

Date: February 18, 2025
To: CBJ Lands, Housing, and Economic Development Committee
Cc: Russell Dick, Susan Bell
From: Corey Wall
Re: Aak'w Landing (JYW No. 21022)
Traffic Impact Analysis Executive Summary

The Traffic Impact Analysis (TIA) from DOWL is now completed and ready for submission to CBJ and DOT. The TIA is somewhat dense and technical, so this memo will summarize and contextualize the key findings.

TIA Purpose

The TIA is the mechanism for the traffic engineers at DOT to analyze potential impacts of new developments on controlled vehicular intersections. As such, the methodology used to predict future traffic flows is developed from mathematical models and resources approved by DOT. Because the traffic caused by a new cruise ship development like Aak'w Landing was unusual, the traffic engineers at DOWL worked closely with DOT to develop an accurate and acceptable method to predict vehicle and pedestrian traffic increases. The complex mathematical model developed by DOWL is described in the report on pages 11 -13 and utilizes traffic numbers from published sources as well as from actual counts performed during the 2024 season.

Although the TIA can be used by non-traffic engineers to understand the potential traffic changes, that is not its primary purpose. Many of the specifics used in the model, such as the percentage of traffic turning at a given intersection, may not mesh exactly with a layperson's understanding of traffic patterns. However, the model and methodologies have been negotiated directly between DOWL and DOT to help develop the most accurate findings for the technical purpose of analyzing vehicular traffic impacts to the selected DOT-controlled intersections and determining whether any modifications are required to eliminate or reduce loss of service at these intersections.

TIA Conclusions

Level of Service (LOS) qualitatively describes the operating conditions of an intersection based on factors such as speed, travel time, maneuverability, delay and safety. LOS categories range from A (unimpeded traffic flow) to F (traffic flow at or above capacity with queues forming).

Acceptable Level of Service (LOS) changes at intersections due to new developments are discussed on Page 2. Essentially, DOT wants the LOS at each intersection to be no lower than LOS C, but LOS D is acceptable if the existing condition is already a LOS D. CBJ code requires a minimum standard of LOS D for any roadway or intersection affected by a new development.

The existing LOS at each studied intersection is shown in Table 6 on Page 10.

Table 6: Existing Conditions Traffic Operations

Intersection	AM Peak Hour ^{2,3}			PM Peak Hour ^{2,3}		
	LOS	Delay	Critical Movement	LOS	Delay	Critical Movement
Egan Drive & Main Street ¹	A	8	—	B	11	—
Egan Drive & Whittier Street	A	7	—	B	19	—
Egan Drive & 10th Street	C	27	—	C	31	—
Egan Drive & Willoughby Avenue	A/B	14	NB	A/A	9	EBL
Willoughby Avenue & Whittier Street	A/B	10	NB	A/B	12	NB
Egan Drive & Glacier Avenue	A/A	9	SBR	B/B	12	SBR

¹ Non-NEMA intersection phasing.

² LOS for unsignalized intersection shown as worst LOS for the Major/Minor approaches.

³ Critical Movement listed for unsignalized intersections.

The intersection operations in the year 2035, with the addition of the Aak’w Landing project and after some mitigating modifications, are shown on Table 19 on Page 24.

Table 19: 2035 Intersection Operations with Development (with Mitigation)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Critical Movement	LOS	Delay	Critical Movement
Egan Drive & Main Street	A	9	—	B	11	—
Egan Drive & Whittier Street	B	16	—	B	17	—
Egan Drive & W 10 th Street	C	31	—	C	33	—
Egan Drive & Willoughby Avenue	A/B	14	NB	A/A	9	EBL
Willoughby Avenue & Whittier Street	A/B	11	NB	A/B	14	NB
Egan Drive & Glacier Avenue	A/B	13	SBR	B/C	16	SBR

As shown in Table 19, **after Aak’w Landing is constructed, the LOS at each intersection will be fairly close to existing conditions and all are above the minimum standards set by DOT and CBJ.**

The LOS conditions without mitigations are shown on Table 16 on Page 20 and the mitigation summary is on Page 24. The mitigations include modifying the signal timing at the Egan/10th and Egan/Whittier intersections as well as some striping changes which will alter turn- and through-lanes. Elimination of one of the crosswalks at Egan/10th is also recommended. The mitigations do not require major changes to the roadways and no new lanes or turn lanes will need to be constructed.

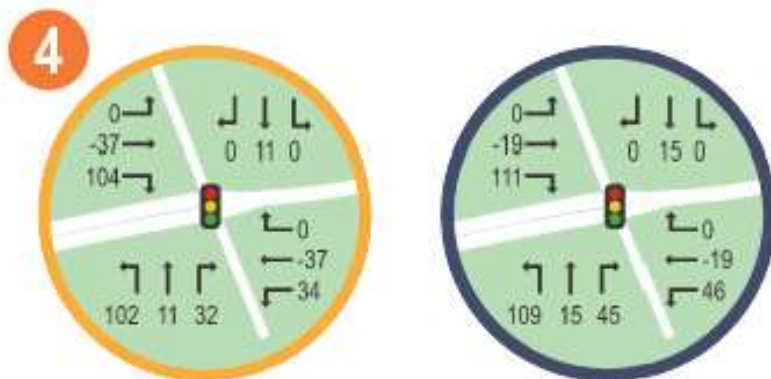
TIA Traffic Count Summaries

The anticipated peak traffic increases caused by the Aak’w Landing project are shown in Table 11 on page 13 of the report. The last line of the Table 11 shows anticipated vehicle traffic increases of **294 vehicles in the Peak AM Hour** (149 entering and 145 exiting) and **341 vehicles in the Peak PM Hour** (172 entering and 169 exiting).

The table also shows the anticipated number of pedestrian increases in the “Less Cruise Ship Passengers (Pedestrians)” line reading, **439 pedestrians in the Peak AM Hour** (8 entering and 431 exiting) and **952 pedestrians in the Peak PM Hour** (741 entering and 211 exiting). Note that this number is negative in the table even though it is an increase because the way it is used in the model to develop the vehicle traffic numbers.

Because of the 5-ship limit, ships at the Aak’w Landing dock will be a combination of replacing ships at anchor, hot-berthing, or new lines entering the market such as MSC Cruises. As a result, some of the existing vehicle traffic to and from these locations will be reduced when the ships are docked instead at Aak’w Landing. However, the report took the conservative position that the traffic reductions would be much less than the full load of vehicles being added by Aak’w Landing. For example, in the morning, the TIA shows vehicle increases of 294 due to Aak’w Landing and a reduction of only 74 due to the elimination of a ship further down South Franklin.

The increased vehicle traffic caused by Aak’w Landing is shown graphically in the excerpt below from Figure 3 which shows traffic changes at the Whittier / Egan intersection at AM (gold) and PM (blue) peak hours. For example, in the morning, the diagram shows that the traffic entering the site from all sides will increase by 149 (as calculated in Table 11, above) with 104 coming east on Egan, 11 coming south down Whittier, and 34 coming west on Egan. The diagram also shows a decrease of 37 vehicles proceeding through the intersection westbound on Egan due to the replacement of a ship and associated vehicle traffic somewhere downtown with the one now at Aak’w Landing. Thus, the TIA calculates the total amount of vehicles increasing on the roadway in the AM leaving the site is 112 (149 - 37).



(Excerpt from Figure 3, traffic changes at the Whittier / Egan intersection)

TIA Numbers Compared to Actual Counts

JYW staff performed on-site counts of the vehicle and pedestrian traffic at the AJ Dock during mid-summer visits of the *Norwegian Bliss* and *Norwegian Encore* during 5 different ship visits in 2023 and 2024. The AJ was good for observation since all traffic was clearly coming or going to the ship at this location.

However, because the AJ Dock is located a fair distance from the center of town (1.1 miles walking distance to the Tram), many pedestrians utilized the free Circulators bus which ran continuously to/from the parking lot in front of the Tram. During peak traffic times, a Circulator entered and exited the site almost every 2 minutes. These Circulator vehicles were half of all the large (bigger than a van) vehicles visiting the site during the counts. Because Aak'w Landing is located much closer to town (0.35 miles to Marine Park), Circulators are unlikely to be used in significant numbers at the new project location.

The maximum number of vehicles, including Circulators, counted entering and exiting the site per hour was fairly consistent each ship visit with 259/hour in the morning and 262/hour in the afternoons. During the busiest hour of 2:30 – 3:30 on June 11, 2024, 126 vehicles entered and 136 exited the AJ Dock site resulting in an actual count of **262 vehicles in the Peak PM Hour**. This compares to 341 used in the TIA for the PM Peak, as discussed above. This gives confidence that the numbers used in the TIA are accurate, if not conservative.

TO: Corey Wall (Jensen Yorba Wall, Inc.)
FROM: LaQuita Chmielowski, P.E. (DOWL)
Cynthia Roe, EI (DOWL)
DATE: January 15, 2025
SUBJECT: Traffic Impact Analysis for Aak'w Landing Development

BACKGROUND

This memorandum evaluates potential traffic impacts associated with the proposed Aak'w Landing multi-use development. The proposed development is located at the southwest corner of Egan Drive and Whittier Street on Lot C1, Juneau Subports, in Downtown Juneau, Alaska. The first two phases of the development will consist of an underground bus and passenger vehicle parking garage with approximately 52,000 square feet of retail space and 11,000 square feet of high-turnover restaurant space. Land use for the third phase of development has been finalized as a cultural museum, though for analysis purposes 20,000 square feet of retail space is assumed. A new driveway is to provide access to the development at the base level of the parking garage on Whittier Street. Opening year for the development is expected to be 2026. The proposed development site plan is included in the Appendix.¹

This study examines the applicable state and municipal codes and compliance requirements, existing intersection operations in the study area, and the impact of the proposed development both now (2026) and in the future (2036).

CODE AND COMPLIANCE REQUIREMENTS

Due to the location and the nature of the Aak'w Landing development, several code and site-specific requirements apply and are included as part of this traffic impact analysis. This section details the Traffic Impact Analysis (TIA) requirements, Mobility Standards, and Site-specific requirements.

TIA Requirements

In accordance with the City and Borough of Juneau (CBJ) policy, a TIA is required for "... (1) a development projected to generate 500 or more average daily trips (ADT)."

According to CBJ code, if a TIA is prepared it "...must identify and assess the impacts of the proposed development on all affected transportation systems... The study area for the TIA shall be that area in which it is anticipated that the proposed development will increase ADT by five percent or more."² Based on this code requirement, a TIA for this development would analyze traffic operations for intersections along roadways with less than approximately 18,000 ADT.

For this development, these intersections include:

- Egan Drive / W 10th Street
- Egan Drive / Glacier Avenue
- Egan Drive / Whittier Street
- Egan Drive / Willoughby Avenue
- Egan Drive / Main Street

¹ Site Plan provided by Jensen Yorba Wall, March 31, 2023.

² Title 49 CBJ Code Chapter 49.40.305

https://library.municode.com/ak/juneau/codes/code_of_ordinances?nodeId=PTIICOOR_TIT49LAUS_CH49.40PATR

Additionally, since the study area is adjacent to Alaska Department of Transportation and Public Facilities (DOT&PF) transportation facilities, State of Alaska TIA requirements are also applicable. The State of Alaska requires a TIA “If a development is projected to generate more than 100 vehicle trips on a highway during any hour of the day.”³ DOT&PF provides a standard TIA checklist which outlines the minimum requirements of a TIA compliant with DOT&PF standards.

Other governing documents include the Highway Capacity Manual (HCM) 2010 (5th Edition) consistent with the DOT&PF Highway Preconstruction Manual (HPCM) and HCM 2000 (4th Edition) for all non-NEMA phased intersections and the driveway Standards Section of the Highway Preconstruction Manual (HPCM).^{4 5,6,7}

Mobility Standards

The Alaska Administrative Code (AAC)⁸ establishes a vehicle and pedestrian minimum LOS for the development’s construction and design years. These code and policy documents state the following minimum acceptable LOS for the construction and design years:

- LOS C is acceptable if the existing conditions are LOS C or better
- LOS D is acceptable if the existing conditions are LOS D
- If the existing conditions are poorer than LOS D, a lower LOS is acceptable if the operation does not deteriorate more than ten percent (10%) in terms of delay time or any other appropriate measure of effectiveness compared with the background condition (i.e., without the development).

CBJ code establishes minimum standards for acceptable LOS, stating “The minimum acceptable LOS for a roadway segment or intersection within the area affected by the development, on the projected opening date of the development, or full build out of the development, is LOS D”.⁹

Driveway Standards

The HPCM states “Where two driveways are provided for one frontage less than 1,000 feet long, the clear distance between driveways should not be less than the minimum distances presented in 1190.5., Control Dimensions. Corner clearances at intersections should also be in accordance with the distance shown in 1190.5.” Upon review of the HPCM, the driveway clear zone and corner clearance for this site are not defined given the posted speed on Whittier Street is 20 miles per hour.

³ Section 17 Alaska Administrative Code 10.060, <https://www.akleg.gov/basic/aac.asp#17.10.050>.

⁴ Section 1190 Driveway Standards, Highway Preconstruction Manual, DOT&PF, 2017.

⁵ Alaska Highway Preconstruction Manual, p. 1100-10, Alaska DOT&PF, March 31, 2019.

⁶ HCM 2010: Highway Capacity Manual, 5th Edition, Transportation Research Board, 2015.

⁷ HCM 2010 Calculations are not compatible with non-NEMA phasing plans. Therefore, an older calculation model which does allow non-NEMA phasing is required.

⁸ Section 17 Alaska Administrative Code 10.070, <https://www.akleg.gov/basis/aac.asp#17.10.070>

⁹ Title 49 CBJ Code Chapter 49.40.310

Site Specific Requirements

The CBJ and major cruise lines (Carnival Corp, Disney Cruise Line, NCL, and Royal Caribbean) operating in Juneau ports entered into a Memorandum of Agreement (MOA), in March of 2023, to limit the number of large cruise ships (carrying more than 950 passengers) permitted to dock per day. This MOA limits cruise lines to a maximum of five ships per day calling at or intending to call at Juneau for the 2024 cruise season.¹⁰ This MOA was in response to the 2023 season when there were 34 days with more than five ships at port.¹¹

The MOA was further amended in May 2024 to limit port calls to a maximum of 16,000 passengers Sunday through Friday and 12,000 passengers on Saturday from among all cruise ships calling at or intending to call at Juneau.¹²

Cruise ships without the ability to dock at Port, currently lighter passengers to Marine Park or hot berth with another ship at an existing dock (such as currently occurs at the AJ dock).¹³ Per the 2023 MOA the proposed development will not be increasing the total number of cruise ships allowed to dock in Juneau for a single day. Effective in 2026, the proposed development will not be allowed to increase the number of passengers allowed for a single day. Instead, the proposed development will re-assign a portion of the existing cruise ships and/or passengers from their current destinations to the proposed development site. As a result, no net new additional trips associated with a cruise ship will be added to the transportation system.

Cruise ship passengers and associated traffic are assessed for the proposed development to confirm site specific requirements of the new location, and any added traffic associated with the multi-use development portion of the site.

¹⁰ Memorandum of Agreement between the City & Borough of Juneau and Cruise Lines Docking in Juneau, CBJ, March 16, 2023.

¹¹ Cruise Line Agencies of Alaska Cruise Ship Calendar for 2023, CBJ, February 27, 2023. <https://claalaska.com/wp-content/uploads/2023/02/JNU-Juneau-2023.pdf>

¹² Memorandum of Agreement between the City & Borough of Juneau and Cruise Lines Docking in Juneau, CBJ, May 24, 2024.

¹³Lighter: Use of flat-bottomed barge to transfer goods and passengers from moored ships.

EXISTING CONDITIONS

Existing intersection and study area conditions were assessed prior to inclusion of development traffic to establish a baseline. The following sections describe the existing transportation network, crash history, traffic volumes, and intersection operations.

Transportation Network Description

This section details the existing vehicle and active transportation networks. This summary includes roadway functional classification, posted speed, pedestrian facilities, bicycle facilities, and transit facilities in the study area.

Roadway Network

Table 1 includes the functional classification, posted speed limit, and cross section for the roadways in the study area.

Table 1: Study Area Roadway Characteristics

Roadway	Functional Classification	Posted Speed (mph)	Number of Lanes
Egan Drive	Principal Arterial	35 mph / 20 mph ¹	4 / 3 ²
W 10 th Street	Major Collector	20 mph	2
Whittier Street	Major Collector	20 mph	2
Willoughby Street	Major Collector	20 mph	2
Main Street	Major Collector	20 mph	2
Glacier Avenue	Minor Collector	20 mph	2

¹ Speed is 35 mph from 10th Avenue to Whittier Street and 20 mph from Whittier Street to Main Street.

² Number of lanes reduces from 4 to 3 at Willoughby Avenue.

Intersection Control

The proposed development is located on Lot C1; the majority of development traffic is expected to travel via Egan Drive. The Egan Drive / 10th Street, Egan Drive / Whittier Street, and Egan Drive / Main Street intersections are signalized with protected permitted left-turn phasing. Additionally, the Egan Drive / Main Street intersection operates with pedestrian-only phases for the east and west legs. Figure 1 shows the study area and intersections of interest with their respective traffic control devices.



Figure 1: Study Area Intersections Map

Pedestrian Network

Table 2 includes the sidewalk dimensions in feet, sidewalk surface type, obstructions, and presence of an Americans with Disabilities Act (ADA) accessible curb ramp by roadway in the study area.

Table 2: Study Area Pedestrian Facility Characteristics

Roadway	Sidewalk Dimensions (ft)	Sidewalk Surface	Obstructions	ADA Curb Ramp
Egan Drive	6 (East Side) ¹	Concrete	Lighting and Signal Poles ²	Yes
	6 (West Side) ³	Concrete	Lighting and Signal Poles ⁴	Yes
W 10 th Street	6 (North Side) ⁵	Concrete	None	Yes
	6 (South Side) ⁶	Concrete	None	Yes
Whittier Street	6 (North Side) ⁷	Concrete	None	Yes
	6 (South Side)	Concrete	None	Yes
Willoughby Street	5 (North Side)	Concrete	None	Yes
	6 (South Side)	Concrete	None	Yes
Main Street	6 (North Side)	Concrete Pavers	None	Yes
	7 (South Side)	Concrete Pavers	Lighting Pole ⁸	Yes
Glacier Avenue	6 (North and South Side)	Concrete	None	Yes

¹ RRFB located at the Egan Drive / Glacier Avenue intersection.

² Poles located in front of the Downtown Transit Center.

³ Narrows to 3-foot section at the Egan Drive / Main Street intersection in front of The Hangar on the Wharf.

⁴ Poles located in front of The Hangar on the Wharf.

⁵ Sidewalk does not continue across the Douglas Island bridge.

⁶ Use of the sidewalk is shared between pedestrians and bicyclists.

⁷ Gaps in sidewalk in front of the Alaska State Museum and adjacent to the proposed development.

⁸ Lighting pole in the center of the sidewalk at Main Street / 2nd Street intersection.

Bicycle Network

Table 3 provides a summary of the bicycle facilities available on the study area roadways including the bike lane width, location, and indicates shared use with vehicles.

Table 3: Study Area Bicycle Facility Characteristics

Roadway	Bicycle Lane Width (ft)	Side of Roadway	Shared Use
Egan Drive	5	East	Yes ¹
	5	West	Yes ¹
W 10 th Street	—	North	—
	5	South	Yes ²
Whittier Street	—	—	—
Willoughby Street	—	—	—
Main Street	—	—	—
Glacier Avenue	—	—	—

¹ Dedicated bicycle lane between 10th Street and Main Street. South of Main Street traffic is notified of shared roadway use through “sharrow” pavement striping.

² Dedicated bicycle lane between Egan Drive and F Street. Use of the sidewalk is shared between pedestrians and bicyclists across the Juneau Douglas bridge.

Transit Network

Capital Transit operates a circular transit service in Juneau with six routes, some of which travel the frontage of the proposed development. The Capital Transit routes include the Douglas, Counterclockwise Mendenhall Loop, Clockwise Mendenhall Loop, Egan Express, Lemon Creek Commuter, and Downtown/Valley Express routes. The nearest stop location to the development is on Whittier Street in front of the State Library. Transit vehicles circulate each route once every hour between 6:00 AM. and 11:00 PM all days of the week.¹⁴

Crash History

Both Tables 4 and 5 include crash history for the study intersections for the seven most recent years of available crash data (January 1, 2015, to December 31, 2021).¹⁵ The Egan Drive and Whittier Street intersection experienced six crashes over this seven-year period.

Table 4 focuses on the crash rate at each study intersection, compared to the statewide crash rate, based on intersection traffic control and number of approaches. The statewide intersection averages are based on data from 2008 to 2012 and represent the most recent data available.¹⁶ All of the intersections identified have crash rates that are below the statewide average for intersection types. Table 5 includes the breakdown of crashes by crash type at the intersections.

¹⁴ Juneau Capital Transit, Accessed September 2024. <https://juneaucapitaltransit.org/>

¹⁵ Crash data provided by DOT&PF, April 3, 2023.

¹⁶ Alaska Highway Safety Improvement Program Handbook, Alaska DOT&PF, January 2017.

Table 4: Total Crashes and Crash Rate by Intersection (2015 – 2021)

Intersection	Crash Rate ¹		Crash Severity			Total Crashes
	Intersection	Statewide Average	Fatal	Injury	PDO ²	
Egan Drive & Willoughby Street	0	—	0	0	0	0
Willoughby Avenue & Whittier Street	0	0.52	0	0	0	0
Egan Drive & Whittier Street	0.15	1.57	0	2	4	6
Egan Drive & Glacier Avenue	0.06	—	0	1	1	2
Egan Drive & W 10 th Street	0.63	1.57	0	7	21	28

¹ Crash rate for intersections = Crashes per million entering vehicles (MEV).

² PDO = Property Damage Only

Table 5: Crash Type by Intersection (2015 – 2021)

Intersection	Angle	Single Vehicle Run-off	Rear End	Sideswipe	Bicycle	Motorcycle
Egan Drive & Willoughby Avenue	0	0	0	0	0	0
Willoughby Avenue & Whittier Street	0	0	0	0	0	0
Egan Drive & Whittier Street	2	0	4	0	0	0
Egan Drive & Glacier Avenue	0	0	1	0	1	0
Egan Drive & W 10 th Street	12	1	12	2	0	1

Existing Traffic Volumes

The study team collected existing traffic volumes on Tuesday, March 21, 2023. The data was collected at the six existing study intersections using 16-hour turning movement counts (6:00 AM to 10:00 PM). In addition, traffic volume and speed count over 24-hours were collected on Egan Drive. The AM peak hour of traffic was identified as 7:30 – 8:30 AM, while the PM peak hour was identified as 4:00 – 5:00 PM.

A seasonal adjustment factor (SAF) of 1.12 was applied to the traffic count data to represent typical traffic conditions. The SAF was calculated using data from the nearby DOT&PF permanent count station located on Egan Drive, northwest of Glacier Highway Access Road.¹⁷ Figure 2 shows the seasonally adjusted existing AM and PM peak hour turning movement volumes at the study intersections.

¹⁷ Data from DOT&PF CCS 16070806 (Juneau – Egan @ 3 mile), <https://alaskatraficdata.drakewell.com>

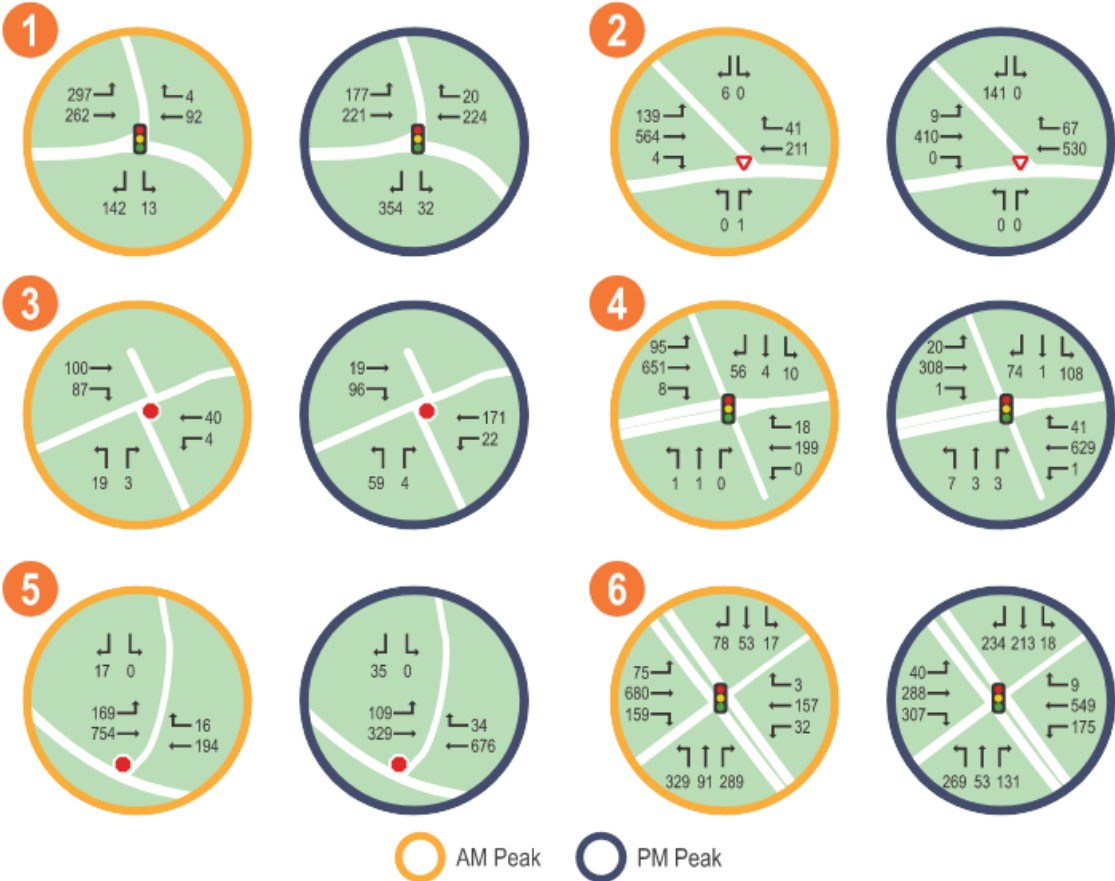


Figure 2: Existing AM and PM Peak Hour Traffic Volumes

Existing (2023) Operations Analysis

Operations of the existing transportation system were evaluated using HCM 5th Edition and 2000 delay methodologies. Intersection operations analysis includes evaluation of both vehicle and pedestrian traffic. All signalized intersections were modeled using timing reports provided by DOT&PF.¹⁸

Intersection Operations

Table 6 includes the existing delay and LOS at the study intersections (reported using the 5th Edition and 2000 HCM delay methodology). Overall intersection delay is reported at the signalized intersections, while delay is only reported for the critical movements (or highest delay approach) at stop-controlled intersections. No intersections within the study area currently operate worse than LOS C with existing signal timing and turn movement configuration during the AM or PM peak hour.

Table 6: Existing Conditions Traffic Operations

Intersection	AM Peak Hour ^{2,3}			PM Peak Hour ^{2,3}		
	LOS	Delay	Critical Movement	LOS	Delay	Critical Movement
Egan Drive & Main Street ¹	A	8	—	B	11	—
Egan Drive & Whittier Street	A	7	—	B	19	—
Egan Drive & 10 th Street	C	27	—	C	31	—
Egan Drive & Willoughby Avenue	A/B	14	NB	A/A	9	EBL
Willoughby Avenue & Whittier Street	A/B	10	NB	A/B	12	NB
Egan Drive & Glacier Avenue	A/A	9	SBR	B/B	12	SBR

¹ Non-NEMA intersection phasing.

² LOS for unsignalized intersection shown as worst LOS for the Major/Minor approaches.

³ Critical Movement listed for unsignalized intersections.

Pedestrian Operations

Table 7 includes the LOS at the study area intersections for pedestrians (reported using the 5th Edition HCM delay methodology). All study area intersections perform at LOS D or better during the AM and PM peak hour.

Table 7: Existing Conditions Pedestrian Operations

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	Approach Delay ¹	X-Walk Score ²	LOS	Approach Delay ¹	X-Walk Score ²
Egan Drive & Main Street	B	—	2.6	B	—	2.5
Egan Drive & Whittier Street	B	—	2.6	B	—	2.6
Egan Drive & 10 th Street	C	—	2.9	C	—	2.9
Egan Drive & Willoughby Avenue	C	15.0	—	C	16.2	—
Willoughby Avenue & Whittier Street	A	2.2	—	B	3.9	—
Egan Drive & Glacier Avenue	C	10.0	—	C	14.8	—

¹ Approach delay for two-way stop-controlled intersections only.

² X-Walk Score = Crosswalk LOS Score for signalized intersections only.

¹⁸ Email providing signal timing files, DOT&PF, June 27, 2023.

IMPACT ANALYSIS

In conformance with AAC and CBJ code, trips associated with the proposed development were developed. These trips were then added to the transportation system where vehicle and pedestrian operations analysis was performed. A summary of the trip generation and trip distribution processes as well as operational analysis results are provided in the following sections.

Proposed Development

The proposed development would include an added cruise ship dock (no increase in ship traffic) and an approximately 83,000 square foot mixed-use structure. The following sections outline the trips added to the transportation network associated with the mixed-use structure, designated as net new trips.

Trip Generation

Trip generation rates for the proposed development are based on the data published in the *Institute of Transportation Engineers (ITE) Trip Generation Manual (Trip Generation Manual), 11th Edition*¹⁹ and traffic counts collected by DOWL in August 2024.²⁰ Due to the proximity of the proposed development to Juneau's downtown the August 2024 pedestrian counts are used in this analysis for the identification of mode choice and volume of cruise ship passengers anticipated during the peak hours relative to the size of cruise ship. Of the passengers and crew that disembarked the observed cruise ship, approximately 65 percent traveled off-site via bus, van, or taxi; 30 percent traveled off-site as pedestrians, and the remaining 5 percent remained on the cruise ship. Table 8 models this mode split across a larger ship that would be typical at Aak'w Landing.

Table 8: Cruise Ship Passenger Travel Mode (5,700 Passenger Ship)

Cruise Ship Travel Mode	Daily			AM Peak Hour ²			PM Peak Hour ²		
	Split	Passengers	Person Trips ¹	Enter	Exit	Total	Enter	Exit	Total
Pedestrians	30%	1,710	3,420	8	431	439	741	211	952
Bus/Coach Trips ³	60%	3,420	6,840	0	540	540	301	0	301
Van Trips ⁴	4%	228	456	0	35	35	19	0	19
Taxi Trips ⁵	1%	57	114	0	11	11	6	0	6
Stay Onboard	5%	285	-	-	-	-	-	-	-
Totals	100%	5,700	10,830	8	1,017	1,025	1,067	211	1,278

¹ Number of trips assumes each assigned passenger disembarks and embarks once.

² Peak hour person trips shown in table.

³ Average Bus/Coach occupancy measured 25 occupants per bus/coach.

⁴ No Van Trips noted in observation data. Occupancy estimated at 4 occupants per vehicle, and 4% of total passenger mix.

⁵ Average Taxi occupancy measured 2 occupants per vehicle.

¹⁹ *ITE Trip Generation Manual, 11th Edition*, Institute of Transportation Engineers, September 2021.

²⁰ Celebrity Summit counted by DOWL at Marine Park, August 20, 2024. Multiple camera angles captured total passengers disembarking, passengers walking to off-site locations, and passengers going to motorized tours/taxis.

Table 9 includes the size and type of unit expected at the development by land use code and development phase.²¹

Table 9: Development Land Use Types and Units

Development Phase	Description	ITE Code	Quantity	Units
1	Cruise Ship	-	1	Berth
1	Shopping Plaza (40-150k)	821	32	KSF
1	High-Turnover (Sit-Down Restaurant)	932	11	KSF
2	Shopping Plaza (40-150k)	821	20	KSF
3	Museum	580	20	KSF

This information was used to calculate the expected number of vehicle trips during a typical weekday and the entering and exiting vehicle trips during the AM and PM peak hours as indicated in Table 10. Due to the high number of passengers associated with cruise ships in addition to the planned volume of scheduled vehicle trips, all development trips were converted to their person trip equivalent before conducting an internal trip capture analysis using the *Trip Generation Handbook*.²² For land uses similar to the development site the *Trip Generation Handbook* provides vehicle occupancy rates ranging from 1.13 to 1.69. Given the multiple land uses associated with the development site a conservative vehicle occupancy rate of 1.2 was used to estimate the number of people per vehicle trip. The total number of person trips reflects the number of people this site could expect in a given time period under typical conditions. As shown in Table 10, the site generates a large amount of activity before considering the effect of cruise ship passengers on the site. This affect is further detailed in Table 11 to separate cruise ship vehicle traffic from other site traffic (employees, Juneau residents, etc.).

Table 10: Development Vehicle Trips

Development Phase	Description	Qty.	Daily		AM Peak Hour				PM Peak Hour			
			Rate	Total	Rate	Enter	Exit	Total	Rate	Enter	Exit	Total
1	Cruise Ship ¹	1	—	—	—	—	—	—	—	—	—	—
1	Shopping Plaza (40-150k)	32	94.49	3,024	3.53	57	56	113	9.03	139	150	289
1	High-Turnover (Sit-Down Restaurant)	11	107.2	1,179	9.57	53	52	105	9.05	61	39	100
2	Shopping Plaza (40-150k)	20	94.49	1,890	3.53	36	35	71	9.03	87	94	181
3	Museum	20	0.66	13	0.35	4	3	7	0.18	2	2	4
Total Development Generated Trips			6,106		296				574			
Total Development Person Trips			7,327		355				689			

¹ Trips associated with the cruise ship are detailed in Table 8 and included in Table 11.

²¹ Estimated from concept drawing provided by Jensen Yorba Wall, Concept Drawings Email January 6, 2023.

²² *ITE Trip Generation Handbook*, 3rd Edition, Institute of Transportation Engineers, September 2017.

With guidance from the National Cooperative Highway Research Program (NCHRP) Report 684²³ and the August 2024 cruise ship counts, the total number of site vehicles can be estimated. Table 11 includes the estimated total site vehicle and pedestrian trips entering and exiting the proposed development site during the AM and PM peak hours. The development is expected to add 293 AM peak hour and 341 PM peak hour trips to the roadway network.

Table 11: Peak Hour Development Trips

Vehicle Trip Inventory	AM Peak Hour			PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
Development Person Trips – All Phases	180	175	355	347	342	689
Cruise Ship Person Trips	8	1,017	1,025	1,067	211	1,278
Less Internal Trip Capture	-46	-46	-92	-163	-163	-326
Person Trips Subtotal - All Phases	142	1,146	1,288	1,251	390	1,641
Less Cruise Ship Passengers (Pedestrians)	-8	-431	-439	-741	-211	-952
Less Cruise Ship Passengers (Motorized)	0	-586	-586	-326	0	-326
Non-Cruise Ship Person Trips	134	129	263	184	179	363
Non-Cruise Ship Vehicle Trips	112	108	220	153	150	303
Cruise Ship Related Motorized Trips ¹	37	37	74	19	19	38
Total External Vehicle Trips	149	145	294	172	169	341

¹ Motorized trips are the sum of all Bus/Coach, Van, and Taxi trips from Table 8 at listed occupancy rates.

Trip Distribution

Trip distribution involves estimating where traffic is coming from and going to when accessing the development. The trip distribution was established based on PM peak hour volumes on Egan Drive and adjusted based on Client provided data and concurrence with DOT&PF staff.²⁴ All modes of development traffic were distributed using the following assumptions for trip origins and destinations:

- 60% to/from Egan Drive to the West
- 30% to/from Egan Drive to the East
- 10% to/from Whittier Street to the North

Future Volumes

Volumes for the future year (2035) were developed based on applying a background growth rate to the existing condition volumes and adding development related traffic as described in the following sections.

Background Growth Rate

The background growth rate is estimated based on data from five permanent count stations in Juneau and the recently approved Juneau Douglas North Crossing PEL Study. Growth rates are shown in Table 12. Juneau, on average, experience a -0.3% per year growth rate on traffic

²³ NCHRP Report 684: *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*, Transportation Research Board, 2011.

²⁴ Email from DOT&PF staff on May 5, 2023.

volumes since 2013. Similarly low growth rates are currently projected in the DOT&PF adopted Juneau Douglas North Crossing PEL Study at 0.25% per year positive growth. For the purpose of this study, a conservative 0.25% per year compounding growth rate is assumed for future traffic volumes.²⁵

Table 12. Historic and Adopted Growth Rates

Source	AADT		Annual Growth Rate
	2013	2023	
CCS 16070805 – Auke Bay TMAS 000805	2,107	2,380	1.2%
CCS 16170896 – Sunny Pt TMAS 000896	25254	23200	-0.8%
CCS 16070806 – Egan @ 3-mile TMAS 000806	21225	19300	-0.9%
CCS 16070918 – S Douglas Highway TMAS 000918	7967	6980	-1.3%
CCS 16070809 – Mendenhall River Bridge TMAS 160708	4508 ¹	4780	0.5%
Juneau 10-yr Historic Average	-	-	-0.3%
Juneau Douglas North Crossing PEL	-	-	0.25%
Final Aak’w Landing TIA Future Growth Rate	-	-	0.25%

¹ Mendenhall River Bridge CSS not operational in 2013. Data from 2012 used instead.

Future Build Volumes

Figure 3 shows how trips generated by the proposed development are distributed throughout the transportation system at study area intersections by movement during the AM and PM peak hour.

As noted in the site-specific requirements, for compliance with the 2023 MOA the proposed development will not be increasing the total number of cruise ships allowed to dock in Juneau for a single day. Effective in 2026, the proposed development will not be allowed to increase the number of passengers allowed for a single day. Instead, the proposed development will re-assign existing cruise ships and/or passengers from their current destinations to the proposed development site.

Cruise ship motorized trips shown in Table 11 are shown in Figure 3 as diverted link trips instead. This allows these trips to show the additional impact to turning movement at the Egan Drive / Whittier Street intersection and reduced impact to intersections east of Whittier Street.

In addition, the peak hour factor typically increases as volumes increase to reflect congestion creating a homogeneous peak hour. For the purpose of this analysis existing peak hour factors have been carried forward to future years without adjustment. This creates a conservative future year operations projection.

²⁵ A future growth rate of 0.25% was identified in the Juneau Douglas North Crossing PEL Study. Volume to Capacity of the Existing Juneau-Douglas Bridge, DOWL, April 2022.

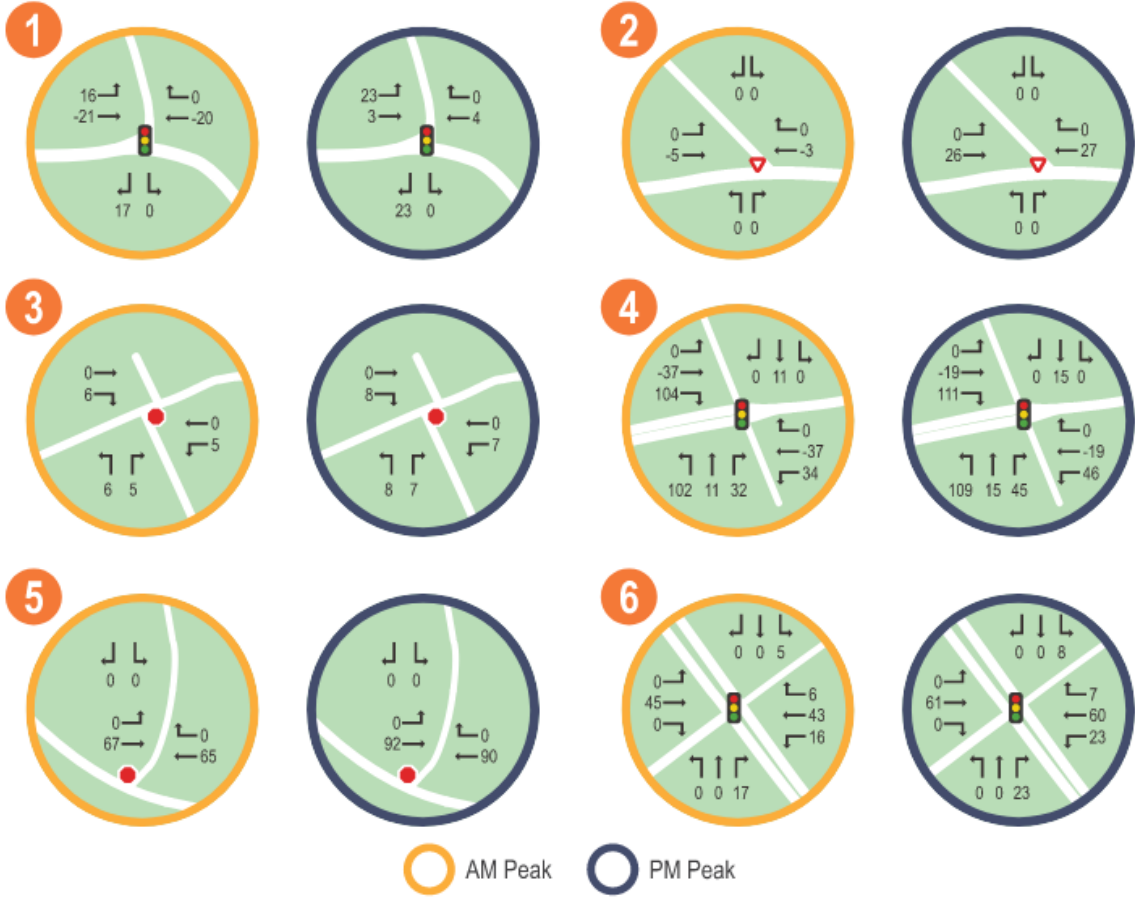


Figure 3: Added Development Traffic Volumes

Future Traffic Operating Conditions

Operations of the study area transportation system were evaluated for the future year 2035 under no-build and build conditions for the AM and PM peak hours. Operational analysis of pedestrian and vehicle traffic uses HCM 5th Edition and 2000 delay methodologies as applicable.

Future Year (2035) No-Build Operations Analysis

Intersection Operations

Figure 4 shows the expected AM and PM peak hour turning movement counts in 2035 without the proposed Aak'w Landing development. Table 13 includes the expected delay and LOS at study intersections in 2035 without the Aak'w Landing development. In this scenario, with existing signal timing and turn movement configuration during the AM and PM peak hour, the Egan Drive / 10th Street intersection continues to degrade and operates at LOS D. All study area intersections operate within an acceptable level for mobility standards.

Table 13: Future Year (2035) No-Build Traffic Operations

Intersection	AM Peak Hour ^{2,3}			PM Peak Hour ^{2,3}		
	LOS	Delay	Critical Movement	LOS	Delay	Critical Movement
Egan Drive & Main Street ¹	A	8	—	B	11	—
Egan Drive & Whittier Street	A	7	—	C	23	—
Egan Drive & W 10 th Street	C	29	—	C	29	—
Egan Drive & Willoughby Avenue	A/B	14	NB	A/A	9	EBL
Willoughby Avenue & Whittier Street	A/B	11	NB	A/B	12	NB
Egan Drive & Glacier Avenue	A/A	9	SBR	B/B	12	SBR

¹ Non-NEMA intersection phasing.

² LOS for unsignalized intersection shown as worst LOS for the Major/Minor approaches.

³ Critical Movement listed for unsignalized intersections.

Pedestrian Operations

Table 14 includes the expected delay and LOS at study area intersections for pedestrians (reported using the 5th Edition HCM delay methodology) in 2035, without the Aak'w Landing development. As shown in the table, all study area intersections operate at LOS C or better.

Table 14: Future Year (2035) No-Build Pedestrian Operations

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	Approach Delay ¹	X-Walk Score ²	LOS	Approach Delay ¹	X-Walk Score ²
Egan Drive & Main Street	C	—	2.8	B	—	2.6
Egan Drive & Whittier Street	C	—	2.8	B	—	2.6
Egan Drive & 10 th Street	C	—	2.8	C	—	3.0
Egan Drive & Willoughby Avenue	C	15.8	—	C	13.2	—
Willoughby Avenue & Whittier Street	A	2.3	—	A	3.3	—
Egan Drive & Glacier Avenue	C	16.4	—	C	12.4	—

¹ Approach delay for two-way stop-controlled intersections only.

² X-Walk Score = Crosswalk LOS Score for signalized intersections only.

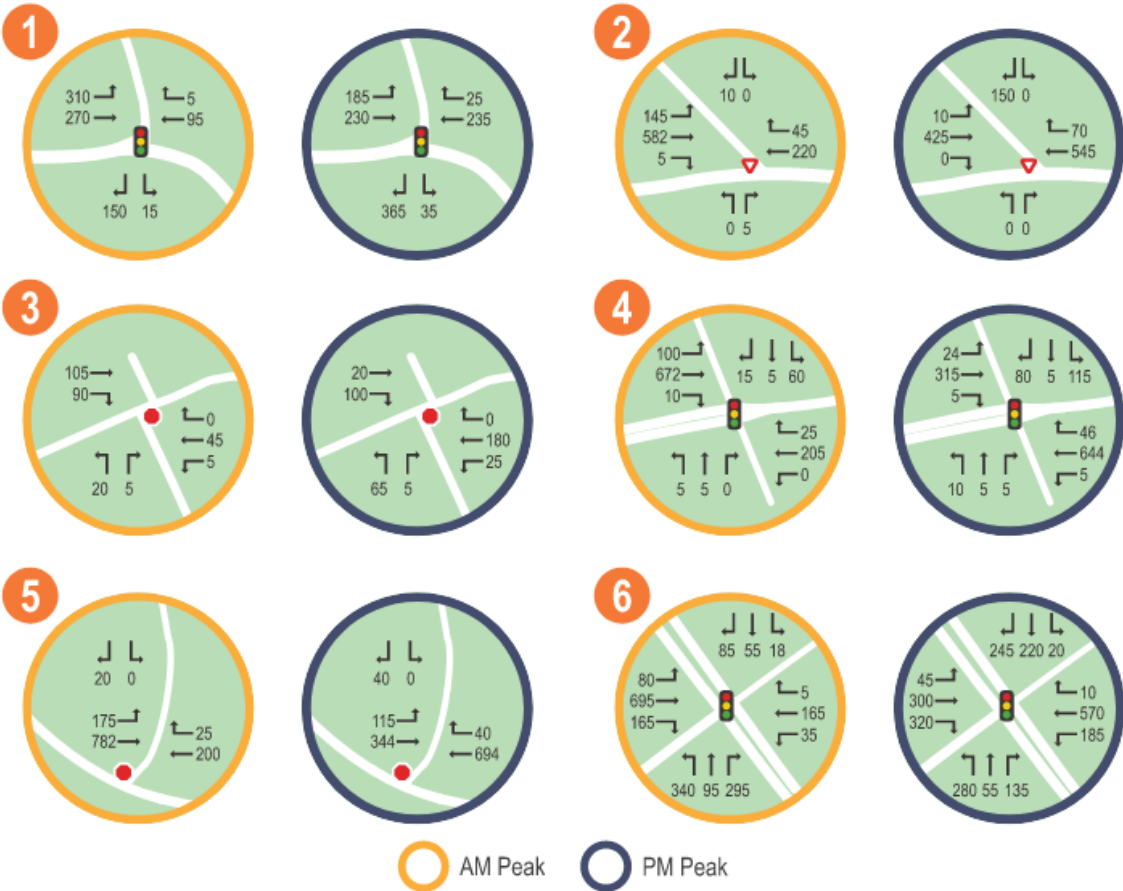


Figure 4: Future 2035 No-Build Traffic Volumes

Queue Length Analysis

Table 15 includes the expected 95th percentile queue at each study intersection approach. As shown, no queue exceeds available storage during the AM and PM peak hours.

Table 15: Future Year (2035) No-Build Queue Lengths

Intersection	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Egan Drive & Main Street												
Available Storage				-		140	150	-			-	
AM 95 th Percentile				40		0	120	60			60	
PM 95 th Percentile				40		60	80	80			100	
Egan Drive & Whittier Street												
Available Storage		-	100		-	100	200	-		100	-	
AM 95 th Percentile		20	0		60	40	80	180		0	60	
PM 95 th Percentile		20	20		100	60	40	120		20	160	
Egan Drive & W 10th Street												
Available Storage	350	-		200	-	230	330	-	150		-	150
AM 95 th Percentile	60	80		140	280	0	180	220	140		100	60
PM 95 th Percentile	200	200		60	160	0	160	160	0		200	140
Egan Drive & Willoughby Avenue¹												
Available Storage		-				-	570					
AM 95 th Percentile		20				0	100					
PM 95 th Percentile		0				0	20					
Willoughby Avenue & Whittier Street¹												
Available Storage		-						-			-	
AM 95 th Percentile		40						0			20	
PM 95 th Percentile		60						0			20	
Egan Drive & Glacier Avenue¹												
Available Storage						400	200				-	
AM 95 th Percentile						0	60				0	
PM 95 th Percentile						0	80				0	

¹ Queues provided for stopped movements only.

Future Year (2035) Operations with Development**Intersection Operations**

Figure 5 shows the total traffic expected at study intersections in 2035, with the Aak'w Landing development. Table 16 includes the expected traffic operations at each study intersection under existing signal timing and turn movement configuration conditions. These conditions result in LOS D at the Egan Drive / 10th Street and Egan Drive / Whittier Street intersections during the AM and PM peak hours. All other intersections operate within an acceptable level for mobility standards.

Table 16: 2035 Intersection Operations with Development

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Critical Movement	LOS	Delay	Critical Movement
Egan Drive & Main Street	A	9	—	B	11	—
Egan Drive & Whittier Street	D	40	—	D	37	—
Egan Drive & W 10 th Street	D	40	—	C	33	—
Egan Drive & Willoughby Avenue	A/B	14	NB	A/A	9	EBL
Willoughby Avenue & Whittier Street	A/B	11	NB	A/B	14	NB
Egan Drive & Glacier Avenue	A/B	11	SBR	B/C	15	SBR

¹ Non-NEMA intersection phasing.

² LOS for unsignalized intersection shown as worst LOS for the Major/Minor approaches.

³ Critical Movement listed for unsignalized intersections.

As required by AAC, mitigation is needed at the Egan Drive / W 10th Street and Egan Drive / Whittier Street intersections due to the identification of unacceptable levels of operation (LOS D or worse).

Pedestrian Operations

Table 17 includes the existing delay and LOS at study area intersections for pedestrians (reported using the 5th Edition HCM delay methodology). Pedestrian delay for the intersection leg expected to experience the most delay is reported. All study area intersections are expected to operate within an acceptable level for mobility standards during the AM or PM peak hours.

Table 17: 2035 Pedestrian Operations with Development

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	Approach Delay ¹	X-Walk Score ²	LOS	Approach Delay ¹	X-Walk Score ²
Egan Drive & Main Street	C	—	2.8	B	—	2.2
Egan Drive & Whittier Street	C	—	2.8	C	—	2.8
Egan Drive & 10 th Street	C	—	3.0	C	—	3.0
Egan Drive & Willoughby Avenue	C	15.6	—	C	14.4	—
Willoughby Avenue & Whittier Street	A	2.3	—	A	3.3	—
Egan Drive & Glacier Avenue	C	17.0	—	C	20.0	—

¹ Approach delay for two-way stop-controlled intersections only.

² X-Walk Score = Crosswalk LOS Score for signalized intersections only.



Figure 5: Future 2035 Build Volumes

Queue Length Analysis

Table 18 includes the expected 95th percentile queue at each study intersection approach. As shown, the only queue which exceeds available storage during the AM and PM peak hours is the eastbound left from Egan Drive onto Main Street at the Egan Drive / Main Street intersection.

Table 18: Future Year (2035) with Development Queue Lengths

Intersection	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Egan Drive & Main Street												
Available Storage				-		140	150	-			-	
AM 95 th Percentile				40		0	160	100			60	
PM 95 th Percentile				80		120	100	100			120	
Egan Drive & Whittier Street												
Available Storage		-	100		-	100	200	-		100	-	
AM 95 th Percentile		120	40		80	40	100	280		40	80	
PM 95 th Percentile		100	40		100	60	40	200		60	180	
Egan Drive & W 10th Street												
Available Storage	350	-		200	-	230	330	-	150		-	150
AM 95 th Percentile	80	100		160	280	40	220	220	160		100	60
PM 95 th Percentile	200	200		60	160	0	140	160	0		200	140
Egan Drive & Willoughby Avenue¹												
Available Storage		-				-	570					
AM 95 th Percentile		20				0	120					
PM 95 th Percentile		0				0	40					
Willoughby Avenue & Whittier Street¹												
Available Storage		-						-			-	
AM 95 th Percentile		60						20			20	
PM 95 th Percentile		60						20			40	
Egan Drive & Glacier Avenue¹												
Available Storage						400	200					
AM 95 th Percentile						0	60					
PM 95 th Percentile						0	80					

¹ Queues provided for stopped movements only.

Site Circulation Review

In addition to typical engineering analysis considerations, the current site plan (Figure 7) was evaluated for qualitative site circulation considerations that should be taken under advisement prior to finalizing the site plan. The site currently plans two access points on Whittier Street, one in the approximate location of the existing driveway used to access the parcel and a second to the south. No additional access to Egan Drive is proposed with the current site plan.

Site circulation concerns include the following:

- Eastbound turning radius from Egan Drive: Final site plans should confirm design vehicles (busses/coaches) can safely turn from Egan Drive to Whittier Street. The turning radius of the southwest intersection corner should be modified as needed.
- Parking and loading of all commercial vehicles is currently anticipated within the site's parking garage levels. This will allow for minimized conflict between development related traffic and other network traffic.



Figure 6: Proposed Site Plan

Mitigation Summary

The following section details any measures which would aid in meeting operational deficiencies (LOS D or worse) due to added traffic associated with the proposed development.

Egan Drive / W 10th Street

Based on the needs identified in the Future Year (2035) with Development, the following improvements to the Egan Drive / W 10th Street intersection are recommended:

- AM Peak Hour Signal Timing Updates: Update AM Peak Hour traffic signal timing plan after construction of the Aak'w Landing development based on actual field counts. This traffic analysis indicates a re-optimized green split could resolve the LOS concern. An example green split is provided in the Appendix with results shown in Table 19.
- Crosswalk Removal: consider removal of the northern intersection crosswalk which runs concurrent with the W 10th Street signal phase. This would remove the possibility of an extended green split to serve a low-utilization crosswalk. Connectivity of the pedestrian network is maintained through the south crosswalk.

Egan Drive / Whittier Street

Based on the needs identified in the Future Year (2035) with Development, the following improvements to the Egan Drive / Whittier Street intersection are recommended:

- Traffic Signal Modification: A modification to the existing traffic signal is recommended to remove the northbound/southbound split phase timing. This modification would require concurrent updates to the intersection striping and laneage to remove the northbound and southbound through-lefts in favor of through-rights. The full extent of the traffic signal modification should be coordinated during design with DOT&PF.
- Peak Hour Signal Timing Updates: Update AM and PM Peak Hour traffic signal timing plans after construction of the Aak'w Landing development based on actual field counts. This traffic analysis indicates a re-optimized green split in conjunction with the traffic signal modification will resolve the LOS concern. An example green split is provided in the Appendix with results shown in Table 19.

Table 19 includes the expected traffic operations at each study intersection under the mitigated signal timing and turn movement configurations. As shown, all intersections operate within an acceptable LOS after implementation of the above recommendations.

Table 19: 2035 Intersection Operations with Development (with Mitigation)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Critical Movement	LOS	Delay	Critical Movement
Egan Drive & Main Street	A	9	—	B	11	—
Egan Drive & Whittier Street	B	16	—	B	17	—
Egan Drive & W 10 th Street	C	31	—	C	33	—
Egan Drive & Willoughby Avenue	A/B	14	NB	A/A	9	EBL
Willoughby Avenue & Whittier Street	A/B	11	NB	A/B	14	NB
Egan Drive & Glacier Avenue	A/B	13	SBR	B/C	16	SBR

Table 20 includes the expected 95th percentile queue at each study intersection approach. As shown, the only queues which exceed available storage during the AM and PM peak hours are the eastbound right from W 10th Street onto Egan Drive at the Egan Drive / W 10th Street intersection and the southbound left from Whittier Street onto Egan Drive at the Egan Drive / Whittier Street intersection.

Table 20: Future Year (2035) with Mitigation Queue Lengths

Intersection	NB			SB			EB			WB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Egan Drive & Main Street												
Available Storage				-		140	150	-			-	
AM 95 th Percentile				120		40	140	100			80	
PM 95 th Percentile				60		100	100	100			120	
Egan Drive & Whittier Street												
Available Storage	200	-		90	-		200	-		100	-	
AM 95 th Percentile	120	60		80	40		80	500		60	60	
PM 95 th Percentile	100	60		100	80		40	200		60	160	
Egan Drive & W 10 th Street												
Available Storage	350	-		200	-	230	330	-	150		-	150
AM 95 th Percentile	80	100		140	300	60	220	220	160		100	60
PM 95 th Percentile	220	220		60	180	0	140	160	20		240	140
Egan Drive & Willoughby Avenue ¹												
Available Storage		-				-	570					
AM 95 th Percentile		20				0	240					
PM 95 th Percentile		0				0	20					
Willoughby Avenue & Whittier Street ¹												
Available Storage		-						-			-	
AM 95 th Percentile		40						20			20	
PM 95 th Percentile		60						20			40	
Egan Drive & Glacier Avenue ¹												
Available Storage						400	200					
AM 95 th Percentile						0	100					
PM 95 th Percentile						0	100					

¹ Queues provided for stopped movements only.

CONCLUSIONS

The proposed Aak'w Landing development is a three-phase multi-use development opening in Downtown Juneau during the year 2025. The three phases of the development will consist of underground bus and passenger vehicle parking garage with approximately 52,000 square feet of retail space, 11,000 square feet of high-turnover restaurant space, and 20,000 square feet of cultural museum space. Access to the development will be provided via a new driveway at the base level of the parking garage on Whittier Street. The proposed development as currently planned will add approximately 83,000 square feet of multi-use space off Egan Drive, generating 323 trips in the AM and 483 trips in the PM peak hours.

The following is a list site circulation recommendations and mitigations required by the development to meet AAC level of service requirements.

- **Site Circulation**
 - Eastbound turning radius from Egan Drive: Final site plans should confirm design vehicles (busses/coaches) can safely turn from Egan Drive to Whittier Street. The turning radius of the southwest intersection corner should be modified as needed.
 - Parking and loading of all commercial vehicles is currently anticipated within the site's parking garage levels. This will allow for minimized conflict between development related traffic and other network traffic.
- **Egan Drive / W 10th Street**
 - AM Peak Hour Signal Timing Updates: Update AM Peak Hour traffic signal timing plan after construction of the Aak'w Landing development based on actual field counts. This traffic analysis indicates a re-optimized green split could resolve the LOS concern.
 - Crosswalk Removal: consider removal of the northern intersection crosswalk which runs concurrent with the W 10th Street signal phase. This would remove the possibility of an extended green split to serve a low-utilization crosswalk. Connectivity of the pedestrian network is maintained through the south crosswalk.
- **Egan Drive / Whittier Street**
 - Traffic Signal Modification: A modification to the existing traffic signal is recommended to remove the northbound/southbound split phase timing. This modification would require concurrent updates to the intersection striping and laneage to remove the northbound and southbound through-lefts in favor of through-rights. The full extent of the traffic signal modification should be coordinated during design with DOT&PF.
 - Peak Hour Signal Timing Updates: Update AM and PM Peak Hour traffic signal timing plans after construction of the Aak'w Landing development based on actual field counts. This traffic analysis indicates a re-optimized green split in conjunction with the traffic signal modification will resolve the LOS concern. An example green split is provided in the Appendix with results shown in Table 19.