LeAnne M. Bremer, P.C.
Admitted in Washington and Oregon
leanne.bremer@millernash.com
360.619.7002 (direct)

Memorandum

To: Joe Turner, City of Woodland Land Use Hearings Examiner

From: LeAnne M. Bremer, P.C.

Subject: Logan's Landing Site Plan Approval Appeal (WLD-2023-006)

Date: Feburary 15, 2024

The purpose of this Memorandum is to provide additional evidence and argument as requested by the Hearings Examiner on Appeal Issue Nos. 1, 2 and 3, and suggest revised condition language for Appeal Issue No. 4. According to the schedule set out by the Hearings Examiner, the Appellant will provide a final rebuttal, with proposed or modified conditions of approval, by February 29, 2024, after other parties submit evidence and argument into the record by February 22, 2024.

Argument

I. Appel Issue #1 – Parking

a. Parking Lot, Parking Garage, and Parking Facility. It is the Appellant's position that by clear language of the code the following uses are allowed in the C-2 zone: "Commercial parking lots and garages,"[1] and "Public and private off-street parking facilities."[2] In addition, dwelling units are allowed in the C-2 zone (through incorporation of C-1 uses) above a permissible C-1 commercial use and if adequate off-street parking is provided.[3] This is consistent with what is proposed: parking, as a permitted use, is available for other commercial uses on the ground floor of the proposed buildings and parking is available to residents above the ground floor. The fact that the permitted parking structures help the Appellant meet parking requirements, in addition to the surface parking lots proposed, should make no difference. Nothing in code prohibits the Appellant from counting parking spaces in structures,

[1] WMC 17.36.020.5.

[2] WMC 17.32.020.10.

[3] WMC 17.32.020.37.

as a permitted use, to help meet parking minimums. WMC 17.56.020, in fact, allows the City to use flexibility in determining whether parking requirements are met.

b. Accessory v. principal use. The question arose at the hearing on whether the proposed parking structure use is simply an accessory use rather than a stand-alone use in and of itself that could qualify as a "permissible C-1 commercial use" in WMC 17.32.020.37. In this case, the parking structure is one of the principal uses proposed for the site.

"Accessory use" means a use which is subordinate in area, extent, or purpose to the principal use on the same lot. WMC 17.08.016. "Principal use" means the main use of land or buildings as distinguished from an accessory use. CMC 17.08.573. These definitions do not fully answer the question in this case because parking can be both an accessory use and a principal use.

The Woodland Code separately lists allowed accessory uses in the Low-Density Residential Zone, Section 17.16.030. There are also references to accessory uses in the Public/Quasi-Public/Institutional District, Section 17.24.030, and in the Neighborhood Commercial District, Section 17.40.040. The City, thus, has specifically listed accessory uses in certain zones. The City has not separately listed permitted accessory uses in the C-1 and C-2 zones. This does not mean accessory uses are not allowed in the C-1 and C-2 zones (because accessory uses likely do not need to be separately listed to be allowed), but what this shows is that commercial parking lots and garages and public and private off-street parking facilities are both listed with other permitted principal uses in each zone under the heading Permitted Uses (as opposed to being listed as Accessory Uses or not being listed at all). In other words, parking is not always an accessory use, or development standard, because parking is specifically listed as one of many "Permitted Uses" in each zone. While parking is required for almost all permitted uses, because of the structure of the code, parking lots, garages, and facilities are also separate permitted uses. The parking structure in this case meets the definition of a "permissible C-1 commercial use," which allows residential units above it. The "commercial" part of the use description refers to the fact that the use is allowed and, importantly, listed in the C-1 and C-2 zones' Permitted Use sections.

Recognizing that parking is a separate permitted use in this case, as the code supports, does not mean that parking cannot be considered an accessory use, or required to meet a development standard in other cases. The City argued in its PowerPoint presentation that if the Appellant were right in its interpretation, then parking would have to be listed as permitted use in other zones or be prohibited. That is not the Appellant's position because, in addition to being a permitted use in the C-1 and C-2 zones, the code also allows parking as an accessory use or to meet a development standard. There is no reason parking cannot have these multiple purposes. Where parking lots, garages, and facilities are specifically listed as permitted uses

means just that—they are permitted uses. Note, the use tables do not list parking spaces or parking areas as allowed uses, which are both defined in code,[4] illustrating that parking lots, garages, and facilities are something different and can have a different purpose as a stand-alone, permissible use in the C-1 and C-2 commercial zones. They are more than just parking spaces or areas.

II. Appeal Issue #2 – Façade

WMC 17.36.130.H.4 states that "[a] minimum of thirty percent of any ground floor façade that is visible from any public street, public space, or residential zone shall be comprised of windows with clear "vision" glass. Clear vision glass is noted in code as something that is transparent. In addition, the code specifically states that the intent of this requirement is "[t]o provide visual connection between activities inside and outside of buildings, and encourage pedestrian activities on the fronting public streets." WMC 17.36.130.H.4.

To meet this standard, the Appellant is submitting into the record a proposed, revised street side elevation for each building. Attachment A. This illustrates that 65% of the façade will be comprised of clear openings or glass, more than twice the standard, with the glass portion being 24% of the façade. Mr. Ed Greer testified at the hearing that putting glass in the openings would not allow for proper ventilation for the parking structure. It would also be unnecessary since the openings allow for clear views inside. It would be no different if inside the structure there was open space or natural areas. Glass in the openings would not further the purpose of transparency in any way whatsoever.

The City cites WMC 17.36.130(A) for the purpose of the architectural and site design standards, one of which is to "[c]reate a physical environment that emphasizes buildings and landscaping, rather than parking lots, driveways, or large signs." The proposal meets this standard because on this issue buildings *are* proposed in place of surface parking lots (which are provided elsewhere on site). The openings will be in structures so this purpose is met. Having openings in the building eliminates expanses of blank walls, and along with other architectural features of the building, improves the pedestrian experience.

The code requirement, which incorporates the intent of it into the standard, is met with the proposal.

III. Issue Three – Transportation

a. One issue on appeal is whether the Appellant must construct a full half-width street (where none exists today), between the extension of Franklin and Old Pacific Highway,

[4] WMC 17.08.548 and .550.

with the first phase of the development at a cost of over a half million dollars. It should be pointed out at the outset that the extension of Franklin will not be, nor needs to be, fully built out through the site with the first phase of the development, so there would be no road to connect the secondary access to with the first phase. The staff decision dated December 21, 2023, recognized the phased approach to the construction of the Franklin extension: "[p]artial construction of the extension of Franklin Loop that has been identified as a part of the City's Transportation Improvement Program (TIP), along with other associated civil improvements will be completed alongside the development." Page 2.

The testimony at the hearing, including from the fire official, leads the Appellant to clarify the timing of the improvements for the extension of Franklin through the site, and the timing of the emergency access road and, later, the full half-street improvements to the west-east street connecting Franklin and Old Pacific Highway, as follows.

b. Dead-Ends. WMC 14.32.005 states that Woodland adopts and incorporates the 2018 Washington State Fire Code (Chapter 51-54A WAC). Additionally, WMC 14.32.010 specifically adopts Appendices C and D from the IFC.

D103.4 of the 2018 IFC provides:

D103.4 Dead ends.

Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) shall be provided with width and turnaround provisions in accordance with Table D103.4.

TABLE D103.4 REQUIREMENTS FOR DEAD-END FIRE APPARATUS ACCESS ROADS

LENGTH (feet)	WIDTH (feet)	TURNAROUNDS REQUIRED
0–150	20	None required
151–500	20	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
501–750	26	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
Over 750	Special approval required	

For SI: 1 foot = 304.8 mm.

As Mr. Greer testified, the preliminary site plan in the record shows typical turnarounds per the fire code all along the extension of Franklin through the site. This fire code requirement will be met as Franklin is built out with the project. There already is a condition of approval in the staff decision that requires this in Condition V.17:

17. Building/construction plans must be submitted to CCFR separately, along with fire alarm and/or fire sprinkler alterations. It is the responsibility of the applicant to comply with any and all conditions placed upon the development by CCFR as the City of Woodland will not approve any proposed development without CCFR approval.

c. Secondary access. D106.1 states:

D106.1 Projects having more than 100 dwelling units.

Multiple-family residential projects having more than 100 *dwelling units* shall be equipped throughout with two separate and *approved* fire apparatus access roads.

Exception: Projects having up to 200 *dwelling units* shall have not fewer than one *approved* fire apparatus access road where all buildings, including nonresidential occupancies, are equipped throughout with *approved automatic sprinkler systems* installed in accordance with Section 903.3.1.1 or 903.3.1.2.

Similarly, commercial developments over 30' feet in height, or 124,000 square feet, must have a secondary access or sprinklers. 2018 IFC D104. Appellant is proposing to provide automatic sprinkler systems in all buildings. Thus, up to 200 dwelling units can be provided without a secondary access because of the sprinklered buildings. The Appellant proposes that at the time of construction of the sixth building (when a total of 204 residential units will be built), it will provide a 20-foot emergency access consistent with the fire code connecting to the extension of Franklin, wherever it then terminates, to Old Pacific Highway. At the final phase, the Appellant will provide the full half-street improvement between Franklin and Old Pacific Highway. As the level of service analysis shows (see below), deferring the full improvement of the secondary access until the final phase will not cause adverse impacts to the transportation system in the meantime.

d. Fire Hydrants. There was testimony at the hearing that if the emergency access road has a fire hydrant, it must be 26-feet wide. The first question is whether a fire hydrant is required on the emergency access road on property that will have no structures. Fire hydrants are required when a facility or building will be more than 600 feet from another hydrant if the buildings have a sprinkler system:

507.5.1 Where required.

Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 400 feet (122 m) from a hydrant on a fire apparatus access road, as measured by an *approved* route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided where required by the *fire code official*.

Exceptions:

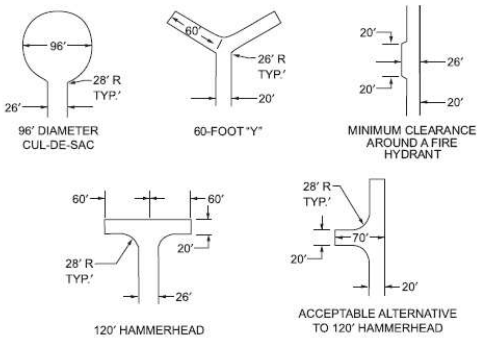
1. For Group R-3 and Group U occupancies, the distance requirement shall be 600 feet (183 m).
2. For buildings equipped throughout with an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2, the distance requirement shall be 600 feet (183 m).

This means fire hydrants are *not* required if no building or facility is being constructed, such as along the emergency access road. Incidentally, the Appellant will be providing fire hydrants as it builds out the site and the Franklin extension, as required by the fire code, the exact locations of which will be determined in consultation with the fire official. This requirement is covered by Condition V.17 above.

Lastly, it is the case that when there is a fire hydrant located on an apparatus access road, the road must be 26-feet wide.

D103.1 Access road width with a hydrant.

Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet (7925 mm), exclusive of shoulders (see Figure D103.1).



For SI: 1 foot = 304.8 mm.

FIGURE D103.1 DEAD-END FIRE APPARATUS ACCESS ROAD TURNAROUND

However, if there is no fire hydrant because there are no buildings along the emergency access road (and why would one be needed in that case?), then the emergency access road, when built, can be 20-feet wide. This width is supported by the same requirement for an access road with a turnaround (since this is a road that would connect two public streets, no turnaround is required, but the access width can still be 20 feet because emergency vehicles will have an outlet):

TABLE D103.4 REQUIREMENTS FOR DEAD-END FIRE APPARATUS ACCESS ROADS

LENGTH (feet)	WIDTH (feet)	TURNAROUNDS REQUIRED
0–150	20	None required
151–500	20	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
501–750	26	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figur D103.1
Over 750	Special approval required	

Applicable provisions can be found in these links:

The 2018 fire code is here: https://codes.iccsafe.org/content/IFC2018P6/appendix-d-fire-apparatus-access-roads

WMC provisions are here: https://library.municode.com/wa/woodland/codes/code_of_ordinances?nodeId=WOODLAND_MUNICIPAL_CODE_TIT14BUCO_CH14.32FICO_14.32.005INFICOAD

e. Level of Service. There was testimony at the hearing by Mr. Patrick Harbison surmising, without evidence, that if a secondary access is not provided earlier than proposed by the Appellant, then there would be level of service failures at affected intersections. The Appellant's traffic engineer is providing additional analysis on this point. See Attachment B from Heath & Associates dated February 13, 2024, demonstrating that even with sole access to and from the north at full build out of the site, no affected intersection will operate at less than LOS D, the City's standard.[5] It could even be argued that the Appellant need not build the full half-width improvement connecting the extension of Franklin to Old Pacific Highway at all (just provide an emergency access once 200 residential units are built); however, the Appellant has offered the full improvement at the final phase.

IV. Issue Four – Proposed Condition Language for Circulation Plan

On further review of this issue and as pointed out by Staff in their appeal staff report, on the top of page 11, Condition 32.f. already addresses the applicable requirement:

[5] In addition, prior to commencement of the hearing on January 29, 2024, Mr. Goddard submitted to the parties and the Hearings Examiner an email from Mr. Dylan Bass from WSDOT stating that if all project trips used the northern access, impact to WSDOT facilities would be "negligible."

> 32. The revised site plan shall include revisions which address how the project meets the Architectural and Site Design Standards in WMC 17.36.130, as follows:
>
> ***
>
> f. Building elevations and site plan details showing how each building will meet the "Pedestrain & Bicyclist Connections" section (M).

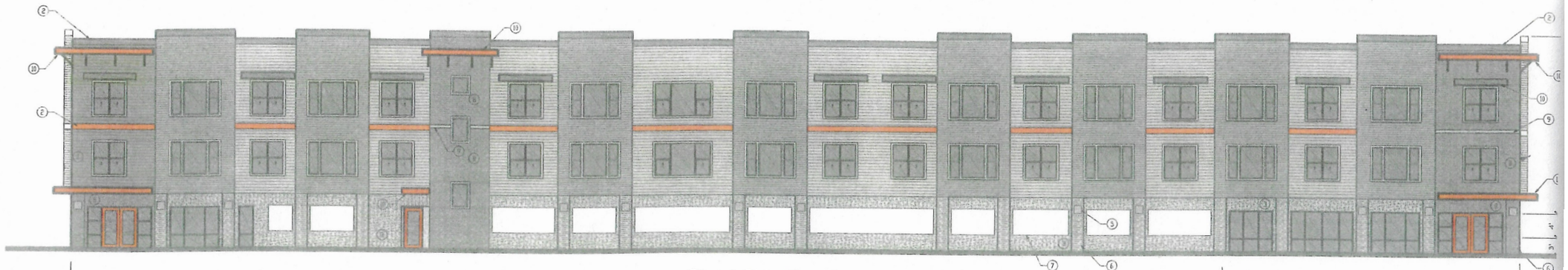
The Appellant accepts this condition with the acknowledgment in the final order of the Examiner that a separate striping and circulation plan is not required. No additional condition is necessary.

Lastly, resolution of the appeal issues does not require a new SEPA review. WAC 197-11-600(3)(b) states:

> (b) For DNSs and EISs, preparation of a new threshold determination or supplemental EIS is required if there are:
>
> (i) Substantial changes to a proposal so that the proposal is likely to have significant adverse environmental impacts (or lack of significant adverse impacts, if a DS is being withdrawn); or
>
> (ii) New information indicating a proposal's probable significant adverse environmental impacts. (This includes discovery of misrepresentation or lack of material disclosure.) A new threshold determination or SEIS is not required if probable significant adverse environmental impacts are covered by the range of alternatives and impacts analyzed in the existing environmental documents.

There are no changes to the proposal, much less substantial. The Appellant's proposal is exactly the same as what the City reviewed leading to the Determination of Nonsignificance, with the proposed parking structures, and the phasing of the transportation improvements. Nor is there new information that would justify further SEPA review. If the Hearings Examiner grants the appeal, the result would be that the contested conditions would be eliminated or modified as requested in the appeal letter. No remand for further review is necessary. The Appellant would proceed with development upon compliance with all the applicable conditions of approval in the Staff Decision, as modified in this appeal.

Thank you for your consideration of the above issues.



Street Side Elevation

Office/Retail
Windows &
Glass Doors
88 sq ft 9%

Parking Area
Open (no glass)
for ventilation
396 sq ft 41%

Office/Retail
Windows &
Glass Doors
148 sq ft 15%

Total Facade (3' to 7' above grade) of Street Side of Building: 968 sq ft
Total Clear Openings (3' to 7') for Parking: 396 sq ft 41%
Total Glass (3' to 7') for Office/Retail: 236 sq ft 24%
Total Glass & Clear Openings: 632 sq ft 65%

Logan's Landing

ATTACHMENT A

HEATH & ASSOCIATES
Transportation Planning & Engineering

Date: February 13, 2024

Subject: Logan's Landing Intersection Evaluation

From: LeAnne M. Bremer, P.C.
Miller Nash LLP

From: Aaron Van Aken, PE, PTOE
Heath & Associates

INTRODUCTION

Heath & Associates was requested to provide an operational assessment as it relates to deferring the Franklin Street extension to Old Pacific Highway as part of the Logan's Landing development in the city of Woodland.

ASSUMPTIONS

The *Logan's Landing Traffic Impact Analysis* (Heath, July 2023) evaluated the development's impacts with the Franklin Street connection to Old Pacific Highway in-place and available for use for all motorists. **This evaluation reanalyzes the full buildout without the Franklin Street connection** whereby all project-generated traffic must use the Belmont Loop roadway for access to and from Old Pacific Highway.

The following parameters were applied:

1. 272 multi-family dwelling units and 40,640 sq. ft. commercial space contained within eight buildings.
2. Full buildout occurring in the year 2032.
    a. Phase 1 (First two buildings by 2026 and each building thereafter constructed in one-year intervals until 2032).
3. 2.3 percent compound annual background growth rate in addition to pipeline volumes from *Oak Village Apartments* (consistent with TIA).
4. All traffic assigned to/from Belmont Loop.
5. A total of PM peak hour 195 new trips from the project added to the network and 42 additional pass-by trips (consistent with TIA).

ANALYSIS

The below referenced figures include the following information:

- **Figure 1: PM Peak Hour Trip Distribution & Assignment**
  - All project-generated trips routing to/from the subject site assigned via Belmont Loop S & Old Pacific Highway

- **Figure 2: Forecast 2032 PM Peak Hour Volumes with Project**

Level of Service (LOS) was remeasured with the updated horizon year and trip distribution assignment. Table 1 below summarizes the LOS.

Table 1: Forecast 2032 Weekday PM Peak Hour LOS – Full Build-Out

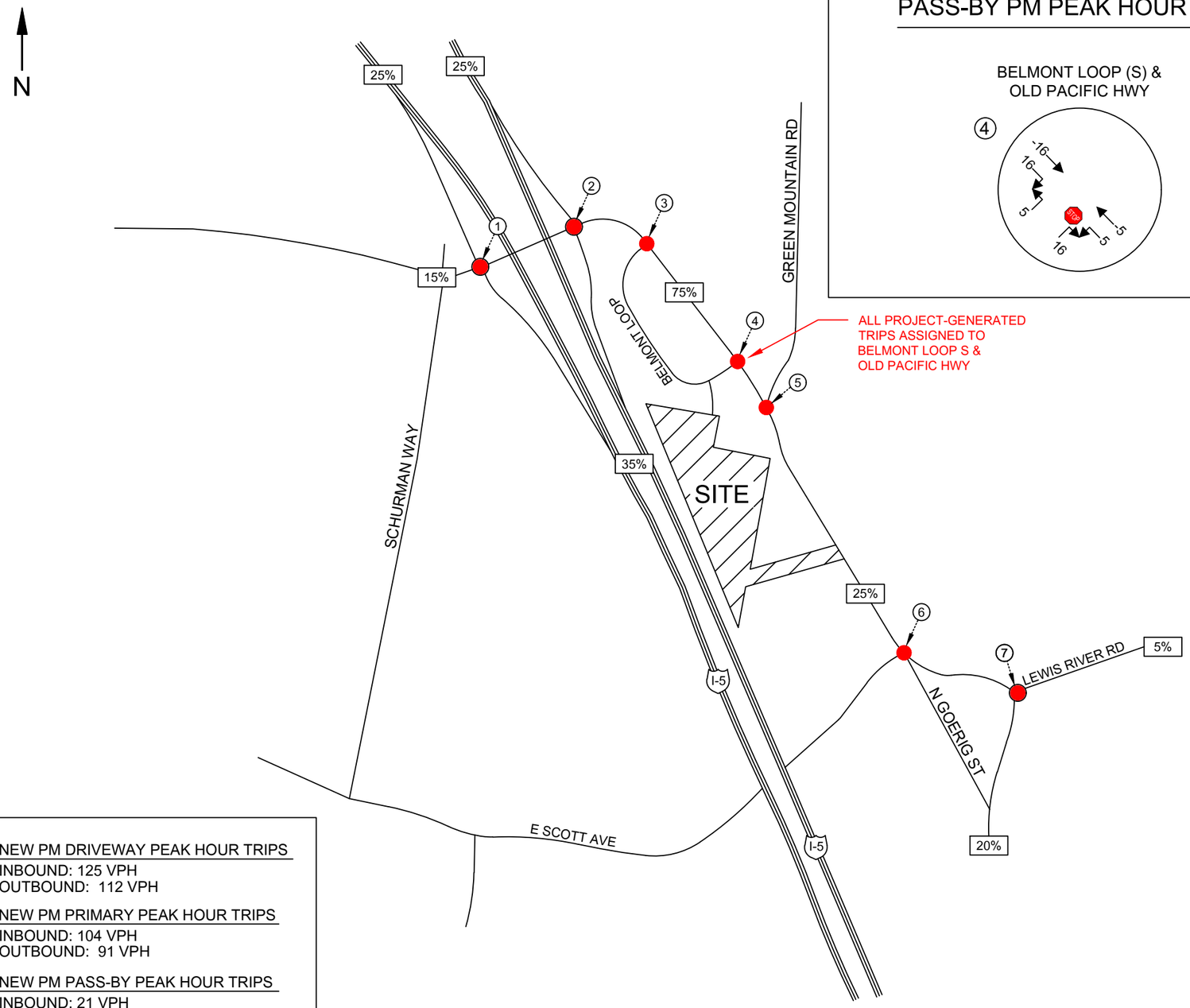
Delays given in seconds per vehicle

Intersection	Control	Movement	LOS	Delay
I-5 SB Ramps & Dike Access Rd	RAB	Overall	C	25.6
I-5 NB Ramps & Dike Access Rd	RAB	Overall	B	13.0
Belmont Loop N & Old Pacific Hwy	TWSC	EB	D	32.7
Belmont Loop S & Old Pacific Hwy	TWSC	EB	C	24.8
Green Mtn Rd & Old Pacific Hwy	TWSC	WB	C	19.3
E Scott Ave & Old Pacific Hwy	AWSC	Overall	C	18.1
E Scott Ave & Lewis River Rd	RAB	Overall	B	11.3

The city of Woodland has adopted LOS D standards. Forecast 2032 PM peak hour conditions with full buildout of Logan's Landing and no Franklin Street connection to Old Pacific Highway are shown to operate with delays at LOS D or better. As such, **all study intersections meet City standards under forecast 2032 full build-out conditions.**

Please reach out should you have any questions.

Thank you,
Aaron Van Aken, P.E., PTOE

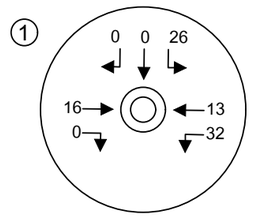


PASS-BY PM PEAK HOUR TRIPS

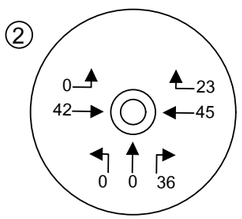
BELMONT LOOP (S) & OLD PACIFIC HWY

PRIMARY PM PEAK HOUR TRIPS

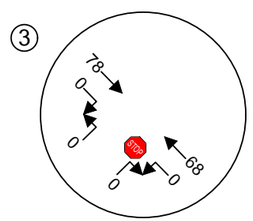
I-5 SB & DIKE ACCESS RD



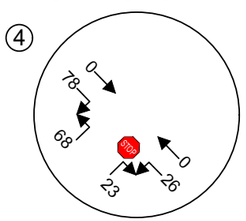
I-5 NB & DIKE ACCESS RD



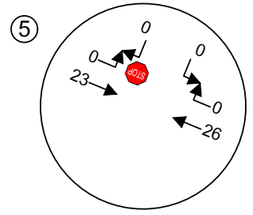
BELMONT LOOP (N) & OLD PACIFIC HWY



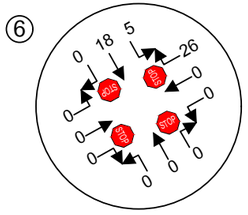
BELMONT LOOP (S) & OLD PACIFIC HWY



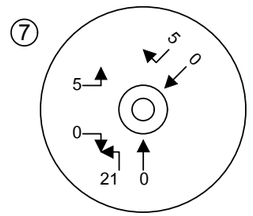
GREEN MOUNTAIN RD & OLD PACIFIC HWY



E SCOTT AVENUE & OLD PACIFIC HWY



E SCOTT AVENUE & LEWIS RIVER ROAD



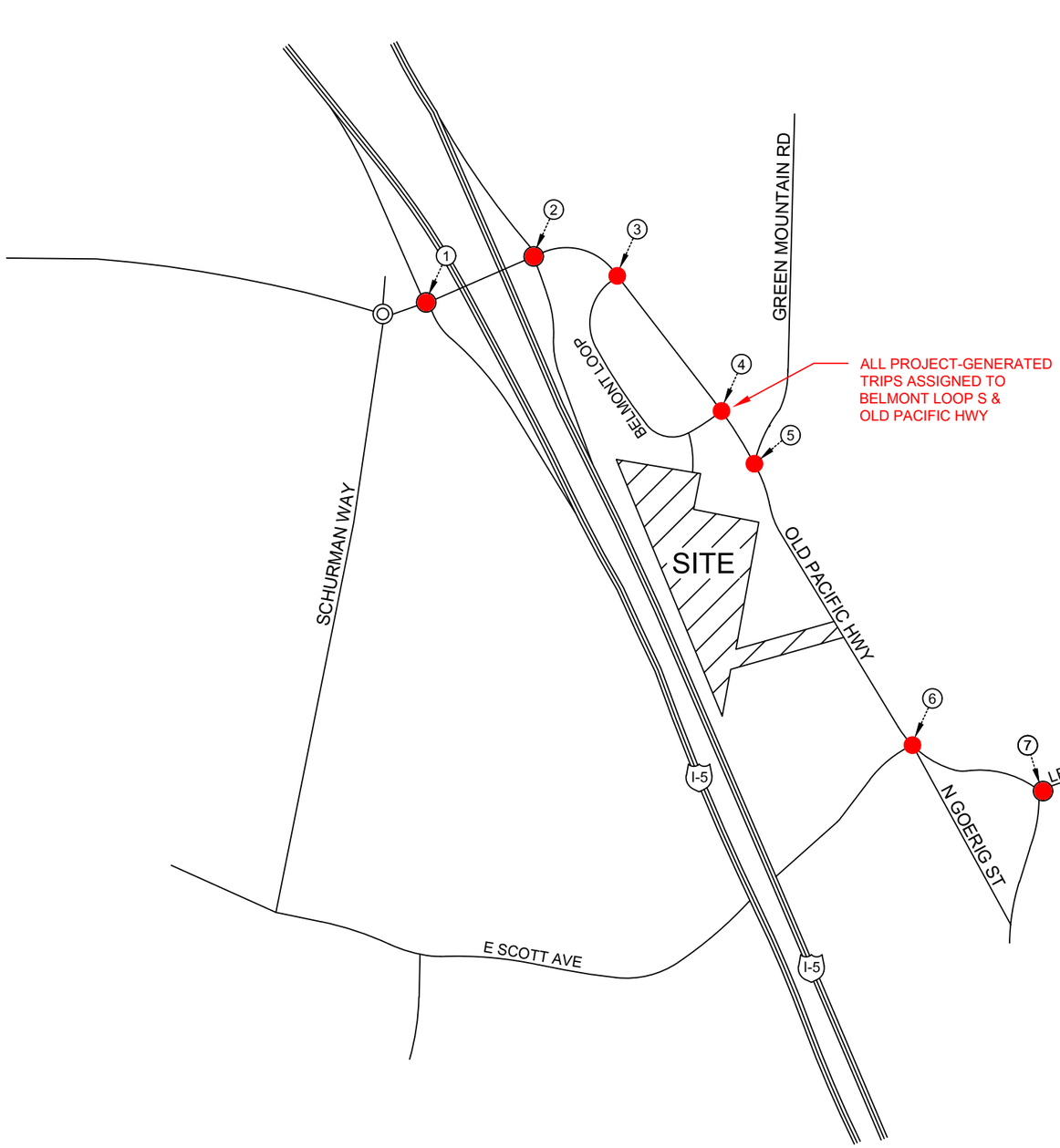
NEW PM DRIVEWAY PEAK HOUR TRIPS
INBOUND: 125 VPH
OUTBOUND: 112 VPH

NEW PM PRIMARY PEAK HOUR TRIPS
INBOUND: 104 VPH
OUTBOUND: 91 VPH

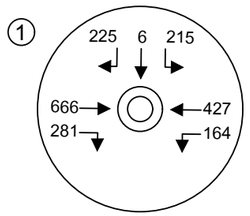
NEW PM PASS-BY PEAK HOUR TRIPS
INBOUND: 21 VPH
OUTBOUND: 21 VPH

HEATH&ASSOCIATES
Transportation Planning & Engineering

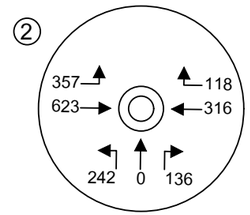
LOGAN'S LANDING
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 1



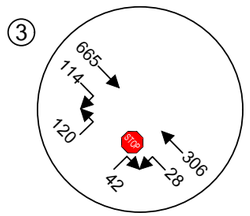
I-5 SB & DIKE ACCESS RD



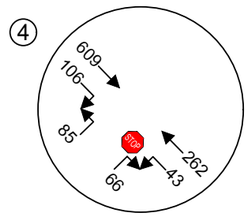
I-5 NB & DIKE ACCESS RD



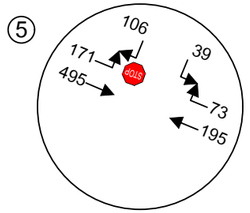
BELMONT LOOP (N) & OLD PACIFIC HWY



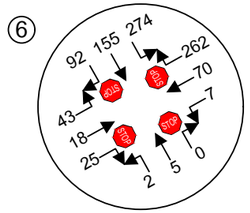
BELMONT LOOP (S) & OLD PACIFIC HWY



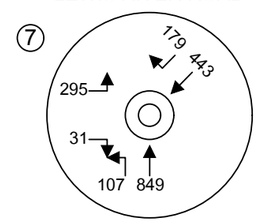
GREEN MOUNTAIN RD & OLD PACIFIC HWY



E SCOTT AVENUE & OLD PACIFIC HWY



E SCOTT AVENUE & LEWIS RIVER ROAD



HEATH&ASSOCIATES
Transportation Planning & Engineering

LOGAN'S LANDING

FORECAST 2032 PM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 2

MOVEMENT SUMMARY

Site: 1 [1. I-5 SB Ramps & Dike Access Road (Site Folder: Forecast 2032 With Project)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Forecast 2032 PM Peak Hour With Project
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
East: Dike Access Road															
1	L2	All MCs	174	5.1	174	5.1	0.452	9.8	LOS A	0.0	0.0	0.00	0.49	0.00	35.0
6	T1	All MCs	454	3.3	454	3.3	0.452	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	35.9
Approach			629	3.8	629	3.8	0.452	5.5	LOS A	0.0	0.0	0.00	0.49	0.00	35.6
North: I-5 SB Off-Ramp															
7	L2	All MCs	229	9.7	229	9.7	0.587	18.5	LOS B	5.3	138.8	0.83	0.86	1.08	30.4
4	T1	All MCs	6	1.0	6	1.0	0.587	11.3	LOS B	5.3	138.8	0.83	0.86	1.08	31.3
14	R2	All MCs	239	3.3	239	3.3	0.587	11.7	LOS B	5.3	138.8	0.83	0.86	1.08	31.0
Approach			474	6.4	474	6.4	0.587	15.0	LOS B	5.3	138.8	0.83	0.86	1.08	30.7
West: Dike Access Road															
2	T1	All MCs	709	1.0	709	1.0	1.034	43.0	LOS F	39.8	1006.4	1.00	1.86	2.93	22.4
12	R2	All MCs	299	2.6	299	2.6	1.034	43.4	LOS F	39.8	1006.4	1.00	1.86	2.93	22.3
Approach			1007	1.5	1007	1.5	1.034	43.1	LOS D	39.8	1006.4	1.00	1.86	2.93	22.4
All Vehicles			2111	3.3	2111	3.3	1.034	25.6	LOS C	39.8	1006.4	0.66	1.23	1.64	27.1

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2 [2. I-5 NB Ramp & Dike Access Road (Site Folder: Forecast 2032 With Project)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Forecast 2032 PM Peak Hour With Project
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: I-5 NB Off-Ramp															
3	L2	All MCs	257	5.6	257	5.6	0.713	34.5	LOS C	8.8	230.3	1.00	1.17	1.84	24.8
8	T1	All MCs	1	1.0	1	1.0	0.713	27.6	LOS C	8.8	230.3	1.00	1.17	1.84	25.3
18	R2	All MCs	145	4.4	145	4.4	0.713	28.4	LOS C	8.8	230.3	1.00	1.17	1.84	25.1
Approach			403	5.2	403	5.2	0.713	32.3	LOS C	8.8	230.3	1.00	1.17	1.84	24.9
East: Dike Access Road															
6	T1	All MCs	336	3.8	336	3.8	0.605	12.0	LOS B	5.9	152.6	0.90	0.86	1.15	32.4
16	R2	All MCs	126	5.6	126	5.6	0.605	12.4	LOS B	5.9	152.6	0.90	0.86	1.15	32.1
Approach			462	4.3	462	4.3	0.605	12.1	LOS B	5.9	152.6	0.90	0.86	1.15	32.3
West: Dike Access Road															
5	L2	All MCs	380	3.1	380	3.1	0.744	9.7	LOS A	0.0	0.0	0.00	0.52	0.00	34.8
2	T1	All MCs	663	2.8	663	2.8	0.744	3.7	LOS A	0.0	0.0	0.00	0.52	0.00	35.6
Approach			1043	2.9	1043	2.9	0.744	5.9	LOS A	0.0	0.0	0.00	0.52	0.00	35.3
All Vehicles			1907	3.7	1907	3.7	0.744	13.0	LOS B	8.8	230.3	0.43	0.74	0.67	31.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	120	42	28	306	665	114
Future Vol, veh/h	120	42	28	306	665	114
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	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	9	5	3	1
Mvmt Flow	122	43	29	312	679	116

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1106	737	795	0	-	0
Stage 1	737	-	-	-	-	-
Stage 2	369	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.19	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.281	-	-	-
Pot Cap-1 Maneuver	232	417	796	-	-	-
Stage 1	472	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	224	417	796	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	455	-	-	-	-	-
Stage 2	697	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	32.71	0.81	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	796	-	224	417	-	-
HCM Lane V/C Ratio	0.036	-	0.548	0.103	-	-
HCM Control Delay (s/veh)	9.7	-	39	14.6	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.1	-	2.9	0.3	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	85	66	43	262	609	106
Future Vol, veh/h	85	66	43	262	609	106
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	115	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	9	1	6	3	1
Mvmt Flow	92	72	47	285	662	115

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1098	720	777	0	-	0
Stage 1	720	-	-	-	-	-
Stage 2	378	-	-	-	-	-
Critical Hdwy	6.41	6.29	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.381	2.209	-	-	-
Pot Cap-1 Maneuver	237	417	844	-	-	-
Stage 1	484	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	223	417	844	-	-	-
Mov Cap-2 Maneuver	223	-	-	-	-	-
Stage 1	457	-	-	-	-	-
Stage 2	695	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	24.76	1.34	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	844	-	223	417	-	-
HCM Lane V/C Ratio	0.055	-	0.413	0.172	-	-
HCM Control Delay (s/veh)	9.5	-	32	15.4	-	-
HCM Lane LOS	A	-	D	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.9	0.6	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	106	195	73	171	495
Future Vol, veh/h	39	106	195	73	171	495
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, %	4	9	4	1	4	3
Mvmt Flow	41	113	207	78	182	527

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1137	246	0	0	285	0
Stage 1	246	-	-	-	-	-
Stage 2	890	-	-	-	-	-
Critical Hdwy	6.44	6.29	-	-	4.14	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.381	-	-	2.236	-
Pot Cap-1 Maneuver	221	776	-	-	1266	-
Stage 1	790	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	176	776	-	-	1266	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	790	-	-	-	-	-
Stage 2	317	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	19.25	0	2.14
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	405	462	-
HCM Lane V/C Ratio	-	-	0.381	0.144	-
HCM Control Delay (s/veh)	-	-	19.2	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.7	0.5	-

Intersection	
Intersection Delay, s/veh	18.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	43	18	25	7	70	262	2	5	0	274	155	92
Future Vol, veh/h	43	18	25	7	70	262	2	5	0	274	155	92
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
Heavy Vehicles, %	3	20	1	1	2	3	1	25	1	2	1	8
Mvmt Flow	44	19	26	7	72	270	2	5	0	282	160	95
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, s/veh	10	13.1	9.2	22.9
HCM LOS	A	B	A	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	50%	2%	53%
Vol Thru, %	71%	21%	21%	30%
Vol Right, %	0%	29%	77%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	86	339	521
LT Vol	2	43	7	274
Through Vol	5	18	70	155
RT Vol	0	25	262	92
Lane Flow Rate	7	89	349	537
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.146	0.495	0.765
Departure Headway (Hd)	6.031	5.925	5.099	5.127
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	592	604	706	709
Service Time	4.086	3.977	3.14	3.154
HCM Lane V/C Ratio	0.012	0.147	0.494	0.757
HCM Control Delay, s/veh	9.2	10	13.1	22.9
HCM Lane LOS	A	A	B	C
HCM 95th-tile Q	0	0.5	2.8	7.2

MOVEMENT SUMMARY

Site: 7 [3. E Scott Ave & Lewis River Road (Site Folder: Forecast 2032 With Project)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Forecast 2032 PM Peak Hour With Project
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Lewis River Road															
3	L2	All MCs	111	1.6	111	1.6	0.894	19.7	LOS D	19.0	478.5	1.00	0.98	1.41	31.1
18a	R1	All MCs	884	1.0	884	1.0	0.894	13.0	LOS D	19.0	478.5	1.00	0.98	1.41	31.8
Approach			996	1.1	996	1.1	0.894	13.7	LOS B	19.0	478.5	1.00	0.98	1.41	31.7
NorthEast: Lewis River Road															
1ax	L1	All MCs	461	1.2	461	1.2	0.502	9.4	LOS A	4.6	115.2	0.47	0.54	0.47	33.3
16ax	R1	All MCs	186	1.0	186	1.0	0.502	3.9	LOS A	4.6	115.2	0.47	0.54	0.47	34.0
Approach			648	1.1	648	1.1	0.502	7.8	LOS A	4.6	115.2	0.47	0.54	0.47	33.5
West: E Scott Avenue															
5a	L1	All MCs	307	1.0	307	1.0	0.345	11.4	LOS B	2.3	59.0	0.67	0.68	0.67	32.3
12	R2	All MCs	32	1.0	32	1.0	0.345	6.5	LOS A	2.3	59.0	0.67	0.68	0.67	32.7
Approach			340	1.0	340	1.0	0.345	10.9	LOS B	2.3	59.0	0.67	0.68	0.67	32.3
All Vehicles			1983	1.1	1983	1.1	0.894	11.3	LOS B	19.0	478.5	0.77	0.78	0.97	32.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.