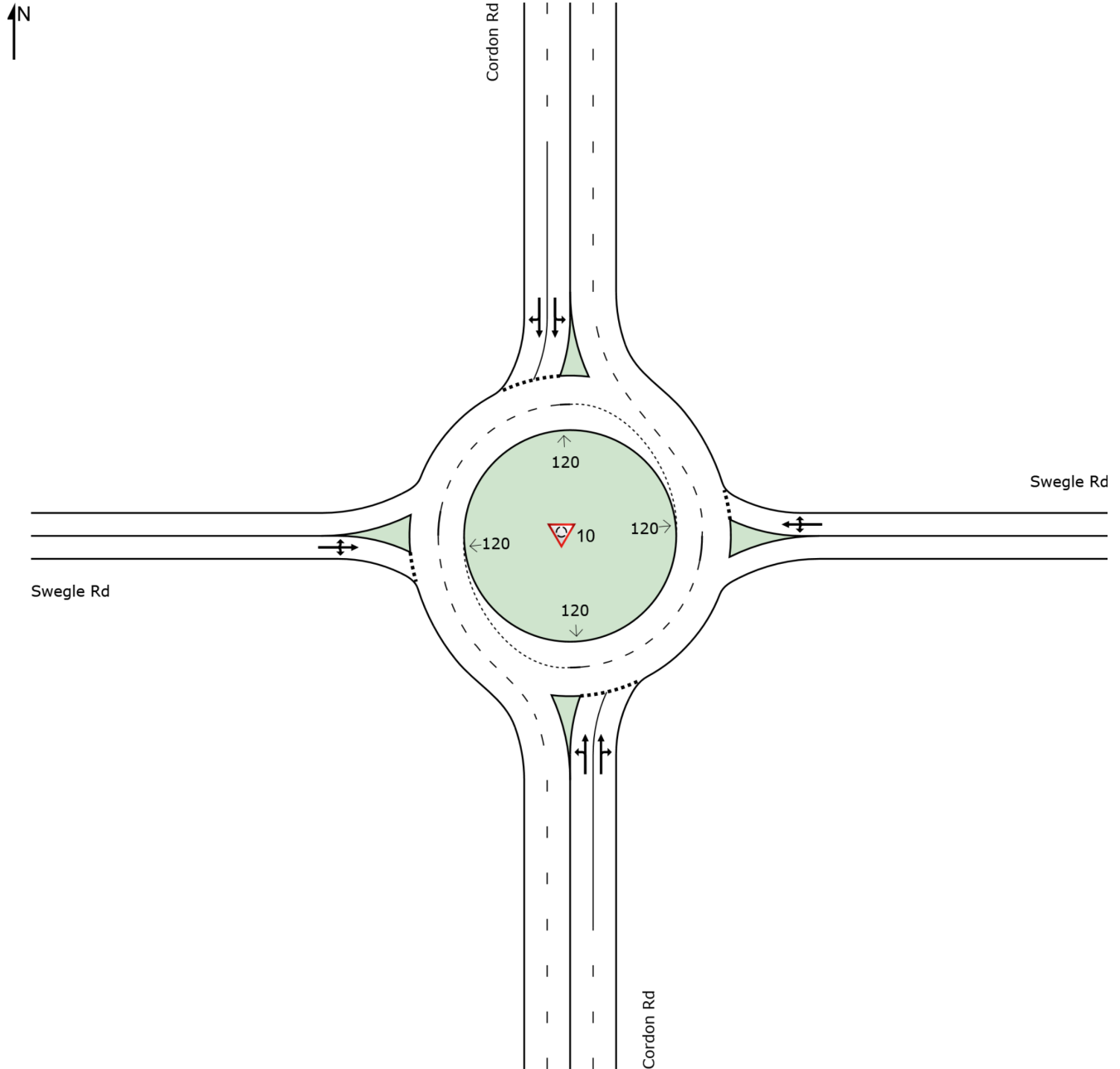


# SITE LAYOUT

Site: 10 [Cordon Rd/Swegle Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

Site: 10 [Cordon Rd/Swegle Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	125	0.0	132	0.0	0.648	11.4	LOS B	5.6	142.4	0.41	0.21	0.41	33.8
8	T1	1350	2.0	1421	2.0	0.648	11.2	LOS B	5.6	142.4	0.39	0.20	0.39	37.9
18	R2	75	0.0	79	0.0	0.648	10.9	LOS B	5.5	139.3	0.38	0.19	0.38	37.3
Approach		1550	1.7	1632	1.7	0.648	11.2	LOS B	5.6	142.4	0.39	0.20	0.39	37.5
East: Swegle Rd														
1	L2	10	0.0	11	0.0	0.088	11.5	LOS B	0.3	6.9	0.77	0.77	0.77	37.0
6	T1	5	0.0	5	0.0	0.088	11.5	LOS B	0.3	6.9	0.77	0.77	0.77	32.8
16	R2	15	0.0	16	0.0	0.088	11.5	LOS B	0.3	6.9	0.77	0.77	0.77	36.0
Approach		30	0.0	32	0.0	0.088	11.5	LOS B	0.3	6.9	0.77	0.77	0.77	35.7
North: Cordon Rd														
7	L2	10	0.0	11	0.0	0.644	11.8	LOS B	5.0	127.6	0.54	0.36	0.54	37.9
4	T1	1345	2.0	1416	2.0	0.644	11.6	LOS B	5.0	127.6	0.53	0.35	0.53	37.9
14	R2	90	0.0	95	0.0	0.644	11.3	LOS B	5.0	126.2	0.52	0.34	0.52	32.6
Approach		1445	1.9	1521	1.9	0.644	11.6	LOS B	5.0	127.6	0.53	0.35	0.53	37.5
West: Swegle Rd														
5	L2	40	3.0	42	3.0	0.483	19.5	LOS C	2.1	53.1	0.83	0.95	1.26	29.1
2	T1	20	0.0	21	0.0	0.483	19.3	LOS C	2.1	53.1	0.83	0.95	1.26	29.4
12	R2	125	1.0	132	1.0	0.483	19.4	LOS C	2.1	53.1	0.83	0.95	1.26	28.6
Approach		185	1.3	195	1.3	0.483	19.4	LOS C	2.1	53.1	0.83	0.95	1.26	28.8
All Vehicles		3210	1.8	3379	1.8	0.648	11.9	LOS B	5.6	142.4	0.48	0.32	0.51	36.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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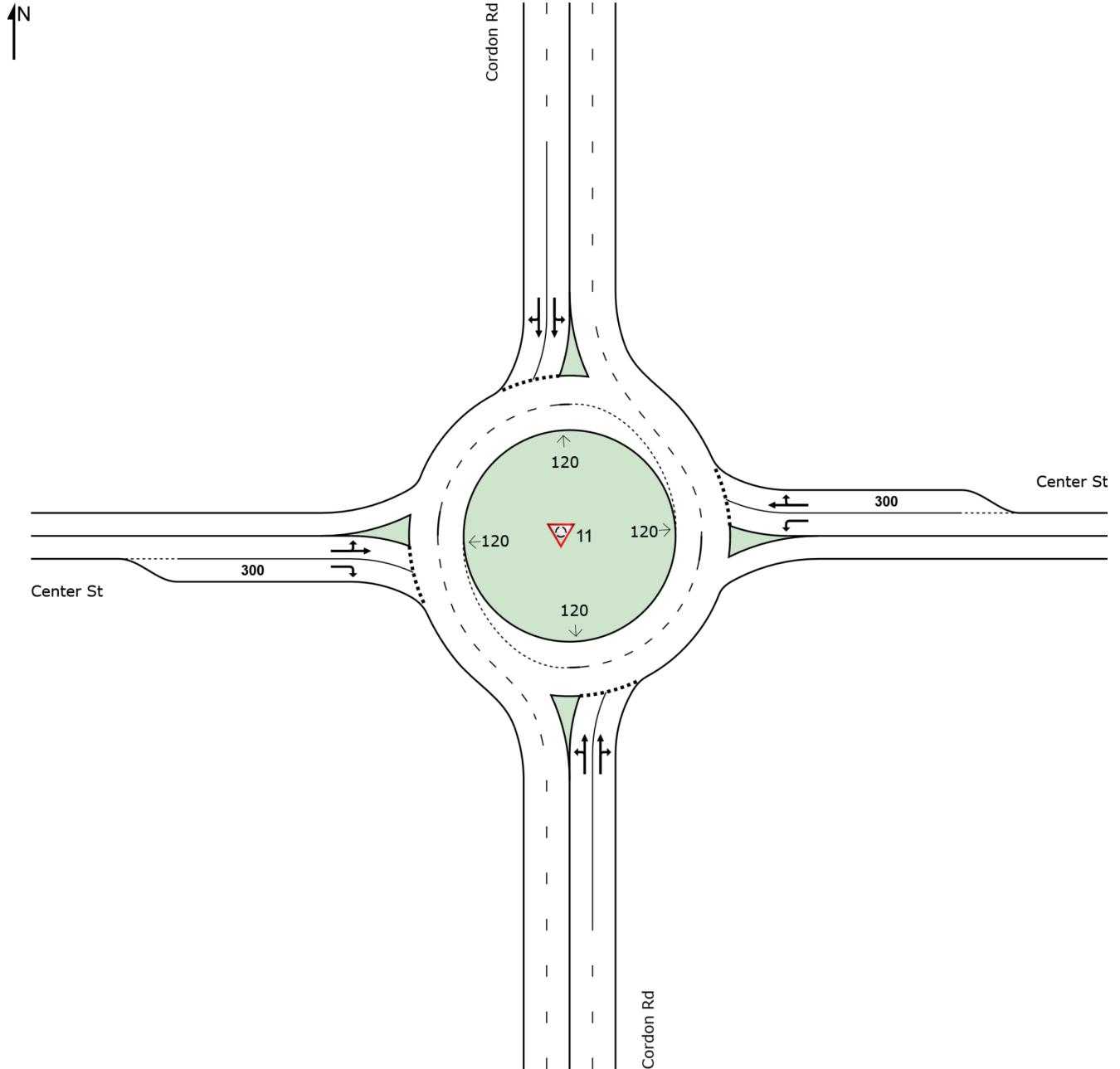
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# SITE LAYOUT

 Site: 11 [Cordon Rd/Center St (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

Site: 11 [Cordon Rd/Center St (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	285	3.0	300	3.0	0.794	18.9	LOS C	19.8	507.6	1.00	1.16	1.77	30.4
8	T1	1375	3.0	1447	3.0	0.794	18.1	LOS C	20.9	535.0	1.00	1.13	1.73	32.2
18	R2	35	4.0	37	4.0	0.794	18.2	LOS C	20.9	535.0	1.00	1.12	1.71	30.4
Approach		1695	3.0	1784	3.0	0.794	18.2	LOS C	20.9	535.0	1.00	1.14	1.74	31.9
East: Center St														
1	L2	50	0.0	53	0.0	0.238	22.5	LOS C	0.8	18.8	0.87	0.89	0.96	27.9
6	T1	60	2.0	63	2.0	0.360	23.1	LOS C	1.2	31.2	0.87	0.93	1.15	29.4
16	R2	30	0.0	32	0.0	0.360	22.8	LOS C	1.2	31.2	0.87	0.93	1.15	29.9
Approach		140	0.9	147	0.9	0.360	22.8	LOS C	1.2	31.2	0.87	0.92	1.08	28.9
North: Cordon Rd														
7	L2	35	12.0	37	12.0	0.821	23.1	LOS C	19.5	496.0	1.00	1.28	2.09	29.8
4	T1	1330	2.0	1400	2.0	0.821	22.4	LOS C	19.5	496.0	1.00	1.29	2.10	30.9
14	R2	135	5.0	142	5.0	0.821	22.5	LOS C	19.1	487.6	1.00	1.29	2.11	29.7
Approach		1500	2.5	1579	2.5	0.821	22.4	LOS C	19.5	496.0	1.00	1.29	2.10	30.7
West: Center St														
5	L2	160	0.0	168	0.0	0.750	41.1	LOS E	4.4	111.7	0.92	1.18	2.01	23.8
2	T1	75	3.0	79	3.0	0.750	41.4	LOS E	4.4	111.7	0.92	1.18	2.01	23.0
12	R2	265	3.0	279	3.0	0.738	35.7	LOS E	4.4	111.7	0.90	1.16	1.97	24.4
Approach		500	2.0	526	2.0	0.750	38.3	LOS E	4.4	111.7	0.91	1.17	1.99	24.0
All Vehicles		3835	2.6	4037	2.6	0.821	22.6	LOS C	20.9	535.0	0.98	1.19	1.89	30.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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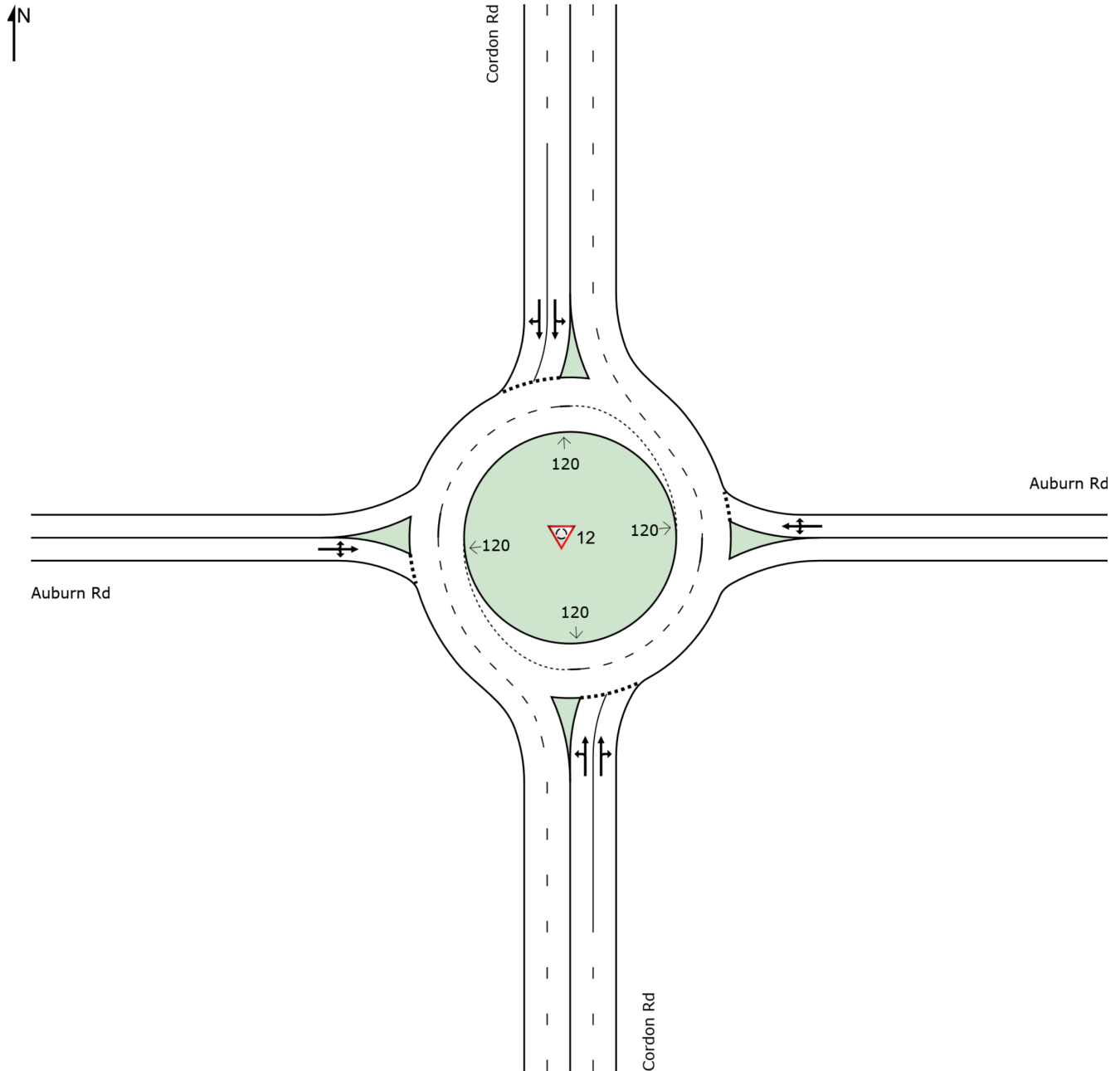
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# SITE LAYOUT

 Site: 12 [Cordon Rd/Auburn Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 Site: 12 [Cordon Rd/Auburn Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	70	2.0	74	2.0	0.729	13.9	LOS B	7.8	198.7	0.41	0.18	0.41	32.8
8	T1	1655	3.0	1742	3.0	0.729	13.7	LOS B	7.8	198.7	0.40	0.18	0.40	36.4
18	R2	35	0.0	37	0.0	0.729	13.4	LOS B	7.6	194.8	0.39	0.17	0.39	31.7
Approach		1760	2.9	1853	2.9	0.729	13.7	LOS B	7.8	198.7	0.40	0.18	0.40	36.1
East: Auburn Rd														
1	L2	5	0.0	5	0.0	0.093	14.5	LOS B	0.3	7.1	0.82	0.82	0.82	31.4
6	T1	5	0.0	5	0.0	0.093	14.5	LOS B	0.3	7.1	0.82	0.82	0.82	28.3
16	R2	15	0.0	16	0.0	0.093	14.5	LOS B	0.3	7.1	0.82	0.82	0.82	30.6
Approach		25	0.0	26	0.0	0.093	14.5	LOS B	0.3	7.1	0.82	0.82	0.82	30.3
North: Cordon Rd														
7	L2	15	0.0	16	0.0	0.712	13.6	LOS B	6.7	172.0	0.48	0.26	0.48	33.1
4	T1	1590	4.0	1674	4.0	0.712	13.4	LOS B	6.7	172.0	0.47	0.26	0.47	36.5
14	R2	50	0.0	53	0.0	0.712	13.1	LOS B	6.6	169.6	0.46	0.25	0.46	31.8
Approach		1655	3.8	1742	3.8	0.712	13.4	LOS B	6.7	172.0	0.47	0.25	0.47	36.3
West: Auburn Rd														
5	L2	30	0.0	32	0.0	0.474	23.7	LOS C	1.9	47.2	0.87	0.99	1.31	27.7
2	T1	5	0.0	5	0.0	0.474	23.7	LOS C	1.9	47.2	0.87	0.99	1.31	25.2
12	R2	105	3.0	111	3.0	0.474	24.1	LOS C	1.9	47.2	0.87	0.99	1.31	26.9
Approach		140	2.3	147	2.3	0.474	24.0	LOS C	1.9	47.2	0.87	0.99	1.31	27.0
All Vehicles		3580	3.3	3768	3.3	0.729	14.0	LOS B	7.8	198.7	0.45	0.25	0.47	35.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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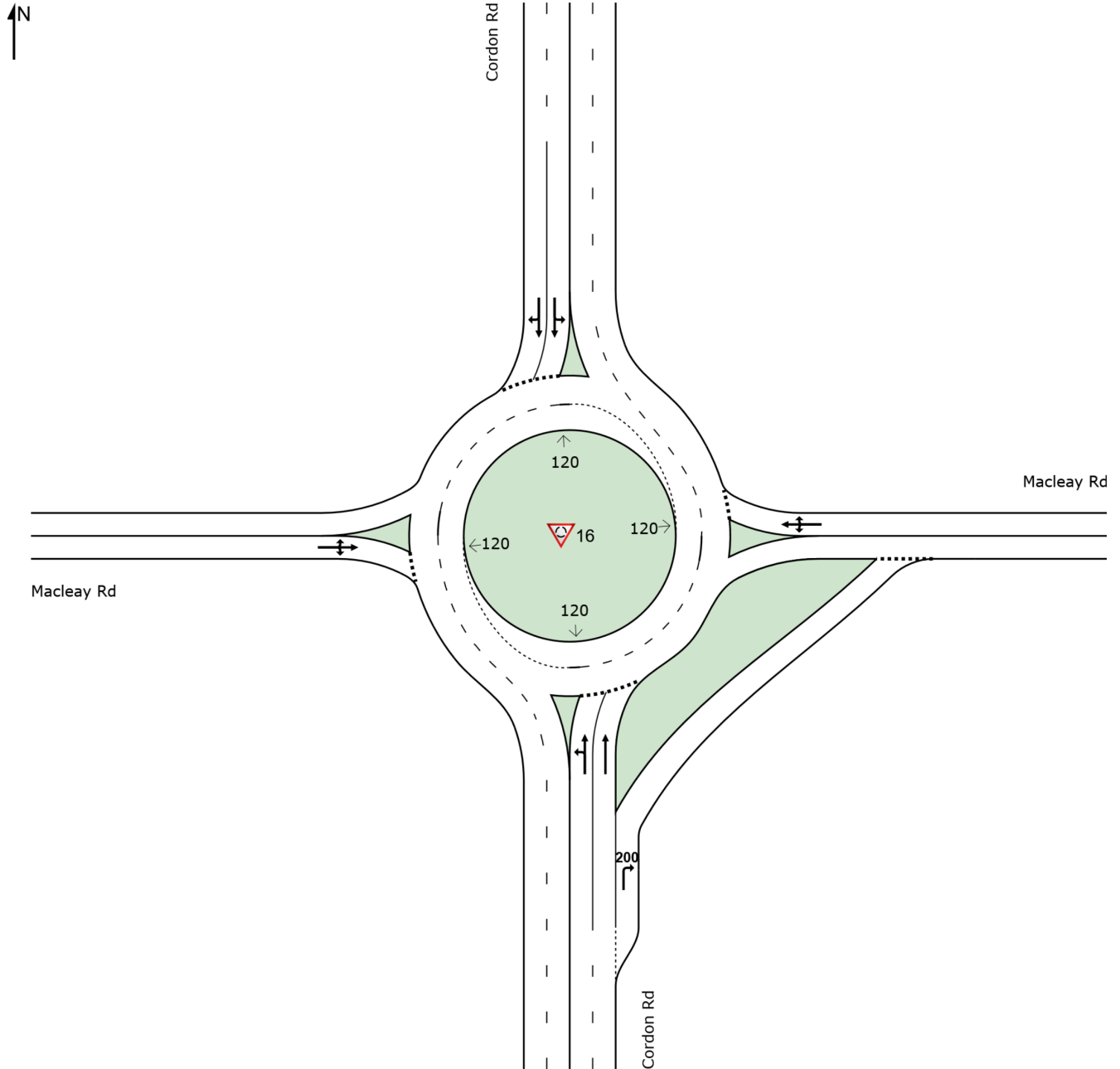
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# SITE LAYOUT

Site: 16 [Cordon Rd/Macleay Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

Site: 16 [Cordon Rd/Macleay Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	125	5.0	129	5.0	0.889	30.9	LOS D	22.7	589.8	0.99	1.62	2.72	25.3
8	T1	1465	5.0	1510	5.0	0.889	30.0	LOS D	23.7	616.9	0.98	1.61	2.71	26.7
18	R2	125	2.0	129	2.0	0.111	4.1	LOS A	0.4	10.7	0.31	0.19	0.31	37.4
Approach		1715	4.8	1768	4.8	0.889	28.2	LOS D	23.7	616.9	0.93	1.50	2.53	27.1
East: Macleay Rd														
1	L2	65	7.0	67	7.0	0.775	52.4	LOS F	4.0	104.9	0.94	1.22	2.17	20.8
6	T1	55	0.0	57	0.0	0.775	51.5	LOS F	4.0	104.9	0.94	1.22	2.17	20.2
16	R2	80	7.0	82	7.0	0.775	52.4	LOS F	4.0	104.9	0.94	1.22	2.17	20.4
Approach		200	5.1	206	5.1	0.775	52.1	LOS F	4.0	104.9	0.94	1.22	2.17	20.5
North: Cordon Rd														
7	L2	120	3.0	124	3.0	0.865	25.5	LOS D	25.9	668.2	0.95	1.34	2.19	28.2
4	T1	1480	4.0	1526	4.0	0.865	24.9	LOS C	26.7	688.9	0.94	1.33	2.17	28.4
14	R2	155	3.0	160	3.0	0.865	24.3	LOS C	26.7	688.9	0.93	1.31	2.15	26.5
Approach		1755	3.8	1809	3.8	0.865	24.9	LOS C	26.7	688.9	0.94	1.33	2.17	28.2
West: Macleay Rd														
5	L2	180	3.0	186	3.0	0.881	63.1	LOS F	6.4	163.3	0.96	1.48	2.83	18.2
2	T1	75	0.0	77	0.0	0.881	62.7	LOS F	6.4	163.3	0.96	1.48	2.83	18.3
12	R2	5	10.0	5	10.0	0.881	63.9	LOS F	6.4	163.3	0.96	1.48	2.83	17.6
Approach		260	2.3	268	2.3	0.881	63.0	LOS F	6.4	163.3	0.96	1.48	2.83	18.2
All Vehicles		3930	4.2	4052	4.2	0.889	30.2	LOS D	26.7	688.9	0.94	1.41	2.37	26.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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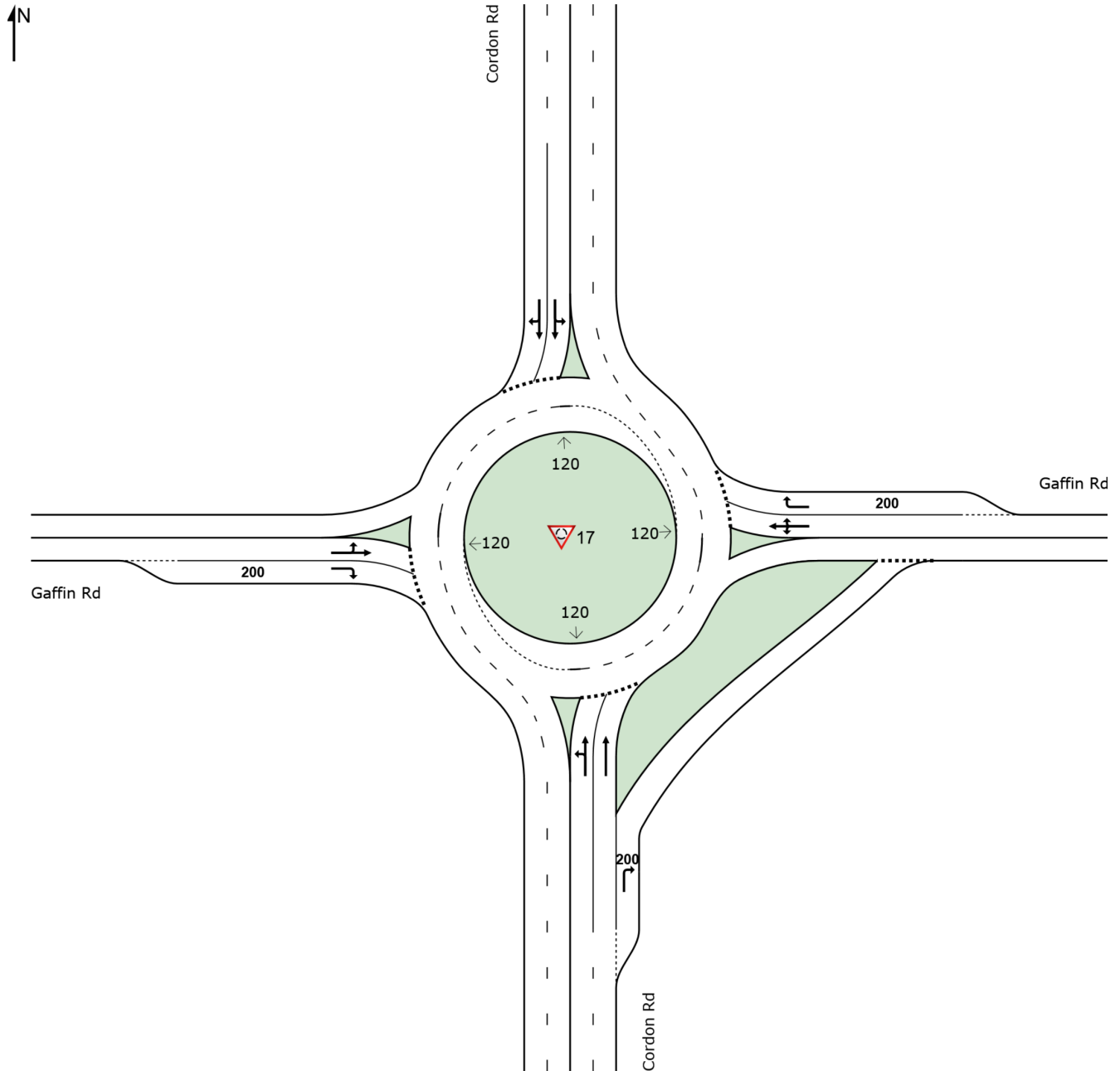


# SITE LAYOUT

Site: 17 [Cordon Rd/Gaffin Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

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# MOVEMENT SUMMARY

Site: 17 [Cordon Rd/Gaffin Rd (Site Folder: PM Peak)]

Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Cordon Rd														
3	L2	170	0.0	179	0.0	0.859	28.3	LOS D	17.5	442.9	0.98	1.51	2.52	23.6
8	T1	1270	2.0	1337	2.0	0.859	27.4	LOS D	18.2	462.9	0.97	1.51	2.52	27.7
18	R2	75	8.0	79	8.0	0.082	4.5	LOS A	0.3	7.4	0.39	0.29	0.39	36.3
Approach		1515	2.1	1595	2.1	0.859	26.4	LOS D	18.2	462.9	0.94	1.45	2.41	27.5
East: Gaffin Rd														
1	L2	140	2.0	147	2.0	0.860	62.3	LOS F	5.9	149.8	0.96	1.34	2.63	19.1
6	T1	40	0.0	42	0.0	0.860	62.1	LOS F	5.9	149.8	0.96	1.34	2.63	16.4
16	R2	320	4.0	337	4.0	0.860	57.0	LOS F	6.2	158.8	0.95	1.35	2.68	19.7
Approach		500	3.1	526	3.1	0.860	58.9	LOS F	6.2	158.8	0.95	1.35	2.66	19.2
North: Cordon Rd														
7	L2	275	5.0	289	5.0	0.850	25.9	LOS D	19.7	506.0	0.94	1.42	2.31	27.5
4	T1	1130	3.0	1189	3.0	0.850	24.9	LOS C	20.7	528.4	0.95	1.42	2.30	28.4
14	R2	145	0.0	153	0.0	0.850	24.1	LOS C	20.7	528.4	0.95	1.41	2.29	23.5
Approach		1550	3.1	1632	3.1	0.850	25.0	LOS C	20.7	528.4	0.95	1.42	2.30	27.7
West: Gaffin Rd														
5	L2	125	0.0	132	0.0	0.525	24.3	LOS C	2.3	56.5	0.87	1.06	1.38	23.2
2	T1	45	0.0	47	0.0	0.525	24.3	LOS C	2.3	56.5	0.87	1.06	1.38	23.1
12	R2	145	0.0	153	0.0	0.530	28.4	LOS D	2.2	55.8	0.89	1.08	1.41	22.3
Approach		315	0.0	332	0.0	0.530	26.2	LOS D	2.3	56.5	0.88	1.07	1.39	22.8
All Vehicles		3880	2.4	4084	2.4	0.860	30.0	LOS D	20.7	528.4	0.94	1.39	2.32	25.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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





















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# **ALTERNATIVE 3 – PED/BIKE-CENTRIC**

## **HCM Results**

HCM 6th Signalized Intersection Summary  
1: OR 99E & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (AM Peak)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	225	325	130	315	55	310	595	60	30	560	55
Future Volume (veh/h)	140	225	325	130	315	55	310	595	60	30	560	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1856	1900	1900	1841	1856	1900	1885	1900	1841	1885	1900
Adj Flow Rate, veh/h	152	245	201	141	342	51	337	647	56	33	609	12
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, %	7	3	0	0	4	3	0	1	0	4	1	0
Cap, veh/h	189	476	413	177	382	57	221	1072	93	39	795	357
Arrive On Green	0.11	0.26	0.26	0.10	0.24	0.24	0.12	0.32	0.32	0.02	0.22	0.22
Sat Flow, veh/h	1711	1856	1610	1810	1565	233	1810	3336	288	1753	3582	1610
Grp Volume(v), veh/h	152	245	201	141	0	393	337	347	356	33	609	12
Grp Sat Flow(s),veh/h/ln	1711	1856	1610	1810	0	1799	1810	1791	1833	1753	1791	1610
Q Serve(g_s), s	6.0	7.9	7.4	5.3	0.0	14.7	8.5	11.4	11.4	1.3	11.1	0.4
Cycle Q Clear(g_c), s	6.0	7.9	7.4	5.3	0.0	14.7	8.5	11.4	11.4	1.3	11.1	0.4
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	189	476	413	177	0	439	221	576	589	39	795	357
V/C Ratio(X)	0.80	0.51	0.49	0.79	0.00	0.89	1.53	0.60	0.60	0.84	0.77	0.03
Avail Cap(c_a), veh/h	282	772	670	195	0	646	221	643	658	189	1234	555
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	22.2	22.0	30.7	0.0	25.5	30.6	19.9	19.9	33.9	25.4	21.2
Incr Delay (d2), s/veh	8.1	0.6	0.7	16.4	0.0	8.3	258.5	0.7	0.7	27.5	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.1	2.5	2.9	0.0	6.5	19.2	4.2	4.3	0.8	4.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.3	22.8	22.7	47.1	0.0	33.8	289.1	20.6	20.6	61.5	26.6	21.3
LnGrp LOS	D	C	C	D	A	C	F	C	C	E	C	C
Approach Vol, veh/h		598			534			1040			654	
Approach Delay, s/veh		26.7			37.3			107.6			28.2	
Approach LOS		C			D			F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	21.5	12.2	23.0	6.1	28.4	11.3	23.9				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	8.5	24.0	11.5	25.0	7.5	25.0	7.5	29.0				
Max Q Clear Time (g_c+I1), s	10.5	13.1	8.0	16.7	3.3	13.4	7.3	9.9				
Green Ext Time (p_c), s	0.0	2.4	0.1	0.3	0.0	2.0	0.0	1.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			58.8									
HCM 6th LOS			E									

HCM 6th TWSC  
2: Lake Labish Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (AM Peak)

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Vol, veh/h	10	290	25	5	405	5	100	5	5	20	5	30
Future Vol, veh/h	10	290	25	5	405	5	100	5	5	20	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	0	0	3	0	0	0	0	0	0	0
Mvmt Flow	11	330	28	6	460	6	114	6	6	23	6	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	466	0	0	358	0	0	847	830	330	847	855	463
Stage 1	-	-	-	-	-	-	352	352	-	475	475	-
Stage 2	-	-	-	-	-	-	495	478	-	372	380	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1106	-	-	1212	-	-	284	308	716	284	298	603
Stage 1	-	-	-	-	-	-	669	635	-	574	561	-
Stage 2	-	-	-	-	-	-	560	559	-	653	617	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1106	-	-	1212	-	-	260	302	716	274	292	603
Mov Cap-2 Maneuver	-	-	-	-	-	-	260	302	-	274	292	-
Stage 1	-	-	-	-	-	-	661	627	-	567	557	-
Stage 2	-	-	-	-	-	-	519	555	-	634	610	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			29.3			15.9		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	270	1106	-	-	1212	-	-	393
HCM Lane V/C Ratio	0.463	0.01	-	-	0.005	-	-	0.159
HCM Control Delay (s)	29.3	8.3	0	-	8	0	-	15.9
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.3	0	-	-	0	-	-	0.6

HCM 6th AWSC  
3: Cordon Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (AM Peak)

Intersection	
Intersection Delay, s/veh	29.7
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	140	110	155	315	20	95	165	75	15	70	10
Future Vol, veh/h	15	140	110	155	315	20	95	165	75	15	70	10
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
Heavy Vehicles, %	0	5	5	0	8	0	0	0	0	0	0	10
Mvmt Flow	16	152	120	168	342	22	103	179	82	16	76	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.4	45.2	22.4	12.8
HCM LOS	C	E	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	28%	6%	32%	16%
Vol Thru, %	49%	53%	64%	74%
Vol Right, %	22%	42%	4%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	335	265	490	95
LT Vol	95	15	155	15
Through Vol	165	140	315	70
RT Vol	75	110	20	10
Lane Flow Rate	364	288	533	103
Geometry Grp	1	1	1	1
Degree of Util (X)	0.672	0.517	0.919	0.219
Departure Headway (Hd)	6.64	6.456	6.21	7.64
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	539	553	581	473
Service Time	4.726	4.553	4.289	5.64
HCM Lane V/C Ratio	0.675	0.521	0.917	0.218
HCM Control Delay	22.4	16.4	45.2	12.8
HCM Lane LOS	C	C	E	B
HCM 95th-tile Q	5	2.9	11.4	0.8

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	155	75	350	340	45
Future Vol, veh/h	50	155	75	350	340	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	54	167	81	376	366	48

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	928	390	414	0	0
Stage 1	390	-	-	-	-
Stage 2	538	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	300	663	1156	-	-
Stage 1	689	-	-	-	-
Stage 2	589	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	273	663	1156	-	-
Mov Cap-2 Maneuver	273	-	-	-	-
Stage 1	628	-	-	-	-
Stage 2	589	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1156	-	273	663	-	-
HCM Lane V/C Ratio	0.07	-	0.197	0.251	-	-
HCM Control Delay (s)	8.3	0	21.4	12.2	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	1	-	-

Intersection						
Int Delay, s/veh	16.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	30	280	210	390	465	40
Future Vol, veh/h	30	280	210	390	465	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	34	318	239	443	528	45

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1472	551	573	0	-	0
Stage 1	551	-	-	-	-	-
Stage 2	921	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	141	538	1010	-	-	-
Stage 1	581	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	97	538	1010	-	-	-
Mov Cap-2 Maneuver	97	-	-	-	-	-
Stage 1	399	-	-	-	-	-
Stage 2	391	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	66.8	3.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1010	-	374	-	-
HCM Lane V/C Ratio	0.236	-	0.942	-	-
HCM Control Delay (s)	9.7	0	66.8	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.9	-	10.2	-	-



Intersection						
Int Delay, s/veh	10.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	95	65	50	505	690	50
Future Vol, veh/h	95	65	50	505	690	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	3	4	4	4	3	6
Mvmt Flow	101	69	53	537	734	53

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1404	761	787	0	-	0
Stage 1	761	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Critical Hdwy	6.43	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	153	402	823	-	-	-
Stage 1	459	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	139	402	823	-	-	-
Mov Cap-2 Maneuver	139	-	-	-	-	-
Stage 1	417	-	-	-	-	-
Stage 2	522	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	92.3	0.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	823	-	189	-	-
HCM Lane V/C Ratio	0.065	-	0.901	-	-
HCM Control Delay (s)	9.7	0	92.3	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.2	-	6.9	-	-

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	40	60	45	515	685	55
Future Vol, veh/h	40	60	45	515	685	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	1	5	7	4	3
Mvmt Flow	44	66	49	566	753	60























Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1447	783	813	0	0
Stage 1	783	-	-	-	-
Stage 2	664	-	-	-	-
Critical Hdwy	6.44	6.21	4.15	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-
Follow-up Hdwy	3.536	3.309	2.245	-	-
Pot Cap-1 Maneuver	143	395	801	-	-
Stage 1	447	-	-	-	-
Stage 2	508	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	130	395	801	-	-
Mov Cap-2 Maneuver	130	-	-	-	-
Stage 1	407	-	-	-	-
Stage 2	508	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	37.2	0.8	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	801	-	218	-	-
HCM Lane V/C Ratio	0.062	-	0.504	-	-
HCM Control Delay (s)	9.8	0	37.2	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0.2	-	2.6	-	-

HCM 6th Signalized Intersection Summary  
8: Cordon Rd & Silverton Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (AM Peak)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	215	195	310	400	25	205	405	200	25	545	165
Future Volume (veh/h)	105	215	195	310	400	25	205	405	200	25	545	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1781	1826	1841	1900	1781	1870	1781	1752	1826	1826
Adj Flow Rate, veh/h	114	234	51	337	435	23	223	440	160	27	592	111
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, %	9	9	8	5	4	0	8	2	8	10	5	5
Cap, veh/h	140	325	69	366	829	44	252	880	1028	32	622	656
Arrive On Green	0.08	0.12	0.12	0.21	0.25	0.25	0.15	0.47	0.47	0.02	0.34	0.34
Sat Flow, veh/h	1682	2746	587	1739	3378	178	1697	1870	1510	1668	1826	1547
Grp Volume(v), veh/h	114	141	144	337	225	233	223	440	160	27	592	111
Grp Sat Flow(s),veh/h/ln	1682	1678	1655	1739	1749	1808	1697	1870	1510	1668	1826	1547
Q Serve(g_s), s	6.6	8.0	8.3	18.8	11.0	11.1	12.8	16.1	3.7	1.6	31.3	4.4
Cycle Q Clear(g_c), s	6.6	8.0	8.3	18.8	11.0	11.1	12.8	16.1	3.7	1.6	31.3	4.4
Prop In Lane	1.00		0.35	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	198	196	366	429	444	252	880	1028	32	622	656
V/C Ratio(X)	0.81	0.71	0.73	0.92	0.52	0.53	0.88	0.50	0.16	0.85	0.95	0.17
Avail Cap(c_a), veh/h	272	542	535	422	707	730	274	907	1050	135	738	754
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	42.0	42.1	38.3	32.3	32.4	41.3	18.1	5.6	48.4	31.8	17.7
Incr Delay (d2), s/veh	4.3	1.8	2.0	22.2	0.4	0.4	24.2	0.2	0.0	19.8	19.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	3.3	3.4	9.9	4.5	4.7	6.7	6.1	0.9	0.8	15.7	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.9	43.8	44.2	60.5	32.7	32.7	65.5	18.3	5.7	68.2	51.1	17.7
LnGrp LOS	D	D	D	E	C	C	E	B	A	E	D	B
Approach Vol, veh/h		399			795			823			730	
Approach Delay, s/veh		45.4			44.5			28.6			46.6	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.8	16.7	18.7	38.7	12.2	29.3	5.9	51.6				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	24.0	32.0	16.0	40.0	16.0	40.0	8.0	48.0				
Max Q Clear Time (g_c+I1), s	20.8	10.3	14.8	33.3	8.6	13.1	3.6	18.1				
Green Ext Time (p_c), s	0.0	0.3	0.0	0.4	0.0	0.4	0.0	0.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			40.4									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary  
 9: Cordon Rd & Sunnyview Rd

Cordon-Kuebler Corridor Plan  
 Alternative #3 - Ped/Bike Centric (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	50	130	70	80	55	160	650	20	25	890	140
Future Volume (veh/h)	95	50	130	70	80	55	160	650	20	25	890	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1856	1900	1870	1856	1856	1856	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	101	53	57	74	85	38	170	691	20	27	947	145
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	3	0	2	3	3	3	2	0	0	2	2
Cap, veh/h	198	83	90	205	116	52	209	1213	35	454	1011	155
Arrive On Green	0.06	0.10	0.10	0.05	0.10	0.10	0.05	0.67	0.67	0.02	0.64	0.64
Sat Flow, veh/h	1753	813	875	1781	1200	537	1767	1809	52	1810	1579	242
Grp Volume(v), veh/h	101	0	110	74	0	123	170	0	711	27	0	1092
Grp Sat Flow(s),veh/h/ln	1753	0	1688	1781	0	1737	1767	0	1861	1810	0	1821
Q Serve(g_s), s	5.6	0.0	6.8	4.0	0.0	7.5	3.4	0.0	22.1	0.6	0.0	58.5
Cycle Q Clear(g_c), s	5.6	0.0	6.8	4.0	0.0	7.5	3.4	0.0	22.1	0.6	0.0	58.5
Prop In Lane	1.00		0.52	1.00		0.31	1.00		0.03	1.00		0.13
Lane Grp Cap(c), veh/h	198	0	173	205	0	168	209	0	1249	454	0	1166
V/C Ratio(X)	0.51	0.00	0.64	0.36	0.00	0.73	0.82	0.00	0.57	0.06	0.00	0.94
Avail Cap(c_a), veh/h	198	0	344	214	0	352	281	0	1388	484	0	1258
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.7	0.0	46.8	41.5	0.0	47.7	26.7	0.0	9.5	8.0	0.0	17.5
Incr Delay (d2), s/veh	2.2	0.0	2.9	1.1	0.0	4.5	12.6	0.0	0.6	0.0	0.0	12.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	3.0	1.7	0.0	3.3	3.4	0.0	7.0	0.2	0.0	22.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.9	0.0	49.6	42.5	0.0	52.2	39.3	0.0	10.1	8.0	0.0	30.4
LnGrp LOS	D	A	D	D	A	D	D	A	B	A	A	C
Approach Vol, veh/h		211			197			881			1119	
Approach Delay, s/veh		46.9			48.6			15.8			29.9	
Approach LOS		D			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	74.5	10.0	14.5	6.2	77.8	9.4	15.1				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	10.0	75.0	6.0	22.0	4.0	81.0	5.9	22.1				
Max Q Clear Time (g_c+1/4), s	15.4	60.5	7.6	9.5	2.6	24.1	6.0	8.8				
Green Ext Time (p_c), s	0.2	9.0	0.0	0.3	0.0	7.7	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay												27.7
HCM 6th LOS												C

HCM 6th TWSC  
10: Cordon Rd & Swegle Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (AM Peak)

Intersection												
Int Delay, s/veh	47.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	40	10	65	10	5	15	95	770	10	30	935	105
Future Vol, veh/h	40	10	65	10	5	15	95	770	10	30	935	105
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	210	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	6	0	0	0	2	5	0	0	7	3
Mvmt Flow	43	11	70	11	5	16	102	828	11	32	1005	113

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2175	2169	1062	2204	2220	835	1118	0	0	839	0	0
Stage 1	1126	1126	-	1038	1038	-	-	-	-	-	-	-
Stage 2	1049	1043	-	1166	1182	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.26	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.354	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 34	47	267	32	44	371	625	-	-	804	-	-
Stage 1	251	282	-	281	311	-	-	-	-	-	-	-
Stage 2	277	309	-	238	266	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 24	38	267	16	35	371	625	-	-	804	-	-
Mov Cap-2 Maneuver	~ 24	38	-	16	35	-	-	-	-	-	-	-
Stage 1	210	271	-	235	260	-	-	-	-	-	-	-
Stage 2	217	259	-	162	255	-	-	-	-	-	-	-























Approach	EB	WB	NB	SB
HCM Control Delay, s	774.5	271	1.3	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	625	-	-	53	37	804	-	-
HCM Lane V/C Ratio	0.163	-	-	2.333	0.872	0.04	-	-
HCM Control Delay (s)	11.9	-	-	774.5	271	9.7	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	12.5	3.2	0.1	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th Signalized Intersection Summary  
11: Cordon Rd & Center St

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (AM Peak)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	55	130	60	85	55	110	740	30	65	825	110
Future Volume (veh/h)	70	55	130	60	85	55	110	740	30	65	825	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1811	1841	1856	1752	1856	1826	1841	1900	1796	1856
Adj Flow Rate, veh/h	76	60	7	65	92	26	120	804	32	71	897	68
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	6	4	3	10	3	5	4	0	7	3
Cap, veh/h	204	181	149	246	125	35	309	1087	43	575	1108	970
Arrive On Green	0.05	0.10	0.10	0.04	0.09	0.09	0.11	1.00	1.00	0.05	0.62	0.62
Sat Flow, veh/h	1781	1870	1535	1753	1392	393	1767	1744	69	1810	1796	1572
Grp Volume(v), veh/h	76	60	7	65	0	118	120	0	836	71	897	68
Grp Sat Flow(s),veh/h/ln	1781	1870	1535	1753	0	1785	1767	0	1813	1810	1796	1572
Q Serve(g_s), s	3.4	2.7	0.4	3.0	0.0	5.8	2.2	0.0	0.0	1.2	34.4	1.6
Cycle Q Clear(g_c), s	3.4	2.7	0.4	3.0	0.0	5.8	2.2	0.0	0.0	1.2	34.4	1.6
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	204	181	149	246	0	161	309	0	1131	575	1108	970
V/C Ratio(X)	0.37	0.33	0.05	0.26	0.00	0.73	0.39	0.00	0.74	0.12	0.81	0.07
Avail Cap(c_a), veh/h	212	457	375	265	0	436	314	0	1131	592	1108	970
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.73	0.00	0.73	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	37.9	36.9	35.0	0.0	39.9	12.7	0.0	0.0	5.3	13.2	6.9
Incr Delay (d2), s/veh	0.4	0.8	0.1	0.2	0.0	4.8	0.2	0.0	3.2	0.0	6.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.2	0.1	1.2	0.0	2.6	0.9	0.0	1.0	0.3	12.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.3	38.7	37.0	35.2	0.0	44.7	12.9	0.0	3.2	5.4	19.6	7.0
LnGrp LOS	D	D	D	D	A	D	B	A	A	A	B	A
Approach Vol, veh/h		143			183			956			1036	
Approach Delay, s/veh		36.8			41.3			4.4			17.8	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	60.5	8.6	12.1	8.2	61.1	8.0	12.7				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	41.0	5.0	22.0	5.0	41.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s	4.2	36.4	5.4	7.8	3.2	2.0	5.0	4.7				
Green Ext Time (p_c), s	0.0	2.9	0.0	0.3	0.0	10.3	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			15.3									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary  
 12: Cordon Rd & Auburn Rd

Cordon-Kuebler Corridor Plan  
 Alternative #3 - Ped/Bike Centric (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↗		↖	↗	
Traffic Volume (veh/h)	25	5	25	15	5	35	55	815	20	15	945	45
Future Volume (veh/h)	25	5	25	15	5	35	55	815	20	15	945	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1900	1767	1900	1900	1900	1900	1826	1604	1900	1796	1900
Adj Flow Rate, veh/h	27	5	0	16	5	0	60	886	22	16	1027	48
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, %	7	0	9	0	0	0	0	5	20	0	7	0
Cap, veh/h	140	20	83	130	31	0	559	1377	34	458	1279	60
Arrive On Green	0.06	0.06	0.00	0.06	0.06	0.00	0.04	0.78	0.78	0.04	1.00	1.00
Sat Flow, veh/h	1199	361	1497	1067	564	0	1810	1774	44	1810	1702	80
Grp Volume(v), veh/h	32	0	0	21	0	0	60	0	908	16	0	1075
Grp Sat Flow(s),veh/h/ln1560	0	1497	1631	0	0	1810	0	1818	1810	0	1782	
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	0.6	0.0	20.1	0.2	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	0.0	1.0	0.0	0.0	0.6	0.0	20.1	0.2	0.0	0.0
Prop In Lane	0.84		1.00	0.76		0.00	1.00		0.02	1.00		0.04
Lane Grp Cap(c), veh/h	160	0	83	161	0	0	559	0	1411	458	0	1339
V/C Ratio(X)	0.20	0.00	0.00	0.13	0.00	0.00	0.11	0.00	0.64	0.03	0.00	0.80
Avail Cap(c_a), veh/h	377	0	301	383	0	0	583	0	1411	527	0	1339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.50	0.00	0.50
Uniform Delay (d), s/veh	40.9	0.0	0.0	40.6	0.0	0.0	2.0	0.0	4.5	4.2	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.4	0.0	0.0	0.1	0.0	2.3	0.0	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln0.7	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	4.6	0.0	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.5	0.0	0.0	41.0	0.0	0.0	2.1	0.0	6.8	4.2	0.0	2.7
LnGrp LOS	D	A	A	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		32			21			968			1091	
Approach Delay, s/veh		41.5			41.0			6.5			2.7	
Approach LOS		D			D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s6.1	74.4			9.5	8.4	72.1		9.5				
Change Period (Y+Rc), s 4.5	4.5			4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s 5.1	53.3			18.1	5.1	53.3		18.1				
Max Q Clear Time (g_c+1/2), s 12.2	22.1			3.6	2.6	2.0		3.0				
Green Ext Time (p_c), s 0.0	7.4			0.1	0.0	11.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay	5.4
HCM 6th LOS	A

HCM 6th Signalized Intersection Summary  
13: Cordon Rd & State St

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↘		↖ ↗	↘		↖ ↗	↘		↖ ↗	↘	↖ ↗
Traffic Volume (veh/h)	170	220	70	125	245	105	45	595	130	125	580	240
Future Volume (veh/h)	170	220	70	125	245	105	45	595	130	125	580	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1856	1870	1841	1752	1885	1811	1811	1856	1796	1796	1885	1870
Adj Flow Rate, veh/h	185	239	62	136	266	96	49	647	131	136	630	139
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, %	3	2	4	10	1	6	6	3	7	7	1	2
Cap, veh/h	429	308	80	255	291	105	267	634	128	193	844	695
Arrive On Green	0.06	0.22	0.22	0.07	0.22	0.22	0.04	0.42	0.42	0.06	0.45	0.45
Sat Flow, veh/h	3428	1432	371	1668	1322	477	1725	1498	303	1711	1885	1552
Grp Volume(v), veh/h	185	0	301	136	0	362	49	0	778	136	630	139
Grp Sat Flow(s),veh/h/ln	1714	0	1803	1668	0	1799	1725	0	1801	1711	1885	1552
Q Serve(g_s), s	3.6	0.0	13.8	5.6	0.0	17.2	1.4	0.0	37.0	3.9	24.2	4.7
Cycle Q Clear(g_c), s	3.6	0.0	13.8	5.6	0.0	17.2	1.4	0.0	37.0	3.9	24.2	4.7
Prop In Lane	1.00		0.21	1.00		0.27	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	429	0	388	255	0	396	267	0	762	193	844	695
V/C Ratio(X)	0.43	0.00	0.78	0.53	0.00	0.91	0.18	0.00	1.02	0.71	0.75	0.20
Avail Cap(c_a), veh/h	447	0	433	255	0	432	316	0	762	200	844	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.8	0.0	32.3	25.7	0.0	33.3	16.0	0.0	25.2	20.3	20.0	14.6
Incr Delay (d2), s/veh	0.3	0.0	6.6	1.1	0.0	21.6	0.1	0.0	38.0	8.7	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4	0.0	6.5	2.1	0.0	9.1	0.5	0.0	21.8	1.8	10.1	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.1	0.0	39.0	26.8	0.0	54.9	16.1	0.0	63.2	29.0	23.3	14.7
LnGrp LOS	C	A	D	C	A	D	B	A	F	C	C	B
Approach Vol, veh/h		486		498		827		905				
Approach Delay, s/veh		34.1		47.2		60.4		22.8				
Approach LOS		C		D		E		C				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	24.8	7.5	45.2	9.5	25.3	9.6	43.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	6.0	21.0	6.0	37.0	6.0	21.0	6.0	37.0				
Max Q Clear Time (g_c+1), s	6.0	15.8	3.4	26.2	5.6	19.2	5.9	39.0				
Green Ext Time (p_c), s	0.0	0.2	0.0	0.6	0.0	0.1	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	40.7
HCM 6th LOS	D



Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	65	35	20	710	695	70
Future Vol, veh/h	65	35	20	710	695	70
Conflicting Peds, #/hr	2	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	7	8	6	9	9
Mvmt Flow	71	38	22	772	755	76

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1611	793	831	0	-	0
Stage 1	793	-	-	-	-	-
Stage 2	818	-	-	-	-	-
Critical Hdwy	6.45	6.27	4.18	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.363	2.272	-	-	-
Pot Cap-1 Maneuver	113	381	776	-	-	-
Stage 1	440	-	-	-	-	-
Stage 2	429	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	110	381	776	-	-	-
Mov Cap-2 Maneuver	110	-	-	-	-	-
Stage 1	428	-	-	-	-	-
Stage 2	429	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	79.7	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	776	-	146	-	-
HCM Lane V/C Ratio	0.028	-	0.744	-	-
HCM Control Delay (s)	9.8	-	79.7	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.1	-	4.5	-	-

HCM 6th TWSC  
15: Cordon Rd & Caplinger Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (AM Peak)

Intersection												
Int Delay, s/veh	12.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	70	5	15	5	10	10	5	665	15	10	670	110
Future Vol, veh/h	70	5	15	5	10	10	5	665	15	10	670	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	0	9	0	20	20	0	6	0	0	5	5
Mvmt Flow	76	5	16	5	11	11	5	723	16	11	728	120

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1562	1559	788	1562	1611	731	848	0	0	739	0	0
Stage 1	810	810	-	741	741	-	-	-	-	-	-	-
Stage 2	752	749	-	821	870	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.29	7.1	6.7	6.4	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.381	3.5	4.18	3.48	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	90	113	380	92	95	393	798	-	-	876	-	-
Stage 1	372	396	-	411	397	-	-	-	-	-	-	-
Stage 2	401	422	-	371	345	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	77	109	380	82	92	393	798	-	-	876	-	-
Mov Cap-2 Maneuver	77	109	-	82	92	-	-	-	-	-	-	-
Stage 1	368	386	-	406	393	-	-	-	-	-	-	-
Stage 2	375	417	-	342	337	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	200.8		40.6		0.1		0.1	
HCM LOS	F		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	798	-	-	91	128	876	-	-
HCM Lane V/C Ratio	0.007	-	-	1.075	0.212	0.012	-	-
HCM Control Delay (s)	9.5	0	-	200.8	40.6	9.2	0	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	6.5	0.8	0	-	-

HCM 6th Signalized Intersection Summary  
16: Cordon Rd & Macleay Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	100	50	135	105	50	60	30	540	40	15	655	20
Future Volume (veh/h)	100	50	135	105	50	60	30	540	40	15	655	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1811	1900	1900	1781	1870	1900	1826	1737	1737	1796	1796
Adj Flow Rate, veh/h	109	54	105	114	54	0	33	587	41	16	712	21
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, %	10	6	0	0	8	2	0	5	11	11	7	7
Cap, veh/h	166	71	117	197	80		376	1038	72	557	1045	31
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.00	0.06	1.00	1.00	0.02	0.60	0.60
Sat Flow, veh/h	566	367	602	670	414	0	1810	1687	118	1654	1736	51
Grp Volume(v), veh/h	268	0	0	168	0	0	33	0	628	16	0	733
Grp Sat Flow(s),veh/h/ln	1535	0	0	1084	0	0	1810	0	1805	1654	0	1787
Q Serve(g_s), s	1.5	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.3	0.0	24.9
Cycle Q Clear(g_c), s	15.2	0.0	0.0	13.7	0.0	0.0	0.6	0.0	0.0	0.3	0.0	24.9
Prop In Lane	0.41		0.39	0.68		0.00	1.00		0.07	1.00		0.03
Lane Grp Cap(c), veh/h	355	0	0	278	0		376	0	1110	557	0	1076
V/C Ratio(X)	0.76	0.00	0.00	0.60	0.00		0.09	0.00	0.57	0.03	0.00	0.68
Avail Cap(c_a), veh/h	478	0	0	387	0		422	0	1110	620	0	1076
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.79	0.00	0.79	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	0.0	34.4	0.0	0.0	9.4	0.0	0.0	6.5	0.0	12.1
Incr Delay (d2), s/veh	2.9	0.0	0.0	0.8	0.0	0.0	0.1	0.0	1.7	0.0	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	0.0	3.4	0.0	0.0	0.2	0.0	0.5	0.1	0.0	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	0.0	0.0	35.2	0.0	0.0	9.5	0.0	1.7	6.6	0.0	15.6
LnGrp LOS	D	A	A	D	A		A	A	A	A	A	B
Approach Vol, veh/h		268			168			661				749
Approach Delay, s/veh		38.2			35.2			2.0				15.4
Approach LOS		D			D			A				B
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	60.2		22.5	6.1	61.4		22.5				
Change Period (Y+Rc), s	4.5	6.0		5.0	4.5	6.0		5.0				
Max Green Setting (Gmax), s	5.1	44.4		25.0	5.1	44.4		25.0				
Max Q Clear Time (g_c+I1), s	2.6	26.9		15.7	2.3	2.0		17.2				
Green Ext Time (p_c), s	0.0	0.8		0.1	0.0	0.7		0.3				

Intersection Summary

HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
17: Cordon Rd & Gaffin Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	60	195	100	35	125	85	435	130	145	665	85
Future Volume (veh/h)	50	60	195	100	35	125	85	435	130	145	665	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1856	1781	1826	1900	1870	1841	1856
Adj Flow Rate, veh/h	54	65	37	109	38	7	92	473	131	158	723	51
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, %	0	0	2	0	0	3	8	5	0	2	4	3
Cap, veh/h	218	90	51	171	123	23	558	869	241	535	1205	1007
Arrive On Green	0.03	0.08	0.08	0.03	0.08	0.08	0.03	0.63	0.63	0.11	1.00	1.00
Sat Flow, veh/h	1810	1137	647	1810	1561	288	1697	1369	379	1781	1841	1539
Grp Volume(v), veh/h	54	0	102	109	0	45	92	0	604	158	723	51
Grp Sat Flow(s),veh/h/ln	1810	0	1784	1810	0	1848	1697	0	1748	1781	1841	1539
Q Serve(g_s), s	2.5	0.0	5.0	3.0	0.0	2.1	1.7	0.0	17.4	2.9	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	5.0	3.0	0.0	2.1	1.7	0.0	17.4	2.9	0.0	0.0
Prop In Lane	1.00		0.36	1.00		0.16	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	218	0	141	171	0	146	558	0	1109	535	1205	1007
V/C Ratio(X)	0.25	0.00	0.72	0.64	0.00	0.31	0.17	0.00	0.54	0.30	0.60	0.05
Avail Cap(c_a), veh/h	218	0	495	171	0	513	558	0	1109	559	1205	1007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.63	0.63	0.63
Uniform Delay (d), s/veh	36.6	0.0	40.5	39.9	0.0	39.1	5.2	0.0	9.2	6.5	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	2.6	6.0	0.0	0.4	0.1	0.0	1.9	0.1	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	2.3	1.1	0.0	0.9	0.4	0.0	5.3	0.7	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.8	0.0	43.1	46.0	0.0	39.6	5.3	0.0	11.1	6.6	1.4	0.1
LnGrp LOS	D	A	D	D	A	D	A	A	B	A	A	A
Approach Vol, veh/h		156			154			696			932	
Approach Delay, s/veh		40.9			44.1			10.3			2.2	
Approach LOS		D			D			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	64.9	7.0	11.1	8.8	63.1	7.0	11.1				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	3.0	41.0	3.0	25.0	6.0	38.0	3.0	25.0				
Max Q Clear Time (g_c+1), s	1.5	2.0	4.5	4.1	4.9	19.4	5.0	7.0				
Green Ext Time (p_c), s	0.0	0.8	0.0	0.0	0.0	0.6	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				11.6								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
18: Kuebler Blvd/Cordon Rd & Lancaster Dr

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	390	125	105	245	90	115	510	210	205	675	80
Future Volume (veh/h)	50	390	125	105	245	90	115	510	210	205	675	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1826	1885	1796	1900	1885	1856	1826	1870	1885	1900
Adj Flow Rate, veh/h	54	424	70	114	266	32	125	554	0	223	734	30
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, %	0	3	5	1	7	0	1	3	5	2	1	0
Cap, veh/h	66	664	355	202	715	553	218	905		276	1251	552
Arrive On Green	0.04	0.19	0.17	0.06	0.21	0.19	0.06	0.26	0.00	0.16	0.35	0.31
Sat Flow, veh/h	1810	3526	1547	3483	3413	1610	3483	3526	1547	1781	3582	1610
Grp Volume(v), veh/h	54	424	70	114	266	32	125	554	0	223	734	30
Grp Sat Flow(s),veh/h/ln	1810	1763	1547	1742	1706	1610	1742	1763	1547	1781	1791	1610
Q Serve(g_s), s	1.4	5.2	1.7	1.5	3.1	0.6	1.6	6.5	0.0	5.7	7.8	0.6
Cycle Q Clear(g_c), s	1.4	5.2	1.7	1.5	3.1	0.6	1.6	6.5	0.0	5.7	7.8	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	66	664	355	202	715	553	218	905		276	1251	552
V/C Ratio(X)	0.82	0.64	0.20	0.57	0.37	0.06	0.57	0.61		0.81	0.59	0.05
Avail Cap(c_a), veh/h	310	2563	1189	596	2481	1386	596	2337		419	2604	1161
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	17.5	14.5	21.5	15.8	10.3	21.3	15.3	0.0	19.1	12.5	10.3
Incr Delay (d2), s/veh	8.8	0.4	0.1	0.9	0.1	0.0	0.9	0.3	0.0	3.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.8	0.5	0.5	1.0	0.2	0.6	1.9	0.0	2.1	2.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.1	17.9	14.6	22.4	16.0	10.3	22.2	15.6	0.0	22.7	12.6	10.3
LnGrp LOS	C	B	B	C	B	B	C	B		C	B	B
Approach Vol, veh/h		548			412			679			987	
Approach Delay, s/veh		18.8			17.3			16.8			14.8	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.9	20.3	5.7	13.8	11.3	16.0	6.7	12.8				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	11.0	29.0	8.0	33.0				
Max Q Clear Time (g_c+1), s	13.6	9.8	3.4	5.1	7.7	8.5	3.5	7.2				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.3	0.0	0.6	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	16.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Kuebler Blvd & Mill Creek Dr

Cordon-Kuebler Corridor Plan  
 Alternative #3 - Ped/Bike Centric (AM Peak)



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	160	230	595	240	235	670
Future Volume (veh/h)	160	230	595	240	235	670
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1604	1604	1856	1604	1752	1870
Adj Flow Rate, veh/h	174	185	647	129	255	728
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	20	20	3	20	10	2
Cap, veh/h	231	329	1007	738	405	1300
Arrive On Green	0.15	0.15	0.18	0.18	0.09	0.69
Sat Flow, veh/h	1527	1359	1856	1359	1668	1870
Grp Volume(v), veh/h	174	185	647	129	255	728
Grp Sat Flow(s),veh/h/ln	1527	1359	1856	1359	1668	1870
Q Serve(g_s), s	7.1	7.8	21.0	5.2	3.9	12.6
Cycle Q Clear(g_c), s	7.1	7.8	21.0	5.2	3.9	12.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	231	329	1007	738	405	1300
V/C Ratio(X)	0.75	0.56	0.64	0.17	0.63	0.56
Avail Cap(c_a), veh/h	493	562	1007	738	459	1300
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.31	0.31	1.00	1.00
Uniform Delay (d), s/veh	26.4	21.6	20.8	14.3	11.0	5.0
Incr Delay (d2), s/veh	1.9	0.6	1.0	0.2	1.4	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	5.9	10.2	1.2	1.2	2.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.3	22.2	21.8	14.5	12.4	6.7
LnGrp LOS	C	C	C	B	B	A
Approach Vol, veh/h	359		776			983
Approach Delay, s/veh	25.2		20.6			8.2
Approach LOS	C		C			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		51.2		13.8	9.9	41.3
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		34.0		21.0	8.0	22.0
Max Q Clear Time (g_c+I1), s		14.6		9.8	5.9	23.0
Green Ext Time (p_c), s		0.6		0.1	0.0	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			15.6			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary  
20: Turner Rd & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (AM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	670	75	190	435	140	200	255	75	60	160	165
Future Volume (veh/h)	95	670	75	190	435	140	200	255	75	60	160	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1811	1870	1870	1678	1870	1870	1841	1900	1693	1826	1900	1752
Adj Flow Rate, veh/h	103	728	79	207	473	142	217	277	73	65	174	43
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, %	6	2	2	15	2	2	4	0	14	5	0	10
Cap, veh/h	363	856	93	480	758	227	315	354	93	176	409	408
Arrive On Green	0.09	1.00	1.00	0.08	0.55	0.53	0.07	0.24	0.23	0.04	0.22	0.22
Sat Flow, veh/h	1725	1658	180	1598	1381	415	1753	1449	382	1739	1900	1485
Grp Volume(v), veh/h	103	0	807	207	0	615	217	0	350	65	174	43
Grp Sat Flow(s),veh/h/ln	1725	0	1838	1598	0	1796	1753	0	1831	1739	1900	1485
Q Serve(g_s), s	3.8	0.0	0.0	7.9	0.0	30.7	9.0	0.0	23.2	3.8	10.3	2.8
Cycle Q Clear(g_c), s	3.8	0.0	0.0	7.9	0.0	30.7	9.0	0.0	23.2	3.8	10.3	2.8
Prop In Lane	1.00		0.10	1.00		0.23	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	363	0	949	480	0	985	315	0	447	176	409	408
V/C Ratio(X)	0.28	0.00	0.85	0.43	0.00	0.62	0.69	0.00	0.78	0.37	0.43	0.11
Avail Cap(c_a), veh/h	407	0	949	543	0	985	315	0	447	213	409	408
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.00	0.77	0.77	0.00	0.77	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	0.0	12.4	0.0	20.3	42.6	0.0	46.1	40.5	44.0	35.2
Incr Delay (d2), s/veh	0.1	0.0	7.5	0.2	0.0	2.3	5.2	0.0	12.9	0.5	3.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	2.0	2.6	0.0	12.2	2.6	0.0	11.9	1.6	5.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	0.0	7.5	12.6	0.0	22.7	47.7	0.0	59.0	41.0	47.3	35.7
LnGrp LOS	B	A	A	B	A	C	D	A	E	D	D	D
Approach Vol, veh/h		910		822		567		282				
Approach Delay, s/veh		8.5		20.1		54.7		44.1				
Approach LOS		A		C		D		D				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.9	71.1	9.3	35.7	9.7	75.3	13.0	32.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	15.0	60.0	8.0	27.0	9.0	66.0	9.0	26.0				
Max Q Clear Time (g_c+1), s	19.9	2.0	5.8	25.2	5.8	32.7	11.0	12.3				
Green Ext Time (p_c), s	0.0	0.8	0.0	0.1	0.0	0.6	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			26.2									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary  
 21: 36th Ave & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
 Alternative #3 - Ped/Bike Centric (AM Peak)

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	615	270	125	475	195	225	85	125	90	125	115
Future Volume (veh/h)	220	615	270	125	475	195	225	85	125	90	125	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1870	1870	1826	1900	1841	1900	1856	1900	1900	1737
Adj Flow Rate, veh/h	239	668	176	136	516	202	245	92	87	98	136	3
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	4	2	2	5	0	4	0	3	0	0	11
Cap, veh/h	628	1191	1025	424	783	307	234	105	100	187	179	139
Arrive On Green	0.06	0.65	0.65	0.09	1.00	1.00	0.08	0.12	0.12	0.06	0.09	0.09
Sat Flow, veh/h	1781	1841	1585	1781	1249	489	1753	898	849	1810	1900	1472
Grp Volume(v), veh/h	239	668	176	136	0	718	245	0	179	98	136	3
Grp Sat Flow(s),veh/h/ln	1781	1841	1585	1781	0	1738	1753	0	1747	1810	1900	1472
Q Serve(g_s), s	6.2	26.1	5.7	3.7	0.0	0.0	11.0	0.0	13.1	6.3	9.1	0.2
Cycle Q Clear(g_c), s	6.2	26.1	5.7	3.7	0.0	0.0	11.0	0.0	13.1	6.3	9.1	0.2
Prop In Lane	1.00		1.00	1.00		0.28	1.00		0.49	1.00		1.00
Lane Grp Cap(c), veh/h	628	1191	1025	424	0	1090	234	0	205	187	179	139
V/C Ratio(X)	0.38	0.56	0.17	0.32	0.00	0.66	1.05	0.00	0.87	0.52	0.76	0.02
Avail Cap(c_a), veh/h	735	1191	1025	469	0	1090	234	0	390	187	380	294
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.77	0.00	0.77	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.0	12.7	9.1	9.9	0.0	0.0	52.9	0.0	56.4	49.4	57.4	53.4
Incr Delay (d2), s/veh	0.1	1.9	0.4	0.1	0.0	2.4	72.0	0.0	4.5	1.3	2.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	10.3	1.9	1.1	0.0	0.7	6.9	0.0	5.9	2.9	4.5	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.1	14.6	9.5	10.0	0.0	2.4	124.9	0.0	60.9	50.7	59.9	53.5
LnGrp LOS	A	B	A	A	A	A	F	A	E	D	E	D
Approach Vol, veh/h		1083			854			424			237	
Approach Delay, s/veh		12.1			3.6			97.9			56.0	
Approach LOS		B			A			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	89.1	15.0	16.3	12.2	86.5	12.0	19.3				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	9.0	67.0	11.0	26.0	16.0	60.0	8.0	29.0				
Max Q Clear Time (g_c+1/3), s	15.5	28.1	13.0	11.1	8.2	2.0	8.3	15.1				
Green Ext Time (p_c), s	0.0	0.7	0.0	0.1	0.0	0.7	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											27.3	
HCM 6th LOS											C	



<b>ID</b>	<b>Software/Method</b>	<b>Intersection</b>	<b>Control Type</b>	<b>LOS</b>	<b>Delay</b>	<b>V/C Ratio</b>
1	Synchro HCM 6th Signal	OR 99E & Hazelgreen Rd	Signal	E	58.8	0.87
8	Synchro HCM 6th Signal	Cordon Rd & Silverton Rd	Signal	D	40.4	0.85
9	Synchro HCM 6th Signal	Cordon Rd & Sunnyview Rd	Signal	C	27.7	0.95
11	Synchro HCM 6th Signal	Cordon Rd & Center St	Signal	B	15.3	0.83
12	Synchro HCM 6th Signal	Cordon Rd & Auburn Rd	Signal	A	5.4	0.81
13	Synchro HCM 6th Signal	Cordon Rd & State St	Signal	D	40.7	0.99
16	Synchro HCM 6th Signal	Cordon Rd & Macleay Rd	Signal	B	15.7	0.80
17	Synchro HCM 6th Signal	Cordon Rd & Gaffin Rd	Signal	B	11.6	0.71
18	Synchro HCM 6th Signal	Kuebler Blvd/Cordon Rd & Lancaster Dr	Signal	B	16.6	0.54
19	Synchro HCM 6th Signal	Kuebler Blvd & Mill Creek Dr	Signal	B	15.6	0.67
20	Synchro HCM 6th Signal	Turner Rd & Kuebler Blvd	Signal	C	26.2	0.91
21	Synchro HCM 6th Signal	36th Ave & Kuebler Blvd	Signal	C	27.3	0.87

HCM 6th Signalized Intersection Summary  
1: OR 99E & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (PM Peak)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	400	540	100	265	40	400	585	155	100	875	105
Future Volume (veh/h)	105	400	540	100	265	40	400	585	155	100	875	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1856	1885	1900	1900	1885	1796	1841	1900	1885
Adj Flow Rate, veh/h	107	408	270	102	270	35	408	597	136	102	893	26
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	0	3	1	0	0	1	7	4	0	1
Cap, veh/h	135	466	395	128	397	51	360	1110	252	129	931	412
Arrive On Green	0.08	0.25	0.25	0.07	0.24	0.24	0.20	0.38	0.38	0.07	0.26	0.26
Sat Flow, veh/h	1795	1900	1610	1767	1635	212	1810	2899	659	1753	3610	1598
Grp Volume(v), veh/h	107	408	270	102	0	305	408	368	365	102	893	26
Grp Sat Flow(s),veh/h/ln	1795	1900	1610	1767	0	1847	1810	1791	1767	1753	1805	1598
Q Serve(g_s), s	5.5	19.2	14.2	5.3	0.0	13.9	18.5	14.9	14.9	5.3	22.7	1.1
Cycle Q Clear(g_c), s	5.5	19.2	14.2	5.3	0.0	13.9	18.5	14.9	14.9	5.3	22.7	1.1
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	135	466	395	128	0	448	360	686	676	129	931	412
V/C Ratio(X)	0.79	0.88	0.68	0.79	0.00	0.68	1.13	0.54	0.54	0.79	0.96	0.06
Avail Cap(c_a), veh/h	164	592	502	142	0	556	360	686	676	235	931	412
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	33.8	31.9	42.5	0.0	32.0	37.3	22.3	22.3	42.4	34.1	26.1
Incr Delay (d2), s/veh	17.8	10.9	2.2	21.0	0.0	1.4	89.1	0.5	0.5	7.7	20.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	9.6	5.3	2.9	0.0	5.9	16.6	5.8	5.8	2.5	11.9	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.1	44.7	34.1	63.5	0.0	33.4	126.4	22.8	22.8	50.1	54.3	26.1
LnGrp LOS	E	D	C	E	A	C	F	C	C	D	D	C
Approach Vol, veh/h		785			407			1141			1021	
Approach Delay, s/veh		43.1			41.0			59.8			53.1	
Approach LOS		D			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.0	30.0	11.5	28.6	11.4	41.6	11.3	28.8				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	18.5	24.0	8.5	28.0	12.5	30.0	7.5	29.0				
Max Q Clear Time (g_c+I1), s	20.5	24.7	7.5	15.9	7.3	16.9	7.3	21.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.1	2.2	0.0	1.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			51.6									
HCM 6th LOS			D									

HCM 6th TWSC  
2: Lake Labish Rd & Hazelgreen Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (PM Peak)

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Vol, veh/h	65	460	130	5	350	25	100	5	10	10	5	5
Future Vol, veh/h	65	460	130	5	350	25	100	5	10	10	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	68	479	135	5	365	26	104	5	10	10	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	391	0	0	614	0	0	1008	1016	479	1078	1138	378
Stage 1	-	-	-	-	-	-	615	615	-	388	388	-
Stage 2	-	-	-	-	-	-	393	401	-	690	750	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1179	-	-	975	-	-	221	240	591	198	203	673
Stage 1	-	-	-	-	-	-	482	485	-	640	612	-
Stage 2	-	-	-	-	-	-	636	604	-	439	422	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1179	-	-	975	-	-	199	217	591	177	184	673
Mov Cap-2 Maneuver	-	-	-	-	-	-	199	217	-	177	184	-
Stage 1	-	-	-	-	-	-	439	441	-	582	608	-
Stage 2	-	-	-	-	-	-	621	600	-	388	384	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.1			42			23.1		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	212	1179	-	-	975	-	-	220
HCM Lane V/C Ratio	0.565	0.057	-	-	0.005	-	-	0.095
HCM Control Delay (s)	42	8.2	0	-	8.7	0	-	23.1
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	3.1	0.2	-	-	0	-	-	0.3

Intersection	
Intersection Delay, s/veh	161.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	370	165	170	180	15	160	125	180	15	300	25
Future Vol, veh/h	10	370	165	170	180	15	160	125	180	15	300	25
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
Heavy Vehicles, %	0	2	0	0	12	0	0	0	0	0	0	10
Mvmt Flow	11	389	174	179	189	16	168	132	189	16	316	26
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	256.1	89.6	170.9	74.6
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	34%	2%	47%	4%
Vol Thru, %	27%	68%	49%	88%
Vol Right, %	39%	30%	4%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	465	545	365	340
LT Vol	160	10	170	15
Through Vol	125	370	180	300
RT Vol	180	165	15	25
Lane Flow Rate	489	574	384	358
Geometry Grp	1	1	1	1
Degree of Util (X)	1.263	1.478	1.007	0.944
Departure Headway (Hd)	10.724	10.172	11.814	11.924
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	343	361	311	308
Service Time	8.724	8.172	9.814	9.924
HCM Lane V/C Ratio	1.426	1.59	1.235	1.162
HCM Control Delay	170.9	256.1	89.6	74.6
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	19.3	28.1	10.9	9.3

HCM 6th TWSC  
4: Cordon Rd & Kale St

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (PM Peak)

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	160	140	415	605	60
Future Vol, veh/h	55	160	140	415	605	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	61	178	156	461	672	67

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1479	706	739	0	-	0
Stage 1	706	-	-	-	-	-
Stage 2	773	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	140	439	876	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	459	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	107	439	876	-	-	-
Mov Cap-2 Maneuver	107	-	-	-	-	-
Stage 1	375	-	-	-	-	-
Stage 2	459	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.4	2.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	876	-	107	439	-	-
HCM Lane V/C Ratio	0.178	-	0.571	0.405	-	-
HCM Control Delay (s)	10	0	76.2	18.7	-	-
HCM Lane LOS	A	A	F	C	-	-
HCM 95th %tile Q(veh)	0.6	-	2.7	1.9	-	-

Intersection						
Int Delay, s/veh	9.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	20	150	185	560	735	25
Future Vol, veh/h	20	150	185	560	735	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	22	167	206	622	817	28

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1865	831	845	0	-	0
Stage 1	831	-	-	-	-	-
Stage 2	1034	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	81	373	800	-	-	-
Stage 1	431	-	-	-	-	-
Stage 2	346	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	49	373	800	-	-	-
Mov Cap-2 Maneuver	49	-	-	-	-	-
Stage 1	261	-	-	-	-	-
Stage 2	346	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	85.8	2.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	800	-	210	-	-
HCM Lane V/C Ratio	0.257	-	0.899	-	-
HCM Control Delay (s)	11	0	85.8	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	1	-	7.2	-	-

Intersection						
Int Delay, s/veh	4.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	25	65	75	755	850	45
Future Vol, veh/h	25	65	75	755	850	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	6	4	3	3	3
Mvmt Flow	28	72	83	839	944	50

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1974	969	994	0	0
Stage 1	969	-	-	-	-
Stage 2	1005	-	-	-	-
Critical Hdwy	6.43	6.26	4.14	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.354	2.236	-	-
Pot Cap-1 Maneuver	68	302	688	-	-
Stage 1	367	-	-	-	-
Stage 2	352	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	53	302	688	-	-
Mov Cap-2 Maneuver	53	-	-	-	-
Stage 1	284	-	-	-	-
Stage 2	352	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	90	1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	688	-	131	-	-
HCM Lane V/C Ratio	0.121	-	0.763	-	-
HCM Control Delay (s)	11	0	90	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0.4	-	4.5	-	-

Intersection						
Int Delay, s/veh	8.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	50	75	70	740	825	45
Future Vol, veh/h	50	75	70	740	825	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	52	78	73	771	859	47

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1800	883	906	0	0
Stage 1	883	-	-	-	-
Stage 2	917	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	89	348	759	-	-
Stage 1	408	-	-	-	-
Stage 2	393	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	74	348	759	-	-
Mov Cap-2 Maneuver	74	-	-	-	-
Stage 1	339	-	-	-	-
Stage 2	393	-	-	-	-


























Approach	EB	NB	SB
HCM Control Delay, s	119.9	0.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	759	-	140	-	-
HCM Lane V/C Ratio	0.096	-	0.93	-	-
HCM Control Delay (s)	10.2	0	119.9	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0.3	-	6.4	-	-



HCM 6th Signalized Intersection Summary  
8: Cordon Rd & Silverton Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (PM Peak)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (veh/h)	170	425	275	240	370	10	175	605	260	15	685	200
Future Volume (veh/h)	170	425	275	240	370	10	175	605	260	15	685	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1870	1900	1885	1885	1885	1900	1870	1900
Adj Flow Rate, veh/h	179	447	200	253	389	9	184	637	220	16	721	166
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, %	1	1	1	3	2	0	1	1	1	0	2	0
Cap, veh/h	205	500	222	257	849	20	189	925	1007	19	741	814
Arrive On Green	0.11	0.21	0.21	0.15	0.24	0.24	0.11	0.49	0.49	0.01	0.40	0.40
Sat Flow, veh/h	1795	2407	1067	1767	3550	82	1795	1885	1578	1810	1870	1590
Grp Volume(v), veh/h	179	332	315	253	194	204	184	637	220	16	721	166
Grp Sat Flow(s),veh/h/ln	1795	1791	1684	1767	1777	1855	1795	1885	1578	1810	1870	1590
Q Serve(g_s), s	12.1	22.3	22.6	17.7	11.6	11.6	12.6	32.2	7.3	1.1	46.9	7.1
Cycle Q Clear(g_c), s	12.1	22.3	22.6	17.7	11.6	11.6	12.6	32.2	7.3	1.1	46.9	7.1
Prop In Lane	1.00		0.63	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	372	350	257	425	443	189	925	1007	19	741	814
V/C Ratio(X)	0.87	0.89	0.90	0.98	0.46	0.46	0.98	0.69	0.22	0.84	0.97	0.20
Avail Cap(c_a), veh/h	305	449	422	257	425	443	189	925	1007	117	756	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.9	47.7	47.8	52.7	40.2	40.3	55.2	24.2	9.5	61.1	36.7	16.6
Incr Delay (d2), s/veh	12.0	15.6	18.0	51.5	0.3	0.3	58.0	1.8	0.0	27.9	25.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	11.2	10.9	11.3	5.0	5.2	8.5	13.5	2.2	0.6	24.9	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.9	63.2	65.8	104.2	40.5	40.5	113.3	26.1	9.6	89.0	62.4	16.6
LnGrp LOS	E	E	E	F	D	D	F	C	A	F	E	B
Approach Vol, veh/h		826			651			1041			903	
Approach Delay, s/veh		64.8			65.3			38.0			54.4	
Approach LOS		E			E			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	30.7	17.0	54.0	18.1	34.6	5.3	65.7				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	18.0	31.0	13.0	50.0	21.0	28.0	8.0	55.0				
Max Q Clear Time (g_c+I1), s	19.7	24.6	14.6	48.9	14.1	13.6	3.1	34.2				
Green Ext Time (p_c), s	0.0	0.5	0.0	0.2	0.0	0.4	0.0	0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			54.0									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary  
 9: Cordon Rd & Sunnyview Rd

Cordon-Kuebler Corridor Plan  
 Alternative #3 - Ped/Bike Centric (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	95	185	70	105	55	180	900	85	65	1060	120
Future Volume (veh/h)	125	95	185	70	105	55	180	900	85	65	1060	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1870	1870	1856	1841	1900	1900	1870	1900	1885	1856
Adj Flow Rate, veh/h	132	100	138	74	111	43	189	947	86	68	1116	123
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, %	1	0	2	2	3	4	0	0	2	0	1	3
Cap, veh/h	225	111	154	154	197	76	205	1097	100	217	979	108
Arrive On Green	0.04	0.15	0.15	0.04	0.15	0.15	0.08	0.64	0.64	0.03	0.59	0.59
Sat Flow, veh/h	1795	721	996	1781	1272	493	1810	1712	155	1810	1668	184
Grp Volume(v), veh/h	132	0	238	74	0	154	189	0	1033	68	0	1239
Grp Sat Flow(s),veh/h/ln	1795	0	1717	1781	0	1765	1810	0	1868	1810	0	1852
Q Serve(g_s), s	5.5	0.0	17.4	4.4	0.0	10.3	9.2	0.0	56.8	1.9	0.0	75.0
Cycle Q Clear(g_c), s	5.5	0.0	17.4	4.4	0.0	10.3	9.2	0.0	56.8	1.9	0.0	75.0
Prop In Lane	1.00		0.58	1.00		0.28	1.00		0.08	1.00		0.10
Lane Grp Cap(c), veh/h	225	0	265	154	0	273	205	0	1197	217	0	1087
V/C Ratio(X)	0.59	0.00	0.90	0.48	0.00	0.56	0.92	0.00	0.86	0.31	0.00	1.14
Avail Cap(c_a), veh/h	225	0	296	154	0	304	205	0	1197	257	0	1087
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.0	0.0	53.0	44.2	0.0	50.0	44.7	0.0	18.4	20.9	0.0	26.4
Incr Delay (d2), s/veh	3.9	0.0	25.6	2.3	0.0	1.5	41.5	0.0	6.9	0.3	0.0	74.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	9.3	2.0	0.0	4.5	5.7	0.0	22.5	0.8	0.0	50.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.9	0.0	78.6	46.5	0.0	51.5	86.2	0.0	25.3	21.2	0.0	100.6
LnGrp LOS	D	A	E	D	A	D	F	A	C	C	A	F
Approach Vol, veh/h		370			228			1222			1307	
Approach Delay, s/veh		69.1			49.9			34.7			96.4	
Approach LOS		E			D			C			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.5	80.0	9.5	23.7	7.6	86.9	9.5	23.7				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	10.5	75.0	5.5	22.0	6.5	79.0	5.5	22.0				
Max Q Clear Time (g_c+I1), s	11.2	77.0	7.5	12.3	3.9	58.8	6.4	19.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.0	10.4	0.0	0.3				

Intersection Summary

HCM 6th Ctrl Delay	65.7
HCM 6th LOS	E

HCM 6th TWSC  
10: Cordon Rd & Swegle Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (PM Peak)

Intersection												
Int Delay, s/veh	257.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	40	20	115	10	5	15	120	1120	25	10	1165	130
Future Vol, veh/h	40	20	115	10	5	15	120	1120	25	10	1165	130
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	210	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	0	1	0	0	0	0	2	0	0	2	0
Mvmt Flow	42	21	121	11	5	16	126	1179	26	11	1226	137

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2772	2777	1295	2835	2832	1195	1363	0	0	1208	0	0
Stage 1	1317	1317	-	1447	1447	-	-	-	-	-	-	-
Stage 2	1455	1460	-	1388	1385	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.21	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.309	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 12	~ 19	199	11	18	229	511	-	-	585	-	-
Stage 1	193	229	-	165	198	-	-	-	-	-	-	-
Stage 2	161	196	-	178	213	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 6	~ 14	199	-	13	228	511	-	-	583	-	-
Mov Cap-2 Maneuver	~ 6	~ 14	-	-	13	-	-	-	-	-	-	-
Stage 1	145	225	-	124	149	-	-	-	-	-	-	-
Stage 2	109	147	-	62	209	-	-	-	-	-	-	-























Approach	EB	WB	NB	SB
HCM Control Delay, \$	4071.7		1.4	0.1
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	511	-	-	20	-	583	-	-
HCM Lane V/C Ratio	0.247	-	-	9.211	-	0.018	-	-
HCM Control Delay (s)	14.3	-	-	\$ 4071.7	-	11.3	-	-
HCM Lane LOS	B	-	-	F	-	B	-	-
HCM 95th %tile Q(veh)	1	-	-	23.5	-	0.1	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th Signalized Intersection Summary  
 11: Cordon Rd & Center St

Cordon-Kuebler Corridor Plan  
 Alternative #3 - Ped/Bike Centric (PM Peak)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	90	205	40	60	45	130	925	30	55	1005	180
Future Volume (veh/h)	275	90	205	40	60	45	130	925	30	55	1005	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1870	1900	1856	1856	1841	1722	1870	1826
Adj Flow Rate, veh/h	289	95	32	42	63	22	137	974	31	58	1058	154
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, %	0	3	3	0	2	0	3	3	4	12	2	5
Cap, veh/h	205	186	158	183	86	30	259	1236	39	472	1282	1060
Arrive On Green	0.07	0.10	0.10	0.03	0.07	0.07	0.08	1.00	1.00	0.04	0.69	0.69
Sat Flow, veh/h	1810	1856	1572	1810	1325	463	1767	1788	57	1640	1870	1546
Grp Volume(v), veh/h	289	95	32	42	0	85	137	0	1005	58	1058	154
Grp Sat Flow(s),veh/h/ln	1810	1856	1572	1810	0	1787	1767	0	1845	1640	1870	1546
Q Serve(g_s), s	8.0	5.8	2.2	2.6	0.0	5.6	2.9	0.0	0.0	1.2	49.2	4.2
Cycle Q Clear(g_c), s	8.0	5.8	2.2	2.6	0.0	5.6	2.9	0.0	0.0	1.2	49.2	4.2
Prop In Lane	1.00		1.00	1.00		0.26	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	205	186	158	183	0	116	259	0	1275	472	1282	1060
V/C Ratio(X)	1.41	0.51	0.20	0.23	0.00	0.73	0.53	0.00	0.79	0.12	0.83	0.15
Avail Cap(c_a), veh/h	205	387	328	202	0	328	260	0	1275	482	1282	1060
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.58	0.00	0.58	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.7	51.2	49.6	50.2	0.0	55.1	18.2	0.0	0.0	4.8	13.7	6.6
Incr Delay (d2), s/veh	210.4	1.6	0.5	0.2	0.0	6.4	0.6	0.0	3.0	0.0	6.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.1	2.7	0.9	1.2	0.0	2.7	1.9	0.0	1.0	0.3	18.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	262.2	52.8	50.0	50.4	0.0	61.5	18.8	0.0	3.0	4.9	19.8	6.9
LnGrp LOS	F	D	D	D	A	E	B	A	A	A	B	A
Approach Vol, veh/h		416			127			1142			1270	
Approach Delay, s/veh		198.1			57.8			4.9			17.6	
Approach LOS		F			E			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	87.2	12.0	11.8	8.3	87.9	7.8	16.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	68.0	8.0	22.0	5.0	68.0	5.0	25.0				
Max Q Clear Time (g_c+I1), s	4.9	51.2	10.0	7.6	3.2	2.0	4.6	7.8				
Green Ext Time (p_c), s	0.0	10.1	0.0	0.2	0.0	16.5	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				39.8								
HCM 6th LOS				D								

HCM 6th Signalized Intersection Summary  
 12: Cordon Rd & Auburn Rd

Cordon-Kuebler Corridor Plan  
 Alternative #3 - Ped/Bike Centric (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↕	↗		↕	↗	
Traffic Volume (veh/h)	5	5	25	5	5	15	110	1055	40	15	1165	70
Future Volume (veh/h)	5	5	25	5	5	15	110	1055	40	15	1165	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1856	1900	1900	1900	1870	1856	1900	1900	1841	1900
Adj Flow Rate, veh/h	5	5	0	5	5	0	116	1111	41	16	1226	73
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, %	0	0	3	0	0	0	2	3	0	0	4	0
Cap, veh/h	68	49	66	68	49	0	474	1473	54	360	1383	82
Arrive On Green	0.04	0.04	0.00	0.04	0.04	0.00	0.04	0.83	0.83	0.03	1.00	1.00
Sat Flow, veh/h	548	1174	1572	548	1174	0	1781	1778	66	1810	1717	102
Grp Volume(v), veh/h	10	0	0	10	0	0	116	0	1152	16	0	1299
Grp Sat Flow(s),veh/h/ln	1722	0	1572	1722	0	0	1781	0	1844	1810	0	1820
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	34.3	0.2	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	0.0	0.6	0.0	0.0	1.3	0.0	34.3	0.2	0.0	0.0
Prop In Lane	0.50		1.00	0.50		0.00	1.00		0.04	1.00		0.06
Lane Grp Cap(c), veh/h	117	0	66	117	0	0	474	0	1528	360	0	1465
V/C Ratio(X)	0.09	0.00	0.00	0.09	0.00	0.00	0.24	0.00	0.75	0.04	0.00	0.89
Avail Cap(c_a), veh/h	295	0	237	295	0	0	492	0	1528	406	0	1465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.39	0.00	0.39
Uniform Delay (d), s/veh	55.4	0.0	0.0	55.4	0.0	0.0	1.5	0.0	4.7	6.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.3	0.0	0.0	0.3	0.0	3.5	0.0	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.3	0.0	0.0	0.2	0.0	8.1	0.1	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.7	0.0	0.0	55.7	0.0	0.0	1.7	0.0	8.2	6.1	0.0	3.5
LnGrp LOS	E	A	A	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		10			10			1268			1315	
Approach Delay, s/veh		55.7			55.7			7.6			3.5	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6			9.5	9.4	101.1		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	83.3		18.1	6.1	82.3		18.1				
Max Q Clear Time (g_c+1/2), s	12.2	36.3		2.6	3.3	2.0		2.6				
Green Ext Time (p_c), s	0.0	13.3		0.0	0.1	20.8		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				5.9								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary  
13: Cordon Rd & State St

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (veh/h)	210	330	105	170	310	210	90	775	150	150	805	240
Future Volume (veh/h)	210	330	105	170	310	210	90	775	150	150	805	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1900	1856	1856	1900	1885	1841	1900	1885	1885	1870	1870	1885
Adj Flow Rate, veh/h	221	347	102	179	326	201	95	816	153	158	847	189
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, %	0	3	3	0	1	4	0	1	1	2	2	1
Cap, veh/h	273	337	99	181	294	181	167	736	138	151	917	783
Arrive On Green	0.05	0.25	0.25	0.07	0.27	0.27	0.04	0.48	0.48	0.05	0.49	0.49
Sat Flow, veh/h	3510	1370	403	1810	1091	673	1810	1544	289	1781	1870	1598
Grp Volume(v), veh/h	221	0	449	179	0	527	95	0	969	158	847	189
Grp Sat Flow(s),veh/h/ln	1755	0	1773	1810	0	1764	1810	0	1833	1781	1870	1598
Q Serve(g_s), s	6.0	0.0	32.0	9.0	0.0	35.0	3.5	0.0	62.0	7.0	54.9	8.9
Cycle Q Clear(g_c), s	6.0	0.0	32.0	9.0	0.0	35.0	3.5	0.0	62.0	7.0	54.9	8.9
Prop In Lane	1.00		0.23	1.00		0.38	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	273	0	436	181	0	475	167	0	874	151	917	783
V/C Ratio(X)	0.81	0.00	1.03	0.99	0.00	1.11	0.57	0.00	1.11	1.04	0.92	0.24
Avail Cap(c_a), veh/h	273	0	436	181	0	475	176	0	874	151	917	783
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	0.0	49.0	38.8	0.0	47.5	29.0	0.0	34.0	37.9	30.9	19.2
Incr Delay (d2), s/veh	15.5	0.0	50.7	64.1	0.0	74.7	2.1	0.0	64.7	85.4	14.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	20.1	7.3	0.0	24.4	1.5	0.0	41.3	5.8	26.6	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.8	0.0	99.7	102.8	0.0	122.2	31.1	0.0	98.7	123.3	45.4	19.2
LnGrp LOS	D	A	F	F	A	F	C	A	F	F	D	B
Approach Vol, veh/h		670		706		1064		1194				
Approach Delay, s/veh		84.9		117.3		92.6		51.5				
Approach LOS		F		F		F		D				
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	38.0	9.3	69.7	10.0	41.0	11.0	68.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	30.0	32.0	6.0	63.0	6.0	35.0	7.0	62.0				
Max Q Clear Time (g_c+I1), s	30.0	34.0	5.5	56.9	8.0	37.0	9.0	64.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			82.5									
HCM 6th LOS			F									

Intersection						
Int Delay, s/veh	7.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	20	50	1025	995	100
Future Vol, veh/h	40	20	50	1025	995	100
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	7	0	5	4	4
Mvmt Flow	42	21	52	1068	1036	104

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2261	1089	1141	0	-	0
Stage 1	1089	-	-	-	-	-
Stage 2	1172	-	-	-	-	-
Critical Hdwy	6.4	6.27	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.363	2.2	-	-	-
Pot Cap-1 Maneuver	46	256	620	-	-	-
Stage 1	326	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	42	256	619	-	-	-
Mov Cap-2 Maneuver	42	-	-	-	-	-
Stage 1	298	-	-	-	-	-
Stage 2	297	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	258.9	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	619	-	58	-	-
HCM Lane V/C Ratio	0.084	-	1.078	-	-
HCM Control Delay (s)	11.3	-	258.9	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.3	-	5.1	-	-

HCM 6th TWSC  
15: Cordon Rd & Caplinger Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (PM Peak)

Intersection												
Int Delay, s/veh	97.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	130	5	5	5	0	10	20	930	10	10	860	195
Future Vol, veh/h	130	5	5	5	0	10	20	930	10	10	860	195
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	5	20	10	4	2
Mvmt Flow	137	5	5	5	0	11	21	979	11	11	905	205

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2063	2062	1008	2062	2159	986	1110	0	0	990	0	0
Stage 1	1030	1030	-	1027	1027	-	-	-	-	-	-	-
Stage 2	1033	1032	-	1035	1132	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.2	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	~ 41	55	295	41	48	303	637	-	-	668	-	-
Stage 1	284	313	-	285	314	-	-	-	-	-	-	-
Stage 2	283	313	-	282	281	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 36	49	295	34	42	303	637	-	-	668	-	-
Mov Cap-2 Maneuver	~ 36	49	-	34	42	-	-	-	-	-	-	-
Stage 1	263	299	-	264	291	-	-	-	-	-	-	-
Stage 2	253	290	-	260	268	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s \$	1512	58.3	0.2	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	637	-	-	38	83	668	-	-
HCM Lane V/C Ratio	0.033	-	-	3.878	0.19	0.016	-	-
HCM Control Delay (s)	10.8	0	-	\$ 1512	58.3	10.5	0	-
HCM Lane LOS	B	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	16.9	0.7	0	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon



HCM 6th Signalized Intersection Summary  
16: Cordon Rd & Macleay Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (veh/h)	160	170	20	125	45	50	105	740	70	10	815	35
Future Volume (veh/h)	160	170	20	125	45	50	105	740	70	10	815	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1752	1796	1900	1796	1826	1826	1870	1856	1841	1856
Adj Flow Rate, veh/h	165	175	19	129	46	0	108	763	69	10	840	35
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, %	3	0	10	7	0	7	5	5	2	3	4	3
Cap, veh/h	231	196	21	254	81		239	952	86	454	942	39
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.00	0.10	1.00	1.00	0.01	0.54	0.54
Sat Flow, veh/h	726	823	87	774	339	0	1739	1650	149	1767	1753	73
Grp Volume(v), veh/h	359	0	0	175	0	0	108	0	832	10	0	875
Grp Sat Flow(s),veh/h/ln	1635	0	0	1113	0	0	1739	0	1799	1767	0	1826
Q Serve(g_s), s	6.3	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.2	0.0	38.3
Cycle Q Clear(g_c), s	19.2	0.0	0.0	12.9	0.0	0.0	2.4	0.0	0.0	0.2	0.0	38.3
Prop In Lane	0.46		0.05	0.74		0.00	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	448	0	0	335	0		239	0	1038	454	0	982
V/C Ratio(X)	0.80	0.00	0.00	0.52	0.00		0.45	0.00	0.80	0.02	0.00	0.89
Avail Cap(c_a), veh/h	511	0	0	387	0		252	0	1038	532	0	982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.55	0.00	0.55	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.3	0.0	0.0	30.8	0.0	0.0	17.0	0.0	0.0	9.2	0.0	18.5
Incr Delay (d2), s/veh	6.8	0.0	0.0	0.5	0.0	0.0	0.7	0.0	3.7	0.0	0.0	12.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	0.0	3.3	0.0	0.0	0.9	0.0	1.1	0.1	0.0	16.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.1	0.0	0.0	31.3	0.0	0.0	17.7	0.0	3.7	9.2	0.0	30.6
LnGrp LOS	D	A	A	C	A		B	A	A	A	A	C
Approach Vol, veh/h		359			175			940				885
Approach Delay, s/veh		40.1			31.3			5.3				30.3
Approach LOS		D			C			A				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	54.4		26.5	5.6	57.9		26.5				
Change Period (Y+Rc), s	4.5	6.0		5.0	4.5	6.0		5.0				
Max Green Setting (Gmax), s	5.3	44.2		25.0	5.1	44.4		25.0				
Max Q Clear Time (g_c+I1), s	4.4	40.3		14.9	2.2	2.0		21.2				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	1.0		0.2				

Intersection Summary

HCM 6th Ctrl Delay	21.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
17: Cordon Rd & Gaffin Rd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	60	180	145	55	180	265	650	95	185	640	135
Future Volume (veh/h)	85	60	180	145	55	180	265	650	95	185	640	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1900	1841	1900	1870	1781	1826	1856	1900
Adj Flow Rate, veh/h	89	63	34	153	58	23	279	684	95	195	674	82
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, %	0	0	0	2	0	4	0	2	8	5	3	0
Cap, veh/h	191	94	51	176	105	42	660	995	138	423	1124	953
Arrive On Green	0.03	0.08	0.08	0.03	0.08	0.08	0.08	0.62	0.62	0.13	1.00	1.00
Sat Flow, veh/h	1810	1158	625	1781	1292	512	1810	1607	223	1739	1856	1574
Grp Volume(v), veh/h	89	0	97	153	0	81	279	0	779	195	674	82
Grp Sat Flow(s),veh/h/ln	1810	0	1783	1781	0	1804	1810	0	1830	1739	1856	1574
Q Serve(g_s), s	3.0	0.0	4.8	3.0	0.0	3.9	5.2	0.0	25.4	4.0	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	4.8	3.0	0.0	3.9	5.2	0.0	25.4	4.0	0.0	0.0
Prop In Lane	1.00		0.35	1.00		0.28	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	191	0	145	176	0	147	660	0	1133	423	1124	953
V/C Ratio(X)	0.47	0.00	0.67	0.87	0.00	0.55	0.42	0.00	0.69	0.46	0.60	0.09
Avail Cap(c_a), veh/h	191	0	495	176	0	501	696	0	1133	443	1124	953
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.26	0.26	0.26
Uniform Delay (d), s/veh	38.2	0.0	40.2	41.3	0.0	39.8	5.3	0.0	11.4	9.2	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	2.0	32.8	0.0	1.2	0.2	0.0	3.4	0.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	2.2	3.4	0.0	1.7	1.3	0.0	8.5	0.9	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.9	0.0	42.1	74.0	0.0	41.0	5.4	0.0	14.8	9.3	0.6	0.0
LnGrp LOS	D	A	D	E	A	D	A	A	B	A	A	A
Approach Vol, veh/h		186			234			1058			951	
Approach Delay, s/veh		40.6			62.6			12.3			2.4	
Approach LOS		D			E			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.2	60.5	7.0	11.3	9.9	61.7	7.0	11.3				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.0	4.0	6.0	4.0	4.0				
Max Green Setting (Gmax), s	35.0	35.0	3.0	25.0	7.0	37.0	3.0	25.0				
Max Q Clear Time (g_c+1), s	17.2	2.0	5.0	5.9	6.0	27.4	5.0	6.8				
Green Ext Time (p_c), s	0.0	0.7	0.0	0.1	0.0	0.7	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				15.4								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary  
18: Kuebler Blvd/Cordon Rd & Lancaster Dr

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	340	195	215	380	245	150	705	160	180	710	75
Future Volume (veh/h)	60	340	195	215	380	245	150	705	160	180	710	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1811	1856	1796	1811	1841	1870	1885	1885	1900	1900	1870
Adj Flow Rate, veh/h	63	358	146	226	400	181	158	742	0	189	747	28
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, %	0	6	3	7	6	4	2	1	1	0	0	2
Cap, veh/h	79	572	348	337	772	524	259	1017		238	1228	545
Arrive On Green	0.04	0.17	0.15	0.10	0.22	0.20	0.08	0.28	0.00	0.13	0.34	0.30
Sat Flow, veh/h	1810	3441	1572	3319	3441	1560	3456	3582	1598	1810	3610	1585
Grp Volume(v), veh/h	63	358	146	226	400	181	158	742	0	189	747	28
Grp Sat Flow(s),veh/h/ln	1810	1721	1572	1659	1721	1560	1728	1791	1598	1810	1805	1585
Q Serve(g_s), s	1.7	4.9	4.0	3.3	5.2	4.4	2.2	9.4	0.0	5.1	8.7	0.6
Cycle Q Clear(g_c), s	1.7	4.9	4.0	3.3	5.2	4.4	2.2	9.4	0.0	5.1	8.7	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	79	572	348	337	772	524	259	1017		238	1228	545
V/C Ratio(X)	0.80	0.63	0.42	0.67	0.52	0.35	0.61	0.73		0.80	0.61	0.05
Avail Cap(c_a), veh/h	287	2045	1021	789	2318	1225	548	2199		394	2431	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	19.6	16.9	21.9	17.2	12.6	22.6	16.3	0.0	21.3	13.9	11.1
Incr Delay (d2), s/veh	6.8	0.4	0.3	0.9	0.2	0.1	0.9	0.4	0.0	2.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.7	1.2	1.1	1.7	1.2	0.8	2.9	0.0	1.9	2.5	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.7	20.0	17.2	22.7	17.4	12.7	23.5	16.7	0.0	23.6	14.0	11.1
LnGrp LOS	C	C	B	C	B	B	C	B		C	B	B
Approach Vol, veh/h		567			807			900			964	
Approach Delay, s/veh		20.5			17.8			17.9			15.8	
Approach LOS		C			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.8	21.2	6.2	15.3	10.6	18.3	9.1	12.4				
Change Period (Y+Rc), s	4.0	6.0	4.0	5.0	4.0	6.0	4.0	5.0				
Max Green Setting (Gmax), s	30.0	32.0	8.0	33.0	11.0	29.0	12.0	29.0				
Max Q Clear Time (g_c+1/2), s	11.2	10.7	3.7	7.2	7.1	11.4	5.3	6.9				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.5	0.0	0.9	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	17.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
 19: Kuebler Blvd & Mill Creek Dr

Cordon-Kuebler Corridor Plan  
 Alternative #3 - Ped/Bike Centric (PM Peak)



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	155	325	690	160	300	815
Future Volume (veh/h)	155	325	690	160	300	815
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1885	1900	1885	1900	1900	1885
Adj Flow Rate, veh/h	158	282	704	96	306	832
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	0	1	0	0	1
Cap, veh/h	329	465	935	798	636	1250
Arrive On Green	0.18	0.18	0.99	0.99	0.11	0.66
Sat Flow, veh/h	1795	1610	1885	1609	1810	1885
Grp Volume(v), veh/h	158	282	704	96	306	832
Grp Sat Flow(s),veh/h/ln	1795	1610	1885	1609	1810	1885
Q Serve(g_s), s	5.1	9.8	0.8	0.0	4.9	17.3
Cycle Q Clear(g_c), s	5.1	9.8	0.8	0.0	4.9	17.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	329	465	935	798	636	1250
V/C Ratio(X)	0.48	0.61	0.75	0.12	0.48	0.67
Avail Cap(c_a), veh/h	580	690	935	798	668	1250
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.51	0.51	1.00	1.00
Uniform Delay (d), s/veh	23.8	19.9	0.1	0.1	5.4	6.6
Incr Delay (d2), s/veh	0.4	0.5	2.9	0.2	0.2	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	8.8	0.8	0.0	1.0	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.2	20.4	3.0	0.3	5.6	9.4
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	440		800			1138
Approach Delay, s/veh	21.8		2.7			8.4
Approach LOS	C		A			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.1		15.9	10.9	38.2
Change Period (Y+Rc), s		6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s		34.0		21.0	8.0	22.0
Max Q Clear Time (g_c+I1), s		19.3		11.8	6.9	2.8
Green Ext Time (p_c), s		0.7		0.1	0.0	0.6
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			9.0			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
20: Turner Rd & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	670	160	40	785	80	200	195	40	80	190	270
Future Volume (veh/h)	210	670	160	40	785	80	200	195	40	80	190	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1885	1870	1870	1900	1870	1900	1870	1900	1900	1900	1870	1841
Adj Flow Rate, veh/h	219	698	161	42	818	80	208	203	37	83	198	189
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	2	2	0	2	0	2	0	0	0	2	4
Cap, veh/h	235	839	194	405	825	81	285	369	67	267	403	516
Arrive On Green	0.20	1.00	1.00	0.02	0.49	0.48	0.07	0.24	0.22	0.05	0.22	0.22
Sat Flow, veh/h	1795	1470	339	1810	1677	164	1781	1564	285	1810	1870	1560
Grp Volume(v), veh/h	219	0	859	42	0	898	208	0	240	83	198	189
Grp Sat Flow(s),veh/h/ln	1795	0	1809	1810	0	1841	1781	0	1849	1810	1870	1560
Q Serve(g_s), s	11.5	0.0	0.0	1.5	0.0	62.9	9.0	0.0	14.8	4.7	12.1	12.0
Cycle Q Clear(g_c), s	11.5	0.0	0.0	1.5	0.0	62.9	9.0	0.0	14.8	4.7	12.1	12.0
Prop In Lane	1.00		0.19	1.00		0.09	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	235	0	1033	405	0	906	285	0	436	267	403	516
V/C Ratio(X)	0.93	0.00	0.83	0.10	0.00	0.99	0.73	0.00	0.55	0.31	0.49	0.37
Avail Cap(c_a), veh/h	235	0	1033	478	0	906	285	0	436	290	403	516
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.00	0.60	0.78	0.00	0.78	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.5	0.0	0.0	16.8	0.0	32.8	43.2	0.0	43.8	39.0	44.8	33.1
Incr Delay (d2), s/veh	28.6	0.0	4.9	0.0	0.0	24.3	8.0	0.0	4.9	0.2	4.2	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	1.4	0.6	0.0	31.3	2.5	0.0	7.2	2.1	6.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	0.0	4.9	16.8	0.0	57.1	51.1	0.0	48.7	39.3	49.0	35.1
LnGrp LOS	E	A	A	B	A	E	D	A	D	D	D	D
Approach Vol, veh/h		1078			940			448			470	
Approach Delay, s/veh		17.1			55.3			49.8			41.7	
Approach LOS		B			E			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	78.2	10.4	34.6	17.0	68.0	13.0	32.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	6.0	67.0	8.0	27.0	13.0	62.0	9.0	26.0				
Max Q Clear Time (g_c+1), s	13.5	2.0	6.7	16.8	13.5	64.9	11.0	14.1				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.2	0.0	0.0	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay	38.3
HCM 6th LOS	D

HCM 6th Signalized Intersection Summary  
21: 36th Ave & Kuebler Blvd

Cordon-Kuebler Corridor Plan  
Alternative #3 - Ped/Bike Centric (PM Peak)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	585	165	240	890	80	285	115	315	160	140	110
Future Volume (veh/h)	35	585	165	240	890	80	285	115	315	160	140	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1856	1826	1767	1885	1900	1885	1900	1900	1900	1826	1885
Adj Flow Rate, veh/h	37	616	89	253	937	82	300	121	252	168	147	18
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, %	1	3	5	9	1	0	1	0	0	0	5	1
Cap, veh/h	111	945	788	381	980	86	353	118	246	167	365	319
Arrive On Green	0.02	0.51	0.51	0.06	0.38	0.38	0.08	0.22	0.22	0.06	0.20	0.20
Sat Flow, veh/h	1795	1856	1547	1682	1709	150	1795	549	1143	1810	1826	1594
Grp Volume(v), veh/h	37	616	89	253	0	1019	300	0	373	168	147	18
Grp Sat Flow(s),veh/h/ln	1795	1856	1547	1682	0	1858	1795	0	1691	1810	1826	1594
Q Serve(g_s), s	1.3	31.7	3.9	8.8	0.0	69.4	10.0	0.0	28.0	8.0	9.1	1.2
Cycle Q Clear(g_c), s	1.3	31.7	3.9	8.8	0.0	69.4	10.0	0.0	28.0	8.0	9.1	1.2
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.68	1.00		1.00
Lane Grp Cap(c), veh/h	111	945	788	381	0	1066	353	0	364	167	365	319
V/C Ratio(X)	0.33	0.65	0.11	0.66	0.00	0.96	0.85	0.00	1.02	1.01	0.40	0.06
Avail Cap(c_a), veh/h	188	945	788	436	0	1066	353	0	364	167	365	319
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.44	0.00	0.44	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	23.4	16.6	19.2	0.0	38.4	46.2	0.0	51.0	45.0	45.2	42.1
Incr Delay (d2), s/veh	0.6	3.5	0.3	0.9	0.0	10.5	16.7	0.0	53.4	71.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	14.0	1.4	3.2	0.0	34.6	6.1	0.0	16.9	4.8	4.1	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.8	26.9	16.9	20.2	0.0	48.9	62.9	0.0	104.4	116.6	45.5	42.1
LnGrp LOS	C	C	B	C	A	D	E	A	F	F	D	D
Approach Vol, veh/h		742			1272			673			333	
Approach Delay, s/veh		25.9			43.2			85.9			81.2	
Approach LOS		C			D			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.8	71.2	14.0	30.0	6.4	79.6	12.0	32.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0				
Max Green Setting (Gmax), s	15.0	62.0	10.0	26.0	8.0	69.0	8.0	28.0				
Max Q Clear Time (g_c+10), s	11.0	33.7	12.0	11.1	3.3	71.4	10.0	30.0				
Green Ext Time (p_c), s	0.0	0.6	0.0	0.1	0.0	0.0	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	52.7
HCM 6th LOS	D

<b>ID</b>	<b>Software/Method</b>	<b>Intersection</b>	<b>Control Type</b>	<b>LOS</b>	<b>Delay</b>	<b>V/C Ratio</b>
1	Synchro HCM 6th Signal	OR 99E & Hazelgreen Rd	Signal	D	51.6	0.94
8	Synchro HCM 6th Signal	Cordon Rd & Silverton Rd	Signal	D	54.0	0.95
9	Synchro HCM 6th Signal	Cordon Rd & Sunnyview Rd	Signal	E	65.7	1.10
11	Synchro HCM 6th Signal	Cordon Rd & Center St	Signal	D	39.8	0.99
12	Synchro HCM 6th Signal	Cordon Rd & Auburn Rd	Signal	A	5.9	0.92
13	Synchro HCM 6th Signal	Cordon Rd & State St	Signal	F	82.5	1.16
16	Synchro HCM 6th Signal	Cordon Rd & Macleay Rd	Signal	C	21.9	0.99
17	Synchro HCM 6th Signal	Cordon Rd & Gaffin Rd	Signal	B	15.4	0.85
18	Synchro HCM 6th Signal	Kuebler Blvd/Cordon Rd & Lancaster Dr	Signal	B	17.7	0.60
19	Synchro HCM 6th Signal	Kuebler Blvd & Mill Creek Dr	Signal	A	9.0	0.79
20	Synchro HCM 6th Signal	Turner Rd & Kuebler Blvd	Signal	D	38.3	0.83
21	Synchro HCM 6th Signal	36th Ave & Kuebler Blvd	Signal	D	52.7	1.01



## TECHNICAL MEMORANDUM #7 – REFINED DRAFT

DATE: June 1, 2023

TO: Project Management Team

FROM: Lacy Brown, PhD, PE, RSP<sub>1</sub> | DKS Associates  
Jenna Bogert, PE | DKS Associates  
Travis Larson, PE | DKS Associates

SUBJECT: Cordon-Kuebler Corridor Plan  
Project Identification & Prioritization

Project #22001-000

### INTRODUCTION

The primary objective of the Cordon-Kuebler Corridor Plan project is to develop a multimodal corridor plan and an access management strategy that outlines a cohesive and consistent vision for the corridor that encourages desired land development, accommodates future growth, and creates a safe and enjoyable travel experience for users of all ages and abilities.

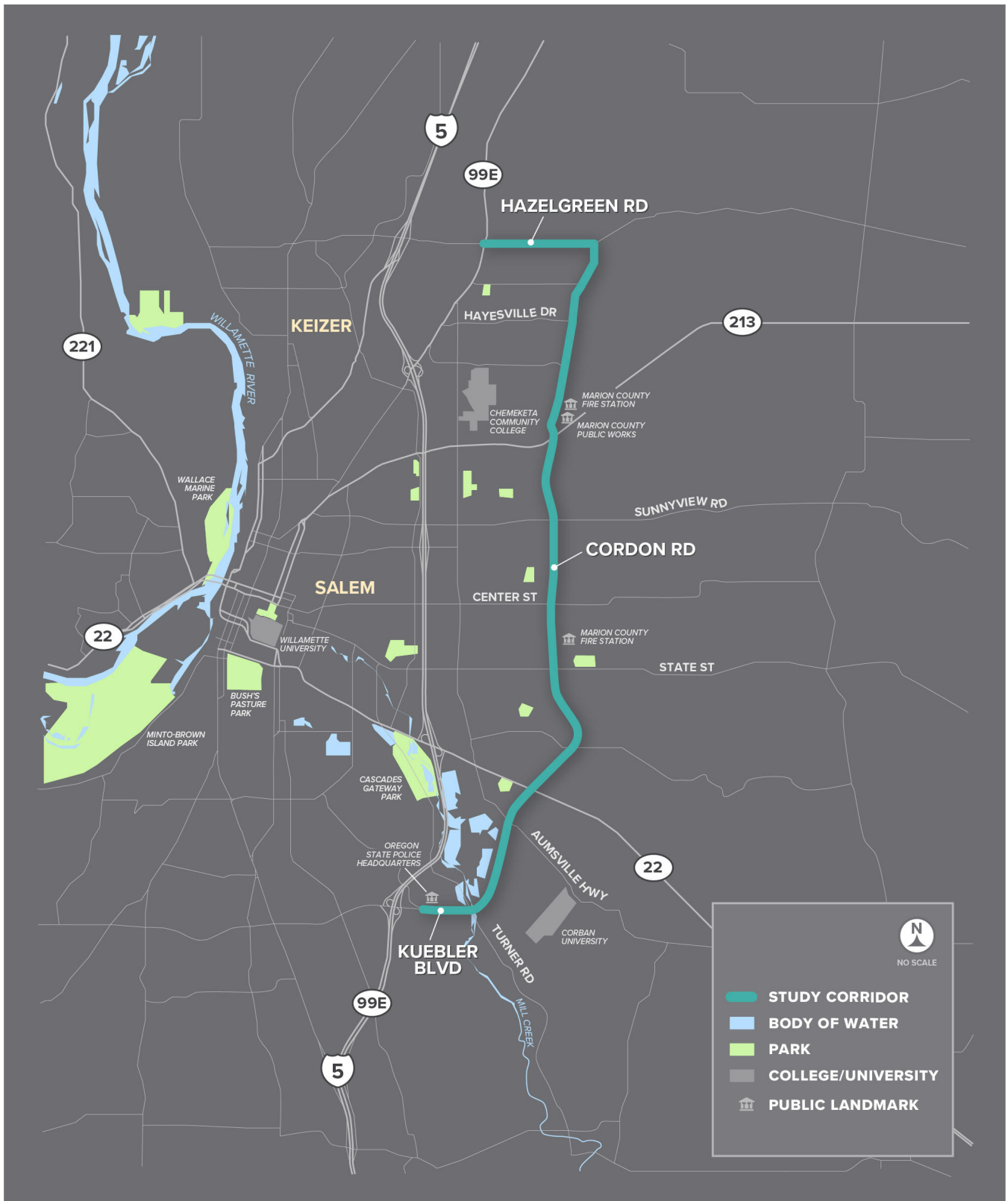
As one of the primary purposes of the Cordon-Kuebler Corridor Plan is to create a consistent framework to ensure the future corridor serves its intended function as a circumferential route around the Salem area that is accessible and beneficial to the community, this plan will create a cohesive access management and roadway design document for Marion County and the City of Salem by recommending short-term and long-term improvement strategies.

This memorandum provides a description of the process for creating a preferred alternative for the corridor, identifying the projects for the preferred alternative, and prioritizing those projects. The projects were categorized as low-, medium-, and high-priority and cost estimates were provided for ten of the key projects identified by the County and City.

### STUDY AREA

The study area and all associated roadway intersections and segments were previously noted and inventoried in Technical Memorandum #3 – Existing Intersections and Segment Operations Analysis. The corridor includes approximately 10.8 miles of roadway segments and 21 study intersections. Some of the corridor is under City of Salem ownership, while the majority of the corridor is under Marion County ownership. See Figure 1 for an overview of the study area.



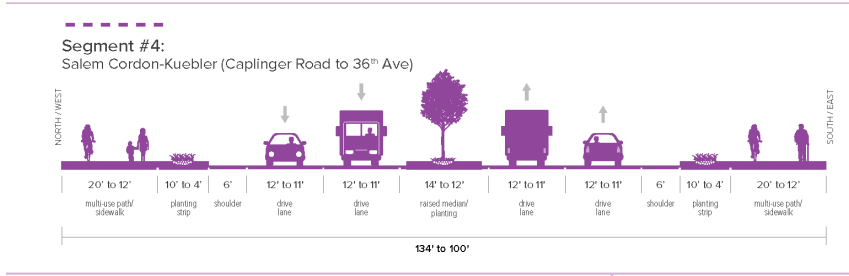
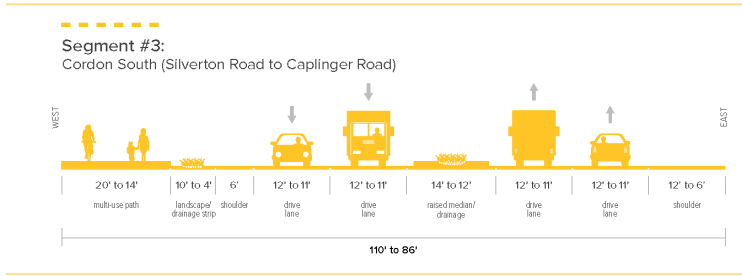
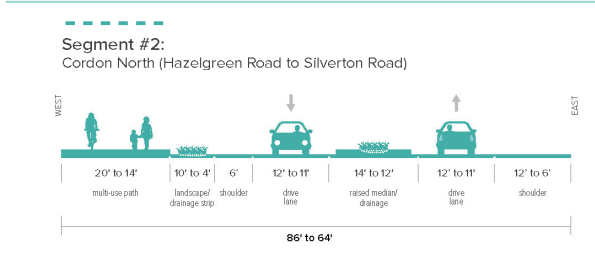
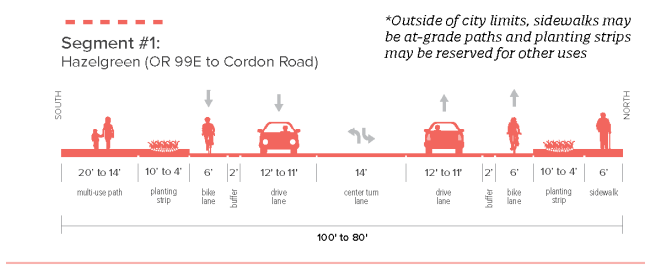


**FIGURE 1: STUDY AREA AND PROJECT EXTENTS**

## PREFERRED ALTERNATIVE

Three potential alternatives for the desired corridor cross section were previously identified in Technical Memorandum #6 - Transportation Alternatives. The final preferred alternative was selected through a detailed, multi-step evaluation process involving input from both City of Salem staff and Marion County staff, which is described in detail in the Appendix. Figure 2 on the next page shows the Preferred Alternative.

# Cordon-Kuebler Corridor Plan: Preferred Alternative

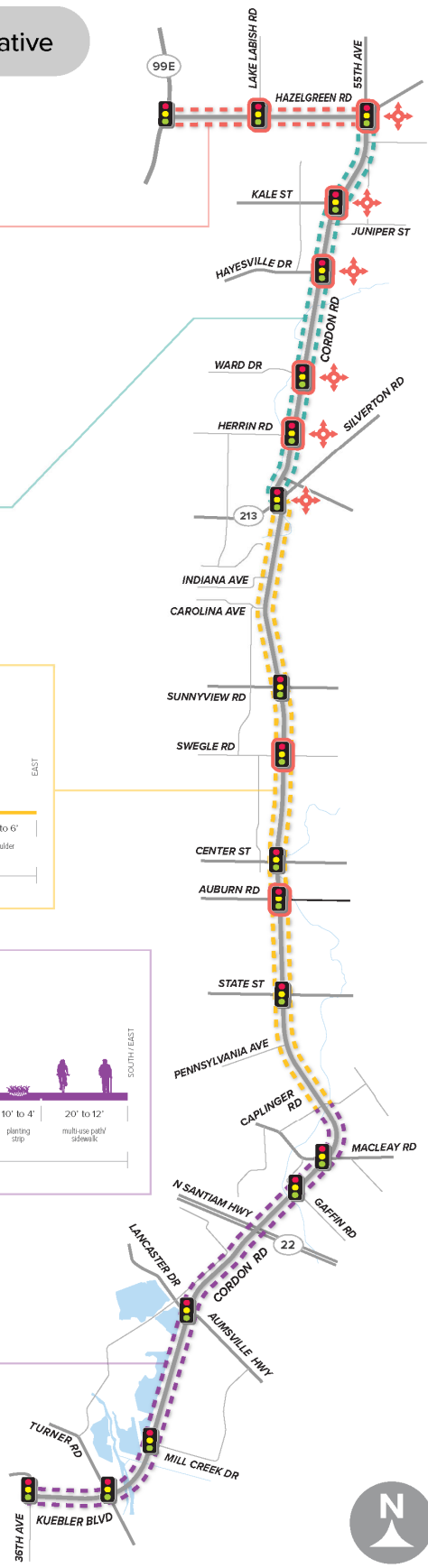


## INTERSECTION TRAFFIC CONTROL

- NEW TRAFFIC SIGNAL
- EXISTING TRAFFIC SIGNAL
- ROUNDABOUT ALTERNATIVE

(a) All intersections without a planned traffic signal will be stop-controlled with a center median down the corridor, allowing right-turn movements only. Allowances for a major-street left-turn movement can be considered per intersection location.

(b) All planting strips and medians may be designated for alternative stormwater or drainage uses, which are to be designed to applicable County and City standards.



**FIGURE 2: PREFERRED ALTERNATIVE CROSS-SECTIONS & TRAFFIC CONTROL**

## PROJECT IDENTIFICATION & PRIORITIZATION PROCESS

Transitioning the Cordon-Kuebler corridor to the Preferred Alternative will be a complex, costly, and time-intensive effort. As such, the County and City will need to implement upgrades in phases over many years. The Preferred Alternative was broken down into reasonably sized individual projects that were categorized as short-, mid-, and long-term projects based on expected timelines for funding, design and construction, and partnership with future developers.

Figure 3 shows a map of the transportation projects for the Preferred Alternative on the following page. Each intersection and bridge project was assigned its own project number, but the roadway and multi-use path improvements were separated into approximately 1.0 to 3.0-mile sections based on cross-section changes and natural segmentation. These projects were then broken into sub-projects based on realistic construction groupings as suggested by the County.

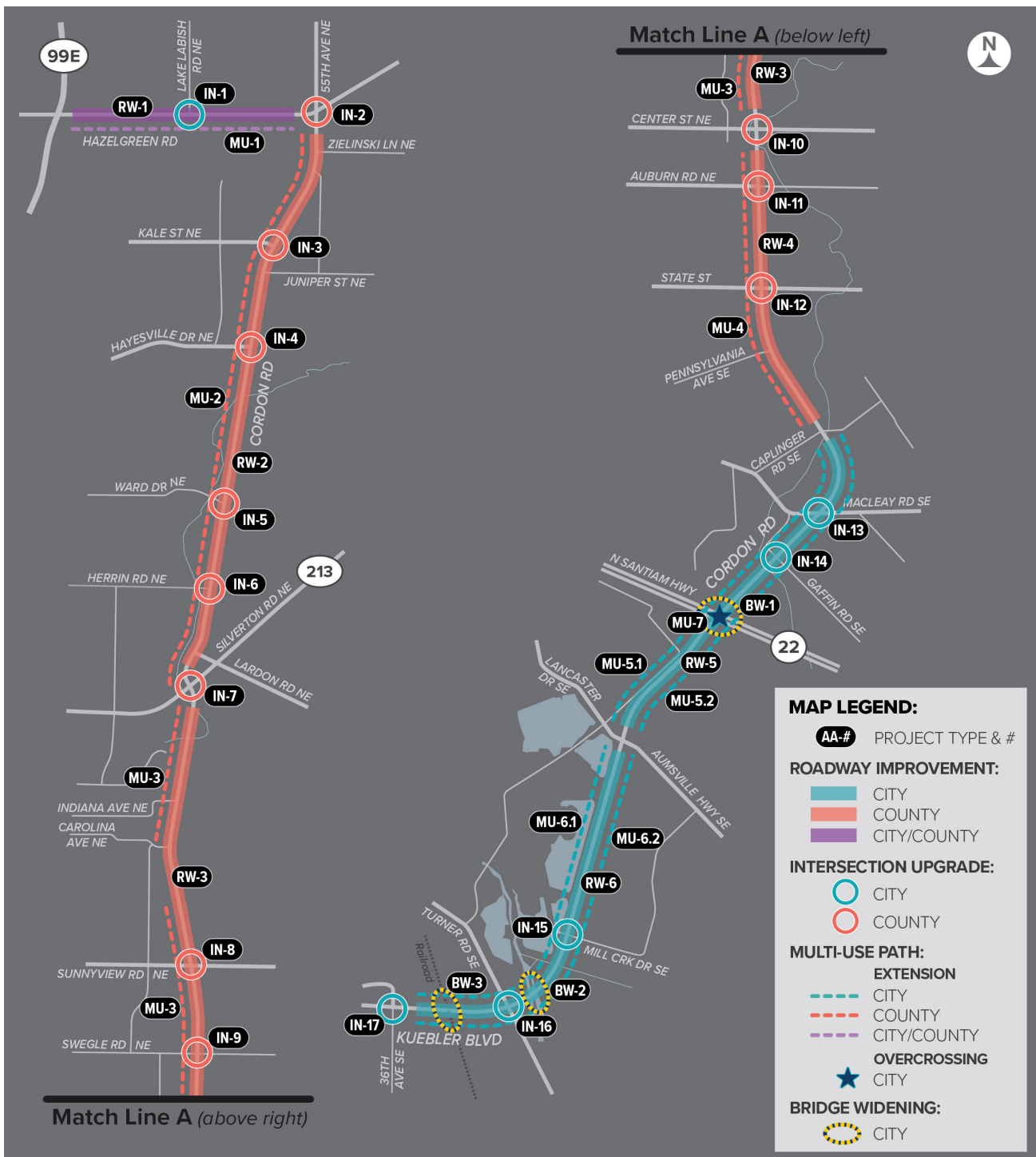
To prioritize the transportation projects, criteria were developed that matched the goals of the corridor plan. The more criteria that a project met, the higher the priority. Each criterion was assigned an equal weight of 1. Projects that met three or more criteria were considered high priority, two criteria were considered medium priority, and one or less criteria were considered low priority.

### **Ask if the project does the following...**

1. Addresses Existing Safety Deficiency
2. Addressed Existing Capacity Deficiency
3. Connects Existing Ped or Bike Infrastructure
4. Exists in the City TSP or County TSP
5. Is Competitive for Grants or Federal Funds
6. Improves Access Management

Planning-level cost estimates were developed for 10 key projects that were selected by City and County staff. These specific projects represent projects with high-community interest, increased opportunities for funding, and/or address existing deficiencies.

The full list of projects with their associated information is provided in Table 1, Table 2, and Table 3 below.



**PROJECTS:**

**ROADWAY IMPROVEMENT**

- RW-1 99E to Cordon
- RW-2 Hazelgreen to Silverton
- RW-3 Silverton to Center
- RW-4 Center to Caplinger
- RW-5 Caplinger to Lancaster
- RW-6 Lancaster to 36th

**INTERSECTION UPGRADE**

- IN-1 Lake Labish/Hazelgreen
- IN-2 Cordon/Hazelgreen
- IN-3 Kale/Cordon
- IN-4 Hayesville/Cordon
- IN-5 Ward/Cordon
- IN-6 Herrin/Cordon
- IN-7 Silverton/Cordon
- IN-8 Sunnyview/Cordon
- IN-9 Swegle/Cordon
- IN-10 Center/Cordon
- IN-11 Auburn/Cordon
- IN-12 State/Cordon
- IN-13 Macleay/Cordon
- IN-14 Gaffin/Cordon
- IN-15 Mill Creek/Kuebler
- IN-16 Turner/Kuebler
- IN-17 36th/Kuebler

**MULTI-USE PATH EXTENSION**

- MU-1 99E to Cordon
- MU-2 Hazelgreen to Silverton
- MU-3 Silverton to Center
- MU-4 Center to Caplinger
- MU-5.1 Caplinger to Lancaster NW Side
- MU-5.2 Caplinger to Lancaster SE Side
- MU-6.1 Lancaster to 36th NW Side
- MU-6.2 Lancaster to 36th SE Side

**MULTI-USE PATH OVERCROSSING**

- MU-7 OR 22 Overcrossing

**BRIDGE WIDENING**

- BW-1 OR 22 Overpass Bridge
- BW-2 Mill Creek Bridge
- BW-3 Railroad Overpass Bridge

**FIGURE 3: PREFERRED ALTERNATIVE TRANSPORTATION PROJECTS**

**TABLE 1: MARION COUNTY PROJECT LIST**

PROJ. ID	PROJECT NAME	DESCRIPTION	LENGTH (MILES)	PRIORITY	COST ESTIMATE (2023 DOLLARS)
IN-2	Cordon/Hazelgreen Intersection Upgrade	Install a traffic signal and dedicated EBR turn lane or single lane roundabout	N/A	High	\$4,970,000 (Roundabout)
					\$4,400,000 (Signal)
IN-3	Kale/Cordon Intersection Upgrade	Install a traffic signal or single lane roundabout	N/A	Low	-
IN-4	Hayesville/Cordon Intersection Upgrade	Install a traffic signal with dedicated eastbound left and right turn lanes or single-lane roundabout	N/A	Medium	-
IN-5	Ward/Cordon Intersection Upgrade	Install a traffic signal with dedicated eastbound left and right turn lanes or single-lane roundabout	N/A	Low	-
IN-6	Herrin/Cordon Intersection Upgrade	Install a traffic signal with dedicated eastbound left and right turn lanes or single-lane roundabout	N/A	Low	-
IN-7	Silverton/Cordon Intersection Upgrade	Replace the existing traffic signal or install a dual-lane roundabout	N/A	Low	-
IN-8	Sunnyview/Cordon Intersection Upgrade	Replace the existing traffic signal	N/A	Medium	-
IN-9	Swegle/Cordon Intersection Upgrade	Install a new traffic signal with dedicated eastbound and westbound left turn lanes	N/A	Medium	\$4,305,000
IN-10	Center/Cordon Intersection Upgrade	Replace the existing traffic signal and add a dedicated northbound right turn lane	N/A	High	\$4,660,000
IN-11	Auburn/Cordon Intersection Upgrade	Install a new traffic signal with dedicated eastbound and westbound left turn lanes	N/A	Medium	-
IN-12	State/Cordon Intersection Upgrade	Replace the existing traffic signal and add dedicated westbound, eastbound, and southbound right turn lanes and dual westbound, dual northbound, and dual southbound left turn lanes	N/A	Low	-

<b>RW-2</b>	Hazelgreen to Silverton Roadway Improvement	Widen to two vehicle lanes with a center median, shoulders, and a landscape strip	2.4	High	\$24,680,000
<b>RW-3</b>	Silverton to Center Roadway Improvement	Widen to four vehicle lanes with a center median, shoulders, and a landscape strip	2.2	Medium	-
<b>RW-4</b>	Center to Caplinger Roadway Improvement	Widen to four vehicle lanes with a center median, shoulders, and a landscape strip	1.5	High	\$22,855,000
<b>MU-2</b>	Hazelgreen to Silverton Multi-Use Path Extension	Install a multi-use path on the west side of Cordon Road	2.4	Medium	-
<b>MU-3</b>	Silverton to Center Multi-Use Path Extension	Install a multi-use path on the west side of Cordon Road	2.2	High	-
<b>MU-4</b>	Center to Caplinger Multi-Use Path Extension	Install a multi-use path on the west side of Cordon Road	1.5	Medium	\$5,120,000

**TABLE 2: JOINT COUNTY & CITY PROJECT LIST**

<b>PROJ. ID</b>	<b>PROJECT NAME</b>	<b>DESCRIPTION</b>	<b>LENGTH (MILES)</b>	<b>PRIORITY</b>	<b>COST ESTIMATE (2023 DOLLARS)</b>
<b>RW-1</b>	99E to Cordon Roadway Improvement	Widen to two vehicle lanes with a center turn lane, bicycle lanes, planting strips, and a sidewalk	1.3	Medium	-
<b>MU-1</b>	99E to Cordon Multi-Use Path Extension	Install a multi-use path on the south side of Hazelgreen Road	1.3	Low	-

**TABLE 3: CITY OF SALEM PROJECT LIST**

<b>PROJ. ID</b>	<b>PROJECT NAME</b>	<b>DESCRIPTION</b>	<b>LENGTH (MILES)</b>	<b>PRIORITY</b>	<b>COST ESTIMATE (2023 DOLLARS)</b>
<b>IN-1</b>	Lake Labish/Hazelgreen Intersection Upgrade	Install a traffic signal	N/A	Low	-
<b>IN-13</b>	Macleay/Cordon Intersection Upgrade	Replace the existing traffic signal and add dedicated eastbound and westbound left turn lanes	N/A	Low	-
<b>IN-14</b>	Gaffin/Cordon Intersection Upgrade	Replace the existing traffic signal and add dedicated westbound and northbound right turn lanes	N/A	Low	-

<b>IN-15</b>	Mill Creek/Kuebler Intersection Upgrade	Replace the existing traffic signal	N/A	Low	-
<b>IN-16</b>	Turner/Kuebler Intersection Upgrade	Replace the existing traffic signal and add dedicated eastbound, westbound, and northbound right turn lanes, dual northbound left turn lanes, and dual southbound right turn lanes	N/A	Low	\$4,715,000
<b>IN-17</b>	36th/Kuebler Intersection Upgrade	Replace the existing traffic signal with dedicated eastbound, westbound, and northbound right turn lanes, dual northbound left turn lanes, and dual southbound left turn lanes	N/A	Low	\$5,490,000
<b>BW-1</b>	OR 22 Overpass Bridge Widening	Widen the bridge to accommodate the applicable roadway cross-section	N/A	Low	-
<b>BW-2</b>	Mill Creek Bridge Widening	Widen the bridge to accommodate the applicable roadway cross-section	N/A	Medium	-
<b>BW-3</b>	Railroad Overpass Bridge Widening	Widen the bridge to accommodate the applicable roadway cross-section	N/A	Medium	-
<b>RW-5</b>	Caplinger to Lancaster Roadway Improvement	Widen to four vehicle lanes with a raised center median, shoulders, and planting strips	1.6	Medium	-
<b>RW-6</b>	Lancaster to 36th Roadway Improvement	Widen to four vehicle lanes with a raised center median, shoulders, and planting strips	1.6	High	-
<b>MU-5.1</b>	Caplinger to Lancaster Multi-Use Path Extension (NW Side)	Install a multi-use path on the northwest side of Cordon Road	1.6	High	-
<b>MU-5.2</b>	Caplinger to Lancaster Multi-Use Path Extension (SE Side)	Install a multi-use path on the southeast side of Cordon Road	1.6	Medium	-
<b>MU-6.1</b>	Lancaster to 36th Multi-Use Path Extension (NW Side)	Install a multi-use path on the northwest side of Kuebler Boulevard	1.6	Medium	-
<b>MU-6.2</b>	Lancaster to 36th Multi-Use Path Extension (SE Side)	Install a multi-use path on the southeast side of Kuebler Boulevard	1.6	High	-
<b>MU-7</b>	OR 22 Multi-Use Path Overcrossing	Install a cantilevered multi-use path structure onto the northwest side of the OR 22 overcrossing bridge	N/A	High	\$3,845,000



## SUMMARY & PROJECT IMPLEMENTATION

The full implementation of the desired corridor improvements will require significant time, resources, and external funding.

This technical memorandum presented the final preferred alternative for the Cordon-Kuebler corridor. The full implementation of the desired corridor improvements will require significant time, resources, and external funding. As such, the final alternative was divided into manageable projects and those projects were prioritized using the overall project goals and funding opportunities. This prioritized project list is intended to serve as a guide for the strategic planning of future projects by both Marion County and the City of Salem.

## NEXT STEPS & PROJECT IMPLEMENTATION

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Nearing the completion of the project, the project team is focusing on the development of a cohesive access management plan (Technical Memorandum #8) and compiling all relevant information gathered over the course of the project into a final summary report.

# APPENDIX



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# PREFERRED ALTERNATIVE SELECTION PROCESS

The following process was used to identify the preferred alternative:

1. Identify evaluation criteria, weight, and scoring system
2. Score each alternative by corridor segment
3. Consider scoring results, public input, County and City priorities, and desired elements of each alternative
4. Arrive at the Preferred Alternative

## STEP 1 – IDENTIFY EVALUATION CRITERIA, WEIGHT, AND SCORING SYSTEM

The evaluation criteria were based on the project’s goals and objectives, which were identified in Technical Memo #2 - Vision Plan. The evaluation criteria are listed in **TABLE 4** and were then weighted based on input from City and County staff. The category weight indicates the relative importance of one criterion in relation to another criterion. The combined safety category, for example, is considered three times more important than the Strategic Investment considerations in the process of identifying the highest-ranking alternative.

**TABLE 4: EVALUATION CRITERIA AND WEIGHTS**

CATEGORY	CRITERION	CRITERION WEIGHT	CATEGORY WEIGHT
SAFETY	Vehicle Safety	1.5	3
	Ped & Bike Safety	1.5	
MOBILITY	Mobility	3	3
ACCESS MANAGEMENT	Multimodal Connectivity	1	2
	Access Management Rating	1	
COMMUNITY & ECONOMIC VITALITY	City Perspective	0.5	1
	County Perspective	0.5	
STRATEGIC INVESTMENT	Project Benefits vs Cost	0.5	1
	Funding Opportunities	0.5	
COORDINATION	Agency Coordination	1	1
ENVIRONMENT	Environmental Impacts	1	1
PUBLIC SUPPORT	Public Support	1	1

The project corridor was split into four segments for evaluation. Segments 2 and 3 are under Marion County jurisdiction, Segment 4 is under City of Salem jurisdiction, and Segment 1 has portions under Marion County jurisdiction and portions under City of Salem jurisdiction. Breaking up the corridor into multiple segments allowed for a finer level of detail in matching alternatives to different corridor needs and priorities.

- Segment 1: Hazelgreen Road (OR 99E to Cordon Road)
- Segment 2: Cordon Road (Hazelgreen Road to Silverton Road)
- Segment 3: Cordon Road (Silverton Road to Caplinger Road)
- Segment 4: Kuebler Boulevard-Cordon Road (Caplinger Road to 36<sup>th</sup> Avenue)

**STEP 2 – SCORE EACH ALTERNATIVE BY CORRIDOR SEGMENT**

Using the evaluation criteria above, each of the three alternatives were then assigned a score between 1 and 4 for each criterion for each segment. These scores helped to demonstrate what attributes from each alternative were the most desirable for the corridor. Scores were generally assigned in the following way.

- 1 = Alternative is worse than existing conditions
- 2 = Alternative is the same as existing conditions
- 3 = Alternative is slightly improved compared to existing conditions
- 4 = Alternative is significantly improved compared to existing conditions

The results of the criteria and scoring process resulted in the following overall evaluation criteria scores by segment shown in **TABLE 5**. As shown, Alternative 2 and Alternative 3 tied for the highest evaluation score for Segment 1. Alternative 2 scored the highest for the remaining Segments.

**TABLE 5: OVERALL EVALUATION RESULTS**

	ALTERNATIVE 1 (TRAFFIC SIGNAL CENTRIC)	ALTERNATIVE 2 (ROUNDAABOUT CENTRIC)	ALTERNATIVE 3 (BIKE-PED CENTRIC)
Segment 1	40.5	<b>42.0</b>	<b>42.0</b>
Segment 2	38.0	<b>40.0</b>	37.0
Segment 3	38.0	<b>40.0</b>	34.0
Segment 4	38.5	<b>40.5</b>	33.5

**BOLD** = Highest scoring alternative for the segment

Three key findings from the evaluation results informed the selection of the preferred alternative.

- First, both the County and City, along with the public, have expressed the desire for better bicycle facilities. While Alternative 3 has the greatest separation between bicycles and vehicles, the scoring for Alternative 3 was generally lower than the other alternatives due to capacity restrictions and mobility concerns.
- Second, as just stated, mobility concerns are one of the top priorities for the County and City as the corridor is considered a circumferential route with both freight and farming heavy vehicle usage. As such, the final alternative must consider these competing needs.
- Third, roundabouts were identified as being the preferred traffic control due to their benefits to safety and operations. However, right-of-way, complexity, and cost may make them infeasible at some locations.

### **STEP 3 – COMBINE DESIRED ELEMENTS OF EACH ALTERNATIVE**

Once the initial evaluation was complete, the project team took the results and key observations and discussed what elements of each alternative were most desired, which was guided by input from County Commissioners and City of Salem staff.

- First, to align with the high criterion weight of mobility, it was decided that the baseline vehicular cross-section needed to accommodate expected traffic growth predictions, following the conceptual designs of Alternative 1 and 2. This includes two vehicle travel lanes on the corridor in each direction south of Silverton Road, and one vehicle travel lane on the corridor in each direction north of Silverton Road. This would maintain mobility standards as set forth by the County and City.
- Second, roundabouts were discussed as the preferred traffic control alternative for the corridor. However, issues of right-of-way, cost, complexity of navigating multi-lane roundabouts, and multimodal considerations may make them impractical in many locations. Therefore, roundabouts will be considered at locations with a documented safety need (e.g., historical crash patterns), where they provide the greatest benefit and also have a higher chance of qualifying for state and federal safety grants. Therefore, Marion County and the City preferred to recommend traffic signals (like in Alternative 1) as the desired traffic control device on the corridor with roundabouts suggested as an alternative traffic control option at key intersections north of Silverton Road (where they would be single-lane roundabouts) that have an identified safety need. Based on crash history, DKS identified roundabouts for consideration at the following intersections: Hazelgreen Road/Cordon Road, Cordon Road/Hayesville Drive, and Cordon Road/Silverton Road.
- Third, the final alternative includes accommodation for increased bicycle safety. It was determined that higher levels of bicycle separation were needed for bicycles than painted buffers or similar separation techniques. Therefore, on-street marked bicycle lanes were removed and the separated multi-use path was widened to accommodate increased bicycle activity. However, wide roadway shoulders were maintained for bicyclists that desired to use the roadway or provide flexible space during emergency events. This change narrowed the primary pavement width of the vehicle area which has the potential to reduce vehicle speeds. Both Marion County and the City of Salem prefer to encourage bicycle use on the multi-use paths as they provide a more comfortable, safer facility for bicyclists of all ages and abilities. As also previously discussed, signalized intersections also facilitate more protected movements for bicycles and pedestrians. Bicycle signals at signalized intersections should be considered as the desired improvements are implemented to safely transition the bicycles on the multi-use paths through intersections.

### **STEP 4 – ARRIVE AT THE PREFERRED ALTERNATIVE**

After making the previously discussed adjustments to the corridor segments and intersections, the Preferred Alternative was the result. The Preferred Alternative is depicted in **FIGURE 2**.



# memo

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to **Cordon Road Corridor Study Project Management Team and Committees**  
from **Shayna Rehberg, Brandon Crawford, and Darci Rudzinski, MIG|APG**  
re **Cordon-Kuebler Corridor Plan**  
**Technical Memorandum #8 – Access Management Plan**  
date **July 13, 2023**

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## Introduction

This memorandum looks at existing zoning, land use, and existing access points, with a focus on access policy to help chart a path forward to improved access management and implementation in the Cordon-Kuebler Corridor.

The memorandum begins with a combined review of existing zoning, land use, and access points (**Section 1**), which includes land under either City of Salem or Marion County jurisdiction. Existing access situations and potential access options are generally discussed before an overview of existing City and County policy and standards regarding access and access spacing (**Section 2**). As part of this overview of existing policies and standards, clarifications and considerations regarding access policy are initially identified; it is recognized that these clarifications and considerations may be made as part of this planning process or as part of subsequent City and County planning efforts.

“Reasonable alternative access” is defined and inventoried for the corridor (**Section 3**). With this framework with which to assess how parcels could take access onto existing and planned roadways, the remainder of the memorandum is devoted to Access Management Best Practices (**Section 4**) and Future Policy Considerations (**Section 5**). These sections lay out short-, medium-, and long-range best practice approaches for access management and identify policy considerations for the County as well as jointly for the City and County.

## 1. Existing Land Use and Access Conditions

### LAND USE AND ACCESS

This section addresses the corridor in three parts:

- North Corridor - **Hazelgreen Road** from Portland Road to Cordon Road, and **Cordon Road** from Hazelgreen Road to Herrin Road
- Central Corridor - **Cordon Road** from Herrin Road to Auburn Road
- South Corridor - **Cordon Road** from Auburn Road to Lancaster Drive, and **Kuebler Boulevard** from Lancaster Drive to Turner Road

Note: Other memoranda and the Corridor Plan itself organize the corridor into four segments – Hazelgreen, Cordon North, Cordon South, and Salem Cordon-Kuebler. It is a minor difference and does not affect the findings of this section.

The Cordon-Kuebler Corridor includes a combination of Marion County and City of Salem zoning, as shown for the northern, central, and southern parts of the corridor in the figures in this section. Existing land uses in the corridor are described in this section for these same geographies. Land uses were determined using property class codes in GIS files from the County, aerial imagery (Google Maps), and Project Management Team knowledge. County Assessor’s data was used to determine if there are currently improvements on a parcel or if the parcel is vacant.

Alongside existing zoning and land uses, this section also provides an overview of existing access points in the corridor. Access points were determined using aerial imagery of the corridor and are indicated by dots on the figures in this section.

Establishing existing zoning and land use helps identify properties in the corridor that may already be developed as permitted by zoning and, more importantly, those that could still be developed. The inventory of existing access points shows which properties already have one or more access points onto corridor roadways (Hazelgreen Road, Cordon Road, and Kuebler Boulevard). Properties that front these roadways - but are not shown as having an access point on these roadways - may or may not have other opportunities for access.

### Land Use, Zoning, and Access – North Corridor

See Figure 1. Land use, zoning, and access information is also available on a web map: [Cordon-Kuebler Corridor \(arcgis.com\)](https://arcgis.com).

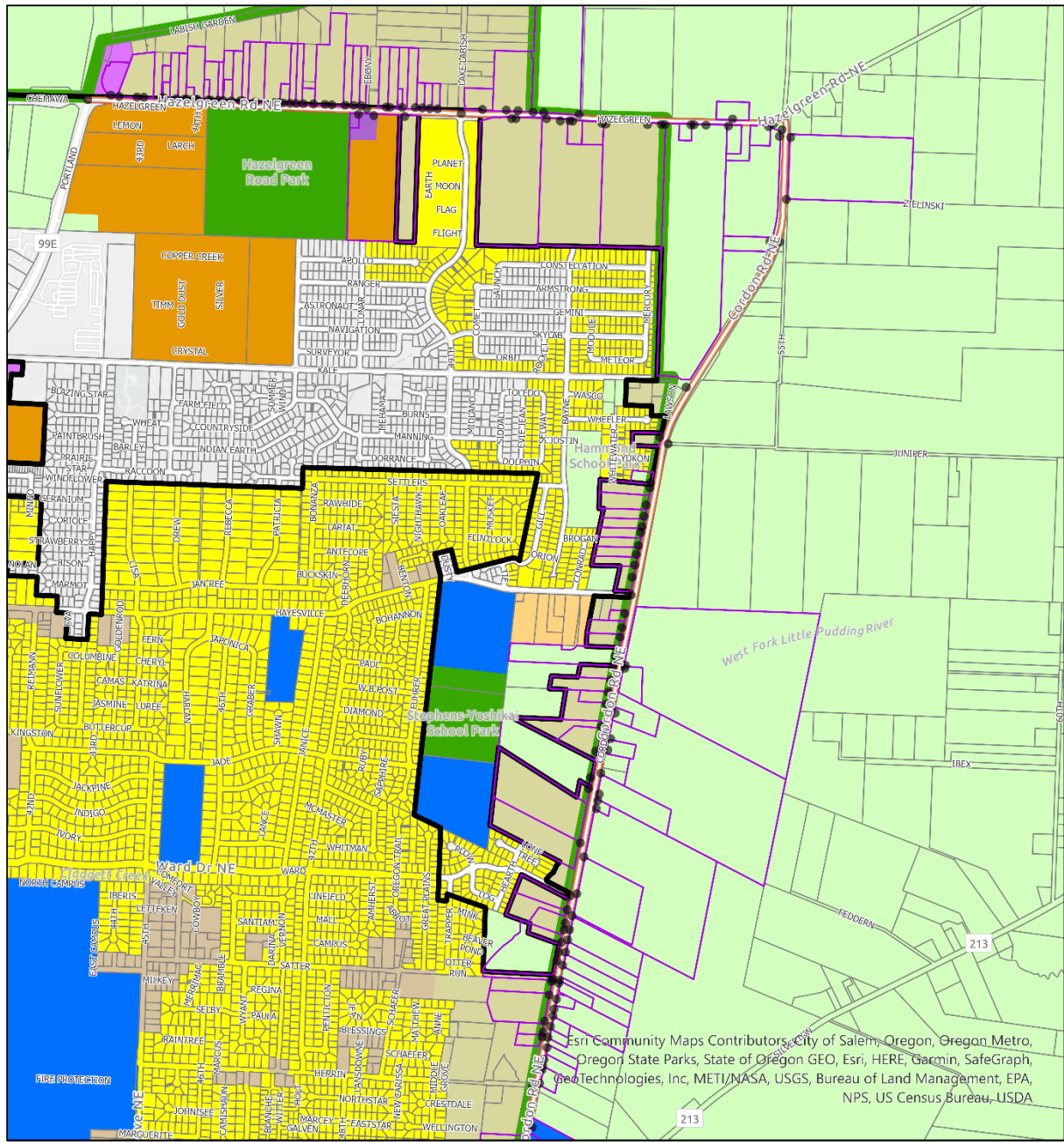
**Hazelgreen Road.** Other than multifamily uses and zoning in the southeast corner of the Hazelgreen Road/Portland Road intersection, uses and zoning along Hazelgreen Road are largely rural residential (use listed as “tract” and zoning Urban Transition) and agricultural (use listed as “farm” and zoning Exclusive Farm Use (EFU)). This is consistent with this section of the road being surrounded by land that is mostly unincorporated.

Many properties fronting Hazelgreen Road have existing accesses (driveways), including some of the approximately eight properties identified as vacant.

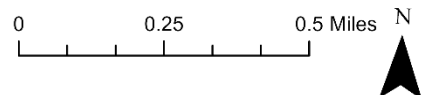
**Cordon Road – Hazelgreen Road to Herrin Road.** Land along this section of Cordon Road is largely unincorporated. Zoning is largely Urban Transition along the west side of Cordon Road within the Urban Growth Boundary (UGB) and EFU along the east side of Cordon Road outside the UGB. Existing uses – residential, rural residential, and agricultural – are consistent with this zoning.

Many of the properties fronting this section of Cordon Road also have existing access points (driveways). The approximately six vacant properties either have an existing access or abut a road intersecting Cordon Road., One exception is a property zoned EFU (County) between Hazelgreen Road and Kale Street that is potentially part of a farm operation; residences (houses) are located on properties immediately to the north and west where the farm parcel may currently take access.

Figure 1. Zoning – North Corridor



### Cordon-Kuebler Corridor North Zoning



- Access Points
- Cordon-Kuebler Corridor
- Lots with Direct Access
- Parcels
- Salem City Limits
- Salem UGB
- Commercial General
- EFU
- Multi Residential
- Public
- Single Residential
- Urban Development
- Urban Transition
- Public/Private Education
- Residential Agriculture
- Single Family Residential
- Multiple Family Residential 1
- Multiple Family Residential 2
- Mixed Use-I
- Public Amusement



## Land Use, Zoning, and Access – Central Corridor

See Figure 2. Land use, zoning, and access information is also available on a web map: [Cordon-Kuebler Corridor \(arcgis.com\)](https://arcgis.com).

**Cordon Road – Herrin Road to Auburn Road.** While the Central Corridor includes a significant amount of unincorporated land fronting Cordon Road, it also features denser, more urban zoning and uses.

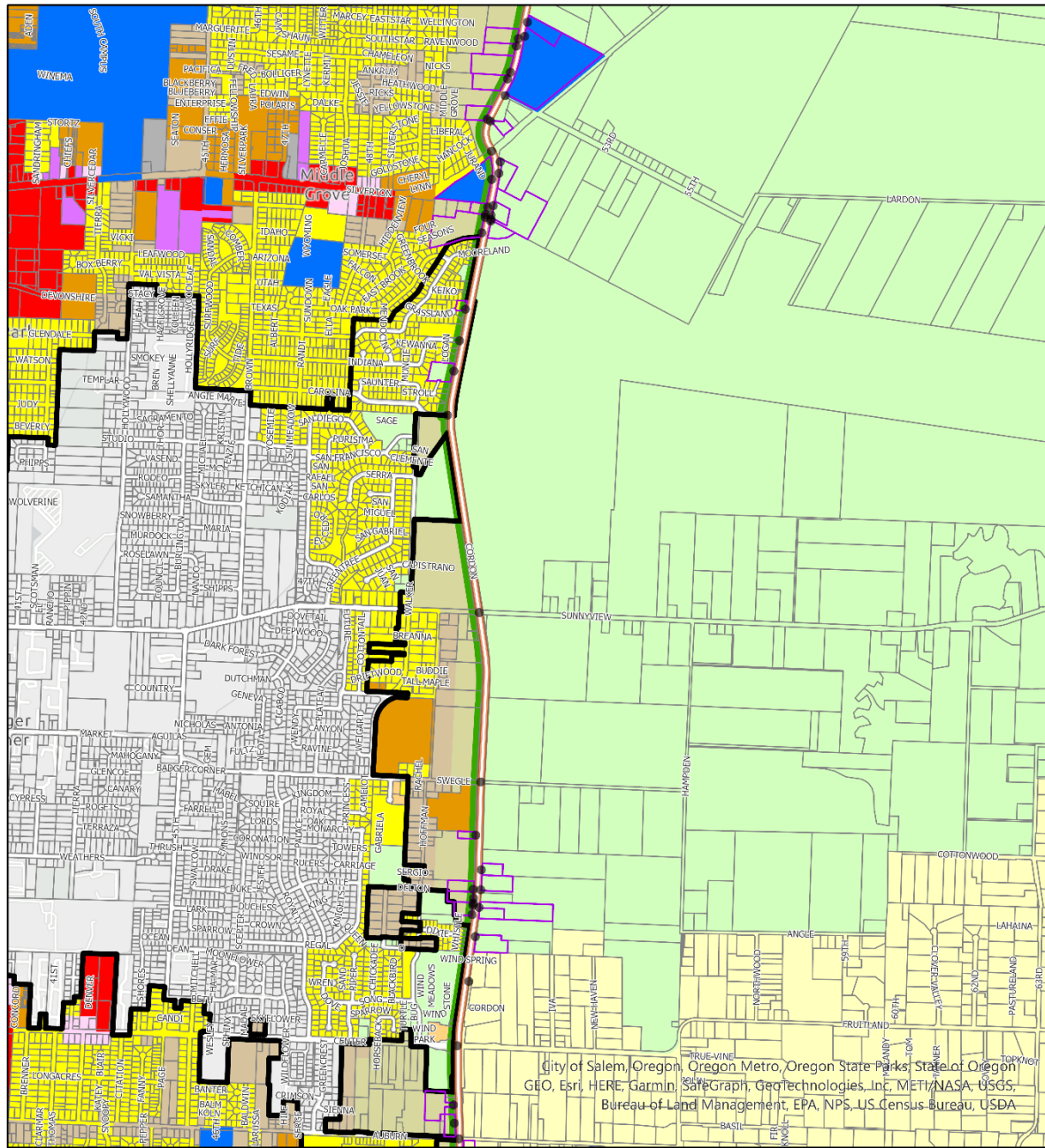
- Marion County offices (e.g., public works and planning) are located on the north end (zoned Public and its use listed as “Commercial” given there is not an institutional use code).
- North of Sunnyview Road, Chavez Elementary School occupies two tax lots, one incorporated and zoned Residential Agriculture and the other unincorporated and zoned Urban Transition.
- Places of worship front Cordon Road on the west side, including: First Baptist Church, south of Silverton Road, zoned Urban Transition (County); Messiah Lutheran Church, on the north side of Indiana Avenue, zoned Single Residential (City); New Hope Foursquare Church, on the north side of Swegle Road, split-zoned Urban Transition and Urban Development (County); and Calvary Chapel Salem, on the south side of Swegle Road, zoned Multi Residential (County).
- A number of residential subdivisions front or back up to Cordon Road on the west side between Silverton Road and Center Street.
- Large agricultural lots are predominant on the east side of Cordon Road.

Except for the Marion County offices (two driveways) and First Baptist Church (two driveways), the uses listed above do not take their access on Cordon Road. The large agricultural lots on the east side of Cordon Road do not have existing access on Cordon Road, although some of the smaller agricultural and rural residential uses do.

For select parcels on the east side of Cordon Road between State Street and Auburn Road, there is an access sub-area plan in Chapter 12 of Rural Marion County TSP (2005). The plan provides locations for future access points, relocated from Cordon Road. The plan relies on easements and connections via new or existing public roads to reduce the number of driveways on Cordon Road in this area. Such measures are discussed further in the Access Management Strategies of this memorandum. Many vacant lots in the Central Corridor either have an existing access on Cordon Road or abut a road intersecting Cordon Road. However, there are also a number of lots identified as vacant that do not have these access conditions, including:

- A couple properties on the west side of Cordon Road between Sunnyview Road and Swegle Road, zoned Urban Transition (County) or split-zoned Urban Transition and Urban Development;
- A couple large EFU-zoned (County) properties on the east side of Cordon Road between Swegle Road and Center Street but that are adjacent to agricultural/residential uses with driveways; and
- A few smaller properties zoned Urban Transition (County) on the west side of Cordon Road between Center Street and Auburn Road, with one property in between them with an existing access point on Cordon Road.

Figure 2. Zoning – Central Corridor



### Cordon-Kuebler Corridor Central Zoning

0 0.25 0.5 Miles



- Access Points
- Cordon-Kuebler Corridor
- ▭ Lots with Direct Access
- ▭ Parcels
- ▭ Salem City Limits
- ▭ Salem UGB
- ▭ Marion County Zoning
- ▭ Acreage Residential
- ▭ Commercial
- ▭ Commercial General
- ▭ Commercial Office
- ▭ EFU
- ▭ Industrial
- ▭ Multi Residential
- ▭ Public
- ▭ Single Residential
- ▭ Urban Development
- ▭ Urban Transition
- ▭ Salem Zoning
- ▭ Multiple Family Residential 1
- ▭ Residential Agriculture
- ▭ Single Family Residential

### Land Use, Zoning, and Access – South Corridor

The South Corridor is the most developed part of the corridor. See Figure 3. Land use, zoning, and access information is also available on a web map: [Cordon-Kuebler Corridor \(arcgis.com\)](https://arcgis.com).

**Cordon Road – Auburn Road to State Street.** The following zoning and uses characterize the east side of this segment of Cordon Road: Acreage Residential zoning (County) and rural residential uses; Public zoning (County) and the Marion County Fire District; and Industrial zoning (County) and nursery and freight uses. Residential and commercial-zoned land (City) on the west side of Cordon Road is due to be developed (the former Pictsweet site).

The rural residences on the east side of Cordon Drive have existing private driveways, and the fire district appears to have three driveways.

There is just one existing access point for the vacant Pictsweet lots on the west side of Cordon Road. Access to these properties could potentially be through some combination of Auburn Road, State Street, and/or a new street and consolidated access on Cordon Road.

**Cordon Road – State Street to Macleay Road.** This segment of the South Corridor features a large amount of Single Residential (County) or Single Family Residential (City) zoning and uses on the west side of Cordon Road. Special Agriculture zoning (County) and rural residential (tract") uses characterize the east side of Cordon Road.

Most of the rural residences on the east side of the road have existing driveways. Access to the subdivisions on the west side of the road is provided via established streets including Pennsylvania Avenue, Wagon Wheel Drive, and Caplinger Road.

Two large vacant lots in this segment of the corridor do not have existing access points on Cordon Road. These properties include a parcel in the southeast corner of the Cordon Road/State Street intersection, zoned Special Agriculture (County), where future access could potentially be from State Street; and a parcel in the northwest corner of the Cordon Road/Macleay Road intersection, zoned Industrial Business Campus (City), that has access opportunities off of Macleay Road.

**Cordon Road – Macleay Road to Lancaster Drive.** Special Agriculture and Urban Transition (County) and rural residences and agriculture characterize the zoning and uses in the northern portion of the east side of this segment. The Employment Center zoning (City) and major warehousing uses (Home Depot Distribution Center and Amazon Fulfillment Center) characterize the southern portion of the east side. Industrial Commercial and Multiple Family Residential 2 zoning (City) and uses characterize the west side of Cordon Road.

Cordon Road is located on an overpass over North Santiam Highway in this segment.

There are very few private driveways in this segment of Cordon Road, with the exception of the rural residences on the east side of Cordon Road between Macleay Road and North Santiam Highway. Most uses take their access off of intersecting roads like Lancaster Drive/Aumsville Highway.

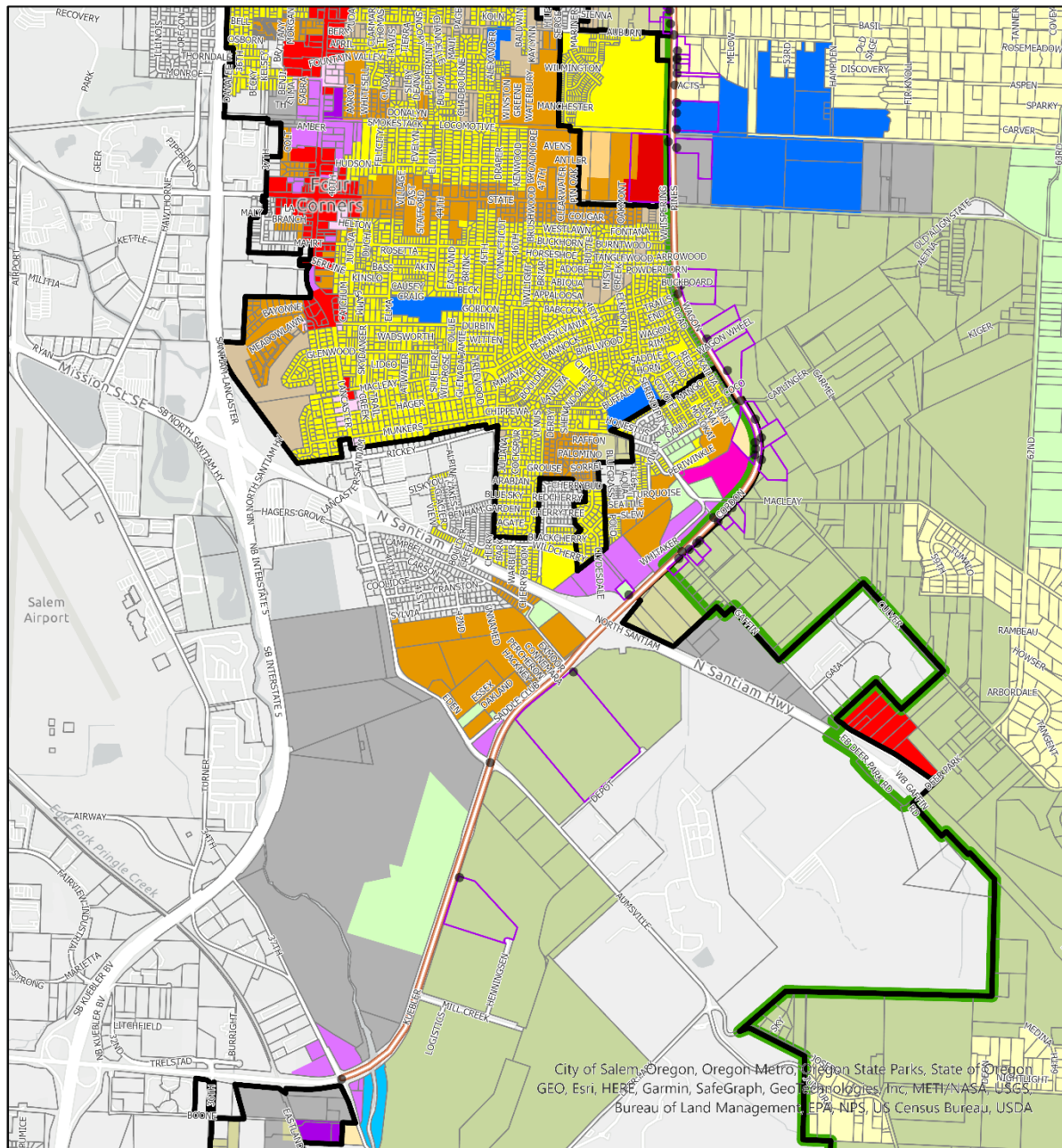
Several of the Special Agriculture- and Urban Transition-zoned properties on the east side of Cordon Road are identified as vacant and not having an existing access on Cordon Road. An Industrial Commercial-zoned lot on the west side of Cordon Road is also identified as vacant and not having an existing access on Cordon Road. Two vacant lots are located along Cordon Road in the northwest and northeast corners of its intersection with Lancaster Drive/Aumsville Highway, which should have access alternatives to Cordon Road.

**Kuebler Boulevard – Lancaster Drive to Turner Road.** Large employment and industrial uses – including Raw Advantage Processing, Winco Foods, and Riverbend Asphalt – occupy Employment Center and General Industrial-zoned (City) land in this segment.

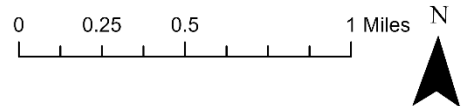
No private driveways are found in this segment other than a single driveway identified on a vacant lot north of Winco Foods. Otherwise, properties in this segment appear to all take access off of intersecting streets.



Figure 3. Zoning – South Corridor



### Cordon-Kuebler Corridor South Zoning



- |                           |                      |                       |                            |                               |                           |
|---------------------------|----------------------|-----------------------|----------------------------|-------------------------------|---------------------------|
| ● Access Points           | Marion County Zoning | Industrial            | Urban Development          | Industrial Commercial         | Retail Commercial         |
| — Cordon-Kuebler Corridor | Acreege Residential  | Industrial/Commercial | Urban Transition           | Industrial Park               | Single Family Residential |
| — Lots with Direct Access | Commercial           | Multi Residential     | Salem Zoning               | Multiple Family Residential 1 |                           |
| ▭ Parcels                 | Commercial General   | Public                | Employment Center          | Multiple Family Residential 2 |                           |
| ▭ Salem City Limits       | Commercial Office    | Single Residential    | General Industrial         | Public Health                 |                           |
| ▭ Salem UGB               | EFU                  | Special Agriculture   | Industrial Business Campus | Residential Agriculture       |                           |

## DISCUSSION OF EXISTING ACCESS

As represented the Land Use and Access summaries above, there is a mixture of access situations in the corridor, including the following:

1. Properties that already have access onto a corridor roadway or intersecting roadway, via one or more driveways;
2. Properties that do not currently have access on corridor roadways but could take access on an intersecting roadway or potentially from an adjoining property – the latter may particularly apply to what appear to be farm operations with common ownership between adjoining properties; and
3. Properties that do not currently have access on corridor roadways and do not currently appear to have intersecting roadway or adjoining property options for access.

Given the number of parcels along the corridor and the variety of conditions related to land use, land use authority, property ownership, and opportunities for future development and alternate access opportunities, future access management solutions will necessarily reflect a range of options. These options could include:

- Maintaining the existing access on the corridor;
- Maintaining existing access points but access is modified by roadway treatments such as medians;
- Consolidating access, if there are two or more existing driveways;
- Sharing access with an adjoining property, whether that involves removing an existing driveway from one of the properties or avoiding establishing a new driveway on one of the properties;
- Maintaining access on or shifting access to an intersecting roadway;
- Creating frontage or backage roads for alternative access; and
- When “reasonable alternative access” (discussed in the next section) is not feasible, providing a new access onto a corridor roadway.

The first and last options are the least preferred and can be framed as such in the Corridor Plan.

These access options are discussed in more detail later in this memorandum, in sections regarding access management best practices and future policy considerations.

## 2. Existing Access Policies and Standards

This section provides an overview of existing access policies and standards on the books for the City of Salem and Marion County. City and County policies take different approaches to access. There are opportunities during and subsequent to this planning process to clarify and align policies. The following are topics for consideration and clarification in the Corridor Plan:

- Whether City access policy and standards govern access for properties in the City's UGB when they front County roadways like Cordon Road, particularly for land not yet incorporated
- Options for how to reconcile City and County access policy – e.g., in a potentially single, uniform policy – in the future

These topics are explored further in memorandum sections regarding access management best practices and future policy considerations, which follow this section.

### CITY OF SALEM

Per the City's 2020 TSP, the whole corridor (Hazelgreen Road, Cordon Road, and Kuebler Boulevard) is classified as a parkway. Salem Revised Code (SRC) Section 804.040 (Access onto parkways) establishes parkway access as follows:

*(a) Number of driveway approaches. **No driveway approach shall be allowed onto a parkway** unless the driveway approach is for a complex that generates 10,000 or more vehicle trips per day, or the driveway approach is a service driveway approach that provides access to a site controlled by a franchised utility service provider or a governmental entity. [emphasis added]*

[...]

*(c) Spacing. Driveway approaches onto a parkway shall be no less than one mile from the nearest driveway approach or street intersection, measured from centerline to centerline.*

[...]

*(f) No variance or adjustment. The standards set forth in this section cannot be varied or adjusted.*

Other than for very large uses (e.g., subdivisions and large shopping centers or malls) and utilities, City policy prohibits direct access to Cordon Road in the corridor.

City access spacing standards dictate driveway spacing – for example, the minimum distance required between a driveway on an intersecting road and a corridor roadway. The City establishes access spacing standards in its code, differentiated by the functional classification of the road on which access is proposed to be taken. Per SRC Sections 804.030 and 804.035:

- Access spacing on collector streets – Driveways or intersections must be a minimum of 200 feet from intersections with major arterials or minor arterials, measured from centerline to centerline.
- Access spacing on major and minor arterials – Except for driveways providing access to a single-family, two-family, three-family, or four-family residential use, driveways must be a minimum of 370 feet from the nearest driveway or street intersection, measured from centerline to centerline.

### MARION COUNTY

On the County side, access on Cordon Road is governed by the 1981 Cordon Road Resolution. The following summarizes the resolution:

1. Adopted on April 22, 1981 by the Marion County Board of Commissioners.
2. Establishes policies that the County must follow “in acting upon applications for land divisions, zoning approval, driveway permits and other actions affecting Cordon Road.”
3. Allows for parcels abutting Cordon Road that were legally established prior to the date of the resolution and have no other public road access to one point of access to Cordon Road, whether or not such access existed at the time the resolution was passed.
4. Affirms that “existing locations, forms and usages of these accesses” are rights that are not affected by the resolution unless “a change” is proposed.
5. Requires that properties adjacent to Cordon Road in the county develop “in a manner that will not increase, and wherever possible will reduce, consolidate or eliminate, accesses to Cordon Road.”

The resolution raises questions, including the following:

- What qualifies as “changes” that could potentially trigger a change in existing access?
- How should the guarantee of access that the resolution appears to make to parcels on Cordon Road without access (#3) be reconciled with the requirement that access to Cordon Road must not be increased (#5)?

Policy 1 under Access Management (Section 10.1.3) in the 2005 Marion County Rural TSP sets the following access spacing standards for new or modified accesses on County Arterials. Thus, these standards govern access points on Hazelgreen Road, Kuebler Boulevard, and roads intersecting the corridor from the east:

- Minimum 500 feet spacing from any intersection with a state highway, arterial, or major collector; and
- Minimum 400 feet spacing from any other intersection, including a private access (i.e., driveway).

Policy 4 under Access Management (Section 10.1.3) provides criteria to vary from the access standards. Policies 5 and 6 establish cases in which greater spacing may be required.



### 3. Inventory of Reasonable Alternative Access

The GIS web map ([Cordon-Kuebler Corridor \(arcgis.com\)](https://arcgis.com)) indicates which parcels are likely to require direct access to Cordon Road, Kuebler Boulevard, or Hazelgreen Road; those that are likely to obtain alternative access; and those that will need further evaluation at the time of an access permit request. The criteria of the color coding for the parcels are as follows:

- Green/Reasonable Alternative Access – Parcel has frontage on, or existing access to, a public street that is **not** Cordon Road, Kuebler Boulevard, or Hazelgreen Road.
- Yellow/Potential Reasonable Alternative Access – Parcel has the potential to take access from an alternative, future public facility, such as a future backage/frontage road (requires coordination between multiple property owners).
- Red/No Reasonable Alternative Access – Parcel does not have frontage on any other public street, there are no identified future frontage/backage roads in the vicinity, and there is more than one parcel between it and the next closest public street.

#### **DEFINING “REASONABLE ALTERNATIVE ACCESS”**

The project team intended to develop a definition of “reasonable alternative access” for use in this plan and as a reference for future decision-making. However, after discussions with access management experts who are intimately familiar with legal proceedings on the topic of access management, it was determined that no such definition could be provided. The determination of “reasonable alternative access” can only be made in a court of law, as the definition will vary from the perspective of the agency and the property owner. In lieu of a formal definition, the criteria outlined above for generating the GIS map may provide the County with a starting point for case-by-case discussions with property owners during the access permitting process.

## 4. Access Management Best Practices

The following is a list of access management best practices. These are categorized as short-range, medium-range, and long-range practices depending on the implementation time, cost, and whether coordination of multiple property owners is required to implement.

### **SHORT-RANGE: LIMITING TURNING MOVEMENTS WITHIN INTERSECTION FUNCTIONAL AREAS**

The functional area of an intersection represents the distance upstream and downstream of an intersection that is impacted by the operations of that intersection (e.g., vehicles slowing down to join a queue or accelerating after turning onto the roadway). Driveways should not be located within the functional area of an intersection when possible. If an existing driveway is located within the functional area of an intersection and cannot be relocated, turning movements should be restricted where possible using signs, markings, channelizing islands, and/or medians.

### **MEDIUM-RANGE: CONSOLIDATION OF ACCESS POINTS**

Every access point introduces conflicts and an increased risk for crashes. When properties redevelop, identify opportunities for developments to consolidate access points to the major road by reducing the number of access points to a single parcel or sharing access points between adjacent developments.

### **MEDIUM-RANGE: PROVIDING AUXILIARY LANES AT DRIVEWAYS**

A primary safety concern at driveways is the speed differential between turning vehicles and through traffic, and providing dedicated turn lanes greatly reduces the potential speed differential. However, because turn lanes require additional right-of-way and can be costly to implement, they should only be installed when the volume of traffic utilizing the driveway is high enough to warrant them.

### **LONG-RANGE: INSTALLING RAISED CENTER MEDIANS**

Installing a raised median is an effective treatment to reduce conflict points without eliminating driveways by restricting driveways to right-in/right-out only (no left turns). Raised medians also reduce the risk of head-on and side-swipe crashes, and can be utilized to provide pedestrian refuge areas at enhanced crossings. However, eliminating direct left-turns at driveways introduces the need for out-of-direction travel. Refer to the Median U-turn and Roundabout strategies as supplemental treatments that reduce out-of-direction travel when left turns are restricted due to raised center medians.

### **LONG-RANGE: FRONTAGE ROADS AND BACKAGE ROADS**

Frontage roads run parallel to the major roadway and provide access to individual parcels that do not have direct access to the major roadway. Backage roads are a similar concept but are located on the back side of the parcels (parcels are between major roadway and backage road).

Frontage and backage roads reduce the number of access points onto the major roadway and separate the high-speed major road traffic from the slower turning traffic accessing the parcels. Providing local backage road connections can also spur additional economic growth once the number of parcels with direct access to a local street and adjacent developments increases (potentially doubled).

Right-of-way dedication and coordination between multiple properties is required to implement this access management strategy.

### **LONG-RANGE: UNSIGNALIZED AND SIGNALIZED U-TURNS**

U-turns may be used to reduce out-of-direction travel and allow drivers to make a right-turn/U-turn combination instead of a direct left-turn into or out of a driveway. In Oregon, U-turns are prohibited

unless specifically indicated at the following locations: intersections with a traffic signal and between intersections on highways within the limits of an incorporated city.

Signalized U-turns require protected turning movements (i.e., no flashing yellow arrows) and no overlap right turn phasing at the traffic signal. Additional right-of-way may be required to accommodate large turning radii of trucks and other large vehicles.

Mid-block, unsignalized bi-directional U-turns may require additional right-of-way to accommodate the design elements. Approximately 120 feet – 140 feet of right-of-way is needed for a four-lane cross-section.

### **LONG-RANGE: ROUNDABOUTS**

Though not appropriate for all situations, roundabouts offer safety, mobility, and access management benefits by eliminating traditional left-turns at intersections and providing a safe and efficient means of making U-turns to reduce out-of-direction travel along segments with raised medians. Potential benefits attributable to roundabouts range from increased safety and vehicular capacity to reduced fuel consumption, improved air quality, aesthetics, convenient U-turns, and traffic calming.

### **LONG-RANGE: ESTABLISH OR MODIFY ACCESS SPACING STANDARDS AND TRAFFIC SIGNAL SPACING STANDARDS**

A high-density of access points (public street intersections and driveways) creates a complex driving environment that can be challenging for drivers to navigate safely. Increasing the distance between traffic signals and unsignalized access points improves the flow of traffic on the major road, reduces congestion, simplifies the driving environment, and improves air quality for heavily traveled corridors.

### **ONGOING: PUBLIC EDUCATION**

Effective access management along a corridor provides safety, mobility, livability, and economic benefits to freight, retail businesses, residents, multimodal commuters, and other stakeholders. Clearly articulating and presenting the benefits to these groups will help the agency provide a successful access management program. Communication materials could include photos, case studies, brochures, videos, testimonials, presentations, and fact sheets that clearly explain the value and importance of access management.

## 5. Future Policy Considerations

This section provides a list of potential policy revisions or clarifications for the City of Salem and Marion County to consider if either agency decides to amend their existing policy related to access management.

### MARION COUNTY POLICY CONSIDERATIONS

- Consider the following clarifications for the 1981 Cordon Road Resolution:
  - Policy 1 – Define what constitutes a change in land use. Specify what types of requests will trigger a required change in access, such as a land use application that proposes one of the following: a change in use; a zoning change that allows more intensive development; or development that is projected to generate additional vehicular trips, above a specific number or a specified percent increase, as calculated using the latest ITE trip generation rates.
  - Policy 2 – Replace “wherever possible” with when reasonable alternative access and potential reasonable alternative access exists, in terms of when access points will be reduced, consolidated, or removed from Cordon Road.
- Modify access spacing standards on County Arterials, or specifically on Cordon Road and Kuebler Boulevard. Consider increasing the minimum distance between private accesses and public streets to one (1) mile. This would be consistent with the City of Salem Parkway access spacing standard.
- For parcels within the UGB but not yet annexed into Salem city limits (i.e., parcels subject to an urban growth management agreement between Marion County and the City of Salem), consider modifying the agreement and existing access management policy in the County’s Rural TSP (Policy 3 in Section 10.1.3) to specify that County roads in **or adjacent** to the UGB will be subject to City access management policies and standards.

### JOINT POLICY CONSIDERATIONS

- Consider modifying the urban growth management agreement between the City and County to specify that County roads in **or adjacent** to the UGB will be subject to City access management policies and standards.
- Ultimately, consider a single, unified policy for the County and City that requires removal, sharing, or consolidation of access points when an action on the subject property or prohibits no new access points on the corridor when “reasonable alternative access” or “potential reasonable alternative access” exists and the following land use actions are proposed: a change in use; a zoning change that allows more intensive development; or development that is projected to generate a specific number or percentage of trips above that generated by the existing use, per the latest ITE trip generation rates.

## Attachments

- A. Marion County Cordon Road Resolution (1981)

Attachment A – Marion County Cordon Road Resolution (1981)

*Dave Chamness Cindy*

RECEIVED

FILED

APR 29 1981

BEFORE THE BOARD OF COMMISSIONERS

1981 APR 29 PM 3:00

MARION COUNTY ENGINEER FOR MARION COUNTY, OREGON

EDWIN P. MORGAN, CLERK

In the Matter of Restricted Access on Cordon Road (County Road No. 97).

DEPUTY

RESOLUTION

WHEREAS, Marion County has acquired certain rights-of-way and constructed Cordon Road (County Road 97), which is especially designed for through traffic from the northerly right-of-way line of State Highway 22 to its intersection with Hazelgreen Road (County Road 52); and

WHEREAS, the adopted Salem Metropolitan Area Transportation Plan designates Cordon Road as an arterial route to facilitate free flow of traffic around the Salem Metropolitan Area; and

WHEREAS, experience with designated arterial roads has shown that a proliferation of access points destroys their traffic carrying capacity; and

WHEREAS, ORS 374.305 provides that no one may place, build or construct on the right-of-way of any County Road, any approach road or structure or substantially alter or change the manner of using any such approach road without first obtaining written permission from the Board of County Commissioners;

NOW, THEREFORE, BE IT RESOLVED that limiting and controlling further access to Cordon Road is necessary for the preservation of public safety and the protection of traffic from the hazards of unregulated and unrestricted entry from adjacent property, and in general, the promotion of the public welfare; and

Marion County Legal Counsel  
Marion County Courthouse  
Salem, Oregon 97301  
Telephone 588-5220

1 BE IT FURTHER RESOLVED that Cordon Road is hereby designated  
2 as a throughway, as provided in ORS 374.420; and

3 BE IT FURTHER RESOLVED, that the Marion County Board of  
4 Commissioners hereby adopts the following CORDON ROAD ACCESS  
5 POLICIES which limit access in a manner consistent with the  
6 existing access rights of abutting properties. These Policies are  
7 consistent with and implement the land use and transportation  
8 policies of the Marion County Comprehensive Plan and the Salem  
9 Metropolitan Area Transportation Plan; and

10 BE IT FURTHER RESOLVED that these stated Policies shall be  
11 followed by the County in acting upon applications for land  
12 divisions, zoning approval, driveway permits and other actions  
13 affecting Cordon Road.

14 CORDON ROAD ACCESS POLICIES

- 15 1. Points of access existing prior to the date of this Resolution  
16 have been identified and are listed in Appendix A which is  
17 hereby made a part of this Resolution. Any parcel abutting  
18 Cordon Road which was legally established prior to the date  
19 of this Resolution and which has no other public road access  
20 is entitled to one point of vehicular access to Cordon Road,  
21 whether or not such access now exists. Existing locations,  
22 forms and usages of these accesses are prior rights which are  
23 not affected by this Resolution unless a change is proposed.
- 24 2. It shall be the policy of Marion County that properties  
25 adjacent to Cordon Road shall be developed in a manner that

26 ////

Page

1 will not increase, and wherever possible will reduce,  
2 consolidate or eliminate, accesses to Cordon Road.

- 3 3. The Marion County Board of Commissioners hereby delegates  
4 authority to the Director of Public Works to review and either  
5 approve or approve subject to conditions, all requests for  
6 new, additional or changed access to Cordon Road that are con-  
7 sistent with these Policies, as also provided in Marion County  
8 Ordinances 540 and 579. Any such requests that are not con-  
9 sistent with these Policies shall be denied by the Director of  
10 Public Works. Requests denied by the Director of Public Works  
11 may be appealed to the Board of Commissioners within thirty  
12 (30) calendar days from the date of denial. The appeal shall  
13 be in writing and shall clearly explain the basis of the appeal.  
14 The Board may set the appeal for public hearing.

- 15 4. The following actions require access design approval by the  
16 Director:

- 17 a) New access and/or changes in usage or location of  
18 existing accesses.  
19 b) Increases in the type and amount of access traffic from  
20 existing legally established parcels and land uses.  
21 c) Future building permits, land use changes and/or land  
22 divisions. Applicants shall obtain access design approval  
23 from the Director of Public Works prior to applying for  
24 building permits, land use changes and/or land divisions.

25 Such approvals shall be granted only if proposed changes  
26 conform to the Policies set forth in this Resolution and  
conform generally to the standards for arterial street access  
contained in the "Guidebook for Access Management" published

Page

3

RESOLUTION  
Cordon Road Access



1 in July, 1979, by the Oregon Department of Transportation in  
2 cooperation with the U.S. Department of Transportation.  
3 Policies herein shall govern in the event of any apparent  
4 conflict with the "Guidebook for Access Management". Existing  
5 and potential traffic generation from allowable uses on bene-  
6 fitting properties and from all other sources served by Cordon  
7 Road shall be considered in determining conformance with these  
8 Policies.

- 9 5. New street connections to Cordon Road shall be limited to  
10 collector and arterial streets. Such connections shall be  
11 subject to advance approval of design (including location) by  
12 the Director of Public Works.
- 13 6. Creation of new parcels of land abutting Cordon Road after the  
14 adoption of this Resolution shall be approved only in those  
15 cases in which the Director of Public Works determines that  
16 the land division and associated access changes provide maxi-  
17 mum possible reduction in numbers of vehicles directly  
18 accessing Cordon Road and that resulting accesses to other  
19 public roads are consistent with then-existing traffic safety  
20 and roadway standards.
- 21 7. Whenever possible, new private access points approved by the  
22 County shall be located where future public roadways are  
23 planned. If no public roadway is planned in the vicinity,  
24 consolidation of the access point with other accesses on  
25 adjacent properties shall be required whenever possible.

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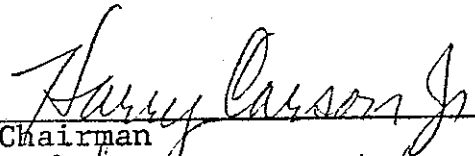
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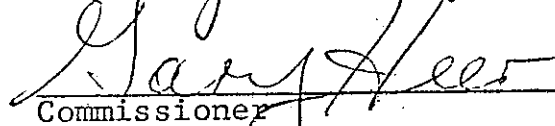
RESOLUTION  
Cordon Road Access

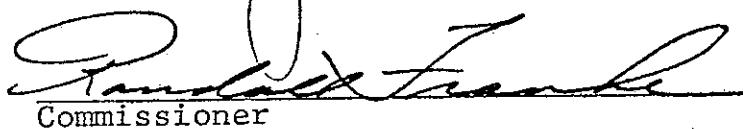
1 8. A second access to any parcel shall not be allowed unless the  
2 Director of Public Works or the Board of Commissioners deter-  
3 mines, subject to the review of Legal Counsel, that a single  
4 access is not adequate for the highest and best use of the  
5 affected property and that a second access will not adversely  
6 affect the traffic safety and movement on Cordon Road.

7 Dated at Salem, Oregon, this 22<sup>nd</sup> day of April, 1981.

8 MARION COUNTY BOARD OF COMMISSIONERS

9  
10   
Chairman

11   
12 Commissioner

13   
14 Commissioner

15  
16  
17  
18  
19  
20  
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23  
24  
25  
26  
Marion County Legal Counsel  
Marion County Courthouse  
Salem, Oregon 97301  
Telephone 588-5220

Page

5

RESOLUTION  
Cordon Road Access

EXISTING DRIVEWAYS, APPROACH ROADS,  
AND ACCESS POINTS ON CORDON ROAD,  
MARKET ROAD 97

Surveyor's Station	Street Address	Driveway Description			
		Direction, from Cordon Road	Approx. Width (Ft.)	Surface	Use
Marion County Market Road 97 (Cordon Road) Commences at Salem City Limits at Approximately Surveyor's Station 33+50.					
37+93		East	15'	Gravel	Field
38+31	1851 Cordon Rd. SE	West	17'	Gravel	Residence
42+62	1800 Cordon Rd. SE	East	21'	Gravel	Residence
44+50		West	20'	Dirt	Field
49+57		East	44'	Gravel	Horse Barn
Gaffin Road SE (CR 847) Intersects from East at Station 50+81.76.					
52+11	1560 Cordon Rd. SE	East	18'	Gravel	Residence
Survey Change in Stationing 52+89 Back = 156+26 Ahead.					
157+15	1570 Cordon Rd. SE	East	24'	Gravel	Residence
157+85		East	24'	Dirt	Field
160+80		West	20'	Gravel	Field
162+49	1482 Cordon Rd. SE	East	18'	Gravel	Residence
162+50		East	22'	*A.C.	Old Macleay Rd.
164+43		East	20'	Gravel	Field
164+80		East	15'	A.C.	Residence

Except where otherwise indicated, Surveyor's Station is at approximate center of driveway.

\* A.C. - Asphaltic Concrete Paved

Surveyor's Station	Street Address	Driveway Description			
		Direction from Cordon Road	Approx. Width (Ft.)	Surface	Use
166+06		East	24'	Gravel	Yard
Macleay Road (MR 23) Centerline Crosses at Station 167+24.83					
167+40		West	20'	Gravel	Field
171+56		West	20'	Dirt	Field
175+82	1150 Cordon Rd. SE	East	20'	A.C.	Residence
177+59		West	24'	Gravel	Yard
178+90	1125 Cordon Rd. SE	West	26'	Gravel	Residence
179+60		East	18'	Gravel	School & Church
182+88	1000 Cordon Rd. SE		18'	Gravel	Residence
Caplinger Street (CR 745) Crosses at Station 187+05					
191+35		East	14'	Gravel	Yard
192+88		West	21'	Gravel	Field
192+92	700 Cordon Rd. SE	East	16'	A.C.	Yard
196+15		East	15'	Gravel	Field
Wagon Wheel Drive (CR 7541) Intersects on West at Station 194+40'					
199+53	698 Cordon Rd. SE 694 Cordon Rd. SE 696 Cordon Rd. SE	East	17' (curb)	Gravel	Residences
205+84	594 Cordon Rd. SE	East	16'	Gravel	Residence
Pennsylvania Avenue (CR 7234) Intersects on West at Station 209+03.87					
210+60	452 Cordon Rd. SE 454 Cordon Rd. SE	East	20'	Gravel	Residences
217+97		West	17'	Dirt	Field
220+46		West	15'	Dirt	Field
221+36		East	12'	Dirt	Field
222+72		West	15'	Gravel	Yard

Surveyor's Station	Street Address	Driveway Description			
		Direction from Cordon Road	Approx. Width (Ft.)	Surface	Use
State Street (MR 22) Crosses at Station 225+06.34					
227+66		East	28'	A.C.	Scharff Bros.
230+43		East	20'	A.C.	Scharff Bros.
232+92		East	23'	Gravel	Nursery Entrance
234+02	255 Cordon Rd. NE	West	35'	A.C.	Mushroom Plant
237+51	255 Cordon Rd. NE	West	33'	A.C.	Mushroom Plant
SPRR Crosses at Station 237+90.51					
238+30 ) to ) 240+02 )	300 Cordon Rd. NE	East	172'	A.C.	Marion Fire District #1
239+80	255 Cordon Rd. NE	West	29'	A.C.	Mushroom Plant Parking Lot
240+73		East	16'	Gravel	Field
241+99		East	16'	Gravel	Field
243+32		East	31'	A.C.	Holland Park
246+40	400 Cordon Rd. NE 410 Cordon Rd. NE 420 Cordon Rd. NE	East	25'	Gravel	Residences - Trailer Park
247+61	430 Cordon Rd. NE	East	20'	Gravel	Residence - Trailer Park
248+48		East	25'	Gravel	Residence - Trailer Park
249+88	480 Cordon Rd. NE 476 Cordon Rd. NE	East	10'	A.C.	Residences - Trailer Park
250+97	496 Cordon Rd. NE 490 Cordon Rd. NE	East	44'	Gravel	Residences - Trailer Park
252+57	498 Cordon Rd. NE	East	27'	Gravel	Residence - Trailer Park
253+33		East	22'	Gravel	Garage (Shop)

Surveyor's Station	Street Address	Driveway Description			
		Direction from Cordon Road	Approx. Width (Ft.)	Surface	Use

Auburn Road (CR 739) Crosses at Station 255+29.70

257+23		West	23'	Gravel	Field
260+08		West	12'	Gravel	Field
262+41		West	17'	Gravel	Field

Center Street (MR 64) Crosses at Station 267+26.12

270+74		West	26'	Gravel	Field
272+26		East	19'	Gravel	Residence
275+46		West	19'	Gravel	Field
275+64		East	17'	Gravel	Field
279+63 ) to ) 280+51 )		East	98'	Gravel	Shop Area
281+40	990 Cordon Rd. NE	East	31'	Gravel	Residence
281+53		West	20'	Gravel	Field
284+02	1145 Cordon Rd. NE 1097 Cordon Rd. NE	West	38'	Gravel	Yard Residence
285+18	1140 Cordon Rd. NE	East	20'	Gravel	Residence
285+51	1145 Cordon Rd. NE	West	60'	Gravel	Residence
286+28	1165 Cordon Rd. NE	West	42'	Gravel	
287+78	1185 Cordon Rd. NE	West	97'	Gravel	Residence
287+39	1190 Cordon Rd. NE	East	16'	Gravel	Residence
290+05	1260 Cordon Rd. NE	East	12'	Gravel	Residence
294+41	1355 Cordon Rd. NE	West	23'	Gravel	Residence

Swegle Road NE (CR 736) Crosses at Station 301+33.98

320+56		West	18'	Gravel	Yard
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Sunnyview Road NE (MR 21) Crosses at Station 323+23.16

Surveyor's Station	Street Address	Driveway Description			
		Direction from Cordon Road	Approx. Width (Ft.)	Surface	Use
332+13		West	26'	Gravel	Yard
332+13		East	26'	Dirt	Field
337+32		East	24'	Gravel	Field
Walker Road NE (CR 732) Intersects on West at Station 349+11.					
354+44	2905 Cordon Rd. NE	West	23'	Gravel	Residence
362+23		East	20'	Gravel	Field
362+50		West	40'	Gravel	Yard
363+34	3103 Cordon Rd. NE	West	21'	A.C.	Residence
364+74	3135 Cordon Rd. NE	West	23'	Gravel	Residence
366+90	3195 Cordon Rd. NE	West	19'	A.C.	Residence
369+95		East	23'	Gravel	Field
372+66	3345 Cordon Rd. NE	West	21'	A.C.	Faith Baptist Church
374+67	3345 Cordon Rd. NE	West	23'	A.C.	Faith Baptist Church
374+58	3360 Cordon Rd. NE	East	21'	Gravel	Residence
375+10	3362 Cordon Rd. NE	East	20'	Gravel	Residence
375+06	3365 Cordon Rd. NE	West	18'	Gravel	Yard
376+02	3365 Cordon Rd. NE	West	21'	Gravel	Residence
376+25	3362 Cordon Rd. NE	East	21'	Gravel	Residence
379+47		West	30'	Gravel	Parking Lot for School
382+05	3440 Cordon Rd. NE	East	20'	Gravel	Residence
Silverton Road (MR 26) Crosses at Station 383+48.84, which is also change in Survey Stationing to 0+00.					
0+40		East	14'	Dirt	Field
0+37	3595 Cordon Rd. NE	West	14'	Gravel	Residence
1+01		East	15'	Dirt	Field

Surveyor's Station	Street Address	Driveway Description			
		Direction from Cordon Road	Approx. Width (Ft.)	Surface	Use
1+72		East	16'	Dirt	Field
2+73	3625 Cordon Rd. NE	East	15'	Gravel	Yard
Lardon Road NE (CR 735) Intersects on East at Station 4+22					
6+17	3715 Cordon Rd. NE	West	14'	Gravel	Residence
7+76	3725 Cordon Rd. NE	West	16'	Gravel	Residence
10+72	3765 Cordon Rd. NE	West	12'	Gravel	Residence
11+64	3769 Cordon Rd. NE	West	14'	Gravel	Residence
12+13		East	50'	A.C.	County Shops
13+37 )		East	140'	A.C.	Middle Grove
to )					Fire Station
14+77 )					
Herrin Road NE (CR 727) Intersects on West at Station 18+18.97					
18+50		East	25'	Gravel	Residence
20+16	4020 Cordon Rd. NE	East	16'	Gravel	Residence
20+16		West	16'	Gravel	Field
20+43		East	13'	A.C.	Residence
21+07	4030 Cordon Rd. NE	East	14'	A.C.	Residence
22+38	4040 Cordon Rd. NE	East	23'	Concrete	Residence
22+99	4068 Cordon Rd. NE	East	21'	Gravel	Residence
23+36	4100 Cordon Rd. NE	East	18'	Gravel	Residence
23+34	4055 Cordon Rd. NE	West	18'	Gravel	Residence
23+76	4075 Cordon Rd. NE	West	27'	Gravel	Residence
24+54	4124 Cordon Rd. NE	East	28'	A.C.	Residence
25+11	4125 Cordon Rd. NE	West	20'	A.C.	Residence
25+74	4128 Cordon Rd. NE	East	24'	Gravel	Residence



Surveyor's Station	Street Address	Driveway Description			
		Direction from Cordon Road	Approx. Width (Ft.)	Surface	Use
26+45		East	21'	Gravel	Residence
26+53		West	15'	Gravel	Field
27+49	4138 Cordon Rd. NE	East	17'	Gravel	Residence
27+80		West	21'	Gravel	Field
29+07	4160 Cordon Rd. NE	East	21'	Gravel	Residence
29+22	4165 Cordon Rd. NE	West	12'	Gravel	Residence
29+42	4175 Cordon Rd. NE	West	13'	Gravel	Residence
29+56	4170 Cordon Rd. NE	East	19'	Gravel	Residence
31+56	4205 Cordon Rd. NE	West	12'	Gravel	Residence
31+86		East	20'	Gravel	Field
32+36		West	10'	Gravel	Field
32+49	4190 Cordon Rd. NE	East	16'	Gravel	Residence
33+39	4225 Cordon Rd. NE	West	22'	Gravel	Residence
33+81		East	18'	Gravel	Residence
34+68		West	16'	Gravel	Yard
34+78		East	16'	Gravel	Residence
35+40	4235 Cordon Rd. NE	West	15'	Gravel	Residence
36+35		East	16'	Gravel	Field
36+76	4255 Cordon Rd. NE	West	12'	Gravel	Residence
38+61	4270 Cordon Rd. NE	East	16'	Gravel	Residence
38+82	4315 Cordon Rd. NE	West	20'		Residence
42+61	4340 Cordon Rd. NE	East	12'	Gravel	Residence
43+82	4365 Cordon Rd. NE 4345 Cordon Rd. NE	West	10'	Gravel	Residences
47+67	4390 Cordon Rd. NE	East	12'	Gravel	Residence
48+57	4390 Cordon Rd. NE	East	12'	Gravel	Yard
49+28	4410 Cordon Rd. NE	East	14'	Gravel	Residence
49+61	4405 Cordon Rd. NE	West	20'	Gravel	Residence

Surveyor's Station	Street Address	Driveway Description			
		Direction from Cordon Road	Approx. Width (Ft.)	Surface	Use
50+71		West	30'	Gravel	Residence Garage
51+39		East	14'	Gravel	Field
52+38	4486 Cordon Rd. NE	East	14'	Gravel	Residence
53+00		West	15'	Gravel	Shed
53+53	4485 Cordon Rd. NE	West	18'	Gravel	Residence
53+85	4490 Cordon Rd. NE	East	16'	Gravel	Residence
55+07	4510 Cordon Rd. NE	East	14'	Gravel	Residence
56+07	4515 Cordon Rd. NE	West	14'	Gravel	Residence
57+66	4530 Cordon Rd. NE 4540 Cordon Rd. NE	East	14'	Gravel	Residences
58+61	4555 Cordon Rd. NE	West	10'	Gravel	Residence
59+90	4565 Cordon Rd. NE	West	12'	Gravel	Residence
61+22	4577 Cordon Rd. NE	West	14'	Gravel	Residence
62+54	4590 Cordon Rd. NE	East	12'	Gravel	Residence
62+69	4595 Cordon Rd. NE	West	10'	Gravel	Residence
62+84	4615 Cordon Rd. NE	West	10'	Gravel	Residence
62+84		East	10'	Gravel	Yard
63+81		West	20'	Dirt	Field
64+64		West	12'	Dirt	Yard
65+75	4645 Cordon Rd. NE	West	26'	Gravel	Residence
66+79	4655 Cordon Rd. NE	West	24'	Gravel	Residence
68+17	4685 Cordon Rd. NE	West	18'	Concrete	Residence
68+56	4695 Cordon Rd. NE	West	12'	Gravel	Residence
69+04		East	20'	Gravel	Field
Hayesville Drive NE (CR 726) Intersects on West at Station 70+22.28					
70+97		West	12'	Gravel	Yard
72+11	4705 Cordon Rd. NE	West	22'	A.C.	Residence

Surveyor's Station	Street Address	Driveway Description			
		Direction from Cordon Road	Approx. Width (Ft.)	Surface	Use
73+35	4715 Cordon Rd. NE	West	18'	Gravel	Residence
74+41	4725 Cordon Rd. NE	West	18'	A.C.	Residence
75+37	4735 Cordon Rd. NE	West	20'	A.C.	Residence
76+45		East	14'	Gravel	Field
76+79	4745 Cordon Rd. NE	West	15'	A.C.	Residence
77+37	4755 Cordon Rd. NE	West	35'	Gravel	Residence
78+51	4795 Cordon Rd. NE	West	22'	Gravel	Residence
79+65	4815 Cordon Rd. NE	West	18'	A.C.	Residence
80+03		East	20'	Gravel	Field
81+39	4835 Cordon Rd. NE	West	16'	A.C.	Residence
82+04	4845 Cordon Rd. NE	West	12'	Gravel	Residence
82+81	4845 Cordon Rd. NE	West	10'	Gravel	Yard

Survey Station Change - Station 84+34.23 Back  
Equal Station 215+14.21 Ahead

Juniper Street NE (CR 725) Intersects on East  
at Station 216+94

217+67	4905 Cordon Rd. NE	West	25'	Gravel	Residence
217+94		West	16'	Gravel	Field

Kale Street NE (CR 725) Intersects on West at  
Station 223+24

234+16		East	24'	Gravel	Yard
239+71		West	14'	Gravel	Field
240+99		West	18'	Gravel	Residence

Vancleave Road NE (CR 628) Intersects on East  
at Station 241+19

245+65	5496 Cordon Rd. NE 5490 Cordon Rd. NE	East	14'	A.C.	Residence
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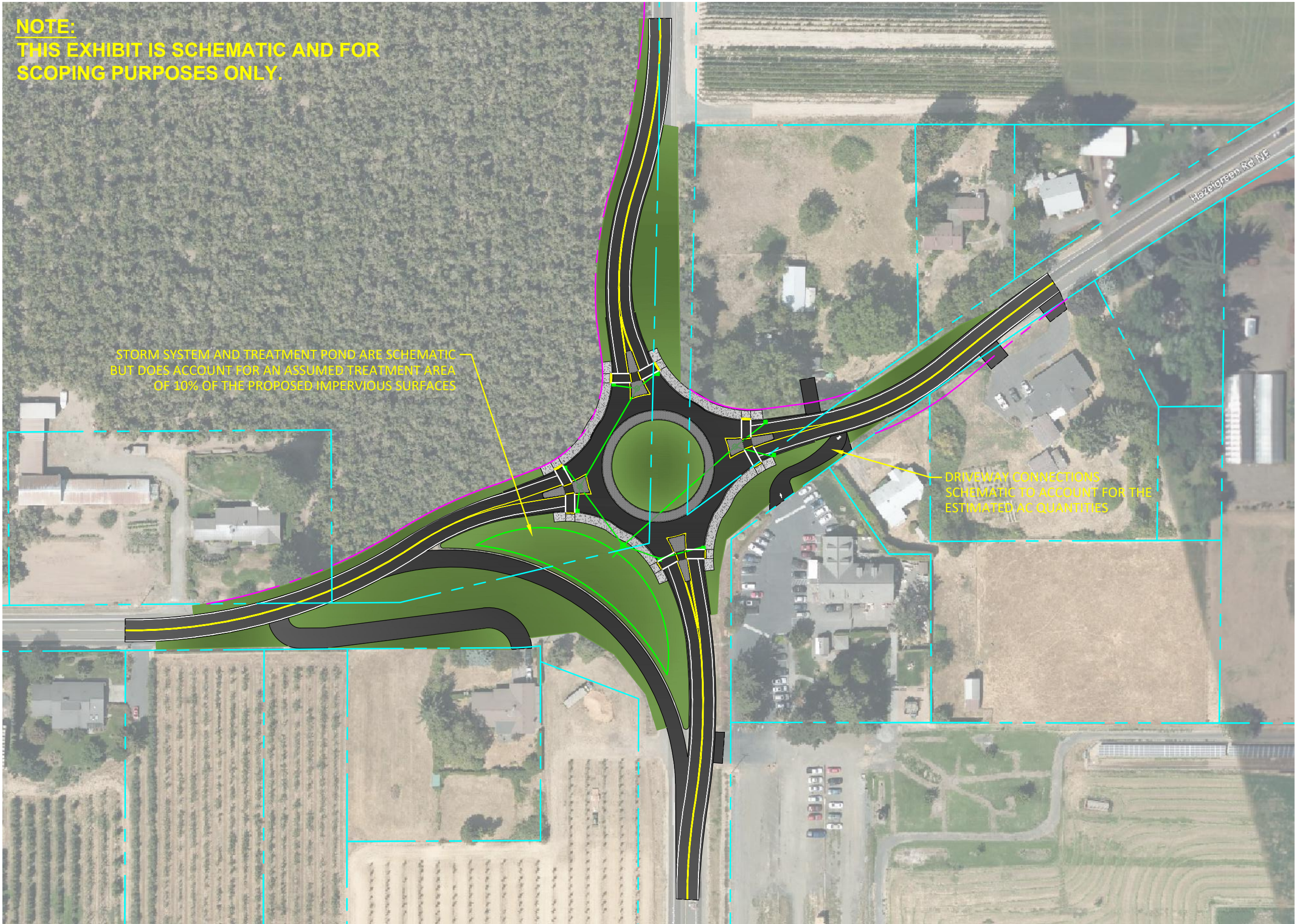
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Surveyor's Station	Street Address	Driveway Description			
		Direction from Cordon Road	Approx. Width (Ft.)	Surface	Use
252+03	5696 Cordon Rd. NE	West	26'	Gravel	Yard
252+97	5696 Cordon Rd. NE	East	18'	Gravel	Residence

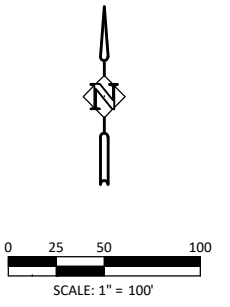
Cordon Road Terminates at Centerline of Hazel Green Road NE (MR 52) at Station 253+65



**NOTE:**  
**THIS EXHIBIT IS SCHEMATIC AND FOR SCOPING PURPOSES ONLY.**



**CORDON/HAZELGREEN INTERSECTION  
ROUNDABOUT OPTION  
SALEM, OREGON  
APRIL 2023**



**IN-2A**



## Cordon/Hazelgreen Intersection (IN-2A)

### Engineer's Estimate - Preliminary Roundabout Estimate

Prepared by: Harper Houf Peterson Righellis, Inc.

Job No. DKS-49

April 27, 2023

#### Construction Costs

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	Mobilization	L.S.	1	10.0%	\$ 223,000
2	Temporary Work Zone Traffic Control	L.S.	1	12.0%	\$ 267,000
3	Erosion Control	L.S.	1	2.0%	\$ 45,000
4	Construction Staking	L.S.	1	3.5%	\$ 78,000
5	Clearing and Grubbing/Removal of Structures and Obstructions	L.S.	1	\$ 277,000	\$ 277,000
6	General Excavation	CY	3,089	\$ 70.00	\$ 216,207
7	Concrete Islands and Aprons, 6 inches thick	SF	4,742	\$ 20.00	\$ 94,840
8	Level 3, 1/2" Dense ACP	TON	2,023	\$ 130	\$ 263,011
9	Aggregate Base	TON	6,609	\$ 60.00	\$ 396,553
10	Geotextile	SY	9,262	\$ 2.00	\$ 18,523
11	Concrete Curb, Standard/Mountable Curb	LF	2,623	\$ 50.00	\$ 131,150
12	Concrete Sidewalks	SF	5,932	\$ 12.00	\$ 71,184
13	Extra for New Curb Ramps	EA	16	\$ 1,500.00	\$ 24,000
14	10 inch Storm Sewer Pipe	LF	700	\$ 200	\$ 140,000
15	Concrete Manholes, 48" Standard	EA	4	\$ 7,000	\$ 28,000
16	Catch Basins, Type 2	EA	8	\$ 4,100	\$ 32,800
17	Stormwater Treatment Ponds	SF	8,800	\$ 10.00	\$ 88,000
18	Permenant Seeding and Topsoil	SY	6,661	\$ 25.00	\$ 166,528
19	Striping and Signage	L.S.	1	\$ 37,000	\$ 37,000
20	Street Illumination	L.S.	1	\$ 240,000	\$ 240,000
<b>Construction Subtotal</b>					<b>\$ 2,837,795</b>
30% Contingency					\$851,339
<b>CONSTRUCTION TOTAL</b>					<b>\$3,689,134</b>

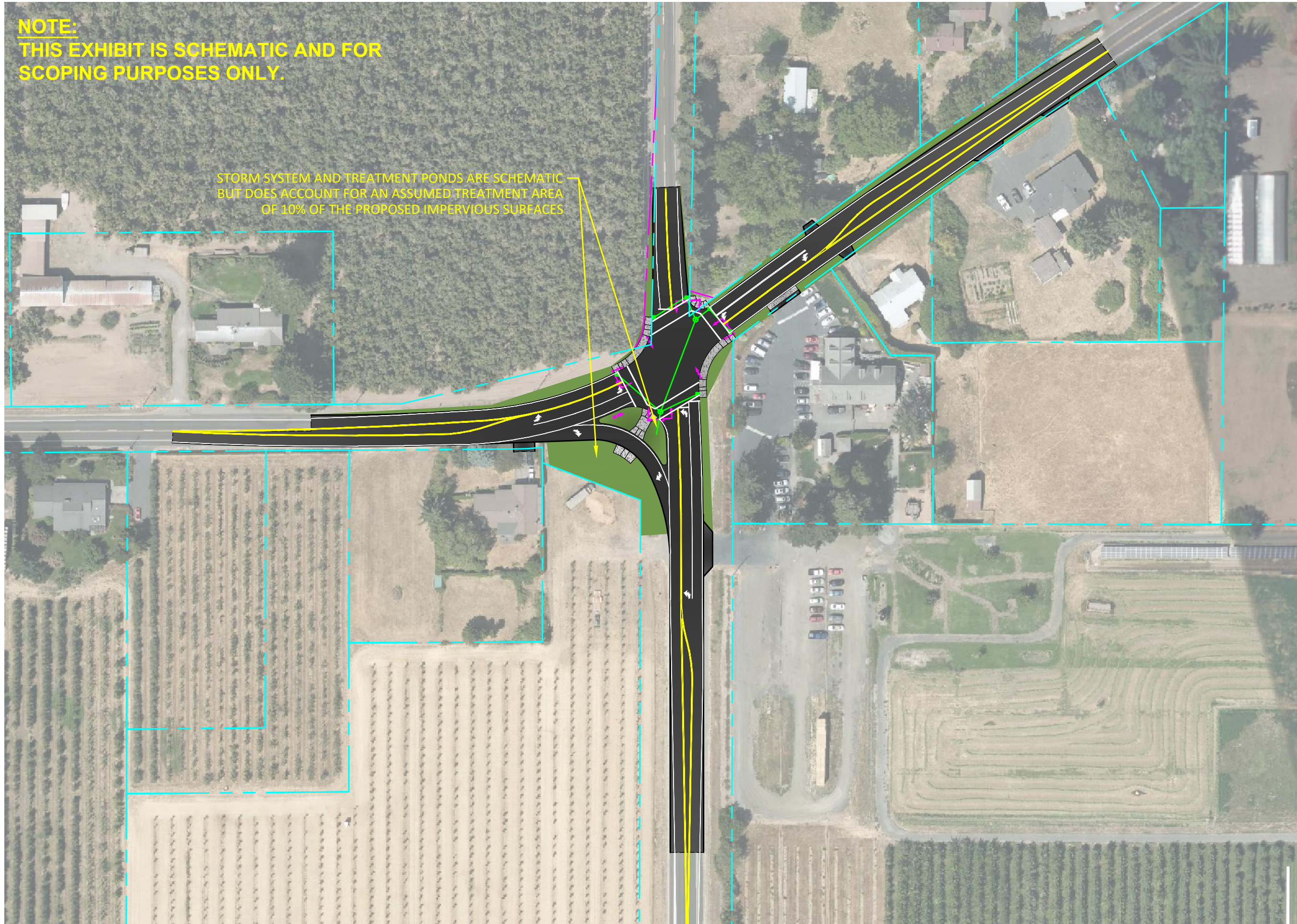
#### Engineering Design

ITEM	DESCRIPTION	TOTAL
1	Topographical Survey	\$110,000
2	Civil Engineering	\$430,000
3	Traffic Engineering	\$80,000
4	Geotechnical Engineering	\$60,000
5	Construction Administration	\$440,000
6	Environmental/Cultural Resources Services	\$60,000
7	ROW Services (10 Parcels)	\$100,000
<b>ENGINEERING TOTAL</b>		<b>\$1,280,000</b>
<b>Grand Total</b>		<b>\$ 4,969,134</b>

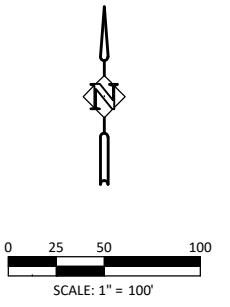


**NOTE:**  
**THIS EXHIBIT IS SCHEMATIC AND FOR  
SCOPING PURPOSES ONLY.**

STORM SYSTEM AND TREATMENT PONDS ARE SCHEMATIC  
BUT DOES ACCOUNT FOR AN ASSUMED TREATMENT AREA  
OF 10% OF THE PROPOSED IMPERVIOUS SURFACES



**CORDON/HAZELGREEN INTERSECTION  
SIGNALIZED OPTION  
SALEM, OREGON  
APRIL 2023**



**IN-2B**



## Cordon/Hazelgreen Intersection (IN-2B)

### Engineer's Estimate - Preliminary Signalized Estimate

Prepared by: Harper Houf Peterson Righellis, Inc.

Job No. DKS-49

April 27, 2023

#### Construction Costs

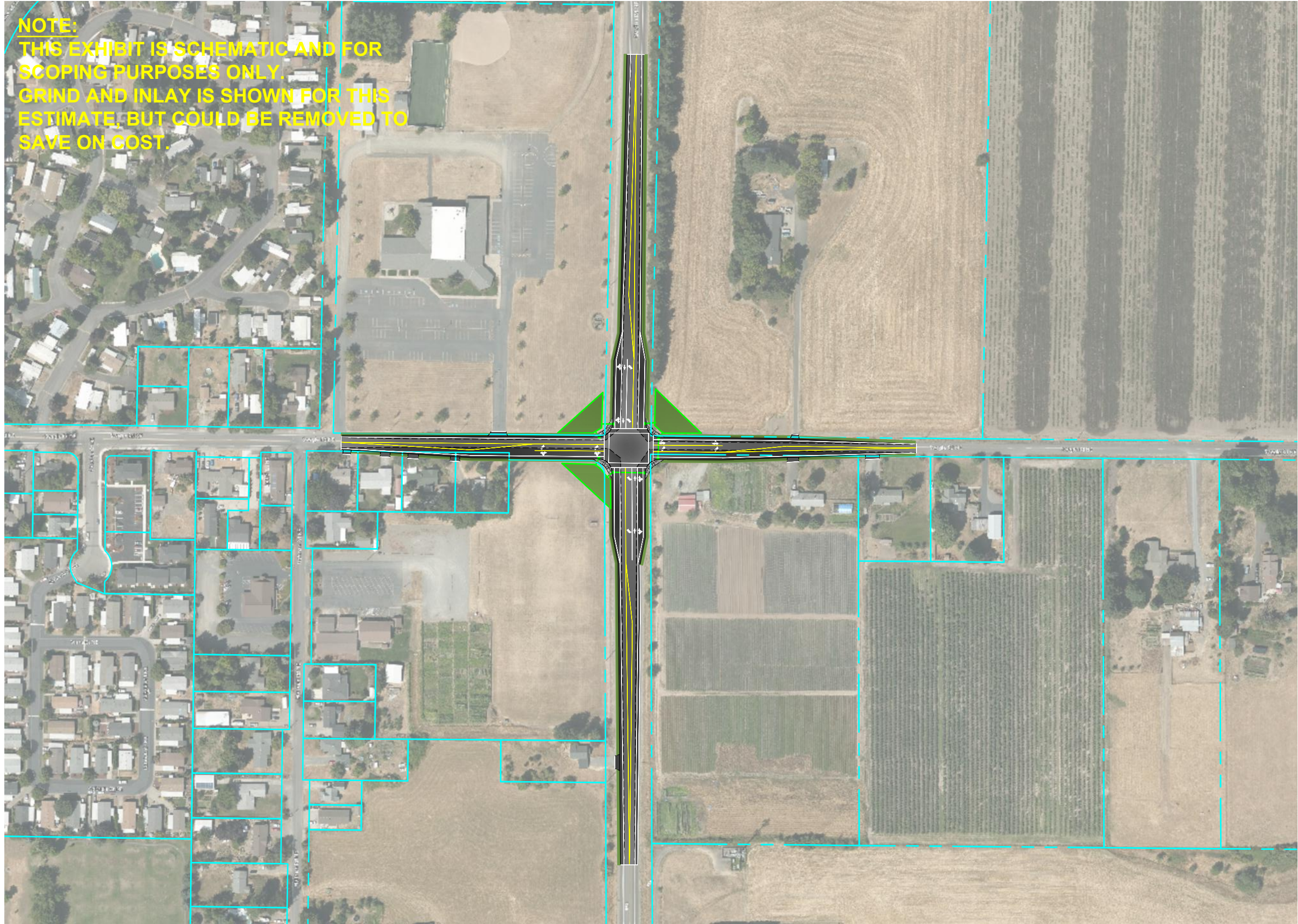
ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	Mobilization	L.S.	1	10.0%	\$ 199,000
2	Temporary Work Zone Traffic Control	L.S.	1	12.0%	\$ 238,000
3	Erosion Control	L.S.	1	2.0%	\$ 40,000
4	Construction Staking	L.S.	1	3.5%	\$ 70,000
5	Clearing and Grubbing/Removal of Structures and Obstructions	L.S.	1	\$ 146,000	\$ 146,000
6	General Excavation	CY	2,574	\$ 70.00	\$ 180,185
7	Level 3, 1/2" Dense ACP	TON	1,801	\$ 130	\$ 234,090
8	Aggregate Base	TON	5,717	\$ 60.00	\$ 343,000
9	Geotextile	SY	7,761	\$ 2.00	\$ 15,522
10	Concrete Curb and Gutter	LF	700	\$ 60.00	\$ 42,000
11	Concrete Sidewalks	SF	2,100	\$ 12.00	\$ 25,200
12	Extra for New Curb Ramps	EA	8	\$ 1,500.00	\$ 12,000
13	10 inch Storm Sewer Pipe	LF	400	\$ 200	\$ 80,000
14	Concrete Manholes, 48" Standard	EA	2	\$ 7,000	\$ 14,000
15	Catch Basins, Type 2	EA	6	\$ 4,100	\$ 24,600
16	Stormwater Treatment Ponds	SF	7,200	\$ 10.00	\$ 72,000
17	Permenant Seeding and Topsoil	SY	1,078	\$ 25.00	\$ 26,944
18	Striping and Signage	L.S.	1	\$ 47,000	\$ 47,000
19	Signal Furnish and Install	L.S.	1	\$ 600,000	\$ 600,000
20	Street Illumination	L.S.	1	\$ 120,000	\$ 120,000
<b>Construction Subtotal</b>					<b>\$ 2,529,542</b>
30% Contingency					\$758,863
<b>CONSTRUCTION TOTAL</b>					<b>\$3,288,404</b>

#### Engineering Design

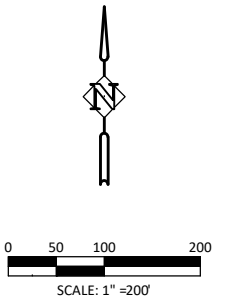
ITEM	DESCRIPTION	TOTAL
1	Topographical Survey	\$90,000
2	Civil Engineering	\$320,000
3	Traffic Engineering	\$120,000
4	Geotechnical Engineering	\$70,000
5	Construction Administration	\$400,000
6	Environmental/Cultural Resources Services	\$60,000
7	ROW Services (5 Parcels)	\$50,000
<b>ENGINEERING TOTAL</b>		<b>\$1,110,000</b>
<b>Grand Total</b>		<b>\$ 4,398,404</b>



**NOTE:**  
THIS EXHIBIT IS SCHEMATIC AND FOR SCOPING PURPOSES ONLY. GRIND AND INLAY IS SHOWN FOR THIS ESTIMATE, BUT COULD BE REMOVED TO SAVE ON COST.



**SWEGLE/CORDON INTERSECTION  
SIGNALIZED OPTION  
SALEM, OREGON  
APRIL 2023**



**IN-9**



## Swegle/Cordon Intersection (IN-9)

### Engineer's Estimate - Preliminary Signalized Estimate

Prepared by: Harper Houf Peterson Righellis, Inc.

Job No. DKS-49

April 27, 2023

#### Construction Costs

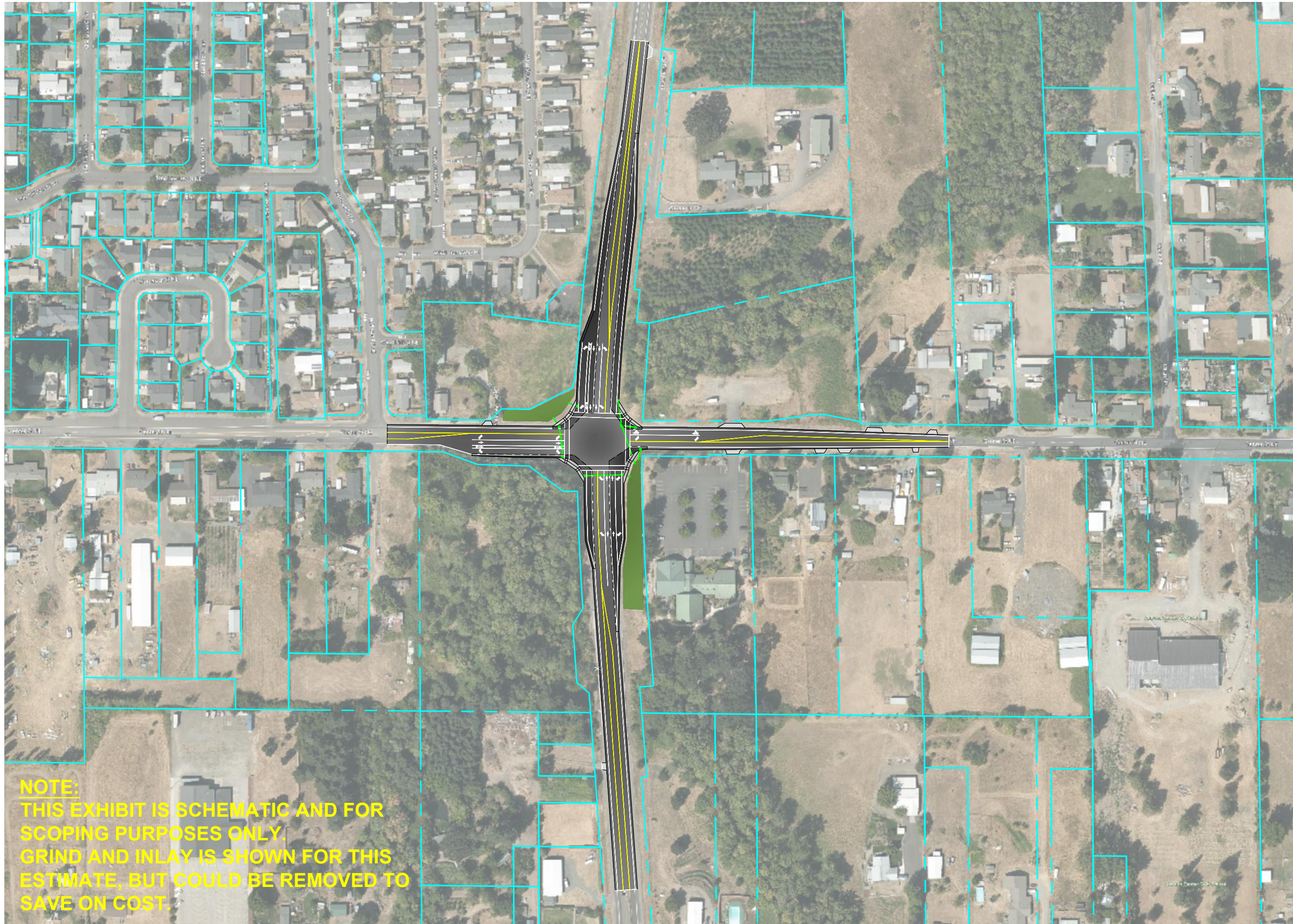
ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	Mobilization	L.S.	1	10.0%	\$ 196,000
2	Temporary Work Zone Traffic Control	L.S.	1	10.0%	\$ 196,000
3	Erosion Control	L.S.	1	2.0%	\$ 40,000
4	Construction Staking	L.S.	1	3.5%	\$ 69,000
5	Clearing and Grubbing/Removal of Structures and Obstructions	L.S.	1	\$ 63,000	\$ 63,000
6	General Excavation	CY	2,952	\$ 70	\$ 206,673
7	Cold Plane Pavement Removal, 2 Inches	SY	8,265	\$ 5	\$ 41,326
8	Level 3, 1/2" Dense ACP	TON	1,715	\$ 130	\$ 222,998
9	Aggregate Base	TON	5,393	\$ 60	\$ 323,559
10	Geotextile	SY	7,313	\$ 2	\$ 14,626
11	Concrete Curb and Gutter	LF	184	\$ 60	\$ 11,040
12	Concrete Sidewalks	SF	1,791	\$ 12	\$ 21,492
13	Extra for New Curb Ramps	EA	8	\$ 1,500	\$ 12,000
14	12 inch Storm Sewer Pipe	LF	250	\$ 220	\$ 55,000
15	Concrete Manholes, 48" Standard	EA	2	\$ 7,000	\$ 14,000
16	Catch Basins, Type 2	EA	8	\$ 4,100	\$ 32,800
17	Stormwater Treatment Ponds	SF	13,993	\$ 10	\$ 139,926
18	Permenant Seeding and Topsoil	SY	934	\$ 25	\$ 23,354
19	Striping and Signage	L.S.	1	\$ 55,000	\$ 55,000
20	Signal Furnish and Install	L.S.	1	\$ 600,000	\$ 600,000
21	Street Illumination	L.S.	1	\$ 120,000	\$ 120,000
<b>Construction Subtotal</b>					<b>\$ 2,457,793</b>
30% Contingency					\$ 737,338
<b>CONSTRUCTION TOTAL</b>					<b>\$ 3,195,130</b>

#### Engineering Design

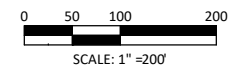
ITEM	DESCRIPTION	TOTAL
1	Topographical Survey	\$165,000
2	Civil Engineering	\$255,000
3	Traffic Engineering	\$100,000
4	Geotechnical Engineering	\$60,000
5	Construction Administration	\$400,000
6	Environmental/Cultural Resources Services	\$60,000
7	ROW Services (7 Parcels)	\$70,000
<b>ENGINEERING TOTAL</b>		<b>\$1,110,000</b>
<b>Grand Total</b>		<b>\$ 4,305,130</b>



**CENTER/CORDON INTERSECTION  
SIGNALIZED OPTION  
SALEM, OREGON  
APRIL 2023**



**NOTE:  
THIS EXHIBIT IS SCHEMATIC AND FOR  
SCOPING PURPOSES ONLY.  
GRIND AND INLAY IS SHOWN FOR THIS  
ESTIMATE, BUT COULD BE REMOVED TO  
SAVE ON COST.**



**IN-10**



## Center/Cordon Intersection (IN-10)

### Engineer's Estimate - Preliminary Signalized Estimate

Prepared by: Harper Houf Peterson Righellis, Inc.

Job No. DKS-49

April 27, 2023

#### Construction Costs

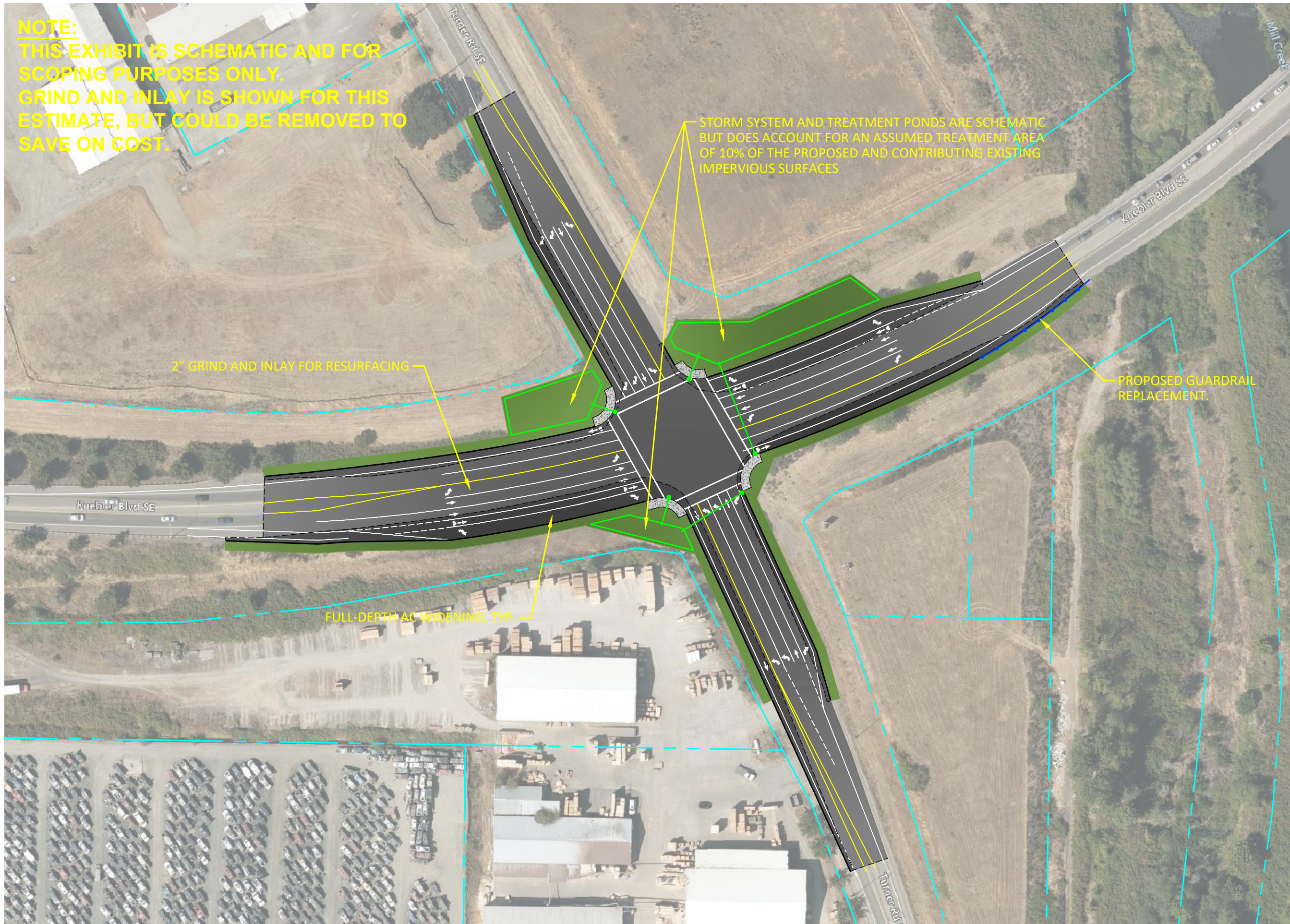
ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	Mobilization	L.S.	1	10.0%	\$ 218,000
2	Temporary Work Zone Traffic Control	L.S.	1	10.0%	\$ 218,000
3	Erosion Control	L.S.	1	2.0%	\$ 44,000
4	Construction Staking	L.S.	1	3.5%	\$ 77,000
5	Clearing and Grubbing/Removal of Structures and Obstructions	L.S.	1	\$ 52,000	\$ 52,000
6	General Excavation	CY	2,952	\$ 70	\$ 206,673
7	Cold Plane Pavement Removal, 2 Inches	SY	14,474	\$ 5	\$ 72,368
8	Level 3, 1/2" Dense ACP	TON	2,816	\$ 130	\$ 366,041
9	Aggregate Base	TON	3,572	\$ 60	\$ 214,344
10	Geotextile	SY	4,840	\$ 2	\$ 9,680
11	Concrete Curb and Gutter	LF	740	\$ 60	\$ 44,400
12	Concrete Sidewalks	SF	2,396	\$ 12	\$ 28,752
13	Extra for New Curb Ramps	EA	8	\$ 1,500	\$ 12,000
14	12 inch Storm Sewer Pipe	LF	405	\$ 220	\$ 89,100
15	Concrete Manholes, 48" Standard	EA	2	\$ 7,000	\$ 14,000
16	Catch Basins, Type 2	EA	8	\$ 4,100	\$ 32,800
17	Stormwater Treatment Ponds	SF	17,271	\$ 10	\$ 172,712
18	Guardrail	LF	250	\$ 250	\$ 62,500
19	Permenant Seeding and Topsoil	SY	392	\$ 25	\$ 9,802
20	Striping and Signage	L.S.	1	\$ 65,000	\$ 65,000
21	Signal Furnish and Install	L.S.	1	\$ 600,000	\$ 600,000
22	Street Illumination	L.S.	1	\$ 120,000	\$ 120,000
<b>Construction Subtotal</b>					<b>\$ 2,729,172</b>
30% Contingency					\$818,752
<b>CONSTRUCTION TOTAL</b>					<b>\$3,547,923</b>

#### Engineering Design

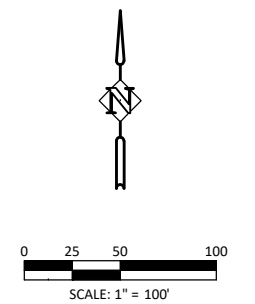
ITEM	DESCRIPTION	TOTAL
1	Topographical Survey	\$159,500
2	Civil Engineering	\$310,500
3	Traffic Engineering	\$100,000
4	Geotechnical Engineering	\$70,000
5	Construction Administration	\$400,000
6	Environmental/Cultural Resources Services	\$70,000
<b>ENGINEERING TOTAL</b>		<b>\$1,110,000</b>
<b>Grand Total</b>		<b>\$ 4,657,923</b>



**NOTE:**  
THIS EXHIBIT IS SCHEMATIC AND FOR SCOPING PURPOSES ONLY. GRIND AND INLAY IS SHOWN FOR THIS ESTIMATE, BUT COULD BE REMOVED TO SAVE ON COST.



**KUEBLER/TURNER INTERSECTION  
SIGNALIZED OPTION  
SALEM, OREGON  
APRIL 2023**



**IN-16**



## Kuebler/Turner Intersection (IN-16)

### Engineer's Estimate - Preliminary Signalized Estimate

Prepared by: Harper Houf Peterson Righellis, Inc.

Job No. DKS-49

April 27, 2023

#### Construction Costs

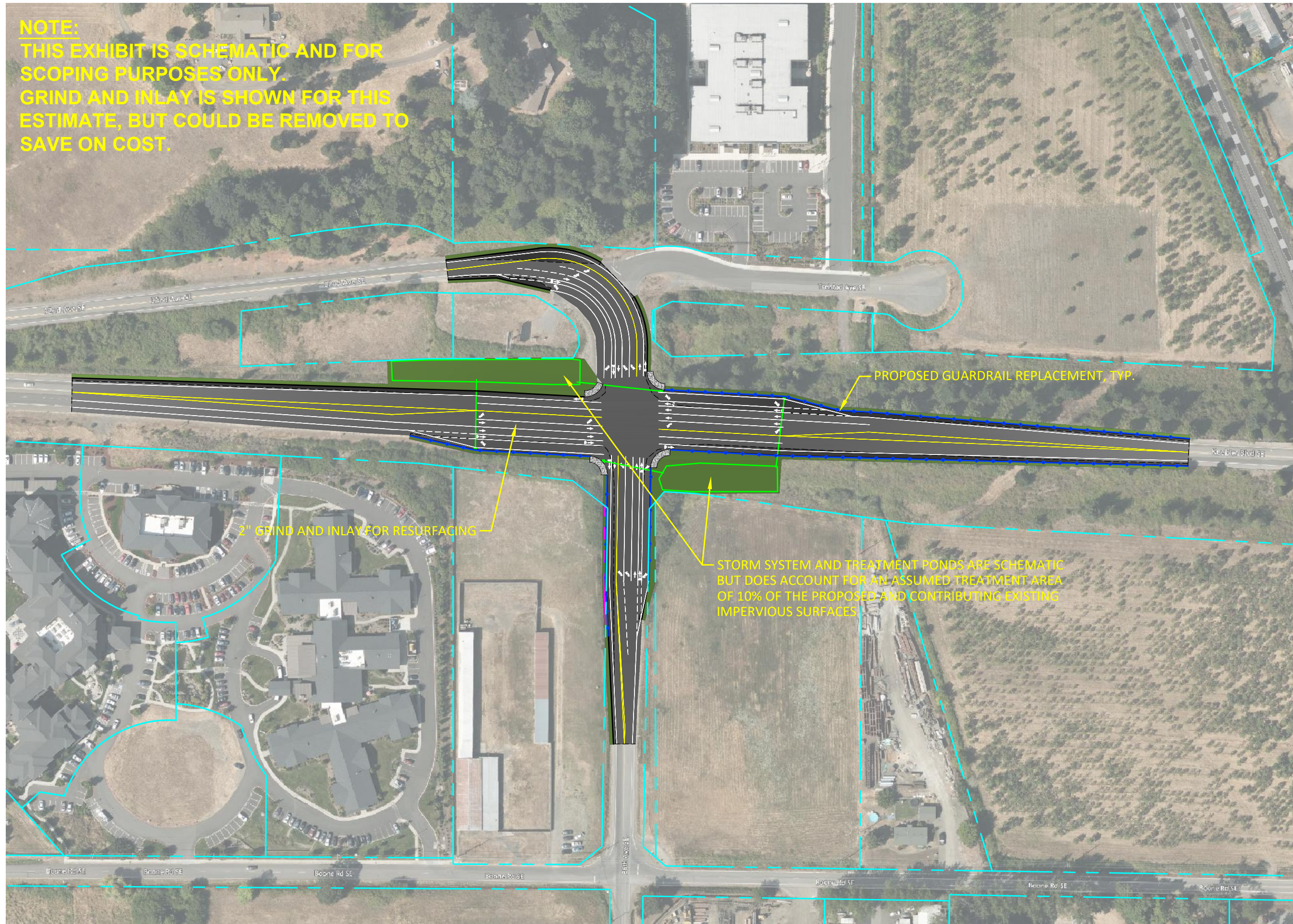
ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	Mobilization	L.S.	1	10.0%	\$ 221,000
2	Temporary Work Zone Traffic Control	L.S.	1	8.0%	\$ 177,000
3	Erosion Control	L.S.	1	2.0%	\$ 45,000
4	Construction Staking	L.S.	1	3.5%	\$ 78,000
5	Clearing and Grubbing/Removal of Structures and Obstructions	L.S.	1	\$ 45,000	\$ 45,000
6	General Excavation	CY	2,131	\$ 70	\$ 149,204
7	Cold Plane Pavement Removal, 2 Inches	SY	10,922	\$ 5	\$ 54,611
8	Level 3, 1/2" Dense ACP	TON	2,718	\$ 130	\$ 353,283
9	Aggregate Base	TON	2,907	\$ 60	\$ 174,440
10	Geotextile	SY	3,900	\$ 2	\$ 7,800
11	Concrete Curb and Gutter	LF	200	\$ 60	\$ 12,000
12	Concrete Sidewalks	SF	1,700	\$ 12	\$ 20,400
13	Extra for New Curb Ramps	EA	8	\$ 1,500	\$ 12,000
14	10 inch Storm Sewer Pipe	LF	250	\$ 200	\$ 50,000
15	Catch Basins, Type 2	EA	5	\$ 4,100	\$ 20,500
16	Stormwater Treatment Ponds	SF	13,300	\$ 10	\$ 133,000
17	Permenant Seeding and Topsoil	SY	3,100	\$ 25	\$ 77,500
18	Midwest Guardrail System, Type 2A	LF	150	\$ 35	\$ 5,250
19	Striping and Signage	L.S.	1	\$ 55,000	\$ 55,000
20	Signal Furnish and Install	L.S.	1	\$ 800,000	\$ 800,000
21	Street Illumination	L.S.	1	\$ 240,000	\$ 240,000
<b>Construction Subtotal</b>					<b>\$ 2,730,987</b>
30% Contingency					\$ 819,296
<b>CONSTRUCTION TOTAL</b>					<b>\$ 3,550,284</b>

#### Engineering Design

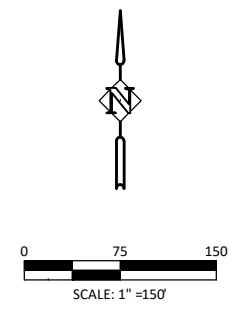
ITEM	DESCRIPTION	TOTAL
1	Topographical Survey	\$120,000
2	Civil Engineering	\$330,000
3	Traffic Engineering	\$120,000
4	Geotechnical Engineering	\$70,000
5	Construction Administration	\$425,000
6	Environmental/Cultural Resources Services	\$70,000
7	ROW Services (3 Parcels)	\$30,000
<b>ENGINEERING TOTAL</b>		<b>\$1,165,000</b>
<b>Grand Total</b>		<b>\$ 4,715,284</b>



**NOTE:**  
THIS EXHIBIT IS SCHEMATIC AND FOR SCOPING PURPOSES ONLY.  
GRIND AND INLAY IS SHOWN FOR THIS ESTIMATE, BUT COULD BE REMOVED TO SAVE ON COST.



**KUEBLER/35TH INTERSECTION  
SIGNALIZED OPTION  
SALEM, OREGON  
APRIL 2023**





## Kuebler/36th Intersection (IN-17)

### Engineer's Estimate - Preliminary Signalized Estimate

Prepared by: Harper Houf Peterson Righellis, Inc.

Job No. DKS-49

April 27, 2023

#### Construction Costs

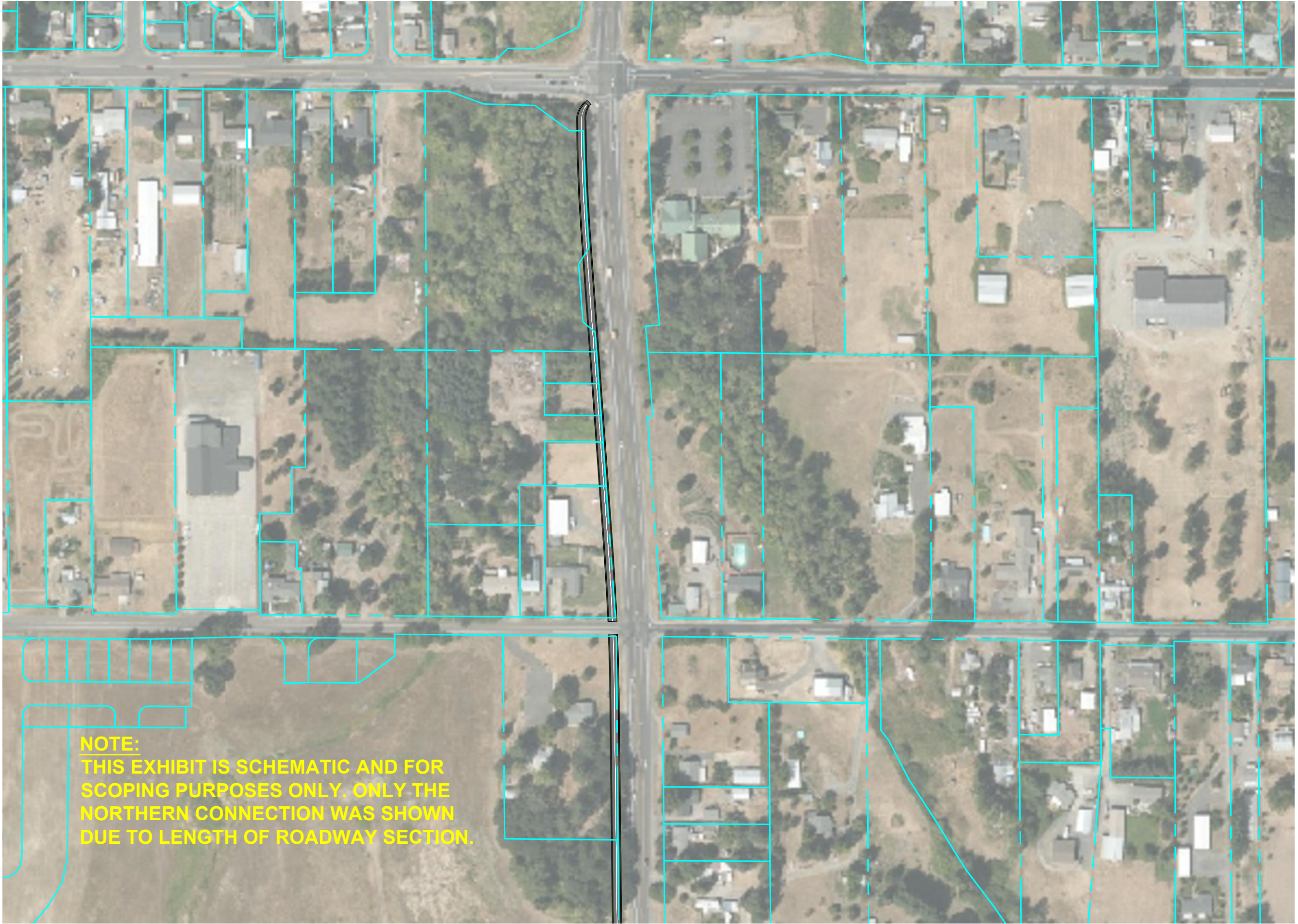
ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	Mobilization	L.S.	1	10.0%	\$ 261,000
2	Temporary Work Zone Traffic Control	L.S.	1	8.0%	\$ 209,000
3	Erosion Control	L.S.	1	2.0%	\$ 53,000
4	Construction Staking	L.S.	1	3.5%	\$ 92,000
5	Clearing and Grubbing/Removal of Structures and Obstructions	L.S.	1	\$ 93,000	\$ 93,000
6	General Excavation	CY	2,273	\$ 70	\$ 159,088
7	Cold Plane Pavement Removal, 2 Inches	SY	17,111	\$ 5	\$ 85,556
8	Level 3, 1/2" Dense ACP	TON	3,446	\$ 130	\$ 448,041
9	Aggregate Base	TON	2,766	\$ 60	\$ 165,935
10	Geotextile	SY	3,744	\$ 2	\$ 7,489
11	Concrete Curb and Gutter	LF	200	\$ 60	\$ 12,000
12	Concrete Sidewalks	SF	1,500	\$ 12	\$ 18,000
13	Extra for New Curb Ramps	EA	8	\$ 1,500	\$ 12,000
14	10 inch Storm Sewer Pipe	LF	500	\$ 200	\$ 100,000
15	Catch Basins, Type 2	EA	4	\$ 4,100	\$ 16,400
16	Stormwater Treatment Ponds	SF	19,300	\$ 10	\$ 193,000
17	Permenant Seeding and Topsoil	SY	3,922	\$ 25	\$ 98,056
18	Midwest Guardrail System, Type 2A	LF	2,500	\$ 35	\$ 87,500
19	Striping and Signage	L.S.	1	\$ 65,000	\$ 65,000
20	Signal Furnish and Install	L.S.	1	\$ 800,000	\$ 800,000
21	Street Illumination	L.S.	1	\$ 240,000	\$ 240,000
<b>Construction Subtotal</b>					<b>\$ 3,216,064</b>
30% Contingency					\$964,819
<b>CONSTRUCTION TOTAL</b>					<b>\$4,180,884</b>

#### Engineering Design

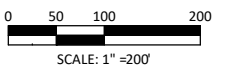
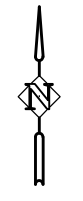
ITEM	DESCRIPTION	TOTAL
1	Topographical Survey	\$140,000
2	Civil Engineering	\$400,000
3	Traffic Engineering	\$120,000
4	Geotechnical Engineering	\$70,000
5	Construction Administration	\$450,000
6	Environmental/Cultural Resources Services	\$80,000
7	ROW Services (5 Parcels)	\$50,000
<b>ENGINEERING TOTAL</b>		<b>\$1,310,000</b>
<b>Grand Total</b>		<b>\$ 5,490,884</b>



**CORDON ROAD: CENTER TO CAPLINGER  
MULTI-USE PATH EXTENSION**  
SALEM, OREGON  
APRIL 2023



**NOTE:  
THIS EXHIBIT IS SCHEMATIC AND FOR  
SCOPING PURPOSES ONLY. ONLY THE  
NORTHERN CONNECTION WAS SHOWN  
DUE TO LENGTH OF ROADWAY SECTION.**



**MU-4**



## Center to Caplinger Multi-Use Path Extension (MU-4)

### Engineer's Estimate - Preliminary Path Estimate

Prepared by: Harper Houf Peterson Righellis, Inc.

Job No. DKS-49

April 27, 2023

#### Construction Costs

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	Mobilization	L.S.	1	10.0%	\$ 168,000
2	Temporary Work Zone Traffic Control	L.S.	1	10.0%	\$ 168,000
3	Erosion Control	L.S.	1	2.0%	\$ 34,000
4	Construction Staking	L.S.	1	3.5%	\$ 59,000
5	Clearing and Grubbing/Removal of Structures and Obstructions	L.S.	1	\$ 82,000	\$ 82,000
6	General Excavation	CY	848	\$ 70	\$ 59,383
7	Level 3, 1/2" Dense ACP	TON	3,268	\$ 130	\$ 424,870
8	Aggregate Base	TON	2,924	\$ 60	\$ 175,418
9	Geotextile	SY	13,885	\$ 2	\$ 27,770
10	Concrete Curb and Gutter	LF	95	\$ 60	\$ 5,700
11	Concrete Sidewalks	SF	650	\$ 12	\$ 7,800
12	Extra for New Curb Ramps	EA	4	\$ 25	\$ 100
13	12 inch Storm Sewer Pipe	LF	240	\$ 220	\$ 52,800
14	Concrete Manholes, 48" Standard	EA	2	\$ 7,000	\$ 14,000
15	Catch Basins, Type 2	EA	4	\$ 4,100	\$ 16,400
16	Stormwater Treatment Ponds	SF	12,487	\$ 10	\$ 124,871
17	Permenant Seeding and Topsoil	SY	2,081	\$ 25	\$ 52,030
18	Striping and Signage	L.S.	1	\$ 33,000	\$ 33,000
19	Street Illumination	L.S.	1	\$ 600,000	\$ 600,000
<b>Construction Subtotal</b>					<b>\$ 2,105,141</b>
30% Contingency					\$631,542
<b>CONSTRUCTION TOTAL</b>					<b>\$2,736,684</b>

#### Engineering Design

ITEM	DESCRIPTION	TOTAL
1	Topographical Survey	\$160,000
2	Civil Engineering	\$258,000
3	Traffic Engineering	\$55,000
4	Geotechnical Engineering	\$38,500
5	Construction Administration	\$330,000
6	Environmental/Cultural Resources Services	\$38,500
7	ROW Services (15 Parcels)	\$1,500,000
<b>ENGINEERING TOTAL</b>		<b>\$2,380,000</b>
<b>Grand Total</b>		<b>\$ 5,116,684</b>



**NOTE:**  
**THIS EXHIBIT IS SCHEMATIC AND FOR SCOPING PURPOSES ONLY.**

**NEW 10' WIDE PEDESTRIAN BRIDGE IS PROPOSED WITH MIN. 2' GAP FROM EXISTING BRIDGE. ASSUMES NO IMPACT/EVALUATION OF EXISTING BRIDGE.**

16' WIDE PATH AT GRADE WITH ROADWAY SHOULDER. EXISTING GUARDRAIL TO REMAIN. LANDSCAPING IS SHOWN OVER EMBANKMENT AT 3H:1V SLOPE TO EXISTING.

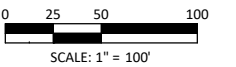
100' BRIDGE SPAN WITH IT'S OWN FOUNDATIONS. ADDITIONAL 48' APPROACH SPANS FROM NEW EMBANKMENT.

16' WIDE PATH AT GRADE WITH ROADWAY SHOULDER. EXISTING GUARDRAIL TO REMAIN. LANDSCAPING IS SHOWN OVER EMBANKMENT AT 3H:1V SLOPE TO EXISTING.

PROPOSED 12' PATH UNDER EXISTING BRIDGE ON 4' OF FILL WITH RETAINING WALL. ASSUMES NO IMPACT TO EXISTING BRIDGE COLUMNS.

16' WIDE PATH AT GRADE WITH ROADWAY SHOULDER. EXISTING GUARDRAIL TO REMAIN. LANDSCAPING IS SHOWN OVER EMBANKMENT AT 3H:1V SLOPE TO EXISTING.

**CORDON/HWY 22 INTERSECTION  
MULTI-USE PATH AND BRIDGE  
SALEM, OREGON  
APRIL 2023**



**MU-7**



**OR 22 Multi-Use Path Overcrossing (MU-7)**  
**Engineer's Estimate - Preliminary Roundabout Estimate**

Prepared by: Harper Houf Peterson Righellis, Inc.

Job No. DKS-49

April 27, 2023

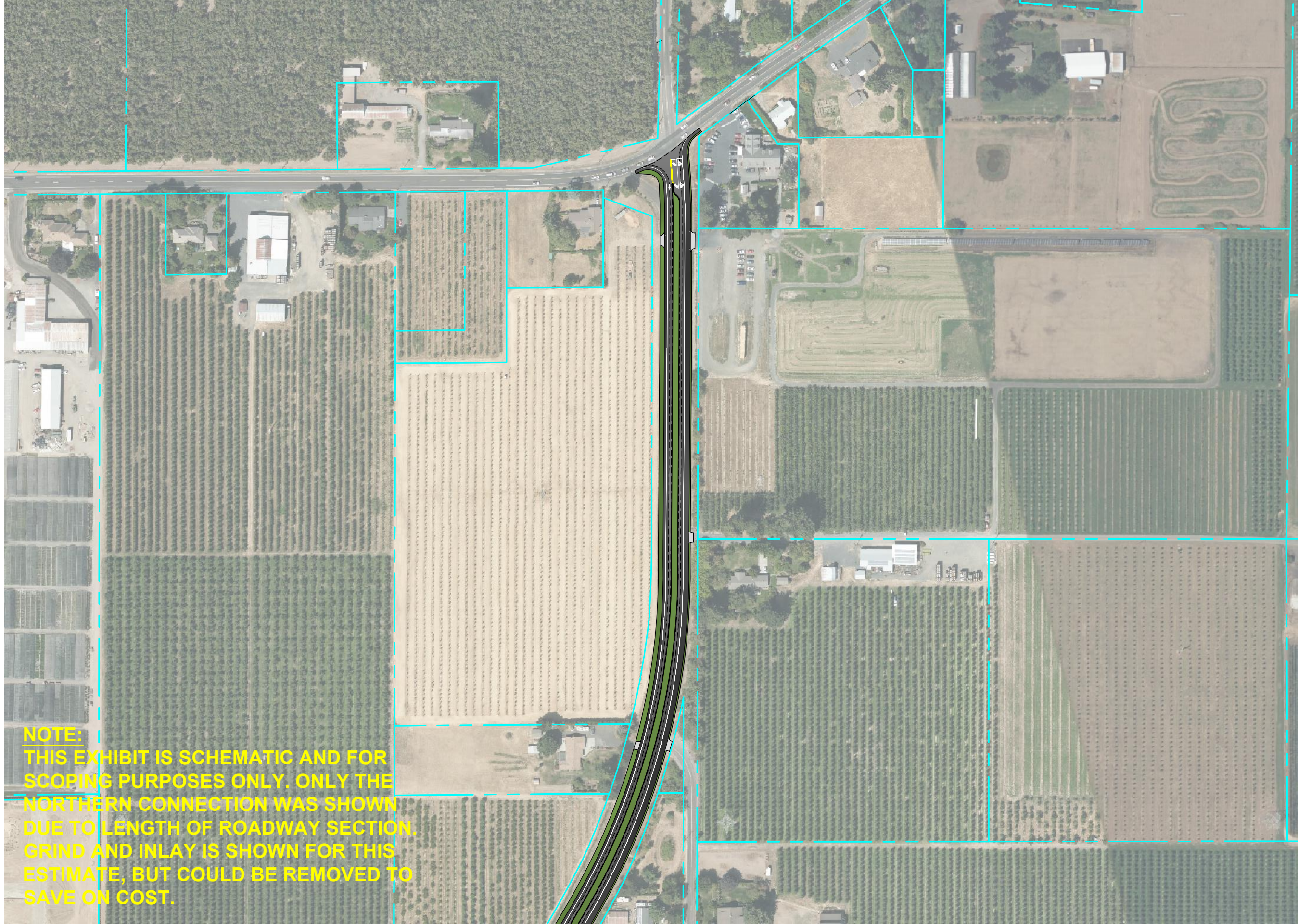
**Construction Costs**

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	Mobilization	L.S.	1	10.0%	\$ 193,000
2	Temporary Work Zone Traffic Control	L.S.	1	6.0%	\$ 116,000
3	Erosion Control	L.S.	1	2.0%	\$ 39,000
4	Construction Staking	L.S.	1	3.5%	\$ 68,000
5	Clearing and Grubbing/Removal of Structures and Obstructions	L.S.	1	\$ 29,000	\$ 29,000
6	General Embankment	CY	14,905	\$ 70.00	\$ 1,043,376
7	Level 2, 1/2" Dense ACP	TON	226	\$ 130	\$ 29,389
8	Aggregate Base	TON	467	\$ 60.00	\$ 28,035
9	Retaining Wall for Path	SF	875	\$ 110.00	\$ 96,250
10	Permenant Seeding and Topsoil	SY	3,568	\$ 25.00	\$ 89,197
11	New 10' Pedestrian Bridge with 100' span over highway	L.S.	1	\$ 550,000	\$ 550,000
12	Street Illumination	L.S.	1	\$ 60,000	\$ 60,000
<b>Construction Subtotal</b>					<b>\$ 2,341,247</b>
30% Contingency					\$702,374
<b>CONSTRUCTION TOTAL</b>					<b>\$3,043,621</b>

**Engineering Design**

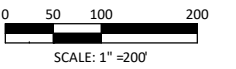
ITEM	DESCRIPTION	TOTAL
1	Topographical Survey	\$40,000
2	Civil Engineering	\$230,000
3	Structural Engineering	\$100,000
4	Geotechnical Engineering	\$50,000
5	Construction Administration	\$350,000
6	Environmental/Cultural Resources Services	\$30,000
<b>ENGINEERING TOTAL</b>		<b>\$800,000</b>
<b>Grand Total</b>		<b>\$ 3,843,621</b>





**NOTE:**  
THIS EXHIBIT IS SCHEMATIC AND FOR SCOPING PURPOSES ONLY. ONLY THE NORTHERN CONNECTION WAS SHOWN DUE TO LENGTH OF ROADWAY SECTION. GRIND AND INLAY IS SHOWN FOR THIS ESTIMATE, BUT COULD BE REMOVED TO SAVE ON COST.

**CORDON ROAD: HAZELGREEN TO SILVERTON  
ROADWAY IMPROVEMENT  
SALEM, OREGON  
APRIL 2023**



**RW-2**



## Hazelgreen to Silverton Roadway Improvement (RW-2)

### Engineer's Estimate - Preliminary Roadway Estimate

Prepared by: Harper Houf Peterson Righellis, Inc.

Job No. DKS-49

April 27, 2023

#### Construction Costs

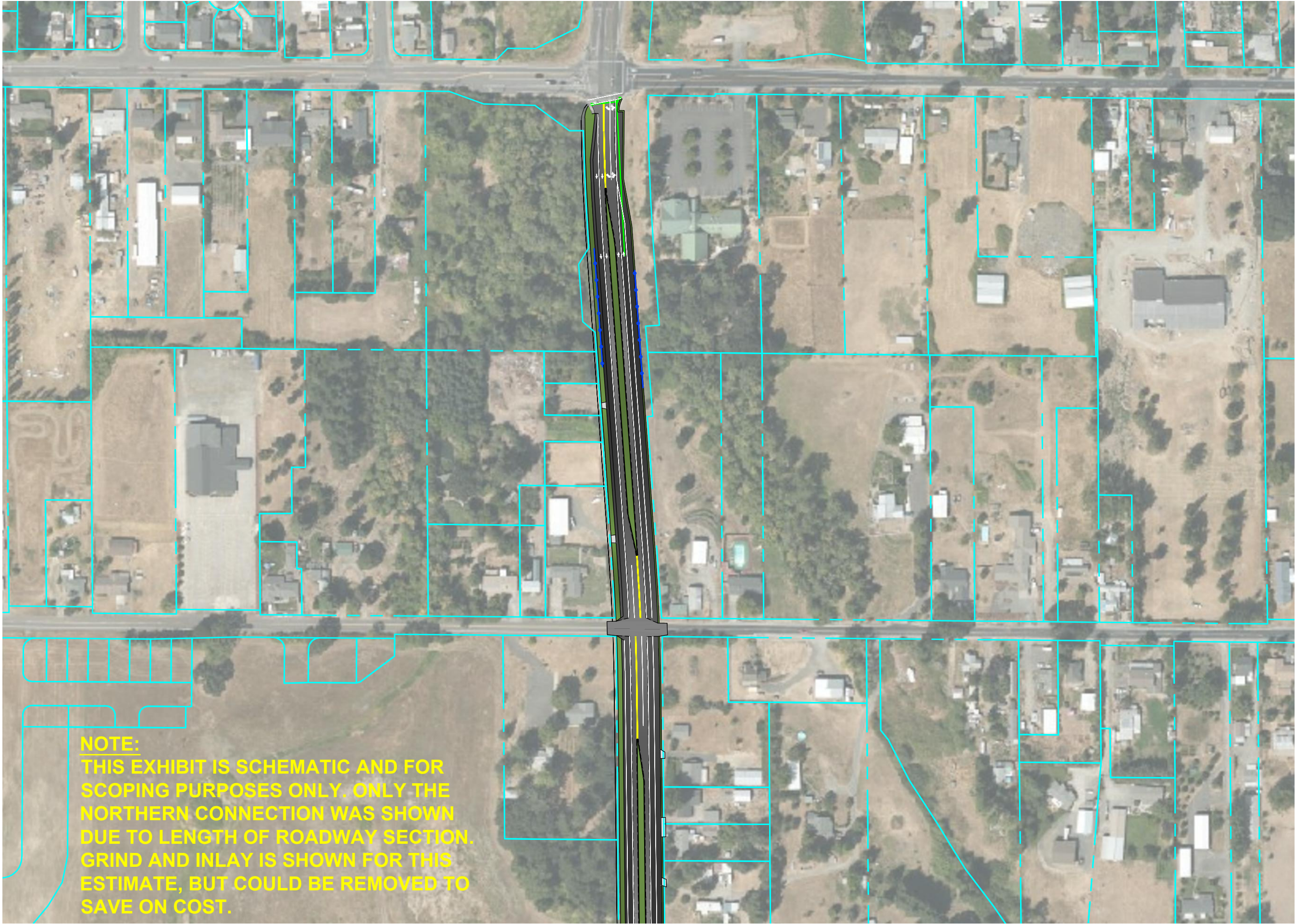
ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	Mobilization	L.S.	1	10.0%	\$ 1,128,000
2	Temporary Work Zone Traffic Control	L.S.	1	12.0%	\$ 1,353,000
3	Erosion Control	L.S.	1	2.0%	\$ 226,000
4	Construction Staking	L.S.	1	3.5%	\$ 395,000
5	Clearing and Grubbing/Removal of Structures and Obstructions	L.S.	1	\$ 1,047,000	\$ 1,047,000
6	General Excavation	CY	17,965	\$ 70.00	\$ 1,257,516
7	Cold Plane Pavement Removal, 2 Inches	SY	15,143	\$ 5	\$ 75,717
8	Level 3, 1/2" Dense ACP	TON	12,730	\$ 130	\$ 1,654,878
9	Aggregate Base	TON	34,739	\$ 60.00	\$ 2,084,312
10	Geotextile	SY	47,858	\$ 2.00	\$ 95,717
11	Concrete Curb, Standard	LF	24,989	\$ 50.00	\$ 1,249,450
12	12 inch Storm Sewer Pipe	LF	6,295	\$ 220	\$ 1,384,900
13	Concrete Manholes, 48" Standard	EA	16	\$ 7,000	\$ 112,000
14	Catch Basins, Type 2	EA	16	\$ 4,100	\$ 65,600
15	Stormwater Treatment Ponds	SF	41,823	\$ 10.00	\$ 418,230
16	Permenant Seeding and Topsoil	SY	30,001	\$ 25.00	\$ 750,014
17	Striping and Signage	L.S.	1	\$ 118,000	\$ 118,000
18	Street Illumination	L.S.	1	\$ 960,000	\$ 960,000
<b>Construction Subtotal</b>					<b>\$ 14,375,333</b>
30% Contingency					\$4,312,600
<b>CONSTRUCTION TOTAL</b>					<b>\$18,687,933</b>

#### Engineering Design

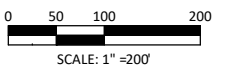
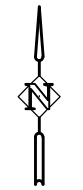
ITEM	DESCRIPTION	TOTAL
1	Topographical Survey	\$700,000
2	Civil Engineering	\$2,120,000
3	Traffic Engineering	\$400,000
4	Geotechnical Engineering	\$260,000
5	Construction Administration	\$2,250,000
6	Environmental/Cultural Resources Services	\$260,000
7	ROW Services	\$0
<b>ENGINEERING TOTAL</b>		<b>\$5,990,000</b>
<b>Grand Total</b>		<b>\$ 24,677,933</b>



**CORDON ROAD: CENTER TO CAPLINGER  
ROADWAY IMPROVEMENT**  
SALEM, OREGON  
APRIL 2023



**NOTE:**  
THIS EXHIBIT IS SCHEMATIC AND FOR SCOPING PURPOSES ONLY. ONLY THE NORTHERN CONNECTION WAS SHOWN DUE TO LENGTH OF ROADWAY SECTION. GRIND AND INLAY IS SHOWN FOR THIS ESTIMATE, BUT COULD BE REMOVED TO SAVE ON COST.



**RW-4**



## Center to Caplinger Roadway Improvement (RW-4)

### Engineer's Estimate - Preliminary Roadway Estimate

Prepared by: Harper Houf Peterson Righellis, Inc.

Job No. DKS-49

April 27, 2023

#### Construction Costs

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	Mobilization	L.S.	1	10.0%	\$ 962,000
2	Temporary Work Zone Traffic Control	L.S.	1	12.0%	\$ 1,155,000
3	Erosion Control	L.S.	1	2.0%	\$ 193,000
4	Construction Staking	L.S.	1	3.5%	\$ 337,000
5	Clearing and Grubbing/Removal of Structures and Obstructions	L.S.	1	\$ 769,000	\$ 769,000
6	General Excavation	CY	15,310	\$ 70	\$ 1,071,670
7	Cold Plane Pavement Removal, 2 Inches	SY	22,087	\$ 5	\$ 110,433
8	Level 3, 1/2" Dense ACP	TON	12,111	\$ 130	\$ 1,574,474
9	Aggregate Base	TON	30,008	\$ 60	\$ 1,800,506
10	Geotextile	SY	41,122	\$ 2	\$ 82,243
11	Concrete Curb, Standard	LF	13,478	\$ 50	\$ 673,900
12	Concrete Curb and Gutter	LF	190	\$ 60	\$ 11,400
13	Concrete Sidewalks	SF	1,300	\$ 12	\$ 15,600
14	Extra for New Curb Ramps	EA	8	\$ 25	\$ 200
15	12 inch Storm Sewer Pipe	LF	3,604	\$ 220	\$ 792,880
16	Concrete Manholes, 48" Standard	EA	16	\$ 7,000	\$ 112,000
17	Catch Basins, Type 2	EA	24	\$ 4,100	\$ 98,400
18	Stormwater Treatment Ponds	SF	36,336	\$ 10	\$ 363,355
19	Guardrail	LF	1,675	\$ 250	\$ 418,750
20	Permenant Seeding and Topsoil	SY	16,258	\$ 25	\$ 406,446
21	Traffic Signal Upgrades at State Street	L.S.	1	\$ 600,000	\$ 600,000
22	Striping and Signage	L.S.	1	\$ 117,000	\$ 117,000
23	Street Illumination	L.S.	1	\$ 600,000	\$ 600,000
<b>Construction Subtotal</b>					<b>\$ 12,265,256</b>
30% Contingency					\$3,679,577
<b>CONSTRUCTION TOTAL</b>					<b>\$15,944,833</b>

#### Engineering Design

ITEM	DESCRIPTION	TOTAL
1	Topographical Survey	\$440,000
2	Civil Engineering	\$1,950,000
3	Traffic Engineering	\$350,000
4	Geotechnical Engineering	\$225,000
5	Construction Administration	\$1,920,000
6	Environmental/Cultural Resources Services	\$225,000
7	ROW Services (18 Parcels)	\$1,800,000
<b>ENGINEERING TOTAL</b>		<b>\$6,910,000</b>
<b>Grand Total</b>		<b>\$ 22,854,833</b>