

MEMORANDUM

Date:	May 13, 2022	TG:	1.16345.00
To:	Ali Shasti, City of SeaTac		
From:	Mike Swenson, PE, PTOE and Kassi Leingang, PE – Transpo Group		
cc:	Jeff Walls – Study 19 Architects		
Subject:	SeaTac Hyatt – Updated Traffic Impact Report		

The purpose of this traffic impact report (TIR) is to identify potential transportation-related impacts associated with the proposed mixed-use development located along International Boulevard, in the City of SeaTac. Note that this is an update to the *SeaTac Hyatt – Traffic Impact Report* (Transpo Group, May 2017) completed for the previous proposal. The following sections summarize a review of existing conditions within the site vicinity, present forecast conditions at the site access driveways and defined study area intersections, and summarize project related impact fees. The scope of the analysis was coordinated in advance with City staff and satisfies the City's requirements for Traffic Impact Reports. The updated report reflects the current project description as well as existing traffic volumes collected at the study area intersections.

Project Description

The proposed development is located on the east side of International Boulevard, south of S 171st Street, as shown on Figure 1. The project will include development of 182 apartment units and a 198-room hotel. The site is currently occupied by two motels and a park-and-fly lot which have been removed to accommodate development of the project. Parking for the proposed uses will be provided by an on-site garage with approximately 239 stalls that would be accessed from two driveways on International Boulevard. The northern driveway will be restricted to right-in/right-out movements only. The southern driveway would operate with left-in/right-in/right-out movements permitted. The preliminary site plan showing the project location and access points is shown in Figure 2. It is anticipated the development would be completed and occupied by 2024.

Study Scope

Based on coordination with City staff, this analysis includes a review of build-out conditions at the site access driveways, and the intersections of International Boulevard (SR 99)/SR 518 EB Ramp and International Boulevard (SR 99)/S 188th Street. This analysis includes an evaluation of existing and future without-project peak hour traffic volumes, traffic operations, and traffic safety at the study area intersections. Future with-project conditions are evaluated by adding site-generated traffic to future without-project conditions. Future with-project conditions are then compared to future without-project conditions to identify the relative impacts of the proposed project on the surrounding transportation system. A horizon year of 2024 was assumed for the analysis based on the anticipated completion of the project.



Figure 1 Site Vicinity

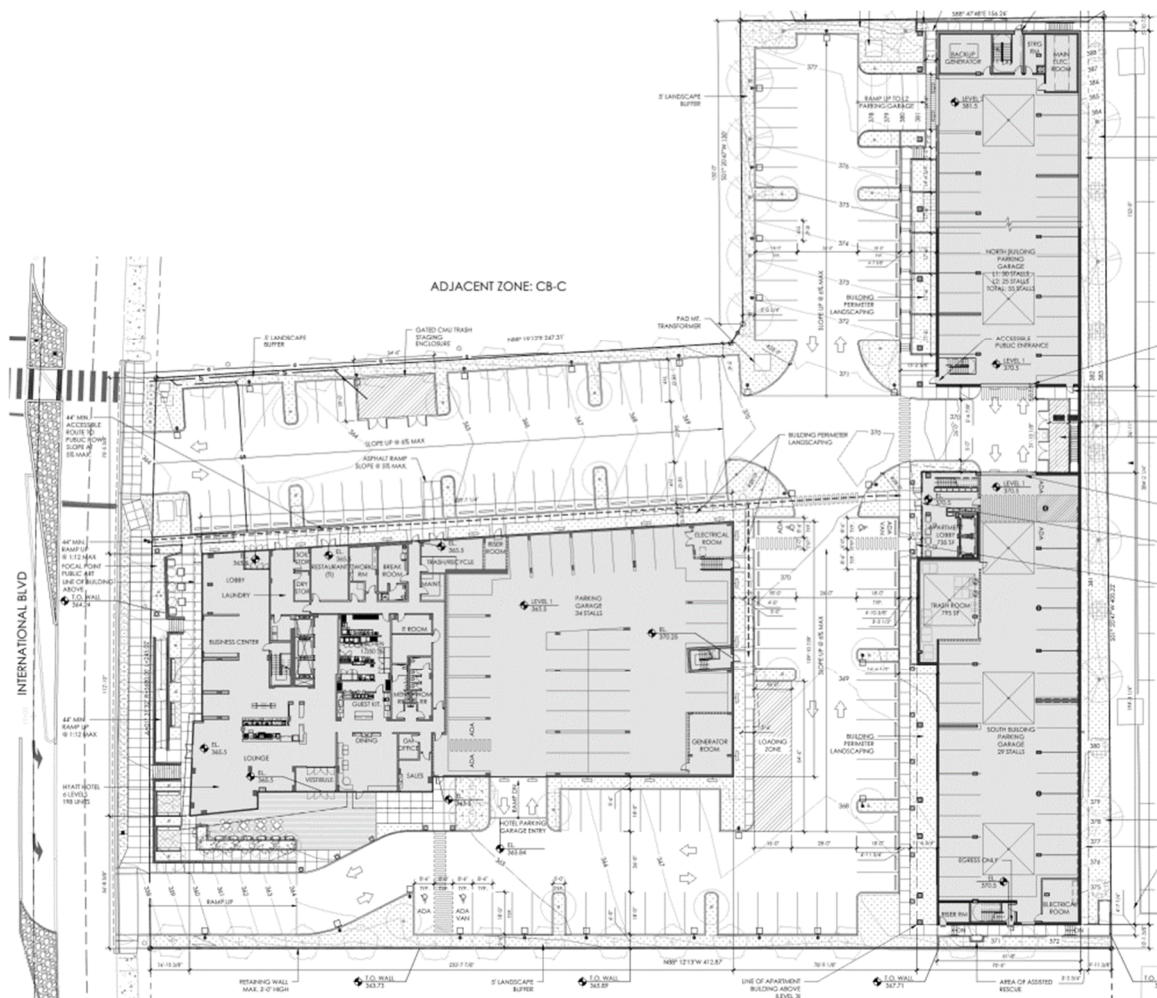


Figure 2 Preliminary Site Plan

Roadway Network

The proposed project is located in the City of SeaTac, east of International Boulevard, south of S 171st Street. Characteristics of the existing street system in the proposed project vicinity are shown in Table 1.

Table 1. Study Area Existing Street System Summary

Roadway	Arterial Classification	Posted Speed Limit	Number of Travel Lanes	Parking	Sidewalks	Bicycle Facilities
International Boulevard (SR 99)	Principal Arterial	40 mph	5 lanes	No	Yes	No
SR 518	WSDOT Limited Access	60 mph	4-6 lanes	No	No	No
S 188th Street	Principal Arterial	35 mph	4-5 lanes	No	Yes	No

The area surrounding the project site is retail in nature. As such, numerous driveways connect directly to the surrounding streets and are often closely spaced to one another.

Planned Improvements

The current City of SeaTac's Capital Improvement Program (CIP) for the years of 2021 to 2026 was reviewed to identify planned improvements within the project vicinity. The International Boulevard Safety Improvements project was identified that is a corridor study evaluating safety improvements to reduce collisions. No specific projects were identified in the project vicinity that are anticipated to be completed by the opening year of 2024.

Collision History

The Washington State Department of Transportation (WSDOT) provided collision data for the most recent three-year period (January 1, 2019 and December 31, 2021) at the study intersections. Collision data were reviewed at the two study intersections and are summarized in Table 2.

Table 2. Three-Year Collision Summary – 2019 to 2021

Location	Number of Collisions			Total	Annual Average	Collisions Per MEV ¹
	2019	2020	2021			
Intersection						
1. International Boulevard (SR 99)/SR 518 EB Ramp	4	8	3	15	5.00	0.47
2. International Boulevard (SR 99)/S 188th Street	21	9	19	49	16.33	1.05

Source: WSDOT
1. Collisions per million entering vehicles

As shown in Table 2, the International Boulevard (SR 99)/SR 518 EB Ramp had an average of 5 collisions per year or approximately 0.47 collisions per million entering vehicles. Of the reported collisions, there were no reported fatalities, no pedestrian related collisions, and no bicycle related collisions. Rear-end collisions were the most common type of collision at this intersection, which are typically the predominate type of collision at signalized intersections as drivers can rapidly alter vehicle speeds while approaching an intersection in response to traffic signal state changes (e.g. green to yellow or yellow to red) or to turn onto the intersecting roadway.

The International Boulevard (SR 99)/S 188th Street intersection had an average of approximately 16 collisions per year or approximately 1 collision per million entering vehicles. Of the reported collisions, there were no reported fatalities, five pedestrian related collisions, and zero bicycle related collisions. Rear-end collisions and collisions at an angle were the most common type of collision at this intersection.

Traffic Volumes

The following sections summarize the existing traffic volume at the study intersections and forecast volumes with the addition of project generated traffic.

Existing Traffic Volumes

Existing turning movement counts at the study intersections were completed in April 2022. Detailed intersection turning movement traffic volumes are provided in Attachment 1. Existing PM peak hour traffic volumes are summarized in Attachment 4.

Future Without-Project Background Traffic Volumes

Future 2024 without-project traffic volumes were forecast by applying a 1.0 percent annual growth rate. The growth rate was developed through coordination with City Staff. The future (2024) without-project traffic volumes are shown in Attachment 4.



Trip Generation

Trip generation for the proposed project was based on data published by the Institute for Transportation Engineers (ITE) in the *Trip Generation Manual* (11th Edition, 2021). The estimated trip generation for the proposal was based on the ITE land-use codes 221 (Multifamily Housing (Mid-Rise))) and 310 (Hotel). Additionally, the existing land use trip generation removed is based on land use 320 (Motel) as well as based on available data for the park lot use¹. In addition, Table 3 summarizes the estimated weekday daily, AM, and PM peak hour trip generation for the proposed development.

Table 3. Estimated Weekday Vehicle Trip Generation

Land Use	Size	Daily Trips	AM Peak-Hour Trips			PM Peak-Hour Trips		
			In	Out	Total	In	Out	Total
<u>Proposed Use</u>								
Apartment (LU #221)	182	864	32	26	58	23	30	53
Hotel (LU #310)	198	1,724	52	40	92	61	58	119
Total Proposed		2,588	84	66	150	84	88	172
<u>Existing Use</u>								
Motel (LU #320)	56	174	7	13	20	11	9	20
Park & Fly Lot ^{1,2}	238	155	6	5	11	6	5	11
Total Existing		329	13	18	31	17	14	31
Net New Trips		2,259	71	48	119	67	74	141

Notes: du = dwelling units

1. Based on information provided by the City of SeaTac Community & Economic Development Engineering Review Division Memorandum, April 13, 2017 (Preliminary Transportation Mitigation Fee)
2. Assumed peak hour directional split was 50 percent inbound/50 percent outbound

As shown in Table 3, the project is anticipated to generate 2,259 net new weekday daily trips with 119 net new trips occurring during AM peak hour and 141 net new trips during the PM peak hour. The existing use will also reflect activity associated with the park-and-fly operations. Traffic counts conducted in the field at the existing access points will be used to assess the current activity levels.

Trip Distribution and Assignment

Travel patterns of site generated vehicle traffic to and from the proposed site were based on a review of existing travel patterns, and U.S. Census Bureau's *OnTheMap* tool for the residential apartment use. *OnTheMap* is a web-based mapping and reporting application, which shows where workers are employed and where they live based on census data. The *OnTheMap* census data were translated to the number of people that live within a quarter-mile radius of the proposed project and where they work. It was assumed that workers at the Seattle-Tacoma International Airport would not drive. Attachment 2 illustrates the expected project trip distribution and assignment for the residential apartment use. Attachment 3 illustrates the anticipated trip distribution and assignment for the proposed hotel uses. The PM peak hour trips were assigned to the study area based on the trip distribution and site access locations and permitted movements. It was assumed, for purposes of net new trip assignment, that the existing park-and-fly lot would follow the same distribution as the trips associated with the apartment use.

¹ Based on information provided by the City of SeaTac Community & Economic Development Engineering Review Division Memorandum, April 13, 2017 (Preliminary Transportation Mitigation Fee)

Future With-Project Traffic Volumes

Project generated trips were added to future without-project traffic volumes to estimate future with-project traffic volumes. Attachment 4 shows the total future with-project weekday PM peak hour traffic volumes at the study intersections and site access driveways for 2024.

Traffic Operations

The operational characteristics of an intersection are evaluated by calculating the intersection level of service (LOS). Traffic operations were evaluated based on the procedures identified in the *Highway Capacity Manual* (6th Edition), and evaluated using Synchro version 11.0. At side-street stop-controlled intersections LOS is measured in average delay per vehicle during the peak hour of traffic and is reported for the worst operating approach of the intersection. Traffic operations for an intersection can be described alphabetically with a range of levels of service (LOS A through F), with LOS A indicating free-flowing traffic and LOS F indicating extreme congestion and long vehicle delays. Attachment 5 contains a detailed explanation of LOS criteria and definitions.

Table 4 summarizes the weekday PM peak hour LOS at the study intersections and site access locations for existing (2022) and future (2024) conditions. Operations at the site access locations are reported for the worst operating movement at each location. Detailed LOS worksheets are included in Attachment 6.

Table 4. Weekday PM Peak Hours LOS Summary

Intersection	Intersection Proportionate Share	2022 Existing		2024 Without-Project		2024 With-Project		
		LOS ¹	Delay ²	LOS	Delay	LOS	Delay	WM
1. International Boulevard (SR 99)/SR 518 EB Ramp	2.8%	A	4	A	5	A	4	-
2. International Boulevard (SR 99)/S 188th Street	1.2%	D	54	D	55	D	55	-
A. North Site Access/ International Boulevard (SR 99)	-	-	-	-	-	B	14	WBR
B. South Site Access/ International Boulevard (SR 99)	-	-	-	-	-	B	15	WBR
¹ Level of service (LOS), based on <i>Highway Capacity Manual</i> (6th edition) methodology. ² Average delay in seconds per vehicle. Delay is provided for the worse movement at side-street stop controlled intersections. ³ Worst movement reported for side-street stop controlled intersections where WBR = westbound right-turn.								

As shown in Table 4, all study intersections currently operate at LOS D or better complying with the City's LOS E standard along principal and minor arterials.² Under future (2024) without- and with-project conditions the study intersections are anticipated to continue to operate at the same LOS as existing conditions with minimal changes in delay under future (2024) with-project conditions at the study intersections. Both site access locations are anticipated to operate at LOS B.

Additionally, the project proportionate share at the study intersections is included in Table 4. The project proportionate share at the two study intersections ranges from approximately 1 percent to 3 percent.

² City of SeaTac Transportation Element Update & Transportation Master Plan, Transpo Group, December 2014.

Transportation Impact Fee

The City of SeaTac requires new development to pay a transportation impact fee. Table 5 shows the estimated impact fee. This calculation is provided as a preliminary estimate; the City of SeaTac will calculate the final transportation fee.

Table 5. Estimated Transportation Impact Fee

Land Use	Size	Impact Fee ¹	Estimated Fee
<u>Proposed Use</u>			
Apartment Home (LU #221)	182 dwelling units	\$1,643 per unit	\$299,026
Hotel (LU #310)	<u>198 rooms</u>	<u>\$2,240 per room</u>	<u>\$443,520</u>
	<i>Subtotal</i>		<i>\$742,546</i>
<u>Existing Use</u>			
Motel (LU #320)	56 rooms	\$1,419 per room	\$79,464
Park-and-fly Lot	<u>238 stalls</u>	<u>\$3,500 per trip²</u>	<u>\$38,500</u>
	<i>Subtotal</i>		<i>\$117,964</i>
Total			\$624,582

1. City of SeaTac Transportation Impact Fees – 2021 Update

2. 11 PM peak hour trips. Based on information provided by the City of SeaTac Community & Economic Development Engineering Review Division Memorandum, April 13, 2017 (Preliminary Transportation Mitigation Fee)

Summary & Conclusions

- The proposed project would construct a 182-unit apartment building and 198-room hotel development located in SeaTac, Washington east of International Boulevard, south of 171st Street. The project site previously included a 10-room motel, a 46-room motel, and a 238-stall park-and-fly lot. Both existing buildings and the park-and-fly lot were removed to accommodate the proposed project.
- The proposed project is anticipated to generate a 2,259 net new weekday daily trips with 119 occurring during the AM peak hour and 141 during the PM peak hour.
- All study intersections are anticipated to operate at LOS D or better under future without- and with-project condition.
- The site access driveways are anticipated to operate at LOS B under future 2024 with-project conditions.

Attachment 1: Traffic Counts

Attachment 2: Residential Trip Distribution and Assignment

Attachment 3: Hotel Trip Distribution and Assignment

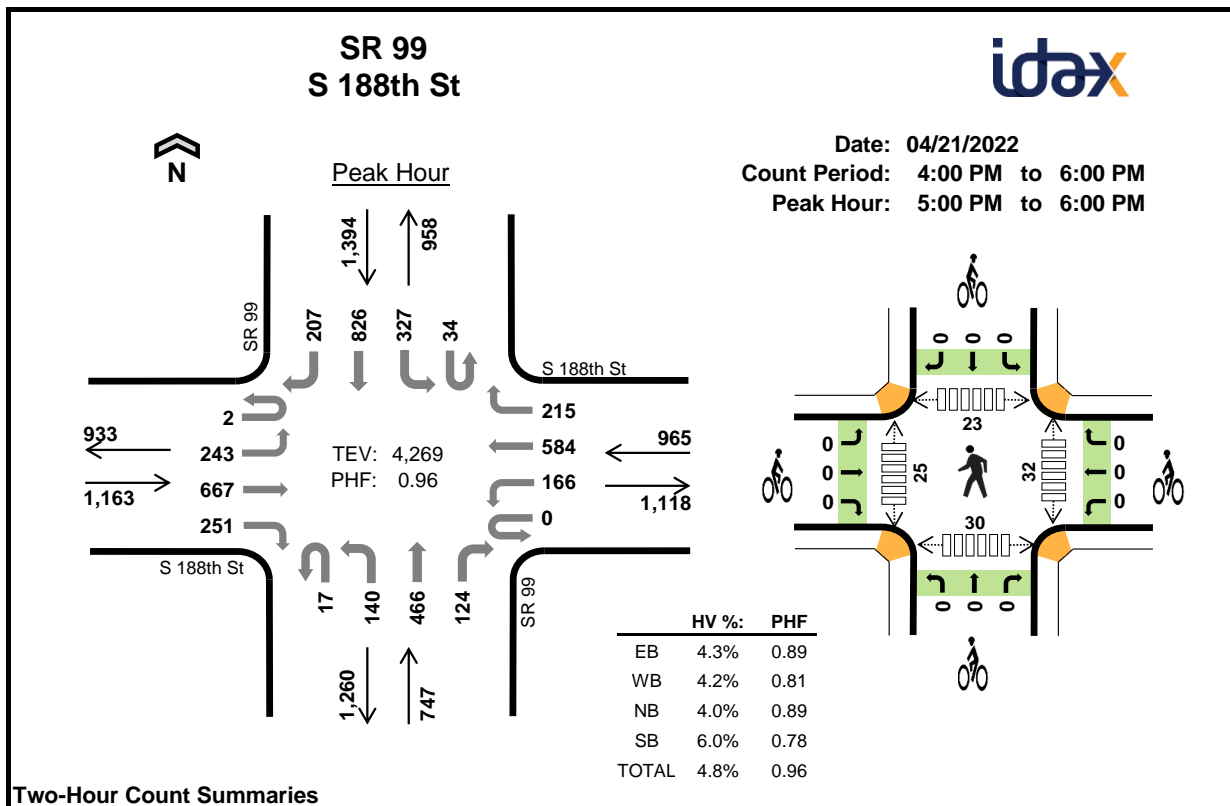
Attachment 4: Traffic Volumes

Attachment 5: LOS Criteria

Attachment 6: LOS Worksheets



Attachment 1: Traffic Counts

**Two-Hour Count Summaries**

Interval Start		S 188th St				S 188th St				SR 99				SR 99				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	60	187	77	0	46	90	63	3	33	95	29	6	66	202	50	1,007	0
4:15 PM		0	39	196	72	0	44	126	41	2	28	125	39	10	82	217	45	1,066	0
4:30 PM		0	68	174	84	0	63	111	57	5	43	118	42	8	45	216	31	1,065	0
4:45 PM		0	48	197	69	0	50	96	50	1	29	96	29	12	66	223	31	997	4,135
5:00 PM		1	52	169	63	0	47	124	46	7	37	130	35	16	68	185	50	1,030	4,158
5:15 PM		1	60	197	69	0	49	141	46	3	38	108	27	6	84	183	46	1,058	4,150
5:30 PM		0	55	144	62	0	36	123	55	3	36	120	34	6	111	252	77	1,114	4,199
5:45 PM		0	76	157	57	0	34	196	68	4	29	108	28	6	64	206	34	1,067	4,269
Count Total		2	458	1,421	553	0	369	1,007	426	28	273	900	263	70	586	1,684	364	8,404	0
Peak Hour	All	2	243	667	251	0	166	584	215	17	140	466	124	34	327	826	207	4,269	0
	HV	0	23	24	3	0	3	22	16	0	3	26	1	10	18	38	18	205	0
	HV%	0%	9%	4%	1%	-	2%	4%	7%	0%	2%	6%	1%	29%	6%	5%	9%	5%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	33	10	10	22	75	0	0	0	0	0	2	8	0	6	16
4:15 PM	23	8	14	16	61	0	0	0	0	0	4	9	4	2	19
4:30 PM	14	13	7	24	58	0	0	0	0	0	2	5	6	3	16
4:45 PM	21	15	11	16	63	0	0	0	0	0	6	8	2	4	20
5:00 PM	10	11	7	20	48	0	0	0	0	0	10	10	9	9	38
5:15 PM	17	12	7	16	52	0	0	0	0	0	10	6	6	13	35
5:30 PM	13	8	9	26	56	0	0	0	0	0	6	4	7	3	20
5:45 PM	10	10	7	22	49	0	0	0	0	0	6	5	1	5	17
Count Total	141	87	72	162	462	0	0	0	0	0	46	55	35	45	181
Peak Hour	50	41	30	84	205	0	0	0	0	0	32	25	23	30	110

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	S 188th St				S 188th St				SR 99				SR 99				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	10	17	6	0	0	6	4	0	3	5	2	2	5	12	3	75	0
4:15 PM	0	6	17	0	0	0	6	2	0	2	11	1	2	5	6	3	61	0
4:30 PM	0	3	11	0	0	0	7	6	0	2	5	0	3	4	11	6	58	0
4:45 PM	0	5	10	6	0	2	9	4	0	3	8	0	2	2	8	4	63	257
5:00 PM	0	5	5	0	0	1	8	2	0	3	3	1	4	2	8	6	48	230
5:15 PM	0	8	8	1	0	1	5	6	0	0	7	0	2	5	7	2	52	221
5:30 PM	0	6	5	2	0	1	5	2	0	0	9	0	2	5	12	7	56	219
5:45 PM	0	4	6	0	0	0	4	6	0	0	7	0	2	6	11	3	49	205
Count Total	0	47	79	15	0	5	50	32	0	13	55	4	19	34	75	34	462	0
Peak Hour	0	23	24	3	0	3	22	16	0	3	26	1	10	18	38	18	205	0

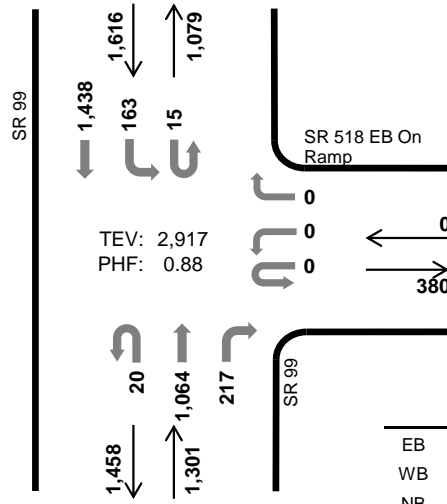
Two-Hour Count Summaries - Bikes																		
Interval Start	S 188th St			S 188th St			SR 99			SR 99			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

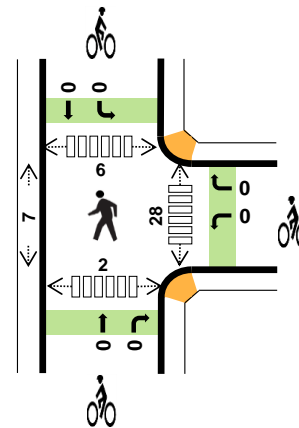
SR 99 SR 518 EB On Ramp



Peak Hour



Date: 04/21/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	-	-
WB	-	-
NB	2.6%	0.75
SB	2.9%	0.92
TOTAL	2.8%	0.88

Two-Hour Count Summaries

Interval Start		0				SR 518 EB On Ramp				SR 99				SR 99				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	0	0	0	0	0	0	8	0	190	69	2	66	292	0	627	0
4:15 PM		0	0	0	0	0	0	0	0	9	0	157	62	2	54	311	0	595	0
4:30 PM		0	0	0	0	0	0	0	0	7	0	189	93	1	78	343	0	711	0
4:45 PM		0	0	0	0	0	0	0	0	1	0	167	65	2	71	314	0	620	2,553
5:00 PM		0	0	0	0	0	0	0	0	7	0	290	11	12	12	413	0	745	2,671
5:15 PM		0	0	0	0	0	0	0	0	7	0	317	0	0	0	396	0	720	2,796
5:30 PM		0	0	0	0	0	0	0	0	5	0	290	141	1	80	315	0	832	2,917
5:45 PM		0	0	0	0	0	0	0	0	3	0	184	64	2	54	304	0	611	2,908
Count Total		0	0	0	0	0	0	0	0	47	0	1,784	505	22	415	2,688	0	5,461	0
Peak Hour	All	0	0	0	0	0	0	0	0	20	0	1,064	217	15	163	1,438	0	2,917	0
	HV	0	0	0	0	0	0	0	0	0	0	23	11	1	4	42	0	81	0
	HV%	-	-	-	-	-	-	-	-	0%	-	2%	5%	7%	2%	3%	-	3%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

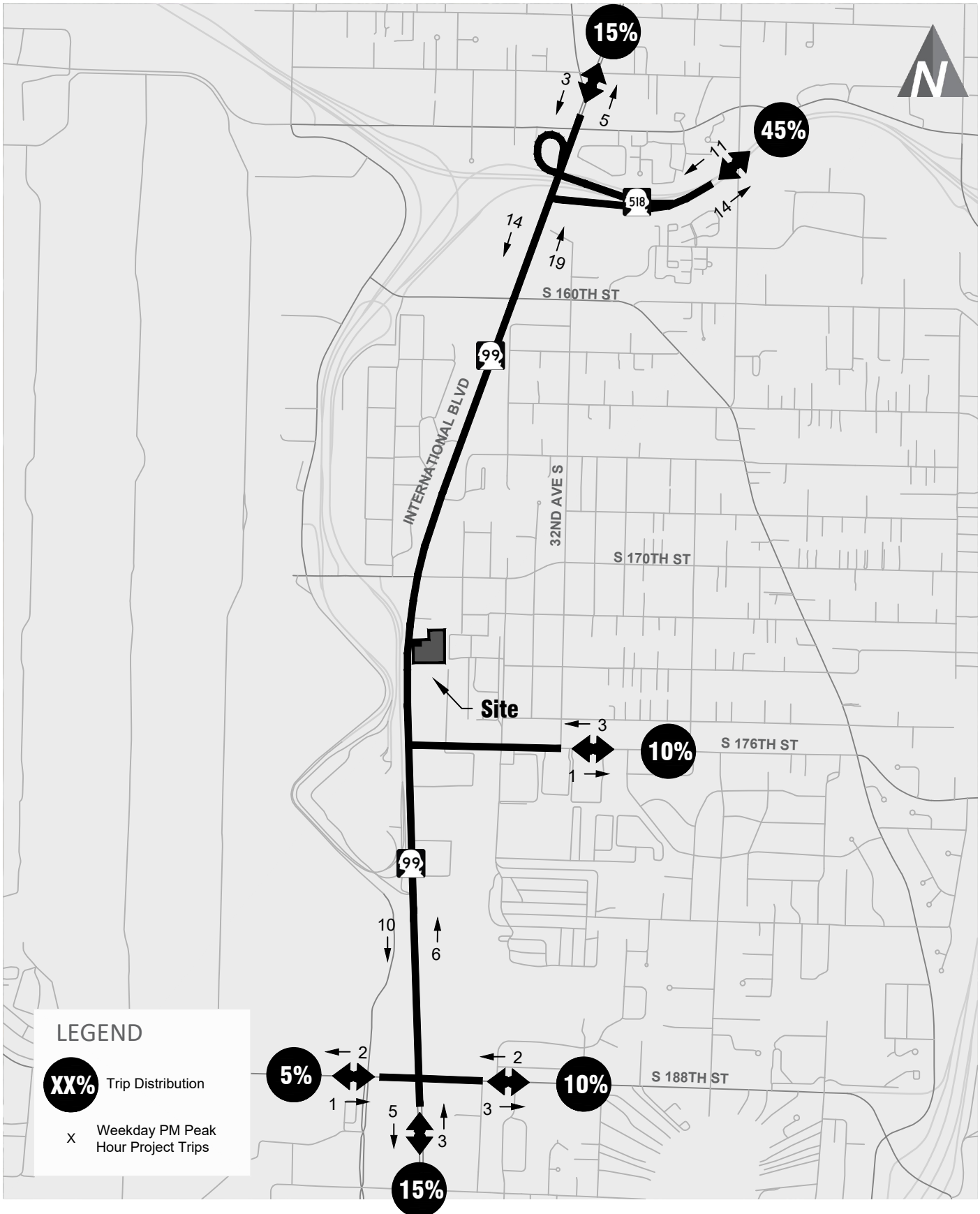
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	8	8	16	0	0	0	0	0	4	1	0	0	5
4:15 PM	0	0	7	8	15	0	0	0	0	0	3	0	0	1	4
4:30 PM	0	0	5	9	14	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	8	9	17	0	0	0	0	0	1	2	0	0	3
5:00 PM	0	0	4	13	17	0	0	0	0	0	7	1	4	0	12
5:15 PM	0	0	10	12	22	0	0	0	0	0	11	1	0	1	13
5:30 PM	0	0	12	13	25	0	0	0	0	0	9	3	2	1	15
5:45 PM	0	0	11	6	17	0	0	0	0	0	3	0	0	0	3
Count Total	0	0	65	78	143	0	0	0	0	0	38	8	6	3	55
Peak Hr	0	0	34	47	81	0	0	0	0	0	28	7	6	2	43

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	0				SR 518 EB On Ramp				SR 99				SR 99				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	7	1	0	2	6	0	16	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	4	3	0	1	7	0	15	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	3	2	0	2	7	0	14	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	4	4	0	0	9	0	17	62
5:00 PM	0	0	0	0	0	0	0	0	0	0	4	0	1	1	11	0	17	63
5:15 PM	0	0	0	0	0	0	0	0	0	0	10	0	0	0	12	0	22	70
5:30 PM	0	0	0	0	0	0	0	0	0	0	5	7	0	3	10	0	25	81
5:45 PM	0	0	0	0	0	0	0	0	0	0	10	1	0	0	6	0	17	81
Count Total	0	0	0	0	0	0	0	0	0	0	47	18	1	9	68	0	143	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	23	11	1	4	42	0	81	0

Two-Hour Count Summaries - Bikes																	
Interval Start	0			SR 518 EB On Ramp			SR 99			SR 99			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Attachment 2: Residential Trip Distribution and Assignment



Apartment Project Trip Distribution and Assignment

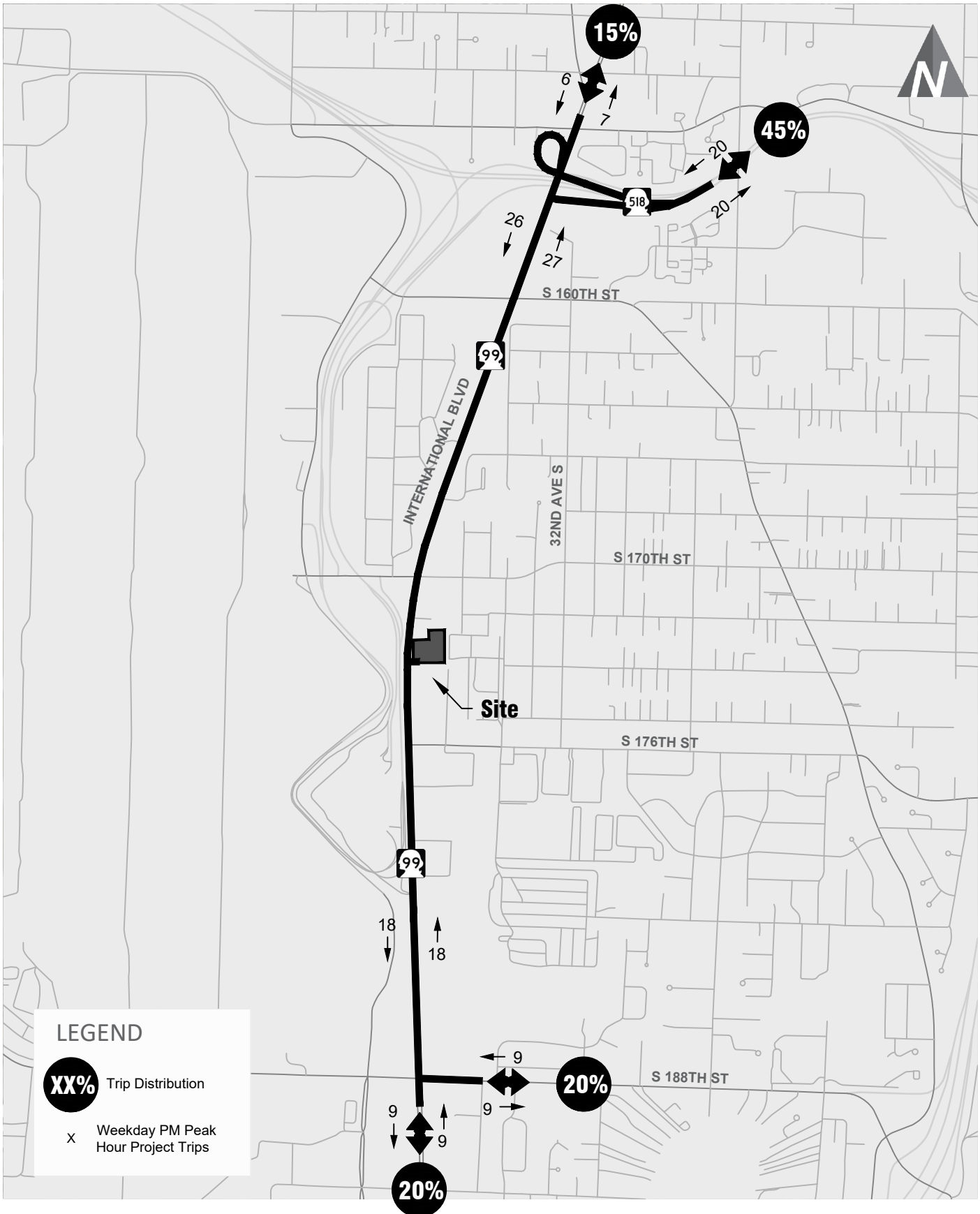
SeaTac Hyatt

ATTACHMENT

transpogroup 

2

Attachment 3: Hotel Trip Distribution and Assignment



Hotel Project Trip Distribution and Assignment

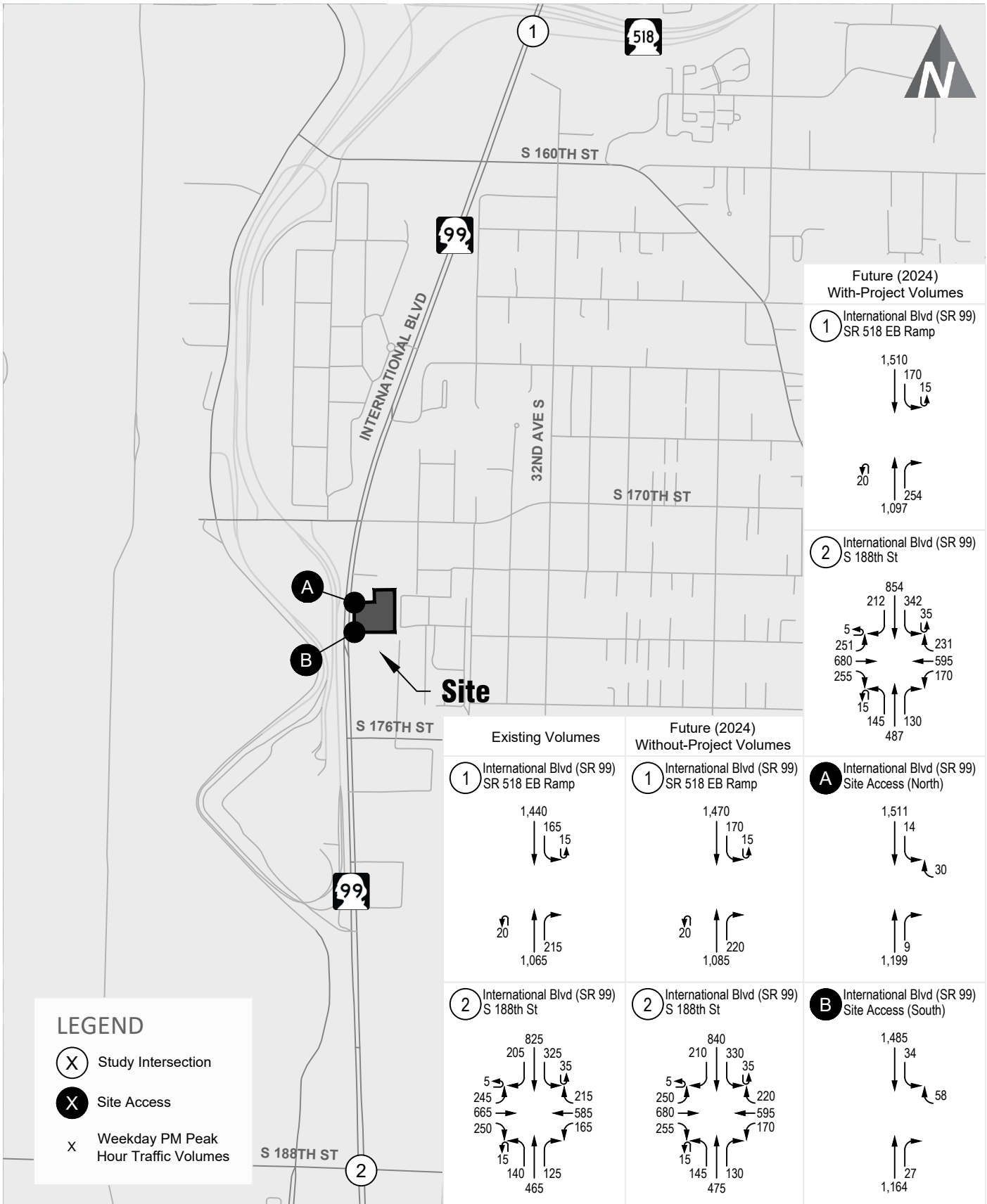
SeaTac Hyatt

ATTACHMENT

transpogroup 

3

Attachment 4: Traffic Volumes



Existing and Future (2024) PM Peak Hour Traffic Volumes ATTACHMENT

SeaTac Hyatt

transpogroup

4

Attachment 5: LOS Criteria

Highway Capacity Manual 2010/6th Edition

Signalized intersection level of service (LOS) is defined in terms of a weighted average control delay for the entire intersection. Control delay quantifies the increase in travel time that a vehicle experiences due to the traffic signal control as well as provides a surrogate measure for driver discomfort and fuel consumption. Signalized intersection LOS is stated in terms of average control delay per vehicle (in seconds) during a specified time period (e.g., weekday PM peak hour). Control delay is a complex measure based on many variables, including signal phasing and coordination (i.e., progression of movements through the intersection and along the corridor), signal cycle length, and traffic volumes with respect to intersection capacity and resulting queues. Table 1 summarizes the LOS criteria for signalized intersections, as described in the *Highway Capacity Manual 2010* and 6th Edition (Transportation Research Board, 2010 and 2016, respectively).

Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)	General Description
A	≤10	Free Flow
B	>10 – 20	Stable Flow (slight delays)
C	>20 – 35	Stable flow (acceptable delays)
D	>35 – 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 – 80	Unstable flow (intolerable delay)
F ¹	>80	Forced flow (congested and queues fail to clear)

Source: *Highway Capacity Manual 2010 and 6th Edition*, Transportation Research Board, 2010 and 2016, respectively.

1. If the volume-to-capacity (v/c) ratio for a lane group exceeds 1.0 LOS F is assigned to the individual lane group. LOS for overall approach or intersection is determined solely by the control delay.

Unsignalized intersection LOS criteria can be further reduced into two intersection types: all-way stop and two-way stop control. All-way stop control intersection LOS is expressed in terms of the weighted average control delay of the overall intersection or by approach. Two-way stop-controlled intersection LOS is defined in terms of the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns. This approach is because major-street through vehicles are assumed to experience zero delay, a weighted average of all movements results in very low overall average delay, and this calculated low delay could mask deficiencies of minor movements. Table 2 shows LOS criteria for unsignalized intersections.

Table 2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)
A	0 – 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F ¹	>50

Source: *Highway Capacity Manual 2010 and 6th Edition*, Transportation Research Board, 2010 and 2016, respectively.

1. If the volume-to-capacity (v/c) ratio exceeds 1.0, LOS F is assigned an individual lane group for all unsignalized intersections, or minor street approach at two-way stop-controlled intersections. Overall intersection LOS is determined solely by control delay.

Attachment 6: LOS Worksheets

HCM 6th Signalized Intersection Summary

1: International Blvd (SR 99) & SR 518 EB Ramp

05/05/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑	↑	↑	↑↑↑
Traffic Volume (veh/h)	0	0	1085	215	180	1440
Future Volume (veh/h)	0	0	1085	215	180	1440
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No			No
Adj Sat Flow, veh/h/ln			1856	1856	1856	1856
Adj Flow Rate, veh/h			1233	0	205	1636
Peak Hour Factor			0.88	0.88	0.88	0.88
Percent Heavy Veh, %			3	3	3	3
Cap, veh/h			1953		277	4283
Arrive On Green			0.55	0.00	0.16	0.85
Sat Flow, veh/h			3618	1572	1767	5233
Grp Volume(v), veh/h			1233	0	205	1636
Grp Sat Flow(s),veh/h/ln			1763	1572	1767	1689
Q Serve(g_s), s			9.8	0.0	4.5	3.0
Cycle Q Clear(g_c), s			9.8	0.0	4.5	3.0
Prop In Lane				1.00	1.00	
Lane Grp Cap(c), veh/h			1953		277	4283
V/C Ratio(X)			0.63		0.74	0.38
Avail Cap(c_a), veh/h			3347		1279	4809
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh			6.2	0.0	16.4	0.7
Incr Delay (d2), s/veh			0.3	0.0	3.9	0.1
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			2.1	0.0	1.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			6.6	0.0	20.3	0.8
LnGrp LOS			A		C	A
Approach Vol, veh/h			1233	A		1841
Approach Delay, s/veh			6.6			2.9
Approach LOS			A			A
Timer - Assigned Phs	1	2				6
Phs Duration (G+Y+Rc), s	11.9	28.9				40.8
Change Period (Y+Rc), s	5.5	6.3				6.3
Max Green Setting (Gmax), s	29.5	38.7				38.7
Max Q Clear Time (g_c+I1), s	6.5	11.8				5.0
Green Ext Time (p_c), s	0.6	10.8				16.6

Intersection Summary

HCM 6th Ctrl Delay	4.4
HCM 6th LOS	A

Notes













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

HCM 6th Signalized Intersection Summary

2: International Blvd (SR 99) & S 188th St

05/05/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	665	250	165	585	215	155	465	125	360	825	205
Future Volume (veh/h)	250	665	250	165	585	215	155	465	125	360	825	205
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.97
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	1841	1841	1841	1841	1841	1841	1841	1841	1811	1811	1811
Adj Flow Rate, veh/h	260	693	260	172	609	224	161	484	130	375	859	214
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, %	4	4	4	4	4	4	4	4	4	6	6	6
Cap, veh/h	263	992	428	196	859	369	218	1009	435	436	1220	530
Arrive On Green	0.15	0.28	0.28	0.11	0.25	0.25	0.06	0.29	0.29	0.13	0.35	0.35
Sat Flow, veh/h	1753	3497	1510	1753	3497	1503	3401	3497	1508	3346	3441	1493
Grp Volume(v), veh/h	260	693	260	172	609	224	161	484	130	375	859	214
Grp Sat Flow(s),veh/h/ln	1753	1749	1510	1753	1749	1503	1700	1749	1508	1673	1721	1493
Q Serve(g_s), s	20.7	24.8	20.9	13.5	22.3	18.5	6.5	16.0	9.4	15.4	30.1	15.1
Cycle Q Clear(g_c), s	20.7	24.8	20.9	13.5	22.3	18.5	6.5	16.0	9.4	15.4	30.1	15.1
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	263	992	428	196	859	369	218	1009	435	436	1220	530
V/C Ratio(X)	0.99	0.70	0.61	0.88	0.71	0.61	0.74	0.48	0.30	0.86	0.70	0.40
Avail Cap(c_a), veh/h	263	992	428	250	924	397	437	1009	435	526	1220	530
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	59.4	44.8	43.4	61.2	48.3	46.8	64.4	41.1	38.8	59.6	38.9	34.0
Incr Delay (d2), s/veh	52.2	2.2	2.5	23.3	2.3	2.4	6.8	1.6	1.8	12.8	3.4	2.3
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	8.0	11.1	8.1	7.3	10.0	7.2	3.0	7.2	3.7	7.3	13.3	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	111.6	47.0	45.9	84.5	50.6	49.2	71.1	42.8	40.5	72.4	42.3	36.3
LnGrp LOS	F	D	D	F	D	D	E	D	D	E	D	D
Approach Vol, veh/h	1213			1005			775			1448		
Approach Delay, s/veh	60.6			56.1			48.3			49.2		
Approach LOS	E			E			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	34.2	46.4	22.7	46.7	15.0	55.6	28.0	41.4				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	34.0	34.0	20.0	38.0	18.0	38.0	21.0	37.0				
Max Q Clear Time (g_c+I1), s	17.4	18.0	15.5	26.8	8.5	32.1	22.7	24.3				
Green Ext Time (p_c), s	0.9	3.3	0.2	4.4	0.5	3.2	0.0	4.1				

Intersection Summary

HCM 6th Ctrl Delay	53.7
HCM 6th LOS	D

HCM 6th Signalized Intersection Summary

1: International Blvd (SR 99) & SR 518 EB Ramp

05/05/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↔↔	↔	↔	↔↔↔
Traffic Volume (veh/h)	0	0	1105	220	185	1470
Future Volume (veh/h)	0	0	1105	220	185	1470
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No			No
Adj Sat Flow, veh/h/ln			1856	1856	1856	1856
Adj Flow Rate, veh/h			1256	0	210	1670
Peak Hour Factor			0.88	0.88	0.88	0.88
Percent Heavy Veh, %			3	3	3	3
Cap, veh/h			1964		282	4300
Arrive On Green			0.56	0.00	0.16	0.85
Sat Flow, veh/h			3618	1572	1767	5233
Grp Volume(v), veh/h			1256	0	210	1670
Grp Sat Flow(s),veh/h/ln			1763	1572	1767	1689
Q Serve(g_s), s			10.2	0.0	4.7	3.1
Cycle Q Clear(g_c), s			10.2	0.0	4.7	3.1
Prop In Lane				1.00	1.00	
Lane Grp Cap(c), veh/h			1964		282	4300
V/C Ratio(X)			0.64		0.74	0.39
Avail Cap(c_a), veh/h			3275		1251	4706
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh			6.3	0.0	16.7	0.7
Incr Delay (d2), s/veh			0.4	0.0	3.9	0.1
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			2.3	0.0	1.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			6.7	0.0	20.6	0.8
LnGrp LOS			A		C	A
Approach Vol, veh/h			1256	A		1880
Approach Delay, s/veh			6.7			3.0
Approach LOS			A			A
Timer - Assigned Phs	1	2				6
Phs Duration (G+Y+Rc), s	12.2	29.5				41.7
Change Period (Y+Rc), s	5.5	6.3				6.3
Max Green Setting (Gmax), s	29.5	38.7				38.7
Max Q Clear Time (g_c+I1), s	6.7	12.2				5.1
Green Ext Time (p_c), s	0.6	11.0				17.0

Intersection Summary

HCM 6th Ctrl Delay	4.5
HCM 6th LOS	A

Notes

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

HCM 6th Signalized Intersection Summary

2: International Blvd (SR 99) & S 188th St

05/05/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	255	680	255	170	595	220	160	475	130	365	840	210
Future Volume (veh/h)	255	680	255	170	595	220	160	475	130	365	840	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.97
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	1841	1841	1841	1841	1841	1841	1841	1841	1811	1811	1811
Adj Flow Rate, veh/h	266	708	266	177	620	229	167	495	135	380	875	219
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, %	4	4	4	4	4	4	4	4	4	6	6	6
Cap, veh/h	263	985	425	201	862	370	224	1001	431	440	1210	525
Arrive On Green	0.15	0.28	0.28	0.11	0.25	0.25	0.07	0.29	0.29	0.13	0.35	0.35
Sat Flow, veh/h	1753	3497	1510	1753	3497	1503	3401	3497	1508	3346	3441	1493
Grp Volume(v), veh/h	266	708	266	177	620	229	167	495	135	380	875	219
Grp Sat Flow(s),veh/h/ln	1753	1749	1510	1753	1749	1503	1700	1749	1508	1673	1721	1493
Q Serve(g_s), s	21.0	25.5	21.5	13.9	22.7	19.0	6.8	16.5	9.8	15.6	30.9	15.6
Cycle Q Clear(g_c), s	21.0	25.5	21.5	13.9	22.7	19.0	6.8	16.5	9.8	15.6	30.9	15.6
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	263	985	425	201	862	370	224	1001	431	440	1210	525
V/C Ratio(X)	1.01	0.72	0.63	0.88	0.72	0.62	0.74	0.49	0.31	0.86	0.72	0.42
Avail Cap(c_a), veh/h	263	985	425	250	924	397	437	1001	431	526	1210	525
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	59.5	45.3	43.8	61.0	48.3	46.9	64.2	41.5	39.2	59.6	39.4	34.5
Incr Delay (d2), s/veh	58.5	2.6	2.9	24.3	2.5	2.6	6.8	1.7	1.9	13.1	3.8	2.4
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	3.6	11.5	8.4	7.6	10.2	7.4	3.1	7.4	3.9	7.4	13.7	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	118.0	47.8	46.7	85.4	50.8	49.5	71.0	43.3	41.1	72.7	43.2	36.9
LnGrp LOS	F	D	D	F	D	D	E	D	D	E	D	D
Approach Vol, veh/h	1240			1026			797			1474		
Approach Delay, s/veh	62.6			56.5			48.7			49.9		
Approach LOS	E			E			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	34.4	46.1	23.1	46.4	15.2	55.2	28.0	41.5				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	27.0	34.0	20.0	38.0	18.0	38.0	21.0	37.0				
Max Q Clear Time (g_c+I1), s	17.6	18.5	15.9	27.5	8.8	32.9	23.0	24.7				
Green Ext Time (p_c), s	0.8	3.4	0.2	4.3	0.5	2.9	0.0	4.1				

Intersection Summary

HCM 6th Ctrl Delay	54.7
HCM 6th LOS	D

HCM 6th Signalized Intersection Summary

1: International Blvd (SR 99) & SR 518 EB Ramp

05/10/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↔↔	↔	↔	↔↔↔
Traffic Volume (veh/h)	0	0	1117	254	185	1510
Future Volume (veh/h)	0	0	1117	254	185	1510
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No			No
Adj Sat Flow, veh/h/ln			1856	1856	1856	1856
Adj Flow Rate, veh/h			1269	0	210	1716
Peak Hour Factor			0.88	0.88	0.88	0.88
Percent Heavy Veh, %			3	3	3	3
Cap, veh/h			1973		282	4306
Arrive On Green			0.56	0.00	0.16	0.85
Sat Flow, veh/h			3618	1572	1767	5233
Grp Volume(v), veh/h			1269	0	210	1716
Grp Sat Flow(s),veh/h/ln			1763	1572	1767	1689
Q Serve(g_s), s			10.4	0.0	4.8	3.2
Cycle Q Clear(g_c), s			10.4	0.0	4.8	3.2
Prop In Lane				1.00	1.00	
Lane Grp Cap(c), veh/h			1973		282	4306
V/C Ratio(X)			0.64		0.74	0.40
Avail Cap(c_a), veh/h			3247		1241	4666
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh			6.4	0.0	16.8	0.7
Incr Delay (d2), s/veh			0.4	0.0	3.9	0.1
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			2.4	0.0	2.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			6.7	0.0	20.7	0.8
LnGrp LOS			A		C	A
Approach Vol, veh/h			1269	A		1926
Approach Delay, s/veh			6.7			2.9
Approach LOS			A			A
Timer - Assigned Phs	1	2				6
Phs Duration (G+Y+Rc), s	12.2	29.8				42.0
Change Period (Y+Rc), s	5.5	6.3				6.3
Max Green Setting (Gmax), s	29.5	38.7				38.7
Max Q Clear Time (g_c+I1), s	6.8	12.4				5.2
Green Ext Time (p_c), s	0.6	11.1				17.6
Intersection Summary						
HCM 6th Ctrl Delay			4.4			
HCM 6th LOS			A			

Notes













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

HCM 6th Signalized Intersection Summary

2: International Blvd (SR 99) & S 188th St

05/10/2022







Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	256	680	255	170	595	231	160	487	130	377	854	212
Future Volume (veh/h)	256	680	255	170	595	231	160	487	130	377	854	212
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.97
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	1841	1841	1841	1841	1841	1841	1841	1841	1811	1811	1811
Adj Flow Rate, veh/h	267	708	266	177	620	241	167	507	135	393	890	221
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, %	4	4	4	4	4	4	4	4	4	6	6	6
Cap, veh/h	263	986	426	201	862	371	224	989	426	452	1210	525
Arrive On Green	0.15	0.28	0.28	0.11	0.25	0.25	0.07	0.28	0.28	0.14	0.35	0.35
Sat Flow, veh/h	1753	3497	1510	1753	3497	1503	3401	3497	1507	3346	3441	1493
Grp Volume(v), veh/h	267	708	266	177	620	241	167	507	135	393	890	221
Grp Sat Flow(s),veh/h/ln	1753	1749	1510	1753	1749	1503	1700	1749	1507	1673	1721	1493
Q Serve(g_s), s	21.0	25.5	21.5	13.9	22.7	20.1	6.8	17.0	9.9	16.1	31.7	15.8
Cycle Q Clear(g_c), s	21.0	25.5	21.5	13.9	22.7	20.1	6.8	17.0	9.9	16.1	31.7	15.8
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	263	986	426	201	862	371	224	989	426	452	1210	525
V/C Ratio(X)	1.02	0.72	0.63	0.88	0.72	0.65	0.74	0.51	0.32	0.87	0.74	0.42
Avail Cap(c_a), veh/h	263	986	426	250	924	397	437	989	426	526	1210	525
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	59.5	45.3	43.8	61.0	48.3	47.3	64.2	42.1	39.6	59.3	39.7	34.5
Incr Delay (d2), s/veh	59.5	2.6	2.9	24.3	2.5	3.4	6.8	1.9	1.9	14.0	4.0	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	3.7	11.5	8.4	7.6	10.2	7.9	3.1	7.7	3.9	7.7	14.1	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	119.0	47.8	46.7	85.4	50.8	50.7	71.0	44.0	41.5	73.3	43.7	37.0
LnGrp LOS	F	D	D	F	D	D	E	D	D	E	D	D
Approach Vol, veh/h	1241			1038			809			1504		
Approach Delay, s/veh	62.9			56.7			49.2			50.4		
Approach LOS	E			E			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.9	45.6	23.1	46.5	15.2	55.2	28.0	41.5				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	27.0	34.0	20.0	38.0	18.0	38.0	21.0	37.0				
Max Q Clear Time (g_c+I1), s	19.0	19.0	15.9	27.5	8.8	33.7	23.0	24.7				
Green Ext Time (p_c), s	0.8	3.4	0.2	4.3	0.5	2.6	0.0	4.1				

Intersection Summary

HCM 6th Ctrl Delay	55.0
HCM 6th LOS	D

Intersection





Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	33	1196	10	0	1525
Future Vol, veh/h	0	33	1196	10	0	1525
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	-	-	120	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	3	3	3	3
Mvmt Flow	0	34	1246	10	0	1589

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	628	0 0 1256 0
Stage 1	-	-	- - - -
Stage 2	-	-	- - - -
Critical Hdwy	-	6.9	- - 4.16 -
Critical Hdwy Stg 1	-	-	- - - -
Critical Hdwy Stg 2	-	-	- - - -
Follow-up Hdwy	-	3.3	- - 2.23 -
Pot Cap-1 Maneuver	0	431	- - 544 -
Stage 1	0	-	- - - -
Stage 2	0	-	- - - -
Platoon blocked, %		-	- - -
Mov Cap-1 Maneuver	-	431	- - 544 -
Mov Cap-2 Maneuver	-	-	- - - -
Stage 1	-	-	- - - -
Stage 2	-	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 431	544	-
HCM Lane V/C Ratio	-	- 0.08	-	-
HCM Control Delay (s)	-	- 14.1	0	-
HCM Lane LOS	-	- B	A	-
HCM 95th %tile Q(veh)	-	- 0.3	0	-

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	55	1165	26	48	1485
Future Vol, veh/h	0	55	1165	26	48	1485
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	-	-	70	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	3	3	3	3
Mvmt Flow	0	57	1214	27	50	1547
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	621	0	0	1241	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	4.16	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	2.23	-
Pot Cap-1 Maneuver	0	435	-	-	551	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	435	-	-	551	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.5	0		0.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	435	551	-	
HCM Lane V/C Ratio	-	-	0.132	0.091	-	
HCM Control Delay (s)	-	-	14.5	12.2	-	
HCM Lane LOS	-	-	B	B	-	
HCM 95th %tile Q(veh)	-	-	0.5	0.3	-	

Attachment 7: Site Driveway Modifications

CHANNELIZATION NOTES

- ① WHITE THERMOPLASTIC TYPE 2SL LEFT TURN TRAFFIC ARROW PER WSDOT STANDARD PLAN M-24.40-02.
- ② WHITE PAINTED PRECAST DUAL-FACED SLOPED MOUNTABLE CURB PER WSDOT STANDARD PLAN F-10.64-03.
- ③ YELLOW PAINTED PRECAST DUAL-FACED SLOPED MOUNTABLE CURB PER WSDOT STANDARD PLAN F-10.64-03.
- ④ SEE CIVIL SHEETS FOR CURB AND MEDIAN DETAILS.
- ⑤ NOT USED
- ⑥ NOT USED
- ⑦ NOT USED
- ⑧ NOT USED
- ⑨ NOT USED
- ⑩ 13FT WIDE WHITE THERMOPLASTIC CROSSWALK PER WSDOT STANDARD PLAN M-15.10-01.
- ⑪ WHITE THERMOPLASTIC STOP LINE PER WSDOT STANDARD PLAN M-24.60-04.

SEC.28 T.23N. R.4E. W.M.
SR 99 (MP 19.26 TO 19.33)

LEGEND

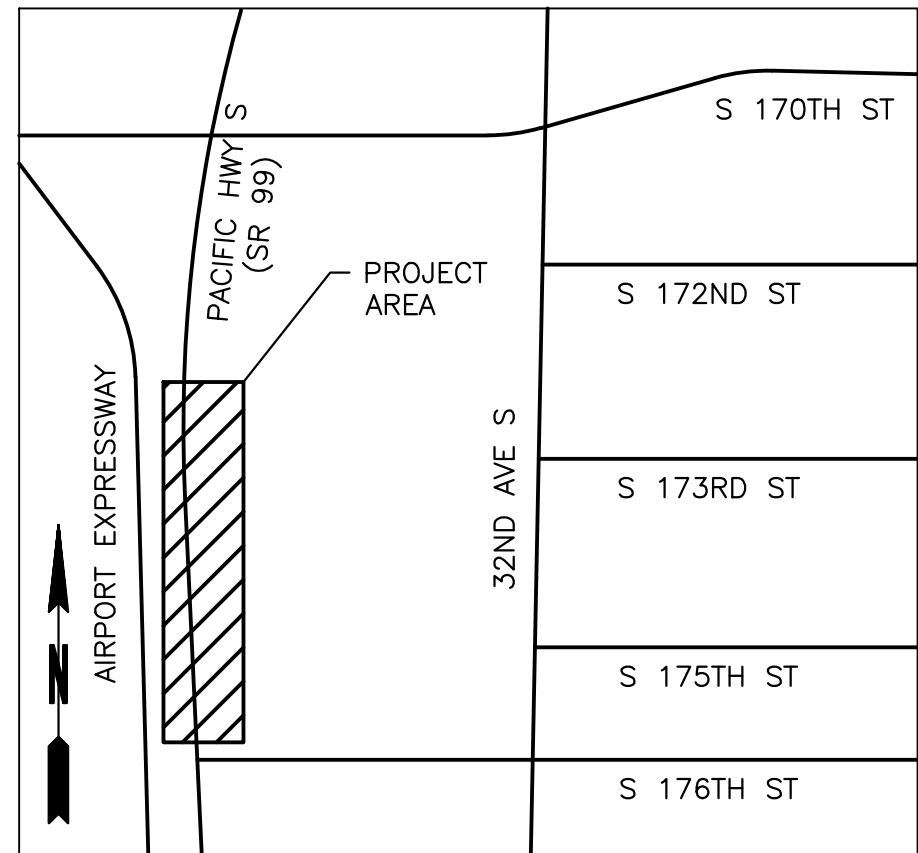
RIGHT-OF-WAY	
PROPOSED FEATURE	
EXISTING FEATURE TO REMAIN	
PROPOSED FEATURE BY OTHERS	
CHANNELIZATION NOTE	
SIGN NUMBER	

CURVE DATA									
NO.	ROADWAY	PC STA	PT STA	PI STA	Δ	R	TANGENT	L	DESIGN SPEED
①	SR 99 (PACIFIC HIGHWAY S)	6+70	15+86	11+28	9°05'53"	5765.6FT	458.7FT	915.5FT	45MPH

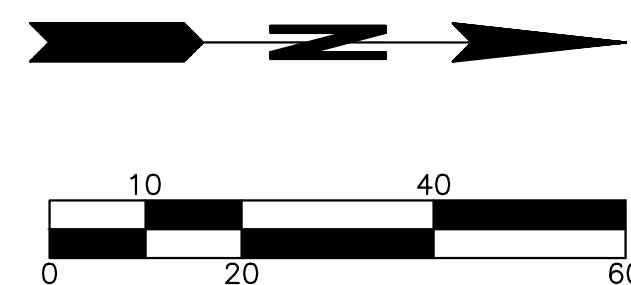
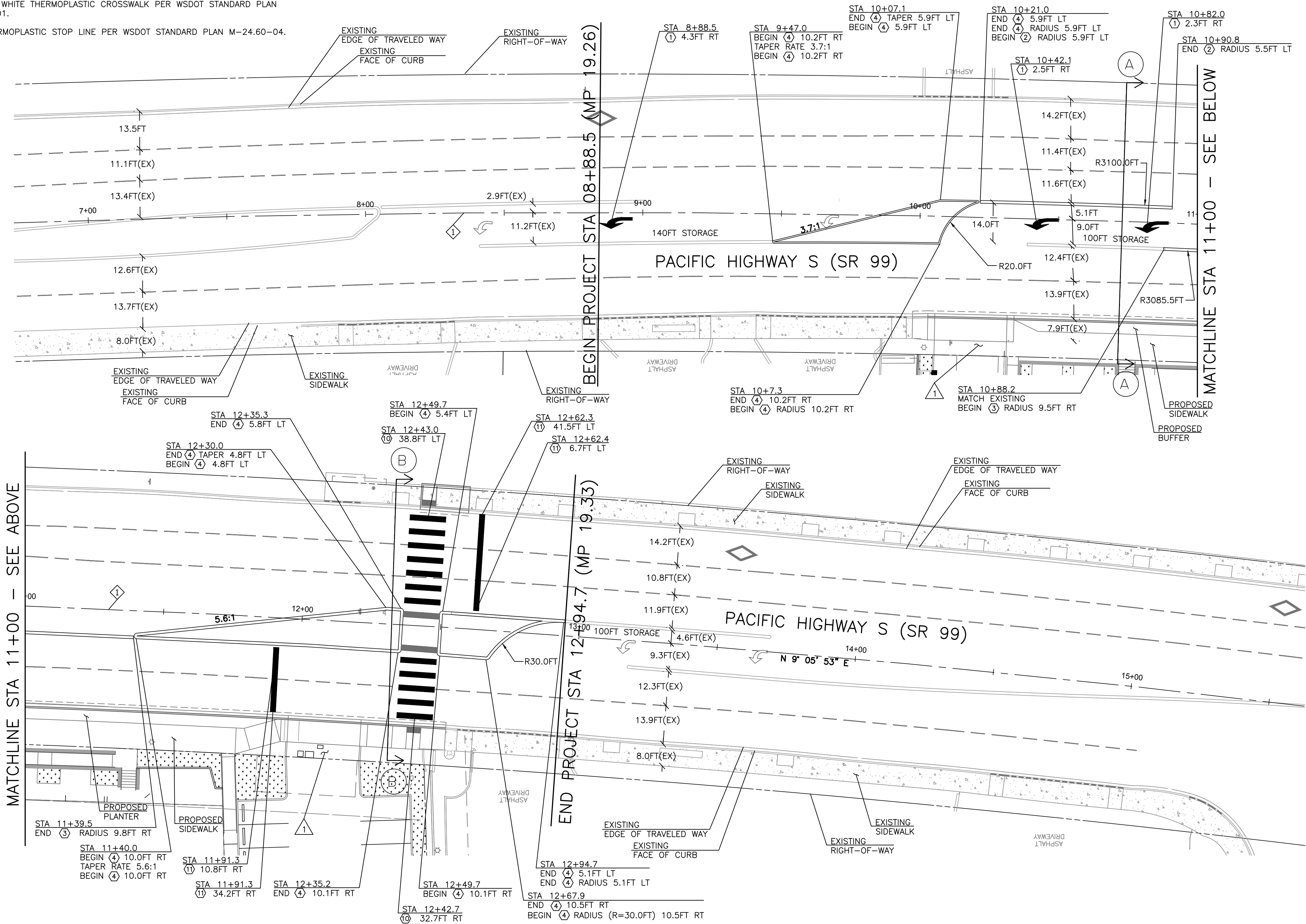
DESIGN DATA	
FUNCTIONAL CLASS:	SR 99
NHS STATUS:	U1-URBAN-PRINCIPAL ARTERIAL
ACCESS CONTROL:	NHS
DESIGN VEHICLE:	MANAGED ACCESS CLASS 4
POSTED/TARGET SPEED:	WB-67 (FOR MAINLINE) SU-30 (FOR DRIVEWAYS)
TERRAIN:	40MPH
TRUCK PERCENTAGE:	ROLLING
	6.1%

DESIGN VARIANCES

- ① DEVIATION#1: DRIVEWAY SPACING (CITY OF SEATAC)



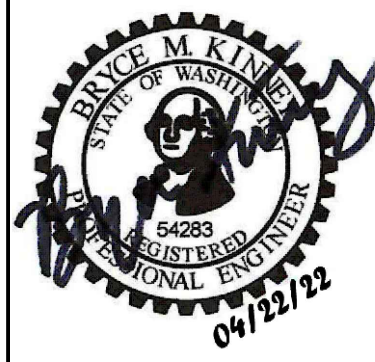
VICINITY MAP



WSDOT NORTHWEST REGION
APPROVED CHANNELIZATION PLAN

TRAFFIC ENGINEER - AREA OPERATIONS
Signed _____ Date _____
Print _____

ENGINEERING MANAGER
Signed _____ Date _____
Print _____



SEATAC HYATT
SR99 PACIFIC HIGHWAY S MP 19.26 TO 19.33
17300 / 17224 INTERNATIONAL BLVD

CITY OF SEATAC
KING COUNTY
APRIL 2022
CHANNELIZATION PLAN FOR APPROVAL

CH01
SHEET
1
OF
3
SHEETS

	DATE	REVISION	BY	DATE
DESIGNED BY	MHA	04/22/2022		
DRAWN BY	OS	04/22/2022		
REVIEWED BY	BMK	04/22/2022		