Lori Barlow

From: Sean Messner
Sent: Tuesday, December 20, 2016 11:02 AM
To: Todd Whipple
Cc: 'Greg Figg'; Gabe Gallinger; John Hohman; Eric Guth
Subject: COSV Painted Hills TIA comments
Attachments: COSV TIA comments_pertinent pages.pdf

Good Morning Todd,

Please find attached the COSV comments on the Painted Hills TIA. I don't believe I duplicated any of WSDOT comments, but if I have, please defer to WSDOT comments on WSDOT facilities.

I've spoken to Ben over the phone yesterday and offered to go through the comments page by page. The offer still stands as I think it would be very good to meet in person to go over the comments. The comments are fairly minor in the grand scheme of things but are necessary to complete study for the project that meets the City standards. I do not think the comments will change the recommendations per say, but rather provide the necessary documentation to validate the recommendations within the report. I appreciate the hard work that you have done on this project and have shown in the documentation within the TIA as the recommendations appear to be very sound and have merit.

Ben emailed WSDOT requesting that an addendum letter be provided by WCE to address the WSDOT comments. I believe that the same memorandum can also be utilized to address the City comments.

Please let me know when you would like to meet to discuss further, or if you'd prefer to discuss via phone, please give me a call.

Thank you Todd,
Sean

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City of Spokane Valley Comments
12/19/16
SM

Traffic Impact Analysis

For

Painted Hills PRD

Spokane Valley, Washington

September 14, 2016

2013-1166

- 32nd Ave & Bowdish Rd (AM & PM)
- Dishman-Mica Rd & Bowdish Rd (AM & PM)
- Dishman-Mica Rd & Apt. Access (AM & PM) (Proposed)
- Dishman-Mica Rd & Sundown Dr. (AM & PM) (Proposed)
- Dishman-Mica Rd & S. Comm. Access (AM & PM) (Proposed)
- Dishman-Mica Rd & Thorpe Rd (AM & PM)
- Thorpe Rd & Comm. Access (AM & PM) (Proposed)
- 16th Ave & Pines Rd (AM & PM)
- 16th Ave & SR 27 (AM & PM)
- 32nd Ave & Pines Rd (AM & PM)
- Madison Rd & Painted Hills Ave (AM & PM) (Proposed)
- Madison Rd & 41st Ave (AM & PM) (Proposed)
- Madison Rd & 43rd Ave (AM & PM) (Proposed)
- Madison Rd & 44th Ave (AM & PM) (Proposed)
- Madison Rd & Thorpe Rd (AM & PM)
- 32nd Ave & SR 27 (AM & PM)
- 32nd Ave & Evergreen Rd (AM & PM)
- 32nd Ave & Sullivan Rd (AM & PM)

8. This traffic impact analysis follows the City of Spokane Valley Standard for Traffic impact analysis which utilizes level of service analysis for the year 2015 (existing) to establish a baseline of performance and identify any existing concerns in the exiting transportation system. Buildout year scenarios (2025) both with and without the project to determine traffic concurrency or to determine if the added trips of the project on the transportation system would reduce the scoped intersections level of service below the standard.

9. Per the City of Spokane Valley Street Standards 3.3.4.6 the buildout year +5 analysis scenario was included as the project is expected to take more than 6 years to complete. The buildout year plus 5 years (2030) both with and without the project will ensure that any proposed mitigation would maintain level of service after buildout.

10. Per the City of Spokane Valley Street Standards 3.3.4.6 the buildout year +20 analysis scenario of the mitigated intersection was not included as the proposed year 2025 mitigation at an unsignalized intersection (16th Avenue & Pines Road) does not involve the installation or modification to an intersection controlled with a traffic signal or roundabout.

11. An Additional analysis of Peak Hours and cut-through traffic per public comment were included in the public involvement section to respond to a concern that the Midilome East residents had. This additional analysis is not a part of traffic concurrency but is a service provided to the public for their information.

12. Conclusion See Conclusion comments at end.

Based upon the analysis, field observations, assumptions, methodologies and results which are provided in the body of this report, it is concluded that the development of the proposed project

- There are five queue deficiencies identified at three intersections. These deficiencies were identified as the result of the background growth rate and the background projects as identified at scoping. A review of the City of Spokane Valley Transportation improvement projects (TIP), shows that there are no public improvement projects identified to mitigate the discrepancies at the following intersections and movements:
    - 16th Avenue & State Route 27, EB Thru, WB Thru
    - 32nd Avenue & Pines Road, EB Thru
    - 32nd Avenue & State Route 27, WB Thru, WB Left Turn

Year 2030, Buildout Plus 5 Years, with project, with background projects

- There is a Level of Service deficiency identified at the intersection of 16th Avenue & Pines Road, as the southbound approach has 133.7 seconds of average delay, for level of service as described in Chapter 3 of the Spokane Valley Street Standards, and the Level of Service Table 4.3 of the City of Spokane Valley Comprehensive Plan.
- The Level of Service deficiency identified at the intersection of 16th Avenue & Pines Road, originally caused by the background trips and worsened by this project, can be brought back to an acceptable level of service signalizing the intersection and pairing the signal timing with the signal at the intersection of 16th Avenue & State Route 27
- There are five future queue deficiencies at three intersections with two of those intersections operating at acceptable levels of service. These deficiencies were the result of the background growth rate and the background projects as identified within this study and are only incrementally worsened or kept the same by this project. A review of the City of Spokane Valley Transportation improvement projects (TIP), shows that there are no public improvement projects identified to mitigate the discrepancies at the following intersections and movements:
    - 16th Avenue & State Route 27, EB Thru, WB Thru
    - 32nd Avenue & Pines Road, EB Thru
    - 32nd Avenue & State Route 27, WB Thru, WB Left Turn

Recommendations

See Recommendations comments at end of document.

Based upon the concl[illegible]ject is recommended to provide the following;

- frontage improvements to Dishman-Mica Road, Thorpe Road, and Madison Road per the City of Spokane Valley development process
- A two-way-left-turn-lane north of the Chester Creek Bridge to the property boundary with appropriate taper.
- Bicycle and pedestrian facilities per the City of Spokane Valley Bicycle and Pedestrian Master Plan along the site frontage.
- a northbound right turn lane be considered at the intersection of 32nd Avenue & Pines Road. Coordination with the City of Spokane Valley and the Central Valley School District will be required.
- We also recommend that when warranted by the development conditions that the project contribute its participating percentage in a project to signalize the intersection of 16th Avenue & Pines Road.

FUTURE YEAR TRAFFIC IMPACT ANALYSIS

Future Year Traffic Impact Analysis

Level of service calculations for the buildout Year (2025) & the buildout year plus 5 years (2030) conditions assumed that the existing traffic volumes as shown on Figures 3 & 4 experience an increase above the year 2015 volumes at the established background rate. Two scenarios were examined for the year 2025 (buildout) analysis, as well as the 2030 buildout year plus 5 years. The first scenario assumes that the development has not moved forward and analyzes the scoped intersections with the background growth rate and the background project trips. The second scenario assumes that the development has moved forward to completion and is builtout. The scenario analyzes the scoped intersections with the background growth rate, the background projects, and the project trips. These scenarios will allow a determination to be made of what the future conditions may be with and without the project.

Year 2025 Buildout without the Project, with the Background Projects

T kground projects
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t are shown in the
f

The "Paired Signalized Intersections" also includes capacity additions, as shown in the Synchro model. This needs to be mentioned in the body of the report so that it's clear what the proposed improvement that is being analyzed is. As a side note, this is one very viable option for improvement. Other options may be considered through the implementation process.

Table 17 - Year 2025 Levels of Service, without the Project, with the Background Projects

INTERSECTION	(S)ignalized (U)nsignalized	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
32nd Ave & University Rd	S	12.2	B	11.9	B
Dishman-Mica Rd & University/Schafer Rd	S	16.4	B	17.2	B
32nd Ave & Bowdish Rd	S	15.2	B	13.5	B
Dishman-Mica Rd & Bowdish Rd	S	12.8	B	11.8	B
Dishman-Mica Rd & Thorpe Rd	U	11.3	B	10.9	B
16th Ave & Pines Rd	U	26.2	D	**66.4**	**F**
• Paired Signalized Intersections	(S)	(30.5)	(C)	(23.7)	(C)
16th Ave & SR 27	S	33.6	C	30.3	C
• Paired Signalized Intersections		(42.3)	(D)	(28.4)	(C)
32nd Ave & Pines Rd	S	27.0	C	21.9	C
Madison Rd & Thorpe Rd	U	12.1	B	9.9	A
32nd Ave & SR 27	S	22.3	C	28.2	C
32nd Ave & Evergreen Rd	U	11.2	B	23.6	C
32nd Ave & Sullivan Rd	U	12.0	B	13.2	B

The signal phasing for the proposed improvements is not correct. Please refer to WSDOT for comments on the improvement signal phasing, which may adjust the LOS.

Table 18 – Year 2025 PM Peak W-O the Project, Intersection Queue Lengths 95th Percentile

INTERSECTION (A)vailable Lane Storage (Q)ueue within the Storage Lane		EB			WB			NB			SB		
		L	T	R	L	T	R	L	T	R	L	T	R
32nd Ave & University Rd	A		345			582		100	400		100	265	
	Q		127			98		29	30		88	38	
Dishman-Mica Rd & University/Schafer Rd	A	150	1,213	1,213	60	1,978		130	280		90	550	550
	Q	32	291	49	56	80		89	64		53	109	0
32nd Ave & Bowdish Rd	A	200	590		200	990			445			280	
	Q	10	403		37	190			111			135	
Dishman-Mica Rd & Bowdish Rd	A	100	863		100	680			360			290	135
	Q	18	187		30	96			106			96	0
Dishman-Mica Rd & Thorpe Rd	A					1,303						700	
	Q					12.5						5	
16th Ave & Pines Rd*	A				60				662			300	
	Q				5				117.5			265	
16th Ave & SR 27*	A		60	60		170		240	3,708		325	630	
	Q		586	27		310		60	209		150	234	
32nd Ave & Pines Rd*	A	240	490		240	980		130	425		160	700	
	Q	26	562		49	327		42	83		48	108	
Madison Rd & Thorpe Rd	A		1,303						400				
	Q		10						2.5				
32nd Ave & SR 27*	A	170	900		150	165		200	460		265	1,240	
	Q	136	276		246	470		190	137		97	187	
32nd Ave & Evergreen Rd	A	100									75	315	
	Q	25									30	70	
32nd Ave & Sullivan Rd	A		600										
	Q		55										
A = Available Space (ft) Q = 95th Percentile Queue Length					Apparent Deficiency								

*A graphical exhibit of these Queue lengths are shown on Figures 13A through 13c.

Do these queues reflect the proposed improvements or existing conditions? If proposed improvements, show the queue length for the existing conditions, as was performed for the LOS in Table 17. If this table shows existing conditions, show what the queue would be with the proposed improvements. Please note that any traffic signal timing changes will impact the queue storage reported.

Year 2025 with the Project, with the Background Projects

This scenario assumes that the development has moved forward to completion and the background projects have been completed. The traffic volumes for this condition include the traffic volumes, as shown on Figures 10 & 11, plus the project trips as shown on Figures 7 & 8. Please see Fig[illegible] level of service res[illegible]

The "Paired Signalized Intersections" also includes capacity additions, as shown in the Synchro model. This needs to be mentioned in the body of the report so that it's clear what the proposed improvement that is being analyzed is. As a side note, this is one very viable option for improvement. Other options may be considered through the implementation process.

Table 19 - Ye[illegible]

INTERSECT[illegible]	(U)nsignalized	[illegible] (sec)		[illegible] (sec)	[illegible]S
32nd Ave & University Rd	S	12.4	B	12.4	B
Dishman-Mica Rd & University/Schafer Rd	S	16.9	B	18.3	B
32nd Ave & Bowdish Rd	S	15.6	B	14.7	B
Dishman-Mica Rd & Bowdish Rd	S	15.7	B	13.3	B
Dishman-Mica Rd & Apt. Access	U	13.2	B	10.4	B
Dishman-Mica Rd & Sundown Drive	U	12.6	B	10.8	B
Dishman- Mica Rd & S. Comm. Access	U	11.5	B	11.3	B
Dishman-Mica Rd & Thorpe Rd	U	11.9	B	11.9	B
Thorpe Rd & Comm. Access	U	9.0	A	9.1	A
16th Ave & Pines Rd • Paired Signalized Intersections	U (S)	27.3 (31.1)	D (C)	**99.2** (34.8)	**F** (C)
16th Ave & SR 27 • Paired Signalized Intersections	S	35.9 (44.6)	D (D)	31.3 (28.6)	C (C)
32nd Ave & Pines Rd • NB Right Turn	S	32.3 (27.6)	C (C)	26.0 (24.7)	C (C)
Madison Rd & Painted Hills Ave.	U	11.1	B	10.8	B
Madison Rd & 41st Ave.	U	10.7	B	10.5	B
Madison Rd & 43rd Ave.	U	10.5	B	10.2	B
Madison Rd & 44th Ave.	U	9.7	A	9.6	A
Madison Rd & Thorpe Rd	U	12.4	B	10.4	B
32nd Ave & SR 27	S	23.2	C	29.8	C
32nd Ave & Evergreen Rd	U	11.6	B	26.1	D
32nd Ave & Sullivan Rd	U	12.3	B	13.5	B

Intersection Level of Service - Deficiency Evaluation

With the project there continues to be a deficiency identified for intersection level of service as described in Chapter 3 of the Spokane Valley Street Standards, and the Level of Service Table 4.3 of the City of Spokane Valley Comprehensive Plan, at the intersection of 16th Avenue & Pines Road. The deficiency in LOS can be remedied by signalizing the intersection and pairing the signal timing with 16th Avenue & Highway 27. We therefore recommend that the project contribute its proportionate share to the signal. The cost of the signal is anticipated at $475,000 - $500,000. the proportionate share should be included in the conditions of approval.

Table 20 (continued)

INTERSECTION (A)vailable Lane Storage (Q)ueue within the Storage Lane		EB			WB			NB			SB		
		L	T	R	L	T	R	L	T	R	L	T	R
Dishman-Mica Rd & S Comm.	A												
	Q												
Dishman-Mica Rd & Thorpe Rd	A											700	
	Q					20						10	
Thorpe Rd & Comm. Access	A											50	
	Q											2.5	
16th Ave & Pines Rd	A				60				662			300	
	Q				5				272.5			347.5	
16th Ave & SR 27*	A		60	60		170		240	3,708		325	630	
	Q		645	27		319		60	213		149	238	
32nd Ave & Pines Rd*	A	240	490		240	980		130	425	150	160	700	
	Q	28	708		112	358		69	97	6	66	183	
Madison Rd & Painted Hills Ave	A		100					50					
	Q		0					0					
Madison Rd & 41st Ave	A		100					50					
	Q		2.5					0					
Madison													
Madison													
Madison													
32nd Ave & SR 27*	A	170	900		150	165		200	460		265	1,240	
	Q	137	281		238	497		199	140		95	194	
32nd Ave & Evergreen Rd	A	100									75	315	
	Q	27.5									35	82.5	
32nd Ave & Sullivan Rd	A		600										
	Q		57.5										
A = Available Space (ft) Q = 95th Percentile Queue Length					Apparent Deficiency								

Note that the queue shown exceeds available capacity.

Do these queues reflect the proposed improvements or existing conditions? If proposed improvements, show the queue length for the existing conditions, as was performed for the LOS in Table 17. If this table shows existing conditions, show what the queue would be with the proposed improvements. Please note that any traffic signal timing changes will impact the queue storage reported.

*A graphical exhibit of these Queue lengths are shown on Figures 13A through 13c.

There are no new deficiencies identified with the proposed project, only the extension of known deficiencies.

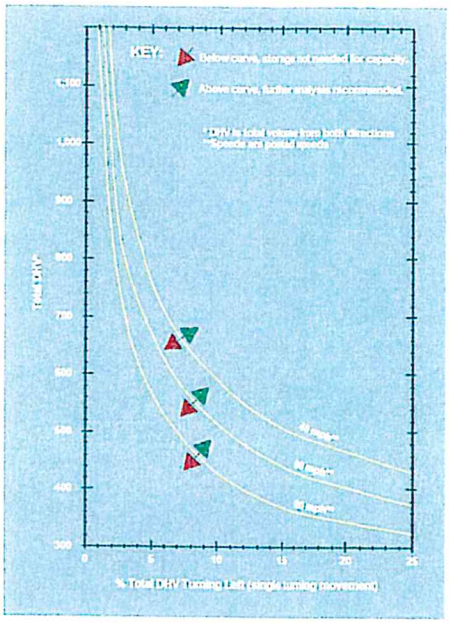
Left Turn Analysis at Proposed Project Accesses on Dishman-Mica Road, Thorpe Road & Madison Road along Project Frontage

Per the request of the City of Spokane Valley we have analyzed the proposed accesses to [illegible]turn is warranted based upon the WSDOT design manual Exhibit 1310-7a. [illegible]mmarized here and the exhibits are shown in the appendix:

Only 1 commercial access allowed to Dishman Mica

Table 21 - Left Turn Analysis at Proposed Project Accesses.

Intersection:	Results
Dishman-Mica Road & Apt. Access	NA – no left turns allowed (RI-RO)
Dishman-Mica Road & Sundown Drive	Plots above the line and warrants left turn lane
Dishman-Mica Road & N. Comm. Access	Plots below the line
Dishman-Mica Road & S. Comm. Access	Plots below the line
Thorpe Road & Comm. Access	Plots below the line
Madison Road & Painted Hills Avenue	Plots below the line
Madison Road & 41st Avenue	Plots below the line
Madison Road & 43rd Avenue	Plots below the line
Madison Road & 44th Avenue	Plots below the line



Left-Turn Storage Guidelines: Two-Lane, Unsignalized

As shown in the results only the intersection of Dishman-Mica Road & Sundown Drive meets the threshold to consider a left turn storage lane.

Based upon these results and discussions with the developer regarding the developments frontage improvements, we recommend that on Dishman Mica Road a Two-Way-Left-Turn-Lane (TWLTL) be provided to accommodate the proposed access roads and driveways. The TWLTL is proposed to begin north of the Chester Creek Bridge and end before the extension of the project boundary. Additionally, based upon the City of Spokane Valleys classification of Madison Road as a collector we recommend that that the developer includes the widening of Madison Road for a future TWLTL. These recommendations are incorporated with the analysis of the intersections.

Study Area Intersections Left and Right Turn Warrants

Per the request of the City of Spokane Valley a review of directly impacted left & right turn movements of the study intersections was completed for the Year 2025 with the project in the AM and PM peak hours. The left and right turn movements of each intersection were screened using a rule of thumb consideration to identify potential turn lane needs. The rule of thumb is a

movements that exceeded a volume of 300 vehicles for a left turn movement, and 100 vehicles for a right turn movement. This rule of thumb is only used as an indicator, as the decision to install a turn lane is based upon multiple variables including Intersection Level of Service, Signal Ti[illegible]s, and Movement Queue.

Exceeding 300 vph warrants dual left-turn lanes (rule of thumb).

T[illegible]sis at Study Area Intersections

In[illegible]	AM Peak Hour		PM Peak Hour		Existing Condition	Recommendation
	Mvmt	Trips	Mvmt	Trips		
32nd Ave. & University Rd.	WB Rt SB Lt	132 69	WB Rt SB Lt	70 114	Shared Rt & Thru Turn Lane	None
Dishman-Mica Rd & University/Schafer	WB RT SB Lt	34 25	WB Rt SB Lt	34 18	50' Full Flare Turn Lane	None
32nd Ave & Bowdish	WB Lt WB Rt NB Lt NB Rt SB Lt	29 14 63 37 83	WB Lt WB Rt NB Lt NB Rt SB Lt	103 58 25 89 48	SB left-turn lane is warranted per NCHRP 745 and WSDOT chart and would be included in the frontage improvements as proposed. No Turn lane	
Dishman-Mica Rd & Bowdish	WB Lt WB Rt NB Rt SB Lt	42 46 30 32	WB Lt WB Rt NB Rt SB Lt	31 43 27 35	Turn Lane No turn lane. Slight Flare No Turn Lane	None
Dishman-Mica Rd & Thorpe Rd	WB Rt NB Rt SB Lt	113 14 55	WB Rt NB Rt SB Lt	103 18 139	Shared Lt & Rt No Turn Lane No Turn Lane	None
16th Ave. & Pines Rd	WB Lt NB Rt	54 256	WB Lt NB Rt	81 202	No Turn Lane Slight Flare	See 2025 W-OProj Recommendation
16th Ave & Hwy 27	EB Lt	237	EB Lt.	194	Shared Lt & Thru	none
32nd Ave. & Pines Rd	EB Rt WB Lt NB Lt NB Rt	8 63 63 168	EB Rt WB Lt NB Lt NB Rt	71 133 64 83	No turn lane. Turn Lane Turn Lane No Turn lane	See Below
Madison & Thorpe	EB Lt SB Rt	91 79	EB Lt SB Rt	47 44	No Turn Lane No Turn Lane	None
32nd Ave. & State Route 27	EB Lt EB Rt NB Lt SB Rt	154 71 145 82	EB Lt EB Rt NB Lt SB Rt	92 213 149 77	Turn Lane Turn Lane Turn Lane 50' Full Flare	None
32nd Ave. & Evergreen Rd	EB Lt SB Rt	244 115	EB Lt SB Rt	214 223	Turn Lane Turn Lane	None
32nd Ave. & Sullivan Rd	EB Lt SB Rt	241 177	EB Lt SB Rt	294 370	Shared Lt & Rt Turn Lane	None

The Intersection of 16th Avenue & Pines Road northbound right turn movement meet the rule of thumb in the Year 2025 with the project, however because of the close proximity of intersections, the signal controls the operation of the northbound approach. So the addition of a right turn lane would still operate as before, rendering any improvement as moot.

Year 2030 Buildout plus 5 years without the Project, with the Background Projects

This scenario ... have been co... the existing tr... the traffic fro... 14 & 15 for th... are shown in t...

The "Paired Signalized Intersections" also includes capacity additions, as shown in the Synchro model. This needs to be mentioned in the body of the report so that it's clear what the proposed improvement that is being analyzed is. As a side note, this is one very viable option for improvement. Other options may be considered through the implementation process.

Table 22 - Year 2030 Buildout Plus 5, Levels of Service, without the Project

INTERSECTION (S)ignalized (U)nsignalized		AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
32nd Ave & University Rd	S	12.4	B	12.2	B
Dishman-Mica Rd & University/Schafer Rd	S	16.8	B	17.6	B
32nd Ave & Bowdish Rd	S	16.5	B	14.7	B
Dishman-Mica Rd & Bowdish Rd	S	13.4	B	12.1	B
Dishman-Mica Rd & Thorpe Rd	U	11.6	B	11.2	B
16th Ave & Pines Rd	U	30.8	D	**99.9**	**F**
• Paired Signalized Intersections	(S)	(30.8)	(C)	(35.2)	(D)
16th Ave & SR 27	S	37.4	D	32.8	C
• Paired Signalized Intersections		(46.7)	(D)	(28.7)	(C)
32nd Ave & Pines Rd	S	28.8	C	24.6	C
Madison Rd & Thorpe Rd	U	12.4	B	10.1	B
32nd Ave & SR 27	S	23.4	C	30.0	C
32nd Ave & Evergreen Rd	U	11.5	B	27.1	D
32nd Ave & Sullivan Rd	U	12.3	B	13.9	B

Intersection Level of Service - Deficiency Evaluation

Without the project there is a deficiency identified for intersection level of service as described in Chapter 3 of the Spokane Valley Street Standards, and the Level of Service Table 4.3 of the City of Spokane Valley Comprehensive Plan, at the intersection of 16th Avenue & Pines Road. The deficiency in LOS can be remedied by signalizing the intersection and pairing the signal timing with 16th Avenue & Highway 27.

Year 2030 Buildout Plus 5 Years with the Project, with the Background Projects

This scenario assumes that the development has moved forward to completion and the background projec
this condition inclu
shown on Figures
scenario. A summa

The "Paired Signalized Intersections" also includes capacity additions, as shown in the Synchro model. This needs to be mentioned in the body of the report so that it's clear what the proposed improvement that is being analyzed is. As a side note, this is one very viable option for improvement. Other options may be considered through the implementation process.

Table 23- Year 20

INTERSECTION	(S)ignalized (U)nsignalized	AM Peak Hour Delay (sec)	AM Peak Hour LOS	PM Peak Hour Delay (sec)	PM Peak Hour LOS
32nd Ave & University Rd	S	12.7	B	12.8	B
Dishman-Mica Rd & University/Schafer Rd	S	17.3	B	18.9	B
32nd Ave & Bowdish Rd	S	16.9	B	16.0	B
Dishman-Mica Rd & Bowdish Rd	S	16.9	B	14.0	B
Dishman-Mica Rd & Apt. Access	U	13.4	B	10.5	B
Dishman-Mica Rd & Sundown Drive	U	12.9	B	10.9	B
Dishman- Mica Rd & S. Comm. Access	U	11.6	B	11.5	B
Dishman-Mica Rd & Thorpe Rd	U	12.2	B	12.2	B
Thorpe Rd & Comm. Access	U	9.1	A	9.1	A
16th Ave & Pines Rd • Paired Signalized Intersections	U (S)	32.3 (31.4)	D (C)	**141.2** (36.7)	**F** (D)
16th Ave & SR 27 • Paired Signalized Intersections	S	40.7 (49.3)	D (D)	34.3 (29.0)	C (C)
32nd Ave & Pines Rd • NB Right Turn lane	S	34.9 29.2	C (C)	26.9 27.1	C (C)
Madison Rd & Painted Hills Ave.	U	11.2	B	10.9	B
Madison Rd & 41st Ave.	U	10.8	B	10.6	B
Madison Rd & 43rd Ave.	U	10.6	B	10.2	B
Madison Rd & 44th Ave.	U	9.7	A	9.8	A
Madison Rd & Thorpe Rd	U	12.8	B	10.6	B
32nd Ave & SR 27	S	24.3	C	31.9	C
32nd Ave & Evergreen Rd	U	11.8	B	30.3	D
32nd Ave & Sullivan Rd	U	12.6	B	14.2	B

Intersection Level of Service - Deficiency Evaluation

With the project there continues to be a deficiency identified for intersection level of service as described in Chapter 3 of the Spokane Valley Street Standards, and the Level of Service Table 4.3 of the City of Spokane Valley Comprehensive Plan, at the intersection of 16th Avenue & Pines Road. The deficiency in LOS can be remedied by signalizing the intersection and pairing the signal timing with 16th Avenue & Highway 27.

The report reflects build-out in phases, and per the Street Standards 3.3.4.6 requires analysis of the build-out year + 5 years. The LOS for the build-out + 5 years was provided and meets the standards. However, the queue analysis was not provided for review and therefore does not meet the street standards. Please provide the build-out + 5 years queue analysis per the street standards for review. The conclusions already identify the results of the 2030 analysis, provide the analysis to confirm the conclusions.

Conclusions

Based upon the analysis, field observations, assumptions, methodologies and results which are provided in the body of this report, it is concluded that the development of the proposed project will generate new trips on the existing transportation system and that those trips while affecting level of service will generally not degrade LOS below concurrency levels, except at the intersection of 16th Avenue & Pines Road. Additionally, the queue deficiencies identified, carry through the scenarios from the existing condition to the future conditions, and the project only adds to an already existing condition. This conclusion was reached and has been documented within the body of this report.

Based on Tables 18 & 20, the project adds queues to 16th & Pines that block SR 27 traffic. See Figure 13A. It appears the proposed improvement project resolves this queue issue, but need clarification in the tables to reflect this.

Existing Condition

- There are no Level of Service deficiencies ide
  Chapter 3 of the Spokane Valley Street Stand
  the City of Spokane Valley Comprehensive P
- There are four queue deficiencies identified at
  acceptable levels of service, there is no public
  these discrepancies.
  - 16th Avenue & State Route 27, EB Thru, WB Thru
  - 32nd Avenue & State Route 27, WB left, WB Thru

Left Turn lanes on Dishman Mica Road, Thorpe Road, and Madison Road

- The intersection of Dishman-Mica Road & Sundown Drive warrants a southbound left turn lane
- Based upon the results and discussions with the developer Dishman-Mica Road & Madison are proposed to include a TWLTL for the project accesses.

and SB Thorpe

Study Area Intersections Left and Right Turn Warrants

The Intersection of 16th Avenue & Pines Road northbound right turn movement meet the rule of thumb in the Year 2025 With the project, however because of the close proximity of intersections, the signal controls the operation of the northbound approach. So the addition of a right turn lane would still operate as before, rendering any improvement as moot.

The intersection of 32nd Avenue & Pines Road northbound right turn movement meets the rule of thumb and the project anticipates adding trips to the movement. Therefore a northbound right turn lane will be considered.

Appendix comments: The AM Synchro files have the pedestrian data entered correctly as discussed. However, the PM Synchro files did not have the pedestrian data entered as discussed. Inputing the pedestrian data as discussed may impact the delays at the intersections. Please review/revise accordingly.

Year 2025, Buildout, without project, with background projects

- There is a Level of Service deficiency identified at the intersection of 16th Avenue & Pines Road, for level of service as described in Chapter 3 of the Spokane Valley Street Standards, and the Level of Service Table 4.3 of the City of Spokane Valley Comprehensive Plan. The deficiency in LOS can be remedied by signalizing the intersection and pairing the signal timing with 16th Avenue & Highway 27.
- There are five queue deficiencies identified at three intersections. These deficiencies were identified as the resu
  identified at scoping
  discrepancies. Pleas
  - 16th Avenue
  - 32nd Avenue
  - 32nd Avenue

The "Paired Signalized Intersections" also includes capacity additions, as shown in the Synchro model. This needs to be mentioned in the body of the report so that it's clear what the proposed improvement that is being analyzed is. As a side note, this is one very viable option for improvement. Other options may be considered through the implementation process.

Year 2025, Buildout, with project, with background projects

- There is a Level of Service deficiency identified at the intersection of 16th Avenue & Pines Road, for level of service as described in Chapter 3 of the Spokane Valley Street Standards, and the Level of Service Table 4.3 of the City of Spokane Valley

The report reflects build-out in phases, and per the Street Standards 3.3.4.6 requires analysis of the build-out year + 5 years. The LOS for the build-out + 5 years was provided and meets the standards. However, the queue analysis was not provided for review and therefore does not meet the street standards. Please provide the build-out + 5 years queue analysis per the street standards for review. As shown below, the conclusions already identify the results of the 2030 analysis, provide the analysis to confirm the conclusions.

at the intersection of 16th Avenue & Pines
trips and worsened by this project, can be
ice by signalizing the intersection and pairing
way 27.
previously identified at three intersections
acceptable levels of service. These
nd growth rate and the background projects as
cremental<u>ly</u> worsened or kept the same by this
oject identified to mitigate these discrepancies.
found discrepancies.
Thru, WB Thru
  - 32nd Avenue & Pines Road, EB Thru
  - 32nd Avenue & State Route 27, WB Thru, WB Left Turn

Year 2030, Buildout Plus 5 Years, without project, with background projects

- There is a Level of Service deficiency identified at the intersection of 16th Avenue & Pines Road, for level of service as described in Chapter 3 of the Spokane Valley Street Standards, and the Level of Service Table 4.3 of the City of Spokane Valley Comprehensive Plan. The deficiency in LOS can be remedied by signalizing the intersection and pairing the signal timing with 16th Avenue & Highway 27.
- There are five queue deficiencies identified at three intersections. These deficiencies were identified as the result of the background growth rate and the background projects as identified at scoping. There is no public improvement project identified to mitigate these discrepancies. Please see the analysis for the details of the found discrepancies.

- 16th A
- 32nd A
- 32nd A

Year 2030, Buildou

- There is a Level of Service deficiency identified at the intersection of 16th Avenue & Pines Road, for level of service as described in Chapter 3 of the Spokane Valley Street Standards, and the Level of Service Table 4.3 of the City of Spokane Valley Comprehensive Plan.
- The Level of Service deficiency identified at the intersection of 16th Avenue & Pines Road, originally caused by the background trips and worsened by this project, can be brought back to an acceptable level of service by signalizing the intersection and pairing the signal timing with 16th Avenue & Highway 27.
- There are the same five queue deficiencies previously identified at three intersections with two of those intersections operating at acceptable levels of service. These deficiencies were the result of the background growth rate and the background projects as identified within this study and are only incrementally worsened or kept the same by this project. There is no public improvement project identified to mitigate these discrepancies. Please see the analysis for the details of the found discrepancies.
  - 16th Avenue & State Route 27, EB Thru, WB Thr
  - 32nd Avenue & Pines Road, EB Thru
  - 32nd Avenue & State Route 27, WB Thru, WB Left Turn

Recommendations

Based upon the conclusions within this study the proposed project is recommended to provide the following;

- frontage improvements to Dishman-Mica Road, Thorpe Road, and Madison Road per the City of Spokane Valley development process
- A two-way-left-turn-lane north of the Chester Creek Bridge to the property boundary with appropriate taper.
- Bicycle and pedestrian facilities per the City of Spokane Valley Bicycle and Pedestrian Master Plan along the site frontage.
- a northbound right turn lane be considered at the intersection of 32nd Avenue & Pines Road. Coordination with the City of Spokane Valley and the Central Valley School District will be required.
- We also recommend that the development contribute a proportionate share of the cost of the proposed signal at the intersection of 16th Avenue & Pines Road.

The "Paired Signalized Intersections" also includes capacity additions, as shown in the Synchro model. This needs to be mentioned in the body of the report so that it's clear what the proposed improvement that is being analyzed is. As a side note, this is one very viable option for improvement. Other options may be considered through the implementation process.

SB turn lane @ Thorpe/DM

Agreed. Thank you for analyzing accordingly.

The report reflects build-out in phases, and per the Street Standards 3.3.4.6 requires analysis of the build-out year + 5 years. The LOS for the build-out + 5 years was provided and meets the standards. However, the queue analysis was not provided for review and therefore does not meet the street standards. Please provide the build-out + 5 years queue analysis per the street standards for review. As shown below, the conclusions already identify the results of the 2030 analysis, provide the analysis to confirm the conclusions.

Agreed. The proposed improvement identified in this report is a very viable option, and the proportionate share discussion would be a condition of approval.

s PRD