

Agenda

Planning Commission - Regular Meeting City and Borough of Juneau

June 14, 2022
Virtual & In Person
7:00 PM

This meeting will be held in person and by remote participation. For remote participation: join the Webinar by visiting <https://juneau.zoom.us/j/83744860461> and use the Webinar ID: 837 4486 0461, or join by telephone, calling: 1-253-215-8782 and enter the Webinar ID. You may also participate in person in City Hall Assembly Chambers, 155 S. Seward Street, Juneau, AK.

I. LAND ACKNOWLEDGEMENT

II. ROLL CALL

III. REQUEST FOR AGENDA CHANGES AND APPROVAL OF AGENDA

IV. APPROVAL OF MINUTES

V. BRIEF REVIEW OF THE RULES FOR PUBLIC PARTICIPATION

VI. PUBLIC PARTICIPATION ON NON-AGENDA ITEMS

VII. ITEMS FOR RECONSIDERATION

VIII. CONSENT AGENDA

- A. USE2022 0006: A Conditional Use Permit for a 45,000 square foot Medical Office Building - REMOVED FROM CONSENT AGENDA AND APPROVED ON THE REGULAR AGENDA
- B. AME2022 0004: Amendment to Seawalk - REMOVED FROM CONSENT AGENDA AND APPROVED AS AMENDED ON REGULAR AGENDA

IX. UNFINISHED BUSINESS

- A. APL2021 0006: Juneau Cooperative Christian Ministry, dba The Glory Hall v. CDD - CONTINUED TO THE NEXT REGULAR MEETING OR A SPECIAL MEETING

X. REGULAR AGENDA

XI. OTHER BUSINESS

XII. STAFF REPORTS

XIII. COMMITTEE REPORTS

XIV.LIAISON REPORT

**XV. CONTINUATION OF PUBLIC PARTICIPATION ON NON-AGENDA
ITEMS**

XVIPLANNING COMMISSION COMMENTS AND QUESTIONS

XVIEXECUTIVE SESSION

XVISUPPLEMENTAL MATERIALS

A. Additional Materials for June 14, 2022 Planning Commission

XIXADJOURNMENT

**PLANNING COMMISSION AGENDA
THE CITY AND BOROUGH OF JUNEAU, ALASKA**

USE2022 0006: A Conditional Use Permit for a 45,000 square foot Medical Office Building - REMOVED
FROM CONSENTA AGENDA AND APPROVED ON THE REGULAR AGENDA

AGENDA ITEM:

Case No.: USE2022 0006

Applicant: Southeast Alaska Regional Health Consortium

Location: Vintage Boulevard

Proposal: A Conditional Use Permit for a 45,000 square foot Medical Office Building

RECOMMENDATION:

Staff recommends the Planning Commission adopt the Director's analysis and findings and APPROVE WITH CONDITIONS the requested Conditional Use Permit. The permit would allow the development of a 45,000 square foot medical office building.

The approval is subject to the following conditions:

1. Install perimeter sidewalks on site to connect to the existing sidewalk network.
2. Install covered or enclosed bike racks.

ATTACHMENTS:

Description	Upload Date	Type
☐ Staff Report for USE2022 0006 - Part 1	6/7/2022	Staff Report
☐ Staff Report for USE2022 0006 - Part 2	6/7/2022	Staff Report
☐ Staff Report for USE2022 0006 - Part 3	6/7/2022	Staff Report
☐ Staff Report for USE2022 0006 - Part 4	6/7/2022	Staff Report
☐ Staff Report for USE2022 0006 - Part 5	6/7/2022	Staff Report
☐ Notice of Decision for USE2022 0006	6/27/2022	Notice of Decision



**PLANNING COMMISSION STAFF REPORT
CONDITIONAL USE PERMIT USE2022 0006
HEARING DATE: JUNE 14, 2022**

(907) 586-0715

CDD_Admin@juneau.org

www.juneau.org/community-development

155 S. Seward Street • Juneau, AK 99801

DATE: June 7, 2022
TO: Michael LeVine, Chair, Planning Commission
BY: Joseph Meyers, Planner 
THROUGH: Jill Maclean, Director, AICP

PROPOSAL: Applicant requests a Conditional Use Permit for a 45,000 square foot medical office building.

STAFF RECOMMENDATION: Approval with conditions.

KEY CONSIDERATIONS FOR REVIEW:

- Conforms with standards for Light Commercial (LC) zoning.
- Structure height is 42 feet (maximum height in the LC zoning district is 45 feet).
- A Traffic Impact Analysis (TIA) has been completed for the project, no improvements are required.

GENERAL INFORMATION	
Property Owner	Southeast Alaska Regional Health Consortium
Applicant	Southeast Alaska Regional Health Consortium
Property Address	Vintage Boulevard
Legal Description	Vintage IV Tract A2
Parcel Number	5B1601430017
Zoning	LC
Land Use Designation	Traditional Town Center (TTC)
Lot Size	127,336 square feet (2.92 acres)
Water/Sewer	CBJ Provided
Access	Vintage Boulevard
Existing Land Use	Vacant
Associated Applications	SUB2008-00028

ALTERNATIVE ACTIONS:

1. **Amend:** Require additional conditions, or delete or modify the recommended conditions.
2. **Deny:** Deny the permit and adopt new findings for items 1-6 below that support the denial.
3. **Continue:** To a future meeting date if determined that additional information or analysis is needed to make a decision, or if additional testimony is warranted.

ASSEMBLY ACTION REQUIRED:

Assembly action is not required for this permit.

STANDARD OF REVIEW:

- Quasi-judicial decision
- Requires five (5) affirmative votes for approval.
- Code Provisions:
 - o CBJ 49.15.330
 - o CBJ 49.40
 - o CBJ 49.80

The Commission shall hear and decide the case per CBJ 49.15.330(a) Conditional Use Permit. A conditional use is a use that may or may not be appropriate in a particular zoning district according to the character, intensity, or size of that or surrounding uses. The conditional use permit procedure is intended to afford the commission the flexibility necessary to make determinations appropriate to individual sites. The commission may attach to the permit those conditions listed in subsection (g) of this section as well as any further conditions necessary to mitigate external adverse impacts. If the commission determines that these impacts cannot be satisfactorily overcome, the permit shall be denied.

SITE FEATURES AND ZONING



SURROUNDING ZONING AND LAND USES	
North (Right-of-Way)	Vintage Boulevard
South (LC)	Retail Commercial
East (LC)	Miscellaneous Commercial
West (Right-of-Way)	Vintage Boulevard

SITE FEATURES	
Anadromous	None
Flood Zone	Zone X
Hazard	No known
Hillside	None
Wetlands	Unknown
Parking District	None
Historic District	None
Overlay Districts	N/A

BACKGROUND INFORMATION

Project Description – The applicant is seeking to develop a 45,000 square foot, three-story, medical office building in the LC zoning district.

Background – This lot was originally part of the larger Vintage Subdivision in 1984. Several iterations were platted between 1984 and 2009. In 2009, this lot was platted into its current form. There are covenants associated with the land going back to 1997 and through its several iterations. The CBJ does not enforce private covenants, and any discussion of the covenants in this report is informational in nature.

The table below summarizes relevant history for the lot and proposed development.

Item	Summary
Plat 84-117	Created Block B, Vintage Subdivision
Plat 98-45	Created Tracts A and B, Vintage IV Subdivision
Plat 04-45	Created 30-foot access and maintenance easement
Plat 09-14	Platted Tract A2, Vintage IV Subdivision into current form

Table 1 – Associated Cases and Relevant History

ZONING REQUIREMENTS

Standard		Requirement	Proposed	Code Reference
Lot	Size	2,000 square feet	127,336 square feet	CBJ 49.25.400
	Width	20 feet	475 feet	CBJ 49.25.400
Setbacks	Front	25 feet	57 feet	CBJ 49.25.400

Standard		Requirement	Proposed	Code Reference
	Rear	10 feet	47 feet	CBJ 49.25.400
	Side	10 feet	130 feet	CBJ 49.25.400
	Street Side	17 feet	25 feet	CBJ 49.25.400
Lot Coverage Maximum		None	None	CBJ 49.25.400
Vegetative Cover Minimum		15%	16.5%	CBJ 49.50.300
Height	Permissible	45 feet	42 feet	CBJ 49.25.400
	Accessory	35 feet	N/A	CBJ 49.25.400
Maximum Dwelling Units (30/Acre)		N/A	N/A	CBJ 49.25.500
Use		Table of Permissible Uses 7.150	Major development allowed with Conditional Use Permit	CBJ 49.25.300

Table 2 – Zoning Requirements

SITE PLAN

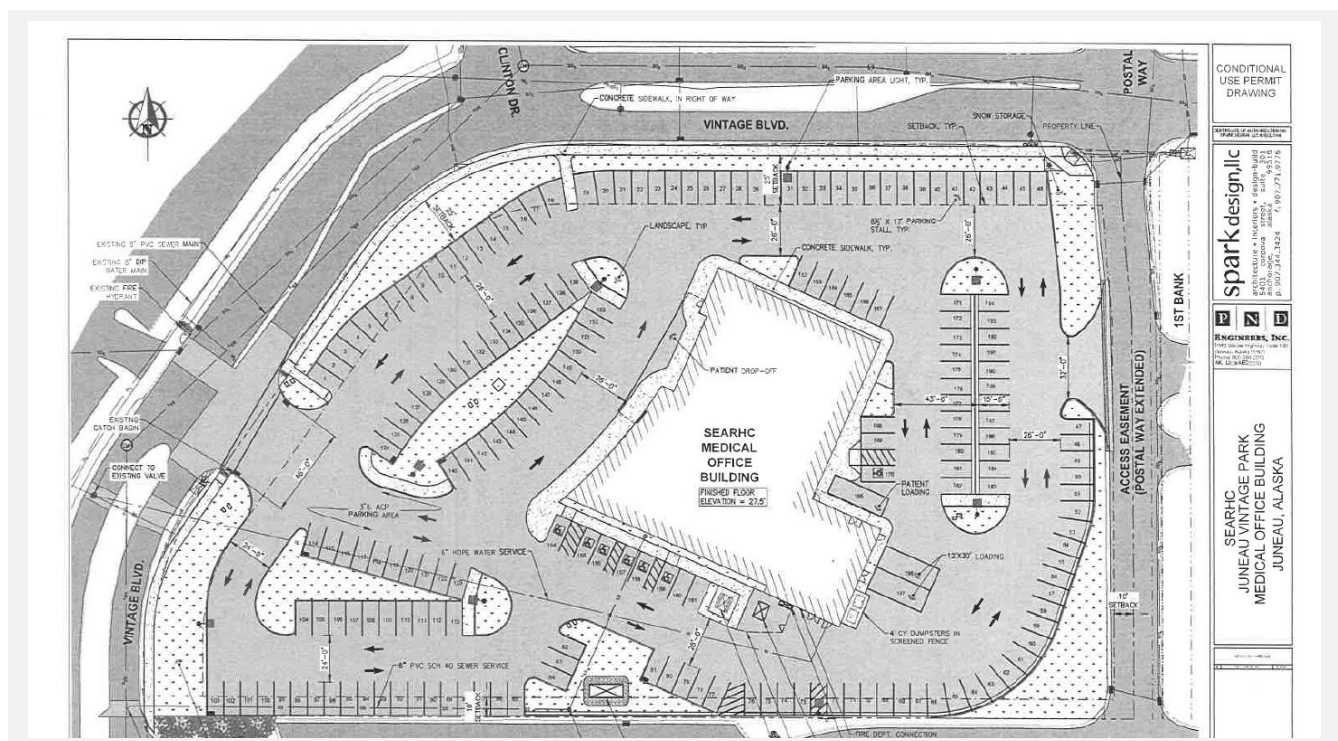


Figure 1 – Site Plan

ANALYSIS

Project Site – The proposed development is on Vintage Boulevard just north of Safeway, south of the Mendenhall Valley Post Office, and within 500 feet of Trillium Landing, Riverview Senior Community, and retail. The project site is within walking distance to transit, including the new Valley Transit Center (see Table 6, below).

- a. **Setbacks** – The interior angle of Vintage Boulevard is 127°; by definition, streets with an angle of less than 135° are lot corners (CBJ 49.80.120). The yard setbacks are as follows:
- Front yard setback – Western portion of Vintage Boulevard.
 - Street side yard setback – Eastern portion of Vintage Boulevard.
 - Side yard setback – Southern lot line.
 - Rear yard setback – Eastern lot line.

Project Design –

- a. **Parking** – The project is an outpatient medical office building with services including “primary and urgent care, pediatrics, lab, imaging, behavioral health, optometry, and dental care” on three floors. The site includes 197 parking spaces, seven of which are Americans with Disabilities Act (ADA) spaces, and three loading spaces.
- b. **Structure Height** – The structure is 42 feet in height and conforms to CBJ 49.25.420(a). 45 feet is the maximum height permitted in the LC zoning district.

Traffic – According to CBJ 49.40.300(1), a TIA is required if Average Daily Trips (ADT) exceed 500. Staff conducted an analysis of trips using the Institute of Transportation Trip Generation Manual 9th Edition and found that ADTs are around 1,315, meeting the threshold to require a TIA.

Use	Total Square Feet	Trips Generated	Total Trips
Medical/Dental Office	31,513	31.45/1,000 square feet	991
Office	8,482	36.13/1,000 square feet	307
Storage	4,880	3.56/1,000 square feet	17
Total ADTs:			1,315

Table 3 – Trip Generation Table

A preliminary analysis by the applicant projected 1,677 ADTs from the site and determined that a TIA was warranted. Due to this projection, the applicant had a TIA created. In this TIA, five intersections were studied, with four of these intersections not meeting the threshold to require mitigation (CBJ 49.40.330). The intersections and details are listed in Table 4.

Intersection	Intersection type	Requires mitigation under CBJ 49.40.330	TIA Report page #
Egan Drive and Vintage Boulevard/Glacier Highway	Two-way stop controlled	Threshold not met.	41

Intersection	Intersection type	Requires mitigation under CBJ 49.40.330	TIA Report page #
Riverside Drive and Vintage Boulevard/Mendenhall Mall Road	Signalized	Threshold not met.	44
Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive	Signalized	Threshold not met.	47
*Mendenhall Loop Road and Egan Drive	Signalized	May require mitigation.	51
Riverside Drive and Egan Drive	Signalized	Threshold not met.	55

Table 4 – Mitigation Waiver Status

There was a staff oversight when the TIA was identified. The Mendenhall Loop Road and Egan Drive intersection should not have been included in the study area (Attachment F**).*

As stated above, a staff oversight incorrectly stated that the TIA should include the Mendenhall Loop Road and Egan Drive intersection. Upon consultation with the Alaska Department of Transportation and CBJ Engineering, it was determined that this intersection should not have been included as part of the TIA. Further, the applicant should not be held responsible for improvements at this intersection. This is in concurrence with the attached memo from PND Engineers, Inc. (**Attachment F**). A mitigation waiver is not being sought under CBJ 49.40.340.

Vehicle Parking & Circulation – Primary access to the lot will be through Vintage Boulevard. A 30-foot access and maintenance easement exists on the eastern edge of the lot and will serve as a secondary access point. Per CBJ 49.40, 191 off-street parking spaces are required, including seven (7) ADA accessible spaces. The applicant will be providing 197 parking spaces, seven (7) of which are ADA spaces, six (6) of which are van accessible, and three (3) loading areas.

Use	Total Square Feet	Spaces Required	Total Spaces
Medical/Dental Office	31,513	1 per 200 square feet	158
Office	8,482	1 per 300 square feet	28
Storage	4,880	1 per 1,000 square feet	5
Total Parking Requirement:			191
Off-Street Loading Spaces Required:			2
ADA Accessible Spaces Required:			6

Table 5 – Parking Requirements

Condition: None

Non-motorized Transportation – The site does not currently have a complete sidewalk network. The applicant intends to complete the network by providing sidewalks around the site edges, and strategically locating pedestrian paths through the parking area. Completing the perimeter sidewalk is a recommendation from the TIA submitted with this application packet. Additionally, bicycle parking is planned for the site with four (4) bike racks being included in the landscaping plan, each with the capacity to secure two (2) bicycles. This will help to create a more complete, non-motorized transportation network in the area.

Condition: Install perimeter sidewalks on site to connect to the existing sidewalk network.

Condition: Install four (4) covered or enclosed bike racks.

Proximity to Transit – There are five (5) transit stops within one half mile of the project area. Combined, all of the existing stops are served by 10 transit lines that reach large areas within the Urban Service Boundary. This information is subject to change due to the imminent development of the Valley Transit Center.

Stop ID #	Stop name	Distance from project site	Estimated walk time	Lines served
477	Mendenhall Mall Road at Mendenhall Mall	≈ 1,302 feet	5 minutes	4, 5, 6, 9, 10, 15
431	Mendenhall Mall Road and Riverside Drive	≈ 1,347 feet	6 minutes	3, 5, 8
572	Riverside Drive and James Boulevard	≈ 1,713 feet	7 minutes	16
452	Glacier Highway and Industrial Boulevard	≈ 2,414 feet	9 minutes	4, 5, 15
455	Glacier Highway and Wildmeadow Lane	≈ 2,476 feet	10 minutes	3, 5, 8, 14, 16
N/A	Future Valley Transfer Station	≈ 1,300 feet	5 minutes	Unknown

Table 6 – Bus Service Accessibility

Noise – The facility will contain outpatient medical services. Adjacent uses include a financial institution, a grocery store and gas station, condominiums, senior housing, a memory care facility, professional offices, a large post office distribution center, and other commercial services. The noise anticipated for this facility is not expected to be out of character with the existing neighborhood.

Condition: None.

Lighting – A lighting plan and light fixture data sheet was submitted with the application. According to CBJ 49.40.230(d), parking areas shall be suitably lit. All proposed fixtures shall be full cut-off design. Based on the submitted materials, staff believes that this requirement has been met.

Condition: None.

Vegetative Cover & Landscaping – Based on the submitted landscape plan, planting schedule, and narrative, the project area will have 16.5% vegetative cover. This exceeds the minimum requirement of 15% in the LC zoning district (CBJ 49.50.200).

Condition: None.

Habitat – There are no known habitats regulated by the Land Use Code on this site.

Condition: None.

Historic District – The project is not within the historic district.

Condition: None.

Hazard Zones – The proposed facility is within the Zone X flood zone. The Zone X designation indicates that there is between a 0.2% and 1% chance of a flood with an average depth of less than one (1) foot or with drainage areas of less than one (1) square mile. While the Zone X flood zone is not generally considered high risk, staff recommends that the applicant take into account potential future flood risks.

Condition: None.

Drainage and Snow Storage – Two snow storage areas will be created on site (see Figure 2, below). The first will be located on the northeast edge of the site and one on the southwest edge of the site. These areas will be covered with turf to strategically channel melt water to prevent pooling. Stormwater drainage on site will use a combination of bioswales and culverts to slow the flow of water, allowing biological filtration and water retention before outfall into the storm sewer system. This will mitigate some of the environmental impacts to the site, and the impacts to CBJ wastewater facilities of the proposed project.

Condition: None.

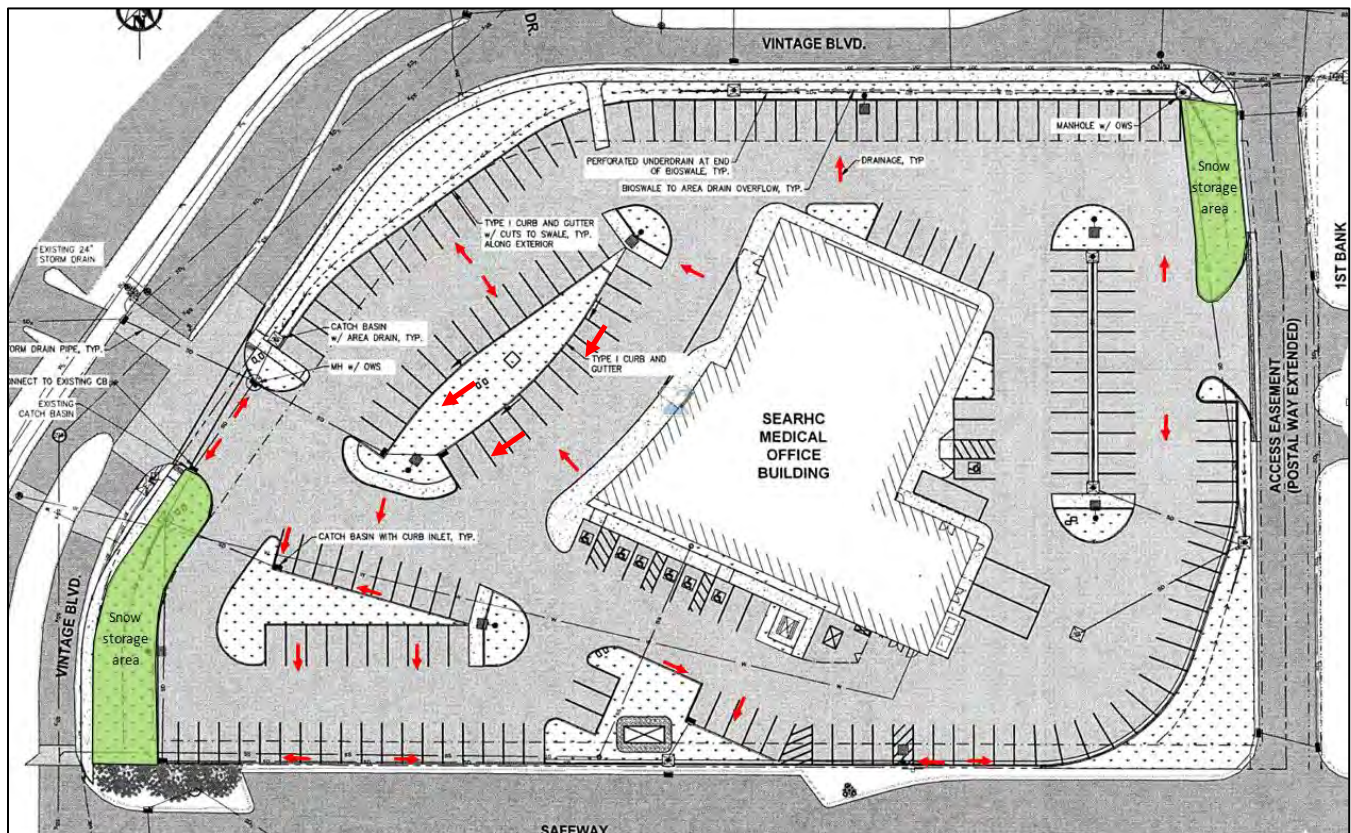


Figure 2 – Snow Storage and Drainage Plan

Public Health, Safety, and Welfare – The proposed development promotes the public health, safety, and welfare by providing a central location for medical services including: primary and urgent care, pediatrics, labs, imaging, behavioral health, optometry, and dental care. This is located within one of Juneau’s most populated areas and within 1,000 feet of the new Valley Transit Center.

All of the intersections within the study area for this project were analyzed in the TIA. Traffic safety performance at all intersections was rated as “good”. This rating was established by comparison of actual crash rates to statewide averages, and the Upper Control Limit (UCL). Crash rates for the intersections are well below the statewide averages and the UCL. According to the latest available data at the time of writing of this report, no crashes between 2013 and 2017 resulted in fatalities at any of the studied intersections (TIA, page 27).

Condition: None.

Property Value or Neighborhood Harmony – The project site and surrounding areas are zoned Light Commercial; surrounding uses include Safeway, the Mendenhall Valley post office, Trillium Landing, Riverview Senior Community, and other retail uses. The proposed medical offices are in harmony with the existing neighborhood. No information has been submitted that suggests the proposal will reduce property values in the surrounding area.

Condition: None.

AGENCY REVIEW

CDD conducted an agency review comment period between April 18, 2022, and May 2, 2022. Agency review comments can be found in **Attachment C**.

Agency	Summary
Assessor	No comments received.
Buildings	The Building Department has no issues with this project at this time.
Capital Transit	No comments received.
Capital City Fire & Rescue	No issues identified.
General Engineering	“Have gone through the PND Engineering, Inc. City & Borough of Juneau Conditional Use Permit Application for SEARHC Juneau Vintage Park Medical Office Building, Juneau Alaska, dated April 1, 2022 – and find it meets CBJ’s General Engineering requirements.”
Streets	No comments received.

Table 7 – Agency Review Comments

PUBLIC COMMENTS

CDD conducted a public comment period between May 9, 2022, and May 23, 2022. Public notice was mailed to property owners within 500 feet of the proposed development. A public notice sign was also posted on site two weeks prior to the scheduled hearing. No public comments were submitted at time of writing this staff report.

CONFORMITY WITH ADOPTED PLANS

The proposed development is in general conformity with the 2009 Juneau Non-motorized Transportation Plan, the 2013 Comprehensive Plan, and the 2015 Juneau Economic Development Plan.

PLAN	Chapter	Page No.	Item	Summary
2015 Juneau Economic Development Plan	5	58	Objective 2	Increase the breadth and depth of skilled local healthcare workers and services for seniors.
	5	58	Objective 4	Improve senior access to community-based services and activities.
2009 Juneau Non-motorized Transportation Plan	8	70	Policy 5B	In new subdivisions and neighborhoods, install facilities for non-motorized transportation, such as paths connecting cul-de-sacs or linking to broader trail systems, at the same time as the rest of the transportation network. This will ensure home purchasers know about and can use the non-motorized network, preventing later ‘surprises.’ Note that not all neighborhood trails that connect cul-de-sacs and serve other non-motorized purposes that have been approved by the Planning Commission are captured on the maps.
	8	73	Policy 10	Provide more bicycle racks. “Secure, covered, well-designed bike racks help encourage residents to take more trips by bicycle and are required for the development of a complete non-motorized network.”
2013 Comprehensive Plan	11	157	Map 11.8 – TTC	Complies with the TTC designation of the 213 Comprehensive Plan.
	5	44	Policy 5.1	To develop and sustain a diverse economy, providing opportunities for employment for all residents.
	5	47	Policy 5.4	To encourage and support regional economic development in other cities and locations in Southeast Alaska to create a local environment of services and offerings attractive to commerce originating from outside the CBJ, and to actively participate in development and implementation of regional sustainable development goals.
	10	140	10.13	To provide for and encourage mixed use development that integrates residential, retail, and office use in downtown areas, shopping centers, along transit corridors, and in other suitable areas.
	13	213	13.3	To promote quality medical and social services in the CBJ to ensure the safety, health, well-being, and self-sufficiency of its residents.

Table 8 – Conformity with Adopted Plans

FINDINGS

Conditional Use Permit Criteria – Per CBJ 49.15.330(e) & (f), Review of Director's & Commission's Determinations, the Director makes the following findings on the proposed development:

1. *Is the application for the requested conditional use permit complete?*

Analysis: No further analysis needed.

Finding: Yes. The application contains the information necessary to conduct full review of the proposed operations. The application submittal by the applicant, including the appropriate fees, substantially conforms to the requirements of CBJ Chapter 49.15.

2. *Is the proposed use appropriate according to the Table of Permissible Uses?*

Analysis: The application is for a 45,000 square foot, three-story, medical facility. The use is listed at CBJ 49.25.300(7.150) for the LC zoning district.

Finding: Yes. The requested permit is appropriate according to the Table of Permissible Uses.

3. *Will the proposed development comply with the other requirements of this chapter?*

Analysis: No additional analysis required.

Finding: Yes. With the recommended conditions, the proposed development will comply with Title 49, including parking, lighting, vegetative cover, and flood development standards.

4. *Will the proposed development materially endanger the public health, safety, or welfare?*

Analysis: The proposed medical offices provide needed medical services in an accessible location. This proposed facility provides an essential community service and promotes the public health, safety, and welfare.

Finding: No. There is no information to suggest that with appropriate conditions, the requested medical facility, in an LC zoning district, will materially endanger the public health or safety.

5. *Will the proposed development substantially decrease the value of or be out of harmony with property in the neighboring area?*

Analysis: The surrounding area contains a variety of uses. The proposed development is in harmony with the existing developments in the LC zoning district.

Finding: No. There is no evidence to suggest that with appropriate conditions, the requested medical facility in an LC zoning district will substantially decrease the value or be out of harmony with the property in the neighboring area.

6. *Will the proposed development be in general conformity with the land use plan, thoroughfare plan, or other officially adopted plans?*

Analysis: No additional analysis required.

Finding: Yes. The proposed medical facility, with the recommended conditions, will be in general conformity with the 2013 Comprehensive Plan, the 2009 Juneau Non-motorized Transportation Plan, and the 2015 Economic Development Plan.

RECOMMENDATION

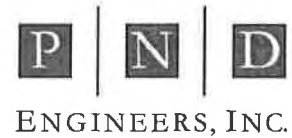
Staff recommends the Planning Commission adopt the Director's analysis and findings and APPROVE WITH CONDITIONS the requested Conditional Use Permit. The permit would allow the development of a 45,000 square foot medical office building.

The approval is subject to the following conditions:

1. Install perimeter sidewalks on site to connect to the existing sidewalk network.
2. Install covered or enclosed bike racks.

STAFF REPORT ATTACHMENTS

Item	Description
Attachment A	Application Packet
Attachment B	Abutters Notice and Public Notice Sign Photo
Attachment C	Agency Comments
Attachment D	Reviewed Information
Attachment E	PND Engineering Memo
Attachment F	PND Memo – Project Modification and Updated Plans
Attachment G	Final Traffic Impact Analysis



**City and Borough of Juneau
Conditional Use Permit Application**

**SEARHC Juneau Vintage Park
Medical Office Building,
Juneau Alaska**

April 1, 2022



PND Project #222016

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Appendix A	Geotechnical Report
Appendix B	Traffic Impact Analysis
Appendix C	PAC20220001 Report

1.0 Engineer's Letter



April 1, 2022

PND No. 222016

Irene Gallion
Senior Planner
City and Borough of Juneau Community Development Dept.
230 S. Franklin St. Juneau, AK 99801

Re: SEARHC Vintage Park Medical Office Building, Conditional Use Permit Application

Dear Ms. Gallion,

Southeast Alaska Regional Health Consortium, (SEARHC) is proposing to construct an approximately 45,000 Square Foot, 3-story medical facility on a currently undeveloped lot located on Vintage Boulevard in Juneau. On behalf of SEARHC, I am requesting your review and approval of the proposed project and subsequent submission to the CBJ Planning Commission. With this letter I am submitting the following for your review:

1. Conditional Use Permit Application Form
2. Development Permit Application Form
3. Project Narrative
4. Plans
5. Parking Area Light Fixture Data Sheets
6. Project Geotechnical Report
7. Project Traffic Impact Analysis
8. PAC20220001 Report

Plan review fees will be sent separately from SEARHC once the appropriate fee is determined by the department.

Please contact me if you have any questions or require further information.

Sincerely,
PND Engineers, Inc. | Juneau Office

A handwritten signature in black ink, appearing to read 'Tyler Bradshaw'.

Tyler Bradshaw, P.E. | Senior Engineer

cc:
Ed Zernia, SEARHC Director of Construction, Facilities Admin
Deanna Wlad, AIA, Architect, Spark Design

Attachment A - Application Packet

9360 Glacier Highway, Suite 100 • Juneau, Alaska 99801 • phone: 907.586.2093 • fax: 907.586.2099

2.0 Application Forms

Attachment A - Application Packet



DEVELOPMENT PERMIT APPLICATION

NOTE: Development Permit Application forms must accompany all other Community Development Department land use applications.

To be completed by Applicant	PROPERTY LOCATION		
	Physical Address Vintage Boulevard, Juneau		
	Legal Description(s) (Subdivision, Survey, Block, Tract, Lot) City and Borough of Juneau, State of Alaska, Juneau Recording District, Tract A2 Vintage IV Subdivision according to Plat 2009-14, located within Section 25, T. 40 S., R. 65 E., Copper River Meridian.		
	Parcel Number(s) 5B1601430017		
	☐ This property located in the downtown historic district ☒ This property located in a mapped hazard area, if so, which Flood Zone <u>X</u>		
	LANDOWNER/ LESSEE		
	Property Owner SEARHC	Contact Person Ed Zernia	Phone Number(s) 907.364.4441
	Mailing Address 3100 Channel Drive Suite 300, Juneau, Alaska 99801		907.364.4441
	E-mail Address ezernia@searhc.org		
	LANDOWNER/ LESSEE CONSENT Required for Planning Permits, not needed on Building/ Engineering Permits		
I am (we are) the owner(s) or lessee(s) of the property subject to this application and I (we) consent as follows: A. This application for a land use or activity review for development on my (our) property is made with my complete understanding and permission. B. I (we) grant permission for officials and employees of the City and Borough of Juneau to inspect my property as needed for purposes of this application.			
X <u>Ed Zernia</u> Landowner/Lessee Signature		3/31/2022 Date	
X _____ Landowner/Lessee Signature		_____ Date	
NOTICE: The City and Borough of Juneau staff may need access to the subject property during regular business hours and will attempt to contact the landowner in addition to the formal consent given above. Further, members of the Planning Commission may visit the property before the scheduled public hearing date.			
APPLICANT If the same as OWNER, write "SAME"			
Applicant Same		Contact Person	
Mailing Address		Phone Number(s)	
E-mail Address			
X <u>Ed Zernia</u> Applicant's Signature		3/31/2022 Date of Application	

DEPARTMENT USE ONLY BELOW THIS LINE

This form and all documents associated with it are public record once submitted.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

Intake Initials

JLS

Case Number

69022-006

Date Received

4/6/22



ALLOWABLE/CONDITIONAL USE PERMIT APPLICATION

See reverse side for more information regarding the permitting process and the materials required for a complete application.

NOTE: Must be accompanied by a DEVELOPMENT PERMIT APPLICATION form.

To be completed by Applicant

PROJECT SUMMARY

45,000 SF 3 Story Medical Facility, Vintage Blvd, Juneau

TYPE OF ALLOWABLE OR CONDITIONAL USE PERMIT REQUESTED

- ☐ Accessory Apartment – Accessory Apartment Application (AAP)
☒ Use Listed in 49.25.300 – Table of Permissible Uses (USE)
 Table of Permissible Uses Category: 7.150 Health Care Clinic

IS THIS A MODIFICATION or EXTENSION OF AN EXISTING APPROVAL?

☐ YES – Case # _____ ☒ NO

UTILITIES PROPOSED

WATER: ☒ Public ☐ On Site

SEWER: ☒ Public ☐ On Site

SITE AND BUILDING SPECIFICS

Total Area of Lot 127,200 square feet Total Area of Existing Structure(s) 0 square feet

Total Area of Proposed Structure(s) 44,875 square feet

EXTERNAL LIGHTING

Existing to remain
Proposed

☐ No
☐ No

☐ Yes – Provide fixture information, cutoff sheets, and location of lighting fixtures
☒ Yes – Provide fixture information, cutoff sheets, and location of lighting fixtures

ALL REQUIRED DOCUMENTS ATTACHED

☒ Narrative including:

- ☒ Current use of land or building(s)
- ☒ Description of project, project site, circulation, traffic etc.
- ☒ Proposed use of land or building(s)
- ☒ How the proposed use complies with the Comprehensive Plan

If this is a modification or extension include:

- ☐ Notice of Decision and case number
- ☐ Justification for the modification or extension
- ☐ Application submitted at least 30 days before expiration date

☒ Plans including:

- ☒ Site plan
- ☒ Floor plan(s)
- ☒ Elevation view of existing and proposed buildings
- ☒ Proposed vegetative cover
- ☒ Existing and proposed parking areas and proposed traffic circulation
- ☒ Existing physical features of the site (e.g.: drainage, habitat, and hazard areas)

-----DEPARTMENT USE ONLY BELOW THIS LINE-----

ALLOWABLE/CONDITIONAL USE FEES

	Fees	Check No.	Receipt	Date
Application Fees	\$ <u>1,600.00</u>			
Admin. of Guarantee	\$ _____			
Adjustment	\$ _____			
Pub. Not. Sign Fee	\$ <u>50.00</u>			
Pub. Not. Sign Deposit	\$ <u>100.00</u>			
Total Fee	\$ <u>1,750.00</u>			

This form and all documents associated with it are public record once submitted.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

Attachment A - Application Packet

Case Number <u>65-22-006</u>	Date Received <u>4/6/22</u>
---------------------------------	--------------------------------

Allowable/Conditional Use Permit Application Instructions

Allowable Use permits are outlined in CBJ 49.15.320, Conditional Use permits are outline in CBJ 49.15.330

Pre-Application Conference: A pre-application conference is required prior to submitting an application. There is no fee for a pre-application conference. The applicant will meet with City & Borough of Juneau and Agency staff to discuss the proposed development, the permit procedure, and to determine the application fees. To schedule a pre-application conference, please contact the Permit Center at 586-0770 or via e-mail at permits@juneau.org.

Application: An application for an Allowable/Conditional Use Permit will not be accepted by the Community Development Department until it is determined to be complete. The items needed for a complete application are:

1. **Forms:** Completed Allowable/Conditional Use Permit Application and Development Permit Application forms.
2. **Fees:** Fees generally range from \$350 to \$1,600. Any development, work, or use done without a permit issued will be subject to double fees. All fees are subject to change.
3. **Project Narrative:** A detailed narrative describing the project.
4. **Plans:** All plans are to be drawn to scale and clearly show the items listed below:
 - A. Site plan, floor plan and elevation views of existing and proposed structures
 - B. Existing and proposed parking areas, including dimensions of the spaces, aisle width and driveway entrances
 - C. Proposed traffic circulation within the site including access/egress points and traffic control devices
 - D. Existing and proposed lighting (including cut sheets for each type of lighting)
 - E. Existing and proposed vegetation with location, area, height and type of plantings
 - F. Existing physical features of the site (i.e. drainage, eagle trees, hazard areas, salmon streams, wetlands, etc.)

Document Format: All materials submitted as part of an application shall be submitted in either of the following formats:

1. Electronic copies in the following formats: .doc, .txt, .xls, .bmp, .pdf, .jpg, .gif, .xlm, .rtf (other formats may be preapproved by the Community Development Department).
2. Paper copies 11" X 17" or smaller (larger paper size may be preapproved by the Community Development Department).

Application Review & Hearing Procedure: Once the application is determined to be complete, the Community Development Department will initiate the review and scheduling of the application. This process includes:

Review: As part of the review process the Community Development Department will evaluate the application for consistency with all applicable City & Borough of Juneau codes and adopted plans. Depending on unique characteristics of the permit request the application may be required to be reviewed by other municipal boards and committees. During this review period, the Community Development Department also sends all applications out for a 15-day agency review period. Review comments may require the applicant to provide additional information, clarification, or submit modifications/alterations for the proposed project.

Hearing: All Allowable/Conditional Use Permit Applications must be reviewed by the Planning Commission for vote. Once an application has been deemed complete and has been reviewed by all applicable parties the Community Development Department will schedule the requested permit for the next appropriate meeting.

Public Notice Responsibilities: Allowable/Conditional Use requests must be given proper public notice as outlined in CBJ 49.15.230:

The Community Development Department will give notice of the pending Planning Commission meeting and its agenda in the local newspaper a minimum of 10-days prior to the meeting. Furthermore, CDD will mail notices to all property owners within 500-feet of the project site.

The Applicant will post a sign on the site at least 14 days prior to the meeting. The sign shall be visible from a public right-of-way or where determined appropriate by CDD. Signs may be produced by the Community Development Department for a preparation fee of \$50, and a \$100 deposit that will be refunded in full if the sign is returned within seven days of the scheduled hearing date. If the sign is returned between eight and 14 days of the scheduled hearing \$50 may be refunded. The Applicant may make and erect their own sign. Please contact the Community Development Department for more information.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

3.0 Project Narrative

**SEARHC Juneau, Vintage Park
Medical Office Building**

**Conditional Use Permit Application, Project Narrative
April 1, 2022**

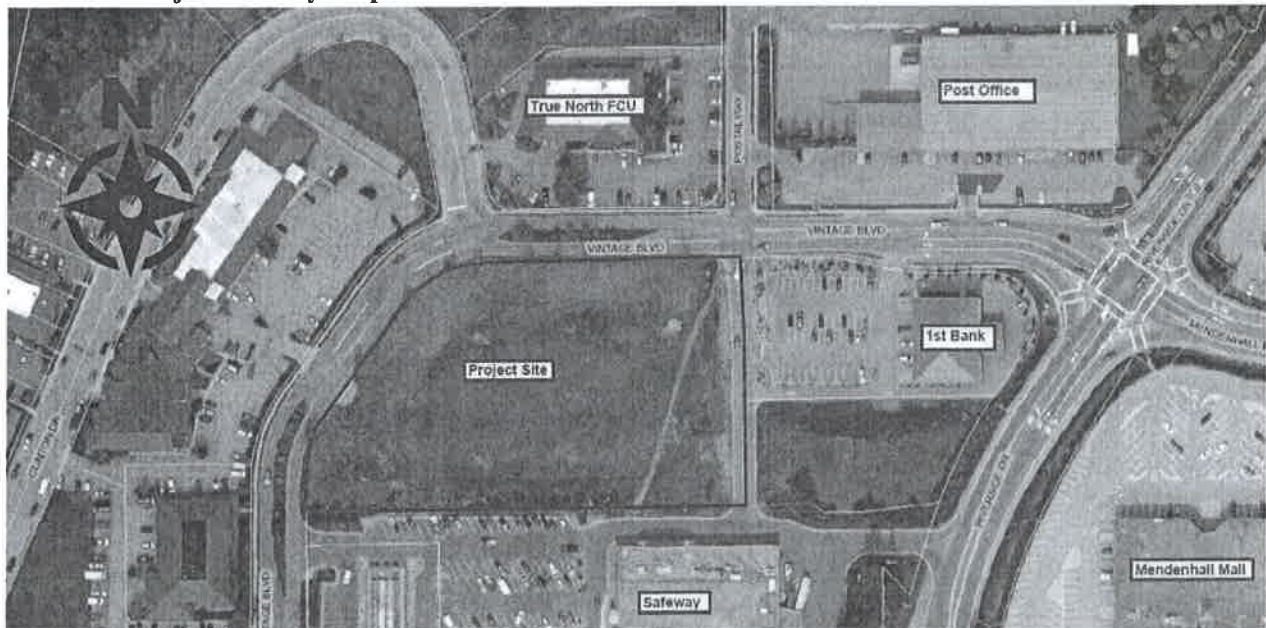
SEARHC Vintage Park Medical Office Building Project Narrative

1. General Information

- a. Owner: SEARHC, 3100 Channel Drive Suite 300, Juneau, Alaska 99801
Owner Contact: Ed Zernia, Director of Construction, Facilities-admin, 907.364.4441
- b. Application Prepared by PND Engineers, Juneau, AK
Application Contact: Tyler Bradshaw, P.E., PND Engineers, 907.586.2093
- c. Location: Vintage Boulevard, Juneau Alaska
City and Borough of Juneau, State of Alaska, Juneau Recording District. Tract A2 Vintage IV Subdivision according to Plat 2009-14, located within Section 25, t. 40 s., r. 65 e., Copper River Meridian.
CBJ Parcel No. 5B1601430017
- d. Design Team:
Architect: Spark Design, 5401 Cordova Street, Suite 301, Anchorage, AK 99518
Civil Engineer: PND Engineers, 9360 Glacier Highway Suite 100, Juneau, AK 99801
Mechanical/Electrical Engineer: AMC Engineers, 701 East Tudor Road, Suite 250 Anchorage, AK 99503
Structural Engineer: BBFM Engineers, 845 K Street, Anchorage, Alaska 99501
Landscape Architecture: Corvus Design, 119 Seward St., Unit 15, Juneau, AK, 99801
- e. Contractor: Dawson Construction, 8401 Airport Boulevard, Juneau, AK. 99801
- f. Zoning: Light Commercial
- g. Building Area: 44,875 SF, 3 Levels
- h. Building Height: 45 feet
- i. Lot Size: 2.92 Acres, 127,200 Square Feet

Height
45'

2. Project Vicinity Map



3. Current Use of Land or Building

The 2.9-acre lot is currently undeveloped with no buildings. The ground is generally flat and covered with native grasses. The eastern boundary of the lot includes a 30-foot-wide paved maintenance and access easement shared with the adjoining property. The easement straddles the property boundary to encroach on the subject lot approximately 15-feet.

4. Description of the Project, Project Site, Circulation and Traffic.

General Description

The proposed SEARHC Juneau Vintage Park Medical Office Building is a full-service outpatient medical and dental clinic intended to serve the entire Juneau community. The facility will be a hub for medical services in the Mendenhall Valley, providing a much-needed service in the highly populated area. It will be a premier medical facility, with state-of-the-art treatment services located in a highly accessible commercial center adjacent to one of Juneau's most populated residential areas. Services will include primary and urgent care, pediatrics, lab, imaging, behavioral health, optometry, and dental care. The facility will fulfill an immediate need, enhance the neighborhood and increase medical care options for Juneau residents.

The SEARHC Juneau Vintage Park Medical Office Building will be a single-phase development project and will include approximately 45,000 square feet of building space on 3 floors with a building height of 42 feet. It will primarily be a medical clinic, but will include some mixed occupancy areas. Designated uses according to CBJ 49.40.210 include Medical Clinic, Storage and Office. A floor plan indicating proposed areas and use has been included with the Plans in Section 4.

Height
42'

Site Development

All trees, small brush, surface debris, organics, and other deleterious surficial materials will be removed prior to constructing the building's foundation and parking area. Existing subgrade materials generally consist of loose to medium-dense gravelly silty sands and sandy gravelly silts with sporadic layers of soft silt, organic silt, and silt with sand. Excavation and removal of existing material will be completed approximately to frost depth in most areas, deeper for the foundation, in order to replace unsuitable existing material with imported structural fill. A geotechnical investigation and report have been completed for the project and can be found in Appendix A.

Circulation and Traffic

The facility will primarily be accessed from the west driveway via Vintage Boulevard where the front of the building is faced. The front driveway is located at an existing curb cut driveway which was installed with the original subdivision. The driveway width will be enlarged from existing to accommodate emergency and delivery vehicles to and from the site. The enlargement is necessary considering the median in the Vintage Boulevard right of way and minor modifications will be required within the right of way including reconfiguration of a storm drain pipe and removal of approximately 10 feet of the existing median adjacent to the site entering turn lane. Anticipated traffic movements for an aerial fire vehicle have been modeled. Turning movement diagrams can be found with the Plans in Section 4.

A second driveway will be provided in the rear of the building within the access easement connecting Vintage Boulevard to the Safeway parking area.

Traffic generated is anticipated to exceed 1600 average daily trips. A draft Traffic Impact Study (TIA) is included in Appendix B. Coordination with AKDOT is ongoing due to the multiple intersections. A final TIA will be submitted when available and prior to the planning commission meeting.

NO PC
date before
final DRAFT
TIA

Located in the heart of the Mendenhall Valley, with immediate access to transit and pedestrian facilities, the facility will promote transit and non-motorized access by including sidewalks located in the Vintage

**SEARHC Juneau, Vintage Park
Medical Office Building**

**Conditional Use Permit Application, Project Narrative
April 1, 2022**

Boulevard Right of Way, filling a gap in sidewalk service along the property and connecting existing sidewalks at the First Bank property to the east and the Safeway property to the south. Sidewalks and pedestrian paths are strategically located throughout the parking area to provide safe and convenient access to the building. Bicycle storage racks will be provided adjacent to the building as shown in the Landscape Plan, found in Section 4. Additional alternative transportation discussion can be found in the TIA in Appendix B.

Parking

Using the terminology as defined by CBJ 49.40.10, the facility is comprised of medical/dental office space, office space, and storage space. A floor plan describing the designated areas is provided in Section 4. Based on these uses, the facility's minimum number of parking spaces is anticipated to be as shown in the Table below.

Use	Total Area (SF)	Rate per SF	Total Spaces Required
Medical/ Dental Office	31513	1 per 200	158
Office	8482	1 per 300	29
Storage	4880	1 per 1000	5
Totals	44,875		192

The proposed project provides 197 parking spaces, including 3 loading spaces and 7 ADA spaces. Parking and circulation are shown on the site plan found in Section 4.

Utilities

The proposed project will connect to existing CBJ water and sewer mains within Vintage Boulevard. See the site plan provided in Section 4. The water service will connect to an existing service line on the west side of the site. The sewer service will make a new connection to the sewer main within Vintage Boulevard at the south west corner of the site.

Storm water throughout the site will make use of a combination of vegetated swales and culverts to retain as much storm water runoff onsite before out falling into the municipal storm drain system on the west and east sides of the site.

Electrical services will be provided by AEL&P, a new transformer will be located on site adjacent to the south side of the building. A backup generator will ensure the critical services provided by the facility remain operational during outages.

Parking area lighting will be provided by poles throughout the site. Light pole locations, can be found on the site plan in Section 4. A light distribution map is also provided. Light fixture data sheets can be found in Section 5.

Vegetative Cover

In addition to the building, site cover will include paved parking, concrete walkways and landscaped areas. Total vegetative cover for the site is approximately 21,000 square feet, in compliance with CBJ 49.50.200 which requires a minimum of 15% or 19,100 square feet for this project. A landscape plan displaying proposed vegetative cover can be found in Section 4.

Snow Storage

The site has two designated snow storage areas as can be found on the site plan. They will be covered with turf, providing vegetated snow melt runoff paths.

5. How the Proposed Use Complies with the Comprehensive Plan

The Juneau Comprehensive Plan identifies CBJ planning objectives and outlines planning criteria for varying subareas within Juneau. The SEARHC Juneau Vintage Park Medical Office Building is located in Subarea 4 and is within a Traditional Town Center (TTC) land use designation.

SEARHC Juneau Vintage Park Medical Office Building complies with the TTC designation; the proposed facility provides medical services and will be a major employer in a commercial corridor surrounded by densely populated residential neighborhoods.

Additional Comprehensive Plan policies the facility satisfies include the following.

Policy 5.1 To develop and sustain a diverse economy, providing opportunities for Employment for all residents. SEARHC, already a major local employer will provide significant skilled and general employment opportunities at the Juneau Vintage Park Medical Office Building.

Policy 5.4. To encourage and support regional economic development in other cities and locations in southeast Alaska to create a local environment of services and offerings attractive to commerce originating from outside the CBJ, and to actively participate in development and implementation of regional sustainable development goals. Providing medical services throughout Southeast Alaska SEARHC is a major regional employer and service provider. The SEARHC Juneau Vintage Park Medical Office Building will expand medical services in Juneau, and strengthen Juneau's role as a regional services hub for medical services, directly complying with 5.4 - SOP7.

Policy 10.13. To provide for and encourage mixed use development that integrates Residential, retail and office use in downtown areas, shopping centers, along Transit corridors, and in other suitable areas. Located adjacent to major shopping centers and the oncoming new CBJ Transit facility, the SEARHC Juneau Vintage Park Medical Office Building provides office use and medical support services in a highly accessible valley residential area ensuring support services are available for current and future residential development.

Policy 13.2 To provide adequate and efficient fire protection and field emergency medical care for all and to maintain an incident response organization to effectively respond to large-scale events and disasters. While the SEARHC Juneau Vintage Park Medical Office Building is not a municipal service, additional medical facilities in the Valley are a needed service in the spirit of the policy.

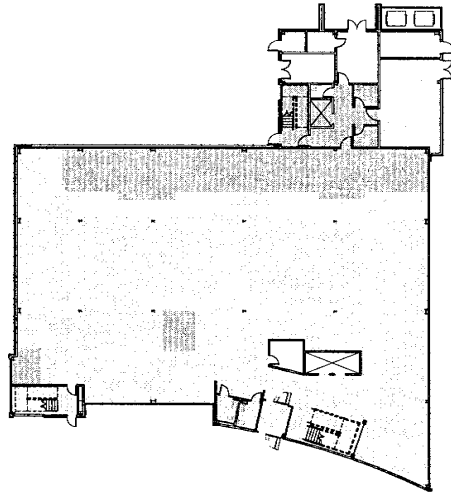
Policy 13.3 To promote quality medical and social services in the CBJ to ensure the safety, health, well-being and self-sufficiency of its residents. The SEARHC Juneau Vintage Park Medical Office Building, a state-of-the-art medical clinic will provide high quality medical service to Juneau Residents.

For the reasons stated above and many more, the SEARHC Juneau Vintage Park Medical Office Building complies with the CBJ Comprehensive plan.

4.0 Plans

Drawing Index	
Sheet No.	Title
<i>Architectural</i>	
G1.00	Parking Summary
P1.01	Level 1 Floor Plan
P1.02	Level 2 Floor Plan
P1.03	Level 3 Floor Plan
A2.00	Exterior Elevations
A2.01	Exterior Elevations
<i>Civil</i>	
C1.01	Existing Conditions
C1.02	Conceptual Site Plan
C1.03	Preliminary Grading and Drainage Plan
C1.04	Turning Movement Diagram
<i>Electrical</i>	
E1.01	Site Plan - Electrical
E1.02	Lighting Calculation 1
E1.03	Lighting Calculation 2
<i>Landscape</i>	
L1.01	Landscape Plan
L5.01	Landscape Details

AREA PLAN - LEVEL 1

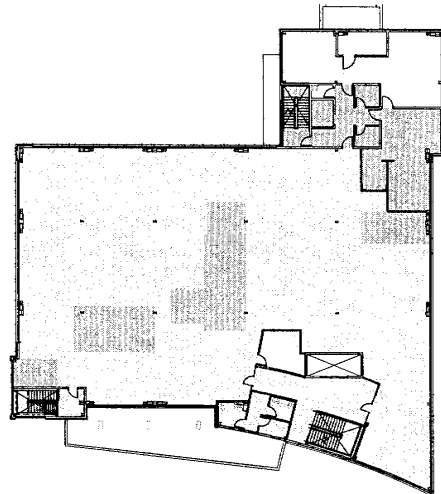


PARKING SUMMARY

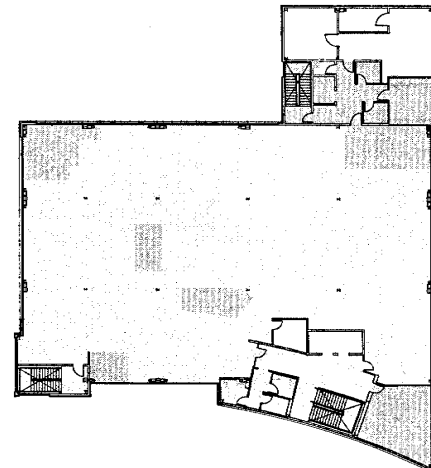
- ☐ MEDICAL/DENTAL CLINIC
- ☐ OFFICE SPACE
- ☐ STORAGE/UTILITY SPACE

PARKING CALCULATION SCHEDULE	
Name	Area
MEDICAL/DENTAL CLINIC	
LEVEL 1 CLINIC	9843 SF
LEVEL 2 CLINIC	10729 SF
LEVEL 3 CLINIC	10591 SF
	31163 SF
OFFICE SPACE	
OFFICE	2546 SF
OFFICE	138 SF
OFFICE	122 SF
BH OFFICES	408 SF
BH OFFICES	413 SF
BH OFFICE	142 SF
LEVEL 2 - BREAK & STAFF AREAS	1613 SF
CONFERENCE ROOM	544 SF
LEVEL 3 BREAK & STAFF AREAS	1413 SF
OFFICE	190 SF
OFFICE	143 SF
OFFICE	139 SF
OFFICE	134 SF
	8462 SF
STORAGE/UTILITY SPACE	
MECH/ELEC	1461 SF
DATA	117 SF
STORAGE	121 SF
STORAGE	241 SF
STORAGE	314 SF
MECH/ELEC	1169 SF
DATA	105 SF
MECH/ELEC	1125 SF
DATA ROOM	118 SF
	4880 SF

AREA PLAN - LEVEL 2



AREA PLAN - LEVEL 3



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architecture • interiors • design-build
anchorage, alaska
p. 907.344.3424 f. 907.771.9776

SEARHC
JUNEAU VINTAGE PARK
JUNEAU, AK

AREA - 11 - MECH/ELEC

11 - MECH/ELEC

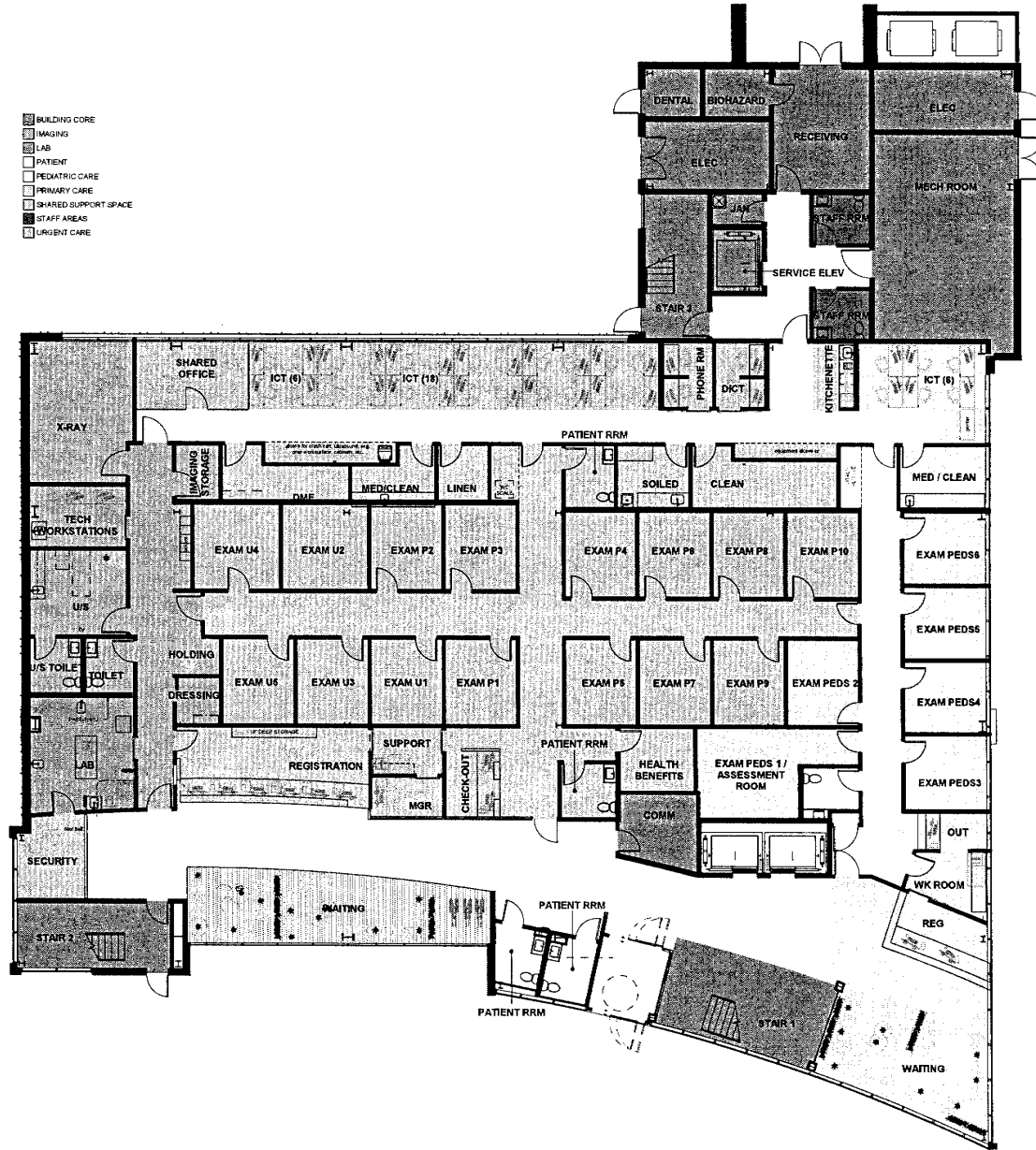
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DRAWN: JTV
REVIEWED: JTV

SHEET NAME:
PARKING SUMMARY

SHEET NO.:
G1.00

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- BUILDING CORE
- IMAGING
- LAB
- PATIENT
- PEDIATRIC CARE
- PRIMARY CARE
- SHARED SUPPORT SPACE
- STAFF AREAS
- URGENT CARE



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SEARCHC
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 JUNEAU, AK

REVISIONS

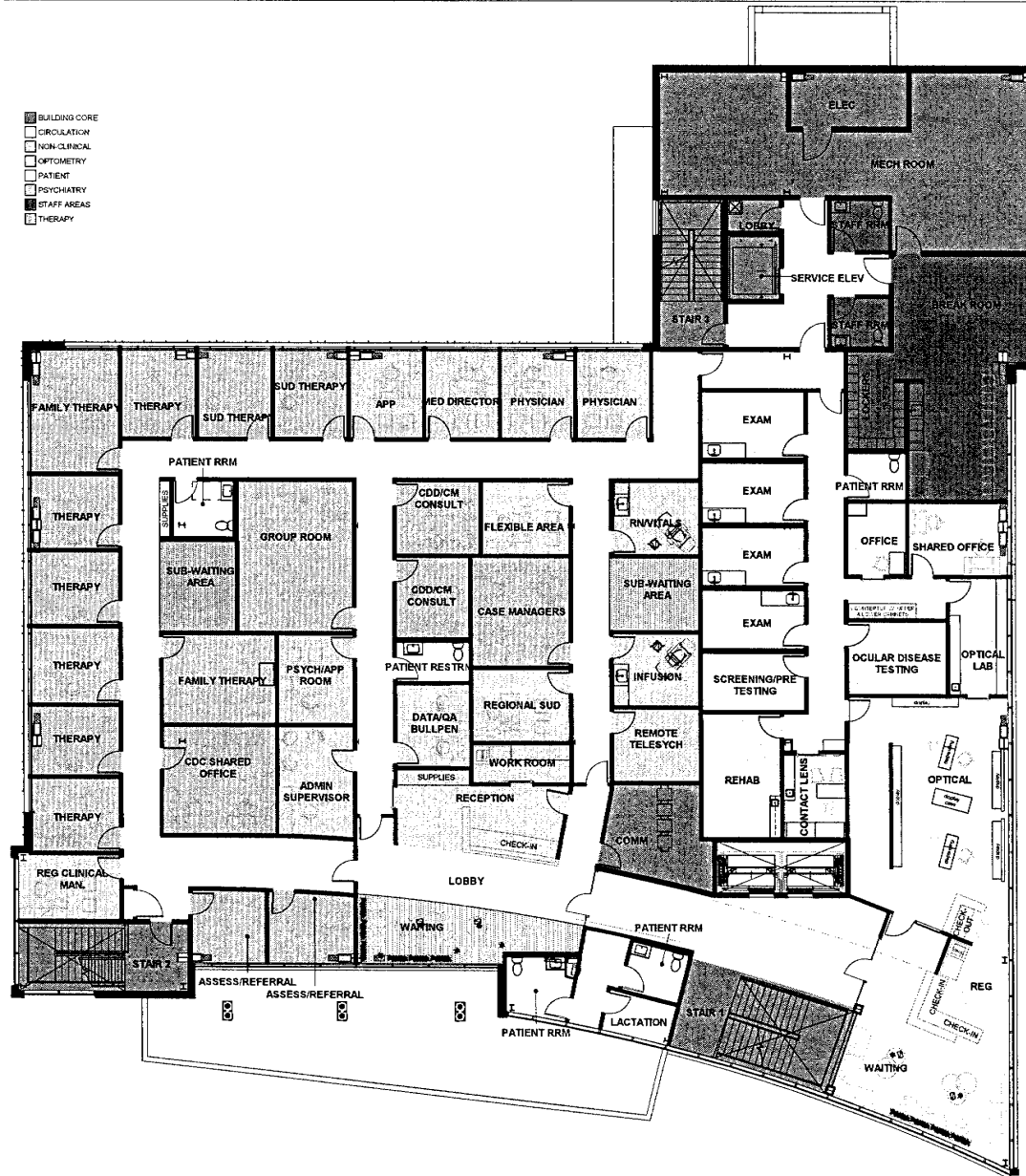
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 DATE 4/27/2013
 DRAWN Author
 REVIEWED DSV

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 LEVEL 1

SHEET NO.
 A 1.01

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- BUILDING CORE
- CIRCULATION
- NON-CLINICAL
- OPTOMETRY
- PATIENT
- PSYCHIATRY
- STAFF AREAS
- THERAPY



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 Anchorage, Alaska
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 JUNEAU, AK

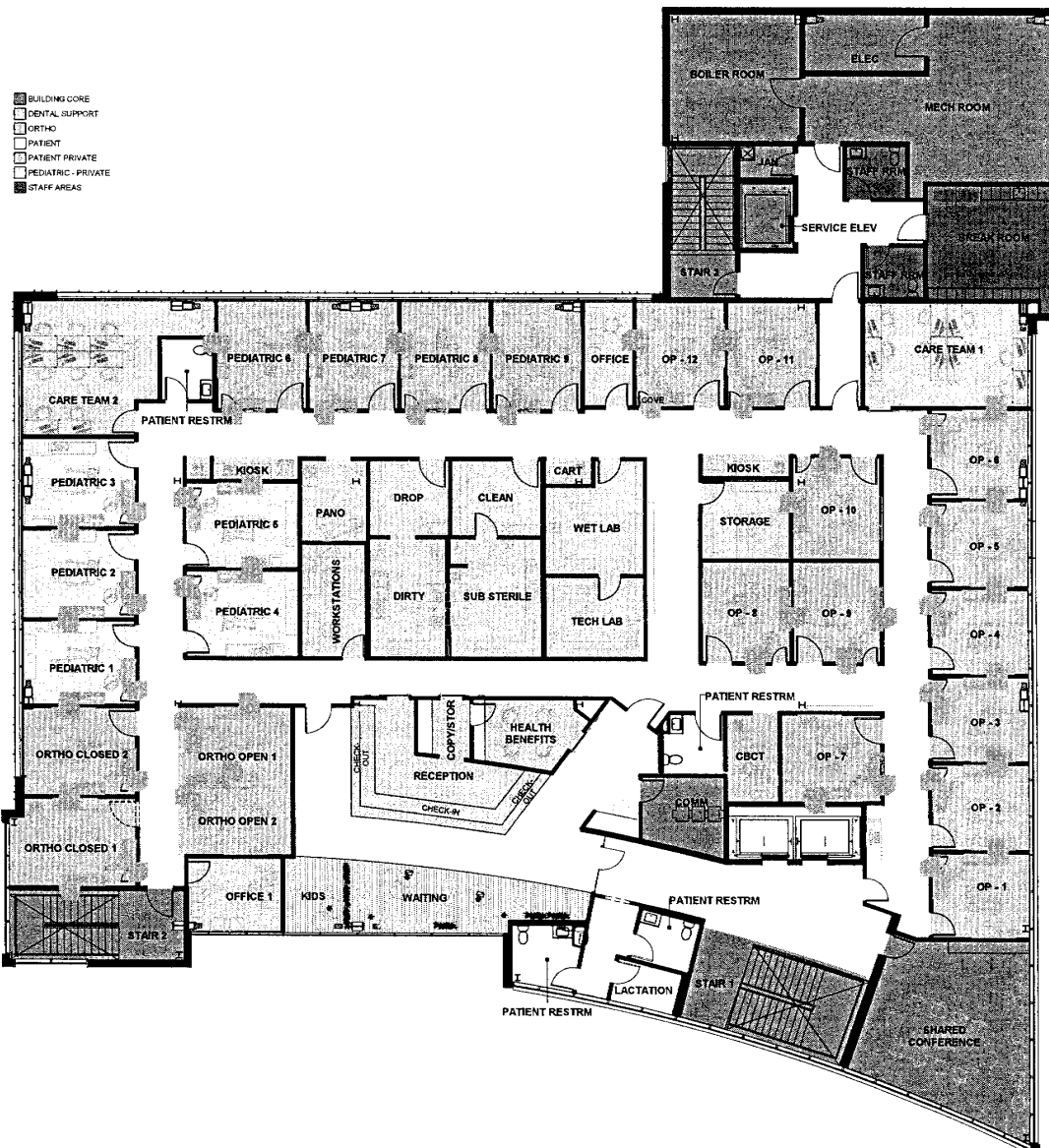
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 NO. DATE BY

JOB NO. 21-004
 DATE 4/20/2023
 DRAWN BY
 REVIEWED BY

SHEET NAME
 LEVEL 2

SHEET NO.
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CONDITIONAL USE PERMIT HALF SCALE WHEN PRINTED AT 11x17

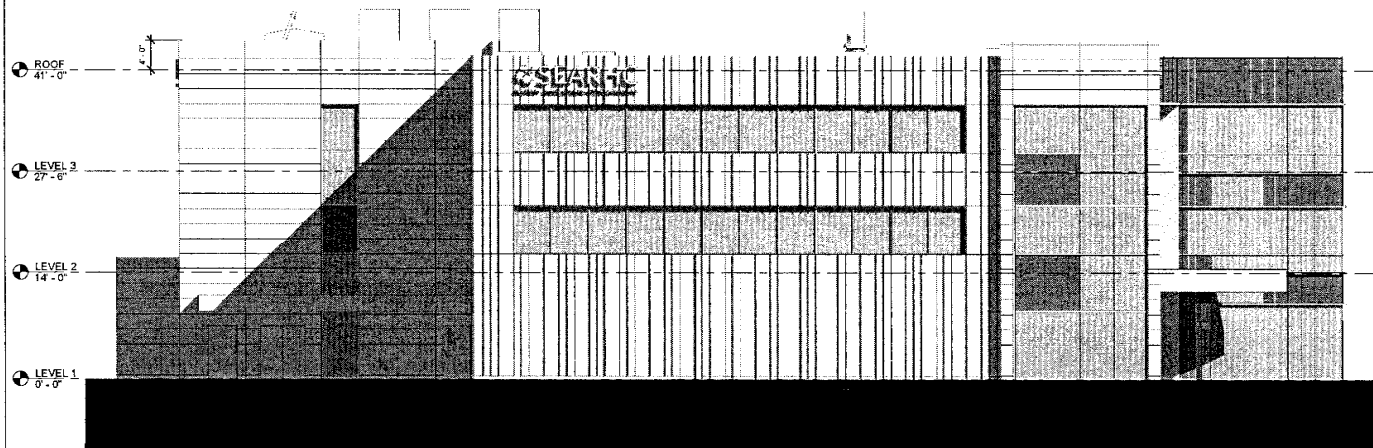


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 5403 cordova street suite 301
 anchorage, alaska 99518
 p. 907.344.3424 f. 907.771.5776

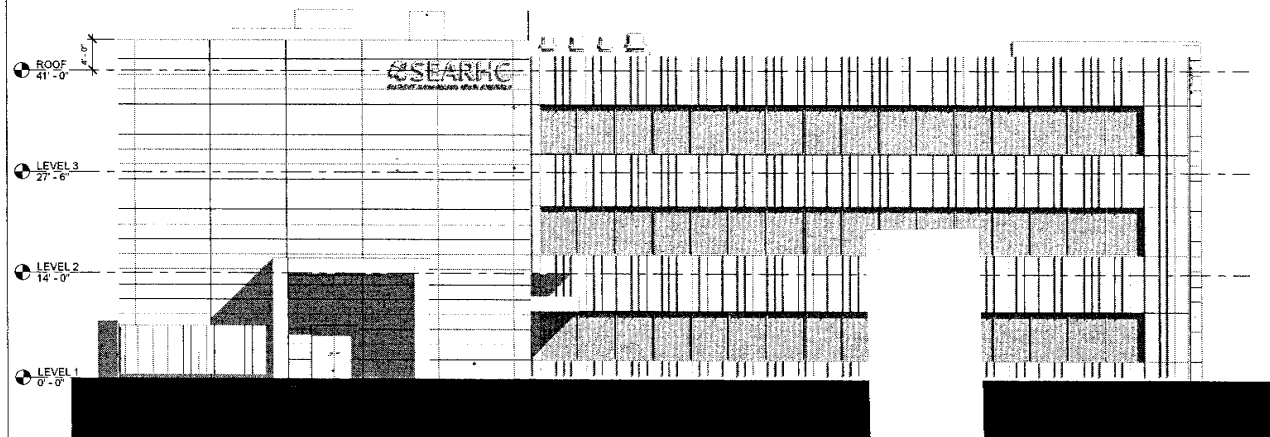
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 JUNEAU VINTAGE PARK
 JUNEAU, AK

DATE	21-08-21
DRAWN	4502022
REVIEWED	07/21
SHEET NAME	LEVEL 1
SHEET NO.	A 1.03

CONDITIONAL USE PERMIT



1 NORTH
1/8" = 1'-0"



2 EAST
1/8" = 1'-0"

EXTERIOR ELEVATION LEGEND

- METAL PANEL**
MP1: MFG: ORA-DESIGN
STYLE: PAINTED ALUMINUM
COLOR: WHITE
PANEL WIDTH: 24"
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 1/4"
REVEAL: 1/2"
- METAL PANEL**
MP2: MFG: ORA-DESIGN
STYLE: PAINTED ALUMINUM W/ 3" VERTICAL RIBS
COLOR: LAVA
PANEL WIDTH: 12" AND 24"
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 1/4"
REVEAL: 1/2" 7/8" VERTICAL RIB AS SHOWN ON ELEVATIONS
- METAL PANEL ACCENT**
MP3: MFG: ARKUTURA
STYLE: GRAPHIC PERFORATED METAL PANELS
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THICKNESS: CUSTOM
REVEAL: AS SHOWN ON ELEVATIONS
- ENTRY CANOPY FASCIA**
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COLOR: T60
PANEL WIDTH: CUSTOM
LENGTH: CUSTOM
THICKNESS: CUSTOM
REVEAL: AS SHOWN ON DRAWINGS

CERTIFICATE OF REGISTRATION
SPARK DESIGN, LLC 00001394

spark design, llc
architects • interiors • design-build
5401 cordova street, suite 301
anchorage, alaska 99518
p. 907.364.3424 f. 907.771.9776

SEARHC
JUNEAU VINTAGE PARK
JUNEAU, AK

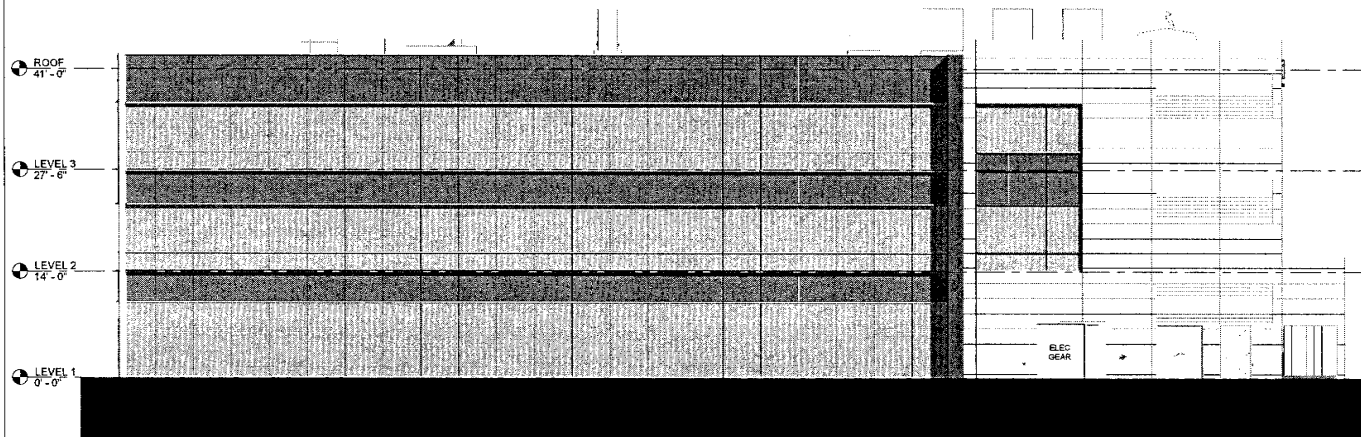
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JOB NO. 21004
DATE 4/20/2022
DRAWN Author
REVIEWED JTL

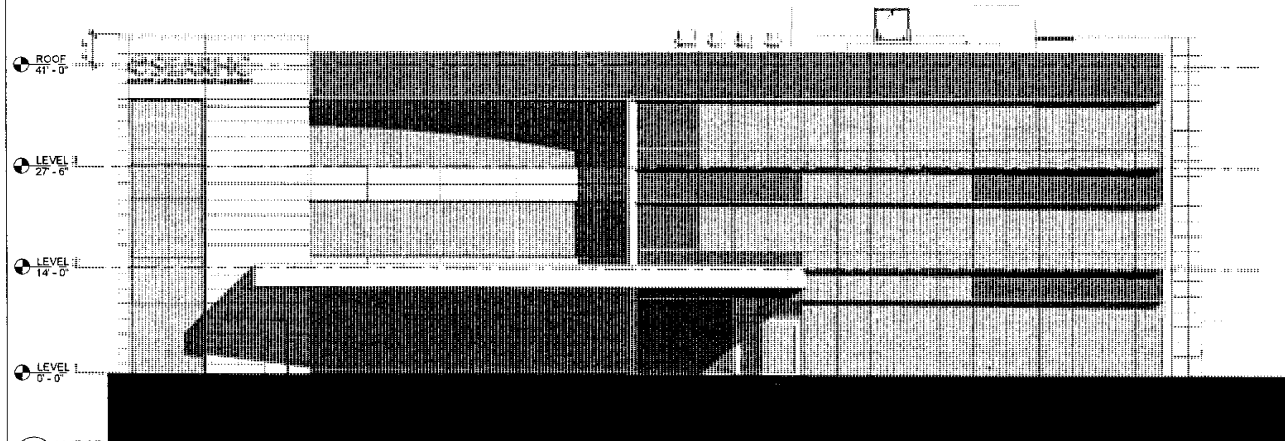
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EXTERIOR ELEVATIONS

SHEET NO.
A2.00

CONDITIONAL USE PERMIT HALF SCALE WHEN PRINTED AT 11x17



1 SOUTH
1/8" = 1'-0"



2 WEST
1/8" = 1'-0"

EXTERIOR ELEVATION LEGEND

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COLOR: WHITE
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LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 1 1/4"
REVEAL: 1/2"
- METAL PANEL**
MP2: MFG: DRIDESIGN
STYLE: PAINTED ALUMINUM 1/2" VERTICAL RIBS
COLOR: LAVA
PANEL WIDTH: 12" AND 24"
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 1 1/4"
REVEAL: 1/2" VERTICAL RIB AS SHOWN ON ELEVATIONS
- METAL PANEL ACCENT**
MP3: MFG: ARKTURA
STYLE: GRAPHIC PERFORATED METAL PANELS
COLOR: TBD
PANEL WIDTH: CUSTOM
LENGTH: CUSTOM
THICKNESS: CUSTOM
REVEAL: AS SHOWN ON ELEVATIONS
- ENTRY CANOPY FASCIA**
MP4: MFG: ARKTURA
STYLE: GRAPHIC PERFORATED METAL PANELS
COLOR: TBD
PANEL WIDTH: CUSTOM
LENGTH: CUSTOM
THICKNESS: CUSTOM
REVEAL: AS SHOWN ON DRAWINGS

CERTIFICATE OF AUTHORIZATION NO.

SPARK DESIGN LLC MBE011394

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architecture • interiors • design-build
5401 cordova street, suite 300
anchorage, alaska
p. 907.344.3424 f. 907.771.9776

SEARHC
JUNEAU VINTAGE PARK
JUNEAU, AK

REVISIONS

NO.	DATE	BY	CHKD BY
1	11.15.2020	ELC	ELC

JOB NO.	21-004
DATE	4/20/2023
DRAWN	AKW
REVIEWED	DTY

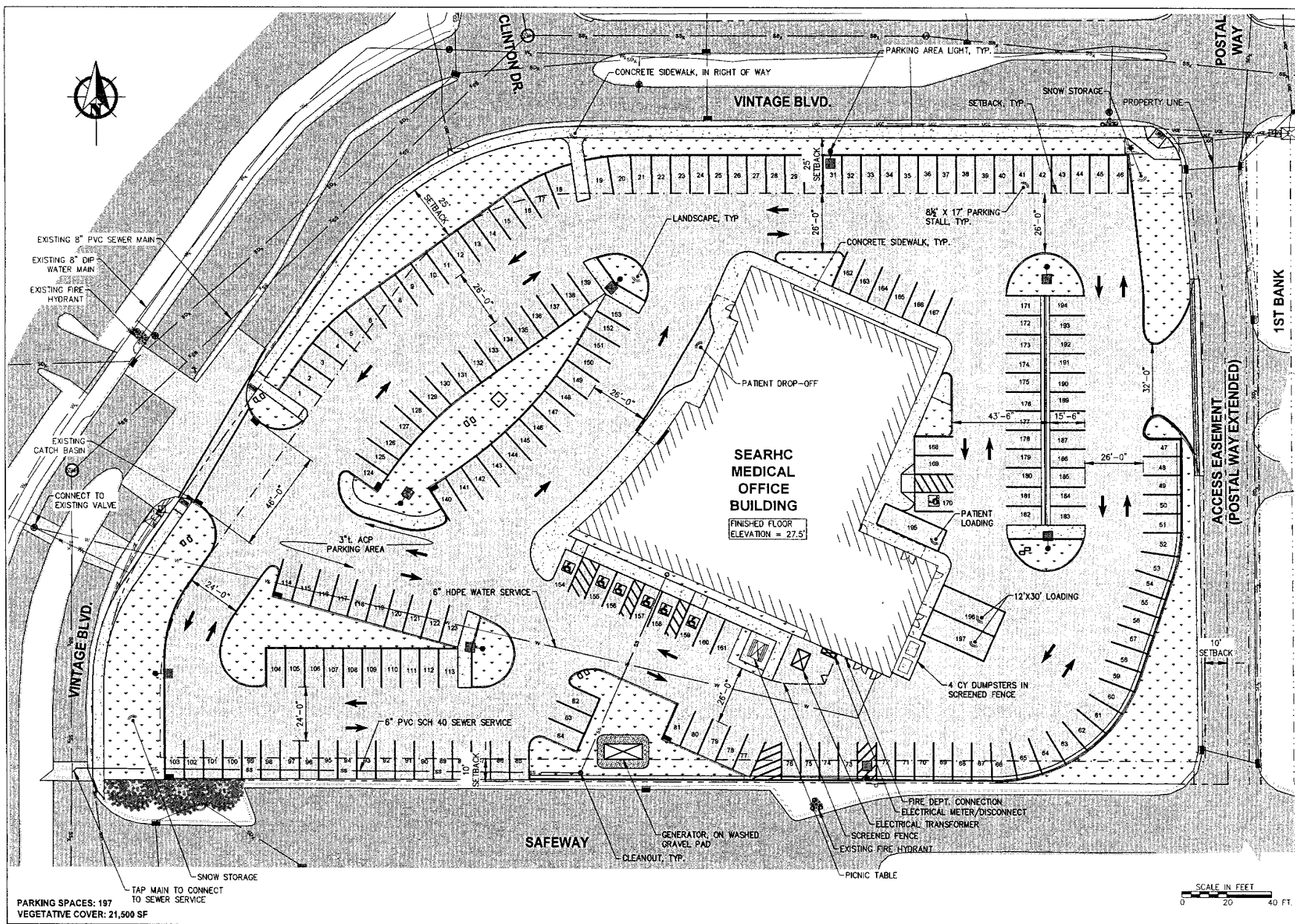
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SHEET NO.

A2.01

CONDITIONAL USE PERMIT HALF SCALE TYPED PRINTED AT 11/17

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CONDITIONAL
USE PERMIT
DRAWING

CERTIFICATE OF AUTHORIZATION
SPARK DESIGN, LLC AEC011094

spark design, llc
architecture • interiors • design-build
5403 cordova street, suite 310
anchorage, alaska 99518
p. 907.771.9776
f. 907.771.9776

ENGINEERS, INC.
5900 Glacier Highway, Suite 100
Juneau, Alaska 99801
Phone: 907.588.2000
AK LIC# AEC02250

**SEARHC
JUNEAU VINTAGE PARK
MEDICAL OFFICE BUILDING
JUNEAU, ALASKA**

REVISIONS

NO.	DATE	BY	CHKD.
1	03/31/2022	SP	SP

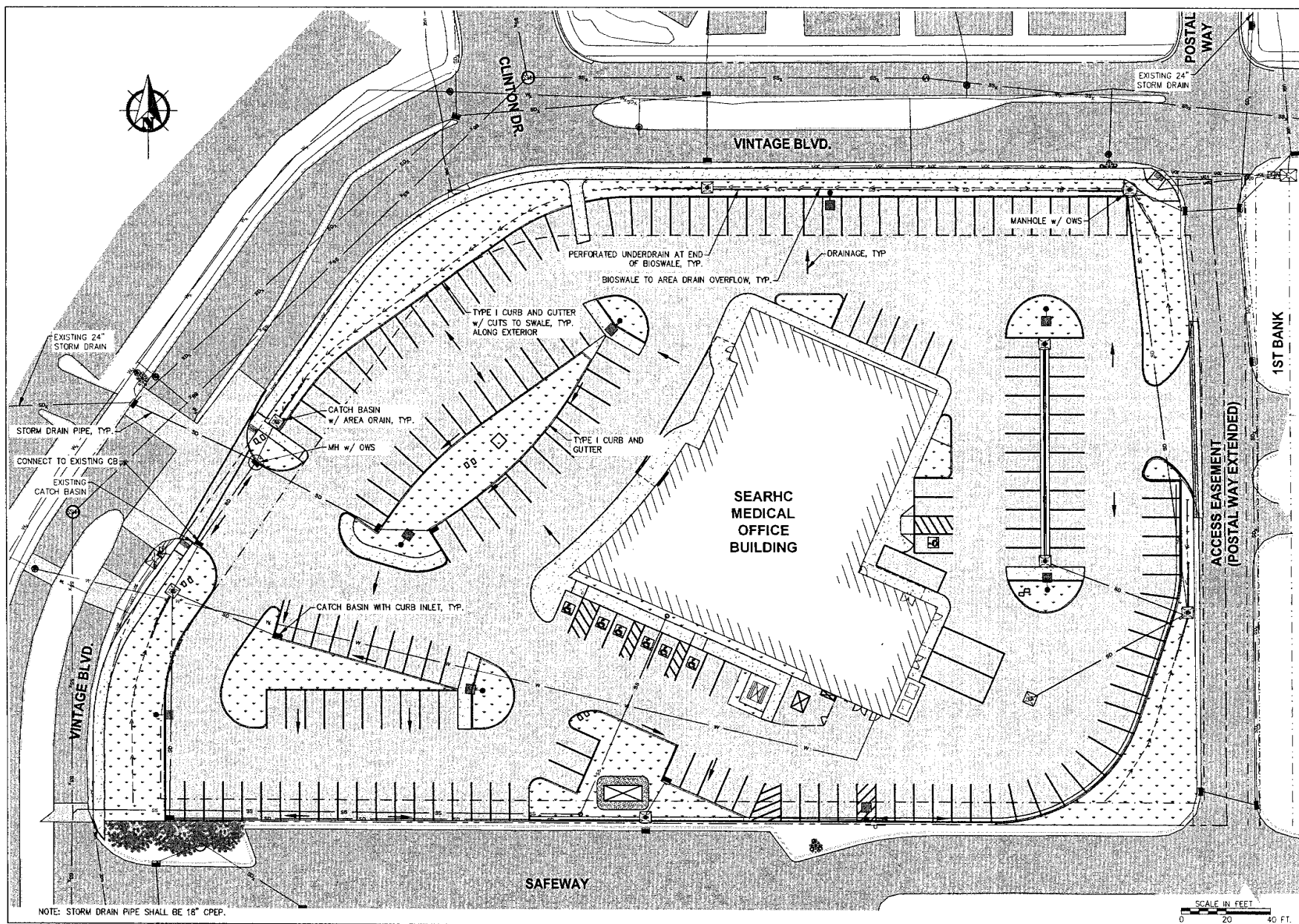
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REVIEWED: SP

SHEET NAME:
CONCEPTUAL SITE PLAN

SHEET NO.:
C1.02

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CONDITIONAL
USE PERMIT
DRAWING

SPARK DESIGN, LLC 6000 GLOUCESTER HIGHWAY SUITE 100 JUNEAU, ALASKA 99901

spark design, llc
architecture • interiors • design-build
landscape architecture • civil
anchorage, alaska
p. 907.344.3424 f. 907.771.9776

ENGINEERS, INC.
6000 GLOUCESTER HIGHWAY SUITE 100
JUNEAU, ALASKA 99901
PHONE: 907.585.2000
AK LIC# AEC-0290

SEARHC
JUNEAU VINTAGE PARK
MEDICAL OFFICE BUILDING
JUNEAU, ALASKA

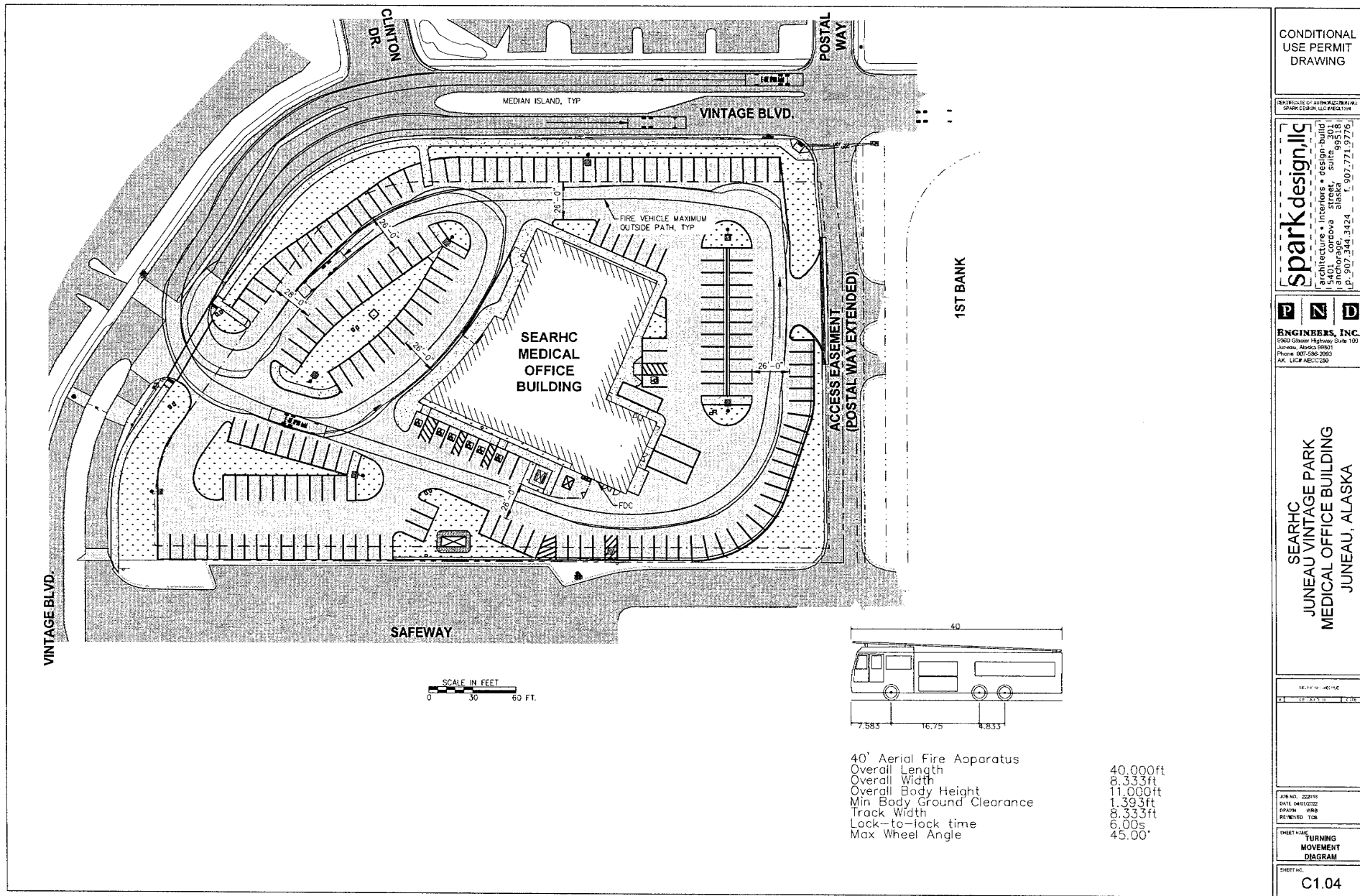
REVISIONS

JOB NO. 220715
DATE 04/07/2022
DRAWN VAB
REVIEWED TCB

SHEET NAME
PRELIMINARY
GRADING AND
DRAINAGE PLAN

SHEET NO.
C1.03

ALL SCALES UNLESS NOTED OTHERWISE



Attachment A - Application Packet

GENERAL NOTES

1. REFER TO LIGHTING FIXTURE SCHEDULE ON SHEET E1.01 FOR ADDITIONAL INFORMATION.

SHEET NOTES

1. PROVIDE LIGHT FIXTURE AND POLE AT LOCATION INDICATED.
2. PROVIDE TYPE 1A JUNCTION BOX FOR ROUTING OF EXTERIOR LIGHTING CIRCUIT.
3. REFER TO SHEET E1.01 FOR ADDITIONAL INFORMATION ON CAMERA MOUNTING AND SHEET E1.01 FOR ADDITIONAL INFORMATION ON CAMERA MOUNTING.
4. PROVIDE TYPE 1A JUNCTION BOX FOR ROUTING OF POLE-MOUNTED CCTV CAMERA CABLES AND SITE TELECOM CABLES.
5. PROVIDE TYPE 1A JUNCTION BOX FOR ROUTING OF TELECOM SERVICE CABLES.
6. CAMERA IDENTIFICATION NUMBERS, REFER TO SHEET E1.01 FOR ADDITIONAL INFORMATION.
7. MOUNT CAMERA TO SURFACE CEILING OF CANOPY, REFER TO SHEET E1.01 FOR ADDITIONAL INFORMATION.
8. MOUNT CAMERA TO SIDE OF BUILDING AT APPROXIMATELY 12 FEET ABOVE EMBEDED SPACE, REFER TO SHEET E1.01 FOR ADDITIONAL INFORMATION.
9. COORDINATE EXACT CONNECTION REQUIREMENTS AND LOCATION WITH UTILITY.

SITE LIGHTING FIXTURE SCHEDULE						
TYPE	DESCRIPTION	COLOR TEMP	LUMENS	WATTAGE	MOUNTING	NOTES
SA	LITHONIA DSX1 LED P6 40K 13M MVOLT 13"X11" LED AREA LUMINAIRE, IP65 RATED DIE-CAST ALUMINUM HOUSING, 1.01 FT SQ EPA, ZINC-INFUSED POWDER COAT FINISH, ACRYLIC LENS	4000K	15000	163	POLE	
SB	LITHONIA DSX1 LED P6 40K 15W MVOLT 13"X11" LED AREA LUMINAIRE, IP65 RATED DIE-CAST ALUMINUM HOUSING, 1.01 FT SQ EPA, ZINC-INFUSED POWDER COAT FINISH, ACRYLIC LENS	4000K	19500	163	POLE	



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21149
CERTIFICATE OF INFORMATION
SPARK DESIGN, LLC PROJECT

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architecture • interiors • design-build
5401 concova street, suite 300
anchorage, alaska 99518
p: 907.344.3424 f: 907.771.9776

SEARCHC
JUNEAU VINTAGE PARK
JUNEAU, AK

NO FIELD CHANGE
21 21 21

JOB NO. 21-004
DATE 2/10/2022
DRAWN
REVIEWED

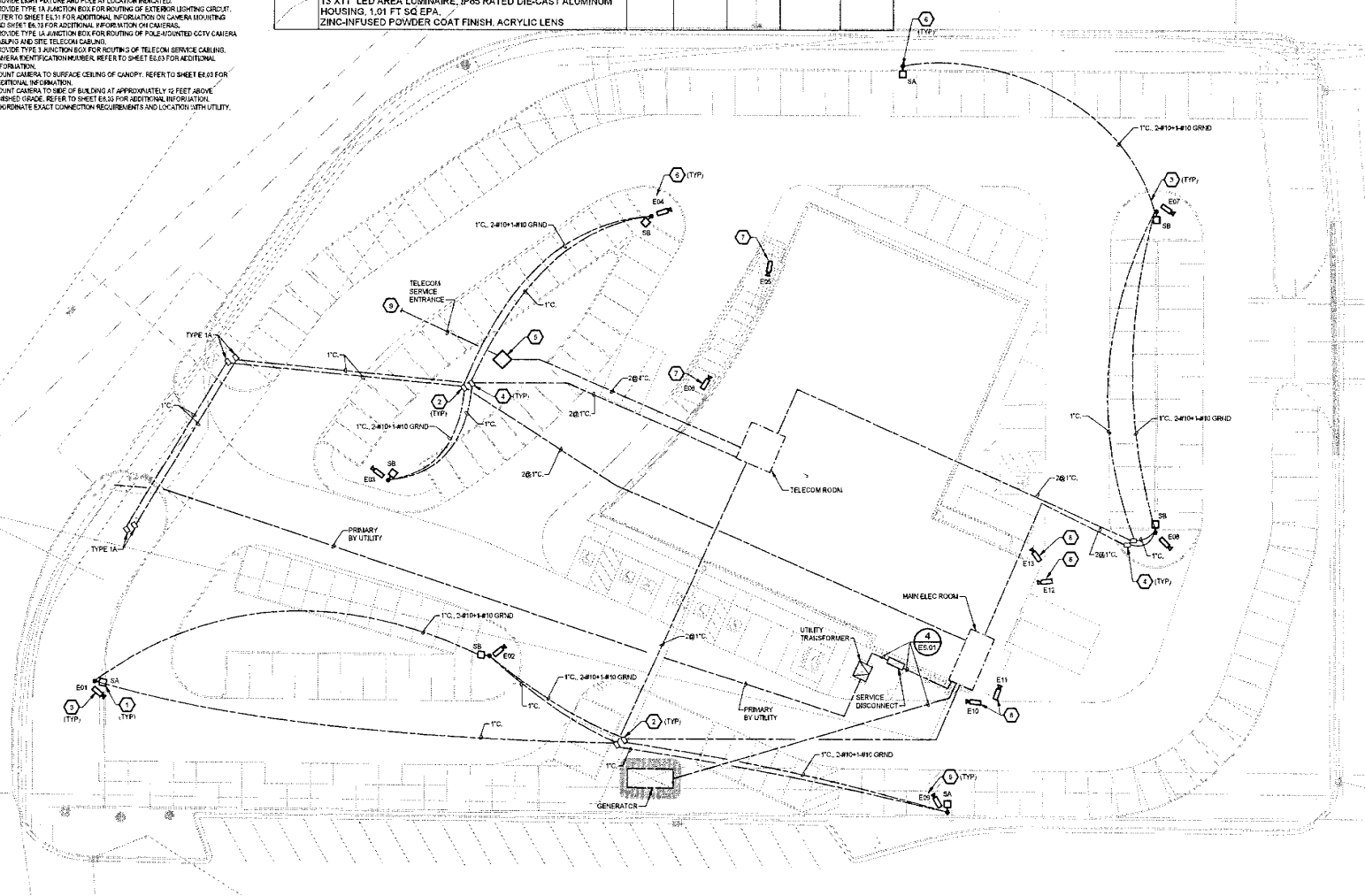
SHEET NAME
SITE PLAN - ELECTRICAL

SHEET NO.
E1.01

CONCEPT HALF SCALE (OTHER PROJECTS AT 1/8"=1')

1 SITE PLAN - ELECTRICAL
E1.01 Scale: 1" = 20'-0"

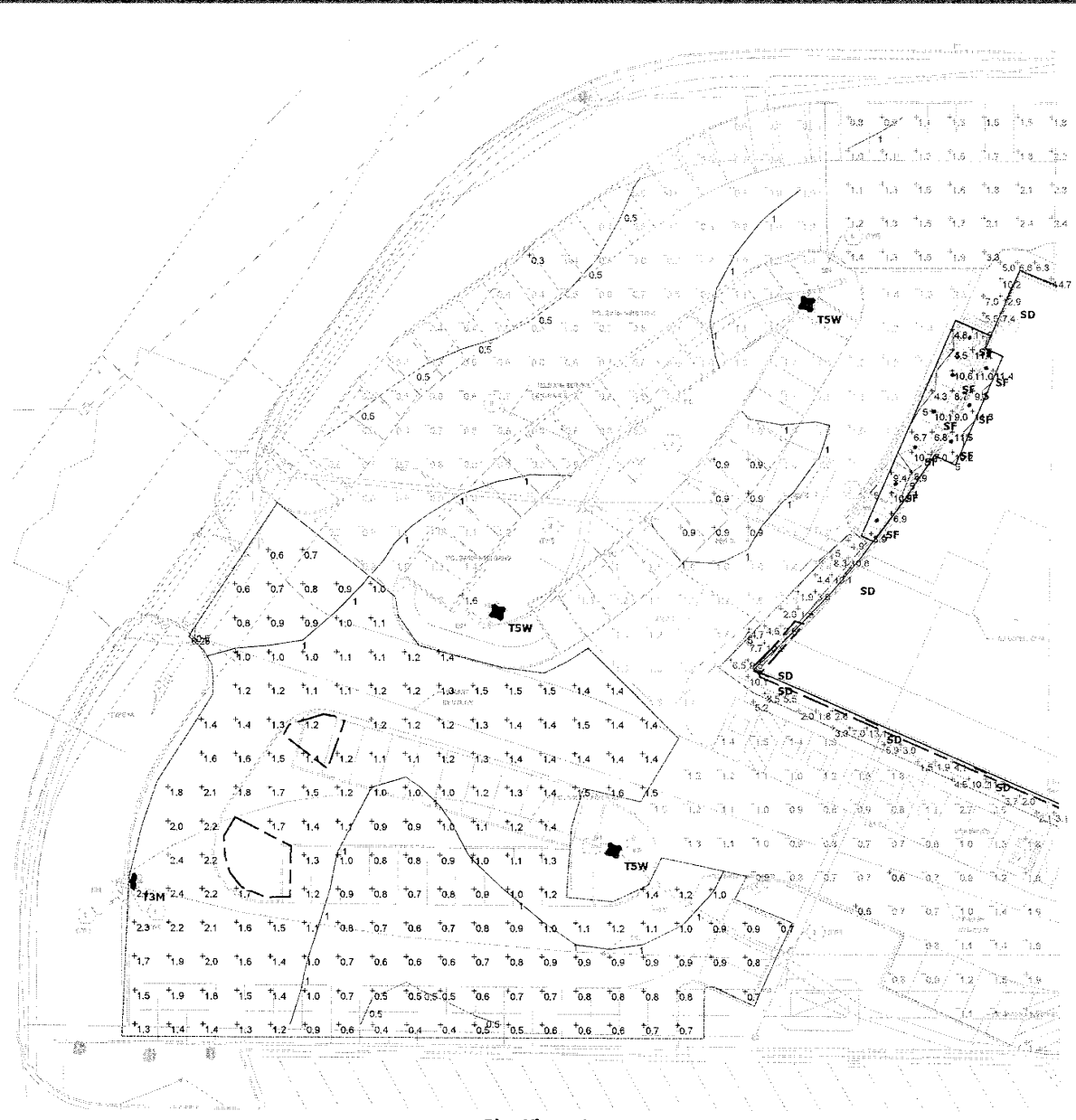
0 10' 20' 40' 80'



FILE NAME: C:\Users\AS\Documents\2149 Juneau Vintage Park - MEP_Juneau_AUG21
PLOTED: 3/20/2022 7:49:01 AM

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Canopy	+	8.8 fc	11.9 fc	4.3 fc	2.8:1	2.0:1
Generator	+	4.9 fc	6.2 fc	3.6 fc	1.7:1	1.4:1
Loading	+	4.2 fc	6.3 fc	2.5 fc	2.5:1	1.7:1
Parking Lot NE	+	1.5 fc	7.3 fc	0.5 fc	14.6:1	3.0:1
Parking Lot NE	+	1.5 fc	3.3 fc	0.6 fc	5.5:1	2.5:1
Parking Lot NW	+	0.8 fc	1.6 fc	0.3 fc	5.3:1	2.7:1
Parking Lot NW	+	1.4 fc	4.7 fc	0.9 fc	5.2:1	1.6:1
Parking Lot South	+	1.3 fc	3.4 fc	0.4 fc	8.5:1	3.3:1
Parking Lot SW	+	1.2 fc	2.4 fc	0.4 fc	6.0:1	3.0:1
Patient Loading	+	9.0 fc	16.5 fc	4.6 fc	3.6:1	2.0:1
Perimeter Sidewalk NE	+	7.0 fc	14.7 fc	1.9 fc	7.7:1	3.7:1
Perimeter Sidewalk SW	+	5.8 fc	13.1 fc	1.5 fc	8.7:1	3.9:1
Parking Lot South	+	1.8 fc	5.2 fc	0.6 fc	8.7:1	3.0:1

Symbol	Light Type	Height	Beam Spread	Mounting Height	Mounting Type	Mounting Location	Mounting Orientation	Mounting Angle	Mounting Distance	Mounting Spacing	Mounting Notes
○	SP	10	120°	10	10	10	10	10	10	10	Not to Scale
□	SC	10	120°	10	10	10	10	10	10	10	Not to Scale
□	TJM	10	120°	10	10	10	10	10	10	10	Not to Scale
□	TSW	10	120°	10	10	10	10	10	10	10	Not to Scale
	SD	10	120°	10	10	10	10	10	10	10	Not to Scale



Plan View - A



SEARCHC
JUNEAU VINTAGE PARK
LIGHTING CALCULATION - SITE PLAN

Designer

Date

03/24/2022

Scale

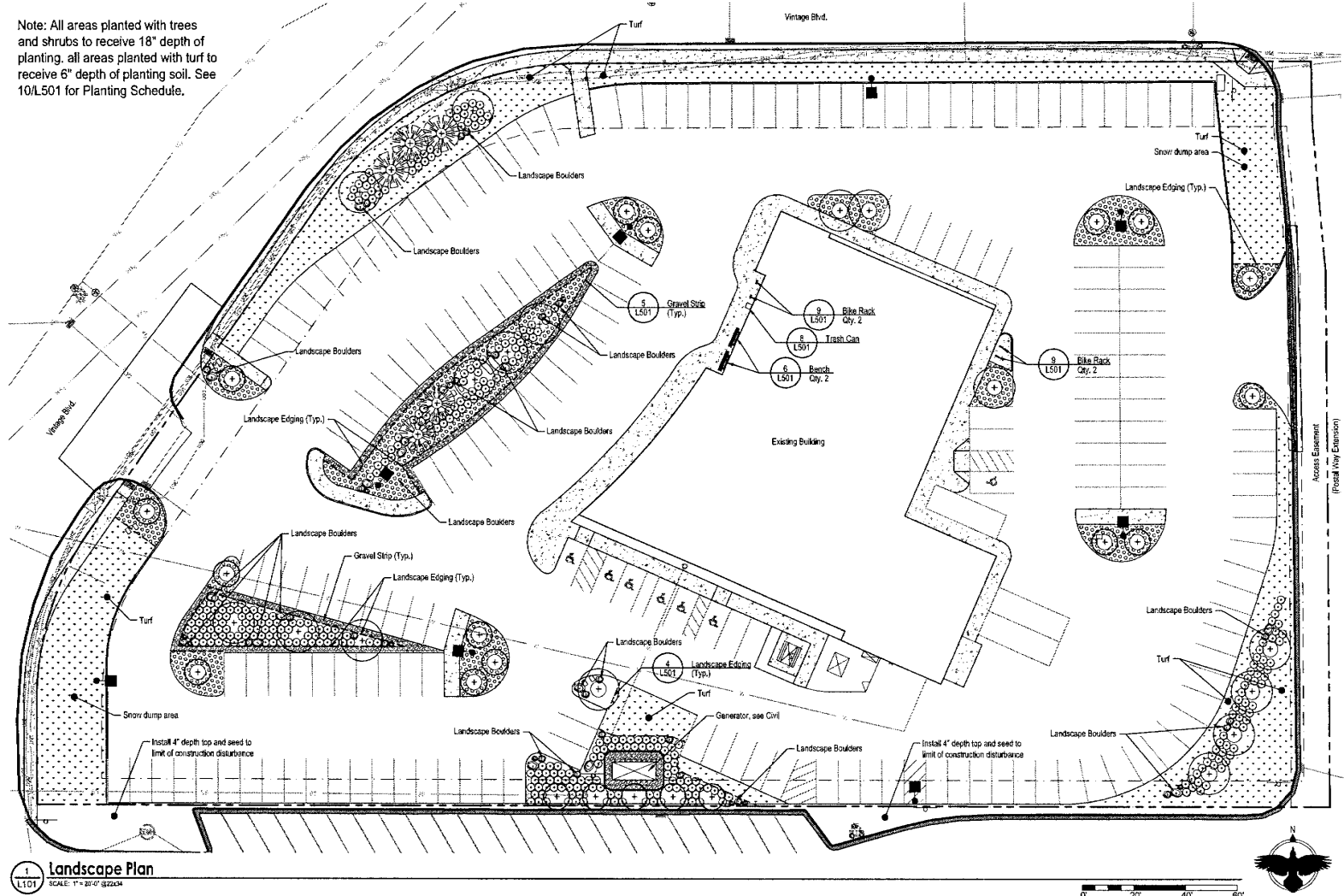
Not to Scale

Drawing No.

Summary

Drawing: J:\SPK\2241 SEARHC Juneau Medical\2 - CAD\Corvus-Sheets - SEARHC.dwg last saved on 3/24/2022 4:55 PM was plotted by Brindley Little on 3/25/2022 8:43 AM

Note: All areas planted with trees and shrubs to receive 18" depth of planting, all areas planted with turf to receive 6" depth of planting soil. See 10/L501 for Planting Schedule.



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**SEARHC
JUNEAU VINTAGE PARK
MEDICAL OFFICE BUILDING
JUNEAU, ALASKA**

1/4" = 1' - 0" (Horizontal)
1/8" = 1' - 0" (Vertical)

JOB NO. SPK-22-01
DATE 3/23/2022
DRAWN BY BL
REVIEWED BY CM

SHEET TITLE
LANDSCAPE PLAN

SHEET NO.
L101

HALF SCALE (NEAR PRINTED AT 1/4")

Attachment A - Application Packet

5.0 Light Fixture Data Sheets



FEATURES & SPECIFICATIONS

INTENDED USE — These specifications are for USA standards only. Square Straight Steel is a general purpose light pole for up to 39-foot mounting heights. This pole provides a robust yet cost effective option for mounting area lights and floodlights.

CONSTRUCTION —

Pole Shaft: The pole shaft is of uniform dimension and wall thickness and is made of a weldable-grade, hot-rolled, commercial-quality steel tubing with a minimum yield of 55 KSI (11-gauge, .1196"), or 50 KSI (7-gauge, .1793"). Shaft is one-piece with a full-length longitudinal high-frequency electric resistance weld. Uniformly square in cross-section with flat sides, small corner radii and excellent torsional qualities. Available shaft widths are 4", 5" and 6".

Pole Top: Options include tenon top, drilled for side mount fixture, tenon with drilling (includes extra handhole) and open top. Side drilled and open top poles include a removable top cap.

Handhole: A reinforced handhole with grounding provision is provided at 18" from the base on side A. Positioning the handhole lower may not be possible and requires engineering review; consult Tech Support-Outdoor for further information. Every handhole includes a cover and cover attachment hardware. The handhole has a nominal dimension of 2.5" x 5".

Base Cover: A durable ABS plastic two-piece full base cover, finished to match the pole, is provided with each pole assembly. Additional base cover options are available upon request.

Anchor Base/Bolts: Anchor base is fabricated from steel that meets ASTM A36 standards and can be altered to match existing foundations; consult factory for modifications. Anchor bolts are manufactured to ASTM F1554 Standards grade 55, (55 KSI minimum yield strength and tensile strength of 75-95 KSI). Top threaded portion (nominal 12") is hot-dipped galvanized per ASTM A-153.

HARDWARE — All structural fasteners are high-strength galvanized carbon steel. All non-structural fasteners are galvanized or zinc-plated carbon steel or stainless steel.

FINISH — Extra durable painted finish is coated with TGIC (Triglycidyl Isocyanurate) Polyester powder that meets 5A and 5B classifications of ASTM D3359. Powder-coat finishes include Dark Bronze, White, Black, and Natural Aluminum colors. Architectural Colors and Special Finishes are available by quote and include, but are not limited to Paint over Hot-dipped Galvanized, RAL Colors, Custom Colors and Extended Warranty Finishes.

BUY AMERICAN — Product with the BAA option is assembled in the USA and meets the Buy America(n) government procurement requirements under FAR, DFARS and DOT. Please refer to www.acuitybrands.com/buy-american for additional information.

INSTALLATION — Do not erect poles without having fixtures installed. Factory-supplied templates must be used when setting anchor bolts. Lithonia Lighting will not accept claim for incorrect anchorage placement due to failure to use Lithonia Lighting factory templates. If poles are stored outside, all protective wrapping must be removed immediately upon delivery to prevent finish damage. Lithonia Lighting is not responsible for the foundation design.

WARRANTY — 1-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

NOTE: Actual performance may differ as a result of end-user environment and application. Specifications subject to change without notice.

Catalog Number
Notes
Type



Anchor Base Poles

SSS

SQUARE STRAIGHT STEEL



SSS Square Straight Steel Poles

ORDERING INFORMATION

Lead times will vary depending on options selected. Consult with your sales representative.

Example: SSS 20 5C DM19 DDBXD

SSS						
Series	Nominal fixture mounting height	Nominal shaft base size/wall thickness ²	Mounting ¹		Options	Finish ¹³
SSS ¹	10'-39' (for 1/2 ft increments, add -6 to the pole height. Ex: 20-6 equals 20ft 6in.) See technical information table for complete ordering information.)	4C 4" 11g (.1196") 4G 4" 7g (.1793") 5C 5" 11g (.1196") 5G 5" 7g (.1793") 6G 6" 7g (.1793") See technical information table for complete ordering information.)	<u>Tenon mounting</u> PT Open top (includes top cap) T20 2-3/8" O.D. (2" NPS) T25 2-7/8" O.D. (2-1/2" NPS) T30 3-1/2" O.D. (3" NPS) T35 4" O.D. (3-1/2" NPS) <u>KAC/KAD/KSE/KSF/KVR/KVF Drill mounting⁴</u> DM19 1 at 90° DM28 2 at 180° DM28 PL 2 at 180° with one side plugged DM29 2 at 90° DM39 3 at 90° DM49 4 at 90° <u>CSX/DSX/RSX/AERIS™/OMERO™/HLA/KAX Drill mounting⁴</u> DM19AS 1 at 90° DM28AS 2 at 180° DM29AS 2 at 90° DM39AS 3 at 90° DM49AS 4 at 90° <u>RAD drill mounting⁴</u> DM19RAD 1 at 90° DM28RAD 2 at 180° DM29RAD 2 at 90° DM39RAD 3 at 90° DM49RAD 4 at 90° <u>ESX Drill mounting⁴</u> DM19ESX 1 at 90° DM28ESX 2 at 180° DM29ESX 2 at 90° DM39ESX 3 at 90° DM49ESX 4 at 90°	<u>AERIS™ Suspend drill mounting^{4,5}</u> DM19AST_ 1 at 90° DM28AST_ 2 at 180° DM29AST_ 2 at 90° DM39AST_ 3 at 90° DM49AST_ 4 at 90° <u>OMERO™ Suspend drill mounting^{4,5}</u> DM19MRT_ 1 at 90° DM28MRT_ 2 at 180° DM29MRT_ 2 at 90° DM39MRT_ 3 at 90° DM49MRT_ 4 at 90°	<u>Shipped installed</u> VD Vibration damper ⁶ HAxy Horizontal arm bracket (1 fixture) ^{7,8} FDLxy Festoon outlet less electrical ^{7,9} CPL12/xy 1/2" coupling ⁷ CPL34/xy 3/4" coupling ⁷ CPL1/xy 1" coupling ⁷ NPL12/xy 1/2" threaded nipple ⁷ NPL34/xy 3/4" threaded nipple ⁷ NPL1/xy 1" threaded nipple ⁷ EHHxy Extra handhole ^{2,10} NEC NEC 410.30 compliant gasketed handhole (Not UL Labeled) IC Interior coating ¹¹ L/AB Less anchor bolts (Include when anchor bolts are not needed) TP Tamper resistant handhole cover fasteners UL UL listed with label (Includes NEC compliant cover) BAA Buy America(n) Act Compliant ¹²	<u>Super durable paint colors</u> DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white <u>Other finishes</u> GALV Galvanized finish <u>Architectural colors and special finishes</u> Paint over Galvanized, RAL Colors, Custom Colors and Extended Warranty Finishes available.

NOTES:

- Handhole covers (HHC), full base covers (FBC) and top caps (TC) shipped separately. No need to call out in nomenclature. For additional parts please order as replacements.
- Wall thickness will be signified with a "C" (11 Gauge) or a "G" (7-Gauge) in nomenclature. "C" - 0.1196" | "G" - 0.1793".
- PT open top poles include top cap. When ordering tenon mounting and drill mounting for the same pole, follow this example: DM28/T20. The combination includes a required extra handhole.
- Refer to the fixture spec sheet for the correct drilling template pattern and orientation compatibility.
- Insert "1" or "2" to designate fixture size; e.g. DM19AST2.
- On 4" and 5" poles, VD cannot be installed if provisions (EHH, FDL, NPL, CPL) are located higher than 2/3 of the pole's total height.
Example: Pole height is 25ft, A provision cannot be placed above 16ft.
- Specify location and orientation when ordering option.
For "x": Specify the height above the base of pole in feet and inches; separate feet and inches with a "-".
Example: 5ft = 5 and 20ft 3in = 20-3
For "y": Specify orientation from handhole (A,B,C,D) Refer to the Handhole Orientation diagram below.
Example: 1/2" coupling at 5'8"; orientation C = CPL12/5-8C
- Horizontal arm is 18" x 2-3/8" O.D. tenon standard, with radius curve providing 12" rise and 2-3/8" O.D. If ordering two horizontal arm at the same height, specify with HAxy. Example: HA20BD.
- FDL does not come with GFCI outlet or handhole cover. These must be supplied by contractor or electrician.
- Combination of tenon-top and drill mount includes extra handhole. EHH includes cover.
- Provides enhanced corrosion resistance.
- Use when mill certifications are required.
- Finish must be specified. Additional colors available; see Architectural Colors brochure linked [here](#) (Form No. 794.3).

Accessories: Order as separate catalog number.

- PL DT20 Plugs for ESX drillings
PL DT8 Plugs for DMxxAS drillings

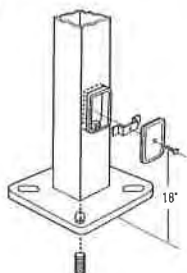
SSS Square Straight Steel Poles

TECHNICAL INFORMATION — EPA (ft²) with 1.3 gust

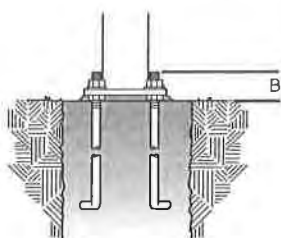
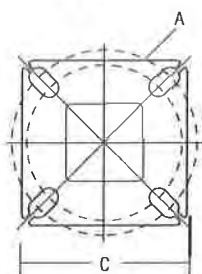
Catalog Number	Nominal Shaft Length (ft.)*	Pole Shaft Size (Base in. x Top in. x ft.)	Wall thick (in)	Gauge	EPA (ft ²) with 1.3 gust						Bolt circle (in)	Bolt size (in. x in. x in.)	Approximate ship weight (lbs.)
					80 MPH	Max. weight	90 MPH	Max. weight	100 MPH	Max. weight			
SSS 10 4C	10	4.0 x 10.0	0.1196	11	30.6	765	23.8	595	18.9	473	8-9	3/4 x 18 x 3	75
SSS 12 4C	12	4.0 x 12.0	0.1196	11	24.4	610	18.8	470	14.8	370	8-9	3/4 x 18 x 3	90
SSS 14 4C	14	4.0 x 14.0	0.1196	11	19.9	498	15.1	378	11.7	293	8-9	3/4 x 18 x 3	100
SSS 16 4C	16	4.0 x 16.0	0.1196	11	15.9	398	11.8	295	8.9	223	8-9	3/4 x 18 x 3	115
SSS 18 4C	18	4.0 x 18.0	0.1196	11	12.6	315	9.2	230	6.7	168	8-9	3/4 x 18 x 3	125
SSS 20 4C	20	4.0 x 20.0	0.1196	11	9.6	240	6.7	167	4.5	150	8-9	3/4 x 18 x 3	140
SSS 20 4G	20	4.0 x 20.0	0.1793	7	14	350	11	275	8	200	8-9	3/4 x 30 x 3	198
SSS 20 5C	20	5.0 x 20.0	0.1196	11	17.7	443	12.7	343	9.4	235	10-12	1 x 36 x 4	185
SSS 20 5G	20	5.0 x 20.0	0.1793	7	28.1	703	21.4	535	16.2	405	10-12	1 x 36 x 4	265
SSS 25 4C	25	4.0 x 25.0	0.1196	11	4.8	150	2.6	100	1	50	8-9	3/4 x 18 x 3	170
SSS 25 4G	25	4.0 x 25.0	0.1793	7	10.8	270	7.7	188	5.4	135	8-9	3/4 x 30 x 3	245
SSS 25 5C	25	5.0 x 25.0	0.1196	11	9.8	245	6.3	157	3.7	150	10-12	1 x 36 x 4	225
SSS 25 5G	25	5.0 x 25.0	0.1793	7	18.5	463	13.3	333	9.5	238	10-12	1 x 36 x 4	360
SSS 30 4G	30	4.0 x 30.0	0.1793	7	6.7	168	4.4	110	2.6	65	8-9	3/4 x 30 x 3	295
SSS 30 5C	30	5.0 x 30.0	0.1196	11	4.7	150	2	50	—	—	10-12	1 x 36 x 4	265
SSS 30 5G	30	5.0 x 30.0	0.1793	7	10.7	267	6.7	167	3.9	100	10-12	1 x 36 x 4	380
SSS 30 6G	30	6.0 x 30.0	0.1793	7	19	475	13.2	330	9	225	11-13	1 x 36 x 4	520
SSS 35 5G	35	5.0 x 35.0	0.1793	7	5.9	150	2.5	100	—	—	10-12	1 x 36 x 4	440
SSS 35 6G	35	6.0 x 35.0	0.1793	7	12.4	310	7.6	190	4.2	105	11-13	1 x 36 x 4	540
SSS 39 6G	39	6.0 x 39.0	0.1793	7	7.2	180	3	75	—	—	11-13	1 x 36 x 4	605

NOTE: * EPA values are based ASCE 7-93 wind map. For 1/2 ft increments, add .6 to the pole height. Ex: 20-6 equals 20ft 6in.

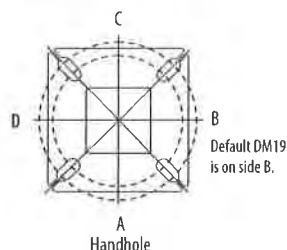
BASE DETAIL



POLE DATA								
Shaft base size	Bolt circle A	Bolt projection B	Base diameter C	Base plate thickness	Template description	Anchor bolt description	Anchor bolt and template number	Anchor bolt description
4"C	8" - 9"	3.25" - 3.75"	8" - 8.25"	0.75"	ABTEMPLATE PJ50004	AB18-0	ABSSS-4C	3/4"x18"x3"
4"G	8" - 9"	3.38" - 3.75"	8" - 8.25"	0.875"	ABTEMPLATE PJ50004	AB30-0	ABSSS-4G	3/4"x30"x3"
5"	10" - 12"	3.5" - 4"	11"	1"	ABTEMPLATE PJ50010	AB36-0	ABSSS-5	1"x36"x4"
6"	11" - 13"	4" - 4.50"	12.5"	1"	ABTEMPLATE PJ50011	AB36-0	N/A	1"x36"x4"



HANDHOLE ORIENTATION



IMPORTANT INSTALLATION NOTES:

- Do not erect poles without having fixtures installed.
- Factory-supplied templates must be used when setting anchor bolts. Lithonia Lighting will not accept claim for incorrect anchorage placement due to failure to use Lithonia Lighting factory templates.
- If poles are stored outside, all protective wrapping must be removed immediately upon delivery to prevent finish damage.
- Lithonia Lighting is not responsible for the foundation design.
- Bolt circles have +/- 1/2" tolerance.

CAUTION: These specifications are intended for general purposes only. Lithonia Lighting reserves the right to change material or design, without prior notice, in a continuing effort to upgrade its products.



Attachment A - Application Packet



d®series

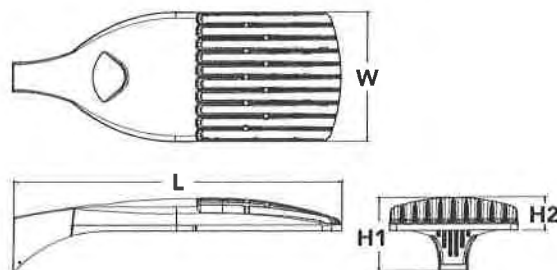
D-Series Size 1 LED Area Luminaire



Buy American

Specifications

EPA:	1.01 ft ² (0.09 m ²)
Length:	33" (83.8 cm)
Width:	13" (33.0 cm)
Height H1:	7-1/2" (19.0 cm)
Height H2:	3-1/2"
Weight (max):	27 lbs (12.2 kg)



Catalog Number	
Notes	
Type	

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Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 750W metal halide in pedestrian and area lighting applications with typical energy savings of 65% and expected service life of over 100,000 hours.

Ordering Information

EXAMPLE: DSX1 LED P7 40K T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX1 LED											
Series	LEDs	Color temperature		Distribution		Voltage	Mounting				
DSX1 LED	Forward optics		30K	3000 K	T1S	Type I short (Automotive)	T5VS	Type V very short ³	MVOLT ⁵	Shipped included SPA Square pole mounting RPA Round pole mounting ¹⁰ WBA Wall bracket ⁴ SPUMBA Square pole universal mounting adaptor ¹¹ RPUMBA Round pole universal mounting adaptor ⁹	
	P1	P4 ¹	P7 ¹	40K	4000 K	T5S	Type V short ⁴	T5M	Type V medium ³		XVOLT ⁵
	P2	P5 ¹	P8	50K	5000 K	T2S	Type II short	T5W	Type V wide ³		(277V-480V) ^{6,7,8}
	P3	P6 ¹	P9 ¹			T2M	Type II medium	BLC	Backlight control ⁴		120 ⁹
	Rotated optics				T3S	Type III short	LCCO	Left corner cutoff ⁴	208 ⁹		
	P10 ²	P12 ²			T3M	Type III medium	RCCO	Right corner cutoff ⁴	240 ⁹		
	P11 ²	P13 ^{1,2}			T4M	Type IV medium			277 ⁹		
					TFTM	Forward throw medium			347 ⁹		
									480 ⁹		
										Shipped separately KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish) ¹²	

Control options		Other options		Finish
Shipped installed NLTAIR2 nLight AIR generation 2 enabled ¹⁵ PIRHN Network, high/low motion/ambient sensor ¹⁴ PER NEMA twist-lock receptacle only (controls ordered separately) ¹⁵ PER5 Five-pin receptacle only (controls ordered separately) ^{15,16} PER7 Seven-pin receptacle only (controls ordered separately) ^{15,16} DMG 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) ¹⁷ DS Dual switching ^{18,19,20}		Shipped installed HS House-side shield ²¹ SF Single fuse (120, 277, 347V) ⁹ DF Double fuse (208, 240, 480V) ⁹ L90 Left rotated optics ² R90 Right rotated optics ² HA 50°C ambient operations ¹ BAA Buy America(n) Act Compliant Shipped separately BS Bird spikes ²⁴ EGS External glare shield		DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white
PIR High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc ^{20,21} PIRH High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc ^{20,21} PIR1FC3V High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc ^{20,21} PIRH1FC3V Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc ^{20,21} FAO Field adjustable output ^{20,21}				

Ordering Information

Accessories

Ordered and shipped separately.

DL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) ²⁵
DL1347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) ²⁵
DL1480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) ²⁵
DSHORT 5BK U	Shorting cap ²⁵
DSX1HS 30C U	House-side shield for P1, P2, P3, P4 and P5 ²¹
DSX1HS 40C U	House-side shield for P6 and P7 ²¹
DSX1HS 60C U	House-side shield for P8, P9, P10, P11 and P12 ²¹
PUMBA DDBXD U*	Square and round pole universal mounting bracket (specify finish) ²⁴
KMA8 DDBXD U	Master arm mounting bracket adaptor (specify finish) ²²
DSX1EGS (FINISH) U	External glare shield

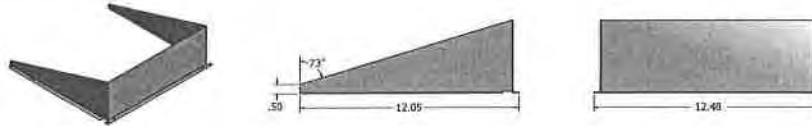
For more control options, visit [TL](#) and [ROAM](#) online.

NOTES

- HA not available with P4, P5, P6, P7, P9 and P13.
- P10, P11, P12 or P13 and rotated optics (L90, R90) only available together.
- Any Type 5 distribution with photocell, is not available with WBA.
- Not available with HS.
- MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
- XVOLT only suitable for use with P3, P5, P6, P7, P9 and P13.
- XVOLT works with any voltage between 277V and 480V.
- XVOLT not available with fusing (SF or DF) and not available with PIR, PIRH, PIR1FC3V, PIRH1FC3V.
- Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V. XVOLT not available with fusing (SF or DF).
- Suitable for mounting to round poles between 3.5" and 12" diameter.
- Universal mounting brackets intended for retrofit on existing, pre-drilled poles only. 1.5 G vibration load rating per ANCI C136.31. Only usable when pole's drill pattern is NOT Lithonia template #8.
- Must order fixture with SPA option. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" diameter mast arm (not included).
- Must be ordered with PIRHN. Sensor cover available only in dark bronze, black, white and natural aluminum colors.
- Must be ordered with NLTAIR2. For more information on nLight Air 2 visit [this link](#).
- Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting cap included.
- If ROAM* node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Node with integral dimming.
- DMG not available with PIRHN, PER5, PER7, PIR, PIRH, PIR1FC3V or PIRH1FC3V, FAO.
- Provides 50/50 fixture operation via (2) independent drivers. Not available with PER, PER5, PER7, PIR or PIRH. Not available P1, P2, P3, P4 or P5.
- Requires (2) separately switched circuits with isolated neutral.
- Reference Controls Option Default settings table on page 4.
- Reference Motion Sensor table on page 4 to see functionality.
- Not available with other dimming controls options.
- Not available with BLC, LCCO and RCCO distribution. Also available as a separate accessory; see Accessories information.
- Must be ordered with fixture for factory pre-drilling.
- Requires luminaire to be specified with PER, PER5 or PER7 option. See Control Option Table on page 4.
- For retrofit use only. Only usable when pole's drill pattern is NOT Lithonia template #8.

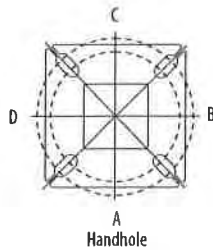
Options

EGS - External Glare Shield



Drilling

HANDHOLE ORIENTATION



Tenon Mounting Slipfitter

Tenon O.D.	Mounting	Single Unit	2 @ 180	2 @ 90	3 @ 90	3 @ 120	4 @ 90
2-3/8"	RPA	AS3-5 190	AS3-5 280	AS3-5 290	AS3-5 390	AS3-5 320	AS3-5 490
2-7/8"	RPA	AST25-190	AST25-280	AST25-290	AST25-390	AST25-320	AST25-490
4"	RPA	AST35-190	AST35-280	AST35-290	AST35-390	AST35-320	AST35-490

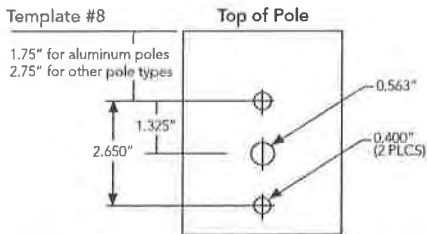
Mounting Option	Drilling Template	Single	2 @ 180	2 @ 90	3 @ 90	3 @ 120	4 @ 90
Head Location		Side B	Side B & D	Side B & C	Side B, C & D	Round Pole Only	Side A, B, C & D
Drill Nomenclature	#8	DM19AS	DM28AS	DM29AS	DM39AS	DM32AS	DM49AS

DSX1 Area Luminaire - EPA

*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

Fixture Quantity & Mounting Configuration	Single DM19	2 @ 180 DM28	2 @ 90 DM29	3 @ 90 DM39	3 @ 120 DM32	4 @ 90 DM49
Mounting Type						
DSX1 LED	1.013	2.025	1.945	3.038	2.850	3.749

	Drilling Template	Minimum Acceptable Outside Pole Dimension					
SPA	#8	2-7/8"	2-7/8"	3.5"	3.5"	3"	3.5"
RPA	#8	2-7/8"	2-7/8"	3.5"	3.5"	3"	3.5"
SPUMBA	#5	2-7/8"	3"	4"	4"	3.5"	4"
RPUMBA	#5	2-7/8"	3.5"	5"	5"	3.5"	5"

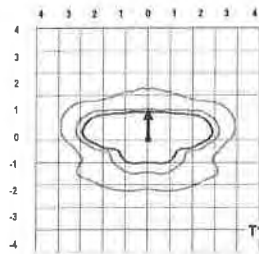


Photometric Diagrams

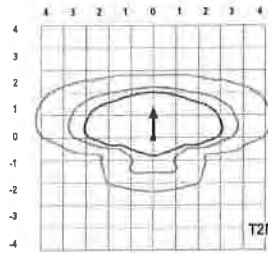
To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area Size 1 homepage.

Isofootcandle plots for the DSX1 LED 60C 1000 40K. Distances are in units of mounting height (25').

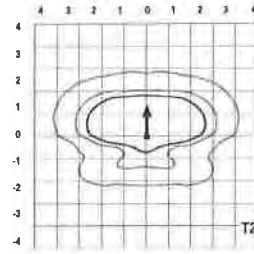
LEGEND



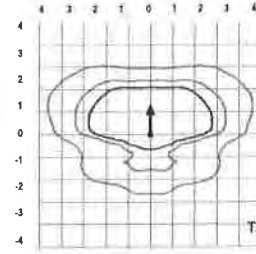
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IESNA LM-79-08



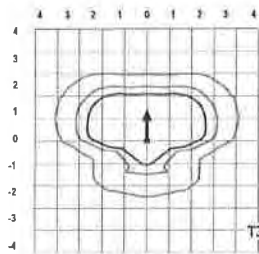
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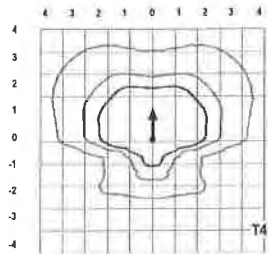
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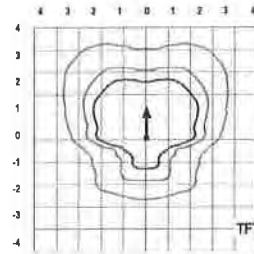
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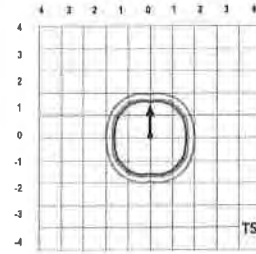
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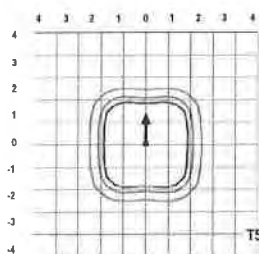
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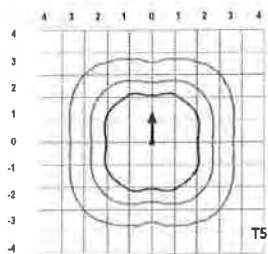
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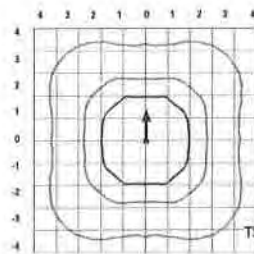
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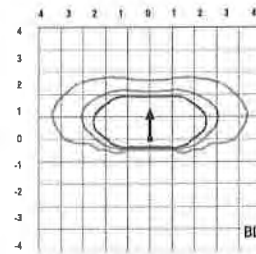
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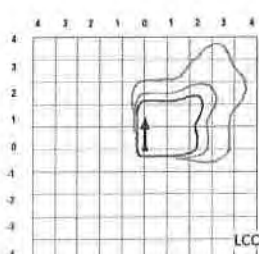
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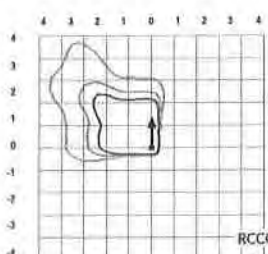
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IESNA LM-79-08



BLC
Test No. LT123271 tested in accordance with
IESNA LM-79-08



LCCO
Test No. LT123211 tested in accordance with
IESNA LM-79-08



RCCO
Test No. LT123164B tested in accordance with
IESNA LM-79-08

Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.04
10°C	50°F	1.03
15°C	59°F	1.02
20°C	68°F	1.01
25°C	77°F	1.00
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a 25°C ambient, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	Lumen Maintenance Factor
0	1.00
25,000	0.96
50,000	0.92
100,000	0.85

Motion Sensor Default Settings						
Option	Dimmed State	High Level (when triggered)	Photocell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
*PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min

*for use when motion sensor is used as dusk to dawn control.

Electrical Load

	Performance Package	LED Count	Drive Current	Wattage	Current (A)					
					120	208	240	277	347	480
Forward Optics (Non-Rotated)	P1	30	530	54	0.45	0.26	0.23	0.19	0.10	0.12
	P2	30	700	70	0.59	0.34	0.30	0.25	0.20	0.16
	P3	30	1050	102	0.86	0.50	0.44	0.38	0.30	0.22
	P4	30	1250	125	1.06	0.60	0.52	0.46	0.37	0.27
	P5	30	1400	138	1.16	0.67	0.58	0.51	0.40	0.29
	P6	40	1250	163	1.36	0.78	0.68	0.59	0.47	0.34
	P7	40	1400	183	1.53	0.88	0.76	0.66	0.53	0.38
	P8	60	1050	207	1.74	0.98	0.87	0.76	0.64	0.49
	P9	60	1250	241	2.01	1.16	1.01	0.89	0.70	0.51
Rotated Optics (Requires L90 or R90)	P10	60	530	106	0.90	0.52	0.47	0.43	0.33	0.27
	P11	60	700	137	1.15	0.67	0.60	0.53	0.42	0.32
	P12	60	1050	207	1.74	0.99	0.87	0.76	0.60	0.46
	P13	60	1250	231	1.93	1.12	0.97	0.86	0.67	0.49

Controls Options

Nomenclature	Description	Functionality	Primary control device	Notes
FAO	Field adjustable output device installed inside the luminaire; wired to the driver dimming leads.	Allows the luminaire to be manually dimmed, effectively trimming the light output.	FAO device	Cannot be used with other controls options that need the 0-10V leads
DS	Drivers wired independently for 50/50 luminaire operation	The luminaire is wired to two separate circuits, allowing for 50/50 operation.	Independently wired drivers	Requires two separately switched circuits. Consider nLight AIR as a more cost effective alternative.
PERS or PER7	Twist-lock photocell receptacle	Compatible with standard twist-lock photocells for dusk to dawn operation, or advanced control nodes that provide 0-10V dimming signals.	Twist-lock photocells such as DLL Elite or advanced control nodes such as ROAM.	Pins 4 & 5 to dimming leads on driver, Pins 6 & 7 are capped inside luminaire
PIR or PIRH	Motion sensors with integral photocell. PIR for 8-15' mounting; PIRH for 15-30' mounting	Luminaires dim when no occupancy is detected.	Acuity Controls SBGR	Also available with PIRH1FC3V when the sensor photocell is used for dusk-to-dawn operation.
NLTAIR2 PIRHN	nLight AIR enabled luminaire for motion sensing, photocell and wireless communication.	Motion and ambient light sensing with group response. Scheduled dimming with motion sensor over-ride when wirelessly connected to the nLight Edypse.	nLight AIR rSDGR	nLight AIR sensors can be programmed and commissioned from the ground using the CLAIRity Pro app.

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts Contact factory for performance data on any configurations not shown here.

Forward Optics																			
LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30	530	P1	54W	T1S	6,457	2	0	2	120	6,956	2	0	2	129	7,044	2	0	2	130
				T2S	6,450	2	0	2	119	6,949	2	0	2	129	7,037	2	0	2	130
				T2M	6,483	1	0	1	120	6,984	2	0	2	129	7,073	2	0	2	131
				T3S	6,279	2	0	2	116	6,764	2	0	2	125	6,850	2	0	2	127
				T3M	6,468	1	0	2	120	6,967	1	0	2	129	7,056	1	0	2	131
				T4M	6,327	1	0	2	117	6,816	1	0	2	126	6,902	1	0	2	128
				TFTM	6,464	1	0	2	120	6,963	1	0	2	129	7,051	1	0	2	131
				TSVS	6,722	2	0	0	124	7,242	3	0	0	134	7,334	3	0	0	136
				TSS	6,728	2	0	1	125	7,248	2	0	1	134	7,340	2	0	1	136
				TSM	6,711	3	0	1	124	7,229	3	0	1	134	7,321	3	0	2	136
				TSW	6,667	3	0	2	123	7,182	3	0	2	133	7,273	3	0	2	135
				BLC	5,299	1	0	1	98	5,709	1	0	2	106	5,781	1	0	2	107
				LCCO	3,943	1	0	2	73	4,248	1	0	2	79	4,302	1	0	2	80
				RCCO	3,943	1	0	2	73	4,248	1	0	2	79	4,302	1	0	2	80
				30	700	P2	70W	T1S	8,249	2	0	2	118	8,886	2	0	2	127	8,999
T2S	8,240	2	0					2	118	8,877	2	0	2	127	8,989	2	0	2	128
T2M	8,283	2	0					2	118	8,923	2	0	2	127	9,036	2	0	2	129
T3S	8,021	2	0					2	115	8,641	2	0	2	123	8,751	2	0	2	125
T3M	8,263	2	0					2	118	8,901	2	0	2	127	9,014	2	0	2	129
T4M	8,083	2	0					2	115	8,708	2	0	2	124	8,818	2	0	2	126
TFTM	8,257	2	0					2	118	8,896	2	0	2	127	9,008	2	0	2	129
TSVS	8,588	3	0					0	123	9,252	3	0	0	132	9,369	3	0	0	134
TSS	8,595	3	0					1	123	9,259	3	0	1	132	9,376	3	0	1	134
TSM	8,573	3	0					2	122	9,236	3	0	2	132	9,353	3	0	2	134
TSW	8,517	3	0					2	122	9,175	4	0	2	131	9,291	4	0	2	133
BLC	6,770	1	0					2	97	7,293	1	0	2	104	7,386	1	0	2	106
LCCO	5,038	1	0					2	72	5,427	1	0	2	78	5,496	1	0	2	79
RCCO	5,038	1	0					2	72	5,427	1	0	2	78	5,496	1	0	2	79
30	1050	P3	102W					T1S	11,661	2	0	2	114	12,562	3	0	3	123	12,721
				T2S	11,648	2	0	2	114	12,548	3	0	3	123	12,707	3	0	3	125
				T2M	11,708	2	0	2	115	12,613	2	0	2	124	12,773	2	0	2	125
				T3S	11,339	2	0	2	111	12,215	3	0	3	120	12,370	3	0	3	121
				T3M	11,680	2	0	2	115	12,582	2	0	2	123	12,742	2	0	2	125
				T4M	11,426	2	0	3	112	12,309	2	0	3	121	12,465	2	0	3	122
				TFTM	11,673	2	0	2	114	12,575	2	0	3	123	12,734	2	0	3	125
				TSVS	12,140	3	0	1	119	13,078	3	0	1	128	13,244	3	0	1	130
				TSS	12,150	3	0	1	119	13,089	3	0	1	128	13,254	3	0	1	130
				TSM	12,119	4	0	2	119	13,056	4	0	2	128	13,221	4	0	2	130
				TSW	12,040	4	0	3	118	12,970	4	0	3	127	13,134	4	0	3	129
				BLC	9,570	1	0	2	94	10,310	1	0	2	101	10,440	1	0	2	102
				LCCO	7,121	1	0	3	70	7,671	1	0	3	75	7,768	1	0	3	76
				RCCO	7,121	1	0	3	70	7,671	1	0	3	75	7,768	1	0	3	76
				30	1250	P4	125W	T1S	13,435	3	0	3	107	14,473	3	0	3	116	14,657
T2S	13,421	3	0					3	107	14,458	3	0	3	116	14,641	3	0	3	117
T2M	13,490	2	0					2	108	14,532	3	0	3	116	14,716	3	0	3	118
T3S	13,064	3	0					3	105	14,074	3	0	3	113	14,252	3	0	3	114
T3M	13,457	2	0					2	108	14,497	2	0	2	116	14,681	2	0	2	117
T4M	13,165	2	0					3	105	14,182	2	0	3	113	14,362	2	0	3	115
TFTM	13,449	2	0					3	108	14,488	2	0	3	116	14,672	2	0	3	117
TSVS	13,987	4	0					1	112	15,068	4	0	1	121	15,259	4	0	1	122
TSS	13,999	3	0					1	112	15,080	3	0	1	121	15,271	3	0	1	122
TSM	13,963	4	0					2	112	15,042	4	0	2	120	15,233	4	0	2	122
TSW	13,872	4	0					3	111	14,944	4	0	3	120	15,133	4	0	3	121
BLC	11,027	1	0					2	88	11,879	1	0	2	95	12,029	1	0	2	96
LCCO	8,205	1	0					3	66	8,839	1	0	3	71	8,951	1	0	3	72
RCCO	8,205	1	0					3	66	8,839	1	0	3	71	8,951	1	0	3	72
30	1400	P5	138W					T1S	14,679	3	0	3	106	15,814	3	0	3	115	16,014
				T2S	14,664	3	0	3	106	15,797	3	0	3	114	15,997	3	0	3	116
				T2M	14,739	3	0	3	107	15,878	3	0	3	115	16,079	3	0	3	117
				T3S	14,274	3	0	3	103	15,377	3	0	3	111	15,572	3	0	3	113
				T3M	14,704	2	0	3	107	15,840	3	0	3	115	16,040	3	0	3	116
				T4M	14,384	2	0	3	104	15,496	3	0	3	112	15,692	3	0	3	114
				TFTM	14,695	2	0	3	106	15,830	3	0	3	115	16,030	3	0	3	116
				TSVS	15,283	4	0	1	111	16,464	4	0	1	119	16,672	4	0	1	121
				TSS	15,295	3	0	1	111	16,477	4	0	1	119	16,686	4	0	1	121
				TSM	15,257	4	0	2	111	16,435	4	0	2	119	16,644	4	0	2	121
				TSW	15,157	4	0	3	110	16,328	4	0	3	118	16,534	4	0	3	120
				BLC	12,048	1	0	2	87	12,979	1	0	2	94	13,143	1	0	2	95
				LCCO	8,965	1	0	3	65	9,657	1	0	3	70	9,780	1	0	3	71
				RCCO	8,965	1	0	3	65	9,657	1	0	3	70	9,780	1	0	3	71

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics																			
LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
40	1250	P6	163W	T1S	17,654	3	0	3	108	19,018	3	0	3	117	19,259	3	0	3	118
				T2S	17,635	3	0	3	108	18,998	3	0	3	117	19,238	3	0	3	118
				T2M	17,726	3	0	3	109	19,096	3	0	3	117	19,337	3	0	3	119
				T3S	17,167	3	0	3	105	18,493	3	0	3	113	18,727	3	0	3	115
				T3M	17,683	3	0	3	108	19,049	3	0	3	117	19,290	3	0	3	118
				T4M	17,299	3	0	3	106	18,635	3	0	4	114	18,871	3	0	4	116
				TFTM	17,672	3	0	3	108	19,038	3	0	4	117	19,279	3	0	4	118
				TSVS	18,379	4	0	1	113	19,800	4	0	1	121	20,050	4	0	1	123
				TSS	18,394	4	0	2	113	19,816	4	0	2	122	20,066	4	0	2	123
				TSM	18,348	4	0	2	113	19,766	4	0	2	121	20,016	4	0	2	123
				TSW	18,228	5	0	3	112	19,636	5	0	3	120	19,885	5	0	3	122
				BLC	14,489	2	0	2	89	15,609	2	0	3	96	15,806	2	0	3	97
				LCCO	10,781	1	0	3	66	11,614	1	0	3	71	11,761	2	0	3	72
				RCCO	10,781	1	0	3	66	11,614	1	0	3	71	11,761	2	0	3	72
				40	1400	P7	183W	T1S	19,227	3	0	3	105	20,712	3	0	3	113	20,975
T2S	19,206	3	0					3	105	20,690	3	0	3	113	20,952	3	0	3	114
T2M	19,305	3	0					3	105	20,797	3	0	3	114	21,060	3	0	3	115
T3S	18,696	3	0					3	102	20,141	3	0	3	110	20,396	3	0	4	111
T3M	19,258	3	0					3	105	20,746	3	0	3	113	21,009	3	0	3	115
T4M	18,840	3	0					4	103	20,296	3	0	4	111	20,553	3	0	4	112
TFTM	19,246	3	0					4	105	20,734	3	0	4	113	20,996	3	0	4	115
TSVS	20,017	4	0					1	109	21,564	4	0	1	118	21,837	4	0	1	119
TSS	20,033	4	0					2	109	21,581	4	0	2	118	21,854	4	0	2	119
TSM	19,983	4	0					2	109	21,527	5	0	3	118	21,799	5	0	3	119
TSW	19,852	5	0					3	108	21,386	5	0	3	117	21,656	5	0	3	118
BLC	15,780	2	0					3	86	16,999	2	0	3	93	17,214	2	0	3	94
LCCO	11,742	2	0					3	64	12,649	2	0	3	69	12,809	2	0	3	70
RCCO	11,742	2	0					3	64	12,649	2	0	3	69	12,809	2	0	3	70
60	1050	P8	207W					T1S	22,490	3	0	3	109	24,228	3	0	3	117	24,535
				T2S	22,466	3	0	4	109	24,202	3	0	4	117	24,509	3	0	4	118
				T2M	22,582	3	0	3	109	24,327	3	0	3	118	24,635	3	0	3	119
				T3S	21,870	3	0	4	106	23,560	3	0	4	114	23,858	3	0	4	115
				T3M	22,527	3	0	4	109	24,268	3	0	4	117	24,575	3	0	4	119
				T4M	22,038	3	0	4	106	23,741	3	0	4	115	24,041	3	0	4	116
				TFTM	22,513	3	0	4	109	24,253	3	0	4	117	24,560	3	0	4	119
				TSVS	23,415	5	0	1	113	25,224	5	0	1	122	25,543	5	0	1	123
				TSS	23,434	4	0	2	113	25,244	4	0	2	122	25,564	4	0	2	123
				TSM	23,374	5	0	3	113	25,181	5	0	3	122	25,499	5	0	3	123
				TSW	23,221	5	0	4	112	25,016	5	0	4	121	25,332	5	0	4	122
				BLC	18,458	2	0	3	89	19,885	2	0	3	96	20,136	2	0	3	97
				LCCO	13,735	2	0	3	66	14,796	2	0	4	71	14,983	2	0	4	72
				RCCO	13,735	2	0	3	66	14,796	2	0	4	71	14,983	2	0	4	72
				60	1250	P9	241W	T1S	25,575	3	0	3	106	27,551	3	0	3	114	27,900
T2S	25,548	3	0					4	106	27,522	3	0	4	114	27,871	3	0	4	116
T2M	25,680	3	0					3	107	27,664	3	0	3	115	28,014	3	0	3	116
T3S	24,870	3	0					4	103	26,791	3	0	4	111	27,130	3	0	4	113
T3M	25,617	3	0					4	106	27,597	3	0	4	115	27,946	3	0	4	116
T4M	25,061	3	0					4	104	26,997	3	0	4	112	27,339	3	0	4	113
TFTM	25,602	3	0					4	106	27,580	3	0	4	114	27,929	3	0	4	116
TSVS	26,626	5	0					1	110	28,684	5	0	1	119	29,047	5	0	1	121
TSS	26,648	4	0					2	111	28,707	5	0	2	119	29,070	5	0	2	121
TSM	26,581	5	0					3	110	28,635	5	0	3	119	28,997	5	0	3	120
TSW	26,406	5	0					4	110	28,447	5	0	4	118	28,807	5	0	4	120
BLC	20,990	2	0					3	87	22,612	2	0	3	94	22,898	2	0	3	95
LCCO	15,619	2	0					4	65	16,825	2	0	4	70	17,038	2	0	4	71
RCCO	15,619	2	0					4	65	16,825	2	0	4	70	17,038	2	0	4	71

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Rotated Optics																			
LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
60	530	P10	106W	T1S	13,042	3	0	3	123	14,050	3	0	3	133	14,228	3	0	3	134
				T2S	12,967	4	0	4	122	13,969	4	0	4	132	14,146	4	0	4	133
				T2M	13,201	3	0	3	125	14,221	3	0	3	134	14,401	3	0	3	136
				T3S	12,766	4	0	4	120	13,752	4	0	4	130	13,926	4	0	4	131
				T3M	13,193	4	0	4	124	14,213	4	0	4	134	14,393	4	0	4	136
				T4M	12,944	4	0	4	122	13,945	4	0	4	132	14,121	4	0	4	133
				TFTM	13,279	4	0	4	125	14,305	4	0	4	135	14,486	4	0	4	137
				TSVS	13,372	3	0	1	126	14,405	4	0	1	136	14,588	4	0	1	138
				TSS	13,260	3	0	1	125	14,284	3	0	1	135	14,465	3	0	1	136
				TSM	13,256	4	0	2	125	14,281	4	0	2	135	14,462	4	0	2	136
				TSW	13,137	4	0	3	124	14,153	4	0	3	134	14,332	4	0	3	135
				BLC	10,906	3	0	3	103	11,749	3	0	3	111	11,898	3	0	3	112
				LCCO	7,789	1	0	3	73	8,391	1	0	3	79	8,497	1	0	3	80
				RCCO	7,779	4	0	4	73	8,380	4	0	4	79	8,486	4	0	4	80
				60	700	P11	137W	T1S	16,556	3	0	3	121	17,835	3	0	3	130	18,061
T2S	16,461	4	0					4	120	17,733	4	0	4	129	17,957	4	0	4	131
T2M	16,758	4	0					4	122	18,053	4	0	4	132	18,281	4	0	4	133
T3S	16,205	4	0					4	118	17,457	4	0	4	127	17,678	4	0	4	129
T3M	16,748	4	0					4	122	18,042	4	0	4	132	18,271	4	0	4	133
T4M	16,432	4	0					4	120	17,702	4	0	4	129	17,926	4	0	4	131
TFTM	16,857	4	0					4	123	18,159	4	0	4	133	18,389	4	0	4	134
TSVS	16,975	4	0					1	124	18,287	4	0	1	133	18,518	4	0	1	135
TSS	16,832	4	0					1	123	18,133	4	0	2	132	18,362	4	0	2	134
TSM	16,828	4	0					2	123	18,128	4	0	2	132	18,358	4	0	2	134
TSW	16,677	4	0					3	122	17,966	5	0	3	131	18,193	5	0	3	133
BLC	13,845	3	0					3	101	14,915	3	0	3	109	15,103	3	0	3	110
LCCO	9,888	1	0					3	72	10,652	2	0	3	78	10,787	2	0	3	79
RCCO	9,875	4	0					4	72	10,638	4	0	4	78	10,773	4	0	4	79
60	1050	P12	207W					T1S	22,996	4	0	4	111	24,773	4	0	4	120	25,087
				T2S	22,864	4	0	4	110	24,631	5	0	5	119	24,943	5	0	5	120
				T2M	23,277	4	0	4	112	25,075	4	0	4	121	25,393	4	0	4	123
				T3S	22,509	4	0	4	109	24,248	5	0	5	117	24,555	5	0	5	119
				T3M	23,263	4	0	4	112	25,061	4	0	4	121	25,378	4	0	4	123
				T4M	22,824	5	0	5	110	24,588	5	0	5	119	24,899	5	0	5	120
				TFTM	23,414	5	0	5	113	25,223	5	0	5	122	25,543	5	0	5	123
				TSVS	23,579	5	0	1	114	25,401	5	0	1	123	25,722	5	0	1	124
				TSS	23,380	4	0	2	113	25,187	4	0	2	122	25,506	4	0	2	123
				TSM	23,374	5	0	3	113	25,181	5	0	3	122	25,499	5	0	3	123
				TSW	23,165	5	0	4	112	24,955	5	0	4	121	25,271	5	0	4	122
				BLC	19,231	4	0	4	93	20,717	4	0	4	100	20,979	4	0	4	101
				LCCO	13,734	2	0	3	66	14,796	2	0	4	71	14,983	2	0	4	72
				RCCO	13,716	4	0	4	66	14,776	4	0	4	71	14,963	4	0	4	72
				60	1250	P13	231W	T1S	25,400	4	0	4	110	27,363	4	0	4	118	27,709
T2S	25,254	5	0					5	109	27,205	5	0	5	118	27,550	5	0	5	119
T2M	25,710	4	0					4	111	27,696	4	0	4	120	28,047	4	0	4	121
T3S	24,862	5	0					5	108	26,783	5	0	5	116	27,122	5	0	5	117
T3M	25,695	5	0					5	111	27,680	5	0	5	120	28,031	5	0	5	121
T4M	25,210	5	0					5	109	27,158	5	0	5	118	27,502	5	0	5	119
TFTM	25,861	5	0					5	112	27,860	5	0	5	121	28,212	5	0	5	122
TSVS	26,043	5	0					1	113	28,056	5	0	1	121	28,411	5	0	1	123
TSS	25,824	4	0					2	112	27,819	5	0	2	120	28,172	5	0	2	122
TSM	25,818	5	0					3	112	27,813	5	0	3	120	28,165	5	0	3	122
TSW	25,586	5	0					4	111	27,563	5	0	4	119	27,912	5	0	4	121
BLC	21,241	4	0					4	92	22,882	4	0	4	99	23,172	4	0	4	100
LCCO	15,170	2	0					4	66	16,342	2	0	4	71	16,549	2	0	4	72
RCCO	15,150	5	0					5	66	16,321	5	0	5	71	16,527	5	0	5	72

FEATURES & SPECIFICATIONS

INTENDED USE

The sleek design of the D-Series Size 1 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

CONSTRUCTION

Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED drivers are mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (1.01 ft²) for optimized pole wind loading.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS

Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 3000 K, 4000 K and 5000 K (70 CRI) configurations. The D-Series Size 1 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS

The DSX1 LED area luminaire has a number of control options. DSX Size 1, comes standard with 0-10V dimming drivers. Dusk to dawn controls can be utilized via optional NEMA twist-lock photocell receptacles. Integrated motion sensors with on-board photocells feature field-adjustable programming and are suitable for mounting heights up to 30 feet.

nLIGHT AIR CONTROLS

The DSX1 LED area luminaire is also available with nLight® AIR for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing and photocontrol functionality and is suitable for mounting heights up to 40 feet. Once commissioned using a smartphone and the easy-to-use CLAIRITY app, nLight AIR equipped luminaires can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclipse. Additional information about nLight Air can be found here.

INSTALLATION

Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 1 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 1 utilizes the AERIS™ series pole drilling pattern (template #8). NEMA photocontrol receptacle are also available.

LISTINGS

UL listed to meet U.S. and Canadian standards, UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

BUY AMERICAN

Product with the BAA option is assembled in the USA and meets the Buy America(n) government procurement requirements under FAR, DFARS and DOT. Please refer to www.acuitybrands.com/buy-american for additional information.

WARRANTY

5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/support/customer-support/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Specifications subject to change without notice.



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Attachment A - Application Packet

DSX1-LED

Rev. 07/19/21

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WEDGE3 LED

Architectural Wall Sconce



Buy American



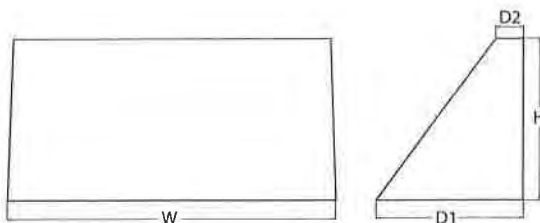
Catalog
Number

Notes

Type

Specifications

Depth (D1): 8"
Depth (D2): 1.5"
Height: 9"
Width: 18"
Weight: 19.5 lbs
(without options)



Introduction

The WEDGE LED family is designed to meet specifier's every wall-mounted lighting need in a widely accepted shape that blends with any architecture. The clean rectilinear design comes in four sizes with lumen packages ranging from 1,200 to 25,000 lumens, providing a true site-wide solution. Embedded with nLight® AIR wireless controls, the WEDGE family provides additional energy savings and code compliance.

WEDGE3 has been designed to deliver up to 12,000 lumens through a precision refractive lens with wide distribution, perfect for augmenting the lighting from pole mounted luminaires.

WEDGE LED Family Overview

Luminaire	Standard EM, 0°C	Cold EM, -20°C	Sensor	Lumens (4000K)					
				P1	P2	P3	P4	P5	P6
WEDGE1 LED	4W	—	—	1,200	2,000	—	—	—	—
WEDGE2 LED	10W	18W	Standalone / nLight	1,200	2,000	3,000	4,500	6,000	—
WEDGE3 LED	15W	18W	Standalone / nLight	7,500	8,500	10,000	12,000	—	—
WEDGE4 LED	—	—	Standalone / nLight	12,000	16,000	18,000	20,000	22,000	25,000

Ordering Information

EXAMPLE: WEDGE3 LED P3 40K 70CRI R3 MVOLT SRM DDBXD

Series	Package	Color Temperature	CRI	Distribution	Voltage	Mounting
WEDGE3 LED	P1	30K 3000K	70CRI	R2 Type 2	MVOLT	Shipped included
	P2	40K 4000K	80CRI	R3 Type 3	347 ¹	SRM Surface mounting bracket
	P3	50K 5000K		R4 Type 4	480 ¹	ICW Indirect Canopy/Ceiling Washer bracket (dry/damp locations only) ⁴
	P4			RFT Forward Throw		
						Shipped separately
						AWS 3/8Inch Architectural wall spacer
						PBBW Surface-mounted back box (top, left, right conduit entry). Use when there is no junction box available.

Options			Finish	
E15WH	Emergency battery backup, Certified in CA Title 20 MAEDBS (15W, 5°C min)	Standalone Sensors/Controls PIR Bi-level (100/35%) motion sensor for 8-15' mounting heights. Intended for use on switched circuits with external dusk to dawn switching. PIRH Bi-level (100/35%) motion sensor for 15-30' mounting heights. Intended for use on switched circuits with external dusk to dawn switching PIR1FC3V Bi-level (100/35%) motion sensor for 8-15' mounting heights with photocell pre-programmed for dusk to dawn operation. PIRH1FC3V Bi-level (100/35%) motion sensor for 15-30' mounting heights with photocell pre-programmed for dusk to dawn operation Networked Sensors/Controls NLTAIR2 PIR nLightAIR Wireless enabled bi-level motion/ambient sensor for 8-15' mounting heights. NLTAIR2 PIRH nLightAIR Wireless enabled bi-level motion/ambient sensor for 15-30' mounting heights See page 4 for out of box functionality	DDBXD	Dark bronze
E20WC	Emergency battery backup, Certified in CA Title 20 MAEDBS (18W, -20°C min)		DBLXD	Black
PE ²	Photocell, Button Type		DNAXD	Natural aluminum
DMG ³	0-10V dimming wires pulled outside fixture (for use with an external control, ordered separately)		DWHXD	White
BCE	Bottom conduit entry for back box (PBBW). Total of 4 entry points.		DSSXD	Sandstone
SPD10KV	10kV Surge pack		DBBTXD	Textured dark bronze
BAA	Buy America(n) Act Compliant	DBLBXD	Textured black	
		DNATXD	Textured natural aluminum	
		DWHGXD	Textured white	
		DSSTXD	Textured sandstone	

Accessories

Ordered and shipped separately.

WDGEAWS DDBXD	WEDGE 3/8Inch Architectural Wall Spacer (specify finish)
WDGE3PBBW DDBXD U	WEDGE3 surface-mounted back box (specify finish)

NOTES

- 347V and 480V not available with E15WH and E20WC.
- PE not available in 480V and with sensors/controls.
- DMG option not available with sensors/controls.
- Not qualified for DLC. Not available with emergency battery backup or sensors/controls



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WEDGE3 LED
Rev 01/18/22

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Performance Package	System Watts	Dist. Type	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P1	52W	R2	7,037	136	1	0	1	7,649	148	2	0	1	7,649	148	2	0	1
		R3	6,922	134	1	0	2	7,524	145	1	0	2	7,524	145	1	0	2
		R4	7,133	138	1	0	2	7,753	150	1	0	2	7,753	150	1	0	2
		RFT	6,985	135	1	0	2	7,592	147	1	0	2	7,592	147	1	0	2
P2	59W	R2	7,968	135	2	0	1	8,661	147	2	0	1	8,661	147	2	0	1
		R3	7,838	133	1	0	2	8,519	144	1	0	2	8,519	144	1	0	2
		R4	8,077	137	1	0	2	8,779	149	1	0	2	8,779	149	1	0	2
		RFT	7,909	134	1	0	2	8,597	146	2	0	2	8,597	146	2	0	2
P3	71W	R2	9,404	132	2	0	1	10,221	143	2	0	1	10,221	143	2	0	1
		R3	9,250	130	2	0	2	10,054	141	2	0	2	10,054	141	2	0	2
		R4	9,532	134	2	0	2	10,361	145	2	0	2	10,361	145	2	0	2
		RFT	9,334	131	2	0	2	10,146	142	2	0	2	10,146	142	2	0	2
P4	88W	R2	11,380	129	2	0	1	12,369	140	2	0	1	12,369	140	2	0	1
		R3	11,194	127	2	0	2	12,167	138	2	0	2	12,167	138	2	0	2
		R4	11,535	131	2	0	2	12,538	142	2	0	2	12,538	142	2	0	2
		RFT	11,295	128	2	0	2	12,277	139	2	0	2	12,277	139	2	0	2

Electrical Load

Performance Package	System Watts	Current (A)					
		120V	208V	240V	277V	480V	480V
P1	52W	0.437	0.246	0.213	0.186	0.150	0.110
P2	59W	0.498	0.287	0.251	0.220	0.175	0.126
P3	71W	0.598	0.344	0.300	0.262	0.210	0.152
P4	88W	0.727	0.424	0.373	0.333	0.260	0.190

Lumen Output in Emergency Mode (4000K, 70 CRI)

Option	Dist. Type	Lumens
E15WH	R2	3,185
	R3	3,133
	R4	3,229
	RFT	3,162
E20WC	R2	3,669
	R3	3,609
	R4	3,719
	RFT	3,642

Lumen Multiplier for 80CRI

CCT	Multiplier
30K	0.891
40K	0.906
50K	0.906

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient	Lumen Multiplier
0°C	1.05
10°C	1.03
20°C	1.01
25°C	1.00
30°C	0.99
40°C	0.97

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a 25°C ambient, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	1.0	>0.98	>0.97	>0.92



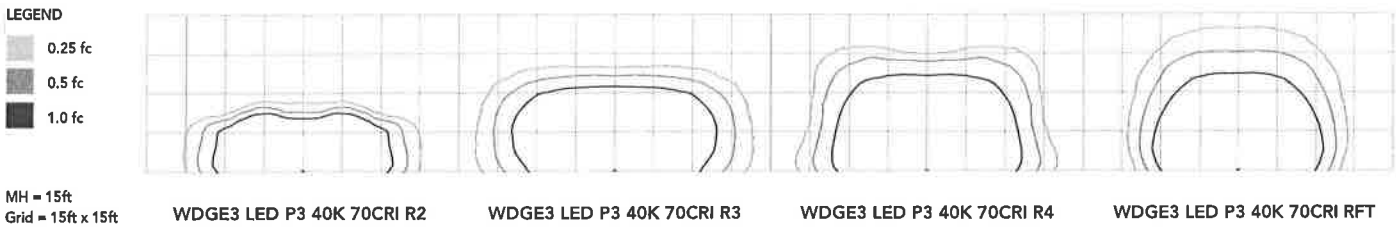
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WDGE3 LED
Rev. 01/18/22

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit the Lithonia Lighting WDGE LED homepage. Tested in accordance with IESNA LM-79 and LM-80 standards.



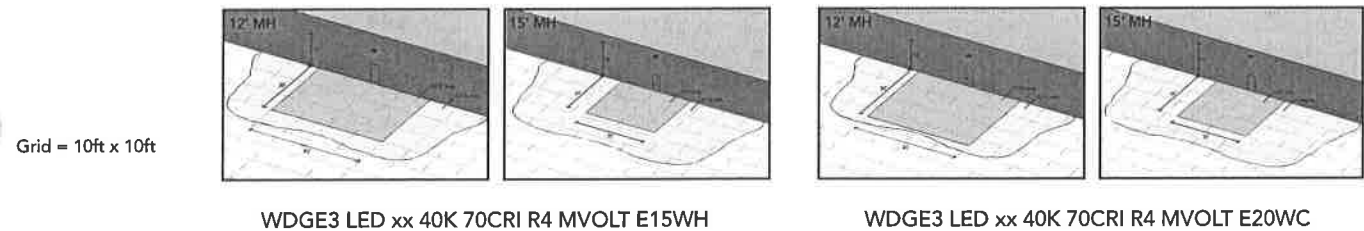
Emergency Egress Options

Emergency Battery Backup

The emergency battery backup is integral to the luminaire — no external housing required! This design provides reliable emergency operation while maintaining the aesthetics of the product. All emergency battery backup configurations include an independent secondary driver with an integral relay to immediately detect loss of normal power and automatically energize the luminaire. The emergency battery will power the luminaire for a minimum duration of 90 minutes (maximum duration of three hours) from the time normal power is lost and maintain, minimum of 60% of the light output at the end of 90minutes.

Applicable codes: NFPA 70/NEC – section 700.16, NFPA 101 Life Safety Code Section 7.9

The examples below show illuminance of 1 fc average and 0.1 fc minimum in emergency mode with E15WH or E20WC and R4 distribution.



Control / Sensor Options

Motion/Ambient Sensor (PIR_, PIRH_)

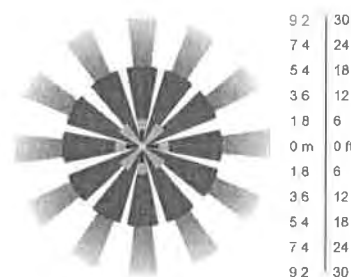
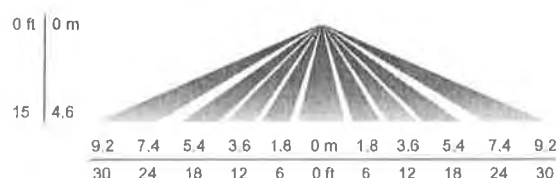
Motion/Ambient sensor (Sensor Switch MSOD) is integrated into the the luminaire. The sensor provides both Motion and Daylight based dimming of the luminaire. For motion detection, the sensor utilizes 100% Digital Passive Infrared (PIR) technology that is tuned for walking size motion while preventing false tripping from the environment. The integrated photocell enables additional energy savings during daytime periods when there is sufficient daylight. Optimize sensor coverage by either selecting PIR or PIRH option. PIR option comes with a sensor lens that is optimized to provide maximum coverage for mounting heights between 8-15ft, while PIRH is optimized for 15-40ft mounting height.

Networked Control (NLTAIR2)

nLight® AIR is a wireless lighting controls platform that allows for seamless integration of both indoor and outdoor luminaires. Five-tier security architecture, 900 MHz wireless communication and app (CLAIRITY™ Pro) based configurability combined together make nLight® AIR a secure, reliable and easy to use platform.

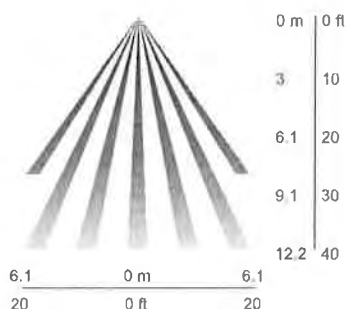
PIR

HIGH VIEW

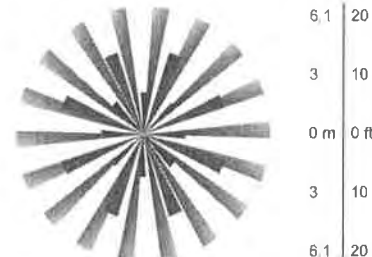


PIRH

SIDE VIEW



TOP VIEW



Motion/Ambient Sensor Default Settings

Option	Dim Level	High Level (when triggered)	Photocell Operation	Motion Time Delay	Ramp-down Time	Ramp-up Time
PIR or PIRH	Motion - 3V (37% of full output) Photocell - 0V (turned off)	10V (100% output)	Enabled @ 5fc	5 min	5 min	Motion - 3 sec Photocell - 45 sec
PIR1FC3V, PIRH1FC3V	Motion - 3V (37% of full output) Photocell - 0V (turned off)	10V (100% output)	Enabled @ 1fc	5 min	5 min	Motion - 3 sec Photocell - 45 sec
NLTAIR2 PIR, NLTAIR2 PIRH (out of box)	Motion - 3V (37% of full output) Photocell - 0V (turned off)	10V (100% output)	Enabled @ 5fc	7.5 min	5 min	Motion - 3 sec Photocell - 45 sec

Mounting, Options & Accessories

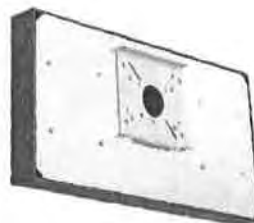


**NLTAIR2 PIR – nLight AIR
Motion/Ambient Sensor**

D = 8"

H = 11"

W = 18"



PBBW – Surface-Mounted Back Box
Use when there is no junction box available.

D = 1.75"

H = 9"

W = 18"



AWS – 3/8inch Architectural Wall Spacer

D = 0.38"

H = 4.4"

W = 7.5"

FEATURES & SPECIFICATIONS

INTENDED USE

Common architectural look, with clean rectilinear shape, of the WDGE LED was designed to blend with any type of construction, whether it be tilt-up, frame or brick. Applications include commercial offices, warehouses, hospitals, schools, malls, restaurants, and other commercial buildings.

CONSTRUCTION

The single-piece die-cast aluminum housing to optimize thermal transfer from the light engine and promote long life. The driver is mounted in direct contact with the casting for a low operating temperature and long life. The die-cast door frame is fully gasketed with a one-piece solid silicone gasket to keep out moisture and dust, providing an IP65 rating for the luminaire.

FINISH

Exterior painted parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Standard Super Durable colors include dark bronze, black, natural aluminum, sandstone and white. Available in textured and non-textured finishes.

OPTICS

Individually formed acrylic lenses are engineered for superior application efficiency which maximizes the light in the areas where it is most needed. Light engines are available in 3000 K, 4000 K or 5000 K configurations. The WDGE LED has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine consists of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L92/100,000 hours at 25°C). The electronic driver has a power factor of >90%, THD <20%. Luminaire comes with built in 6kV surge protection, which meets a minimum Category C low exposure (per ANSI/IEEE C62.41.2). Fixture ships standard with 0-10v dimmable driver.

INSTALLATION

A universal mounting plate with integral mounting support arms allows the fixture to hinge down for easy access while making wiring connections. The 3/8" Architectural Wall Spacer (AWS) can be used to create a floating appearance or to accommodate small imperfections in the wall surface. The ICW option can be used to mount the luminaire inverted for indirect lighting in dry and damp locations. Design can withstand up to a 1.5 G vibration load rating per ANSI C136.31.

LISTINGS

CSA certified to U.S. and Canadian standards. Light engines are IP66 rated; luminaire is IP65 rated. PIR options are rated for wet location. Rated for -40°C minimum ambient. DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified. International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature and SRM mounting only.

BUY AMERICAN

Product with the BAA option is assembled in the USA and meets the Buy America(n) government procurement requirements under FAR, DFARS and DOT. Please refer to www.acuitybrands.com/buy-american for additional information.

WARRANTY

5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

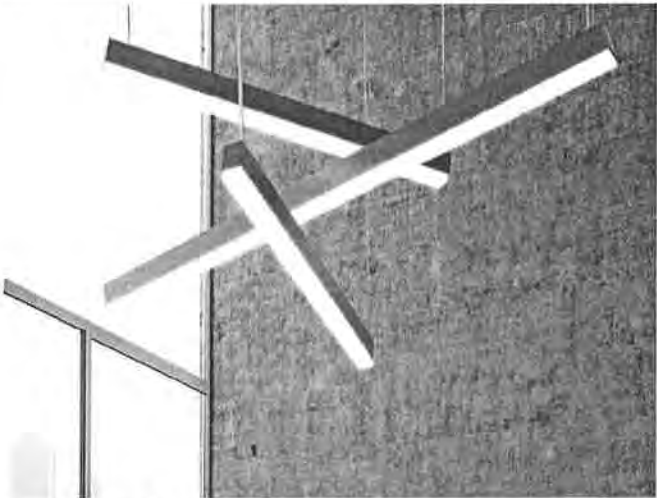


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WDGE3 LED
Rev. 01/18/22

ACCOLED | ACL3ST | SUSPENDED | SURFACE | WALL



ACL3ST

Direct - Suspended - Surface - Wall

ACL3ST combines clean lines with high performance direct distribution, for a functional and aesthetically pleasing slim profile.

Replacement of ACCOLED - ACL3

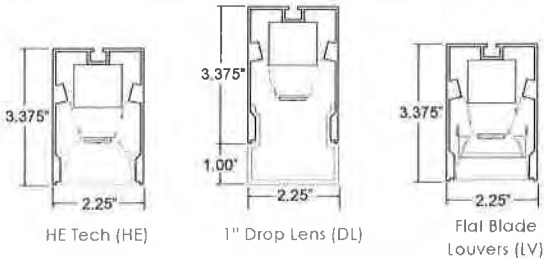
- Unique patterns with fully lit corners and intersections possible with Design Assist.
- Individual units and continuous runs in exact lengths.
- Adjustable mounting options for ease of installation.
- Custom color options.
- Quickship nominal options.
- ADA compliant mounting options.

PERFORMANCE

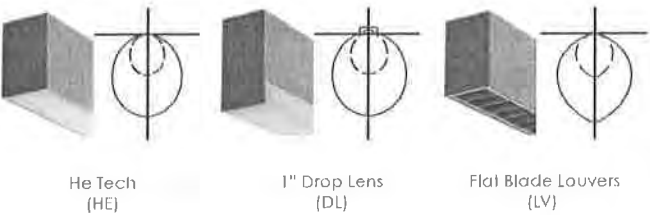
OUTPUT	OPTICS	NOMINAL		
		LM OUTPUT	INPUT WATTS	EFFICACY
LH (High)	HE Tech™	1075 lm/ft	10 W/ft	109 lm/W
	1" Drop Lens	861 lm/ft	9.8 W/ft	88 lm/W
LS (Low)	HE Tech™	572 lm/ft	4.9 W/ft	117 lm/W
	1" Drop Lens	453 lm/ft	4.9 W/ft	95 lm/W

Shown only (table white) HE lens fixtures. For the complete photometric data of this fixture refer to page 4

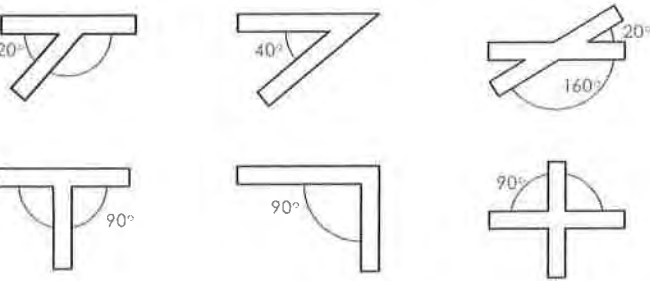
DIMENSIONS



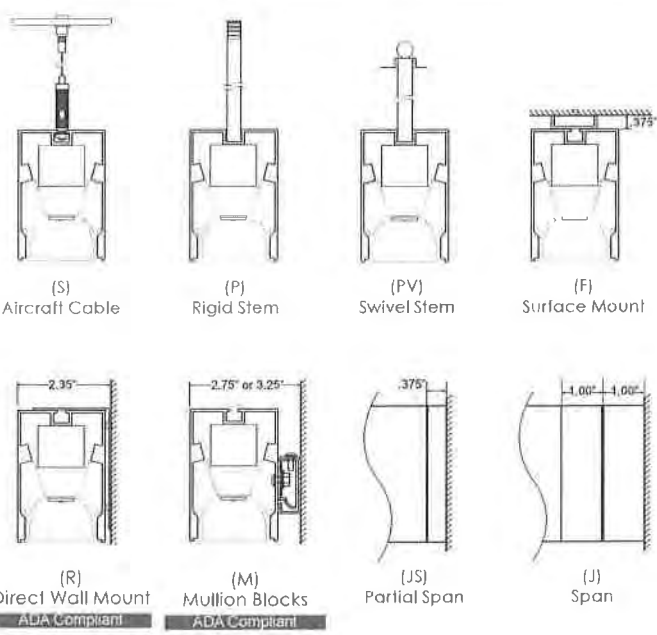
DOWNLIGHT LENS OPTIONS



MULTIPLE INTERSECTIONS AND CORNERS OPTIONS



MOUNTING OPTIONS



ACL3ST | SPECIFICATION

PERFORMANCE AT 3500K

OUTPUT	OPTICS	NOMINAL		
		LUMEN OUTPUT	INPUT WATTS	EFFICACY
LH (High)	HE Tech™	1075 lm/ft	9.8 W/ft	109 lm/W
	1" Drop Lens	843 lm/ft	9.8 W/ft	86 lm/W
	Flat Blade Louver*	982 lm/ft	9.8 W/ft	100 lm/W
LS (Standard)	HE Tech™	572 lm/ft	4.9 W/ft	117 lm/W
	1" Drop Lens	443 lm/ft	4.9 W/ft	90 lm/W
	Flat Blade Louver*	517 lm/ft	4.9 W/ft	106 lm/W

Custom tuned output available from 25% to 125% of high output. Please consult factory for custom lumen output and wattage. *Flat Blade Louver calculated using the aluminum finish.

PROJECT INFORMATION

Project Info	Date
Type	Quantity



Need help? Don't see what you need?

Please reach out to our factory for any specific request or questions you have. Our talented Design Assist team at: designassist@alights.com

ACL3ST

ACL3ST							
SERIES	LENGTH OR PATTERN TYPE	INTERSECTION TYPE	OUTPUT	LED CCT	CRI	VOLTAGE	DIRECT OPTICS
ACL3ST	Nominal Length* M_ Exact Length** PL_ "L" Shape*** PU_ "U" Shape*** PR_ Rectangle / Square*** CP Custom Pattern****	IT "T" Intersection* IX "X" Intersection* IY "Y" Intersection**	LH High Output LS Standard Output C_ Custom Output*	27 2700K 30 3000K 35 3500K 40 4000K TW Tunable White (27K to 50K)* DW Dim-to-warm**	80+ CRI 90 90+ CRI*	U 120V-277V 3 347V	HE HE Tech™ DL 1" Drop Lens* LV Flat Blade Louvers** PFW Polycarbonate Flush WISP™
	*Specify in feet to the nearest foot (i.e., 12). **Specify in inches to the nearest 1/8 (i.e., 180, 125). ***Specify in inches to the nearest 1/8 (See Pattern Guide (P.6) for configurations). ****Contact Design Assist.	*Not available with Drop Lens. Available with Flat Blade Louvers only in 90° degree. **Fully illuminated intersection available with HE Tech and Polycarbonate Flush WISP optics only. Contact Design Assist.	*Available from 25% to 125% of LED High Output.	*Contact Design Assist for custom CCT range. **Standard CCT range is 27-50K. Contact design assist for custom range.	*Not offered with (TW) Tunable white or (DW) Dim-to-warm.		*Not available in Wet Location. **Aluminum Standard. Not available in Wet Location.

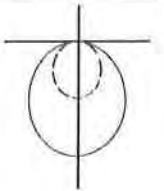
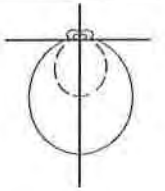
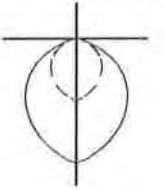
MOUNTING	FINISH	DIMMING	EMERGENCY	SENSORS	OPTIONS
S Aircraft Cable* P_ Rigid Stem** PV Swivel Stem** R Direct Wall Mount M_ Mullion Blocks*** F Surface Mount**** JS Partial Span J Full Span	T Titanium W White B Black O_ Other*	D Standard 0-10V dimming* D1 HiLume Ecosystems 1% (LDEI) D2 Phase dimming** D3 DMX 0.1% dim-to-dark (EldoLED) D4 DALI dim-to-off (EldoLED) NAIR nLight @AIR (dim-to-off) NWIR nLight @Wired (dim-to-off) DO Dimming - Other***	EC Emergency - Circuited* E_ Emergency - battery**	OC Occupancy Sensor - Ceiling PC Photocell / Daylight Sensor - Ceiling OF Occupancy Sensor - Fixture PF Photocell / Daylight Sensor - Fixture OPC Occupancy / Daylight Sensor - Ceiling OPF Occupancy / Daylight Sensor - Fixture	M Multi-Circuit* R Right End cap Feed L Left End cap Feed N New York City Code K Natatorium Application** Q Wet Location*** MRI MRI
Standard power cord exit point is 3" away from end-cap. Contact Design Assist for custom location. *Standard 48" field adjustable cable, specify length to nearest inch if over 48". Black power cord provided for black and titanium finish and white power cord provided for all other fixture finishes, unless otherwise specified. **Indicate stem length to nearest inch, 4" 00" minimum. ***Enter 1 for 1" depth. Enter 5 for 1/2" depth. ****Available for ceiling and wall surface mounting.	*Specify RAL#	*1% Dimming standard unless otherwise specified. **Reference ERP-PH8 driver for compatible dimmers. ***Specify if other dimming driver is needed. Contact Design Assist.	*Not available on fixtures < 4' length. Smallest EM circuit is 2ft. If entire fixture is on EM circuit, no need to call out EC in part number. **Factor in installed emergency battery pack. Specify desired quantity of batteries. Not available on fixtures < 4' length. Not available for 347V. See technical data for more information.	*Sensor will be matched to dimming input.	*Submit multi-circuiting requirements. **Not available with aircraft cable. See guide and contact Design Assist. Not compatible with Drop Lens, Flat Blade Louvers. ***Client must specify power feed location. Not available with aircraft cable. Wet location suitable in full coverage and/or mullion mounted applications (direct to sky not recommended); not suitable for extreme weather applications. Refer to Wet Location brochure and contact Design Assist for more information. Not compatible with Drop Lens, Flat Blade Louvers optics.

ACL3ST | PHOTOMETRY

LIGHT DISTRIBUTION

DISTRIBUTION	OUTPUT
Direct Symmetric	LH: High output - 9.8 W/ft LS: Standard output - 4.9 W/ft C: Custom tuned output - Contact Design Assist

PHOTOMETRIC DATA

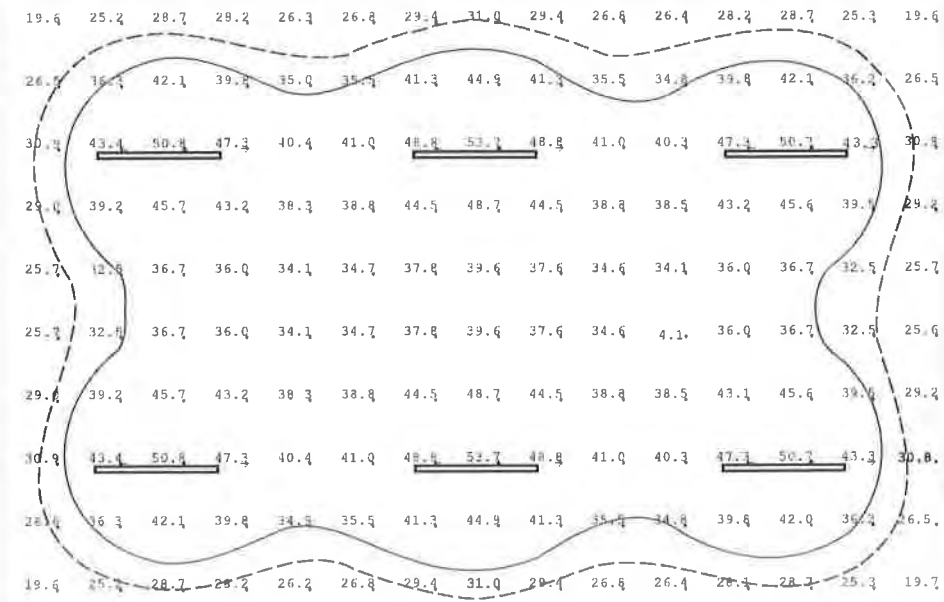
DIRECT SYMMETRIC LH - 4FT - 3500K - HE TECH	DIRECT SYMMETRIC LH - 4FT - 3500K - DROP LENS	DIRECT SYMMETRIC LH - 4FT - 3500K - BLADE LOUVERS
Lumens: 1075 lm/ft Input watts: 9.8 W/ft Efficacy: 109 lm/W	Lumens: 843 lm/ft Input watts: 9.8 W/ft Efficacy: 86 lm/W	Lumens: 982 lm/ft Input watts: 9.8 W/ft Efficacy: 100 lm/W
LH: _____ LS: -----	LH: _____ LS: -----	LH: _____ LS: -----
		

SAMPLE INSTALLATION - WORKSPACE

LH DOWN - 3500K

Room dimensions: 30'L x 20'W x 12'H
Reflectance: 80% / 50% / 20%
Mounting height: 9 ft A.F.F.
Fixture length: 4 ft
Calculation grid: 2 ft x 2 ft
Calculation plane (horizontal): 2.5 ft A.F.F.
Average Illuminance: 36 fc
Fixture spacing: 10 ft x 10 ft
Uniformity: 1.9:1 (avg/min)

TOP VIEW
30 ft: _____
25 ft: -----



ACL3ST | PHOTOMETRY

LIGHT LOSS FACTORS (LLF)

OUTPUT	CCT	CRI 80+				CRI 90+			
		%	OPTICS			%	OPTICS		
			HE Tech™	Drop Lens	Flat Blade Louver		HE Tech™	Drop Lens	Flat Blade Louver
LH (High)	4000k	100%	1098 lm/ft	861 lm/ft	1003 lm/ft	88.3%	970 lm/ft	760 lm/ft	886 lm/ft
	3500k	97.9%	1075 lm/ft	843 lm/ft	982 lm/ft	85.4%	938 lm/ft	735 lm/ft	857 lm/ft
	3000k	94.2%	1034 lm/ft	811 lm/ft	945 lm/ft	80.7%	886 lm/ft	695 lm/ft	809 lm/ft
	2700k	90.6%	995 lm/ft	780 lm/ft	909 lm/ft	76.5%	840 lm/ft	659 lm/ft	767 lm/ft
LS (Standard)	4000k	100%	584 lm/ft	453 lm/ft	528 lm/ft	88.3%	516 lm/ft	400 lm/ft	466 lm/ft
	3500k	97.9%	572 lm/ft	443 lm/ft	517 lm/ft	85.4%	499 lm/ft	387 lm/ft	451 lm/ft
	3000k	94.2%	550 lm/ft	427 lm/ft	497 lm/ft	80.7%	471 lm/ft	366 lm/ft	426 lm/ft
	2700k	90.6%	529 lm/ft	410 lm/ft	478 lm/ft	76.5%	447 lm/ft	347 lm/ft	404 lm/ft

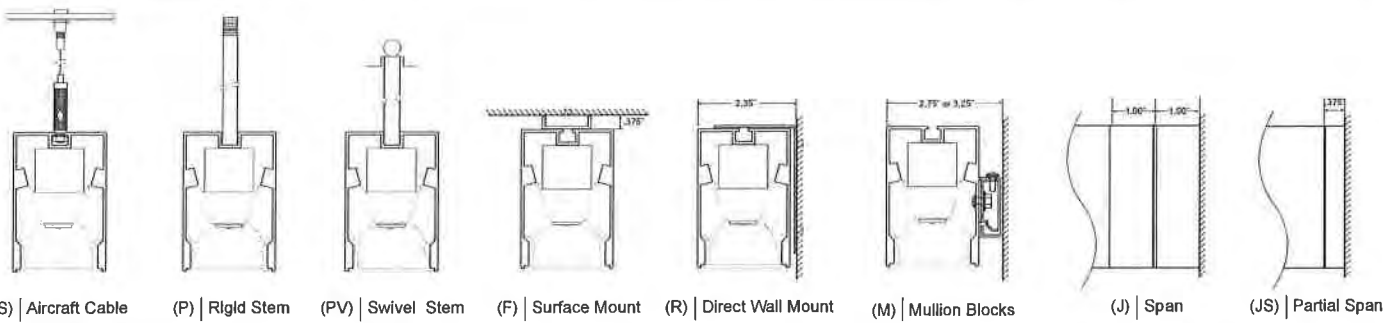
For standard output (LS) -50%

TUNNABLE WHITE | LIGHT LOSS FACTORS (LLF)

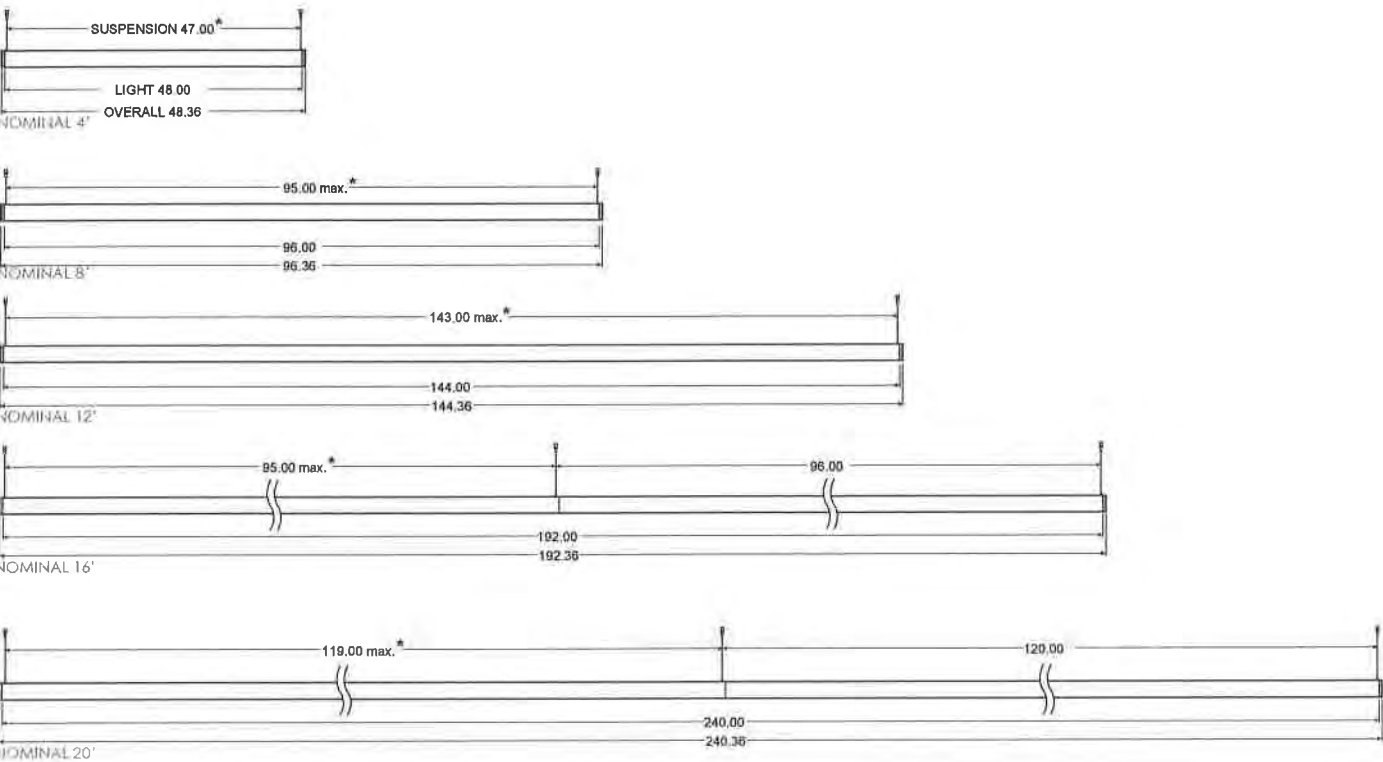
OUTPUT	CCT	CRI 80+			
		%	OPTICS		
			HE Tech™	Drop Lens	Flat Blade Louver
LH (High)	5000k	100%	890 lm/ft	727 lm/ft	847 lm/ft
	2700k	93.6%	833 lm/ft	667 lm/ft	776 lm/ft
LS (Standard)	5000k	100%	469 lm/ft	351 lm/ft	446 lm/ft
	2700k	93.6%	439 lm/ft	383 lm/ft	409 lm/ft

For standard output (LS) -50%. Values are applicable for Tunable White and Dim-to-warm only

ACL3ST | MOUNTING & DIMENSIONS

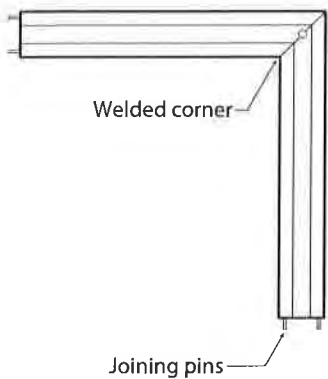


MOUNTING LENGTHS

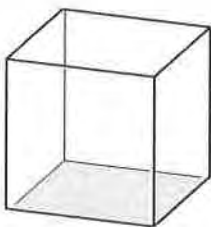


Maximum dimensions shown for suspension points, all aircraft cable mounting lengths are adjustable on site.
*For nLight AIR applications: gripper needs to be at least 3.5" from the antenna. Refer to nLight dimensions section for more details.

CORNER DETAIL



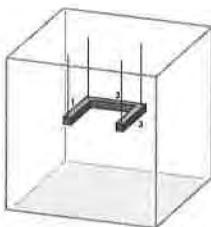
STANDARD PATTERNS



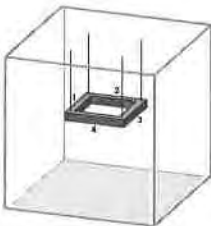
Custom Pattern*



PL



PU



PR



PLCW | Wall to Ceiling



PLWW | Wall to Wall



PLW | Wall Only



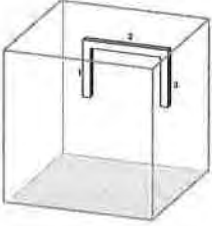
PLC | Ceiling Only



PUWW | Wall to Wall



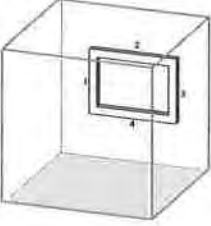
PUCW | Wall to Ceiling to Wall



PUW | Wall Only



PUC | Ceiling Only



PRW | Wall Only



PRC | Ceiling Only



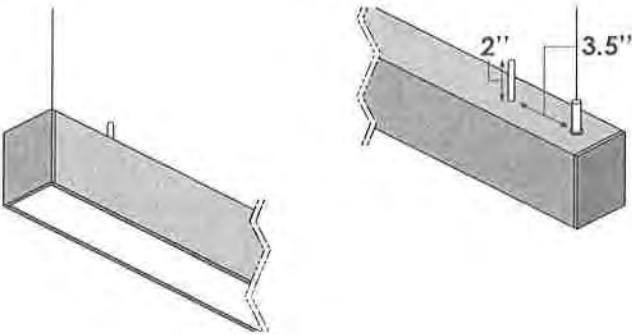
PRWW | Rectangle Wall to Wall

*Contact design assist for custom patterns.

ACL3ST | NLIGHT

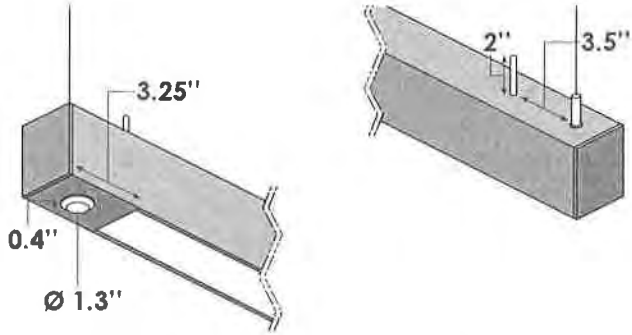
NLIGHT® DIMENSIONS

AIR : r10



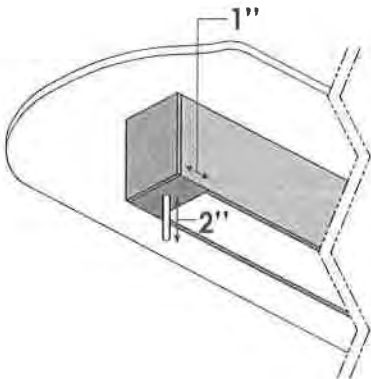
*Fixture mounted sensors and filler panel for nLight AIR only.

AIR : res7



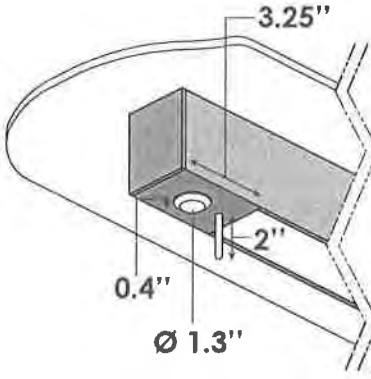
*Fixture mounted sensors and filler panel for nLight AIR only.

AIR : r10 Surface



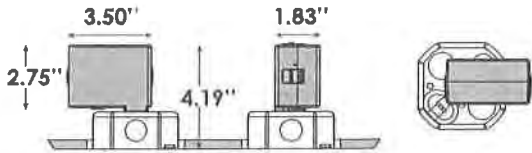
*Fixture mounted sensors and filler panel for nLightAIR only.

AIR : res7 Surface



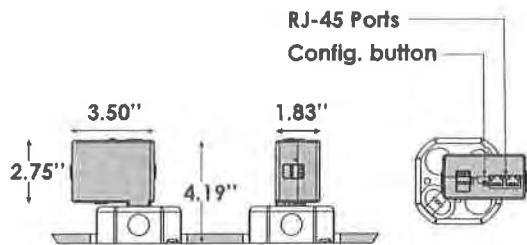
*Fixture mounted sensors and filler panel for nLightAIR only.

AIR : rPP20



*Mounted on standard 4" octagonal j-box. Fits on any j-box with 5/8" knockouts

WIRED : nPP16



*Mounted on standard 4" octagonal j-box. Fits on any j-box with 5/8" knockouts

ACL3ST | TECHNICAL DATA

LINEAR DIMENSIONS

Elements - 4', 8', and 12' nominal length individual fixtures that can be joined to create continuous row lengths.

Integrations - Nominal or exact lengths to the nearest 1/8th of an inch available as individual fixtures or joined to create continuous row lengths, minimum fixture lengths is 12 inches. Patterns comprised of 90 degree precisely welded fully illuminated corners provide a multitude of geometric options and architectural transitions. Custom angled corners and intersections also available upon request.

Custom - Contact [Design Assist](#) for modifications to product not detailed within specification sheets.

OPTICS

He Tech™ patented high efficacy extruded diffuse acrylic lens technology with integrated opaque white reflector delivers superior lumen output with optimal uniform lens surface luminance for direct distribution.

Flat Blade Louvers are used to cut down on glare and better control the light source on ACL3ST. This option includes a linear film diffuser (inserted between the louvers and the LEDs), that enhances glare control. The louvers standard finish is aluminum. Other colors and custom finish options available, specify RAL# or contact factory regarding custom finish requirement.

Drop Lens is a light diffuser option for ACL3ST that turns the luminaire into a decorative graphical statement. The diffuser drops down from the luminaire's main body of 1" and sits flush with the metal end caps. Once lit, the drop lens glows vividly and offers a wider diffusion pattern.

LED LIGHT SOURCE

Custom manufactured linear board array uses high performance Nichia® LED in combination with a performance driven heat sink technology. Tested in accordance with LM79 and LM-80; L70>60,000hr; operated at reduced output for high efficacy and lumen maintenance. 2700K, 3000K, 3500K, and 4000K with 80+ CRI standard; other color temperatures and 90+ CRI available upon request, contact factory. LED color variation maintained at a 3-step MacAdam ellipse (SDCM 3x). LEDs are available in Standard, and High outputs. Refer to photometry for delivered lumens. Custom output available in the range 25% to 125% of high output, contact factory.

LED DIMMING DRIVER

Factory tuned constant current electronic 0-10V control dimming driver is standard. Specification grade dimming down to 1%. Driver life of 50,000 hrs with ambient operating temperature range of -20°C to 50°C, maximum case temperature of 80°C. Electrical specifications at maximum driver load: PF >0.9, THD <20%, >85% Efficiency. Other available drivers include Lutron Hi-lume 1% EcoSystem LED Driver (LDE1) with Soft On, Fade to Black dimming technology; and DMX and DALI protocol drivers. Other Lutron and specialty drivers available, contact factory.

EMERGENCY

This luminaire is provided with a factory installed LED emergency lighting battery pack for both normal and emergency operation, 120-277v only. This fixture integrated unit contains long-life Ni-Cad recyclable battery, 24 hour charger, and converter circuit. Test switch and charge indicator provided. Test button to be remote located within 3 feet of the luminaire, in accordance with local code. Emergency mode provides constant power to a nominal 12W LED load for a period of 90 minutes, delivering 1200 lumens of unwavering illumination throughout the full 90 minute emergency duration. Unless otherwise specified, the emergency battery pack will illuminate one 2 foot end in the direct portion of the fixture. Not available in fixtures <4ft'.

Emergency circuiting provided as a separate circuit from normal power circuit according to NEC requirements, specify circuit length and location.

CONTROLS

Low-profile integral occupancy and daylight sensors are available to deliver high performance control in an architecturally pleasing package.

Integrated nLight® for system networking wired and wireless:

nLIGHT® AIR WIRELESS

The integrated API smart sensor is part of each luminaire in the nLight® AIR network, which can be grouped to control multiple luminaires. The granularity of control with the digital PIR occupancy detection and daylight sensing makes a great solution for any application. Optionally you can order nLight® AIR sensors for compatibility with an nLight Air wireless system. The rIO, rES7, rMSOD, and rCMS models are available for integration.

CONTROLS AND SYSTEM NETWORKING OPTIONS

For wired networking via Cat-5e, choose an nLight® wired module. The nIO EZ PH, nIO EZDL CCT, nES7 and nCM are available for integration.

Other manufacturer controls may be available for product integration, contact factory.

MOUNTING

Suspension with aircraft cables or pendant stems, and full or partial span mounting available.

Aircraft cable set includes 48" standard length 1/16" stainless steel adjustable aircraft cables with secure micro grippers to field set suspension length and adjustable suspension points to accommodate existing architecture, comes factory pre-installed in fixture, 4-1/2" x 4-1/2" square white canopies. Cord strain also included. Power cord options available for aircraft cable. Black power cord provided for black and titanium finish, white power cord provided for all other fixture finishes unless otherwise specified.

ACL3ST | TECHNICAL DATA**MOUNTING CONTD.**

Rigid pendant stem-set includes 1/4" hollow white threaded rod for suspension and power feed. Factory pre-drilled power feed and tapped holes, submit dimension requirements when ordering. Standard specification length, 6" minimum. 5" square mono point white canopies.

Swivel stem set includes 1/4" hollow white threaded rod for suspension and power feed, standard specification length, 6" in minimum. 5" in square mono point white 45-degree angle swivel stem. Factory pre-drilled power feed and tapped holes, submit dimension requirements when ordering.

Specify if another suspension length is required. Canopies provided as required for the quantity of power feed and non-power feed locations (crossbar included). Specify if another shape, size, or color is required.

Direct wall mounting is ADA compliant. Factory pre-drilled holes can be tapped for 1/2" chase nipple, submit dimension requirements when ordering. The top groove of the fixture is used to mount the fixture and provides a firm and flexible mounting option.

Surface ceiling and wall mounting is offered with die-cast mounting blocks with sheet metal brackets used to provide a firm flexible mounting option in any orientation the system might be installed in.

Mullion blocks are used to mount fixtures to a horizontal or vertical window mullion and can also be used to offset fixtures from the wall. 1/2" and 1" offsets are available standard. Custom offsets are also available upon request. (2) Mullion blocks are provided for fixtures 8ft or less. Fixtures larger than 8ft are provided with (3) blocks. The maximum distance between (2) mounting blocks is 8ft. Power feed holes are pre-drilled and mounting hardware is pre-installed at the factory to the fixture housing. Standard mullion block center location point has a 3" distance from endcap. Submit custom dimension requirements when ordering.

Partial /Full span mounting conditions utilize special expansion joint end caps to mount fixture to the wall (blocking required) and feed power through the end cap, specify end feed location. Additional attachment hardware provided as required depending on partial span condition. Provide architectural details at time of ordering for inclusion in factory shop drawings; field verified dimensions required for full span mounting.

STRUCTURE

Robust, high quality 60% recycled aluminum extruded housing. 0.040" thick aluminum internal gear trays. Flat or flanged aluminum end caps. Aluminum joiner brackets. 2 lbs/ft approximate fixture weight.

FINISH

Electrostatically applied powder coat finish. Standard finish options include titanium, white, and black. Other colors and custom finish options available, specify RAL# or contact factory regarding custom finish requirement.

LISTING

UL/CUL rated for damp locations. Tested under UL 1598 and certified to CEC/CSA C22.1, NEC, ANSI/NFPA 70, and NOM-001-SEDE.

UL Wet location label available. Complies with UL definition of wet locations to prevent the accumulation of water on live parts, electrical components, other conductor not identified for use in contact with water through the provision of weep holes. Waterproof connector to be provided by others. Installing contractor responsible for properly sealing and waterproofing all mounting and power feed locations.

The ACL3ST is assembled in the U.S.A. and comply with the Buy America(n) Act (BAA) government procurement requirements under FAR, DFARS, and DOT.

WARRANTY

Limited defect-free manufactured equipment warranty provided under normal use and proper storage for five (5) year. LED products (LED boards and drivers) will be covered for five (5) years. Please refer to the full terms and conditions on our website. Wet location fixtures are not recommended for extreme wet weather conditions and must be installed according to factory drawings; there is a modified warranty for LED components installed in applications not following factory recommendations/ drawings. Please refer to the full terms and conditions on our website.



CATALOG #	TYPE
JOB NAME	VOLTAGE

Open Appearance 4" Downlight • LED

Up to 90,000 Hour Life • Type IC • Air Tight Optional
10% Dimming • 4 Distributions • 5 CCT • 3-Step Binning
LM-80 Qualified • LM-79 Certified • Wet Location

LRR-04002-2000L
LRR-04002-1500L
LRR-04002-1000L



Specifications

Delivered System Performance*

- Lumen Series: **MUST SPECIFY**
-2000L: 2000 nominal lumens (25W).
-1500L: 1500 nominal lumens (20W).
-1000L: 1000 nominal lumens (11W).
- Distribution: MFL standard.
Optional: -SPT, -NFL or -WFL.
- Color temperature: 3500°K standard.
Optional: -27K, -30K, -41K or -50K.
- CRI: 80+ standard. Optional: -HC (90+).
- 90,000 hour life (L70**).
- Fully sustainable: removable for servicing.

Thermal Management System

- All aluminum heat sink, components and housing maximize cool operation and long life while minimizing maintenance.

LED Power Supply - INTERNAL

- Suitable for outdoor / indoor use:
-30°C (-22°F) to 60°C (140°F).

- 120-277V / 50-60Hz standard. Load insensitive.
- **0-10V CCR dimming standard. (100-10%) Trim Assembly**
- Clear specular aluminum trim.
- Self-flanged, low glare cone with lens above.
- Optional colors and finishes available.

Acrylic Enameled Aluminum Housing

- Rustproof and corrosion resistant: Exceeds 1000 hour ASTM 5% salt spray test.
- Shallow depth fits restricted plenums.
- Cool operation: Extends life of all components.
- Entire luminaire, including LED light engine, is modular, easily visible and serviced through aperture.
- Built-in plaster flange.

Outlet Box

- UL listed J-box with insulated removable cover. Prewired 14 GA (NEC) with 1/2" and 3/4" knockouts.

Installation

- Recess indoor or outdoor.
- Accommodates ceilings up to 1-1/8" thick.
- Compatible with fire rated enclosures (by others).
- 27" galvanized hanger bars with adjustable mounting brackets (2) supplied.

UL, C-UL (Canada) Listings

- Wet, damp or dry locations, covered ceilings.
- Type IC: for direct contact with insulation.
- Through-branch conductors (4 #12 AWG 90°C) for Type IC Listing.

IEC & FCC Compliance

- Meets IEC/EN 60601-1-2 electromagnetic compatibility standard for medical electrical equipment.
- FCC Part 15 certified for EMI/RFI emissions.



**FIVE YEAR
Limited Warranty**

- Complete standard fixture.

MUST SPECIFY		OPTIONAL	Ordering Example: LRR-04002-2000L-120-30K-NFL
Product Number	Voltage	Options	
LRR-04002-2000L LRR-04002-1500L LRR-04002-1000L	-120 (120 volts) -277 (277 volts) -97 (Specify other)	See "Options" below	

Options

Input Power: SPECIFY

- 120 120V (50-60Hz) input.
- 277 277V (50-60Hz) input.
- 97 Specify other voltage. Consult factory.

LED Power Supply

- 29† **Two wire** full range (100-1%) PWM dimming instead (Lutron). Consult factory. 120V only. Not available with -EI.
- D1† 0-10V 1.0% dimming instead.
- D2† 0-10V 0.1% dimming instead.
- D3† DALI 1.0% dimming instead.
- D4† DALI 0.1% dimming instead.
- D5† DMX512A 0% dimming instead for -1000L only.
- EI Remote emergency inverter for 100% of rated lumens. Run time: 90+ minutes. 120 or 277V, 60 Hz input only. Specify voltage. Not for use with Options -29 or -FS.
- EM INTERNAL emergency battery pack. Delivers 500 lumens. Run time: 90+ minutes.
- ERH REMOTE emergency battery pack. Delivers 1000 lumens. Run time: 90+ minutes. CEC Compliant.

† Consult factory for use with -2000L lumen series.

Color (CCT and CRI)

- 27K Color temperature 2700°K instead.
- 30K Color temperature 3000°K instead.
- 41K Color temperature 4100°K instead.
- 50K Color temperature 5000°K instead.
- HC 90+ CRI instead. Consult factory.

Optics

- NFL Narrow flood distribution.
- SPT Spot distribution.
- WFL **Wide flood distribution.**

Lens and Trim

- 23 Frosted microprismatic lens instead.
- 30T White enamel (complete trim).
- 30F White enamel (flange only).
- 32 White oversize trim ring, Specify O.D.
- 33 Decorative Glow Ring; see last page for details.
- 35T Silver enamel (complete trim).
- 35F Silver enamel (flange only).
- 37T Dark bronze enamel (complete trim).
- 37F Dark bronze enamel (flange only).
- 38T Black enamel (complete trim).
- 38F Black enamel (flange only).
- 45 Gasket between trim flange and ceiling.
- 70T Clear semi-specular SofTex™ (complete trim).

- 94 Custom color/finish. Specify. Consult factory.
- CF Custom color filter (Rosco). Specify.
- DF Electrically isolated "dead front" gasketed trim.
- WA White acrylic (flat) diffuser instead; will produce wide flood distribution.

Other

- 79 Extension collar for ceilings up to 2" thick.
- 99 Special modification. Consult factory.
- AT Air tight version. Meets ASTM E283 restricted airflow of 2 CFM maximum.
- FS Single in-line fuse. Not for use with Option -EI.
- RH Residential mounting hardware instead. Suitable for wood joist ceilings with spacing from 14 1/8" to 25 1/8" with 5% vertical adjustability.



Projected L70** for Kirlin Luminaires	
In Open Plenum	90,000 hours
In Insulation (Type IC)	60,000 hours

**Hours at 70% lumen maintenance



The Kirlin Company

3401 EAST JEFFERSON AVENUE • DETROIT, MICHIGAN 48207-4232
(313) 259-6400 • Fax: (313) 259-3121 • www.kirlinlighting.com

**LATITUDES
LED LIGHTING**

*See note next page

Attachment A - Application Packet

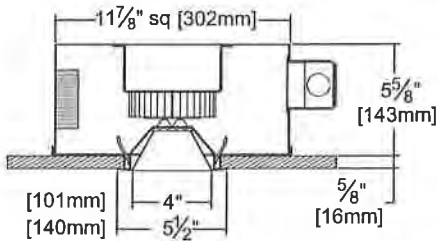
DUE TO OUR CONTINUING EFFORT TO IMPROVE PRODUCTS, TECHNICAL INFORMATION IS SUBJECT TO CHANGE WITHOUT NOTICE. THE KIRLIN COMPANY EXPECTS PHOTOMETRIC PERFORMANCE TO IMPROVE SIGNIFICANTLY AND FREQUENTLY AS LED SOURCE TECHNOLOGY IMPROVES.



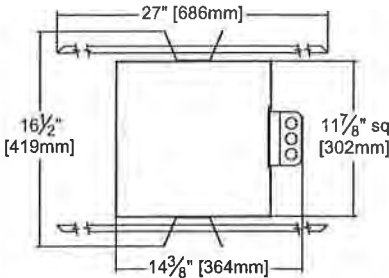
LRR-04002-1500L
PERFORMANCE



Dimensions



Ceiling Cut-out
5" Dia.



Detailed Photometry - Installed Fixture

Photometric testing done in accordance with IESNA LM-79

Photometry from I.T.L., Boulder, CO

▲ Cone of Light Key
Dist. Distance (Ft.) from fixture
FC Footcandles at nadir (0°)
Dia. Circle of light at 50% of FC
value is half the FC at nadir.

-1500L STANDARD (MFL)

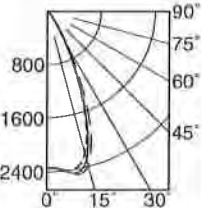
Lumens: 1538
Beam: ~45°
SC: 0.8
LPW: 74
Effic: 76.1%
ITL Test: 87226



Total System Watts 20.9

CANDLEPOWER DISTRIBUTION					
	0.0	22.5	45.0	67.5	90.0
0	2335	2335	2335	2335	2335
5	2371	2371	2371	2371	2371
10	2182	2273	2305	2316	2282
15	1855	1899	1190	1120	1045
20	203	222	230	220	208
25	37	35	26	34	41
30	0	1	1	0	0
35	0	0	0	0	0
40	0	0	0	0	0
45	0	0	0	0	0
50	0	0	0	0	0

Dist.	FC	Dia.
6	64.9	4.9
8	36.5	6.6
10	23.4	8.2
12	16.2	9.9
14	11.9	11.5
16	9.1	13.2



-1500L Option -SPT

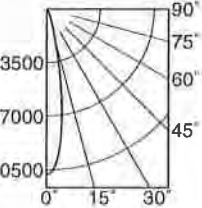
Lumens: 1629
Beam: ~20°
SC: 0.3
LPW: 78
Effic: 80.6%
ITL Test: 87179



Total System Watts 20.9

CANDLEPOWER DISTRIBUTION					
	0.0	22.5	45.0	67.5	90.0
0	10779	10779	10779	10779	10779
5	9337	9349	9332	9270	9316
10	1950	1984	2104	2162	2155
15	436	373	331	380	465
20	79	69	65	70	92
25	12	12	12	12	13
30	0	0	0	0	0
35	0	0	0	0	0
40	0	0	0	0	0
45	0	0	0	0	0
50	0	0	0	0	0

Dist.	FC	Dia.
6	299.4	2.0
8	168.4	2.7
10	107.8	3.4
12	74.9	4.1
14	55.0	4.8
16	42.1	5.5



-1500L Option -NFL

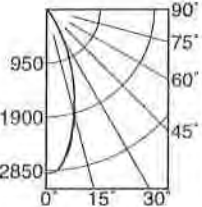
Lumens: 1428
Beam: ~35°
SC: 0.6
LPW: 68
Effic: 70.6%
ITL Test: 87933



Total System Watts 20.9

CANDLEPOWER DISTRIBUTION					
	0.0	22.5	45.0	67.5	90.0
0	2902	2902	2902	2902	2902
5	2791	2791	2900	2793	2793
10	1903	1929	1949	1910	1893
15	137	943	952	950	932
20	239	268	266	266	268
25	51	40	42	45	53
30	0	1	1	1	1
35	0	0	0	0	0
40	0	0	0	0	0
45	0	0	0	0	0
50	0	0	0	0	0

Dist.	FC	Dia.
6	80.6	3.8
8	45.3	5.0
10	29.0	6.3
12	20.2	7.5
14	14.8	8.8
16	11.3	10.0



-1500L Option -WFL

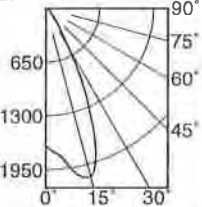
Lumens: 1538
Beam: ~51°
SC: 0.9
LPW: 74
Effic: 76.1%
ITL Test: 87226-REV



Total System Watts 20.9

CANDLEPOWER DISTRIBUTION					
	0.0	22.5	45.0	67.5	90.0
0	1663	1663	1663	1663	1663
5	1763	1763	1763	1763	1763
10	2097	2097	2097	2097	2097
15	1127	1127	1127	1127	1127
20	280	280	280	280	280
25	86	86	86	86	86
30	49	49	49	49	49
35	27	27	27	27	27
40	9	9	9	9	9
45	1	1	1	1	1
50	0	0	0	0	0

Dist.	FC	Dia.
6	48.4	5.6
8	26.1	7.4
10	16.7	9.3
12	11.6	11.2
14	8.5	13.0
16	6.5	14.9



LUMEN SERIES	LUMEN FACTOR	WATTAGE FACTOR	LPW FACTOR
-2000L	1.257	1.369	0.92
-1000L	0.579	0.495	1.17

LM-80 Qualified • LM-79 Certified Photometry

* LED manufacturers maintain a tolerance of ±7% on flux (lumens) and power (electrical) measurements. Kirlin photometrics are actual test data from Independent Testing Laboratories (ITL) where photometry was measured from 2022 lumen (-1500L) light engines (within the established tolerance).

SUBMITTAL DATA

APPROVAL STAMP



JOB NAME

PE
CATALOG NUMBER

VOLTAGE

Attachment A - Application Packet

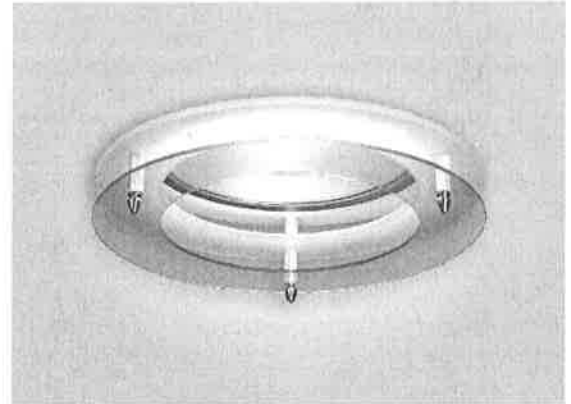
¹See GRR-04202 specification sheet or "Gazelle Express Program" brochure for complete details. Limited option availability.



Kirlin Classic Glow Rings: Option -33 for Latitudes LED Lighting

To order a Kirlin Glow Ring, begin by adding -33 to the product number. Then, configure your Glow Ring by selecting each of the 7 design elements listed below:

(Example: LRR-04002-2000L-120-30K-NFL-**33**-GLM-1L-FRR-ROF-SIF-ROS-SIS)



1. Ring Material (choose one)



Glass (-GLM)

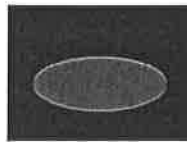


Acrylic (-ACM)



Custom (-CUM)

2. # of Rings (choose one)



1 Ring (1L)



2 Rings (-2L)



3 Rings (-3L)

3. Ring Design (choose one)



Frosted Ring (-FRR)



Clear Ring (-CRR)



Solid Disk (-SDR)



Frosted Center (-FCR)

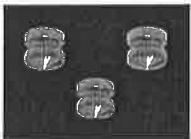


Frosted Disk (-FDR)

4. Finial Design (choose one)



Round (-ROF)



Knurled (-KNF)



Cone (-COF)

5. Finial Color (choose one)



Brass (-BRF)



Silver (-SIF)



Black (-BLF)



White (-WHF)

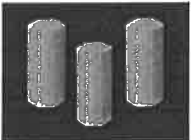


Custom (-CUF)

6. Standoff Design (choose one)



Round (-ROS)



Hexagonal (-HOS)

7. Standoff Color (choose one)



Brass (-BRS)



Silver (-SIS)



Black (-BLS)



White (-WHS)



Custom (-CFS)

Attachment A - Application Packet

Appendix A – Geotechnical Report

March 2022

Prepared for:

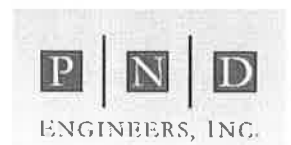
Spark Design, LLC
5401 Cordova Street, Suite 301
Anchorage, Alaska 99518

SEARHC Juneau Medical Office Building Geotechnical Report



Prepared by:

PND Engineers, Inc.
9360 Glacier Highway, Suite 100
Juneau, Alaska 99801



March 2022

SEARHC Juneau Medical Office Building
Geotechnical Report

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- Appendix C. Field Investigation Photographs
- Appendix D. Climate Summaries
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March 2022

SEARHC Juneau Medical Office Building
Geotechnical Report

SEARHC Juneau Medical Office Building Geotechnical Report

1. INTRODUCTION

This report presents the results of a geotechnical field investigation, performed by PND Engineers, Inc. (PND), in support of a new Southeast Alaska Regional Health Consortium (SEARHC) medical office building and parking lot located on a vacant 2.9-acre lot adjacent to Vintage Boulevard (legal description: Tract A2, Vintage IV Subdivision) in Juneau, Alaska. The current plans call for a 3-story medical office building that will be used to facilitate behavioral health, ophthalmology, and dental services among other functions.

The report has been prepared by PND and provides geotechnical data gathered during the field investigation, laboratory results from testing performed on representative soil samples, as well as geotechnical engineering analyses and recommendations to be incorporated in the design of the site and structure. PND performed the work in accordance with the engineering service scope and fee proposal, submitted to Spark Design, LLC on January 3, 2022. The report contains six appendices:

- ✓ **Appendix A – Borehole Logs** presents the complete graphical log set from the exploration.
- ✓ **Appendix B – Laboratory Test Results** presents the complete summary of results from the laboratory testing program.
- ✓ **Appendix C – Field Investigation Photographs** presents photographs taken during the field investigation.
- ✓ **Appendix D – Climate Summaries** presents data pertaining to historical temperature and precipitation variation near the project site.
- ✓ **Appendix E – Environmental Report** presents the results from the environmental soil sampling program performed by Dahlberg Design concurrently with the geotechnical investigation.
- ✓ **Appendix F – GBA Publication *Important Information about your Geotechnical-Engineering Report*** describes the reports intended use, applicability and limitations.

2. PROJECT BACKGROUND

2.1 LOCAL GEOGRAPHY

The city of Juneau resides on the Gastineau Channel, part of the greater Southeast Alaska Panhandle region. The City and Borough of Juneau is a unified city-borough comprising Juneau and Douglas, and encompasses approximately 3,255 square miles. The 2020 population of Juneau was 32,255 residents (United States Census Bureau). There are no roads or bridges connecting Juneau to any other community or integrated road system; typical commercial access is by regularly scheduled vessel or plane service.

The project site is located approximately 8 miles northwest of downtown Juneau, immediately adjacent to the Safeway grocery store located at 3033 Vintage Boulevard. The site is bound by Vintage Boulevard to the north and west and by Postal Way to the east. A large parking lot for the Safeway grocery store is immediately south. Figure 2-1 shows the project area and its immediate surroundings.

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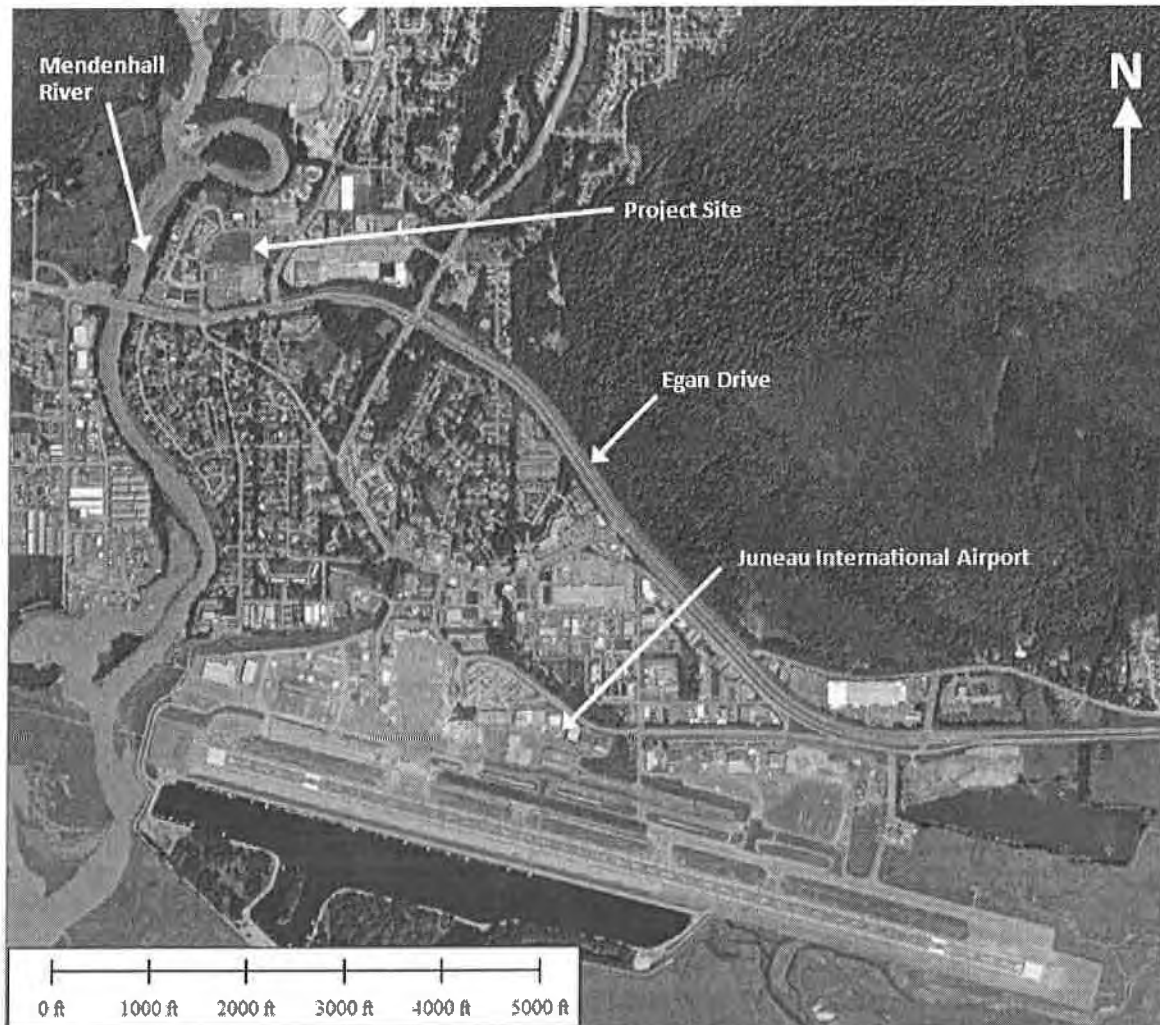
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Figure 2-1: Project Location in Juneau, Alaska

2.2 EXISTING SITE CONDITIONS

The project area is located at approximately 58°22'19.31"N latitude, 134°35'45.55"W longitude on an undeveloped lot approximately 2.9 acres in area. The relatively flat site sits approximately 800 feet from the eastern bank of Mendenhall River. The site has no existing access roads but is believed to have multiple water and sewer service stub-outs to the property line.

At the time of the investigation, the ground surface at the project site was very wet with standing water up to six inches deep in places. Surficial vegetation consisted of various types of grasses, willows, and sporadic small spruce trees.

2.3 REGIONAL CLIMATE

Juneau experiences temperate rainforest/maritime climate conditions typical to Southeast Alaska. The average monthly temperatures recorded in Juneau typically range from 39°F in January to 62°F in July. Daily extreme temperatures range from (-)22°F to 88°F. Average annual precipitation typically ranges from 70 to 90 inches per year. This climate data was obtained from the Western Regional Climate Center Juneau station (Station 504094) for the years 1965 to 2012 and is attached in Appendix D.

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2.4 REGIONAL SEISMICITY AND SEISMIC HAZARDS

The regional seismicity of the Juneau area is primarily defined by four known major faults: the Queen Charlotte-Fairweather Fault, Chatham Strait Fault, Denali Fault, and the Transition Fault. These four known faults surrounding Juneau all contribute to the seismic hazard of the project site. Wesson et al., (2007) found that these four faults could yield maximum moment magnitude (M_w) earthquakes of 7.8 to 8.2 for return intervals of 2% in 50 years. These ranges are consistent with the larger historic earthquakes that have previously been documented or recorded in the Juneau area (Brockman et al., 1988). Earthquakes of M_w 5.0 or less are common to Southeast Alaska, although they present low hazard to the project site.

The primary potential seismic-induced hazards for Juneau and the surrounding region include strong ground shaking, slope failure, liquefaction and landsliding. Both the seismic setting and glacially-scoured over-steepened terrain of the region contribute to the potential for both land-based and submarine landslides caused by earthquake-induced ground shaking or other triggering events, and are most likely to occur in saturated sediments and in unstable rock debris on steep slopes. Figure 2-2 shows previously recorded seismic activity in the Southeast Alaska region.

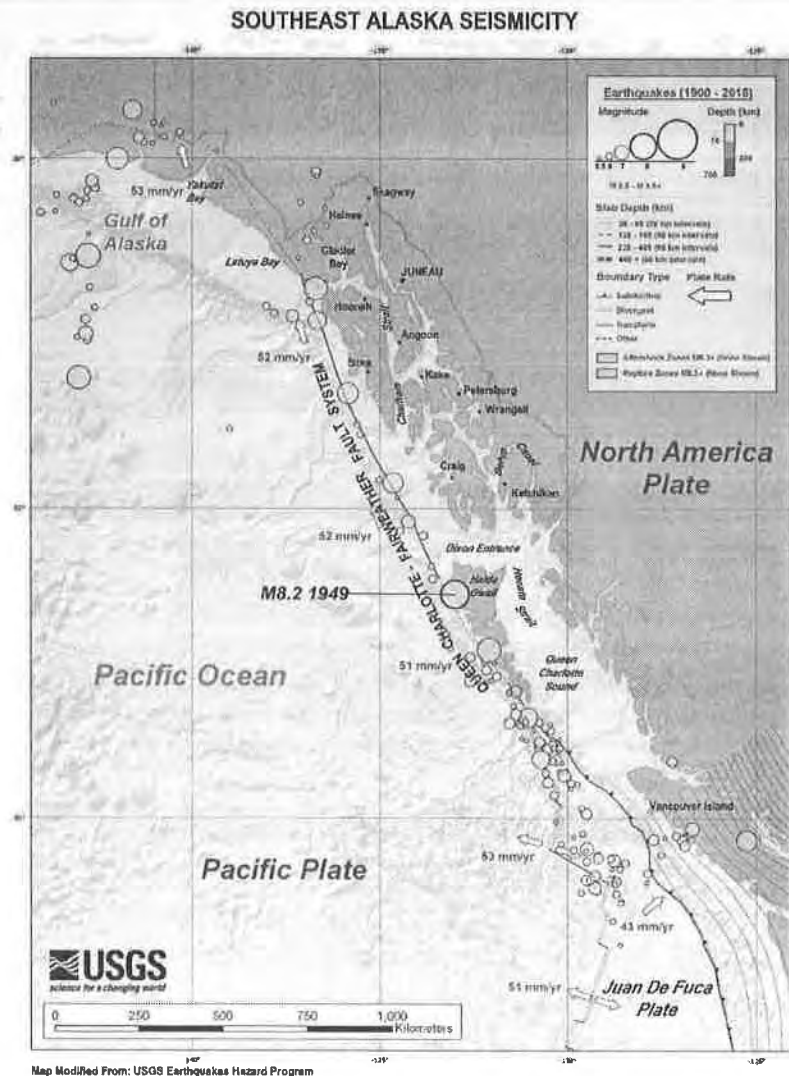


Figure 2-2: Seismic Activity and Features in Southeast Alaska

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2.5 SITE GEOLOGY

The site lies approximately 2.5 miles north of the mouth of the glacially-fed Mendenhall River, which discharges into the waters of Gastineau Channel. The site has the potential for varying sediment types due to its proximity to the glacier and to the channel. Historical geologic reconnaissance and mapping of the area indicates the potential for marine, alluvial and glacial deposits (Miller, 1972). Typically, these deposits consist of sands, gravels and silts. Glacially-deposited surficial and potentially subsurface cobbles and boulders are present further upriver from the project site. Boulders are not apparent at the project site but may be present. Bedrock is likely several hundred feet below the ground surface based on nearby geotechnical investigations.

3. FIELD INVESTIGATION

3.1 GEOTECHNICAL EXPLORATION

The geotechnical investigation was performed from February 7th through February 14th, 2022 with Discovery Drilling, Inc. Six geotechnical boreholes (BH-1 through BH-6) were advanced at the project site to depths ranging from 22 to 107 feet below the existing ground surface (bgs). Two boreholes (BH-1 and BH-2) were located on the western side of the site in one of the proposed parking areas; the other four geotechnical boreholes (BH-3 through BH-6) were located near the proposed footprint of the medical office building. All boreholes were advanced using a track-mounted Geoprobe 6712DT drill rig. PND field personnel provided oversight, directed the work, and documented findings during the investigation. Approximate borehole locations are presented in Table 3-1 and are depicted graphically in Figure 3-1.

3.2 ENVIRONMENTAL SAMPLING

An environmental testing program was performed concurrently with the geotechnical investigation by Dahlberg Design in order to evaluate the site for potential contamination. The environmental testing program consisted of advancing four boreholes (ENV-1 through ENV-4, see Table 3-1). One borehole was located near each side of the project site in order to maximize the areal coverage of subsurface data collected. All environmental boreholes were advanced to 10 feet bgs using the same track-mounted Geoprobe 6712DT drill rig operated by Discovery Drilling. Representative soil samples were collected by Sigrid Dahlberg, P.E., of Dahlberg Design before being shipped to Eurofins Scientific laboratory in Seattle, Washington for testing. PND field personnel also logged the soils encountered in the environmental boreholes and collected representative soil samples. Based on field screening and the laboratory results, none of the soil samples analyzed contained problematic levels of contamination. All findings from the environmental sampling program are presented in Appendix E.

Table 3-1: Borehole Summary

Borehole	Northing	Easting	Total Depth (ft bgs)
BH-1	2389377.25	2507439.02	22
BH-2	2389222.47	2507362.82	22
BH-3	2389377.88	2507546.61	102
BH-4	2389242.33	2507507.35	103
BH-5	2389356.95	2507664.91	107
BH-6	2389211.19	2507661.21	102
ENV-1	2389326.72	2507379.438	10
ENV-2	2389419.39	2507624.203	10
ENV-3	2389292.04	2507674.961	10
ENV-4	2389197.51	2507593.671	10

Note: Coordinates based on Alaska State Plane Zone 1 coordinate system

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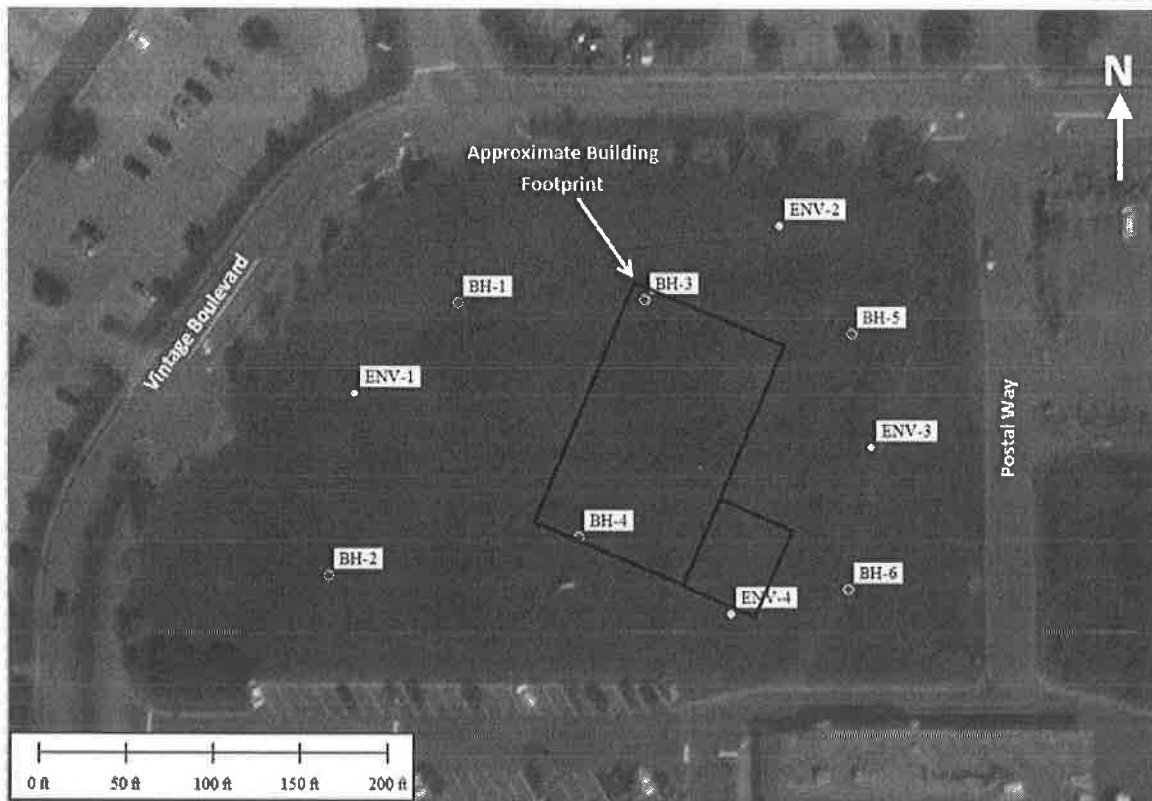
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Figure 3-1: Borehole Location Map

3.3 EQUIPMENT AND METHODS

BH-1 and BH-2 were advanced using a hollow-stem auger (HSA) while BH-3 through BH-6 were advanced using mud-rotary drill tooling consisting of a tri-cone bit HWT casing advancer system. Environmental boreholes ENV-1 through ENV-4 were advanced using a Geoprobe Macro-Core® MC5 continuous core sampler. Water and drilling mud were used for the HSA and HWT boreholes, respectively, to counteract heaving soils beneath the water table. Modified Penetration Tests (MPT's) were conducted using oversized split-spoon samplers and a 340-pound automatic drop-hammer falling 30 inches per stroke. The number of blows required to drive the sampler for each 6-inch interval, for a maximum total distance of 24 inches, were recorded. MPT tests were typically performed every 2.5 feet at depths less than 10 feet bgs, every 5 feet at depths between 10 and 50 feet bgs, and every 10 feet at depths greater than 50 feet bgs. The blow counts shown on the borehole logs (presented in Appendix A) are field values that have not been corrected for overburden, rod length, and other factors. Sampling methods and classifications for soil were based on the Unified Soil Classification System (USCS) and the following American Society for Testing and Materials (ASTM) standards:

- ASTM D1586 *Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils*
- ASTM D2488 *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*
- ASTM D5434 *Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock*

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4. LABORATORY TESTING

Retained soil samples from the geotechnical boreholes were transported to PND's Soils-Materials laboratory in Anchorage for additional testing upon completion of the field investigation. A total of 227 laboratory tests were performed on the soil samples in accordance with the ASTM standards given in Table 4-1. Dahlberg Design also retained soil samples from each environmental borehole in order to perform contamination testing. Results from the geotechnical and environmental laboratory testing are presented in Appendix B and Appendix E, respectively.

Table 4-1: Soil Sample Testing Summary

Test Type	Quantity
Description and Identification of Soils – Visual Manual Procedure (ASTM D2488)	116
Moisture Content of Soils (ASTM D2216)	100
Gradation of Soils (ASTM D6913)	4
Fines Wash (ASTM D1140)	6
Atterberg Limits (ASTM D4318)	1

5. INVESTIGATION RESULTS

5.1 SOIL LITHOLOGY AND COMPOSITION

The upper 20 feet of soil is highly variable, but generally consists of loose to medium-dense gravelly silty sands and sandy gravelly silts with sporadic layers of soft silt, organic silt, and silt with sand. Below 20 feet bgs the soil types are more uniform and primarily consisted of medium-dense poorly-graded sands and silty sands with varying amounts of gravel to depths greater than 100 feet bgs. Occasional layers of silt were also encountered below 20 feet bgs.

All laboratory test results, including a summary of soil classifications, gradation plots, and a plot of soil moisture content versus depth are presented in Appendix B. Select photographs taken during the field investigation are shown in Appendix C.



Figure 5-1: Contact between poorly graded sand and silty sand in BH-3.

5.2 GROUNDWATER

A 2-inch outer diameter groundwater monitoring well was installed in BH-3 after the borehole was completed. The monitoring well was installed to a depth of 20 feet bgs using 10 feet of Geoprobe prepacked screen and 10 feet of PVC pipe. Measurements taken on February 14 and March 3, 2022 indicate that the groundwater table is located approximately 14 feet below the relatively flat ground surface at the project site. The location of the groundwater table was not able to be determined while advancing any of the boreholes due to the consistent use of water and drilling mud required to counteract heaving soils.

5.3 CORRECTED BLOW COUNTS

Figure 5-2 shows corrected blow counts versus depth below the existing ground surface at the project site. Field blow counts were corrected using standard correlations found in most geotechnical texts.

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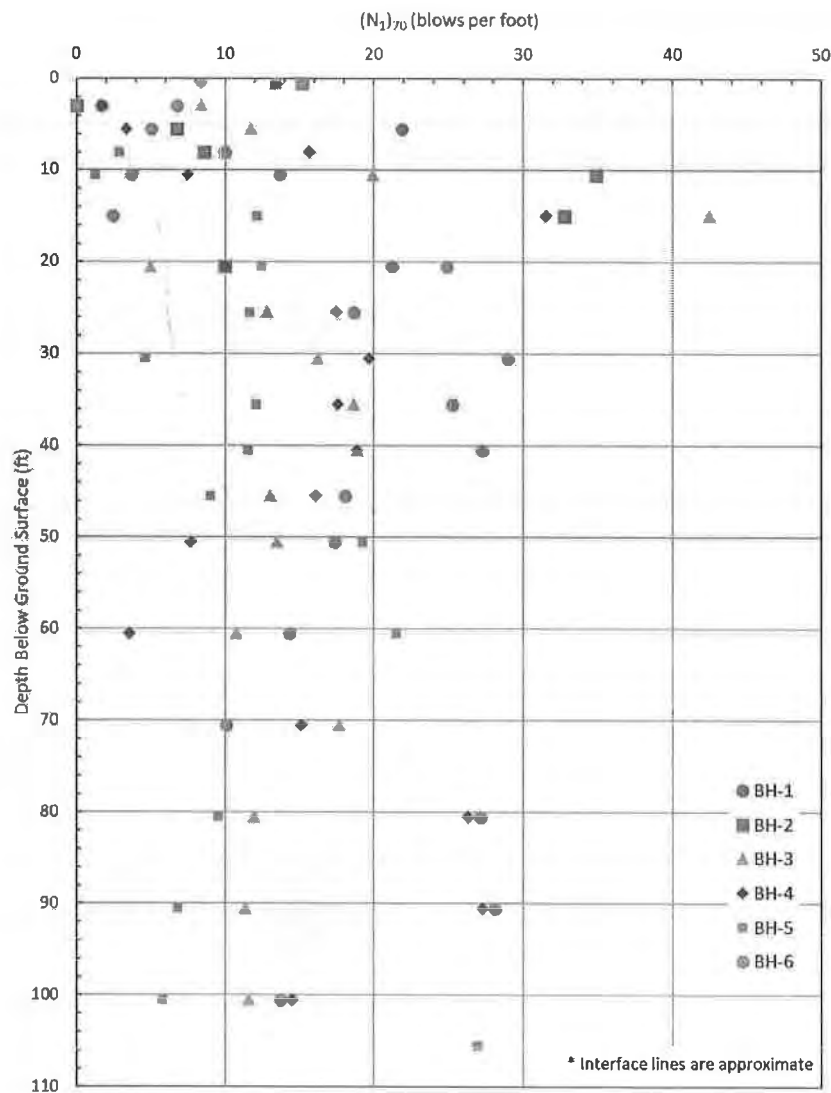


Figure 5-2: Corrected Blow Counts $(N_1)_{70}$ Versus Depth

6. GEOTECHNICAL ANALYSES and DESIGN RECOMMENDATIONS

6.1 SUMMARY

The following subsections present design parameters and recommendations based on the findings of the geotechnical investigation and known aspects of the project. Recommendations are general and subject to change as design progresses. This report contains sufficient geotechnical information for the project designer(s) to tailor specific work items to the project needs.

6.1 DESIGN SOIL PROPERTIES

Table 6-1 presents the generalized soil properties recommended for design at the project site. Values for future Structural Fill are estimated based on experience with the specified material. All other values for the in-situ material were estimated based on blow count correlations found in Das (2007), Bowles (1996), and Coduto (1999), engineering judgement, and experience. Note that some of these soil types and properties were not

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incorporated in analyses because it is recommended that they be excavated and replaced before the proposed structure's foundation is constructed.

Table 6-1: Generalized Soil Properties

Soil Type	Bulk Unit Weight (pcf)	Effective Friction Angle, ϕ (degrees)	Effective Cohesion, c (psf)	Elastic Modulus, E (ksf)
Structural Fill (Future)	135	40	0	3,300
Gravel (GP, sGP, GM)	125	34	0	450
Sand (SP, SM, SP-SM)	115	30	0	280
Silt (ML, sML, MLs)	105	27	0	50
Organic Silt (OL)	70	22	100	3

6.2 SEISMIC DESIGN PARAMETERS

All seismic parameters for the project site are given in Table 6-2. Moment magnitude was obtained from the United States Geological Survey (USGS) online Unified Hazard Tool. All other parameters were obtained from the Applied Technology Council (ATC) Hazards By Location online utility. The reference code was set as ASCE 7-10 with the understanding that the structural design will utilize the 2012 version of the International Building Code.

Table 6-2: Seismic Design Parameters Per ASCE 7-10

Seismic Event (Return Period, Probability of Exceedance):	MCE (2,475 years, 2% in 50 years)
Site Class	D*
Risk Category	II
Peak Ground Acceleration (PGA)	0.25g
S_s (0.2 sec period acceleration)	0.62g
S_1 (1.0 sec period acceleration)	0.39g
F_{PGA}	1.30
F_a	1.31
F_v	1.63
S_{DS}	0.54
S_{D1}	0.42
Site Modified PGA (PGA_M)	0.33
Moment Magnitude (M_w):	7.9

Site Class D designation applies based on the soil profile without consideration for liquefaction. The presence of liquefiable soils may require a Site Class I designation and a site-specific seismic response analysis depending on the facility type and the structure's fundamental period of vibration (see ASCE 7-10 Section 20.3.1). Structural designers must consider this carefully and determine if a site-specific seismic response analysis is required.

6.3 LIQUEFACTION ANALYSIS

Liquefaction occurs when excess pore water pressure develops in saturated soils, typically as a result of vibrations or ground shaking caused by earthquakes, which results in a loss of shear strength in the soil. Detrimental effects of liquefaction include ground deformations due to void redistribution in liquefied soils, slope instability, lateral spreading, and reduced bearing capacity due to loss of shear strength. Typically,

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liquefiable soils are very loose- to medium-dense, clean to moderately silty sands; liquefiable soils also include some silts. Other soils may experience liquefaction depending on other factors, such as the duration of ground shaking. Gravels and soils with high fines content (greater than approximately 35%), which exhibit clay-like behavior (Plasticity Index ≥ 7), are unlikely to liquefy (Boulanger and Idriss, 2006). Soils beyond a certain depth, often estimated at a maximum of 50 feet, may not liquefy due to high confining pressures (Day, 2002). This depth is based on site-specific conditions and engineering judgement and should not be assumed for all cases.

Liquefaction analyses performed for the four boreholes located near the footprint of the proposed structure (BH-3 through BH-6) indicated that the majority of the soil at the project site is potentially liquefiable under Maximum Considered Earthquake (MCE) loading. A plot of factor of safety against liquefaction (FS_{LIQ}) versus depth below the ground surface is presented in Figure 6-1. Note that the soils located above the depth of the water table which show liquefaction potential ($FS_{LIQ} < 1$) will not liquefy unless they are saturated from significant surface infiltration or rising groundwater table.

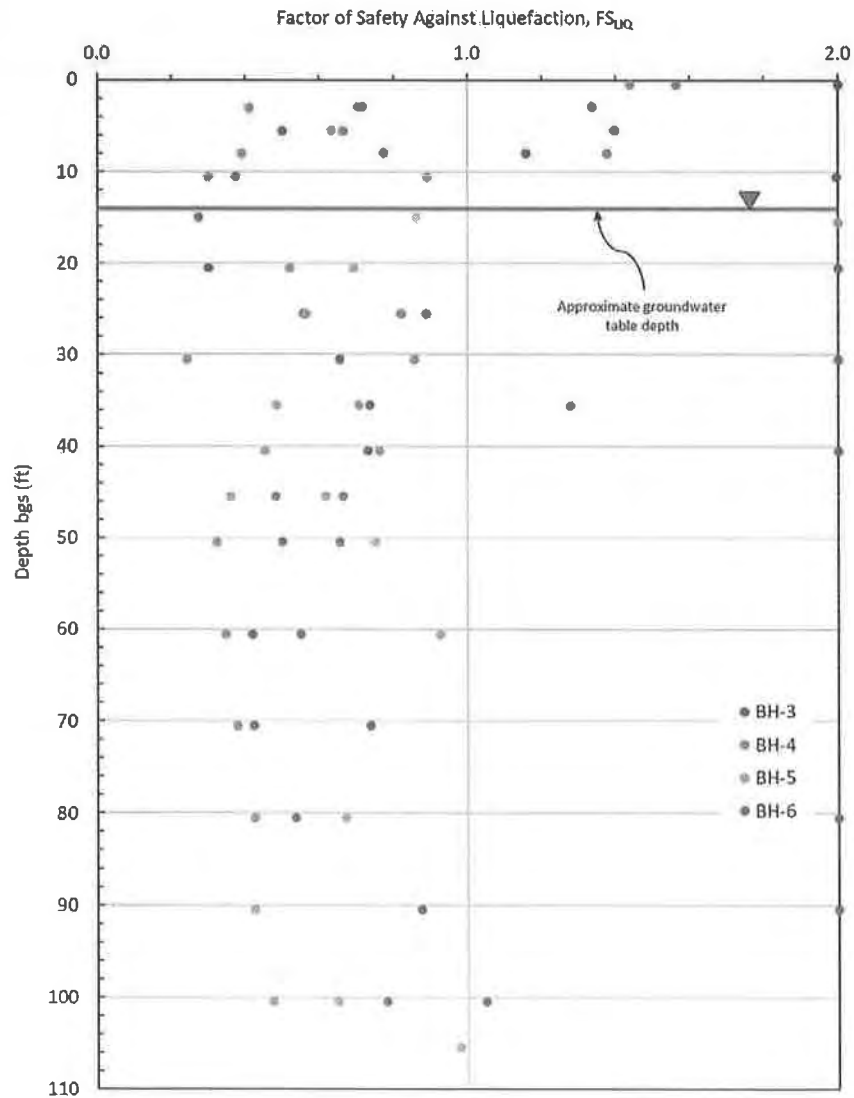


Figure 6-1: Factor of Safety Against Liquefaction vs. Depth

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6.3.1 LIQUEFACTION-INDUCED SETTLEMENT

Calculations performed for each of the four boreholes located near the proposed footprint of the structure indicate that total estimated liquefaction settlements from 5 to 14 inches could occur. Manifestation of these total settlements could result in 9 inches of differential settlement, with the most differential occurring between BH-5 and BH-6. This yields a differential settlement gradient of approximately 0.06 vertical inches per horizontal foot on the axis between these two locations. A summary of the predicted liquefaction settlements for each borehole located near the building's footprint are presented in Table 6-3.

Table 6-3: Estimated Liquefaction Settlements for BH-3 through BH-6

Borehole ID	Estimated Liquefaction-Induced Settlement (in)
BH-3	13
BH-4	11
BH-5	14
BH-6	5

6.3.2 LATERAL SPREADING

Lateral spreading occurs when an unconfined soil or soil whose strata interfaces have non-horizontal gradient liquefies and behaves as a fluid. Due to lack of confinement or inclined stratification, the soil will flow and result in vertical and horizontal deformations.

While liquefiable soils exist at the project site, they are generally confined and are stratified essentially horizontally. Lateral spreading is not expected to be an issue at the project site.

6.4 FOUNDATION RECOMMENDATIONS

Preliminary discussions with structural designers and the project Owner indicate that a shallow foundation system incorporating grade beams is the preferred foundation type for the structure. This type of foundation system can be a cost-effective solution, provided that the foundations and structure are designed to accommodate the predicted differential settlements and satisfy all performance criteria for the building per applicable design codes. The recommendations and allowable bearing pressures presented in this section have been tailored for a shallow grade beam type of foundation system. The project Owner and structural engineer of record should understand the complex site conditions and the ramifications of employing a shallow foundation over liquefiable soil prior to proceeding with shallow foundation design. Deep foundations such as driven piles could provide a robust measure of mitigation to differential settlement and design guidance for deep foundations can be provided by PND upon request.

The bearing pressure analyses considered the bearing capacity of the soil profile under static and seismic conditions. The seismic analysis models the soil between 14 and 50 feet bgs in a liquefied, residual-strength state. The residual strength of the liquefied soil was estimated using the procedure outlined in chapter 4 of Idriss and Boulanger (2008). The depth range for the liquefied soil layer was chosen based on the groundwater levels observed in the monitoring well that was installed in BH-3, the results of the liquefaction analysis discussed in Section 6.3, and the assumption that soils deeper than 50 feet bgs generally will not liquefy due to high confining pressures (Day). Elastic settlement was also considered in determine bearing pressures and was limited to 1 inch.

6.5 ALLOWABLE BEARING CAPACITY

6.5.1 GRADE BEAMS

Allowable bearing pressure and elastic settlement calculations were performed for grade beams with widths ranging from 2 to 6 feet. The grade beams were modelled as strip footings and were assumed to bear on a minimum 1-foot thick lift of structural fill over in-situ medium dense silty sand. The length of the strip

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footing was assumed to be 96 feet long (the approximate east-west dimension of the medical office building) with an embedment depth of 4 feet. The results of the analysis are presented in Figure 6-2.

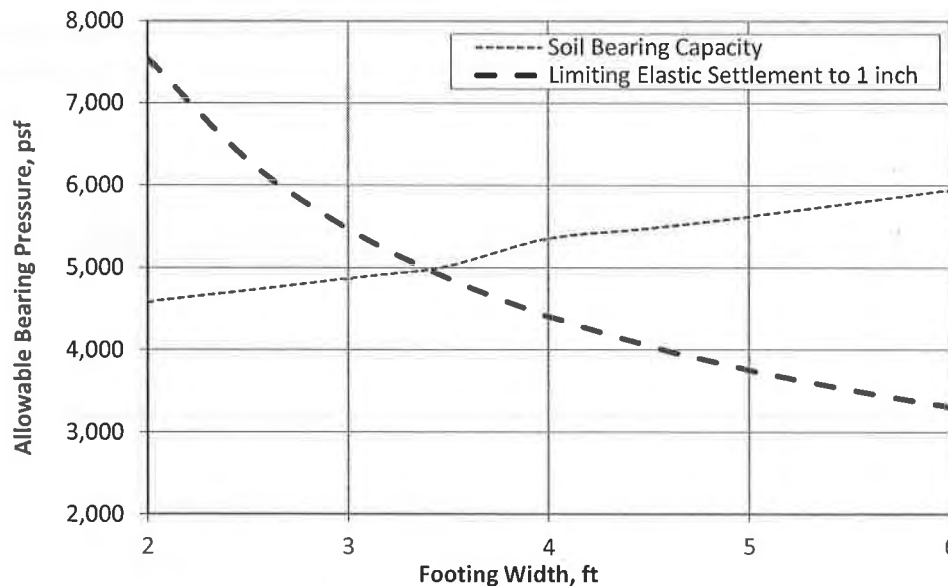


Figure 6-2: Allowable Bearing Pressure vs. Footing Width

The designer should select the allowable bearing pressure for a given footing width based on the lower of the two intersecting curves in Figure 6-2. To elaborate, the allowable bearing pressure for footing widths less than about 3.5 feet wide is governed by the bearing capacity of the soil (elastic settlement will be less than 1 inch). The allowable bearing pressure for footing widths greater than about 3.5 feet is governed by the allowable 1-inch elastic settlement. It should be noted that when proper construction practice is implemented and foundation loads are relatively light, compactive efforts that exceed the foundation load will often induce elastic settlement during construction and prior to the foundation being constructed.

The typical allowance of a 33% increase in allowable bearing pressure under seismic loading is not permitted for this foundation due to the presence of liquefiable soil at the project site. The 33% increase is permitted under other short-term loading scenarios where soil liquefaction is not a concern.

Allowable bearing pressures in the seismic condition using residual strength of the liquefied soil do not govern the design, provided that factors of safety less than 3 are acceptable. A simple equilibrium analysis indicates that factors of safety between 2 and 3 are achieved by permitting the bearing pressures in Figure 6-2 in a liquefied condition. A reduced bearing capacity factor of safety, as low as 1.5 in extreme events such as this, are generally acceptable.

Allowable bearing pressures presented in this section assumes that the minimum construction recommendations presented in this report will be adhered to.

6.5.2 MODULUS OF SUBGRADE REACTION

The modulus of subgrade reaction may be necessary for the structural analysis of non-rigid foundation elements. Calculation of the modulus of subgrade reaction is a function of both the soil and the structural element. The recommended value for k_1 (subgrade reaction modulus for foundations measuring 1-foot by 1-foot) at the project site is 250 lbs/in³. Das (2014) provides a series of equations utilizing k_1 that may then be used to calculate an appropriate subgrade reaction modulus for various foundation geometries.

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6.6 PRIMARY CONSOLIDATION AND SECONDARY SETTLEMENT

Long-term settlement occurs when soil consolidates over time due to an induced load, such as from embankments or structural foundations. Two types of long-term settlement are typically considered when designing a foundation: primary consolidation and secondary compression. Both are typically attributed to compressible soils such as saturated silts and clays, as well as organic-rich soils such as peat and organic silt. Due to the primarily granular nature of the soil at the project site, long-term settlement related to primary consolidation and secondary compression are not a concern for this project.

6.7 DIFFERENTIAL SETTLEMENT

As discussed in Section 6.3.1, a differential settlement gradient of up to 0.06 vertical inches per horizontal foot may manifest at the project site if soil liquefaction occurs due to MCE earthquake loading. As a result, the foundation and structure must be able to accommodate this differential gradient and maintain facility performance criteria per applicable design codes.

6.8 LATERAL LOAD RESISTANCE

Temporary lateral loads are likely to develop on the building's foundation from wind and seismic loading. These forces will be counteracted by frictional resistance between the base of the foundation and the soil beneath the foundation, as well as passive pressures that will develop between the sides of the foundation and the soil surrounding it. A passive resistance (equivalent fluid pressure) of 200 pcf, which includes a factor of safety of 2, is recommended at this site. An interface friction factor ($\tan(\delta)$) of 0.55 is recommended to be used for resistance of foundations to lateral sliding, assuming concrete footings are cast on and bear directly against structural fill.

6.9 UPLIFT RESISTANCE

Uplift loads may manifest in some foundation elements due to overturning moments that occur as a result of wind and seismic forces. Uplift loads may be resisted by the weight of the footing and soil within the limits of a truncated pyramid above the top of the grade beams. The shape of the truncated pyramid will vary with material type and density. For the material expected at this project site, the pyramid is defined by a 30-degree angle from vertical extending upward from the top of the footing.

7. CONSTRUCTION RECOMMENDATIONS

This section provides recommended construction practices and materials for the project. In general, practices and materials should conform to the IBC adopted by local authorities having jurisdiction, the local CBJ design specifications, and any other project-specific design criteria.

7.1 SITE PREPARATION

All trees, small brush, surface debris, organics, and other deleterious surficial materials should be removed prior to constructing the building's foundation and the parking lot's pavement section.

7.2 EXCAVATIONS

Temporary excavations of soil should be performed with care and follow OSHA or other agency guidelines and recommendations for trenching and slope angles based on the soil types encountered.

Excavations should be performed utilizing a backhoe or excavator with a smooth-bladed bucket from outside the excavation to minimize disturbance of the subgrade soils. Soils that are disturbed, pumped, or rutted by construction activity should be removed prior to placement of any structural, classified, or unclassified fill as recommended in this report.

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7.3 DRAINAGE AND CONTROL OF WATER

Water may flow into excavations due to rain or surface runoff during periods of intense rainfall. Excavations should be monitored at all times for excessive water accumulation that could endanger workers or negatively affect the project. The contractor may be required to implement measures to control water flow and effectively dewater the site depending on the magnitude and impact of rain and surface runoff. These measures may include installing and grading perimeter trenches, sump wells with pumps, or other water control measures. Excavations are not expected to extend deep enough to where the water table would be an issue, based on observations during this field investigation. However, the groundwater table may fluctuate seasonally and should be monitored during construction.

Parking areas should have a positive gradient toward drainage structures and away from buildings. Site grading should be established to provide drainage of surface water or roof drainage away from proposed and existing buildings and toward suitable drainage structures.

Perimeter foundation drains should be installed at or below the same elevation as the bottom of the exterior footings. Foundation drains should daylight into drainage ditches or connect to an underground storm drain system.

7.4 CONSTRUCTION MATERIALS AND COMPACTION

This section provides general recommendations for the use of aggregate (structural) fill to be used during construction. Generally, imported structural fill should comply with CBJ Standard Specifications, with modifications as determined necessary. All structural fill should be angular, clean, sound, durable, and free of any frozen clumps, ice, or any deleterious material prior to placement. Structural fill should follow all project specifications and be a well-graded mixture of non-frost susceptible (NFS) sand and gravel. For the purposes of this report, structural fill can be segregated into two material sub-types: subbase and base course.

Subbase should have a maximum particle size of 4 to 6 inches and less than 6% passing the No. 200 sieve size. Subbase shall be placed in lifts not exceeding 12 inches in loose thickness. Compaction of subbase shall be achieved by performing a minimum level of effort consisting of six complete passes with a 15-ton vibratory steel drum roller. In areas that are too small to accommodate a roller, compaction shall be accomplished by a minimum level of effort of six complete passes with a vibratory plate compactor with a minimum rated centrifugal force of 15,000 lbs.

Base course should have a maximum particle size of 1 to 1.5 inches and less than 6% passing the No. 200 sieve size. Base course shall be placed in lifts not exceeding 8 inches in loose thickness and shall be compacted to 95% of the maximum density as determined by a control strip test, such as Alaska Test Method (ATM) 309 Relative Standard Density of Soils by the Control Strip Method.

All structural fill material should be protected from freezing during construction. No frozen soil should be used as fill, nor should any fill be placed over frozen soil. Any frozen soil should be removed, replaced, or thawed prior to fill placement.

Moisture control of materials should be implemented when stockpiling and placing fill material. Stockpiles should be covered to prevent saturation during wet weather conditions. Additional moistening or drying of fill material may be required in order to obtain the optimum moisture content for maximum compaction.

No hauling or grading equipment should be used in lieu of appropriate compaction equipment. Any loosening of fill material by hauling or other equipment should be repaired by re-compacting as needed. The number of passes required to meet the compaction requirement will depend on the size of the compaction equipment used.

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7.5 SHALLOW FOUNDATIONS AND SLABS

Discontinuous layers of soft silt with organics was encountered across the project site between 0 and 6 feet bgs. As such, PND recommends that the contractor remove no less than 6 feet of in-situ material (as measured from the existing ground surface) before placing and compacting structural fill on top of native material within the building's footprint. The excavation depth may need to extend deeper such that organic and soft soils are removed in their entirety. Foundations should bear on, at a minimum, 6 inches of base course over 12 inches of subbase. The limits of excavation and structural fill placement should extend a minimum of 1-foot beyond the building's footprint. Foundations should then be constructed directly on the compacted structural fill so that the base of the foundation is buried a minimum of 32 inches for protection against frost action. Slabs should be constructed over a minimum of 4 inches of base course and 12 inches of subbase. Additional sub-excavation and backfill with structural fill should be implemented if pockets of unsuitable or highly-saturated soils are encountered.

7.6 PARKING LOTS

Excavations for parking lots should extend to the depth required to accommodate a minimum 32-inch thick structural section as measured from finish grade. The minimum section should consist of 2 inches of asphalt concrete pavement (ACP), over 4 inches of base course, over 26 inches of subbase. A thicker ACP surface should be considered in areas of heavier vehicle traffic such as fire lanes and loading bays. A 3-inch thick ACP is likely adequate for all anticipated traffic at the project site.

It is likely that the bottom of excavations for most parking areas will be in a layer of soft silt or organics observed at many of the investigation test locations. Placing fill directly on these soft fine-grained soils is not recommended. Two options should be considered: over-excavation as required to remove these soils (to a maximum depth of approximately 6 feet bgs), or placement of a separation geotextile at the limits of excavation for the minimum structural section.

7.7 UTILITIES

Buried utilities, including storm sewer, sanitary sewer and water conduits and structures, should bear on a minimum 6-inch thick lift of base course or comparable material that will not damage the utility component. If the bottom of trench excavation is in a layer of organics or soft silt, the trench excavation should extend deep enough to accommodate an additional 1-foot thick lift of subbase, and the excavation should be lined with separation geotextile. Alternatively, the trench excavation could extend deep enough to remove the organic or soft silt layer. The utility should be bedded on all sides with appropriate pipe bedding material. Any remaining open excavation should be backfilled with subbase to the appropriate grade.

Sanitary sewer lines shall have a minimum cover of 4 feet; water lines shall have a minimum cover of 5 feet. Lines shall be insulated if the specified minimum cover cannot be achieved. Utility crossings shall be addressed in accordance with CBJ Standard Details.

8. LIMITATIONS and CLOSURE

The information submitted in this report is based on our interpretation of data from a field and lab geotechnical investigation conducted for this project and other sources discussed in this report. Effort was made to obtain information that is representative of the actual conditions at the site. However, actual subsurface conditions will vary and additional information may be discovered that could impact our recommendations. If conditions significantly different from those indicated in this report are encountered by subsequent investigations or during construction, the recommendations of this report should be reviewed by PND.

This report was prepared by PND Engineers, Inc., for use on this project only, and may not be used in any manner that would constitute a detriment to PND. PND is not responsible for conclusions, opinions, or recommendations made by others based on data presented in this report.

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Included in Appendix F is a copy of the Geoprofessional Business Association (GBA) publication "Important Information about Your Geotechnical-Engineering Report." The publication is included in this report to help the Owner, Contractor, and others who read this document understand the limitations described above and the additional limitations contained in the publication and made a part of this report. This document should be read carefully. If in the opinion of Contractors bidding this project, sufficient information has not been made available to satisfactorily bid the project then the Contractor should perform additional geotechnical investigations as necessary to satisfy themselves as to site conditions.



Sean Sjostedt, P.E.
Senior Geotechnical Engineer
March 31, 2022



Dick Somerville, P.E.
Principal
March 31, 2022

March 2022

SEARHC Juneau Medical Office Building
Geotechnical Report

9. REFERENCES

- ASTM D420. "Standard Guide to Site Characterization for Engineering Design and Construction Purposes."
- ASTM D1586. "Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils."
- ASTM D2216. "Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass."
- ASTM D2487. "Classification of Soils for Engineering Purposes (Unified Soil Classification System)."
- ASTM D2488. "Description and Identification of Soils (Visual Manual Method)."
- ASTM D4318. "Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils."
- ASTM D5434. "Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock."
- ASTM D6913. "Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis."
- Brockman, S.R., Espinosa, A.F., and Michael, J.A. (1988). Catalog of Intensities and Magnitudes for Earthquakes in Alaska and the Aleutian Islands – 1786 – 1981. United States Geological Survey, Survey Bulletin 1840.
- Coduto, Donald P (1999). Geotechnical Engineering Principles and Practices. Prentice-Hall, Inc. Upper Saddle River, New Jersey.
- Combellick, R.A. and Long, W.E., (1983), "Geologic hazards in southeastern Alaska: an overview", Alaska Division of Geological & Geophysical Surveys Report of Investigation 83-17, 17 p.
- Das, B.M. (2014). Principles of Foundation Engineering, Eighth Edition. Cengage Learning. Boston, Massachusetts.
- Day, Robert W (2002). Geotechnical Earthquake Engineering Handbook. McGraw-Hill. New York, New York.
- Idriss and Boulanger (2008). Soil Liquefaction During Earthquakes. Earthquake Engineering Research Institute (EERI). Oakland, California.
- Miller Robert D. (1972). *Surficial Geology of the Juneau Urban Area and Vicinity, Alaska with Emphasis on Earthquake and Other Geologic Hazards*. United States Geological Survey Open-File Report, 100p.
- Wesson, R.L., Boyd, O.S., Mueller, C.S., Bufe, C.G., Frankel, A.D., and Petersen, M.D. (2007). "Revision of time-independent probabilistic seismic hazard maps for Alaska." *U.S. Geological Survey Open-File Report*, 2007-1043.

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Geotechnical Report

APPENDIX A – BOREHOLE LOGS

SOILS CLASSIFICATION, CONSISTENCY AND SYMBOLS

CLASSIFICATION

Identification and classification of soil samples is accomplished in general accordance with the ASTM version of the Unified Soil Classification System (USCS) as presented in ASTM Standard D2487. The standard is a qualitative method of classifying soil into the following major divisions (1) coarse grained soil, (2) fine grained soil, and (3) highly organic soils. Classification is performed on a soil sample which passes the 75 mm (3 inch) sieve, oversize material (> 75 mm particles) is noted on the soil logs as well. Classification of oversize material is not always possible because the oversize particles are typically too large to be captured in the sampling equipment. Oversize materials greater than 300 mm (12 inches) are termed boulders, while materials between 75 mm and 300 mm are termed cobbles. Coarse grained soils are described as having 50% or more of the sample retained on the No. 200 sieve (0.075 mm) while fine grained soils will have 50% or more of the sample passing the No. 200 sieve. Coarse samples containing >50% material retained on the No. 4 sieve is classified as gravel. If a majority of the sample is retained on the No. 200 sieve but passes the No. 4 sieve it is classified as a sand. Fine grained soils are those having more than 50% of the sample passing the No. 200 sieve; these may be classified as silt or clay depending their Atterberg limits or observations of field consistency. Refer to the most recent version of ASTM D2487 for a complete discussion of the classification method.

SOIL CONSISTENCY - CRITERIA

Soil consistency as defined below and determined by normal field and laboratory methods applies only to non-frozen material. For these materials, the influence of such factors as soil structure, i.e. Fissure systems, shrinkage cracks, slickensides, etc., must be taken into consideration in making any correlation with the consistency values listed below. In permafrost zones, the consistency and strength of frozen soils may vary significantly and unexplainably with ice content, thermal regime and soil type.

STANDARD PENETRATION TEST (BLOWS/FT) RELATIVE TO DENSITY/CONSISTENCY

N ₆₀	Density	Relative Density	N ₆₀	Consistency
0-4	Very Loose	0-15%	< 2	Very Soft
4-10	Loose	15-35%	2 - 4	Soft
10-30	Medium Dense	35-65%	4 - 8	Medium Stiff
30-50	Dense	65-85%	8 - 15	Stiff
> 50	Very Dense	>85%	15 - 30	Very Stiff
			> 30	Hard

UNDRAINED SHEAR STRENGTH

psf
< 250
250 - 500
500 - 1000
1000 - 2000
2000 - 4000
> 4000

(*correlations based upon standard 1.4" O.D. split spoon and 140 lb manual hammer dropped from a height of 30 inches)

(*Adjust as required for other sampler types)

Ref: Terzaghi and Peck, Soil Mechanics in Engineering Practice, 3rd Edition, pg 60-63
ASTM D1586 Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils
ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (USCS)

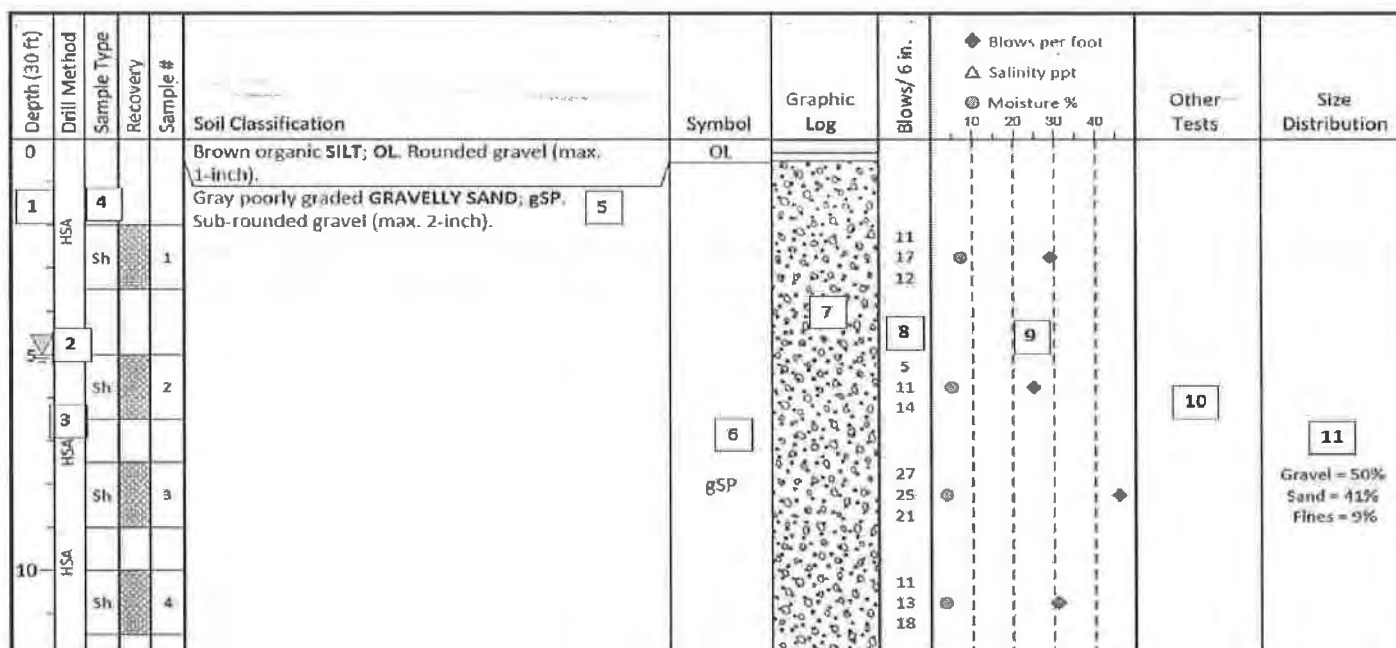
LIST OF ABBREVIATIONS

Drill Methods:	Sample Methods:	Color:	Particle Angularity
AR Air Rotary	AR Air Rotary	BK Black	A Angular
CC60 Continuous Coring (RS-60)	Cc Continuous Core	BN Brown	R Rounded
CD Case and Drill	GR Grab Sample	DG Dark Brown	SA Sub-Angular
CCm Continuous Coring (Macro Core)	Sh Oversize Split-Spoon	DG Dark Gray	SR Sub-Rounded
CME Continuous Augering	Ss Standard Split-Spoon	G Gray	<u>Particle Shape:</u>
CWR Casing with Wash Rotary	ST Shelby Tube	GG Greenish Gray	E Elongated
DH Down-hole hammer	Cs Core Sample	LB Light Brown	F Flat
HSA Hollow Stem Auger		LG Light Gray	
MR Mud Rotary		OG Olive Gray	
NQ3 NQ3 Triple Tube		P Pink	
WR Wash Rotary		R Reddish	
TP Test Pit		RO Rusty Orange	
		TN Tan	
		YO Yellowish Orange	
		BG Brownish Gray	



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Drawn: PND
Checked: PND
Project No.: 222016
Date: March 2022

STANDARD GEOTECHNICAL EXPLORATION BOREHOLE LEGEND



- 1 Depth Depth (in feet) below the mudline.
- 2 Water Table Water Table depth.
- 3 Drill Method Drilling methods recorded in depth intervals. Symbols explained on Fig. B-01.
- 4 Sample Type Type of soil sample collected at depth interval depicted; symbols explained on Fig. B-04.
- 5 Material Description - General General description of soil encountered in a lithological layer.
- 6 Symbol Group symbols for soil and ice classification for each specimen.
- 7 Graphic Log Graphic depiction of lithological layers encountered. Graphic symbols explained in Fig. B-03 and B-04.
- 8 Blows/ 6 in Number of blows to advance sampler each 6-inch interval using sampler type specified with a 30-inch drop.
- 9 Graphs Graphic log depicting moisture content and blow count per foot of soil specimens.
- 10 Other Tests Results of other tests including hydrometer, Atterberg limits, etc.
- 11 Size Distribution Results of particle size distribution analysis.

GENERAL NOTES

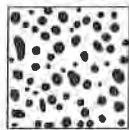
1. Field descriptions may have been modified to reflect laboratory test results.
2. Descriptions on these boring logs apply only at the specific locations at the time the borings were drilled. They are not warranted to be representative of subsurface conditions at other locations or times.
3. Split spoon blow counts shown are uncorrected raw data. Various hammer sizes and split spoon sizes were used and have not been corrected to a Standard Penetration Test (SPT). Blow counts may vary substantially between SPT and these methods.



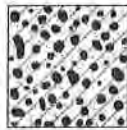
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 Date: March 2022

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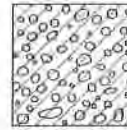
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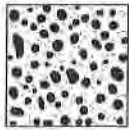
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GRAVEL



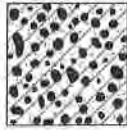
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WELL GRADED
GRAVEL WITH
CLAY AND SAND



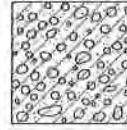
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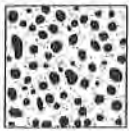
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WELL GRADED GRAVEL
WITH SAND



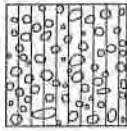
s(GW-GC)
WELL GRADED
SANDY GRAVEL
WITH CLAY



GCs
CLAYEY GRAVEL
WITH SAND



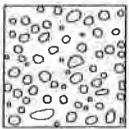
sGW
WELL GRADED SANDY
GRAVEL



GP-GM
POORLY GRADED
GRAVEL WITH SILT



sGC
CLAYEY, SANDY
GRAVEL



GP
POORLY GRADED
GRAVEL



(GP-GM)s
POORLY GRADED
GRAVEL WITH SILT
AND SAND



GC-GM
SILTY, CLAYEY
GRAVEL



GPs
POORLY GRADED
GRAVEL WITH SAND



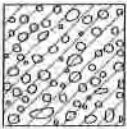
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POORLY GRADED SANDY
GRAVEL WITH SILT



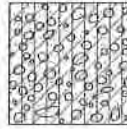
(GC-GM)s
SILTY, CLAYEY
GRAVEL WITH SAND



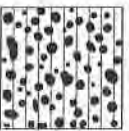
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POORLY GRADED SANDY
GRAVEL



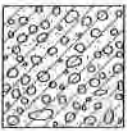
GP-GC
POORLY GRADED
GRAVEL WITH CLAY



s(GC-GM)
SILTY, CLAYEY,
SANDY GRAVEL



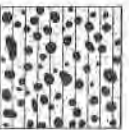
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WELL GRADED
GRAVEL WITH SILT



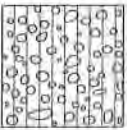
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POORLY GRADED
GRAVEL WITH CLAY
AND SAND



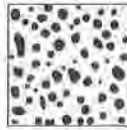
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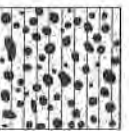
(GW-GM)s
WELL GRADED
GRAVEL WITH SILT
AND SAND



GM
SILTY GRAVEL



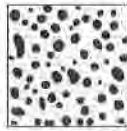
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WELL GRADED
SAND WITH GRAVEL



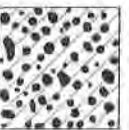
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SANDY GRAVEL
WITH SILT



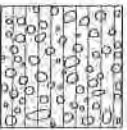
GMs
SILTY GRAVEL WITH
SAND



gSW
WELL GRADED
GRAVELLY SAND



GW-GC
WELL GRADED
GRAVEL WITH CLAY



sGM
SILTY, SANDY GRAVEL



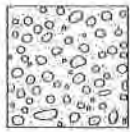
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POORLY GRADED
SAND



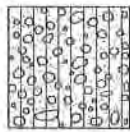
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Date: March 2022

**STANDARD
GEOTECHNICAL EXPLORATION
BOREHOLE LEGEND**

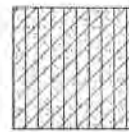
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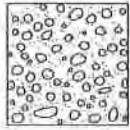
SPg
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SAND WITH GRAVEL



g(SP-SM)
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GRAVELLY SAND
WITH SILT



SC-SM
SILTY, CLAYEY SAND



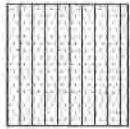
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POORLY GRADED
GRAVELLY SAND



SP-SC
POORLY GRADED
SAND WITH CLAY



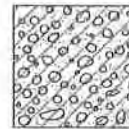
(SC-SM)g
SILTY, CLAYEY SAND
WITH GRAVEL



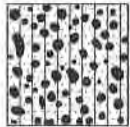
SW-SM
WELL GRADED SAND
WITH SILT



(SP-SC)g
POORLY GRADED
SAND WITH CLAY
AND GRAVEL



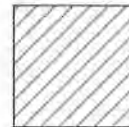
g(SP-SC)
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GRAVELLY SAND
WITH CLAY



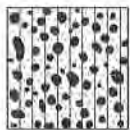
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WELL GRADED
SAND WITH SILT
AND GRAVEL



g(SP-SC)
POORLY GRADED
GRAVELLY SAND
WITH CLAY



CL
CLAY



g(SW-SM)
WELL GRADED
GRAVELLY SAND
WITH SILT



SM
SILTY SAND



CLs
CLAY WITH SAND



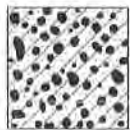
SW-SC
WELL GRADED SAND
WITH CLAY



SMg
SILTY SAND WITH
GRAVEL



CLg
CLAY WITH GRAVEL



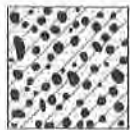
(SW-SC)g
WELL GRADED
SAND WITH CLAY
AND GRAVEL



gSM
SILTY, GRAVELLY
SAND



sCL
SANDY LEAN CLAY



g(SW-SC)
WELL GRADED
GRAVELLY SAND
WITH CLAY



SC
CLAYEY SAND



gCL
GRAVELLY LEAN CLAY



SP-SM
POORLY GRADED
SAND WITH SILT



SCg
CLAYEY SAND WITH
GRAVEL



sCLg
SANDY LEAN CLAY
WITH GRAVEL



(SP-SM)g
POORLY GRADED
SAND WITH SILT
AND GRAVEL



gSC
CLAYEY, GRAVELLY
SAND



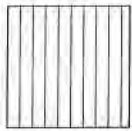
gCLs
GRAVELLY LEAN CLAY
WITH SAND



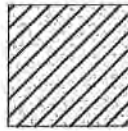
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Date: March 2022

STANDARD GEOTECHNICAL EXPLORATION BOREHOLE LEGEND

SOIL LEGEND - (3 of 3)



ML
SILT



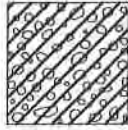
sCH
SANDY FAT CLAY



OH
ORGANIC SILT



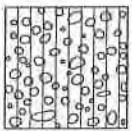
MLs
SILT WITH SAND



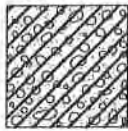
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GRAVELLY FAT CLAY



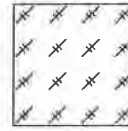
OL
ORGANIC CLAY



MLg
LEAN SILT WITH GRAVEL



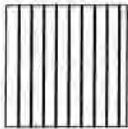
gCHs
GRAVELLY FAT CLAY WITH SAND



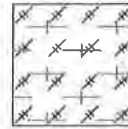
ICE
ICE



sML
SANDY SILT



MH
ELASTIC SILT



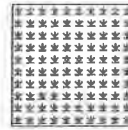
ICE+S
ICE WITH SOIL



gML
GRAVELLY SILT



MHs
ELASTIC SILT WITH SAND



PT
PEAT



sMLg
SANDY SILT WITH GRAVEL



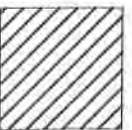
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ELASTIC SILT WITH GRAVEL



gMLs
GRAVELLY SILT WITH SAND



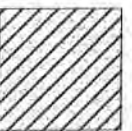
sMH
SANDY ELASTIC SILT



CH
FAT CLAY



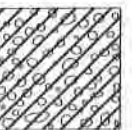
gMH
GRAVELLY ELASTIC SILT



CHs
FAT CLAY WITH SAND



sMHg
SANDY ELASTIC SILT WITH GRAVEL



CHg
FAT CLAY WITH GRAVEL



gMHs
GRAVELLY ELASTIC SILT WITH SAND



Designed: PND
Drawn: PND
Checked: PND
Project No.: 222016
Date: March 2022

**STANDARD
GEOTECHNICAL EXPLORATION
BOREHOLE LEGEND**

LOG OF BOREHOLE BH-1

 Project: SEARHC Juneau Medical Office Building
 Project Number: 222016

 Horizontal Datum: NAD83 AKSP Zone 1
 Latitude: 58.37224 °N Longitude: 134.59637 °W

 Logged By: CDK
 Reviewed By: SS
 Review Date: 3/26/2022

Depth (22 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/6 in.	Blows per foot	Salinity ppt	Moisture %	Other Tests	Size Distribution
0					Brown PEAT; PT . Fibrous organics.	PT		2					
	HSA	Sh		1	Brown poorly graded GRAVELLY SAND; gSP . Sub-rounded/sub-angular gravel (max. 2.5-inch).	gSP		4 5 5					
	HSA	Sh		2	Gray SANDY SILT; sML . Sub-rounded gravel (max. 1/2-inch). 3" layer of coarse sand at 4.3'. Start using water at 5' to counteract heave.	sML		2 0 1 4					
5	HSA	Sh		3				2 7 6 7					
	HSA	Sh		4	Gray poorly graded SAND with SILT and GRAVEL; (SP-SM)g . Sub-rounded gravel (max. 1-inch).	(SP-SM)g							
	HSA	Sh		5	Gray poorly graded GRAVEL with SAND; GPs . Sub-rounded gravel (max. 1.5-inch).	GPs		3 4 3 1					
10	HSA	Sh		6	Gray poorly graded SAND; SP . Rounded gravel (max. 3/4-inch). 6" layer of fine sand at 10.5'.	SP		1 2 9 21					
	HSA	Sh		7	Orange-brown poorly graded GRAVEL with SILT and SAND; (GP-GM)s . Sub-rounded gravel (max. 1-inch). Driller notes hard drilling to 15'.	(GP-GM)s							
15	HSA	Sh		8	Gray SILTY GRAVEL with SAND; GMs . Sub-rounded gravel (max. 2-inch).	GMs		70/3					
	HSA	Sh		9									
20	HSA	Sh		10	poorly graded SAND; SP . Sub-rounded gravel (max. 1-inch).	SP		23 9 8 8					


 Borehole terminated at 22 ft
 Client: Southeast Alaska Regional Health Consortium
 Drill Start: 2/11/2022

 Drilling Contractor: Discovery Drilling, LLC
 Drill Equipment: Geoprobe 6712DT
 Driller: BV

Page: 1 of 1

LOG OF BOREHOLE BH-2

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: 58.37181 °N Longitude: 134.59676 °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (22 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/6 in.	Blows per foot	Salinity ppt	Moisture %	Other Tests	Size Distribution
0					Brown PEAT ; PT . Fibrous organics.	PT		2					
		Sh		1	Gray poorly graded SAND with SILT and GRAVEL ;	(SP-SM)g		4					
					(SP-SM)g . Sub-rounded gravel (max. 1/2-inch).			5					
	HSA	Sh		2				4					
					Brownish gray SANDY SILT ; sML . About 20% fibrous organics by volume.	sML		1					
								0					
	HSA	Sh		3				0			72%		
					Gray poorly graded SAND with SILT ; SP-SM .								
5					Rounded gravel (max. 3/4-inch). About 10% fibrous organics by volume.			2					
								2					
	HSA	Sh		4		SP-SM		2					
								2					
								1					
	HSA	Sh		5				5					
								3					
					Gray poorly graded GRAVELLY SAND ; gSP .			3					
10					Sub-rounded gravel (max. 1-inch). 6" layer of silt at 10.5'.	gSP							
								1					
	HSA	Sh		7				7					
					Brownish gray poorly graded SANDY GRAVEL with SILT ; s(GP-GM) . Sub-rounded gravel (max. 1-inch).			21					
	HSA	Sh		8		s(GP-GM)							
	HSA	Sh		9	Gray SILTY SAND ; SM . Rounded gravel (max. 1/2-inch).	SM		8					
15								13					
					Gray poorly graded SANDY GRAVEL with SILT ;			14					
	HSA	Sh		10	s(GP-GM) . Sub-angular gravel (max. 2-inch).			12					
	HSA	Sh		11		s(GP-GM)		12					
20								4					
								4					
	HSA	Sh						4					



Borehole terminated at 22 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/11/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

Page: 1 of 1

LOG OF BOREHOLE BH-3

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: 58.37225 °N Longitude: 134.59581 °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (102 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/ 6 in.	♦ Blows per foot ● Salinity ppt ○ Moisture %	Other Tests	Size Distribution
								10 20 30 40			
0		Sh		1	Brown PEAT ; PT . Fibrous organics.	PT		1			
		Sh		2	Brownish gray SILTY, GRAVELLY SAND ; gSM . Sub-rounded gravel (max. 1-inch).	gSM		4			
	MR	Sh		3	Gray SILT ; ML . About 15% fibrous organics by volume.	ML		1			
		Sh		4	Gray SILTY, GRAVELLY SAND ; gSM . Sub-rounded gravel (max. 1/2-inch).	gSM		1			
5		Sh		5	Light gray SILTY SAND ; SM . Sub-rounded/sub-angular gravel (max. 1/2-inch).	SM		4			
	MR	Sh		6	Brownish gray poorly graded SANDY GRAVEL with SILT ; s(GP-GM) . Sub-rounded/sub-angular gravel (max. 1.5-inch).	s(GP-GM)		5			
		Sh		7	Light gray poorly graded SANDY GRAVEL ; sGP . Sub-rounded gravel (max. 1-inch).	sGP		6			
10		Sh		8	Gray poorly graded SAND with GRAVEL ; SPg . Sub-rounded gravel (max. 1/2-inch). No recovery at 20'. Start using drilling mud at 20' to counteract heave.	SPg		10			
	MR	Sh		9				10			
15		Sh		10				11			
	MR	Sh						16			
20		Sh						17			
	MR	Sh									
25		Sh									
	MR	Sh									
30		Sh									
	MR	Sh									
35		Sh									
	MR	Sh									
40		Sh									
	MR	Sh									

Gravel = 26%
 Sand = 69%
 Fines = 5%

LOG OF BOREHOLE BH-3

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: 58.37225 °N Longitude: 134.59581 °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (102 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/5 in.	Blows per foot Salinity ppt Moisture %	Other Tests	Size Distribution
40	MR	Sh		11	Dark gray poorly graded SAND with GRAVEL; SPg. Sub-rounded gravel (max. 1/2-inch).			6 8 10 8	10 20 30 40		
45	MR	Sh		12	Dark gray poorly graded SAND; SP.			5 5 8 9	10 20 30 40		
50	MR	Sh		13				6 7 7 9	10 20 30 40		
55	MR								10 20 30 40		
60	MR	Sh		14				1 5 7 7	10 20 30 40		
65	MR								10 20 30 40		
70	MR	Sh		15				8 10 11 11	10 20 30 40		
75	MR								10 20 30 40		
80	MR								10 20 30 40		



Borehole terminated at 102 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/8/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

LOG OF BOREHOLE BH-3

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: 58.37225 °N Longitude: 134.59581 °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (102 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/ 6 in.	Blows per foot Salinity ppt Moisture %	Other Tests	Size Distribution
80	MR	Sh		16	Light gray poorly graded SAND; SP.			7 7 8	10 20 30 40		
85	MR										
90	MR	Sh		17	Dark gray SILTY SAND; SM.			9 7 8	10 20 30 40		
95	MR					SM					
100	MR	Sh		18				5 8 8 9	10 20 30 40		



Borehole terminated at 102 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/8/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

LOG OF BOREHOLE BH-4

 Project: SEARHC Juneau Medical Office Building
 Project Number: 222016

 Horizontal Datum: NAD83 AKSP Zone 1
 Latitude: 58.37188 °N Longitude: 134.59601 °W

 Logged By: CDK
 Reviewed By: SS
 Review Date: 3/26/2022

Depth (103 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/6 in.	Blows per foot	Salinity ppt	Moisture %	Other Tests	Size Distribution
0	MR	Sh		1	Dark brown SILTY SAND with GRAVEL; SMg .	SMg		2					
		Sh		2	Sub-rounded gravel (max. 3/4-inch). Trace fibrous organics.	s(GP-GM)		2					
					Gray poorly graded SANDY GRAVEL with SILT; s(GP-GM) . Sub-rounded/sub-angular gravel (max. 1.5-inch).	ML		2					
		Sh		3	Light gray SILT; ML .			0					
5	MR	Sh		4	Gray SILTY SAND; SM . Rounded gravel (max. 1/2-inch).	SM		1					
								1					
								2					
		Sh		5	Gray poorly graded SAND with SILT and GRAVEL; (SP-SM)g . Sub-rounded gravel (max. 3/4-inch).	(SP-SM)g		4					
								6					
								5					
10	MR	Sh		6	Gray SILT; ML . 15% fibrous organics.	ML		1					
		Sh		7	Gray SILTY SAND; SM .	SM		3					
								6					
	MR				Gray poorly graded SANDY GRAVEL; sGP . Sub-rounded gravel (max. 1-inch).								
15		Sh		8		sGP		9					
								13					
								13					
	MR							16					
20	MR	Sh		9	Light gray poorly graded SAND; SP . Rounded gravel (max. 1/2-inch).			1					
								3					
								5					
								4					
25	MR					SP							
		Sh		10				8					
								7					
								8					
	MR							7					
30	MR	Sh		11	Gray poorly graded GRAVELLY SAND; gSP . Sub-rounded gravel (max. 1-inch).			10					
								9					
								8					
								6					
35	MR	Sh		12	Gray poorly graded SAND; SP . Sub-rounded gravel (max. 1/2-inch).			7					
								7					
								7					
	MR							9					
40								8					

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 Borehole terminated at 103 ft
 Client: Southeast Alaska Regional Health Consortium
 Drill Start: 2/9/2022

 Drilling Contractor: Discovery Drilling, LLC
 Drill Equipment: Geoprobe 6712DT
 Driller: BV

Page: 1 of 3

LOG OF BOREHOLE BH-4

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: 58.37188 °N Longitude: 134.59601 °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (103 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/ 6 in.	Blows per foot	Salinity ppt	Moisture %	Other Tests	Size Distribution
40	MR	Sh		13	Gray poorly graded SAND; SP. Sub-rounded/sub-angular gravel (max. 3/8-inch).			7 8 10 10					
45	MR	Sh		14		SP		8 8 8 6					
50	MR	Sh		15				1 3 5 6					
55	MR				Dark gray SILTY SAND; SM.								
60	MR	Sh		16		SM		1 1 3 4					
65	MR				Gray poorly graded SAND with SILT; SP-SM.								
70	MR					SP-SM							
75	MR	Sh		17	Gray poorly graded SAND; SP.			5 4 5 6					
80	MR					SP							

Gravel = 6%
Sand = 91%
Fines = 3%



Borehole terminated at 103 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/9/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

LOG OF BOREHOLE BH-4

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: 58.37188 °N Longitude: 134.59601 °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (103 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/ 6 in.	Blows per foot	Salinity ppt	Moisture %	Other Tests	Size Distribution
80	MR	Sh		18	Gray poorly graded SAND; SP.			2					
	MR				Gray poorly graded SAND with SILT; SP-SM.			4					
85	MR					SP-SM		7					
90	MR	Sh		19	Gray SILTY SAND; SM.			3					
	MR							4					
95	MR					SM		5					
	MR							4					
100	MR	Sh		20				1					
								0					
								4					
								7					



Borehole terminated at 103 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/9/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

LOG OF BOREHOLE BH-5

 Project: SEARHC Juneau Medical Office Building
 Project Number: 222016

 Horizontal Datum: NAD83 AKSP Zone 1
 Latitude: 58.37219 °N Longitude: 134.59519 °W

 Logged By: CDK
 Reviewed By: SS
 Review Date: 3/26/2022

Depth (107 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/ 6 in.	Blows per foot				Other Tests	Size Distribution		
									10	20	30	40				
0	MR	Sh		1	Brown PEAT ; PT . Fibrous organics.	PT		5								
					Brown poorly graded GRAVELLY SAND ; gSP .	gSP		3								
					Sub-rounded/sub-angular gravel (max. 1/2-inch).			2								
	MR	Sh		2	Dark brown organic SILT ; OL . About 25% fibrous organics by volume.	OL		0								
										0						
											3					
5	MR	Sh		3	Gray SILTY, SANDY GRAVEL ; sGM . Sub-rounded gravel (max. 1-inch).	sGM		4								
										3						
											1					
	MR	Sh		5	Gray SANDY SILT ; sML .	sML		2								
										1						
											2					
10	MR	Sh		6	Gray SILTY, GRAVELLY SAND ; gSM . Rounded gravel (max. 1/2-inch).	gSM		1								
											1					
											0					
	MR	Sh		7	Gray SILT ; ML .	ML		1								
											0					
											1					
15	MR	Sh		8	Gray poorly graded SANDY GRAVEL with SILT ; s(GP-GM) . Sub-rounded/sub-angular gravel (max. 1.5-inch).	s(GP-GM)		5								
											5					
											8					
20	MR	Sh		9	Gray poorly graded SAND ; SP .	SP		3								
											4					
											6					
25	MR	sh		10				5								
											5					
											7					
30	MR	Sh		11	Light gray poorly graded GRAVELLY SAND ; gSP . Sub-rounded/sub-angular gravel (max. 1-inch).	gSP		1								
											2					
											3					
35	MR	Sh		12				8								
											7					
											4					
40	MR				Gray poorly graded SAND ; SP .			4								
Gravel = 41% Sand = 56% Fines = 3%																

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Borehole terminated at 107 ft

Client: Southeast Alaska Regional Health Consortium

Drill Start: 2/12/2022

Drilling Contractor: Discovery Drilling, LLC

Drill Equipment: Geoprobe 6712DT

Driller: BV

Page: 1 of 3

LOG OF BOREHOLE BH-5

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: 58.37219 °N Longitude: 134.59519 °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (107 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/6 in.	Blows per foot	Salinity ppt	Moisture %	Other Tests	Size Distribution
40	MR	Sh		13	Gray poorly graded SAND; SP.			8 6 5 8					
45	MR	Sh		14				5 4 5 5					
50	MR	Sh		15				8 10 10 10					
55	MR												
60	MR	Sh		16				10 11 13 10					
65	MR												
70	MR	Sh		17				3 4 8 9					
75	MR												
80	MR												



Borehole terminated at 107 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/12/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

LOG OF BOREHOLE BH-5

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: 58.37219 °N Longitude: 134.59519 °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (107 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/ 6 in.	Blows per foot	Salinity ppt	Moisture %	Other Tests	Size Distribution
80	MR	Sh		18	Gray SILTY SAND; SM . 1' of medium to coarse sand at 100'.			3 4 8 8					
85	MR												
90	MR	Sh		19		SM		3 4 5 6					
95	MR												
100	MR	Sh		20				8 3 5 4					
		Sh		21	Gray poorly graded SAND with SILT; SP-SM .								
105	MR					SP-SM		5 8 11 13					
		Sh		22									



Borehole terminated at 107 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/12/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

LOG OF BOREHOLE BH-6

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: 58.37179 °N Longitude: 134.59520 °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (102 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/6 in.	Blows per foot	Salinity ppt	Moisture %	Other Tests	Size Distribution
0		Sh		1	Brown PEAT ; PT . Fibrous organics.	PT		2					
					Brownish gray poorly graded GRAVELLY SAND with SILT ; g(SP-SM) . Sub-rounded gravel (max. 1.5-inch).	g(SP-SM)		3					
					Gray SILT with SAND ; MLs .	MLs		5					
	MR	Sh		2				3					
								2					
								2					
5		sh		3	Gray SILTY, SANDY GRAVEL ; sGM .	sGM		3					
					Sub-rounded/sub-angular gravel (max. 1-inch).			1					
	MR	sh		4	Gray SILT with SAND ; MLs .	MLs		2					
								1					
								4					
								3					
10	MR	sh		5	Gray SILTY GRAVEL with SAND ; GMs .	GMs		5					
					Sub-rounded/sub-angular gravel (max. 1-inch).			3					
					Gray SILT with SAND ; MLs .			2					
		Sh		6				1					
								1					
	MR					MLs		4					
15								1					
		Sh		7				1					
								1					
	MR							4					
					Gray poorly graded SAND ; SP . Rounded gravel (max. 1/2-inch).			2					
20	MR	Sh		8		SP		7					
								13					
								16					
25	MR							4					
		Sh		9				8					
								8					
								9					
30	MR				Gray poorly graded SANDY GRAVEL ; sGP .	sGP		16					
					Sub-rounded gravel (max. 1-inch).			17					
		Sh		10				8					
	MR							7					
35		Sh		11				11					
	MR							12					
								11					
								11					
40	MR				Gray poorly graded SAND ; SP . Rounded gravel (max. 1/2-inch).	SP							



Borehole terminated at 102 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/11/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

LOG OF BOREHOLE BH-6

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: 58.37179 °N Longitude: 134.59520 °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (102 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/ 6 in.	Blows per foot	Salinity ppt	Moisture %	Other Tests	Size Distribution
40	MR	Sh		12	Gray well-graded SAND; SW. Rounded gravel (max. 1/2-inch).			11 15 11 9					
45	MR	Sh		13				8 8 10 9					
50	MR	Sh		14				8 11 7 6					
55	MR					SW							
60	MR	Sh		15				4 7 9 12					
65	MR												
70	MR	Sh		16	Gray poorly graded SAND with SILT; SP-SM.			5 6 6 5					
75	MR												
80	MR												

Gravel = 3%
Sand = 93%
Fines = 4%



Borehole terminated at 102 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/11/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

LOG OF BOREHOLE BH-6

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: 58.37179 °N Longitude: 134.59520 °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (102 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/ 6 in.	Blows per foot Salinity ppt Moisture %	Other Tests	Size Distribution
80	MR	Sh		17	Gray poorly graded SAND with SILT; SP-SM.	SP-SM		13 15 19 20	10 20 30 40		
85	MR										
90	MR	Sh		18				23 19 18 21			
95	MR										
100	MR	Sh		19	Gray poorly graded SAND; SP.	SP		9 9 10 12			



Borehole terminated at 102 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/11/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 67120T
Driller: BV

LOG OF BOREHOLE ENV-1

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: °N Longitude: °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (10 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/ 6 in.	Blows per foot	Salinity ppt	Moisture %	Other Tests	Size Distribution
0		LI		1	Brown PEAT; PT . Fibrous organics.	PT							
					Brown poorly graded GRAVELLY SAND; gSP . Sub-rounded/sub-angular gravel (max. 3/4-inch).	gSP							
		LI		2	Gray poorly graded SAND with SILT; SP-SM . Sub-rounded gravel (max. 1/2-inch).								
5						SP-SM							
		LI		3	Gray poorly graded SANDY GRAVEL; sGP . Sub-rounded/sub-angular gravel (max. 1-inch).	sGP							
		LI		4	Gray SILT; ML .	ML							
10													



Borehole terminated at 10 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/10/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

LOG OF BOREHOLE ENV-2

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: °N Longitude: °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (10 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/6 in.	Blows per foot Salinity ppt Moisture %	Other Tests	Size Distribution
0		LI		1	Brown SILTY SAND with GRAVEL; SMg . Sub-rounded gravel (max. 1/2-inch). Fibrous organics.	SMg					
		LI		2	Gray poorly graded SANDY GRAVEL; sGP . Sub-rounded gravel (max. 1/2-inch).	sGP					
5		LI		3	Gray SILTY SAND; SM .	SM					
		LI		4	Light gray poorly graded SANDY GRAVEL with SILT; s(GP-GM) . Sub-rounded gravel (max. 1/2-inch).	s(GP-GM)					
10											



Borehole terminated at 10 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/10/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

LOG OF BOREHOLE ENV-3

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: °N Longitude: °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (10 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/ 6 in.	Blows per foot Salinity ppt Moisture %	Other Tests	Size Distribution
0		LI		1	Brownish gray poorly graded GRAVELLY SAND with SILT; g(SP-SM) . Sub-rounded gravel (max. 1/2-inch). Trace fibrous organics.	g(SP-SM)					
		LI		2	Brownish gray organic SILT; OL . About 25% fibrous organics by volume.	OL					
					Gray SANDY SILT; sML .	sML					
5		LI		3							
		LI		4	Light gray poorly graded SANDY GRAVEL; sGP . Sub-rounded/sub-angular gravel (max. 1-inch).	sGP					
10											



Borehole terminated at 10 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/10/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

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LOG OF BOREHOLE ENV-4

Project: SEARHC Juneau Medical Office Building
Project Number: 222016

Horizontal Datum: NAD83 AKSP Zone 1
Latitude: °N Longitude: °W

Logged By: CDK
Reviewed By: SS
Review Date: 3/26/2022

Depth (10 ft)	Drill Method	Sample Type	Recovery	Sample #	Soil Classification	Symbol	Graphic Log	Blows/6 in.	Blows per foot Salinity ppt Moisture %	Other Tests	Size Distribution
0					Brown PEAT ; PT . Fibrous organics.	PT					
		LI		1	Brownish gray poorly graded SANDY GRAVEL ; sGP . Sub-rounded/sub-angular gravel (max. 3/4-inch).	sGP					
					Brown SILT ; ML .	ML					
		LI		2	Dark brown organic SILT ; OL . About 25% fibrous organics by volume.	OL					
					Brown SILT ; ML .	ML					
5											
		LI		3	Rusty orange poorly graded GRAVEL with SILT and SAND ; (GP-GM)s . Rounded gravel (max. 1/2-inch).	(GP-GM)s					
					Gray poorly graded SAND ; SP .	SP					
		LI		4	Gray poorly graded GRAVELLY SAND ; gSP . Sub-rounded gravel (max. 1/2-inch).	gSP					
10											



Borehole terminated at 10 ft
Client: Southeast Alaska Regional Health Consortium
Drill Start: 2/11/2022

Drilling Contractor: Discovery Drilling, LLC
Drill Equipment: Geoprobe 6712DT
Driller: BV

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March 2022

SEARHC Juneau Medical Office Building
Geotechnical Report

APPENDIX B – LABORATORY TEST RESULTS

Summary of Sample Characteristics

Client: Southeast Alaska Regional Health Consortium
 Project: SEARHC Juneau Medical Office Building
 Project #: 222016



Borehole	Sample #	From	To	Sample Method	Liquid Limit (%)	Plastic Limit (%)	Gradation (%)			Max Particle Size (in)	Laboratory Classification*	Salinity (ppt)	Moisture (%)	Particle Shape	Angularity	Other Tests**
							Gravel	Sand	Fines*							
BH-1	1	0.5	1.5	Sh						2	sGP		9		SR	
BH-1	2	3.5	4.5	Sh							sML		42			
BH-1	3	5	5.5	Sh						1/2	SM		13		SR	
BH-1	4	6	7	Sh						1	(SP-SM)g		11		SR	
BH-1	5	8	8.5	Sh						1.5	GPs		8		SR	
BH-1	6	10	10.5	Sh						3/4	SP		13		R	
BH-1	7	11	11.5	Sh						1	(GP-GM)s		6		SR	
BH-1	8	15	15.3	Sh						2	GMs		8		SR	
BH-1	9	20	20.5	Sh						1.5	GMs		10		SR	
BH-1	10	21	21.5	Sh						1	SP		20		SR	
BH-2	1	0.5	1.5	Sh						1	gSM		8		SR	
BH-2	2	1.5	2	Sh						1/2	(SP-SM)g		11		SR	
BH-2	3	3.5	4.5	Sh							sML		72			
BH-2	4	5.5	6	Sh						3/4	SP-SM		25		R	
BH-2	5	8	9	Sh							SM		26			
BH-2	6	9	9.5	Sh						1	gSP		12		SR	
BH-2	7	10.5	11	Sh							ML		44			
BH-2	8	11	11.5	Sh						1	s(GP-GM)		5		SR	
BH-2	9	15.5	16	Sh						1/2	SM		10		R	
BH-2	10	16	17	Sh						1.5	s(GP-GM)		6		SR-SA	
BH-2	11	20.5	21	Sh						2	s(GP-GM)		9		SR-SA	
BH-3	1	0.25	1.5	Sh						1	gSM		13		SR	
BH-3	2	2.5	3.5	Sh							ML		37			
BH-3	3	3.5	4	Sh						1/2	SMg		11		SR	
BH-3	4	5.5	6.5	Sh						1/2	gSM		13		SR	
BH-3	5	8.5	9.5	Sh							SM		26			
BH-3	6	11	12	Sh						1.5	s(GP-GM)		6		SR-SA	
BH-3	7	15.5	17	Sh						1	sGP		6		SR	
BH-3	8	26	27	Sh			26.5	68.7	4.7	3/8	SPg		11		SR	

*Fines type and content estimated with ASTM D2488 when ASTM D422 or D4318 were not performed

**Other tests: DEN = Bulk Density, SPG = Specific Gravity, HYD = Hydrometer, CONSL = Consolidation, UCS = Unconfined Compression Strength, TRIAX = Triaxial

Summary of Sample Characteristics

Client: Southeast Alaska Regional Health Consortium
 Project: SEARHC Juneau Medical Office Building
 Project #: 222016



Borehole	Sample #	From	To	Sample Method	Liquid Limit (%)	Plastic Limit (%)	Gradation (%)			Max Particle Size (in)	Laboratory Classification*	Salinity (ppt)	Moisture (%)	Particle Shape	Angularity	Other Tests**
							Gravel	Sand	Fines*							
BH-3	9	31	32	Sh							SPg		20			
BH-3	10	35.5	36.5	Sh						1/2	SPg		12		SR	
BH-3	11	40.5	41.5	Sh						1/2	SPg		12		SR	
BH-3	12	45.5	46.5	Sh							SP		18			
BH-3	13	51	52	Sh							SP		17			
BH-3	14	60.5	61.5	Sh							SP		18			
BH-3	15	70.5	71.5	Sh							SP		20			
BH-3	16	81	81.5	Sh							SP		24			
BH-3	17	90.5	91.5	Sh							SM		29			
BH-3	18	100	101	Sh							SM					
BH-4	1	0	0.5	Sh						3/4	SMg		23		SR	
BH-4	2	0.5	2	Sh						1.5	s(GP-GM)		10		SR-SA	
BH-4	3	3.5	4	Sh							ML		47			
BH-4	4	5.5	6.5	Sh						1/2	SM		28		R	
BH-4	5	8	9	Sh						3/4	(SP-SM)g		12		SR	
BH-4	6	10	11	Sh							ML		46			
BH-4	7	11	12	Sh						0	SM		27			
BH-4	8	15.5	16.5	Sh						1	sGP		7		SR	
BH-4	9	20.5	21.5	Sh							SP		20			
BH-4	10	25.5	26.5	Sh						1/2	SP		14		R	
BH-4	11	30.5	31.5	Sh						1	sGP		11		SR	
BH-4	12	35.5	36.5	Sh						1	gSP		13		SR	
BH-4	13	40.5	41.5	Sh						1/2	SP		14		SR	
BH-4	14	46	46.5	Sh			5.6	91.1	3.2	3/8	SP		18		SR-SA	
BH-4	15	50.5	51	Sh							SP		20			
BH-4	16	60.5	61.5	Sh							SM		36			
BH-4	17	71	71.5	Sh							SP-SM		27			
BH-4	18	81	81.5	Sh							SP		25			
BH-4	19	90.5	91	Sh							SP-SM		29			

*Fines type and content estimated with ASTM D2488 when ASTM D422 or D4318 were not performed
 **Other tests: DEN = Bulk Density, SPG = Specific Gravity, HYD = Hydrometer, CONSL = Consolidation, UCS = Unconfined Compression Strength, TRIAX = Triaxial

Summary of Sample Characteristics

Client: Southeast Alaska Regional Health Consortium
 Project: SEARHC Juneau Medical Office Building
 Project #: 222016



Borehole	Sample #	From	To	Sample Method	Liquid Limit (%)	Plastic Limit (%)	Gradation (%)			Max Particle Size (in)	Laboratory Classification*	Salinity (ppt)	Moisture (%)	Particle Shape	Angularity	Other Tests**
							Gravel	Sand	Fines*							
BH-4	20	102	103	Sh							SM		28			
BH-5	1	1.5	2	Sh							ML		55			
BH-5	2	2.5	3.5	Sh							ML		110			
BH-5	3	3.5	4	Sh						1	sGM		18		SR	
BH-5	4	5	6	Sh						1	sGM		12		SR	
BH-5	5	6	6.5	Sh							sML		34			
BH-5	6	8.8	9	Sh						1/2	gSM		18		R	
BH-5	7	10.5	11.5	Sh							ML		40			
BH-5	8	15.5	16	Sh						1.5	s(GP-GM)		9		SR-SA	
BH-5	9	20.5	21.3	Sh							SP		17			
BH-5	10	25.5	26.5	sh							SP		17			
BH-5	11	30.5	31	Sh						1	gSP		10		SR	
BH-5	12	35.5	36.5	Sh			41.4	55.9	2.7	1	gSP		12		SR-SA	
BH-5	13	40.5	41.5	Sh							SP		17			
BH-5	14	46	46.5	Sh							SP		23			
BH-5	15	51	51.5	Sh							SP		17			
BH-5	16	61	61.5	Sh							SP		18			
BH-5	17	71	71.5	Sh							SP		17			
BH-5	18	80.5	81	Sh							SM		31			
BH-5	19	91	92	Sh							SM		23			
BH-5	20	101	101	Sh							SP		14			
BH-5	21	101	102	Sh							SM		29			
BH-5	22	106	107	Sh							SP-SM		18			
BH-6	1	0.5	1.5	Sh						1.5	g(SP-SM)		7		SR	
BH-6	2	3	4	Sh							MLs		32			
BH-6	3	5	5.5	Sh						1	sGM		15		SR-SA	
BH-6	4	6	6.5	Sh							MLs		43			
BH-6	5	8.5	9	Sh						1	GMs		11		SR-SA	
BH-6	6	11	12	Sh							MLs		42			

*Fines type and content estimated with ASTM D2488 when ASTM D422 or D4318 were not performed

**Other tests: DEN = Bulk Density, SPG = Specific Gravity, HYD = Hydrometer, CONS = Consolidation, UCS = Unconfined Compression Strength, TRIAX = Triaxial

Summary of Sample Characteristics

Client: Southeast Alaska Regional Health Consortium
 Project: SEARHC Juneau Medical Office Building
 Project #: 222016



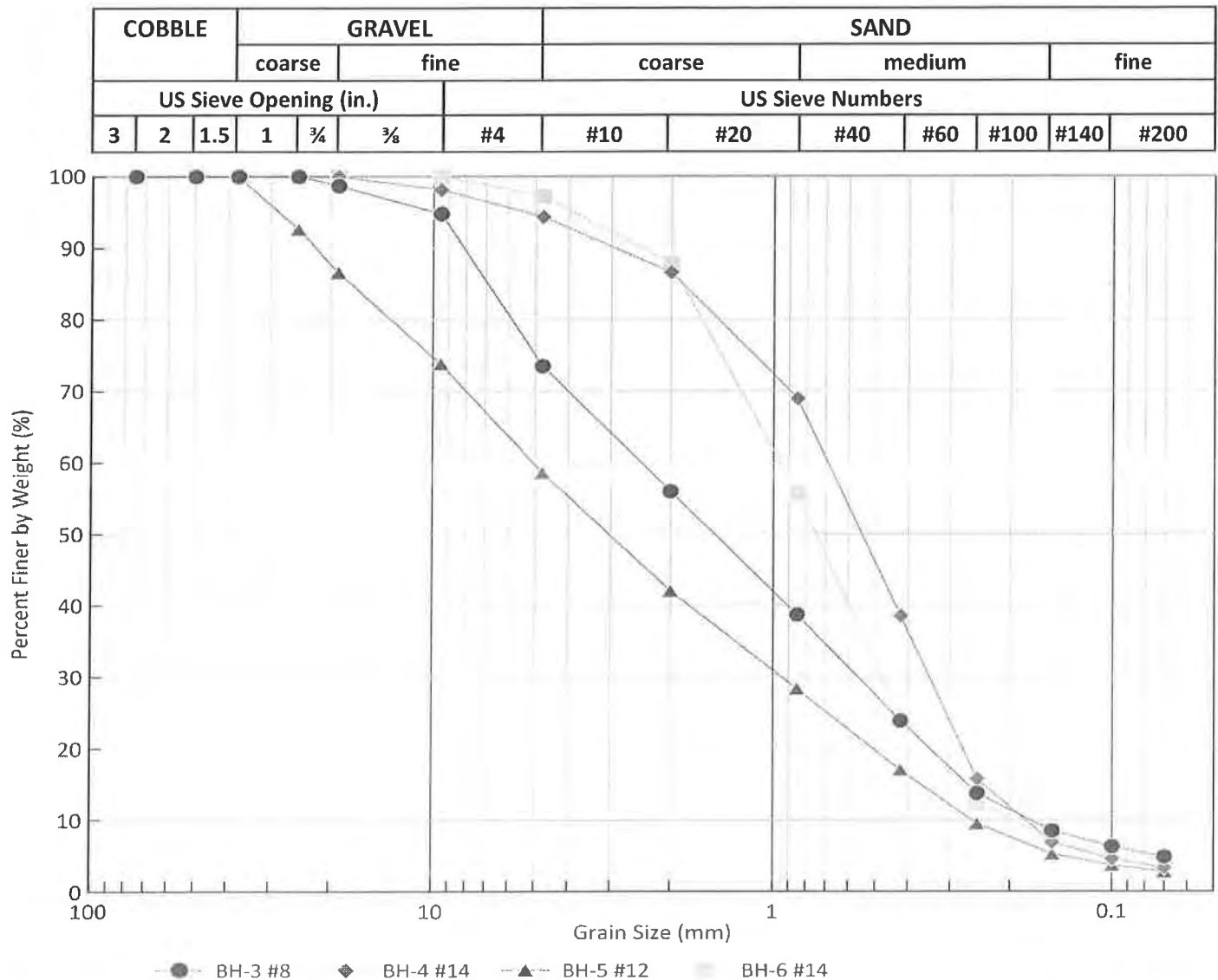
Borehole	Sample #	From	To	Sample Method	Liquid Limit (%)	Plastic Limit (%)	Gradation (%)			Max Particle Size (in)	Laboratory Classification*	Salinity (ppt)	Moisture (%)	Particle Shape	Angularity	Other Tests**
							Gravel	Sand	Fines*							
BH-6	7	15.5	16.5	Sh							MLs		40			
BH-6	8	20.5	21.5	Sh						1/2	SP		13		R	
BH-6	9	25.5	26.5	Sh							SP		15			
BH-6	10	30.5	31.5	Sh						1	sGP		11		SR	
BH-6	11	35.5	36	Sh						1	sGP		9		SR	
BH-6	12	40.5	41	Sh						1/2	SW		14		R	
BH-6	13	46	46.5	Sh							SW		20			
BH-6	14	50.5	51	Sh			2.8	93.0	4.1		SW		18			
BH-6	15	61	61.5	Sh							SW		22			
BH-6	16	70.5	71.5	Sh							SP-SM		19			
BH-6	17	81	81.5	Sh							SP-SM		22			
BH-6	18	90.5	91.5	Sh							SP-SM		21			
BH-6	19	101	102	Sh							SP		12			
ENV-1	1	0.2	1	LI						3/4	gSP				SR-SA	
ENV-1	2	2	2.5	LI						1/2	SP-SM				SR	
ENV-1	3	7	8	LI						1	sGP				SR-SA	
ENV-1	4	8	9	LI							ML					
ENV-2	1	0	1	LI						1/2	SMg				SR	
ENV-2	2	2	3	LI						1/2	sGP				SR	
ENV-2	3	5	6	LI							SM					
ENV-2	4	8	8.5	LI						1/2	s(GP-GM)				SR	
ENV-3	1	0.5	1.5	LI						1/2	g(SP-SM)				SR	
ENV-3	2	2	3	LI							OL					
ENV-3	3	5	6	LI							sML					
ENV-3	4	7	8	LI						1	sGP				SR-SA	
ENV-4	1	0.5	1	LI						3/4	sGP				SR-SA	
ENV-4	2	2	3	LI							OL					
ENV-4	3	6	7	LI						1/2	(GP-GM)s				R	
ENV-4	4	8	9	LI						1/2	gSP				SR	

116 samples

*Fines type and content estimated with ASTM D2488 when ASTM D422 or D4318 were not performed
 **Other tests: DEN = Bulk Density, SPG = Specific Gravity, HYD = Hydrometer, CONSL = Consolidation, UCS = Unconfined Compression Strength, TRIAX = Triaxial

Grain Size Distribution

Client: Southeast Alaska Regional Health Consortium
 Project: SEARHC Juneau Medical Office Building
 Project #: 222016

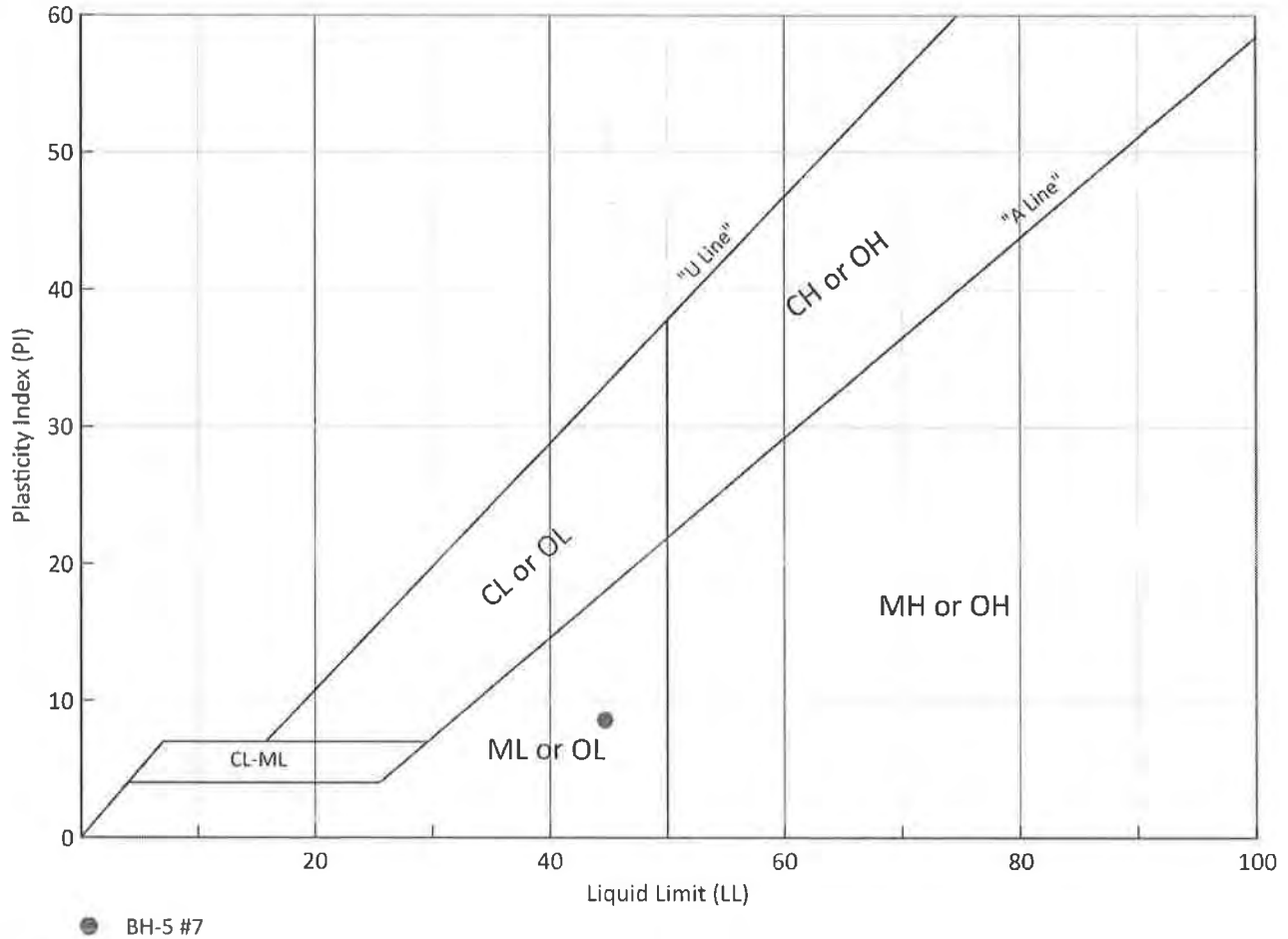


Borehole	Sample #	From	To	Laboratory Classification*	Gradation (%)			D50	P10
					Gravel	Sand	Fines		
BH-3	8	26	27	SPg	26.5	68.7	4.7	1.5	56.0
BH-4	14	46	46.5	SP	5.6	91.1	3.2	0.6	86.6
BH-5	12	35.5	36.5	gSP	41.4	55.9	2.7	3.0	42.1
BH-6	14	50.5	51	SW	2.8	93.0	4.1	0.7	87.8

*Fines type estimated with ASTM D2488 when ASTM D422 or D4318 were not performed

Atterberg Test Results

Client: Southeast Alaska Regional Health Consortium
 Project: SEARHC Juneau Medical Office Building
 Project #: 222016



Borehole	Sample #	From	To	Moisture %	LL	PL	PI	Soil Type
BH-5	7	10.5	11.5	40.42%	44.7	36.07	8.6	ML



ENGINEERS, INC.

Client: Southeast Alaska Regional Health Consortium

Project: SEARHC Juneau Medical Office Building

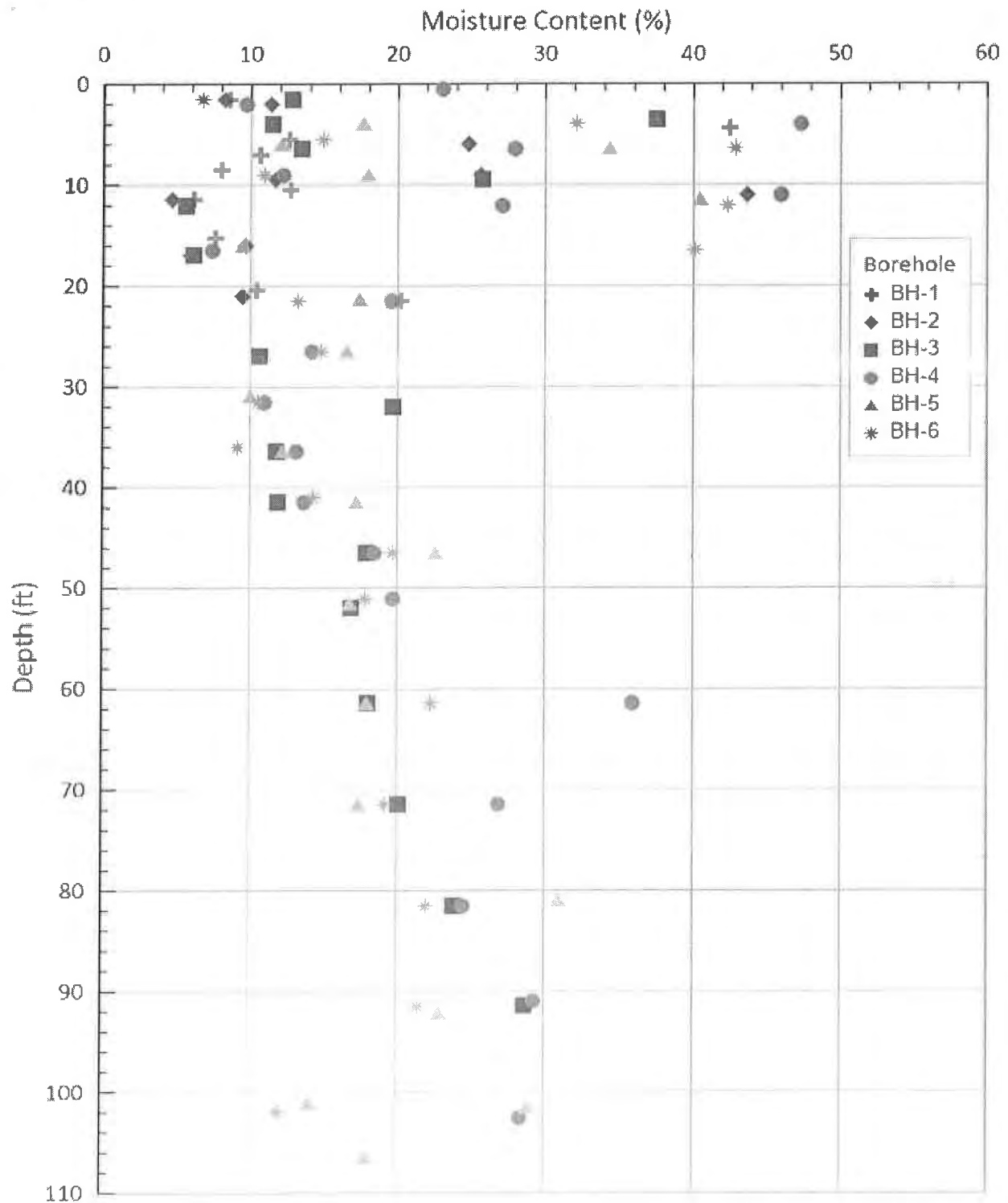
Project #: 222016

MOISTURE CONTENT BY DEPTH SEARHC JUNEAU MEDICAL OFFICE BUILDING

Location: Juneau, Alaska

Reviewed By: SS

Review Date:



March 2022

SEARHC Juneau Medical Office Building
Geotechnical Report

APPENDIX C – FIELD INVESTIGATION PHOTOGRAPHS

March 2022

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Photograph No. 1

Description:

Sandy silt (sML) underlain by sand with silt and gravel ((SP-SM)g) in BH-1.



Photograph No. 2

Description:

Gravel with sand (GPs) encountered from 8 to 8.5 feet bgs in BH-1.

March 2022

SEARHC Juneau Medical Office Building
Geotechnical Report



Photograph No. 3

Description:

Gravel with silt and sand ((GP-GM)s) encountered in BH-1.



Photograph No. 4

Description:

Silty gravel with sand (GMs) underlain by poorly graded sand (SP) in BH-1.

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Geotechnical Report



Photograph No. 5

Description:

Surficial organics underlain by sand with silt and gravel ((SP-SM)g) in BH-2.



Photograph No. 6

Description:

Sandy silt (sML) with layers of fibrous organics encountered in BH-2.

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Photograph No. 7

Description:

Gravelly sand (gSP) underlain by silt (ML) and sandy gravel with silt (s(GP-GM)) in BH-2.



Photograph No. 8

Description:

Sandy gravel with silt (s(GP-GM)) in BH-2.

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Photograph No. 9

Description:

Surficial fibrous organics underlain by silty gravelly sand (gSM) in BH-3.



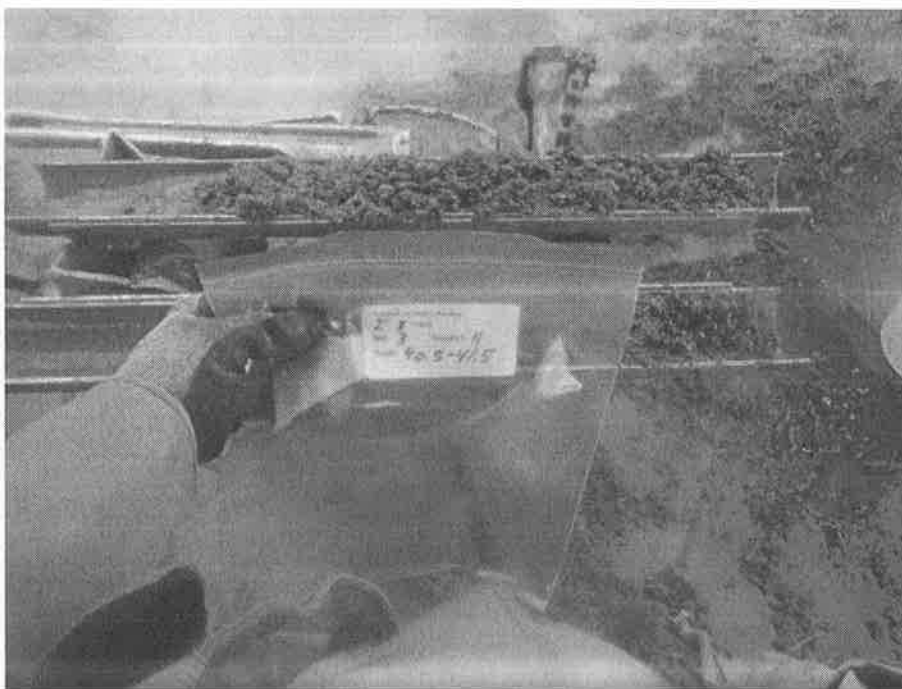
Photograph No. 10

Description:

Silty sand (SM) encountered in BH-3.

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Photograph No. 11

Description:

Sand with gravel (SPg) encountered in BH-3.



Photograph No. 12

Description:

Groundwater monitoring well installed in BH-3.

March 2022

SEARHC Juneau Medical Office Building
Geotechnical Report



Photograph No. 13

Description:

Silty sand (SM) between 4.5 and 7.5 feet bgs in BH-4.



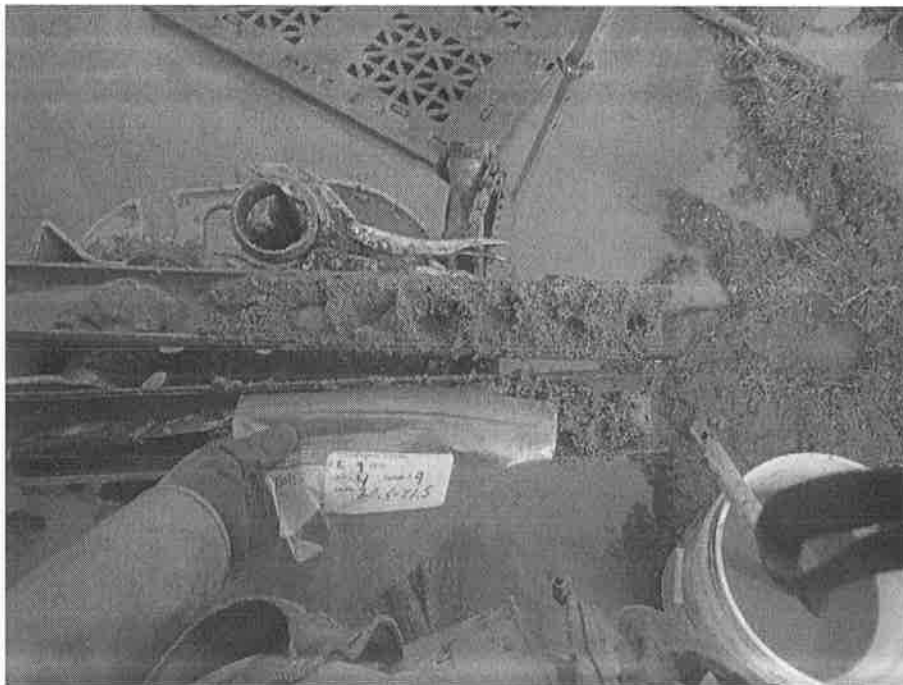
Photograph No. 14

Description:

Sandy poorly graded gravel (sGP) encountered in BH-4.

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Geotechnical Report



Photograph No. 15

Description:

Poorly graded sand (SP) encountered between 19 and 29 feet bgs in BH-4.



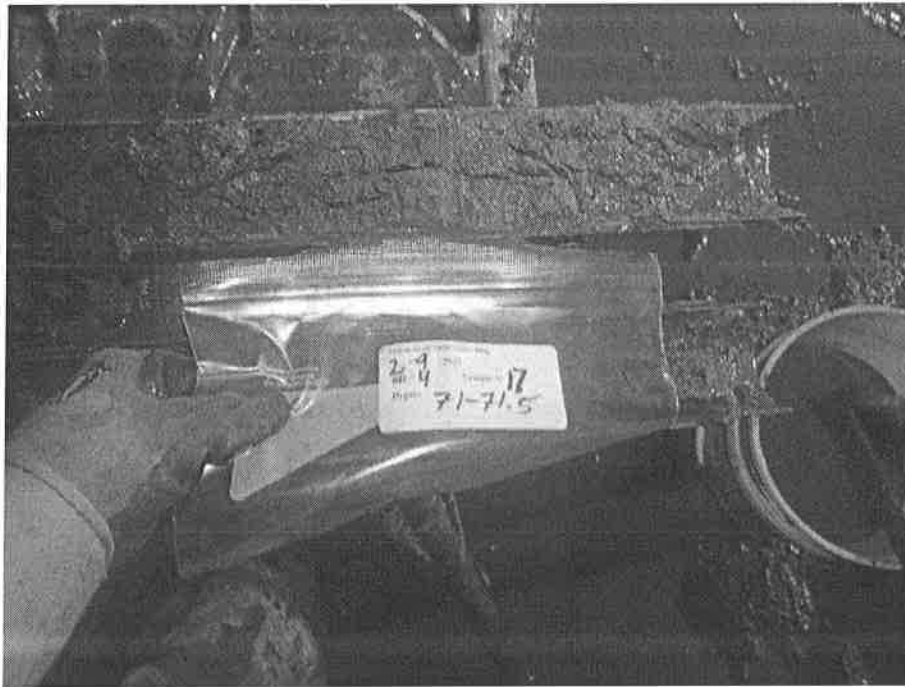
Photograph No. 16

Description:

Gravelly poorly graded sand (gSP) between 29 and 36.5 feet bgs in BH-4.

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Geotechnical Report



Photograph No. 17

Description:

Sand with silt (SP-SM) encountered in BH-4.



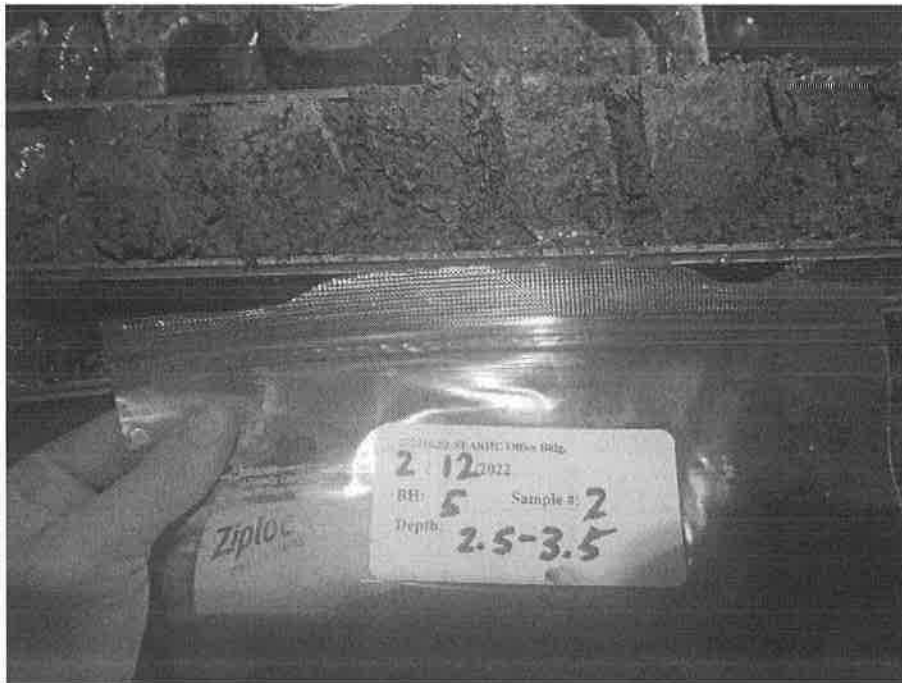
Photograph No. 18

Description:

Silty sand (SM) encountered in BH-4.

March 2022

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Geotechnical Report



Photograph No. 19

Description:

Organic silt (OL) encountered between 1.5 and 3.5 feet bgs in BH-5.



Photograph No. 20

Description:

Silt (ML) encountered in BH-5.

March 2022

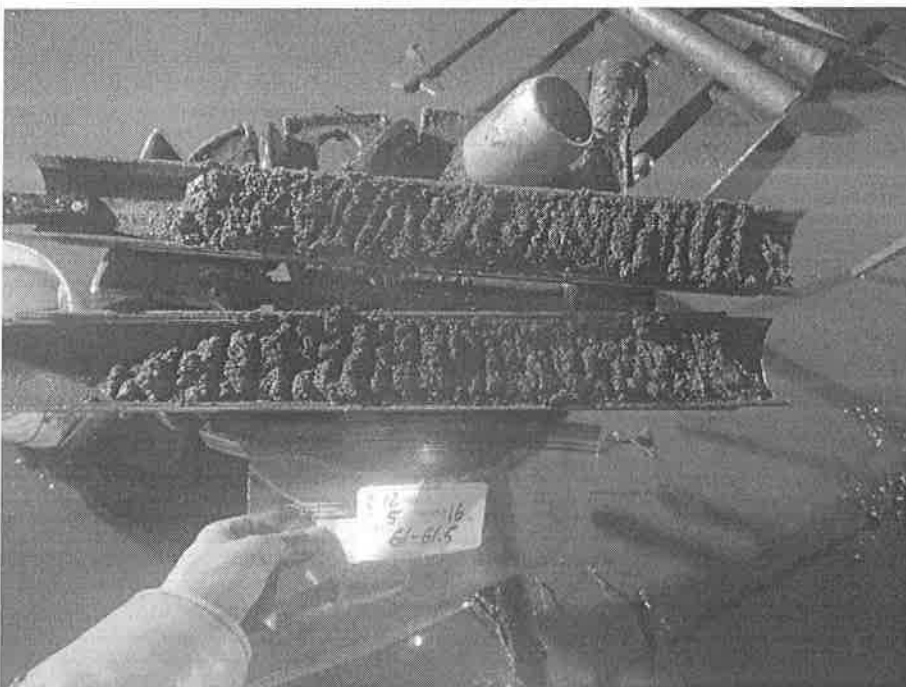
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Photograph No. 21

Description:

Gravelly sand (gSP) encountered between 29 and 38 feet bgs in BH-5.



Photograph No. 22

Description:

Poorly graded sand (SP) encountered in BH-5.

March 2022

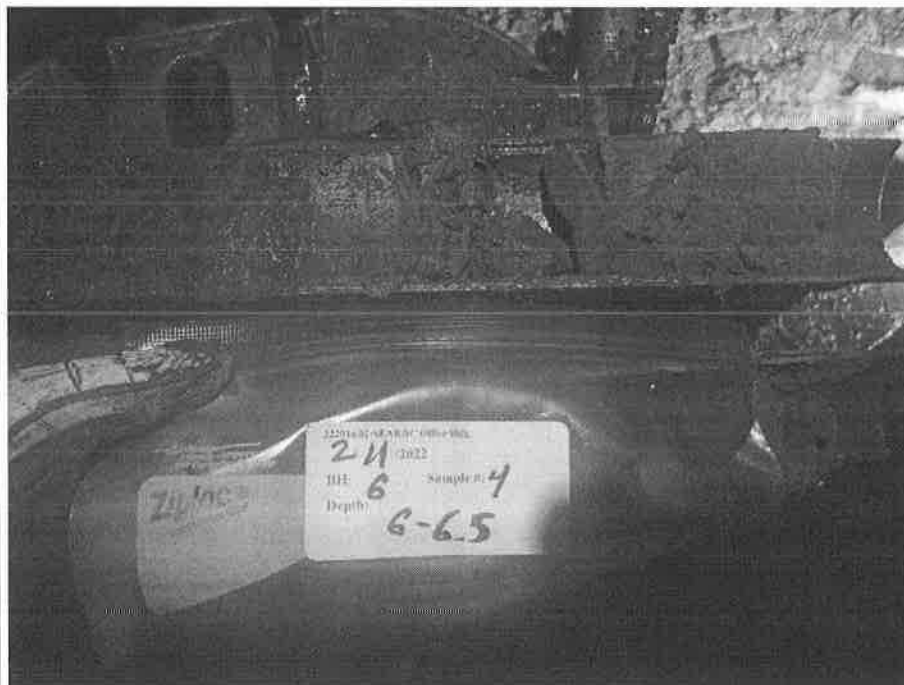
SEARHC Juneau Medical Office Building
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Photograph No. 23

Description:

Silty sand (SM) encountered in BH-5.



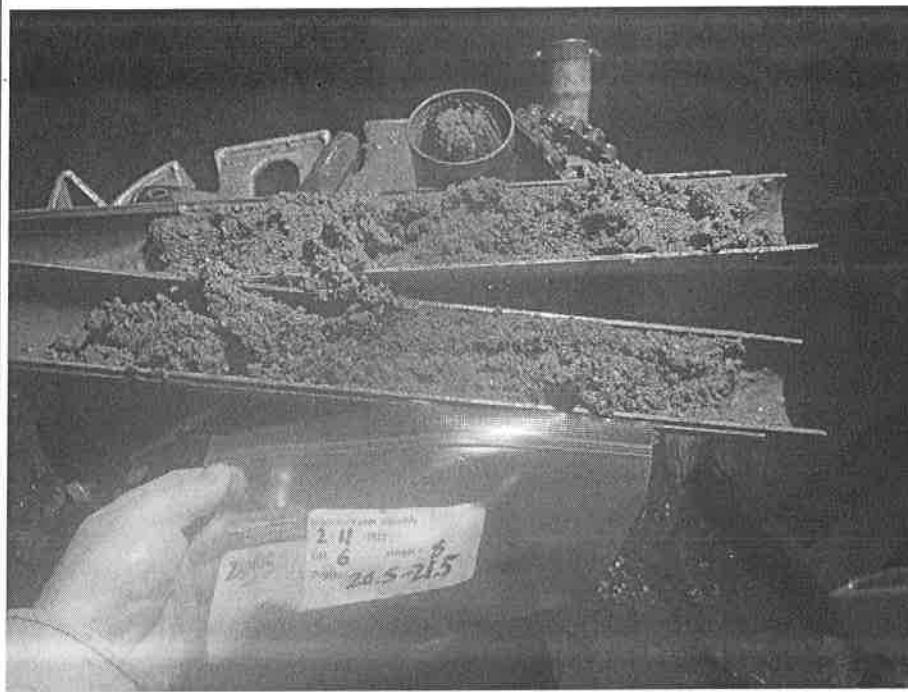
Photograph No. 24

Description:

Silt with sand (MLs) encountered from 5.5 to 8.5 feet bgs in BH-6.

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Photograph No. 25

Description:

Poorly graded sand (SP) with trace gravel encountered in BH-6.



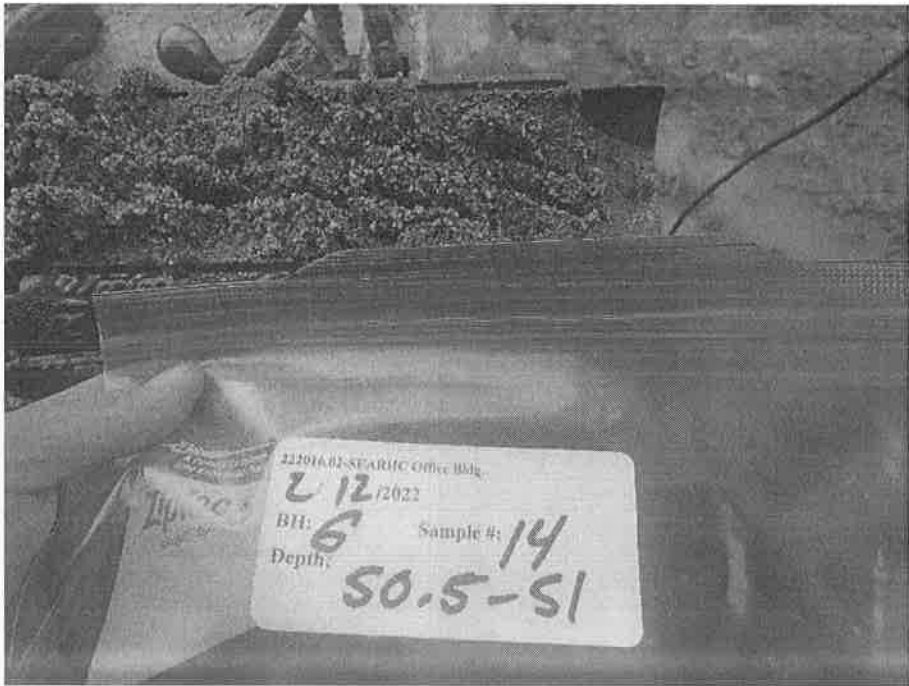
Photograph No. 26

Description:

Sandy poorly graded gravel (sGP) located between 28 and 38 feet bgs in BH-6.

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Photograph No. 27

Description:

Well graded sand (SW) encountered in BH-6.



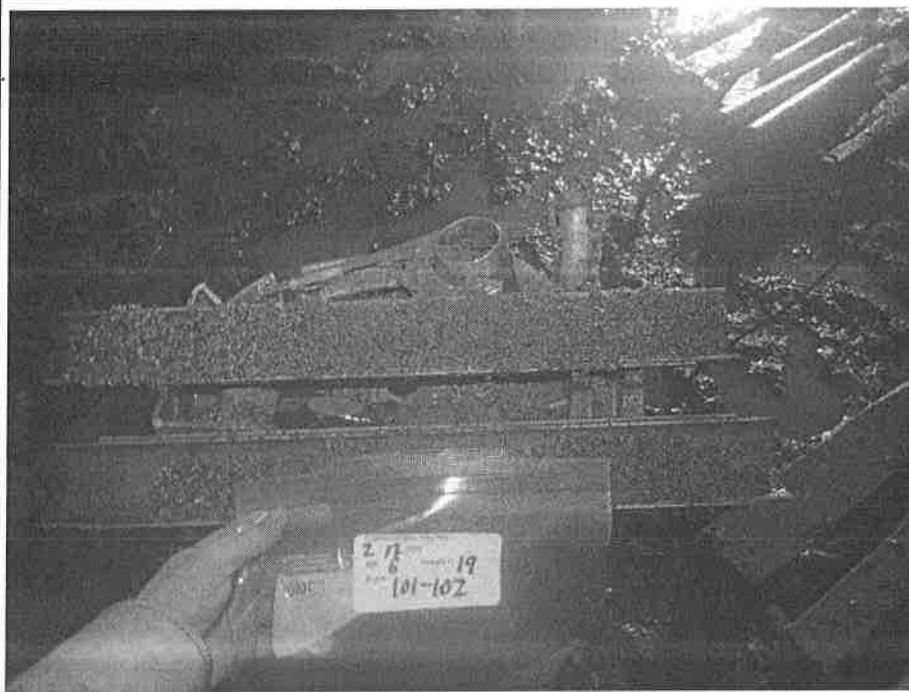
Photograph No. 28

Description:

Sand with silt (SP-SM) encountered between 70 and 96 feet bgs in BH-6.

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SEARHC Juneau Medical Office Building
Geotechnical Report



Photograph No. 29

Description:

Poorly graded sand (SP) located between 96 and 102 feet bgs in BH-6.

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SEARHC Juneau Medical Office Building
Geotechnical Report

APPENDIX D – CLIMATE DATA

3/1/22, 1:22 PM

JUNEAU 2, ALASKA - Climate Summary

JUNEAU 2, ALASKA

Period of Record General Climate Summary - Precipitation

Station:(504094) JUNEAU 2														
From Year=1965 To Year=2012														
	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.	>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.		Mean	High	Year
	in.	in.	-	in.	-	in. dd/yyyy or yyyyymmdd	# Days	# Days	# Days	# Days		in.	in.	-
January	7.06	15.35	1985	0.69	1998	2.17 17/1987	18	14	5	1		24.2	72.1	1989
February	6.10	11.66	1988	0.06	1989	3.14 20/1988	16	12	4	1		12.7	44.8	1990
March	5.92	10.04	2004	1.42	2011	3.60 13/1972	18	13	4	1		10.1	53.7	2007
April	4.98	9.38	1980	1.18	1989	1.83 22/1970	17	12	3	1		0.8	3.1	1982
May	5.62	11.26	1966	1.86	1968	2.50 19/1972	19	13	4	1		0.0	0.5	1971
June	4.28	7.57	2012	1.00	1966	2.57 03/1977	16	10	3	1		0.0	0.0	1966
July	5.69	13.43	1969	2.51	1993	2.24 16/1971	17	12	4	1		0.0	0.0	1965
August	7.61	15.39	1983	2.09	1979	4.16 17/2009	19	14	6	2		0.0	0.0	1965
September	12.00	19.09	1968	4.10	1986	4.55 28/1970	21	17	9	4		0.0	0.0	1966
October	13.21	26.68	1978	6.64	1969	3.60 18/1978	24	20	10	4		0.3	7.0	1991
November	9.39	21.01	2005	2.26	1965	4.14 30/1988	20	16	7	2		8.0	45.8	1990
December	8.67	19.59	2006	1.17	1983	5.00 17/2006	20	15	6	2		15.8	42.2	1968
Annual	90.52	108.05	1987	72.17	1982	5.00 20061217	226	169	65	21		71.9	124.8	1989
Winter	21.82	34.91	2007	7.97	1969	5.00 20061217	55	41	16	5		52.7	90.3	1982
Spring	16.52	22.78	1966	10.19	1989	3.60 19720313	54	38	11	2		10.9	53.7	2007
Summer	17.57	26.75	1969	9.13	1989	4.16 20090817	52	36	13	4		0.0	0.0	1966
Fall	34.60	51.28	2005	20.62	1984	4.55 19700928	65	53	26	10		8.3	45.8	1990

Table updated on Oct 31, 2012

For monthly and annual means, thresholds, and sums:

Months with 5 or more missing days are not considered

Years with 1 or more missing months are not considered

Seasons are climatological not calendar seasons

Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May

Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Western Regional Climate Center: wrc@drcl.edu

Attachment A - Application Packet

3/1/22, 1:26 PM

JUNEAU 2, ALASKA - Climate Summary

JUNEAU 2, ALASKA

Period of Record General Climate Summary - Temperature

Station:(504094) JUNEAU 2															
From Year=1965 To Year=2012															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	33.2	24.4	28.8	56	19/2009	-20	19/1972	39.2	1981	13.4	1969	0.0	11.3	22.7	0.6
February	36.9	27.3	32.1	57	27/1992	-9	01/1968	40.6	1977	13.9	1979	0.0	5.9	18.9	0.4
March	40.4	30.0	35.2	56	21/1981	-4	01/1972	40.6	1984	29.0	1967	0.0	2.9	18.0	0.0
April	48.8	35.0	41.9	69	26/1983	20	04/1968	46.0	1993	37.7	1982	0.0	0.0	7.6	0.0
May	55.8	41.5	48.7	79	28/1998	28	11/1971	53.8	1998	44.7	1982	0.0	0.0	0.3	0.0
June	62.1	47.9	55.0	87	21/1991	32	07/2010	61.4	1998	51.2	1972	0.0	0.0	0.0	0.0
July	63.6	51.0	57.3	85	29/1976	42	21/1965	61.6	1998	54.5	1969	0.0	0.0	0.0	0.0
August	63.0	49.9	56.5	88	20/1998	34	31/1968	61.6	2004	53.4	2006	0.0	0.0	0.0	0.0
September	56.5	45.3	50.9	76	04/1996	28	27/1983	53.2	1989	47.1	1992	0.0	0.0	0.3	0.0
October	48.6	39.0	43.8	63	02/1987	16	30/1984	46.9	1993	40.8	1996	0.0	0.1	3.6	0.0
November	39.9	30.8	35.3	58	11/1997	-7	24/1965	41.2	1976	25.6	1985	0.0	3.7	14.9	0.1
December	36.1	27.4	31.8	68	09/1965	-22	07/1970	38.6	1969	23.2	1980	0.0	8.0	20.0	0.2
Annual	48.7	37.5	43.1	88	19980820	-22	19701207	45.6	1993	40.6	1982	0.0	31.9	106.1	1.3
Winter	35.4	26.4	30.9	68	19651209	-22	19701207	37.2	1977	22.7	1969	0.0	25.2	61.6	1.1
Spring	48.3	35.5	41.9	79	19980528	-4	19720301	45.3	1993	38.8	1982	0.0	2.9	25.8	0.0
Summer	62.9	49.6	56.3	88	19980820	32	20100607	58.7	1993	53.9	1985	0.0	0.0	0.0	0.0
Fall	48.3	38.4	43.3	76	19960904	-7	19651124	45.7	1979	39.2	1985	0.0	3.8	18.7	0.1

Table updated on Oct 31, 2012

For monthly and annual means, thresholds, and sums:

Months with 5 or more missing days are not considered

Years with 1 or more missing months are not considered

Seasons are climatological not calendar seasons

Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May

Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

March 2022

SEARHC Juneau Medical Office Building
Geotechnical Report

APPENDIX E – ENVIRONMENTAL REPORT



16 March 2022

Mr. Sean Sjostedt, PE
PND Engineers
9360 Glacier Highway
Juneau, AK 99801

Re: SEARHC Vintage Park Soil Boring Environmental Sampling in Juneau

Dear Mr. Sjostedt,

This letter report describes the results of environmental sampling carried out along with a geotechnical investigation at CBJ Parcel 5B160-143-0017, an un-numbered address on a lot located between Vintage Boulevard and Postal Way in Juneau, Alaska, recently acquired by the Southeast Alaska Regional Health Consortium (SEARHC). The portion of this letter following this first paragraph can be extracted and placed in a combined report or the entire letter can be included as a stand-alone report.

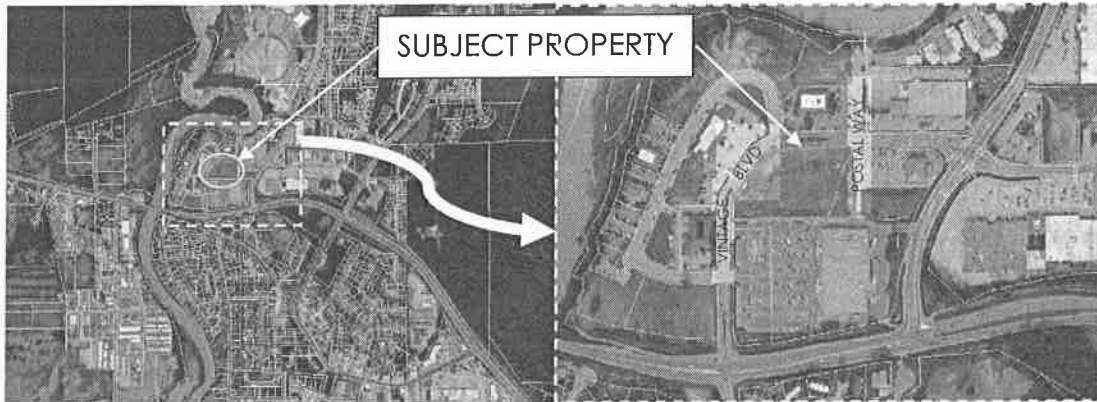
ENVIRONMENTAL SOIL INVESTIGATION

This soil investigation took place at CBJ Parcel 5B160-143-0017, at an un-numbered address on an undeveloped lot located between Vintage Boulevard and Postal Way in Juneau, Alaska, as part of a geotechnical investigation of the site. This environmental sampling program was implemented in conjunction with a geotechnical investigation carried out by PND Engineers for SEARHC. The purpose of the environmental sampling was to collect soil specimens for contaminant screening in the field and the laboratory. Figure 1 shows the site location adjacent to Vintage Boulevard in Juneau.

The environmental investigation was performed concurrently with the geotechnical investigation. Dahlberg Design, of Juneau, was retained to perform field screening and environmental sample collection. Sigrid Dahlberg, PE, of Dahlberg Design was onsite during collection of the samples at four selected locations on the site, accompanied by PND sampling technician Cameron Klatt and the crew from Discovery Drilling, LLC. Results of the environmental sample testing are outlined below. Laboratory results are attached.

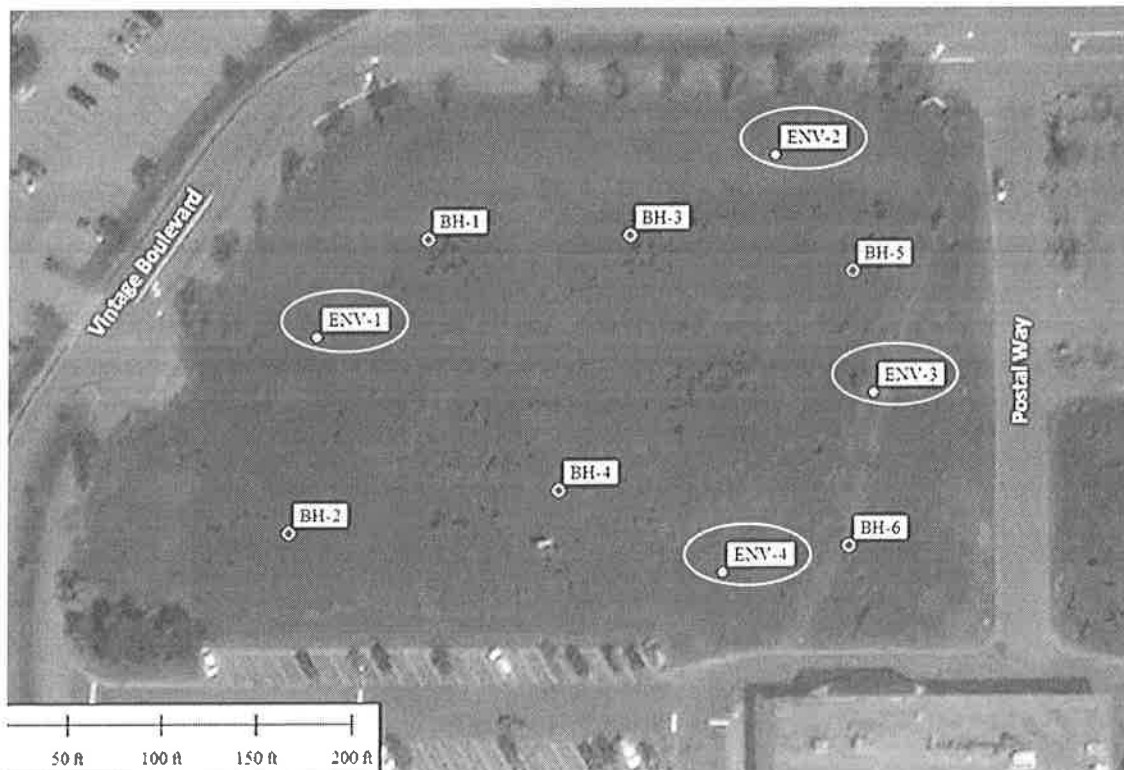
Soil descriptions for each borehole are included in Appendix A of the PND report. Layers present in each borehole indicated that the lot had been filled in some areas to create a level building platform during original development of the Vintage Park area in the 1980s.

FIGURE 1. Site Location



Environmental samples were collected from each of the four boreholes identified in the geotechnical report as ENV-1, ENV-2, ENV-3, and ENV-4, and detailed in the borehole logs in Appendix A of the PND report and shown in Figure 2. All samples were collected from a zero to 10 foot depth below the ground surface (bgs). Each sample was field screened through visual and olfactory examination.

FIGURE 2. Environmental Soil Borehole Locations



Hydrocarbon Sampling

Samples were collected on February 10 (ENV-1, ENV-2, and ENV-2) and on February 11, 2022 (ENV-4). All field screening results showed no visual sign of hydrocarbons and no detectible odor in any of the samples or at any of the boring depths up to 10 ft bgs. The surface layer included actively growing organic material but no soils were seen (such as muskeg soils) that would present naturally-occurring background levels of hydrocarbons in the soils. This depth captures information at all depths that are likely to be excavated for foundations and utilities on the proposed future development of this lot. Laboratory results are tabulated below.

TABLE 1. Hydrocarbon, VOC, and SVOC Sampling Results for Environmental Boreholes

SEARHC Vintage Blvd Site Soil Boring Hydrocarbon Results, February 2022					
Sample ID	Depth ft bgs	GRO mg/kg	DRO mg/kg	RRO mg/kg	VOC/PAH mg/kg
ENV-1	0-10	ND	ND	ND	ND
ENV-2	0-10	ND	ND	ND	<RL
ENV-3	0-10	ND	ND	19	<RL
ENV-4	0-10	1.7	14	170	<RL
ADEC Standard*	NA	260	230	9700	see Table B1

*Standard for comparison is ADEC Migration to Groundwater, which is their most stringent standard.

ND = none detected; <RL=detected below the reporting limit for this method; bgs=below ground surface

All sample results are well below the most stringent ADEC hydrocarbon standards (Method Two, Table B2, Migration to Groundwater). Volatile and semi-volatile organic compounds were generally not detected and, where detected, were in de minimus quantities far below the ADEC Table B1 values.

RCRA Metals Sampling

Soil from each environmental borehole was also analyzed for the presence of toxic metals that are regulated by the Resource Conservation Recovery Act (RCRA). Sample results are shown in Table 2.

TABLE 2. RCRA Metals Sampling Results for Environmental Boreholes

SEARHC Vintage Blvd Site Soil Boring RCRA Metals Results, February 2022							
Sample ID	Arsenic Mg/kg	Barium mg/kg	Cadmium mg/kg	Chromium mg/kg	Lead mg/kg	Selenium mg/kg	Silver mg/kg
ENV-1	6.5	590	ND	33	5.3	ND	ND
ENV-2	1.9	230	ND	14	2.5	ND	ND
ENV-3	1.8	230	ND	12	2.0	ND	ND
ENV-4	6.8	430	ND	27	3.9	ND	ND
ADEC/EPA Standard*	0.20*/7.2**	2100	9.1	10,000	400	6.9	11

*Standard for comparison is ADEC Migration to Groundwater, which is their most stringent standard.

**Standard is ADEC Human Health Standard for over 40 inches of annual rainfall.

ND = none detected



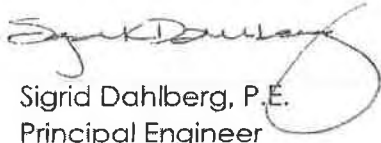
RCRA metals were generally not detected or were present in small quantities far below the ADEC standard for migration to groundwater. Arsenic was present at levels that exceeded the migration-to-groundwater standard but met the human health standard. Arsenic is a known naturally-occurring contaminant in local soils and is often found at levels higher than found on the project site. The arsenic detections in this investigation fall into the de minimus category and are not a cause for concern.

Summary

Based on field screening and laboratory results, none of the soils investigated on the subject property indicate the presence of hydrocarbon or metals contamination on the site. While this statement is limited to the areas sampled, it is most likely that levels of contamination on the remaining site are consistent with the findings of this investigation.

Laboratory results are included with this submission. Please let me know if you have any questions.

Regards,



Sigrid Dahlberg, P.E.
Principal Engineer



SAMPLING PHOTOS



1. Boring at ENV-3

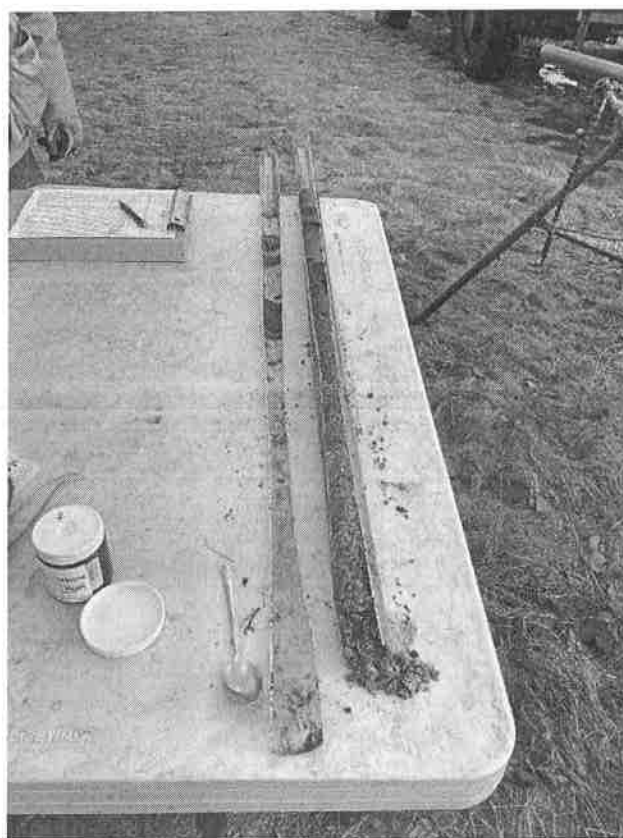


2. Preparing sample jars





3. Boring at ENV-2 location



4. Core from ENV-2





5. Boring at ENV-3 location



6. Core from ENV-4





eurofins

Environment Testing
America

1

4

5

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10

11

ANALYTICAL REPORT

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-110418-1
Client Project/Site: Search Vintage Park

For:
Dahlberg Design
222 Seward St.
D205
Juneau, Alaska 99801

Attn: Sigrid Dahlberg

Authorized for release by:
3/3/2022 8:59:31 PM

Sheri Cruz, Project Manager I
(253)922-2310
Sheri.Cruz@Eurofinset.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Attachment A - Application Packet

Client: Dahlberg Design
Project/Site: Search Vintage Park

Laboratory Job ID: 580-110418-1

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Case Narrative

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Job ID: 580-110418-1

Laboratory: Eurofins Seattle

Narrative

Job Narrative 580-110418-1

Comments

No additional comments.

Receipt

The samples were received on 2/16/2022 2:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.2° C.

Receipt Exceptions

A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC). No analysis was attached at login.

GC/MS VOA

Method 8260D: The CCV for analytical batch 580-382076 recovered outside control limits for the following analytes: Chloroethane and Trichlorofluoromethane. These have been identified as a poor performing analytes when analyzed using this method; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Method 8260D: The laboratory control sample (LCS) for preparation batch 580-382067 and analytical batch 580-382076 recovered outside control limits for the following analyte: Trichlorofluoromethane. Trichlorofluoromethane has been identified as a poor performing analyte when analyzed using this method; therefore, re-analysis was not performed.

Method 8260D SIM: The continuing calibration verification (CCV) associated with batch 580-382187 recovered outside acceptance criteria, low biased, for Bromomethane, 1,1-Dichloroethene and Naphthalene. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D SIM: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-382049 and analytical batch 580-382187 recovered outside control limits for the following analytes: 1,1-Dichloroethene.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA

Method 8270E SIM: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 580-382117 and analytical batch 580-382371 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample(LCS) accuracy was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep

Method 5035: The following samples were provided to the laboratory with a significantly different initial weight than that required by the reference method: SEARHC-E1 (580-110418-1), SEARHC-E2 (580-110418-2), SEARHC-E3 (580-110418-3) and SEARHC-E4 (580-110418-4). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method

Case Narrative

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Job ID: 580-110418-1 (Continued)

Laboratory: Eurofins Seattle (Continued)

specifies 25g. The amount provided was above this range.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS and/or LCSD is outside acceptance limits, low biased.
*1	LCS/LCSD RPD exceeds control limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS Semi VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits

GC Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E1

Date Collected: 02/10/22 13:10

Date Received: 02/16/22 14:30

PND Sample ENV-3

Lab Sample ID: 580-110418-1

Matrix: Solid

Percent Solids: 95.1

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		8.2	0.97	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
Bromomethane	ND		2.1	0.30	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
1,1-Dichloroethene	ND	*1	2.1	0.25	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
Chloroform	0.39	J	2.1	0.35	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
Benzene	0.22	J	2.1	0.17	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
1,2-Dichloroethane	ND		2.1	0.26	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
Trichloroethene	0.18	J B	2.1	0.18	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
Dibromomethane	ND		2.1	0.24	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
Dichlorobromomethane	ND		2.1	0.24	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
cis-1,3-Dichloropropene	ND		2.1	0.15	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
trans-1,3-Dichloropropene	ND		2.1	0.39	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
1,1,2-Trichloroethane	ND		2.1	0.19	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
Tetrachloroethene	ND		2.1	0.26	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
2-Hexanone	8.8	J	12	3.0	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
Chlorodibromomethane	ND		2.1	0.23	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
Ethylene Dibromide	ND		2.1	0.18	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
1,1,1,2-Tetrachloroethane	ND		2.1	0.31	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
Bromoform	ND		2.1	0.46	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
1,1,2,2-Tetrachloroethane	ND		4.1	0.56	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
1,4-Dichlorobenzene	ND		2.1	0.43	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
Hexachlorobutadiene	1.2	J B	4.1	0.27	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1
Naphthalene	6.3	J	8.2	0.81	ug/Kg	✱	02/23/22 18:05	02/24/22 21:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	114		79 - 120	02/23/22 18:05	02/24/22 21:38	1
1,2-Dichloroethane-d4 (Surr)	102		79 - 121	02/23/22 18:05	02/24/22 21:38	1
4-Bromofluorobenzene (Surr)	98		79 - 120	02/23/22 18:05	02/24/22 21:38	1
Dibromofluoromethane (Surr)	112		78 - 120	02/23/22 18:05	02/24/22 21:38	1

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		100	19	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
Chloromethane	ND		25	4.1	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
Chloroethane	ND		25	4.1	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
Trichlorofluoromethane	ND	*-	25	4.7	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
Methylene Chloride	ND		100	27	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
trans-1,2-Dichloroethene	ND		25	6.0	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
1,1-Dichloroethane	ND		16	3.8	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
2,2-Dichloropropane	ND		16	5.0	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
Bromochloromethane	ND		16	2.5	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
1,1,1-Trichloroethane	ND		16	1.9	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
Carbon tetrachloride	ND		8.2	1.8	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
1,1-Dichloropropene	ND		16	2.2	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
1,2-Dichloropropane	ND		8.2	2.7	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
Toluene	ND		25	5.5	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
1,3-Dichloropropane	ND		25	2.3	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
Chlorobenzene	ND		16	2.0	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
Ethylbenzene	ND		16	3.7	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
m-Xylene & p-Xylene	ND		16	2.9	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1
o-Xylene	ND		16	2.1	ug/Kg	✱	02/23/22 20:06	02/24/22 01:47	1

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Client Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E1

Date Collected: 02/10/22 13:10

Date Received: 02/16/22 14:30

PND Sample ENV-3

Lab Sample ID: 580-110418-1

Matrix: Solid

Percent Solids: 95.1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		16	2.5	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
Isopropylbenzene	ND		16	3.5	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
Bromobenzene	ND		16	1.7	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
N-Propylbenzene	ND		16	2.8	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
1,2,3-Trichloropropane	ND		16	4.7	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
2-Chlorotoluene	ND		16	3.6	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
1,3,5-Trimethylbenzene	ND		16	3.1	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
4-Chlorotoluene	ND		16	4.0	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
t-Butylbenzene	ND		16	3.2	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
1,2,4-Trimethylbenzene	ND		16	5.5	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
sec-Butylbenzene	ND		16	3.5	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
1,3-Dichlorobenzene	ND		25	5.5	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
4-Isopropyltoluene	ND		16	4.2	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
n-Butylbenzene	ND		16	3.3	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
1,2-Dichlorobenzene	ND		16	3.6	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
1,2-Dibromo-3-Chloropropane	ND		25	6.2	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
1,2,4-Trichlorobenzene	ND		25	6.3	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
1,2,3-Trichlorobenzene	ND		25	5.8	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
Methyl tert-butyl ether	ND		16	2.5	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1
cis-1,2-Dichloroethene	ND		25	5.2	ug/Kg	☆	02/23/22 20:06	02/24/22 01:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 120	02/23/22 20:06	02/24/22 01:47	1
4-Bromofluorobenzene (Surr)	89		80 - 120	02/23/22 20:06	02/24/22 01:47	1
Dibromofluoromethane (Surr)	93		80 - 120	02/23/22 20:06	02/24/22 01:47	1
1,2-Dichloroethane-d4 (Surr)	100		80 - 121	02/23/22 20:06	02/24/22 01:47	1

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		1.6	0.53	mg/Kg	☆	03/02/22 12:12	03/02/22 14:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	60		50 - 150	03/02/22 12:12	03/02/22 14:42	1
4-Bromofluorobenzene (Surr)	97		50 - 150	03/02/22 12:12	03/02/22 14:42	1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		4.9	1.6	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1
2-Methylnaphthalene	ND		4.9	2.0	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1
1-Methylnaphthalene	ND		4.9	0.62	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1
Acenaphthylene	ND		4.9	0.49	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1
Acenaphthene	ND		4.9	0.59	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1
Fluorene	ND		4.9	0.49	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1
Phenanthrene	ND		4.9	1.6	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1
Anthracene	ND		4.9	0.59	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1
Fluoranthene	ND		4.9	1.4	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1
Pyrene	ND		4.9	0.95	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1
Benzo[a]anthracene	ND		4.9	1.7	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1
Chrysene	ND		4.9	1.5	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1
Benzo[b]fluoranthene	ND F2		4.9	1.1	ug/Kg	☆	02/24/22 11:21	02/28/22 12:24	1

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Client Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E1

Date Collected: 02/10/22 13:10

PND Sample ENV-3

Lab Sample ID: 580-110418-1

Matrix: Solid

Date Received: 02/16/22 14:30

Percent Solids: 95.1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		4.9	0.59	ug/Kg	*	02/24/22 11:21	02/28/22 12:24	1
Benzo[a]pyrene	ND		4.9	0.82	ug/Kg	*	02/24/22 11:21	02/28/22 12:24	1
Indeno[1,2,3-cd]pyrene	ND		4.9	0.59	ug/Kg	*	02/24/22 11:21	02/28/22 12:24	1
Dibenz(a,h)anthracene	ND		4.9	0.70	ug/Kg	*	02/24/22 11:21	02/28/22 12:24	1
Benzo[g,h,i]perylene	ND		4.9	0.49	ug/Kg	*	02/24/22 11:21	02/28/22 12:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	88		57 - 145	02/24/22 11:21	02/28/22 12:24	1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND		19	8.6	mg/Kg	*	02/24/22 15:19	02/26/22 09:09	1
RRO (nC25-nC36)	19	J	48	18	mg/Kg	*	02/24/22 15:19	02/26/22 09:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	111		50 - 150	02/24/22 15:19	02/26/22 09:09	1
n-Triacontane-d62	102		50 - 150	02/24/22 15:19	02/26/22 09:09	1

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.8		1.8	0.15	mg/Kg	*	02/18/22 13:57	02/21/22 19:31	1
Barium	230		0.29	0.046	mg/Kg	*	02/18/22 13:57	02/21/22 19:31	1
Cadmium	ND		0.59	0.029	mg/Kg	*	02/18/22 13:57	02/21/22 19:31	1
Chromium	12		0.76	0.13	mg/Kg	*	02/18/22 13:57	02/21/22 19:31	1
Lead	2.0		0.88	0.13	mg/Kg	*	02/18/22 13:57	02/21/22 19:31	1
Selenium	ND		2.9	0.23	mg/Kg	*	02/18/22 13:57	02/21/22 19:31	1
Silver	ND		1.5	0.33	mg/Kg	*	02/18/22 13:57	02/21/22 19:31	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.027	0.0080	mg/Kg	*	02/25/22 17:02	02/28/22 13:38	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	95.1		0.1	0.1	%			02/21/22 12:26	1
Percent Moisture	4.9		0.1	0.1	%			02/21/22 12:26	1

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Client Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E2

Date Collected: 02/10/22 13:45

Date Received: 02/16/22 14:30

PND Sample ENV-2

Lab Sample ID: 580-110418-2

Matrix: Solid

Percent Solids: 84.9

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		13	1.5	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
Bromomethane	ND		3.2	0.47	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
1,1-Dichloroethene	ND	*1	3.2	0.40	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
Chloroform	0.65	J	3.2	0.55	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
Benzene	0.31	J	3.2	0.27	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
1,2-Dichloroethane	ND		3.2	0.40	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
Trichloroethene	0.31	J B	3.2	0.28	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
Dibromomethane	ND		3.2	0.38	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
Dichlorobromomethane	ND		3.2	0.38	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
cis-1,3-Dichloropropene	ND		3.2	0.24	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
trans-1,3-Dichloropropene	ND		3.2	0.60	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
1,1,2-Trichloroethane	ND		3.2	0.30	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
Tetrachloroethene	ND		3.2	0.40	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
2-Hexanone	ND		19	4.7	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
Chlorodibromomethane	ND		3.2	0.37	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
Ethylene Dibromide	ND		3.2	0.29	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
1,1,1,2-Tetrachloroethane	ND		3.2	0.48	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
Bromoform	ND		3.2	0.73	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
1,1,2,2-Tetrachloroethane	ND		6.4	0.87	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
1,4-Dichlorobenzene	ND		3.2	0.67	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
Hexachlorobutadiene	1.4	J B	6.4	0.42	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1
Naphthalene	ND		13	1.3	ug/Kg	☆	02/23/22 18:05	02/24/22 22:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		79 - 120	02/23/22 18:05	02/24/22 22:01	1
1,2-Dichloroethane-d4 (Surr)	105		79 - 121	02/23/22 18:05	02/24/22 22:01	1
4-Bromofluorobenzene (Surr)	97		79 - 120	02/23/22 18:05	02/24/22 22:01	1
Dibromofluoromethane (Surr)	103		78 - 120	02/23/22 18:05	02/24/22 22:01	1

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		160	29	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
Chloromethane	ND		39	6.5	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
Chloroethane	ND		39	6.4	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
Trichlorofluoromethane	ND	*-	39	7.3	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
Methylene Chloride	ND		160	41	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
trans-1,2-Dichloroethene	ND		39	9.4	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
1,1-Dichloroethane	ND		26	5.9	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
2,2-Dichloropropane	ND		26	7.8	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
Bromochloromethane	ND		26	4.0	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
1,1,1-Trichloroethane	ND		26	3.0	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
Carbon tetrachloride	ND		13	2.8	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
1,1-Dichloropropene	ND		26	3.4	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
1,2-Dichloropropane	ND		13	4.2	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
Toluene	ND		39	8.7	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
1,3-Dichloropropane	ND		39	3.6	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
Chlorobenzene	ND		26	3.1	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
Ethylbenzene	ND		26	5.8	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
m-Xylene & p-Xylene	ND		26	4.6	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1
o-Xylene	ND		26	3.2	ug/Kg	☆	02/23/22 20:06	02/24/22 02:09	1

Eurofins Seattle

Client Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E2

Date Collected: 02/10/22 13:45

Date Received: 02/16/22 14:30

PND Sample ENV-2

Lab Sample ID: 580-110418-2

Matrix: Solid

Percent Solids: 84.9

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		26	3.9	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
Isopropylbenzene	ND		26	5.5	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
Bromobenzene	ND		26	2.7	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
N-Propylbenzene	ND		26	4.4	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
1,2,3-Trichloropropane	ND		26	7.4	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
2-Chlorotoluene	ND		26	5.6	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
1,3,5-Trimethylbenzene	ND		26	4.9	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
4-Chlorotoluene	ND		26	6.3	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
t-Butylbenzene	ND		26	4.9	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
1,2,4-Trimethylbenzene	ND		26	8.7	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
sec-Butylbenzene	ND		26	5.5	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
1,3-Dichlorobenzene	ND		39	8.5	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
4-Isopropyltoluene	ND		26	6.5	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
n-Butylbenzene	ND		26	5.1	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
1,2-Dichlorobenzene	ND		26	5.6	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
1,2-Dibromo-3-Chloropropane	ND		39	9.8	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
1,2,4-Trichlorobenzene	ND		39	9.9	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
1,2,3-Trichlorobenzene	ND		39	9.1	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
Methyl tert-butyl ether	ND		26	3.9	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1
cis-1,2-Dichloroethene	ND		39	8.1	ug/Kg	☼	02/23/22 20:06	02/24/22 02:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		80 - 120	02/23/22 20:06	02/24/22 02:09	1
4-Bromofluorobenzene (Surr)	90		80 - 120	02/23/22 20:06	02/24/22 02:09	1
Dibromofluoromethane (Surr)	94		80 - 120	02/23/22 20:06	02/24/22 02:09	1
1,2-Dichloroethane-d4 (Surr)	100		80 - 121	02/23/22 20:06	02/24/22 02:09	1

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		2.6	0.83	mg/Kg	☼	03/02/22 12:12	03/02/22 15:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	98		50 - 150	03/02/22 12:12	03/02/22 15:05	1
4-Bromofluorobenzene (Surr)	99		50 - 150	03/02/22 12:12	03/02/22 15:05	1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		5.1	1.7	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1
2-Methylnaphthalene	ND		5.1	2.1	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1
1-Methylnaphthalene	ND		5.1	0.64	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1
Acenaphthylene	ND		5.1	0.51	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1
Acenaphthene	ND		5.1	0.61	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1
Fluorene	ND		5.1	0.51	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1
Phenanthrene	ND		5.1	1.7	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1
Anthracene	ND		5.1	0.61	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1
Fluoranthene	ND		5.1	1.4	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1
Pyrene	ND		5.1	0.99	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1
Benzo[a]anthracene	ND		5.1	1.8	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1
Chrysene	ND		5.1	1.5	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1
Benzo[b]fluoranthene	ND		5.1	1.2	ug/Kg	☼	02/24/22 11:21	02/28/22 14:32	1

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Client Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E2

Lab Sample ID: 580-110418-2

Date Collected: 02/10/22 13:45

PND Sample ENV-2

Matrix: Solid

Date Received: 02/16/22 14:30

Percent Solids: 84.9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		5.1	0.61	ug/Kg	☆	02/24/22 11:21	02/28/22 14:32	1
Benzo[a]pyrene	ND		5.1	0.86	ug/Kg	☆	02/24/22 11:21	02/28/22 14:32	1
Indeno[1,2,3-cd]pyrene	ND		5.1	0.61	ug/Kg	☆	02/24/22 11:21	02/28/22 14:32	1
Dibenz[a,h]anthracene	ND		5.1	0.73	ug/Kg	☆	02/24/22 11:21	02/28/22 14:32	1
Benzo[g,h,i]perylene	ND		5.1	0.51	ug/Kg	☆	02/24/22 11:21	02/28/22 14:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	90		57 - 145	02/24/22 11:21	02/28/22 14:32	1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND		22	10	mg/Kg	☆	02/21/22 11:58	02/22/22 02:44	1
RRO (nC25-nC36)	ND		56	21	mg/Kg	☆	02/21/22 11:58	02/22/22 02:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	101		50 - 150	02/21/22 11:58	02/22/22 02:44	1
n-Triacontane-d62	98		50 - 150	02/21/22 11:58	02/22/22 02:44	1

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.9	J	2.1	0.17	mg/Kg	☆	02/18/22 13:57	02/21/22 19:34	1
Barium	230		0.35	0.055	mg/Kg	☆	02/18/22 13:57	02/21/22 19:34	1
Cadmium	ND		0.69	0.034	mg/Kg	☆	02/18/22 13:57	02/21/22 19:34	1
Chromium	14		0.90	0.15	mg/Kg	☆	02/18/22 13:57	02/21/22 19:34	1
Lead	2.5		1.0	0.15	mg/Kg	☆	02/18/22 13:57	02/21/22 19:34	1
Selenium	ND		3.5	0.27	mg/Kg	☆	02/18/22 13:57	02/21/22 19:34	1
Silver	ND		1.7	0.39	mg/Kg	☆	02/18/22 13:57	02/21/22 19:34	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.028	0.0083	mg/Kg	☆	02/25/22 17:02	02/28/22 13:47	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	84.9		0.1	0.1	%			02/21/22 12:26	1
Percent Moisture	15.1		0.1	0.1	%			02/21/22 12:26	1

Client Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E3

Date Collected: 02/10/22 14:10

Date Received: 02/16/22 14:30

PND Sample ENV-1

Lab Sample ID: 580-110418-3

Matrix: Solid

Percent Solids: 51.1

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		31	3.7	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
Bromomethane	ND		7.8	1.1	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
1,1-Dichloroethene	ND	*1	7.8	0.96	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
Chloroform	ND		7.8	1.3	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
Benzene	ND		7.8	0.65	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
1,2-Dichloroethane	ND		7.8	0.98	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
Trichloroethene	ND		7.8	0.67	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
Dibromomethane	ND		7.8	0.92	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
Dichlorobromomethane	ND		7.8	0.92	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
cis-1,3-Dichloropropene	ND		7.8	0.57	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
trans-1,3-Dichloropropene	ND		7.8	1.5	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
1,1,2-Trichloroethane	ND		7.8	0.71	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
Tetrachloroethene	ND		7.8	0.98	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
2-Hexanone	ND		47	11	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
Chlorodibromomethane	ND		7.8	0.88	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
Ethylene Dibromide	ND		7.8	0.70	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
1,1,1,2-Tetrachloroethane	ND		7.8	1.2	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
Bromoform	ND		7.8	1.8	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
1,1,2,2-Tetrachloroethane	ND		16	2.1	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
1,4-Dichlorobenzene	ND		7.8	1.6	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
Hexachlorobutadiene	2.6	J B	16	1.0	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1
Naphthalene	ND		31	3.1	ug/Kg	✕	02/23/22 18:05	02/24/22 22:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102		79 - 120	02/23/22 18:05	02/24/22 22:25	1
1,2-Dichloroethane-d4 (Surr)	105		79 - 121	02/23/22 18:05	02/24/22 22:25	1
4-Bromofluorobenzene (Surr)	96		79 - 120	02/23/22 18:05	02/24/22 22:25	1
Dibromofluoromethane (Surr)	102		78 - 120	02/23/22 18:05	02/24/22 22:25	1

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		390	71	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
Chloromethane	ND		93	16	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
Chloroethane	ND		93	16	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
Trichlorofluoromethane	ND	*	93	18	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
Methylene Chloride	ND		390	100	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
trans-1,2-Dichloroethene	ND		93	23	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
1,1-Dichloroethane	ND		62	14	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
2,2-Dichloropropane	ND		62	19	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
Bromochloromethane	ND		62	9.6	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
1,1,1-Trichloroethane	ND		62	7.1	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
Carbon tetrachloride	ND		31	6.8	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
1,1-Dichloropropene	ND		62	8.2	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
1,2-Dichloropropane	ND		31	10	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
Toluene	ND		93	21	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
1,3-Dichloropropane	ND		93	8.7	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
Chlorobenzene	ND		62	7.4	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
Ethylbenzene	ND		62	14	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
m-Xylene & p-Xylene	ND		62	11	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1
o-Xylene	ND		62	7.8	ug/Kg	✕	02/23/22 20:06	02/24/22 02:32	1

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Client Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E3

Lab Sample ID: 580-110418-3

Date Collected: 02/10/22 14:10

PND Sample ENV-1

Matrix: Solid

Date Received: 02/16/22 14:30

Percent Solids: 51.1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		62	9.5	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
Isopropylbenzene	ND		62	13	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
Bromobenzene	ND		62	6.5	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
N-Propylbenzene	ND		62	11	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
1,2,3-Trichloropropane	ND		62	18	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
2-Chlorotoluene	ND		62	14	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
1,3,5-Trimethylbenzene	ND		62	12	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
4-Chlorotoluene	ND		62	15	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
t-Butylbenzene	ND		62	12	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
1,2,4-Trimethylbenzene	ND		62	21	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
sec-Butylbenzene	ND		62	13	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
1,3-Dichlorobenzene	ND		93	21	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
4-Isopropyltoluene	ND		62	16	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
n-Butylbenzene	ND		62	12	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
1,2-Dichlorobenzene	ND		62	14	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
1,2-Dibromo-3-Chloropropane	ND		93	24	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
1,2,4-Trichlorobenzene	ND		93	24	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
1,2,3-Trichlorobenzene	ND		93	22	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
Methyl tert-butyl ether	ND		62	9.3	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1
cis-1,2-Dichloroethene	ND		93	20	ug/Kg	☆	02/23/22 20:06	02/24/22 02:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 120	02/23/22 20:06	02/24/22 02:32	1
4-Bromofluorobenzene (Surr)	94		80 - 120	02/23/22 20:06	02/24/22 02:32	1
Dibromofluoromethane (Surr)	96		80 - 120	02/23/22 20:06	02/24/22 02:32	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 121	02/23/22 20:06	02/24/22 02:32	1

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		6.2	2.0	mg/Kg	☆	03/02/22 12:12	03/02/22 15:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	145		50 - 150	03/02/22 12:12	03/02/22 15:28	1
4-Bromofluorobenzene (Surr)	97		50 - 150	03/02/22 12:12	03/02/22 15:28	1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		9.1	3.0	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1
2-Methylnaphthalene	ND		9.1	3.8	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1
1-Methylnaphthalene	ND		9.1	1.2	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1
Acenaphthylene	ND		9.1	0.91	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1
Acenaphthene	ND		9.1	1.1	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1
Fluorene	ND		9.1	0.91	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1
Phenanthrene	ND		9.1	3.0	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1
Anthracene	ND		9.1	1.1	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1
Fluoranthene	ND		9.1	2.6	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1
Pyrene	ND		9.1	1.8	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1
Benzo[a]anthracene	ND		9.1	3.3	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1
Chrysene	ND		9.1	2.7	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1
Benzo[b]fluoranthene	ND		9.1	2.1	ug/Kg	☆	02/24/22 11:21	02/28/22 14:57	1

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Client Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E3

Lab Sample ID: 580-110418-3

Date Collected: 02/10/22 14:10

PND Sample ENV-1

Matrix: Solid

Date Received: 02/16/22 14:30

Percent Solids: 51.1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		9.1	1.1	ug/Kg	✱	02/24/22 11:21	02/28/22 14:57	1
Benzo[a]pyrene	ND		9.1	1.5	ug/Kg	✱	02/24/22 11:21	02/28/22 14:57	1
Indeno[1,2,3-cd]pyrene	ND		9.1	1.1	ug/Kg	✱	02/24/22 11:21	02/28/22 14:57	1
Dibenz[a,h]anthracene	ND		9.1	1.3	ug/Kg	✱	02/24/22 11:21	02/28/22 14:57	1
Benzo[g,h,i]perylene	ND		9.1	0.91	ug/Kg	✱	02/24/22 11:21	02/28/22 14:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	95		57 - 145	02/24/22 11:21	02/28/22 14:57	1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND		37	16	mg/Kg	✱	02/21/22 11:58	02/22/22 03:04	1
RRO (nC25-nC36)	ND		92	35	mg/Kg	✱	02/21/22 11:58	02/22/22 03:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	96		50 - 150	02/21/22 11:58	02/22/22 03:04	1
n-Triacontane-d62	90		50 - 150	02/21/22 11:58	02/22/22 03:04	1

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.5		3.3	0.27	mg/Kg	✱	02/18/22 13:57	02/21/22 19:37	1
Barium	590		0.55	0.087	mg/Kg	✱	02/18/22 13:57	02/21/22 19:37	1
Cadmium	ND		1.1	0.054	mg/Kg	✱	02/18/22 13:57	02/21/22 19:37	1
Chromium	33		1.4	0.24	mg/Kg	✱	02/18/22 13:57	02/21/22 19:37	1
Lead	5.3		1.6	0.24	mg/Kg	✱	02/18/22 13:57	02/21/22 19:37	1
Selenium	ND		5.5	0.43	mg/Kg	✱	02/18/22 13:57	02/21/22 19:37	1
Silver	ND		2.7	0.61	mg/Kg	✱	02/18/22 13:57	02/21/22 19:37	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.044	0.013	mg/Kg	✱	02/25/22 17:02	02/28/22 13:49	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	51.1		0.1	0.1	%			02/21/22 12:26	1
Percent Moisture	48.9		0.1	0.1	%			02/21/22 12:26	1

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Client Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E4

Lab Sample ID: 580-110418-4

Date Collected: 02/11/22 10:00

PND Sample ENV-4

Matrix: Solid

Date Received: 02/16/22 14:30

Percent Solids: 58.0

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		25	3.0	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
Bromomethane	ND		6.3	0.93	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
1,1-Dichloroethene	ND	*1	6.3	0.78	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
Chloroform	ND		6.3	1.1	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
Benzene	ND		6.3	0.53	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
1,2-Dichloroethane	ND		6.3	0.79	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
Trichloroethene	ND		6.3	0.54	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
Dibromomethane	ND		6.3	0.74	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
Dichlorobromomethane	ND		6.3	0.74	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
cis-1,3-Dichloropropene	ND		6.3	0.46	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
trans-1,3-Dichloropropene	ND		6.3	1.2	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
1,1,2-Trichloroethane	ND		6.3	0.58	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
Tetrachloroethene	ND		6.3	0.79	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
2-Hexanone	26	J	38	9.3	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
Chlorodibromomethane	ND		6.3	0.71	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
Ethylene Dibromide	ND		6.3	0.56	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
1,1,1,2-Tetrachloroethane	ND		6.3	0.94	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
Bromoform	ND		6.3	1.4	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
1,1,2,2-Tetrachloroethane	ND		13	1.7	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
1,4-Dichlorobenzene	ND		6.3	1.3	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
Hexachlorobutadiene	2.8	J B	13	0.83	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1
Naphthalene	ND		25	2.5	ug/Kg	☆	02/23/22 18:05	02/24/22 22:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	112		79 - 120	02/23/22 18:05	02/24/22 22:48	1
1,2-Dichloroethane-d4 (Surr)	105		79 - 121	02/23/22 18:05	02/24/22 22:48	1
4-Bromofluorobenzene (Surr)	97		79 - 120	02/23/22 18:05	02/24/22 22:48	1
Dibromofluoromethane (Surr)	107		78 - 120	02/23/22 18:05	02/24/22 22:48	1

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		310	57	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
Chloromethane	ND		75	13	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
Chloroethane	ND		75	13	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
Trichlorofluoromethane	ND		75	14	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
Methylene Chloride	ND		310	81	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
trans-1,2-Dichloroethene	ND		75	18	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
1,1-Dichloroethane	ND		50	12	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
2,2-Dichloropropane	ND		50	15	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
Bromochloromethane	ND		50	7.8	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
1,1,1-Trichloroethane	ND		50	5.8	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
Carbon tetrachloride	ND		25	5.5	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
1,1-Dichloropropene	ND		50	6.6	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
1,2-Dichloropropane	ND		25	8.3	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
Toluene	ND		75	17	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
1,3-Dichloropropane	ND		75	7.0	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
Chlorobenzene	ND		50	6.0	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
Ethylbenzene	ND		50	11	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
m-Xylene & p-Xylene	ND		50	8.9	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1
o-Xylene	ND		50	6.3	ug/Kg	☆	02/23/22 20:06	02/24/22 02:55	1

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Client Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E4

Date Collected: 02/11/22 10:00

Date Received: 02/16/22 14:30

PND Sample ENV-4

Lab Sample ID: 580-110418-4

Matrix: Solid

Percent Solids: 58.0

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		50	7.6	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
Isopropylbenzene	ND		50	11	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
Bromobenzene	ND		50	5.3	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
N-Propylbenzene	ND		50	8.6	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
1,2,3-Trichloropropane	ND		50	14	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
2-Chlorotoluene	ND		50	11	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
1,3,5-Trimethylbenzene	ND		50	9.5	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
4-Chlorotoluene	ND		50	12	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
t-Butylbenzene	ND		50	9.6	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
1,2,4-Trimethylbenzene	ND		50	17	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
sec-Butylbenzene	ND		50	11	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
1,3-Dichlorobenzene	ND		75	17	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
4-Isopropyltoluene	ND		50	13	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
n-Butylbenzene	ND		50	10	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
1,2-Dichlorobenzene	ND		50	11	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
1,2-Dibromo-3-Chloropropane	ND		75	19	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
1,2,4-Trichlorobenzene	ND		75	19	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
1,2,3-Trichlorobenzene	ND		75	18	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
Methyl tert-butyl ether	ND		50	7.5	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1
cis-1,2-Dichloroethene	ND		75	16	ug/Kg	*	02/23/22 20:06	02/24/22 02:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		80 - 120	02/23/22 20:06	02/24/22 02:55	1
4-Bromofluorobenzene (Surr)	93		80 - 120	02/23/22 20:06	02/24/22 02:55	1
Dibromofluoromethane (Surr)	95		80 - 120	02/23/22 20:06	02/24/22 02:55	1
1,2-Dichloroethane-d4 (Surr)	100		80 - 121	02/23/22 20:06	02/24/22 02:55	1

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	1.7	J	5.0	1.6	mg/Kg	*	03/02/22 12:12	03/02/22 15:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	124		50 - 150	03/02/22 12:12	03/02/22 15:51	1
4-Bromofluorobenzene (Surr)	100		50 - 150	03/02/22 12:12	03/02/22 15:51	1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		7.8	2.5	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1
2-Methylnaphthalene	ND		7.8	3.2	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1
1-Methylnaphthalene	ND		7.8	0.98	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1
Acenaphthylene	ND		7.8	0.78	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1
Acenaphthene	ND		7.8	0.94	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1
Fluorene	ND		7.8	0.78	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1
Phenanthrene	ND		7.8	2.5	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1
Anthracene	ND		7.8	0.94	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1
Fluoranthene	ND		7.8	2.2	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1
Pyrene	ND		7.8	1.5	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1
Benzo[a]anthracene	ND		7.8	2.8	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1
Chrysene	ND		7.8	2.3	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1
Benzo[b]fluoranthene	ND		7.8	1.8	ug/Kg	*	02/24/22 11:21	02/28/22 15:31	1

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Client Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E4

Lab Sample ID: 580-110418-4

Date Collected: 02/11/22 10:00

PND Sample ENV-4

Matrix: Solid

Date Received: 02/16/22 14:30

Percent Solids: 58.0

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		7.8	0.94	ug/Kg	☆	02/24/22 11:21	02/28/22 15:31	1
Benzo[a]pyrene	ND		7.8	1.3	ug/Kg	☆	02/24/22 11:21	02/28/22 15:31	1
Indeno[1,2,3-cd]pyrene	ND		7.8	0.94	ug/Kg	☆	02/24/22 11:21	02/28/22 15:31	1
Dibenz[a,h]anthracene	ND		7.8	1.1	ug/Kg	☆	02/24/22 11:21	02/28/22 15:31	1
Benzo[g,h,i]perylene	ND		7.8	0.78	ug/Kg	☆	02/24/22 11:21	02/28/22 15:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	78		57 - 145	02/24/22 11:21	02/28/22 15:31	1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	14	J	31	14	mg/Kg	☆	02/24/22 15:19	02/26/22 10:10	1
RRO (nC25-nC36)	170		78	29	mg/Kg	☆	02/24/22 15:19	02/26/22 10:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	82		50 - 150	02/24/22 15:19	02/26/22 10:10	1
n-Triacontane-d62	135		50 - 150	02/24/22 15:19	02/26/22 10:10	1

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.8		3.6	0.30	mg/Kg	☆	02/18/22 13:57	02/21/22 19:42	1
Barium	430		0.60	0.095	mg/Kg	☆	02/18/22 13:57	02/21/22 19:42	1
Cadmium	ND		1.2	0.059	mg/Kg	☆	02/18/22 13:57	02/21/22 19:42	1
Chromium	27		1.6	0.26	mg/Kg	☆	02/18/22 13:57	02/21/22 19:42	1
Lead	3.9		1.8	0.27	mg/Kg	☆	02/18/22 13:57	02/21/22 19:42	1
Selenium	ND		6.0	0.48	mg/Kg	☆	02/18/22 13:57	02/21/22 19:42	1
Silver	ND		3.0	0.67	mg/Kg	☆	02/18/22 13:57	02/21/22 19:42	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.047	0.014	mg/Kg	☆	02/25/22 17:02	02/28/22 13:52	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	58.0		0.1	0.1	%			02/21/22 12:26	1
Percent Moisture	42.0		0.1	0.1	%			02/21/22 12:26	1

QC Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-382067/1-A

Matrix: Solid

Analysis Batch: 382076

METHOD BLANK

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 382067

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		250	46	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Chloromethane	ND		60	10	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Chloroethane	ND		60	10	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Trichlorofluoromethane	ND		60	11	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Methylene Chloride	ND		250	65	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
trans-1,2-Dichloroethene	ND		60	15	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,1-Dichloroethane	ND		40	9.2	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
2,2-Dichloropropane	ND		40	12	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Bromochloromethane	ND		40	6.2	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,1,1-Trichloroethane	ND		40	4.6	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Carbon tetrachloride	ND		20	4.4	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,1-Dichloropropene	ND		40	5.3	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,2-Dichloropropane	ND		20	6.6	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Toluene	ND		60	14	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,3-Dichloropropane	ND		60	5.6	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Chlorobenzene	ND		40	4.8	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Ethylbenzene	ND		40	9.1	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
m-Xylene & p-Xylene	ND		40	7.1	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
o-Xylene	ND		40	5.0	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Styrene	ND		40	6.1	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Isopropylbenzene	ND		40	8.6	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Bromobenzene	ND		40	4.2	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
N-Propylbenzene	ND		40	6.9	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,2,3-Trichloropropane	ND		40	12	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
2-Chlorotoluene	ND		40	8.8	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,3,5-Trimethylbenzene	ND		40	7.6	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
4-Chlorotoluene	ND		40	9.8	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
t-Butylbenzene	ND		40	7.7	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,2,4-Trimethylbenzene	ND		40	14	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
sec-Butylbenzene	ND		40	8.6	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,3-Dichlorobenzene	ND		60	13	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
4-Isopropyltoluene	ND		40	10	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
n-Butylbenzene	ND		40	8.0	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,2-Dichlorobenzene	ND		40	8.7	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,2-Dibromo-3-Chloropropane	ND		60	15	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,2,4-Trichlorobenzene	ND		60	15	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
1,2,3-Trichlorobenzene	ND		60	14	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
Methyl tert-butyl ether	ND		40	6.0	ug/Kg		02/23/22 20:06	02/23/22 22:19	1
cis-1,2-Dichloroethene	ND		60	13	ug/Kg		02/23/22 20:06	02/23/22 22:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 120	02/23/22 20:06	02/23/22 22:19	1
4-Bromofluorobenzene (Surr)	88		80 - 120	02/23/22 20:06	02/23/22 22:19	1
Dibromofluoromethane (Surr)	95		80 - 120	02/23/22 20:06	02/23/22 22:19	1
1,2-Dichloroethane-d4 (Surr)	100		80 - 121	02/23/22 20:06	02/23/22 22:19	1

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QC Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-382067/2-A

Matrix: Solid

Analysis Batch: 382076

LAB QC

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 382067

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Dichlorodifluoromethane	800	988		ug/Kg		123	33 - 150
Chloromethane	800	874		ug/Kg		109	52 - 142
Chloroethane	800	370		ug/Kg		46	26 - 150
Trichlorofluoromethane	800	563	+	ug/Kg		70	71 - 150
Methylene Chloride	800	881		ug/Kg		110	56 - 140
trans-1,2-Dichloroethene	800	924		ug/Kg		115	77 - 134
1,1-Dichloroethane	800	889		ug/Kg		111	78 - 126
2,2-Dichloropropane	800	881		ug/Kg		110	75 - 134
Bromochloromethane	800	860		ug/Kg		107	76 - 131
1,1,1-Trichloroethane	800	933		ug/Kg		117	78 - 135
Carbon tetrachloride	800	936		ug/Kg		117	76 - 140
1,1-Dichloropropene	800	951		ug/Kg		119	76 - 140
1,2-Dichloropropene	800	853		ug/Kg		107	73 - 130
Toluene	800	923		ug/Kg		115	75 - 125
1,3-Dichloropropane	800	840		ug/Kg		105	80 - 120
Chlorobenzene	800	893		ug/Kg		112	80 - 125
Ethylbenzene	800	939		ug/Kg		117	80 - 135
m-Xylene & p-Xylene	800	915		ug/Kg		114	80 - 132
o-Xylene	800	914		ug/Kg		114	80 - 132
Styrene	800	924		ug/Kg		115	79 - 129
Isopropylbenzene	800	963		ug/Kg		120	80 - 131
Bromobenzene	800	856		ug/Kg		107	78 - 126
N-Propylbenzene	800	883		ug/Kg		110	78 - 133
1,2,3-Trichloropropane	800	795		ug/Kg		99	77 - 127
2-Chlorotoluene	800	874		ug/Kg		109	77 - 134
1,3,5-Trimethylbenzene	800	925		ug/Kg		116	72 - 134
4-Chlorotoluene	800	882		ug/Kg		110	71 - 137
t-Butylbenzene	800	947		ug/Kg		118	72 - 144
1,2,4-Trimethylbenzene	800	913		ug/Kg		114	73 - 138
sec-Butylbenzene	800	962		ug/Kg		120	71 - 143
1,3-Dichlorobenzene	800	889		ug/Kg		111	78 - 132
4-Isopropyltoluene	800	971		ug/Kg		121	71 - 142
n-Butylbenzene	800	941		ug/Kg		118	69 - 143
1,2-Dichlorobenzene	800	883		ug/Kg		110	78 - 126
1,2-Dibromo-3-Chloropropane	800	712		ug/Kg		89	64 - 129
1,2,4-Trichlorobenzene	800	858		ug/Kg		107	74 - 131
1,2,3-Trichlorobenzene	800	814		ug/Kg		102	58 - 146
Methyl tert-butyl ether	800	806		ug/Kg		101	71 - 126
cis-1,2-Dichloroethene	800	881		ug/Kg		110	80 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120
1,2-Dichloroethane-d4 (Surr)	98		80 - 121

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QC Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-382067/3-A

LAB QC

Client Sample ID: Lab Control Sample Dup

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 382076

Prep Batch: 382067

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dichlorodifluoromethane	800	1090		ug/Kg		136	33 - 150	10	31
Chloromethane	800	959		ug/Kg		120	52 - 142	9	40
Chloroethane	800	350		ug/Kg		44	26 - 150	6	40
Trichlorofluoromethane	800	573		ug/Kg		72	71 - 150	2	30
Methylene Chloride	800	917		ug/Kg		115	56 - 140	4	20
trans-1,2-Dichloroethene	800	956		ug/Kg		120	77 - 134	3	20
1,1-Dichloroethane	800	929		ug/Kg		116	78 - 126	4	20
2,2-Dichloropropane	800	923		ug/Kg		115	75 - 134	5	20
Bromochloromethane	800	897		ug/Kg		112	76 - 131	4	20
1,1,1-Trichloroethane	800	969		ug/Kg		121	78 - 135	4	20
Carbon tetrachloride	800	979		ug/Kg		122	76 - 140	5	20
1,1-Dichloropropene	800	978		ug/Kg		122	76 - 140	3	20
1,2-Dichloropropane	800	882		ug/Kg		110	73 - 130	3	20
Toluene	800	953		ug/Kg		119	75 - 125	3	20
1,3-Dichloropropane	800	862		ug/Kg		108	80 - 120	3	20
Chlorobenzene	800	913		ug/Kg		114	80 - 125	2	20
Ethylbenzene	800	967		ug/Kg		121	80 - 135	3	20
m-Xylene & p-Xylene	800	939		ug/Kg		117	80 - 132	3	20
o-Xylene	800	941		ug/Kg		118	80 - 132	3	20
Styrene	800	953		ug/Kg		119	79 - 129	3	20
Isopropylbenzene	800	990		ug/Kg		124	80 - 131	3	20
Bromobenzene	800	905		ug/Kg		113	78 - 126	6	20
N-Propylbenzene	800	923		ug/Kg		115	78 - 133	4	24
1,2,3-Trichloropropane	800	832		ug/Kg		104	77 - 127	5	20
2-Chlorotoluene	800	928		ug/Kg		116	77 - 134	6	21
1,3,5-Trimethylbenzene	800	969		ug/Kg		121	72 - 134	5	24
4-Chlorotoluene	800	907		ug/Kg		113	71 - 137	3	21
t-Butylbenzene	800	995		ug/Kg		124	72 - 144	5	27
1,2,4-Trimethylbenzene	800	956		ug/Kg		120	73 - 138	5	22
sec-Butylbenzene	800	1010		ug/Kg		126	71 - 143	5	29
1,3-Dichlorobenzene	800	928		ug/Kg		116	78 - 132	4	20
4-Isopropyltoluene	800	1020		ug/Kg		127	71 - 142	5	29
n-Butylbenzene	800	979		ug/Kg		122	69 - 143	4	31
1,2-Dichlorobenzene	800	918		ug/Kg		115	78 - 126	4	20
1,2-Dibromo-3-Chloropropane	800	742		ug/Kg		93	64 - 129	4	40
1,2,4-Trichlorobenzene	800	910		ug/Kg		114	74 - 131	6	26
1,2,3-Trichlorobenzene	800	868		ug/Kg		108	58 - 146	6	28
Methyl tert-butyl ether	800	831		ug/Kg		104	71 - 126	3	20
cis-1,2-Dichloroethene	800	918		ug/Kg		115	80 - 125	4	20

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	99		80 - 121

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QC Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Method: 8260D SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-382049/1-A

Matrix: Solid

Analysis Batch: 382187

LAB QC

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 382049

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		20	2.4	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
Bromomethane	ND		5.0	0.74	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
1,1-Dichloroethene	ND		5.0	0.62	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
Chloroform	ND		5.0	0.85	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
Benzene	ND		5.0	0.42	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
1,2-Dichloroethane	ND		5.0	0.63	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
Trichloroethene	0.477	J	5.0	0.43	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
Dibromomethane	ND		5.0	0.59	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
Dichlorobromomethane	ND		5.0	0.59	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
cis-1,3-Dichloropropene	ND		5.0	0.37	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
trans-1,3-Dichloropropene	ND		5.0	0.94	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
1,1,2-Trichloroethane	ND		5.0	0.46	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
Tetrachloroethene	ND		5.0	0.63	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
2-Hexanone	ND		30	7.4	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
Chlorodibromomethane	ND		5.0	0.57	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
Ethylene Dibromide	ND		5.0	0.45	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
1,1,1,2-Tetrachloroethane	ND		5.0	0.75	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
Bromoform	ND		5.0	1.1	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
1,1,2,2-Tetrachloroethane	ND		10	1.4	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
1,4-Dichlorobenzene	ND		5.0	1.1	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
Hexachlorobutadiene	1.58	J	10	0.66	ug/Kg		02/23/22 18:05	02/24/22 21:14	1
Naphthalene	ND		20	2.0	ug/Kg		02/23/22 18:05	02/24/22 21:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		79 - 120	02/23/22 18:05	02/24/22 21:14	1
1,2-Dichloroethane-d4 (Surr)	100		79 - 121	02/23/22 18:05	02/24/22 21:14	1
4-Bromofluorobenzene (Surr)	97		79 - 120	02/23/22 18:05	02/24/22 21:14	1
Dibromofluoromethane (Surr)	106		78 - 120	02/23/22 18:05	02/24/22 21:14	1

Lab Sample ID: LCS 580-382049/2-A

Matrix: Solid

Analysis Batch: 382187

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 382049

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Vinyl chloride	200	208		ug/Kg		104	56 - 144
Bromomethane	200	271		ug/Kg		136	34 - 150
1,1-Dichloroethene	200	219		ug/Kg		110	65 - 129
Chloroform	200	194		ug/Kg		97	80 - 122
Benzene	200	200		ug/Kg		100	80 - 120
1,2-Dichloroethane	200	192		ug/Kg		96	75 - 127
Trichloroethene	200	202		ug/Kg		101	80 - 127
Dibromomethane	200	187		ug/Kg		94	78 - 128
Dichlorobromomethane	200	199		ug/Kg		99	75 - 134
cis-1,3-Dichloropropene	200	207		ug/Kg		103	73 - 130
trans-1,3-Dichloropropene	200	194		ug/Kg		97	66 - 138
1,1,2-Trichloroethane	200	190		ug/Kg		95	80 - 123
Tetrachloroethene	200	209		ug/Kg		104	76 - 127
2-Hexanone	1000	995		ug/Kg		99	64 - 143

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QC Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Method: 8260D SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-382049/2-A				LAB QC		Client Sample ID: Lab Control Sample					
Matrix: Solid						Prep Type: Total/NA					
Analysis Batch: 382187						Prep Batch: 382049					
				Spike	LCS	LCS					
Analyte				Added	Result	Qualifier	Unit	D	%Rec	%Rec.	Limits
Chlorodibromomethane				200	188		ug/Kg		94		76 - 138
Ethylene Dibromide				200	203		ug/Kg		101		77 - 130
1,1,1,2-Tetrachloroethane				200	207		ug/Kg		103		80 - 127
Bromoform				200	190		ug/Kg		95		71 - 143
1,1,2,2-Tetrachloroethane				200	170		ug/Kg		85		65 - 139
1,4-Dichlorobenzene				200	203		ug/Kg		102		78 - 127
Hexachlorobutadiene				200	205		ug/Kg		102		73 - 135
Naphthalene				200	159		ug/Kg		80		41 - 150
					LCS	LCS					
Surrogate					%Recovery	Qualifier	Limits				
Toluene-d8 (Surr)					102		79 - 120				
1,2-Dichloroethane-d4 (Surr)					95		79 - 121				
4-Bromofluorobenzene (Surr)					108		79 - 120				
Dibromofluoromethane (Surr)					95		78 - 120				

Lab Sample ID: LCSD 580-382049/3-A				Client Sample ID: Lab Control Sample Dup					
Matrix: Solid				Prep Type: Total/NA					
Analysis Batch: 382187				Prep Batch: 382049					
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Vinyl chloride	200	199		ug/Kg		99	56 - 144	4	20
Bromomethane	200	260		ug/Kg		130	34 - 150	4	35
1,1-Dichloroethene	200	170	*1	ug/Kg		85	65 - 129	25	23
Chloroform	200	192		ug/Kg		96	80 - 122	1	20
Benzene	200	199		ug/Kg		100	80 - 120	0	20
1,2-Dichloroethane	200	194		ug/Kg		97	75 - 127	1	20
Trichloroethene	200	188		ug/Kg		94	80 - 127	7	20
Dibromomethane	200	185		ug/Kg		93	78 - 128	1	20
Dichlorobromomethane	200	203		ug/Kg		101	75 - 134	2	20
cis-1,3-Dichloropropene	200	218		ug/Kg		109	73 - 130	5	20
trans-1,3-Dichloropropene	200	202		ug/Kg		101	66 - 138	4	20
1,1,2-Trichloroethane	200	192		ug/Kg		96	80 - 123	1	20
Tetrachloroethene	200	201		ug/Kg		101	76 - 127	4	20
2-Hexanone	1000	1060		ug/Kg		106	64 - 143	6	20
Chlorodibromomethane	200	189		ug/Kg		94	76 - 138	1	20
Ethylene Dibromide	200	207		ug/Kg		104	77 - 130	2	20
1,1,1,2-Tetrachloroethane	200	198		ug/Kg		99	80 - 127	4	20
Bromoform	200	189		ug/Kg		95	71 - 143	0	20
1,1,2,2-Tetrachloroethane	200	173		ug/Kg		87	65 - 139	2	20
1,4-Dichlorobenzene	200	198		ug/Kg		99	78 - 127	3	20
Hexachlorobutadiene	200	198		ug/Kg		99	73 - 135	3	20
Naphthalene	200	159		ug/Kg		80	41 - 150	0	21
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
Toluene-d8 (Surr)	101		79 - 120						
1,2-Dichloroethane-d4 (Surr)	96		79 - 121						
4-Bromofluorobenzene (Surr)	107		79 - 120						
Dibromofluoromethane (Surr)	93		78 - 120						

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QC Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Method: AK101 - Alaska - Gasoline Range Organics (GC/MS)

Lab Sample ID: MB 580-382639/1-A
Matrix: Solid
Analysis Batch: 382646

LAB QC

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 382639

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		4.0	1.3	mg/Kg		03/02/22 12:12	03/02/22 13:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	103		50 - 150	03/02/22 12:12	03/02/22 13:32	1
4-Bromofluorobenzene (Surr)	99		50 - 150	03/02/22 12:12	03/02/22 13:32	1

Lab Sample ID: LCS 580-382639/2-A
Matrix: Solid
Analysis Batch: 382646

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 382639

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Gasoline Range Organics (GRO)-C6-C10	40.0	34.6		mg/Kg		87	60 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	99		50 - 150
4-Bromofluorobenzene (Surr)	99		50 - 150

Lab Sample ID: LCSD 580-382639/3-A
Matrix: Solid
Analysis Batch: 382646

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 382639

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO)-C6-C10	40.0	35.7		mg/Kg		89	60 - 120	3	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	99		50 - 150
4-Bromofluorobenzene (Surr)	96		50 - 150

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-382117/1-A
Matrix: Solid
Analysis Batch: 382371

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 382117

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		5.0	1.6	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
2-Methylnaphthalene	ND		5.0	2.1	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
1-Methylnaphthalene	ND		5.0	0.63	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Acenaphthylene	ND		5.0	0.50	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Acenaphthene	ND		5.0	0.60	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Fluorene	ND		5.0	0.50	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Phenanthrene	ND		5.0	1.6	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Anthracene	ND		5.0	0.60	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Fluoranthene	ND		5.0	1.4	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Pyrene	ND		5.0	0.97	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Benzo[a]anthracene	ND		5.0	1.8	ug/Kg		02/24/22 11:21	02/28/22 11:35	1

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QC Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: MB 580-382117/1-A

Matrix: Solid

Analysis Batch: 382371

LAB QC.

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 382117

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chrysene	ND		5.0	1.5	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Benzo[b]fluoranthene	ND		5.0	1.2	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Benzo[k]fluoranthene	ND		5.0	0.60	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Benzo[a]pyrene	ND		5.0	0.84	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Indeno[1,2,3-cd]pyrene	ND		5.0	0.60	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Dibenz(a,h)anthracene	ND		5.0	0.72	ug/Kg		02/24/22 11:21	02/28/22 11:35	1
Benzo[g,h,i]perylene	ND		5.0	0.50	ug/Kg		02/24/22 11:21	02/28/22 11:35	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	94		57 - 145	02/24/22 11:21	02/28/22 11:35	1

Lab Sample ID: LCS 580-382117/2-A

Matrix: Solid

Analysis Batch: 382371

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 382117

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Naphthalene	1000	971		ug/Kg		97	65 - 120
2-Methylnaphthalene	1000	978		ug/Kg		98	64 - 120
1-Methylnaphthalene	1000	883		ug/Kg		88	64 - 120
Acenaphthylene	1000	952		ug/Kg		95	66 - 120
Acenaphthene	1000	888		ug/Kg		89	65 - 120
Fluorene	1000	942		ug/Kg		94	62 - 126
Phenanthrene	1000	1010		ug/Kg		101	63 - 120
Anthracene	1000	960		ug/Kg		96	53 - 132
Fluoranthene	1000	937		ug/Kg		94	64 - 130
Pyrene	1000	919		ug/Kg		92	62 - 131
Benzo[a]anthracene	1000	1010		ug/Kg		101	66 - 127
Chrysene	1000	846		ug/Kg		85	57 - 128
Benzo[b]fluoranthene	1000	939		ug/Kg		94	54 - 122
Benzo[k]fluoranthene	1000	921		ug/Kg		92	51 - 131
Benzo[a]pyrene	1000	841		ug/Kg		84	66 - 124
Indeno[1,2,3-cd]pyrene	1000	963		ug/Kg		96	63 - 132
Dibenz(a,h)anthracene	1000	968		ug/Kg		97	64 - 133
Benzo[g,h,i]perylene	1000	921		ug/Kg		92	61 - 128

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Terphenyl-d14	88		57 - 145

Lab Sample ID: 580-110418-1 MS

Matrix: Solid

Analysis Batch: 382371

Client Sample ID: SEARHC-E1

Prep Type: Total/NA

Prep Batch: 382117

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Naphthalene	ND		954	935		ug/Kg	↗	98	65 - 120
2-Methylnaphthalene	ND		954	930		ug/Kg	↗	98	64 - 120
1-Methylnaphthalene	ND		954	834		ug/Kg	↗	87	64 - 120
Acenaphthylene	ND		954	905		ug/Kg	↗	95	66 - 120
Acenaphthene	ND		954	837		ug/Kg	↗	88	65 - 120

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QC Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 580-110418-1 MS

Matrix: Solid

Analysis Batch: 382371

LAB QC

Client Sample ID: SEARHC-E1

Prep Type: Total/NA

Prep Batch: 382117

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Fluorene	ND		954	890		ug/Kg	☼	93	62 - 126
Phenanthrene	ND		954	966		ug/Kg	☼	101	63 - 120
Anthracene	ND		954	906		ug/Kg	☼	95	53 - 132
Fluoranthene	ND		954	897		ug/Kg	☼	94	64 - 130
Pyrene	ND		954	883		ug/Kg	☼	93	62 - 131
Benzo[a]anthracene	ND		954	1000		ug/Kg	☼	105	66 - 127
Chrysene	ND		954	813		ug/Kg	☼	85	57 - 128
Benzo[b]fluoranthene	ND	F2	954	948		ug/Kg	☼	99	54 - 122
Benzo[k]fluoranthene	ND		954	863		ug/Kg	☼	91	51 - 131
Benzo[a]pyrene	ND		954	827		ug/Kg	☼	87	66 - 124
Indeno[1,2,3-cd]pyrene	ND		954	1010		ug/Kg	☼	106	63 - 132
Dibenz(a,h)anthracene	ND		954	939		ug/Kg	☼	98	64 - 133
Benzo[g,h,i]perylene	ND		954	886		ug/Kg	☼	93	61 - 128

Surrogate	MS %Recovery	MS Qualifier	Limits
Terphenyl-d14	88		57 - 145

Lab Sample ID: 580-110418-1 MSD

Matrix: Solid

Analysis Batch: 382371

Client Sample ID: SEARHC-E1

Prep Type: Total/NA

Prep Batch: 382117

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Naphthalene	ND		874	794		ug/Kg	☼	91	65 - 120	16	20
2-Methylnaphthalene	ND		874	797		ug/Kg	☼	91	64 - 120	15	20
1-Methylnaphthalene	ND		874	712		ug/Kg	☼	81	64 - 120	16	20
Acenaphthylene	ND		874	795		ug/Kg	☼	91	66 - 120	13	20
Acenaphthene	ND		874	735		ug/Kg	☼	84	65 - 120	13	20
Fluorene	ND		874	783		ug/Kg	☼	90	62 - 126	13	20
Phenanthrene	ND		874	842		ug/Kg	☼	96	63 - 120	14	20
Anthracene	ND		874	757		ug/Kg	☼	87	53 - 132	18	40
Fluoranthene	ND		874	803		ug/Kg	☼	92	64 - 130	11	20
Pyrene	ND		874	775		ug/Kg	☼	89	62 - 131	13	20
Benzo[a]anthracene	ND		874	833		ug/Kg	☼	95	66 - 127	19	20
Chrysene	ND		874	687		ug/Kg	☼	79	57 - 128	17	20
Benzo[b]fluoranthene	ND	F2	874	738	F2	ug/Kg	☼	84	54 - 122	25	20
Benzo[k]fluoranthene	ND		874	747		ug/Kg	☼	85	51 - 131	14	20
Benzo[a]pyrene	ND		874	680		ug/Kg	☼	78	66 - 124	20	40
Indeno[1,2,3-cd]pyrene	ND		874	913		ug/Kg	☼	104	63 - 132	10	20
Dibenz(a,h)anthracene	ND		874	786		ug/Kg	☼	90	64 - 133	18	20
Benzo[g,h,i]perylene	ND		874	748		ug/Kg	☼	86	61 - 128	17	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Terphenyl-d14	86		57 - 145

Eurofins Seattle

QC Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Lab Sample ID: MB 580-381756/1-A

Matrix: Solid

Analysis Batch: 381745

LAB QC

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 381756

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND		20	8.9	mg/Kg		02/21/22 11:58	02/21/22 23:03	1
RRO (nC25-nC36)	ND		50	19	mg/Kg		02/21/22 11:58	02/21/22 23:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	97		50 - 150	02/21/22 11:58	02/21/22 23:03	1
n-Triacontane-d62	95		50 - 150	02/21/22 11:58	02/21/22 23:03	1

Lab Sample ID: LCS 580-381756/2-A

Matrix: Solid

Analysis Batch: 381745

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 381756

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
DRO (nC10-<nC25)	500	477		mg/Kg		95	75 - 125
RRO (nC25-nC36)	500	472		mg/Kg		94	60 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	91		50 - 150
n-Triacontane-d62	92		50 - 150

Lab Sample ID: LCSD 580-381756/3-A

Matrix: Solid

Analysis Batch: 381745

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 381756

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
DRO (nC10-<nC25)	500	408		mg/Kg		82	75 - 125	16	20
RRO (nC25-nC36)	500	413		mg/Kg		83	60 - 120	13	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	78		50 - 150
n-Triacontane-d62	86		50 - 150

Lab Sample ID: MB 580-382171/1-A

Matrix: Solid

Analysis Batch: 382331

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 382171

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND		20	8.9	mg/Kg		02/24/22 15:19	02/26/22 04:28	1
RRO (nC25-nC36)	ND		50	19	mg/Kg		02/24/22 15:19	02/26/22 04:28	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	56		50 - 150	02/24/22 15:19	02/26/22 04:28	1
n-Triacontane-d62	50		50 - 150	02/24/22 15:19	02/26/22 04:28	1

Eurofins Seattle

QC Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)
(Continued)

Lab Sample ID: 580-110418-1 MS				LAB QC		Client Sample ID: SEARHC-E1				
Matrix: Solid						Prep Type: Total/NA				
Analysis Batch: 382331						Prep Batch: 382171				
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	
DRO (nC10-<nC25)	ND		511	473		mg/Kg	☼	92	75 - 125	
RRO (nC25-nC36)	19	J	511	454		mg/Kg	☼	85	60 - 120	
Surrogate	MS %Recovery	MS Qualifier	Limits							
o-Terphenyl	92		50 - 150							
n-Triacontane-d62	86		50 - 150							

Lab Sample ID: 580-110418-1 MSD						Client Sample ID: SEARHC-E1				
Matrix: Solid						Prep Type: Total/NA				
Analysis Batch: 382331						Prep Batch: 382171				
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD Limit
DRO (nC10-<nC25)	ND		415	408		mg/Kg	☼	98	75 - 125	15 20
RRO (nC25-nC36)	19	J	415	385		mg/Kg	☼	88	60 - 120	16 20
Surrogate	MSD %Recovery	MSD Qualifier	Limits							
o-Terphenyl	92		50 - 150							
n-Triacontane-d62	93		50 - 150							

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-381633/9-A				Client Sample ID: Method Blank						
Matrix: Solid				Prep Type: Total/NA						
Analysis Batch: 381790				Prep Batch: 381633						
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Arsenic	ND		3.0	0.25	mg/Kg		02/18/22 13:57	02/21/22 18:35		1
Barium	ND		0.50	0.079	mg/Kg		02/18/22 13:57	02/21/22 18:35		1
Cadmium	ND		1.0	0.049	mg/Kg		02/18/22 13:57	02/21/22 18:35		1
Chromium	ND		1.3	0.22	mg/Kg		02/18/22 13:57	02/21/22 18:35		1
Lead	ND		1.5	0.22	mg/Kg		02/18/22 13:57	02/21/22 18:35		1
Selenium	ND		5.0	0.40	mg/Kg		02/18/22 13:57	02/21/22 18:35		1
Silver	ND		2.5	0.56	mg/Kg		02/18/22 13:57	02/21/22 18:35		1

Lab Sample ID: LCS 580-381633/10-A				Client Sample ID: Lab Control Sample						
Matrix: Solid				Prep Type: Total/NA						
Analysis Batch: 381790				Prep Batch: 381633						
Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits			
Arsenic	50.0	49.4		mg/Kg		99	80 - 120			
Barium	50.0	51.4		mg/Kg		103	80 - 120			
Cadmium	50.0	51.6		mg/Kg		103	80 - 120			
Chromium	50.0	50.9		mg/Kg		102	80 - 120			
Lead	50.0	52.6		mg/Kg		105	80 - 120			
Selenium	50.0	49.6		mg/Kg		99	80 - 120			
Silver	50.0	51.9		mg/Kg		104	80 - 120			

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QC Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: LCSD 580-381633/11-A

Matrix: Solid

Analysis Batch: 381790

LAB QC

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 381633

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	50.0	46.8		mg/Kg		94	80 - 120	6	20
Barium	50.0	47.6		mg/Kg		95	80 - 120	8	20
Cadmium	50.0	49.6		mg/Kg		99	80 - 120	4	20
Chromium	50.0	47.6		mg/Kg		95	80 - 120	7	20
Lead	50.0	49.9		mg/Kg		100	80 - 120	5	20
Selenium	50.0	46.9		mg/Kg		94	80 - 120	6	20
Silver	50.0	49.2		mg/Kg		98	80 - 120	5	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 580-382289/14-A

Matrix: Solid

Analysis Batch: 382417

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 382289

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.030	0.0090	mg/Kg		02/25/22 17:02	02/28/22 13:31	1

Lab Sample ID: LCS 580-382289/15-A

Matrix: Solid

Analysis Batch: 382417

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 382289

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.167	0.180		mg/Kg		108	80 - 120

Lab Sample ID: LCSD 580-382289/16-A

Matrix: Solid

Analysis Batch: 382417

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 382289

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.167	0.176		mg/Kg		106	80 - 120	2	20

Lab Sample ID: 580-110418-1 MS

Matrix: Solid

Analysis Batch: 382417

Client Sample ID: SEARHC-E1

Prep Type: Total/NA

Prep Batch: 382289

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		0.150	0.174		mg/Kg	☞	116	80 - 120

Lab Sample ID: 580-110418-1 MSD

Matrix: Solid

Analysis Batch: 382417

Client Sample ID: SEARHC-E1

Prep Type: Total/NA

Prep Batch: 382289

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.155	0.181		mg/Kg	☞	117	80 - 120	4	20

Eurofins Seattle

QC Sample Results

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Method: 7471A - Mercury (CVAA) (Continued)

Lab Sample ID: 580-110418-1 DU
Matrix: Solid
Analysis Batch: 382417

LAB QC

Client Sample ID: SEARHC-E1
Prep Type: Total/NA
Prep Batch: 382289

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Mercury	ND		ND		mg/Kg	*	NC	20

Lab Chronicle

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E1

Date Collected: 02/10/22 13:10

Date Received: 02/16/22 14:30

LAB QC

Lab Sample ID: 580-110418-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1	381758	02/21/22 12:26	JAE	FGS SEA

Client Sample ID: SEARHC-E1

Date Collected: 02/10/22 13:10

Date Received: 02/16/22 14:30

Lab Sample ID: 580-110418-1

Matrix: Solid

Percent Solids: 95.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			382067	02/23/22 20:06	RJL	FGS SEA
Total/NA	Analysis	8260D		1	382076	02/24/22 01:47	TL1	FGS SEA
Total/NA	Prep	5035			382049	02/23/22 18:05	JBT	FGS SEA
Total/NA	Analysis	8260D SIM		1	382187	02/24/22 21:38	T1W	FGS SEA
Total/NA	Prep	5035			382639	03/02/22 12:12	RJL	FGS SEA
Total/NA	Analysis	AK101		1	382646	03/02/22 14:42	RJL	FGS SEA
Total/NA	Prep	3546			382117	02/24/22 11:21	DH	FGS SEA
Total/NA	Analysis	8270E SIM		1	382371	02/28/22 12:24	TL1	FGS SEA
Total/NA	Prep	3546			382171	02/24/22 15:19	DH	FGS SEA
Total/NA	Analysis	AK102 & 103		1	382331	02/26/22 09:09	JAE	FGS SEA
Total/NA	Prep	3050B			381633	02/18/22 13:57	TMH	FGS SEA
Total/NA	Analysis	6010D		1	381790	02/21/22 19:31	TMH	FGS SEA
Total/NA	Prep	7471A			382289	02/25/22 17:02	ABP	FGS SEA
Total/NA	Analysis	7471A		1	382417	02/28/22 13:38	ABP	FGS SEA

Client Sample ID: SEARHC-E2

Date Collected: 02/10/22 13:45

Date Received: 02/16/22 14:30

Lab Sample ID: 580-110418-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1	381758	02/21/22 12:26	JAE	FGS SEA

Client Sample ID: SEARHC-E2

Date Collected: 02/10/22 13:45

Date Received: 02/16/22 14:30

Lab Sample ID: 580-110418-2

Matrix: Solid

Percent Solids: 84.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			382067	02/23/22 20:06	RJL	FGS SEA
Total/NA	Analysis	8260D		1	382076	02/24/22 02:09	TL1	FGS SEA
Total/NA	Prep	5035			382049	02/23/22 18:05	JBT	FGS SEA
Total/NA	Analysis	8260D SIM		1	382187	02/24/22 22:01	T1W	FGS SEA
Total/NA	Prep	5035			382639	03/02/22 12:12	RJL	FGS SEA
Total/NA	Analysis	AK101		1	382646	03/02/22 15:05	RJL	FGS SEA
Total/NA	Prep	3546			382117	02/24/22 11:21	DH	FGS SEA
Total/NA	Analysis	8270E SIM		1	382371	02/28/22 14:32	TL1	FGS SEA
Total/NA	Prep	3546			381756	02/21/22 11:58	DH	FGS SEA
Total/NA	Analysis	AK102 & 103		1	381745	02/22/22 02:44	JAE	FGS SEA

Eurofins Seattle

Lab Chronicle

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E2

Lab Sample ID: 580-110418-2

Date Collected: 02/10/22 13:45

Matrix: Solid

Date Received: 02/16/22 14:30

LAB QC

Percent Solids: 84.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			381633	02/18/22 13:57	TMH	FGS SEA
Total/NA	Analysis	6010D		1	381790	02/21/22 19:34	TMH	FGS SEA
Total/NA	Prep	7471A			382289	02/25/22 17:02	ABP	FGS SEA
Total/NA	Analysis	7471A		1	382417	02/28/22 13:47	ABP	FGS SEA

Client Sample ID: SEARHC-E3

Lab Sample ID: 580-110418-3

Date Collected: 02/10/22 14:10

Matrix: Solid

Date Received: 02/16/22 14:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1	381758	02/21/22 12:26	JAE	FGS SEA

Client Sample ID: SEARHC-E3

Lab Sample ID: 580-110418-3

Date Collected: 02/10/22 14:10

Matrix: Solid

Date Received: 02/16/22 14:30

Percent Solids: 51.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			382067	02/23/22 20:06	RJL	FGS SEA
Total/NA	Analysis	8260D		1	382076	02/24/22 02:32	TL1	FGS SEA
Total/NA	Prep	5035			382049	02/23/22 18:05	JBT	FGS SEA
Total/NA	Analysis	8260D SIM		1	382187	02/24/22 22:25	T1W	FGS SEA
Total/NA	Prep	5035			382639	03/02/22 12:12	RJL	FGS SEA
Total/NA	Analysis	AK101		1	382646	03/02/22 15:28	RJL	FGS SEA
Total/NA	Prep	3546			382117	02/24/22 11:21	DH	FGS SEA
Total/NA	Analysis	8270E SIM		1	382371	02/28/22 14:57	TL1	FGS SEA
Total/NA	Prep	3546			381756	02/21/22 11:58	DH	FGS SEA
Total/NA	Analysis	AK102 & 103		1	381745	02/22/22 03:04	JAE	FGS SEA
Total/NA	Prep	3050B			381633	02/18/22 13:57	TMH	FGS SEA
Total/NA	Analysis	6010D		1	381790	02/21/22 19:37	TMH	FGS SEA
Total/NA	Prep	7471A			382289	02/25/22 17:02	ABP	FGS SEA
Total/NA	Analysis	7471A		1	382417	02/28/22 13:49	ABP	FGS SEA

Client Sample ID: SEARHC-E4

Lab Sample ID: 580-110418-4

Date Collected: 02/11/22 10:00

Matrix: Solid

Date Received: 02/16/22 14:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1	381758	02/21/22 12:26	JAE	FGS SEA

Client Sample ID: SEARHC-E4

Lab Sample ID: 580-110418-4

Date Collected: 02/11/22 10:00

Matrix: Solid

Date Received: 02/16/22 14:30

Percent Solids: 58.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			382067	02/23/22 20:06	RJL	FGS SEA
Total/NA	Analysis	8260D		1	382076	02/24/22 02:55	TL1	FGS SEA

Eurofins Seattle

Lab Chronicle

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Client Sample ID: SEARHC-E4

Lab Sample ID: 580-110418-4

Date Collected: 02/11/22 10:00

LAB QC

Matrix: Solid

Date Received: 02/16/22 14:30

Percent Solids: 58.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			382049	02/23/22 18:05	JBT	FGS SEA
Total/NA	Analysis	8260D SIM		1	382187	02/24/22 22:48	T1W	FGS SEA
Total/NA	Prep	5035			382639	03/02/22 12:12	RJL	FGS SEA
Total/NA	Analysis	AK101		1	382646	03/02/22 15:51	RJL	FGS SEA
Total/NA	Prep	3546			382117	02/24/22 11:21	DH	FGS SEA
Total/NA	Analysis	8270E SIM		1	382371	02/28/22 15:31	TL1	FGS SEA
Total/NA	Prep	3546			382171	02/24/22 15:19	DH	FGS SEA
Total/NA	Analysis	AK102 & 103		1	382331	02/26/22 10:10	JAE	FGS SEA
Total/NA	Prep	3050B			381633	02/18/22 13:57	TMH	FGS SEA
Total/NA	Analysis	6010D		1	381790	02/21/22 19:42	TMH	FGS SEA
Total/NA	Prep	7471A			382289	02/25/22 17:02	ABP	FGS SEA
Total/NA	Analysis	7471A		1	382417	02/28/22 13:52	ABP	FGS SEA

Laboratory References:

FGS SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Eurofins Seattle

Accreditation/Certification Summary

Client: Dahlberg Design
Project/Site: Search Vintage Park

LAB QC

Job ID: 580-110418-1

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
2540G		Solid	Percent Moisture
2540G		Solid	Percent Solids
8260D	5035	Solid	1,1-Dichloropropene
8260D	5035	Solid	1,2-Dibromo-3-Chloropropane
8260D	5035	Solid	1,3-Dichloropropane
8260D	5035	Solid	2,2-Dichloropropane
8260D	5035	Solid	2-Chlorotoluene
8260D	5035	Solid	4-Chlorotoluene
8260D	5035	Solid	4-Isopropyltoluene
8260D	5035	Solid	Bromochloromethane

Sample Summary

Client: Dahlberg Design
Project/Site: Search Vintage Park

Job ID: 580-110418-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-110418-1	SEARHC-E1	Solid	02/10/22 13:10	02/16/22 14:30
580-110418-2	SEARHC-E2	Solid	02/10/22 13:45	02/16/22 14:30
580-110418-3	SEARHC-E3	Solid	02/10/22 14:10	02/16/22 14:30
580-110418-4	SEARHC-E4	Solid	02/11/22 10:00	02/16/22 14:30



Chain of Custody Record



**Environment Testing
America**

[illegible]

Login Sample Receipt Checklist

Client: Dahlberg Design

Job Number: 580-110418-1

Login Number: 110418

List Source: Eurofins Seattle

List Number: 1

Creator: Greene, Ashton R

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Received Trip Blank(s) not listed on COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

March 2022

SEARHC Juneau Medical Office Building
Geotechnical Report

APPENDIX F – GBA PUBLICATION

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.

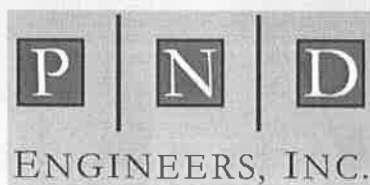


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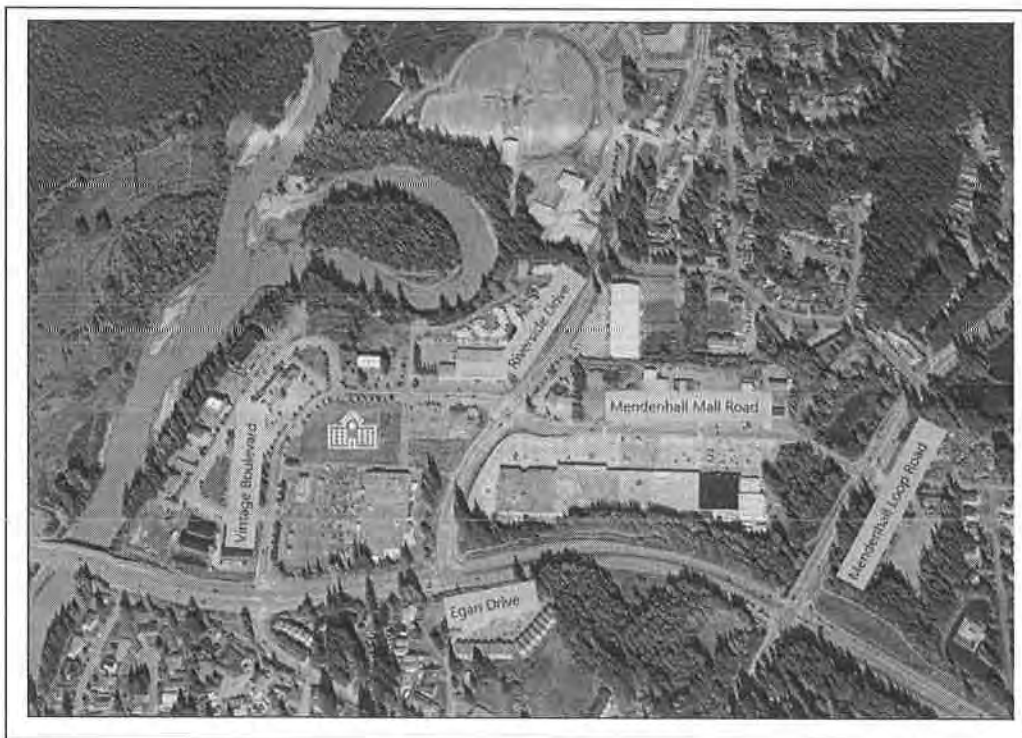
Attachment A - Application Packet

Appendix B – Traffic Impact Analysis



Juneau SEARHC Medical Office Traffic Impact Analysis Draft Report

March 2022



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Abbreviations

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ASCT	Adaptive Signal Control Technology
CBJ	City and Borough of Juneau
CCS	Continuous Count Station
DOT&PF	Alaska Department of Transportation and Public Facilities
HCM	Highway Capacity Manual
ISD	Intersection Sight Distance
ITE	Institution of Transportation Engineers
KE	Kinney Engineering
LOS	Level of Service (intersection performance grade)
mph	miles per hour
PHF	Peak hour factor
SSD	Stopping Sight Distance
ST	Short term station
RIRO	Right-in-right-out
TIA	Traffic Impact Analysis
V/C	Volume to capacity ratio

N, S, E, W are north, south, east, and west

NB, SB, EB, WB are northbound, southbound, eastbound, and westbound

R, L, T are right, left, through (thru)

RT and LT, right (-) turn(ing) and left (-) turn(ing)

Definition of Terms

Access: Ability to enter and exit a given location from a public roadway.

Actuated Pedestrian Signal: Signal, which is activated, usually with a button, by pedestrians and bicyclists.

Adaptive Signal Control: Type of traffic signal that uses sensors and algorithms to give green time in a continuous and equitable manner.

Annual Average Daily Traffic (AADT): Measurement of the number of vehicles traveling on a segment of highway each day, averaged over the year.

Capacity: Value of the maximum flow rate

Continental Style Cross Walk: Style of pedestrian crossing which enhances the visibility of pedestrians to drivers. A series of stripes are installed perpendicular to the intersection creating a pattern similar to a zebra or ladder.

Crash Rate: Number of crashes per a unit of exposure. Common units of exposure include million vehicle miles traveled for roadway segments and million entering vehicles for intersections.

Crash Severity: Scale of bodily harm up to and including death, suffered by the occupants of a vehicle involved in a crash. There are four level of crash severity used: property damage only non-incapacitating/possible injury, incapacitating injury, and fatal.

Daily Delay: Sum of delay all drivers undergo in a day, given in vehicle-hours per day.

Flow: Rate which describes how many vehicles pass a given point within a set amount of time, usually an hour.

Interchange: Set of ramps and intersections used to allow traffic to travel to and from a controlled access freeway facility.

Level of Service (LOS): Performance measure concept used to quantify the operational performance of a facility and present the information to users and operating agencies. The actual performance measure used varies by the type of facility; however, all use a scale of A (best conditions for individual users) to F (worst conditions). Often, LOS C or D in the most congested hours of the day will provide the optimal societal benefits for the required construction and maintenance costs

Mobility: Ability of people and goods to move from one place to another.

Off-peak: Any period of the day which is not the peak hour

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Peak Hour: Hour long period in which the volume of a given road is the highest for the day or given period. Morning, evening, and noon peak hours are often used for analysis, although peak hours may occur at other times, such as school dismissals.

Peak Hour Factor: Measure of traffic variability over an hour period calculated by dividing the hourly flowrate by the peak 15-minute flowrate. PHF values can vary from 0.25 (all traffic for the hour arrives in the same 15-minute period) to 1.00 (traffic is spread evenly throughout the hour).

Permanent Traffic Recorder: Vehicle counting device that remains in the same place throughout the years.

Safety: Count of crashes by severity at a given location

Upper Control Limit (UCL): Statistical measure used in crash rate analysis to determine statistical significance. If the crash rate of the location in question is above the upper control limit for that location, the crash rate is above the average crash rate for similar facilities to a statistically significant level.

Volume to Capacity Ratio (v/c): Measure of how much of the available capacity of a facility is being used, calculated by dividing the demand volume by the capacity of a facility. Values of 0.85 or less indicate adequate capacity to serve the demand volume. When v/c is greater than 0.85, drivers begin to feel uncomfortably crowded.

Executive Summary

This Traffic Impact Analysis (TIA) Report addresses the potential traffic impacts of the proposed SEARHC medical office building development to be located along Vintage Boulevard in an area of Juneau listed as Traditional Town Center in the City and Borough of Juneau 2013

Comprehensive Plan Update. The property, shown in Exhibit 1 Figure 3, is located on an empty 2.9-acre lot north of Safeway and across the street from the Post Office. This TIA evaluates the following labeled intersections during the AM and PM peak time period for the build year of 2023.

1. Egan Drive and Vintage Boulevard/Glacier Highway
2. Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road
3. Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive
4. Mendenhall Loop Road and Egan Drive
5. Riverside Drive and Egan Drive



Exhibit 1: TIA Study Area

Traffic counts taken in 2012, 2015 and 2016 were used to determine traffic movements for each of the studied intersections. These counts were factored to the peak month of May in 2023 as a base condition by using the Juneau-Riverside Drive TMA 000807 continuous count station annual average daily traffic (AADT) and monthly average daily traffic (ADT) data to calculate the estimated annual traffic growth rate as well as factor the counts from the month they were taken to the peak month. Also, there is a proposed 11 condominium complex with 11 commercial garages development with an estimated ADT of 108 at 3011 Clinton Drive as well as a proposed 98-bed senior housing development at 3041 Clinton Drive with an estimated ADT of 269, both of which are planned for construction in 2022. All traffic generated by these facilities will use Vintage Boulevard and flow through the study area. The Institute of

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Transportation (ITE) Trip Generation Manual 10th edition was used to determine the estimated traffic generated by the proposed medical office building.

The intersection of Egan Drive and Vintage Boulevard/Glacier Highway is a stop controlled, right-in, right-out intersection with minor differences in queue length in the PM peak hour, there is no change in the AM peak hour and no change to level of service (LOS) with the additional site traffic. No mitigation is required by the CBJ Code of Ordinances.

The intersection of Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road is a four-way signalized intersection with one left, thru and right turn lane in each direction. There are pedestrian signals and crosswalks across all four approaches of the intersection. The left turns phases on all approaches are permissive-protected. With the additional site traffic, there is a slight increase in the queue lengths for some of the approach lanes and a one second delay increase in the AM and PM peak hours. There is no LOS change. No mitigation is required by the CBJ Code of Ordinances.

Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive is a four-way signalized intersection. The northbound approach has a thru lane, a thru/right turn lane and a left turn lane. The southbound approach has two thru lanes, a left turn lane and a right turn lane. The westbound approach has a shared thru/left turn lane and a right turn lane. The eastbound approach has a shared thru/left turn lane and a right turn lane. The northbound and southbound left turn phases are protected. The eastbound and westbound left turn phases are permissive. There are pedestrian signals and crossings across three of the four approaches. There is a 1 second delay change and no LOS change to the AM peak hour and a 6 second delay change and a LOS change from C to D for the entire intersection for the PM peak hour. No mitigation is required by the CBJ Code of Ordinances.

The intersection of Egan Drive and Mendenhall Loop Road is a four-way signalized intersection with left, thru and right turn lanes. The left turns are all protected split phase. There are pedestrian signals and crossings across all four approaches of the intersection. The LOS for this intersection is F for the AM peak hour and E for the PM peak hour both for pre-build and build conditions. The site traffic impact is minimal with a one second increase for both the AM and PM peak hours. There is no LOS change for the intersection with the additional traffic. The CBJ Code of Ordinances requires mitigation for this intersection because it is currently operating below a level of service of D. However, the site traffic has a negligible impact on the operations of the intersection and the CBJ Code of Ordinances provides conditions for mitigation waiver.

Riverside Drive and Egan Drive is a signalized T-intersection with two thru eastbound and westbound lanes, westbound left turn phasing, eastbound channelized right turn and two southbound left turn lanes and one right turn lane. There are pedestrian signals and crosswalks on two of the three approaches at this intersection. There are no changes to the LOS or queue delays for this intersection caused the proposed site traffic. No mitigation is required by the CBJ Code of Ordinances.

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In addition to intersections, site impacts were evaluated for transit, pedestrians and bicycles, and traffic safety.

Mitigations for impacts include the following:

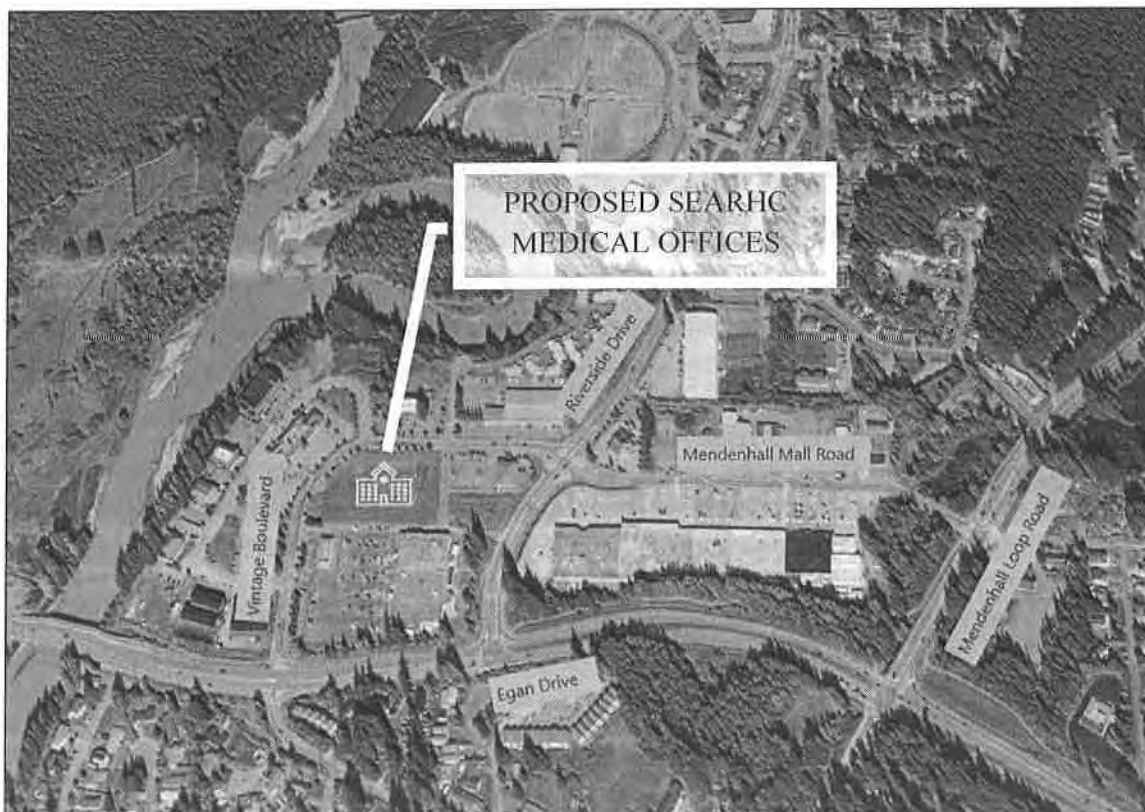
- CBJ Code of Ordinances would require mitigation of the Egan Drive and Mendenhall Loop Road intersection as it has a LOS less than D prior to the additional site traffic. Reconstruction would include require expansion of northbound and southbound approaches, and cost millions of dollars. However, the site traffic has only a negligible impact on operations, and a mitigation waiver may be granted due to the excessive cost.
- There is a missing sidewalk segment on Vintage Boulevard directly fronting the SEARHC medical office site. Installation of the sidewalk improves pedestrian mobility and safety impacts and would promote walking and transit as alternative commuting modes, thus reducing site vehicular demand.
- Demand management policies may promote mode changes from vehicles to active transportation modes (biking, walking, transit) or reducing demand by promoting carpools. These include:
 - Incentivize transit use (potential 4% to 5% vehicle trip reduction, see Section 3.4)
 - Incentivize carpooling (potential 14% to 15% vehicle trip reduction, see Section 3.4)
 - Provide bicycle racks. (Vehicle trip reduction isn't quantifiable).

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1 Introduction and Development Background

1.1 Development Description

Southeast Alaska Regional Health Consortium (SEARHC) proposes a 45,924 square-foot gross floor area medical office facility located on Vintage Boulevard between the intersections with Riverside Drive and Egan Drive in Juneau, Alaska. The facility is located on a 2.9-acre empty tract with access only by Vintage Boulevard. The vicinity map is presented in the Figure 2.



Background Photo Source- Google Earth

Figure 2: SEARHC Medical Office Location Map

1.2 City and Borough of Juneau Traffic Impact Analysis Requirements

City and Borough of Juneau (CBJ) Code of Ordinances, 49.40.300 Applicability, states that a traffic impact analysis (TIA) shall be required when a development is projected to generate 500 or more average daily trips (ADT).

The proposed SEARHC medical office facility aligns with the Institute of Transportation Engineer's (ITE) Trip Generation Manual Land Use 720- Medical/Dental Office Building. Based on the gross floor area of 45,924 gross floor area, the Trip Generation Manual, and the companion Trip Generation Handbook 3rd Ed. estimates that the traffic generated upon full build

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out of the facility exceeds 1,600 ADT, as shown in Table 1, below. As such, a TIA for the facility is required.

Table 1: Weekday ADT for Proposed SEARHC Medical Offices

Land Use Classification	Gross Floor Area (1000 square feet)	Equation Type	Equation and Trip Computations	DD% (In/Out)	Trips In	Trips Out
720 – Medical-Dental Office Building	X=45.924	Regression	$T=38.42(X) - 87.62$ $T=38.42(45.924) - 87.62 = \underline{1,677}$	50/50	838	838

The street system around the facility is urbanized with movements through intersections controlled by a signs or signals. As such, it is within an interrupted flow regime, and traffic operation quality is generally dependent upon intersection operations and performance. For this TIA, vehicular impact analyses are focused on intersections.

CBJ Code of Ordinances, 49.40.305 Traffic impact analysis (TIA) requirements indicates that the study area for the TIA shall include those intersections with approaches where the proposed development will increase ADT by five percent or more. Required mitigation for intersections within the study area is addressed by CBJ Code of Ordinances as follows:

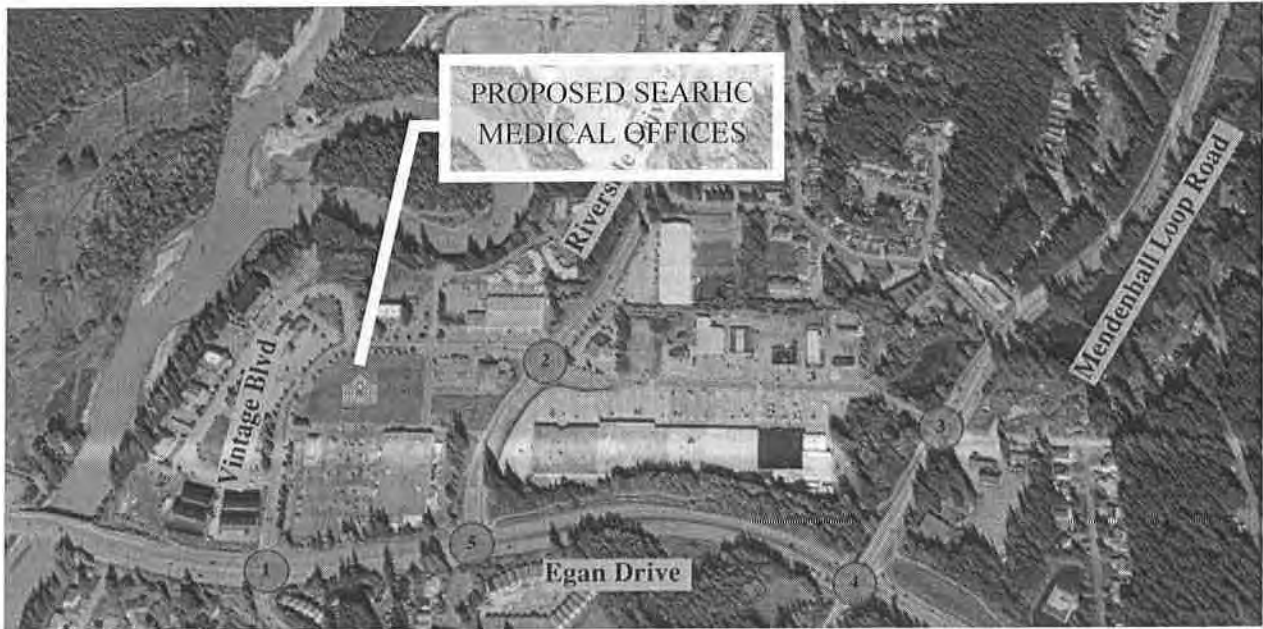
- CBJ Code of Ordinances, 49.40.310 Traffic; minimum standards.
 - (a) *The minimum acceptable (level of service) LOS for a roadway segment or intersection within the area affected by the development, on the projected opening date of the development, or full build out of the development, is LOS D.*
- CBJ Code of Ordinances, 49.40.340 Traffic impact mitigation.
 - (a) *Except as provided in 49.40.340, an applicant shall make improvements to a roadway or intersection to achieve or maintain an acceptable LOS if a roadway or intersection has an:*
 - (1) *LOS D without traffic generated by the development; and would drop below LOS D with traffic generated by the development at the opening date of the development or full build out;*
 - (2) *If a roadway has an LOS below D without traffic generated by the development at the opening date of the development; or*
 - (3) *If the intersection or roadway segment has a pattern of accidents resulting in personal injuries, and the development would aggravate this accident pattern, then mitigation shall be required regardless of the LOS.*

The term “level of service” or LOS is defined in Section 7.1 on page 39 and Table 14 on page 41.

In a July 2021 meeting between Randy Kinney, Kinney Engineering, LLC (KE) and Allison Eddins from CBJ’s Community Development Department, the study area presented in Figure 3 was discussed. This study area was later presented in a second meeting focusing on traffic in January 2022 that included CBJ and the Department of Transportation and Public Facilities

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(DOT&PF) staff; and address a wider range of traffic impact issues. In addition, there have been two pre-application meetings with CBJ, but these meeting only addressed traffic issues in general.



Background Photo Source- Google Earth

Figure 3: TIA Study Area

As proposed in these meetings, an initial analysis of impacts would include the following intersections (numbered as shown in the figure):

1. Egan Drive and Vintage Boulevard/Glacier Highway
2. Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road
3. Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive
4. Mendenhall Loop Road and Egan Drive
5. Riverside Drive and Egan Drive

This starting point was deemed sufficient although it preceded the detail analysis that would form a final study area required by CBJ Code of Ordinances, 49.40.305. The process for trip generation and distribution of site traffic is an iterative process, and thus cannot be completed without a substantial effort. However, in meeting discussions, KE indicated that adding any intersections (expanding the study area) would occur as the analysis progressed to evaluate and confirm the link ADT thresholds in CBJ Code of Ordinances, 49.40.305.

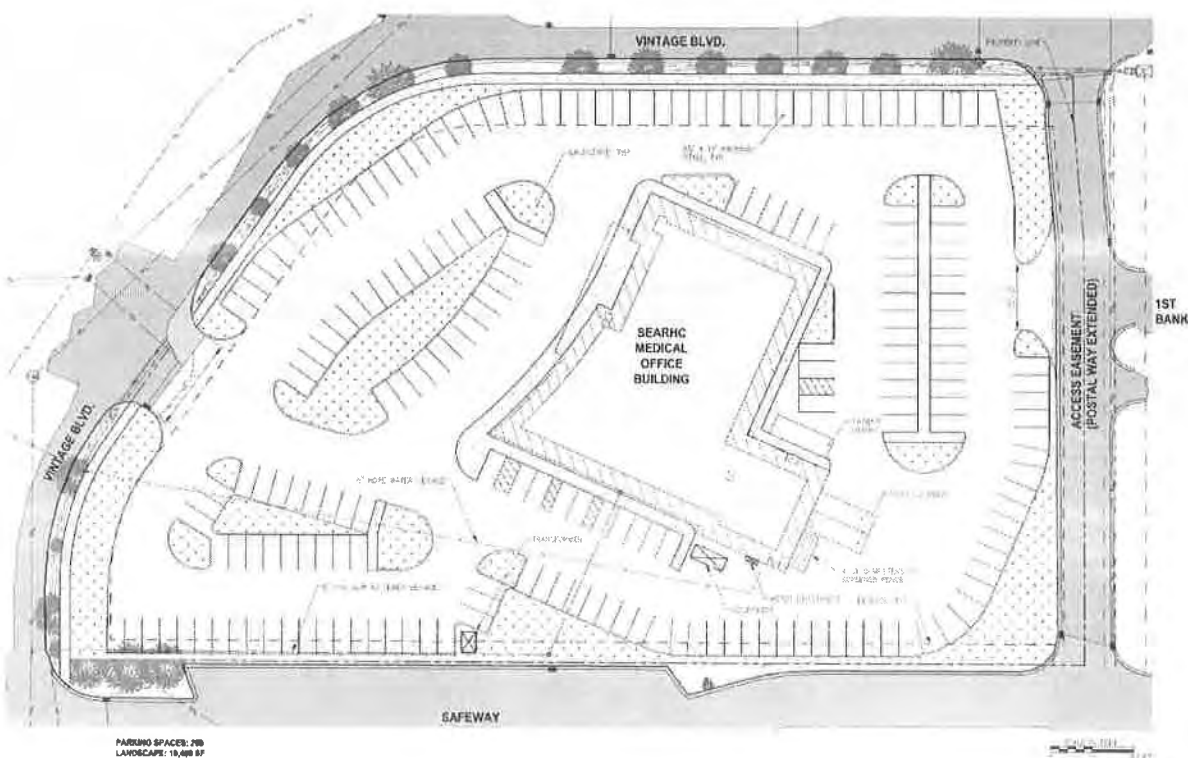
The completion of the analyses of site traffic distribution to other intersection approaches outside of the study area found all others be under the 5% threshold discussed above. As such, the study area shown satisfies CBJ Code of Ordinances.

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Ultimately, KE chose to prepare operational and safety analysis for all five of the listed intersections with and without site traffic, irrespective of the 5% ADT increase requirements in CBJ Code of Ordinances, 49.40.305.

1.3 Site Plan

Figure 4 below presents the conceptual site plan (current as of 2-22-22) showing parking layout, access aisle, and site access locations. There will be minor changes to this plan as the design develops.



Source- PND Engineers Inc.

Figure 4: Proposed Site Plan

The site plan presents two access points onto Vintage Boulevard, both of which are existing and established as shown in Figure 5 on page 8. Both of these have auxiliary left-turn lanes, a significant benefit for crash prevention and roadway capacity by removing stopped or slowing left turn cars from the through lane.

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Background Photo Source- Google Earth

Figure 5: Existing Site Conditions

1.4 Design Year and Design Hour

The SEARHC medical office facility will be completed in 2023. As agreed upon in the traffic meetings with CBJ and DOT&PF, 2023 will be considered the design year for the analysis. The design hours for the facility will include morning and evening commuting peak hours. Additional analyses period for weekend traffic was discussed and dismissed.

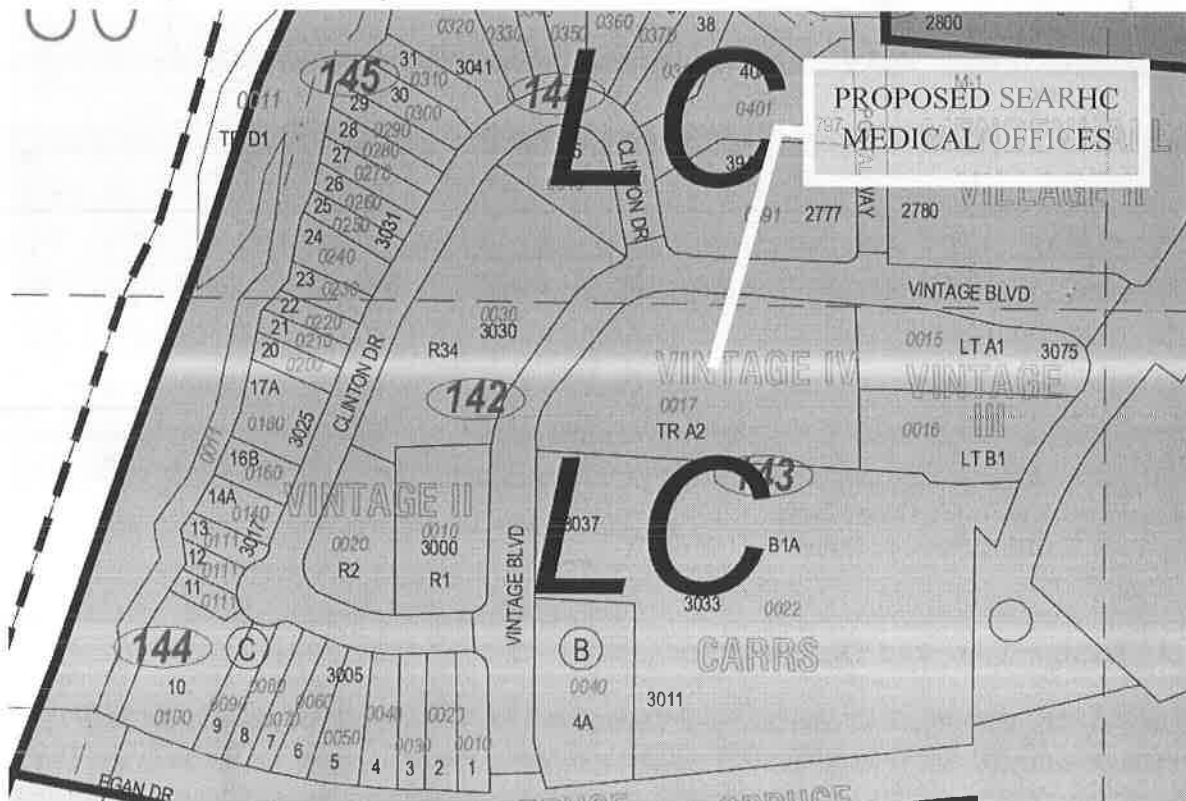
Because of seasonal traffic fluctuations, KE decided to further define the design hours as those expected during the summer season instead of an average condition.

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2 Project Area Background

2.1 Surrounding Land Zoning

The proposed SEARHC medical office facility is located within areas zoned Light Commercial, or LC. The zoning in the immediate area is presented in the Figure 6.



Source-Zoning Atlas City and Borough of Juneau

Figure 6: Area Zoning

The CBJ Code of Ordinances, 49.25.230 - Commercial districts states:

"The LC, light commercial district, is intended to accommodate commercial development that is less intensive than that permitted in the general commercial district. Light commercial districts are primarily located adjacent to existing residential areas. Although many of the uses allowed in this district are also allowed in the GC, general commercial district, they are listed as conditional uses in this district and therefore require commission review to determine compatibility with surrounding land uses. A lower level of intensity of development is also achieved by stringent height and setback restrictions. Residential development is allowed in mixed- and single-use developments in the light commercial district."

The proposed SEARHC medical office facility is consistent with the existing zoning. As such, no changes in zoning will be required.

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2.2 Surrounding Land Uses And Site Land Use

The adjacent, existing development is largely commercial. A Safeway grocery store and related shopping center businesses, including an automotive fuel station, are located directly south of the site. Other immediate or nearby land uses include a bank, credit union, US Post Office, and numerous private and agency offices. Residential developments are also nearby.

The City and Borough of Juneau 2013 Comprehensive Plan Update indicates that the site is within a Traditional Town Center, described as follows:

"These lands are characterized by high density residential and non-residential land uses in downtown areas and around shopping centers, the University, major employment centers and public transit corridors, as well as other areas suitable for a mixture of retail, office, general commercial, and high-density residential uses at densities at 18 or more residential units per acre. Residential and non-residential uses could be combined within a single structure, including off-street parking. Ground floor retail space facing roads with parking behind the retail and housing above would be an appropriate and efficient use of the land."

The proposed medical office facility is consistent with the adjoining development and Tradition Town Center land use.

2.3 Traffic Improvements Already Funded, Programmed, Or Planned

A survey of agency websites found the following committed or planning projects within the immediate area of the proposed facility.

2.3.1 CBJ Capital Improvement Program 2021 to 2026

This six-year plan shows a total of about \$1.5 million planned for Vintage Boulevard Street Reconstruction in FY23. A scan of the document found no other CBJ projects planned for the immediate area.

2.3.2 DOT&PF State Transportation Improvement Program (STIP)

The April 2020 Original STIP and Amendment 3 issued in November 2021 have been scanned with no projects planned in the immediate area of the proposed facility.

2.3.3 Juneau Egan Drive & Riverside Intersection Improvements

KE completed this study in the spring of 2016 for the DOT&PF. The study focused on the Egan Drive and Riverside Intersection and prepared an analysis of several signalized and roundabout alternatives, including extending Riverside Drive to the south of Egan Drive. The proposed medical offices do not affect the recommendations of this study. Moreover, if any of the alternatives were to be implemented, site travel patterns and routes would not be changed over the current system travel patterns.

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This traffic impact analysis uses morning and evening peak hour intersection traffic count data from this study. The 2020-2022 pandemic has depressed travel, meaning that current counts may be underrepresenting actual or future demands. As such the counts in the 2016 study were the base of this analysis and factored to estimate current and future demand conditions.

2.3.4 West Egan Drive Corridor Study

This study, completed in 2003 for DOT&PF, proposes grade separation interchanges for the Egan Drive intersections with Mendenhall Loop Road and with Riverside Drive. It is not clear if Vintage Drive inbound and outbound access from Egan Drive would be maintained as is now, because Vintage Boulevard connects to the Riverside Interchange westbound on-ramp.

Regardless of the Vintage Boulevard connection to Egan Drive, the proposed SEARHC medical offices would be compatible with the improvements proposed in the West Egan Drive Corridor Study.

2.4 Other Committed Projects

CBJ Community Development planners provided additional developments that are or will be completed prior to the design year 2023, but whose traffic was not captured during the intersection counts that provide the basis of background traffic (see Section 4.3 on page 23).

There is a proposed 11 condominium complex with 11 commercial garages development with an estimated ADT of 108 at 3011 Clinton Drive. Also, there is a proposed 98-bed senior housing development at 3041 Clinton Drive with an estimated ADT of 269 planned for construction by 2022. All traffic generated by these facilities will use Vintage Boulevard (Both ends of Clinton Drive connects to Vintage Boulevard) and flow through the study area.

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3 Transportation System Elements

The traffic study area for this report, shown in Figure 3 on page 6, consist of five intersections and the connecting streets. The streets are discussed in more detail in Section 3.1. There are four signalized intersections (intersections 2-5) and one stop-controlled intersection (intersection 1), which are discussed further in Section 3.2.

3.1 Streets

Egan Drive is a principal arterial roadway which primarily serves to carry traffic between downtown Juneau, the Mendenhall Valley, Auke Bay, and other outlying areas of the CBJ. It is Route 4 on the National Highway System, connecting the Juneau International Airport and the Auke Bay Ferry Terminal to other areas of the CBJ. Between downtown Juneau and the Mendenhall Valley, Egan Drive is a four-lane divided highway with a posted speed limit of 50 mph.

Riverside Drive is a two-lane minor arterial roadway that connects Egan Drive with businesses, residences, schools, and community centers in the Mendenhall Valley. Riverside Drive is posted at 35 mph.

Mendenhall Loop Road is a minor arterial roadway with two lanes and a center turn lane south of Egan Drive, four lanes with a designated left turn lane between Egan Drive and Mendenhall Mall Road, and four lanes north of Mendenhall Mall Road to Nancy Street. Mendenhall Loop Road has a posted speed limit of 40 mph.

Mendenhall Mall Road is a two-lane local access roadway with no curbing connecting Riverside Drive and Mendenhall Loop Road, serving as access to the businesses on both sides of the roadway. Mendenhall Mall Road has a posted speed limit of 20 mph.

Atlin Drive is a two-lane local access roadway that provides access to a church and residential neighborhood with a posted speed limit of 20 mph.

Vintage Boulevard is a two-lane divided local access roadway connecting Egan Drive and Riverside Drive that provides access to businesses and residences. Vintage Boulevard posted speed limit is 20 mph.

Glacier Highway is a two-lane minor collector roadway from Egan Drive/Vintage Boulevard to Mendenhall Loop Road with a right turn only at the intersection with Egan Drive. Glacier Highway is posted at 35 mph.

3.1.1 Functional Classification

The three major functional classes include:

- **Local Road** - Local roads are oriented towards access to homes and businesses at the terminal ends of a trip.
- **Collector** - Collector roads gather and distribute trips between local streets and arterials.

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- **Arterial** - Arterials emphasize mobility and are designed to carry large volumes at an efficient speed.

Table 2 presents the DOT&PF functional classifications for the roads in the study area.

Roadway	Classification
Egan Drive	Principal Arterial
Glacier Highway (Vintage Boulevard to Mendenhall Loop Road)	Minor Collector
Mendenhall Loop Road	Minor Arterial
Riverside Drive	Minor Arterial
Vintage Boulevard	Major Collector
Atlin Drive	Local Road
Mendenhall Mall Road	Local Road

Table 2: Functional Classifications

3.2 Intersections

The study area contains four signalized intersections and one stop-controlled intersection. The following four signals are coordinated:

- Egan Drive and Riverside Drive
- Egan Drive and Mendenhall Loop Road
- Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road
- Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive

The intersections are discussed in the following sections. Most of the information presented in these sections, including the diagram with background aerial photography was extracted from the 2016 Juneau Egan Drive & Riverside Intersection Improvements Study.

3.2.1 Egan Drive / Riverside Drive



The intersection of Egan Drive with Riverside Drive is a signalized T-intersection (Figure 7). On westbound Egan Drive, the approach to the signal has two through lanes and a channelized right turn lane. For eastbound Egan Drive, the approach has two through lanes and a left turn lane/U-turn, with protected left turn phasing. The Riverside Drive approach has two left turn lanes and one right turn lane. There are also pedestrian signals and crosswalks across the inbound Egan Drive and Riverside Drive approaches; however, there are no pedestrian crossings of the outbound Egan Drive approach.

Figure 7: Egan Drive and Riverside Drive

3.2.2 Egan Drive / Mendenhall Loop Road



The intersection of Egan Drive and Mendenhall Loop Road (Figure 8) is a four-way signalized intersection. The southbound approach has a right turn, left turn and center shared left turn/through lane. The southbound approach consists of a left turn, a center shared left/through, and a right turn lane. The eastbound approach has two through lanes, a right turn lane and a left turn lane. The westbound approach also has two through lanes, a channelized right turn lane and a left turn lane. All left turns have protected left turn split phasing. There are pedestrian signals and crosswalks across all four approaches of the intersection.

Figure 8: Egan Drive and Mendenhall Loop Road

3.2.3 Riverside Drive / Vintage Boulevard / Mendenhall Mall Road



The intersection of Riverside Drive with Vintage Boulevard and Mendenhall Mall Road (Figure 9) is a four-way signalized intersection. Each approach has a left turn, a through lane and a separated right turn lane. The left turns phases on all approaches are permissive-protected. There are pedestrian signals and crosswalks across all four approaches of the intersection.

Figure 9: Riverside Drive and Vintage Boulevard/Mendenhall Mall Road

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3.2.4 Mendenhall Loop Road / Mendenhall Mall Road / Atlin Road



The intersection of Mendenhall Loop Road with Mendenhall Mall Road and Atlin Road (

Figure 10) is a four-way signalized intersection. The northbound approach has two through lanes and a left turn lane. The southbound approach has two through lanes, a left turn lane and a right turn lane. The westbound approach from Atlin Road has a shared through/left turn lane and a right turn lane. The eastbound approach from Mendenhall Mall Road has a shared through/left turn lane and a right turn lane. The northbound and southbound left turn phases are protected. The eastbound and westbound left turn phases are signed as permissive. There are pedestrian signals and crosswalks across the

southbound, eastbound, and westbound approaches to the intersection. There is no pedestrian crossing allowed on the northbound approach.

Figure 10: Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive

3.2.5 Egan Drive / Vintage Boulevard / Glacier Highway



The intersection of Egan Drive and Vintage Boulevard/Glacier Highway (Figure 11) is stop controlled with right-in-right-out restricted movements on the north and southbound approaches. The eastbound approach along Egan Drive has two through lanes and a right turn lane, while the westbound approach has two through lanes, a left turn lane and a right turn lane. There are unsignalized pedestrian crosswalks along the northbound and southbound approaches.

Figure 11: Egan Drive and Vintage Boulevard/Glacier Highway

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3.3 Pedestrian and Bicycle Facilities

The CBJ has been named a bronze level bicycle friendly community since 2011 and has also received honorable mention as a walk friendly community.

3.3.1 Pedestrian Facilities

The pedestrian facilities for the main streets in the study area include:

- A separated multiuse pathway on the north side of Egan Drive;
- Continuous attached pavement pathways on both sides of Riverside Drive;
- Separated paved pathways on both sides of Mendenhall Loop Road, and;
- A separated sidewalk on the west and north sides of Vintage Boulevard and a discontinuous separated sidewalk on the east and south side of Vintage Boulevard.

There is no sidewalk immediately fronting the parcel that will contain the proposed SEARHC medical facilities. Also, there are no sidewalks on Mendenhall Mall Road and pedestrians are required to use the roadway shoulders or parking lots.

There are push-button actuated pedestrian signals and crosswalks at all the signalized intersections in the study area, with pedestrians prohibited from crossing the inbound approach of the intersection of Egan Drive and Glacier Highway intersection, the outbound approach of the Egan Drive/Riverside Drive intersection, and the northbound approach of the Atlin Road/Mendenhall Mall Road/Mendenhall Loop Road intersection.

3.3.2 Bicycle Facilities

Riverside Drive has bicycle lanes. On other streets, bicyclists ride in the travel lanes, on shoulders or on pathways where provided.

3.4 Transit

The proposed Medical Center will be located in close proximity to 10 CBJ Capitol Transit routes. Boarding and alighting for all routes would be within ¼- to ½-mile walking distance to and from the site, depending upon walking patterns of the transit patron. A survey of the state of the practice on acceptable walking distances indicate that most people are willing to walk ¼- to ½- miles to a transit stop (see FHWA's Pedestrian Safety Guide for Transit Agencies https://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/index.cfm#toc).

Table 3 summarizes, in general, nearby Capital Transit routes and their service frequency daily and during commuting peak hours.

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Table 3: Capital Transit Routes and Service Near Proposed SEARHC Medical Office Facility

Route	Service	Nearest Bus Stop	Morning Commute Peak (7 AM to 9 AM)		Evening Commute Peak (4 PM to 6 PM)	
			Headway	Buses	Headway	Buses
3 Mendenhall Loop Counterclockwise	Monday-Saturday, Early Commute to Late Evening Sunday 8 AM hour through 6 PM Hour	431-Mendenhall Mall Road and Riverside Drive	60 minutes	2	60 minutes	2
4 Mendenhall Loop Clockwise	Monday-Saturday, Early Commute to Late Evening Sunday 8 AM hour through 6 PM Hour	477-Mendenhall Mall Road at Mendenhall Mall	90-60 minutes	2	60 minutes	2
5 University Express	Monday-Friday, 7 AM Hour through 6 PM Hour	431-Mendenhall Mall and Riverside 477-Mendenhall Mall Road at Mendenhall Mall	60 minutes	4	60 minutes	4
6 Riverside Express	Monday-Friday, 8 AM Hour through 6 PM Hour	477-Mendenhall Mall Road at Mendenhall Mall	60 minutes	1	60 minutes	2
8 Valley Express	Monday-Friday, 2 PM Hour through 5 PM hour	431-Mendenhall Mall Road and Riverside Drive	NA	NA	30 minutes	2
9 Mendenhall Valley Express	Monday-Friday, 7 AM Hour	477-Mendenhall Mall Road at Mendenhall Mall	NA	1	NA	NA
10 Mendenhall Valley Commuter	Monday-Friday, 6 AM and 7 AM Hours	477-Mendenhall Mall Road at Mendenhall Mall	NA	1	NA	NA
14 Mendenhall Riverside Commuter	Monday-Friday, 6 AM Hour	On Street Riverside at Vintage	NA	1	NA	NA
15 Valley/UAS Express	Monday-Friday, 7 AM and 8 AM Hours	477-Mendenhall Mall Road at Mendenhall Mall	NA	1	NA	NA

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Route	Service	Nearest Bus Stop	Morning Commute Peak (7 AM to 9 AM)		Evening Commute Peak (4 PM to 6 PM)	
			Headway	Buses	Headway	Buses
16 Taku Express	Monday-Friday, 6 AM Hour	On Street Riverside at Vintage	NA	1	NA	NA
				14		12

Source: juneaucapitaltransit.org

As indicated in the table above, there are 14 buses providing morning commuting service and 12 buses providing evening commuting service, making public transit a viable work trip alternative for employees. In addition, there is consistent and continuous service during business hours and on weekends, with at least one bus per hour in each inbound and outbound direction for patients to use instead of driving individual cars.

The US Census Bureau American Community Survey *Table S0802 Means Of Transportation To Work By Selected Characteristics* for 2013 through 2019 (5 most recent years published) indicates that the average public transportation work trip mode share is about 4.6% of commuting trips. (Source of this data is:

<https://data.census.gov/cedsci/table?q=Juneau%20city%20and%20borough,%20Alaska&t=Commuting&tid=ACSST5Y2019.S0802>). The margin of error for this estimate is 1.3% (meaning the actual mode share likely falls between 3.3% and 5.9%). The data indicates that public transportation users tend to be within lower income brackets as well.

The American Community Survey also provides data on carpooling for Juneau, indicating that carpools comprise about 14.6% of the 2013 to 2019 work trips with a margin of error of about 2%.

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4 Traffic Data

4.1 Average Annual Daily Traffic

Average annual daily traffic (AADT) is obtained from the DOT&PF websites:

<https://alaskatrafficdata.drakewell.com/publicmultinodemap.asp> and

<https://akdot.maps.arcgis.com/home/index.html>

AADT will be used in computing crash rates in determining the study area for the TIA. Also, AADT will be used to finalize those intersections within the study area that require mitigation. CBJ Code of Ordinances, 49.40.305, indicates that the study area for the TIA shall include those intersections with approaches where the proposed development will increase ADT by five percent or more.

The following table presents street system AADT in the proximity of the proposed SEARHC medical office facility. The 2013-2017 average AADT will be applied to the crash rate computation.

Table 4: AADT for Streets Within Study Area

Street/Segment	2013	2014	2015	2016	2017	2018	2019	2020	2013-2017 average
Egan Drive									
Glacier-Mendenhall Loop	26,195	26,332	26,776	27,844	26,884	25,115	26,134	21,700	26,806
Between Mendenhall Loop Road & Riverside Drive	14,315	14,479	14,698	15,284	14,757	16,126	15,769	12,500	14,707
Between Riverside Drive and Vintage Blvd	13,500	13,654	13,861	14,514	16,904	13,524	15,752	13,200	14,364
Between Vintage Boulevard & Engineers Cutoff Road	11,715	11,850	12,030	15,480	15,709	13,524	16,454	13,200	13,357
Mendenhall Loop Road									
Glacier Highway North-Egan Drive	8,655	-	8,655	9,192	9,095	8,410	9,334	-	8,890
Between Egan Drive/Glacier Highway & Atlin Drive	21,485	20,950	21,268	22,729	22,489	18,565	18,073	14,800	21,784
Mall Access-James Road	15,440	-	-	16,789	16,612	15,361	16,476	-	16,136
Glacier Highway North									
Glacier Highway North - Between Glacier Nugget & Del Rae Road	2,820	2,317	2,363	1,775	1,997	1,889	2,085	1,690	2,254

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Street/Segment	2013	2014	2015	2016	2017	2018	2019	2020	2013-2017 average
Vintage Blvd									
Vintage Boulevard - Between Clinton Drive & Egan Drive/Glacier Highway	2,135	-	2,135	1,965	2,181	2,380	2,305	1,980	2,104
Vintage Boulevard - Near Junction with Riverside Drive	5,597	5,604	5,694	6,109	5,762	5,181	6,175	5,070	5,753
Mendenhall Mall Road									
Mendenhall Mall Access Road - Near Junction with Riverside Drive	6,445	6,217	6,340	6,498	7,153	4,502	4,700	3,860	6,531
Riverside Drive									
Egan Drive to Vintage Blvd	13,225	-	13,225	14,275	14,124	13,060	14,495	-	13,712
Riverside Drive - Between Vintage Boulevard & James Boulevard	8,110	7,962	7,961	10,074	9,967	8,449	8,619	7,080	8,815

4.2 Riverside Drive Continuous Count Station

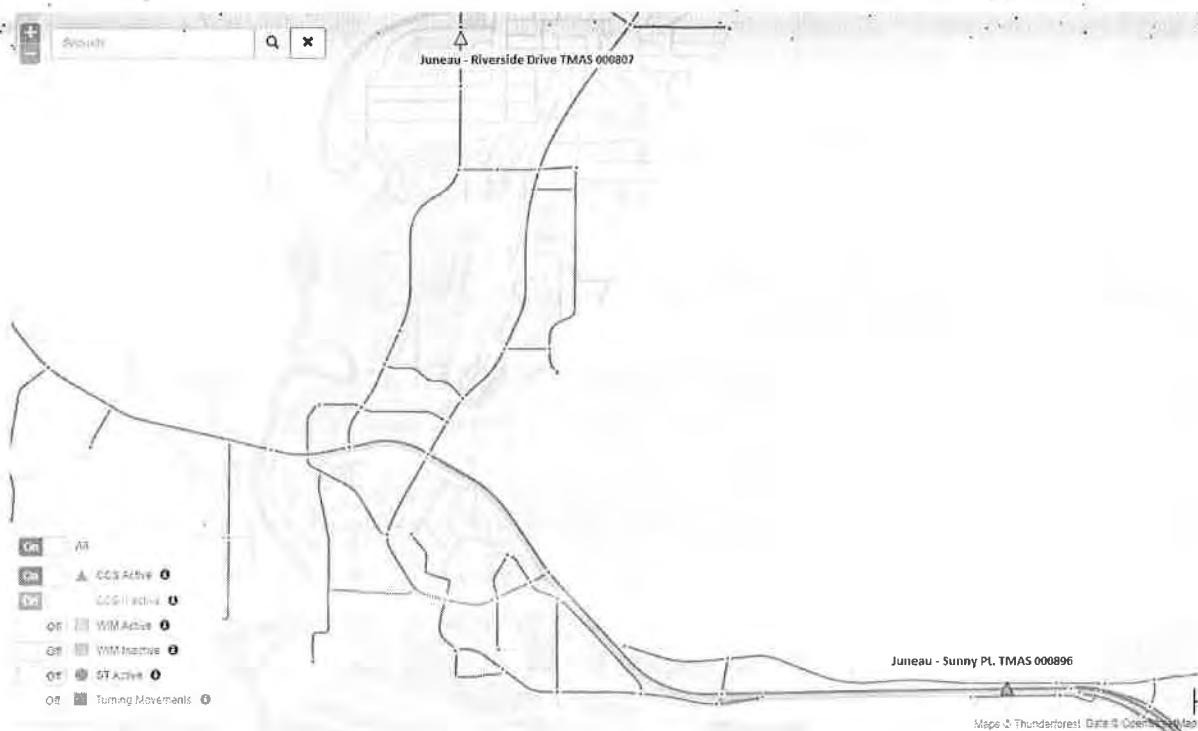
Continuous count stations (CCS) provide continuous data that can be used to factor temporary counts collected at separate times to a count that represents a design year and hour condition.

Source: <https://alaskatraficdata.drakewell.com/publicmultinodemap.asp>

Figure 12 presents the two closest CCS to the project site.

The closest CCS, Juneau - Riverside Drive TMA5 000807, was used to convert past counts to a common year and month. In addition to being the closest in proximity to the project, it is also on the street system that is most alike to the local, collector, and minor arterial streets of the study area and probably shares similar seasonal and diurnal traffic patterns. Annual AADT for the Riverside Drive CCS is shown in Table 5, and the average annual growth rate is calculated as 1.30%.

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Source: <https://alaskatraficdata.drakewell.com/publicmultinodemap.asp>

Figure 12: Continuous Count Station Locations

Table 5: AADT by Year at CCS Juneau-Riverside Drive

Year	AADT
2012	3,920
2013	3,969
2014	3,967
2015	3,861
2016	3,915
2017	4,042
2018	4,045
2019	4,291
Estimated Annual Traffic Growth Rate= 1.30%	

To develop estimated base condition traffic volumes for each horizon year, the estimated annual traffic growth rate was applied to existing intersection traffic volume counts that were collected from 2012, 2015 and 2016. Because the intersection traffic flow counts were taken in non-peak months, the values were factored to the peak month of May using the ADT values in

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Table 6. The cells highlighted in yellow represent the year and month that the counts were conducted. The cells highlighted in green are the corresponding May ADT values.

Table 6: Riverside Drive CCS Monthly ADT by Year

Juneau - Riverside Drive TMAS 000807								
Year→ Month	2012	2013	2014	2015	2016	2017	2018	2019
Jan	3,561	3,485	3,542	3,566	3,509	3,390	3,554	3,578
Feb	3,754	3,590	3,699	3,653	3,718	3,594	3,636	3,938
Mar	3,787	3,668	3,654	3,639	3,819	3,399	3,574	4,015
Apr	4,160	3,944	3,964	3,980	4,110	4,164	4,117	4,426
May	4,312	4,441	4,608	4,547	4,445	4,479	4,563	4,740
Jun	4,283	4,280	4,306	4,013	4,222	4,258	4,347	4,424
Jul	4,196	4,164	4,267	3,819	4,001	4,347	4,399	4,370
Aug	4,240	4,294	4,217	4,100	4,190	4,428	4,408	4,523
Sep	4,037	4,194	4,094	3,950	4,047	4,514	4,333	4,291
Oct	3,842	4,235	4,025	3,899	3,890	4,440	4,046	4,153
Nov	3,459	3,735	3,668	3,568	3,561	3,775	3,807	4,027
Dec	3,407	3,596	3,643	3,603	3,470	3,719	3,758	4,129
AADT→	3,920	3,969	3,967	3,861	3,915	4,042	4,045	4,291

Source: <https://alaskatraficdata.drakewell.com/publicmultinodemap.asp>

From the Riverside CCS data, the month of May experiences the highest monthly AADT. As such, the design hour for the TIA analyses is expected to follow the same monthly ADT patterns as occurred at the CCS, and intersection movements will be factored to a summer peak condition occurring in May.

4.3 Intersection Counts Used For Background Traffic Estimates

Turning movement counts were collected by DOT&PF Southcoast Region between 2012 and 2016 during different months for each of the intersections in the study area, as shown in Figure 13 and Figure 14. These intersection movements were presented in the Juneau Egan Drive & Riverside Intersection Improvements study prepared by KE in 2016. The 2020-2022 pandemic has depressed travel, meaning that conducting current counts may be underrepresenting actual or future demands. As such the counts in the 2016 study were the base of this analysis and factored to estimate current and future demand conditions.

The AM and PM commuting peak hours were found to occur, generally, between the hours of 7:15 to 8:15 in the morning and 4:30 to 5:30 in the evening. Traffic primarily travels inbound in the AM peak hour, and outbound during the PM peak hour.

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These counts in Figure 13 and Figure 14 will be factored to represent a common design period for the summer peak of May and for 2023.

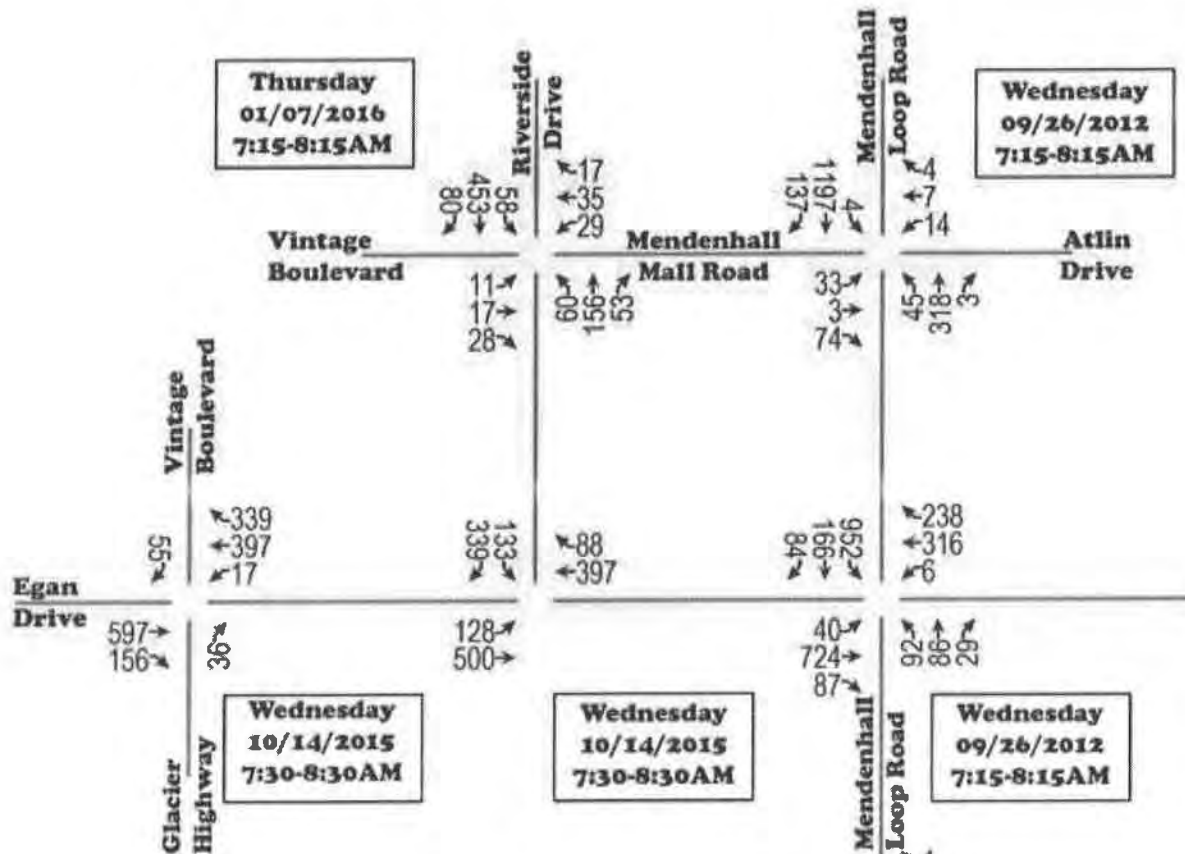


Figure 13: Observed AM Study Area Intersection Movement Traffic Volumes

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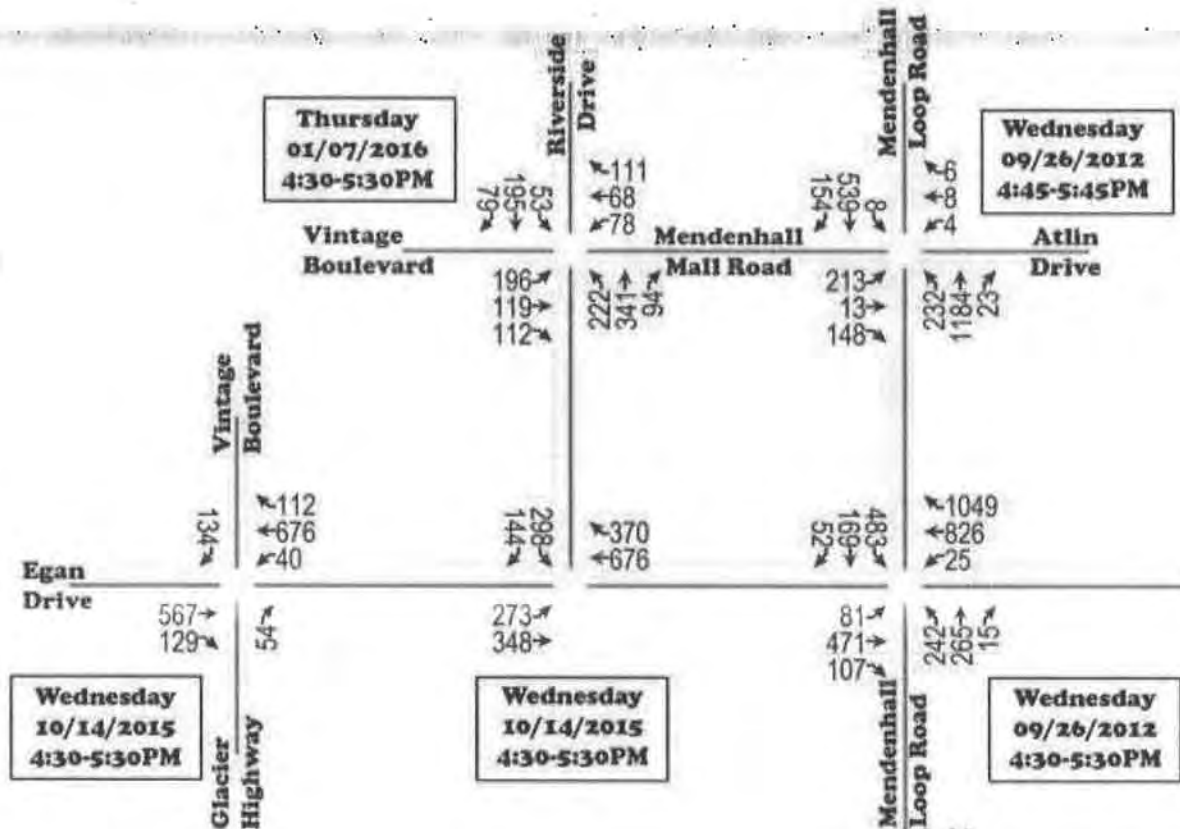


Figure 14: Observed PM Study Area Intersection Movement Traffic Volumes

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5 Crash Analysis

DOT&PF provided crash data for the five individual intersections in the study area for the 5-year period from 2013 through 2017 (most recent years available). Crash types are summarized for each of the intersections in the study area in Table 7 below. The proportion of crash types, with majority as rear-end (front to rear) and angle are consistent with expectations for intersections.

Table 7: Intersections and Crash Types, 2013 to 2017

Crash Type	Egan Dr. and Mendenhall Loop Road	Egan Dr. and Riverside Dr.	Egan Dr. and Vintage Blvd.	Mendenhall Loop Road and Mall Access Road	Riverside Dr. and Vintage Blvd.	Grand Total
Angle	8	7		6	4	25
Front-To-Front	3	1			2	6
Front-To-Rear	34	5	4	10	3	56
Not a Collision with a Motor Vehicle In-Transport						
<i>Ditch</i>	1		1			2
<i>Guardrail Face</i>	1					1
<i>Motor Vehicle In-Transport Strikes or is Struck by Cargo /Persons/ Objects Set-In-Motion From/ By Another Motor Vehicle In-Transport</i>				1		1
<i>Other Post/Other Pole/Other Support</i>	1					1
<i>Other Traffic Barrier</i>		1				1
<i>Pedalcycle</i>	3					3
<i>Traffic Sign Support</i>			1			1
<i>Utility Pole/Light Support</i>	1				1	2
Other		2			2	4
Sideswipe - Opposite Direction	1			1		2
Sideswipe - Same Direction	1			1	1	3
Unknown	2	1				3
Grand Total	56	17	6	19	13	111

Table 8 summarizes crash severity for the intersections between 2013 and 2017. In general, this severity is low since there was only one major injury crash and no fatalities.

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Table 8: Intersection Crash Severity, 2013 to 2017

Intersection Location		Property Damage Only	Minor Injury	Major Injury	Fatal
Street 1	Street 2				
Egan Drive	Vintage Boulevard	4	2		
Riverside Drive	Vintage Boulevard	9	4		
Mendenhall Loop Road	Mall Access Road	15	3	1	
Egan Drive	Mendenhall Loop Road	36	20		
Egan Drive	Riverside Drive	13	4		

KE calculated intersection crash rates based on the number of crashes, the number of years of analysis, and entering AADT. KE then compared the actual crash rates to average statewide crash rates for similar facilities and calculated upper control limits (UCLs) for each facility. The upper control limit, or critical limit, is a threshold above which the observed rate is considered statistically significant at a 95% confidence level.

Table 9: Intersection Crash Rates, 2013 to 2017

Intersection Location		Entering AADT 5 Year Average	Total Crashes	Millions of Entering Vehicles (MEV) in Study Period	Crash Rate (Crashes per MEV)	*State Average Crash Rate (Crashes per MEV)	Upper Control Limit Rate (Crashes per MEV)	Critical Rate Exceeded?
Street 1	Street 2							
Egan Drive	Vintage Boulevard	16,039	6	29.272	0.20	0.55	0.80	No, Actual is 26% of UCL
Riverside Drive	Vintage Boulevard	17,405	13	31.765	0.41	1.57	1.95	No, Actual is 21% of UCL
Mendenhall Loop Road	Mall Access Road	22,225	19	40.561	0.47	1.57	1.91	No, Actual is 25% of UCL
Egan Drive	Mendenhall Loop Road	36,094	56	65.871	0.85	1.57	1.83	No, Actual is 46% of UCL
Egan Drive	Riverside Drive	21,391	17	39.039	0.44	1.02	1.30	No, Actual is 33% of UCL

*Population rates are from the Intersection HSIP Handbook FY 18 Screening Process Spreadsheets

In summary, traffic safety performance of the intersections is good. The crash rates for intersections are below upper critical limit by a significant margin, and actually are less than the average rates for similar intersections. Also, crash severities for the intersections are low.

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6 Traffic Forecasting

6.1 Design Conditions

Of most concern regarding site traffic generation by the proposed SEARHC medical office facility is the impacts during peak hours of the street network, typically commuter peak periods. Operationally, these periods are the most congestive, and in fact are the design condition.

In order to estimate traffic impacts of the development, a no-build condition background traffic is determined. Since we are concerned with a future design year, the background traffic is expected to increase at an annual growth rate, which, for this project, is assumed to be similar to the recent past year's observed growth rate from the Riverside Drive CCS. Site-generated traffic is projected onto the background traffic to estimate the build condition and the incremental impacts of the new facility. Unlike background traffic, which is assumed to increase over time, site traffic levels are static and will remain the same for entire life of the facility absent of additions or renovations.

The anticipated build year for the proposed SEARHC medical office building is 2023. As previously discussed, intersection traffic counts were not performed in 2020-2022 because of pandemic depressed travel. Instead, historic traffic counts were for the peak AM and peak PM time periods, and past data from the Riverside CCS was used to factor past traffic to a design year and hour condition. Institute of Transportation Engineers Trip Generation (10th edition) website was used to calculate the ADT and peak hour traffic generated by the proposed development.

6.2 Background Traffic

6.2.1 Normalization to 2019

The traffic counts collected in 2012, 2015 and 2016, discussed in Section 4.3 on page 23, were used as a basis for the normalization of 2019 traffic flow counts, that were then used to calculate the 2023 base traffic flow counts. 2019 was used as the normalization year, as it is pre-pandemic and is the last year published for the CCS Juneau - Riverside Drive TMA 000807, which is the closest CCS (see Section 4.2, on page 21). The CCS AADT between 2012 and 2019, shown in Table 5 on page 22, yields an average annual growth rate of 1.30%.

To develop the estimated traffic volumes for 2019, the estimated annual traffic growth rate of 1.30% was applied to existing traffic volumes gathered from 2012 through 2016 to derive the annual growth factor, which was then applied to the movement volumes presented in Figure 13 and Figure 14. The factors are computed as:

Factor for converting 2012 counts to 2019 baseline: $F = (1.013)^{(2019-2012)} = 1.095$

Factor for converting 2015 counts to 2019 baseline: $F = (1.013)^{(2019-2015)} = 1.053$

Factor for converting 2016 counts to 2019 baseline: $F = (1.013)^{(2019-2016)} = 1.040$

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To further explain, the turning movement volumes collected in 2012 would be factored to 2019 by multiplying the 2012 volume by 1.095.

An additional step is required to factor volumes collected during the year to a summer “peak” condition. The apex of the monthly ADT is May as is clearly exhibited in Table 6 on page 23. Table 10, below, shows how monthly factors are computed. The factored traffic flow counts for 2019 are shown in Figure 15 and Figure 16.

Table 10: Monthly Factor to Adjust 2019 Original Traffic Count Month to Peak Month

Intersection	Year	Original Traffic Count Month	CCS Count Month ADT	Design Summer Month	CCS May ADT	Monthly Factor
Riverside/Vintage	2016	January	3,509	May	4,445	$4445/3509=1.267$
Egan/Mendenhall Loop	2012	September	4,037	May	4,312	$4312/4037=1.068$
Egan/Riverside	2015	October	3,899	May	4,547	$4547/3899=1.166$
Egan/Vintage	2015	October	3,899	May	4,547	$4547/3899=1.166$
Mendenhall Loop/Mendenhall Mall/Atlin	2012	September	4,037	May	4,312	$4312/4037=1.068$

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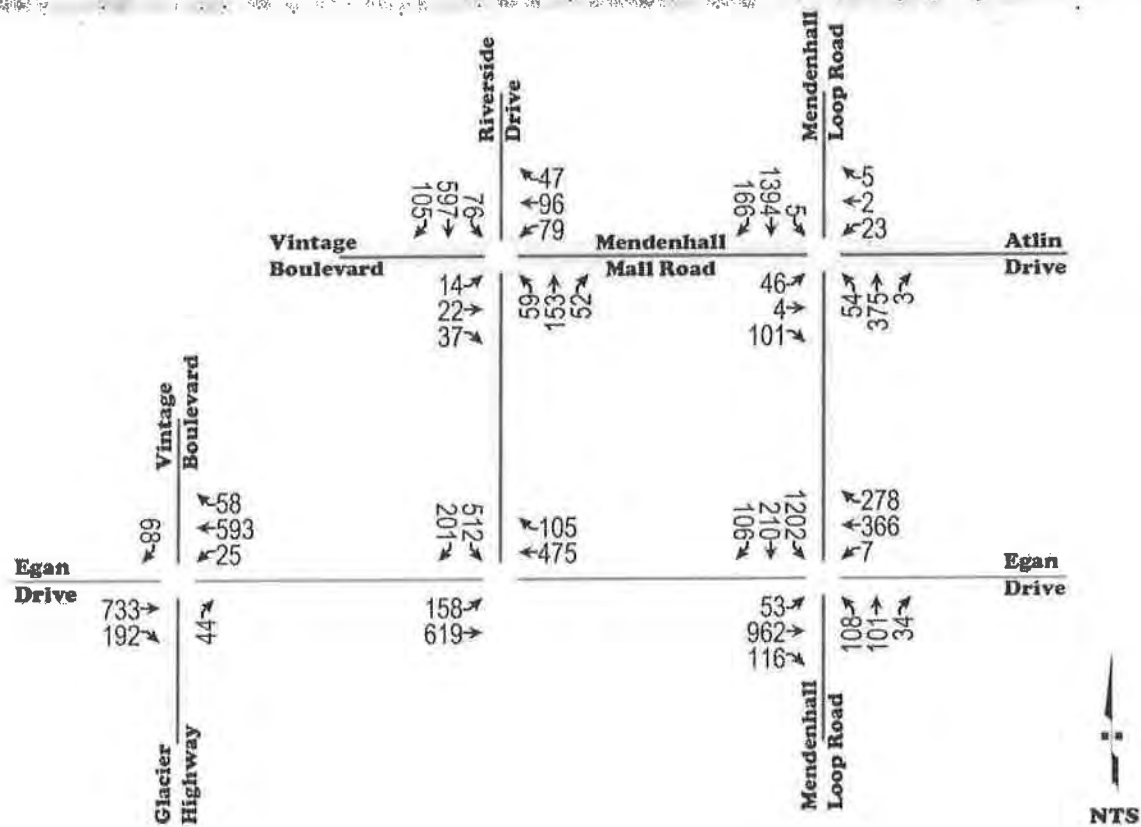


Figure 15: AM Peak TMVs – Factored Base Condition 2019

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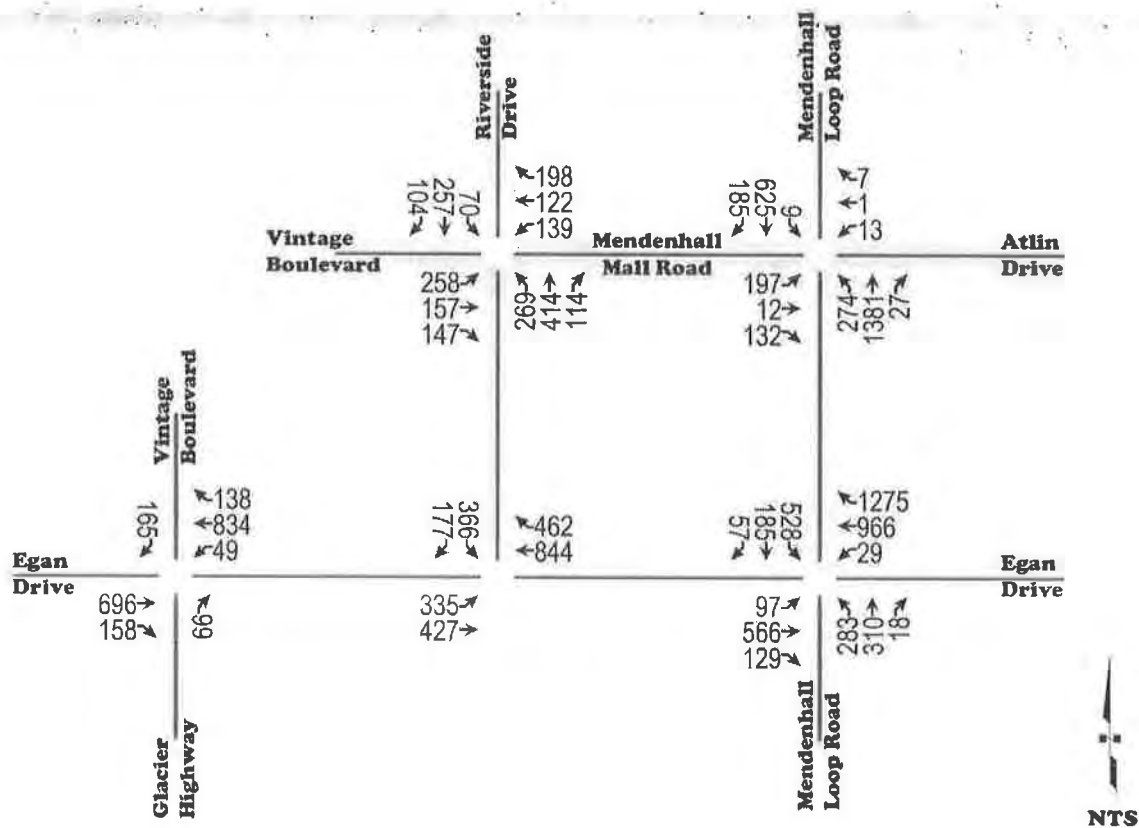


Figure 16: PM Peak TMVs – Factored Base Condition 2019

6.2.2 Estimated Background Traffic Growth for Design Year (2023)

The 2023 intersection movement volumes were calculated by growing the factored 2019 counts by the historical trend of 1.30%. The factor is computed as:

$$\text{Factor for converting 2019 counts to 2023 counts: } F = (1.013)^{(2023-2019)} = 1.053$$

6.2.3 Traffic Generated by Committed Developments

According to CBJ planners, there is a proposed 11 condominium complex with 11 commercial garages development with an estimated ADT of 108, and a proposed senior housing development with 98 beds and an estimated ADT of 269 planned for construction in 2022. Both facilities are located on Clinton drive, which exits on both ends to Vintage Boulevard. CBJ planners have requested that these facilities be added to the background traffic for intersection traffic movements occurring without the proposed SEARHC medical offices.

In order to develop AM and PM peak hour volumes to apply to the design hours, we need average rates or a function to which we would input independent variables to estimate trips.

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However, CBJ did not provide weekday hourly traffic counts, nor did they provide independent variables for the developments that can be used to calculate peak hour traffic. As such, an alternative method was used to convert ADT volumes to the AM and PM hours that will be added to background traffic. Institute of Transportation Engineers Trip Generation (10th edition) website was used to find the weekday peak hour average rate and the weekday average rate based on the land use classification. These values were then used in the below formula to estimate the weekday AM and PM peak hour traffic trips:

$$\text{Hourly Traffic} = (\text{Weekday Peak Hour Average Rate} / \text{Weekday Average Rate}) / \text{ADT}$$

Table 11 and Table 12, below, show the calculated values for the trips in and out of the proposed developments based on the directional distribution (DD%) also found from the Institute of Transportation Engineers Trip Generation (10th edition) website. More information from ITE Trip Generation website can be found in Appendix B.

Table 11: 98 bed Senior Housing Trip Generation Calculation

Land Use Classification	ADT	Peak Hour	Equation	DD% (In/Out)	Trips In	Trips Out
252 - Senior Adult Housing	269	AM	$(0.2 / 3.7) / 269 = 15$	35/65	$15 * 35\% = 5$	$15 * 65\% = 10$
		PM	$(0.26 / 3.7) / 269 = 19$	55/45	$19 * 55\% = 10$	$19 * 45\% = 9$

Table 12: 11 Condos with 11 Commercial Garages Trip Generation Calculation

Land Use Classification	ADT	Peak Hour	Equation	DD% (In/Out)	Trips In	Trips Out
221 – Multifamily Housing (mid-rise)	108	AM	$(0.36 / 5.44) / 108 = 7$	26/74	$7 * 26\% = 2$	$7 * 74\% = 5$
		PM	$(0.44 / 5.44) / 108 = 9$	61/39	$9 * 61\% = 5$	$9 * 39\% = 3$

6.2.3.1 Trip Distribution for Condominiums and Senior Housing

The AM and PM peak hour traffic from these facilities are not accounting for the turning movement volumes presented in Figure 15 and Figure 16 shown above. The state of practice for site traffic trip distribution methodology is to assume the inbound and outbound trips will follow the existing background traffic travel patterns. As such, trip distribution for the proposed senior housing and condominiums was calculated assuming traffic divides at intersections in the inbound and outbound proportions exhibited in Figure 15 and Figure 16 would be similar to existing traffic flows throughout the traffic network. Figure 17 and Figure 18 presents the AM and PM trip distribution of the condominium and senior housing traffic for the intersections of Vintage Boulevard with Egan Drive and Riverside Drive, based on 2019 base traffic. The remaining three intersections in the study area used this methodology to overlay site trips on the base traffic movements.

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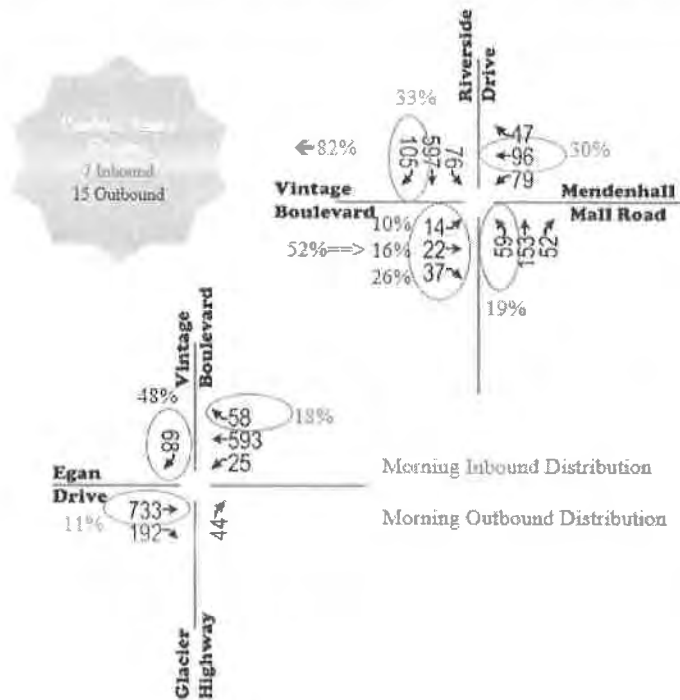


Figure 17: AM Condo and Senior Site Trip Distribution to Near Intersections

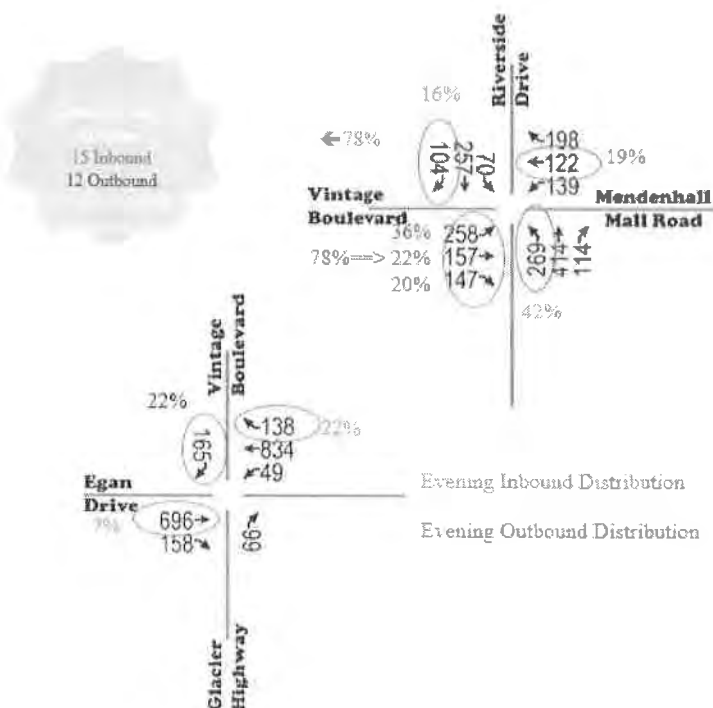


Figure 18: PM Condo and Senior Site Trip Distribution to Near Intersections

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6.2.4 Composite Design Year 2023 without Medical Office

Opening year, 2023, base traffic conditions are presented as AM and PM peak hour turning movements in Figure 19 and Figure 20. As stated in previous sections, these turning movement counts were calculated by taking the original counts and projecting them to year 2019 using the historical AADT and then factoring the counts from the month they were taken to the peak month of 2019, which was May. The 2019 turning movement volumes were then factored to 2023 as discussed in Section 6.2.2 on page 31. The site traffic from the proposed condominiums and senior housing turning movements expected to be built before the medical offices are open was distributed to the intersections as discussed in Section 6.2.3.1 above.

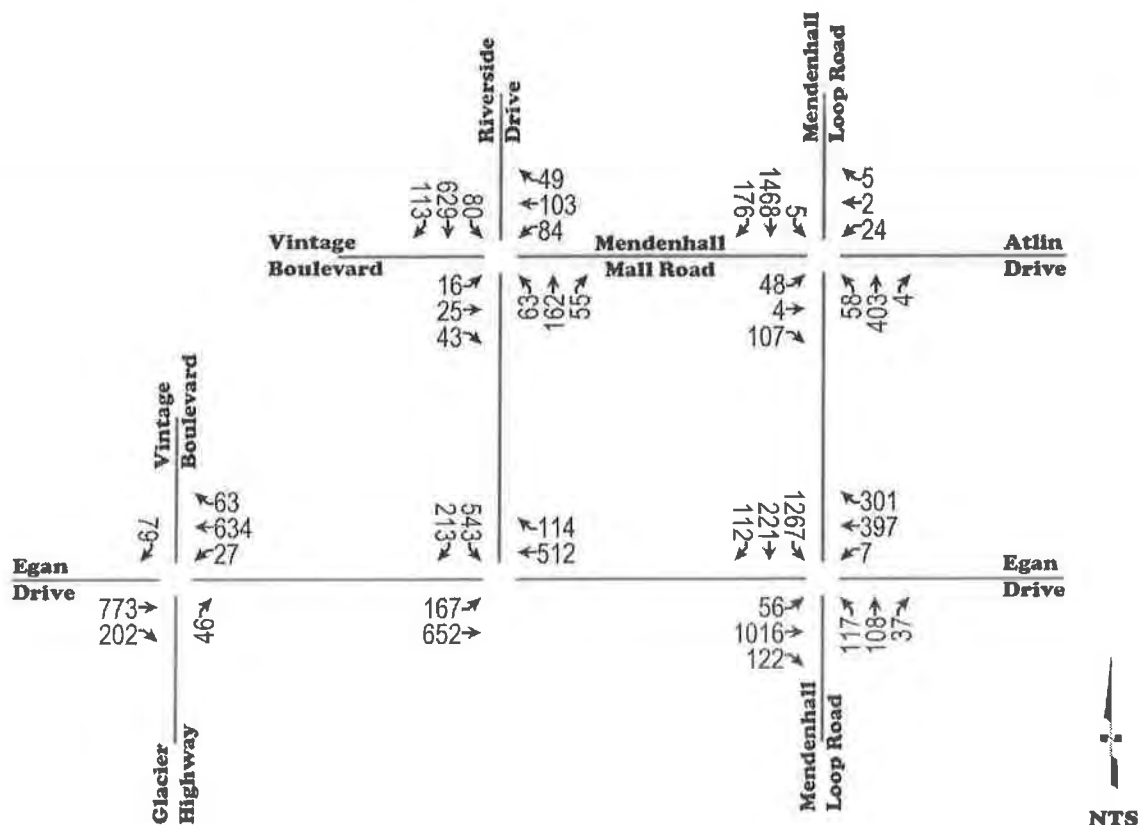


Figure 19: AM Peak TMVs – Base Condition 2023

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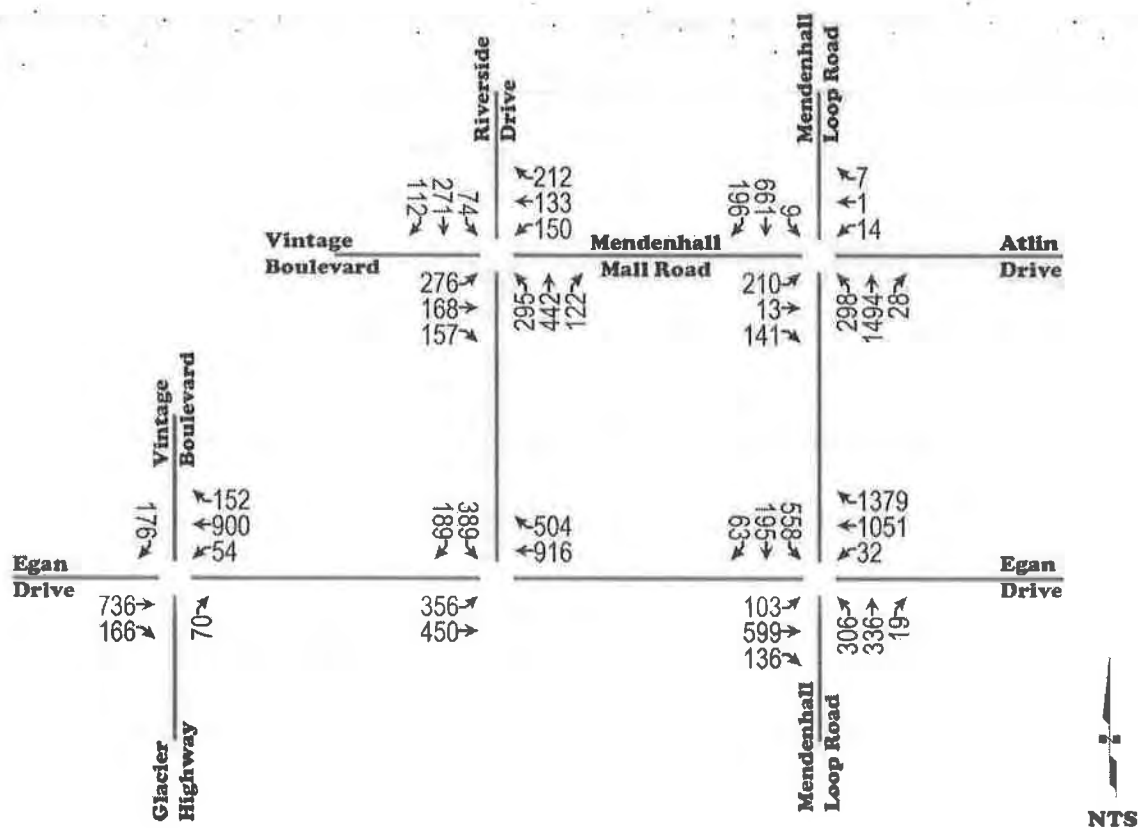


Figure 20: PM Peak TMVs – Base Condition 2023

6.3 Site Development Traffic

6.3.1 Trip Generation

The Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition, provides trip generation for Land Use 720, Medical Dental Offices using gross floor area as the independent variable in an average trip rate or using a fitted curve. The methodology in the *Trip Generation Handbook*, 3rd Edition, was followed the fitted curve equation (regression) to calculate estimated trips. The trip generation time periods were the AM peak hour of the adjacent street (7AM to 9 AM) and the PM peak hour of adjacent street (4PM to 6PM) which would occur during the commuting peak and is the typical design condition for streets and intersections. Peak hour trip generation rates are presented in Table 13.

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Table 13: 45,924 square foot Medical Office Building AM and PM Trip Generation Calculation

Land Use Classification	Gross Floor Area (1000 square feet)	Peak Hour	Equation Type	Equation and Trip Computations	DD% (In/Out)	Trips In	Trips Out
720 – Medical-Dental Office Building	X=45.924	AM Peak (7AM - 9AM)	Regression	$\ln(T)=0.89\ln(X)+1.31$ $\ln(T)=0.89\ln(45.924)+1.31 = \underline{112}$	78/22	87	25
		PM Peak (4PM - 6PM)	Regression	$T=3.39(X)+2.02$ $T=3.39(45.924)+2.02 = \underline{158}$	28/72	44	114

6.3.1.1 Trip Distribution

Trip distribution for the proposed medical office building was calculated assuming the site traffic patterns are the same as the background base traffic flows throughout the traffic network. Distribution patterns and assignments are essentially the same as discussed for the condominium and senior housing traffic discussed in Section 6.2.3.1.

6.3.2 Composite Design Year 2023 with Medical Offices

Figure 21 and Figure 22, below, show the traffic flow counts at the adjacent five intersections for build year 2023 with the addition to the anticipated increase in traffic flow from the medical office building. These turning movement counts were calculated by taking the 2023 traffic count turn percentages and factoring the anticipated medical center trips accordingly.

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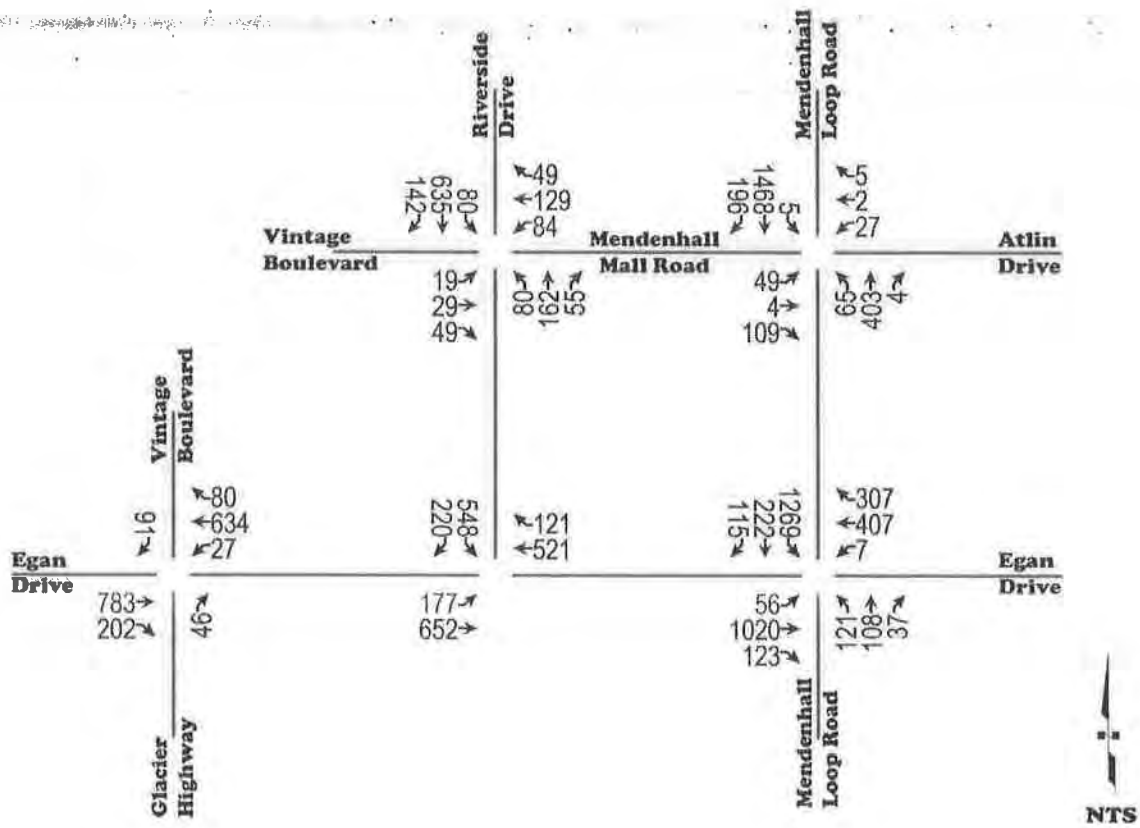


Figure 21: AM Peak TMVs – Build Condition 2023

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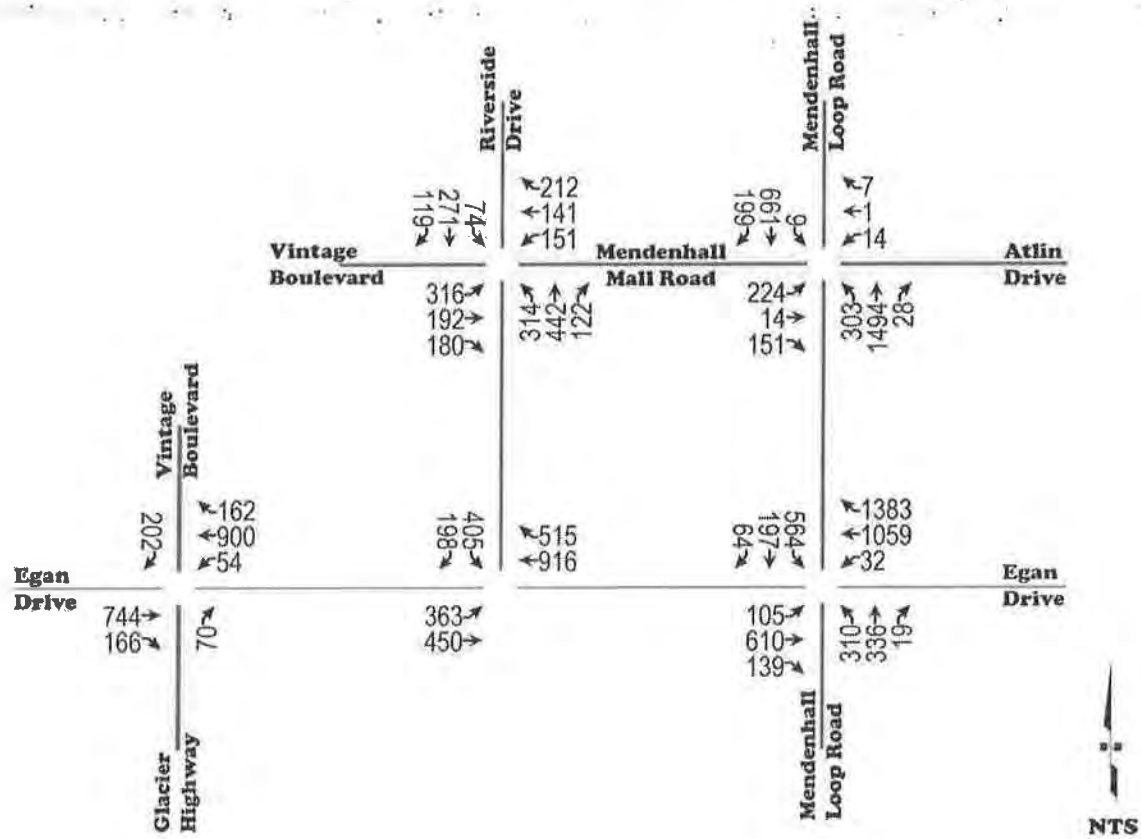


Figure 22: PM Peak TMVs – Build Condition 2023

7. Traffic and Safety Analysis

7.1 Intersection Operation Impacts

The 2023 base condition AM and PM peak hour traffic flow counts for the five adjacent intersections were analyzed using Synchro 11 software, using Highway Capacity Manual (HCM) 2000 methodologies for the signalized intersections and HCM 2010 methodologies for the unsignalized intersection. HCM 2010 requires National Electrical Manufacturers Association (NEMA) phasing to analyze signal operations. The Egan Drive and Mendenhall Loop Road intersection cannot be modeled as NEMA phasing because of the split-phased timing. Additionally, the Egan Drive and Riverside Drive intersection has an exclusive pedestrian phase which cannot be modeled as NEMA phasing. For equal comparison among the signalized intersections in the study area, HCM 2000 was used to analyze all signals.

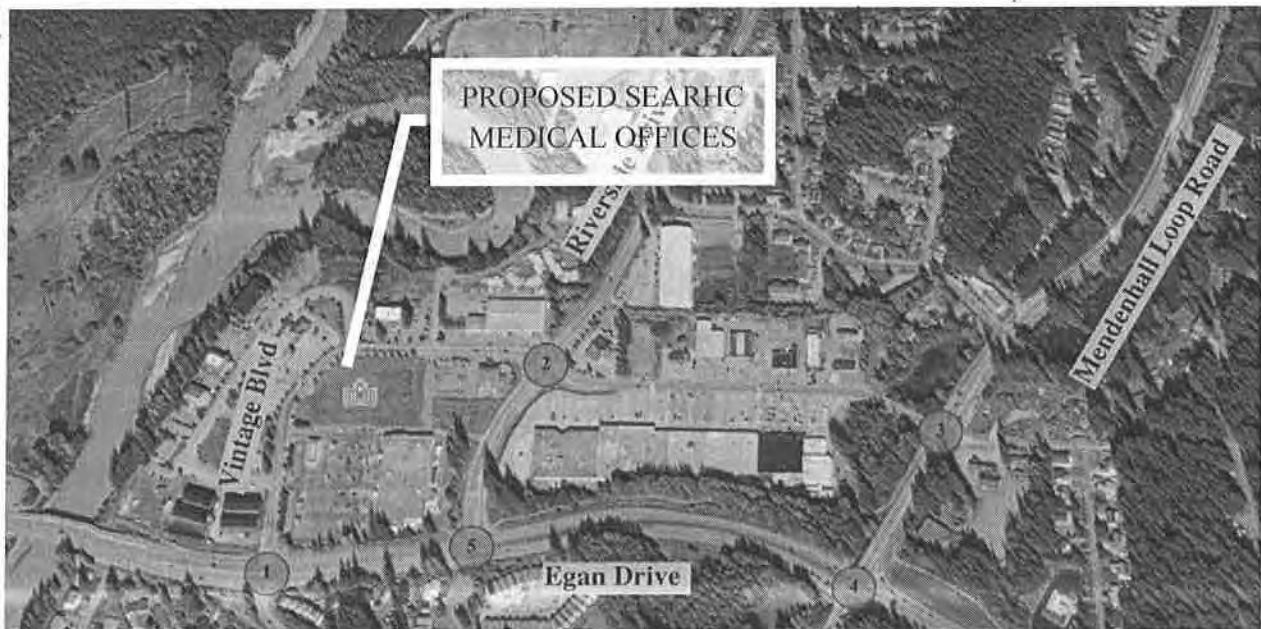
The signalized intersections were analyzed using existing signal timings provided by DOT&PF. The Egan Drive at Mendenhall Loop Road intersection and the Riverside Drive at Vintage Boulevard/Mendenhall Mall Road intersection are configured with at least one channelized right-turn movement. It was assumed that channelized right-turn movements at an intersection do not affect signal operations. Therefore, these right-turn movements were removed from the signal models at the Egan Drive and were analyzed separately as an unsignalized intersection. Approach and intersection delays at these intersections consider delays at the signal and delays for the channelized right-turn lanes.

Observed intersection AM and PM peak hour factors (PHFs) from the collected turning movement counts discussed in Section 4.3 on page 23. PHFs ranged from 0.77 to 0.91 during the AM peak and 0.91 to 0.97 during the PM peak.

Average heavy vehicle percentages were estimated using continuous count stations and short-term stations with historical vehicle classification data gathered from the DOT&PF traffic data portal. Heavy vehicles made up approximately 5% of traffic on Egan Drive, 2% of traffic on Riverside Drive, and 7% of traffic on Vintage Boulevard. Roadways without vehicle classification data were given a default heavy vehicle percentage of 2%.

The intersections that are evaluated in this section are presented in Figure 23 and listed below.

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Background Photo Source- Google Earth

Figure 23: TIA Study Area Intersections

The analyzed intersections (numbered as shown in the figure) include:

1. Egan Drive and Vintage Boulevard/Glacier Highway
2. Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road
3. Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive
4. Mendenhall Loop Road and Egan Drive
5. Riverside Drive and Egan Drive

The site traffic distributed to other intersection approaches outside of the study area were found to be under the 5% threshold discussed in Section 1.2. As such, the study area shown satisfies CBJ Code of Ordinances.

Under each subsection below, the operation performance measures are presented for the 2023 AM and PM peak hours, for both cases of with and without the SEARHC medical offices.

Operational performance measures include:

- Movement and intersection average control delay in seconds per vehicle (sec/veh);
- Movement and Overall Level of Service (LOS) based on control delay, and as presented in the HCM for signalized and unsignalized intersection;
- Volume to Capacity Ratio (v/c) for movements, where $v/c > 1$ indicates demand exceeds capacity, and;
- Queue Lengths in feet, 95th percentile queue is reported, signifying the approximate length exceeded by queues about 5% of the time.

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Table 14 presents level of service (LOS) criteria for signalized and unsignalized intersections. Level of service for signals is applied to individual movements, approaches, and the intersection. Unsignalized LOS is applied only to movements and approaches that yield to other movements and unimpeded movements are not analyzed since they do not experience delay.

Table 14: Signalized and Unsignalized Intersection LOS Based on Control Delay

Level of Service	Signalized Intersection Control Delay (seconds/vehicle)	Unsignalized Intersection Control Delay (seconds/vehicle)
A	0-10	0-10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50

Queue lengths (95th percentile) for controlled turning movements are evaluated to determine if the queues exceed available auxiliary lane storage lane. Signalized through movement queues are evaluated to determine if they block entrances to auxiliary lanes, denying turning vehicle access to the auxiliary lane. Queue storage for all movements may be limited by upstream intersections, which is whether they will spill back through an upstream intersection and interfere with the upstream intersection operations.

7.1.1 Egan Drive and Vintage Boulevard/Glacier Highway

This intersection, discussed in detail under Section 3.2.5, on page 16 and depicted below in Figure 24 is a two-way stop-controlled intersection.

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Figure 24: Egan Drive and Vintage Boulevard/Glacier Highway

7.1.1.1 Egan-Vintage-Glacier AM Peak Hour

The following tables summarize intersection LOS performance measures for the AM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 15: AM Peak at Egan Drive-Vintage Boulevard Intersection, Base Condition 2023

Existing Base Condition AM Peak	WB	NB	SB
	<i>LT</i>	<i>R</i>	<i>R</i>
Delay (sec/veh)	10	13	12
LOS	B	B	B
v/c Ratio	0.05	0.10	0.15
Queue Length (ft)	<25	<25	<25

Table 16: AM Peak at Egan Drive-Vintage Boulevard Intersection, Build Condition 2023

2023 Build Condition AM Peak	WB	NB	SB
	<i>LT</i>	<i>R</i>	<i>R</i>
Delay (sec/veh)	10	13	13
LOS	B	B	B
v/c Ratio	0.05	0.10	0.20
Queue Length (ft)	<25	<25	<25

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There are only minor differences in performance measures for the AM intersection operations with and without the development. The following table summarizes queue impacts.

Table 17: AM Peak at Egan Drive-Vintage Boulevard Intersection Queue Lengths

2023 Build Condition AM Peak	WB			EB		SB
	LT	Thru	R	Thru	R	R
Available Storage Length (ft)	200	Free	400	Free	360	240
No-Build Queue Length (ft)	<25	Free	Free	Free	<25	<25
Build Queue Length (ft)	<25	Free	Free	Free	<25	<25

There are no queue impacts caused by the proposed development.

7.1.1.2 Egan-Vintage-Glacier PM Peak Hour

The following tables summarize intersection LOS performance measures for the PM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 18: PM Peak at Egan Drive-Vintage Boulevard Intersection, Base Condition 2023

Existing Base Condition PM Peak	WB	NB	SB
	LT	R	R
Delay (sec/veh)	10	12	15
LOS	A	B	C
v/c Ratio	0.05	0.15	0.35
Queue Length (ft)	<25	<25	50

Table 19: PM Peak at Egan Drive-Vintage Boulevard Intersection, Build Condition 2023

2023 Build Condition PM Peak	WB	NB	SB
	LT	R	R
Delay (sec/veh)	10	12	17
LOS	A	B	C
v/c Ratio	0.05	0.15	0.40
Queue Length (ft)	<25	<25	50

There are only minor differences in performance measures for the PM intersection operations with and without the development. The following table summarizes queue impacts.

Table 20: PM Peak at Egan Drive-Vintage Boulevard Intersection Queue Lengths

	WB			EB		SB
	LT	Thru	R	Thru	R	R
Available Queue Length (ft)	200	Free	400	Free	360	240
No-Build Queue Length (ft)	<25	Free	Free	Free	<25	50

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	WB			EB		SB
	LT	Thru	R	Thru	R	R
Build Queue Length (ft)	<25	Free	Free	Free	<25	50

The are no queue impacts caused by the proposed development.

7.1.1.3 Egan-Vintage-Glacier Summary

Intersection operation measures and queue lengths are not significantly impacted by the traffic generated by the proposed SEARHC medical office development. The operational performance measures with the development do not exceed CBJ Code of Ordinance thresholds requiring mitigations (see Section 1.2 on page 4 for discussion of requirements).

7.1.2 Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road

This intersection, discussed in detail under Section 3.2.3 on page 15 and depicted below in Figure 25 is a signalized intersection.

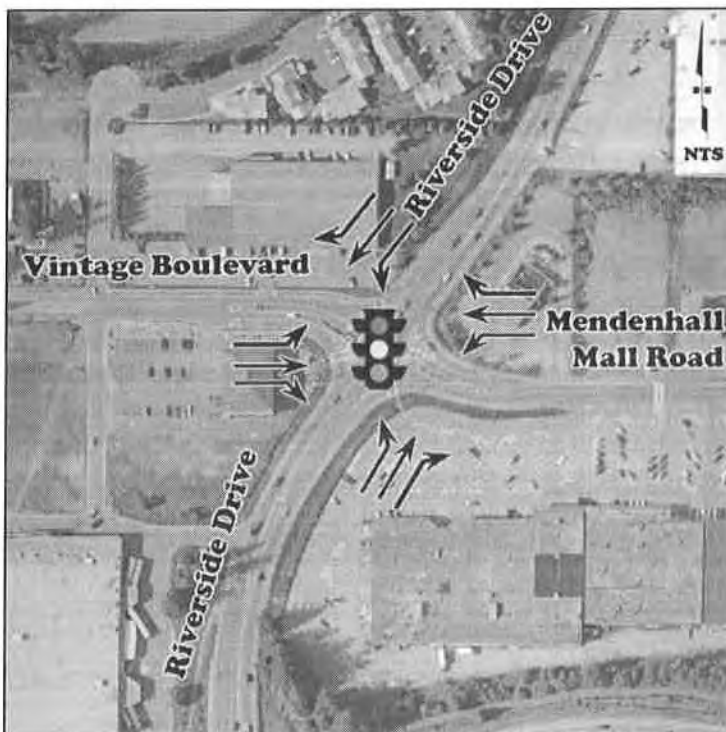


Figure 25: Riverside Drive and Vintage Boulevard/Mendenhall Mall Road

7.1.2.1 Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road AM Peak Hour

The following tables summarize intersection LOS performance measures for the AM peak hour in the design year without the SEARHC medical offices and with the medical offices.

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Table 21: AM Peak at Riverside Drive-Vintage Boulevard Intersection, Base Condition 2023

2023 Base Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	36	38	18	29	36	10	12	10	9	7	23	10
LOS	D	D	C	C	D	A	B	A	A	A	C	B
v/c Ratio	0.15	0.25	0.15	0.45	0.55	0.10	0.30	0.20	0.10	0.15	0.85	0.20
Queue Length (ft)	25	50	25	100	125	< 25	50	100	< 25	50	575	25
Intersection	20 sec/veh											
	LOS B											

Table 22: AM Peak at Riverside Drive-Vintage Boulevard Intersection, Build Condition 2023

2023 Build Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	36	38	19	29	37	10	14	10	9	8	26	11
LOS	D	D	C	C	D	A	B	B	A	A	C	B
v/c Ratio	0.15	0.25	0.20	0.40	0.60	0.10	0.40	0.20	0.10	0.15	0.85	0.25
Queue Length (ft)	50	50	25	100	150	< 25	50	125	< 25	50	625	25
Intersection	21 sec/veh											
	LOS C											

Although the intersection LOS is B without development traffic and C with it, the average delay only increases by one second in the build case. As such, individual movement and overall intersection performance measures will not change significantly with the additional traffic generated by the SEARHC medical offices. The following table summarizes queue impacts.

Table 23: AM Peak at Riverside Drive-Vintage Boulevard Intersection Queue Lengths

	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Available Storage Length (ft)	260	190*	190	140	110*	110	170	140*	140	180	140*	140
No-Build Queue Length (ft)	25	50	25	100	125	< 25	50	100	< 25	50	575	25
Build Queue Length (ft)	50	50	25	100	150	< 25	50	125	< 25	50	625	25

*Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.

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With site development traffic the westbound 150-foot through queue will occasionally block the entrance of the westbound right turn lane. However, that is not a significant issue, since right-turns and throughs will proceed on the same signal phase. Right-turns on other phases may be impacted on occasion. The westbound left-turn lane is 140 feet, and the adjacent westbound through queue is 150 feet. However, the channelization is formed by striping, and vehicles may enter the auxiliary left-turn lane behind the through queue by driving over the painted taper.

The no-build southbound queues will block access to the adjacent auxiliary turn lanes. For the right-turn lane, this may not be a significant issue as discussed above, but the blockage to the left-turn lane may starve the left-turn phase during green indications. The build condition lengthens the southbound through queue by approximately 50 feet but does not create any additional impacts.

7.1.2.2 Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road PM Peak Hour

The following tables summarize intersection LOS performance measures for the PM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 24: PM Peak at Riverside Drive-Vintage Boulevard Intersection, Base Condition 2023

2023 Base Condition PM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	22	30	13	21	30	25	15	23	11	18	27	13
LOS	C	C	B	C	C	D	B	C	B	B	C	B
v/c Ratio	0.65	0.60	0.30	0.40	0.50	0.55	0.65	0.70	0.15	0.25	0.65	0.20
Queue Length (ft)	225	175	50	125	150	100	175	375	25	50	250	25
Intersection	21 sec/veh											
	LOS C											

Table 25: PM Peak at Riverside Drive-Vintage Boulevard Intersection, Build Condition 2023

2023 Build Condition PM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	23	30	14	22	32	28	17	25	11	19	28	13
LOS	C	C	B	C	C	D	B	C	B	B	C	B
v/c Ratio	0.70	0.60	0.30	0.40	0.55	0.60	0.70	0.70	0.15	0.25	0.65	0.20
Queue Length (ft)	250	200	50	125	150	100	200	375	25	50	250	25
Intersection	23 sec/veh											
	LOS C											

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There are only minor differences of two seconds in vehicle delay in performance measures for the PM intersection operations with and without the development and the LOS remains C in both cases. The following table summarizes queue impacts.

Table 26: PM Peak at Riverside Drive-Vintage Boulevard Intersection Queue Lengths

	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Available Storage Length (ft)	260	190*	190	140	110*	110	170	140*	140	180	140*	140
No-Build Queue Length (ft)	225	175	50	125	150	100	175	375	25	50	250	25
Build Queue Length (ft)	250	200	50	125	150	100	200	375	25	50	250	25

**Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.*

Upon opening of the development, the eastbound right-turn lane may be blocked on occasion by the through queue, but as mentioned previously it is not expected to be an issue. Similarly, the westbound left-turn may have to be accessed by vehicle entering the lane behind through queue over the painted channelization. Both northbound and southbound through queues block access to the adjoining acceleration lanes, but the additional site traffic does not worsen the queuing conditions.

7.1.2.3 Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road Summary

Intersection operation measures and queue lengths are not significantly impacted by the traffic generated by the proposed SEARHC medical office development. The operational performance measures with the development do not exceed CBJ Code of Ordinance thresholds requiring mitigations (see Section 1.2 on page 4 for discussion of requirements).

7.1.3 Mendenhall Mall Road and Mendenhall Loop Road/Atlin Drive

This intersection, discussed in detail under Section 3.2.4 on page 16 and depicted below (Figure 26) is a signalized intersection.

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Figure 26: Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive

7.1.3.1 Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive AM Peak Hour

The following tables summarize intersection LOS performance measures for the AM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 27: AM Peak at Mendenhall Loop Road-Mendenhall Mall Road Intersection, Base Condition 2023

2023 Base Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R)	LT	Thru	R	LT	Thru	R)	LT	Thru	R)
Delay (sec/veh)	53		50	51		49	65		6	64	12	6
LOS	D		D	D		D	E		A	E	B	A
v/c Ratio	0.50		0.15	0.25		0.00	0.65		0.20	0.35	0.70	0.20
Queue Length (ft)	100		75	50		< 25	125		200	25	550	75
Intersection	15 sec/veh											
	LOS B											

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Table 28: AM Peak at Mendenhall Loop Road-Mendenhall Mall Road Intersection, Build Condition 2023

2023 Build Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	53		50	51		49	53	6		64	13	7
LOS	D		D	D		D	D	A		E	B	A
v/c Ratio	0.50		0.20	0.30		0.00	0.60	0.20		0.35	0.75	0.20
Queue Length (ft)	100		75	50		< 25	125	175		25	550	75
Intersection	16 sec/veh											
	LOS B											

There is only a minor difference of 1 second in vehicle delay in performance measures for the AM intersection operations with and without the development and the LOS is B in both cases. The following table summarizes queue impacts.

Table 29: AM Peak at Mendenhall Loop Road-Mendenhall Mall Road Intersection Queue Lengths

	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R	LT	Thru	R	LT	Thru	R
Available Storage Length (ft)	250		120	70		40	190	590		110	110*	130
No-Build Queue Length (ft)	100		75	50		< 25	125	200		25	550	75
Build Queue Length (ft)	100		75	50		< 25	125	175		25	550	75

*Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.

With site development traffic the southbound 550-foot through queue will occasionally block the entrance of the southbound left and right turn lanes. However, the build condition does not lengthen the southbound through queue.

7.1.3.2 Mendenhall Loop Road-Mendenhall Mall Road/Atlin Drive PM Peak Hour

The following tables summarize intersection LOS performance measures for the PM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 30: PM Peak at Riverside Drive-Vintage Boulevard Intersection, Base Condition 2023

2023 Base Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	63		32	31		31	145		15	54	19	16

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2023 Base Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
LOS	E		C	C		C	F		B	D	B	B
v/c Ratio	0.90		0.20	0.05		0.00	1.15		0.80	0.45	0.45	0.15
Queue Length (ft)	275		75	25		< 25	525		625	25	200	50
Intersection	33 sec/veh											
	LOS C											

Table 31: PM Peak at Riverside Drive-Vintage Boulevard Intersection, Build Condition 2023

2023 Build Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	66		32	31		30	198		16	54	19	16
LOS	E		C	C		C	F		B	D	B	B
v/c Ratio	0.90		0.20	0.05		0.00	1.30		0.80	0.45	0.45	0.15
Queue Length (ft)	300		100	25		< 25	525		625	25	200	50
Intersection	39 sec/veh											
	LOS D											

For the PM peak hour, there is a six second vehicle delay increase between the 2023 no build and build conditions. The LOS changes from C to D, but does not exceed CBJ Code of Ordinances mitigation thresholds.

Table 32: PM Peak at Mendenhall Loop Road-Atlin Road Intersection Queue Lengths

	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R	LT	Thru	R	LT	Thru	R
Available Storage Length (ft)	120*		120	70		40	190	590		110	110*	130
No-Build Queue Length (ft)	275		75	25		< 25	525	625		25	200	50
Build Queue Length (ft)	300		100	25		< 25	525	625		25	200	50

*Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.

Upon opening of the development, the eastbound approach queue lengths are increased for the shared left turn/thru and right turn lanes. The eastbound right-turn lane may be blocked on occasion by the left turn/through queue. While the eastbound shared left turn/thru lane

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anticipated queue length for no-build and build conditions is longer than the storage length to where it would impact the entrance for the right turn lane, the queue lengths for the eastbound lanes are only increased by 25 feet. This is mitigated in part because the right turn movements occur simultaneously with the shared left-through phase. Both northbound and southbound through queues block access to the adjoining acceleration lanes, but the additional site traffic does not worsen the queuing conditions. The eastbound, westbound, and southbound right turn lane available queue length storages are all longer than the expected no build and build queue lengths.

7.1.3.3 Mendenhall Loop Road-Mendenhall Mall Road/Atlin Drive Summary

The operational performance measures with the development do not exceed the CBJ Code of Ordinance thresholds requiring mitigations (see Section 1.2 on page 4 for discussion of requirements).

7.1.4 Egan Drive and Mendenhall Loop Road

This intersection, discussed in detail under Section 3.2.2 and depicted below in Figure 27 is a signalized intersection.



Figure 27: Egan Drive and Mendenhall Loop Road

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7.1.4.1 Egan Drive and Mendenhall Loop Road AM Peak Hour

The following tables summarize intersection LOS performance measures for the AM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 33: AM Peak at Egan Drive-Mendenhall Loop Road Intersection, Base Condition 2023

2023 Base Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R (Yield)	LT	Thru	R	LT	Thru	R
Delay (sec/veh)	64	141	34	90	45	0	65	57	49	81	84	25
LOS	E	F	C	F	D	Free	E	E	D	F	F	C
v/c Ratio	0.65	1.20	0.10	0.55	0.55	-	0.75	0.65	0.05	1.10	1.10	0.10
Queue Length (ft)	100	800	75	25	250	-	175	150	< 25	950	975	50
Intersection	82 sec/veh											
	LOS F											

Table 34: AM Peak at Egan Drive-Mendenhall Loop Road Intersection, Build Condition 2023

2023 Build Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R (Yield)	LT	Thru	R	LT	Thru	R
Delay (sec/veh)	64	147	34	90	46	0	66	57	48	80	83	24
LOS	E	F	C	F	D	Free	E	E	D	F	F	C
v/c Ratio	0.65	1.20	0.10	0.55	0.60	-	0.75	0.65	0.05	1.10	1.10	0.10
Queue Length (ft)	100	800	75	25	250	-	175	150	< 25	950	975	50
Intersection	83 sec/veh											
	LOS F											

The Mendenhall Loop and Mendenhall Mall Road/Atlin Drive intersection has a no-build intersection LOS of F. The build condition is also LOS F, with a 1 second increase in delay. The following table summarizes queue impacts.

Table 35: AM Peak at Egan Drive-Mendenhall Loop Road Intersection Queue Lengths

	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R (Yield)	LT	Thru	R	LT	Thru	R
Available Storage Length (ft)	700	150*	150	720	720*	980	300	300*	470	960	280*	280
No-Build Queue Length (ft)	100	800	75	25	250	-	175	150	< 25	950	975	50
Build Queue Length (ft)	100	800	75	25	250	-	175	150	< 25	950	975	50

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**Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.*

Queues are not increased with the additional site traffic.

7.1.4.2 Egan Drive and Mendenhall Loop Road PM Peak Hour

The following tables summarize intersection LOS performance measures for the PM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 36: PM Peak at Egan Drive and Mendenhall Loop Road Intersection, Base Condition 2023

2023 Base Condition PM Peak	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R (Yield)	LT	Thru	R	LT	Thru	R
Delay (sec/veh)	42	24	19	49	168	Free	75	85	33	75	71	30
LOS	D	C	B	D	F	Free	E	F	C	E	E	C
v/c Ratio	0.65	0.60	0.10	0.50	1.25	Free	0.95	1.00	0.00	1.00	1.00	0.05
Queue Length (ft)	125	250	50	75	625	Free	375	425	< 25	475	475	< 25
Intersection	65 sec/veh											
	LOS E											

Table 37: PM Peak at Egan Drive and Mendenhall Loop Road Intersection, Build Condition 2023

2023 Build Condition PM Peak	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R (Yield)	LT	Thru	R	LT	Thru	R
Delay (sec/veh)	43	24	18	49	172	Free	79	85	33	78	74	30
LOS	D	C	B	D	F	Free	E	F	C	E	E	C
v/c Ratio	0.65	0.60	0.10	0.50	1.30	Free	0.95	1.00	0.00	1.05	1.00	0.05
Queue Length (ft)	125	225	75	75	625	Free	375	425	< 25	500	500	< 25
Intersection	66 sec/veh											
	LOS E											

There is a one second vehicle delay increase at this intersection; however, the LOS remains E for both the no-build and build conditions. Through queue will occasionally block the entrance of the left and right turn lanes. The following table summarizes queue impacts.

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Table 38: PM Peak at Egan Drive-Mendenhall Loop Road Queue Lengths

	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R (Yield)	LT	Thru	R	LT	Thru	R
Available Storage Length (ft)	700	150*	150	720	720*	980	300	300*	470	960	280*	280
No-Build Queue Length (ft)	125	250	50	75	625	Free	375	425	< 25	475	475	< 25
Build Queue Length (ft)	125	225	75	75	625	Free	375	425	< 25	500	500	< 25

**Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.*

Upon opening of the development, the eastbound, northbound, and southbound right-turn lane may be blocked on occasion by the through queue, but the additional site traffic does not significantly worsen the queuing conditions. There is a 25-foot increase in southbound left and through turning movements as well as a 25-foot increase in length in the eastbound right turn queue.

7.1.4.3 Egan Drive and Mendenhall Loop Road Summary

If interpreted correctly, the operational performance measures with the development may exceed CBJ Code of Ordinance thresholds requiring mitigations (see Section 1.2 on page 4 for discussion of requirements) simply because the base condition without site traffic falls below LOS D. However, intersection operation measures and queue lengths are not significantly impacted by the traffic generated by additional traffic from the proposed SEARHC medical office development.

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7.1.5 Egan Drive and Riverside Drive

This intersection, discussed in detail under Section 3.2.1 on page 14 and depicted below in Figure 28, is a signalized intersection.



Figure 28: Egan Drive and Riverside Drive

7.1.5.1 Egan Drive and Riverside Drive AM Peak Hour

The following tables summarize intersection LOS performance measures for the AM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 39: AM Peak at Egan Drive and Riverside Drive Intersection, Base Condition 2023

2023 Base Condition AM Peak	EB		WB		SB	
	LT	Thru	Thru	R (Yield)	LT	R (Yield)
Delay (sec/veh)	27	9	24	18	22	18
LOS	C	A	C	B	C	B
v/c Ratio	0.60	0.45	0.70	0.10	0.65	0.30
Queue Length (ft)	175	150	225	50	225	100
Intersection	19 sec/veh					
	LOS B					

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Table 40: AM Peak at Egan Drive and Riverside Drive Road Intersection, Build Condition 2023

2023 Base Condition AM Peak	EB		WB		SB	
	LT	Thru	Thru	R (Yield)	LT	R (Yield)
Delay (sec/veh)	28	9	25	19	23	19
LOS	C	A	C	B	C	B
v/c Ratio	0.65	0.45	0.70	0.10	0.70	0.30
Queue Length (ft)	175	175	225	50	225	100
Intersection	19 sec/veh					
	LOS B					

The intersection LOS is B with both no-build and build conditions and no change in average delay. The following table summarizes queue impacts.

Table 41: AM Peak at Egan Drive and Riverside Drive Intersection Queue Lengths

	EB		WB		SB	
	LT	Thru	Thru	R (Yield)	LT	R(Yield)
Available Queue Length (ft)	370	370*	530*	530	460	230
Pre-Build	175	150	225	50	225	100
Post-Build	175	175	225	50	225	100

*Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.

Through queue should not block the entrance of the left or right turn lanes. The build condition has insignificant impact on any of the left, right or through queues.

7.1.5.2 Egan Drive and Riverside Drive PM Peak Hour

The following tables summarize intersection LOS performance measures for the PM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 42: PM Peak at Egan Drive and Riverside Drive Intersection, Base Condition 2023

2023 Base Condition AM Peak	EB		WB		SB	
	LT	Thru	Thru	R (Yield)	LT	R (Yield)
Delay (sec/veh)	38	5	15	34	44	36
LOS	D	A	B	C	D	D
v/c Ratio	0.75	0.20	0.75	0.35	0.75	0.15
Queue Length (ft)	325	75	175	< 25	175	75
Intersection	25 sec/veh					
	LOS C					

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Table 43: PM Peak at Egan Drive and Riverside Drive Intersection, Build Condition 2023

2023 Base Condition AM Peak	EB		WB		SB	
	LT	Thru	Thru	R (Yield)	LT	R (Yield)
Delay (sec/veh)	38	5	15	38	44	35
LOS	D	A	B	D	D	D
v/c Ratio	0.75	0.20	0.80	0.35	0.75	0.15
Queue Length (ft)	350	75	175	< 25	175	75
Intersection	26 sec/veh					
	LOS C					

There are only minor differences in performance measures for the PM intersection operations with and without the development. The following table summarizes queue impacts.

Table 44: PM Peak at Egan Drive and Riverside Drive Queue Lengths

	EB		WB		SB	
	LT	THRU	LT	R (Yield)	LT	R
Available Queue Length (ft)	370	740	1200	530	460	230
Pre-Build	325	75	175	< 25	175	75
Post-Build	350	75	175	< 25	175	75

**Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.*

Through queue should not block the entrance of the left or right turn lanes. The build condition has insignificant impact on any of the left, right or through queues.

7.1.5.3 Egan Drive and Riverside Drive Summary

Intersection operation measures and queue lengths are not significantly impacted by the traffic generated by the proposed SEARHC medical office development. The operational performance measures with the development do not exceed CBJ Code of Ordinance thresholds requiring mitigations (see Section 1.2 on page 4 for discussion of requirements).

7.2 Safety Impacts

Crash experience is discussed under Section 5 on page 26. The crash rates and severity are low for the intersections within the study area. The site traffic may increase crash frequency (number per year) for the study intersections, but crash rates (crashes per volume exposure) is not expected to increase and in fact, may be reduced (rates tend to fall as traffic increases). Similarly, crash severity (major injuries and fatalities) are low, and would not be subject to an increase with the additional site traffic.

7.3 Transit System Impacts

Section 3.4 discusses transit service in the area. As a community, Juneau has an average public transportation work trip mode share is about 4.6% of commuting trips. As US Census Bureau American Community Survey *Table S0802* shows CBJ transit patrons tend to be lower income. As such, there is a potential and benefit of incentivizing transit so that all income levels employed by the medical office consider transit as alternative mode for commutes.. If so, and applying the community 4.6% usage, we would expect to see about 4 to 10 work trips use transit during the morning and evening commuting hours.

Moreover, about 70 to 80 trips daily (of 1677 total) would probably use transit if the mode share were applied to the total site traffic.

Section 3.4 indicates that the current transit system routes and schedules have adequate capacity to carry the patrons generated by the proposed SEARHC medical offices.

7.4 Pedestrian and Bicycle Impacts

The proposed SEARHC medical offices will generate additional pedestrian and bicycle use. In addition to the commuter and patient mode share (in place of automobiles), there will be short-trip opportunities for staff walkers or cyclists during the day to shop or visit restaurants.

The study area has pedestrian and bicycle facilities in place, as discussed under Section 3.3, although not every street has sidewalks or pathways. However, the study area pedestrian and bicycle network will accommodate walking or biking between the proposed medical offices and study area destinations study area or external origins/destinations.

Within the immediate area of the proposed offices, there is a missing sidewalk segment fronting the medical office parcel which, if left unimproved, impacts pedestrian circulation and affects the quality of walking experience. Completion of this sidewalk would enhance the connectivity of the non-motorized network facilities for pedestrian staff and patients, reduce unsignalized mid-block street crossings, and provide an improved walking route for commuters or patients who walk between the offices and the Mendenhall Mall stops to board or alight transit buses. However, the walking route along Mendenhall Mall road is on shoulders or parking areas.

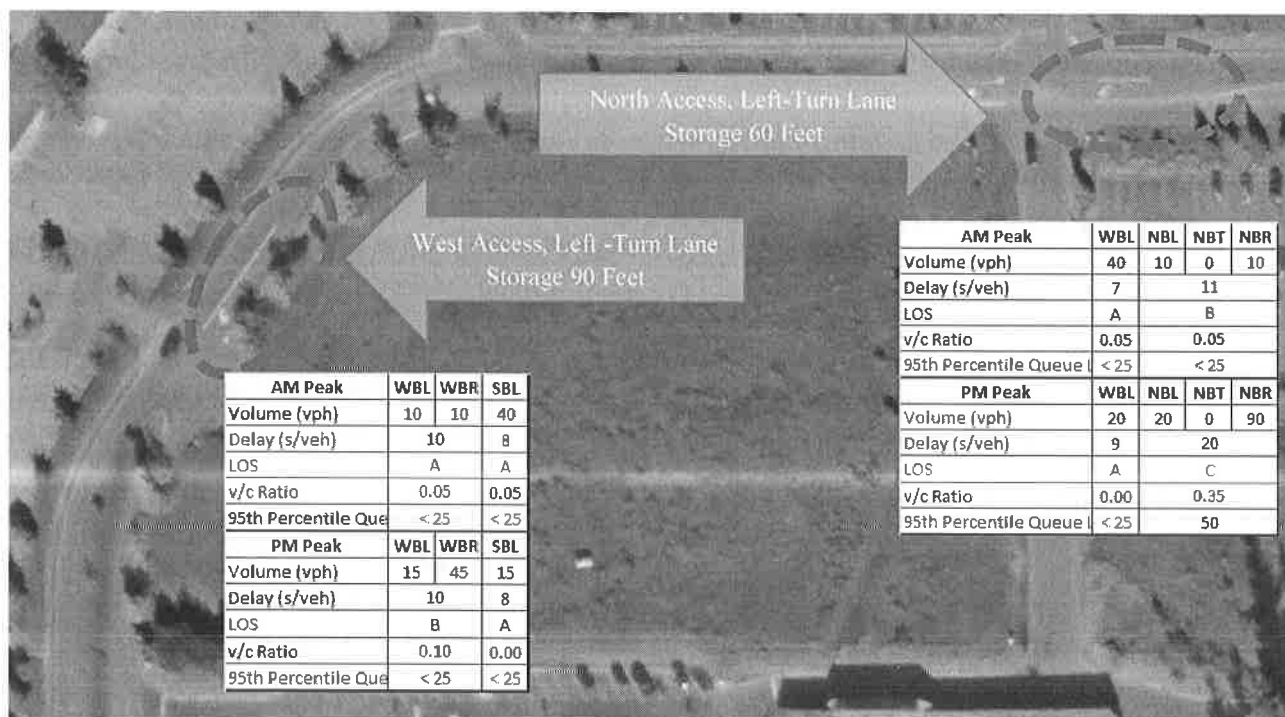
7.5 Driveway Impacts

7.5.1 Operational Impacts

Composite driveway volumes were estimated for the AM and PM peak hours in 2023 using data extracted and interpreted from Figure 21, Figure 22, and Table 13 (counts are not available). Of primary concerns are the left-turn queues for traffic entering the site be contained in the existing storage lanes, and that delay for the driveway egress traffic is not excessive, which if so, may result in drivers accepting inadequate gaps and increase the likelihood of crashes.

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Figure 29, below, presents these performance measures. Queues will be contained in the left-turn storage lanes and delays for the outbound approach traffic onto Vintage will not be excessive.



Background Photo Source- Google Earth

Figure 29: Driveway Performance Measures

7.5.2 Driveway Sight Distance

Sight distance is required for main street left-turning vehicles and for driveway egress vehicles. The American Association of State Highway and Transportation Officials (AASHTO) *A Policy on the Geometric Design of Highways and Streets (GDHS)* provides guidance on intersection and driveway sight distance. The sight distance requirements are based upon Vintage Boulevard's posted speed limit of 20 mph.

Sight distance will have to be evaluated and incorporated during site design. The discussion below only presents the criteria that should be observed.

7.5.2.1 Vintage Boulevard Left-Turns Into Site

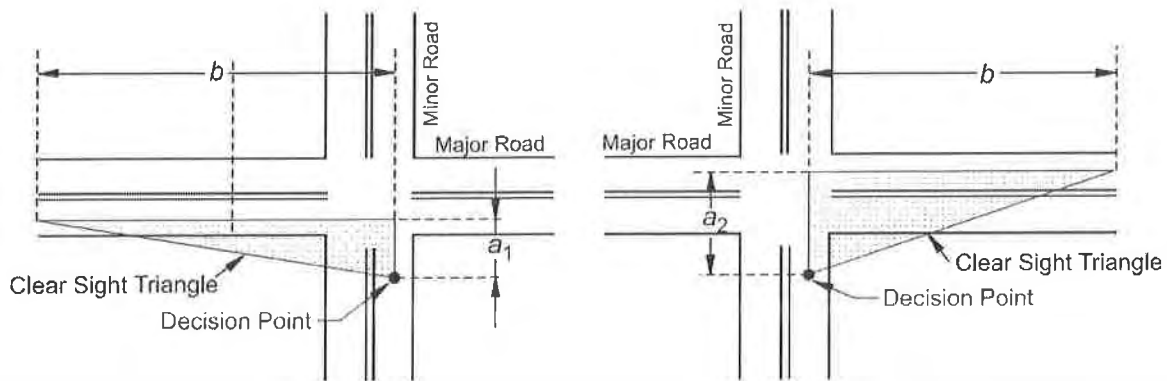
AASHTO requires 115 feet minimum for sight distance that will allow vehicles traveling in the opposing direction enough sight distance to come to a full stop from 20 mph, and avoid a left turning vehicle. However, a desirable sight distance is 165 feet, allowing the left-turning vehicle enough sight distance to judge oncoming gaps and complete the turn without impeding the opposite direction vehicle.

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7.5.2.2 Driveway Departure Sight Distance

AASHTO requires 115 feet minimum for departure sight distance that will allow vehicles on Vintage Boulevard enough sight distance to come to a full stop from 20 mph, and avoid the driveway departure (egress) vehicle. The desirable sight distance is 225 feet.

Departure sight triangles are shown below.



Departure Sight Triangle for Viewing Traffic
Approaching the Minor Road from the Left

Departure Sight Triangle for Viewing Traffic
Approaching the Minor Road from the Right

Source: AASHTO GDHS Figure 9-17

Notes: The distance a_1 is distance from center of near lane to the decision point located 15 feet from edge of travel way. The distance a_2 is distance from center of far lane to the decision point located 15 feet from edge of travel way. The distance b is the sight distance, minimum 115 feet or desirable 225 feet.

Figure 30: Departure Sight Triangles

All objects within the clear sight triangle should be less than the plane formed by the driver's eye at 3.5 feet above the driveway surface and at the lane vertices, 3.5 above the roadway surfaces.

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8 Mitigation and Recommendations

8.1 Egan Drive and Mendenhall Loop Road

Without site traffic, intersection AM average delay per vehicle is 82 seconds with a LOS F and the PM average delay per vehicle is 65 seconds with LOS E. Adding site traffic only increases delay by 1 second per vehicle in both AM and PM peak hours with no changes in LOS.

If interpreted correctly, the operational performance measures with the development may exceed CBJ Code of Ordinance thresholds requiring mitigations (see Section 1.2 on page 4 for discussion of requirements) simply because the base condition without site traffic falls below LOS D. However, intersection operation measures and queue lengths are not significantly impacted by the traffic generated by additional traffic from the proposed SEARHC medical office development.

A sketch-level evaluation of the intersection capacity analysis indicates that engineering and construction mitigation would likely require expanding the northbound and southbound approaches with additional left-turn and through capacity. This essentially involves an entire intersection and signal reconstruction, with likely unforeseen utility and right-of-way impacts, and would likely cost several million dollars. Moreover, the West Egan Drive Corridor Study, discussed in Section 2.3.4, indicates that the long-term solution for this intersection is a grade separated interchange. As such, any reconstruction efforts required by this project would eventually be superseded.

CBJ Code of Ordinances, 49.40.340 Mitigation waiver, discusses mitigation waivers:

- (a) *The planning commission or community development department director may, in their discretion, waive or partially waive the requirements for mitigation under this section if the planning commission finds at a public hearing, or the director finds in writing after reviewing a permit which does not require planning commission approval, that either of the following circumstances is true:*
 - (1) (A) *Existing roadway facilities are only marginally achieving an LOS D without the traffic generated by the development, and would likely fall below LOS D within five years;*
 - (B) *Traffic generated by the development would result in an LOS below D without mitigation; and*
 - (C) *The costs of mitigating the impacts outweighs the benefits; or*
 - (2) (A) *If the LOS is below D, before the development's opening date;*
 - (B) *If the operation of the roadway or intersection, within the affected area, would not deteriorate more than five percent in terms of delay time, a minimum LOS, LOS E may be acceptable;*
 - (C) *Does not result in an LOS below E; and*
 - (D) *The costs of mitigating the impacts outweighs the benefits.*

SEARHC Medical Center
Traffic Impact Analysis
March 2022

The CBJ Code of Ordinances will allow mitigation to be waived, based on clause (D).

8.2 Completion of the Vintage Boulevard Sidewalk Fronting the SEARHC Medical Offices

As part of the site design and construction for the SEARHC medical offices, the missing sidewalk segment fronting this parcel could be completed, thus minimizing impacts to pedestrians generated by the facility. This segment completion enhances pedestrian mobility and safety and promotes transit use by improving the walking route between the bus stops and the medical offices. It should be noted that part of the transit walking route along Mendenhall Mall Road between the bus stops and the intersection of Riverside-Vintage-Mendenhall Mall is on roadway shoulders.

This improvement would mitigate the safety and mobility impacts caused by the missing sidewalk segment. It provides continuous and connecting pedestrian walking routes in the vicinity of the medical offices and reduce the need for mid-block unsignalized pedestrian crossings on Vintage Boulevard.

This improvement could also be a mitigation for the Egan Drive and Mendenhall Loop Road operational issues discussed above. The improvement may promote mode changes to walking and transit, and reduce vehicular demand generated by the site.

8.3 Demand Management Policies By SEARHC

Site vehicular traffic and parking demand may be reduced by SEARHC with the implementation of policies that promote changes to active the active transportation modes of transit, walking, or biking, and by encouraging car-pools. These include:

- Incentivize transit use (potential 4% to 5% vehicle trip reduction, see Section 3.4)
- Incentivize carpooling (potential 7% to 8% vehicle trip reduction, see Section 3.4)
- Provide bicycle racks. (Vehicle trip reduction isn't quantifiable).

8.4 Recommendations

Following agency review.

Appendix A- Excerpts from ITE Trip Generation Manual for Project Land Uses

Land Use: 720 Medical-Dental Office Building

Description

A medical-dental office building is a facility that provides diagnoses and outpatient care on a routine basis but is unable to provide prolonged in-house medical and surgical care. One or more private physicians or dentists generally operate this type of facility. Clinic (Land Use 630) is a related use.

Additional Data

Time-of-day distribution data for this land use for a weekday, Saturday, and Sunday are presented in Appendix A. For the 19 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 9:30 and 10:30 a.m. and 2:15 and 3:15 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Connecticut, Kentucky, Maryland, Minnesota, New Jersey, New York, Ohio, Oregon, Pennsylvania, South Dakota, Texas, Virginia, Washington, and Wisconsin.

Source Numbers

104, 109, 120, 157, 184, 209, 211, 253, 287, 294, 295, 304, 357, 384, 404, 407, 423, 444, 509, 601, 715, 867, 879, 901, 902, 908, 959, 972

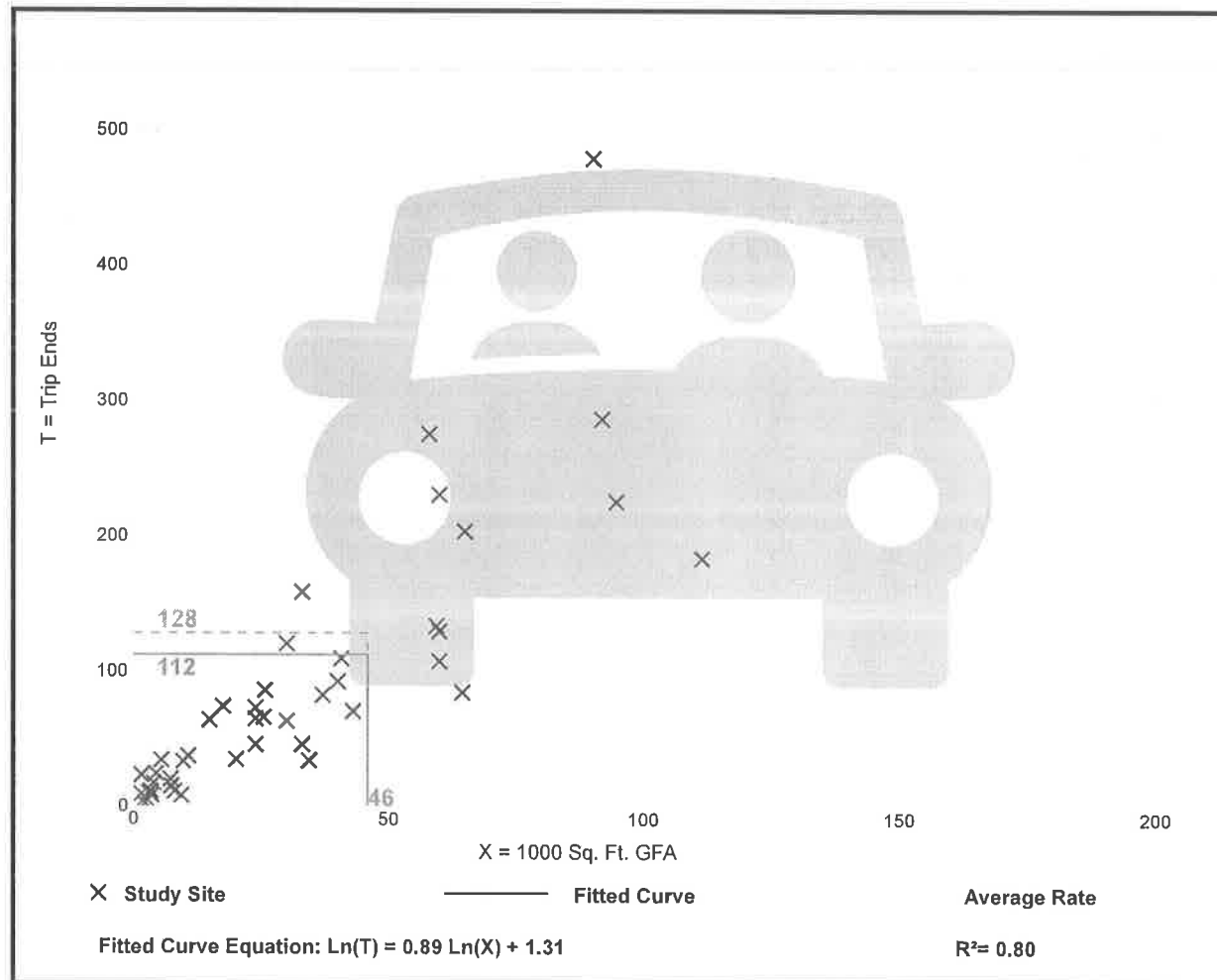
Medical-Dental Office Building (720)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 44
 Avg. 1000 Sq. Ft. GFA: 32
 Directional Distribution: 78% entering, 22% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.78	0.85 - 14.30	1.28

Data Plot and Equation



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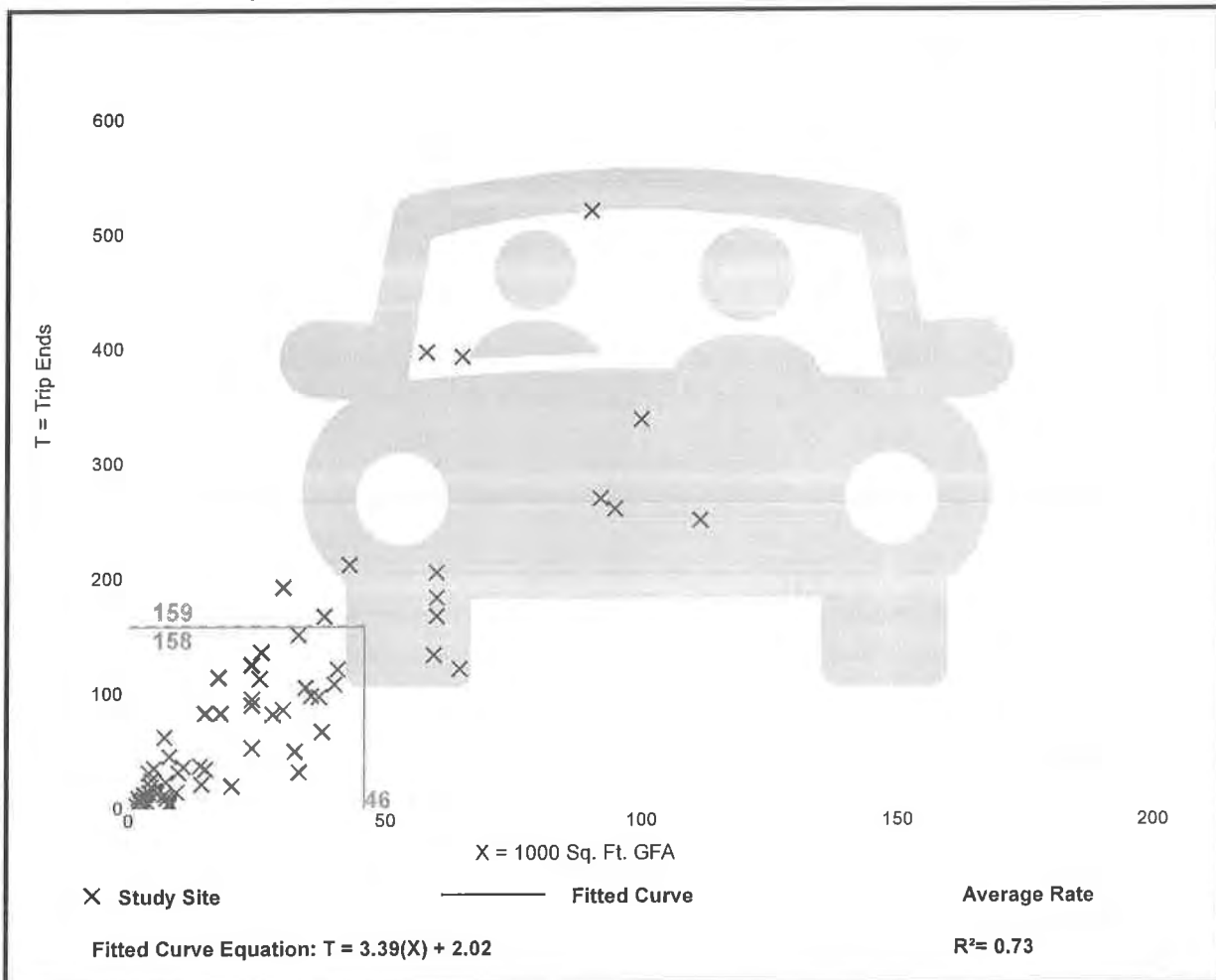
Medical-Dental Office Building (720)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 65
 Avg. 1000 Sq. Ft. GFA: 28
 Directional Distribution: 28% entering, 72% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.46	0.25 - 8.86	1.58

Data Plot and Equation



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Medical-Dental Office Building (720)

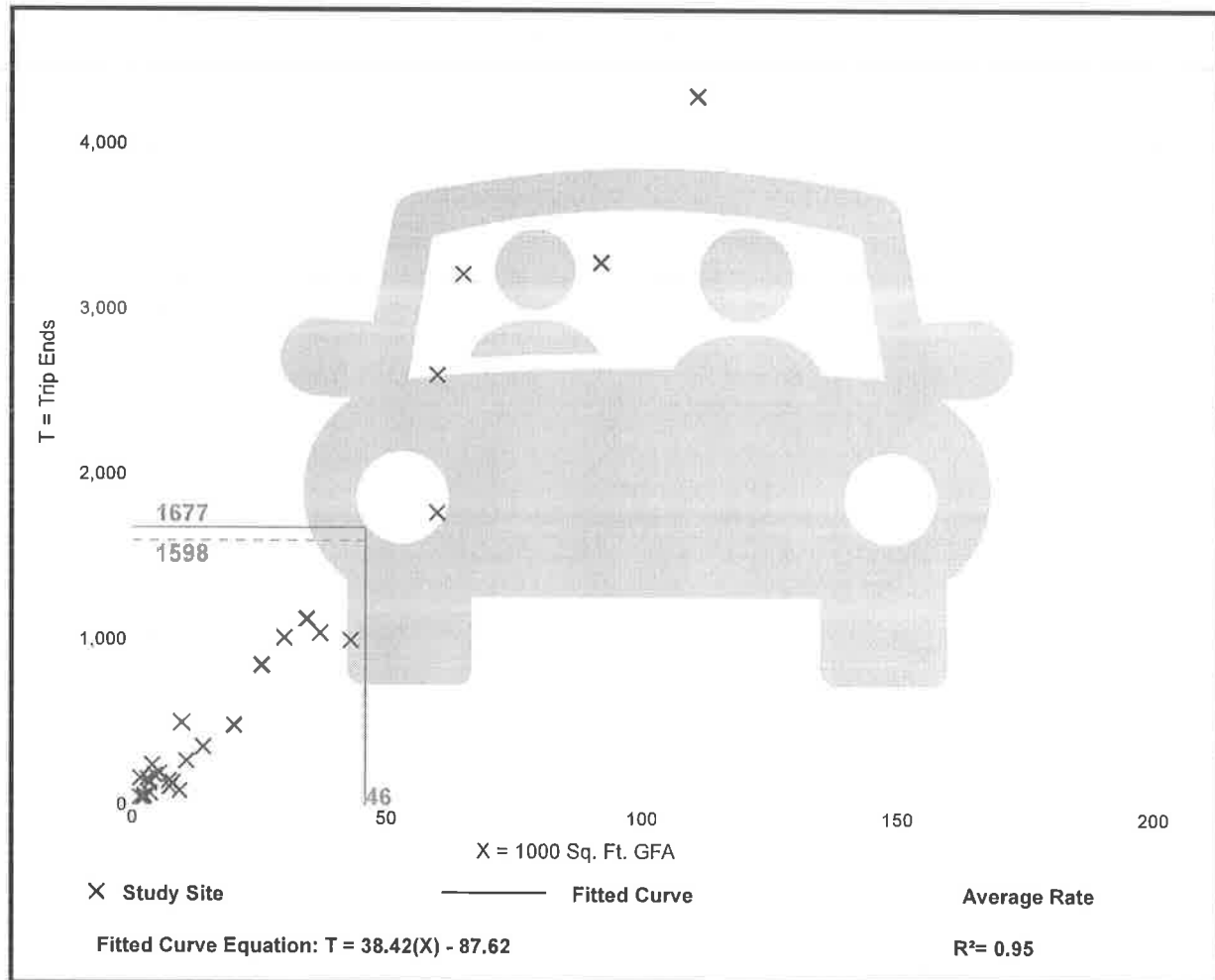
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 28
Avg. 1000 Sq. Ft. GFA: 24
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
34.80	9.14 - 100.75	9.79

Data Plot and Equation



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Land Use: 221

Multifamily Housing (Mid-Rise)

Description

Mid-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have between three and 10 levels (floors). Multifamily housing (low-rise) (Land Use 220), multifamily housing (high-rise) (Land Use 222), off-campus student apartment (Land Use 225), and mid-rise residential with 1st-floor commercial (Land Use 231) are related land uses.

Additional Data

In prior editions of *Trip Generation Manual*, the mid-rise multifamily housing sites were further divided into rental and condominium categories. An investigation of vehicle trip data found no clear differences in trip making patterns between the rental and condominium sites within the ITE database. As more data are compiled for future editions, this land use classification can be reinvestigated.

For the six sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.46 residents per occupied dwelling unit.

For the five sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 95.7 percent of the total dwelling units were occupied.

Time-of-day distribution data for this land use are presented in Appendix A. For the eight general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:00 and 8:00 a.m. and 4:45 and 5:45 p.m., respectively.

For the four dense multi-use urban sites with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:15 and 8:15 a.m. and 4:15 and 5:15 p.m., respectively. For the three center city core sites with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 6:45 and 7:45 a.m. and 5:00 and 6:00 p.m., respectively.

For the six sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.46 residents per occupied dwelling unit.

For the five sites for which data were provided for both occupied dwelling units and total dwelling units, an average of 95.7 percent of the units were occupied.

The average numbers of person trips per vehicle trip at the five center city core sites at which both person trip and vehicle trip data were collected were as follows:

- 1.84 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.94 during Weekday, AM Peak Hour of Generator
- 2.07 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.59 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 32 dense multi-use urban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.90 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.90 during Weekday, AM Peak Hour of Generator
- 2.00 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.08 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 13 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.56 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.88 during Weekday, AM Peak Hour of Generator
- 1.70 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.07 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Delaware, District of Columbia, Florida, Georgia, Illinois, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, Ontario, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Virginia, and Wisconsin.

Source Numbers

168, 188, 204, 305, 306, 321, 357, 390, 436, 525, 530, 579, 638, 818, 857, 866, 901, 904, 910, 912, 918, 934, 936, 939, 944, 947, 948, 949, 959, 963, 964, 966, 967, 969, 970

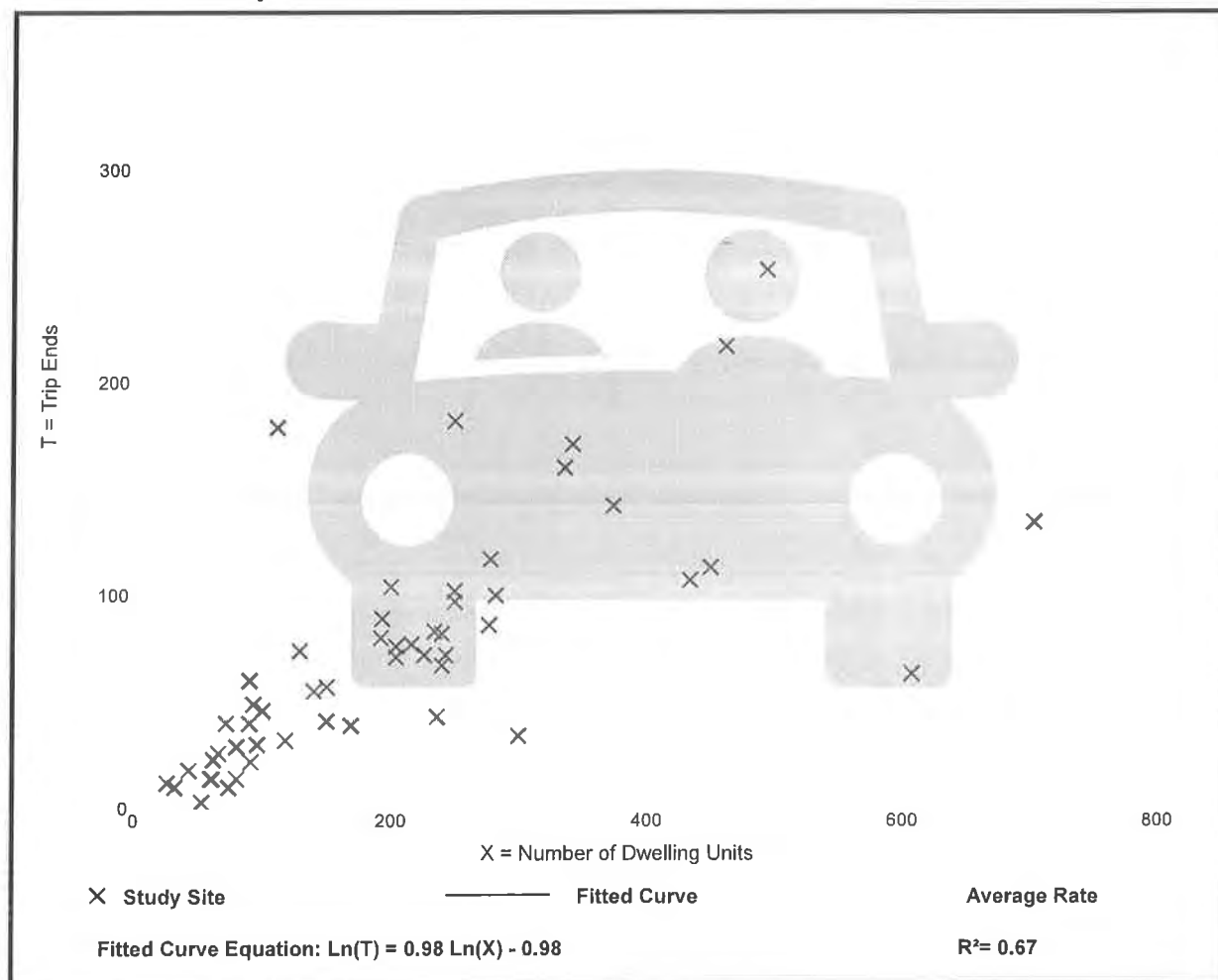
Multifamily Housing (Mid-Rise) (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 53
 Avg. Num. of Dwelling Units: 207
 Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 1.61	0.19

Data Plot and Equation



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Multifamily Housing (Mid-Rise) (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 60

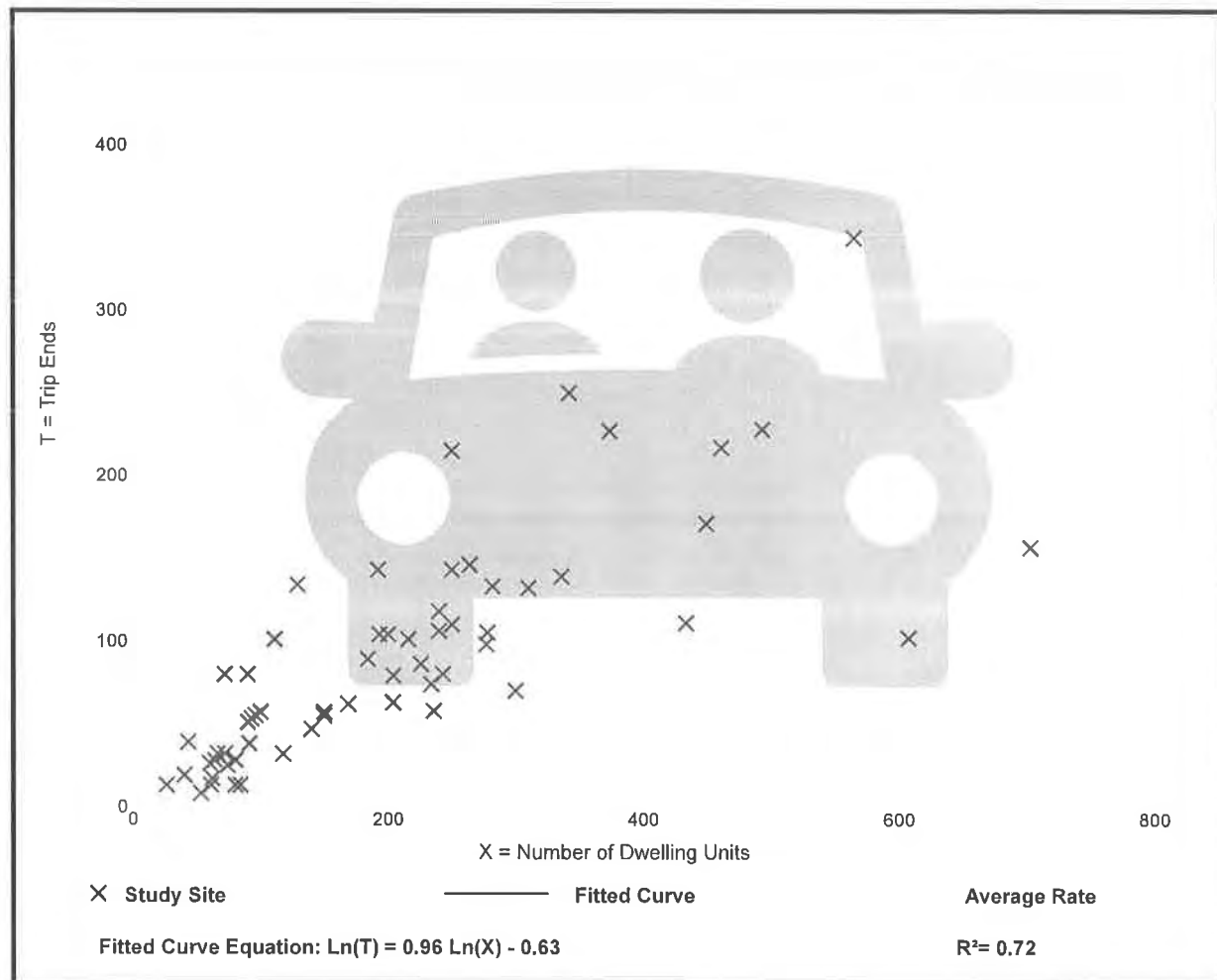
Avg. Num. of Dwelling Units: 208

Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.11	0.19

Data Plot and Equation



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Multifamily Housing (Mid-Rise) (221)

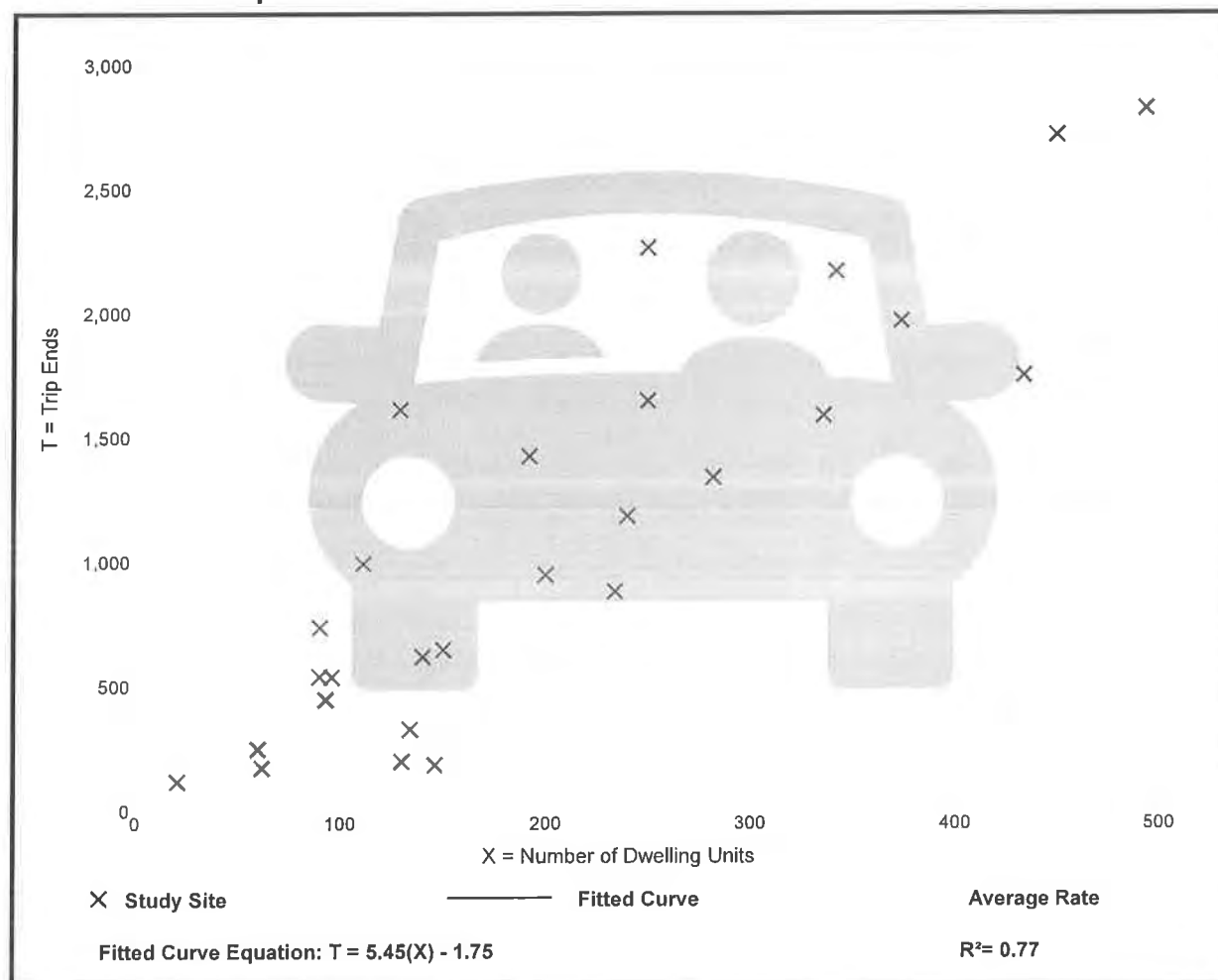
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 27
Avg. Num. of Dwelling Units: 205
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
5.44	1.27 - 12.50	2.03

Data Plot and Equation



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Land Use: 252

Senior Adult Housing—Attached

Description

Senior adult housing consists of attached independent living developments, including retirement communities, age-restricted housing, and active adult communities. These developments may include limited social or recreational services. However, they generally lack centralized dining and onsite medical facilities. Residents in these communities live independently, are typically active (requiring little to no medical supervision) and may or may not be retired. Senior adult housing—detached (Land Use 251), congregate care facility (Land Use 253), assisted living (Land Use 254), and continuing care retirement community (Land Use 255) are related uses.

Additional Data

Time-of-day distribution data for this land use are presented in Appendix A. For the one general urban/suburban site with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:00 and 1:00 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, and the 2000s in Alberta (CAN), California, Illinois, New Hampshire, New Jersey, New York, and Pennsylvania.

Source Numbers

272, 501, 576, 602, 703, 734, 741, 902, 970

Senior Adult Housing - Attached (252)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 11

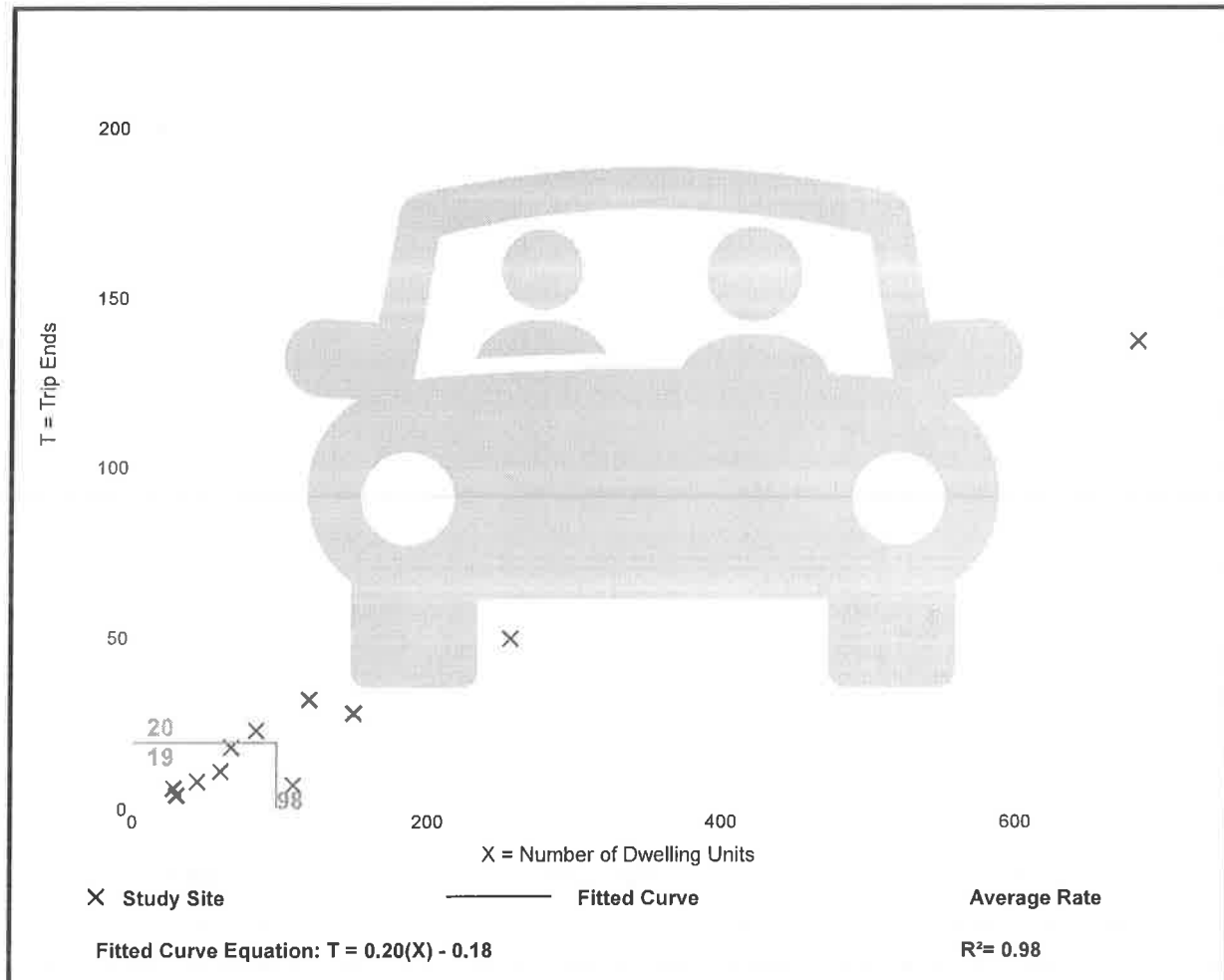
Avg. Num. of Dwelling Units: 148

Directional Distribution: 35% entering, 65% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.20	0.06 - 0.27	0.05

Data Plot and Equation



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Senior Adult Housing - Attached (252)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

**Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.**

Setting/Location: General Urban/Suburban

Number of Studies: 11

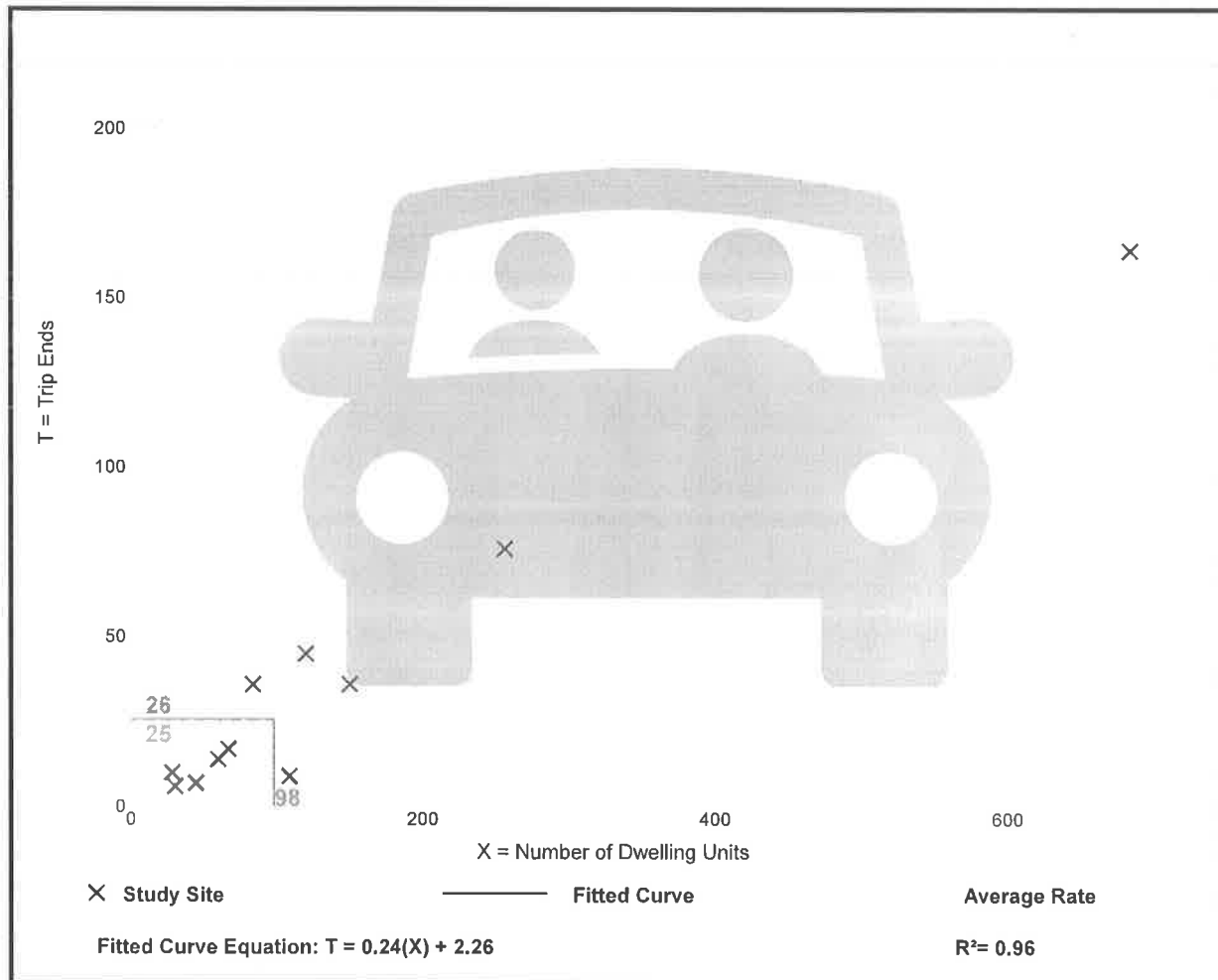
Avg. Num. of Dwelling Units: 148

Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.26	0.08 - 0.43	0.08

Data Plot and Equation



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Senior Adult Housing - Attached (252)

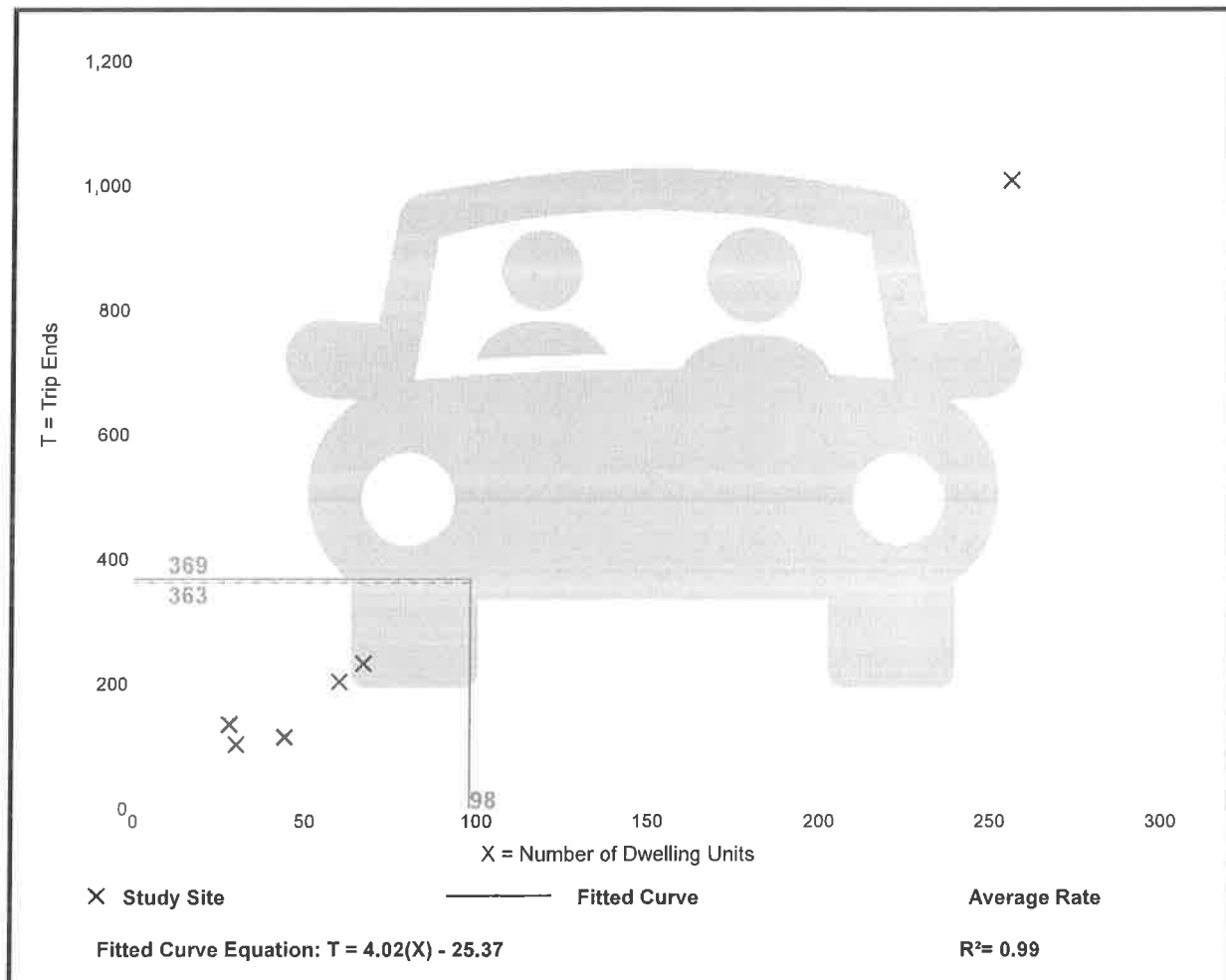
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Dwelling Units: 81
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
3.70	2.59 - 4.79	0.53

Data Plot and Equation



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Appendix B- AM Base Traffic Capacity Analysis Report.

HCM 2010 TWSC

1: Glacier Highway/Vintage Boulevard & Egan Drive

03/02/2022

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑	↑			↑			↑
Traffic Vol, veh/h	0	773	202	27	634	63	0	0	46	0	0	79
Future Vol, veh/h	0	773	202	27	634	63	0	0	46	0	0	79
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	Stop	-	-	Stop
Storage Length	-	-	375	300	-	475	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	5	2	0	5	2	0	0	2	0	0	7
Mvmt Flow	0	966	253	34	793	79	0	0	58	0	0	99

Major/Minor	Major1		Major2		Minor1		Minor2	
Conflicting Flow All	-	0	-	971	0	0	-	493
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.1	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.2	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	0	718	-	0	0	522
Stage 1	0	-	0	-	-	0	0	-
Stage 2	0	-	0	-	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	715	-	-	-	518
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	12.8	12.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT	SBLn1
Capacity (veh/h)	518	-	715	-	582
HCM Lane V/C Ratio	0.111	-	0.047	-	0.17
HCM Control Delay (s)	12.8	-	10.3	-	12.4
HCM Lane LOS	B	-	B	-	B
HCM 95th %tile Q(veh)	0.4	-	0.1	-	0.6

Queues

2: Riverside Drive & Vintage Boulevard/Mendenhall Malt Drive

03/02/2022

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	21	32	109	134	82	210	104	817
v/c Ratio	0.11	0.22	0.42	0.51	0.25	0.20	0.13	0.81
Control Delay	28.0	42.9	33.4	41.5	7.6	11.9	6.2	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	42.9	33.4	41.5	7.6	11.9	6.2	27.3
Queue Length 50th (ft)	9	17	49	61	14	58	17	382
Queue Length 95th (ft)	24	41	81	113	30	99	36	#573
Internal Link Dist (ft)		693		1080		707		271
Turn Bay Length (ft)	200		75		150		100	
Base Capacity (vph)	374	421	357	442	449	1030	890	1005
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.08	0.31	0.30	0.18	0.20	0.12	0.81

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	25	0	84	103	0	63	162	0	80	629	0
Future Volume (vph)	16	25	0	84	103	0	63	162	0	80	629	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width	12	12	16	12	12	16	12	12	16	12	12	16
Total Lost time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1705	1729		1710	1814		1723	1762		1706	1762	
Flt Permitted	0.67	1.00		0.44	1.00		0.14	1.00		0.63	1.00	
Satd. Flow (perm)	1204	1729		798	1814		260	1762		1125	1762	
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	21	32	0	109	134	0	82	210	0	104	817	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	21	32	0	109	134	0	82	210	0	104	817	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	7%	2%	2%	2%	2%	2%	5%	2%	2%	5%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	8.7	6.5		18.7	12.2		56.0	48.8		53.6	47.6	
Effective Green, g (s)	8.7	6.5		18.7	12.2		56.0	48.8		53.6	47.6	
Actuated g/C Ratio	0.10	0.07		0.21	0.14		0.64	0.56		0.62	0.55	
Clearance Time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		3.0	2.0		3.0	2.0	
Lane Grp Cap (vph)	133	129		254	254		288	988		733	964	
v/s Ratio Prot	0.00	0.02		c0.04	c0.07		c0.02	0.12		0.01	c0.46	
v/s Ratio Perm	0.01			0.05			0.16			0.08		
v/c Ratio	0.16	0.25		0.43	0.53		0.28	0.21		0.14	0.85	
Uniform Delay, d1	35.7	37.9		28.8	34.7		11.4	9.5		6.8	16.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4		0.4	0.9		0.5	0.0		0.1	6.7	
Delay (s)	35.9	38.3		29.2	35.6		12.0	9.6		6.9	23.4	
Level of Service	D	D		C	D		B	A		A	C	
Approach Delay (s)		37.3			32.7			10.2			21.5	
Approach LOS		D			C			B			C	

Intersection Summary

HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022

	→	↘	←	↙	↖	↑	↗	↓	↘
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	62	127	31	6	69	485	6	1748	210
v/c Ratio	0.51	0.52	0.26	0.03	0.57	0.18	0.07	0.70	0.19
Control Delay	64.1	18.1	53.1	0.2	68.8	6.5	56.2	13.2	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Total Delay	64.1	18.2	53.1	0.2	68.8	6.5	56.2	13.4	4.8
Queue Length 50th (ft)	47	9	23	0	44	18	5	371	27
Queue Length 95th (ft)	78	52	46	0	#107	152	18	530	64
Internal Link Dist (ft)	362		281			230		391	
Turn Bay Length (ft)		75		50	150		75		90
Base Capacity (vph)	245	379	236	338	125	2750	100	2494	1079
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	6	0	0	0	0	0	203	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.34	0.13	0.02	0.55	0.18	0.06	0.76	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	4	107	24	2	5	58	403	4	5	1468	176
Future Volume (vph)	48	4	107	24	2	5	58	403	4	5	1468	176
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97		1.00	0.98	1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes		0.99	1.00		0.99	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1722	1499		1721	1511	1723	3439		1723	3446	1460
Flt Permitted		0.72	1.00		0.69	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1298	1499		1251	1511	1723	3439		1723	3446	1460
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	57	5	127	29	2	6	69	480	5	6	1748	210
RTOR Reduction (vph)	0	0	104	0	0	5	0	0	0	0	0	24
Lane Group Flow (vph)	0	62	23	0	31	1	69	485	0	6	1748	186
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4		4						6
Actuated Green, G (s)		11.3	11.3		11.3	11.3	7.3	92.0		1.2	85.9	85.9
Effective Green, g (s)		11.3	11.3		11.3	11.3	7.3	92.0		1.2	85.9	85.9
Actuated g/C Ratio		0.09	0.09		0.09	0.09	0.06	0.77		0.01	0.72	0.72
Clearance Time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Vehicle Extension (s)		1.5	1.5		1.5	1.5	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		122	141		117	142	104	2636		17	2466	1045
v/s Ratio Prot							c0.04	0.14		0.00	c0.51	
v/s Ratio Perm		c0.05	0.02		0.02	0.00						0.13
v/c Ratio		0.51	0.16		0.26	0.00	0.66	0.18		0.35	0.71	0.18
Uniform Delay, d1		51.7	50.0		50.5	49.3	55.1	3.8		59.0	9.8	5.6
Progression Factor		1.00	1.00		1.00	1.00	0.94	1.64		1.00	1.00	1.00
Incremental Delay, d2		1.2	0.2		0.4	0.0	11.6	0.2		4.5	1.8	0.4
Delay (s)		52.9	50.2		50.9	49.3	63.5	6.4		63.6	11.6	5.9
Level of Service		D	D		D	D	E	A		E	B	A
Approach Delay (s)		51.1			50.7			13.5			11.1	
Approach LOS		D			D			B			B	

Intersection Summary

HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queues

4: Mendenhall Loop Road & Egan Drive

03/02/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	62	1116	134	8	436	129	119	41	807	828	123
v/c Ratio	0.55	1.06	0.25	0.11	0.55	0.73	0.64	0.15	1.08	1.09	0.17
Control Delay	72.1	84.3	9.3	58.9	46.4	74.6	66.3	1.2	81.6	84.6	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Total Delay	72.1	84.3	9.3	58.9	46.4	74.6	66.3	1.2	81.6	85.2	4.7
Queue Length 50th (ft)	47	428	5	6	154	99	90	0	~699	~724	15
Queue Length 95th (ft)	#100	#778	61	23	#238	156	144	0	#932	#954	m27
Internal Link Dist (ft)		1356			1654		696			316	
Turn Bay Length (ft)	540		120	550		290		390	280		
Base Capacity (vph)	123	1057	532	72	792	277	291	348	749	762	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	1	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	1.06	0.25	0.11	0.55	0.47	0.41	0.12	1.08	1.09	0.17

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 4: Mendenhall Loop Road & Egan Drive

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1016	122	7	397	0	117	108	37	1267	221	112
Future Volume (vph)	56	1016	122	7	397	0	117	108	37	1267	221	112
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Lane Util. Factor	1.00	*1.00	1.00	1.00	*1.00		1.00	1.00	1.00	*1.00	*1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Fr t	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (prot)	1723	3524	1481	1723	3524		1723	1814	1509	1723	1752	1511
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (perm)	1723	3524	1481	1723	3524		1723	1814	1509	1723	1752	1511
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	62	1116	134	8	436	0	129	119	41	1392	243	123
RTOR Reduction (vph)	0	0	92	0	0	0	0	0	37	0	0	69
Lane Group Flow (vph)	62	1116	42	8	436	0	129	119	4	807	828	54
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2			3			4
Actuated Green, G (s)	6.9	31.9	31.9	1.0	26.0		12.3	12.3	12.3	52.2	52.2	52.2
Effective Green, g (s)	6.9	31.9	31.9	1.0	26.0		12.3	12.3	12.3	52.2	52.2	52.2
Actuated g/C Ratio	0.06	0.27	0.27	0.01	0.22		0.10	0.10	0.10	0.44	0.44	0.44
Clearance Time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Vehicle Extension (s)	2.0	0.5	0.5	2.0	0.5		0.5	0.5	0.5	2.0	2.0	2.0
Lane Grp Cap (vph)	99	936	393	14	763		176	185	154	749	762	657
v/s Ratio Prot	c0.04	c0.32		0.00	0.12		c0.07	0.07		0.47	c0.47	
v/s Ratio Perm			0.03						0.00			0.04
v/c Ratio	0.63	1.19	0.11	0.57	0.57		0.73	0.64	0.03	1.08	1.09	0.08
Uniform Delay, d1	55.3	44.0	33.3	59.3	42.0		52.3	51.7	48.5	33.9	33.9	19.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.88	0.88	1.26
Incremental Delay, d2	8.6	97.2	0.6	30.5	3.1		12.7	5.6	0.0	51.5	54.6	0.0
Delay (s)	63.9	141.2	33.8	89.8	45.1		65.0	57.4	48.5	81.2	84.3	24.9
Level of Service	E	F	C	F	D		E	E	D	F	F	C
Approach Delay (s)		126.6			45.9			59.5			78.7	
Approach LOS		F			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			89.9			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.6			
Intersection Capacity Utilization			101.1%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

5: Egan Drive & Riverside Drive

03/02/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	201	786	617	137	654	257
v/c Ratio	0.62	0.44	0.71	0.29	0.68	0.45
Control Delay	36.1	10.5	28.9	6.6	26.4	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	10.5	28.9	6.6	26.4	10.9
Queue Length 50th (ft)	73	90	115	0	116	24
Queue Length 95th (ft)	159	150	204	33	206	83
Internal Link Dist (ft)		694	1356		707	
Turn Bay Length (ft)	350			900	225	145
Base Capacity (vph)	793	3218	2115	960	2111	626
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.24	0.29	0.14	0.31	0.41
Intersection Summary						

HCM Signalized Intersection Capacity Analysis 5: Egan Drive & Riverside Drive

03/02/2022

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	167	652	512	114	543	213
Future Volume (vph)	167	652	512	114	543	213
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1674	3348	3348	1453	3343	1542
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1674	3348	3348	1453	3343	1542
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	201	786	617	137	654	257
RTOR Reduction (vph)	0	0	0	100	0	123
Lane Group Flow (vph)	201	786	617	37	654	134
Confl. Peds. (#/hr)	5			5	5	5
Heavy Vehicles (%)	5%	5%	5%	5%	2%	2%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	1	6	2		4	8
Permitted Phases				2		
Actuated Green, G (s)	13.0	36.0	17.7	17.7	19.3	19.3
Effective Green, g (s)	13.0	36.0	17.7	17.7	19.3	19.3
Actuated g/C Ratio	0.20	0.54	0.27	0.27	0.29	0.29
Clearance Time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Vehicle Extension (s)	1.0	0.5	0.5	0.5	2.0	2.0
Lane Grp Cap (vph)	327	1815	892	387	971	448
v/s Ratio Prot	c0.12	0.23	c0.18		c0.20	0.09
v/s Ratio Perm				0.03		
v/c Ratio	0.61	0.43	0.69	0.09	0.67	0.30
Uniform Delay, d1	24.4	9.1	21.9	18.3	20.8	18.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1	1.9	0.0	1.5	0.1
Delay (s)	26.8	9.2	23.8	18.4	22.2	18.4
Level of Service	C	A	C	B	C	B
Approach Delay (s)		12.8	22.8		21.2	
Approach LOS		B	C		C	
Intersection Summary						
HCM 2000 Control Delay		18.5		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.69				
Actuated Cycle Length (s)		66.4		Sum of lost time (s)	18.4	
Intersection Capacity Utilization		53.6%		ICU Level of Service	A	
Analysis Period (min)		15				
c Critical Lane Group						

HCM 2010 TWSC
6: Riverside & EBR Vintage

03/02/2022

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		7			↑	
Traffic Vol, veh/h	0	43	0	0	713	0
Future Vol, veh/h	0	43	0	0	713	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	56	0	0	926	0

Major/Minor	Minor2	Major2
Conflicting Flow All	- 926	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.22	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3,318	- -
Pot Cap-1 Maneuver	0 326	- 0
Stage 1	0 -	- 0
Stage 2	0 -	- 0
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	- 326	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	18.3	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT
Capacity (veh/h)	326	-
HCM Lane V/C Ratio	0.171	-
HCM Control Delay (s)	18.3	-
HCM Lane LOS	C	-
HCM 95th %tile Q(veh)	0.6	-

HCM 2010 TWSC
7: Riverside & WBR Mendenhall Mall

03/02/2022

Intersection

Int Delay, s/veh 2.1

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations

Traffic Vol, veh/h 0 49 178 0 0 0

Future Vol, veh/h 0 49 178 0 0 0

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Stop Stop

RT Channelized - Yield - None - None

Storage Length - 0 - - -

Veh in Median Storage, # 0 - 0 - -

Grade, % 0 - 0 - -

Peak Hour Factor 77 77 77 77 77 77

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 0 64 231 0 0 0

Major/Minor Minor1 Major1

Conflicting Flow All - 231 0 -

Stage 1 - - - -

Stage 2 - - - -

Critical Hdwy - 6.22 - -

Critical Hdwy Stg 1 - - - -

Critical Hdwy Stg 2 - - - -

Follow-up Hdwy - 3.318 - -

Pot Cap-1 Maneuver 0 808 - 0

Stage 1 0 - - 0

Stage 2 0 - - 0

Platoon blocked, % - - - -

Mov Cap-1 Maneuver - 808 - -

Mov Cap-2 Maneuver - - - -

Stage 1 - - - -

Stage 2 - - - -

Approach WB NB

HCM Control Delay, s 9.8 0

HCM LOS A

Minor Lane/Major Mvmt NBTWBLn1

Capacity (veh/h) - 808

HCM Lane V/C Ratio - 0.079

HCM Control Delay (s) - 9.8

HCM Lane LOS - A

HCM 95th %tile Q(veh) - 0.3

HCM 2010 TWSC

8: NBR Riverside & Vintage/Mendenhall Mall

03/02/2022

Intersection

Int Delay, s/veh 3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↑
Traffic Vol, veh/h	105	0	0	0	0	55
Future Vol, veh/h	105	0	0	0	0	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	136	0	0	0	0	71

Major/Minor	Major1	Minor1
Conflicting Flow All	0	- 136
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	- 6.22
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	- 3.318
Pot Cap-1 Maneuver	- 0	0 913
Stage 1	- 0	0 -
Stage 2	- 0	0 -
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	- 913
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach	EB	NB
HCM Control Delay, s	0	9.3
HCM LOS		A

Minor Lane/Major Mvmt	NBLn1	EBT
Capacity (veh/h)	913	-
HCM Lane V/C Ratio	0.078	-
HCM Control Delay (s)	9.3	-
HCM Lane LOS	A	-
HCM 95th %tile Q(veh)	0.3	-

HCM 2010 TWSC 9: Vintage/Mendenhall Mall & SBR Riverside

03/02/2022

Intersection						
Int Delay, s/veh	4.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑			↑
Traffic Vol, veh/h	0	0	167	0	0	113
Future Vol, veh/h	0	0	167	0	0	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	7405568	0	-	0	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	217	0	0	147

Major/Minor	Major2	Minor2
Conflicting Flow All	-	0 - 217
Stage 1	-	- -
Stage 2	-	- -
Critical Hdwy	-	- - 6.22
Critical Hdwy Stg 1	-	- -
Critical Hdwy Stg 2	-	- -
Follow-up Hdwy	-	- - 3.318
Pot Cap-1 Maneuver	-	0 0 823
Stage 1	-	0 0 -
Stage 2	-	0 0 -
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	- - 823
Mov Cap-2 Maneuver	-	- -
Stage 1	-	- -
Stage 2	-	- -

Approach	WB	SB
HCM Control Delay, s	0	10.3
HCM LOS		B

Minor Lane/Major Mvmt	WBT SBLn1
Capacity (veh/h)	- 823
HCM Lane V/C Ratio	- 0.178
HCM Control Delay (s)	- 10.3
HCM Lane LOS	- B
HCM 95th %tile Q(veh)	- 0.6

Appendix C- PM Base Traffic Capacity Analysis Reports

HCM 2010 TWSC

1: Glacier Highway/Vintage Boulevard & Egan Drive

03/02/2022

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑	↑			↑			↑
Traffic Vol, veh/h	0	736	166	54	900	152	0	0	70	0	0	176
Future Vol, veh/h	0	736	166	54	900	152	0	0	70	0	0	176
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	Stop	-	-	Stop
Storage Length	-	-	375	300	-	475	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	5	2	2	5	2	2	2	2	0	0	7
Mvmt Flow	0	783	177	57	957	162	0	0	74	0	0	187

Major/Minor	Major1		Major2		Minor1		Minor2	
Conflicting Flow All	-	0	-	788	0	0	-	402
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	0	827	-	0	0	598
Stage 1	0	-	0	-	-	0	0	-
Stage 2	0	-	0	-	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	824	-	-	-	593
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	11.9	16
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT	SBLn1
Capacity (veh/h)	593	-	824	-	514
HCM Lane V/C Ratio	0.126	-	0.07	-	0.364
HCM Control Delay (s)	11.9	-	9.7	-	16
HCM Lane LOS	B	-	A	-	C
HCM 95th %tile Q(veh)	0.4	-	0.2	-	1.7

Queues

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	297	181	161	143	317	475	80	291
v/c Ratio	0.64	0.59	0.38	0.52	0.64	0.71	0.24	0.67
Control Delay	25.9	39.4	20.2	38.9	19.2	29.2	13.8	34.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	39.4	20.2	38.9	19.2	29.2	13.8	34.6
Queue Length 50th (ft)	97	76	48	62	86	192	19	124
Queue Length 95th (ft)	213	175	116	140	175	364	48	229
Internal Link Dist (ft)		693		1080		707		271
Turn Bay Length (ft)	200		75		150		100	
Base Capacity (vph)	515	490	526	514	528	1158	536	1158
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.37	0.31	0.28	0.60	0.41	0.15	0.25
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	276	168	0	150	133	0	295	442	0	74	271	0
Future Volume (vph)	276	168	0	150	133	0	295	442	0	74	271	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width	12	12	16	12	12	16	12	12	16	12	12	16
Total Lost time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1713	1729		1707	1814		1723	1814		1718	1814	
Flt Permitted	0.52	1.00		0.62	1.00		0.33	1.00		0.39	1.00	
Satd. Flow (perm)	940	1729		1108	1814		591	1814		700	1814	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	297	181	0	161	143	0	317	475	0	80	291	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	297	181	0	161	143	0	317	475	0	80	291	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	26.0	13.2		22.2	11.3		37.0	27.3		24.5	19.1	
Effective Green, g (s)	26.0	13.2		22.2	11.3		37.0	27.3		24.5	19.1	
Actuated g/C Ratio	0.35	0.18		0.30	0.15		0.50	0.37		0.33	0.26	
Clearance Time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	460	305		417	274		499	663		303	464	
v/s Ratio Prot	c0.11	0.10		0.06	0.08		c0.12	c0.26		0.02	0.16	
v/s Ratio Perm	c0.11			0.06			0.20			0.07		
v/c Ratio	0.65	0.59		0.39	0.52		0.64	0.72		0.26	0.63	
Uniform Delay, d1	19.2	28.2		20.3	29.2		12.6	20.3		17.8	24.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	2.1		0.6	0.8		1.9	3.1		0.2	1.9	
Delay (s)	21.6	30.3		20.9	30.0		14.6	23.4		17.9	26.5	
Level of Service	C	C		C	C		B	C		B	C	
Approach Delay (s)		24.9			25.2			19.9			24.7	
Approach LOS		C			C			B			C	

Intersection Summary

HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	74.6	Sum of lost time (s)	17.8
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queues

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022

	→	↘	←	↖	↗	↑	↙	↓	↘
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	245	155	16	8	327	1673	10	726	215
v/c Ratio	0.88	0.37	0.06	0.02	1.16	0.74	0.10	0.45	0.27
Control Delay	68.1	11.9	29.8	0.1	145.1	13.9	46.4	18.3	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Total Delay	68.1	11.9	29.8	0.1	145.1	14.4	46.4	18.3	3.2
Queue Length 50th (ft)	148	17	8	0	~347	262	6	138	5
Queue Length 95th (ft)	#263	68	25	0	m#508	m#623	23	181	40
Internal Link Dist (ft)	362		281			230		391	
Turn Bay Length (ft)		75		50	150		75		90
Base Capacity (vph)	323	465	325	433	283	2262	120	1819	868
Starvation Cap Reductn	0	0	0	0	0	203	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.33	0.05	0.02	1.16	0.81	0.08	0.40	0.25

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	13	141	14	1	7	298	1494	28	9	661	196
Future Volume (vph)	210	13	141	14	1	7	298	1494	28	9	661	196
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1721	1513		1726	1513	1723	3434		1723	3446	1469
Flt Permitted		0.73	1.00		0.73	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1310	1513		1319	1513	1723	3434		1723	3446	1469
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	231	14	155	15	1	8	327	1642	31	10	726	215
RTOR Reduction (vph)	0	0	95	0	0	6	0	1	0	0	0	105
Lane Group Flow (vph)	0	245	60	0	16	2	327	1672	0	10	726	110
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4		4						6
Actuated Green, G (s)		21.3	21.3		21.3	21.3	16.5	61.9		1.3	46.7	46.7
Effective Green, g (s)		21.3	21.3		21.3	21.3	16.5	61.9		1.3	46.7	46.7
Actuated g/C Ratio		0.21	0.21		0.21	0.21	0.16	0.62		0.01	0.47	0.47
Clearance Time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Vehicle Extension (s)		1.5	1.5		1.5	1.5	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		279	322		280	322	284	2125		22	1609	686
v/s Ratio Prot							c0.19	c0.49		0.01	0.21	
v/s Ratio Perm		c0.19	0.04		0.01	0.00						0.07
v/c Ratio		0.88	0.19		0.06	0.01	1.15	0.79		0.45	0.45	0.16
Uniform Delay, d1		38.1	32.2		31.4	31.0	41.8	14.1		49.0	18.0	15.4
Progression Factor		1.00	1.00		1.00	1.00	1.07	0.85		1.00	1.00	1.00
Incremental Delay, d2		24.6	0.1		0.0	0.0	100.5	3.0		5.3	0.9	0.5
Delay (s)		62.7	32.3		31.4	31.0	145.2	15.1		54.3	18.9	15.9
Level of Service		E	C		C	C	F	B		D	B	B
Approach Delay (s)		50.9			31.3			36.3			18.6	
Approach LOS		D			C			D			B	

Intersection Summary

HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

4: Mendenhall Loop Road & Egan Drive

03/02/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	106	618	140	33	1084	315	346	20	385	391	65
v/c Ratio	0.66	0.56	0.24	0.32	1.27	0.95	0.99	0.05	1.02	1.00	0.14
Control Delay	53.5	23.3	4.2	53.3	163.5	79.4	87.1	0.2	77.8	73.8	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.5	23.3	4.2	53.3	163.5	79.4	87.1	0.2	77.8	73.8	1.8
Queue Length 50th (ft)	47	204	20	21	~474	200	222	0	~267	~267	4
Queue Length 95th (ft)	#101	227	50	51	#606	#366	#403	0	#471	#471	11
Internal Link Dist (ft)		1356			1654		696			316	
Turn Bay Length (ft)	540		120	550		290		390	280		
Base Capacity (vph)	186	1104	590	117	854	332	350	414	379	390	466
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.56	0.24	0.28	1.27	0.95	0.99	0.05	1.02	1.00	0.14

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 4: Mendenhall Loop Road & Egan Drive

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	599	136	32	1051	0	306	336	19	558	195	63
Future Volume (vph)	103	599	136	32	1051	0	306	336	19	558	195	63
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1723	3348	1486	1723	3348		1723	1814	1511	1637	1682	1513
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (perm)	1723	3348	1486	1723	3348		1723	1814	1511	1637	1682	1513
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	106	618	140	33	1084	0	315	346	20	575	201	65
RTOR Reduction (vph)	0	0	97	0	0	0	0	0	16	0	0	50
Lane Group Flow (vph)	106	618	43	33	1084	0	315	346	4	385	391	15
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2			3			4
Actuated Green, G (s)	9.4	30.9	30.9	4.0	25.5		19.3	19.3	19.3	23.2	23.2	23.2
Effective Green, g (s)	9.4	30.9	30.9	4.0	25.5		19.3	19.3	19.3	23.2	23.2	23.2
Actuated g/C Ratio	0.09	0.31	0.31	0.04	0.26		0.19	0.19	0.19	0.23	0.23	0.23
Clearance Time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Vehicle Extension (s)	2.0	0.5	0.5	2.0	0.5		0.5	0.5	0.5	2.0	2.0	2.0
Lane Grp Cap (vph)	161	1034	459	68	853		332	350	291	379	390	351
v/s Ratio Prot	c0.06	0.18		0.02	c0.32		0.18	c0.19		c0.24	0.23	
v/s Ratio Perm			0.03						0.00			0.01
v/c Ratio	0.66	0.60	0.09	0.49	1.27		0.95	0.99	0.01	1.02	1.00	0.04
Uniform Delay, d1	43.7	29.3	24.6	47.0	37.2		39.9	40.2	32.6	38.4	38.4	29.8
Progression Factor	0.79	0.73	0.77	1.00	1.00		1.00	1.00	1.00	0.67	0.67	1.00
Incremental Delay, d2	7.0	2.5	0.4	2.0	131.1		35.4	44.5	0.0	48.9	44.8	0.0
Delay (s)	41.8	23.9	19.2	49.0	168.3		75.2	84.7	32.7	74.6	70.6	29.8
Level of Service	D	C	B	D	F		E	F	C	E	E	C
Approach Delay (s)		25.4			164.8			78.8			69.3	
Approach LOS		C			F			E			E	

Intersection Summary

HCM 2000 Control Delay	90.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.6
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues

5: Egan Drive & Riverside Drive

03/02/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	371	469	954	525	405	197
v/c Ratio	0.76	0.19	0.75	0.60	0.73	0.47
Control Delay	43.2	5.0	16.5	4.2	47.4	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	5.0	16.5	4.2	47.4	9.0
Queue Length 50th (ft)	215	43	71	5	127	0
Queue Length 95th (ft)	316	72	m165	m0	169	57
Internal Link Dist (ft)		694	1356		707	
Turn Bay Length (ft)	350			900	225	145
Base Capacity (vph)	489	2420	1264	872	1026	420
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.19	0.75	0.60	0.39	0.47

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 5: Egan Drive & Riverside Drive

03/02/2022

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	356	450	916	504	389	189
Future Volume (vph)	356	450	916	504	389	189
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1674	3348	3348	1446	3343	1542
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1674	3348	3348	1446	3343	1542
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	371	469	954	525	405	197
RTOR Reduction (vph)	0	0	0	327	0	164
Lane Group Flow (vph)	371	469	954	198	405	33
Confl. Peds. (#/hr)	5			5	5	5
Heavy Vehicles (%)	5%	5%	5%	5%	2%	2%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	1	6	2		4	8
Permitted Phases				2		
Actuated Green, G (s)	29.2	72.3	37.8	37.8	16.6	16.6
Effective Green, g (s)	29.2	72.3	37.8	37.8	16.6	16.6
Actuated g/C Ratio	0.29	0.72	0.38	0.38	0.17	0.17
Clearance Time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Vehicle Extension (s)	1.0	0.5	0.5	0.5	2.0	2.0
Lane Grp Cap (vph)	488	2420	1265	546	554	255
v/s Ratio Prot	c0.22	0.14	c0.28		c0.12	0.02
v/s Ratio Perm				0.14		
v/c Ratio	0.76	0.19	0.75	0.36	0.73	0.13
Uniform Delay, d1	32.2	4.5	27.1	22.4	39.6	35.5
Progression Factor	1.00	1.00	0.53	1.50	1.00	1.00
Incremental Delay, d2	6.2	0.2	0.4	0.2	4.3	0.1
Delay (s)	38.4	4.6	14.7	33.9	43.8	35.6
Level of Service	D	A	B	C	D	D
Approach Delay (s)		19.6	21.5		41.2	
Approach LOS		B	C		D	
Intersection Summary						
HCM 2000 Control Delay			25.0		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.77			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	18.4
Intersection Capacity Utilization			71.3%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 TWSC
6: Riverside & EBR Vintage

03/02/2022

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑			↑	
Traffic Vol, veh/h	0	157	0	0	420	0
Future Vol, veh/h	0	157	0	0	420	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	169	0	0	452	0

Major/Minor	Minor2	Major2
Conflicting Flow All	- 452	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.22	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.318	- -
Pot Cap-1 Maneuver	0 608	- 0
Stage 1	0 -	- 0
Stage 2	0 -	- 0
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	- 608	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	13.2	0
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBT
Capacity (veh/h)	608	-
HCM Lane V/C Ratio	0.278	-
HCM Control Delay (s)	13.2	-
HCM Lane LOS	B	-
HCM 95th %tile Q(veh)	1.1	-

HCM 2010 TWSC
7: Riverside & WBR Mendenhall Mall

03/02/2022

Intersection						
Int Delay, s/veh	5.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑			
Traffic Vol, veh/h	0	212	718	0	0	0
Future Vol, veh/h	0	212	718	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	-
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	228	772	0	0	0

Major/Minor	Minor1	Major1		
Conflicting Flow All	-	772	0	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.22	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.318	-	-
Pot Cap-1 Maneuver	0	400	-	0
Stage 1	0	-	-	0
Stage 2	0	-	-	0
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	400	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	25.3	0
HCM LOS	D	

Minor Lane/Major Mvmt	NBTWBLn1
Capacity (veh/h)	- 400
HCM Lane V/C Ratio	- 0.57
HCM Control Delay (s)	- 25.3
HCM Lane LOS	- D
HCM 95th %tile Q(veh)	- 3.4

HCM 2010 TWSC

8: NBR Riverside & Vintage/Mendenhall Mall

03/02/2022

Intersection						
Int Delay, s/veh	3.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↑
Traffic Vol, veh/h	242	0	0	0	0	122
Future Vol, veh/h	242	0	0	0	0	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	260	0	0	0	0	131

Major/Minor	Major1		Minor1	
Conflicting Flow All	0	-	-	260
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	779
Stage 1	-	0	0	-
Stage 2	-	0	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	779
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	NB
HCM Control Delay, s	0	10.6
HCM LOS		B

Minor Lane/Major Mvmt	NBLn1	EBT
Capacity (veh/h)	779	-
HCM Lane V/C Ratio	0.168	-
HCM Control Delay (s)	10.6	-
HCM Lane LOS	B	-
HCM 95th %tile Q(veh)	0.6	-

HCM 2010 TWSC

9: Vintage/Mendenhall Mall & SBR Riverside

03/02/2022

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑			↑
Traffic Vol, veh/h	0	0	428	0	0	112
Future Vol, veh/h	0	0	428	0	0	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	460	0	0	120

Major/Minor	Major2	Minor2
Conflicting Flow All	-	0
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	-
Pot Cap-1 Maneuver	-	0
Stage 1	-	0
Stage 2	-	0
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	-
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach	WB	SB
HCM Control Delay, s	0	12.5
HCM LOS		B

Minor Lane/Major Mvmt	WBT SBLn1
Capacity (veh/h)	- 601
HCM Lane V/C Ratio	- 0.2
HCM Control Delay (s)	- 12.5
HCM Lane LOS	- B
HCM 95th %tile Q(veh)	- 0.7

Appendix D- AM Base + Site Traffic Capacity Analysis Report

HCM 2010 TWSC

1: Glacier Highway/Vintage Boulevard & Egan Drive

03/02/2022

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑	↑			↑			↑
Traffic Vol, veh/h	0	783	202	27	634	80	0	0	46	0	0	91
Future Vol, veh/h	0	783	202	27	634	80	0	0	46	0	0	91
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	Stop	-	-	Stop
Storage Length	-	-	375	300	-	475	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	5	2	0	5	2	0	0	2	0	0	7
Mvmt Flow	0	979	253	34	793	100	0	0	58	0	0	114

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	-	984	0	0	-	-	500	-	-	402
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.1	-	-	-	-	6.94	-	-	7.04
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.2	-	-	-	-	3.32	-	-	3.37
Pot Cap-1 Maneuver	0	-	0	710	-	0	0	0	516	0	0	584
Stage 1	0	-	0	-	-	0	0	0	-	0	0	-
Stage 2	0	-	0	-	-	0	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	707	-	-	-	-	512	-	-	582
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	12.9	12.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT	SBLn1
Capacity (veh/h)	512	-	707	-	582
HCM Lane V/C Ratio	0.112	-	0.048	-	0.195
HCM Control Delay (s)	12.9	-	10.3	-	12.7
HCM Lane LOS	B	-	B	-	B
HCM 95th %tile Q(veh)	0.4	-	0.1	-	0.7

Queues

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	25	38	109	168	104	210	104	825
v/c Ratio	0.12	0.22	0.40	0.58	0.33	0.20	0.14	0.83
Control Delay	28.4	42.6	32.7	43.4	9.0	12.6	6.9	29.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	42.6	32.7	43.4	9.0	12.6	6.9	29.6
Queue Length 50th (ft)	11	21	50	80	18	58	18	391
Queue Length 95th (ft)	27	46	83	140	39	105	39	#623
Internal Link Dist (ft)		693		1080		707		271
Turn Bay Length (ft)	200		75		150		100	
Base Capacity (vph)	379	416	364	436	419	1043	869	999
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.09	0.30	0.39	0.25	0.20	0.12	0.83

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	29	0	84	129	0	80	162	0	80	635	0
Future Volume (vph)	19	29	0	84	129	0	80	162	0	80	635	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width	12	12	16	12	12	16	12	12	16	12	12	16
Total Lost time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1706	1729		1709	1814		1723	1814		1706	1814	
Flt Permitted	0.65	1.00		0.48	1.00		0.12	1.00		0.63	1.00	
Satd. Flow (perm)	1169	1729		857	1814		213	1814		1125	1814	
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	25	38	0	109	168	0	104	210	0	104	825	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	25	38	0	109	168	0	104	210	0	104	825	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	10.3	8.0		20.4	13.8		57.2	49.1		53.2	47.1	
Effective Green, g (s)	10.3	8.0		20.4	13.8		57.2	49.1		53.2	47.1	
Actuated g/C Ratio	0.12	0.09		0.23	0.15		0.64	0.55		0.60	0.53	
Clearance Time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		3.0	2.0		3.0	2.0	
Lane Grp Cap (vph)	148	155		273	280		274	999		711	958	
v/s Ratio Prot	0.00	0.02		c0.04	c0.09		c0.03	0.12		0.01	c0.45	
v/s Ratio Perm	0.02			0.05			0.21			0.08		
v/c Ratio	0.17	0.25		0.40	0.60		0.38	0.21		0.15	0.86	
Uniform Delay, d1	35.4	37.7		28.4	35.1		13.3	10.2		7.7	18.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3		0.4	2.3		0.9	0.0		0.1	7.8	
Delay (s)	35.6	38.0		28.8	37.4		14.2	10.2		7.8	25.9	
Level of Service	D	D		C	D		B	B		A	C	
Approach Delay (s)		37.1			34.0			11.5			23.9	
Approach LOS		D			C			B			C	

Intersection Summary

HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	89.1	Sum of lost time (s)	17.8
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queues

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022

	→	↘	←	↙	↖	↑	↗	↓	↘
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	63	130	34	6	77	485	6	1748	233
v/c Ratio	0.51	0.53	0.29	0.03	0.59	0.18	0.07	0.73	0.22
Control Delay	64.2	19.0	53.8	0.2	67.5	6.6	56.2	14.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	64.2	19.0	53.8	0.2	67.5	6.6	56.2	14.8	5.1
Queue Length 50th (ft)	48	11	25	0	46	18	5	387	32
Queue Length 95th (ft)	79	55	50	0	#124	151	18	530	71
Internal Link Dist (ft)	362		281			230		391	
Turn Bay Length (ft)		75		50	150		75		90
Base Capacity (vph)	244	379	236	338	133	2747	100	2409	1049
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	6	0	0	0	0	0	207	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.35	0.14	0.02	0.58	0.18	0.06	0.79	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↘	↕↗		↘	↕↗	↗
Traffic Volume (vph)	49	4	109	27	2	5	65	403	4	5	1468	196
Future Volume (vph)	49	4	109	27	2	5	65	403	4	5	1468	196
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97		1.00	0.98	1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes		0.99	1.00		0.99	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1721	1499		1720	1511	1723	3439		1723	3446	1460
Flt Permitted		0.72	1.00		0.69	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1293	1499		1248	1511	1723	3439		1723	3446	1460
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	58	5	130	32	2	6	77	480	5	6	1748	233
RTOR Reduction (vph)	0	0	104	0	0	5	0	0	0	0	0	28
Lane Group Flow (vph)	0	63	26	0	34	1	77	485	0	6	1748	205
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4		4						6
Actuated Green, G (s)		11.4	11.4		11.4	11.4	9.2	91.9		1.2	83.9	83.9
Effective Green, g (s)		11.4	11.4		11.4	11.4	9.2	91.9		1.2	83.9	83.9
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.08	0.77		0.01	0.70	0.70
Clearance Time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Vehicle Extension (s)		1.5	1.5		1.5	1.5	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		122	142		118	143	132	2633		17	2409	1020
v/s Ratio Prot							c0.04	0.14		0.00	c0.51	
v/s Ratio Perm		c0.05	0.02		0.03	0.00						0.14
v/c Ratio		0.52	0.18		0.29	0.00	0.58	0.18		0.35	0.73	0.20
Uniform Delay, d1		51.7	50.0		50.5	49.2	53.5	3.8		59.0	11.0	6.3
Progression Factor		1.00	1.00		1.00	1.00	0.92	1.64		1.00	1.00	1.00
Incremental Delay, d2		1.5	0.2		0.5	0.0	4.2	0.2		4.5	1.9	0.4
Delay (s)		53.2	50.2		51.0	49.2	53.2	6.4		63.6	13.0	6.8
Level of Service		D	D		D	D	D	A		E	B	A
Approach Delay (s)		51.2			50.7			12.8			12.4	
Approach LOS		D			D			B			B	

Intersection Summary

HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queues

4: Mendenhall Loop Road & Egan Drive

03/02/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	62	1121	135	8	447	133	119	41	809	830	126
v/c Ratio	0.55	1.07	0.26	0.11	0.57	0.74	0.63	0.15	1.08	1.09	0.17
Control Delay	72.1	87.6	9.5	58.9	46.9	75.1	65.4	1.2	80.9	83.9	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Total Delay	72.1	87.6	9.5	58.9	46.9	75.1	65.4	1.2	80.9	84.5	4.7
Queue Length 50th (ft)	47	432	5	6	159	102	90	0	~702	~727	13
Queue Length 95th (ft)	#100	#782	63	23	#247	160	144	0	#933	#959	m27
Internal Link Dist (ft)		1356			1654		696			316	
Turn Bay Length (ft)	540		120	550		290		390	280		
Base Capacity (vph)	123	1051	529	72	787	277	291	348	749	762	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	1	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	1.07	0.26	0.11	0.57	0.48	0.41	0.12	1.08	1.09	0.17

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 4: Mendenhall Loop Road & Egan Drive

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1020	123	7	407	0	121	108	37	1269	222	115
Future Volume (vph)	56	1020	123	7	407	0	121	108	37	1269	222	115
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Lane Util. Factor	1.00	*1.00	1.00	1.00	*1.00		1.00	1.00	1.00	*1.00	*1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (prot)	1723	3524	1481	1723	3524		1723	1814	1509	1723	1752	1511
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (perm)	1723	3524	1481	1723	3524		1723	1814	1509	1723	1752	1511
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	62	1121	135	8	447	0	133	119	41	1395	244	126
RTOR Reduction (vph)	0	0	92	0	0	0	0	0	37	0	0	71
Lane Group Flow (vph)	62	1121	43	8	447	0	133	119	4	809	830	55
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2			3			4
Actuated Green, G (s)	6.9	31.7	31.7	1.0	25.8		12.5	12.5	12.5	52.2	52.2	52.2
Effective Green, g (s)	6.9	31.7	31.7	1.0	25.8		12.5	12.5	12.5	52.2	52.2	52.2
Actuated g/C Ratio	0.06	0.26	0.26	0.01	0.22		0.10	0.10	0.10	0.44	0.44	0.44
Clearance Time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Vehicle Extension (s)	2.0	0.5	0.5	2.0	0.5		0.5	0.5	0.5	2.0	2.0	2.0
Lane Grp Cap (vph)	99	930	391	14	757		179	188	157	749	762	657
v/s Ratio Prot	c0.04	c0.32		0.00	0.13		c0.08	0.07		0.47	c0.47	
v/s Ratio Perm			0.03						0.00			0.04
v/c Ratio	0.63	1.21	0.11	0.57	0.59		0.74	0.63	0.03	1.08	1.09	0.08
Uniform Delay, d1	55.3	44.1	33.5	59.3	42.4		52.2	51.6	48.3	33.9	33.9	19.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.83	0.83	1.19
Incremental Delay, d2	8.6	102.6	0.6	30.5	3.4		13.5	5.0	0.0	52.0	55.1	0.0
Delay (s)	63.9	146.8	34.0	89.8	45.7		65.7	56.6	48.3	80.2	83.4	23.6
Level of Service	E	F	C	F	D		E	E	D	F	F	C
Approach Delay (s)		131.3			46.5			59.6			77.6	
Approach LOS		F			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			91.0			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.6			
Intersection Capacity Utilization			101.5%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

5: Egan Drive & Riverside Drive

03/02/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	213	786	628	146	660	265
v/c Ratio	0.64	0.43	0.72	0.30	0.69	0.46
Control Delay	37.0	10.5	29.8	6.6	27.3	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	10.5	29.8	6.6	27.3	11.3
Queue Length 50th (ft)	80	91	122	0	121	27
Queue Length 95th (ft)	171	154	214	35	215	88
Internal Link Dist (ft)		694	1356		707	
Turn Bay Length (ft)	350			900	225	145
Base Capacity (vph)	772	3181	2060	942	2057	622
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.25	0.30	0.15	0.32	0.43
Intersection Summary						

HCM Signalized Intersection Capacity Analysis 5: Egan Drive & Riverside Drive

03/02/2022

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	177	652	521	121	548	220
Future Volume (vph)	177	652	521	121	548	220
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1674	3348	3348	1453	3343	1542
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1674	3348	3348	1453	3343	1542
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	213	786	628	146	660	265
RTOR Reduction (vph)	0	0	0	107	0	126
Lane Group Flow (vph)	213	786	628	39	660	139
Confl. Peds. (#/hr)	5			5	5	5
Heavy Vehicles (%)	5%	5%	5%	5%	2%	2%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	1	6	2		4	8
Permitted Phases				2		
Actuated Green, G (s)	13.8	37.4	18.3	18.3	19.9	19.9
Effective Green, g (s)	13.8	37.4	18.3	18.3	19.9	19.9
Actuated g/C Ratio	0.20	0.55	0.27	0.27	0.29	0.29
Clearance Time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Vehicle Extension (s)	1.0	0.5	0.5	0.5	2.0	2.0
Lane Grp Cap (vph)	337	1830	895	388	972	448
v/s Ratio Prot	c0.13	0.23	c0.19		c0.20	0.09
v/s Ratio Perm				0.03		
v/c Ratio	0.63	0.43	0.70	0.10	0.68	0.31
Uniform Delay, d1	25.0	9.2	22.6	18.9	21.4	18.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.1	2.1	0.0	1.5	0.1
Delay (s)	27.8	9.2	24.6	18.9	22.9	19.0
Level of Service	C	A	C	B	C	B
Approach Delay (s)		13.2	23.6		21.8	
Approach LOS		B	C		C	
Intersection Summary						
HCM 2000 Control Delay			19.1		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.70			
Actuated Cycle Length (s)			68.4		Sum of lost time (s)	18.4
Intersection Capacity Utilization			54.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 TWSC
6: Riverside & EBR Vintage

03/02/2022

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑			↑	
Traffic Vol, veh/h	0	49	0	0	719	0
Future Vol, veh/h	0	49	0	0	719	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	64	0	0	934	0

Major/Minor	Minor2	Major2
Conflicting Flow All	- 934	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.22	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.318	- -
Pot Cap-1 Maneuver	0 322	- 0
Stage 1	0 -	- 0
Stage 2	0 -	- 0
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	- 322	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	18.9	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT
Capacity (veh/h)	322	-
HCM Lane V/C Ratio	0.198	-
HCM Control Delay (s)	18.9	-
HCM Lane LOS	C	-
HCM 95th %tile Q(veh)	0.7	-

HCM 2010 TWSC

7: Riverside & WBR Mendenhall Mall

03/02/2022

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑			
Traffic Vol, veh/h	0	49	181	0	0	0
Future Vol, veh/h	0	49	181	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	-
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	64	235	0	0	0

Major/Minor

	Minor1	Major1
Conflicting Flow All	-	235
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	6.22
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	3.318
Pot Cap-1 Maneuver	0	804
Stage 1	0	-
Stage 2	0	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	804
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach

	WB	NB
HCM Control Delay, s	9.9	0
HCM LOS	A	

Minor Lane/Major Mvmt

	NBTWBLn1
Capacity (veh/h)	- 804
HCM Lane V/C Ratio	- 0.079
HCM Control Delay (s)	- 9.9
HCM Lane LOS	- A
HCM 95th %tile Q(veh)	- 0.3

HCM 2010 TWSC

8: NBR Riverside & Vintage/Mendenhall Mall

03/02/2022 10:15

Intersection						
Int Delay, s/veh	3.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↑
Traffic Vol, veh/h	109	0	0	0	0	55
Future Vol, veh/h	109	0	0	0	0	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	142	0	0	0	0	71

Major/Minor	Major1		Minor1	
Conflicting Flow All	0	-	-	142
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	906
Stage 1	-	0	0	-
Stage 2	-	0	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	906
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	NB
HCM Control Delay, s	0	9.3
HCM LOS		A

Minor Lane/Major Mvmt	NBLn1	EBT
Capacity (veh/h)	906	-
HCM Lane V/C Ratio	0.079	-
HCM Control Delay (s)	9.3	-
HCM Lane LOS	A	-
HCM 95th %tile Q(veh)	0.3	-

HCM 2010 TWSC

9: Vintage/Mendenhall Mall & SBR Riverside

03/02/2022

Intersection

Int Delay, s/veh 4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑			↑
Traffic Vol, veh/h	0	0	209	0	0	142
Future Vol, veh/h	0	0	209	0	0	142
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	9306112	0	-	0	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	271	0	0	184

Major/Minor	Major2	Minor2
Conflicting Flow All	-	0
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	-
Pot Cap-1 Maneuver	-	0
Stage 1	-	0
Stage 2	-	0
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	-
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach	WB	SB
HCM Control Delay, s	0	11.2
HCM LOS		B

Minor Lane/Major Mvmt	WBT	SBLn1
Capacity (veh/h)	-	768
HCM Lane V/C Ratio	-	0.24
HCM Control Delay (s)	-	11.2
HCM Lane LOS	-	B
HCM 95th %tile Q(veh)	-	0.9

Appendix E- PM Base + Site Traffic Capacity Analysis Report

HCM 2010 TWSC

1: Glacier Highway/Vintage Boulevard & Egan Drive

03/02/2022

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑	↑			↑			↑
Traffic Vol, veh/h	0	744	166	54	900	162	0	0	70	0	0	202
Future Vol, veh/h	0	744	166	54	900	162	0	0	70	0	0	202
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	Stop	-	-	Stop
Storage Length	-	-	375	300	-	475	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	5	2	2	5	2	2	2	2	0	0	7
Mvmt Flow	0	791	177	57	957	172	0	0	74	0	0	215

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	-	0	-	796	0	0	-	-	406	-	-	484
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	7.04
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.37
Pot Cap-1 Maneuver	0	-	0	822	-	0	0	0	594	0	0	516
Stage 1	0	-	0	-	-	0	0	0	-	0	0	-
Stage 2	0	-	0	-	-	0	0	0	-	0	0	-
Platoon blocked, %		-		-								
Mov Cap-1 Maneuver	-	-	-	819	-	-	-	-	589	-	-	514
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	12	16.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT	SBLn1
Capacity (veh/h)	589	-	819	-	514
HCM Lane V/C Ratio	0.126	-	0.07	-	0.418
HCM Control Delay (s)	12	-	9.7	-	16.9
HCM Lane LOS	B	-	A	-	C
HCM 95th %tile Q(veh)	0.4	-	0.2	-	2

Queues

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	340	206	162	152	338	475	80	291
v/c Ratio	0.71	0.60	0.39	0.54	0.70	0.72	0.25	0.68
Control Delay	29.5	38.9	20.3	39.9	22.3	30.2	14.4	35.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	38.9	20.3	39.9	22.3	30.2	14.4	35.8
Queue Length 50th (ft)	115	88	48	67	97	198	19	127
Queue Length 95th (ft)	#241	197	116	148	187	364	48	229
Internal Link Dist (ft)		693		1080		707		271
Turn Bay Length (ft)	200		75		150		100	
Base Capacity (vph)	494	467	525	490	507	1103	516	1103
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.44	0.31	0.31	0.67	0.43	0.16	0.26

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	316	192	0	151	141	0	314	442	0	74	271	0
Future Volume (vph)	316	192	0	151	141	0	314	442	0	74	271	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width	12	12	16	12	12	16	12	12	16	12	12	16
Total Lost time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1715	1729		1706	1814		1723	1814		1718	1814	
Flt Permitted	0.44	1.00		0.63	1.00		0.32	1.00		0.38	1.00	
Satd. Flow (perm)	801	1729		1126	1814		573	1814		690	1814	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	340	206	0	162	152	0	338	475	0	80	291	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	340	206	0	162	152	0	338	475	0	80	291	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	29.8	15.4		22.8	11.9		37.8	28.1		24.8	19.4	
Effective Green, g (s)	29.8	15.4		22.8	11.9		37.8	28.1		24.8	19.4	
Actuated g/C Ratio	0.38	0.20		0.29	0.15		0.49	0.36		0.32	0.25	
Clearance Time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	477	343		412	278		488	656		292	453	
v/s Ratio Prot	c0.13	0.12		0.06	0.08		c0.13	c0.26		0.02	0.16	
v/s Ratio Perm	c0.14			0.06			0.21			0.07		
v/c Ratio	0.71	0.60		0.39	0.55		0.69	0.72		0.27	0.64	
Uniform Delay, d1	18.6	28.3		21.4	30.4		13.8	21.4		19.0	26.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.2	2.0		0.6	1.2		3.4	3.4		0.2	2.3	
Delay (s)	22.8	30.3		22.0	31.5		17.2	24.8		19.2	28.3	
Level of Service	C	C		C	C		B	C		B	C	
Approach Delay (s)		25.6			26.6			21.6			26.4	
Approach LOS		C			C			C			C	

Intersection Summary

HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	77.6	Sum of lost time (s)	17.8
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022

	→	↘	←	↙	↖	↑	↗	↓	↘
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	261	166	16	8	333	1673	10	726	219
v/c Ratio	0.90	0.39	0.05	0.02	1.28	0.75	0.10	0.45	0.27
Control Delay	70.6	12.8	29.5	0.1	192.2	14.5	46.4	18.0	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Total Delay	70.6	12.8	29.5	0.1	192.2	14.9	46.4	18.0	3.2
Queue Length 50th (ft)	157	22	8	0	~372	274	6	138	5
Queue Length 95th (ft)	#288	77	25	0	m#518	m#623	23	181	40
Internal Link Dist (ft)	362		281			230		391	
Turn Bay Length (ft)		75		50	150		75		90
Base Capacity (vph)	323	465	325	433	260	2233	120	1819	870
Starvation Cap Reductn	0	0	0	0	0	183	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.36	0.05	0.02	1.28	0.82	0.08	0.40	0.25

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	14	151	14	1	7	303	1494	28	9	661	199
Future Volume (vph)	224	14	151	14	1	7	303	1494	28	9	661	199
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1721	1513		1726	1513	1723	3434		1723	3446	1469
Flt Permitted		0.73	1.00		0.73	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1310	1513		1317	1513	1723	3434		1723	3446	1469
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	246	15	166	15	1	8	333	1642	31	10	726	219
RTOR Reduction (vph)	0	0	95	0	0	6	0	1	0	0	0	106
Lane Group Flow (vph)	0	261	71	0	16	2	333	1672	0	10	726	113
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4		4						6
Actuated Green, G (s)		22.2	22.2		22.2	22.2	15.1	61.0		1.3	47.2	47.2
Effective Green, g (s)		22.2	22.2		22.2	22.2	15.1	61.0		1.3	47.2	47.2
Actuated g/C Ratio		0.22	0.22		0.22	0.22	0.15	0.61		0.01	0.47	0.47
Clearance Time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Vehicle Extension (s)		1.5	1.5		1.5	1.5	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		290	335		292	335	260	2094		22	1626	693
v/s Ratio Prot							c0.19	c0.49		0.01	0.21	
v/s Ratio Perm		c0.20	0.05		0.01	0.00						0.08
v/c Ratio		0.90	0.21		0.05	0.01	1.28	0.80		0.45	0.45	0.16
Uniform Delay, d1		37.8	31.8		30.6	30.3	42.5	14.8		49.0	17.7	15.1
Progression Factor		1.00	1.00		1.00	1.00	1.07	0.85		1.00	1.00	1.00
Incremental Delay, d2		28.2	0.1		0.0	0.0	152.3	3.3		5.3	0.9	0.5
Delay (s)		66.0	31.9		30.7	30.3	197.7	15.9		54.3	18.6	15.6
Level of Service		E	C		C	C	F	B		D	B	B
Approach Delay (s)		52.7			30.5			46.1			18.3	
Approach LOS		D			C			D			B	

Intersection Summary

HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

4: Mendenhall Loop Road & Egan Drive

03/02/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	108	629	143	33	1092	320	346	20	389	395	66
v/c Ratio	0.67	0.57	0.24	0.32	1.28	0.96	0.99	0.05	1.03	1.01	0.14
Control Delay	53.9	23.2	4.2	53.3	168.1	82.6	87.1	0.2	80.9	76.7	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	23.2	4.2	53.3	168.1	82.6	87.1	0.2	80.9	76.7	1.8
Queue Length 50th (ft)	47	208	22	21	~481	204	222	0	~282	~273	4
Queue Length 95th (ft)	#106	225	53	51	#612	#375	#403	0	#477	#478	11
Internal Link Dist (ft)		1356			1654		696			316	
Turn Bay Length (ft)	540		120	550		290		390	280		
Base Capacity (vph)	186	1104	590	117	853	332	350	414	379	390	466
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.57	0.24	0.28	1.28	0.96	0.99	0.05	1.03	1.01	0.14

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 4: Mendenhall Loop Road & Egan Drive

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	610	139	32	1059	0	310	336	19	564	197	64
Future Volume (vph)	105	610	139	32	1059	0	310	336	19	564	197	64
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1723	3348	1486	1723	3348		1723	1814	1511	1637	1682	1513
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (perm)	1723	3348	1486	1723	3348		1723	1814	1511	1637	1682	1513
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	108	629	143	33	1092	0	320	346	20	581	203	66
RTOR Reduction (vph)	0	0	99	0	0	0	0	0	16	0	0	51
Lane Group Flow (vph)	108	629	44	33	1092	0	320	346	4	389	395	15
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2			3			4
Actuated Green, G (s)	9.4	30.9	30.9	4.0	25.5		19.3	19.3	19.3	23.2	23.2	23.2
Effective Green, g (s)	9.4	30.9	30.9	4.0	25.5		19.3	19.3	19.3	23.2	23.2	23.2
Actuated g/C Ratio	0.09	0.31	0.31	0.04	0.26		0.19	0.19	0.19	0.23	0.23	0.23
Clearance Time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Vehicle Extension (s)	2.0	0.5	0.5	2.0	0.5		0.5	0.5	0.5	2.0	2.0	2.0
Lane Grp Cap (vph)	161	1034	459	68	853		332	350	291	379	390	351
v/s Ratio Prot	c0.06	0.19		0.02	c0.33		0.19	c0.19		c0.24	0.23	
v/s Ratio Perm			0.03						0.00			0.01
v/c Ratio	0.67	0.61	0.10	0.49	1.28		0.96	0.99	0.01	1.03	1.01	0.04
Uniform Delay, d1	43.8	29.4	24.6	47.0	37.2		40.0	40.2	32.6	38.4	38.4	29.8
Progression Factor	0.79	0.72	0.73	1.00	1.00		1.00	1.00	1.00	0.68	0.68	1.00
Incremental Delay, d2	8.1	2.6	0.4	2.0	135.1		39.3	44.5	0.0	51.7	47.4	0.0
Delay (s)	42.6	23.8	18.3	49.0	172.3		79.3	84.7	32.7	77.9	73.6	29.8
Level of Service	D	C	B	D	F		E	F	C	E	E	C
Approach Delay (s)		25.2			168.7			80.7			72.2	
Approach LOS		C			F			F			E	
Intersection Summary												
HCM 2000 Control Delay			92.8			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			22.6			
Intersection Capacity Utilization			94.4%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

5: Egan Drive & Riverside Drive

03/02/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	378	469	954	536	422	206
v/c Ratio	0.75	0.20	0.78	0.62	0.74	0.47
Control Delay	42.6	5.2	17.1	4.6	47.1	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	5.2	17.1	4.6	47.1	8.7
Queue Length 50th (ft)	217	44	72	5	132	0
Queue Length 95th (ft)	#329	74	m157	m0	174	58
Internal Link Dist (ft)		694	1356		707	
Turn Bay Length (ft)	350			900	225	145
Base Capacity (vph)	501	2403	1223	868	1026	434
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.20	0.78	0.62	0.41	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis5: Egan Drive & Riverside Drive

03/02/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	363	450	916	515	405	198
Future Volume (vph)	363	450	916	515	405	198
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1674	3348	3348	1446	3343	1542
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1674	3348	3348	1446	3343	1542
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	378	469	954	536	422	206
RTOR Reduction (vph)	0	0	0	340	0	171
Lane Group Flow (vph)	378	469	954	196	422	35
Confl. Peds. (#/hr)	5			5	5	5
Heavy Vehicles (%)	5%	5%	5%	5%	2%	2%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	1	6	2		4	8
Permitted Phases				2		
Actuated Green, G (s)	29.9	71.8	36.6	36.6	17.1	17.1
Effective Green, g (s)	29.9	71.8	36.6	36.6	17.1	17.1
Actuated g/C Ratio	0.30	0.72	0.37	0.37	0.17	0.17
Clearance Time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Vehicle Extension (s)	1.0	0.5	0.5	0.5	2.0	2.0
Lane Grp Cap (vph)	500	2403	1225	529	571	263
v/s Ratio Prot	c0.23	0.14	c0.28		c0.13	0.02
v/s Ratio Perm				0.14		
v/c Ratio	0.76	0.20	0.78	0.37	0.74	0.13
Uniform Delay, d1	31.7	4.6	28.1	23.3	39.3	35.2
Progression Factor	1.00	1.00	0.53	1.64	1.00	1.00
Incremental Delay, d2	5.7	0.2	0.5	0.2	4.3	0.1
Delay (s)	37.5	4.8	15.4	38.3	43.6	35.3
Level of Service	D	A	B	D	D	D
Approach Delay (s)		19.4	23.6		40.9	
Approach LOS		B	C		D	

Intersection Summary

HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.4
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 TWSC 6: Riverside & EBR Vintage

03/02/2022

Intersection						
Int Delay, s/veh	4.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	180	0	0	421	0
Future Vol, veh/h	0	180	0	0	421	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	194	0	0	453	0

Major/Minor	Minor2	Major2
Conflicting Flow All	- 453	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.22	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.318	- -
Pot Cap-1 Maneuver	0 607	- 0
Stage 1	0 -	- 0
Stage 2	0 -	- 0
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	- 607	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	13.7	0
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBT
Capacity (veh/h)	607	-
HCM Lane V/C Ratio	0.319	-
HCM Control Delay (s)	13.7	-
HCM Lane LOS	B	-
HCM 95th %tile Q(veh)	1.4	-

HCM 2010 TWSC
7: Riverside & WBR Mendenhall Mall

03/02/2022

Intersection

Int Delay, s/veh 6.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↖			
Traffic Vol, veh/h	0	212	758	0	0	0
Future Vol, veh/h	0	212	758	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	-
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	228	815	0	0	0

Major/Minor Minor1 Major1

Conflicting Flow All	-	815	0	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.22	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.318	-	-
Pot Cap-1 Maneuver	0	377	-	0
Stage 1	0	-	-	0
Stage 2	0	-	-	0
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	377	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach WB NB

HCM Control Delay, s	28.1	0
HCM LOS	D	

Minor Lane/Major Mvmt NBTWBLn1

Capacity (veh/h)	-	377
HCM Lane V/C Ratio	-	0.605
HCM Control Delay (s)	-	28.1
HCM Lane LOS	-	D
HCM 95th %tile Q(veh)	-	3.8

HCM 2010 TWSC

8: NBR Riverside & Vintage/Mendenhall Mall

03/02/2022

Intersection						
Int Delay, s/veh	3.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↗
Traffic Vol, veh/h	266	0	0	0	0	122
Future Vol, veh/h	266	0	0	0	0	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	286	0	0	0	0	131

Major/Minor	Major1		Minor1	
Conflicting Flow All	0	-	-	286
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	753
Stage 1	-	0	0	-
Stage 2	-	0	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	753
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT
Capacity (veh/h)	753	-
HCM Lane V/C Ratio	0.174	-
HCM Control Delay (s)	10.8	-
HCM Lane LOS	B	-
HCM 95th %tile Q(veh)	0.6	-

HCM 2010 TWSC

9: Vintage/Mendenhall Mall & SBR Riverside

03/02/2022

Intersection

Int Delay, s/veh 2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑			↑
Traffic Vol, veh/h	0	0	455	0	0	119
Future Vol, veh/h	0	0	455	0	0	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	489	0	0	128

Major/Minor	Major2	Minor2
Conflicting Flow All	-	0
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	-
Pot Cap-1 Maneuver	-	0
Stage 1	-	0
Stage 2	-	0
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	-
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach	WB	SB
HCM Control Delay, s	0	13
HCM LOS		B

Minor Lane/Major Mvmt	WBT SBLn1
Capacity (veh/h)	- 579
HCM Lane V/C Ratio	- 0.221
HCM Control Delay (s)	- 13
HCM Lane LOS	- B
HCM 95th %tile Q(veh)	- 0.8

**Appendix F- Meeting Summary; CBJ and Kinney Engineering,
LLC; July 27, 2021**



MEETING SUMMARY

Project: Juneau Medical Office Building
Meeting Purpose: Traffic Impact Analysis (TIA) Requirements
Date/Time: 10:30, July 27, 2021
Location: Zoom
Attendees: **City & Borough of Juneau, AK (CBJ):** Allison Eddins Planner II Community Development Department
Kinney Engineering, LLC on behalf of JL Properties, Inc (Developer): Randy Kinney

Topic Discussed:	Is TIA required?
CBJ Requirements	- Discussions with DOT&PF (David Epstein) indicate that CBJ is primary approving agency for a TIA (if required) since proposed site fronts Vintage Boulevard. - In this meeting, Ms. Eddins indicates CBJ requires TIAs as part of a Conditional Use Permit or Building Permit if traffic thresholds are exceeded. TIA will be reviewed by CBJ staff, but approved by CBJ Planning Commission. - DOT&PF review will be coordinated by CBJ. - CBJ Code of Ordinances, 49.40.300 Applicability. (a) A traffic impact analysis (TIA) shall be required as follows: (1) A development projected to generate 500 or more average daily trips (ADT) shall be required to have a traffic impact analysis. (2) A development projected to generate fewer than 250 ADT shall not be required to have a traffic impact analysis. (3) A development projected to generate more than 250 ADT but fewer than 500 ADT shall be required to have a traffic impact analysis if the Community Development Department Director determines that an analysis is necessary based on the type of development, its location, the likelihood of future expansion, and other factors found relevant by the director.
Proposed Site	- Legal Description: Vintage IV TR A2 - Tax ID: 5B1601430017 2.9 Acres, 127,336 SF - Zoning: (LC) Light Commercial - Street Fronting: Vintage Boulevard, CBJ owned, LOCATION below.

	
Development	3-level, 41,000 SF Medical Office Building (source: Sparks Design LLC plans)
Trip Generation	• ITE Trip Generation Manual Land Use: LU 720 (Medical-Dental Offices, see attached). • Choose trip estimation method for site generated weekday ADT (a. Line at Cluster, b. Average Rate, c. Fitted Curve Equation) per Trip Generation Manual, 3rd Ed: Result is Fitted Curve Equation. • Weekday ADT $T = 38.42(X) - 87.62$; for $X = 41$, $T = 1,488$ trips in and out per day. • 50%/50% entering/exiting.
Conclusion	• TIA will be required.
Topic Discussed:	Design Year/Design Hour
CBJ Requirements	• CBJ Code of Ordinances, 49.40.330 Traffic impact mitigation (a) (1) Summarized as: ◦ Design Year: Opening year and at full build out (if phased). • Design Hour: Not discussed at meeting, but would likely be the morning and evening commuting peak hours.
Topic Discussed:	Study Area
CBJ Requirements	• CBJ Code of Ordinances, 49.40.305 Traffic impact analysis (TIA) requirements. (a) <i>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.</i> • CBJ Code of Ordinances, 49.40.305 (c)

	(1) Intersections and segments of roadways where the ADT on any approach to an intersection is anticipated to increase by five percent or more due to the proposed development.....
Study Area Methodology	- Not discussed at the meeting. - Propose to distribute traffic to/from site Juneau based on AADT weight. DOT&PF has an AADT map of area, https://akdot.maps.arcgis.com/apps/mapviewer/index.html?webmap=7c1e1029fdb64d7a86449d55ef05e21c. - We will cordon that map as shown and assign site inbound and outbound trips according to AADT weight were cordon line crosses major links. Σ AADT at cordon crossing=15752+8619+17049+26134+9334+2085=78973 Map data points: 8619/78973 = 11% 17049/78973 = 22% 15752/78973 = 20% 2085/78973 = 3% 9334/78973 = 12% 26134/78973 = 33%
Topic Discussed:	LOS Standards
CBJ Requirements	- CBJ Code of Ordinances, 49.40.310 Traffic; minimum standards. (a) 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. - CBJ Code of Ordinances, 49.40.340 Traffic impact mitigation. (a) Except as provided in 49.40.340, an applicant shall make improvements to a roadway or intersection to achieve or maintain an acceptable LOS if a roadway or intersection has an: - LOS D without traffic generated by the development; and would drop below LOS D with traffic generated by the development at the opening date of the development or full build out; - If a roadway has an LOS below D without traffic generated by the development at the opening date of the development; or - If the intersection or roadway segment has a pattern of accidents resulting in personal injuries, and the development would aggravate this accident pattern, then mitigation shall be required regardless of the LOS.

	• CBJ Code of Ordinances, 49.40.340 Mitigation waiver. Section indicates conditions in which the requirements above may be waived.
Topic Discussed:	Material Provided by Ms. Eddins
	• CBJ applicable Codes • Example TIA
Additional Topic:	Traffic Data for Intersections .
Discussion	• Because of pandemic, we will use the existing counts published in the Juneau Egan Drive and Riverside Intersection Improvements Traffic Analysis Report. Counts were conducted between 2012 and 2016. They will be factored to 2019 volumes using link AADTs for the respective years, and 2019 AADT. The volumes will then be expanded to the design year using 0.25% per year (DOT&PF recommendations). • Observed PM volumes are: Observed PM traffic volume diagram showing intersections: Egan Drive/Vintage Boulevard, Vintage Boulevard/Riverside Drive, Riverside Drive/Mendenhall, Mendenhall/Loop Road, Loop Road/Atlin Drive, Egan Drive/Glacier Highway, Glacier Highway/Vintage Boulevard, Vintage Boulevard/Mendenhall, Mendenhall/Loop Road, Loop Road/Atlin Drive. Data is provided for Thursday 01/07/2016 4:30-5:30PM and Wednesday 09/26/2012 4:45-5:45PM. • Observed AM volumes are: Observed AM traffic volume diagram showing intersections: Egan Drive/Vintage Boulevard, Vintage Boulevard/Riverside Drive, Riverside Drive/Mendenhall, Mendenhall/Loop Road, Loop Road/Atlin Drive, Egan Drive/Glacier Highway, Glacier Highway/Vintage Boulevard, Vintage Boulevard/Mendenhall, Mendenhall/Loop Road, Loop Road/Atlin Drive. Data is provided for Thursday 01/07/2016 7:15-8:15AM and Wednesday 09/26/2012 7:15-8:15AM.

Juneau Medical Office
TIA Requirements Meeting

5

Attachments

Land Use: 720 Medical-Dental Office Building

Description

A medical-dental office building is a facility that provides diagnoses and outpatient care on a routine basis but is unable to provide prolonged in-house medical and surgical care. One or more private physicians or dentists generally operate this type of facility. Clinic (Land Use 630) is a related use.

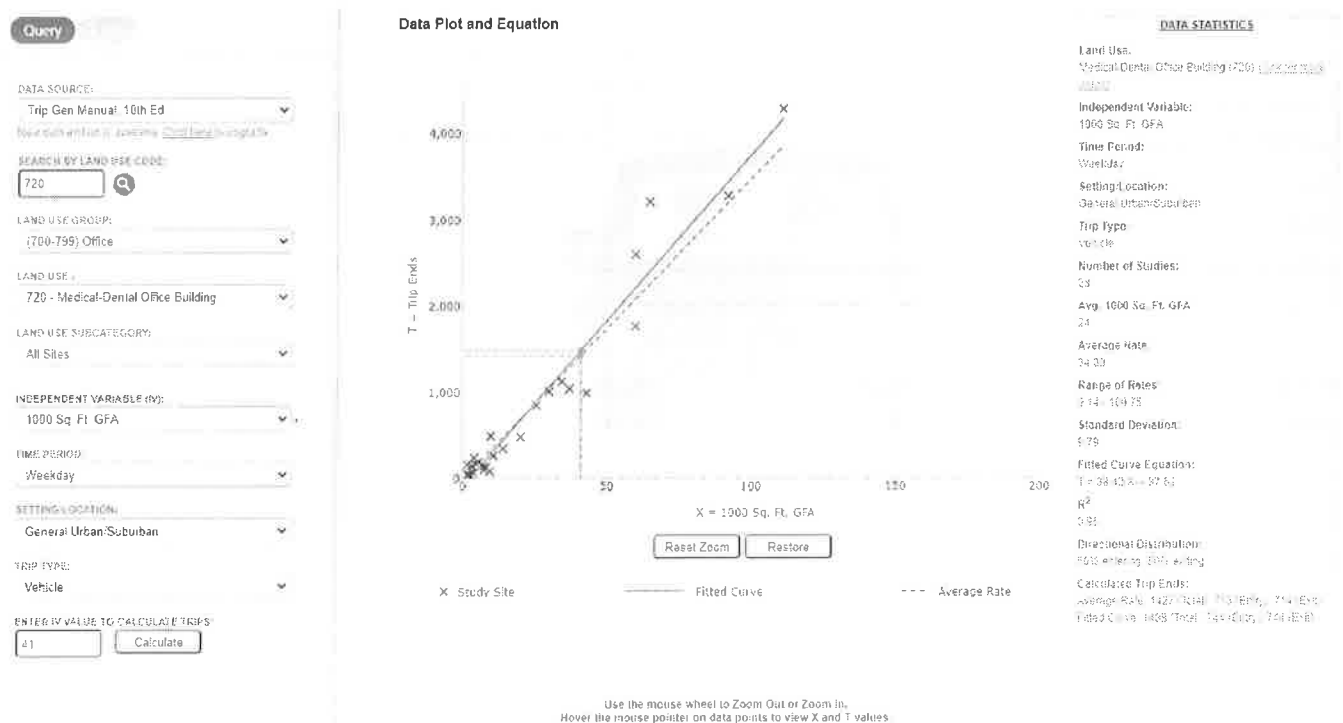
Additional Data

Time-of-day distribution data for this land use for a weekday, Saturday, and Sunday are presented in Appendix A. For the 19 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 9:30 and 10:30 a.m. and 2:15 and 3:15 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Connecticut, Kentucky, Maryland, Minnesota, New Jersey, New York, Ohio, Oregon, Pennsylvania, South Dakota, Texas, Virginia, Washington, and Wisconsin.

Source Numbers

104, 109, 120, 157, 184, 209, 211, 253, 287, 294, 295, 304, 357, 384, 404, 407, 423, 444, 509, 601, 715, 867, 879, 901, 902, 908, 959, 972



Appendix C – Preapplication Conference Report



(907) 586-0715
 CDD_Admin@juneau.org
 www.juneau.org/CDD
 155 S. Seward Street • Juneau, AK 99801

Juneau Medical Office

Case Number: PAC20220001
 Applicant: PND Engineers
 Property Owner: Southeast Alaska Regional Health Consortium
 Property Address: Vintage Blvd
 Parcel Code Number: 5B16010430017
 Site Size: 127,336 Square Feet
 Zoning: LC
 Existing Land Use: Vacant

Conference Date: January 12, 2022

Report Issued: January 20, 2022

DISCLAIMER: Pre-application conferences are conducted for purposes of providing applicants with a preliminary review of a project and timeline. Pre-application conferences are not based on a complete application, and are not a guarantee of final project approval.

List of Attendees

Note: Copies of the Pre-Application Conference Report will be emailed, instead of mailed, to participants who have provided their email address below.

Name	Title	Email address
Tyler Bradshaw	Project Engineer on behalf of applicant	Tbradshaw@pndengineers.com
Allison Eddins	Planning	Allison.eddins@juneau.org
Guy Gleason	Building	Guy.gleason@juneau.org
Eric Vogel	General Engineering	Eric.vogel@juneau.org
Ron Hoganson		Ken.hoganson@juneau.org
Edward Quinto	Permit Specialist	Edward.quinto@juneau.org

Conference Summary

Pre-Application Conference Final Report

Questions/issues/agreements identified at the conference that weren't identified in the attached reports.

The following is a list of issues, comments and proposed actions, and requested technical submittal items that were discussed at the pre-application conference.

Project Overview

SEARHC is developing a 3 story medical clinic in the Light Commercial zoning district. This development will require a Conditional Use Permit. The applicants had their first pre-app in August 2021 (PAC2021-54). Since that time the project has expanded to include 3,000 square feet of mechanical space. The applicants would like to construct the mechanical room on the roof of the medical clinic. This will likely exceed the maximum height restriction of 45' in the LC zoning district.

There are two options:

1. The applicant could seek a rezone to General Commercial which has a maximum height restriction of 55'.
2. The site can be redesigned with the mechanical room on the ground floor.

Planning Division

1. **Zoning** – The current zoning district is Light Commercial. The applicant may be interested in pursuing a rezone to General Commercial. In order to approve a rezone, the requested new zoning district must comply with the Land Use Designation in the Comprehensive Plan. This area is designated as *Traditional Town Center* which is defined as:

These lands are characterized by high density residential and non-residential land uses in downtown areas and around shopping centers, the University, major employment centers and public transit corridors, as well as other areas suitable for a mixture of retail, office, general commercial, and high density residential uses at densities at 18 or more residential units per acre. Residential and non-residential uses could be combined within a single structure, including off-street parking. Ground floor retail space facing roads with parking behind the retail and housing above would be an appropriate and efficient use of the land.

Based on this definition, a rezone to General Commercial would comply with the *Traditional Town Center* designation.

All rezone requests must be either the expansion of an existing zoning district or be over 2 acres. The subject lot is 2.9 acres and does meet the lot size requirement for a rezone request.

2. **Subdivision** – Not applicable to this project.
3. **Setbacks** – Setbacks in the Light Commercial zoning district are: Front lot line – 25 feet; Street side lot line – 17 feet; Sides and Rear – 10 feet. The front lot line will be all of Vintage Blvd. The rear and side will be the remaining lot lines. This lot does not have a street side lot line due to the large angle of Vintage Blvd.
4. **Height** – The maximum height restriction in LC is 45 feet. The proposed medical clinic is estimated to be 42 feet. If the applicant choose to place the mechanical room on top of the 42 foot roof, they will need to rezone the lot to General Commercial. There is the option for a variance to the height requirement. In order for a variance application to be successful, the applicant must demonstrate an unusual or special condition of the property that impedes them from meeting the code requirement.
5. **Access** – The applicants are currently planning for access to come from Vintage Blvd and the shared access easement between the subject lot and First Bank.
6. **Parking & Circulation**– The total parking requirement is shown below. The total was based on only two uses: medical clinic and restaurant. After reviewing the floor plan thoroughly, it was determined that the work space/office facilities are there in support of the medical clinic and will not function independently.

Pre-Application Conference Final Report

Therefore, only the café will be given a separate parking requirement. If, when applying for a Conditional Use Permit, the applicant would like the parking requirement for the medical offices to be calculated separately, a revised floor plan showing all office/work space dimensions shown.

Standard parking spaces are required to be 8.5' x 17'. ADA spaces must be 13' x 17' including an access aisle at least 5'. Two ADA spaces can share one access aisle.

A parking plan prepared by a licensed engineer or architect will be required.

SEARHC Medical Clinic Parking Calculation	
<u>LEVEL 1</u>	
Medical Clinic	12,471 square feet
Café	583 square feet
<u>LEVEL 2</u>	
Medical Clinic	13,054 square feet
<u>LEVEL 3</u>	
Medical Clinic	13,054 square feet
TOTAL PARKING REQUIREMENT	196 spaces (including 7 ADA spaces and 2 loading spaces)

7. **Lot Coverage** – There is not maximum lot coverage for Light Commercial.
8. **Vegetative Coverage** – Vegetative coverage in Light Commercial is 15 percent of the lot square footage. The entirety of the lot including the portion of the lot dedicated to shared access with First Bank is used when calculated lot square footage. The total vegetative cover requirement will be 19,100 square feet.
9. **Lighting** – A lighting plan must be submitted with a building permit application. Any exterior lighting proposed must be a full cut-off design and not produce off-site glare.
10. **Noise** – Through the CBJ Noise Ordinance construction hours may be limited to 7am to 10pm.
11. **Flood** – The site is located in a Zone X flood zone. Flood Zone X are moderate flood hazard areas located between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. Floodplain Development Permit is not required but the applicant is encouraged to use building designs that minimize the flood risk.
12. **Hazard/Mass Wasting/Avalanche/Hillside Endorsement** – No known hazards.
13. **Wetlands** – No mapped wetlands.
14. **Habitat** – No anadromous waterbodies are on the subject parcel, or within 50 feet. Contact Alaska Fish and Wildlife regarding construction near active eagle nests if any are discovered.
15. **Plat or Covenant Restrictions** – In 1984 the area was rezoned from R-7 (residential) to C-2 (Central Commercial) by CBJ Ordinance 84-03(am) (ZC 83-14). This ordinance also included a number of conditions including those regarding access and traffic control, building design, signage, and landscaping. Later, the conditions and site design/uses allowed were further amended by a series of CBJ ordinances (85-33, 85-55, 85-89, 86-54(am), and 86-72). As part of the 1987 major

Pre-Application Conference Final Report

rewrite of the CBJ Land Use Code, the area was rezoned to Light Commercial (LC). The rezoning to Light Commercial removed the additional requirements imposed through earlier rezones. **There may be additional private covenants for the area related to building and site design requirements, although the CBJ does not enforce private covenants**

16. **Traffic** – A Traffic Impact Analysis will be required. The traffic report prepared by Kinney Engineering is sufficient to submit for a Conditional Use Permit for the proposed medical clinic. Note that a Planning Commission date will not be set until a full TIA has been submitted.
17. **Nonconforming situations** – None

Building Division

1. **Building** comments will be made during plan review.
2. **Outstanding Permits** - None

General Engineering/Public Works

3. **Engineering** – Submitted Plans shall include a grading plan whereas all slopes shall be identified for their height and grade. Retaining structures shall be identified.
4. **Drainage** – Stormwater structures like culverts and catch basins shall be shown on the plan. The grading plan will demonstrate the flow of water with directional arrows. Water shall be directed only to approved drainage ways and shall not cause a nuisance to neighboring properties.
5. **Utilities** – (water, power, sewer, etc.) Water and Sewer lines shall be sized according to fixture and drainage counts. If a service upgrade is required, a Right of Way permit will be necessary. Power provided by others.

Fire Marshal

6. **Fire Items/Access** – comments will be made during plan review.

List of required applications

Based upon the information submitted for pre-application review, the following list of applications must be submitted in order for the project to receive a thorough and speedy review.

1. Development Permit Application (DPA) *This form must accompany any land use application.*
<https://juneau.org/index.php?gf-download=2019%2F12%2FDPA.pdf&form-id=22&field-id=11&hash=81202ef96484e0b859d1c4855a6b7ae4b18cb229e8824059dbb0d96082e74d6d>
2. Conditional Use Permit Application. This application is required for an Assisted Living Facility. If approved additional building permits will be required.
<https://juneau.org/index.php?gf-download=2019%2F07%2FUSE-Allowable-Conditional-Use.pdf&form-id=22&field-id=11&hash=1f4082f939f72daa29a17b66188d1bf0f634352cc2ca2397485edbab5a3d366d>

Additional Submittal Requirements

Submittal of additional information, given the specifics of the development proposal and site, are listed below. These items will be required in order for the application to be determined Counter Complete.

Pre-Application Conference Final Report

1. A copy of this pre-application conference report.
2. Narrative, site plan, parking and circulation plan, lighting plan, elevation drawing, for the conditional use permit application
3. Traffic Impact Analysis per 49.40.300 (copy attached)

Exceptions to Submittal Requirements

Submittal requirements staff has determined **not** to be applicable or **not** required, given the specifics of the development proposal, are listed below. These items will **not** be required in order for the application to be reviewed.

1. N/A

Fee Estimates

The preliminary plan review fees listed below can be found in the CBJ code section 49.85.

Based upon the project plan submitted for pre-application review, staff has attempted to provide an accurate estimate for the permits and permit fees which will be triggered by your proposal.

1. Conditional Use Permit Application \$1600
2. Public Notice Sign Fee \$50; deposit \$100
3. Sign Permit Application - \$50 for the first 2 signs, \$20 for each additional sign.

For informational handouts with submittal requirements for development applications, please visit our website at www.juneau.org/cdd.

Submit your Completed Application

You must submit your application(s) in person with payment made to:

City & Borough of Juneau, Permit Center
230 South Franklin Street
Fourth Floor Marine View Center
Juneau, AK 99801

Phone: (907) 586-0715

Web: www.juneau.org/community-development

Attachments:

- 49.15.330 -Conditional Use Permit
- 49.40.230 -Parking and circulation standards
- 49.40.300 – Traffic

https://library.municode.com/ak/juneau/codes/code_of_ordinances?nodeId=PTIICOOR_TIT49LAUS

For informational handouts with submittal requirements for development applications, please visit our website at www.juneau.org/community-development.

Pre-Application Conference Final Report

Submit your Completed Application

You must submit your application(s) in person with payment made to:

City & Borough of Juneau, Permit Center
230 South Franklin Street
Fourth Floor Marine View Center
Juneau, AK 99801

Phone: (907) 586-0715

Web: www.juneau.org/community-development

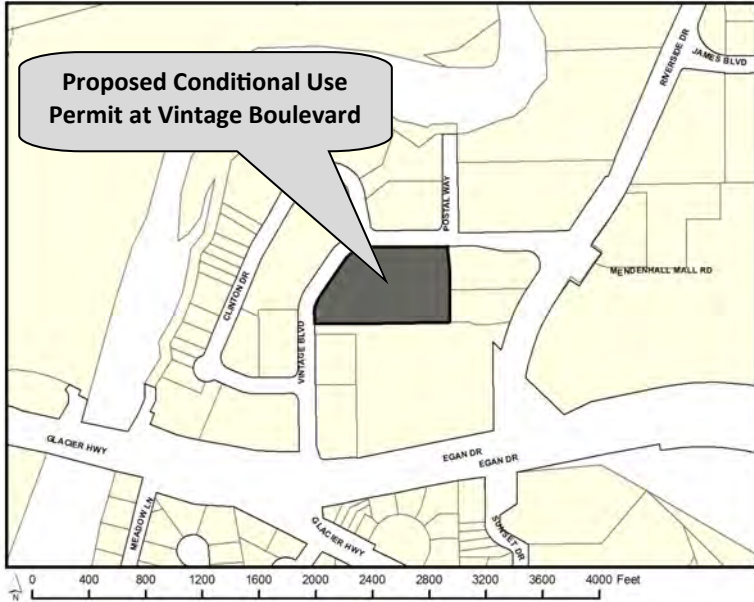
Attachments:

49.70 Article IV – if in a flood zone

49.15.330 – if a Conditional Use Permit

Invitation to Comment

On a proposal to be heard by the CBJ Planning Commission
Your Community, Your Voice



155 S. Seward Street Juneau, Alaska 99801

TO:

An application has been submitted for consideration and public hearing by the Planning Commission for a **Conditional Use Permit for a 45,000 square foot Medical Office Building at Vintage Boulevard** in a **Light Commercial Zone**.

TIMELINE

Staff Report expected to be posted **Monday, June 6, before hearing** at <https://juneau.org/community-development/planning-commission>
Find hearing results, meeting minutes and more here as well.

Now through 12 noon, June 10

Comments received during this period will be sent to the Planning Commissioners to read over the weekend in preparation for the hearing. The planner handling this case, **Joseph Meyers**, will also read any written comments that are received. You may also contact him via the phone number listed below.

FOR DETAILS OR QUESTIONS,

Phone: (907)586-0715 ext. 4209 ♦

Email: pc_comments@juneau.org

Mail: Community Development, 155 S. Seward St,
Juneau AK 99801

Printed May 20, 2022

HEARING DATE & TIME: 7:00 pm, June 14, 2022

This meeting will be held in person and by remote participation. For remote participation: join the Webinar by visiting <https://juneau.zoom.us/j/83744860461> and use the Webinar ID: 837 4486 0461 OR join by telephone, calling: 1-253-215-8782 and enter the Webinar ID (above).

You may also participate in person in City Hall Assembly Chambers, 155 S. Seward Street, Juneau, Alaska.*

June 15

The results of the hearing will be posted online.

Case No.: USE2022 0006

Parcel No.: 5B1601430017

CBJ Parcel Viewer: <http://epv.juneau.org>



NOTICE

For more information

586-0715

pc_comments@juneau.org

MEDICAL OFFICE BUILDING

Case: USE20220006

Conditional Use Permit for a
45,000 square foot
Medical Office building

HEARING DATE: 6/14/2022

From: [Purves, Nathan A \(DOT\)](#)
To: [Joseph Meyers](#); [Bizzarro, Caleb T \(DOT\)](#)
Subject: RE: Request for Comment
Date: Monday, May 2, 2022 1:32:50 PM
Attachments: [image001.jpg](#)
[image002.jpg](#)
[2022.04.07 JVP MOB DOT TIA Letter.pdf](#)

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

Good afternoon Joseph,

You are correct. After reviewing the initial traffic impact analysis DOT finds it acceptable that the applicant does not need to improve any of the intersections studied. I've attached a copy of the record of the meeting submitted by PND. DOT agrees with the assessment in the letter. Let me know if I can help you with anything else.

Thanks,

Nathan Purves, P.E.
 Regional Traffic and Safety Engineer
 Alaska DOT&PF – Southcoast Region
 Phone: 907-465-4521



From: Joseph Meyers <Joseph.Meyers@juneau.org>
Sent: Monday, May 2, 2022 12:18 PM
To: Bizzarro, Caleb T (DOT) <caleb.bizzarro@alaska.gov>; Purves, Nathan A (DOT) <nathan.purves@alaska.gov>
Subject: Request for Comment

CAUTION: This email originated from outside the State of Alaska mail system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon,

I am reaching out to get comment from DOT regarding a planned Medical Facility on Vintage Boulevard. The applicant has had a meeting with DOT regarding this project already and some issues

were raised. The focus of this inquiry is the intersection of Egan Drive and Mendenhall Loop Road. My understanding is that DOT finds it acceptable if the applicant does not improve this intersection based on a preliminary traffic impact analysis done for the site. I would just like to ensure that this is in fact the case and provide a document for the record as this application moves forward. Please let me know if this email has reached the correct person and whether my interpretation on DOT's stance is correct.

Kind regards,

Joseph Meyers, MURP | Planner I

[Community Development Department](#) | City & Borough of Juneau, AK

230 S. Franklin Street, 4th Floor Marine View Building

Personal line: 907.586.0753; Ext: 4209

He/him



From: [Charlie Ford](#)
To: [Joseph Meyers](#)
Subject: RE: Request for Comment on new SEARHC Facility
Date: Monday, April 18, 2022 9:02:30 AM

Hello Joseph,

The Building Department has no issues with this project at this time.
Thank you,

From: Joseph Meyers <Joseph.Meyers@juneau.org>
Sent: Monday, April 18, 2022 8:56 AM
To: Charlie Ford <Charlie.Ford@juneau.org>
Subject: Request for Comment on new SEARHC Facility

Good morning Charlie

I am reaching out to see if you have any comment on [this proposed project](#).

Please provide comments by Monday, May 2nd. Let me know if you have any questions

Thank you,
-Joseph

Joseph Meyers, MURP | Planner I

[Community Development Department](#) | City & Borough of Juneau, AK

230 S. Franklin Street, 4th Floor Marine View Building

Personal line: 907.586.0753; Ext: 4209

He/him



From: [Dan Jager](#)
To: [Joseph Meyers](#)
Subject: RE: Request for Comment on new SEARHC facility
Date: Monday, April 18, 2022 8:41:59 AM
Attachments: [image003.png](#)
[image001.png](#)

Hi Joseph. If this is the project by Safeway, there are no issues on our side. Thanks.

Daniel M. Jager EFO, CFO
 Fire Marshal



Capital City Fire Rescue
 820 Glacier Avenue
 Juneau, Alaska 99801
 907-586-5322 Ext. 4323 (Office)
 907-586-8323 (Fax)

*"If it is predictable, then it is preventable.
 If it is preventable then it is not an accident".*

From: Joseph Meyers <Joseph.Meyers@juneau.org>
Sent: Monday, April 18, 2022 8:41 AM
To: Dan Jager <Dan.Jager@juneau.org>
Subject: Request for Comment on new SEARHC facility

Good morning Dan,

I am reaching out to see if you have any comment on this proposed project. Additionally, do you see any issues with the proposed project in relation to the fire code?

Please provide comments by Monday, May 2nd. Any questions about this project can be directed to me using the contact information below.

Thank you and kind regards,

-Joseph

Joseph Meyers, MURP | Planner I
[Community Development Department](#) | City & Borough of Juneau, AK

230 S. Franklin Street, 4th Floor Marine View Building
Personal line: 907.586.0753; Ext: 4209
He/him



From: [Ken Hoganson](#)
To: [Joseph Meyers](#)
Cc: [Eric Vogel](#); [Mark Millay](#); [Ken Hoganson](#)
Subject: RE: Traffic Impact Analysis (TIA) and Application Review
Date: Thursday, May 5, 2022 2:25:24 PM

Hi Joe,

Have gone through the PND Engineering, Inc. City & Borough of Juneau Conditional Use Permit Application for SEARHC Juneau Vintage Park Medical Office Building, Juneau Alaska, dated April 1, 2022 - and find it meets CBJ's General Engineering requirements.

Best wishes – Ken

[Kenneth A Hoganson | Program Manager](#)
[General Engineering | City & Borough of Juneau, AK](#)
[Location: 230 S. Franklin Street, 4th Floor Marine View Building](#)
[Juneau, AK 99801](#)
[Office: 907.586.0800 ext. 4197, Cell: 907-378-5340](#)



Joe,

Just talked to Mark Millay who is in Oregon about the Traffic Impact Analysis. He advised that planning does these... we do not have a hand in it.

Will go through the Conditional Use permit for Site Grading, Utilities and Drainage – which are GE's responsibility areas.

Please let me know of your comments / questions on what GE is reviewing.

Best wishes – Ken

From: Ken Hoganson
Sent: Wednesday, May 4, 2022 1:12 PM
To: Joseph Meyers <Joseph.Meyers@juneau.org>
Cc: Eric Vogel (Eric.Vogel@juneau.org) <Eric.Vogel@juneau.org>; Ken Hoganson (Ken.Hoganson@juneau.org) <Ken.Hoganson@juneau.org>
Subject: RE: Traffic Impact Analysis (TIA) and Application Review

Joe – will get started on it.

Best wishes - Ken

From: Joseph Meyers <Joseph.Meyers@juneau.org>
Sent: Wednesday, May 4, 2022 8:37 AM
To: Ken Hoganson <Ken.Hoganson@juneau.org>
Subject: FW: Traffic Impact Analysis (TIA) and Application Review

Good morning Ken,

Here is the TIA for your review. I would ask that you review the TIA first as it's the most pressing piece at this point. Let me know if you have any questions.

-Joseph

From: Joseph Meyers
Sent: Wednesday, April 20, 2022 11:51 AM
To: Ken Hoganson <Ken.Hoganson@juneau.org>
Subject: Traffic Impact Analysis (TIA) and Application Review

Good morning Ken,

Linked here is [a draft TIA for the new SEARHC facility](#) on Vintage Boulevard and the [Conditional Use Permit application](#). We are requiring that CBJ GE review the draft TIA before they submit the final TIA. In addition, please review the application to determine if GE has additional comments or concerns on this project. Please complete your review and provide comments by May 4th. If you need additional time, please let me know.

Thank you!

Kindly,

Joseph Meyers, MURP | Planner I

[Community Development Department](#) | City & Borough of Juneau, AK

230 S. Franklin Street, 4th Floor Marine View Building

Personal line: 907.586.0753; Ext: 4209

He/him



CERTIFICATE OF OWNERSHIP

I HEREBY CERTIFY THAT I AM AN AUTHORIZED REPRESENTATIVE FOR BBS ENTERPRISES, THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT BBS ENTERPRISES HEREBY ADOPTS THIS PLAT OF SUBDIVISION WITH ITS FREE CONSENT, AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS AND OTHER OPEN SPACES TO PUBLIC OR PRIVATE USE AS NOTED:

DATE: December 11, 2008

BY: William J. Bauer, S.P.
WILLIAM J. BAUER, GENERAL PARTNER
BBS ENTERPRISES

NOTARY ACKNOWLEDGMENT

UNITED STATES OF AMERICA } ss.
STATE OF ALASKA }

THIS IS TO CERTIFY THAT ON THIS 11 DAY OF December, 2008, BEFORE ME THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR THE STATE OF ALASKA, DULY COMMISSIONED AND SWORN, PERSONALLY APPEARED WILLIAM J. BAUER, GENERAL PARTNER, BBS ENTERPRISES, TO ME KNOWN TO BE THE PERSON HE REPRESENTS HIMSELF TO BE AND A GENERAL PARTNER OF BBS ENTERPRISES, WHO ACKNOWLEDGED TO ME THAT HE EXECUTED THE FOREGOING INSTRUMENT AS THE FREE ACT AND DEED OF THE SAID CORPORATION FOR THE USES AND PURPOSES THEREIN MENTIONED, BEING FULLY AUTHORIZED TO DO SO.

WITNESSED MY HAND AND OFFICIAL SEAL THE DAY AND YEAR IN THIS CERTIFICATE FIRST ABOVE WRITTEN.

Carole Bullman
NOTARY PUBLIC FOR ALASKA
MY COMMISSION EXPIRES: 2/18/2012

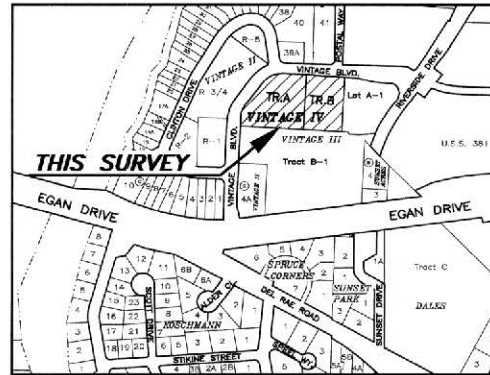
CERTIFICATE OF PLAT APPROVAL

I HEREBY CERTIFY THAT THE PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE TITLE 04 COMMUNITY DEVELOPMENT REGULATIONS AND TITLE 49 OF THE CODE OF THE CITY AND BOROUGH OF JUNEAU AND IS APPROVED BY THE CITY AND BOROUGH OF JUNEAU DEPARTMENT OF COMMUNITY DEVELOPMENT FOR RECORDING IN THE OFFICE OF THE JUNEAU RECORDING DISTRICT, JUNEAU, ALASKA.

DATED: January 7, 2009
DALE PERNULA, DIRECTOR
CITY AND BOROUGH OF JUNEAU
DEPARTMENT OF COMMUNITY DEVELOPMENT



ATTEST:
Christine M. Evers, Deputy Clerk
CLERK,
CITY AND BOROUGH OF JUNEAU



VICINITY MAP

SOURCE: CBJ PROPERTY ATLAS
SCALE: 1"=500'+/-

SYMBOLS

- 1410-S PRIMARY MONUMENT (OF RECORD)
- 1410-S SECONDARY MONUMENT (OF RECORD)
- 7570-S SECONDARY MONUMENT (OF RECORD)
- BOUNDARY / PROPERTY LINE
- EASEMENT LINE
- RIGHT-OF-WAY CENTERLINE

GENERAL NOTES

1. THE BASIS OF BEARING FOR THIS SURVEY WAS BETWEEN RECOVERED 1410-S PRIMARY MONUMENTS FOR THE SOUTHWEST CORNER OF TRACT A, VINTAGE IV SUBDIVISION AND THE NORTHWEST CORNER OF LOT B1, VINTAGE II SUBDIVISION, HAVING A RECORD BEARING OF N 89°57'30" W.
2. ALL BEARINGS DENOTED ON THIS PLAT HAVE BEEN ROUNDED TO THE NEAREST 0°00'15" OF ARC.
3. WHERE RECORD SURVEY COURSES (BEARINGS AND/OR DISTANCES) DIFFER FROM MEASURED AND/OR COMPUTED COURSES BY THIS SURVEY, RECORD SURVEY COURSE IS SHOWN IN PARENTHESIS AND THE FIELD MEASURED AND/OR COMPUTED COURSE IS SHOWN WITHOUT PARENTHESIS.

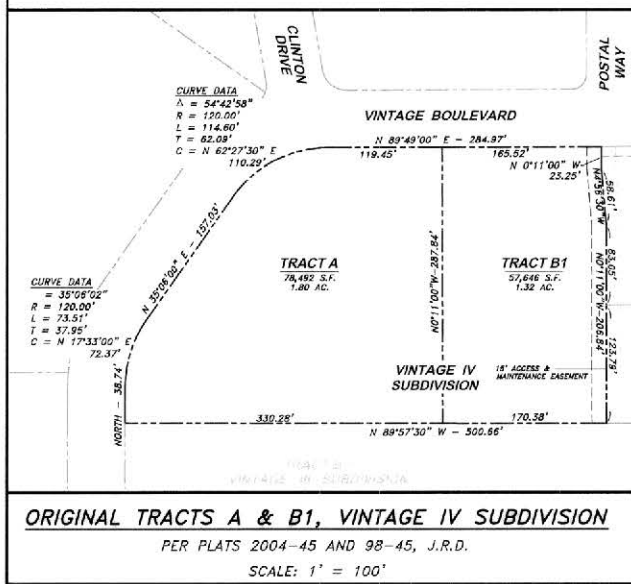
CBJ FILE COPY
This official recorded copy of this document is on file at the Juneau Recording District as:
Plat No. 0009-14
Recorded on: 5/6/2009
CDD No. Sub2008-00028

JUNEAU RECORDING DISTRICT
A PLAT OF
TRACT A2
A CONSOLIDATION OF
TRACT A AND TRACT B1
VINTAGE IV SUBDIVISION
WITHIN A FR. OF U.S.S. No. 1193
CITY & BOROUGH OF JUNEAU, ALASKA

OWNER:
BBS ENTERPRISES
P.O. BOX 34139
JUNEAU, ALASKA 99803
DATE: DECEMBER 9, 2008

SURVEYOR:
R&M ENGINEERING, INC.
6205 GLACIER HIGHWAY
JUNEAU, ALASKA 99801
R&M PROJ. No. 081797

SCALE: 1"=30'
SHEET **1** OF 1

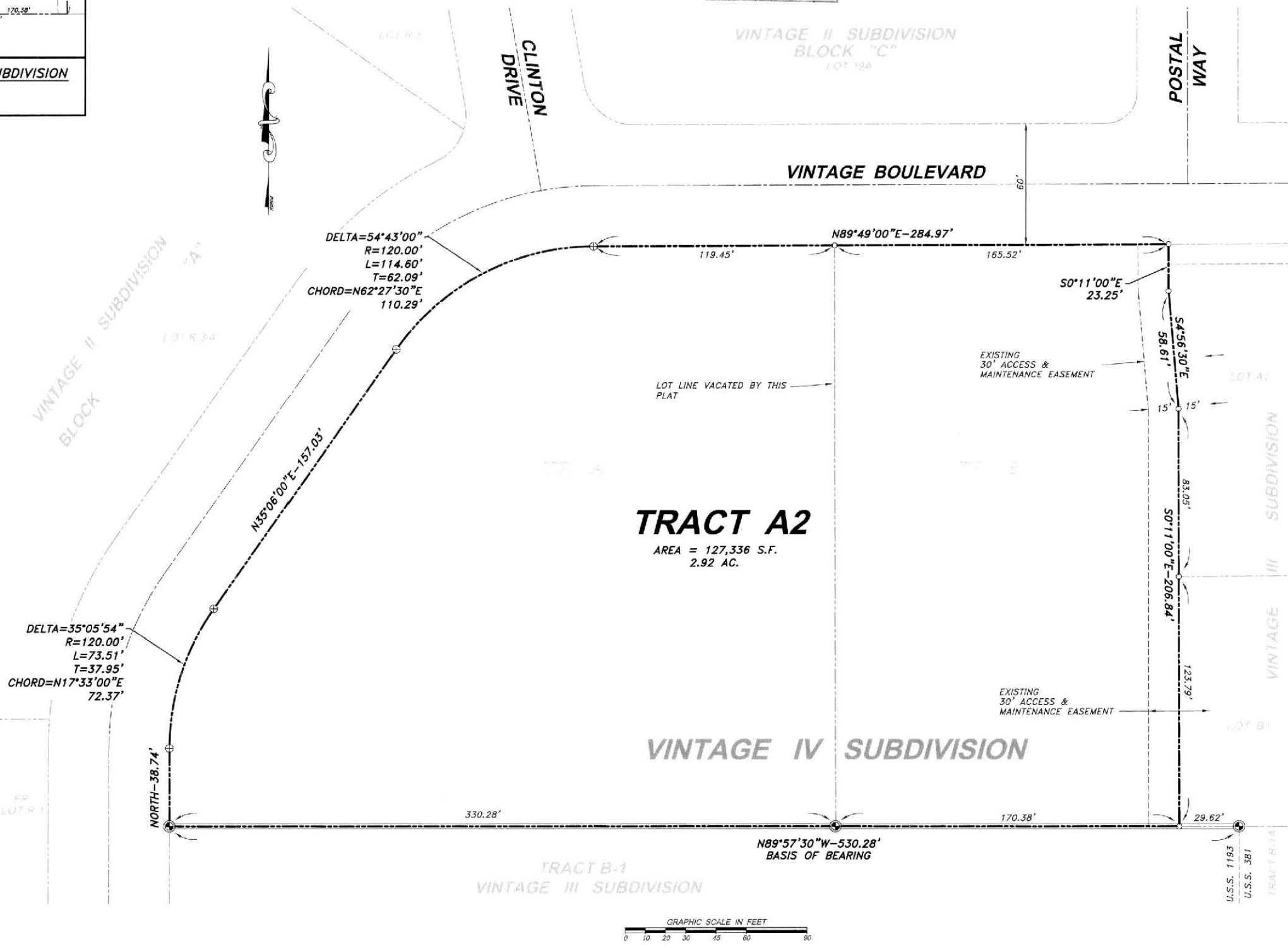


SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF ALASKA, AND THAT THIS PLAT REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, THAT THE ACCURACY OF THE SURVEY IS WITHIN THE LIMITS REQUIRED BY TITLE 49 OF THE CODE OF THE CITY AND BOROUGH OF JUNEAU, THAT ALL DIMENSIONAL AND RELATIVE BEARINGS ARE CORRECT AND THAT MONUMENTS ARE SET IN PLACE AND NOTED UPON THIS PLAT AS PRESENTED.



DATE: 12-10-08



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DECLARATION OF COVENANTS, CONDITIONS, EASEMENTS,
RESTRICTIONS AND RESERVATIONS FOR

VINTAGE BUSINESS PARK
JUNEAU, ALASKA

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DECLARATION OF COVENANTS, CONDITIONS, EASEMENTS,
RESTRICTIONS AND RESERVATIONS FOR

VINTAGE BUSINESS PARK
JUNEAU, ALASKA

This Declaration of Covenants, Conditions, Easements, Restrictions and Reservations (this "Declaration") made this ____ day of August, 1997, by BBS Enterprises and is made with reference to the following facts:

RECITALS:

A. BBS Enterprises is the owner of that certain real property in the City and Borough of Juneau, State of Alaska, described in Part I of Exhibit A attached hereto and by this reference incorporated herein.

B. Vintage Business Park is being developed as a planned business park. It is the desire and intention of BBS Enterprises to subject the real property in said business park to certain covenants, conditions and restrictions for the benefit of the property, Vintage Business Park, and the purchasers of the Lots in the business park. It is intended that said covenants, conditions and restrictions bind and benefit not only said purchasers, but also their respective successors, heirs and assigns and that all Lots in the Vintage Business Park should be held, used, leased, sold and conveyed subject to the covenants, conditions and restrictions set forth in this Declaration.

ARTICLE I

DEFINITIONS

Unless the context otherwise specifies or requires, the terms defined in this Article I shall, as used in this Declaration, have the meaning herein set forth:

1.1 Association. The term "Association" shall mean the association of the property owners of Vintage Business Park as hereinafter created, known as "Vintage Business Park Owners Association".

1.2 Beneficiary. The term "Beneficiary" shall mean a mortgagee under a mortgage as well as a beneficiary under a deed of trust.

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1.3 Board. The term "Board" shall mean the Board of Directors of the Association, who shall be elected by the Association from among its members.

1.4 Park. The term "the Park" shall mean all of the real property in Vintage Business Park now or hereafter subjected of record to this Declaration.

1.5 Common Area or Common Areas. The term "Common Areas" shall mean those portions of the Park including easements which are designated as such on the Plat and are dedicated for the common use and benefit of the owners and occupants of the Park.

1.6 Declarant. The term "Declarant" shall mean Vintage Business Park and, to the extent identified as such in an instrument executed by BBS Enterprises and recorded in the Department of Records and Election of The City and Borough of Juneau, its successors and assigns.

1.7 Declaration. The term "Declaration" shall mean this Declaration of Covenants, Conditions, Easement, Restriction and Reservations for Vintage Business Park as it may from time to time be amended or supplemented.

1.8 Deed of Trust. The term "Deed of Trust" shall mean a mortgage as well as a deed of trust.

1.9 Development Standards. The term "Development Standards" shall mean the procedures, goals, objectives and standards set forth in ordinance serial number 86-54 of the City and Borough of Juneau, and any other ordinances, rules or regulations of the City and Borough of Juneau applicable to the Park.

1.10 First Class. When used in this Declaration in connection with the development, maintenance, operation or condition of the Park, or any portion thereof, the term "First Class" shall refer to comparative standard of quality judged in accordance with other similar well maintained corporate business parks within the City and Borough of Juneau.

1.11 Improvement-Improvements. The term "Improvement" or "Improvements" shall include buildings, outbuilding, roads, driveways, parking areas, fences, screening walls and barriers, retaining walls, stairs, decks, water lines, sewers, electrical and gas distribution facilities, hedges, windbreaks, plantings, planted trees and shrubs, poles, signs, loading areas and all other structures, installations and landscaping of every type and kind, whether on, above or below the land surface.

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1.12 Lot. The term "Lot" shall mean a fractional part of the Park with a numerical designation on the plat for Vintage Business Park in the Office of Records and Elections of the City and Borough of Juneau, State of Alaska.

1.13 Master Plan. The term "Master Plan" shall mean the plan submitted to and approved by the City and Borough of Juneau for the development of the Park, as reflected in Ordinance Serial Number 84-03 (AM) of the Planning and Community Development Department of the City and Borough of Juneau, as hereafter amended from time to time.

1.14 Mortgage. The term "Mortgage" shall mean and include a mortgage, a Deed of Trust and a sale and leaseback transaction, and the making of any such relationship; "mortgagee" shall mean a mortgagee under a Mortgage, the trustee and Beneficiary under a Deed of Trust, and the leaseback lessor in a sale and leaseback transaction. The term "Mortgagee" shall not refer to any of the foregoing persons, when and to the extent in possession of all or any of the Parcel of a Party.

1.15 Occupant. The term "Occupant" shall mean a lessee or licensee or an Owner, or any other person or entity other than an Owner in lawful possession of a Lot, or any portion thereof, with the permission of the Owner.

1.16 Owner or Owners. The term "Owner" shall mean and refer to any person or entity which is the record Owner of fee simple title to any Lot (except any entity or person who holds such interest as security for the payment of an obligation) and the purchaser under a real estate contract in actual possession of a Lot.

1.17 Person or Persons. The term "Person" shall mean and include any individual, partnership, firm, association, corporation, trust, or any other form of business entity.

1.18 Plat. The term "Plat" shall mean the Binding Site Plan of Vintage Business Park filed May 5, 1985 under Vintage Subdivision recording number 85-58.

1.19 Proportionate Share. The term "Proportionate Share" shall mean the ratio which the acreage of a Lot bears to the acreage of all Lots subjected to this Declaration at the time, as such acreage is shown on the Plat.

1.20 Record-Recorded-Recordation. The terms "Record," "Recorded," "Recording," or "Recordation," shall mean with respect to any document, the recordation of said document in the Office of Records and Elections of the City and Borough of Juneau, State of Alaska.

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1.21 Sign. The term "Sign" shall mean any structure, device or contrivance, electric or non-electric, upon or within which any poster, bill, bulletin, printing, lettering, painting, business name, information or advertising device of any kind whatsoever is used, placed, posted, tacked, nailed, pasted, painted or otherwise fastened or affixed.

1.22 Street or Streets. The term "Street" or "Streets" shall mean any street, highway, road, or thoroughfare within or adjacent to the Park and shown on any recorded subdivision or parcel map, or record or survey, whether designated thereon as street, boulevard, place, drive road, court, terrace, way, lane, circle, or otherwise.

1.23 Subject Property. The term "Subject Property" shall mean the Vintage Business Park.

1.24 Transition Date. The term "Transition Date" shall have the meaning set forth in Section 8.1.

1.25 Utility or Utilities. The term "Utilities" shall mean all common water, sanitary and storm sewer lines and related facilities, water mains, conduits or systems, telephone lines, electrical utilities or systems, and other utilities and services, wherever located within the Park to the point where such line, system or facility crosses a line of a building area, together with all improvements, replacements, modifications, additions, extensions, or new construction, whether such system, line or facility now or hereafter exists on the Park.

ARTICLE II

DECLARATION AND EXPANSION

2.1 General Declaration. BBS Enterprises hereby declare that all of that real property located in the City and Borough of Juneau, State of Alaska, and more particularly described in Exhibit A is, and shall be, conveyed, hypothecated, encumbered, leased, occupied, built upon or otherwise used, improved or transferred in whole or in part, subject to this Declaration. All of the covenants, conditions and restrictions set forth herein are declared and agreed to be in furtherance of a general plan for the subdivision, improvement and sale of said real property and are established for the purpose of enhancing and protecting the value, desirability and attractiveness of the Park and every part thereof. All of said covenants, condition and restrictions shall run with all of the Park for all purposes and shall be binding upon and inure to the benefit of BBS Enterprises, and all Owners, Occupants, and their

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successors in interest as set forth in this Declaration. Declarant reserves for itself, until the Transition Date, the right to initiate any and all studies, sign any and all agreements, and otherwise take any and all actions which it deems necessary or desirable to satisfy the City and Borough of Juneau in connection with Development Standards and/or the Master Plan.

2.2 Expansion. Declarant reserves the right, until the Transition Date, to expand the Park onto other property (each, the "Expansion Area") adjacent to the Park, which such expansion shall be accomplished by Recording (i) an amendment to this Declaration that specifies the Expansion Area being added and subjects all such Expansion Area to this Declaration (ii) an amendment or supplement to the Plat covering the Expansion Area and setting forth the acreage of each Lot therein. From and after the Recording thereof, all of the land originally subjected and subsequently subjected to this Declaration shall constitute the Park as a single project pursuant to the provisions of this Declaration. Declarant shall complete, or cause to be completed, all Common Area Improvements required by the City of Juneau in connection with all Expansion Area hereafter subjected to this Declaration. All costs of Common Area Improvements in the Expansion Area shall be the sole responsibility of Declarant; and neither the Association nor any Lot Owner shall have any liability for such costs. In addition to general easements reserved in other sections of this Declaration, there is reserved a nonexclusive easement in favor of Declarant and its successors and assigns over and across all roads and driveways that may exist from time to time on the Subject Property for ingress and egress and over and across easements and utility lines specified or established in and for adjacent land now or hereafter acquired by declarant prior to the Transition Date, and the right to connect thereto; provided that, such can be accomplished (a) without cost to any Lot Owner of the Subject Property, (b) without material interference with the use or operation of the Subject Property, and (c) without reduction in the quality of the utility service to the Subject Property. Such reservations are for the purpose either of completing common area improvements to be subjected to this Declaration or otherwise developing adjacent land if not completed as a part of the Park; provided, however, that Declarant shall bear the cost of tie-ins to said utilities and roads and will not connect with said utilities in a manner that impairs or significantly reduces the quality of the utility service to the Subject Property. The provisions of Section 6.2 shall apply to this Section 2.2.

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ARTICLE III

CONSTRUCTION OF IMPROVEMENTS

3.1 Approval of Plans Required. No Improvements shall be erected, placed, altered, maintained or permitted to remain on any Lot by any Owner or Occupant until final plans and specifications shall have been submitted to and approved in writing by Declarant. Such final plans and specifications shall be submitted with the authorized signature of the Owner or Occupant, or the authorized agent thereof. Such plans and specifications shall be in such form and shall contain such information as may be required by the Declaration, but shall in any event include the following:

(a) A site development plan of the Lot showing the nature, grading scheme, kind, shape, composition and location of all structures with respect to the particular Lot (including proposed front, rear and side setback lines), and with respect to structures on adjoining Lots, and the number and location of all parking spaces and driveways on the Lot;

(b) A landscaping plan for the particular Lot;

(c) A plan for the location of signs and exterior lighting which conforms to the Sign Plan and Lighting Plan for the Park, as required by the City and Borough of Juneau; and

(d) Building elevations and plans, showing dimensions, materials and external color scheme in no less detail than required by the appropriate governmental authority for the issuance of a building permit or design review approval. Material changes in approved plans must be similarly submitted to a approved by Declarant and the City and Borough of Juneau.

3.2 Basis for Approval. Approval shall be based, among other things, upon adequacy of site dimensions, conformity and harmony of external design with neighboring structures, effect of location and use of proposed Improvements upon neighboring Lots, proper facing of main elevation with respect to nearby streets, adequacy of screening of mechanical, air conditioning or other roof top installations, and conformity of the plans and specifications to the purposes and general plan and intent of this Declaration. No plans will be approved which do not provide for the underground installation of power, electrical, telephone and other utility lines from the

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property line buildings. Declarant shall not arbitrarily or unreasonably withhold its approval of any plans and specifications. Except as otherwise provided in this Declaration, Declarant shall have the right to disapprove or require any modification in any plans and specifications submitted hereunder on any reasonable grounds including, but not limited to, the following:

(a) Failure to comply with any of the restrictions set forth in this Declaration;

(b) Failure to comply with either the Development Standards, or the design guidelines promulgated by Declarant from time to time;

(c) Failure to include information in such plans and specifications as may have been reasonably requested by Declarant;

(d) Objection to the exterior design, the appearance of material or materials employed in any proposed structure;

(e) Objection on the grounds of the incompatibility of any proposed structure or use with existing structures or uses upon other Lots, or other property in the vicinity of the Park;

(f) Objection to the grading or landscaping plan for any Lot;

(g) Objection to the color scheme, finish, proportions, style or architecture, height, bulk or appropriateness of any structure;

(h) Objection to the number or the size of parking spaces, or to the design of the parking area;

(i) Any other matter which, in the judgement of the Declarant, would render the proposed improvements or use inharmonious with the general plan for improvements of the Park or with improvements located upon other Lots or other property in the vicinity.

3.3 Review Fee. An architectural review fee of Five Hundred Dollars (\$500) shall be paid to Declarant at such time as plans and specifications are submitted to it.

3.4 Result of Inaction. If Declarant fails either to approve or disapprove plans and specifications submitted to it within forty-five (45) days after the same have been submitted, it shall be conclusively presumed that Declarant

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has disapproved said plans and specifications; provided, however, that if within the forty-five (45) day period Declarant gives written notice of the fact that more time is required for the review of such plans and specifications, there shall be no presumption that the same are disapproved until the expiration of such reasonable period of time as is set forth in the notice.

3.5 Approval. Declarant may approve plans and specifications as submitted, or altered or amended, or it may grant its approval to the same subject to specific conditions. Upon approval or conditional approval by Declarant of any plans and specifications, together with any conditions, shall be deposited for permanent record with Declarant, and a copy of such plans and specifications, bearing such approval together with any conditions, shall be returned to the Owner of Occupant submitting the same.

3.6 Proceeding with Work. Upon receipt of approval of the final construction documents from Declarant, The Owner, or Occupant, or both, to whom the same is give, shall, as soon as practicable, satisfy any and all conditions of such approval and shall diligently proceed with the commencement and completion of all approved excavation, construction, refinishing and alterations. In all cases, work shall commence within one (1) year from The date of approval, and if work is not so commenced approval shall be deemed revoked unless Declarant, pursuant to written request made and received prior to the expirations of said one (1) year period, extends the period of time within which work must be commenced.

3.7 Completion of Work. Any Improvement commenced pursuant hereto shall be completed within one (1) year from the date of commencement of work except for so long as such proposed Improvements would impose a great hardship or upon the occurrence of a the strike, fire, national emergency, natural disaster or other supervening force beyond the control of Owner of Occupant. Declarant may, upon written request made and received prior to the expiration of the on (1) year period, extend the period of time within which work must be completed. Failure to comply with this Section 3.7 shall constitute a breach of this Declaration and subject the party in breach to the enforcement procedures set forth in Article VII.

3.8 Declarant Not Liable. Declarant shall not be liable for any damage, loss or prejudice suffered or claimed by any Person on account of:

- (a) The approval or disapproval of any plans, drawings and specifications, whether or not in any way defective;

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(b) The construction of any Improvement, or performance of any work, whether or not pursuant to approved plans, drawing and specifications; or

(c) The development of any Lot within the Park.

Declarant shall not be liable to any Owner or Occupant of the Park by reason of any mistake in judgement, negligence, nonfeasance, action or inaction or for the enforcement or failure to enforce any provision of this Declaration; provided, that Declarant shall be liable for gross negligence, fraud or willful or wanton misconduct. Every Owner or Occupant of any of the Park by acquiring its interest therein agrees that it will not bring any action or suit against Declarant to recover any such damages or to seek equitable relief because of same.

3.9 Construction Without Approval. If any Improvement shall be erected, placed or maintained upon any Lot, or any new use commenced upon any Lot, other than in accordance with the approval by the Declarant pursuant to the provisions of this Article III, such alteration, erection, placement, maintenance or use shall be deemed to have been undertaken in violation of this Declaration, and upon written notice from Declarant any such Improvement so altered, erected, placed, maintained or used upon any Lot in violation of this Declaration shall be removed or altered so as to conform to this Declaration. Should such removal, or alteration, of cessation or amendment or use not be accomplished within thirty (30) days after receipt of such notice, then the party in breach of this Declaration shall be subject to the enforcement procedures set forth in Article VII.

3.10 Termination of Declarant's Control. Declarant may at any time, prior to the Transition Date, relinquish authority under all or any of this Article III, Article IV and/or Article V to the Association. The Association may thereafter delegate its duties and rights under this Article III to an Architectural Committee consisting of at least three (3) Owners in the Park, or their designated representatives, whereupon The Architectural Committee shall exercise all power and authority of Declarant under this Article; provided, however, that the Architectural Committee or any member may be removed at any time by vote of a majority of the Owners at an annual or special meeting of the Association called for that purpose.

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ARTICLE IV

IMPROVEMENTS STANDARDS

4.1 Minimum Setback. No Improvements of any kind, and no part thereof, shall be placed closer than permitted by the City and Borough of Juneau to an Interior Property Line, except as otherwise provided in Section 4.2. "Interior Property Line" shall mean the boundary between any Lot within The Park and all other Lots bordering upon said Lot. Minimum setbacks shall be as described in Exhibit B.

4.2 Exceptions to Setback Requirements. The following Improvements, or parts of Improvements, are specifically excluded from The setback requirements set forth in Section 4.1:

(a) Roof overhang, subject to approval in writing from Declarant, provided said overhang does not extend more that thirty (30) inches into the setback area;

(b) Steps and walkways;

(c) Fences, subject to the requirements set forth in Section 4.4;

(d) Landscaping;

(e) Planters, not to exceed three (3) feet in height, except that planters of greater height may be built within the setback area with the prior written approval of Declarant;

(f) Business park identification Signs, directional and parking Signs and Signs identifying the Owner or Occupant of a Lot, subject to the prior written approval of Declarant;

(g) Lighting facilities, subject to the prior written approval of Declarant; and

(h) Underground utility facilities and sewers.

4.3 Signs. All Signs shall be subject to applicable law and ordinances of the City and Borough of Juneau including the Development Standards. No Sign shall be permitted on any Lot unless approved by Declarant in Writing. No Sign shall be approved other than reasonable and non-obstructive; business park identification Signs, information and vehicular control Signs, Signs identifying the building or the business of the Owner or Occupant of a Lot, and Signs offering the Lot for sale or lease, and

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temporary development Signs; provided, however, Declarant shall have the right to advertise the Park and any Lot for sale or lease by Signs displayed to the public until all Lots within The Park have been sold or leased by Declarant.

4.4 Fences. No fences or walls shall be permitted on any Lot unless such fence or wall is necessary for security or screening purposes. Declarant reserves the right to approve the location and design of all fences, and no fence shall be constructed without a letter of approval from the Declarant. No chain link fences will be permitted.

4.5 Parking Areas. Off-street parking must be adequate to accommodate the parking needs of the Owner or Occupants. Parking for the employees and visitors thereof shall be provided by the Owner or Occupant of each Lot. If parking requirements increase as a result of a change in the use of a Lot or in the number of persons employed by the Owner or Occupant, additional off-street parking shall be provided so as to satisfy the intent of this section. All parking and loading areas shall conform to applicable Development Standards of the City and Borough of Juneau and the following requirements:

(a) Required off-street parking shall be provided on the Lot, on a contiguous Lot, or within such distance from the Lot as Declarant deems reasonable. Where parking is provided other than upon the Lot concerned, Declarant shall be given a certified copy of a Recorded Instrument, duly executed and acknowledged by the Person or Persons holding title to the Lot or other Property upon which the parking area is located, stipulating to the permanent reservation of the use of the Lot or other Property for such parking area.

(b) Parking areas shall be paved so as to provide dust-free, all-weather surfaces. Each parking space provided shall be designated by lines painted upon the paved surface and shall be adequate in area. All parking areas shall provide, in addition to parking spaces, adequate driveways and space for the movement of vehicles.

4.6 Storage and Loading Areas. Storage, maintenance and loading areas must be constructed, maintained and used in accordance with applicable Development Standards and the following conditions:

(a) Outside storage of materials, supplies or equipment, including trucks or other motor vehicles, shall be permitted only if approved in writing by Declarant.

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(b) Provision shall be made on each lot for any necessary vehicle loading and no on-street vehicle loading shall be permitted.

(c) Loading areas shall be set back, recessed or screened so as to be minimally visible from neighboring property or streets.

4.7 Drainage Control. All Lots shall be responsible to control drainage within said Lot as may be required to assure compliance with the Development Standards of The City and Borough of Juneau and as required by the applicable agencies. Each Lot shall construct a storm facility that services the collection of impervious surfaces i.e., roofs, walks, parking areas, and will connect such runoff areas to the storm connections provided or as required to assure these water do not enter the natural draining outfall. All pervious areas, i.e., lawn and landscape features shall direct surface and subsurface collection systems to the subdrains installed, or as may be modified to receive said water. This provision is to assure that each Lot Owner will recharge the natural ground water as much as possible. No landscaping or regrading of said Lots shall preclude the surface water from entering the required storm draining systems. Maintenance of all systems within private property shall be the individual Lot Owner's responsibility, except the easements as may be required for transporting impervious area storm run-off from dedicated public right-of-ways, or owned by public agencies. The agency having to maintain said storm facility shall have the right to enter each Lot as may be required to repair, reconstruct or maintain said system as deemed necessary.

4.8 Vacant Lots. Any vacant Lot shall be maintained in an orderly condition and debris, weeds and any waste materials shall be removed or controlled on a regular basis.

ARTICLE V

REGULATION OF OPERATIONS AND USES

5.1 Permitted Uses. Only uses allowed by the Master Plan shall be permitted in the Park. Any use shall be performed or carried out entirely within a building that is so designed and constructed that the enclosed operations and uses do not cause or produce a nuisance to other Lots or property, such as, but not limited to, vibration, sound, electro-mechanical disturbances, radiation, air or water pollution, dust or the emission of odorous, toxic or non-toxic matter (including steam). Certain activities which cannot be carried on within a building may be permitted, provided Declarant specifically consents to such activity in

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writing, and further provided such activity is screened so as not to be visible from neighboring property and streets. All lighting for exterior business activities other than parking and landscaping, shall be shielded so as not to be visible from neighboring property.

Nothing contained herein shall preclude an Owner from recovering from any Person liable therefor, damages to which such Owner might be entitled for any act or omission to act requiring an expenditure by the Owner for the maintenance and repair of the parking area, driveway, walkway and/or landscaping on his Lot.

5.2 Nuisances. No nuisance shall be permitted to exist or operate upon any Lot so as to be offensive or detrimental to any adjacent Lot of site of neighboring property or to its occupants. A "nuisance" shall include, but not be limited to any of the following conditions:

(a) Any use of the Lot which emits smoke, dust, dirt, or other particulates into the atmosphere. Any discharge of contaminated water, oil, grease, detergents or other improper liquids, solid wastes, or other harmful matter into the storm sewer system, or other waterway which, in the opinion of Declarant, may adversely affect the health, safety, or comfort of Person within the area, or intended use of their property, or cause negative impacts to the downstream receiving waters. No toxic waste, deleterious substance or improper materials of any kind shall be discharged into any public sewer serving the Park or any part thereof in violation of any regulation of any public body having jurisdiction over such public sewer.

(b) The escape or discharge of any fumes, odors, gases, vapors, steam, acids or other substance into the atmosphere which discharge, in the opinion of Declarant may be interfere with comfort of Person within the area or which may be harmful to property or vegetation;

(c) The radiation or discharge of intense light, glare or heat, or atomic, electromagnetic, microwave, ultrasonic, laser or other radiation. Any operation producing intense glare or heat or such other radiation shall be performed only within an enclosed or screened area and then only in such manner that the point exterior to the site or Lot upon which the operation is conducted;

(d) Excessive noise, being any noise level which unreasonably disturbs the peace of the area taking into consideration the nature of the uses permitted in the

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Park, or any noise level which violates any applicable law;

(e) Excessive emissions of smoke, steam, or particulate matter. Visible emissions of smoke or steam will not be permitted (outside any building) which exceed Ringlemann No. 1 on the Ringlemann Chart of the United States Bureau of Mines, or as determined by opacity limitations established by the State of Alaska. This requirement shall also be applied to the disposal of trash and waste materials. Wind-borne dust, sprays and mists are not permitted.

(f) Ground vibration. Buildings and other structures shall be constructed, and machinery and equipment installed, and insulated on each Lot so that the ground vibration inherently and recurrently generated is not perceptible without instruments at any point exterior to any Lot.

5.3 Condition of Property. The Owner of any Lot shall at all times keep it and the Improvements and appurtenances thereon in a safe, clean and wholesome condition and comply, at its own expense, in all respects with applicable governmental, health, fire and safety ordinances, regulations, requirements and directives, and shall at regular and frequent intervals remove at its own expense any rubbish of any character whatsoever that may accumulate upon such Lot.

5.4 Maintenance of Grounds. Except to the extent, from time to time, Declarant or, after the Transition Date, the Association, elects, by notice in writing, to sweep or clean driveways and parking lots, mow lawns or maintain sidewalks or grass areas between the curbs and sidewalks as if they were Common Areas, each Owner shall be responsible for the maintenance and repair of all parking areas, driveways, walkway, snow removal systems and landscaping on its Lot. Such maintenance and repair shall include, without limitation:

(a) Maintenance of all parking areas, driveways, curbs and walkways in a clean and safe condition, including the paving and repairing or resurfacing of such areas when necessary with the type of material originally installed thereon or such substitute therefor as shall, in all respects, be equal in quality, appearance and durability; the removal of debris and waste material and the washing and sweeping of paved areas as required; painting and repainting of striping markers and directional signals as required; and

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(b) Cleaning, maintenance and relamping of any external lighting fixtures except such fixtures as may be the property of any public utility or government body; and

(c) Except to the extent performed by Declarant or the Association pursuant to this Section 5.4, performance of all necessary maintenance of all landscaping including the trimming, watering and fertilization of all grass, ground cover, shrubs or trees, removal of dead or waste materials, replacement of any dead or diseased grass, ground cover, shrubs or trees.

(d) Installation, maintenance, repair and operation of the irrigation system on all landscaped areas of the Lot.

5.5 Taxes and Assessments. Owners shall pay taxes and assessments on their Lots before such taxes or assessments become a lien on the Lot or on any portion of the Park.

5.6 Refuse Collection. No refuse collection area shall be permitted between a street and the front of a building.

5.7 Repair of Building. No building or structure upon any Lot shall be permitted to fall into disrepair, and each such building and structure shall at all times be kept in good condition and repair and adequately painted or otherwise finished.

5.8 Public Utilities. Declarant reserves the sole right to grant consents for the construction and operation of public utilities including, but not limited to, underground lines for cable television antenna, electricity, telephone or telegraph, and gas pipes in and upon any and all streets now existing or hereafter established upon which any portion of the Park may now or hereafter front or abut. Declarant reserves the exclusive right to grant consents and to petition the proper authorities for any and all street improvements such as grading, seeding, tree planting, sidewalks, paving, sewer and water installation, whether it be on the surface or subsurface, which in the opinion of Declarant are necessary on or to the Park. Notwithstanding the provisions of Section 3.2, Declarant reserves the exclusive right to approve above ground utility lines across the Park or any portion thereof (excluding Lots owned by other Owners) on a temporary basis for the purpose of construction, and such lines shall be permitted when required by a government agency.

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5.9 Utility Lines and Antennas. No sewer, drainage or utility lines or wires or other devices for the communication or transmission of electric current, power or signals, including telephone, television, microwave or radio signals, shall be constructed, placed or maintained anywhere in or upon any portion of the Park other than within buildings or structures unless the same shall be contained in conduit or cables constructed, placed or maintained underground or concealed in or under buildings or other structures. Antenna for the transmission or reception of telephone, television, microwave or radio signals placed on any Lot, shall be appropriately screened so as to have minimum visual impact on surrounding streets, public spaces and common open space. The final location and configuration of such antenna must be approved in writing by the Declarant. Nothing contained herein shall be deemed to forbid Declarant from allowing, by written approval, the erection or use of temporary above ground power or telephone facilities incidental to the construction or repair of buildings on the Park.

5.10 Mechanical Equipment. All mechanical Equipment, utility meters, storage tanks, air conditioning equipment and similar items shall be screened with landscaping or attractive architectural features integrated into the structure itself.

5.11 Mineral Exploration. No portion of the Park shall be used in any manner to explore for or to remove any steam, heat, oil or other hydrocarbons, gravel, earth, or any earth substances or other minerals of any kind, provided, however, that this shall not prevent the excavation of earth in connection with the grading or construction of Improvements within the Park.

ARTICLE VI

AMENDMENT AND REPEAL

6.1 Procedure. Except as otherwise provided in Section 6.2, this Declaration or any provision hereof, or any covenant, condition, easement, restriction or reservation contained herein, may be terminated, extended, modified or otherwise amended, as to the whole of the Park or any portion thereof, with the written consent of the Owners of eighty percent (80%) of the voting power in the Association, based upon each Lot having a vote equal to its Proportionate Share; provided, however, that until the Transition Date, no such termination, extension, modification or other amendment shall be effective without the written approval of Declarant. No such termination, extension, modification or other amendment shall be

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effective until a proper instrument in writing has been executed, acknowledged and recorded.

6.2 Amendment by Declarant. Until the Transition Date, Declarant acting alone may (i) modify or amend the provisions of Articles III, IV, V and (ii) correct, clarify, amend, adjust or complete legal descriptions on any exhibit hereto and/or on the Plat, including adjusting Lot lines or (iii) add other property, as permitted by Section 2.2 hereof; provided, however, that (A) any such modification or amendment conform to the intent set forth herein; (B) prior to any such modification or amendment Declarant shall obtain the approval of any governmental agency to such modification or amendment where such approval is necessary; and (C) any modification or amendment shall not provide for any type of Improvements or use not presently permitted by the Declaration or authorize Declarant to transfer any cost of Common Area Improvements in the Expansion Area to the Association of any Lot Owner. No such modification or amendment shall be effective until the Owners have been given thirty (30) days' prior written notice of the proposed change, and a proper instrument in writing has been executed, acknowledged and recorded. No material modification or amendment shall be effective until approved by the Owners. If Declarant, in its sole discretion, determines that it is necessary to amend this Declaration or the Plat, as permitted by this Section 6.2, then Declarant, on behalf of itself, the Association, and each and every Owner, is hereby authorized to execute and have recorded said required amendment or amendments. The Association, by the act of recording of this Declaration, and each and every Owner by the act of accepting or Recording a conveyance (including by real estate contract) of any interest in a Lot or any other Improvements thereon, shall be deemed thereby to grant to Declarant a full and complete and unconditional power of attorney which is and shall be deemed coupled with an interest, to take any and all actions to effectuate and record or file said amendment or amendments and agrees that any such amendment or binding upon their respective interests in Lots, the Association, and upon each of them personally and their heirs, representatives, tenants, successors and assigns, to the same extent as if they and each of them had personally executed and acknowledged amendment or amendments. The power of attorney reserved herein or arising out of this Section 6.2, however, shall expire on the Transition Date; from and after the Transition Date, this Declaration may be amended only pursuant to the provisions of Section 6.1.

6.3 Governmental Regulation. All Development Standards, including the Master Plan, are deemed to be a part of this Declaration and to the extent that they conflict with any

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provision, covenant, condition or restriction hereof, said conflicting Development Standards, including the Master Plan, shall control and the provision, covenant, condition or restriction hereof in conflict therewith shall be either: (i) deemed amended to the extent necessary to bring the same into conformity with said Development Standards, including the Master Plan, while still preserving the intent and spirit of the provision, covenant, condition or restriction; or (ii) stricken herefrom should no amendment conforming to the Development Standards, including the Master Plan, be capable of preserving the intent and spirit of said provision, covenant, condition or restriction.

ARTICLE VII

VINTAGE BUSINESS PARK OWNERS ASSOCIATION

7.1 Form of Association. There is hereby created the Vintage Business Park Owners Association. Initially, the Association may be an unincorporated association. The Board, or Declarant until such time as the initial Board is selected, may at any time if deemed advisable in the exercise of Declarant's sole discretion, without necessity of prior approval or other action by the members being necessary, cause such unincorporated association to be converted to a non-profit corporation, the rights and duties of the members and of such corporation, the rights and duties of the members and of such corporation shall continue to be governed by the provisions of this Declaration.

7.2 Membership.

7.2.1 Qualification. Each Owner shall be a member of the Association and shall be entitled to one membership for each Lot so owned.

7.2.2 Transfer of Membership. The Association membership of each Owner shall be appurtenant to the Lot giving rise to such membership, and shall not be assigned, transferred, pledged, hypothecated, conveyed or alienated in any way except upon the transfer of title to said Lot or tract and then only to the transferee of title to such Lot or tract. Any attempt to make a prohibited transfer shall be void. Any transfer of title to a Lot or tract shall operate automatically to transfer the membership in the Association appurtenant thereto to the new Owner.

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7.3 Voting.

7.3.1 Number of Votes. The total voting power of all Owners shall be the number of acres (and fraction thereof) of all Lots in Vintage Business Park subject to this Declaration; each Lot shall be entitled to earn the number of votes (including fraction thereof) equal to its Proportional Share thereof.

7.3.2 Voting Owner. There shall be one voting representative of each Lot. If a Person owns more than one (1) Lot, he shall have the votes for each Lot owned. The voting representative shall be designated by the Owner or Owners of each Lot by written notice signed by all Owners and filed with the Board. A voting representative need not be an Owner. The designation shall be revocable at any time by any one of The Owners of a Lot upon written notice filed with the Board, or when the board receives actual notice of the death or judicially declared incompetence of an Owner of a Lot or by the conveyance of such Owner of his Lot. This power of designation and revocation may be exercised by the guardian, administrator or executor of an Owner's estate. Where no designation is made, or share a designation has been made, the voting representative of each Lot shall be the group composed of all of its Owners.

7.3.3 Joint Owner Disputes. The vote for a Lot must be cast as a single vote. In the event that joint Owners are unable to agree among themselves as to how their vote or votes shall be cast, they shall lose their right to vote on the matter in question. In the event more than the vote to which a particular Lot is entitled is cast for a particular Lot, then all such votes for such Lot shall be deemed void and shall not be counted.

7.4 Meetings, Audits, Notices of Meetings.

7.4.1 Annual Meetings. There shall be an annual meeting of the Owners in the first quarter of each fiscal year at such reasonable place and time as may be designated by written notice of the Board delivered to the Owners no less than ten (10) days prior to the date fixed for said meeting. At the annual meeting, the Board shall present a summary of the common expenses, receipts and disbursements for the preceding fiscal year, and the allocation thereof to each Owner, and the estimated common expenses for the coming fiscal year. Within ten (10) days after the annual meeting, a copy of said summary shall be delivered or mailed to the Owners not present at said meeting.

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7.4.2 Audits. The Board at any time, or upon the written request of Owners having at least forty percent (40%) of the total voting power, may require that an audit of the Association and management books be presented at any special meeting. An Owner, at his own expense, may at any reasonable time make an audit of the books of the Board and Association.

7.4.3 Special Meetings. Special meetings of the Owners may be called at any time for the purpose of considering matters which by the terms of this Declaration require the approval of all or some of the Owners, or for any other reasonable purpose. Such meetings shall be called by written notice of the president of the Association upon the president's decision or upon a request signed by a majority of the Board, or by written request by Owners having forty percent (40%) of the total voting power, which notice shall be delivered not less than ten (10) days prior to the date fixed for said meeting. The notice shall specify the date, time and place of the meeting, and in general the matters to be considered.

7.5 Bylaws of Association.

7.5.1 Adoption of Bylaws. Bylaws for the administration of the Association and the Park, and for other purposes not inconsistent with the intent of this Declaration, shall be adopted by the Association by a majority of the voting power of the voting Owners at a regular or special meeting. Notice of the time, place and purpose of such meeting shall be delivered to each Lot Owner at least ten (10) days prior to such meeting. Amendments to the Bylaws may be adopted by the same vote at a regular or special meeting similarly called.

7.5.2 Bylaws Provisions. The Bylaws shall contain provisions identical to those provided in this Article VII, and may contain supplementary, not inconsistent, provisions regarding the operation and administration of the property. The Bylaws shall establish such provisions for quorum, ordering of meetings, and varying the size of the Board and details as may be required for the proper administration of the Association and the Property.

7.5.3 Availability of Reports, Documents. The Association shall make available to Lot Owners and any first Mortgagee, current copies of this Declaration, Articles of Incorporation, if any, Bylaws, and other rules concerning the Association and the books, records

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and financial statements of the Association. "Available" means available for inspection upon request, during normal business hours or under other reasonable circumstances.

ARTICLE VIII

MANAGEMENT OF ASSOCIATION

8.1 Management of Declarant. "Transition Date" shall mean a date one hundred twenty (120) days after the date on which Declarant shall have closed the sale of the last unsold Lot or the date on which Declarant elects to permanently relinquish all of its authority under this Section 8.1 by written notice to all Owners, whichever date first occurs. Until the Transition Date occurs, the Park shall be managed in the exercise of the sole discretion of the Declarant, as follows:

8.1.1 Declarant or a managing agent selected by Declarant shall have the power and authority to exercise all the rights, duties and function of the Board. To carry out this provision, Declarant may, from and after the date of Recording hereof, adopt and enforce temporary bylaws, rules and regulations for the Association of Owners; may give notices and call meetings, determine, assess, collect, receive and expend assessments and Association funds; hire a manager or other employees or service agencies as required; purchase supplies and for required services, property and insurance; set up and establish Association books and accounts; and generally exercise all powers necessary to carry out the provisions of the Declaration and itself or through a managing agent manage the Park. Acceptance of an interest in a Lot described in this Declaration evidences acceptance of this management authority in Declarant for the initial period of operation indicated and in carrying out the same, the Declarant is entitled to the benefits of all powers, indemnities and protections set forth in this Declaration for the Board.

8.1.2 These requirements and covenants are made in order to insure that the Park will be adequately administered in the initial phases of development, and to insure an orderly transition of Association operations.

8.1.3 Until the Transition Date, any reference in this Declaration to the "Association" or the "Board" shall be deemed to mean and refer to Declarant. From and after the Transition Date, any reference in this

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Declaration to "Declarant" shall be deemed to mean and refer to the Association.

8.2 Management by Board. From and after the Transition Date, administrative power and authority shall vest in a Board of not less than three nor more than seven directors of such other number as may be provided in the Bylaws, elected from among the Owners. The board may delegate all or any portion of its administrative duties to a manager, managing agent, or officer of the Association, or in such manner as may be provided by the Bylaws. All Board positions shall be open for election at the first annual meeting. The Board shall elect officers of the Association from among its members, which shall include a president who shall preside over meetings of the Board and the meetings of the Association.

8.3 Authority of the Board.

8.2.1 Regular Assessments. The Board for the benefit of the Owners shall enforce the provisions of this Declaration and of the Bylaws, and shall acquire and shall pay for out of the Common Expense Fund, provided for in Article IX of the Declaration, all goods and services requisite for the proper functioning of the Park, including but not limited to the following:

(a) Water, sewer, garbage collection, electricity, telephone, gas and any other necessary Utility service as required for the Common Area.

(b) Policies of insurance coverage for hazards, liability for personal injury and property damage, and for fidelity bonds for Association officers and other employees, as the same are more fully required hereafter and/or in the Bylaws.

(c) The services of persons or firms as required to properly manage the affairs of the Park to the extent deemed advisable by the Board as well as such other personnel as the Board shall determine are necessary or proper for the operation of the Common Area, whether such personnel are employed directly by the Board or are furnished by the manager of management firm or agent; provided that the fees paid for any services shall be reasonable.

(d) Legal and accounting services necessary or proper in the operation of the Association affairs, administration of the Common Area, or the enforcement of this Declaration.

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(e) Planting, maintenance, repair and all landscaping and gardening work for the Common Areas, and such furnishings and equipment for the Common Area as the Board shall determine are necessary and proper, and the Board shall have the exclusive right and duty to acquire the same for the Common Area.

(f) Any other materials, supplies, labor, services, maintenance, repairs, structural alterations, insurance, taxes or assessments which the Board is required to secure by law or which in its opinion shall be necessary or proper for the operation of the Common Area or for the Enforcement of this Declaration; provided that if for any reason such materials, supplies, labor, services, maintenance, repairs, structural alterations, insurance, taxes or assessments are provided for particular Lots or their Owners, the cost thereof shall be specially assessed to the Owner of such Lots.

(g) Maintenance and repair of any Lot, its appurtenances and Improvements, if such maintenance or repair is reasonably necessary in the discretion of the Board to protect the Common Area or preserve the appearance and value of the Park, and the Owner of Owners of said Lot have failed or refused to perform said maintenance or repair as required by Article V.

(h) The Board may also pay any amount necessary to discharge any lien or encumbrance levied against the Common Areas rather than merely against the interest therein of particular Owners. Where one or more Owners are responsible for the existence of such lien, they shall be jointly and severally liable for the cost of discharging it, and any costs and expenses (including court costs and attorneys' fees) incurred by the Board by reason of such lien or liens shall be specially charged against the Owners and the Lots responsible to the extent of their responsibility.

(i) The Board's power hereinabove enumerated shall be limited in that the Board shall have no authority to acquire and pay for out of the Common Expense Fund capital additions and Improvements (other than for purposes of restoring, repairing or replacing portions of the Common Areas) having a total cost in excess of Two Thousand Five Hundred Dollars (\$2,500.00) in any one fiscal year, without first obtaining the affirmative vote of the Owners holding a majority of the voting power present or represented at an annual meeting or a special meeting called for such purpose, or voting by mail; provided that any expenditure or

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contract for capital additions or Improvements in excess of Twenty-Five Thousand Dollars (\$25,000.00) must be approved by Owners having not less than two-thirds (2/3) of the voting power present or represented at such a meeting or voting by mail. This Section 8.3.1(f) shall not apply to assessments arising out of Section 8.3.2.

(j) Nothing herein contained shall be construed to give the Board authority to conduct an active business for profit on behalf of all of the Owners or any one of them.

(k) The Board shall have the exclusive right to contract for all goods and services, payment of which is to be made from the Common Expense Fund. The Board may delegate such powers subject to the terms hereof.

(l) The Board may, from the Common Expense Fund, acquire and hold in the name of the Association, for the benefit of the Owners, tangible and intangible personal property and real property and interests therein, and may dispose of the same by sale or otherwise; and the beneficial interest in such property shall be owned by the Owners in the same proportion as their respective Proportionate Shares, and such property shall thereafter be held, sold, leased, rented, mortgaged or otherwise dealt with for the benefit of the Association as the Board may direct. The Board shall not, however, in any case acquire real property or personal property at a cost in excess of Two Thousand Five Hundred Dollars (\$2,500.00) without first obtaining the affirmative votes of the Owners holding a majority of the voting power present or represented at an annual meeting or a special meeting called for such purpose, or voting by mail; provided that any acquisition by lease or purchase of real or personal property valued in excess of Ten Thousand Dollars (\$10,000.00) must be approved by Owners having not less than two-thirds (2/3) of the voting power present at such meeting or voting by mail.

8.3.2 Special Assessments. Each Owner shall be responsible for paying its Proportionate Share of the cost of Off-site improvements and on-site improvements not benefitting the Park exclusively, which such improvements relate to proportional cost sharing by the Park with other affected properties in the City and Borough of Juneau, including such things as roadway extensions, traffic lights and utilities. Such improvements, if constructed, may be funded through a local improvement district ("LID"), or other means as

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then determined by the City. Unless otherwise stipulated through a LID process, each Owner shall pay his Proportionate Share of such costs as follows: To the extent the Association elects to pay, or to the extent Declarant or any one or more of the Lot Owners elects to advance to the Association the cost of certain off-site and on-site improvements, the full amount of any such costs advanced shall constitute a loan which shall be repaid in forty (40) equal quarterly installments including interest, accruing on the unpaid principal balance, at the rate of twelve percent (12%) per annum or at the prime rate then charged plus two percent (2%), whichever is higher. The loan shall be evidenced by a Note substantially in the form of Exhibit B attached hereto. After the Transition Date, the Board may enter into such borrowing, under terms and conditions as shall be acceptable to it. Each Owner's Proportionate Share shall be assessed pursuant to Article IX and in the event an Owner fails to timely pay amounts due the Association pursuant to this Section 8.3.2, the lien provisions of Section 12.3 shall apply. Any Owner may prepay the entire remaining balance of such Owner's Proportionate Share of all special assessments arising out of this Section 8.3.2, at any time without penalty, and Declarant or the Board shall execute and deliver to the prepaying Owner a recordable instrument removing the special assessment arising out of this Section 8.3.2 from the Lot in question.

ARTICLE IX

FUND FOR REGULAR AND SPECIAL ASSESSMENTS

9.1 Estimated Expenses. Within thirty (30) day prior to the beginning of each fiscal year the Board shall prepare a budget and an estimate of the charges (including regular expenses, and any special assessments for particular Lots) to be paid during such year; shall make provisions for creating, funding and maintaining reasonable reserves for contingencies, operations, repairs, replacements, improvements and acquisition of Common Areas and facilities (the "Common Expense Fund"); and shall take into account any expected income and any surplus available from the prior year's operating fund. The Board may create and maintain from regular monthly assessments a reserve fund for replacement of those Common Areas which can reasonably be expected to require replacement. The estimated requirement shall be assessed among all Lots subject to this Declaration based upon their relative acreage as shown on the Plat. If the sum estimated and budgeted at any time proves inadequate for any reason (including nonpayment for any reason of

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Owner's assessment), the Board may at any time levy a further assessment, which shall be assessed to the Owners in like proportions. Within ninety (90) days after the end of each fiscal year, the Board shall furnish to each Owner a certified statement, in reasonable detail, of all expenditures during such period, prepared by the Association's accountant. If such certified statement shows that expenditures exceed estimated installments paid to the Association, then the Lot Owner shall pay the Association the excess with ten (10) day of receipt of such statement; if such certified statement shows that the contrary is the case, then the overpayment to the Association shall be a credit to the next amounts due from the Lot Owner to the Association pursuant to this Article IX.

9.2 Payment by Owners. Each Owner shall be obligated to pay assessment made pursuant to this Article to the treasurer of the Association in equal quarterly installments in advance on or before the first (1st) day of each calendar quarter during such year, or in such other reasonable manner as the Declarant of Board shall designate. Any unpaid assessments shall bear interest at the rate of twelve percent (12%) per annum or such other rate as provided in the Bylaws from due date until paid. In addition, the Board shall have the power to assess against an Owner a late fee of Fifty Dollars (\$50.00), or such other sum as may be provided in the Bylaws, for each installment which is unpaid for a period of ten (10) days after it is due. Assessments for all Lots shall begin upon the closing of the first sale of a Lot by Declarant.

9.3 Contribution to Common Expense Fund. Each Owner may be required by the Board to make an initial, one time contribution of up to twelve (12) months' estimated common expense assessment. The contribution shall be in lieu of payment of regular quarterly assessments for the first year.

9.4 Purpose. All funds collected hereunder shall be expended for the purposes designated in this Declaration.

9.5 Separate Accounts. After Declarant's management authority under Section 9.1 expires, the Board may require that the Association maintain separate accounts for current operations, reserves, and a special separate reserve account for payment of insurance. All assessment and charges shall be collected and held in trust for, and administered and expended for the benefit of the Owners.

9.6 Based on Percentage. Except for certain special charges which may be levied against particular Lots under the provision of this declaration, all assessments for

BOOK 0479 PAGE 471

common expenses shall be divided among all Lots subject to this Declaration in accordance with their relative Proportionate Shares.

9.7 Omission of Assessment. The omission by the Board or the Association before the expiration of any fiscal year to fix the estimate and assessments and charges hereunder for that or the next fiscal year, shall not be deemed a waiver or modification in any respect of the provisions of this Declaration, or a release of any Owner from the obligation to pay the assessments and charges, or any installment thereof for that or any subsequent fiscal year; but the assessment fixed for the preceding fiscal year shall continue until a new assessment or charge is fixed.

9.8 Records. The Board shall cause to be kept detailed and accurate records, in the form established by the Association's accountant, if any, of The receipts and expenditures of the Association, specifying and itemizing the maintenance and repair expenses of the Common Area and any other expense incurred. such records and any resolution authorizing the payments involved shall be available for examination by any Owner at convenient hours of week days.

9.9 Certificate of Assessment. A certificate executed and acknowledged by the treasurer or the president of the Board or an authorized agent thereof if neither the president nor treasurer is available, stating the indebtedness for assessments and charges or lack thereof secured by the assessment lien upon any Lot shall by conclusive upon the Board and the Owners as to the amount of such indebtedness on the date of the certificate, in favor of all persons who rely thereon in good faith. Such a certificate shall be furnished to any Owner or any encumbrancer of a Lot within a reasonable time after request, in recordable form, at a reasonable fee. Unless otherwise prohibited by law, any encumbrancer holding a lien on a Lot may pay any unpaid assessments or charges payable with respect to such Lot, and, upon such payment, such encumbrancer shall have a lien on such Lot pursuant to Section 12.3 hereof, for the amounts paid of the same rank as the lien of his encumbrance.

ARTICLE X

INSURANCE

10.1 Insurance Coverage. The Board shall obtain, maintain and pay the premiums as a common expense a policy or policies of insurance and bonds written by companies licensed to do business in Alaska required to provide:

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10.1.1 A Master of blanket type of property insurance covering all of the Common Areas, including common fixtures and equipment and personal property and supplies owned by the Association. The insurance policy shall afford, as a minimum, protection against loss or damage by fire and other peril normally covered by the standard extended coverage endorsements and all other perils which are customarily covered with respect to similar projects, including all peril normally covered by the standard "all risk" endorsement, where such is available.

10.1.2 General comprehensive liability insurance insuring Declarant, the Board, the Association, the Owner and managing agent, if any, against any liability to the public or to the Owners of Lots and their guests, invites, or tenants, incident to the ownership, maintenance and use of the Common Areas and legal liability arising out of lawsuits related to employment contracts of the Association. The liability insurance policies shall include such protection as the Board deems necessary. Coverages and policy limits shall be reviewed at least annually by the Board. The policies of liability insurance shall contain a severability of interest endorsement or equivalent coverage which shall preclude the insurer from denying the claim of Owner because of the negligent acts of the Association or other Owners.

10.1.3 Workmen's compensation insurance to the extent required by applicable law.

10.1.4 Insurance against loss of personal property of the Association by fire, theft and other losses with deductible provisions as the Board deems advisable.

10.1.5 Such other insurance as the Board deems advisable, including directors and officers liability insurance covering the Board and officers of the Association.

ARTICLE XI

INDEMNIFICATION OF BOARD MEMBERS

Each Board member of Association committee member, or Association officer shall be indemnified by the Owners against all expenses and liabilities, including attorney's fees, reasonable incurred by or imposed in connection with any proceeding to which he may be a party, or in which he may become involved, by reason of being or having held such position, or any settlement thereof, whether or not he holds

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such position at the time such expenses or liabilities are incurred, except in such cases wherein such Person is adjudged guilty of willful misfeasance or malfeasance in the performance of his duties; provided, that, in the event of a settlement, the indemnification shall apply only when the Board approves such settlement and reimbursement as being for the best interests of the Association.

ARTICLE XII

REMEDIES

12.1 (a) Remedies for Failure to Maintain and Repair. If any Owner shall fail to perform the covenants and condition required by Article V, then Declarant or the Association shall, after fifteen (15) days' prior written notice to such delinquent Owner, and in addition to the other enforcement remedies provided herein, have the right, but not the obligation, to cure such default, and to charge the delinquent Owner with the cost of such work plus a fifteen percent (15%) coordination fee except for payments made pursuant to Section 5.5, together with interest thereon at the rate of twelve percent (12%) per annum from the date of Declarant's advancement of funds to the date of reimbursement of Declarant by Owner. If the delinquent Owner shall fail to reimburse Declarant for such costs within ten (10) days after demand therefor, Declarant for such costs within ten (10) days after demand therefor, Declarant may, at any time within two (2) years after such advance, file for record in the Department of Records and Elections of the City and Borough of Juneau, Alaska, a claim of lien signed by Declarant for the amount of such advances and interest thereon. The lien created by this section shall be effective to establish a lien against the interest of the delinquent Owner and its Lot, together with interest at twelve percent (12%) per annum on the amount of such advance from the date thereof, in addition to recording fees, cost of title search obtained in connection with such lien or the foreclosure thereof and court costs and reasonable attorneys' fees which may be incurred in the enforcement of such a lien.

(b) Foreclosure of Lien. A lien created pursuant to Section 12.1(a), when so established against the Lot described in said claim, shall be prior or superior to any right, title, interest, lien, or claim which may be or may have been acquired in or attached to the real property interests subject to the lien subsequent to the time of filing such claim for record. Such lien shall be for the benefit of Declarant and may be enforced and foreclosed in a like manner as a real estate mortgage is foreclosed in the State of Alaska.

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(c) Cure. If any Owner's failure to perform the obligations required by Article V is cured, and all amounts, including accrued interest, due and owing, to Declarant or the Association as a result of said failure to perform is paid, then Declarant of the Association shall file or Record a rescission of such notice, upon payment by the defaulting Owner of the costs of preparing and filing or Recording such rescission, and other reasonable costs, interest, and fees, including attorneys' fees which have been incurred.

(d) Nonexclusive Remedy. The foregoing lien and the rights to foreclose thereunder shall be in addition to, and not in substitution for, all other rights and remedies which any party may have hereunder and by law, including any suit to recover a money judgement for unpaid assessments. If any Owner shall fail to perform such maintenance and repair and, notwithstanding such failure, Declarant should fail to exercise its rights and remedies hereunder, then, any other Owner, after fifteen (15) days' prior written notice to Declarant and such delinquent Owner, shall have the right, but not the obligation to perform such maintenance and repair and shall have the same rights and remedies with respect thereto as are provided herein to Declarant.

12.2 Abatement and Suit. The Owner of each Lot shall be primarily liable, and the Occupant, if any, secondarily liable for the violation or breach of any covenant, condition or restriction herein contained. Violation or breach of any covenant, condition or restriction herein contained shall give to Declarant, following thirty (30) days' written prior notice to the Owner or Occupant in question, the right, privilege and license to enter upon the Lot where said violation or breach exists and to summarily abate and remove, at the expense of the Owner or Occupant thereof, any Improvement, structure, thing or condition that may be or exists thereon contrary to the intent and meaning of the provisions hereof, or to prosecute a proceeding at law or in equity against the Person or Persons who have violated or are attempting to violate any of these covenants, conditions or restrictions to enjoin or prevent them from doing so, to cause said violation to be remedied, or to recover damages for said violation. No such entry by Declarant or its agent shall be deemed a trespass, and neither Declarant nor its agents shall be subject for liability to the Owner or Occupant of said Lot for such entry and any action taken to remedy or remove a violation. The cost of any abatement, remedy or removal hereunder shall be a binding personal obligation on any Owner or Occupant in violation of any provision of this Declaration, as well as a lien (enforceable in the same manner as a Mortgage) upon the Lot in question. The lien provided for in this section shall not be valid as against a bona fide purchaser for

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value or a bona fide Beneficiary for value of the lot in question, unless a suit to enforce said lien shall have been filed in a court of record in the City and Borough of Juneau, Alaska, prior to the Recordation of the Deed of Mortgage conveying or encumbering the Lot in question to such purchaser or Beneficiary, respectively.

12.3 Creation of Lien and Personal Obligation for Assessments. Each Owner of a Lot with the Park, by acceptance of the Deed to or other conveyance of that Lot, shall be deemed to covenant and agree to pay all costs and all assessments provided for herein. Any costs or assessment, or any portion thereof, not paid when due, together with interest payable hereunder, and all costs and attorney's fees incurred in connection with collection, shall be a continuing lien upon the Lot, which lien may be foreclosed by the Declarant, the Association or other Owner in the manner provided by law for the foreclosure of a Mortgage on real property. Each Lot Owner shall also be personally obligated to pay the amount of any assessment levied against the Owner's Lot during the time that the Lot Owner is the Owner thereof, together with all other amounts due and payable pursuant to this Section. The personal obligation shall not be released by any transfer of the Lot subsequent to the effective date of any particular assessment. Any lien arising out of this Article XII, shall be established by the Recordation of a claim of lien in the Records of the Department of Records and Elections of the City and Borough of Juneau, Alaska, signed by the Association, Declarant or other Owner. Such lien shall also secure Recording costs, costs of title search obtained in connection with the lien or the foreclosure thereof and court costs and reasonable attorneys' fees as may be incurred in the Lot described in the claim, shall be prior to and superior to any right, title, interest, lien, or claim which may be or may have been acquired in or attached to the real property interests for record. Such lien shall be for the benefit of Declarant, the Association or other Owner and may be enforced and foreclosed in a like manner as a real estate Mortgage is foreclosed in the State of Alaska.

12.4 Right of Entry. During reasonable hours and upon reasonable notice, and subject to reasonable security requirements, Declarant, or its agents, shall have the right to enter upon and inspect any Lot and the Improvements thereon covered by this declaration for the purpose of ascertaining whether or not the provisions of this Declaration have been or are being complied with, and neither declarant nor its agents shall be deemed to have committed a trespass or other wrongful act by reason of such entry or inspection.

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12.5 Deemed to Constitute a Nuisance. The result of every act or omission whereby any covenant, condition or restriction herein contained is violated in whole or in part is hereby declared to be and constitute a nuisance, and every remedy allowed by law or in equity against an Owner or Occupant, either public or private, shall be applicable against every such result and may be exercised by Declarant.

12.6 Attorneys' Fees. In any legal or equitable proceeding for the enforcement of this Declaration or any provision hereof, whether it be an action for damages, declaratory relief of injunctive relief, or any other action, the losing party or parties shall pay the attorney's fees of the prevailing party or parties, which shall be fixed by the court in such proceedings or in a separate action brought for that purpose. All remedies provided herein or at law or in equity shall be cumulative and not exclusive.

12.7 Failure to Enforce No Waiver. The failure of Declarant to enforce any requirement, restriction or standard herein contained shall in no event be deemed to be a waiver of the right to do so thereafter or in other cases, nor of the right to enforce any other restriction.

ARTICLE XIII

CONSTRUCTIVE NOTICE AND ACCEPTANCE

Every Person who now or hereafter owns, occupies or acquires any right, title or interest in or to any portion of the Park is and shall be conclusively deemed to have consented and agreed to every covenant, condition and restriction contained herein, whether or not any reference to this Declaration is contained in the instrument by which such Person acquired an interest in the Park.

ARTICLE XIV

WAIVER AND RELEASE

Neither Declarant nor its successors or assigns shall be liable to any Owner or Occupant of the Park by reason of any mistake in judgment, negligence, nonfeasance, action or inaction or for the enforcement or failure to enforce any provision of this declaration. Every Owner or Occupant of any of the Park by acquiring interest therein: (1) agrees that it will not bring any action or suit against Declarant to recover any such damages or to seek equitable relief because of same; and (2) hereby releases any claims it may have against Declarant or Declarant's successors or assigns.

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ARTICLE XV**RUNS WITH LAND**

All covenants, conditions, restrictions and agreements herein contained, or hereafter created pursuant to this Declaration, are made for the direct, mutual and reciprocal benefit of each and every Lot of the Park; shall create mutual equitable servitudes upon each Lot in favor of every other Lot; shall create reciprocal rights and obligations between respective Owners and Occupants of all Lots and privity of contract and estate between all grantees of said Lots, their heirs, successors and assigns; and shall, as to the Owner and Occupants of each Lot, their heirs, successors and assigns, operate as covenants running with the land, for the benefit of all other Lots, except as provided otherwise herein.

ARTICLE XVI**RIGHTS OF BENEFICIARIES**

No breach of any covenant, condition or restriction herein contained, or any enforcement thereof, shall defeat or render invalid the lien of any Mortgage now or hereafter executed upon the Park or a portion thereof; provided, however, that if any portion of the Park is sold under a judicial or nonjudicial foreclosure of any Mortgage, any purchaser at such sale and its purchased subject to all of the covenants, conditions and restrictions contained in this Declaration.

ARTICLE XVII**CAPTIONS; OTHER WORDS**

The captions of articles and sections herein are used for convenience only and are not intended to be a part of this Declaration or in any way to define, limit or describe the scope and intent of the particular article or section to which they refer. Any reference in this Declaration to the singularly shall include the plural, and vice versa, and any reference to one gender shall include the other genders. The locative adverbs "herein", "hereunder", "hereto", "hereby", "hereinafter", etc., shall mean and refer to this Declaration in its entirety and not to any specific Article, Section or other part thereof.

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ARTICLE XVIII

EFFECT OF INVALIDATION

If any provision of this Declaration is held to be invalid by any court, the invalidity of such provision shall not affect the validity of the remaining provisions hereof.

ARTICLE XIX

COUNTERPARTS

This Declaration may be executed in any number of counterparts, each of which shall be deemed to be an original, but all of which together shall constitute one and the same agreement. The execution and delivery of one counterpart by any party shall have the same force and effect as if that party had signed all other counterparts.

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BBS ENTERPRISES, an Alaska
limited partnership

By: Its General Partner

Wm. J. Bauer

By Lawrence J. Bauer

William J. Bauer, by
Lawrence Bauer, his
attorney-in-fact

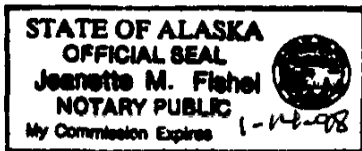
BOOK 0479 PAGE 480

STATE OF ALASKA)
) ss.
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this 28 day of August, 1997, before me, the undersigned, a notary public in and for the State of Alaska, duly commissioned and sworn, personally appeared **Lawrence Bauer, attorney-in-fact of William J. Bauer**, to me known and known to me to be the person named in and who executed the within and foregoing instrument, and he acknowledged to me that he signed the same freely and voluntarily for the uses and purposes therein mentioned as attorney-in-fact of William J. Bauer the general partner of BBS Enterprises, an Alaska limited partnership.

WITNESS my hand and official seal the day and year in this certificate first above written.

Jeanette M. Fisher
Notary Public, State of Alaska
My commission expires: _____



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EXHIBIT A

Lots 1-13, inclusive, and Lots 20-40, inclusive, Block "C",
Lots R-1, R-2, R-3/4 and R-5 and Tract "D", VINTAGE II
SUBDIVISION, according to Plat 85-58, Juneau Recording
District, First Judicial District, State of Alaska, and

Lots 14A and 16B, Block "C", VINTAGE II SUBDIVISION, according
to Plat 96-34, Juneau Recording District, First Judicial
District, State of Alaska, and

Lot 17A, Block "C", VINTAGE II SUBDIVISION, according to Plat
96-15, Juneau Recording District, First Judicial District,
State of Alaska, and

Lot 41A, Block "C", VINTAGE II SUBDIVISION, according to Plat
88-1, Juneau Recording District, First Judicial District,
State of Alaska, and

Tract A-1A and Tract A-1B, VINTAGE III SUBDIVISION, according
to Plat 96-33, Juneau Recording District, First Judicial
District, State of Alaska.

After recording return to:

Baxter, Bruce, Brand & Douglas
P.O. Box 32819
Juneau, Alaska 99803

006862 129
JUNEAU
RECORDING DISTRICT CC

1997 SP 22 AM 11:34

REQUESTED BY B3B4D



April 7, 2022

PND No. 222016

Irene Gallion
Senior Planner
City and Borough of Juneau Community Development Dept.
230 S. Franklin St. Juneau, AK 99801

Re: SEARHC Vintage Park Medical Office Building, Conditional Use Permit Application – Additional Information on Traffic Impact Analysis

Dear Ms. Gallion,

On Thursday, March 31, 2022, PND submitted to CBJ a conditional use permit application package for the subject project. The permit package included a draft Traffic Impact Analysis, (TIA) developed by Kinney Engineering, (KE). It was noted in the application Project Narrative that the TIA is in draft form due to ongoing coordination with AKDOT. Previously, CBJ requested we review the draft with AKDOT prior to submitting the final TIA. On April 5th, KE and PND met with AKDOT stakeholders to review the TIA and discuss the results and potential traffic impact mitigations that may be warranted. You requested PND summarize the meeting discussion and provide the summary to CBJ as additional information to the CUP application.

PND and KE met with AKDOT on April 5, 2022. In attendance were myself, representing PND and the Owner, Randy Kinney and Jeanne Bowie from KE, and Nathan Purves, Steven Thater and Chrissy McNally from AKDOT.

The TIA was discussed with only minor comments and no objections to the method or results of the analysis. AKDOT voiced no objections to the proposed mitigations and indicated they would not request additional intersection improvements as a result of the proposed project. A main point of discussion was the intersection of Egan Drive and Mendenhall Loop Road. As noted in the TIA, this is the only intersection which may warrant impact mitigation in accordance with the CBJ municipal code, however, the level of service (LOS) under existing conditions is within the CBJ threshold for mitigation and the proposed traffic impact is minimal; there is no LOS change for the intersection with the additional proposed site traffic. As described in the TIA Section 8.1. *“Without site traffic, intersection AM average delay per vehicle is 82 seconds with a LOS F and the PM average delay per vehicle is 65 seconds with LOS E. Adding site traffic only increases delay by 1 second per vehicle in both AM and PM peak hours with no changes in LOS.”*

Mr. Thater observed that under AKDOT criteria as specified in 17 AAC 10.070, Traffic Impact Analysis, mitigation of impacts from the proposed SEARHC Medical Facility would likely not be required as the change in operational performance resulting from the site is minimal and appears to be beneath the AKDOT threshold triggering code required mitigation. He went on to make the additional points that, the existing traffic signals currently employ adaptive software technology, which will mitigate potential impacts proactively and the Department regularly reviews and updates signalization parameters, further minimizing project impacts.

Additional comments, included support for the proposed pedestrian mitigations, including the addition of the perimeter sidewalk along Vintage Boulevard.



ENGINEERS, INC.

During our telephone conversation on April 5th, you requested that the TIA remain in draft form until CBJ Engineering has reviewed the CUP application and draft TIA, then update and provide the final TIA prior to the Planning Commission meeting, yet to be scheduled. As requested, the final TIA is pending CBJ internal review.

Please contact me if you have any questions or require further information.

Sincerely,
PND Engineers, Inc. | Juneau Office

Tyler Bradshaw, P.E. | Senior Engineer

cc:

Ed Zernia, SEARHC Director of Construction, Facilities Admin
Deanna Wlad, AIA, Architect, Spark Design
Randy Kinney, PE, Kinney Engineering
Dick Somerville, PE, PND Engineers
Steven Thater, Alaska Department of Transportation
Nathan Purves, Alaska Department of Transportation
Chrissy McNally, Alaska Department of Transportation



ENGINEERS, INC.

June 2, 2022

PND No. 222016

Joseph Meyers
Planner
City and Borough of Juneau Community Development Dept.
230 S. Franklin St. Juneau, AK 99801

Re: SEARHC Vintage Park Medical Office Building, Conditional Use Permit Application – Additional Information

Dear Mr. Meyers,

On Thursday, March 31, 2022, PND submitted to CBJ a conditional use permit application package for the subject project. There have been minor revisions to the project resulting from value engineering efforts to reduce project cost. I am submitting this letter to inform CBJ of the minor revisions and to provide additional requested information ahead of the Planning Commission hearing scheduled for June 14, 2022.

The permit application included a draft Traffic Impact Analysis, (TIA) developed by Kinney Engineering, (KE). It was noted in the application Project Narrative that the TIA is in draft form due to ongoing coordination with AKDOT. On April 7, 2022, PND provided a letter summarizing the results of coordination with AKDOT. Following the submittal of the letter you requested the TIA remain in draft form, pending CBJ Engineering review. You have now indicated that CBJ Engineering has no additional comments and requested we proceed with finalizing the TIA. The TIA is finalized and is enclosed, there have been no revisions to the method or data, only the recommendations section was finalized, which was omitted from the draft pending DOT and CBJ comment.

Minor revisions to the project have occurred due to ongoing value engineering efforts. These include the following:

- An overall reduction in square footage to approximately 43,000 square feet. The reductions were made in the southeast area of the building, in primarily mechanical and storage space. Revised floor plans, elevation views, parking summary sheet and site plan are enclosed. There have been no revisions to the proposed traffic circulation, number of parking spaces, or to the total proposed vegetative cover.
- A phased approach to final construction will be implemented. The third floor of the building will be constructed as core and shell only in Phase One, with final build out to be completed during Phase 2, as funding allows. There are no planned revisions to the final 3rd floor program or use of space.
- The proposed perimeter sidewalk will be asphalt with concrete ADA ramps in lieu of entirely concrete, similar to recent CBJ roadway projects.

Thank you for your time and review of the enclosed documents. Please contact me if you have any questions or require further information.

Sincerely,
PND Engineers, Inc. | Juneau Office

Tyler Bradshaw, P.E. | Senior Engineer

Enclosures:

1. Final TIA
2. Revised Drawings

cc:
Ed Zernia, SEARHC Director of Construction, Facilities Admin
Deanna Wlad, AIA, Architect, Spark Design
Dick Somerville, PE, PND Engineers

JUNEAU VINTAGE PARK
LEVEL 1
14,824 SF



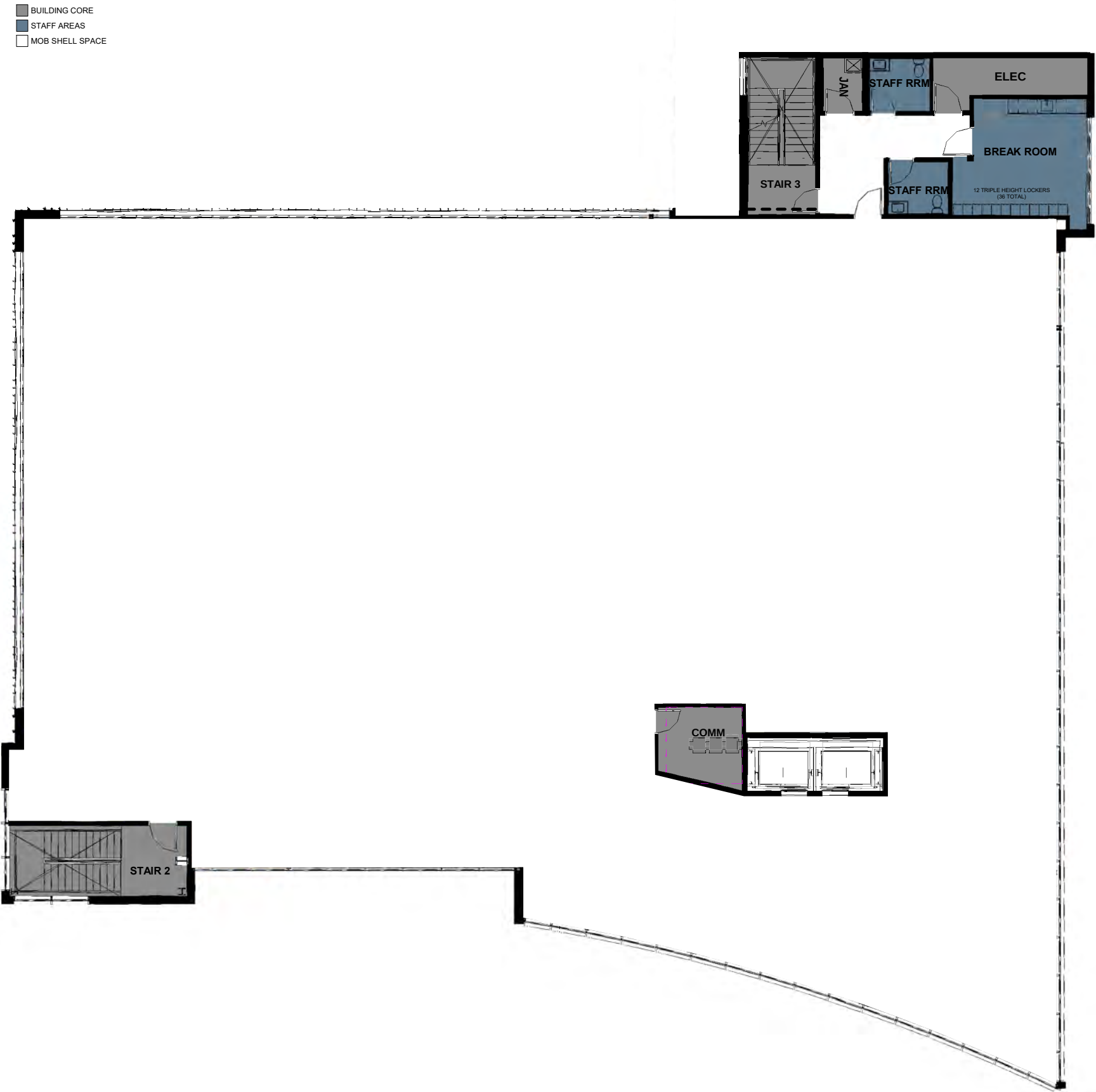
14,087 SF

-  BUILDING CORE
-  CIRCULATION
-  NON-CLINICAL
-  OPTOMETRY
-  PATIENT
-  PSYCHIATRY
-  STAFF AREAS
-  THERAPY



sparkdesign
architecture • interior design

JUNEAU VINTAGE PARK
LEVEL 3
14,087 SF



AREA PLAN - LEVEL 1



PARKING SUMMARY

MEDICAL/DENTAL CLINIC	
OFFICE SPACE	
STORAGE/UTILITY SPACE	

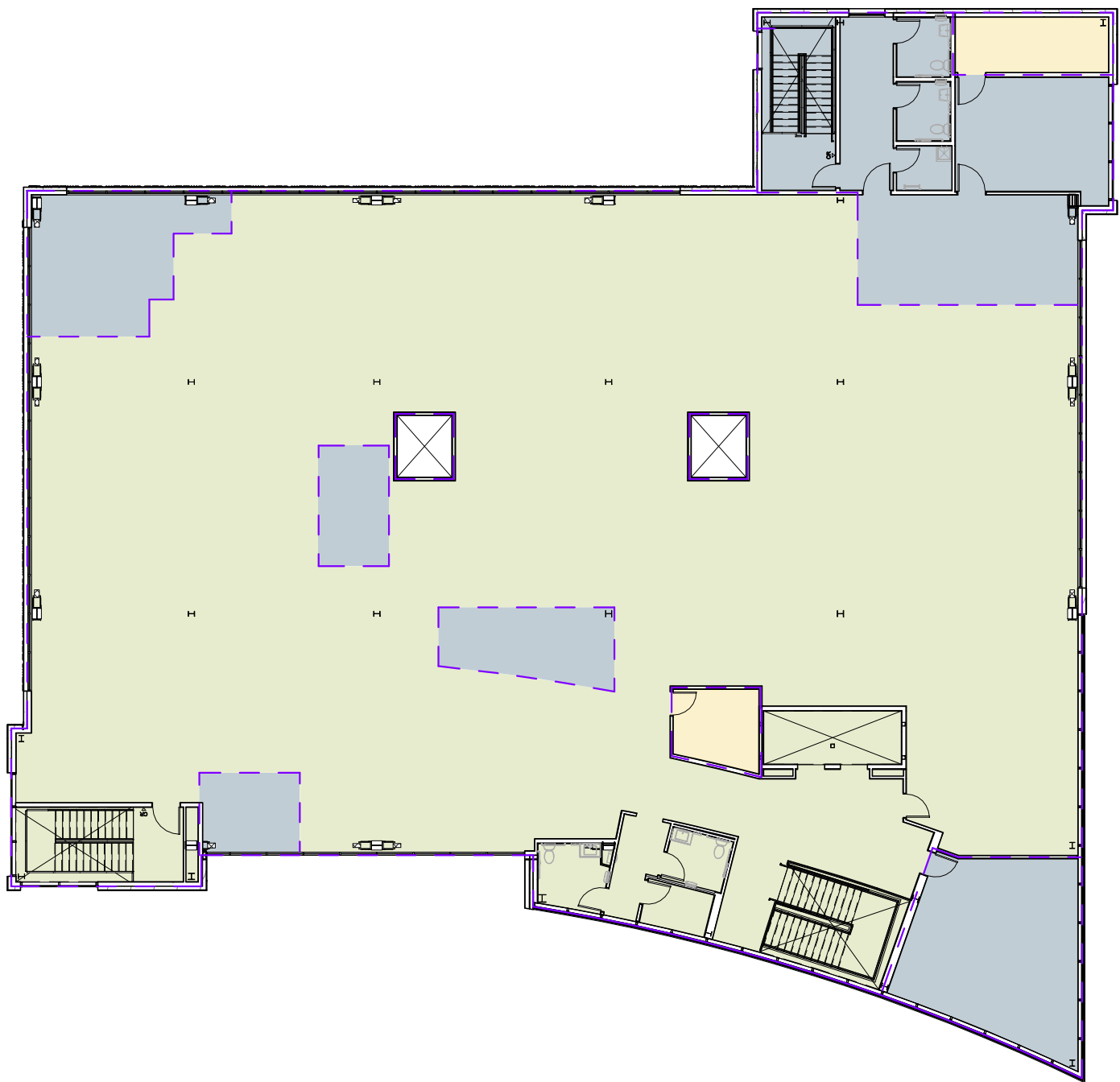
PARKING CALCULATION SCHEDULE	
Name	Area
MEDICAL/DENTAL CLINIC	
LEVEL 1 CLINIC	9920 SF
LEVEL 2 CLINIC	10693 SF
LEVEL 3 CLINIC	10909 SF
	31522 SF
OFFICE SPACE	
OFFICE	2445 SF
OFFICE	138 SF
OFFICE	120 SF
OFFICE	130 SF
BH OFFICES	565 SF
BH OFFICES	413 SF
BH OFFICE	142 SF
LEVEL 2 - BREAK & STAFF AREAS	1583 SF
BH OFFICE	242 SF
CONFERENCE ROOM	544 SF
LEVE 3 BREAK & STAFF AREAS	1338 SF
OFFICE	207 SF
OFFICE	143 SF
OFFICE	139 SF
OFFICE	384 SF
	8531 SF
STORAGE/UTILITY SPACE	
MECH / ELEC	1268 SF
DATA	117 SF
STORAGE	121 SF
STORAGE	261 SF
STORAGE	259 SF
STORAGE	46 SF
MECH / ELEC	Not Enclosed
DATA	197 SF
MECH / ELEC	167 SF
MECH / ELEC	Not Enclosed
DATA ROOM	118 SF
MECH / ELEC	167 SF
	2720 SF

AREA PLAN - LEVEL 2

Packet Page 403 of 635



AREA PLAN - LEVEL 3



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SEARHC
JUNEAU VINTAGE PARK
JUNEAU, AK

REVISION SCHEDULE		
#	DESCRIPTION	DATE

JOB NO.	21-064
DATE	05/31/2022
DRAWN	Author
REVIEWED	DTW

SHEET NAME
PARKING SUMMARY

SHEET NO.
G1.00

EXTERIOR ELEVATIONS GENERAL NOTES

1. ALL UNSTRUCT SUPPORTING UTILITY EQUIPMENT SHALL BE PAINTED TO MATCH THE BUILDING.
2. ALL BLOCKING FOR HOSE BIBS, WALL MOUNTED LIGHTS, RECEPTACLES, ETC. SHALL BE CLAD IN THE SAME SIDING MATERIAL AS THE BUILDING OR A COMPLEMENTARY FINISH AS APPROVED BY THE ARCHITECT.
3. ADDRESS SIGNAGE DIMENSIONAL NUMBERS:
MATERIAL: ANODIZED ALUMINUM
FONT: ADA FUTURA
SIZE: TBD (BOD 20")
MOUNTING: STUDS WITH STANDOFFS

EXTERIOR ELEVATION LEGEND

METAL PANEL:
MP1: MFG. TO BE DETERMINED OR EQUAL
COLOR: WHITE

METAL PANEL:
MP2: MFG. TO BE DETERMINED OR EQUAL
COLOR: COOL SLATE GRAY
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 1 1/4"

METAL PANEL:
MP3: MFG. TO BE DETERMINED OR EQUAL
COLOR: COOL SLATE GRAY
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 1 1/4"

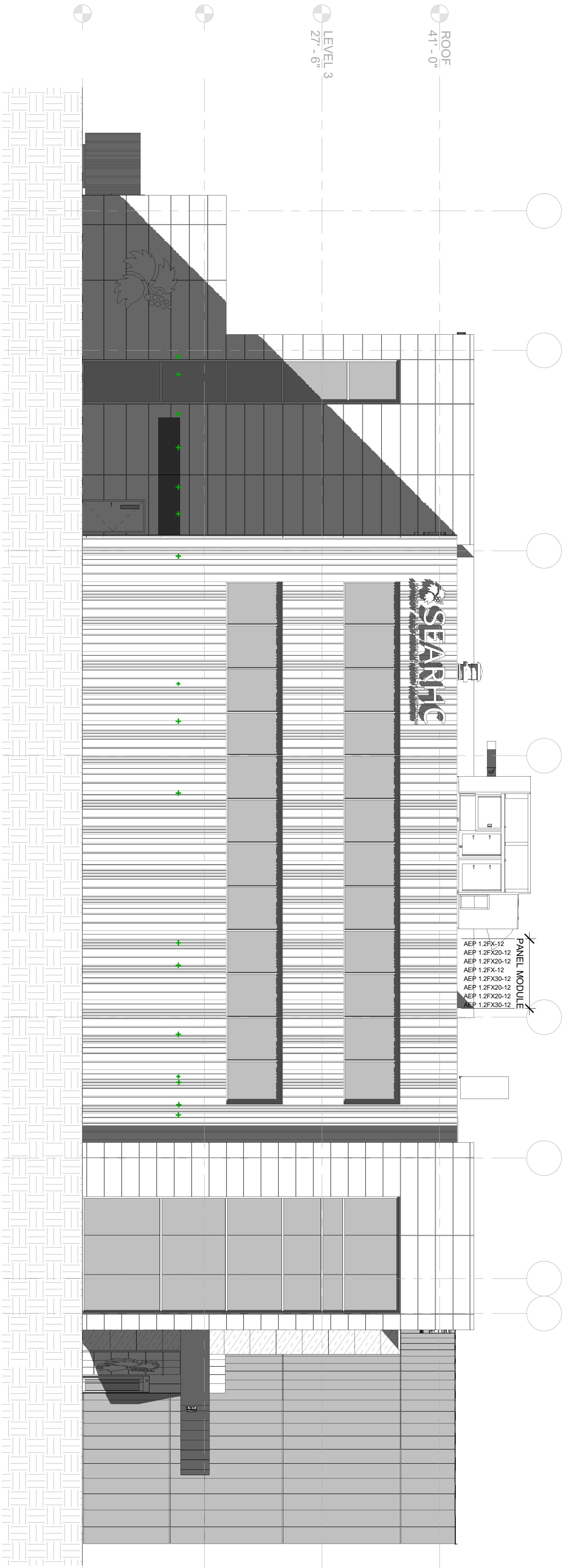
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MP4: MFG. TO BE DETERMINED OR EQUAL
COLOR: COOL SLATE GRAY
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 1 1/4"

METAL PANEL:
MP5: MFG. TO BE DETERMINED OR EQUAL
COLOR: COOL SLATE GRAY
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 1 1/4"

ENTRY CANOPY AND LEVEL 3 SOFRT
MP3: MFG. TO BE DETERMINED OR EQUAL
COLOR: COOL SLATE GRAY
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 1 1/4"

CANOPY FASCIA PANELS
ACM1: MFG. TO BE DETERMINED OR EQUAL
COLOR: WHITE TO MATCH MP1 AND MP3
LENGTH: CUSTOM
THICKNESS: 4 MM
REVEAL: WET JOINT, AS SHOWN ON ELEVATIONS

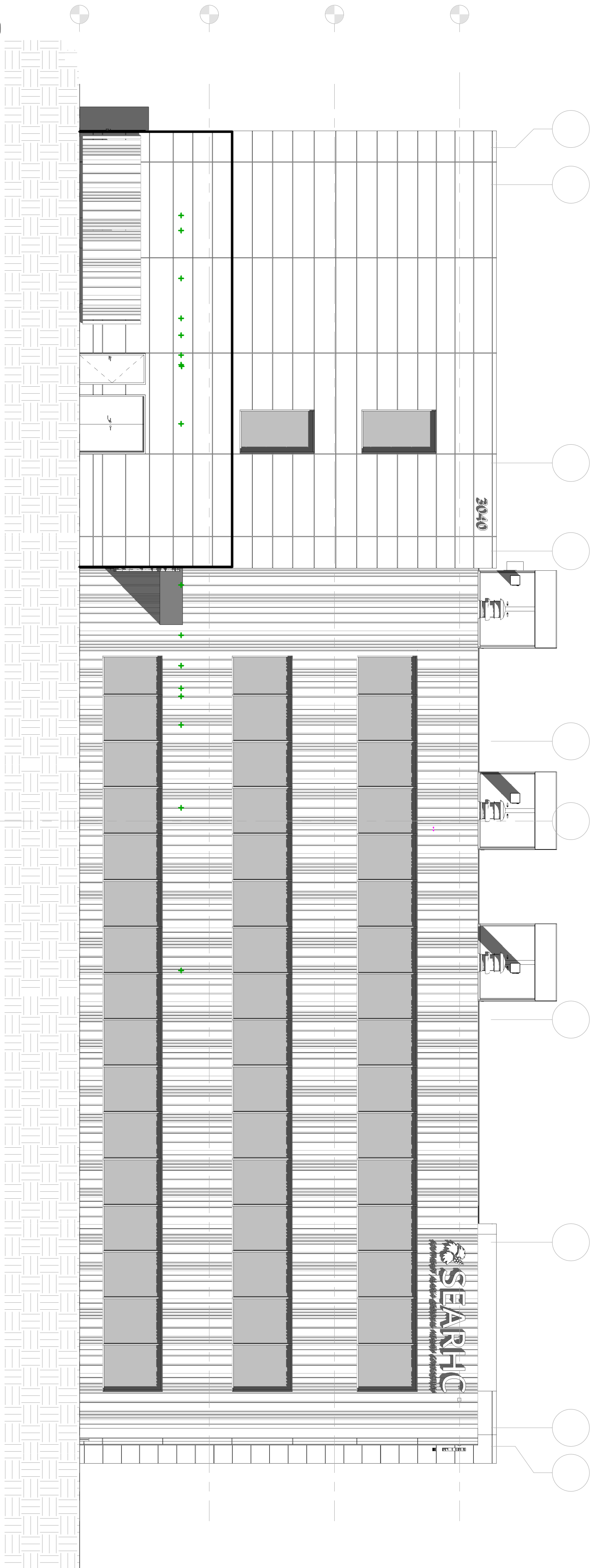
1 NORTH
1/8" = 1'-0"



ROOF
4'-1" - 0"

LEVEL 3
27' - 6"

2 EAST
1/8" = 1'-0"



Packet Page 404 of 635

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JUNEAU, AK

#	REVISION SCHEDULE	DATE
	DESCRIPTION	

JOB NO.	21-064
DATE	05/31/2022
DRAWN	Author
REVIEWED	DTW

SHEET NAME
EXTERIOR ELEVATIONS

SHEET NO.
A2.00

HALF SCALE WHEN PRINTED AT 11x17

EXTERIOR ELEVATIONS GENERAL NOTES

1. ALL UNSTRUCT SUPPORTING UTILITY EQUIPMENT SHALL BE PAINTED TO MATCH THE BUILDING.
2. ALL BLOCKING FOR HOSE BIBS, WALL MOUNTED LIGHTS, RECEPTACLES, ETC. SHALL BE CLAD IN THE SAME SIDING MATERIAL AS THE BUILDING OR A COMPLEMENTARY FINISH AS APPROVED BY THE ARCHITECT.
3. ADDRESS SIGNAGE DIMENSIONAL NUMBERS:
MATERIAL: ANODIZED ALUMINUM
FONT: ADA FUTURA
SIZE: 7(BD 207)
MOUNTING: STUDS WITH STANDOFFS

EXTERIOR ELEVATION LEGEND

METAL PANEL:
MP1: MFG. DR. DESIGN OR EQUAL
STYLE: PANELS ALUMINUM

PANEL WIDTH: 24"
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 1 1/4"
REVEAL: 1/2"

METAL PANEL:
MP2: MFG. FLEX SERIES WITH STANDOFF CLIP
STYLE: FLEX SERIES WITH STANDOFF CLIP
COLOR: COOL SLATE GRAY

PANEL WIDTH: 12"
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 18 GA AT LONG SPANS, 20 GA BETWEEN WINDOWS
PROFILE: RECTANGULAR PROFILE PER MODULE LAYOUT, NO BEVELS ETC.

METAL PANEL ACCENT:
MP3: MFG. TO BE DETERMINED
STYLE: TO BE DETERMINED
COLOR: TBD

PANEL WIDTH: CUSTOM
LENGTH: CUSTOM
THICKNESS: CUSTOM, 1/8" MIN.
REVEAL: AS SHOWN ON ELEVATIONS

ENTRY CANOPY AND LEVEL 3 SOFRT
MP3: MFG. TO BE DETERMINED
STYLE: TO BE DETERMINED
COLOR: TBD

PANEL WIDTH: CUSTOM
LENGTH: CUSTOM
THICKNESS: CUSTOM, 1/8" MIN.
REVEAL: AS SHOWN ON DRAWINGS

CANOPY FASCIA PANELS

ACM1: MFG. TO BE DETERMINED
STYLE: ALUMINUM COMPOSITE PANELS
COLOR: WHITE TO MATCH MP1 AND MP3
LENGTH: CUSTOM
THICKNESS: 4 MM
REVEAL: WET JOINT, AS SHOWN ON ELEVATIONS

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SEARCHHC
JUNEAU VINTAGE PARK
JUNEAU, AK

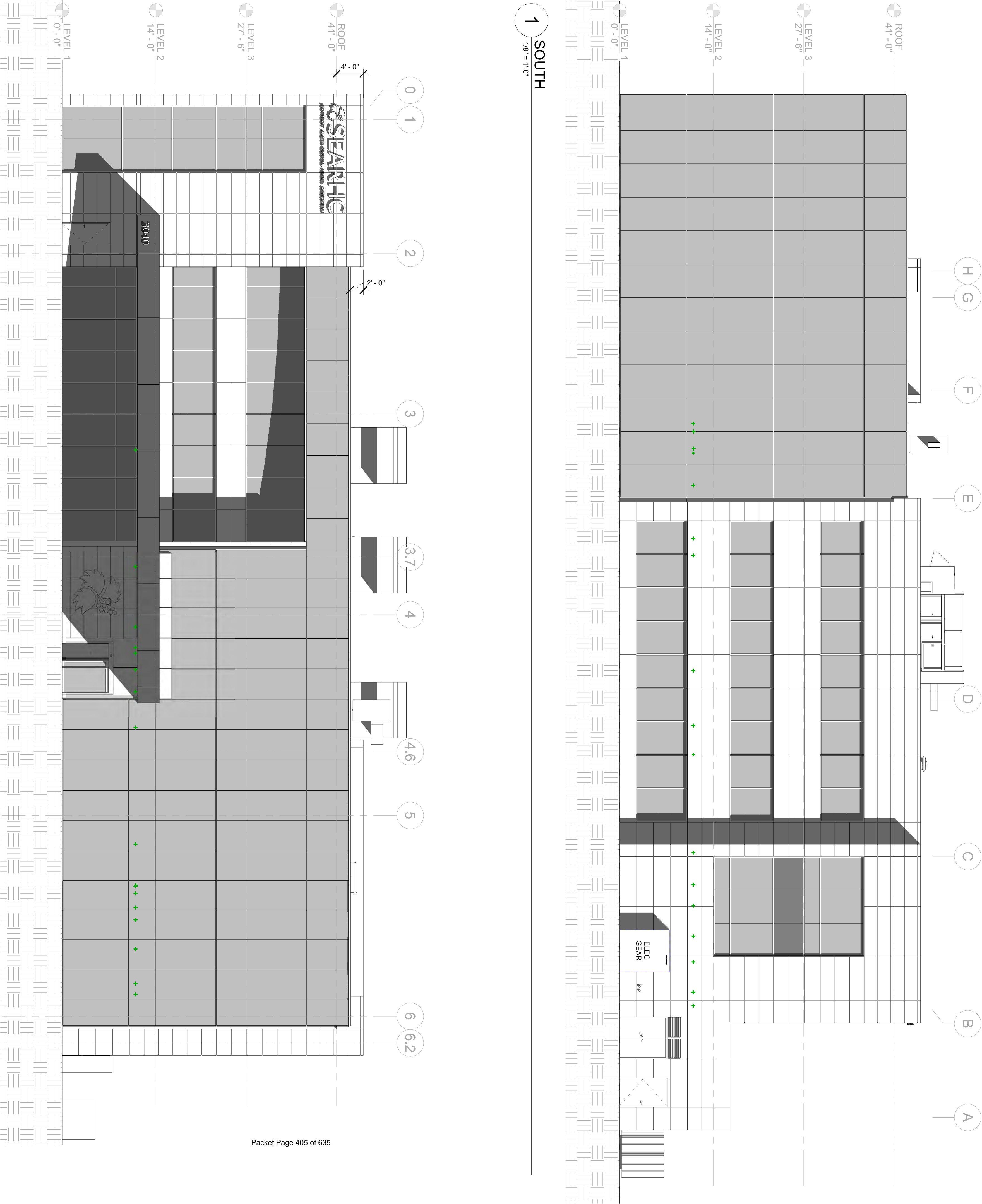
REVISION SCHEDULE	
#	DESCRIPTION DATE

JOB NO.	21-064
DATE	05/31/2022
DRAWN	Author
REVIEWED	DTW

SHEET NAME
EXTERIOR ELEVATIONS

2 WEST
1/8" = 1'-0"

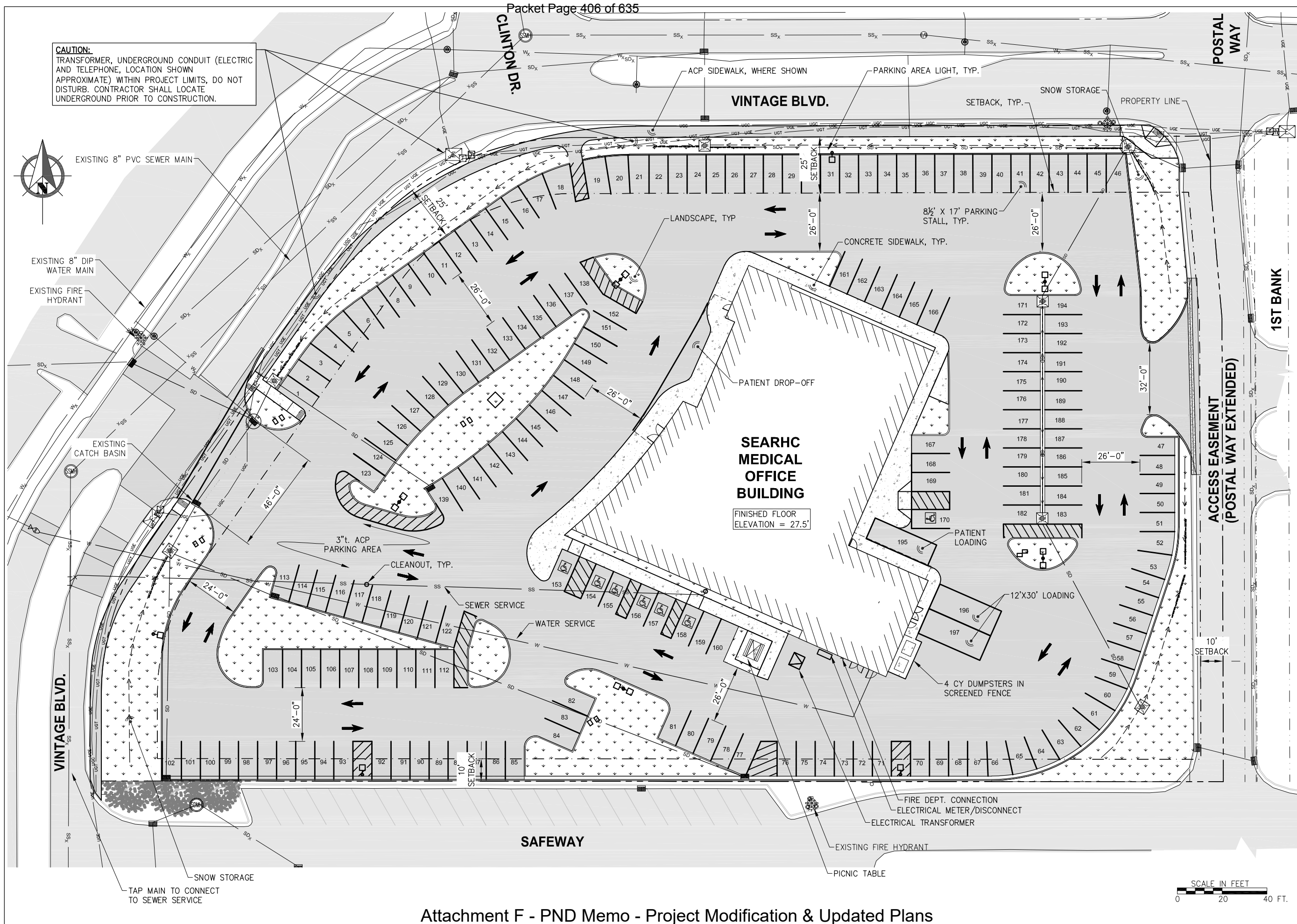
1 SOUTH
1/8" = 1'-0"



Packet Page 405 of 635

SHEET NO.
A2.01

HALF SCALE WHEN PRINTED AT 11x17



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REVIEW
SUBMITTAL

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SEARHC
JUNEAU VINTAGE PARK
MEDICAL OFFICE BUILDING
JUNEAU, ALASKA

REVISION SCHEDULE

#	DESCRIPTION	DATE

JOB NO. 222016
DATE 04/01/2022
DRAWN WRB
REVIEWED TCB

SHEET NAME
GENERAL SITE PLAN

SHEET NO.
C1.03

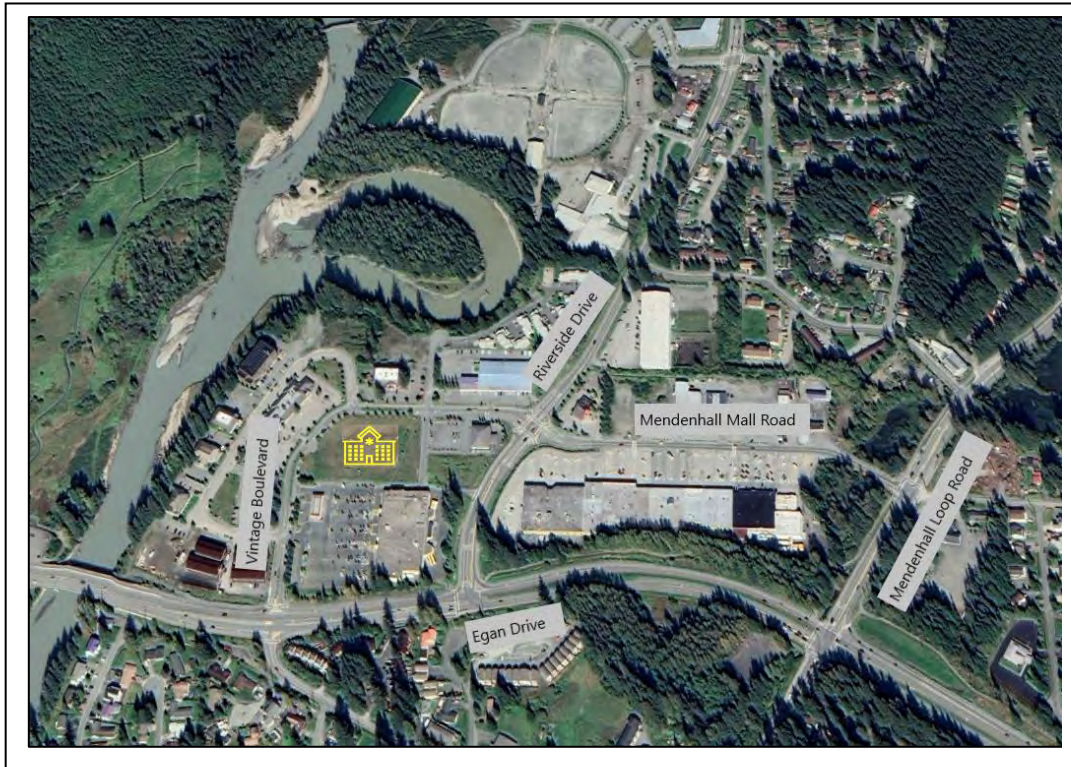
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Attachment F - PND Memo - Project Modification & Updated Plans



Juneau SEARHC Medical Office Traffic Impact Analysis Final Report

May 2022



Prepared By:
Randy Kinney, PE, PTOE
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AECL1102

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Abbreviations

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ASCT	Adaptive Signal Control Technology
CBJ	City and Borough of Juneau
CCS	Continuous Count Station
DOT&PF	Alaska Department of Transportation and Public Facilities
HCM	Highway Capacity Manual
ISD	Intersection Sight Distance
ITE	Institution of Transportation Engineers
KE	Kinney Engineering
LOS	Level of Service (intersection performance grade)
mph	miles per hour
PHF	Peak hour factor
SSD	Stopping Sight Distance
ST	Short term station
RIRO	Right-in-right-out
TIA	Traffic Impact Analysis
V/C	Volume to capacity ratio

N, S, E, W are north, south, east, and west

NB, SB, EB, WB are northbound, southbound, eastbound, and westbound

R, L, T are right, left, through (thru)

RT and LT, right (-) turn(ing) and left (-) turn(ing)

Definition of Terms

Access: Ability to enter and exit a given location from a public roadway.

Actuated Pedestrian Signal: Signal, which is activated, usually with a button, by pedestrians and bicyclists.

Adaptive Signal Control: Type of traffic signal that uses sensors and algorithms to give green time in a continuous and equitable manner.

Annual Average Daily Traffic (AADT): Measurement of the number of vehicles traveling on a segment of highway each day, averaged over the year.

Capacity: Value of the maximum flow rate

Continental Style Cross Walk: Style of pedestrian crossing which enhances the visibility of pedestrians to drivers. A series of stripes are installed perpendicular to the intersection creating a pattern similar to a zebra or ladder.

Crash Rate: Number of crashes per a unit of exposure. Common units of exposure include million vehicle miles traveled for roadway segments and million entering vehicles for intersections.

Crash Severity: Scale of bodily harm up to and including death, suffered by the occupants of a vehicle involved in a crash. There are four level of crash severity used: property damage only non-incapacitating/possible injury, incapacitating injury, and fatal.

Daily Delay: Sum of delay all drivers undergo in a day, given in vehicle-hours per day.

Flow: Rate which describes how many vehicles pass a given point within a set amount of time, usually an hour.

Interchange: Set of ramps and intersections used to allow traffic to travel to and from a controlled access freeway facility.

Level of Service (LOS): Performance measure concept used to quantify the operational performance of a facility and present the information to users and operating agencies. The actual performance measure used varies by the type of facility; however, all use a scale of A (best conditions for individual users) to F (worst conditions). Often, LOS C or D in the most congested hours of the day will provide the optimal societal benefits for the required construction and maintenance costs

Mobility: Ability of people and goods to move from one place to another.

Off-peak: Any period of the day which is not the peak hour

Peak Hour: Hour long period in which the volume of a given road is the highest for the day or given period. Morning, evening, and noon peak hours are often used for analysis, although peak hours may occur at other times, such as school dismissals.

Peak Hour Factor: Measure of traffic variability over an hour period calculated by dividing the hourly flowrate by the peak 15-minute flowrate. PHF values can vary from 0.25 (all traffic for the hour arrives in the same 15-minute period) to 1.00 (traffic is spread evenly throughout the hour).

Permanent Traffic Recorder: Vehicle counting device that remains in the same place throughout the years.

Safety: Count of crashes by severity at a given location

Upper Control Limit (UCL): Statistical measure used in crash rate analysis to determine statistical significance. If the crash rate of the location in question is above the upper control limit for that location, the crash rate is above the average crash rate for similar facilities to a statistically significant level.

Volume to Capacity Ratio (v/c): Measure of how much of the available capacity of a facility is being used, calculated by dividing the demand volume by the capacity of a facility. Values of 0.85 or less indicate adequate capacity to serve the demand volume. When v/c is greater than 0.85, drivers begin to feel uncomfortably crowded.

Executive Summary

This final report, completed in May 2022, revised the draft report submitted in March 2022. The final report retains computations, calculations, and conclusions, as well as addresses the minor comments or observations resulting in reviews and as described in letter from PND Engineers, Inc. to City and Borough of Juneau Community Development. The final report also includes the most recent 65% site plan, updated from the draft report site plan.

This Traffic Impact Analysis (TIA) Report addresses the potential traffic impacts of the proposed SEARHC medical office building development to be located along Vintage Boulevard in an area of Juneau listed as Traditional Town Center in the City and Borough of Juneau 2013 Comprehensive Plan Update. The property, shown in Exhibit 1 Figure 3, is located on an empty 2.9-acre lot north of Safeway and across the street from the Post Office. This TIA evaluates the following labeled intersections during the AM and PM peak time period for the build year of 2023.

1. Egan Drive and Vintage Boulevard/Glacier Highway
2. Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road
3. Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive
4. Mendenhall Loop Road and Egan Drive
5. Riverside Drive and Egan Drive



Exhibit 1: TIA Study Area

Traffic counts taken in 2012, 2015 and 2016 were used to determine traffic movements for each of the studied intersections. These counts were factored to the peak month of May in 2023 as a base condition by using the Juneau-Riverside Drive TMAIS 000807 continuous count station annual average daily traffic (AADT) and monthly average daily traffic (ADT) data to calculate the estimated annual traffic growth rate as well as factor the counts from the month they were

taken to the peak month. Also, there is a proposed 11 condominium complex with 11 commercial garages development with an estimated ADT of 108 at 3011 Clinton Drive as well as a proposed 98-bed senior housing development at 3041 Clinton Drive with an estimated ADT of 269, both of which are planned for construction in 2022. All traffic generated by these facilities will use Vintage Boulevard and flow through the study area. The Institute of Transportation (ITE) Trip Generation Manual 10th edition was used to determine the estimated traffic generated by the proposed medical office building.

The intersection of Egan Drive and Vintage Boulevard/Glacier Highway is a stop controlled, right-in, right-out intersection with minor differences in queue length in the PM peak hour, there is no change in the AM peak hour and no change to level of service (LOS) with the additional site traffic. No mitigation is required by the CBJ Code of Ordinances.

The intersection of Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road is a four-way signalized intersection with one left, thru and right turn lane in each direction. There are pedestrian signals and crosswalks across all four approaches of the intersection. The left turns phases on all approaches are permissive-protected. With the additional site traffic, there is a slight increase in the queue lengths for some of the approach lanes and a one second delay increase in the AM and PM peak hours. There is no LOS change. No mitigation is required by the CBJ Code of Ordinances.

Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive is a four-way signalized intersection. The northbound approach has a thru lane, a thru/right turn lane and a left turn lane. The southbound approach has two thru lanes, a left turn lane and a right turn lane. The westbound approach has a shared thru/left turn lane and a right turn lane. The eastbound approach has a shared thru/left turn lane and a right turn lane. The northbound and southbound left turn phases are protected. The eastbound and westbound left turn phases are permissive. There are pedestrian signals and crossings across three of the four approaches. There is a 1 second delay change and no LOS change to the AM peak hour and a 6 second delay change and a LOS change from C to D for the entire intersection for the PM peak hour. No mitigation is required by the CBJ Code of Ordinances.

The intersection of Egan Drive and Mendenhall Loop Road is a four-way signalized intersection with left, thru and right turn lanes. The left turns are all protected split phase. There are pedestrian signals and crossings across all four approaches of the intersection. The LOS for this intersection is F for the AM peak hour and E for the PM peak hour both for pre-build and build conditions. The site traffic impact is minimal with a one second increase for both the AM and PM peak hours. There is no LOS change for the intersection with the additional traffic. The CBJ Code of Ordinances requires mitigation for this intersection because it is currently operating below a level of service of D. However, the site traffic has a negligible impact on the operations of the intersection and the CBJ Code of Ordinances provides conditions for mitigation waiver.

Riverside Drive and Egan Drive is a signalized T-intersection with two thru eastbound and westbound lanes, westbound left turn phasing, eastbound channelized right turn and two southbound left turn lanes and one right turn lane. There are pedestrian signals and crosswalks on two of the three approaches at this intersection. There are no changes to the LOS or queue delays for this intersection caused the proposed site traffic. No mitigation is required by the CBJ Code of Ordinances.

In addition to intersections, site impacts were evaluated for transit, pedestrians and bicycles, and traffic safety.

Mitigations for impacts include the following:

- CBJ Code of Ordinances would require mitigation of the Egan Drive and Mendenhall Loop Road intersection as it has a LOS less than D prior to the additional site traffic. Reconstruction would include require expansion of northbound and southbound approaches, and cost millions of dollars. However, the site traffic has only a negligible impact on operations, and a mitigation waiver may be granted due to the excessive cost. Moreover, the adaptive signal control at this intersection will provide optimization of timing and serve as a mitigation.
- There is a missing sidewalk segment on Vintage Boulevard directly fronting the SEARHC medical office site. Installation of the sidewalk improves pedestrian mobility and safety impacts and would promote walking and transit as alternative commuting modes, thus reducing site vehicular demand. Note that this improvement is now presented in the 65% Design Site Plan (May 2022).
- Demand management policies may promote mode changes from vehicles to active transportation modes (biking, walking, transit) or reducing demand by promoting carpools. These include:
 - Incentivize transit use (potential 4% to 5% vehicle trip reduction, see Section 3.4)
 - Incentivize carpooling (potential 14% to 15% vehicle trip reduction, see Section 3.4)
 - Provide bicycle racks. (Vehicle trip reduction isn't quantifiable).

DOT&PF and CBJ have reviewed this report when in draft. CBJ had no comments. DOT&PF's comments are addressed in a summary letter that is under Appendix G. CBJ and DOT&PF have concurred with the above stated mitigations.

1 Introduction and Development Background

This final report, completed in May 2022, revised the draft report submitted in March 2022. The final report retains computations, calculations, and conclusions, as well as addresses the minor comments or observations resulting in reviews and as described in letter from PND Engineers, Inc. to City and Borough of Juneau Community Development. The final report also includes the most recent 65% site plan, updated from the draft report site plan.

1.1 Development Description

Southeast Alaska Regional Health Consortium (SEARHC) proposes a 45,924 square-foot gross floor area (GFA, *area as of March 2022*) medical office facility located on Vintage Boulevard between the intersections with Riverside Drive and Egan Drive in Juneau, Alaska. The facility is located on a 2.9-acre empty tract with access only by Vintage Boulevard. The vicinity map is presented in the Figure 2.



Background Photo Source- Google Earth

Figure 2: SEARHC Medical Office Location Map

1.2 City and Borough of Juneau Traffic Impact Analysis Requirements

City and Borough of Juneau (CBJ) Code of Ordinances, 49.40.300 Applicability, states that a traffic impact analysis (TIA) shall be required when a development is projected to generate 500 or more average daily trips (ADT).

The proposed SEARHC medical office facility aligns with the Institute of Transportation Engineer's (ITE) Trip Generation Manual Land Use 720- Medical/Dental Office Building. Based on the gross floor area of 45,924 gross floor area, the Trip Generation Manual, and the companion Trip Generation Handbook 3rd Ed. estimates that the traffic generated upon full build out of the facility exceeds 1,600 ADT, as shown in Table 1, below. As such, a TIA for the facility is required.

Table 1: Weekday ADT for Proposed SEARHC Medical Offices

Land Use Classification	Gross Floor Area (1000 square feet)	Equation Type	Equation and Trip Computations	DD% (In/Out)	Trips In	Trips Out
720 – Medical-Dental Office Building	X=45.924	Regression	$T=38.42(X) - 87.62$ $T=38.42(45.924) - 87.62 = \underline{1,677}$	50/50	838	838

The street system around the facility is urbanized with movements through intersections controlled by a signs or signals. As such, it is within an interrupted flow regime, and traffic operation quality is generally dependent upon intersection operations and performance. For this TIA, vehicular impact analyses are focused on intersections.

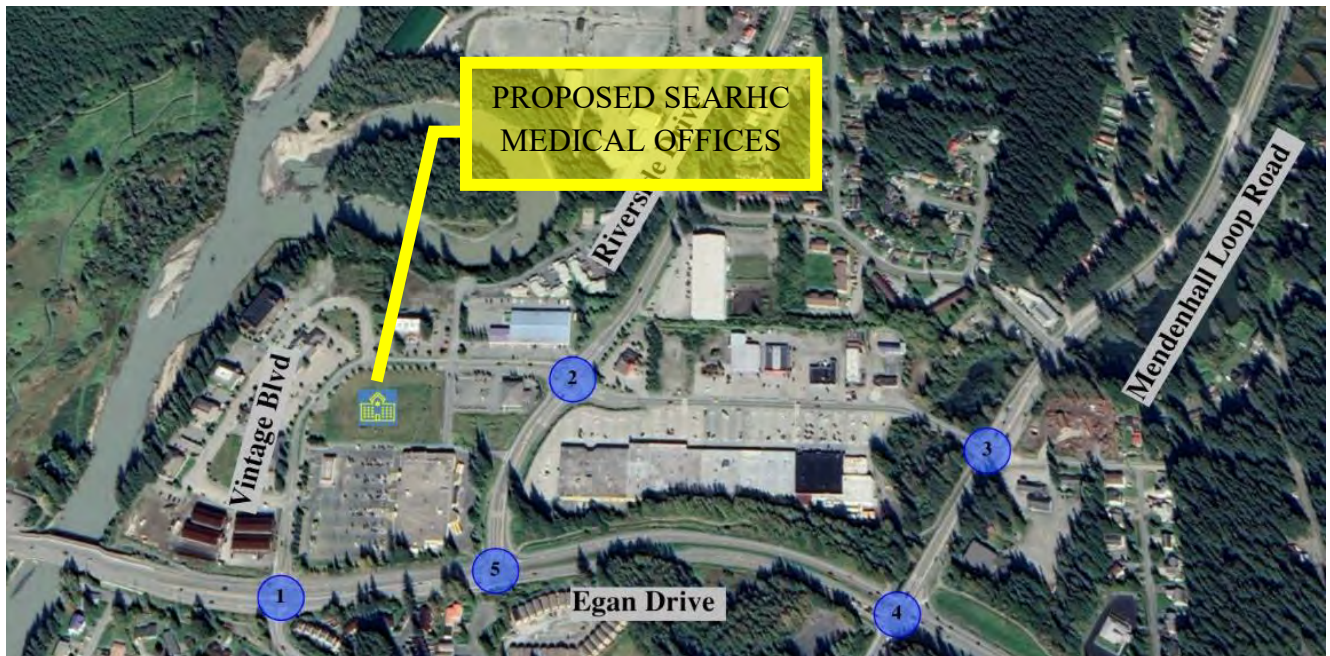
CBJ Code of Ordinances, 49.40.305 Traffic impact analysis (TIA) requirements indicates that the study area for the TIA shall include those intersections with approaches where the proposed development will increase ADT by five percent or more. Required mitigation for intersections within the study area is addressed by CBJ Code of Ordinances as follows:

- CBJ Code of Ordinances, 49.40.310 Traffic; minimum standards.
 - (a) *The minimum acceptable (level of service) 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.*
- CBJ Code of Ordinances, 49.40.340 Traffic impact mitigation.
 - (a) *Except as provided in 49.40.340, an applicant shall make improvements to a roadway or intersection to achieve or maintain an acceptable LOS if a roadway or intersection has an:*
 - (1) *LOS D without traffic generated by the development; and would drop below LOS D with traffic generated by the development at the opening date of the development or full build out;*
 - (2) *If a roadway has an LOS below D without traffic generated by the development at the opening date of the development; or*

(3) If the intersection or roadway segment has a pattern of accidents resulting in personal injuries, and the development would aggravate this accident pattern, then mitigation shall be required regardless of the LOS.

The term “level of service” or LOS is defined in Section 7.1 on page 39 and Table 14 on page 41.

In a July 2021 meeting between Randy Kinney, Kinney Engineering, LLC (KE) and Allison Eddins from CBJ’s Community Development Department, the study area presented in Figure 3 was discussed. This study area was later presented in a second meeting focusing on traffic in January 2022 that included CBJ and the Department of Transportation and Public Facilities (DOT&PF) staff; and address a wider range of traffic impact issues. In addition, there have been two pre-application meetings with CBJ, but these meeting only addressed traffic issues in general.



Background Photo Source- Google Earth

Figure 3: TIA Study Area

As proposed in these meetings, an initial analysis of impacts would include the following intersections (numbered as shown in the figure):

1. Egan Drive and Vintage Boulevard/Glacier Highway
2. Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road
3. Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive
4. Mendenhall Loop Road and Egan Drive
5. Riverside Drive and Egan Drive

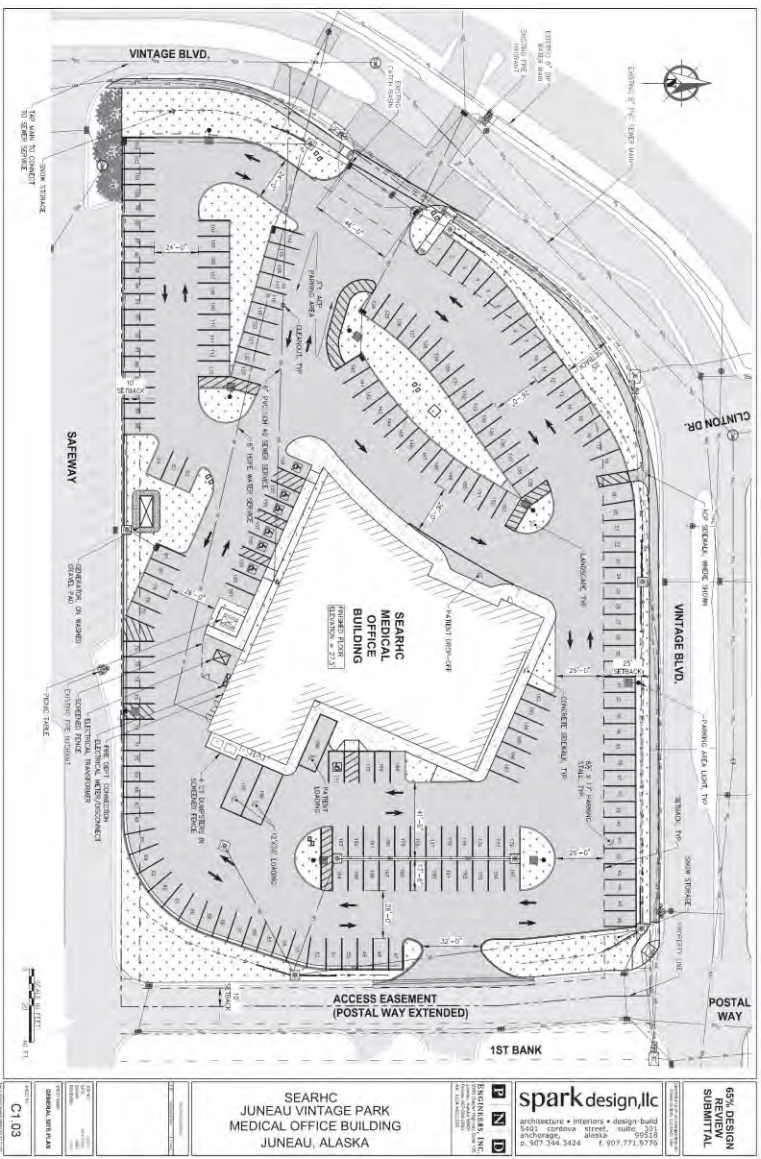
This starting point was deemed sufficient although it preceded the detail analysis that would form a final study area required by CBJ Code of Ordinances, 49.40.305. The process for trip generation and distribution of site traffic is an iterative process, and thus cannot be completed without a substantial effort. However, in meeting discussions, KE indicated that adding any intersections (expanding the study area) would occur as the analysis progressed to evaluate and confirm the link ADT thresholds in CBJ Code of Ordinances, 49.40.305.

The completion of the analyses of site traffic distribution to other intersection approaches outside of the study area found all others be under the 5% threshold discussed above. As such, the study area shown satisfies CBJ Code of Ordinances.

Ultimately, KE chose to prepare operational and safety analysis for all five of the listed intersections with and without site traffic, irrespective of the 5% ADT increase requirements in CBJ Code of Ordinances, 49.40.305.

1.3 Site Plan

Figure 4 below presents the conceptual site plan (current as of 2-22-22) showing parking layout, access aisle, and site access locations. There will be minor changes to this plan as the design develops.



Source- PND Engineers Inc.
Figure 4: Proposed Site Plan (revised May 2022)

The site plan presents two access points onto Vintage Boulevard, both of which are existing and established as shown in Figure 5 below. Both of these have auxiliary left-turn lanes, a significant benefit for crash prevention and roadway capacity by removing stopped or slowing left turn cars from the through lane.



Background Photo Source- Google Earth

Figure 5: Existing Site Conditions

1.4 Design Year and Design Hour

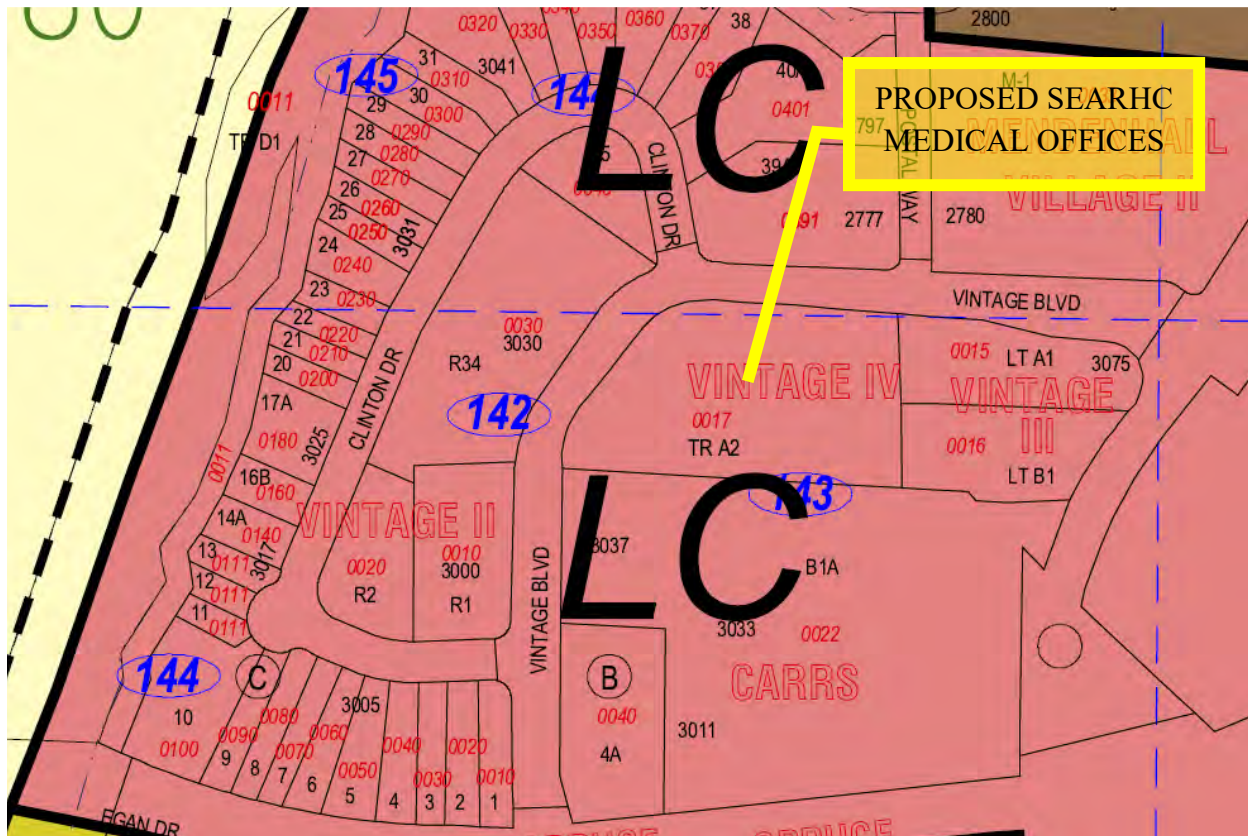
The SEARHC medical office facility will be completed in 2023. As agreed upon in the traffic meetings with CBJ and DOT&PF, 2023 will be considered the design year for the analysis. The design hours for the facility will include morning and evening commuting peak hours. Additional analyses period for weekend traffic was discussed and dismissed.

Because of seasonal traffic fluctuations, KE decided to further define the design hours as those expected during the summer season instead of an average condition.

2 Project Area Background

2.1 Surrounding Land Zoning

The proposed SEARHC medical office facility is located within areas zoned Light Commercial, or LC. The zoning in the immediate area is presented in the Figure 6.



Source-Zoning Atlas City and Borough of Juneau

Figure 6: Area Zoning

The CBJ Code of Ordinances, 49.25.230 - Commercial districts states:

“The LC, light commercial district, is intended to accommodate commercial development that is less intensive than that permitted in the general commercial district. Light commercial districts are primarily located adjacent to existing residential areas. Although many of the uses allowed in this district are also allowed in the GC, general commercial district, they are listed as conditional uses in this district and therefore require commission review to determine compatibility with surrounding land uses. A lower level of intensity of development is also achieved by stringent height and setback restrictions. Residential development is allowed in mixed- and single-use developments in the light commercial district.”

The proposed SEARHC medical office facility is consistent with the existing zoning. As such, no changes in zoning will be required.

2.2 Surrounding Land Uses And Site Land Use

The adjacent, existing development is largely commercial. A Safeway grocery store and related shopping center businesses, including an automotive fuel station, are located directly south of the site. Other immediate or nearby land uses include a bank, credit union, US Post Office, and numerous private and agency offices. Residential developments are also nearby.

The City and Borough of Juneau 2013 Comprehensive Plan Update indicates that the site is within a Traditional Town Center, described as follows:

"These lands are characterized by high density residential and non-residential land uses in downtown areas and around shopping centers, the University, major employment centers and public transit corridors, as well as other areas suitable for a mixture of retail, office, general commercial, and high-density residential uses at densities at 18 or more residential units per acre. Residential and non-residential uses could be combined within a single structure, including off-street parking. Ground floor retail space facing roads with parking behind the retail and housing above would be an appropriate and efficient use of the land."

The proposed medical office facility is consistent with the adjoining development and Tradition Town Center land use.

2.3 Traffic Improvements Already Funded, Programmed, Or Planned

A survey of agency websites found the following committed or planning projects within the immediate area of the proposed facility.

2.3.1 CBJ Capital Improvement Program 2021 to 2026

This six-year plan shows a total of about \$1.5 million planned for Vintage Boulevard Street Reconstruction in FY23. A scan of the document found no other CBJ projects planned for the immediate area.

2.3.2 DOT&PF State Transportation Improvement Program (STIP)

The April 2020 Original STIP and Amendment 3 issued in November 2021 have been scanned with no projects planned in the immediate area of the proposed facility.

2.3.3 Juneau Egan Drive & Riverside Intersection Improvements

KE completed this study in the spring of 2016 for the DOT&PF. The study focused on the Egan Drive and Riverside Intersection and prepared an analysis of several signalized and roundabout alternatives, including extending Riverside Drive to the south of Egan Drive. The proposed medical offices do not affect the recommendations of this study. Moreover, if any of the alternatives were to be implemented, site travel patterns and routes would not be changed over the current system travel patterns.

This traffic impact analysis uses morning and evening peak hour intersection traffic count data from this study. The 2020-2022 pandemic has depressed travel, meaning that current counts may be underrepresenting actual or future demands. As such the counts in the 2016 study were the base of this analysis and factored to estimate current and future demand conditions.

2.3.4 West Egan Drive Corridor Study

This study, completed in 2003 for DOT&PF, proposes grade separation interchanges for the Egan Drive intersections with Mendenhall Loop Road and with Riverside Drive. It is not clear if Vintage Drive inbound and outbound access from Egan Drive would be maintained as is now, because Vintage Boulevard connects to the Riverside Interchange westbound on-ramp.

Regardless of the Vintage Boulevard connection to Egan Drive, the proposed SEARHC medical offices would be compatible with the improvements proposed in the West Egan Drive Corridor Study.

2.4 Other Committed Projects

CBJ Community Development planners provided additional developments that are or will be completed prior to the design year 2023, but whose traffic was not captured during the intersection counts that provide the basis of background traffic (see Section 4.3 on page 23).

There is a proposed 11 condominium complex with 11 commercial garages development with an estimated ADT of 108 at 3011 Clinton Drive. Also, there is a proposed 98-bed senior housing development at 3041 Clinton Drive with an estimated ADT of 269 planned for construction by 2022. All traffic generated by these facilities will use Vintage Boulevard (Both ends of Clinton Drive connects to Vintage Boulevard) and flow through the study area.

3 Transportation System Elements

The traffic study area for this report, shown in Figure 3 on page 6, consist of five intersections and the connecting streets. The streets are discussed in more detail in Section 3.1. There are four signalized intersections (intersections 2-5) and one stop-controlled intersection (intersection 1), which are discussed further in Section 3.2.

3.1 Streets

Egan Drive is a principal arterial roadway which primarily serves to carry traffic between downtown Juneau, the Mendenhall Valley, Auke Bay, and other outlying areas of the CBJ. It is Route 4 on the National Highway System, connecting the Juneau International Airport and the Auke Bay Ferry Terminal to other areas of the CBJ. Between downtown Juneau and the Mendenhall Valley, Egan Drive is a four-lane divided highway with a posted speed limit of 50 mph.

Riverside Drive is a two-lane minor arterial roadway that connects Egan Drive with businesses, residences, schools, and community centers in the Mendenhall Valley. Riverside Drive is posted at 35 mph.

Mendenhall Loop Road is a minor arterial roadway with two lanes and a center turn lane south of Egan Drive, four lanes with a designated left turn lane between Egan Drive and Mendenhall Mall Road, and four lanes north of Mendenhall Mall Road to Nancy Street. Mendenhall Loop Road has a posted speed limit of 40 mph.

Mendenhall Mall Road is a two-lane local access roadway with no curbing connecting Riverside Drive and Mendenhall Loop Road, serving as access to the businesses on both sides of the roadway. Mendenhall Mall Road has a posted speed limit of 20 mph.

Atlin Drive is a two-lane local access roadway that provides access to a church and residential neighborhood with a posted speed limit of 20 mph.

Vintage Boulevard is a two-lane divided local access roadway connecting Egan Drive and Riverside Drive that provides access to businesses and residences. Vintage Boulevard posted speed limit is 20 mph.

Glacier Highway is a two-lane minor collector roadway from Egan Drive/Vintage Boulevard to Mendenhall Loop Road with a right turn only at the intersection with Egan Drive. Glacier Highway is posted at 35 mph.

3.1.1 Functional Classification

The three major functional classes include:

- **Local Road** - Local roads are oriented towards access to homes and businesses at the terminal ends of a trip.
- **Collector** - Collector roads gather and distribute trips between local streets and arterials.

- **Arterial** - Arterials emphasize mobility and are designed to carry large volumes at an efficient speed.

Table 2 presents the DOT&PF functional classifications for the roads in the study area.

Roadway	Classification
Egan Drive	Principal Arterial
Glacier Highway (Vintage Boulevard to Mendenhall Loop Road)	Minor Collector
Mendenhall Loop Road	Minor Arterial
Riverside Drive	Minor Arterial
Vintage Boulevard	Major Collector
Atlin Drive	Local Road
Mendenhall Mall Road	Local Road

Table 2: Functional Classifications

3.2 Intersections

The study area contains four signalized intersections and one stop-controlled intersection. The following four signals are coordinated:

- Egan Drive and Riverside Drive
- Egan Drive and Mendenhall Loop Road
- Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road
- Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive

The intersections are discussed in the following sections. Most of the information presented in these sections, including the diagram with background aerial photography was extracted from the 2016 Juneau Egan Drive & Riverside Intersection Improvements Study.

3.2.1 Egan Drive / Riverside Drive



The intersection of Egan Drive with Riverside Drive is a signalized T-intersection (Figure 7). On westbound Egan Drive, the approach to the signal has two through lanes and a channelized right turn lane. For eastbound Egan Drive, the approach has two through lanes and a left turn lane/U-turn, with protected left turn phasing. The Riverside Drive approach has two left turn lanes and one right turn lane. There are also pedestrian signals and crosswalks across the inbound Egan Drive and Riverside Drive approaches; however, there are no pedestrian crossings of the outbound Egan Drive approach.

Figure 7: Egan Drive and Riverside Drive

3.2.2 Egan Drive / Mendenhall Loop Road



The intersection of Egan Drive and Mendenhall Loop Road (Figure 8) is a four-way signalized intersection. The southbound approach has a right turn, left turn and center shared left turn/through lane. The southbound approach consists of a left turn, a center shared left/through, and a right turn lane. The eastbound approach has two through lanes, a right turn lane and a left turn lane. The westbound approach also has two through lanes, a channelized right turn lane and a left turn lane. All left turns have protected left turn split phasing. There are pedestrian signals and crosswalks across all four approaches of the intersection.

Figure 8: Egan Drive and Mendenhall Loop Road

3.2.3 Riverside Drive / Vintage Boulevard / Mendenhall Mall Road



The intersection of Riverside Drive with Vintage Boulevard and Mendenhall Mall Road (Figure 9) is a four-way signalized intersection. Each approach has a left turn, a through lane and a separated right turn lane. The left turns phases on all approaches are permissive-protected. There are pedestrian signals and crosswalks across all four approaches of the intersection.

Figure 9: Riverside Drive and Vintage Boulevard/Mendenhall Mall Road

3.2.4 Mendenhall Loop Road / Mendenhall Mall Road / Atlin Road



The intersection of Mendenhall Loop Road with Mendenhall Mall Road and Atlin Road (

Figure 10) is a four-way signalized intersection. The northbound approach has two through lanes and a left turn lane. The southbound approach has two through lanes, a left turn lane and a right turn lane. The westbound approach from Atlin Road has a shared through/left turn lane and a right turn lane. The eastbound approach from Mendenhall Mall Road has a shared through/left turn lane and a right turn lane. The northbound and southbound left turn phases are protected. The eastbound and westbound left turn phases are signed as permissive. There are pedestrian signals and crosswalks across the

southbound, eastbound, and westbound approaches to the intersection. There is no pedestrian crossing allowed on the northbound approach.

Figure 10: Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive

3.2.5 Egan Drive / Vintage Boulevard / Glacier Highway



The intersection of Egan Drive and Vintage Boulevard/Glacier Highway (Figure 11) is stop controlled with right-in-right-out restricted movements on the north and southbound approaches. The eastbound approach along Egan Drive has two through lanes and a right turn lane, while the westbound approach has two through lanes, a left turn lane and a right turn lane. There are unsignalized pedestrian crosswalks along the northbound and southbound approaches.

Figure 11: Egan Drive and Vintage Boulevard/Glacier Highway

3.3 Pedestrian and Bicycle Facilities

The CBJ has been named a bronze level bicycle friendly community since 2011 and has also received honorable mention as a walk friendly community.

3.3.1 Pedestrian Facilities

The pedestrian facilities for the main streets in the study area include:

- A separated multiuse pathway on the north side of Egan Drive;
- Continuous attached pavement pathways on both sides of Riverside Drive;
- Separated paved pathways on both sides of Mendenhall Loop Road, and;
- A separated sidewalk on the west and north sides of Vintage Boulevard and a discontinuous separated sidewalk on the east and south side of Vintage Boulevard.

There is no sidewalk immediately fronting the parcel that will contain the proposed SEARHC medical facilities. Also, there are no sidewalks on Mendenhall Mall Road and pedestrians are required to use the roadway shoulders or parking lots.

There are push-button actuated pedestrian signals and crosswalks at all the signalized intersections in the study area, with pedestrians prohibited from crossing the inbound approach of the intersection of Egan Drive and Glacier Highway intersection, the outbound approach of the Egan Drive/Riverside Drive intersection, and the northbound approach of the Atlin Road/Mendenhall Mall Road/Mendenhall Loop Road intersection.

3.3.2 Bicycle Facilities

Riverside Drive has bicycle lanes. On other streets, bicyclists ride in the travel lanes, on shoulders or on pathways where provided.

3.4 Transit

The proposed Medical Center will be located in close proximity to 10 CBJ Capitol Transit routes. Boarding and alighting for all routes would be within ¼- to ½-mile walking distance to and from the site, depending upon walking patterns of the transit patron. A survey of the state of the practice on acceptable walking distances indicate that most people are willing to walk ¼- to ½- miles to a transit stop (see FHWA's Pedestrian Safety Guide for Transit Agencies https://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/index.cfm#toc).

Table 3 summarizes, in general, nearby Capital Transit routes and their service frequency daily and during commuting peak hours.

Table 3: Capital Transit Routes and Service Near Proposed SEARHC Medical Office Facility

Route	Service	Nearest Bus Stop	Morning Commute Peak (7 AM to 9 AM)		Evening Commute Peak (4 PM to 6 PM)	
			Headway	Buses	Headway	Buses
3 Mendenhall Loop Counterclockwise	Monday-Saturday, Early Commute to Late Evening Sunday 8 AM hour through 6 PM Hour	431-Mendenhall Mall Road and Riverside Drive	60 minutes	2	60 minutes	2
4 Mendenhall Loop Clockwise	Monday-Saturday, Early Commute to Late Evening Sunday 8 AM hour through 6 PM Hour	477-Mendenhall Mall Road at Mendenhall Mall	90-60 minutes	2	60 minutes	2
5 University Express	Monday-Friday, 7 AM Hour through 6 PM Hour	431-Mendenhall Mall and Riverside 477-Mendenhall Mall Road at Mendenhall Mall	60 minutes	4	60 minutes	4
6 Riverside Express	Monday-Friday, 8 AM Hour through 6 PM Hour	477-Mendenhall Mall Road at Mendenhall Mall	60 minutes	1	60 minutes	2
8 Valley Express	Monday-Friday, 2 PM Hour through 5 PM hour	431-Mendenhall	NA	NA	30 minutes	2

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Route	Service	Nearest Bus Stop	Morning Commute Peak (7 AM to 9 AM)		Evening Commute Peak (4 PM to 6 PM)	
			Headway	Buses	Headway	Buses
		Mall Road and Riverside Drive				
9 Mendenhall Valley Express	Monday-Friday, 7 AM Hour	477-Mendenhall Mall Road at Mendenhall Mall	NA	1	NA	NA
10 Mendenhall Valley Commuter	Monday-Friday, 6 AM and 7 AM Hours	477-Mendenhall Mall Road at Mendenhall Mall	NA	1	NA	NA
14 Mendenhall Riverside Commuter	Monday-Friday, 6 AM Hour	On Street Riverside at Vintage	NA	1	NA	NA
15 Valley/UAS Express	Monday-Friday, 7 AM and 8 AM Hours	477-Mendenhall Mall Road at Mendenhall Mall	NA	1	NA	NA
16 Taku Express	Monday-Friday, 6 AM Hour	On Street Riverside at Vintage	NA	1	NA	NA
				14		12

Source: juneaucapitaltransit.org

As indicated in the table above, there are 14 buses providing morning commuting service and 12 buses providing evening commuting service, making public transit a viable work trip alternative for employees. In addition, there is consistent and continuous service during business hours and on weekends, with at least one bus per hour in each inbound and outbound direction for patients to use instead of driving individual cars.

The US Census Bureau American Community Survey *Table S0802 Means Of Transportation To Work By Selected Characteristics* for 2013 through 2019 (5 most recent years published) indicates that the average public transportation work trip mode share is about 4.6% of commuting trips. (Source of this data is: <https://data.census.gov/cedsci/table?q=Juneau%20city%20and%20borough,%20Alaska&t=Commuting&tid=ACST5Y2019.S0802>). The margin of error for this estimate is 1.3% (meaning the actual mode share likely falls between 3.3% and 5.9%). The data indicates that public transportation users tend to be within lower income brackets as well.

The American Community Survey also provides data on carpooling for Juneau, indicating that carpools comprise about 14.6% of the 2013 to 2019 work trips with a margin of error of about 2%.

4 Traffic Data

4.1 Average Annual Daily Traffic

Average annual daily traffic (AADT) is obtained from the DOT&PF websites:

<https://alaskatraficdata.drakewell.com/publicmultinodemap.asp> and

<https://akdot.maps.arcgis.com/home/index.html>

AADT will be used in computing crash rates in determining the study area for the TIA. Also, AADT will be used to finalize those intersections within the study area that require mitigation. CBJ Code of Ordinances, 49.40.305, indicates that the study area for the TIA shall include those intersections with approaches where the proposed development will increase ADT by five percent or more.

The following table presents street system AADT in the proximity of the proposed SEARHC medical office facility. The 2013-2017 average AADT will be applied to the crash rate computation.

Table 4: AADT for Streets Within Study Area

Street/Segment	2013	2014	2015	2016	2017	2018	2019	2020	2013-2017 average
Egan Drive									
Glacier-Mendenhall Loop	26,195	26,332	26,776	27,844	26,884	25,115	26,134	21,700	26,806
Between Mendenhall Loop Road & Riverside Drive	14,315	14,479	14,698	15,284	14,757	16,126	15,769	12,500	14,707
Between Riverside Drive and Vintage Blvd	13,500	13,654	13,861	14,514	16,904	13,524	15,752	13,200	14,364
Between Vintage Boulevard & Engineers Cutoff Road	11,715	11,850	12,030	15,480	15,709	13,524	16,454	13,200	13,357
Mendenhall Loop Road									
Glacier Highway North-Egan Drive	8,655	-	8,655	9,192	9,095	8,410	9,334	-	8,890
Between Egan Drive/Glacier Highway & Atlin Drive	21,485	20,950	21,268	22,729	22,489	18,565	18,073	14,800	21,784
Mall Access-James Road	15,440	-	-	16,789	16,612	15,361	16,476	-	16,136
Glacier Highway North									
Glacier Highway North - Between Glacier Nugget & Del Rae Road	2,820	2,317	2,363	1,775	1,997	1,889	2,085	1,690	2,254

Street/Segment	2013	2014	2015	2016	2017	2018	2019	2020	2013-2017 average
Vintage Blvd									
Vintage Boulevard - Between Clinton Drive & Egan Drive/Glacier Highway	2,135	-	2,135	1,965	2,181	2,380	2,305	1,980	2,104
Vintage Boulevard - Near Junction with Riverside Drive	5,597	5,604	5,694	6,109	5,762	5,181	6,175	5,070	5,753
Mendenhall Mall Road									
Mendenhall Mall Access Road - Near Junction with Riverside Drive	6,445	6,217	6,340	6,498	7,153	4,502	4,700	3,860	6,531
Riverside Drive									
Egan Drive to Vintage Blvd	13,225	-	13,225	14,275	14,124	13,060	14,495	-	13,712
Riverside Drive - Between Vintage Boulevard & James Boulevard	8,110	7,962	7,961	10,074	9,967	8,449	8,619	7,080	8,815

4.2 Riverside Drive Continuous Count Station

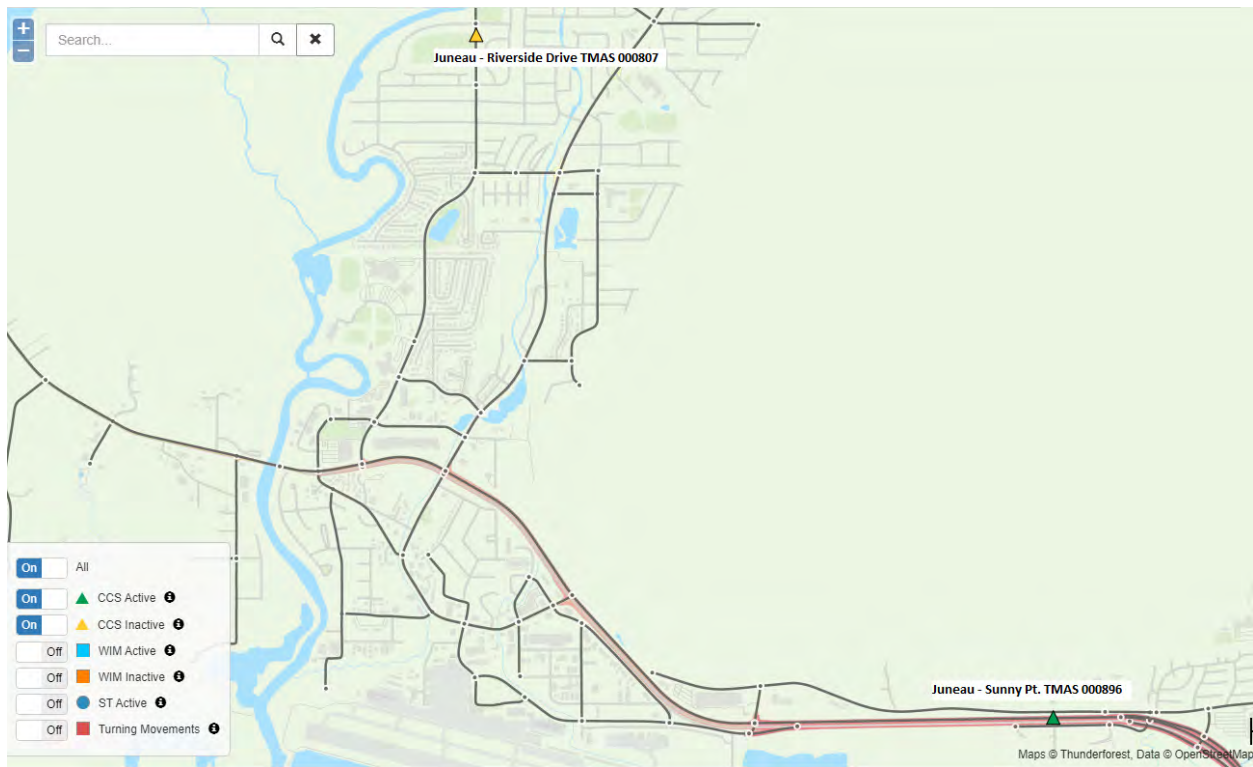
Continuous count stations (CCS) provide continuous data that can be used to factor temporary counts collected at separate times to a count that represents a design year and hour condition.

Source: <https://alaskatraficdata.drakewell.com/publicmultinodemap.asp>

Figure 12 presents the two closest CCS to the project site.

The closest CCS, Juneau - Riverside Drive TMAS 000807, was used to convert past counts to a common year and month. In addition to being the closest in proximity to the project, it is also on the street system that is most alike to the local, collector, and minor arterial streets of the study area and probably shares similar seasonal and diurnal traffic patterns. Annual AADT for the Riverside Drive CCS is shown in Table 5, and the average annual growth rate is calculated as 1.30%.

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Source: <https://alaskatraficdata.drakewell.com/publicmultinodemap.asp>

Figure 12: Continuous Count Station Locations

Table 5: AADT by Year at CCS Juneau-Riverside Drive

Year	AADT
2012	3,920
2013	3,969
2014	3,967
2015	3,861
2016	3,915
2017	4,042
2018	4,045
2019	4,291
Estimated Annual Traffic Growth Rate= 1.30%	

To develop estimated base condition traffic volumes for each horizon year, the estimated annual traffic growth rate was applied to existing intersection traffic volume counts that were collected from 2012, 2015 and 2016. Because the intersection traffic flow counts were taken in non-peak months, the values were factored to the peak month of May using the ADT values in

Table 6. The cells highlighted in yellow represent the year and month that the counts were conducted. The cells highlighted in green are the corresponding May ADT values.

Table 6: Riverside Drive CCS Monthly ADT by Year

Juneau - Riverside Drive TMAS 000807								
Year→ Month	2012	2013	2014	2015	2016	2017	2018	2019
Jan	3,561	3,485	3,542	3,566	3,509	3,390	3,554	3,578
Feb	3,754	3,590	3,699	3,653	3,718	3,594	3,636	3,938
Mar	3,787	3,668	3,654	3,639	3,819	3,399	3,574	4,015
Apr	4,160	3,944	3,964	3,980	4,110	4,164	4,117	4,426
May	4,312	4,441	4,608	4,547	4,445	4,479	4,563	4,740
Jun	4,283	4,280	4,306	4,013	4,222	4,258	4,347	4,424
Jul	4,196	4,164	4,267	3,819	4,001	4,347	4,399	4,370
Aug	4,240	4,294	4,217	4,100	4,190	4,428	4,408	4,523
Sep	4,037	4,194	4,094	3,950	4,047	4,514	4,333	4,291
Oct	3,842	4,235	4,025	3,899	3,890	4,440	4,046	4,153
Nov	3,459	3,735	3,668	3,568	3,561	3,775	3,807	4,027
Dec	3,407	3,596	3,643	3,603	3,470	3,719	3,758	4,129
AADT→	3,920	3,969	3,967	3,861	3,915	4,042	4,045	4,291

Source: <https://alaskatrafficdata.drakewell.com/publicmultinodemap.asp>

From the Riverside CCS data, the month of May experiences the highest monthly AADT. As such, the design hour for the TIA analyses is expected to follow the same monthly ADT patterns as occurred at the CCS, and intersection movements will be factored to a summer peak condition occurring in May.

4.3 Intersection Counts Used For Background Traffic Estimates

Turning movement counts were collected by DOT&PF Southcoast Region between 2012 and 2016 during different months for each of the intersections in the study area, as shown in Figure 13 and Figure 14. These intersection movements were presented in the Juneau Egan Drive & Riverside Intersection Improvements study prepared by KE in 2016. The 2020-2022 pandemic has depressed travel, meaning that conducting current counts may be underrepresenting actual or future demands. As such the counts in the 2016 study were the base of this analysis and factored to estimate current and future demand conditions.

The AM and PM commuting peak hours were found to occur, generally, between the hours of 7:15 to 8:15 in the morning and 4:30 to 5:30 in the evening. Traffic primarily travels inbound in the AM peak hour, and outbound during the PM peak hour.

These counts in Figure 13 and Figure 14 will be factored to represent a common design period for the summer peak of May and for 2023.

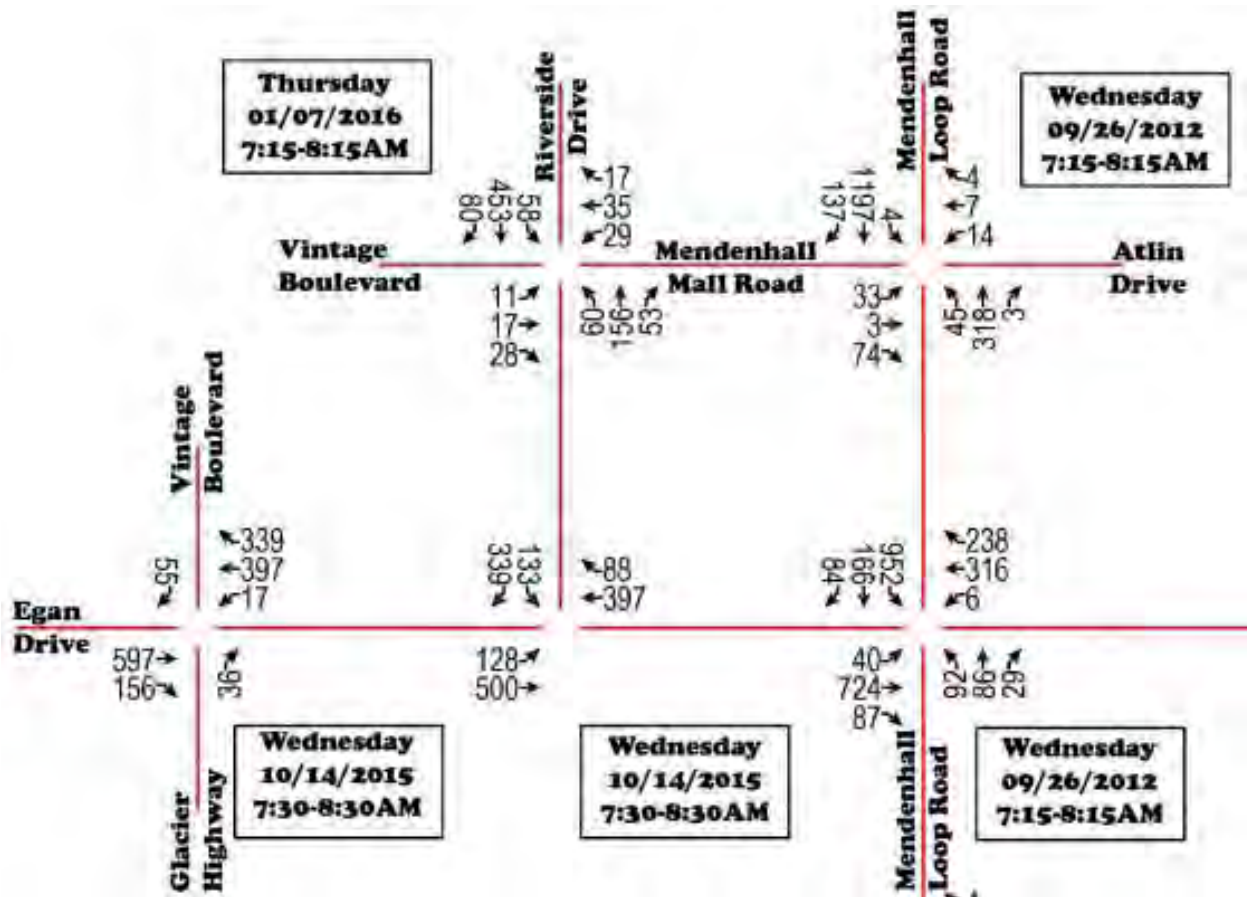


Figure 13: Observed AM Study Area Intersection Movement Traffic Volumes

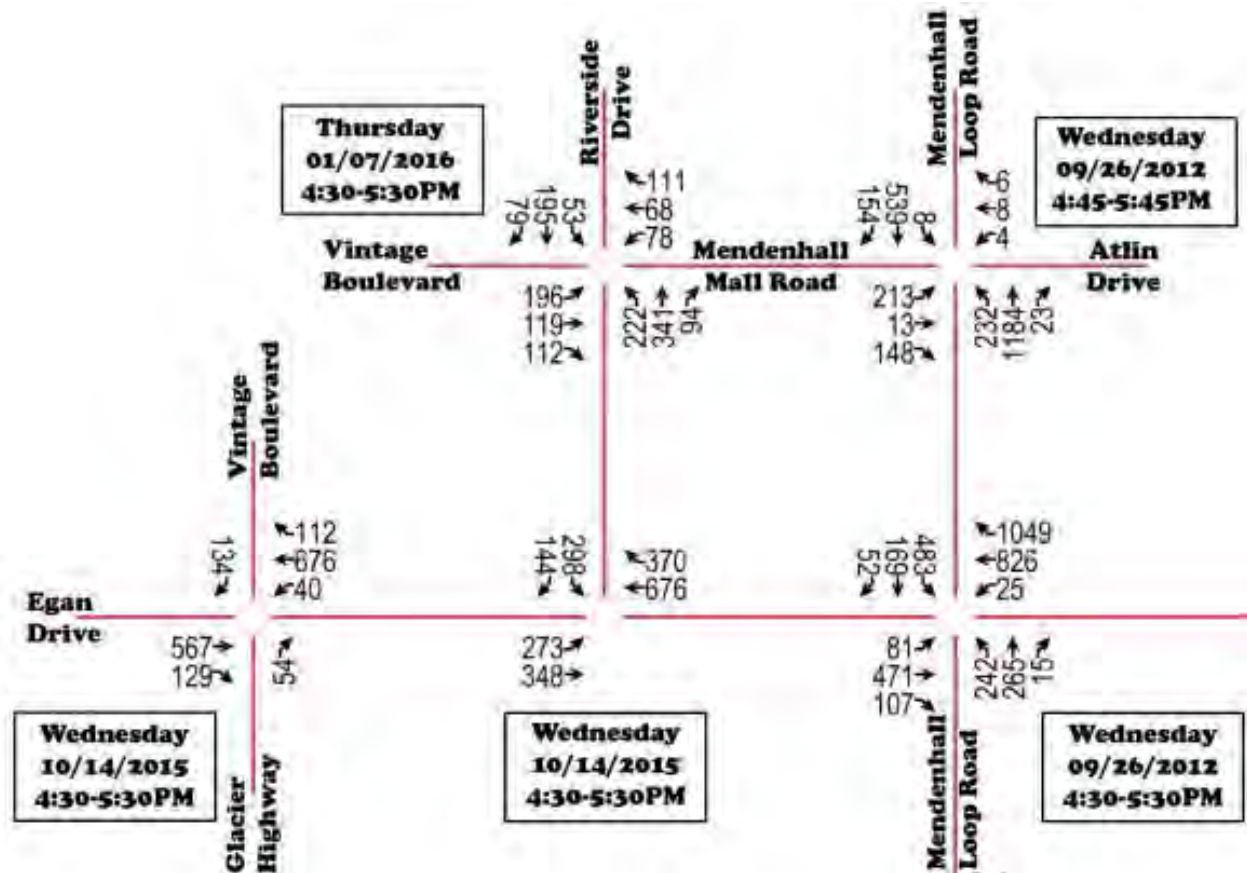


Figure 14: Observed PM Study Area Intersection Movement Traffic Volumes

5 Crash Analysis

DOT&PF provided crash data for the five individual intersections in the study area for the 5-year period from 2013 through 2017 (most recent years available). Crash types are summarized for each of the intersections in the study area in Table 7 below. The proportion of crash types, with majority as rear-end (front to rear) and angle are consistent with expectations for intersections.

Table 7: Intersections and Crash Types, 2013 to 2017

Crash Type	Egan Dr. and Mendenhall Loop Road	Egan Dr. and Riverside Dr.	Egan Dr. and Vintage Blvd.	Mendenhall Loop Road and Mall Access Road	Riverside Dr. and Vintage Blvd.	Grand Total
Angle	8	7		6	4	25
Front-To-Front	3	1			2	6
Front-To-Rear	34	5	4	10	3	56
Not a Collision with a Motor Vehicle In-Transport						
<i>Ditch</i>	1		1			2
<i>Guardrail Face</i>	1					1
<i>Motor Vehicle In-Transport Strikes or is Struck by Cargo /Persons/ Objects Set-In-Motion From/ By Another Motor Vehicle In-Transport</i>				1		1
<i>Other Post/Other Pole/Other Support</i>	1					1
<i>Other Traffic Barrier</i>		1				1
<i>Pedalcycle</i>	3					3
<i>Traffic Sign Support</i>			1			1
<i>Utility Pole/Light Support</i>	1				1	2
Other		2			2	4
Sideswipe - Opposite Direction	1			1		2
Sideswipe - Same Direction	1			1	1	3
Unknown	2	1				3
Grand Total	56	17	6	19	13	111

Table 8 summarizes crash severity for the intersections between 2013 and 2017. In general, this severity is low since there was only one major injury crash and no fatalities.

Table 8: Intersection Crash Severity, 2013 to 2017

Intersection Location		Property Damage Only	Minor Injury	Major Injury	Fatal
Street 1	Street 2				
Egan Drive	Vintage Boulevard	4	2		
Riverside Drive	Vintage Boulevard	9	4		
Mendenhall Loop Road	Mall Access Road	15	3	1	
Egan Drive	Mendenhall Loop Road	36	20		
Egan Drive	Riverside Drive	13	4		

KE calculated intersection crash rates based on the number of crashes, the number of years of analysis, and entering AADT. KE then compared the actual crash rates to average statewide crash rates for similar facilities and calculated upper control limits (UCLs) for each facility. The upper control limit, or critical limit, is a threshold above which the observed rate is considered statistically significant at a 95% confidence level.

Table 9: Intersection Crash Rates, 2013 to 2017

Intersection Location		Entering AADT 5 Year Average	Total Crashes	Millions of Entering Vehicles (MEV) in Study Period	Crash Rate (Crashes per MEV)	*State Average Crash Rate (Crashes per MEV)	Upper Control Limit Rate (Crashes per MEV)	Critical Rate Exceeded?
Street 1	Street 2							
Egan Drive	Vintage Boulevard	16,039	6	29.272	0.20	0.55	0.80	No, Actual is 26% of UCL
Riverside Drive	Vintage Boulevard	17,405	13	31.765	0.41	1.57	1.95	No, Actual is 21% of UCL
Mendenhall Loop Road	Mall Access Road	22,225	19	40.561	0.47	1.57	1.91	No, Actual is 25% of UCL
Egan Drive	Mendenhall Loop Road	36,094	56	65.871	0.85	1.57	1.83	No, Actual is 46% of UCL
Egan Drive	Riverside Drive	21,391	17	39.039	0.44	1.02	1.30	No, Actual is 33% of UCL

*Population rates are from the Intersection HSIP Handbook FY 18 Screening Process Spreadsheets

In summary, traffic safety performance of the intersections is good. The crash rates for intersections are below upper critical limit by a significant margin, and actually are less than the average rates for similar intersections. Also, crash severities for the intersections are low.

6 Traffic Forecasting

6.1 Design Conditions

Of most concern regarding site traffic generation by the proposed SEARHC medical office facility is the impacts during peak hours of the street network, typically commuter peak periods. Operationally, these periods are the most congestive, and in fact are the design condition.

In order to estimate traffic impacts of the development, a no-build condition background traffic is determined. Since we are concerned with a future design year, the background traffic is expected to increase at an annual growth rate, which, for this project, is assumed to be similar to the recent past year's observed growth rate from the Riverside Drive CCS. Site-generated traffic is projected onto the background traffic to estimate the build condition and the incremental impacts of the new facility. Unlike background traffic, which is assumed to increase over time, site traffic levels are static and will remain the same for entire life of the facility absent of additions or renovations.

The anticipated build year for the proposed SEARHC medical office building is 2023. As previously discussed, intersection traffic counts were not performed in 2020-2022 because of pandemic depressed travel. Instead, historic traffic counts were for the peak AM and peak PM time periods, and past data from the Riverside CCS was used to factor past traffic to a design year and hour condition. Institute of Transportation Engineers Trip Generation (10th edition) website was used to calculate the ADT and peak hour traffic generated by the proposed development.

6.2 Background Traffic

6.2.1 Normalization to 2019

The traffic counts collected in 2012, 2015 and 2016, discussed in Section 4.3 on page 23, were used as a basis for the normalization of 2019 traffic flow counts, that were then used to calculate the 2023 base traffic flow counts. 2019 was used as the normalization year, as it is pre-pandemic and is the last year published for the CCS Juneau - Riverside Drive TMA 000807, which is the closest CCS (see Section 4.2, on page 21). The CCS AADT between 2012 and 2019, shown in Table 5 on page 22, yields an average annual growth rate of 1.30%.

To develop the estimated traffic volumes for 2019, the estimated annual traffic growth rate of 1.30% was applied to existing traffic volumes gathered from 2012 through 2016 to derive the annual growth factor, which was then applied to the movement volumes presented in in Figure 13 and Figure 14. The factors are computed as:

Factor for converting 2012 counts to 2019 baseline: $F = (1.013)^{(2019-2012)} = 1.095$

Factor for converting 2015 counts to 2019 baseline: $F = (1.013)^{(2019-2015)} = 1.053$

Factor for converting 2016 counts to 2019 baseline: $F = (1.013)^{(2019-2016)} = 1.040$

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To further explain, the turning movement volumes collected in 2012 would be factored to 2019 by multiplying the 2012 volume by 1.095.

An additional step is required to factor volumes collected during the year to a summer “peak” condition. The apex of the monthly ADT is May as is clearly exhibited in Table 6 on page 23. Table 10, below, shows how monthly factors are computed. The factored traffic flow counts for 2019 are shown in Figure 15 and Figure 16.

Table 10: Monthly Factor to Adjust 2019 Original Traffic Count Month to Peak Month

Intersection	Year	Original Traffic Count Month	CCS Count Month ADT	Design Summer Month	CCS May ADT	Monthly Factor
Riverside/Vintage	2016	January	3,509	May	4,445	4445/3509=1.267
Egan/Mendenhall Loop	2012	September	4,037	May	4,312	4312/4037=1.068
Egan/Riverside	2015	October	3,899	May	4,547	4547/3899=1.166
Egan/Vintage	2015	October	3,899	May	4,547	4547/3899=1.166
Mendenhall Loop/Mendenhall Mall/Atlin	2012	September	4,037	May	4,312	4312/4037=1.068

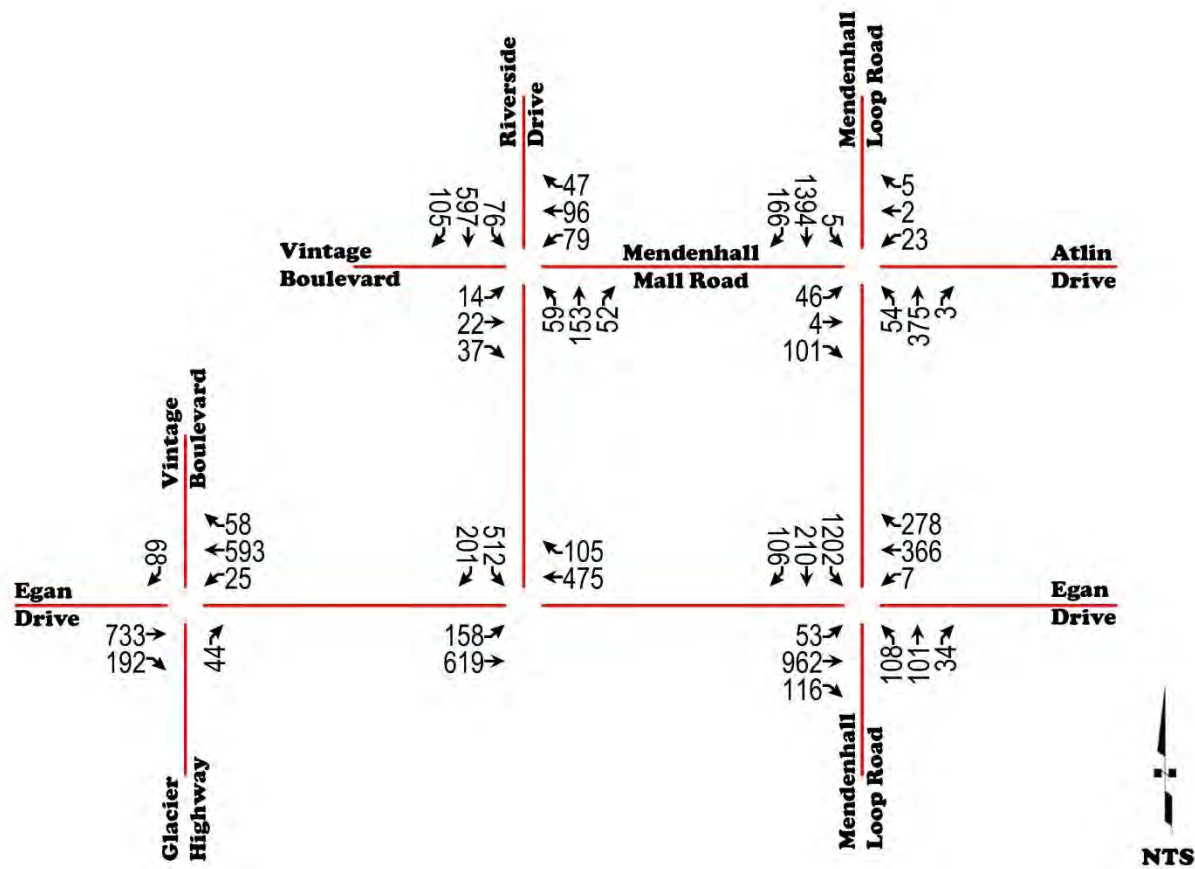


Figure 15: AM Peak TMVs – Factored Base Condition 2019

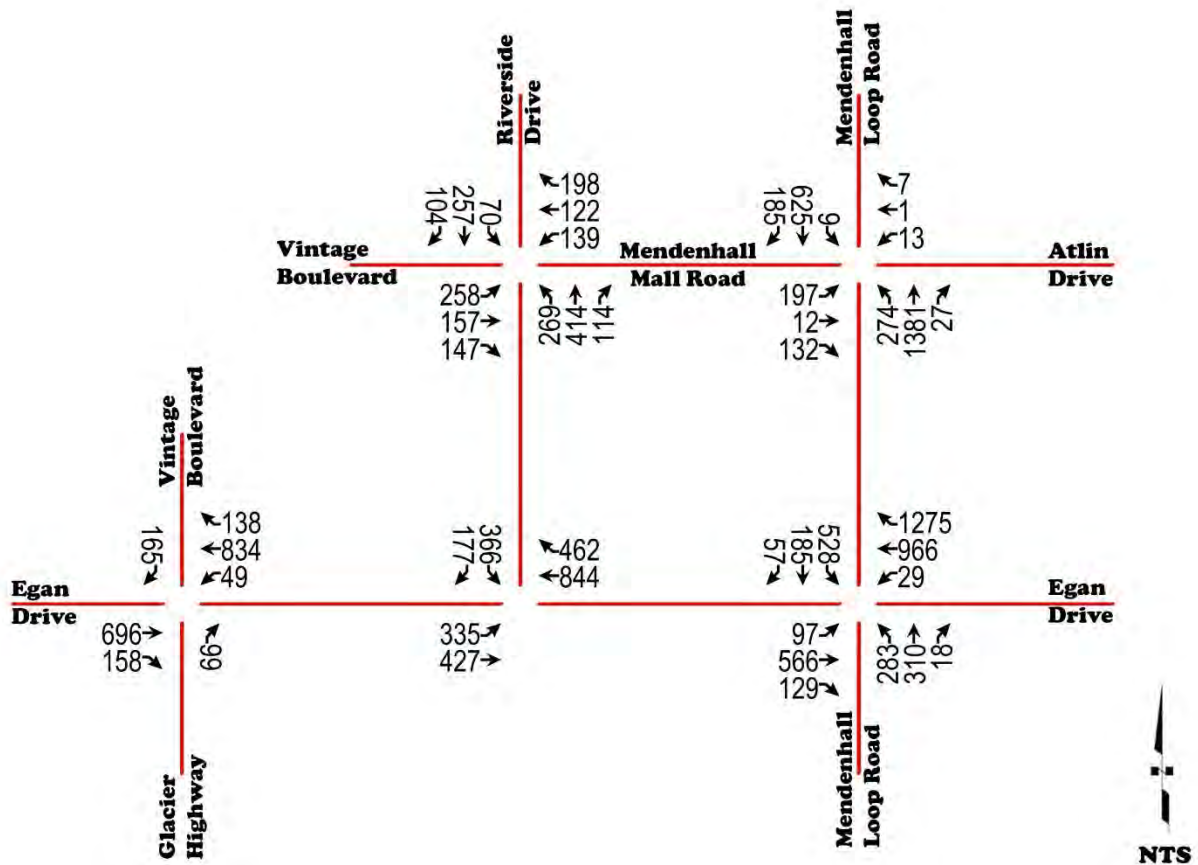


Figure 16: PM Peak TMVs – Factored Base Condition 2019

6.2.2 Estimated Background Traffic Growth for Design Year (2023)

The 2023 intersection movement volumes were calculated by growing the factored 2019 counts by the historical trend of 1.30%. The factor is computed as:

$$\text{Factor for converting 2019 counts to 2023 counts: } F = (1.013)^{(2023-2019)} = 1.053$$

6.2.3 Traffic Generated by Committed Developments

According to CBJ planners, there is a proposed 11 condominium complex with 11 commercial garages development with an estimated ADT of 108, and a proposed senior housing development with 98 beds and an estimated ADT of 269 planned for construction in 2022. Both facilities are located on Clinton drive, which exits on both ends to Vintage Boulevard. CBJ planners have requested that these facilities be added to the background traffic for intersection traffic movements occurring without the proposed SEARHC medical offices.

In order to develop AM and PM peak hour volumes to apply to the design hours, we need average rates or a function to which we would input independent variables to estimate trips.

However, CBJ did not provide weekday hourly traffic counts, nor did they provide independent variables for the developments that can be used to calculate peak hour traffic. As such, an alternative method was used to convert ADT volumes to the AM and PM hours that will be added to background traffic. Institute of Transportation Engineers Trip Generation (10th edition) website was used to find the weekday peak hour average rate and the weekday average rate based on the land use classification. These values were then used in the below formula to estimate the weekday AM and PM peak hour traffic trips:

$$\text{Hourly Traffic} = (\text{Weekday Peak Hour Average Rate} / \text{Weekday Average Rate}) / \text{ADT}$$

Table 11 and Table 12, below, show the calculated values for the trips in and out of the proposed developments based on the directional distribution (DD%) also found from the Institute of Transportation Engineers Trip Generation (10th edition) website. More information from ITE Trip Generation website can be found in Appendix B.

Table 11: 98 bed Senior Housing Trip Generation Calculation

Land Use Classification	ADT	Peak Hour	Equation	DD% (In/Out)	Trips In	Trips Out
252 - Senior Adult Housing	269	AM	$(0.2 / 3.7) / 269 = 15$	35/65	$15 * 35\% = 5$	$15 * 65\% = 10$
		PM	$(0.26 / 3.7) / 269 = 19$	55/45	$19 * 55\% = 10$	$19 * 45\% = 9$

Table 12: 11 Condos with 11 Commercial Garages Trip Generation Calculation

Land Use Classification	ADT	Peak Hour	Equation	DD% (In/Out)	Trips In	Trips Out
221 – Multifamily Housing (mid-rise)	108	AM	$(0.36 / 5.44) / 108 = 7$	26/74	$7 * 26\% = 2$	$7 * 74\% = 5$
		PM	$(0.44 / 5.44) / 108 = 9$	61/39	$9 * 61\% = 5$	$9 * 39\% = 3$

6.2.3.1 Trip Distribution for Condominiums and Senior Housing

The AM and PM peak hour traffic from these facilities are not accounting for the turning movement volumes presented in Figure 15 and Figure 16 shown above. The state of practice for site traffic trip distribution methodology is to assume the inbound and outbound trips will follow the existing background traffic travel patterns. As such, trip distribution for the proposed senior housing and condominiums was calculated assuming traffic divides at intersections in the inbound and outbound proportions exhibited in Figure 15 and Figure 16 would be similar to existing traffic flows throughout the traffic network. Figure 17 and Figure 18 presents the AM and PM trip distribution of the condominium and senior housing traffic for the intersections of Vintage Boulevard with Egan Drive and Riverside Drive, based on 2019 base traffic. The remaining three intersections in the study area used this methodology to overlay site trips on the base traffic movements.

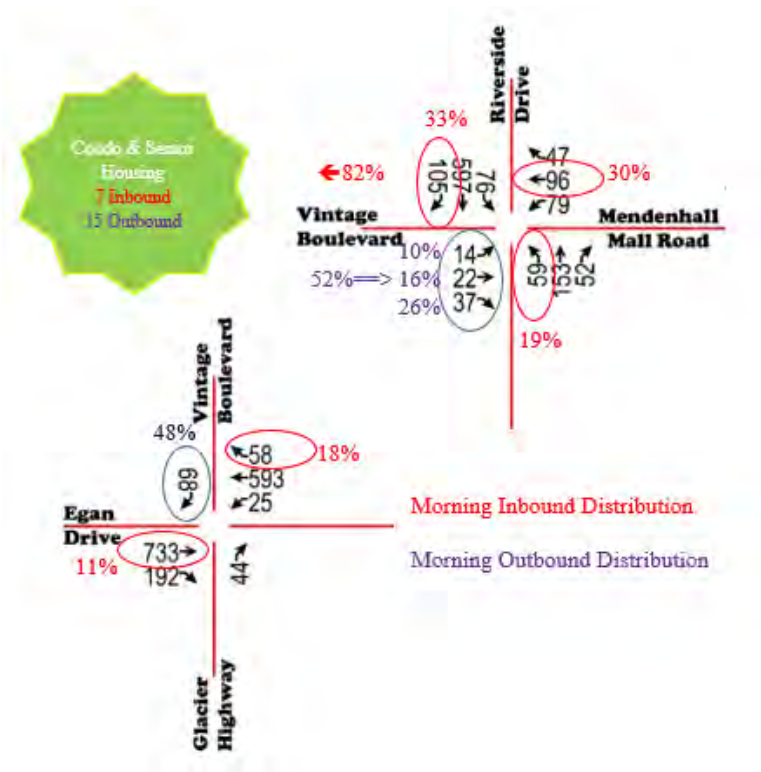


Figure 17: AM Condo and Senior Site Trip Distribution to Near Intersections

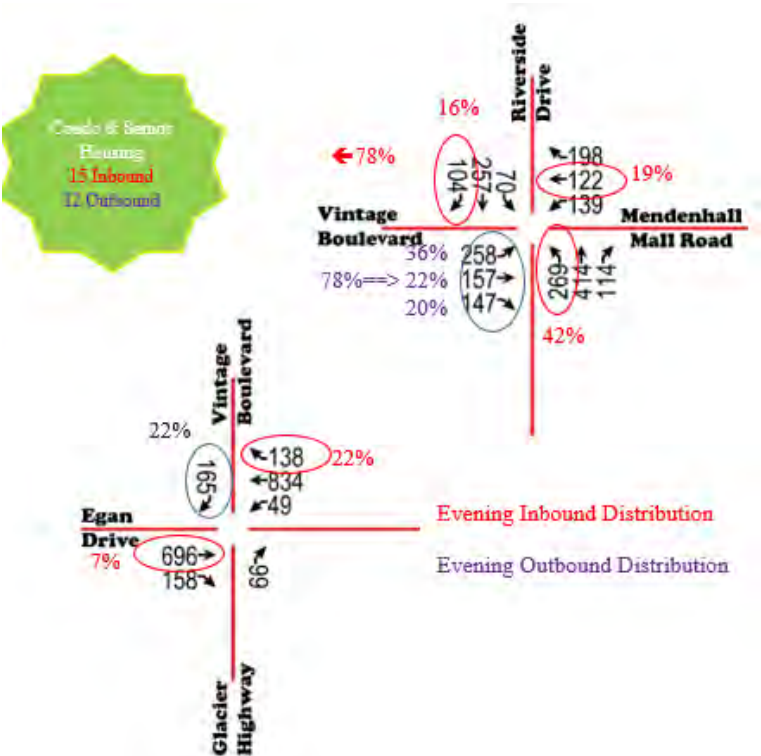


Figure 18: PM Condo and Senior Site Trip Distribution to Near Intersections

6.2.4 Composite Design Year 2023 without Medical Office

Opening year, 2023, base traffic conditions are presented as AM and PM peak hour turning movements in Figure 19 and Figure 20. As stated in previous sections, these turning movement counts were calculated by taking the original counts and projecting them to year 2019 using the historical AADT and then factoring the counts from the month they were taken to the peak month of 2019, which was May. The 2019 turning movement volumes were then factored to 2023 as discussed in Section 6.2.2 on page 31. The site traffic from the proposed condominiums and senior housing turning movements expected to be built before the medical offices are open was distributed to the intersections as discussed in Section 6.2.3.1 above.

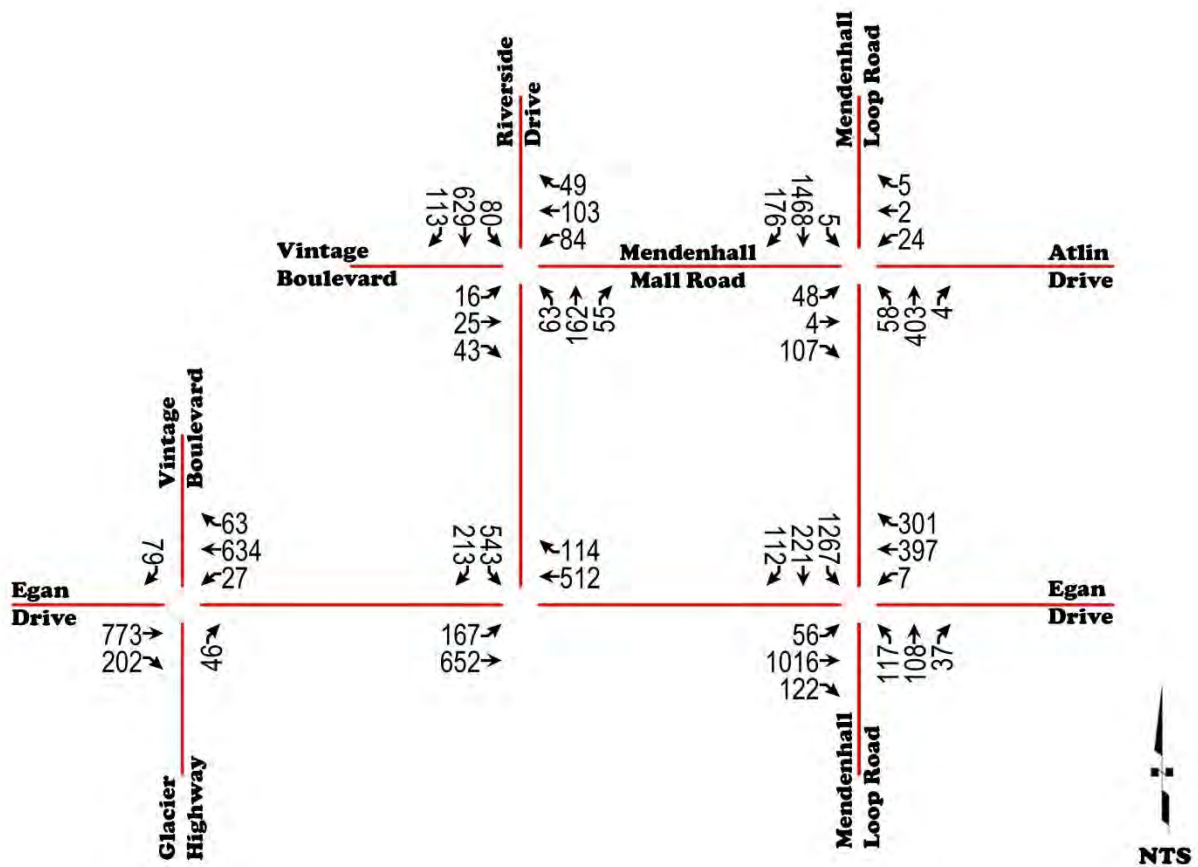


Figure 19: AM Peak TMVs – Base Condition 2023

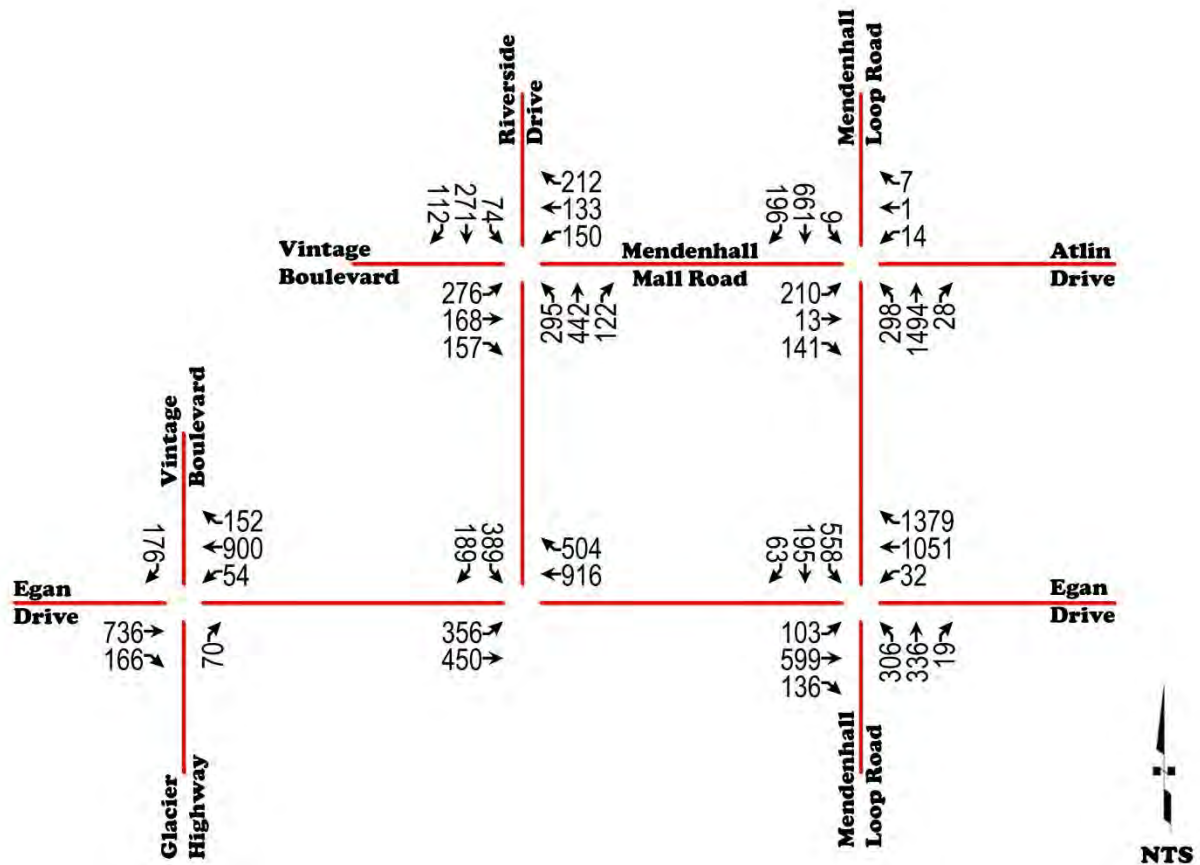


Figure 20: PM Peak TMVs – Base Condition 2023

6.3 Site Development Traffic

6.3.1 Trip Generation

The Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition, provides trip generation for Land Use 720, Medical Dental Offices using gross floor area as the independent variable in an average trip rate or using a fitted curve. The methodology in the *Trip Generation Handbook*, 3rd Edition, was followed the fitted curve equation (regression) to calculate estimated trips. The trip generation time periods were the AM peak hour of the adjacent street (7AM to 9 AM) and the PM peak hour of adjacent street (4PM to 6PM) which would occur during the commuting peak and is the typical design condition for streets and intersections. Peak hour trip generation rates are presented in Table 13.

Table 13: 45,924 square foot Medical Office Building AM and PM Trip Generation Calculation

Land Use Classification	Gross Floor Area (1000 square feet)	Peak Hour	Equation Type	Equation and Trip Computations	DD% (In/Out)	Trips In	Trips Out
720 – Medical-Dental Office Building	X=45.924	AM Peak (7AM - 9AM)	Regression	$\ln(T)=0.89\ln(X)+1.31$ $\ln(T)=0.89\ln(45.924)+1.31 = \underline{112}$	78/22	87	25
		PM Peak (4PM - 6PM)	Regression	$T=3.39(X)+2.02$ $T=3.39(45.924)+2.02 = \underline{158}$	28/72	44	114

6.3.1.1 Trip Distribution

Trip distribution for the proposed medical office building was calculated assuming the site traffic patterns are the same as the background base traffic flows throughout the traffic network. Distribution patterns and assignments are essentially the same as discussed for the condominium and senior housing traffic discussed in Section 6.2.3.1.

6.3.2 Composite Design Year 2023 with Medical Offices

Figure 21 and Figure 22, below, show the traffic flow counts at the adjacent five intersections for build year 2023 with the addition to the anticipated increase in traffic flow from the medical office building. These turning movement counts were calculated by taking the 2023 traffic count turn percentages and factoring the anticipated medical center trips accordingly.

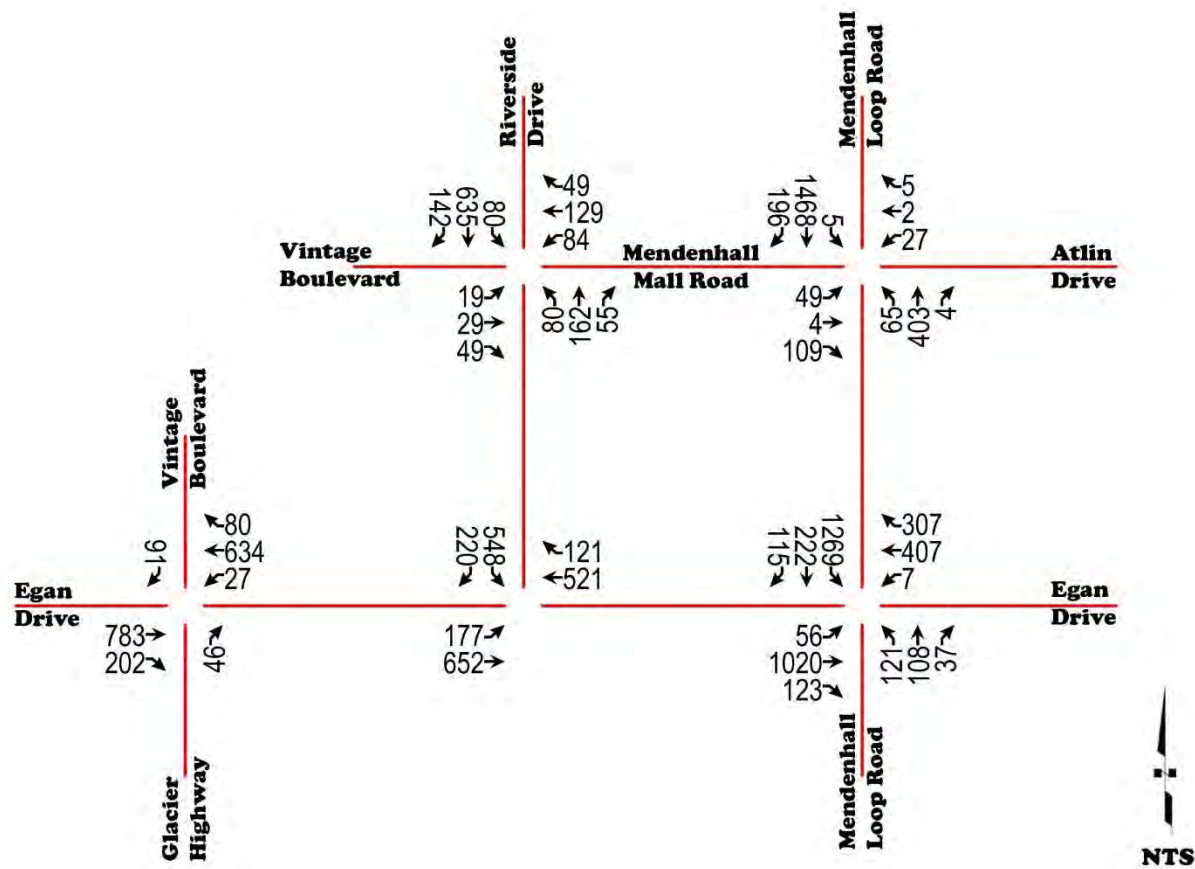


Figure 21: AM Peak TMVs – Build Condition 2023

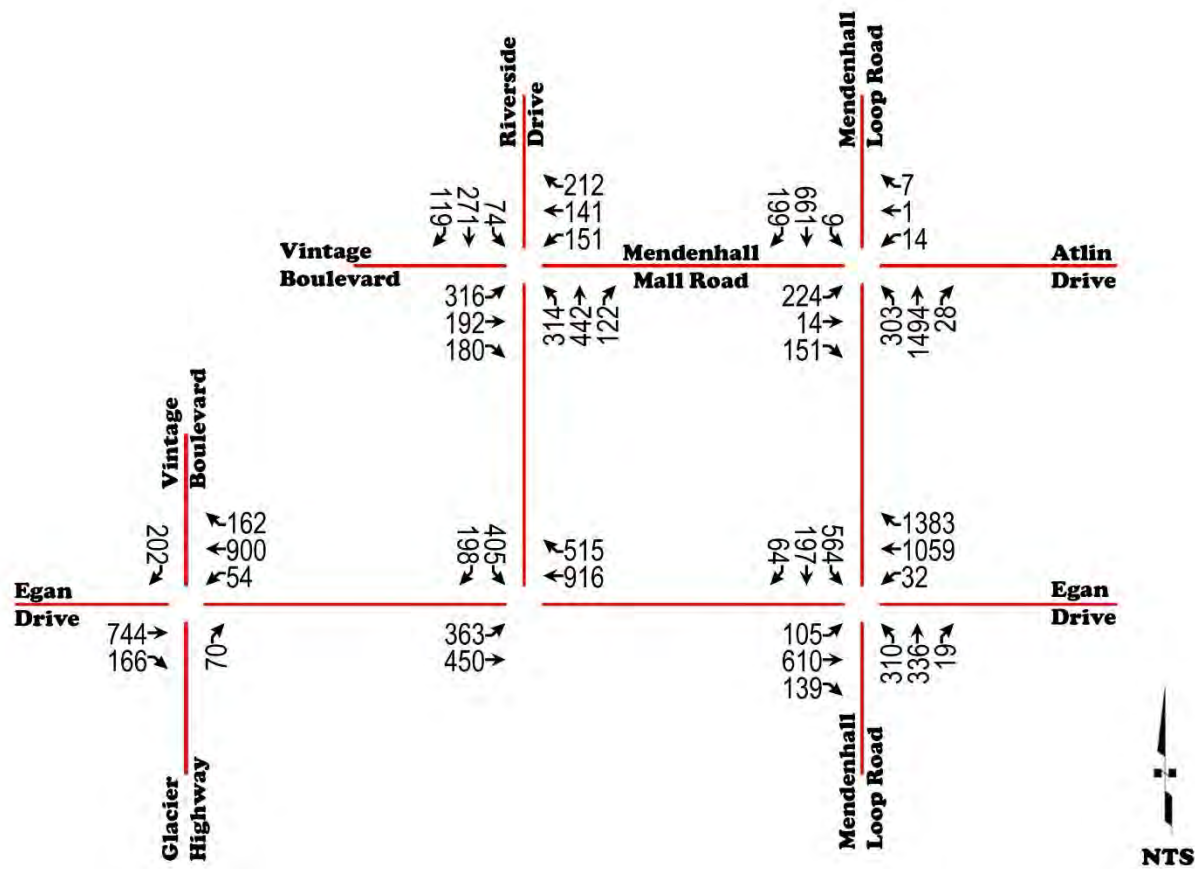


Figure 22: PM Peak TMVs – Build Condition 2023

7 Traffic and Safety Analysis

7.1 Intersection Operation Impacts

The 2023 base condition AM and PM peak hour traffic flow counts for the five adjacent intersections were analyzed using Synchro 11 software, using Highway Capacity Manual (HCM) 2000 methodologies for the signalized intersections and HCM 2010 methodologies for the unsignalized intersection. HCM 2010 requires National Electrical Manufacturers Association (NEMA) phasing to analyze signal operations. The Egan Drive and Mendenhall Loop Road intersection cannot be modeled as NEMA phasing because of the split-phased timing. Additionally, the Egan Drive and Riverside Drive intersection has an exclusive pedestrian phase which cannot be modeled as NEMA phasing. For equal comparison among the signalized intersections in the study area, HCM 2000 was used to analyze all signals.

The signalized intersections were analyzed using existing signal timings provided by DOT&PF for the 2016 Juneau Egan Drive & Riverside Intersection Improvements project. The Egan Drive at Mendenhall Loop Road intersection and the Riverside Drive at Vintage Boulevard / Mendenhall Mall Road intersection are configured with at least one channelized right-turn movement. It was assumed that channelized right-turn movements at an intersection do not affect signal operations. Therefore, these right-turn movements were removed from the signal models at the Egan Drive and were analyzed separately as an unsignalized intersection. Approach and intersection delays at these intersections consider delays at the signal and delays for the channelized right-turn lanes.

It should be noted that this analysis may not be using the most current signal timing plans. DOT&PF stated in their review of this report that adaptive signal control is used at the study intersections. However, DOT&PF did not require revaluation of the signalized intersection operations since, as present in the sections below, the additional delay impact caused by the development is not significant. Moreover, adaptive signal control is a mitigation to decrease delay.

Observed intersection AM and PM peak hour factors (PHFs) from the collected turning movement counts discussed in Section 4.3 on page 23. PHFs ranged from 0.77 to 0.91 during the AM peak and 0.91 to 0.97 during the PM peak.

Average heavy vehicle percentages were estimated using continuous count stations and short-term stations with historical vehicle classification data gathered from the DOT&PF traffic data portal. Heavy vehicles made up approximately 5% of traffic on Egan Drive, 2% of traffic on Riverside Drive, and 7% of traffic on Vintage Boulevard. Roadways without vehicle classification data were given a default heavy vehicle percentage of 2%.

The intersections that are evaluated in this section are presented in Figure 23 and listed below.



Background Photo Source- Google Earth

Figure 23: TIA Study Area Intersections

The analyzed intersections (numbered as shown in the figure) include:

1. Egan Drive and Vintage Boulevard/Glacier Highway
2. Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road
3. Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive
4. Mendenhall Loop Road and Egan Drive
5. Riverside Drive and Egan Drive

The site traffic distributed to other intersection approaches outside of the study area were found to be under the 5% threshold discussed in Section 1.2. As such, the study area shown satisfies CBJ Code of Ordinances.

Under each subsection below, the operation performance measures are presented for the 2023 AM and PM peak hours, for both cases of with and without the SEARHC medical offices.

Operational performance measures include:

- Movement and intersection average control delay in seconds per vehicle (sec/veh);
- Movement and Overall Level of Service (LOS) based on control delay, and as presented in the HCM for signalized and unsignalized intersection;
- Volume to Capacity Ratio (v/c) for movements, where $v/c > 1$ indicates demand exceeds capacity, and;
- Queue Lengths in feet, 95th percentile queue is reported, signifying the approximate length exceeded by queues about 5% of the time.

Table 14 presents level of service (LOS) criteria for signalized and unsignalized intersections. Level of service for signals is applied to individual movements, approaches, and the intersection. Unsignalized LOS is applied only to movements and approaches that yield to other movements and unimpeded movements are not analyzed since they do not experience delay.

Table 14: Signalized and Unsignalized Intersection LOS Based on Control Delay

Level of Service	Signalized Intersection Control Delay (seconds/vehicle)	Unsignalized Intersection Control Delay (seconds/vehicle)
A	0-10	0-10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50

Queue lengths (95th percentile) for controlled turning movements are evaluated to determine if the queues exceed available auxiliary lane storage lane. Signalized through movement queues are evaluated to determine if they block entrances to auxiliary lanes, denying turning vehicle access to the auxiliary lane. Queue storage for all movements may be limited by upstream intersections, which is whether they will spill back through an upstream intersection and interfere with the upstream intersection operations.

7.1.1 Egan Drive and Vintage Boulevard/Glacier Highway

This intersection, discussed in detail under Section 3.2.5, on page 16 and depicted below in Figure 24 is a two-way stop-controlled intersection.



Figure 24: Egan Drive and Vintage Boulevard/Glacier Highway

7.1.1.1 Egan-Vintage-Glacier AM Peak Hour

The following tables summarize intersection LOS performance measures for the AM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 15: AM Peak at Egan Drive-Vintage Boulevard Intersection, Base Condition 2023

Existing Base Condition AM Peak	WB	NB	SB
	<i>LT</i>	<i>R</i>	<i>R</i>
Delay (sec/veh)	10	13	12
LOS	B	B	B
v/c Ratio	0.05	0.10	0.15
Queue Length (ft)	<25	<25	<25

Table 16: AM Peak at Egan Drive-Vintage Boulevard Intersection, Build Condition 2023

2023 Build Condition AM Peak	WB	NB	SB
	<i>LT</i>	<i>R</i>	<i>R</i>
Delay (sec/veh)	10	13	13
LOS	B	B	B
v/c Ratio	0.05	0.10	0.20
Queue Length (ft)	<25	<25	<25

There are only minor differences in performance measures for the AM intersection operations with and without the development. The following table summarizes queue impacts.

Table 17: AM Peak at Egan Drive-Vintage Boulevard Intersection Queue Lengths

2023 Build Condition AM Peak	WB			EB		SB
	<i>LT</i>	<i>Thru</i>	<i>R</i>	<i>Thru</i>	<i>R</i>	<i>R</i>
Available Storage Length (ft)	200	Free	400	Free	360	240
No-Build Queue Length (ft)	<25	Free	Free	Free	<25	<25
Build Queue Length (ft)	<25	Free	Free	Free	<25	<25

There are no queue impacts caused by the proposed development.

7.1.1.2 Egan-Vintage-Glacier PM Peak Hour

The following tables summarize intersection LOS performance measures for the PM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 18: PM Peak at Egan Drive-Vintage Boulevard Intersection, Base Condition 2023

Existing Base Condition PM Peak	WB	NB	SB
	<i>LT</i>	<i>R</i>	<i>R</i>
Delay (sec/veh)	10	12	15
LOS	A	B	C
v/c Ratio	0.05	0.15	0.35
Queue Length (ft)	<25	<25	50

Table 19: PM Peak at Egan Drive-Vintage Boulevard Intersection, Build Condition 2023

2023 Build Condition PM Peak	WB	NB	SB
	<i>LT</i>	<i>R</i>	<i>R</i>
Delay (sec/veh)	10	12	17
LOS	A	B	C
v/c Ratio	0.05	0.15	0.40
Queue Length (ft)	<25	<25	50

There are only minor differences in performance measures for the PM intersection operations with and without the development. The following table summarizes queue impacts.

Table 20: PM Peak at Egan Drive-Vintage Boulevard Intersection Queue Lengths

	WB			EB		SB
	<i>LT</i>	<i>Thru</i>	<i>R</i>	<i>Thru</i>	<i>R</i>	<i>R</i>
Available Queue Length (ft)	200	Free	400	Free	360	240
No-Build Queue Length (ft)	<25	Free	Free	Free	<25	50

	WB			EB		SB
	<i>LT</i>	<i>Thru</i>	<i>R</i>	<i>Thru</i>	<i>R</i>	<i>R</i>
Build Queue Length (ft)	<25	Free	Free	Free	<25	50

There are no queue impacts caused by the proposed development.

7.1.1.3 Egan-Vintage-Glacier Summary

Intersection operation measures and queue lengths are not significantly impacted by the traffic generated by the proposed SEARHC medical office development. The operational performance measures with the development do not exceed CBJ Code of Ordinance thresholds requiring mitigations (see Section 1.2 on page 5 for discussion of requirements).

7.1.2 Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road

This intersection, discussed in detail under Section 3.2.3 on page 15 and depicted below in Figure 25 is a signalized intersection.



Figure 25: Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road

7.1.2.1 Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road AM Peak Hour

The following tables summarize intersection LOS performance measures for the AM peak hour in the design year without the SEARHC medical offices and with the medical offices.

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Table 21: AM Peak at Riverside Drive-Vintage Boulevard Intersection, Base Condition 2023

2023 Base Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	36	38	18	29	36	10	12	10	9	7	23	10
LOS	D	D	C	C	D	A	B	A	A	A	C	B
v/c Ratio	0.15	0.25	0.15	0.45	0.55	0.10	0.30	0.20	0.10	0.15	0.85	0.20
Queue Length (ft)	25	50	25	100	125	< 25	50	100	< 25	50	575	25
Intersection	20 sec/veh											
	LOS B											

Table 22: AM Peak at Riverside Drive-Vintage Boulevard Intersection, Build Condition 2023

2023 Build Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	36	38	19	29	37	10	14	10	9	8	26	11
LOS	D	D	C	C	D	A	B	B	A	A	C	B
v/c Ratio	0.15	0.25	0.20	0.40	0.60	0.10	0.40	0.20	0.10	0.15	0.85	0.25
Queue Length (ft)	50	50	25	100	150	< 25	50	125	< 25	50	625	25
Intersection	21 sec/veh											
	LOS C											

Although the intersection LOS is B without development traffic and C with it, the average delay only increases by one second in the build case. As such, individual movement and overall intersection performance measures will not change significantly with the additional traffic generated by the SEARHC medical offices. The following table summarizes queue impacts.

Table 23: AM Peak at Riverside Drive-Vintage Boulevard Intersection Queue Lengths

	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Available Storage Length (ft)	260	190*	190	140	110*	110	170	140*	140	180	140*	140
No-Build Queue Length (ft)	25	50	25	100	125	< 25	50	100	< 25	50	575	25
Build Queue Length (ft)	50	50	25	100	150	< 25	50	125	< 25	50	625	25

*Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.

With site development traffic the westbound 150-foot through queue will occasionally block the entrance of the westbound right turn lane. However, that is not a significant issue, since right-turns and throughs will proceed on the same signal phase. Right-turns on other phases may be impacted on occasion. The westbound left-turn lane is 140 feet, and the adjacent westbound through queue is 150 feet. However, the channelization is formed by striping, and vehicles may enter the auxiliary left-turn lane behind the through queue by driving over the painted taper.

The no-build southbound queues will block access to the adjacent auxiliary turn lanes. For the right-turn lane, this may not be a significant issue as discussed above, but the blockage to the left-turn lane may starve the left-turn phase during green indications. The build condition lengthens the southbound through queue by approximately 50 feet but does not create any additional impacts.

7.1.2.2 Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road PM Peak Hour

The following tables summarize intersection LOS performance measures for the PM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 24: PM Peak at Riverside Drive-Vintage Boulevard Intersection, Base Condition 2023

2023 Base Condition PM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	22	30	13	21	30	25	15	23	11	18	27	13
LOS	C	C	B	C	C	D	B	C	B	B	C	B
v/c Ratio	0.65	0.60	0.30	0.40	0.50	0.55	0.65	0.70	0.15	0.25	0.65	0.20
Queue Length (ft)	225	175	50	125	150	100	175	375	25	50	250	25
Intersection	21 sec/veh											
	LOS C											

Table 25: PM Peak at Riverside Drive-Vintage Boulevard Intersection, Build Condition 2023

2023 Build Condition PM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	23	30	14	22	32	28	17	25	11	19	28	13
LOS	C	C	B	C	C	D	B	C	B	B	C	B
v/c Ratio	0.70	0.60	0.30	0.40	0.55	0.60	0.70	0.70	0.15	0.25	0.65	0.20
Queue Length (ft)	250	200	50	125	150	100	200	375	25	50	250	25
Intersection	23 sec/veh											
	LOS C											

There are only minor differences of two seconds in vehicle delay in performance measures for the PM intersection operations with and without the development and the LOS remains C in both cases. The following table summarizes queue impacts.

Table 26: PM Peak at Riverside Drive-Vintage Boulevard Intersection Queue Lengths

	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Available Storage Length (ft)	260	190*	190	140	110*	110	170	140*	140	180	140*	140
No-Build Queue Length (ft)	225	175	50	125	150	100	175	375	25	50	250	25
Build Queue Length (ft)	250	200	50	125	150	100	200	375	25	50	250	25

**Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.*

Upon opening of the development, the eastbound right-turn lane may be blocked on occasion by the through queue, but as mentioned previously it is not expected to be an issue. Similarly, the westbound left-turn may have to be accessed by vehicle entering the lane behind through queue over the painted channelization. Both northbound and southbound through queues block access to the adjoining acceleration lanes, but the additional site traffic does not worsen the queuing conditions.

7.1.2.3 Riverside Drive and Vintage Boulevard/ Mendenhall Mall Road Summary

Intersection operation measures and queue lengths are not significantly impacted by the traffic generated by the proposed SEARHC medical office development. The operational performance measures with the development do not exceed CBJ Code of Ordinance thresholds requiring mitigations (see Section 1.2 on page 5 for discussion of requirements).

7.1.3 Mendenhall Mall Road and Mendenhall Loop Road/Atlin Drive

This intersection, discussed in detail under Section 3.2.4 on page 15 and depicted below (Figure 26) is a signalized intersection.



Figure 26: Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive

7.1.3.1 Mendenhall Loop Road and Mendenhall Mall Road/Atlin Drive AM Peak Hour

The following tables summarize intersection LOS performance measures for the AM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 27: AM Peak at Mendenhall Loop Road-Mendenhall Mall Road Intersection, Base Condition 2023

2023 Base Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R)	LT	Thru	R	LT	Thru	R)	LT	Thru	R)
Delay (sec/veh)	53		50	51		49	65		6	64	12	6
LOS	D		D	D		D	E		A	E	B	A
v/c Ratio	0.50		0.15	0.25		0.00	0.65		0.20	0.35	0.70	0.20
Queue Length (ft)	100		75	50		< 25	125		200	25	550	75
Intersection	15 sec/veh											
	LOS B											

Table 28: AM Peak at Mendenhall Loop Road-Mendenhall Mall Road Intersection, Build Condition 2023

2023 Build Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	53		50	51		49	53	6		64	13	7
LOS	D		D	D		D	D	A		E	B	A
v/c Ratio	0.50		0.20	0.30		0.00	0.60	0.20		0.35	0.75	0.20
Queue Length (ft)	100		75	50		< 25	125	175		25	550	75
Intersection	16 sec/veh											
	LOS B											

There is only a minor difference of 1 second in vehicle delay in performance measures for the AM intersection operations with and without the development and the LOS is B in both cases. The following table summarizes queue impacts.

Table 29: AM Peak at Mendenhall Loop Road-Mendenhall Mall Road Intersection Queue Lengths

	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R	LT	Thru	R	LT	Thru	R
Available Storage Length (ft)	250		120	70		40	190	590		110	110*	130
No-Build Queue Length (ft)	100		75	50		< 25	125	200		25	550	75
Build Queue Length (ft)	100		75	50		< 25	125	175		25	550	75

*Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.

With site development traffic the southbound 550-foot through queue will occasionally block the entrance of the southbound left and right turn lanes. However, the build condition does not lengthen the southbound through queue.

7.1.3.2 Mendenhall Loop Road-Mendenhall Mall Road/Atlin Drive PM Peak Hour

The following tables summarize intersection LOS performance measures for the PM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 30: PM Peak at Riverside Drive-Vintage Boulevard Intersection, Base Condition 2023

2023 Base Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	63		32	31		31	145		15	54	19	16

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2023 Base Condition AM Peak	EB			WB			NB			SB		
	<i>LT</i>	<i>Thru</i>	<i>R (Yield)</i>	<i>LT</i>	<i>Thru</i>	<i>R (Yield)</i>	<i>LT</i>	<i>Thru</i>	<i>R (Yield)</i>	<i>LT</i>	<i>Thru</i>	<i>R (Yield)</i>
LOS	E		C	C		C	F		B	D	B	B
v/c Ratio	0.90		0.20	0.05		0.00	1.15		0.80	0.45	0.45	0.15
Queue Length (ft)	275		75	25		< 25	525		625	25	200	50
Intersection	33 sec/veh											
	LOS C											

Table 31: PM Peak at Riverside Drive-Vintage Boulevard Intersection, Build Condition 2023

2023 Build Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)	LT	Thru	R (Yield)
Delay (sec/veh)	66		32	31		30	198		16	54	19	16
LOS	E		C	C		C	F		B	D	B	B
v/c Ratio	0.90		0.20	0.05		0.00	1.30		0.80	0.45	0.45	0.15
Queue Length (ft)	300		100	25		< 25	525		625	25	200	50
Intersection	39 sec/veh											
	LOS D											

For the PM peak hour, there is a six second vehicle delay increase between the 2023 no build and build conditions. The LOS changes from C to D, but does not exceed CBJ Code of Ordinances mitigation thresholds.

Table 32: PM Peak at Mendenhall Loop Road-Atlin Road Intersection Queue Lengths

	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R	LT	Thru	R	LT	Thru	R
Available Storage Length (ft)	120*		120	70		40	190	590		110	110*	130
No-Build Queue Length (ft)	275		75	25		< 25	525	625		25	200	50
Build Queue Length (ft)	300		100	25		< 25	525	625		25	200	50

**Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.*

Upon opening of the development, the eastbound approach queue lengths are increased for the shared left turn/thru and right turn lanes. The eastbound right-turn lane may be blocked on occasion by the left turn/through queue. While the eastbound shared left turn/thru lane

anticipated queue length for no-build and build conditions is longer than the storage length to where it would impact the entrance for the right turn lane, the queue lengths for the eastbound lanes are only increased by 25 feet. This is mitigated in part because the right turn movements occur simultaneously with the shared left-through phase. Both northbound and southbound through queues block access to the adjoining acceleration lanes, but the additional site traffic does not worsen the queuing conditions. The eastbound, westbound, and southbound right turn lane available queue length storages are all longer than the expected no build and build queue lengths.

7.1.3.3 Mendenhall Loop Road-Mendenhall Mall Road/Atlin Drive Summary

The operational performance measures with the development do not exceed the CBJ Code of Ordinance thresholds requiring mitigations (see Section 1.2 on page 5 for discussion of requirements).

7.1.4 Egan Drive and Mendenhall Loop Road

This intersection, discussed in detail under Section 3.2.2 and depicted below in Figure 27 is a signalized intersection.



Figure 27: Egan Drive and Mendenhall Loop Road

7.1.4.1 Egan Drive and Mendenhall Loop Road AM Peak Hour

The following tables summarize intersection LOS performance measures for the AM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 33: AM Peak at Egan Drive-Mendenhall Loop Road Intersection, Base Condition 2023

2023 Base Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R (Yield)	LT	Thru	R	LT	Thru	R
Delay (sec/veh)	64	141	34	90	45	0	65	57	49	81	84	25
LOS	E	F	C	F	D	Free	E	E	D	F	F	C
v/c Ratio	0.65	1.20	0.10	0.55	0.55	-	0.75	0.65	0.05	1.10	1.10	0.10
Queue Length (ft)	100	800	75	25	250	-	175	150	< 25	950	975	50
Intersection	82 sec/veh											
	LOS F											

Table 34: AM Peak at Egan Drive-Mendenhall Loop Road Intersection, Build Condition 2023

2023 Build Condition AM Peak	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R (Yield)	LT	Thru	R	LT	Thru	R
Delay (sec/veh)	64	147	34	90	46	0	66	57	48	80	83	24
LOS	E	F	C	F	D	Free	E	E	D	F	F	C
v/c Ratio	0.65	1.20	0.10	0.55	0.60	-	0.75	0.65	0.05	1.10	1.10	0.10
Queue Length (ft)	100	800	75	25	250	-	175	150	< 25	950	975	50
Intersection	83 sec/veh											
	LOS F											

The Mendenhall Loop and Mendenhall Mall Road/Atlin Drive intersection has a no-build intersection LOS of F. The build condition is also LOS F, with a 1 second increase in delay. The following table summarizes queue impacts.

Table 35: AM Peak at Egan Drive-Mendenhall Loop Road Intersection Queue Lengths

	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R (Yield)	LT	Thru	R	LT	Thru	R
Available Storage Length (ft)	700	150*	150	720	720*	980	300	300*	470	960	280*	280
No-Build Queue Length (ft)	100	800	75	25	250	-	175	150	< 25	950	975	50
Build Queue Length (ft)	100	800	75	25	250	-	175	150	< 25	950	975	50

*Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.

Queues are not increased with the additional site traffic.

7.1.4.2 Egan Drive and Mendenhall Loop Road PM Peak Hour

The following tables summarize intersection LOS performance measures for the PM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 36: PM Peak at Egan Drive and Mendenhall Loop Road Intersection, Base Condition 2023

2023 Base Condition PM Peak	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R (Yield)	LT	Thru	R	LT	Thru	R
Delay (sec/veh)	42	24	19	49	168	Free	75	85	33	75	71	30
LOS	D	C	B	D	F	Free	E	F	C	E	E	C
v/c Ratio	0.65	0.60	0.10	0.50	1.25	Free	0.95	1.00	0.00	1.00	1.00	0.05
Queue Length (ft)	125	250	50	75	625	Free	375	425	< 25	475	475	< 25
Intersection	65 sec/veh											
	LOS E											

Table 37: PM Peak at Egan Drive and Mendenhall Loop Road Intersection, Build Condition 2023

2023 Build Condition PM Peak	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R (Yield)	LT	Thru	R	LT	Thru	R
Delay (sec/veh)	43	24	18	49	172	Free	79	85	33	78	74	30
LOS	D	C	B	D	F	Free	E	F	C	E	E	C
v/c Ratio	0.65	0.60	0.10	0.50	1.30	Free	0.95	1.00	0.00	1.05	1.00	0.05
Queue Length (ft)	125	225	75	75	625	Free	375	425	< 25	500	500	< 25
Intersection	66 sec/veh											
	LOS E											

There is a one second vehicle delay increase at this intersection; however, the LOS remains E for both the no-build and build conditions. Through queue will occasionally block the entrance of the left and right turn lanes. The following table summarizes queue impacts.

Table 38: PM Peak at Egan Drive-Mendenhall Loop Road Queue Lengths

	EB			WB			NB			SB		
	LT	Thru	R	LT	Thru	R (Yield)	LT	Thru	R	LT	Thru	R
Available Storage Length (ft)	700	150*	150	720	720*	980	300	300*	470	960	280*	280
No-Build Queue Length (ft)	125	250	50	75	625	Free	375	425	< 25	475	475	< 25
Build Queue Length (ft)	125	225	75	75	625	Free	375	425	< 25	500	500	< 25

**Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.*

Upon opening of the development, the eastbound, northbound, and southbound right-turn lane may be blocked on occasion by the through queue, but the additional site traffic does not significantly worsen the queuing conditions. There is a 25-foot increase in southbound left and through turning movements as well as a 25-foot increase in length in the eastbound right turn queue.

7.1.4.3 Egan Drive and Mendenhall Loop Road Summary

If interpreted correctly, the operational performance measures with the development may exceed CBJ Code of Ordinance thresholds requiring mitigations (see Section 1.2 on page 5 for discussion of requirements) simply because the base condition without site traffic falls below

LOS D. However, intersection operation measures and queue lengths are not significantly impacted by the traffic generated by additional traffic from the proposed SEARHC medical office development.

7.1.5 Egan Drive and Riverside Drive

This intersection, discussed in detail under Section 3.2.1 on page 14 and depicted below in Figure 28, is a signalized intersection.



Figure 28: Egan Drive and Riverside Drive

7.1.5.1 Egan Drive and Riverside Drive AM Peak Hour

The following tables summarize intersection LOS performance measures for the AM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 39: AM Peak at Egan Drive and Riverside Drive Intersection, Base Condition 2023

2023 Base Condition AM Peak	EB		WB		SB	
	LT	Thru	Thru	R (Yield)	LT	R (Yield)
Delay (sec/veh)	27	9	24	18	22	18
LOS	C	A	C	B	C	B
v/c Ratio	0.60	0.45	0.70	0.10	0.65	0.30
Queue Length (ft)	175	150	225	50	225	100
Intersection	19 sec/veh					
	LOS B					

Table 40: AM Peak at Egan Drive and Riverside Drive Road Intersection, Build Condition 2023

2023 Base Condition AM Peak	EB		WB		SB	
	LT	Thru	Thru	R (Yield)	LT	R (Yield)
Delay (sec/veh)	28	9	25	19	23	19
LOS	C	A	C	B	C	B
v/c Ratio	0.65	0.45	0.70	0.10	0.70	0.30
Queue Length (ft)	175	175	225	50	225	100
Intersection	19 sec/veh					
	LOS B					

The intersection LOS is B with both no-build and build conditions and no change in average delay. The following table summarizes queue impacts.

Table 41: AM Peak at Egan Drive and Riverside Drive Intersection Queue Lengths

	EB		WB		SB	
	LT	Thru	Thru	R (Yield)	LT	R(Yield)
Available Queue Length (ft)	370	370*	530*	530	460	230
Pre-Build	175	150	225	50	225	100
Post-Build	175	175	225	50	225	100

**Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.*

Through queue should not block the entrance of the left or right turn lanes. The build condition has insignificant impact on any of the left, right or through queues.

7.1.5.2 Egan Drive and Riverside Drive PM Peak Hour

The following tables summarize intersection LOS performance measures for the PM peak hour in the design year without the SEARHC medical offices and with the medical offices.

Table 42: PM Peak at Egan Drive and Riverside Drive Intersection, Base Condition 2023

2023 Base Condition AM Peak	EB		WB		SB	
	<i>LT</i>	<i>Thru</i>	<i>Thru</i>	<i>R</i> <i>(Yield)</i>	<i>LT</i>	<i>R (Yield)</i>
Delay (sec/veh)	38	5	15	34	44	36
LOS	D	A	B	C	D	D
v/c Ratio	0.75	0.20	0.75	0.35	0.75	0.15
Queue Length (ft)	325	75	175	< 25	175	75
Intersection	25 sec/veh					
	LOS C					

Table 43: PM Peak at Egan Drive and Riverside Drive Intersection, Build Condition 2023

2023 Base Condition AM Peak	EB		WB		SB	
	<i>LT</i>	<i>Thru</i>	<i>Thru</i>	<i>R</i> <i>(Yield)</i>	<i>LT</i>	<i>R (Yield)</i>
Delay (sec/veh)	38	5	15	38	44	35
LOS	D	A	B	D	D	D
v/c Ratio	0.75	0.20	0.80	0.35	0.75	0.15
Queue Length (ft)	350	75	175	< 25	175	75
Intersection	26 sec/veh					
	LOS C					

There are only minor differences in performance measures for the PM intersection operations with and without the development. The following table summarizes queue impacts.

Table 44: PM Peak at Egan Drive and Riverside Drive Queue Lengths

	EB		WB		SB	
	<i>LT</i>	<i>THRU</i>	<i>LT</i>	<i>R (Yield)</i>	<i>LT</i>	<i>R</i>
Available Queue Length (ft)	370	740	1200	530	460	230
Pre-Build	325	75	175	< 25	175	75
Post-Build	350	75	175	< 25	175	75

**Through queue storage is unlimited, but the lengths presented in the table are the shortest length of the adjoining auxiliary lanes to address the likelihood of through queues blocking the auxiliary lane.*

Through queue should not block the entrance of the left or right turn lanes. The build condition has insignificant impact on any of the left, right or through queues.

7.1.5.3 Egan Drive and Riverside Drive Summary

Intersection operation measures and queue lengths are not significantly impacted by the traffic generated by the proposed SEARHC medical office development. The operational performance measures with the development do not exceed CBJ Code of Ordinance thresholds requiring mitigations (see Section 1.2 on page 5 for discussion of requirements).

7.2 Safety Impacts

Crash experience is discussed under Section 5 on page 26. The crash rates and severity are low for the intersections within the study area. The site traffic may increase crash frequency (number per year) for the study intersections, but crash rates (crashes per volume exposure) is not expected to increase and in fact, may be reduced (rates tend to fall as traffic increases). Similarly, crash severity (major injuries and fatalities) are low, and would not be subject to an increase with the additional site traffic.

7.3 Transit System Impacts

Section 3.4 discusses transit service in the area. As a community, Juneau has an average public transportation work trip mode share is about 4.6% of commuting trips. As US Census Bureau American Community Survey *Table S0802* shows CBJ transit patrons tend to be lower income. As such, there is a potential and benefit of incentivizing transit so that all income levels employed by the medical office consider transit as alternative mode for commutes.. If so, and applying the community 4.6% usage, we would expect to see about 4 to 10 work trips use transit during the morning and evening commuting hours.

Moreover, about 70 to 80 trips daily (of 1677 total) would probably use transit if the mode share were applied to the total site traffic.

Section 3.4 indicates that the current transit system routes and schedules have adequate capacity to carry the patrons generated by the proposed SEARHC medical offices.

7.4 Pedestrian and Bicycle Impacts

The proposed SEARHC medical offices will generate additional pedestrian and bicycle use. In addition to the commuter and patient mode share (in place of automobiles), there will be short-trip opportunities for staff walkers or cyclists during the day to shop or visit restaurants.

The study area has pedestrian and bicycle facilities in place, as discussed under Section 3.3, although not every street has sidewalks or pathways. However, the study area pedestrian and bicycle network will accommodate walking or biking between the proposed medical offices and study area destinations study area or external origins/destinations.

Within the immediate area of the proposed offices, there is a missing sidewalk segment fronting the medical office parcel which, if left unimproved, impacts pedestrian circulation and affects the

quality of walking experience. Completion of this sidewalk would enhance the connectivity of the non-motorized network facilities for pedestrian staff and patients, reduce unsignalized mid-block street crossings, and provide an improved walking route for commuters or patients who walk between the offices and the Mendenhall Mall stops to board or alight transit buses. However, the walking route along Mendenhall Mall road is on shoulders or parking areas.

7.5 Driveway Impacts

7.5.1 Operational Impacts

Composite driveway volumes were estimated for the AM and PM peak hours in 2023 using data extracted and interpreted from Figure 21, Figure 22, and Table 13 (counts are not available). Of primary concerns are the left-turn queues for traffic entering the site be contained in the existing storage lanes, and that delay for the driveway egress traffic is not excessive, which if so, may result in drivers accepting inadequate gaps and increase the likelihood of crashes.

Figure 29, below, presents these performance measures. Queues will be contained in the left-turn storage lanes and delays for the outbound approach traffic onto Vintage will not be excessive.



Background Photo Source- Google Earth

Figure 29: Driveway Performance Measures

7.5.2 Driveway Sight Distance

Sight distance is required for main street left-turning vehicles and for driveway egress vehicles. The American Association of State Highway and Transportation Officials (AASHTO) *A Policy on the Geometric Design of Highways and Streets (GDHS)* provides guidance on intersection and driveway sight distance. The sight distance requirements are based upon Vintage Boulevard's posted speed limit of 20 mph.

Sight distance will have to be evaluated and incorporated during site design. The discussion below only presents the criteria that should be observed.

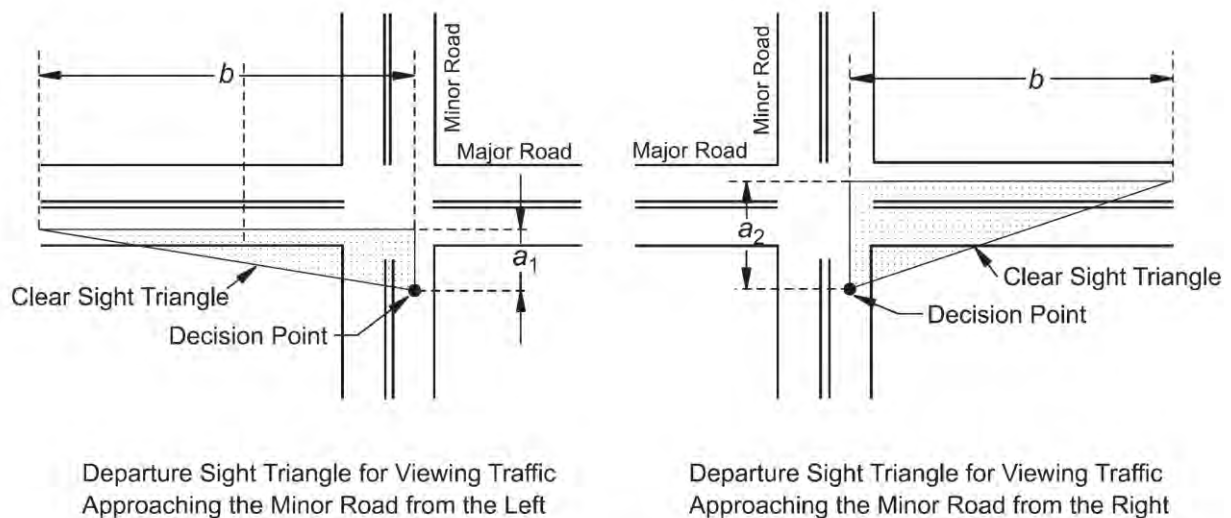
7.5.2.1 Vintage Boulevard Left-Turns Into Site

AASHTO requires 115 feet minimum for sight distance that will allow vehicles traveling in the opposing direction enough sight distance to come to a full stop from 20 mph, and avoid a left turning vehicle. However, a desirable sight distance is 165 feet, allowing the left-turning vehicle enough sight distance to judge oncoming gaps and complete the turn without impeding the opposite direction vehicle.

7.5.2.2 Driveway Departure Sight Distance

AASHTO requires 115 feet minimum for departure sight distance that will allow vehicles on Vintage Boulevard enough sight distance to come to a full stop from 20 mph, and avoid the driveway departure (egress) vehicle. The desirable sight distance is 225 feet.

Departure sight triangles are shown below.



Source: AASHTO GDHS Figure 9-17

Notes: The distance a_1 is distance from center of near lane to the decision point located 15 feet from edge of travel way. The distance a_2 is distance from center of far lane to the decision point located 15 feet from edge of travel way. The distance b is the sight distance, minimum 115 feet or desirable 225 feet.

Figure 30: Departure Sight Triangles

All objects within the clear sight triangle should be less than the plane formed by the driver's eye at 3.5 feet above the driveway surface and at the lane vertices, 3.5 above the roadway surfaces.

8 Mitigation and Recommendations

8.1 Egan Drive and Mendenhall Loop Road

Without site traffic, intersection AM average delay per vehicle is 82 seconds with a LOS F and the PM average delay per vehicle is 65 seconds with LOS E. Adding site traffic only increases delay by 1 second per vehicle in both AM and PM peak hours with no changes in LOS.

If interpreted correctly, the operational performance measures with the development may exceed CBJ Code of Ordinance thresholds requiring mitigations (see Section 1.2 on page 5 for discussion of requirements) simply because the base condition without site traffic falls below LOS D. However, intersection operation measures and queue lengths are not significantly impacted by the traffic generated by additional traffic from the proposed SEARHC medical office development. Furthermore, DOT&PF uses adaptive signal control at this intersection, and that capability to respond to changing demands is a mitigation.

A sketch-level evaluation of the intersection capacity analysis indicates that engineering and construction mitigation would likely require expanding the northbound and southbound approaches with additional left-turn and through capacity. This essentially involves an entire intersection and signal reconstruction, with likely unforeseen utility and right-of-way impacts, and would likely cost several million dollars. Moreover, the West Egan Drive Corridor Study, discussed in Section 2.3.4, indicates that the long-term solution for this intersection is a grade separated interchange. As such, any reconstruction efforts required by this project would eventually be superseded.

CBJ Code of Ordinances, 49.40.340 Mitigation waiver, discusses mitigation waivers:

- (a) *The planning commission or community development department director may, in their discretion, waive or partially waive the requirements for mitigation under this section if the planning commission finds at a public hearing, or the director finds in writing after reviewing a permit which does not require planning commission approval, that either of the following circumstances is true:*
 - (1) (A) *Existing roadway facilities are only marginally achieving an LOS D without the traffic generated by the development, and would likely fall below LOS D within five years;*
 - (B) *Traffic generated by the development would result in an LOS below D without mitigation; and*
 - (C) *The costs of mitigating the impacts outweighs the benefits; or*
 - (2) (A) *If the LOS is below D, before the development's opening date;*
 - (B) *If the operation of the roadway or intersection, within the affected area, would not deteriorate more than five percent in terms of delay time, a minimum LOS, LOS E may be acceptable;*
 - (C) *Does not result in an LOS below E; and*

(D) The costs of mitigating the impacts outweighs the benefits.

The CBJ Code of Ordinances will allow mitigation to be waived, based on clause (D).

8.2 Completion of the Vintage Boulevard Sidewalk Fronting the SEARHC Medical Offices

As part of the site design and construction for the SEARHC medical offices, the missing sidewalk segment fronting this parcel could be completed, thus minimizing impacts to pedestrians generated by the facility. This segment completion enhances pedestrian mobility and safety and promotes transit use by improving the walking route between the bus stops and the medical offices. It should be noted that part of the transit walking route along Mendenhall Mall Road between the bus stops and the intersection of Riverside-Vintage-Mendenhall Mall is on roadway shoulders.

This improvement would mitigate the safety and mobility impacts caused by the missing sidewalk segment. It provides continuous and connecting pedestrian walking routes in the vicinity of the medical offices and reduce the need for mid-block unsignalized pedestrian crossings on Vintage Boulevard.

This improvement could also be a mitigation for the Egan Drive and Mendenhall Loop Road operational issues discussed above. The improvement may promote mode changes to walking and transit, and reduce vehicular demand generated by the site.

8.3 Demand Management Policies By SEARHC

Site vehicular traffic and parking demand may be reduced by SEARHC with the implementation of policies that promote changes to active the active transportation modes of transit, walking, or biking, and by encouraging car-pools. These include:

- Incentivize transit use (potential 4% to 5% vehicle trip reduction, see Section 3.4)
- Incentivize carpooling (potential 7% to 8% vehicle trip reduction, see Section 3.4)
- Provide bicycle racks. (Vehicle trip reduction isn't quantifiable).

8.4 Recommendations

Both DOT&PF and CBJ have reviewed the draft TIA and concur with the above discussed mitigations. Recommendations are as follows:

- Adaptive signal control capability at Egan Drive and Mendenhall Loop Road will be adequate to address the computed 1 second of delay increase at this intersection because of site traffic, and no other mitigation is required.
- Construct the missing segment of the Vintage Boulevard sidewalk that fronts the SEARHC Medical Offices (this has been adopted and shown in the May 2022 site plan).
- Include demand management policies that include incentivizing transit use and carpooling, and provide bicycle racks.

Appendix A- Excerpts from ITE Trip Generation Manual for Project Land Uses

Land Use: 720

Medical-Dental Office Building

Description

A medical-dental office building is a facility that provides diagnoses and outpatient care on a routine basis but is unable to provide prolonged in-house medical and surgical care. One or more private physicians or dentists generally operate this type of facility. Clinic (Land Use 630) is a related use.

Additional Data

Time-of-day distribution data for this land use for a weekday, Saturday, and Sunday are presented in Appendix A. For the 19 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 9:30 and 10:30 a.m. and 2:15 and 3:15 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Connecticut, Kentucky, Maryland, Minnesota, New Jersey, New York, Ohio, Oregon, Pennsylvania, South Dakota, Texas, Virginia, Washington, and Wisconsin.

Source Numbers

104, 109, 120, 157, 184, 209, 211, 253, 287, 294, 295, 304, 357, 384, 404, 407, 423, 444, 509, 601, 715, 867, 879, 901, 902, 908, 959, 972

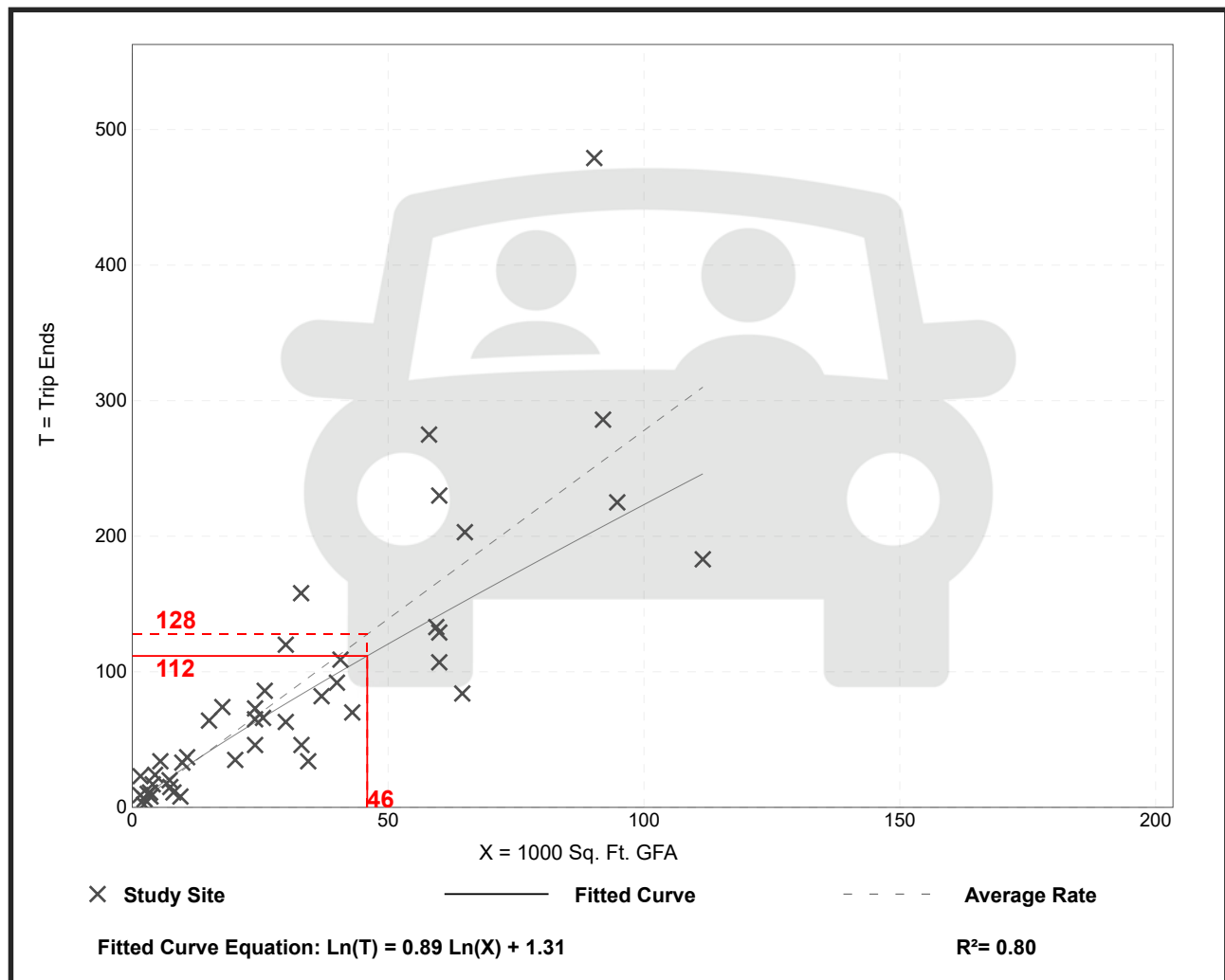
Medical-Dental Office Building (720)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 44
 Avg. 1000 Sq. Ft. GFA: 32
 Directional Distribution: 78% entering, 22% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.78	0.85 - 14.30	1.28

Data Plot and Equation



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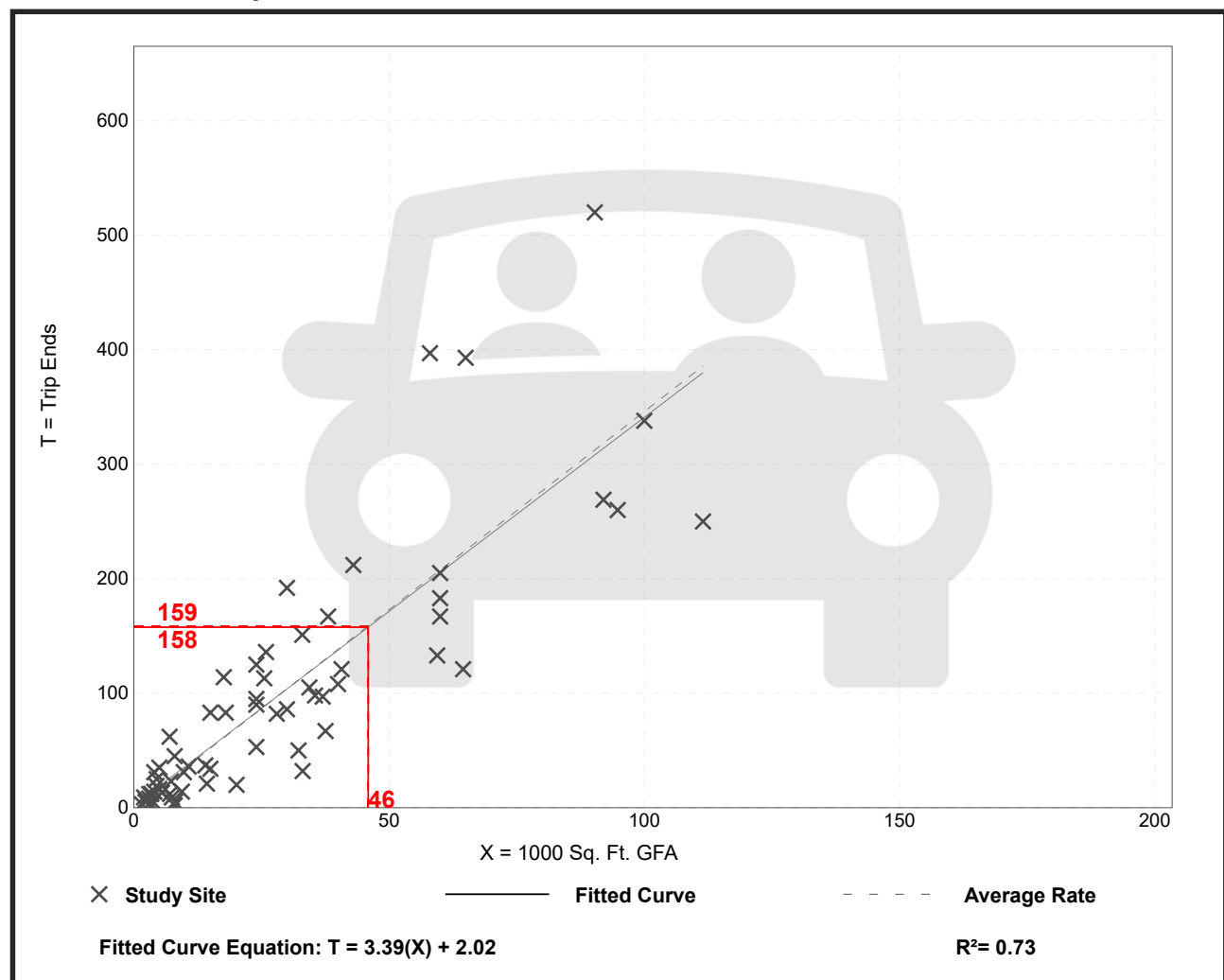
Medical-Dental Office Building (720)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 65
 Avg. 1000 Sq. Ft. GFA: 28
 Directional Distribution: 28% entering, 72% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.46	0.25 - 8.86	1.58

Data Plot and Equation



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Medical-Dental Office Building (720)

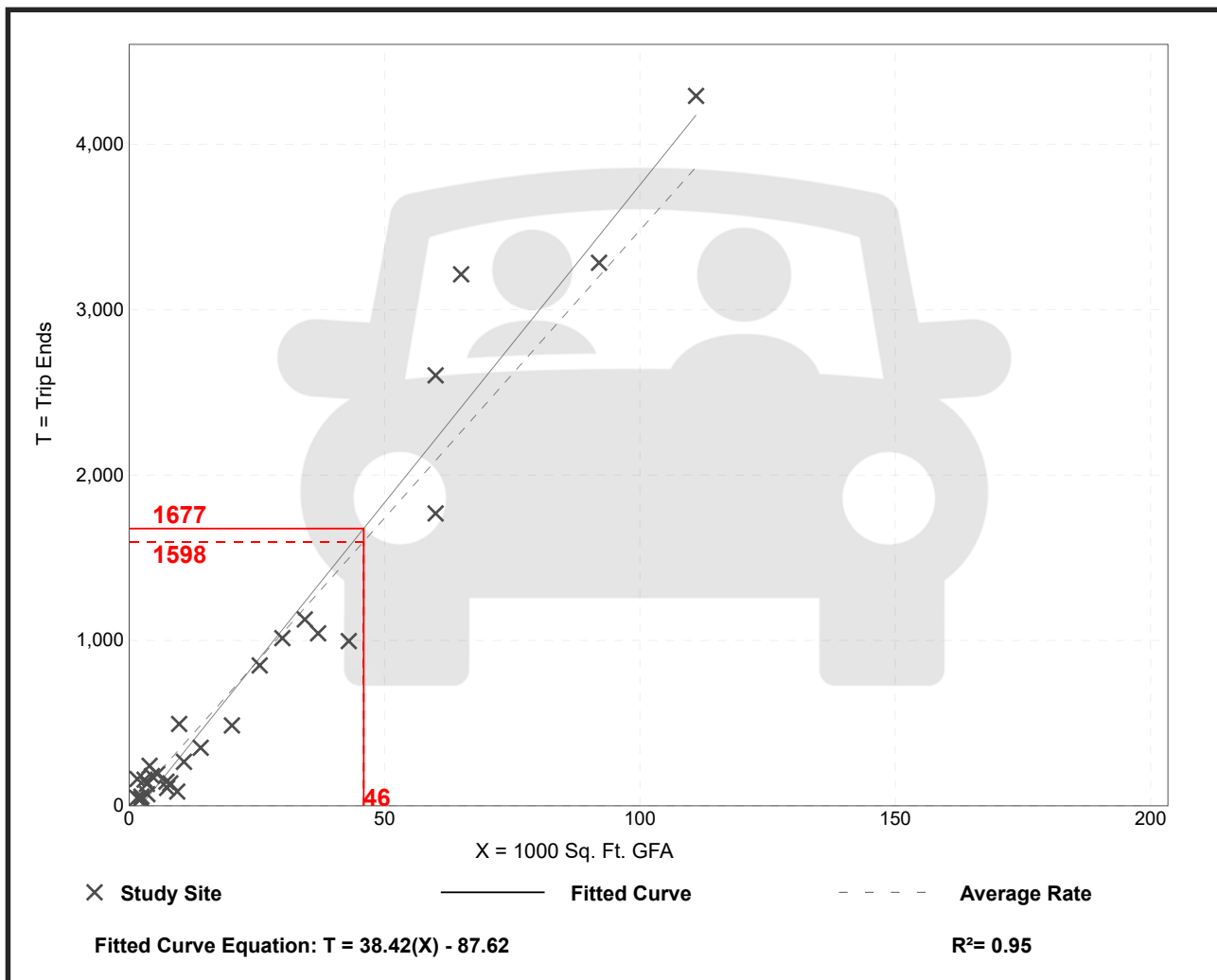
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 28
Avg. 1000 Sq. Ft. GFA: 24
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
34.80	9.14 - 100.75	9.79

Data Plot and Equation



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Land Use: 221

Multifamily Housing (Mid-Rise)

Description

Mid-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have between three and 10 levels (floors). Multifamily housing (low-rise) (Land Use 220), multifamily housing (high-rise) (Land Use 222), off-campus student apartment (Land Use 225), and mid-rise residential with 1st-floor commercial (Land Use 231) are related land uses.

Additional Data

In prior editions of *Trip Generation Manual*, the mid-rise multifamily housing sites were further divided into rental and condominium categories. An investigation of vehicle trip data found no clear differences in trip making patterns between the rental and condominium sites within the ITE database. As more data are compiled for future editions, this land use classification can be reinvestigated.

For the six sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.46 residents per occupied dwelling unit.

For the five sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 95.7 percent of the total dwelling units were occupied.

Time-of-day distribution data for this land use are presented in Appendix A. For the eight general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:00 and 8:00 a.m. and 4:45 and 5:45 p.m., respectively.

For the four dense multi-use urban sites with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:15 and 8:15 a.m. and 4:15 and 5:15 p.m., respectively. For the three center city core sites with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 6:45 and 7:45 a.m. and 5:00 and 6:00 p.m., respectively.

For the six sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.46 residents per occupied dwelling unit.

For the five sites for which data were provided for both occupied dwelling units and total dwelling units, an average of 95.7 percent of the units were occupied.

The average numbers of person trips per vehicle trip at the five center city core sites at which both person trip and vehicle trip data were collected were as follows:

- 1.84 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.94 during Weekday, AM Peak Hour of Generator
- 2.07 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.59 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 32 dense multi-use urban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.90 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.90 during Weekday, AM Peak Hour of Generator
- 2.00 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.08 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 13 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.56 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.88 during Weekday, AM Peak Hour of Generator
- 1.70 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.07 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Delaware, District of Columbia, Florida, Georgia, Illinois, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, Ontario, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Virginia, and Wisconsin.

Source Numbers

168, 188, 204, 305, 306, 321, 357, 390, 436, 525, 530, 579, 638, 818, 857, 866, 901, 904, 910, 912, 918, 934, 936, 939, 944, 947, 948, 949, 959, 963, 964, 966, 967, 969, 970

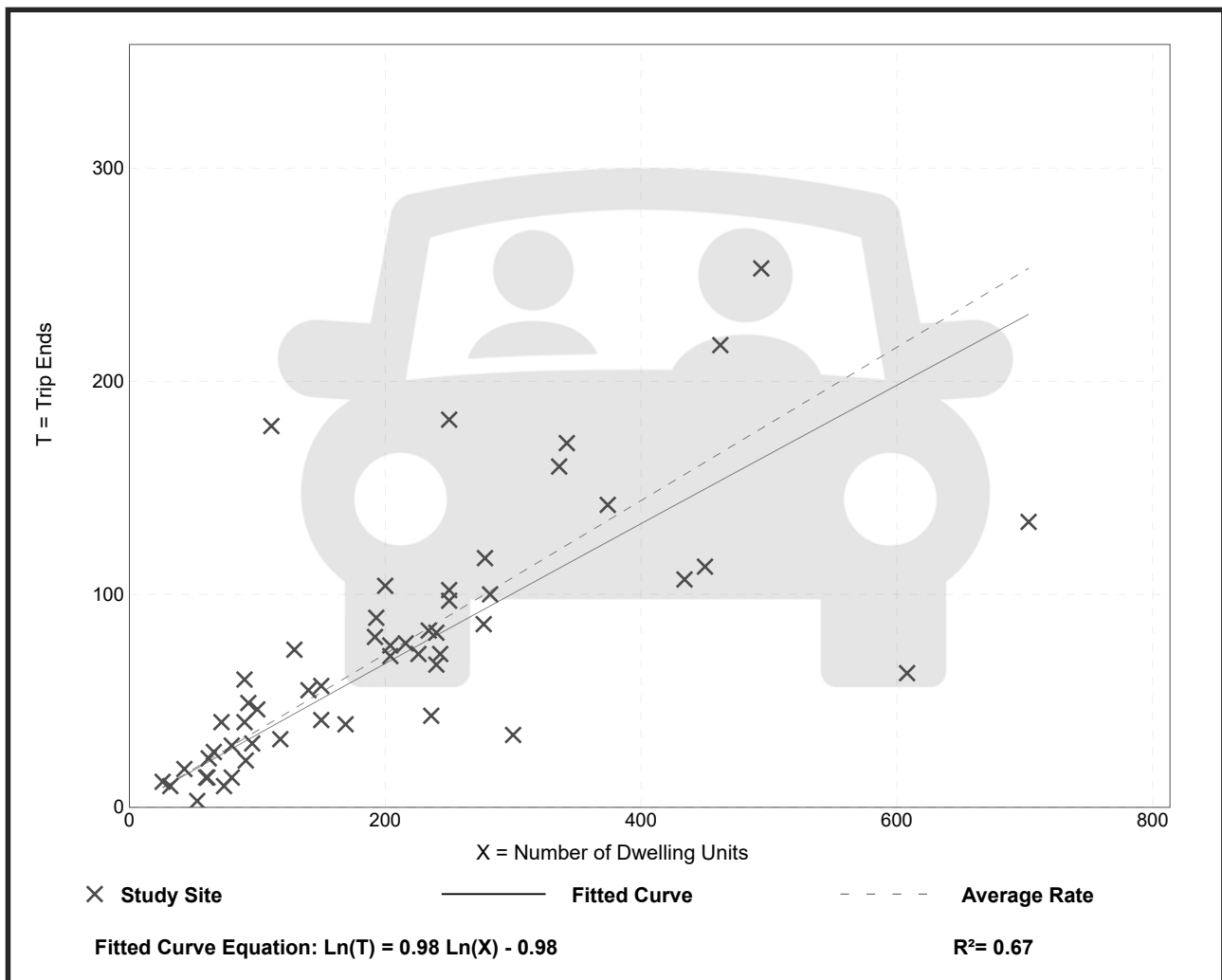
Multifamily Housing (Mid-Rise) (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 53
 Avg. Num. of Dwelling Units: 207
 Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 1.61	0.19

Data Plot and Equation



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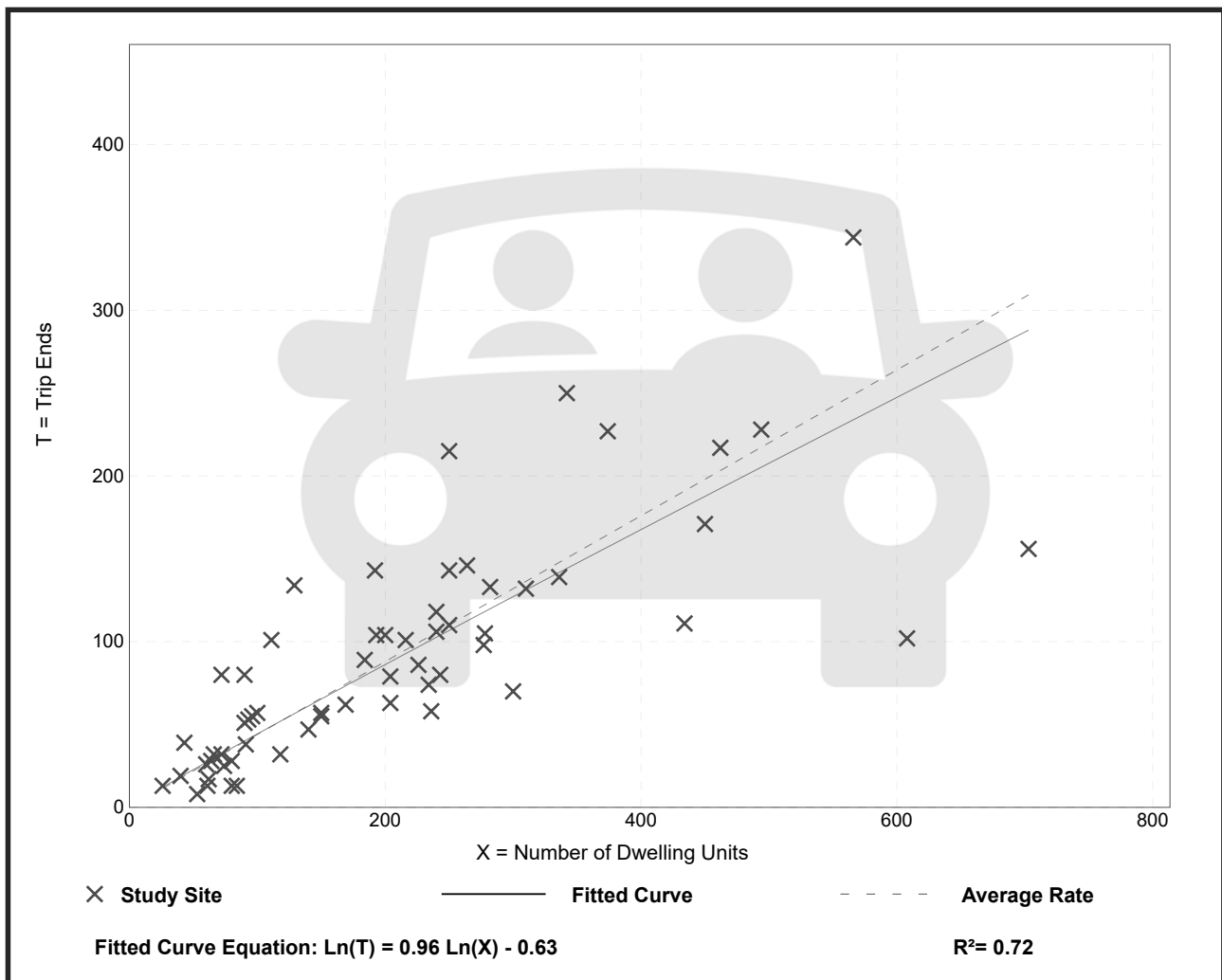
Multifamily Housing (Mid-Rise) (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 60
 Avg. Num. of Dwelling Units: 208
 Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.11	0.19

Data Plot and Equation



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Multifamily Housing (Mid-Rise) (221)

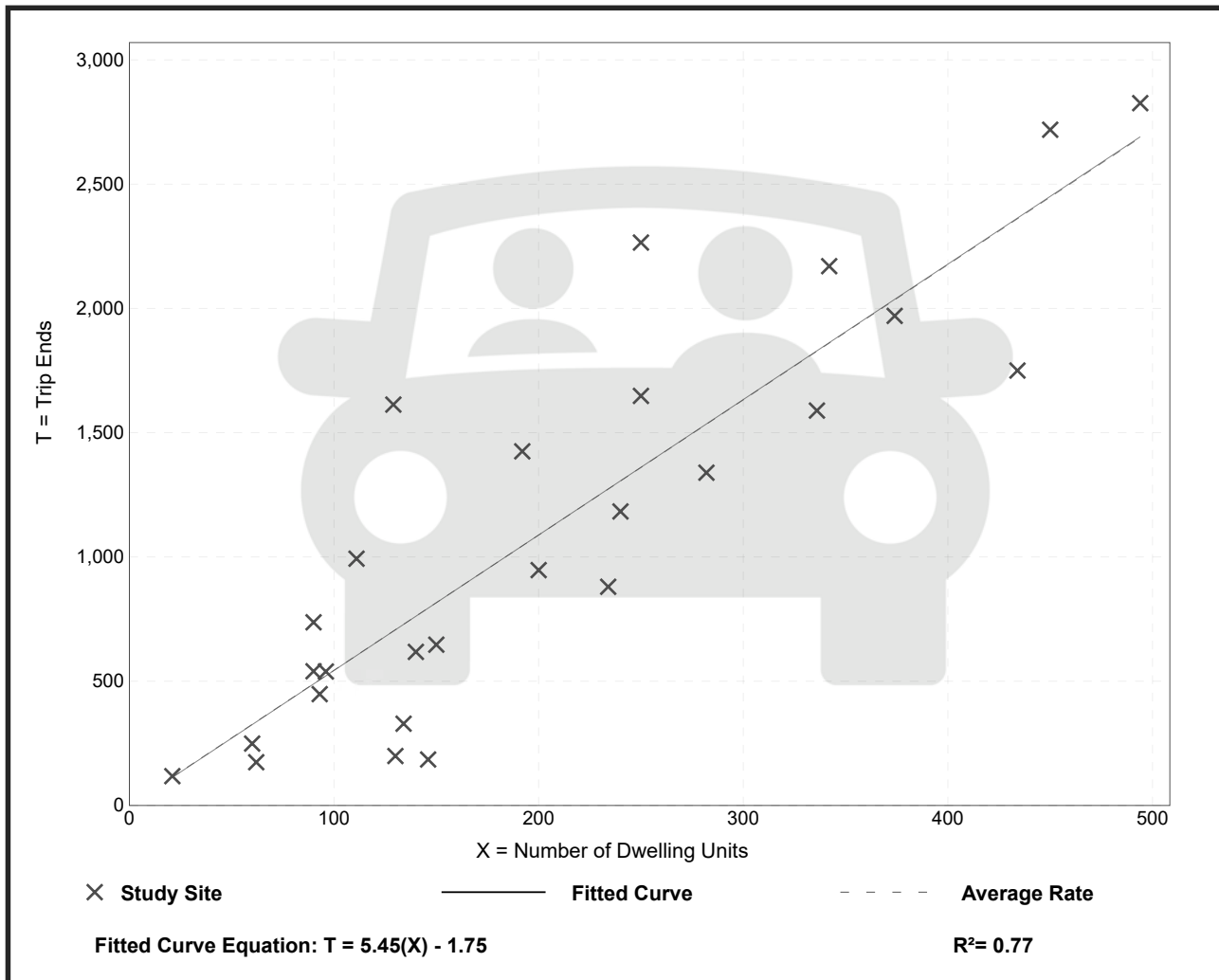
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 27
Avg. Num. of Dwelling Units: 205
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
5.44	1.27 - 12.50	2.03

Data Plot and Equation



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Land Use: 252

Senior Adult Housing—Attached

Description

Senior adult housing consists of attached independent living developments, including retirement communities, age-restricted housing, and active adult communities. These developments may include limited social or recreational services. However, they generally lack centralized dining and onsite medical facilities. Residents in these communities live independently, are typically active (requiring little to no medical supervision) and may or may not be retired. Senior adult housing—detached (Land Use 251), congregate care facility (Land Use 253), assisted living (Land Use 254), and continuing care retirement community (Land Use 255) are related uses.

Additional Data

Time-of-day distribution data for this land use are presented in Appendix A. For the one general urban/suburban site with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:00 and 1:00 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, and the 2000s in Alberta (CAN), California, Illinois, New Hampshire, New Jersey, New York, and Pennsylvania.

Source Numbers

272, 501, 576, 602, 703, 734, 741, 902, 970

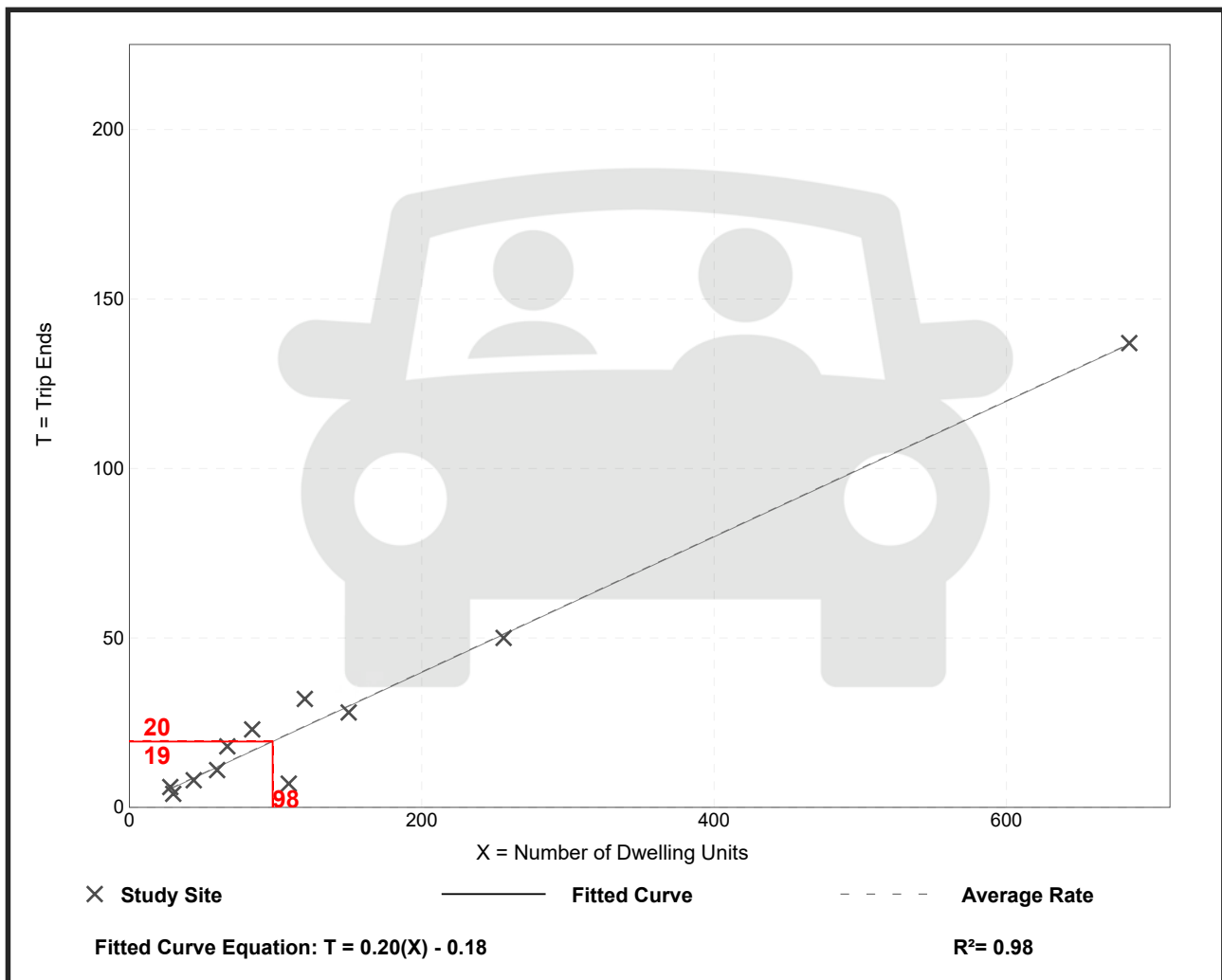
Senior Adult Housing - Attached (252)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 11
Avg. Num. of Dwelling Units: 148
Directional Distribution: 35% entering, 65% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.20	0.06 - 0.27	0.05

Data Plot and Equation



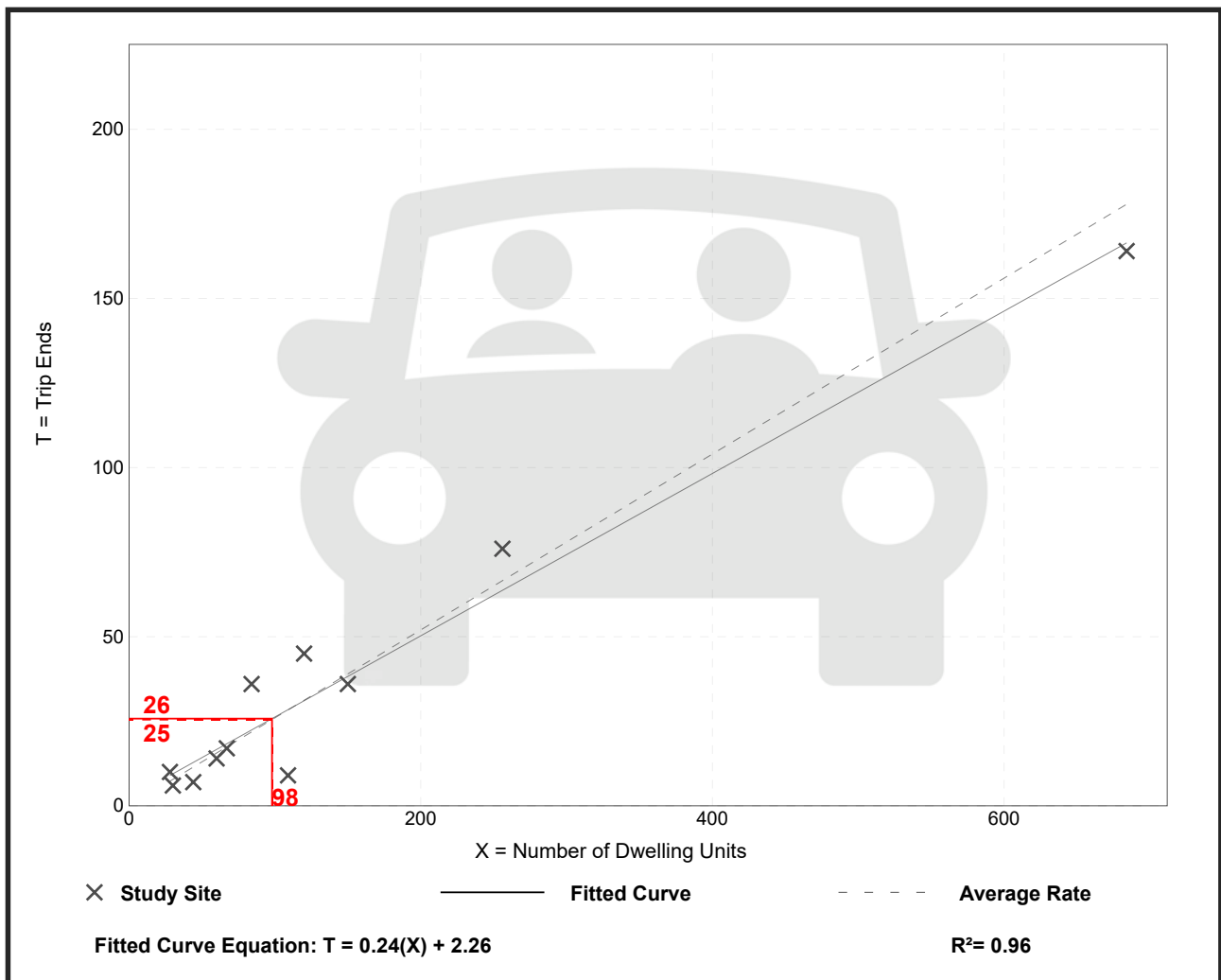
Senior Adult Housing - Attached (252)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 11
Avg. Num. of Dwelling Units: 148
Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.26	0.08 - 0.43	0.08

Data Plot and Equation



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Senior Adult Housing - Attached (252)

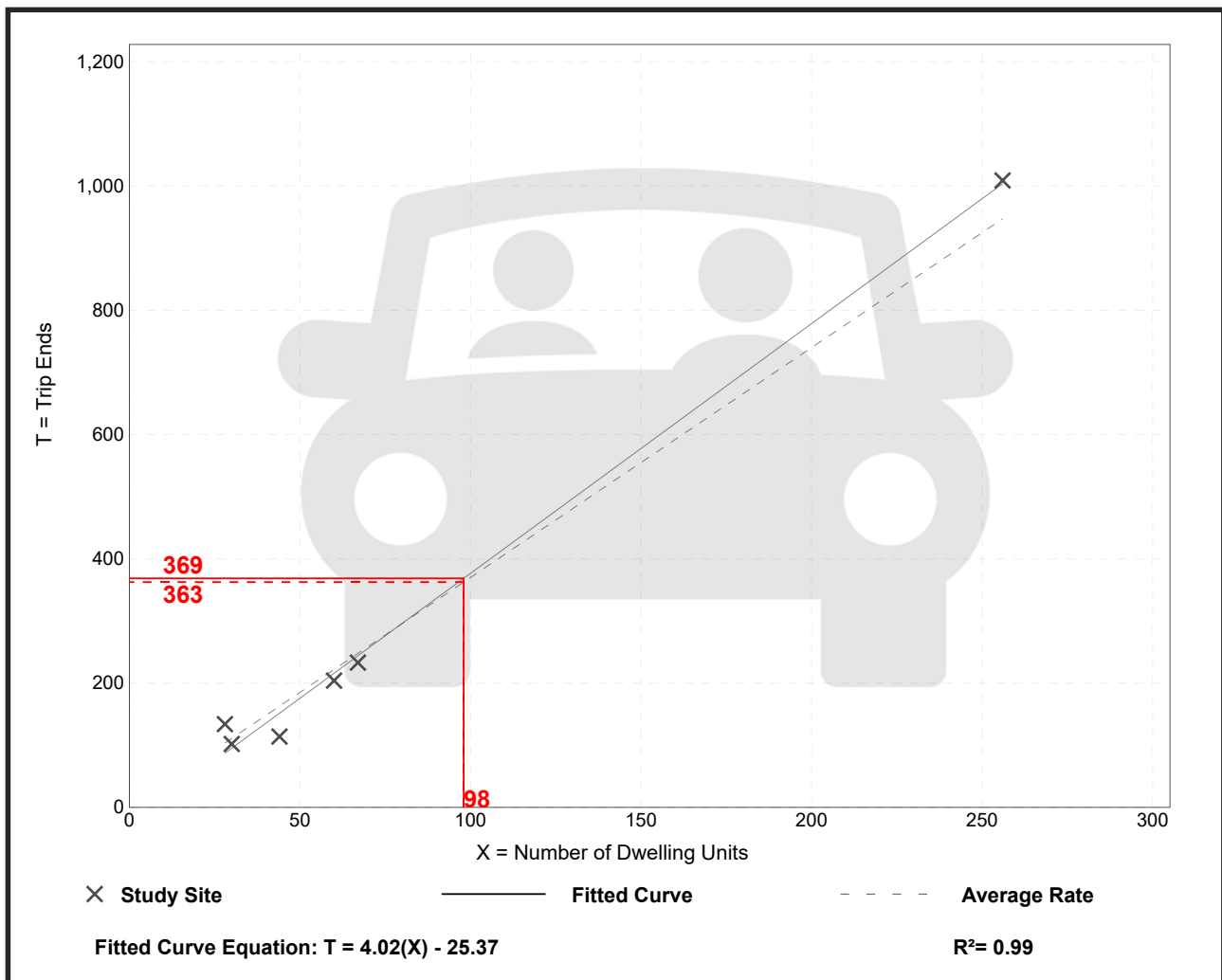
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Dwelling Units: 81
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
3.70	2.59 - 4.79	0.53

Data Plot and Equation



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Appendix B- AM Base Traffic Capacity Analysis Report

HCM 2010 TWSC

1: Glacier Highway/Vintage Boulevard & Egan Drive

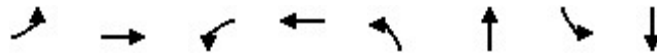
03/02/2022

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑	↑			↑			↑
Traffic Vol, veh/h	0	773	202	27	634	63	0	0	46	0	0	79
Future Vol, veh/h	0	773	202	27	634	63	0	0	46	0	0	79
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	Stop	-	-	Stop
Storage Length	-	-	375	300	-	475	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	5	2	0	5	2	0	0	2	0	0	7
Mvmt Flow	0	966	253	34	793	79	0	0	58	0	0	99
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	-	0	-	971	0	0	-	-	493	-	-	402
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.1	-	-	-	-	6.94	-	-	7.04
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.2	-	-	-	-	3.32	-	-	3.37
Pot Cap-1 Maneuver	0	-	0	718	-	0	0	0	522	0	0	584
Stage 1	0	-	0	-	-	0	0	0	-	0	0	-
Stage 2	0	-	0	-	-	0	0	0	-	0	0	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	715	-	-	-	-	518	-	-	582
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0		0.4			12.8			12.4			
HCM LOS						B			B			
Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT	SBLn1							
Capacity (veh/h)	518	-	715	-	582							
HCM Lane V/C Ratio	0.111	-	0.047	-	0.17							
HCM Control Delay (s)	12.8	-	10.3	-	12.4							
HCM Lane LOS	B	-	B	-	B							
HCM 95th %tile Q(veh)	0.4	-	0.1	-	0.6							

Queues

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	21	32	109	134	82	210	104	817
v/c Ratio	0.11	0.22	0.42	0.51	0.25	0.20	0.13	0.81
Control Delay	28.0	42.9	33.4	41.5	7.6	11.9	6.2	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	42.9	33.4	41.5	7.6	11.9	6.2	27.3
Queue Length 50th (ft)	9	17	49	61	14	58	17	382
Queue Length 95th (ft)	24	41	81	113	30	99	36	#573
Internal Link Dist (ft)		693		1080		707		271
Turn Bay Length (ft)	200		75		150		100	
Base Capacity (vph)	374	421	357	442	449	1030	890	1005
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.08	0.31	0.30	0.18	0.20	0.12	0.81

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	25	0	84	103	0	63	162	0	80	629	0
Future Volume (vph)	16	25	0	84	103	0	63	162	0	80	629	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width	12	12	16	12	12	16	12	12	16	12	12	16
Total Lost time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1705	1729		1710	1814		1723	1762		1706	1762	
Flt Permitted	0.67	1.00		0.44	1.00		0.14	1.00		0.63	1.00	
Satd. Flow (perm)	1204	1729		798	1814		260	1762		1125	1762	
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	21	32	0	109	134	0	82	210	0	104	817	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	21	32	0	109	134	0	82	210	0	104	817	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	7%	2%	2%	2%	2%	2%	5%	2%	2%	5%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	8.7	6.5		18.7	12.2		56.0	48.8		53.6	47.6	
Effective Green, g (s)	8.7	6.5		18.7	12.2		56.0	48.8		53.6	47.6	
Actuated g/C Ratio	0.10	0.07		0.21	0.14		0.64	0.56		0.62	0.55	
Clearance Time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		3.0	2.0		3.0	2.0	
Lane Grp Cap (vph)	133	129		254	254		288	988		733	964	
v/s Ratio Prot	0.00	0.02		c0.04	c0.07		c0.02	0.12		0.01	c0.46	
v/s Ratio Perm	0.01			0.05			0.16			0.08		
v/c Ratio	0.16	0.25		0.43	0.53		0.28	0.21		0.14	0.85	
Uniform Delay, d1	35.7	37.9		28.8	34.7		11.4	9.5		6.8	16.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4		0.4	0.9		0.5	0.0		0.1	6.7	
Delay (s)	35.9	38.3		29.2	35.6		12.0	9.6		6.9	23.4	
Level of Service	D	D		C	D		B	A		A	C	
Approach Delay (s)		37.3			32.7			10.2			21.5	
Approach LOS		D			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			21.7			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			87.0			Sum of lost time (s)				17.8		
Intersection Capacity Utilization			61.7%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	62	127	31	6	69	485	6	1748	210
v/c Ratio	0.51	0.52	0.26	0.03	0.57	0.18	0.07	0.70	0.19
Control Delay	64.1	18.1	53.1	0.2	68.8	6.5	56.2	13.2	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Total Delay	64.1	18.2	53.1	0.2	68.8	6.5	56.2	13.4	4.8
Queue Length 50th (ft)	47	9	23	0	44	18	5	371	27
Queue Length 95th (ft)	78	52	46	0	#107	152	18	530	64
Internal Link Dist (ft)	362		281			230		391	
Turn Bay Length (ft)		75		50	150		75		90
Base Capacity (vph)	245	379	236	338	125	2750	100	2494	1079
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	6	0	0	0	0	0	203	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.34	0.13	0.02	0.55	0.18	0.06	0.76	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	4	107	24	2	5	58	403	4	5	1468	176
Future Volume (vph)	48	4	107	24	2	5	58	403	4	5	1468	176
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97		1.00	0.98	1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes		0.99	1.00		0.99	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1722	1499		1721	1511	1723	3439		1723	3446	1460
Flt Permitted		0.72	1.00		0.69	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1298	1499		1251	1511	1723	3439		1723	3446	1460
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	57	5	127	29	2	6	69	480	5	6	1748	210
RTOR Reduction (vph)	0	0	104	0	0	5	0	0	0	0	0	24
Lane Group Flow (vph)	0	62	23	0	31	1	69	485	0	6	1748	186
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4		4						6
Actuated Green, G (s)		11.3	11.3		11.3	11.3	7.3	92.0		1.2	85.9	85.9
Effective Green, g (s)		11.3	11.3		11.3	11.3	7.3	92.0		1.2	85.9	85.9
Actuated g/C Ratio		0.09	0.09		0.09	0.09	0.06	0.77		0.01	0.72	0.72
Clearance Time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Vehicle Extension (s)		1.5	1.5		1.5	1.5	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		122	141		117	142	104	2636		17	2466	1045
v/s Ratio Prot							c0.04	0.14		0.00	c0.51	
v/s Ratio Perm		c0.05	0.02		0.02	0.00						0.13
v/c Ratio		0.51	0.16		0.26	0.00	0.66	0.18		0.35	0.71	0.18
Uniform Delay, d1		51.7	50.0		50.5	49.3	55.1	3.8		59.0	9.8	5.6
Progression Factor		1.00	1.00		1.00	1.00	0.94	1.64		1.00	1.00	1.00
Incremental Delay, d2		1.2	0.2		0.4	0.0	11.6	0.2		4.5	1.8	0.4
Delay (s)		52.9	50.2		50.9	49.3	63.5	6.4		63.6	11.6	5.9
Level of Service		D	D		D	D	E	A		E	B	A
Approach Delay (s)		51.1			50.7			13.5			11.1	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			14.9				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			69.2%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

4: Mendenhall Loop Road & Egan Drive

03/02/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	62	1116	134	8	436	129	119	41	807	828	123
v/c Ratio	0.55	1.06	0.25	0.11	0.55	0.73	0.64	0.15	1.08	1.09	0.17
Control Delay	72.1	84.3	9.3	58.9	46.4	74.6	66.3	1.2	81.6	84.6	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Total Delay	72.1	84.3	9.3	58.9	46.4	74.6	66.3	1.2	81.6	85.2	4.7
Queue Length 50th (ft)	47	428	5	6	154	99	90	0	~699	~724	15
Queue Length 95th (ft)	#100	#778	61	23	#238	156	144	0	#932	#954	m27
Internal Link Dist (ft)		1356			1654		696			316	
Turn Bay Length (ft)	540		120	550		290		390	280		
Base Capacity (vph)	123	1057	532	72	792	277	291	348	749	762	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	1	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	1.06	0.25	0.11	0.55	0.47	0.41	0.12	1.08	1.09	0.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

4: Mendenhall Loop Road & Egan Drive

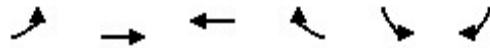
03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1016	122	7	397	0	117	108	37	1267	221	112
Future Volume (vph)	56	1016	122	7	397	0	117	108	37	1267	221	112
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Lane Util. Factor	1.00	*1.00	1.00	1.00	*1.00		1.00	1.00	1.00	*1.00	*1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (prot)	1723	3524	1481	1723	3524		1723	1814	1509	1723	1752	1511
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (perm)	1723	3524	1481	1723	3524		1723	1814	1509	1723	1752	1511
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	62	1116	134	8	436	0	129	119	41	1392	243	123
RTOR Reduction (vph)	0	0	92	0	0	0	0	0	37	0	0	69
Lane Group Flow (vph)	62	1116	42	8	436	0	129	119	4	807	828	54
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2			3			4
Actuated Green, G (s)	6.9	31.9	31.9	1.0	26.0		12.3	12.3	12.3	52.2	52.2	52.2
Effective Green, g (s)	6.9	31.9	31.9	1.0	26.0		12.3	12.3	12.3	52.2	52.2	52.2
Actuated g/C Ratio	0.06	0.27	0.27	0.01	0.22		0.10	0.10	0.10	0.44	0.44	0.44
Clearance Time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Vehicle Extension (s)	2.0	0.5	0.5	2.0	0.5		0.5	0.5	0.5	2.0	2.0	2.0
Lane Grp Cap (vph)	99	936	393	14	763		176	185	154	749	762	657
v/s Ratio Prot	c0.04	c0.32		0.00	0.12		c0.07	0.07		0.47	c0.47	
v/s Ratio Perm			0.03						0.00			0.04
v/c Ratio	0.63	1.19	0.11	0.57	0.57		0.73	0.64	0.03	1.08	1.09	0.08
Uniform Delay, d1	55.3	44.0	33.3	59.3	42.0		52.3	51.7	48.5	33.9	33.9	19.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.88	0.88	1.26
Incremental Delay, d2	8.6	97.2	0.6	30.5	3.1		12.7	5.6	0.0	51.5	54.6	0.0
Delay (s)	63.9	141.2	33.8	89.8	45.1		65.0	57.4	48.5	81.2	84.3	24.9
Level of Service	E	F	C	F	D		E	E	D	F	F	C
Approach Delay (s)		126.6			45.9			59.5			78.7	
Approach LOS		F			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			89.9			HCM 2000 Level of Service				F		
HCM 2000 Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.6			
Intersection Capacity Utilization			101.1%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

5: Egan Drive & Riverside Drive

03/02/2022

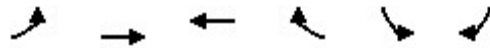


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	201	786	617	137	654	257
v/c Ratio	0.62	0.44	0.71	0.29	0.68	0.45
Control Delay	36.1	10.5	28.9	6.6	26.4	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	10.5	28.9	6.6	26.4	10.9
Queue Length 50th (ft)	73	90	115	0	116	24
Queue Length 95th (ft)	159	150	204	33	206	83
Internal Link Dist (ft)		694	1356		707	
Turn Bay Length (ft)	350			900	225	145
Base Capacity (vph)	793	3218	2115	960	2111	626
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.24	0.29	0.14	0.31	0.41
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

5: Egan Drive & Riverside Drive

03/02/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	167	652	512	114	543	213
Future Volume (vph)	167	652	512	114	543	213
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1674	3348	3348	1453	3343	1542
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1674	3348	3348	1453	3343	1542
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	201	786	617	137	654	257
RTOR Reduction (vph)	0	0	0	100	0	123
Lane Group Flow (vph)	201	786	617	37	654	134
Confl. Peds. (#/hr)	5			5	5	5
Heavy Vehicles (%)	5%	5%	5%	5%	2%	2%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	1	6	2		4	8
Permitted Phases				2		
Actuated Green, G (s)	13.0	36.0	17.7	17.7	19.3	19.3
Effective Green, g (s)	13.0	36.0	17.7	17.7	19.3	19.3
Actuated g/C Ratio	0.20	0.54	0.27	0.27	0.29	0.29
Clearance Time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Vehicle Extension (s)	1.0	0.5	0.5	0.5	2.0	2.0
Lane Grp Cap (vph)	327	1815	892	387	971	448
v/s Ratio Prot	c0.12	0.23	c0.18		c0.20	0.09
v/s Ratio Perm				0.03		
v/c Ratio	0.61	0.43	0.69	0.09	0.67	0.30
Uniform Delay, d1	24.4	9.1	21.9	18.3	20.8	18.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1	1.9	0.0	1.5	0.1
Delay (s)	26.8	9.2	23.8	18.4	22.2	18.4
Level of Service	C	A	C	B	C	B
Approach Delay (s)		12.8	22.8		21.2	
Approach LOS		B	C		C	
Intersection Summary						
HCM 2000 Control Delay			18.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.69			
Actuated Cycle Length (s)			66.4		Sum of lost time (s)	18.4
Intersection Capacity Utilization			53.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 TWSC

6: Riverside & EBR Vintage

03/02/2022

Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations

Traffic Vol, veh/h 0 43 0 0 713 0

Future Vol, veh/h 0 43 0 0 713 0

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Stop Stop Free Free

RT Channelized - Yield - None - None

Storage Length - 0 - - - -

Veh in Median Storage, # 0 - - - 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 77 77 77 77 77 77

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 0 56 0 0 926 0

Major/Minor	Minor2	Major2
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Conflicting Flow All - 926 - 0

Stage 1 - - - -

Stage 2 - - - -

Critical Hdwy - 6.22 - -

Critical Hdwy Stg 1 - - - -

Critical Hdwy Stg 2 - - - -

Follow-up Hdwy - 3.318 - -

Pot Cap-1 Maneuver 0 326 - 0

Stage 1 0 - - 0

Stage 2 0 - - 0

Platoon blocked, % - -

Mov Cap-1 Maneuver - 326 - -

Mov Cap-2 Maneuver - - - -

Stage 1 - - - -

Stage 2 - - - -

Approach	EB	SB
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HCM Control Delay, s 18.3 0

HCM LOS C

Minor Lane/Major Mvmt	EBLn1	SBT
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Capacity (veh/h) 326 -

HCM Lane V/C Ratio 0.171 -

HCM Control Delay (s) 18.3 -

HCM Lane LOS C -

HCM 95th %tile Q(veh) 0.6 -

HCM 2010 TWSC

7: Riverside & WBR Mendenhall Mall

03/02/2022

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	49	178	0	0	0
Future Vol, veh/h	0	49	178	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	-
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	64	231	0	0	0

Major/Minor	Minor1	Major1
Conflicting Flow All	- 231	0 -
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.22	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.318	- -
Pot Cap-1 Maneuver	0 808	- 0
Stage 1	0 -	- 0
Stage 2	0 -	- 0
Platoon blocked, %		-
Mov Cap-1 Maneuver	- 808	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	WB	NB
HCM Control Delay, s	9.8	0
HCM LOS	A	

Minor Lane/Major Mvmt	NBTWBLn1
Capacity (veh/h)	- 808
HCM Lane V/C Ratio	- 0.079
HCM Control Delay (s)	- 9.8
HCM Lane LOS	- A
HCM 95th %tile Q(veh)	- 0.3

HCM 2010 TWSC

8: NBR Riverside & Vintage/Mendenhall Mall

03/02/2022

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↑
Traffic Vol, veh/h	105	0	0	0	0	55
Future Vol, veh/h	105	0	0	0	0	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	136	0	0	0	0	71
Major/Minor	Major1		Minor1			
Conflicting Flow All	0	-	-	-	136	
Stage 1	-	-	-	-	-	
Stage 2	-	-	-	-	-	
Critical Hdwy	-	-	-	-	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	-	
Follow-up Hdwy	-	-	-	-	3.318	
Pot Cap-1 Maneuver	-	0	-	-	0	913
Stage 1	-	0	-	-	0	-
Stage 2	-	0	-	-	0	-
Platoon blocked, %	-	-	-	-	-	
Mov Cap-1 Maneuver	-	-	-	-	913	
Mov Cap-2 Maneuver	-	-	-	-	-	
Stage 1	-	-	-	-	-	
Stage 2	-	-	-	-	-	
Approach	EB		NB			
HCM Control Delay, s	0	-	-	-	9.3	
HCM LOS	-	-	-	-	A	
Minor Lane/Major Mvmt	NBLn1	EBT				
Capacity (veh/h)	913	-				
HCM Lane V/C Ratio	0.078	-				
HCM Control Delay (s)	9.3	-				
HCM Lane LOS	A	-				
HCM 95th %tile Q(veh)	0.3	-				

HCM 2010 TWSC

9: Vintage/Mendenhall Mall & SBR Riverside

03/02/2022

Intersection						
Int Delay, s/veh	4.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑			↗
Traffic Vol, veh/h	0	0	167	0	0	113
Future Vol, veh/h	0	0	167	0	0	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	7405568		0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	217	0	0	147
Major/Minor			Major2		Minor2	
Conflicting Flow All			-	0	-	217
Stage 1			-	-	-	-
Stage 2			-	-	-	-
Critical Hdwy			-	-	-	6.22
Critical Hdwy Stg 1			-	-	-	-
Critical Hdwy Stg 2			-	-	-	-
Follow-up Hdwy			-	-	-	3.318
Pot Cap-1 Maneuver			-	0	0	823
Stage 1			-	0	0	-
Stage 2			-	0	0	-
Platoon blocked, %			-			
Mov Cap-1 Maneuver			-	-	-	823
Mov Cap-2 Maneuver			-	-	-	-
Stage 1			-	-	-	-
Stage 2			-	-	-	-
Approach			WB		SB	
HCM Control Delay, s			0		10.3	
HCM LOS					B	
Minor Lane/Major Mvmt		WBT SBLn1				
Capacity (veh/h)		- 823				
HCM Lane V/C Ratio		- 0.178				
HCM Control Delay (s)		- 10.3				
HCM Lane LOS		- B				
HCM 95th %tile Q(veh)		- 0.6				

Appendix C- PM Base Traffic Capacity Analysis Reports

HCM 2010 TWSC

1: Glacier Highway/Vintage Boulevard & Egan Drive

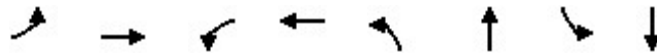
03/02/2022

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑	↑			↑			↑
Traffic Vol, veh/h	0	736	166	54	900	152	0	0	70	0	0	176
Future Vol, veh/h	0	736	166	54	900	152	0	0	70	0	0	176
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	Stop	-	-	Stop
Storage Length	-	-	375	300	-	475	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	5	2	2	5	2	2	2	2	0	0	7
Mvmt Flow	0	783	177	57	957	162	0	0	74	0	0	187
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	-	788	0	0	-	-	402	-	-	484
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	7.04
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.37
Pot Cap-1 Maneuver	0	-	0	827	-	0	0	0	598	0	0	516
Stage 1	0	-	0	-	-	0	0	0	-	0	0	-
Stage 2	0	-	0	-	-	0	0	0	-	0	0	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	824	-	-	-	-	593	-	-	514
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.5			11.9			16		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT	SBLn1							
Capacity (veh/h)	593	-	824	-	514							
HCM Lane V/C Ratio	0.126	-	0.07	-	0.364							
HCM Control Delay (s)	11.9	-	9.7	-	16							
HCM Lane LOS	B	-	A	-	C							
HCM 95th %tile Q(veh)	0.4	-	0.2	-	1.7							

Queues

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	297	181	161	143	317	475	80	291
v/c Ratio	0.64	0.59	0.38	0.52	0.64	0.71	0.24	0.67
Control Delay	25.9	39.4	20.2	38.9	19.2	29.2	13.8	34.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	39.4	20.2	38.9	19.2	29.2	13.8	34.6
Queue Length 50th (ft)	97	76	48	62	86	192	19	124
Queue Length 95th (ft)	213	175	116	140	175	364	48	229
Internal Link Dist (ft)		693		1080		707		271
Turn Bay Length (ft)	200		75		150		100	
Base Capacity (vph)	515	490	526	514	528	1158	536	1158
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.37	0.31	0.28	0.60	0.41	0.15	0.25

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	276	168	0	150	133	0	295	442	0	74	271	0
Future Volume (vph)	276	168	0	150	133	0	295	442	0	74	271	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width	12	12	16	12	12	16	12	12	16	12	12	16
Total Lost time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1713	1729		1707	1814		1723	1814		1718	1814	
Flt Permitted	0.52	1.00		0.62	1.00		0.33	1.00		0.39	1.00	
Satd. Flow (perm)	940	1729		1108	1814		591	1814		700	1814	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	297	181	0	161	143	0	317	475	0	80	291	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	297	181	0	161	143	0	317	475	0	80	291	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	26.0	13.2		22.2	11.3		37.0	27.3		24.5	19.1	
Effective Green, g (s)	26.0	13.2		22.2	11.3		37.0	27.3		24.5	19.1	
Actuated g/C Ratio	0.35	0.18		0.30	0.15		0.50	0.37		0.33	0.26	
Clearance Time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	460	305		417	274		499	663		303	464	
v/s Ratio Prot	c0.11	0.10		0.06	0.08		c0.12	c0.26		0.02	0.16	
v/s Ratio Perm	c0.11			0.06			0.20			0.07		
v/c Ratio	0.65	0.59		0.39	0.52		0.64	0.72		0.26	0.63	
Uniform Delay, d1	19.2	28.2		20.3	29.2		12.6	20.3		17.8	24.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	2.1		0.6	0.8		1.9	3.1		0.2	1.9	
Delay (s)	21.6	30.3		20.9	30.0		14.6	23.4		17.9	26.5	
Level of Service	C	C		C	C		B	C		B	C	
Approach Delay (s)		24.9			25.2			19.9			24.7	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			22.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			74.6			Sum of lost time (s)				17.8		
Intersection Capacity Utilization			69.5%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	245	155	16	8	327	1673	10	726	215
v/c Ratio	0.88	0.37	0.06	0.02	1.16	0.74	0.10	0.45	0.27
Control Delay	68.1	11.9	29.8	0.1	145.1	13.9	46.4	18.3	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Total Delay	68.1	11.9	29.8	0.1	145.1	14.4	46.4	18.3	3.2
Queue Length 50th (ft)	148	17	8	0	~347	262	6	138	5
Queue Length 95th (ft)	#263	68	25	0	m#508	m#623	23	181	40
Internal Link Dist (ft)	362		281			230		391	
Turn Bay Length (ft)		75		50	150		75		90
Base Capacity (vph)	323	465	325	433	283	2262	120	1819	868
Starvation Cap Reductn	0	0	0	0	0	203	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.33	0.05	0.02	1.16	0.81	0.08	0.40	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	13	141	14	1	7	298	1494	28	9	661	196
Future Volume (vph)	210	13	141	14	1	7	298	1494	28	9	661	196
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1721	1513		1726	1513	1723	3434		1723	3446	1469
Flt Permitted		0.73	1.00		0.73	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1310	1513		1319	1513	1723	3434		1723	3446	1469
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	231	14	155	15	1	8	327	1642	31	10	726	215
RTOR Reduction (vph)	0	0	95	0	0	6	0	1	0	0	0	105
Lane Group Flow (vph)	0	245	60	0	16	2	327	1672	0	10	726	110
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4		4						6
Actuated Green, G (s)		21.3	21.3		21.3	21.3	16.5	61.9		1.3	46.7	46.7
Effective Green, g (s)		21.3	21.3		21.3	21.3	16.5	61.9		1.3	46.7	46.7
Actuated g/C Ratio		0.21	0.21		0.21	0.21	0.16	0.62		0.01	0.47	0.47
Clearance Time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Vehicle Extension (s)		1.5	1.5		1.5	1.5	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		279	322		280	322	284	2125		22	1609	686
v/s Ratio Prot							c0.19	c0.49		0.01	0.21	
v/s Ratio Perm		c0.19	0.04		0.01	0.00						0.07
v/c Ratio		0.88	0.19		0.06	0.01	1.15	0.79		0.45	0.45	0.16
Uniform Delay, d1		38.1	32.2		31.4	31.0	41.8	14.1		49.0	18.0	15.4
Progression Factor		1.00	1.00		1.00	1.00	1.07	0.85		1.00	1.00	1.00
Incremental Delay, d2		24.6	0.1		0.0	0.0	100.5	3.0		5.3	0.9	0.5
Delay (s)		62.7	32.3		31.4	31.0	145.2	15.1		54.3	18.9	15.9
Level of Service		E	C		C	C	F	B		D	B	B
Approach Delay (s)		50.9			31.3			36.3			18.6	
Approach LOS		D			C			D			B	
Intersection Summary												
HCM 2000 Control Delay			33.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			80.6%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

4: Mendenhall Loop Road & Egan Drive

03/02/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	106	618	140	33	1084	315	346	20	385	391	65
v/c Ratio	0.66	0.56	0.24	0.32	1.27	0.95	0.99	0.05	1.02	1.00	0.14
Control Delay	53.5	23.3	4.2	53.3	163.5	79.4	87.1	0.2	77.8	73.8	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.5	23.3	4.2	53.3	163.5	79.4	87.1	0.2	77.8	73.8	1.8
Queue Length 50th (ft)	47	204	20	21	~474	200	222	0	~267	~267	4
Queue Length 95th (ft)	#101	227	50	51	#606	#366	#403	0	#471	#471	11
Internal Link Dist (ft)		1356			1654		696			316	
Turn Bay Length (ft)	540		120	550		290		390	280		
Base Capacity (vph)	186	1104	590	117	854	332	350	414	379	390	466
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.56	0.24	0.28	1.27	0.95	0.99	0.05	1.02	1.00	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

4: Mendenhall Loop Road & Egan Drive

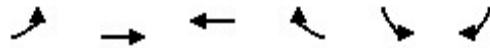
03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	103	599	136	32	1051	0	306	336	19	558	195	63
Future Volume (vph)	103	599	136	32	1051	0	306	336	19	558	195	63
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1723	3348	1486	1723	3348		1723	1814	1511	1637	1682	1513
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (perm)	1723	3348	1486	1723	3348		1723	1814	1511	1637	1682	1513
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	106	618	140	33	1084	0	315	346	20	575	201	65
RTOR Reduction (vph)	0	0	97	0	0	0	0	0	16	0	0	50
Lane Group Flow (vph)	106	618	43	33	1084	0	315	346	4	385	391	15
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2			3			4
Actuated Green, G (s)	9.4	30.9	30.9	4.0	25.5		19.3	19.3	19.3	23.2	23.2	23.2
Effective Green, g (s)	9.4	30.9	30.9	4.0	25.5		19.3	19.3	19.3	23.2	23.2	23.2
Actuated g/C Ratio	0.09	0.31	0.31	0.04	0.26		0.19	0.19	0.19	0.23	0.23	0.23
Clearance Time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Vehicle Extension (s)	2.0	0.5	0.5	2.0	0.5		0.5	0.5	0.5	2.0	2.0	2.0
Lane Grp Cap (vph)	161	1034	459	68	853		332	350	291	379	390	351
v/s Ratio Prot	c0.06	0.18		0.02	c0.32		0.18	c0.19		c0.24	0.23	
v/s Ratio Perm			0.03						0.00			0.01
v/c Ratio	0.66	0.60	0.09	0.49	1.27		0.95	0.99	0.01	1.02	1.00	0.04
Uniform Delay, d1	43.7	29.3	24.6	47.0	37.2		39.9	40.2	32.6	38.4	38.4	29.8
Progression Factor	0.79	0.73	0.77	1.00	1.00		1.00	1.00	1.00	0.67	0.67	1.00
Incremental Delay, d2	7.0	2.5	0.4	2.0	131.1		35.4	44.5	0.0	48.9	44.8	0.0
Delay (s)	41.8	23.9	19.2	49.0	168.3		75.2	84.7	32.7	74.6	70.6	29.8
Level of Service	D	C	B	D	F		E	F	C	E	E	C
Approach Delay (s)		25.4			164.8			78.8			69.3	
Approach LOS		C			F			E			E	
Intersection Summary												
HCM 2000 Control Delay			90.8			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			22.6			
Intersection Capacity Utilization			93.8%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

5: Egan Drive & Riverside Drive

03/02/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	371	469	954	525	405	197
v/c Ratio	0.76	0.19	0.75	0.60	0.73	0.47
Control Delay	43.2	5.0	16.5	4.2	47.4	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	5.0	16.5	4.2	47.4	9.0
Queue Length 50th (ft)	215	43	71	5	127	0
Queue Length 95th (ft)	316	72	m165	m0	169	57
Internal Link Dist (ft)		694	1356		707	
Turn Bay Length (ft)	350			900	225	145
Base Capacity (vph)	489	2420	1264	872	1026	420
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.19	0.75	0.60	0.39	0.47

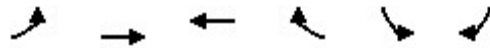
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

5: Egan Drive & Riverside Drive

03/02/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	356	450	916	504	389	189
Future Volume (vph)	356	450	916	504	389	189
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1674	3348	3348	1446	3343	1542
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1674	3348	3348	1446	3343	1542
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	371	469	954	525	405	197
RTOR Reduction (vph)	0	0	0	327	0	164
Lane Group Flow (vph)	371	469	954	198	405	33
Confl. Peds. (#/hr)	5			5	5	5
Heavy Vehicles (%)	5%	5%	5%	5%	2%	2%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	1	6	2		4	8
Permitted Phases				2		
Actuated Green, G (s)	29.2	72.3	37.8	37.8	16.6	16.6
Effective Green, g (s)	29.2	72.3	37.8	37.8	16.6	16.6
Actuated g/C Ratio	0.29	0.72	0.38	0.38	0.17	0.17
Clearance Time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Vehicle Extension (s)	1.0	0.5	0.5	0.5	2.0	2.0
Lane Grp Cap (vph)	488	2420	1265	546	554	255
v/s Ratio Prot	c0.22	0.14	c0.28		c0.12	0.02
v/s Ratio Perm				0.14		
v/c Ratio	0.76	0.19	0.75	0.36	0.73	0.13
Uniform Delay, d1	32.2	4.5	27.1	22.4	39.6	35.5
Progression Factor	1.00	1.00	0.53	1.50	1.00	1.00
Incremental Delay, d2	6.2	0.2	0.4	0.2	4.3	0.1
Delay (s)	38.4	4.6	14.7	33.9	43.8	35.6
Level of Service	D	A	B	C	D	D
Approach Delay (s)		19.6	21.5		41.2	
Approach LOS		B	C		D	
Intersection Summary						
HCM 2000 Control Delay			25.0		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.77			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	18.4
Intersection Capacity Utilization			71.3%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 TWSC

6: Riverside & EBR Vintage

03/02/2022

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	157	0	0	420	0
Future Vol, veh/h	0	157	0	0	420	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	169	0	0	452	0
Major/Minor	Minor2		Major2			
Conflicting Flow All	-	452	-	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	608	-	-	-	0
Stage 1	0	-	-	-	-	0
Stage 2	0	-	-	-	-	0
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	608	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		SB			
HCM Control Delay, s	13.2	-	-	-	0	-
HCM LOS	B	-	-	-	-	-
Minor Lane/Major Mvmt	EBLn1	SBT				
Capacity (veh/h)	608	-				
HCM Lane V/C Ratio	0.278	-				
HCM Control Delay (s)	13.2	-				
HCM Lane LOS	B	-				
HCM 95th %tile Q(veh)	1.1	-				

HCM 2010 TWSC

7: Riverside & WBR Mendenhall Mall

03/02/2022

Intersection

Int Delay, s/veh 5.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	212	718	0	0	0
Future Vol, veh/h	0	212	718	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	-
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	228	772	0	0	0

Major/Minor	Minor1	Major1		
Conflicting Flow All	-	772	0	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.22	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.318	-	-
Pot Cap-1 Maneuver	0	400	-	0
Stage 1	0	-	-	0
Stage 2	0	-	-	0
Platoon blocked, %			-	
Mov Cap-1 Maneuver	-	400	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	25.3	0
HCM LOS	D	

Minor Lane/Major Mvmt	NBTWBLn1
Capacity (veh/h)	- 400
HCM Lane V/C Ratio	- 0.57
HCM Control Delay (s)	- 25.3
HCM Lane LOS	- D
HCM 95th %tile Q(veh)	- 3.4

HCM 2010 TWSC

8: NBR Riverside & Vintage/Mendenhall Mall

03/02/2022

Intersection

Int Delay, s/veh 3.6

Movement EBT EBR WBL WBT NBL NBRLane Configurations  

Traffic Vol, veh/h 242 0 0 0 0 122

Future Vol, veh/h 242 0 0 0 0 122

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Stop Stop Stop Stop

RT Channelized - None - None - Yield

Storage Length - - - - - 0

Veh in Median Storage, # 0 - - - 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 93 93 93 93 93 93

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 260 0 0 0 0 131

Major/Minor Major1 Minor1

Conflicting Flow All 0 - - 260

Stage 1 - - - -

Stage 2 - - - -

Critical Hdwy - - - 6.22

Critical Hdwy Stg 1 - - - -

Critical Hdwy Stg 2 - - - -

Follow-up Hdwy - - - 3.318

Pot Cap-1 Maneuver - 0 0 779

Stage 1 - 0 0 -

Stage 2 - 0 0 -

Platoon blocked, % -

Mov Cap-1 Maneuver - - - 779

Mov Cap-2 Maneuver - - - -

Stage 1 - - - -

Stage 2 - - - -

Approach EB NB

HCM Control Delay, s 0 10.6

HCM LOS B

Minor Lane/Major Mvmt NBLn1 EBT

Capacity (veh/h) 779 -

HCM Lane V/C Ratio 0.168 -

HCM Control Delay (s) 10.6 -

HCM Lane LOS B -

HCM 95th %tile Q(veh) 0.6 -

HCM 2010 TWSC

9: Vintage/Mendenhall Mall & SBR Riverside

03/02/2022

Intersection

Int Delay, s/veh 2.6

Movement EBL EBT WBT WBR SBL SBRLane Configurations  

Traffic Vol, veh/h 0 0 428 0 0 112

Future Vol, veh/h 0 0 428 0 0 112

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Stop Stop

RT Channelized - None - None - Yield

Storage Length - - - - - 0

Veh in Median Storage, # - - 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 93 93 93 93 93 93

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 0 0 460 0 0 120

Major/Minor Major2 Minor2

Conflicting Flow All - 0 - 460

Stage 1 - - - -

Stage 2 - - - -

Critical Hdwy - - - 6.22

Critical Hdwy Stg 1 - - - -

Critical Hdwy Stg 2 - - - -

Follow-up Hdwy - - - 3.318

Pot Cap-1 Maneuver - 0 0 601

Stage 1 - 0 0 -

Stage 2 - 0 0 -

Platoon blocked, % -

Mov Cap-1 Maneuver - - - 601

Mov Cap-2 Maneuver - - - -

Stage 1 - - - -

Stage 2 - - - -

Approach WB SB

HCM Control Delay, s 0 12.5

HCM LOS B

Minor Lane/Major Mvmt WBT SBLn1

Capacity (veh/h) - 601

HCM Lane V/C Ratio - 0.2

HCM Control Delay (s) - 12.5

HCM Lane LOS - B

HCM 95th %tile Q(veh) - 0.7

Appendix D- AM Base + Site Traffic Capacity Analysis Report

HCM 2010 TWSC

1: Glacier Highway/Vintage Boulevard & Egan Drive

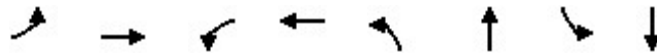
03/02/2022

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑	↑			↑			↑
Traffic Vol, veh/h	0	783	202	27	634	80	0	0	46	0	0	91
Future Vol, veh/h	0	783	202	27	634	80	0	0	46	0	0	91
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	Stop	-	-	Stop
Storage Length	-	-	375	300	-	475	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	5	2	0	5	2	0	0	2	0	0	7
Mvmt Flow	0	979	253	34	793	100	0	0	58	0	0	114
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	-	0	-	984	0	0	-	-	500	-	-	402
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.1	-	-	-	-	6.94	-	-	7.04
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.2	-	-	-	-	3.32	-	-	3.37
Pot Cap-1 Maneuver	0	-	0	710	-	0	0	0	516	0	0	584
Stage 1	0	-	0	-	-	0	0	0	-	0	0	-
Stage 2	0	-	0	-	-	0	0	0	-	0	0	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	707	-	-	-	-	512	-	-	582
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0		0.4			12.9			12.7			
HCM LOS						B			B			
Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT	SBLn1							
Capacity (veh/h)	512	-	707	-	582							
HCM Lane V/C Ratio	0.112	-	0.048	-	0.195							
HCM Control Delay (s)	12.9	-	10.3	-	12.7							
HCM Lane LOS	B	-	B	-	B							
HCM 95th %tile Q(veh)	0.4	-	0.1	-	0.7							

Queues

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	25	38	109	168	104	210	104	825
v/c Ratio	0.12	0.22	0.40	0.58	0.33	0.20	0.14	0.83
Control Delay	28.4	42.6	32.7	43.4	9.0	12.6	6.9	29.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	42.6	32.7	43.4	9.0	12.6	6.9	29.6
Queue Length 50th (ft)	11	21	50	80	18	58	18	391
Queue Length 95th (ft)	27	46	83	140	39	105	39	#623
Internal Link Dist (ft)		693		1080		707		271
Turn Bay Length (ft)	200		75		150		100	
Base Capacity (vph)	379	416	364	436	419	1043	869	999
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.09	0.30	0.39	0.25	0.20	0.12	0.83

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	29	0	84	129	0	80	162	0	80	635	0
Future Volume (vph)	19	29	0	84	129	0	80	162	0	80	635	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width	12	12	16	12	12	16	12	12	16	12	12	16
Total Lost time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1706	1729		1709	1814		1723	1814		1706	1814	
Flt Permitted	0.65	1.00		0.48	1.00		0.12	1.00		0.63	1.00	
Satd. Flow (perm)	1169	1729		857	1814		213	1814		1125	1814	
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	25	38	0	109	168	0	104	210	0	104	825	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	25	38	0	109	168	0	104	210	0	104	825	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	10.3	8.0		20.4	13.8		57.2	49.1		53.2	47.1	
Effective Green, g (s)	10.3	8.0		20.4	13.8		57.2	49.1		53.2	47.1	
Actuated g/C Ratio	0.12	0.09		0.23	0.15		0.64	0.55		0.60	0.53	
Clearance Time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		3.0	2.0		3.0	2.0	
Lane Grp Cap (vph)	148	155		273	280		274	999		711	958	
v/s Ratio Prot	0.00	0.02		c0.04	c0.09		c0.03	0.12		0.01	c0.45	
v/s Ratio Perm	0.02			0.05			0.21			0.08		
v/c Ratio	0.17	0.25		0.40	0.60		0.38	0.21		0.15	0.86	
Uniform Delay, d1	35.4	37.7		28.4	35.1		13.3	10.2		7.7	18.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3		0.4	2.3		0.9	0.0		0.1	7.8	
Delay (s)	35.6	38.0		28.8	37.4		14.2	10.2		7.8	25.9	
Level of Service	D	D		C	D		B	B		A	C	
Approach Delay (s)		37.1			34.0			11.5			23.9	
Approach LOS		D			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			23.7			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			89.1			Sum of lost time (s)				17.8		
Intersection Capacity Utilization			66.5%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	63	130	34	6	77	485	6	1748	233
v/c Ratio	0.51	0.53	0.29	0.03	0.59	0.18	0.07	0.73	0.22
Control Delay	64.2	19.0	53.8	0.2	67.5	6.6	56.2	14.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	64.2	19.0	53.8	0.2	67.5	6.6	56.2	14.8	5.1
Queue Length 50th (ft)	48	11	25	0	46	18	5	387	32
Queue Length 95th (ft)	79	55	50	0	#124	151	18	530	71
Internal Link Dist (ft)	362		281			230		391	
Turn Bay Length (ft)		75		50	150		75		90
Base Capacity (vph)	244	379	236	338	133	2747	100	2409	1049
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	6	0	0	0	0	0	207	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.35	0.14	0.02	0.58	0.18	0.06	0.79	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	4	109	27	2	5	65	403	4	5	1468	196
Future Volume (vph)	49	4	109	27	2	5	65	403	4	5	1468	196
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97		1.00	0.98	1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes		0.99	1.00		0.99	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1721	1499		1720	1511	1723	3439		1723	3446	1460
Flt Permitted		0.72	1.00		0.69	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1293	1499		1248	1511	1723	3439		1723	3446	1460
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	58	5	130	32	2	6	77	480	5	6	1748	233
RTOR Reduction (vph)	0	0	104	0	0	5	0	0	0	0	0	28
Lane Group Flow (vph)	0	63	26	0	34	1	77	485	0	6	1748	205
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4		4						6
Actuated Green, G (s)		11.4	11.4		11.4	11.4	9.2	91.9		1.2	83.9	83.9
Effective Green, g (s)		11.4	11.4		11.4	11.4	9.2	91.9		1.2	83.9	83.9
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.08	0.77		0.01	0.70	0.70
Clearance Time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Vehicle Extension (s)		1.5	1.5		1.5	1.5	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		122	142		118	143	132	2633		17	2409	1020
v/s Ratio Prot							c0.04	0.14		0.00	c0.51	
v/s Ratio Perm		c0.05	0.02		0.03	0.00						0.14
v/c Ratio		0.52	0.18		0.29	0.00	0.58	0.18		0.35	0.73	0.20
Uniform Delay, d1		51.7	50.0		50.5	49.2	53.5	3.8		59.0	11.0	6.3
Progression Factor		1.00	1.00		1.00	1.00	0.92	1.64		1.00	1.00	1.00
Incremental Delay, d2		1.5	0.2		0.5	0.0	4.2	0.2		4.5	1.9	0.4
Delay (s)		53.2	50.2		51.0	49.2	53.2	6.4		63.6	13.0	6.8
Level of Service		D	D		D	D	D	A		E	B	A
Approach Delay (s)		51.2			50.7			12.8			12.4	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			15.7				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			69.4%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

4: Mendenhall Loop Road & Egan Drive

03/02/2022

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	62	1121	135	8	447	133	119	41	809	830	126
v/c Ratio	0.55	1.07	0.26	0.11	0.57	0.74	0.63	0.15	1.08	1.09	0.17
Control Delay	72.1	87.6	9.5	58.9	46.9	75.1	65.4	1.2	80.9	83.9	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Total Delay	72.1	87.6	9.5	58.9	46.9	75.1	65.4	1.2	80.9	84.5	4.7
Queue Length 50th (ft)	47	432	5	6	159	102	90	0	~702	~727	13
Queue Length 95th (ft)	#100	#782	63	23	#247	160	144	0	#933	#959	m27
Internal Link Dist (ft)		1356			1654		696			316	
Turn Bay Length (ft)	540		120	550		290		390	280		
Base Capacity (vph)	123	1051	529	72	787	277	291	348	749	762	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	1	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	1.07	0.26	0.11	0.57	0.48	0.41	0.12	1.08	1.09	0.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

4: Mendenhall Loop Road & Egan Drive

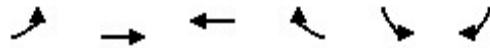
03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	56	1020	123	7	407	0	121	108	37	1269	222	115
Future Volume (vph)	56	1020	123	7	407	0	121	108	37	1269	222	115
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Lane Util. Factor	1.00	*1.00	1.00	1.00	*1.00		1.00	1.00	1.00	*1.00	*1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (prot)	1723	3524	1481	1723	3524		1723	1814	1509	1723	1752	1511
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (perm)	1723	3524	1481	1723	3524		1723	1814	1509	1723	1752	1511
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	62	1121	135	8	447	0	133	119	41	1395	244	126
RTOR Reduction (vph)	0	0	92	0	0	0	0	0	37	0	0	71
Lane Group Flow (vph)	62	1121	43	8	447	0	133	119	4	809	830	55
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2			3			4
Actuated Green, G (s)	6.9	31.7	31.7	1.0	25.8		12.5	12.5	12.5	52.2	52.2	52.2
Effective Green, g (s)	6.9	31.7	31.7	1.0	25.8		12.5	12.5	12.5	52.2	52.2	52.2
Actuated g/C Ratio	0.06	0.26	0.26	0.01	0.22		0.10	0.10	0.10	0.44	0.44	0.44
Clearance Time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Vehicle Extension (s)	2.0	0.5	0.5	2.0	0.5		0.5	0.5	0.5	2.0	2.0	2.0
Lane Grp Cap (vph)	99	930	391	14	757		179	188	157	749	762	657
v/s Ratio Prot	c0.04	c0.32		0.00	0.13		c0.08	0.07		0.47	c0.47	
v/s Ratio Perm			0.03						0.00			0.04
v/c Ratio	0.63	1.21	0.11	0.57	0.59		0.74	0.63	0.03	1.08	1.09	0.08
Uniform Delay, d1	55.3	44.1	33.5	59.3	42.4		52.2	51.6	48.3	33.9	33.9	19.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.83	0.83	1.19
Incremental Delay, d2	8.6	102.6	0.6	30.5	3.4		13.5	5.0	0.0	52.0	55.1	0.0
Delay (s)	63.9	146.8	34.0	89.8	45.7		65.7	56.6	48.3	80.2	83.4	23.6
Level of Service	E	F	C	F	D		E	E	D	F	F	C
Approach Delay (s)		131.3			46.5			59.6			77.6	
Approach LOS		F			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			91.0			HCM 2000 Level of Service				F		
HCM 2000 Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.6			
Intersection Capacity Utilization			101.5%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

5: Egan Drive & Riverside Drive

03/02/2022

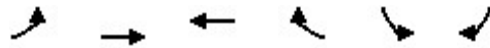


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	213	786	628	146	660	265
v/c Ratio	0.64	0.43	0.72	0.30	0.69	0.46
Control Delay	37.0	10.5	29.8	6.6	27.3	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	10.5	29.8	6.6	27.3	11.3
Queue Length 50th (ft)	80	91	122	0	121	27
Queue Length 95th (ft)	171	154	214	35	215	88
Internal Link Dist (ft)		694	1356		707	
Turn Bay Length (ft)	350			900	225	145
Base Capacity (vph)	772	3181	2060	942	2057	622
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.25	0.30	0.15	0.32	0.43
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

5: Egan Drive & Riverside Drive

03/02/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	177	652	521	121	548	220
Future Volume (vph)	177	652	521	121	548	220
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1674	3348	3348	1453	3343	1542
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1674	3348	3348	1453	3343	1542
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	213	786	628	146	660	265
RTOR Reduction (vph)	0	0	0	107	0	126
Lane Group Flow (vph)	213	786	628	39	660	139
Confl. Peds. (#/hr)	5			5	5	5
Heavy Vehicles (%)	5%	5%	5%	5%	2%	2%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	1	6	2		4	8
Permitted Phases				2		
Actuated Green, G (s)	13.8	37.4	18.3	18.3	19.9	19.9
Effective Green, g (s)	13.8	37.4	18.3	18.3	19.9	19.9
Actuated g/C Ratio	0.20	0.55	0.27	0.27	0.29	0.29
Clearance Time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Vehicle Extension (s)	1.0	0.5	0.5	0.5	2.0	2.0
Lane Grp Cap (vph)	337	1830	895	388	972	448
v/s Ratio Prot	c0.13	0.23	c0.19		c0.20	0.09
v/s Ratio Perm				0.03		
v/c Ratio	0.63	0.43	0.70	0.10	0.68	0.31
Uniform Delay, d1	25.0	9.2	22.6	18.9	21.4	18.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.1	2.1	0.0	1.5	0.1
Delay (s)	27.8	9.2	24.6	18.9	22.9	19.0
Level of Service	C	A	C	B	C	B
Approach Delay (s)		13.2	23.6		21.8	
Approach LOS		B	C		C	
Intersection Summary						
HCM 2000 Control Delay			19.1		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.70			
Actuated Cycle Length (s)			68.4		Sum of lost time (s)	18.4
Intersection Capacity Utilization			54.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 TWSC
6: Riverside & EBR Vintage

03/02/2022

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖	
Traffic Vol, veh/h	0	49	0	0	719	0
Future Vol, veh/h	0	49	0	0	719	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	64	0	0	934	0
Major/Minor	Minor2		Major2			
Conflicting Flow All	-	934	-	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	322	-	-	-	0
Stage 1	0	-	-	-	-	0
Stage 2	0	-	-	-	-	0
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	322	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		SB			
HCM Control Delay, s	18.9	-	-	-	0	-
HCM LOS	C	-	-	-	-	-
Minor Lane/Major Mvmt	EBLn1	SBT				
Capacity (veh/h)	322	-				
HCM Lane V/C Ratio	0.198	-				
HCM Control Delay (s)	18.9	-				
HCM Lane LOS	C	-				
HCM 95th %tile Q(veh)	0.7	-				

HCM 2010 TWSC

7: Riverside & WBR Mendenhall Mall

03/02/2022

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	49	181	0	0	0
Future Vol, veh/h	0	49	181	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	-
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	64	235	0	0	0

Major/Minor	Minor1	Major1
Conflicting Flow All	- 235	0 -
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.22	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.318	- -
Pot Cap-1 Maneuver	0 804	- 0
Stage 1	0 -	- 0
Stage 2	0 -	- 0
Platoon blocked, %		-
Mov Cap-1 Maneuver	- 804	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	WB	NB
HCM Control Delay, s	9.9	0
HCM LOS	A	

Minor Lane/Major Mvmt	NBTWBLn1
Capacity (veh/h)	- 804
HCM Lane V/C Ratio	- 0.079
HCM Control Delay (s)	- 9.9
HCM Lane LOS	- A
HCM 95th %tile Q(veh)	- 0.3

HCM 2010 TWSC

8: NBR Riverside & Vintage/Mendenhall Mall

03/02/2022

Intersection						
Int Delay, s/veh	3.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↑
Traffic Vol, veh/h	109	0	0	0	0	55
Future Vol, veh/h	109	0	0	0	0	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	142	0	0	0	0	71
Major/Minor	Major1		Minor1			
Conflicting Flow All	0	-	-	-	142	
Stage 1	-	-	-	-	-	
Stage 2	-	-	-	-	-	
Critical Hdwy	-	-	-	-	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	-	
Follow-up Hdwy	-	-	-	-	3.318	
Pot Cap-1 Maneuver	-	0	-	-	0	906
Stage 1	-	0	-	-	0	-
Stage 2	-	0	-	-	0	-
Platoon blocked, %	-	-	-	-	-	
Mov Cap-1 Maneuver	-	-	-	-	906	
Mov Cap-2 Maneuver	-	-	-	-	-	
Stage 1	-	-	-	-	-	
Stage 2	-	-	-	-	-	
Approach	EB		NB			
HCM Control Delay, s	0				9.3	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT				
Capacity (veh/h)	906	-				
HCM Lane V/C Ratio	0.079	-				
HCM Control Delay (s)	9.3	-				
HCM Lane LOS	A	-				
HCM 95th %tile Q(veh)	0.3	-				

HCM 2010 TWSC

9: Vintage/Mendenhall Mall & SBR Riverside

03/02/2022

Intersection						
Int Delay, s/veh	4.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑			↗
Traffic Vol, veh/h	0	0	209	0	0	142
Future Vol, veh/h	0	0	209	0	0	142
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	9306112		0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	271	0	0	184
Major/Minor		Major2		Minor2		
Conflicting Flow All		-		0	-	271
Stage 1		-		-	-	-
Stage 2		-		-	-	-
Critical Hdwy		-		-	-	6.22
Critical Hdwy Stg 1		-		-	-	-
Critical Hdwy Stg 2		-		-	-	-
Follow-up Hdwy		-		-	-	3.318
Pot Cap-1 Maneuver		-		0	0	768
Stage 1		-		0	0	-
Stage 2		-		0	0	-
Platoon blocked, %		-				
Mov Cap-1 Maneuver		-		-	-	768
Mov Cap-2 Maneuver		-		-	-	-
Stage 1		-		-	-	-
Stage 2		-		-	-	-
Approach		WB		SB		
HCM Control Delay, s		0		11.2		
HCM LOS				B		
Minor Lane/Major Mvmt		WBT SBLn1				
Capacity (veh/h)		- 768				
HCM Lane V/C Ratio		- 0.24				
HCM Control Delay (s)		- 11.2				
HCM Lane LOS		- B				
HCM 95th %tile Q(veh)		- 0.9				

Appendix E- PM Base + Site Traffic Capacity Analysis Report

HCM 2010 TWSC

1: Glacier Highway/Vintage Boulevard & Egan Drive

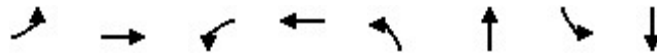
03/02/2022

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑	↑			↑			↑
Traffic Vol, veh/h	0	744	166	54	900	162	0	0	70	0	0	202
Future Vol, veh/h	0	744	166	54	900	162	0	0	70	0	0	202
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	Free	-	-	Stop	-	-	Stop
Storage Length	-	-	375	300	-	475	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	5	2	2	5	2	2	2	2	0	0	7
Mvmt Flow	0	791	177	57	957	172	0	0	74	0	0	215
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	-	796	0	0	-	-	406	-	-	484
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	7.04
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.37
Pot Cap-1 Maneuver	0	-	0	822	-	0	0	0	594	0	0	516
Stage 1	0	-	0	-	-	0	0	0	-	0	0	-
Stage 2	0	-	0	-	-	0	0	0	-	0	0	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	819	-	-	-	-	589	-	-	514
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.6			12			16.9		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT	SBLn1							
Capacity (veh/h)	589	-	819	-	514							
HCM Lane V/C Ratio	0.126	-	0.07	-	0.418							
HCM Control Delay (s)	12	-	9.7	-	16.9							
HCM Lane LOS	B	-	A	-	C							
HCM 95th %tile Q(veh)	0.4	-	0.2	-	2							

Queues

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	340	206	162	152	338	475	80	291
v/c Ratio	0.71	0.60	0.39	0.54	0.70	0.72	0.25	0.68
Control Delay	29.5	38.9	20.3	39.9	22.3	30.2	14.4	35.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	38.9	20.3	39.9	22.3	30.2	14.4	35.8
Queue Length 50th (ft)	115	88	48	67	97	198	19	127
Queue Length 95th (ft)	#241	197	116	148	187	364	48	229
Internal Link Dist (ft)		693		1080		707		271
Turn Bay Length (ft)	200		75		150		100	
Base Capacity (vph)	494	467	525	490	507	1103	516	1103
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.44	0.31	0.31	0.67	0.43	0.16	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: Riverside Drive & Vintage Boulevard/Mendenhall Mall Drive

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	316	192	0	151	141	0	314	442	0	74	271	0
Future Volume (vph)	316	192	0	151	141	0	314	442	0	74	271	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width	12	12	16	12	12	16	12	12	16	12	12	16
Total Lost time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1715	1729		1706	1814		1723	1814		1718	1814	
Flt Permitted	0.44	1.00		0.63	1.00		0.32	1.00		0.38	1.00	
Satd. Flow (perm)	801	1729		1126	1814		573	1814		690	1814	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	340	206	0	162	152	0	338	475	0	80	291	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	340	206	0	162	152	0	338	475	0	80	291	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	7%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	29.8	15.4		22.8	11.9		37.8	28.1		24.8	19.4	
Effective Green, g (s)	29.8	15.4		22.8	11.9		37.8	28.1		24.8	19.4	
Actuated g/C Ratio	0.38	0.20		0.29	0.15		0.49	0.36		0.32	0.25	
Clearance Time (s)	4.3	4.5		4.3	4.5		4.3	4.7		4.3	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	477	343		412	278		488	656		292	453	
v/s Ratio Prot	c0.13	0.12		0.06	0.08		c0.13	c0.26		0.02	0.16	
v/s Ratio Perm	c0.14			0.06			0.21			0.07		
v/c Ratio	0.71	0.60		0.39	0.55		0.69	0.72		0.27	0.64	
Uniform Delay, d1	18.6	28.3		21.4	30.4		13.8	21.4		19.0	26.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.2	2.0		0.6	1.2		3.4	3.4		0.2	2.3	
Delay (s)	22.8	30.3		22.0	31.5		17.2	24.8		19.2	28.3	
Level of Service	C	C		C	C		B	C		B	C	
Approach Delay (s)		25.6			26.6			21.6			26.4	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			24.3				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			77.6				Sum of lost time (s)			17.8		
Intersection Capacity Utilization			73.2%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	261	166	16	8	333	1673	10	726	219
v/c Ratio	0.90	0.39	0.05	0.02	1.28	0.75	0.10	0.45	0.27
Control Delay	70.6	12.8	29.5	0.1	192.2	14.5	46.4	18.0	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Total Delay	70.6	12.8	29.5	0.1	192.2	14.9	46.4	18.0	3.2
Queue Length 50th (ft)	157	22	8	0	~372	274	6	138	5
Queue Length 95th (ft)	#288	77	25	0	m#518	m#623	23	181	40
Internal Link Dist (ft)	362		281			230		391	
Turn Bay Length (ft)		75		50	150		75		90
Base Capacity (vph)	323	465	325	433	260	2233	120	1819	870
Starvation Cap Reductn	0	0	0	0	0	183	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.36	0.05	0.02	1.28	0.82	0.08	0.40	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

3: Mendenhall Loop Road & Mendenhall Mall Road/Atlin Road

03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	14	151	14	1	7	303	1494	28	9	661	199
Future Volume (vph)	224	14	151	14	1	7	303	1494	28	9	661	199
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1721	1513		1726	1513	1723	3434		1723	3446	1469
Flt Permitted		0.73	1.00		0.73	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1310	1513		1317	1513	1723	3434		1723	3446	1469
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	246	15	166	15	1	8	333	1642	31	10	726	219
RTOR Reduction (vph)	0	0	95	0	0	6	0	1	0	0	0	106
Lane Group Flow (vph)	0	261	71	0	16	2	333	1672	0	10	726	113
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4		4						6
Actuated Green, G (s)		22.2	22.2		22.2	22.2	15.1	61.0		1.3	47.2	47.2
Effective Green, g (s)		22.2	22.2		22.2	22.2	15.1	61.0		1.3	47.2	47.2
Actuated g/C Ratio		0.22	0.22		0.22	0.22	0.15	0.61		0.01	0.47	0.47
Clearance Time (s)		5.3	5.3		5.3	5.3	5.0	5.2		5.0	5.2	5.2
Vehicle Extension (s)		1.5	1.5		1.5	1.5	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		290	335		292	335	260	2094		22	1626	693
v/s Ratio Prot							c0.19	c0.49		0.01	0.21	
v/s Ratio Perm		c0.20	0.05		0.01	0.00						0.08
v/c Ratio		0.90	0.21		0.05	0.01	1.28	0.80		0.45	0.45	0.16
Uniform Delay, d1		37.8	31.8		30.6	30.3	42.5	14.8		49.0	17.7	15.1
Progression Factor		1.00	1.00		1.00	1.00	1.07	0.85		1.00	1.00	1.00
Incremental Delay, d2		28.2	0.1		0.0	0.0	152.3	3.3		5.3	0.9	0.5
Delay (s)		66.0	31.9		30.7	30.3	197.7	15.9		54.3	18.6	15.6
Level of Service		E	C		C	C	F	B		D	B	B
Approach Delay (s)		52.7			30.5			46.1			18.3	
Approach LOS		D			C			D			B	
Intersection Summary												
HCM 2000 Control Delay			39.0				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			81.4%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

4: Mendenhall Loop Road & Egan Drive

03/02/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	108	629	143	33	1092	320	346	20	389	395	66
v/c Ratio	0.67	0.57	0.24	0.32	1.28	0.96	0.99	0.05	1.03	1.01	0.14
Control Delay	53.9	23.2	4.2	53.3	168.1	82.6	87.1	0.2	80.9	76.7	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	23.2	4.2	53.3	168.1	82.6	87.1	0.2	80.9	76.7	1.8
Queue Length 50th (ft)	47	208	22	21	~481	204	222	0	~282	~273	4
Queue Length 95th (ft)	#106	225	53	51	#612	#375	#403	0	#477	#478	11
Internal Link Dist (ft)		1356			1654		696			316	
Turn Bay Length (ft)	540		120	550		290		390	280		
Base Capacity (vph)	186	1104	590	117	853	332	350	414	379	390	466
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.57	0.24	0.28	1.28	0.96	0.99	0.05	1.03	1.01	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

4: Mendenhall Loop Road & Egan Drive

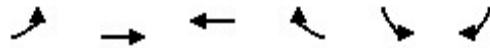
03/02/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	610	139	32	1059	0	310	336	19	564	197	64
Future Volume (vph)	105	610	139	32	1059	0	310	336	19	564	197	64
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1723	3348	1486	1723	3348		1723	1814	1511	1637	1682	1513
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (perm)	1723	3348	1486	1723	3348		1723	1814	1511	1637	1682	1513
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	108	629	143	33	1092	0	320	346	20	581	203	66
RTOR Reduction (vph)	0	0	99	0	0	0	0	0	16	0	0	51
Lane Group Flow (vph)	108	629	44	33	1092	0	320	346	4	389	395	15
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	5%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2			3			4
Actuated Green, G (s)	9.4	30.9	30.9	4.0	25.5		19.3	19.3	19.3	23.2	23.2	23.2
Effective Green, g (s)	9.4	30.9	30.9	4.0	25.5		19.3	19.3	19.3	23.2	23.2	23.2
Actuated g/C Ratio	0.09	0.31	0.31	0.04	0.26		0.19	0.19	0.19	0.23	0.23	0.23
Clearance Time (s)	5.2	5.9	5.9	5.2	5.9		5.7	5.7	5.7	5.8	5.8	5.8
Vehicle Extension (s)	2.0	0.5	0.5	2.0	0.5		0.5	0.5	0.5	2.0	2.0	2.0
Lane Grp Cap (vph)	161	1034	459	68	853		332	350	291	379	390	351
v/s Ratio Prot	c0.06	0.19		0.02	c0.33		0.19	c0.19		c0.24	0.23	
v/s Ratio Perm			0.03						0.00			0.01
v/c Ratio	0.67	0.61	0.10	0.49	1.28		0.96	0.99	0.01	1.03	1.01	0.04
Uniform Delay, d1	43.8	29.4	24.6	47.0	37.2		40.0	40.2	32.6	38.4	38.4	29.8
Progression Factor	0.79	0.72	0.73	1.00	1.00		1.00	1.00	1.00	0.68	0.68	1.00
Incremental Delay, d2	8.1	2.6	0.4	2.0	135.1		39.3	44.5	0.0	51.7	47.4	0.0
Delay (s)	42.6	23.8	18.3	49.0	172.3		79.3	84.7	32.7	77.9	73.6	29.8
Level of Service	D	C	B	D	F		E	F	C	E	E	C
Approach Delay (s)		25.2			168.7			80.7			72.2	
Approach LOS		C			F			F			E	
Intersection Summary												
HCM 2000 Control Delay			92.8			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			22.6			
Intersection Capacity Utilization			94.4%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

5: Egan Drive & Riverside Drive

03/02/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	378	469	954	536	422	206
v/c Ratio	0.75	0.20	0.78	0.62	0.74	0.47
Control Delay	42.6	5.2	17.1	4.6	47.1	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	5.2	17.1	4.6	47.1	8.7
Queue Length 50th (ft)	217	44	72	5	132	0
Queue Length 95th (ft)	#329	74	m157	m0	174	58
Internal Link Dist (ft)		694	1356		707	
Turn Bay Length (ft)	350			900	225	145
Base Capacity (vph)	501	2403	1223	868	1026	434
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.20	0.78	0.62	0.41	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

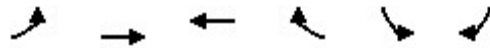
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

5: Egan Drive & Riverside Drive

03/02/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	363	450	916	515	405	198
Future Volume (vph)	363	450	916	515	405	198
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Total Lost time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1674	3348	3348	1446	3343	1542
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1674	3348	3348	1446	3343	1542
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	378	469	954	536	422	206
RTOR Reduction (vph)	0	0	0	340	0	171
Lane Group Flow (vph)	378	469	954	196	422	35
Confl. Peds. (#/hr)	5			5	5	5
Heavy Vehicles (%)	5%	5%	5%	5%	2%	2%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	1	6	2		4	8
Permitted Phases				2		
Actuated Green, G (s)	29.9	71.8	36.6	36.6	17.1	17.1
Effective Green, g (s)	29.9	71.8	36.6	36.6	17.1	17.1
Actuated g/C Ratio	0.30	0.72	0.37	0.37	0.17	0.17
Clearance Time (s)	5.3	5.8	5.8	5.8	5.3	5.3
Vehicle Extension (s)	1.0	0.5	0.5	0.5	2.0	2.0
Lane Grp Cap (vph)	500	2403	1225	529	571	263
v/s Ratio Prot	c0.23	0.14	c0.28		c0.13	0.02
v/s Ratio Perm				0.14		
v/c Ratio	0.76	0.20	0.78	0.37	0.74	0.13
Uniform Delay, d1	31.7	4.6	28.1	23.3	39.3	35.2
Progression Factor	1.00	1.00	0.53	1.64	1.00	1.00
Incremental Delay, d2	5.7	0.2	0.5	0.2	4.3	0.1
Delay (s)	37.5	4.8	15.4	38.3	43.6	35.3
Level of Service	D	A	B	D	D	D
Approach Delay (s)		19.4	23.6		40.9	
Approach LOS		B	C		D	
Intersection Summary						
HCM 2000 Control Delay			26.1		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.78			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	18.4
Intersection Capacity Utilization			72.2%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 TWSC

6: Riverside & EBR Vintage

03/02/2022

Intersection

Int Delay, s/veh 4.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	180	0	0	421	0
Future Vol, veh/h	0	180	0	0	421	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	194	0	0	453	0

Major/Minor	Minor2	Major2
Conflicting Flow All	- 453	- 0
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.22	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.318	- -
Pot Cap-1 Maneuver	0 607	- 0
Stage 1	0 -	- 0
Stage 2	0 -	- 0
Platoon blocked, %		-
Mov Cap-1 Maneuver	- 607	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	EB	SB
HCM Control Delay, s	13.7	0
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBT
Capacity (veh/h)	607	-
HCM Lane V/C Ratio	0.319	-
HCM Control Delay (s)	13.7	-
HCM Lane LOS	B	-
HCM 95th %tile Q(veh)	1.4	-

HCM 2010 TWSC

7: Riverside & WBR Mendenhall Mall

03/02/2022

Intersection

Int Delay, s/veh 6.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	212	758	0	0	0
Future Vol, veh/h	0	212	758	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	-
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	228	815	0	0	0

Major/Minor	Minor1	Major1
Conflicting Flow All	- 815	0 -
Stage 1	- -	- -
Stage 2	- -	- -
Critical Hdwy	- 6.22	- -
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	- -
Follow-up Hdwy	- 3.318	- -
Pot Cap-1 Maneuver	0 377	- 0
Stage 1	0 -	- 0
Stage 2	0 -	- 0
Platoon blocked, %		-
Mov Cap-1 Maneuver	- 377	- -
Mov Cap-2 Maneuver	- -	- -
Stage 1	- -	- -
Stage 2	- -	- -

Approach	WB	NB
HCM Control Delay, s	28.1	0
HCM LOS	D	

Minor Lane/Major Mvmt	NBTWBLn1
Capacity (veh/h)	- 377
HCM Lane V/C Ratio	- 0.605
HCM Control Delay (s)	- 28.1
HCM Lane LOS	- D
HCM 95th %tile Q(veh)	- 3.8

HCM 2010 TWSC

8: NBR Riverside & Vintage/Mendenhall Mall

03/02/2022

Intersection						
Int Delay, s/veh	3.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↑
Traffic Vol, veh/h	266	0	0	0	0	122
Future Vol, veh/h	266	0	0	0	0	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	286	0	0	0	0	131
Major/Minor	Major1		Minor1			
Conflicting Flow All	0	-	-	-	286	
Stage 1	-	-	-	-	-	
Stage 2	-	-	-	-	-	
Critical Hdwy	-	-	-	-	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	-	
Follow-up Hdwy	-	-	-	-	3.318	
Pot Cap-1 Maneuver	-	0	-	-	0	753
Stage 1	-	0	-	-	0	-
Stage 2	-	0	-	-	0	-
Platoon blocked, %	-	-	-	-	-	
Mov Cap-1 Maneuver	-	-	-	-	753	
Mov Cap-2 Maneuver	-	-	-	-	-	
Stage 1	-	-	-	-	-	
Stage 2	-	-	-	-	-	
Approach	EB		NB			
HCM Control Delay, s	0	-	-	-	10.8	
HCM LOS	-	-	-	-	B	
Minor Lane/Major Mvmt	NBLn1	EBT				
Capacity (veh/h)	753	-				
HCM Lane V/C Ratio	0.174	-				
HCM Control Delay (s)	10.8	-				
HCM Lane LOS	B	-				
HCM 95th %tile Q(veh)	0.6	-				

HCM 2010 TWSC

9: Vintage/Mendenhall Mall & SBR Riverside

03/02/2022

Intersection

Int Delay, s/veh 2.7

Movement EBL EBT WBT WBR SBL SBRLane Configurations  

Traffic Vol, veh/h 0 0 455 0 0 119

Future Vol, veh/h 0 0 455 0 0 119

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Stop Stop

RT Channelized - None - None - Yield

Storage Length - - - - - 0

Veh in Median Storage, # - - 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 93 93 93 93 93 93

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 0 0 489 0 0 128

Major/Minor Major2 Minor2

Conflicting Flow All - 0 - 489

Stage 1 - - - -

Stage 2 - - - -

Critical Hdwy - - - 6.22

Critical Hdwy Stg 1 - - - -

Critical Hdwy Stg 2 - - - -

Follow-up Hdwy - - - 3.318

Pot Cap-1 Maneuver - 0 0 579

Stage 1 - 0 0 -

Stage 2 - 0 0 -

Platoon blocked, % -

Mov Cap-1 Maneuver - - - 579

Mov Cap-2 Maneuver - - - -

Stage 1 - - - -

Stage 2 - - - -

Approach WB SB

HCM Control Delay, s 0 13

HCM LOS B

Minor Lane/Major Mvmt WBT SBLn1

Capacity (veh/h) - 579

HCM Lane V/C Ratio - 0.221

HCM Control Delay (s) - 13

HCM Lane LOS - B

HCM 95th %tile Q(veh) - 0.8

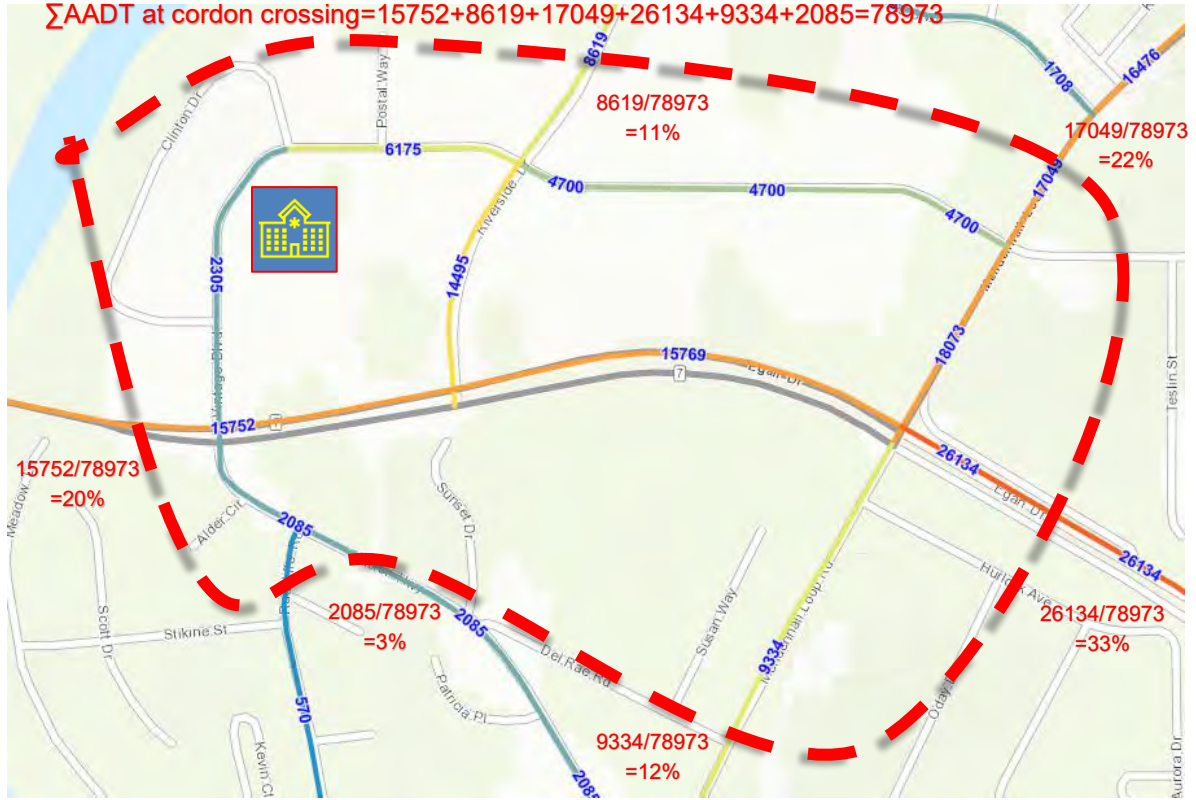
**Appendix F- Meeting Summary; CBJ and Kinney Engineering,
LLC; July 27, 2021**

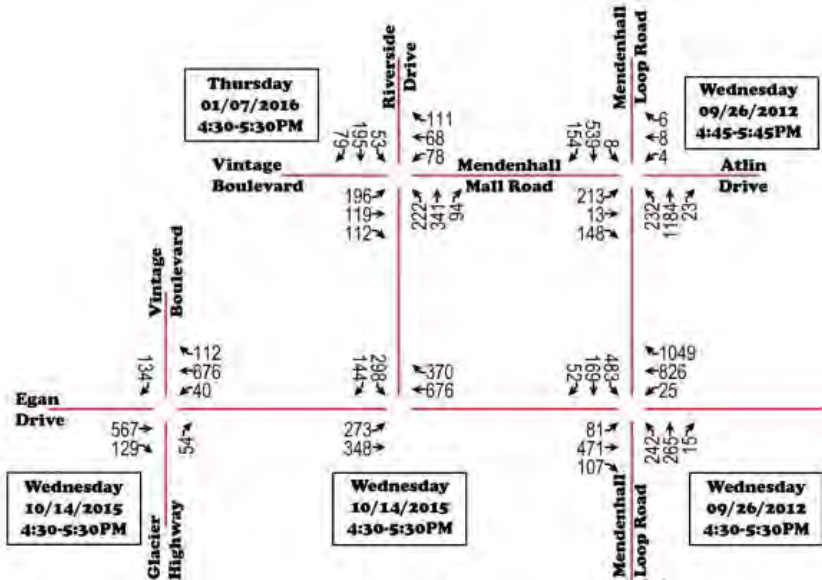
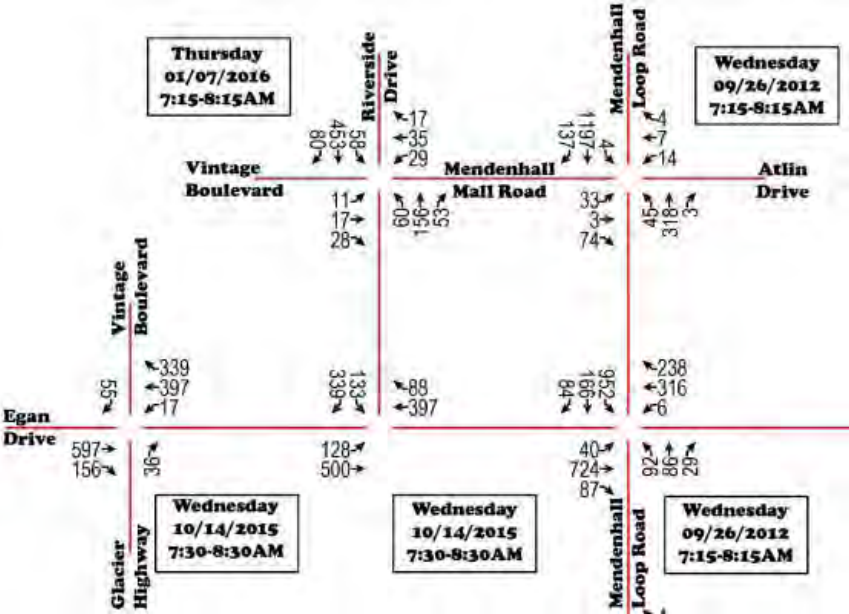
MEETING SUMMARY

Project: Juneau Medical Office Building
Meeting Purpose: Traffic Impact Analysis (TIA) Requirements
Date/Time: 10:30, July 27, 2021
Location: Zoom
Attendees: **City & Borough of Juneau, AK (CBJ):** Allison Eddins Planner II Community Development Department
Kinney Engineering, LLC on behalf of JL Properties, Inc (Developer): Randy Kinney

Topic Discussed:	Is TIA required?
CBJ Requirements	- Discussions with DOT&PF (David Epstein) indicate that CBJ is primary approving agency for a TIA (if required) since proposed site fronts Vintage Boulevard. - In this meeting, Ms. Eddins indicates CBJ requires TIAs as part of a Conditional Use Permit or Building Permit if traffic thresholds are exceeded. TIA will be reviewed by CBJ staff, but approved by CBJ Planning Commission. - DOT&PF review will be coordinated by CBJ. - CBJ Code of Ordinances, 49.40.300 Applicability. (a) A traffic impact analysis (TIA) shall be required as follows: <i>(1) A development projected to generate 500 or more average daily trips (ADT) shall be required to have a traffic impact analysis.</i> <i>“(2) A development projected to generate fewer than 250 ADT shall not be required to have a traffic impact analysis.</i> <i>(3) A development projected to generate more than 250 ADT but fewer than 500 ADT shall be required to have a traffic impact analysis if the Community Development Department Director determines that an analysis is necessary based on the type of development, its location, the likelihood of future expansion, and other factors found relevant by the director.</i>
Proposed Site	- Legal Description: Vintage IV TR A2 - Tax ID: 5B1601430017 2.9 Acres, 127,336 SF - Zoning: (LC) Light Commercial - Street Fronting: Vintage Boulevard, CBJ owned, LOCATION below.

	
Development	3-level, 41,000 SF Medical Office Building (source: Sparks Design LLC plans)
Trip Generation	• ITE Trip Generation Manual Land Use: LU 720 (Medical-Dental Offices, see attached). • Choose trip estimation method for site generated weekday ADT (a. Line at Cluster, b. Average Rate, c. Fitted Curve Equation) per Trip Generation Manual, 3rd Ed: Result is Fitted Curve Equation. • Weekday ADT $T = 38.42(X) - 87.62$; for $X = 41$, $T = 1,488$ trips in and out per day. • 50%/50% entering/exiting.
Conclusion	• TIA will be required.
Topic Discussed:	Design Year/Design Hour
CBJ Requirements	• CBJ Code of Ordinances, 49.40.330 Traffic impact mitigation (a) (1) Summarized as: - o Design Year: Opening year and at full build out (if phased). • Design Hour: Not discussed at meeting, but would likely be the morning and evening commuting peak hours.
Topic Discussed:	Study Area
CBJ Requirements	• CBJ Code of Ordinances, 49.40.305 Traffic impact analysis (TIA) requirements. (a) <i>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.</i> • CBJ Code of Ordinances, 49.40.305 (c)

	(1) <i>Intersections and segments of roadways where the ADT on any approach to an intersection is anticipated to increase by five percent or more due to the proposed development.....</i>
Study Area Methodology	- Not discussed at the meeting. - Propose to distribute traffic to/from site Juneau based on AADT weight. DOT&PF has an AADT map of area, https://akdot.maps.arcgis.com/apps/mapviewer/index.html?webmap=7c1e1029fdb64d7a86449d55ef05e21c. - We will cordon that map as shown and assign site inbound and outbound trips according to AADT weight were cordon line crosses major links. 
Topic Discussed:	LOS Standards
CBJ Requirements	- CBJ Code of Ordinances, 49.40.310 Traffic; minimum standards. (a) <i>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.</i> - CBJ Code of Ordinances, 49.40.340 Traffic impact mitigation. (a) <i>Except as provided in 49.40.340, an applicant shall make improvements to a roadway or intersection to achieve or maintain an acceptable LOS if a roadway or intersection has an:</i> <i>LOS D without traffic generated by the development; and would drop below LOS D with traffic generated by the development at the opening date of the development or full build out;</i> <i>If a roadway has an LOS below D without traffic generated by the development at the opening date of the development; or</i> <i>If the intersection or roadway segment has a pattern of accidents resulting in personal injuries, and the development would aggravate this accident pattern, then mitigation shall be required regardless of the LOS.</i>

	• CBJ Code of Ordinances, 49.40.340 Mitigation waiver. Section indicates conditions in which the requirements above may be waived.
Topic Discussed:	Material Provided by Ms. Eddins
	• CBJ applicable Codes • Example TIA
Additional Topic:	Traffic Data for Intersections .
Discussion	• Because of pandemic, we will use the existing counts published in the Juneau Egan Drive and Riverside Intersection Improvements Traffic Analysis Report. Counts were conducted between 2012 and 2016. They will be factored to 2019 volumes using link AADTs for the respective years, and 2019 AADT. The volumes will then be expanded to the design year using 0.25% per year (DOT&PF recommendations). • Observed PM volumes are:  • Observed AM volumes are: 

Attachments

Land Use: 720 Medical-Dental Office Building

Description

A medical-dental office building is a facility that provides diagnoses and outpatient care on a routine basis but is unable to provide prolonged in-house medical and surgical care. One or more private physicians or dentists generally operate this type of facility. Clinic (Land Use 630) is a related use.

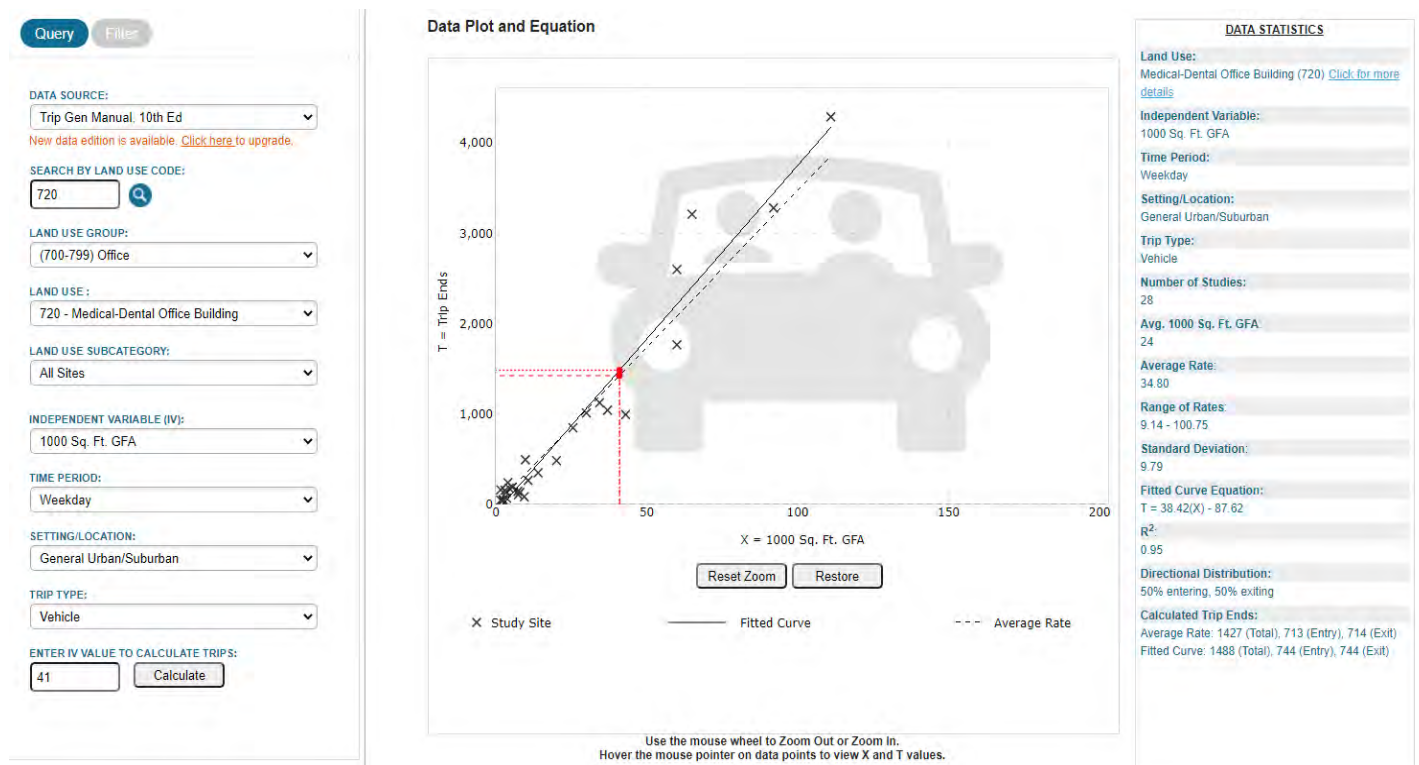
Additional Data

Time-of-day distribution data for this land use for a weekday, Saturday, and Sunday are presented in Appendix A. For the 19 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 9:30 and 10:30 a.m. and 2:15 and 3:15 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Connecticut, Kentucky, Maryland, Minnesota, New Jersey, New York, Ohio, Oregon, Pennsylvania, South Dakota, Texas, Virginia, Washington, and Wisconsin.

Source Numbers

104, 109, 120, 157, 184, 209, 211, 253, 287, 294, 295, 304, 357, 384, 404, 407, 423, 444, 509, 601, 715, 867, 879, 901, 902, 908, 959, 972



Appendix G- Review Meeting Summary



April 7, 2022

PND No. 222016

Irene Gallion
Senior Planner
City and Borough of Juneau Community Development Dept.
230 S. Franklin St. Juneau, AK 99801

Re: SEARHC Vintage Park Medical Office Building, Conditional Use Permit Application – Additional Information on Traffic Impact Analysis

Dear Ms. Gallion,

On Thursday, March 31, 2022, PND submitted to CBJ a conditional use permit application package for the subject project. The permit package included a draft Traffic Impact Analysis, (TIA) developed by Kinney Engineering, (KE). It was noted in the application Project Narrative that the TIA is in draft form due to ongoing coordination with AKDOT. Previously, CBJ requested we review the draft with AKDOT prior to submitting the final TIA. On April 5th, KE and PND met with AKDOT stakeholders to review the TIA and discuss the results and potential traffic impact mitigations that may be warranted. You requested PND summarize the meeting discussion and provide the summary to CBJ as additional information to the CUP application.

PND and KE met with AKDOT on April 5, 2022. In attendance were myself, representing PND and the Owner, Randy Kinney and Jeanne Bowie from KE, and Nathan Purves, Steven Thater and Chrissy McNally from AKDOT.

The TIA was discussed with only minor comments and no objections to the method or results of the analysis. AKDOT voiced no objections to the proposed mitigations and indicated they would not request additional intersection improvements as a result of the proposed project. A main point of discussion was the intersection of Egan Drive and Mendenhall Loop Road. As noted in the TIA, this is the only intersection which may warrant impact mitigation in accordance with the CBJ municipal code, however, the level of service (LOS) under existing conditions is within the CBJ threshold for mitigation and the proposed traffic impact is minimal; there is no LOS change for the intersection with the additional proposed site traffic. As described in the TIA Section 8.1. *“Without site traffic, intersection AM average delay per vehicle is 82 seconds with a LOS F and the PM average delay per vehicle is 65 seconds with LOS E. Adding site traffic only increases delay by 1 second per vehicle in both AM and PM peak hours with no changes in LOS.”*

Mr. Thater observed that under AKDOT criteria as specified in 17 AAC 10.070, Traffic Impact Analysis, mitigation of impacts from the proposed SEARHC Medical Facility would likely not be required as the change in operational performance resulting from the site is minimal and appears to be beneath the AKDOT threshold triggering code required mitigation. He went on to make the additional points that, the existing traffic signals currently employ adaptive software technology, which will mitigate potential impacts proactively and the Department regularly reviews and updates signalization parameters, further minimizing project impacts.

Additional comments, included support for the proposed pedestrian mitigations, including the addition of the perimeter sidewalk along Vintage Boulevard.



ENGINEERS, INC.

During our telephone conversation on April 5th, you requested that the TIA remain in draft form until CBJ Engineering has reviewed the CUP application and draft TIA, then update and provide the final TIA prior to the Planning Commission meeting, yet to be scheduled. As requested, the final TIA is pending CBJ internal review.

Please contact me if you have any questions or require further information.

Sincerely,
PND Engineers, Inc. | Juneau Office

Tyler Bradshaw, P.E. | Senior Engineer

cc:

Ed Zernia, SEARHC Director of Construction, Facilities Admin
Deanna Wlad, AIA, Architect, Spark Design
Randy Kinney, PE, Kinney Engineering
Dick Somerville, PE, PND Engineers
Steven Thater, Alaska Department of Transportation
Nathan Purves, Alaska Department of Transportation
Chrissy McNally, Alaska Department of Transportation



Planning Commission

(907) 586-0715

PC_Comments@juneau.org

www.juneau.org/community-development/planning-commission

155 S. Seward Street • Juneau, AK 99801

PLANNING COMMISSION NOTICE OF DECISION

Date: June 16, 2022
Case No.: USE2022 0006

Southeast Alaska Regional Health Consortium
3100 Channel Drive, Suite 300
Juneau, AK 99801

Proposal: Applicant requests a Conditional Use Permit for an approximately 43,000 square foot medical office building in the Light Commercial zoning district.

Property Address: Vintage Boulevard

Legal Description: Vintage IV Tract A2

Parcel Code No.: 5B1601430017

Hearing Date: June 14, 2022

The Planning Commission, at its regular public meeting, adopted the analysis and findings listed in the attached memorandum dated June 7, 2022, and approved the Conditional Use Permit for a 43,000 square foot medical office building in the Light Commercial zoning district, to be conducted as described in the project description and project drawings submitted with the application and with the following conditions:

1. Install perimeter sidewalks on site to connect to the existing sidewalk network.
2. Install covered or enclosed bike racks.

Attachments: June 7, 2022, memorandum from Joseph Meyers, Community Development, to the CBJ Planning Commission regarding USE2022 0006.

Southeast Alaska Regional Health Consortium

File No: USE2022 0006

June 16, 2022

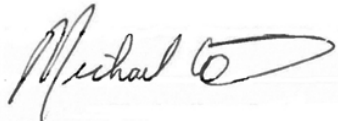
Page 2 of 2

This Notice of Decision does not authorize construction activity. Prior to starting any project, it is the applicant's responsibility to obtain the required building permits.

This Notice of Decision constitutes a final decision of the CBJ Planning Commission. Appeals must be brought to the CBJ Assembly in accordance with CBJ 01.50.030. Appeals must be filed by 4:30 P.M. on the day twenty days from the date the decision is filed with the City Clerk, pursuant to CBJ 01.50.030 (c). Any action by the applicant in reliance on the decision of the Planning Commission shall be at the risk that the decision may be reversed on appeal (CBJ 49.20.120).

Effective Date: The permit is effective upon approval by the Commission, June 14, 2022.

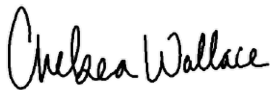
Expiration Date: The permit will expire 18 months after the effective date, or December 14, 2023, if no Building Permit has been issued and substantial construction progress has not been made in accordance with the plans for which the development permit was authorized. Application for permit extension must be submitted thirty days prior to the expiration date.



Michael Levine, Chair
Planning Commission

June 25, 2022

Date



Filed With City Clerk

June 27, 2022

Date

cc: Plan Review

NOTE: The Americans with Disabilities Act (ADA) is a federal civil rights law that may affect this development project. ADA regulations have access requirements above and beyond CBJ-adopted regulations. Owners and designers are responsible for compliance with ADA. Contact an ADA - trained architect or other ADA trained personnel with questions about the ADA: Department of Justice (202) 272-5434, or fax (202) 272-5447, NW Disability Business Technical Center (800) 949-4232, or fax (360) 438-3208.

**PLANNING COMMISSION AGENDA
THE CITY AND BOROUGH OF JUNEAU, ALASKA**

AME2022 0004: Amendment to Seawalk - REMOVED FROM CONSENT AGENDA AND
APPROVED AS AMENDED ON REGULAR AGENDA

AGENDA ITEM:

Case No.: AME2022 0004
Applicant: City & Borough of Juneau
Location: Seawalk
Proposal: Amendment to Seawalk

RECOMMENDATION:

Staff recommends the Planning Commission adopt the Director's analysis and findings and make a recommendation to the Assembly to APPROVE the proposed text amendment and definition amendment providing for Seawalk infrastructure in the downtown area.

ATTACHMENTS:

Description	Upload Date	Type
☐ Staff Report for AME2022 0004	6/8/2022	Staff Report
☐ Notice of Recommendation for AME2022 0004	6/27/2022	Notice of Recommendation



PLANNING COMMISSION STAFF REPORT
TEXT AMENDMENT: AME2022 0004
HEARING DATE: JUNE 14, 2022

(907) 586-0715

CDD_Admin@juneau.org

www.juneau.org/community-development

155 S. Seward Street • Juneau, AK 99801

DATE: June 7, 2022
TO: Michael LeVine, Chair, Planning Commission
FROM: Jill Maclean, Director, AICP

PROPOSAL: A text amendment providing for Seawalk infrastructure in the downtown area (formerly CBJ 49.70.960 Coastal Management).

STAFF RECOMMENDATION: Forward the proposed ordinance with a recommendation of APPROVAL to the Assembly.

KEY CONSIDERATIONS FOR REVIEW:

- In 2021, the Assembly repealed CBJ 49.70 Coastal Management (Ordinance 2021-13).
- The Assembly directed the Planning Commission to review the repealed code and make recommendations on sections that should be reestablished.
- On May 12, 2022, the Title 49 Subcommittee voted to recommend moving a portion of the repealed section, CBJ 49.70.960(c)(6), without revisions, to a new section in CBJ 49.35 Public and Private Improvements.
- Per CBJ 49.20.200, requirements in CBJ Chapter 35 (49.35) cannot be varied.

GENERAL INFORMATION

Applicant	CBJ Community Development
Initiated By	Title 49 Subcommittee
Property Affected	Downtown Waterfront Properties

LAND USE CODE AMENDED

	CBJ 49.35 Public and Private Improvements
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WORK SESSION DATES

Title 49 Committee	May 12, 2022
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ALTERNATIVE ACTIONS:

1. **Amend:** Modify the proposed ordinance and recommend approval to the Assembly.
2. **Deny:** Recommend denial of the proposed ordinance to the Assembly. Planning Commission must make its own findings.
3. **Continue:** Continue the hearing to a later date if determined that additional information or analysis is needed to make a decision, or if additional testimony is warranted.

ASSEMBLY ACTION REQUIRED:

Assembly action is required for this text amendment. The Planning Commission's recommendation will be forwarded to the assembly for final action.

STANDARD OF REVIEW:

- Quasi-legislative decision
- Requires five (5) affirmative votes for approval
- Code Provisions:
 - CBJ 49.10.170(d)

The Commission shall hear and decide the case per CBJ 49.10.170(d) Planning Commission Duties. *The commission shall make recommendations to the assembly on all proposed amendments to this title, zonings and rezoning, indicating compliance with the provisions of this title and the comprehensive plan.*

DISCUSSION

Background – The Alaska Coastal Management Program (ACMP) was repealed in 2011; however, the ACMP reference has remained in code. After a recent permitting error, CBJ determined that the ACMP reference placed the legality of the Juneau Coastal Management Program, CBJ 49.70.900-960, in question, and found that the ordinance is not legally defensible.

In 2021, the Assembly repealed CBJ Article IX of Title 49.70, Coastal Management. Furthermore, the Assembly directed the Planning Commission and staff (through the City Manager) to review the repealed code, and make recommendations on any sections that should be reestablished in the Land Use Code.

At the Title 49 Subcommittee meeting on May 26, 2022 the Committee voted to recommend forwarding the Seawalk section of the repealed code without changes to the Planning Commission for favorable recommendation to the Assembly. The Director recommended, and the Committee agreed, that the Seawalk being a form of infrastructure was a better fit in CBJ Chapter 35 Public and Private Improvements of the Land Use Code.

The Director reminded the Committee that CBJ Chapter 35 cannot be varied. The Committee discussed the implications of this and determined that the Seawalk belongs in CBJ Chapter 35, and that variances should not be applicable to the development of the Seawalk.

The Title 49 Subcommittee finished reviewing the Coastal Management repealed ordinance on May 26, 2022.

Property Affected – Downtown Juneau waterfront properties.

Title 49 Land Use Code Section Amended

CBJ 49.35 Article VI. Public Access. This amendment reestablishes the Seawalk ordinance that previously existed in CBJ 49.70.

Recommendation: Staff recommends a new section, CBJ 49.35.650 Seawalk.

CBJ 49.80 Definitions. This amendment requires a minor revision to the definition of Seawalk. Per CBJ 49.80, Seawalk means, *“the pedestrian path and access easement described in CBJ 49.70.960(c)(6) and the Long Range Waterfront Plan.”*

Recommendation: Staff recommends revising the definition to mean, *“the pedestrian path and access easement described in CBJ 49.35.650 Seawalk and the Long Range Waterfront Plan.”*

COMPLIANCE WITH TITLE 49

CBJ 49.05.100 – Purpose and intent. The purpose and Intent of Title 49 Land Use Code is:

- (1) To achieve the goals and objectives, and implement the policies, of the Juneau comprehensive plan, and coastal management program;*
- (2) To ensure that future growth and development in the City and Borough is in accord with the values of its residents;*
- (3) To identify and secure, for present and future residents, the beneficial impacts of growth while minimizing the negative impacts;*
- (4) To ensure that future growth is of the appropriate type, design and location, and is served by a proper range of public services and facilities such as water, sewage, and electrical distribution systems, transportation, schools, parks and other public requirements, and in general to promote public health, safety and general welfare;*
- (5) To provide adequate open space for light and air; and*
- (6) To recognize the economic value of land and encourage its proper and beneficial use.*

Title 49 – The proposed text amendment complies with CBJ Title 49 Land Use Code. Additionally, the proposed amendment will not create any inconsistencies in Title 49.

Code Reference	Item	Summary
CBJ 49.35.650	Public Access	The proposed text amendment complies with the purpose and intent of this section, and should not cause inconsistencies in the Land Use Code.

COMPLIANCE WITH ADOPTED PLANS

2013 COMPREHENSIVE PLAN VISION: *The City and Borough of Juneau is a vibrant State Capital that values the diversity and quality of its natural and built environments, creates a safe and satisfying quality of life for its diverse population, provides quality education and employment for its workers, encourages resident participation in community decisions and provides an environment to foster state-wide leadership.*

2013 COMPREHENSIVE PLAN The proposed text amendment is in compliance with the 2013 Comprehensive Plan.			
Chapter	Page No.	Item	Summary
5	48	Policy 5.5 – IA3(B)	The proposed text amendment supports <i>Policy 5.5: To maintain and strengthen downtown Juneau as a safe, dynamic, and pleasant center for government and legislative activities, public gatherings, cultural and entertainment events, and residential and commercial activities in a manner that complements its rich historic character and building forms.</i>

2013 COMPREHENSIVE PLAN The proposed text amendment is in compliance with the 2013 Comprehensive Plan.			
5	49	Implementing Action 5.5 – IA3	The proposed text amendment supports <i>Implementing Action 3: Facilitate the pedestrian usage of downtown with physical improvements, Land Use Code amendments, or other programs or initiatives which could include: B. Extend the waterfront Seawalk.</i>
11	185	Guidelines and Considerations for Subarea 6	The proposed text amendment supports <i>Guidelines and Considerations: 7. Preserve public access to the shoreline and waterfront areas. Provide for public access, open space/ natural areas and water-dependent and water-related uses on the downtown waterfront via the seawalk with connections to the existing pedestrian system.</i>

2003 LONG RANGE WATERFRONT PLAN The proposed text amendment complies with the 2003 Long Range Waterfront Plan.			
Chapter	Page No.	Item	Summary
2	20	Implementation Action	The proposed text amendment is in compliance with <i>Chapter 2 Goal – Enhance community quality of life, includes expanding public access and spaces along the waterfront, inclusive of the development of a seawalk along the entirety of the Downtown waterfront...</i>

AGENCY REVIEW

CDD conducted an agency review comment period from May 26, 2022, through June 9, 2022. Agency review comments can be found in **Attachment C**.

Agency	Summary
CBJ Docks & Harbors	No comment
CBJ Parks & Recreation	No comment

PUBLIC COMMENTS

Notice was provided in the CBJ website announcement and agenda for the June 14 Planning Commission meeting, and in the June 3 and June 11, 2022 Juneau Empire's Your Municipality advertisements. At the time of drafting this staff report, no public comment had been received.

FINDINGS

1. Does the proposed text amendment comply with the Comprehensive Plan and other adopted plans?

Analysis: The proposed amendment balances the varied Comprehensive Plan policies and is generally consistent with the overall vision, and complies with the goals of the 2003 Long Range Waterfront Plan.

Finding: Yes. The proposed text amendment complies with the 2013 Comprehensive Plan and the 2003 Long Range Waterfront Plan.

2. Does the proposed text amendment comply with Title 49 – Land Use Code?

Analysis: The proposed amendment was drafted with the purpose and intent of Title 49 taken into account. If approved as drafted, it will be consistent with the above purposes.

Finding: Yes. The proposed amendment complies with the purpose and intent of Title 49. Additionally, the proposed amendments do not create inconsistencies within the code.

RECOMMENDATION

Staff recommends the Planning Commission adopt the Director's analysis and findings and make a recommendation to the Assembly to APPROVE the proposed text amendment and definition amendment providing for Seawalk infrastructure in the downtown area.

STAFF REPORT ATTACHMENTS

Item	Description
Attachment A	Proposed Ordinance
Attachment B	Packet from May 26, 2022 Title 49 Committee Meeting

PART II - CODE OF ORDINANCES
TITLE 49 - LAND USE
Chapter 49.70 - SPECIFIED AREA PROVISIONS
ARTICLE IX. COASTAL MANAGEMENT

ARTICLE IX. COASTAL MANAGEMENT

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Go to page

49.70.900 General provisions.

- ~~(a) This article establishes the coastal management enforceable policies of the Juneau Coastal Management Program.~~
- ~~(b) The director shall be responsible for carrying out the provisions of this article except as such is specifically delegated to other parties. The director is specifically authorized to carry out and is responsible for:~~
 - ~~(1) All functions allocated to the City and Borough under the state's consistency decision making procedure set forth in 6 AAC 50;~~
 - ~~(2) The rendering of local consistency decisions for the City and Borough on all building permit applications;~~
 - ~~(3) The rendering of consistency decisions for the City and Borough on all development applications under the authority of the planning department established under this article;~~
 - ~~(4) The receipt, storage and management of all records pertaining to decisions and actions carried out under this article.~~

~~(Serial No. 87-49, § 2, 1987)~~

49.70.905 Coastal development.

The following policies apply to coastal development throughout the coastal zone:

- ~~(1) To the extent feasible and prudent, coastal development shall be designed using best available technology to minimize hazards associated with physical conditions such as soil characteristics, slopes, geological features, surface and subsurface drainage, water tables, floodplains and shore forms of the site.~~
- ~~(2) To the extent feasible and prudent, coastal development shall be designed and operated to prevent adverse impact upon beaches and other physical shore features in the coastal zone.~~
- ~~(3) The placement of structures and the discharge of dredged or fill material into coastal water shall, at a minimum, comply with Parts 320—330, et seq., Title 33, Code of Federal Regulations (Vol. 51 of the Federal Register, pp. 41206-41260, November 13, 1986).~~
- ~~(4) Dredging and filling shall be prevented in highly productive tideflats and wetlands, subtidal areas important to shellfish, and water important for migration, spawning and rearing of salmon and other sportfish species, unless there is a significant public need for the project and there is no feasible and prudent alternative to meet the public need.~~
- ~~(5) Shoreline industrial developments, ports, harbors and marinas shall be sited, designed, constructed and operated such that:~~
 - ~~(A) Lawful navigation is not impaired;~~
 - ~~(B) Facilities for proper handling of sewage, refuse, fuel and waste oil are provided;~~

- ~~(C) All feasible and prudent steps are taken to prevent water pollution by incorporating best management practices; and~~
- ~~(D) Adequate access and utility access are available or can be provided.~~
- ~~(6) To the extent feasible and prudent, ports, harbors and docks shall be located away from extensive tideflats and wetlands and so as not to obstruct fish passage along the coast or in waters used by anadromous fish.~~
- ~~(7) To the extent feasible and prudent, piers, wharfs, and floating docks shall be installed in waters that have adequate natural flushing capacities. If solid fill must be used, it shall be located and constructed to maintain water circulation in the harbor.~~
- ~~(8) Excavation, shoreline alteration and disturbance of anadromous streams, tideflats and wetlands shall be minimized in the construction and operation of port, harbor, dock and industrial facilities.~~
- ~~(9) To the extent feasible and prudent, the area immediately surrounding small boat harbors shall be reserved for water related and water dependent uses.~~
- ~~(10) To the extent feasible and prudent, port and harbor uses shall minimize the negative aesthetic impact of their use and activities, shall enhance and maintain the positive visual aspects of their development, and shall provide opportunities for public viewing of such positive aspects.~~
- ~~(11) Navigable waters shall be kept free of unnecessarily hazardous or obstructive development.~~
- ~~(12) To the extent feasible and prudent, development shall not detract from the scenic qualities of the shorelines, shall be compatible with its surroundings and shall not significantly block scenic vistas.~~
- ~~(13) Filling of intertidal areas below mean high tide, not specifically addressed in section 49.70.960, for the expansion of upland area is specifically prohibited unless clear and convincing evidence is provided showing that all of the following conditions exist that:~~
 - ~~(A) Strict compliance with the policy would prevent the applicant from making a reasonable use of the property or would make compliance unreasonably burdensome;~~
 - ~~(B) Fill is the only means to allow development of the property which is similar to other properties in the vicinity;~~
 - ~~(C) Less than the proposed fill would prevent the applicant from making a reasonable use of the property or would make compliance unreasonably burdensome;~~
 - ~~(D) The proposed project meets the requirements of the other enforceable policies of the Juneau Coastal Management Plan;~~
 - ~~(E) The proposed project will not be detrimental to the public health, welfare and safety or to other properties in the vicinity;~~
 - ~~(F) Approval of the project will not authorize uses on the property otherwise not allowed by other state, federal and local laws and regulations; and~~
 - ~~(G) If applicable, the meaning of the phrase "feasible and prudent" has been considered and found to support approval of the proposal to fill.~~

~~Provided, log and mining transfer facilities and the following public facilities are exempt from this policy: bridges, causeways, boat ramps, utility transmission facilities, pipelines, treatment plant lines and outfalls, and transportation facilities.~~
- ~~(14) Floathomes, or any floating structures or watercraft intended for moored or anchored residential use, shall be approved through the conditional use process before they may be anchored or moored in one location for more than 30 days. Floathomes must also have state department of natural resources or~~

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City and Borough tideland permits as applicable. Such structures must either be connected to an approved onshore sewage disposal system or have United States Coast Guard approved marine sanitation devices, and may not dispose of sewage by any other means. In addition, floathomes must meet all of the following standards:

- (A) Floathomes shall not ground at low tide and must be located at least 300 feet from any anadromous fish streams. Mooring shall not obstruct recreational use of the shore. Fuel tanks shall be designed to protect against accidental contamination of the water. Seawater must be protected from contamination by fuel spills, and solid and liquid wastes;
- (B) Floathomes shall not be located in the "prohibited area" shown on Juneau Coastal Management Plan Map 2, or areas with concentrations of shellfish, waterfowl, shorebirds, marine mammals, extensive tide flats, salt marshes and kelp or eelgrass beds; sites within 330 feet of eagle nest trees; developed recreation sites; heavily used recreation sites; or known historic and archeological sites. Floathomes may be allowed on privately owned tidelands within the prohibition area provided other provisions of this section are met;
- (C) The placement of floathomes shall avoid blockage or interference to waterway channels used by waterborne traffic;
- (D) Views from adjacent shoreline residences shall not be blocked if the main floor of the residence is located below 25 feet above sea level. The owner of any such residence within 500 feet on either side of the proposed floathome location may prevent that site from being used, by submitting a written objection at or before the time of consistency review or planning commission action, under the conditional use process. Such objection may not be considered after the consistency determination is issued, or planning commission action under the conditional use process;
- (E) Where feasible and prudent, no more than one floathome shall be allowed for every 500 feet of lineal shoreline measured at mean high tide unless multiple floathome moorage is specifically allowed under subsection (15) of this section;
- (F) Floathomes shall be constructed and maintained to avoid a dilapidated, abandoned, derelict or unattended appearance;
- (G) All refuse shall be securely stored pending removal;
- (H) Floathomes shall float generally level and have at least one foot of freeboard;
- (I) Where the need for upland access to the floathome is anticipated, the floathome shall be sited to ensure that there is proper and adequate legally recorded upland access to the site;
- (J) Floathomes shall be placed so that required or desired onshore services and facilities can be efficiently extended;
- (K) Floathomes shall be allowed in an area only after adjacent upland owners are notified;
- (L) Floathomes shall be sited and operated to avoid creating or increasing noise and air pollution. Emissions from heaters and stoves, if otherwise lawful, may be allowed;
- (M) Persons wishing to place floathomes adjacent to shorelines having road access must show that at least two onshore legally recorded parking places not on a public right-of-way are available and that floathome residents will have clear access to these parking places across the shoreland adjacent to the floathome; and
- (N) Floathomes may be allowed without conditional use approval in developed marinas if the owner or operator assumes responsibility for providing fresh water, sewage disposal and solid waste disposal.

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~~(15) Floating camps or multipurpose floating structures intended in whole or in part for residential purposes and meant to support mining, fishing, logging, tourist or other activities may be allowed under the conditional use procedure provided they meet all of the standards for floathomes set forth in subsection (14) of this section.~~

~~(16) Development intended to provide moorage for two or more floathomes may be allowed as conditional uses in the nonprohibited areas shown on Juneau Coastal Management Plan Map 2, provided the developer:~~

~~(A) Owns, or has a nonrevocable lease, for at least 30 years in duration, for the upland area adjacent to the water area to be developed;~~

~~(B) Provides at least two off-road parking spaces for each floathome;~~

~~(C) Provides fresh water, sewer with approved onshore disposal, and electricity to each floathome;~~

~~(D) Provides fire control protection approved by the City and Borough fire chief; and~~

~~(E) Provides to the floathomes, by site selection, physical improvements, or design of the floathomes, protection from storms, such that the floathomes will be safe from waves higher than two feet.~~

~~(17) Floating structures, other than those addressed in subsections (14), (15) and (16) of this section, intended for commercial or industrial purposes including, fish propagation, mineral extraction, mineral processing, timber extraction or processing, lodging, seafood processing, research, marine service and repairs, which will be fixed in one location for more than 30 days, may do so only after having obtained approval through the conditional use process. Provided, the following are exempt from the conditional use process requirement:~~

~~(A) Mooring devices for watercraft;~~

~~(B) Watercraft transiting the City and Borough that are not intended for residential use in excess of 30 days in any 12 calendar months;~~

~~(C) Seafood processors whose primary purpose is to receive fish and shellfish from harvesting boats and prepare it for further transportation; and~~

~~(D) Watercraft intended to transport cargo to, from or within the City and Borough.~~

~~(18) Industrial and commercial uses on or adjacent to the shorelines of navigable waters must be located in the appropriate special waterfront designation established in section 49.70.960 unless:~~

~~(A) There is no feasible and prudent alternative to meet the public need for the use; and~~

~~(B) The nature of the use requires a specific location and no other location will suffice.~~

~~(19) In approving development in coastal areas, priority shall be given, in the following order, to:~~

~~(A) Water dependent uses and activities;~~

~~(B) Water related uses and activities; and~~

~~(C) Uses and activities which are neither water dependent nor water related, for which there is no feasible and prudent inland alternative to meet the public need for the use or activity.~~

~~(Serial No. 87-49, § 2, 1987; Serial No. 92-41, § 2, 1992)~~

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(Supp. No. 133)

49.70.910 Geophysical hazards.

- (a) ~~Surface modification that would induce excessive erosion, undermine the support of nearby land or unnecessarily scar the landscape is prohibited. Any other modification shall be limited to the smallest extent that is needed for development.~~
- (b) ~~Development in areas having known hazards may not be approved until siting, design, and construction measures for minimizing property damage and protecting against loss of life have been provided.~~
- (c) ~~Developers shall retain existing vegetative cover to the greatest extent feasible and prudent. In cases where development necessitates removal of vegetation, erosion shall be prevented through revegetation or, if revegetation is not feasible, by other appropriate measures.~~
- (d) ~~Industrial and resource extraction activities in high landslide or avalanche areas are prohibited unless it is determined that these activities will reduce the threat of landslides and avalanches on existing and potential development.~~
- (e) ~~Mitigating measures are required for development in areas of moderate hazard. These may include dissipating structures or dams, appropriate structural engineering, or other techniques that respond to the specific site hazards.~~
- (f) ~~Residential, commercial and industrial development is prohibited in floodways. Culverts and bridges are not subject to this prohibition.~~
- (g) ~~Structures near watercourses shall be designed to reduce the impact of flooding and to allow for natural drainage.~~
- (h) ~~Sand and gravel operations, recreation activities, open space, and parking lots may be allowed in 100-year floodplains only if they do not increase the flood hazard.~~
- (i) ~~Industrial equipment and raw materials stored in 100-year floodplains shall be adequately bermed or otherwise protected.~~
- (j) ~~Disposal of hazardous materials in 100-year floodplains is prohibited. No new development which will involve storage of hazardous materials will be permitted in the 100-year floodplain unless there is no feasible and prudent alternative and unless safety measures are provided to prevent accidental discharge.~~
- (k) ~~Establishment of sanitary landfills in floodplains is prohibited.~~

(Serial No. 87-49, § 2, 1987)

49.70.915 Recreation.

- (a) ~~In developing areas:~~
 - (1) ~~Recreational developments adjacent to bodies of water shall be located, designed, constructed, and managed to minimize adverse effects on other uses and to provide safe, healthy conditions for recreationists.~~
 - (2) ~~Recreational developments shall, wherever feasible and prudent, preserve or enhance scenic views and vistas as well as improve the aesthetic value of the area.~~
 - (3) ~~Access to natural areas, such as fishing streams and hunting areas, shall be a combination of linear trails or easements and small parking areas to minimize user concentration on small portions of the shore or upland areas.~~

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(Supp. No. 133)

(b) ~~Facilities for water-dependent recreation, such as fishing, swimming, and boating, and water-oriented recreation, such as picnicking, hiking, and walking, shall be located near the shoreline. Non-water-related recreation facilities shall be located away from the shoreline unless no feasible and prudent inland alternative exists to meet the public need.~~

(c) ~~Auke Creek, the east bank of Auke Lake, and Lake Creek outside federal lands shall be protected with shoreline public easements and greenbelts for public access and habitat purposes.~~

(Serial No. 87-49, § 2, 1987)

49.70.920 Energy facilities.

~~Siting for the development of major energy facilities must be based, to the extent feasible and prudent, on the following standards:~~

- ~~(1) Site facilities so as to minimize adverse environmental and social effects while satisfying industrial requirements;~~
- ~~(2) Site facilities so as to be compatible with existing and subsequent adjacent uses and projected community needs;~~
- ~~(3) Consolidation of facilities;~~
- ~~(4) Consider the concurrent use of facilities for public or economic reasons;~~
- ~~(5) Cooperate with landowners, developers, and federal agencies in the development of facilities;~~
- ~~(6) Select sites with sufficient acreage to allow for reasonable expansion of facilities;~~
- ~~(7) Site facilities where existing infrastructure, including roads, docks, and airstrips, is capable of satisfying industrial requirements;~~
- ~~(8) Select harbors and shipping routes with least exposure to reefs, shoals, drift ice, and other obstructions;~~
- ~~(9) Encourage the use of vessel traffic control and collision avoidance systems;~~
- ~~(10) Select sites where development will require minimal site clearing, dredging, and construction in productive habitats;~~
- ~~(11) Site facilities so as to minimize the probability, along shipping routes, of spills or other forms of contamination which would affect fishing grounds, spawning grounds, and other biologically productive or vulnerable habitats, including marine mammal rookeries, haulout grounds and waterfowl nesting areas;~~
- ~~(12) Site facilities so that the design and construction of these facilities and support infrastructures in coastal areas will allow for free passage and movement of fish and wildlife with due consideration for historic migratory patterns and so that areas of particular scenic, recreational, environmental, or cultural value will be protected;~~
- ~~(13) Site facilities in areas of least biological productivity, diversity, and vulnerability and where effluents and spills can be controlled or contained;~~
- ~~(14) Site facilities where winds and air currents disperse airborne emissions which cannot be captured before escape into the atmosphere;~~
- ~~(15) Select sites in areas which are designated for industrial purposes and where industrial traffic is minimized through population centers; and~~

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~~(16) Select sites in areas where vessel movements will not result in overcrowded harbors or interfere with fishing operations.~~

~~(Serial No. 87-49, § 2, 1987)~~

~~49.70.925 Transportation and utilities.~~

- ~~(a) Highway and airport design, construction and maintenance shall take all feasible and prudent steps to prevent alteration of water courses, wetlands and intertidal marshes, and aesthetic degradation.~~
- ~~(b) Where roads and trails cross anadromous streams, the design and construction of bridges and culverts shall allow free passage of fish, and shall take all feasible and prudent steps to prevent habitat disturbance. Phasing of construction shall be done to avoid critical migration periods for salmon and other anadromous species.~~
- ~~(c) Roads and utilities shall be designed and built so as to protect shore features and other uses that may be affected by pollution, flooding, erosion and other adverse effects.~~
- ~~(d) Prior to disposal of state or City and Borough lands, public access routes, such as roads and trails, shall be identified and dedicated.~~
- ~~(e) Where feasible and prudent, bike trails shall be provided.~~
- ~~(f) Transportation and utility routes and facilities shall be sited inland from beaches and shorelines unless the route or facility is water dependent or no feasible and prudent inland alternative exists to meet the public need for the route or facility.~~
- ~~(g) Parking areas shall include suitable drainage controls to prevent ponding and excessive concentrated runoff. Such areas shall be buffered by a minimum ten-foot wide natural vegetation strip, as feasible and prudent, from shorelines and adjacent uses, and shall be sited, screened, and maintained to minimize dust.~~
- ~~(h) Development shall only locate in areas where utilities are available, or can be economically extended, or can be developed as part of the project, or where suitable on-site utilities are possible.~~
- ~~(i) Utility corridors shall, wherever feasible and prudent, be integrated with roads and other transportation corridors.~~
- ~~(j) Where feasible and prudent, overhead lines shall be located so as not to interfere with scenic vistas.~~

~~(Serial No. 87-49, § 2, 1987)~~

~~49.70.930 Fish and seafood propagation and processing.~~

- ~~(a) Shoreline use shall not adversely impact important fisheries habitat, migratory routes and harvest of significant fish or shellfish species. Shorelines having banks, beaches, and beds critical to the preservation or enhancement of the fisheries resource base shall be maintained in, or restored to, their original condition wherever and whenever feasible and prudent. Upland areas shall be managed to maintain water quality standards necessary for the propagation of anadromous fish species.~~
- ~~(b) Fisheries enhancement and aquaculture shall maintain or restore quality and normal circulation patterns of affected waters at optimum levels consistent with applicable state standards. Aquaculture hatcheries and fisheries shall be protected from significant water quality degradation by other users.~~
- ~~(c) Aquaculture development and fisheries enhancement shall be located, designed and operated so that aesthetic values of local shorelines are maintained to the extent feasible and prudent.~~

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(Supp. No. 133)

(d) ~~Fisheries enhancement and aquaculture practices, including disposal of wastes, viscera or fish scrap, shall be conducted so as not to violate applicable state water quality and litter control standards.~~

(Serial No. 87-49, § 2, 1987)

~~49.70.935 Timber harvest and processing.~~

(a) ~~AS 41.17, Forest Resources and Practices, and the regulations and procedures adopted under that chapter with respect to the harvest and processing of timber, are incorporated into the Juneau Coastal Management Plan and constitute, in part, the components of the Juneau Coastal Management Plan, with respect to those purposes.~~

(b) ~~Commercial timber harvest activities and land clearing in the coastal area shall be conducted so as to meet the following standards:~~

(1) ~~The location of facilities and the layout of logging systems shall be sited so as to take all feasible and prudent steps to prevent adverse environmental impacts.~~

(2) ~~Free passage and movement of fish in coastal waters shall be assured.~~

(c) ~~Commercial timber transport and land clearing, storage, and processing in the coastal area shall be conducted so as to meet the following standards:~~

(1) ~~Sites for in-water dumping and storage of logs shall be selected and these activities conducted so as to minimize adverse affects on the marine ecosystem, minimize conflicts with recreational uses and activities, be safe from storms and not constitute a hazard to navigation. Shared use of such facilities shall be required wherever feasible.~~

(2) ~~Roads for log transport and harvest area access shall be planned, designed, and constructed so as to minimize mass wasting, erosion, sedimentation, and interference with drainage, and shall be adequately maintained until they are returned to their pre-road natural drainage patterns unless the roads can be converted to another use, such as recreational access. Approvals and permits for logging activities shall specify what will be done with the roads after logging is completed.~~

(3) ~~Stream crossings, including bridges and culverts, shall be kept to a minimum number, shall be designed to withstand seasonal high water and flooding, and shall provide free passage and movement of fish.~~

(d) ~~Fuelwood cutting practices shall be conducted so as to meet the following standards:~~

(1) ~~Fuelwood cutting within 100 feet of the centerline of any trunk roadway shall be done in a manner that minimizes visual impact.~~

(2) ~~Felling and bucking shall be done so that traffic on roadways is not endangered or delayed.~~

(3) ~~Slash shall be reduced in height by lopping, scattering and laying as close to the ground as practicable.~~

(Serial No. 87-49, § 2, 1987)

~~49.70.940 Mining and mineral processing.~~

(a) ~~Mining and mineral processing in the coastal areas shall be regulated, designed, and conducted so as to be compatible with the standards in this article, adjacent uses and activities, statewide and national needs, and district programs.~~

~~(b) Sand and gravel may be extracted from coastal waters, intertidal areas, barrier islands, and spits, when there is no feasible and prudent alternative to coastal extraction which will meet the public need for sand or gravel.~~

~~(Serial No. 87-49, § 2, 1987)~~

49.70.945 Subsistence.

~~Project proposals shall be designed so that opportunities for subsistence usage of coastal areas and resources are recognized and assured.~~

~~(Serial No. 87-49, § 2, 1987)~~

49.70.950 Habitat.

~~(a) Habitats in the coastal area which are subject to the Alaska Coastal Management Program include:~~

- ~~(1) Offshore areas;~~
- ~~(2) Estuaries;~~
- ~~(3) Wetlands and tideflats;~~
- ~~(4) Rocky islands and seacliffs;~~
- ~~(5) Barrier islands and lagoons;~~
- ~~(6) Exposed high energy coasts;~~
- ~~(7) Rivers, streams, and lakes; and~~
- ~~(8) Important upland habitat.~~

~~(b) The habitats contained in subsection (a) of this section shall be managed so as to maintain or enhance the biological, physical and chemical characteristics of the habitat which contribute to its capacity to support living resources.~~

~~(c) In addition to the standard contained in subsection (b) of this section, the following standards shall apply to the management of the following habitats:~~

- ~~(1) Offshore areas shall be managed as a fisheries conservation zone so as to maintain or enhance the state's sport, commercial, and subsistence fishery;~~
- ~~(2) Estuaries shall be managed so as to ensure adequate waterflow, natural circulation patterns, nutrients, and oxygen levels, and to avoid the discharge of silt, toxic wastes and the destruction of productive habitat;~~
- ~~(3) Wetlands and tideflats shall be managed so as to ensure adequate waterflow, nutrients, and oxygen levels, to avoid the adverse effects on natural drainage patterns, the destruction of important habitat, and the discharge of toxic substances;~~
- ~~(4) Rocky islands and seacliffs shall be managed so as to avoid the harassment of wildlife, the destruction of important habitat, and the introduction of competing or destructive species and predators;~~
- ~~(5) Barrier islands and lagoons shall be managed so as to maintain adequate flows of sediments, detritus, and water, avoid the alteration or redirection of wave energy which would lead to the filling in of lagoons or the erosion of barrier islands, and discourage activities which would decrease the use of barrier islands by coastal species, including polar bears and nesting birds;~~

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(Supp. No. 133)

- (6) ~~High energy coasts shall be managed so as to ensure the adequate mix and transport of sediments and nutrients and avoid redirection of transport process and wave energy; and~~
- (7) ~~Rivers, streams and lakes shall be managed so as to protect natural vegetation, water quality, important fish or wildlife habitat and natural waterflow.~~
- (d) ~~Uses and activities in the coastal area which will not conform to the standards contained in subsections (b) and (c) of this section may be allowed if the following standards are met:~~
- (1) ~~There is a significant public need for the proposed use or activity;~~
 - (2) ~~There is no feasible and prudent alternative to meet the public need for the proposed use or activity which would conform to the standards contained in subsections (b) and (c) of this section; and~~
 - (3) ~~All feasible and prudent steps to maximize conformance with the standards contained in subsections (b) and (c) of this section will be taken.~~
- (e) ~~Each development which adjoins a river or stream which has been degraded by previous human activity shall, as part of its development plan, include provisions for rehabilitation of the stream or river, and shall be approved by the state department of fish and game. Such provisions shall be limited to removal of debris, removal of abandoned machinery and vehicles, grading and stabilization of banks and related clean up activities, and shall include preservation or restoration of riparian vegetation. Restoration shall not be required beyond that needed to return the area to natural appearance and function; provided, the following are exceptions to this policy:~~
- (1) ~~Construction of one single family or duplex dwelling on a lot of record;~~
 - (2) ~~Construction of single family or duplex dwellings on lots created by subdivisions of four or fewer lots.~~
- (f) ~~All structures and foundations located adjacent to streams or lakes listed in Table VI-2 of Appendix C of the Juneau Coastal Management Plan, shall have a 50 foot setback from each side of the stream or lake measured from the ordinary high water mark, where feasible and prudent; provided, docks, bridges, culverts and public structures whose purpose is access to or across the stream or lake are not subject to this policy, and provided further, uses which must be in or adjacent to the stream or lake in order to function, such as mining activities, fish culturing, water supply intakes and similar uses, are exempt from the setback requirement. The setback shall be vegetated or revegetated, where feasible and prudent, and such vegetation or revegetation shall be kept or arranged to maximize shade on the stream.~~
- (g) ~~Where feasible and prudent, watershed areas which contribute to existing drinking water supplies, as defined by the state department of environmental conservation, shall be protected by buffer strips at least 50 feet in width along each side of streams, the edges of wetlands, and lakes. Measures shall be taken to prevent erosion. The side or edge of the water body shall be the ordinary high water mark. The buffer shall be vegetated or revegetated.~~
- (h) ~~Development in buffer areas prescribed in subsections (f) and (g) of this section shall incorporate measures to prevent erosion and subsequent increases in turbidity and sediment within the waterway and adjacent wetlands within the buffer.~~
- (Serial No. 87-49, § 2, 1987)

~~49.70.955 Air, land and water quality.~~

- (a) ~~Notwithstanding any other provision of this article, the statutes, regulations and procedures of the state department of environmental conservation, protecting air, land and water quality are incorporated into the Juneau Coastal Management Plan and, as administered by that agency, constitute the components of the Juneau Coastal Management Plan with respect to those purposes.~~

- (b) ~~Streamside and lakeside development shall not cause downstream water degradation below state standards.~~
- (c) ~~Berms and planting strips shall be placed along highways and major arterials wherever feasible and prudent.~~
- (Serial No. 87-49, § 2, 1987)

49.70.960 Special waterfront areas.

(a) ~~General standards.~~

- (1) ~~The Juneau Coastal Management Plan Special Waterfront Area Map, dated December 1, 1990, shows the boundaries of each special waterfront area, and the maximum seaward limits for permanent development in each special waterfront area. The land or water inside the boundaries shown on the Juneau Coastal Management Plan Special Waterfront Area Map is subject to the provisions of this section. Uses allowed within the special waterfront areas as provided in this section are not allowed along other waterfronts within the City and Borough unless such uses are allowable outside the special waterfront areas under the terms of subsections 49.70.905(13) or (18) and other applicable provisions of the Juneau Coastal Management Plan.~~
- (2) ~~Fill proposals within the special waterfront areas are not subject to the fill prohibition of subsection 49.70.905(13) relating to coastal development. Each fill proposal shall be individually reviewed to ensure that configuration, timing, composition and construction practices will minimize impacts on habitats and meet the water quality standards and other Juneau Coastal Management Plan provisions. The size of any fill shall not exceed that necessary for the use unless a larger fill is needed to maintain integrity of the fill, maintain or enhance habitat values, or to fulfill other enforceable provisions of this section.~~
- (3) ~~Existing uses or activities in the subject areas may continue, provided, if conversion to another use or other modification is to be made, it shall conform to the requirements of the special waterfront areas.~~
- (4) ~~Uses identified as permissible in this article may be conditioned, through the coastal management consistency review process, to be consistent with or conform to the habitat standards contained in subsections 49.70.950(b) and (c). However, if new site-specific information becomes available after May 22, 1986, which clearly indicates that crucial habitats exist within the subject areas and if the state division of governmental coordination, after consultation with the City and Borough and state resource agencies, concurs, a specific evaluation pursuant to subsection 49.70.950(d) will be immediately required for projects within the crucial habitat areas.~~
- (5) ~~A change to the special waterfront areas may be initiated by the submittal of new information regarding habitats to both the division of governmental coordination and the City and Borough, by the state department of fish and game, the state department of environmental conservation, the state department of natural resources, the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency, the National Marine Fisheries Service, the City and Borough, or other interested parties. The division of governmental coordination shall expeditiously process new information as a routine program change in accordance with 6 AAC 85.120(c). To initiate a program change new information must be based on detailed site-specific studies which indicate that the habitat is substantially more productive than was indicated in the information which was available on May 22, 1986.~~
- (6) ~~Except as provided in subsection (a)(4) of this section, the significant public need and feasible and prudent alternative analysis under subsection 49.70.950(d) will not apply to state, federal or local permit applications previously submitted for all, or a part, of the affected area unless a change to the affected special waterfront area has become effective.~~

~~(7) Proponents of land and water uses shall be advised that in cases where the use of dredged or fill materials in waters of the United States is proposed, the requirements of the Clean Water Act Section 404(B)(1) guidelines shall apply and must be met before development may proceed.~~

~~(8) When the use of dredged or fill materials in the waters of the United States is required, uses that do not require direct siting in or access to the water to fulfill their basic purpose will generally be directed to upland areas unless it is clearly demonstrated that upland alternatives are not available.~~

~~(b) Land and water uses permissible in the special waterfront areas:~~

~~(1) Generally, The land and water uses listed below as permissible in the special waterfront areas may be further restricted in zoning classifications within the special waterfront areas. The uses and activities listed below are deemed to meet the water relevancy requirements of section 49.70.905. Other uses and activities may be allowed if they meet the requirements of the zoning districts under chapter 49.25, and the water relevancy requirements of section 49.70.905.~~

~~(A) Maritime activities including private boating, commercial boating of all types, visitor industry, including cruise ships and transient pleasure vessels, commercial fishing, charter fishing and boating, floatplane activity, and any other activity not involving a structure for the use of waterbodies for sport, recreation, or commerce;~~

~~(B) Floats, docks, jetties, groins, bulkheads, ramps, shore defense works, piers, wharfs, dolphins, and other structures needed to provide access between shore and waterbody or to protect and stabilize the shoreline;~~

~~(C) All forms and structures related to handling and storage of cargo which arrived by water and/or is intended to depart by water, including storage yards, warehouses, cranes and similar machinery, and marine railways;~~

~~(D) Any form or structure for manufacturing or repair which is related to maritime activity and which substantially requires or benefits from a shoreline location;~~

~~(E) Any form or structure associated with uses which need or substantially benefit from a shoreline location;~~

~~(F) Marine fuel, water and sanitation facilities including services and support for transient and permanent vessels;~~

~~(G) All forms of public, private, and commercial moorage;~~

~~(H) Public access facilities, including boat ramps, parks, promenades, sidewalks, viewing areas, benches, plazas, and other forms of public open spaces;~~

~~(I) Research and education facilities related to the waterbody they abut;~~

~~(J) Fish and shellfish propagation and management;~~

~~(K) Offices which are related to and a necessary part of permissible uses;~~

~~(L) Public utilities including lines, pump stations, transformer stations, and similar uses;~~

~~(M) Hotels, motels and other types of transient lodging which are designed to take advantage of the shoreline amenity and which will result in increased visual or physical public access to the shoreline;~~

~~(N) Restaurants, cafes, and other food or beverage facilities which are designed to take advantage of the shoreline amenity and which will result in increased visual or physical access to the shoreline;~~

~~(O) Gift shops, entertainment facilities, ticketing agencies, and other visitor industry services;~~

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- (P) ~~Retail services directly linked to a maritime clientele, such as gear and supply stores, boat sales, and laundries. To be directly linked, the proposed use must show by design and orientation that the primary clientele will be persons arriving from or going to watercraft or working on or in conjunction with watercraft, and that the proposed use is reasonably located to be convenient to foot borne customers that are already found in the area or that can be expected to be in the area;~~
- (Q) ~~Retail establishments and restaurants catering to the needs of persons working in the special waterfront areas when close proximity is important to the function of permissible uses;~~
- (R) ~~Water oriented retail and/or office complexes where the value and income potential from retail or office uses will enable provision of public access and other water related amenities for use by the public. Such amenities must be provided at the same time as the facilities are completed, or earlier in time. An overall plan for the entire development must be presented with the permit application showing spaces and features that will be available to the public;~~
- (S) ~~Residences;~~
- (T) ~~The following accessory uses when associated with the uses set forth above: parking lots, spaces and structures, driveways, sidewalks, entrance structures, decorative structures, benches, landscaping features, awnings and similar improvements, and utility facilities.~~

~~(c) Special policies for the special waterfront areas.~~

- (1) ~~No additional intertidal fill may be allowed in the Tee Harbor special waterfront area except that necessary to construct a public boat ramp.~~
- (2) ~~Gold Creek Mouth Protection Area. No structures or activities shall be allowed in this area except as needed by the U.S. Coast Guard for its purposes or as allowed by the state department of fish and game for habitat maintenance and enhancement.~~
- (3) ~~No floating structures are allowed within 300 feet of the mouths of streams in the Thane special waterfront area.~~
- (4) ~~A public fishing pier on the south side of the Juneau Douglas Bridge may be allowed.~~
- (5) ~~A portion of the intertidal area near the mouth of Salmon Creek has been set aside as a natural beach for salmon resting.~~

- (6) **Seawalk.** A pedestrian access easement and walkway intended to provide a continuous pedestrian path along the entire downtown waterfront area, shall be included with all future development or redevelopment along the downtown waterfront shoreline. This walkway, to be known as the seawalk, shall be a continuous path along the entire downtown waterfront as depicted in the Long Range Waterfront Plan. In lieu of constructing the required seawalk, property owners developing or redeveloping property along the waterfront shoreline within the area encompassed by the Long Range Waterfront Plan shall pay a fee to the City and Borough equal to 20 percent of the final project cost for a seawalk constructed to public assembly standards for the section abutting their property. Unless the alignment of the seawalk requires otherwise, owners of property along the waterfront shoreline within the area encompassed by the Long Range Waterfront Plan developing or redeveloping their property shall dedicate all easements necessary for construction of a seawalk 16 feet in width.

(A) Reserved.

(B) Reserved.

- (C) The seawalk shall not be required for existing buildings located along the water's edge until additions or alterations, or both, in excess of 50 percent of the gross square footage of the existing structure are proposed or undertaken within a 36-month period as determined by the

Commented [JM2]: No changes proposed to the wording Title 49 Subcommittee voted to recommend to the Planning Commission that the language remain the same and move to another section of the land use code. After discussion with staff, Title 49 agreed that Chapter 49.35 was the best fit.

City and Borough building division. General maintenance or repair work is exempt from this requirement.

(D) Reserved.

~~(d) Interpretation of the Juneau Coastal Management Plan Special Waterfront Area Map. The purpose of this subsection is to assist users of the Juneau Coastal Management Plan Special Waterfront Area Map.~~

~~(1) Lines which apparently follow street or right-of-way centerlines shall be construed as following such centerlines.~~

~~(2) Lines which apparently follow property or lot boundary lines shall be construed as following such boundary lines.~~

~~(3) Lines at the first and second rock dumps shall represent a line 100 feet upland from the mean high water line. Lines on other land and water areas where there are no survey lines shall be construed by using the scale of the Juneau Coastal Management Plan Special Waterfront Area Map. Where doubt arises over the location of a line, the parties shall first establish the true scale of the map by using a known distance between points visible on the map. The outside, or seaward edge of the line appearing on the map shall then be construed as the line.~~

(Serial No. 87-49, § 2, 1987; Serial No. 90-51, § 2, 1990; Serial No. 92-41, § 3, 1992; Serial No. 2005-29(am), § 2, 10-10-2005)

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(Supp. No. 133)

Agenda

Planning Commission - Title 49 Committee City and Borough of Juneau

May 26, 2022
Virtual Meeting Only
12:00 PM

This virtual meeting will be held by video and telephonic participation only. To join the webinar, paste this URL into your browser: <https://juneau.zoom.us/j/81020140382>. To participate telephonically, call: 1-346-248-7799 or 1-669-900-6833 or 1-253-215-8782 or 1-312-626-6799 or 1-929-436-2866 or 1-301-715-8592 and enter Webinar ID: 810 2014 0382.

I. ROLL CALL

II. APPROVAL OF AGENDA

III. AGENDA TOPICS

- A.** Status Update of All Ordinances Currently Under Review
- B.** AME2022 0003: Proposed Amendments to Subdividing on Arterials
- C.** AME2017 0001: Proposed Revisions to the Juneau Coastal Management Program, 49.70.310

IV. COMMITTEE MEMBER COMMENTS AND QUESTIONS

V. SUPPLEMENTAL MATERIALS

- A.** Additional Materials - Attachment B - Title 49 Land Use Code Chapter 49.70 DRAFT

VI. ADJOURNMENT

Attachment B - Packet from May 26, 2022 Title 49 Committee Meeting

[illegible]



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 155 S. Seward Street • Juneau, AK 99801

May 23, 2022

MEMO

TO: Chair Arndt, and Title 49 Committee Members

FROM: Jill Maclean, AICP

SUBJECT: AME2022 0003: Proposed Amendments to Subdividing on Arterials

INTRODUCTION

The purpose of this memo is to present staff recommendations and proposed revisions to the Land Use Code related to development and access to the Title 49 Committee. Staff has been directed to identify “quick fixes” to the Code that remove barriers to development, specifically residential development. We recognize that other revisions may be worthwhile in Chapter 49.35; however, greater revision may necessitate a public process, and take more time. On May 12, 2022, the Title 49 Committee and staff agreed that we would commit to discussing the quick fixes and not attempt to rewrite entire sections or chapters. The intent is to get in, get out, and create as much flexibility in the Land Use Code that is reasonable with smaller (less time consuming) fixes and adjustments.

SUMMARY OF REVISIONS

Note: Each bullet below has the associated Land Use Code citation, and an approximate Line Number to support ease in discussing the changes.

This packet includes this cover memo, and the existing Chapter 49.35 Public and Private Improvements with track changes, including:

- Language striking the requirement of meeting the D1 lot size standard (36,000 square feet), if subdividing along an arterial (49.35.210, ~Line 91);
- Language striking the regulation that these same properties cannot be further subdivided, and replaced with language stating that further subdivision is permissible if the subdivision meets code (49.35.210, ~Line 93);
- Language striking the requirement of “direct and practical access” must be through the frontage (49.35.250 Access, ~Line 359);
- Language recommending splitting two sentences that recently came into question that makes the language more user-friendly (49.35.262, ~Line 402);

- A grammatical revision changing “zone” to “zoning” on ~Line 419;
- Language clarifying that when using private shared access, the parent lot may choose to use the right-of-way for access similar to panhandle subdivisions (49.35.263, ~Line 450).

Staff recommends that the Title 49 Committee favorably recommend these amendments to the Planning Commission.

ATTACHMENTS

Attachment A – Title 49 Land Use Code Chapter 49.35 DRAFT

ARTICLE I. GENERALLY

Commented [JM1]: No changes proposed at this time
Go to Line 91 [(49.35.210(b)(3))]

1 49.35.110 Purpose.

2 The purpose of this chapter is to:

- 3 (1) Establish design and development criteria for public and private improvements; and
4 (2) Outline the procedures and responsibilities of the developer for furnishing plans and completing the
5 improvements.

6 (Serial No. 87-49, § 2, 1987; Serial No. 2016-26(b), § 6, 4-3-2017, eff. 5-3-2017)

7 49.35.120 Improvements; generally.

8 (a) The developer must install all of the required improvements within the boundaries of the development, and
9 may be required to make improvements beyond the development boundary in order for all of the
10 improvements to function properly. In addition, improvements must be designed and constructed to provide
11 for future extension to adjoining lands.

12 (b) If a publicly maintained street serves an area outside the roaded service area boundary as a result of a
13 subdivision, the roaded service area boundary, and if appropriate, the fire service area, shall be extended to
14 include the roaded area and newly created subdivision.

15 (Serial No. 87-49, § 2, 1987; Serial No. 95-27, § 5, 1995; Serial No. 2002-20, § 2, 8-5-2002; Serial No. 2015-
16 03(c)(am), § 21, 8-31-2015; Serial No. 2016-26(b), § 7, 4-3-2017, eff. 5-3-2017)

17 49.35.130 Standard specifications.

18 (a) Compliance with specifications. Except as otherwise provided, all subdivision improvements shall be in
19 accordance with the latest revision of the City and Borough subdivision standard specifications and details on
20 file in the engineering and public works department.

21 (b) The director of engineering and public works may prescribe different or additional standards if unusual or
22 unforeseen conditions exist in a particular development, and the alternative meets or exceeds the intent of
23 the original standard.

24 (c) Change of standards. Prior to a substantial change in the standards generally applicable to required
25 subdivision improvements, the director of engineering and public works or the director of engineering and
26 public works' designee shall hold a public hearing on the proposed change. The hearing shall be preceded by
27 ten days' published notice. The standards may be changed in response to comments received at the hearing
28 or received at any other time prior to the effective date. The standards shall become effective 30 days after
29 the first notice of the hearing is published. The manager may shorten the notice period or waive the
30 requirement for a hearing and may specify an earlier effective date if the manager finds an emergency exists
31 or that other conditions warrant such action. If the hearing is held with less than three days' published
32 notice, a second hearing preceded by ten days' published notice shall be held.

(Serial No. 87-49, § 2, 1987; Serial No. 92-09, § 2, 1992; Serial No. 99-34, § 5, 1-24-2000; Serial No. 2002-20, § 3, 8-5-2002; Serial No. 2015-03(c)(am), § 22, 8-31-2015)

49.35.140 Construction plans.

- (a) *Generally.* The developer must submit construction plans for all proposed public improvements and associated private improvements and utilities within and outside the proposed development's boundary.
- (b) *Construction plan submittal.*
 - (1) *Plan sets.* Prior to submittal of the final plat, and before the start of any construction, the developer must furnish to the City and Borough Permit Center complete sets of construction plans, profiles, details, and special construction provisions for all existing and proposed improvements. The director of engineering and public works shall determine the number of plan sets to be submitted. Plan sets will be forwarded to the appropriate City and Borough departments and agencies.
 - (2) *Engineer's stamp.* Construction plans must be stamped by the professional engineer licensed in the State of Alaska who is responsible for the improvement designs. Multiple engineer stamps are required for plans with multiple discipline designs, e.g., civil, electrical, structural engineering.
- (c) *Construction plan—Details.*
 - (1) *Size.* All construction plans shall be submitted on 22- by 34-inch sheets. The director of engineering and public works may approve alternative sheet sizes.
 - (2) *Information.* The drawings must contain the following information:
 - (A) Name of subdivision.
 - (B) Type of work.
 - (C) Date.
 - (D) Name of engineer preparing the drawings and the engineer's stamp.
 - (E) Space for approval signature by the director of engineering and public works.
 - (F) A north arrow and scale.
 - (3) *Scale.* Horizontal scale must be one inch equals 50 feet or greater. Vertical scale must be one inch equals five feet or less with a minimum scale of one inch equals ten feet. The director of engineering and public works may approve alternative scales.
 - (4) *Benchmarks.* The locations, elevations and description of datum of permanent benchmarks must be shown.
 - (5) *Street profiles.* Profiles of streets shall indicate finished and existing grades for centerline of the street and shall extend a minimum of 200 feet beyond the limits of the proposed project or, if intersecting an existing street, extend to the far side of the existing street.
 - (6) *[Details to be included.]* Plans and profiles, where applicable, shall include location, elevation, size, materials, and all other details of the proposed improvements.
 - (7) *[Complete data.]* Complete survey data must be shown for all horizontal and vertical curves.
 - (8) *[Location of utilities.]* Construction plans shall include the location of all existing and proposed utilities.
- (d) *As-built drawings.* The developer, upon completion of required improvements, must submit a reproducible and digital format copy of as-built plans unless otherwise required by the director of engineering and public works.

(Serial No. 87-49, § 2, 1987; Serial No. 2015-03(c)(am), § 23, 8-31-2015)

ARTICLE II. STREETS¹

DIVISION 1. IN GENERAL

49.35.210 Street system.

- (a) *[In general.]* Subdivision street systems shall be designed for the most advantageous development of the entire neighborhood area and shall meet the following criteria:
- (1) The street system shall provide for connecting streets into adjoining unsubdivided lands.
 - (2) Subdivision street systems shall be designed to maximize the number of connecting streets in a given area in order to reduce the volume of traffic and traffic delays on major streets (arterials and major collectors), to minimize bypass and through trips on residential streets, and to increase the number of local street connections facilitating safer bicycle and pedestrian travel.
 - (3) Traffic calming should be taken into account in street layout and design.
- (b) *Major and minor arterials.* Except as provided in subsection (3) of this section, if a new subdivision involves frontage along an arterial street:
- (1) The plat shall note that no lots shall access directly onto the arterial;
 - (2) Access shall be provided onto an interior access street or a separate frontage road.
 - (3) A parcel of land with less than 500 feet of frontage on a street, or with less than 350 feet in depth may be subdivided so as to allow access directly onto a minor arterial street if all of the following conditions are met:
 - (A) All of the resulting lots must meet the minimum lot area standard for a single-family dwelling in the D-1 the zoning district and density bonuses are not permissible (36,000 square feet).
 - (B) All of the lots must share a common access point, and further subdivision of the newly created lots is not allowed.
 - (C) Common access to all lots is required and back out parking is prohibited. The applicant must submit a plan that shows the feasibility of off street parking for all lots and an adequate area for a turnaround to prevent back out parking.
 - (D) The applicant must provide assurance in the form of an easement, plat note, and a maintenance agreement that is recorded with the subdivision, all of which must be acceptable to the director, that ensures the required common access will be constructed and maintained by the property owners.
 - (E) The proposed subdivision must meet all other applicable subdivision standards and requirements.
- (c) *Collector streets.* Collector streets in adjoining subdivisions shall be continued in the new subdivision as needed.

Commented [JM2]: Lots are required to have a minimum frontage. See below Line 359 [(49.35.250(b))]

Commented [JM3]: If the further subdivision can meet code, why is not permissible? See below line 102 (49.35.210(b)(3)(E))

¹Cross reference(s)—Public ways and property, CBJ Code tit. 62.

- (1) *Major collectors.* Except as provided in subsection (C) of this section, if a new subdivision involves frontage along a major collector street:
- (A) The plat shall note that no lots shall access directly onto the major collector.
 - (B) Access shall be provided onto an interior access street or a separate frontage road.
 - (C) Exception a parcel of land with less than 500 feet of frontage or less than 350 feet of depth may be subdivided so as to allow access directly onto a major collector street.
- (2) *Minor collectors.* Access for lots is allowed directly onto minor collector streets if no other restrictions apply.
- (Serial No. 87-49, § 2, 1987; Serial No. 95-27, § 6, 1995; Serial No. 2002-20, § 4, 8-5-2002; Serial No. 2015-03(c)(am), § 24, 8-31-2015)

49.35.220 Street names

- (a) *New streets.* Street names must be unique in order to avoid confusion. When streets are extended, the name must remain the same for the new segment. Proposed street names shall be shown on preliminary plats. The names of streets fronting 13 or fewer lots shall be approved by the director through the minor subdivision processes. The names of streets fronting more than 13 lots shall be approved by the commission at the time of preliminary plat approval for major subdivisions.
 - (b) *Existing streets.* The commission shall approve applications to change the name of any existing public street or right-of-way.
 - (1) *Application.* The application must be on a form provided by the department and accompanied by:
 - (A) The application fee.
 - (B) Signed letters of approval from a majority of property owners whose properties have access to the public street proposed for the name change.
 - (2) *Procedure.* After public hearing, the commission shall review the proposed street name change for consistency with this section, and, upon a finding that the change is consistent with this section and that the majority of property owners whose properties have access to the public street proposed for the name change approve of the change, shall approve the application.
 - (3) *Sign replacement.* If the name change is approved, the applicant shall be responsible for replacing all existing street name signs as specified by the department.
- (Serial No. 87-49, § 2, 1987; Serial No. 95-27, § 7, 1995; Serial No. 2015-03(c)(am), § 25, 8-31-2015)

Commented [JM4]: No changes proposed at this time

49.35.230 Roadway classification map

There are adopted roadway classification maps A—D, dated June 5, 2006, as the same may be amended from time to time by ordinance. These maps set forth the classification of streets and roadways within the CBJ. The roadway classification maps will govern references to streets in this title.

(Serial No. 2015-03(c)(am), § 26, 8-31-2015)

Commented [JM5]: No changes proposed at this time

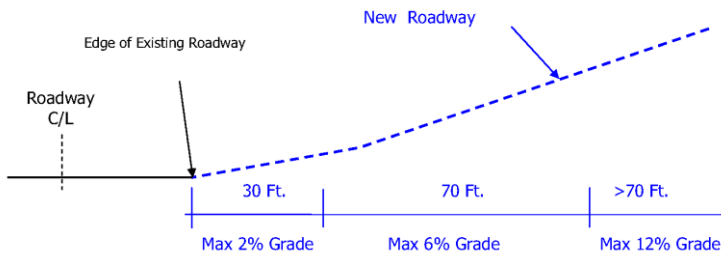
Editor's note(s)—Sec. 26 of Serial No. 2015-03(c)(am) , adopted Aug. 31, 2015, repealed and reenacted § 49.35.230 in its entirety to read as herein set out. Former § 49.35.230 pertained to design criteria and derived from Serial No. 87-49, 1987; and Serial No. 95-27, 1995.

49.35.240 Improvement standards.

Commented [JM6]: No changes proposed at this time.
Go to Line 350 for next proposed change.

- (a) *Right-of-way widths.* The minimum right-of-way width of proposed streets is as follows:
- (1) Arterials: 100 feet; minor, 80 feet.
 - (2) Collectors: 60 feet.
 - (3) Streets other than arterials and collectors: 60 feet.
 - (4) Cul-de-sacs: temporary or permanent turnaround: a diameter of 120 feet.
 - (5) Alleys: 20 feet.
 - (6) Stairways and other non-motorized access routes: 15 feet.
 - (7) Half streets. Whenever there exists a dedicated or platted half street or alley adjacent to the tract of land to be developed, the other half of the street or alley must be platted, dedicated, and the entire street or alley constructed to current improvement standards.
 - (8) Substandard width. Any previously platted right-of-way with less than the minimum standards identified for the traffic generated shall be improved to meet the minimum requirements established by this title.
- (b) *Right-of-way minimum width reductions.* The director may reduce minimum right-of-way width requirements:
- (1) For a collector, the right-of-way width may be reduced by up to ten feet.
 - (2) For streets with less than 500 average daily trips, or a privately maintained access road in a right-of-way, the width may be reduced by up to 25 feet.
 - (3) Where the dedicated right-of-way abuts and runs parallel to an exterior property line, will serve as a half-street, and will be developed as a low volume street or a driveway in a right-of-way, the width may be reduced by up to 30 feet.
 - (4) Alleys and stairway right-of-ways may be reduced by up to five feet.
 - (5) The director shall make written findings supporting right-of-way minimum width reductions granted under this section. The director's findings shall state that:
 - (A) The applicant has provided room for electric utility features and demonstrates that if the road is upgraded in the future to include additional sidewalks that there is sufficient right-of-way for construction of the sidewalks without need for retaining walls over two feet in height.
 - (B) There is sufficient right-of-way or easements to allow for drainage improvements required by construction of the sidewalks.
 - (C) That any driveways shall be constructed to accommodate the elevations of future sidewalks.
 - (D) No additional right-of-way width will be required in order to provide for sufficient access to abutting lands.
 - (E) There is sufficient room for snow storage.
- (c) *Sight distance.* Sight distances for intersection, passing and stopping must be in accordance with the specifications set forth in "A Policy on Geometric Design of Highways and Streets".
- (d) *Street grades.* Street grades are as follows:

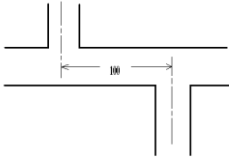
- (1) *Maximum.* Grades on arterial streets must not exceed six percent. Grades on other streets must not exceed 12 percent.
- (2) *Minimum.* The minimum grade for all streets is one-half percent.
- (3) *Cross slope.* The minimum cross slope on all streets is three percent.
- (4) *Exception.* Grades for all streets in hillside areas may be increased under certain circumstances according to chapter 49.70, article II, hillside development.
- (e) *Intersections.*
- (1) *Corner sight distance.* Corner sight distance must be in accordance with CBJ 49.35.240, however, in no case shall the sight distance be less than 200 feet.
- (2) *Intersection angle.* Intersections of right-of-way lines must not be less than 60 degrees. The intersection of the centerline of the constructed roadway must not be less than 80 degrees.
- (3) *Grade.* The grade for the approach leg of a new roadway at an intersection must not exceed two percent for the first 30 feet, measured from the edge of the existing roadway. The grade for the next 70 feet of the new roadway must not exceed six percent (See Figure 1).



Maximum Grades at the Intersection of a New Roadway

Figure 1

- (4) *Adjustment to grade.* In certain circumstances, the director of engineering and public works may require the centerline grade to be adjusted to ensure the grades along the edge of the intersecting street do not exceed the maximum grades listed above.
- (5) *Alignment.* A proposed street that will intersect with an existing cross street shall, whenever practicable, align with an existing street intersection on the opposite side of the cross street. Street jogs that have center line offsets of less than 100 feet, shall not be permitted (See Figure 2).



Street jogs shall be no less than 100' apart, measured from the center of the street.

Figure 2

(f) *Curves.*

- (1) *Design.* Curves shall be designed in accordance with "A Policy on Geometric Design of Highways and Streets."
- (2) *Vertical curve.* The minimum length of vertical curves is 200 feet unless otherwise approved by the director of engineering and public works.

(g) *Cul-de-sacs.*

- (1) *Length.* Streets designed to have one end permanently closed shall be no more than 600 feet and not less than 150 feet in length measured from the center of the intersection to the radius point of the turnaround. The director for minor subdivisions, and the commission for major subdivisions, may authorize a longer or shorter cul-de-sac if it is found that the unique characteristics of the site warrant modification to the length.
- (2) *Temporary cul-de-sacs.* Temporary cul-de-sacs will be allowed where a street can practically be extended to provide for connecting streets into an adjoining undeveloped land, is located in a right-of-way or in an easement for public access, and if the following are met:
 - (A) The temporary portions of the cul-de-sac shall be easements on the plat rather than as dedicated right-of-way. Such easements shall allow for public access and maintenance as if it were dedicated right-of-way until such time the easements are vacated. The easements shall not contribute towards lot area.
 - (B) All of the cul-de-sac must be constructed to permanent street construction standards except as noted in (G) below.
 - (C) The CBJ will record a release of the easements for the temporary portions of the cul-de-sac at the state recorder's office at Juneau at the time the cul-de-sac is removed and the street improvements have been extended.
 - (D) Easement lines for the temporary cul-de-sac will be considered front property lines for determining building setbacks.
 - (E) All improvements, including utilities and private driveways, must be designed to accommodate the eventual extension of the street and reversion of the temporary cul-de-sac to adjoining

properties. The construction plans shall demonstrate those improvements connecting through a temporary cul-de-sac will still comply with CBJ standards after the temporary cul-de-sac is removed.

- (F) Temporary cul-de-sacs must provide required access and minimum frontage on a publically maintained right-of-way to all lots using the cul-de-sac as access. If the cul-de-sac is not extended to the adjoining property, the maximum length of an unconstructed right-of-way between the temporary cul-de-sac and the adjoining property shall be the minimum lot width for the zoning district. If the right-of-way is located in more than one zoning district, the shortest minimum lot width shall be used. The right-of-way between the constructed temporary cul-de-sac and the adjoining property shall be subject to the stub street requirements of this Title (See Figure 3).

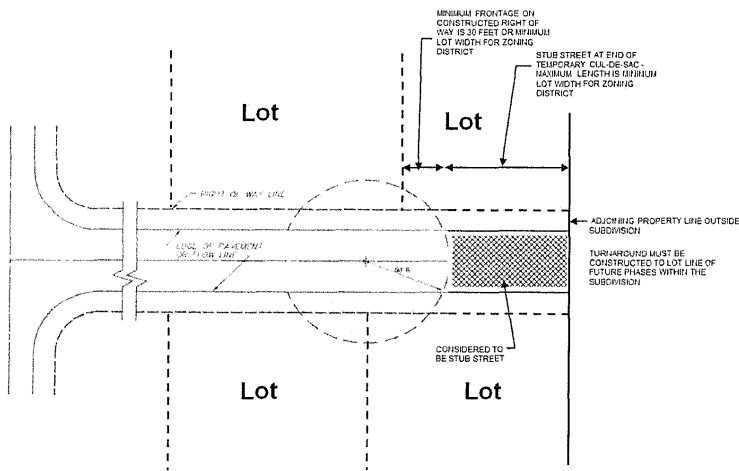


Figure 3

- (G) The temporary cul-de-sac may be located on property within the subdivision intended for future subdivision phases in conjunction with a platted right-of-way. It may also be located outside the subdivision boundary entirely within an easement (See Figure 4). If the temporary cul-de-sac is constructed on property outside of the subdivision boundary, then curb, gutter, and sidewalks are not required for the temporary cul-de-sac.

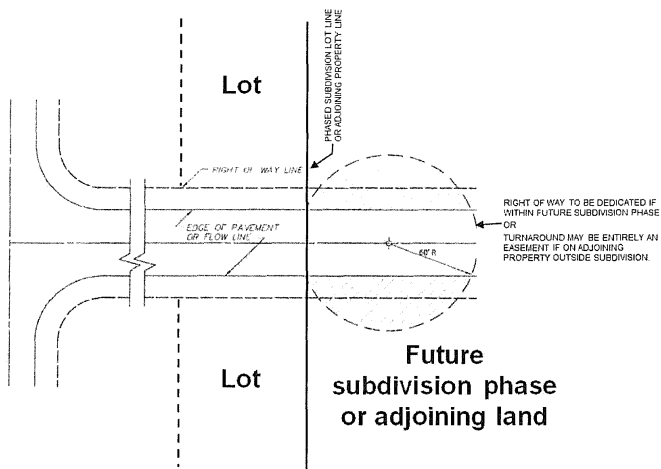


Figure 4

(H) The plat shall include the following note "Temporary cul-de-sac easement shall be vacated upon extension of street unless the director determines all or a portion of the cul-de-sac may remain."

(I) When the developer of adjoining property is required to connect to the temporary cul-de-sac, the temporary portions of the cul-de-sac shall be removed. The director, after considering public safety, costs, and recommendations of the director of engineering and public works department and of the fire marshal, shall determine if the developer may leave all or part of the temporary portions of the cul-de-sac. If any temporary cul-de-sac portion is removed, then the resulting constructed right-of-way shall conform to CBJ standards.

(3) *Hammerhead turnarounds.* Hammerhead turnarounds may be built in lieu of a temporary cul-de-sac, upon approval by the director of engineering and public works.

(h) *Streets construction standards.*

(1) *Arterials.* The subdivider is not responsible for the construction of arterial streets, but may be required to dedicate the necessary right-of-way during the platting process.

(2) *Other streets.* Other than arterials, street shall comply with the following:

Table 49.35.240 Table of roadway construction standards

Avg. Daily Trips (ADT)	Adopted Traffic Impact Analysis Required	Sidewalks	Travel Way Width	Street Lights	Width	Paved Roadway Required	Publicly Maintained

≥ 500	Yes	Both sides	26 ft.	At all intersections	60 ft. Public ROW ⁱⁱ	Yes	Yes
212 to 499	Maybe	One side	24 ft.	At all intersections	60 ft. Public ROW ⁱⁱ	Yes	Yes
0 to 211	No	Not required	22 ft.	At intersection of subdivision streets and external street system	60 ft. Public ROW ⁱⁱ	Yes	Yes
0 to 211	No	Not required	20 ft. ⁱ	At intersection of subdivision streets and external street system	60 ft. Public ROW ⁱⁱ	No, if outside the urban service area	No
0 to 70	No	Not required	20 ft. ⁱ	No	50 ft. private easement	No ⁱⁱⁱ	No

ⁱ Or as required by the Fire Code at CBJ 19.10.

ⁱⁱ ROW width may be reduced as prescribed at CBJ 49.35.240.

ⁱⁱⁱ Except as provided by CBJ 49.35.262(b)(9).

(3) *Signs and markings.* The subdivider must install street name signs, traffic control signs, and traffic control pavement markings in accordance with approved plans and the requirements of the current issue of the Manual on Uniform Traffic Control Devices, including the current Alaska Traffic Manual Supplement, published by the Alaska Department of Transportation and Public Facilities.

(i) *Street waivers.* The director, after considering the recommendations of the director of the engineering and public works department and of the fire marshal, may waive the following and no other street improvement requirements:

(1) Right-of-way relocation. If a plat is submitted for the purpose of relocating a right-of-way, the director may waive all or some of the construction requirements under the following conditions:

(A) The proposed relocation will improve access to abutting or neighboring property not otherwise adequately served.

(B) The subdivider has provided sufficient engineering information to demonstrate to the director of engineering and public works the feasibility of constructing a public street at the location of the relocated right-of-way.

(C) The relocated right-of-way and the resulting subdivision layout will conform to all the other standards of this chapter.

(D) The improvements required in the new right-of-way will not be less than those in the existing right-of-way.

(E) No additional lots are being platted.

(2) *Stub streets.*

- (A) The director for minor subdivisions and the commission for major subdivisions may waive the full construction of a roadway within a right-of-way that is required to provide access to a bordering property, and does not provide required access to any lot within the subdivision. A developer requesting a stub street waiver shall demonstrate in the construction plans that a street can reasonably be constructed to CBJ standards in the right-of-way. The commission or director may require provision of a roadbed, utility line extensions, or other appropriate improvements (See Figure 5).

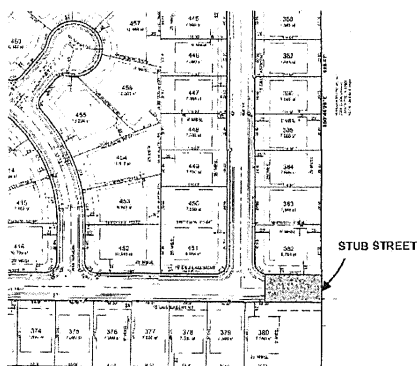


Figure 5

- (B) Reserved.
- (C) When the developer of adjoining property is required to connect to the stub street, then the developer of the adjoining property will be required to construct the stub street to City and Borough standards at the time.
- (3) *Remote subdivisions accessible by navigable water.* The commission and the director may waive roadway improvements and other street construction requirements for remote subdivisions accessed solely by navigable water.
- (4) *Roadway construction standards waivers.* Roadway construction standards identified in Table 49.35.240 may be waived in accordance with this subsection for any street reconstruction project, not including routine maintenance; or any new street construction project located in a right-of-way platted before 1987. Waivers shall be in writing.
- (A) Roadway construction standards may be waived by the director if:
- (i) The existing roadway does not comply with the roadway construction standards identified in Table 49.35.240;
 - (ii) There are unique circumstances that make compliance with the requirements of the table unreasonable;
 - (iii) The proposed project will not aggravate the intent of the requirements of this chapter; and
 - (iv) The proposed project complies with the American Association of State Highway and Transportation Officials' guidelines.

(B) Roadway construction standards may be waived by the commission if:

(i) The existing roadway does not comply with the roadway construction standards identified in Table 49.35.240;

(ii) There are unique circumstances that make compliance with the requirements of the table unreasonable;

(iii) The proposed project will not aggravate the intent of the requirements of this chapter; and

(iv) Unique circumstances make compliance with the American Association of State Highway and Transportation Officials' guidelines unreasonable, and the commission requires sufficient safeguards to protect public health, safety, and welfare under the circumstances.

(j) *Pioneer path standards.* The following standards shall apply to remote subdivisions accessed by pioneer paths.

(1) Interior access shall be provided solely by pioneer path in a right-of-way. The right-of-way width of a pioneer path within a remote subdivision shall be 60 feet.

(2) Grades for pioneer paths must not exceed 18 percent. The maximum cross slope grade must not exceed five percent.

(3) The width of a pioneer path shall not exceed 54 inches of tread, and must be located within a six-foot corridor.

(4) Pioneer paths shall be designed and constructed to prohibit vehicular traffic wider than 48 inches from using the path, which may include the use of boulders, bollards, or any other similar structure.

(k) *Responsibility for improvements.* Unless otherwise provided, it shall be the responsibility of the subdivider to pay the cost of all right-of-way and street improvements caused by any development, as determined by the director.

(Serial No. 87-49, § 2, 1987; Serial No. 88-30, § 2, 1988; Serial No. 2002-20, § 5, 8-5-2002; Serial No. 2006-15, § 8, 6-5-2006; Serial No. 2010-41, § 2, 1-10-2011; Serial No. 2015-03(c)(am), § 27, 8-31-2015; Serial No. 2016-26(b), 4-3-2017, eff. 5-4-2017; Serial No. 2018-08, § 2, 3-5-2018, eff. 4-5-2018; Serial No. 2019-08, § 2, 4-22-2019, eff. 5-23-2019)

49.35.250 Access.

(a) *Principal access to the subdivision.* Except as provided below, the department shall designate one right-of-way as principal access to the entire subdivision. Such access, if not already accepted for public maintenance, shall be improved to the applicable standards for public acceptance and maintenance. It shall be the responsibility of the subdivider to pay the cost of the right-of-way improvements.

(1) *Principal access to remote subdivisions.* The department shall designate the principal access to the remote subdivision. Such access may be by right-of-way.

(b) *Publicly maintained access within a subdivision.* Unless otherwise provided in this section or in 49.15.420(a)(1), all lots must satisfy the minimum frontage requirement and have direct and practical access to the right-of-way ~~through the frontage that complies or can be improved to comply with the emergency service access requirements of CBJ 19.10~~. The minimum frontage requirement on a right-of-way is 30 feet or the minimum lot width for the zoning district or use as provided in CBJ 49.25.400. These requirements for frontage and access can be accomplished by:

(1) Dedication of a new right-of-way with construction of the street to public standards. This street must connect to an existing publicly maintained street;

Commented [JM7]: Same language used below for PSAs.
See Line 406 (49.35.262(b)(4))

- 365 (2) Use of an existing publicly maintained street;
- 366 (3) Upgrading the roadway within an existing right-of-way to public street standards. This existing right-of-
- 367 way must be connected to another publically maintained street; or
- 368 (4) A combination of the above.
- 369 (c) *Privately maintained access within a subdivision.* Lots shall front and have direct access to a publically
- 370 maintained street except as:
- 371 (1) *Privately maintained public access.* A subdivision may create new lots served by a privately maintained
- 372 access within a public right-of-way not maintained by an agency of government as provided by CBJ
- 373 49.35, article II, division 3. All lots must have either a minimum of 30 feet of frontage on a right-of-way,
- 374 or the minimum lot width for the zoning district or use as provided in CBJ 49.25.400.
- 375 (2) *Private shared access.* A lot in a subdivision is exempt from having the minimum frontage on a public
- 376 right-of-way when a shared access is approved pursuant to CBJ 49.35, article II, division 2. All lots
- 377 served by a shared access shall have a minimum of 30 feet of frontage on the shared access.
- 378 (d) *Remote subdivisions accessible by navigable waterbodies.* All lots in a remote subdivision solely accessible by
- 379 navigable waterbodies must have a minimum of 30 feet of frontage on, and direct and practical access to,
- 380 either the navigable water or a right-of-way. The right-of-way must have direct and practical access to the
- 381 navigable water.
- 382 (e) *Access within remote subdivisions accessible by pioneer paths.* All lots must either have direct and practical
- 383 access with a minimum of 30 feet of frontage on the right-of-way, or the minimum lot width for the zoning
- 384 district or use as provided in CBJ 49.25.400.
- 385 (Serial No. 2016-26(b) , § 9, 4-3-2017, eff. 5-3-2017)

DIVISION 2. PRIVATE SHARED ACCESS

49.35.260 Purpose.

- 388 Shared access serving four or fewer lots without frontage on a right-of-way may be constructed within a
- 389 private easement consistent with this division.
- 390 (Serial No. 2016-26(b) , § 10, 4-3-2017, eff. 5-3-2017)

49.35.261 Application.

- 392 An applicant must submit the following to request shared access:
- 393 (1) A preliminary plan and profile of the proposed shared access; and
- 394 (2) A proposed access easement, drainage and utility agreement.
- 395 (Serial No. 2016-26(b) , § 10, 4-3-2017, eff. 5-3-2017)

49.35.262 Standards.

- 397 (a) *Agency review.* The director shall forward the complete application to the fire department and to the
- 398 engineering and public works department for review.

- 399 (b) *Approval criteria.* The director may approve a subdivision, with or without conditions, that has a shared
400 access if all of the following criteria are met:
- 401 (1) The shared access will be located in a private easement completely on the lots served.
- 402 (2) The shared access serves four or fewer lots. (insert return)
- 403 (i) If a subsequent common wall residential subdivision is intended to be served by shared access, the
404 common wall parent lot shall count as two lots.
- 405 (3) The shared access does not endanger public safety or welfare.
- 406 (4) The shared access complies or can be improved to comply with the emergency service access
407 requirements of CBJ 19.10.
- 408 (5) The use of each lot served by the shared access shall be limited to one single-family residence and an
409 accessory apartment.
- 410 (6) The total average daily trips resulting from the subdivision shall not exceed 70.
- 411 (7) Shared access is only allowed in RR and D-1, D-3, D-5, and D-10 SF zoning districts defined by CBJ
412 49.25.210.
- 413 (8) Shared access is prohibited if the subdivision abuts a parcel that does not have alternative and practical
414 frontage on a publicly maintained right-of-way.
- 415 (9) The portion of the shared access in the right-of-way shall be paved or surfaced with materials
416 consistent with the adjacent public roadway. The length of the portion of the shared access in the
417 right-of-way shall consist of a minimum two-foot apron or as required by the governing agency of the
418 right-of-way.
- 419 (10) Lots must meet the minimum standards for the ~~ene-zoning~~ district according to the table of
420 dimensional standards excluding the shared access easement. A buildable area must exist without the
421 need for a variance.
- 422 (c) *Approval process.*
- 423 (1) Upon preliminary plat approval by the director, the applicant shall construct the shared access
424 pursuant to the corresponding standard in Table 49.35.240 for a roadway with zero to 70 average daily
425 trips. A financial guarantee cannot be used as a condition of construction.
- 426 (2) The shared access easement shall be recorded.
- 427 (3) The following shall be noted on a plat or in a recorded decision that contains a shared access:
- 428 (i) The private easement is for access, drainage, and if applicable utilities, and shall be specifically
429 identified.
- 430 (ii) The owner(s) of the lots served by the private access easement acknowledge the City and
431 Borough is not obligated and will not provide any maintenance or snow removal in the private
432 easement.
- 433 (iii) The owner(s) of the lots served by the private access easement shall be responsible and liable for
434 all construction and maintenance of the shared access from the edge of the publicly maintained
435 travel lane.
- 436 (iv) Except a subsequent common wall subdivision depicted on this plat, the lots served by the
437 private access easement are prohibited from subdividing unless the access is upgraded to a
438 public street, dedicated to, and accepted by the City and Borough.

Commented [JM8]: Suggest separating these two sentences to draw a more clear distinction between the hierarchy of development

Commented [JM9]: Grammatical fix.

(v) Owner of a lot served by the private access easement shall automatically abandon all rights to and usage of the private access easement except for utilities, if any, if a publicly maintained street serves that lot.

(vi) A lot with frontage on a public street and on the shared access is prohibited from having vehicular access to the public street except through the shared access.

(Serial No. 2016-26(b), § 10, 4-3-2017, eff. 5-3-2017; Serial No. 2020-11, § 2, 4-27-2020, eff. 5-28-2020)

49.35.263 Other shared access requirements.

(a) If a shared access is approved, the applicant must apply for and receive a right-of-way permit to construct the shared access.

(b) If the director determines that a street sign is required for a health, safety, or welfare reason, the applicant shall install a street sign provided by the City and Borough at the applicant's expense.

(c) The front yard setback shall be measured from the shared access easement. The lot fronting on the public right-of-way, may have a separate and additional access if approved by the government entity that controls the right-of-way. The front yard setback shall be measured from the right-of-way and not the shared access.

(d) The width of the shared access easement may be reduced by up to 20 feet if the director finds there is sufficient area for the provision of utilities, drainage, snow storage, and that it is unlikely for the shared access easement to expand in the future to a public street.

(e) The director shall determine the placement location of mailboxes. The director may require additional improvements and design changes to enable efficient mail delivery and minimize traffic interferences.

(f) The standards identified in this article do not apply to any preexisting shared access previously permitted by the department.

(Serial No. 2016-26(b), § 10, 4-3-2017, eff. 5-3-2017)

Commented [JM10]: Does the "by" help clarify that the PSA may only be reduced by 20 ft.

(start with 50 ft width may be reduced to not less than 30 ft.)

In other words, the PSA cannot be less than 30 ft. in width

DIVISION 3. PRIVATELY MAINTAINED ACCESS IN A RIGHT-OF-WAY

Commented [JM11]: No changes past this point

49.35.270 Purpose.

A privately maintained access road serving 13 or fewer lots located outside the urban service area may be constructed within a public right-of-way and constructed to less than full public street construction standards.

(Serial No. 2016-26(b), § 11, 4-3-2017, eff. 5-3-2017)

49.35.271 Application.

On a preliminary plat application, the applicant must submit the following to request approval for a privately maintained access in a right-of-way:

(1) A preliminary plan and profile of the proposed privately maintained access road and any proposed public or private utilities; and

(2) A proposed access agreement as required by 49.35.272.

(Serial No. 2016-26(b), § 11, 4-3-2017, eff. 5-3-2017)

49.35.272 Access agreement.

- (a) An access agreement must be executed between the City and Borough and all property owners proposed to be served by a privately maintained access road. The agreement must identify the parties and the property, all signatures must be notarized, and the agreement must include the following provisions:
- (1) In exchange for the grantee not being required to construct a road that can be accepted for maintenance by the City and Borough, and for the City and Borough not being responsible for maintaining the privately maintained access road, the parties execute this agreement with the intent for it to run with the land and bind all heirs, successors, and assigns consistent herein;
 - (2) The grantee acknowledges that the City and Borough is not obligated to provide any maintenance, including snow removal, for the privately maintained access. The grantee is required to arrange for year-round reasonable maintenance for the privately maintained access, including snow removal, sufficient to meet weather conditions and to allow for safe vehicular traffic;
 - (3) The grantee and the grantee's heirs, successors, and assigns will defend, indemnify, and hold harmless the City and Borough from any claim or action for any injury, loss, or damage suffered by any person arising from the location, design, maintenance, or use of the privately maintained access;
 - (4) The grantee will ensure that use of the privately maintained access road will not block vehicular or pedestrian access by the public in the right-of-way;
 - (5) The City and Borough will have unimpeded access in the right-of-way.
 - (6) The grantee is required to arrange for maintenance of the right-of-way. The grantee and the grantee's heirs, successors, and assigns will maintain the privately maintained access road and public right-of-way according to the conditions established in this agreement;
 - (7) The City and Borough will record a copy of the agreement, at the grantee's expense, with the state recorder's office for each lot or parcel of land either, in the case of existing lots, those adjoining the segment of right-of-way in which the privately maintained access is to be located; or, in the case of lots created by subdivision and served by the privately maintained access, those lots so created;
 - (8) The owners of the lots subject to this agreement are required to pay for right-of-way upgrades when existing or proposed development served by the privately maintained access exceeds 211 average daily trips as determined by the director;
 - (9) The owners of the lots subject to this agreement are prohibited from subdividing unless the privately maintained access is upgraded or all the property owners served by the privately maintained access execute a new access agreement;
 - (10) Any development that increases the estimated traffic above 211 average daily trips, as determined by the director, shall pay a proportionate share of the costs of the right-of-way upgrades, which will offset the costs imposed on the existing owners served by the privately maintained access. The proportionate share shall be the percentage increase in average daily trips;
 - (11) The owners of the lots subject to this agreement authorize the City and Borough to amend this access agreement by adding a new owner only upon presentation of a written and fully executed maintenance agreement between all the existing property owners subject to the original access agreement and the new property owner proposing to be served by the existing privately maintained access. Any amended access agreement supersedes an existing access agreement. After recording, the new access agreement shall be sent to all the owners subject to it; and
 - (12) The owners agree to maintain in full force and effect any insurance policy required by the City and Borough until and unless the roadway is accepted for maintenance by the City and Borough.

- 516 (b) Prior to the City and Borough executing the access agreement:
- 517 (1) The owners of the lots subject to the agreement shall create an owner's association for the purpose of
- 518 continuing the duties contained in the agreement; and
- 519 (2) The association shall obtain liability insurance of a type and in the amount deemed necessary by the
- 520 City and Borough to provide coverage for claims arising out of or related to the use, occupancy, and
- 521 maintenance of the privately maintained access road. The City and Borough shall be named as an
- 522 additional insured on any required policy.

523 (Serial No. 2016-26(b), § 11, 4-3-2017, eff. 5-3-2017)

524 **49.35.273 Standards.**

- 525 (a) *Agency review.* The director shall forward the complete application to the fire department and to the
- 526 engineering and public works department for review.
- 527 (b) *Approval criteria.* A subdivision may be approved, with or without conditions, with privately maintained
- 528 access in a public right-of-way if all of the following criteria are met:
- 529 (1) The subdivision is located outside of the Urban Service Boundary;
- 530 (2) The proposed privately maintained access would abut and provide access to 13 or fewer lots each
- 531 limited to a single-family residence, or the proposed access road could serve 13 or fewer lots;
- 532 (3) The proposed privately maintained access will be located in a public right-of-way that has not been
- 533 accepted for public maintenance;
- 534 (4) The proposed privately maintained access does not endanger public safety or welfare;
- 535 (5) The proposed privately maintained access will be improved to provide for emergency service access;
- 536 (6) A privately maintained access shall only serve property in which the maximum allowable residential
- 537 density uses do not exceed 211 average daily trips as determined by the director; and
- 538 (7) Property served by the privately maintained access shall include accessory apartment traffic, if allowed
- 539 with or without a conditional use permit, even if accessory apartments are not currently proposed.
- 540 (8) Privately maintained access is prohibited unless:
- 541 (A) The abutting parcels have alternative and practical frontage on a publicly maintained right-of-
- 542 way; or
- 543 (B) The property owners of all abutting parcels are signatories of the access agreement required by
- 544 CBJ 49.35.272.
- 545 (c) *Approval process.*
- 546 (1) All of the requirements of this Title and the conditions identified in the preliminary plat notice of
- 547 decision have been satisfied.
- 548 (2) Area for the right-of-way has been dedicated to the City and Borough. The privately maintained access
- 549 has been constructed consistent with corresponding standard in 49.35.240 for a roadway with zero to
- 550 211 average daily trips.
- 551 (3) The access agreement is recorded prior to recording the final plat.
- 552 (4) The director may impose conditions necessary for public, health, safety, and welfare upon approving
- 553 the subdivision.

554 (Serial No. 2016-26(b) , § 11, 4-3-2017, eff. 5-3-2017)

555 **49.35.274 Other requirements.**

- 556 (a) If a preliminary plat with a privately maintained access in the public right-of-way is approved, the applicant
557 must apply to the engineering and public works department for a permit to construct the privately
558 maintained access as required by CBJ 62.05, accompanied by final construction plans. Additional fees and
559 bonding may be required for final plan review, inspection, and construction of the access road and utilities.
- 560 (b) The applicant shall install a street sign, to be provided by the City and Borough, which shall indicate that the
561 privately maintained access is not maintained by the City and Borough.
- 562 (c) The director shall determine the placement location of mailboxes. The director may require additional
563 improvements and design changes to enable efficient mail delivery and minimize traffic interferences.

564 (Serial No. 2016-26(b) , § 11, 4-3-2017, eff. 5-3-2017)

565

Additional Materials

Planning Commission - Title 49 Committee

City & Borough of Juneau

Virtual Meeting Only

12:00 PM

Meeting Date: May 26, 2022

1. ATTACHMENT B - AME2017 0001:

- a. Attachment B - Title 49 Land Use Code Chapter 49.70 DRAFT

49.70.310(c) Coastal Development and Special Habitats

~~(1)~~ The purpose of this section is to manage and protect the natural resource values of Juneau's coastline and special habitats.

~~(2)~~ The following standards shall apply:

~~(a)~~ Fish and seafood propagation, processing, and mariculture

~~(i)~~ Shoreline use shall not adversely impact important fisheries habitat, migratory routes and harvest of significant fish or shellfish species. ~~Shorelines having banks, beaches, and beds critical to the preservation or enhancement of the fisheries resource base shall be maintained in, or restored to, their original condition whenever reasonable.~~

~~Upland areas shall be managed to maintain water quality standards necessary for the propagation of anadromous fish species.~~

~~(ii)~~

~~Fisheries enhancement and mariculture practices, including disposal of wastes, viscera or fish scrap, shall be conducted so as not to violate applicable state water quality and litter control standards.~~

~~(b)~~ Uses and activities in the coastal area which ~~will do~~ not conform to the standards ~~s~~ contained in this section ~~subsection a of this section or to the standards of 49.70.310(d)(2), Special Waterfront Area General Standards~~ may be allowed if the following standards are met:

- (1) There is a significant public need for the proposed use or activity;
- (2) There is no reasonable alternative to meet the ~~public~~ public need for the proposed use or activity which would conform to the standards ~~contained in subsections a-b of this section or to the standards of 49.70.310(d)(2), Special Waterfront Area General Standards, and~~
- (3) ~~All feasible and prudent steps to maximize conformance with the standards contained in subsections (b-c) of this section will be taken.~~

49.70.310(d)1) Special ~~waterfront~~ Waterfront areasAreas.

~~(1)~~ ~~Purpose.~~ The purpose of this section ~~is~~ to:

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Commented [TC1]: Clarifying language added per Committee request. If the final numbering on the ordinance should change, staff notes that this is intended to refer to Special Waterfront Area General Standards.

Commented [TC2]: At the 4/21/22 meeting there was confusion on where the public need standard applied, and both staff and the Committee overlooked the additional citation in (b) above which referred to the Special Waterfront Area General Standards. This language is now included twice, which is redundant and may not be necessary, however it avoids confusion.

- a) encourage development of marine and marine-related facilities in established Special Waterfront Areas coastal areas with lower habitat value; ~~Other purposes include:~~
- ~~(b) a) to provide greater protection for coastal areas outside of Special Waterfront Areas with higher habitat value, including a prohibition on intertidal fill used for expansion of upland areas; and~~
- ~~(b) to promote pedestrian access to the downtown waterfront with a seawalk; and~~
- ~~(c) to provide special policies for other unique Special Waterfront Areas.~~

~~(2) General standards.~~

~~(a)~~ The Special Waterfront Area Map, dated December 1, 1990, shows the boundaries of each special waterfront area, and the maximum seaward limits for permanent development in each special waterfront area. The land or water inside the boundaries shown on the Special Waterfront Area Map is subject to the provisions of this section.

~~(b)(a) Filling of intertidal areas below mean high tide outside of Special Waterfront Areas for the expansion of upland area is specifically prohibited unless clear and convincing evidence is provided showing that all of the following conditions exist such that:~~

~~(i) Strict compliance with the policy would prevent the applicant from making a reasonable use of the property or would make compliance unreasonably burdensome;~~

~~(ii) Fill is the only means to allow development of the property which is similar to other properties in the vicinity;~~

~~(iii) Less than the proposed fill would prevent the applicant from making a reasonable use of the property or would make compliance unreasonably burdensome; and~~

~~(iv) Provided, log and mining transfer facilities and the following public facilities are exempt from this policy: bridges, causeways, boat ramps, utility transmission facilities, pipelines, treatment plant lines and outfalls, and transportation facilities.~~

~~(v) Fill for expansion of the upland area is fill intended for structural support. Examples include structural support of buildings, parking lots, and related facilities. Fill for expansion of the upland area does not include fill used for rock walls, bank stabilization, and similar uses.~~

~~(c) Fill proposals within the special waterfront areas are not subject to the fill prohibition of subsection 49.70.310(d)(iii)(b) relating to coastal development.~~

~~(d) If new site-specific information becomes available which clearly indicates that crucial habitats exist within the Special Waterfront Areas, and if after consultation concurrence from with the City and Borough and state resource agencies, these entities concur, a specific evaluation (link to line 8-12?) pursuant to subsection 49.70.310(c)(2)(b) will be immediately required for projects within the crucial habitat areas.~~

~~(e) A change to the specialSpecial waterfront-Waterfront areas-Areas boundaries may be initiated by the submittal of new information regarding habitats to the department. To initiate a program change, new information must be based on detailed site-specific studies which indicate that the habitat is~~

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Commented [TC3]: This is the same language as in the original JCMP, except that references to state agencies and the state program have been removed. Special Waterfront Areas were determined long ago to be areas of low habitat value. This section is for the situation (which has never happened) where new information indicates that a Special Waterfront Area has crucial habitats. If CBJ and state resource agencies accept that, then regulation refers back to the public need standard, which says that if a development has unavoidable habitat impacts, it can still be approved if there is demonstrated public need and impacts have been minimized. The specific evaluation referred to here is not a habitat evaluation—it's the evaluation of the public need criteria.

Commented [TC4]: At the 4/21/22 meeting the Committee recommended deletion of this section if changes to the special waterfront area maps would require approval by the Planning Commission and Assembly. Staff will provide clarification on this question prior to the next meeting.

substantially more productive than was indicated in the information which was available on May 22, 1986.

~~(3)~~ Special policies for the ~~special~~ Special waterfront Waterfront areas ~~Areas~~.

- (a) No additional intertidal fill may be allowed in the Tee Harbor special waterfront area except that necessary to construct a public boat ramp.
- (b) Gold Creek Mouth Protection Area. No structures or activities shall be allowed in this area except as needed by the U.S. Coast Guard for its purposes or as allowed by the state department of fish and game for habitat maintenance and enhancement.
- (c) No floating structures are allowed within 300 feet of the mouths of streams in the Thane special waterfront area.

~~(d)~~ A public fishing pier on the south side of the Juneau Douglas Bridge may be allowed.

~~(ed)~~ A portion of the intertidal area near the mouth of Salmon Creek has been set aside as a natural beach for salmon ~~resting~~ no what in this zone - structures/development?

~~(f)~~ Seawalk. A pedestrian access easement and walkway intended to provide a continuous pedestrian path along the entire downtown waterfront area, shall be included with all future development or redevelopment along the downtown waterfront shoreline. This walkway, to be known as the seawalk, shall be a continuous path along the entire downtown waterfront as depicted in the Long Range Waterfront Plan. In lieu of constructing the required seawalk, property owners developing or redeveloping property along the waterfront shoreline within the area encompassed by the Long Range Waterfront Plan shall pay a fee to the City and Borough equal to 20 percent of the final project cost for a seawalk constructed to public assembly standards for the section abutting their property. Unless the alignment of the seawalk requires otherwise, owners of property along the waterfront shoreline within the area encompassed by the Long Range Waterfront Plan developing or redeveloping their property shall dedicate all easements necessary for construction of a seawalk 16 feet in width.

~~(i)~~ Reserved.

~~(Bii)~~ Reserved.

~~(iii)~~ The seawalk shall not be required for existing buildings located along the water's edge until additions or alterations, or both, in excess of 50 percent of the gross square footage of the existing structure are proposed or undertaken within a 36-month period as determined by the City and Borough building division. General maintenance or repair work is exempt from this requirement.

~~(iv)~~ Reserved.

~~(g)~~ Interpretation of the Special Waterfront Area Map.

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The purpose of this subsection is to assist users of the Special Waterfront Area Map.

- (i) Lines which apparently follow street or right-of-way centerlines shall be construed as following such centerlines.
- (ii) Lines which apparently follow property or lot boundary lines shall be construed as following such boundary lines.
- (iii) Lines at the first and second rock dumps shall represent a line 100 feet upland from the mean high water line. Lines on other land and water areas where there are no survey lines shall be construed by using the scale of the Special Waterfront Area Map. Where doubt arises over the location of a line, the parties shall first establish the true scale of the map by using a known distance between points visible on the map. The outside, or seaward edge of the line appearing on the map shall then be construed as the line.

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2) Intertidal Fill outside Special Waterfront Areas

Filling of intertidal areas below mean high tide outside of Special Waterfront Areas for the expansion of upland area is prohibited unless clear and convincing evidence is provided showing that all of the following conditions exist such that:

- (i) Compliance with the policy would prevent the applicant from making a reasonable use of the property or would be unreasonably burdensome;
- (ii) Fill is the only means to allow development of the property which is similar to other properties in the vicinity; and
- (iii) Fill for expansion of the upland area is fill intended for structural support. Examples include structural support of buildings, parking lots, and related facilities.

Log and mining transfer facilities as well as the following facilities are exempt from this policy: bridges, causeways, boat ramps, utility transmission facilities, pipelines, treatment plant lines and outfalls, and transportation facilities.

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Specified Use Provisions. 49.65.1300 Floathomes and Floating Structures

(1) Floathomes located outside of public marinas and on privately owned tidelands may be allowed with a Conditional Use Permit. Floathomes in other areas are prohibited.

(2) Floating camps or multipurpose floating structures intended in whole or in part for residential purposes and meant to support mining, fishing, logging, tourist or other activities may be allowed with a conditional use permit.

(3) Floating structures, other than those addressed in subsections intended for commercial or industrial purposes including, fish propagation, mineral extraction, mineral processing, timber extraction or processing, lodging, seafood processing, research, marine service and repairs, which will be fixed in one location for more than 30 days, may do so only after having obtained approval through the conditional use process. Provided, the following are exempt from the conditional use process requirement:

(A) Mooring devices for watercraft;

(B) Watercraft transiting the City and Borough that are not intended for residential use in excess of 30 days in any 12 calendar months;

(C) ~~Seafood processors whose primary purpose is to receive fish and shellfish from harvesting boats and prepare it for further transportation; and~~

(D) ~~Watercraft intended to transport cargo to, from or within the City and Borough.~~

Definitions 49.80

Banks, beaches, and beds critical to the preservation of the fisheries resource base means areas that are either catalogued or documented as ~~critical~~critical to the fisheries resource base, or expressed as such by a state or federal resource agency.

Important fish and wildlife habitat means the waters and/or surrounding land areas that are either catalogued or documented habitats or expressed as important by a state or federal resource agency.

Significant fish or shellfish species means species that are either catalogued or documented as important to Southeast Alaska, or expressed as such by a state or federal resource agency.

~~Filling of intertidal areas below mean high tide outside of Special Waterfront Areas for the expansion of upland area is specifically prohibited unless clear and convincing evidence is provided showing that all of the following conditions exist such that:~~

~~(i) Strict compliance with the policy would prevent the applicant from making a reasonable use of the property or would make compliance unreasonably burdensome;~~

~~(ii) Fill is the only means to allow development of the property which is similar to other properties in the vicinity;~~

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~~(iv) Provided, log and mining transfer facilities and the following public facilities are exempt from this policy: bridges, causeways, boat ramps, utility transmission facilities, pipelines, treatment plant lines and outfalls, and transportation facilities.~~

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195 MOVE TO (extract):

196 49.35.650 Seawalk.

197 A pedestrian access easement and walkway intended to provide a continuous pedestrian path along the
198 entire downtown waterfront area, shall be included with all future development or redevelopment
199 along the downtown waterfront shoreline. This walkway, to be known as the seawalk, shall be a
200 continuous path along the entire downtown waterfront as depicted in the Long Range Waterfront Plan.
201 In lieu of constructing the required seawalk, property owners developing or redeveloping property along
202 the waterfront shoreline within the area encompassed by the Long Range Waterfront Plan shall pay a
203 fee to the City and Borough equal to 20 percent of the final project cost for a seawalk constructed to
204 public assembly standards for the section abutting their property. Unless the alignment of the seawalk
205 requires otherwise, owners of property along the waterfront shoreline within the area encompassed by
206 the Long Range Waterfront Plan developing or redeveloping their property shall dedicate all easements
207 necessary for construction of a seawalk 16 feet in width.

208 (i) Reserved.

209 (ii) Reserved.

210 (iii) The seawalk shall not be required for existing buildings located along the water's edge
211 until additions or alterations, or both, in excess of 50 percent of the gross square
212 footage of the existing structure are proposed or undertaken within a 36-month period
213 as determined by the City and Borough building division. General maintenance or repair
214 work is exempt from this requirement.

215 (iv) Reserved.

216

217 MOVE TO TPU and rewrite:

218 Specified Use Provisions. 49.65.1300 Floathomes and Floating Structures

219 (1) Floathomes located outside of public marinas and on privately-owned tidelands may be allowed with
220 a Conditional Use Permit. Floathomes in other areas are prohibited.

221 (2) Floating camps or multipurpose floating structures intended in whole or in part for residential
222 purposes and meant to support mining, fishing, logging, tourist or other activities may be allowed with a
223 conditional use permit.

224 (3) Floating structures, other than those addressed in subsections intended for commercial or industrial
225 purposes including, fish propagation, mineral extraction, mineral processing, timber extraction or
226 processing, lodging, seafood processing, research, marine service and repairs, which will be fixed in one
227 location for more than 30 days, may do so only after having obtained approval through the conditional
228 use process. Provided, the following are exempt from the conditional use process requirement:

229 (A) Mooring devices for watercraft;

230 (B) Watercraft transiting the City and Borough that are not intended for residential use in
231 excess of 30 days in any 12 calendar months;

232 (C) Seafood processors whose primary purpose is to receive fish and shellfish from
233 harvesting boats and prepare it for further transportation; and

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234 (D) Watercraft intended to transport cargo to, from or within the City and Borough.

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236 49.15.330.g.10/18/19? Upland areas shall be managed to maintain water quality standards necessary
237 for the propagation of anadromous fish species.

238 (ii) Fisheries enhancement and mariculture practices, including disposal of wastes, viscera or fish
239 scrap, shall be conducted so as not to violate applicable state water quality and litter control standards.

240

241 Where to put this? keep?

242 Shorelines having banks, beaches, and beds critical to the preservation or enhancement of the fisheries
243 resource base shall be maintained in, or restored to, their original condition whenever reasonable.

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Planning Commission

(907) 586-0715

PC_Comments@juneau.org

www.juneau.org/community-development/planning-commission

155 S. Seward Street • Juneau, AK 99801

PLANNING COMMISSION NOTICE OF RECOMMENDATION

Date: June 21, 2022
Case No.: AME2022 0004

City and Borough of Juneau
City and Borough Assembly
155 South Seward Street
Juneau, AK 99801

Proposal: Planning Commission Recommendation to the City and Borough Assembly regarding a text amendment providing for Seawalk infrastructure in the downtown area (formerly CBJ 49.70.960 Coastal Management).

Property Address: Downtown Juneau Waterfront Properties

Legal Description: N/A

Parcel Code Number: N/A

Hearing Date: June 14, 2022

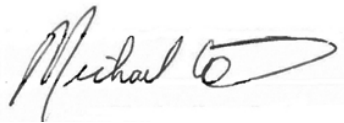
The Planning Commission, at its regular public meeting, adopted the analysis and findings listed in the attached memorandum dated June 7, 2022, and recommended that the City and Borough Assembly adopt staff's recommendation for a text amendment providing for Seawalk infrastructure in the downtown area (formerly CBJ 49.70.960 Coastal Management), as amended:

1. "Unless the alignment of the Seawalk requires otherwise, owners of property along the waterfront shoreline within the area encompassed by the Long Range Waterfront Plan developing or redeveloping their property shall dedicate all easements necessary for construction *must be a minimum of 16 feet in width*" (italics is new language).
2. Revision to the proposed definition in the staff report, page 2, strike the word "Seawalk" within the definition language, "the pedestrian path and access easement described in CBJ 49.35.650 ~~Seawalk~~ and the Long Range Waterfront Plan."

City and Borough Assembly
Case No.: AME2022 0004
June 21, 2022
Page 2 of 2

Attachments: June 7, 2022 memorandum from Director Maclean, Community Development, to the CBJ Planning Commission regarding AME2022 0004.

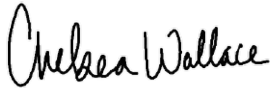
This Notice of Recommendation constitutes a recommendation of the CBJ Planning Commission to the City and Borough Assembly. Decisions to recommend an action are not appealable, even if the recommendation is procedurally required as a prerequisite to some other decision, according to the provisions of CBJ 01.50.020 (b).



Michael LeVine, Chair
Planning Commission

June 25, 2022

Date



Filed With City Clerk

June 27, 2022

Date

cc: Plan Review

NOTE: The Americans with Disabilities Act (ADA) is a federal civil rights law that may affect this recommended text amendment. ADA regulations have access requirements above and beyond CBJ - adopted regulations. Contact an ADA - trained architect or other ADA trained personnel with questions about the ADA: Department of Justice (202) 272-5434, or fax (202) 272-5447, NW Disability Business Technical Center (800) 949-4232, or fax (360) 438-3208.

**PLANNING COMMISSION AGENDA
THE CITY AND BOROUGH OF JUNEAU, ALASKA**

APL2021 0006: Juneau Cooperative Christian Ministry, dba The Glory Hall v. CDD - CONTINUED TO
THE NEXT REGULAR MEETING OR A SPECIAL MEETING

ATTACHMENTS:

Description	Upload Date	Type
☐ Proposed Decision on Appeal	6/8/2022	Appeal
☐ CDD's Objections to the Proposed Decision	6/8/2022	Appeal

**BEFORE THE PLANNING COMMISSION
OF THE CITY AND BOROUGH OF JUNEAU**

JUNEAU COOPERATIVE CHRISTIAN
MINISTRY, dba THE GLORY HALL,

Appellant,

vs.

CBJ COMMUNITY DEVELOPMENT,

Appellee.

APL2021-06

Appeal of:

BLD2021-0765

CDD Director's Decision dated
December 1, 2021

PROPOSED DECISION ON APPEAL

Appellants Juneau Cooperative Christian Ministry, d.b.a. The Glory Hall ("TGH"), appealed the CDD Director's ("Director") decision to deny their request for a building permit to convert TGH building at 2437 South Franklin Street from an "emergency shelter" into commercial use and residential rental units.

The Planning Commission ("Commission") accepted the appeal and voted to review the appeal on the record as provided under CBJ 49.20.110.

The record was prepared by CDD based upon the materials considered by the Director as required under CBJ 49.20.110(b). The record was supplemented with additional materials as requested by TGH, a hearing was held before the Commission on May 24, 2022, and both parties argued in support of their position.¹

Following arguments, the Commission deliberated in executive session as provided under CBJ 01.50.140(b)(3). After deliberations concluded, the Commission came out of executive decision and voted to remand the building permit to CDD for further consideration consistent with this opinion.

1. Burden of Proof and Standard of Review

This is an on the record appeal of the Director's decision. Pursuant to CBJ 49.20.110(b), the burden of proof is on the party challenging the decision. For an on the record appeal, no

¹ Commissioners Arndt, Voelckers, Pedersen, Alper, Hickok, and Winchell participated. MaryAlice McKeen presented argument on behalf of the appellants TGH and CBJ Attorney Adam Gottschalk presented argument on behalf of CDD.

evidence outside the record shall be admitted and the decision of the Director shall be upheld if there is substantial evidence in support thereof and no policy error or abuse of discretion is found therein. Under CBJ 01.50.010, “substantial evidence” means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion. Per CBJ 01.50.070(a)(1), this means “substantial evidence in light of the whole record, as supplemented at the hearing.” The Alaska Supreme Court has held that an abuse of discretion occurs only if the decision is “arbitrary, capricious, manifestly unreasonable, or the result of an improper motive.”² A decision will be upheld unless, after reviewing the whole record, the Commission is left with a definite and firm conviction that the Director erred in her decision.³

2. Relevant Facts

Extensive information regarding the building permit was presented by the parties at the hearing. Accordingly, the recitation of facts here is brief. On October 28, 2021, TGH’s executive director reached out to CDD expressing TGH’s intent to develop seven apartments on the second and third floors of TGH’s building in downtown Juneau. On November 9, 2021, a pre-application conference was held to provide a preliminary review of TGH’s proposed plans. On November 17, 2021, CDD issued a report regarding what was discussed at the pre-application conference. One of the key issues discussed was increasing density in a severe avalanche area. *R at 34*. CDD’s report indicated that TGH needed to obtain a site-specific study prepared by a licensed civil engineer experienced in avalanche and landslide analysis that would demonstrate the need for a hazard boundary relocation. *R at 36*. On November 23, 2021, TGH submitted a building permit showing the addition of seven dwelling units to the 247 South Franklin Street building. *R at 37*. TGH also submitted documents from its 1989 conditional use permit, as well as a geophysical hazard assessment from R&M Engineering dated December 28, 1989. *R at 116-142*. CDD denied TGH’s building permit on December 1, 2021 with the explanation that “increasing the number of dwelling units is prohibited by code in the hazard zone.” *R at 106*.

3. Legal Analysis

As provided above, TGH requested a building permit to convert its emergency shelter property into commercial use space and apartments, which is under the authority of the CDD

² Markham v. Kodiak Island Borough Board of Equalization, 441 P.3d 943, 949 (Alaska 2019).

³ Gold Country Estates Preservation Group, Inc. v. Fairbanks North Star Borough, 270 P.3d 787, 793 (Alaska 2012).

Director. Under CBJ 49.20.110 the decision of the Director may be appealed to the Planning Commission. The Commission reviews the appeal under the standards set forth in CBJ 49.20.110(b). Under these standards, the Commission does not independently review the building permit request and make a determination based on its own analysis. Rather, the Commission reviews the decision of the Director based on the evidence in the record and is required to uphold the decision “if there is substantial evidence in support thereof and no policy error or abuse of discretion therein.”

Several sections of CBJ 49.70.300 apply to this decision. CBJ 49.70.300(a) states:

- (1) Development in all landslide and avalanche areas shall minimize the risk of loss of life or property due to landslides and avalanches.
- (2) Boundaries of potential and severe avalanche areas will be as shown on the landslide and avalanche area maps dated September 9, 1987, consisting of sheets 1—8, as the same may be amended from time to time by the assembly by ordinance.
- (3) Notwithstanding any other provision, all subdivision other than a boundary line relocation and all development greater than a single-family dwelling within landslide or avalanche areas shall require a conditional use permit.
- (4) If a developer disagrees with the boundaries shown on the maps, the developer may seek departmental relocation of the boundaries by submitting site specific studies prepared by a civil engineer experienced in avalanche and landslide analysis. Such studies shall include detailed analyses of topography, vegetation, potential snow accumulation, and other factors. The results should indicate actual hazard area boundaries and potential debris flow direction, time, distance and mass. If, in the opinion of the city engineer, the studies clearly establish that the map boundaries are inaccurate and the proposed development is outside a severe avalanche area or outside any avalanche or landslide area, the department shall proceed accordingly.
- (5) The commission may require mitigating measures certified as effective by a professional engineer for development in landslide and avalanche areas. Such measures may include dissipating structures or dams, special structural engineering, or other techniques designed for the site. Mitigating measures may also include reduction in the proposed density.

Further, CBJ 49.70.300(b)(1) states: Notwithstanding any other provision, no development or any part of a development, which is within a severe avalanche area shall, by the addition of bedrooms, conversions of buildings, or otherwise, increase the density of that parcel; provided, however, that a single-family house may be constructed on a vacant lot.

After review of evidence in the record and taking into account arguments made in this appeal, the Planning Commission remands APL2021-0006 to CDD for a decision within 30 days, with the following findings:

1. CDD acted in error by not incorporating previous engineering work in their analysis under CBJ 49.70.300(a)(5). CBJ Engineering accepted the site specific 1989 R&M Geophysical Hazard Assessment. The assessment established that the Glory Hall property was not in a severe hazard zone. The assessment amends the 1987 CBJ hazard maps for this property.
2. The Planning Commission has determined the intent of CBJ 49.70.300 is to provide for the safety of occupants within a structure, regardless of use. As density is not specifically defined in Title 49, according to CBJ 49.20.300, the Planning Commission hereby provides the following interpretation: For the purposes of CBJ 49.70.300(b)(1), the phrase “shall not increase density” shall be interpreted to mean, “shall not increase the total quantity of people in a structure.”

DATED this _____ day of May, 2022.

PLANNING COMMISSION OF THE CITY AND BOROUGH OF JUNEAU, ALASKA

By: _____
 Presiding Officer
 Commissioner Travis Arndt

**BEFORE THE PLANNING COMMISSION
OF THE CITY AND BOROUGH OF JUNEAU**

JUNEAU COOPERATIVE CHRISTIAN
MINISTRY d/b/a THE GLORY HALL,

Appellant,

v.

CBJ COMMUNITY DEVELOPMENT,

Appellee.

APL2021-0006

Appeal of:

BLD2021-0765

CDD Director's Decision dated
December 1, 2021

CDD'S OBJECTIONS TO THE PROPOSED DECISION

Appellee CBJ Community Development Department's primary objection to the Planning Commission's June 1, 2022 Proposed Decision on Appeal regards the Commission's second finding, that "density" as used in CBJ 49.70.300(b)(1) means "the total quantity of people in a structure."¹ Read in conjunction with the first finding—that CDD erred by not incorporating a 1989 assessment into its analysis—the Commission's intent is fairly clear: Further support the 1989 assessment's sufficiency by minimizing the severe avalanche area issue. However, as explained below, removing the second finding regarding density would not undermine the Commission's intent, but including this finding in a forthcoming final decision *would* undermine the intent of CBJ 49.70.300(b)(1).

I. CDD Seeks Clarity Regarding the Commission's Finding the Agency Should Incorporate the 1989 Assessment Into Its Analysis.

It is not entirely clear from the Proposed Decision what the Commission's first finding is or seeks. This finding indicates CDD erred by not incorporating the 1989

¹ Proposed Decision, 4.

1 assessment *and* that the 1989 assessment amends the adopted hazard maps as to TGH's
 2 property.² However, CDD has already incorporated the 1989 assessment into its decision
 3 and, if the Commission considers the 1989 assessment sufficient to establish TGH's
 4 property is not in a severe hazard zone, what is the Commission seeking through a
 5 remand?

6 As acknowledged in the Proposed Decision, CDD's decision "shall be upheld if
 7 there is substantial evidence in support thereof and no policy error or abuse of discretion
 8 therein."³ Per CBJ 01.50.010, "[s]ubstantial evidence means such relevant evidence as a
 9 reasonable mind might accept as adequate to support a conclusion." And, as provided at
 10 CBJ 01.50.070(a)(1), the breadth is "substantial evidence in light of the whole record, as
 11 supplemented at the hearing...."

12 CDD has already expressed its position regarding the 1989 assessment.
 13 Responding to questions from the Commission, CDD stated the 1989 assessment does
 14 not address avalanche risks and there has been subsequent upslope development since the
 15 1989 assessment was created.⁴ Self-evidently, the 1989 assessment does not disclose
 16 whether its recommended mitigation measures were taken.⁵ Still, CDD represented the
 17
 18

19 ² Proposed Decision, 4 (stating in its entirety, "CDD acted in error by not incorporating
 20 previous engineering work in their analysis under CBJ 49.70.300(a)(5). CBJ Engineering
 21 established that the Glory Hall property was not in a severe hazard zone. The assessment
 22 amends the 1987 CBJ hazard maps for this property.").

23 ³ Proposed Decision, 2-3 (referencing and quoting CBJ 49.20.110(b)).

⁴ May 24, 2022 Planning Commission Hearing, statements by counsel for CDD in
 response to questioning by Commissioner Voelckers.

⁵ R. 121 (recommended mitigation measures in 1989 assessment); R. 129 (1990 CDD
 recommendation the Commission grant a conditional use permit subject to the mitigation
 measures).

1 1989 assessment’s data could be used by an engineer toward an update.⁶ Rendering it less
 2 clear what the Commission seeks from a remand are the Commission’s statements that
 3 the 1989 assessment “established that the Glory Hall property was not in a severe hazard
 4 zone.”⁷ If the 1989 assessment established TGH’s property is not in a severe hazard zone,
 5 what further analysis is the Commission seeking?

6 If the Commission considers the 1989 assessment—despite being silent on
 7 avalanches, recent developments, and whether mitigating measures were taken,⁸ and
 8 despite being unable to secure a modern endorsement⁹ and being contradicted by the
 9 2020/2021 Tetra Tech Hazard Study that shows the property is within a severe landslide
 10 hazard area¹⁰—sufficient to establish that TGH’s property is not in a severe hazard zone,
 11 the Commission could find CDD’s decision was not supported by substantial evidence
 12 and reverse. Reversing would obviate remanding and re-airing of the same above-stated
 13 concerns CDD has regarding the 1989 assessment. As the Commission is aware, CDD is
 14 bound by the terms of Title 49; there is little leeway in CBJ 49.70.300 for the agency to
 15 weigh additional factors such as prior use or the need for affordable housing. Reversal on
 16 this issue would also eliminate the need to create an anomalous definition for density.
 17

18 **II. CDD Objects to the Commission’s Finding Density Should Be Defined As**
 19 **Occupancy for CBJ 49.70.300(b)(1) Purposes.**

20
 21 ⁶ May 24, 2022 Planning Commission Hearing, statements by counsel for CDD

22 ⁷ Proposed Decision, 4.

23 ⁸ To date, CDD does not know if the mitigation measures recommended were taken.

⁹ During the hearing, TGH represented it had been unable to obtain a site-specific report that would establish the site’s safety despite reaching out to 11 engineers.

¹⁰ While the 2020/2021 Tetra Tech Hazard Study should be considered outside the record, it has been raised repeatedly through this appeal. *See, e.g.* TGH Br., 2, 7, 22.

1 If the Commission reverses based on a finding the 1989 assessment clearly
 2 establishes TGH's property is not within a severe hazard zone, then the second finding—
 3 “density” as used in CBJ 49.70.300(b)(1) means “total quantity of people in a structure”—
 4 would be unnecessary to its final decision and this finding should be removed.

5 First, making this density an “occupancy in density’s clothing” would be
 6 unnecessary to the decision. If TGH's property is not within a severe hazard zone, then
 7 whether or not TGH's sought development increases density is irrelevant. So whether
 8 density means dwelling units, persons, property, or some vague combination of factors,
 9 if the 1989 assessment is sufficient, none of these are at risk.

10 Beyond being unnecessary, the Proposed Decision's density definition would
 11 make this density exceptional to Title 49, which consistently uses density to mean
 12 “dwelling units in an area.”¹¹ The Proposed Decision's stated definition would also be
 13 exceptional because buildings' occupancies are almost exclusively concerns of Title 19,
 14 not Title 49. Exceptional interpretations run counter to CBJ 01.15.020, the rule of
 15 construction that instructs words “not specifically defined shall be construed according to
 16 the context and customary usage of the language.” This discord would be especially acute
 17
 18

19
 20 ¹¹ “Density” appears 44 times in Title 49. In virtually every instance it represents the
 21 number of dwelling units in an area. *E.g.* CBJ 49.25.500-20 (regarding zoning and
 22 showing density as dwelling units per acre); CBJ 49.65.740 (regarding zoning and
 23 referring to density in accordance with CBJ 49.25); CBJ 49.60.140 (“The allowable
 density of dwelling units per acre...”); CBJ 49.15.760 (regarding zoning and showing
 density as dwelling units per lot area). While appearing significantly in CBJ 49.25, which
 regards zoning, the term also appears several times in CBJ 49.80.120—the definitions
 section. For example, “density bonus” is defined as “an increase in allowable density
 above that otherwise allowed in the zoning district in which the planned unit development
 is located.”

1 in CBJ 49.70.300 where “density” is used twice; it is also used in CBJ 49.70.300(a)(5).
 2 Should CBJ 49.70.300(a)(5) be read as “proposed [occupancy]” even though it lists
 3 mitigating measures “certified as effective by a professional engineer”? This would make
 4 little sense as an engineer is not necessary to certify that having fewer people would
 5 mitigate risk. Or should CBJ 49.70.300(a)(5)’s density be consistent with the rest of Title
 6 49 but inconsistent with the very next subsection, CBJ 49.70.300(b)(1)?

7 As a practical matter, if the Commission renders CBJ 49.70.300(b)(1)’s density to
 8 mean occupancy, the Commission will open the door to substantial development within
 9 severe landslide and avalanche areas—many of the buildings in severe hazard areas have
 10 significant occupancies. By defining density as occupancy solely in the section of Title
 11 49 intended to minimize development in severe avalanche areas, the Commission would
 12 open the door to development where Title 49 seeks to limit development. Because
 13 occupancy will virtually always be greater than dwelling units, the Commission’s density
 14 definition would undermine CBJ 49.70.300(b)(1).
 15

16 A familiar legal maxim that applies to this case is “bad facts make bad law.”¹² In
 17 this case, TGH’s conversion will lead to fewer people living in a designated severe hazard
 18 area *even though* this same conversion will increase dwelling units. Thus, in this case, the
 19 Proposed Decision’s definition for CBJ 49.70.300(b)(1)’s density supports TGH’s
 20 conversion *and* the intent of CBJ 49.70.300(b)(1), which is to minimize risk to people
 21 and property. Further, as the Proposed Decision indicates, the 1989 assessment
 22
 23

¹² This includes unusual or exceptional facts.

sufficiently assured the Commission that this project will not place people and property at risk.¹³

However, it is the exceptional case in which increasing dwelling units will lead to fewer people living in a building—and this project’s exceptional character is furthered by its laudable purposes (e.g. increase affordable housing, provide income to a well-liked non-profit) and the existence of an earlier site-specific study and subsequent (but unadopted) hazard maps. By defining CBJ 49.70.300(b)(1)’s density as occupancy, the Commission is transferring the exceptional character of a single project to a Code provision affecting many potential projects. By rendering CBJ 49.70.300(b)(1)’s density exceptional, the Commission will essentially nullify CBJ 49.70.300(b)(1) and open the door to significant development in severe hazard areas—in virtually all other cases, dwelling units and inhabitants can increase even if overall occupancy decreases.

As mentioned above, defining density for CBJ 49.70.300(b)(1) purposes does not advance the Commission’s intent as it is represented in the Proposed Decision. Critically, the definition proposed undermines CBJ 49.70.300(b)(1) in virtually every other conceivable case. Even TGH stated dwelling units were a relevant factor in density.¹⁴ Because the Commission’s finding—that for CBJ 49.70.300(b)(1) purposes density means occupancy—is unnecessary to the Proposed Decision’s intent and this definition

¹³ Proposed Decision, 4 (“The assessment established that the Glory Hall property was not in a severe hazard zone.”).

¹⁴ May 24, 2022 Planning Commission Hearing, statements by counsel for TGH (at minute 23:55 on the audio recording).

undermines CBJ 49.70.300(b)(1), CDD objects to its inclusion in a forthcoming final decision.

III. Conclusion

For the above-provided reasons, CDD seeks clarity on the Commission's first finding, which seeks incorporation of the 1989 assessment, and CDD objects to the Commission's second finding, which seeks to create a one-off definition for "density" that will undermine CBJ 49.70.300(b)(1). Finally, as an alternative to remanding, the Commission may consider this project for a conditional use permit pursuant to CBJ 49.15.330 and CBJ 49.70.300(a)(3). While this process would not exempt TGH's project from CBJ 49.70.300 and CDD review, it would afford the Commission greater flexibility to make an individual determination appropriate for TGH's use and property.¹⁵

DATED this 8th day of June, 2022.

CBJ CDD

By: 
Adam R. Gottschalk
Assistant Municipal Attorney
Alaska Bar No. 2008079

CERTIFICATE OF SERVICE

I certify that on 8th of June, 2022, a true and correct copy of the foregoing document was served on:

ATTN: Mary Alice McKeen
212 West 9th Street

¹⁵ See CBJ 49.15.330(a) (stating in relevant part, "The conditional use permit procedure is intended to afford the commission the flexibility necessary to make determinations appropriate to individual sites.").

Juneau, AK 99801
via email to: ottokeen@gmail.com



Assistant Municipal Attorney

**PLANNING COMMISSION AGENDA
THE CITY AND BOROUGH OF JUNEAU, ALASKA**

Additional Materials for June 14, 2022 Planning Commission

ATTACHMENTS:

Description	Upload Date	Type
Additional Materials for June 14, 2022 Planning Commission	6/10/2022	Miscellaneous

Additional Materials

Regular Planning Commission Meeting

Virtual and in Person

7:00p.m.

Meeting Date: June 14, 2022

1. USE2022 0006:

- a. Memo Regarding Modification of Project (page 2-10)



(907) 586-0715
 CDD_Admin@juneau.org
 www.juneau.org/community-development
 155 S. Seward Street • Juneau, AK 99801

June 10, 2022

MEMO

From: Joseph Meyers, Planner II

To: Planning Commission

Parcel No.: 5B1601430017

Legal Description: Vintage IV Tract A2

Case Number: USE2022 0006

RE: Modification of USE2022 0006

Dear Planning Commission,

On June 2, 2022 a memo was received by the Community Development Department from PND Engineering requesting to modify the plans submitted with application USE2022 0006 for a new SEARHC medical office facility in the Vintage Park subdivision. The memo from PND Engineering is attached.

There are three changes being requested:

1. Reduction of floor area from 45,000 square feet to 43,000 square feet.
2. Phased construction of the third floor of the clinic with no revisions to the final third floor program or use. This phasing will be based on the availability of funds
3. Paving the sidewalks with asphalt and using concrete ADA ramps in lieu of entirely concrete facilities.

Based on staff review, the requested changes do not significantly alter the scope of the project or change the recommendation. Additional conditions are not proposed at this time.

Sincerely,

Joseph Meyers, Planner II
 Community Development Department



ENGINEERS, INC.

June 2, 2022

PND No. 222016

Joseph Meyers
Planner
City and Borough of Juneau Community Development Dept.
230 S. Franklin St. Juneau, AK 99801

Re: SEARHC Vintage Park Medical Office Building, Conditional Use Permit Application – Additional Information

Dear Mr. Meyers,

On Thursday, March 31, 2022, PND submitted to CBJ a conditional use permit application package for the subject project. There have been minor revisions to the project resulting from value engineering efforts to reduce project cost. I am submitting this letter to inform CBJ of the minor revisions and to provide additional requested information ahead of the Planning Commission hearing scheduled for June 14, 2022.

The permit application included a draft Traffic Impact Analysis, (TIA) developed by Kinney Engineering, (KE). It was noted in the application Project Narrative that the TIA is in draft form due to ongoing coordination with AKDOT. On April 7, 2022, PND provided a letter summarizing the results of coordination with AKDOT. Following the submittal of the letter you requested the TIA remain in draft form, pending CBJ Engineering review. You have now indicated that CBJ Engineering has no additional comments and requested we proceed with finalizing the TIA. The TIA is finalized and is enclosed, there have been no revisions to the method or data, only the recommendations section was finalized, which was omitted from the draft pending DOT and CBJ comment.

Minor revisions to the project have occurred due to ongoing value engineering efforts. These include the following:

- An overall reduction in square footage to approximately 43,000 square feet. The reductions were made in the southeast area of the building, in primarily mechanical and storage space. Revised floor plans, elevation views, parking summary sheet and site plan are enclosed. There have been no revisions to the proposed traffic circulation, number of parking spaces, or to the total proposed vegetative cover.
- A phased approach to final construction will be implemented. The third floor of the building will be constructed as core and shell only in Phase One, with final build out to be completed during Phase 2, as funding allows. There are no planned revisions to the final 3rd floor program or use of space.
- The proposed perimeter sidewalk will be asphalt with concrete ADA ramps in lieu of entirely concrete, similar to recent CBJ roadway projects.

Thank you for your time and review of the enclosed documents. Please contact me if you have any questions or require further information.

Sincerely,
PND Engineers, Inc. | Juneau Office

Tyler Bradshaw, P.E. | Senior Engineer

Enclosures:

1. Final TIA
2. Revised Drawings

cc:

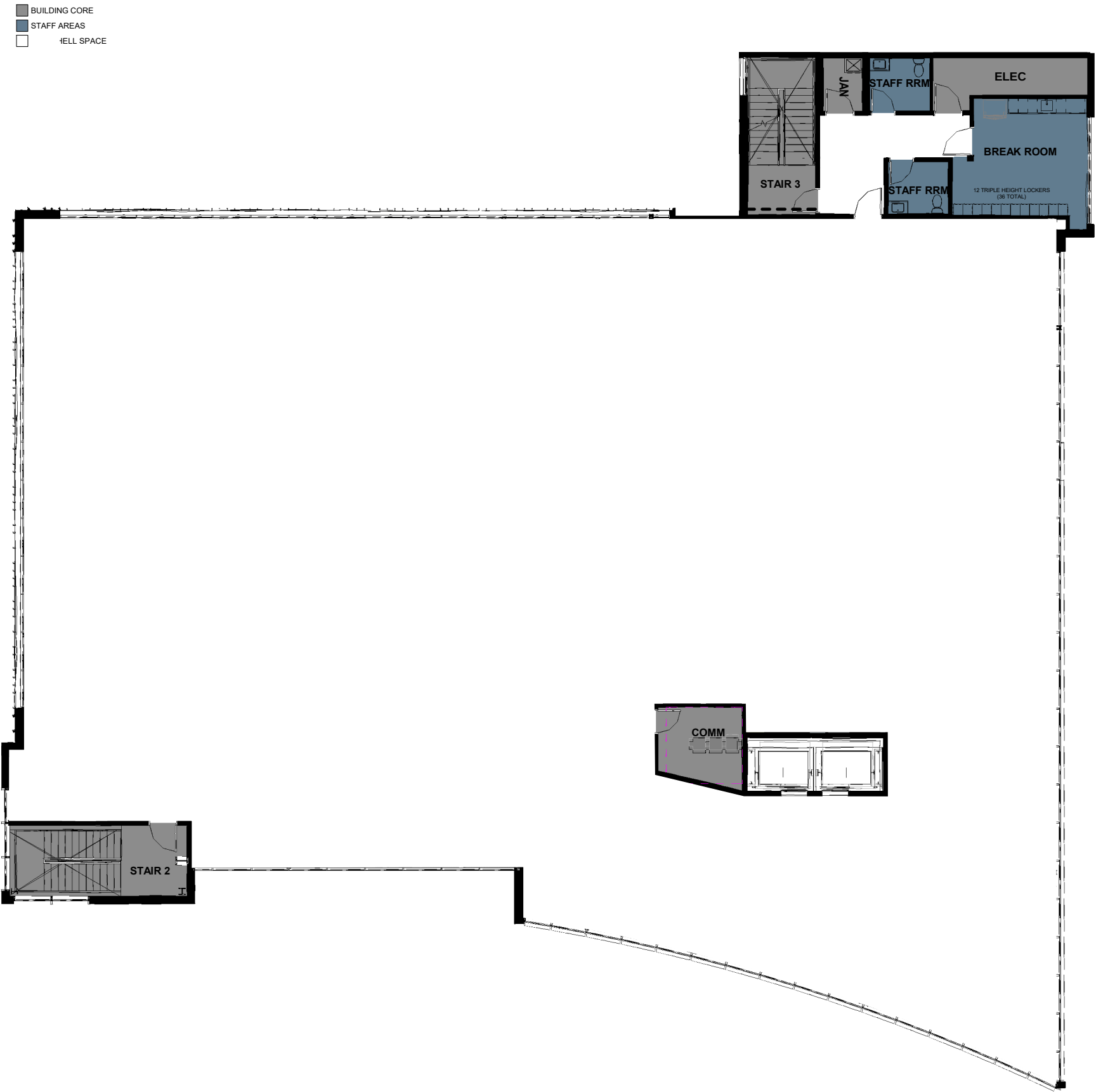
Ed Zernia, SEARHC Director of Construction, Facilities Admin
Deanna Wlad, AIA, Architect, Spark Design
Dick Somerville, PE, PND Engineers

JUNEAU VINTAGE PARK
LEVEL 1
14,824 SF





14,087 SF



AREA PLAN - LEVEL 1



PARKING SUMMARY

- MEDICAL/DENTAL CLINIC
- OFFICE SPACE
- STORAGE/UTILITY SPACE

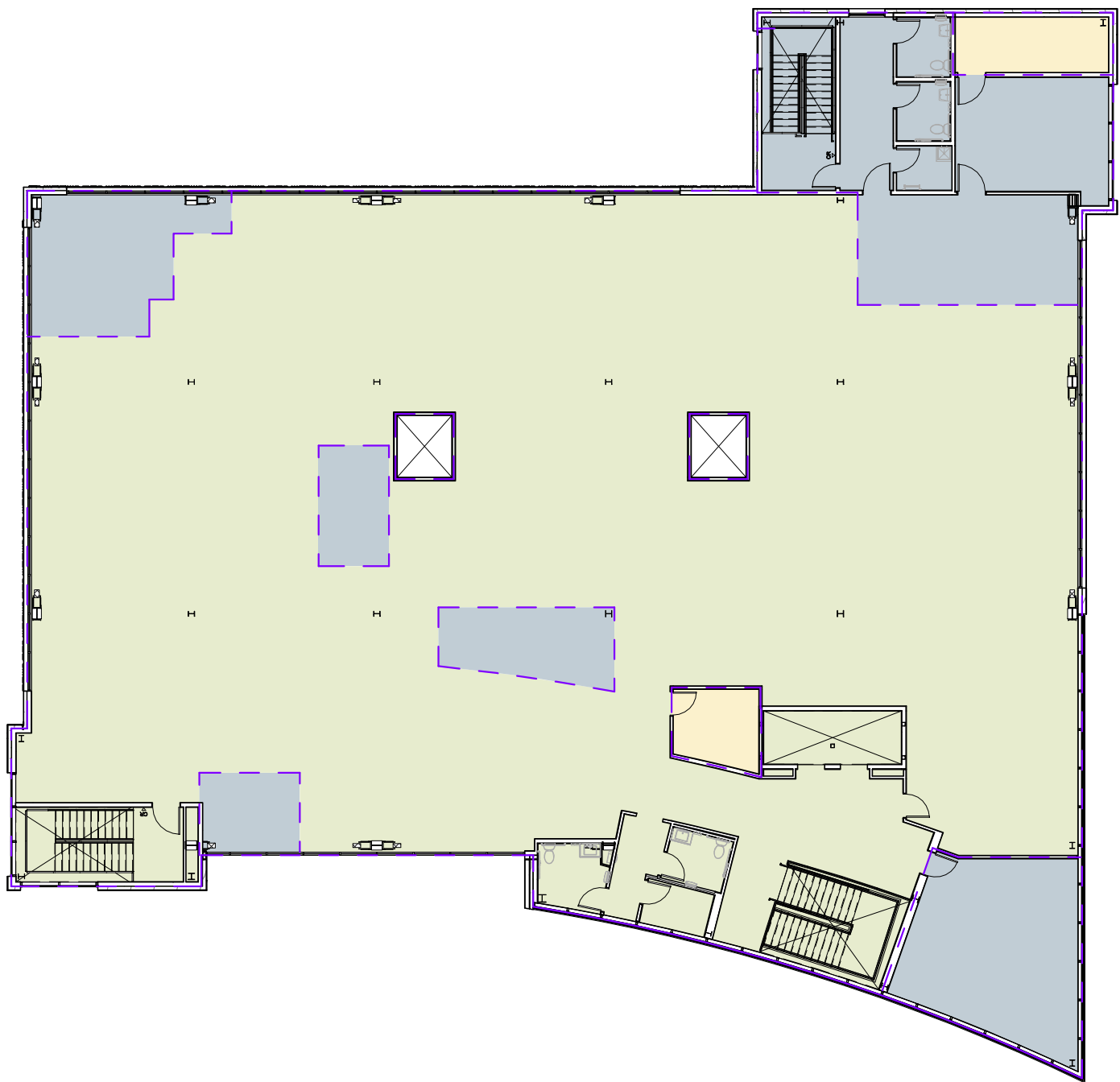
PARKING CALCULATION SCHEDULE	
Name	Area
MEDICAL/DENTAL CLINIC	
LEVEL 1 CLINIC	9920 SF
LEVEL 2 CLINIC	10693 SF
LEVEL 3 CLINIC	10909 SF
	31522 SF
OFFICE SPACE	
OFFICE	2445 SF
OFFICE	138 SF
OFFICE	120 SF
OFFICE	130 SF
BH OFFICES	565 SF
BH OFFICES	413 SF
BH OFFICE	142 SF
LEVEL 2 - BREAK & STAFF AREAS	1583 SF
BH OFFICE	242 SF
CONFERENCE ROOM	544 SF
LEVE 3 BREAK & STAFF AREAS	1338 SF
OFFICE	207 SF
OFFICE	143 SF
OFFICE	139 SF
OFFICE	384 SF
	8531 SF
STORAGE/UTILITY SPACE	
MECH / ELEC	1268 SF
DATA	117 SF
STORAGE	121 SF
STORAGE	261 SF
STORAGE	259 SF
STORAGE	46 SF
MECH / ELEC	Not Enclosed
DATA	197 SF
MECH / ELEC	167 SF
MECH / ELEC	Not Enclosed
DATA ROOM	118 SF
MECH / ELEC	167 SF
	2720 SF

AREA PLAN - LEVEL 2

Packet Page 632 of 635



AREA PLAN - LEVEL 3



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CERTIFICATE OF AUTHORIZATION NO.
SPARK DESIGN, LLC #AECL1394

spark design, llc
architecture • interiors • design-build
5401 cordova street, suite 301
anchorage, alaska 99518
p. 907.344.3424 f. 907.771.9776

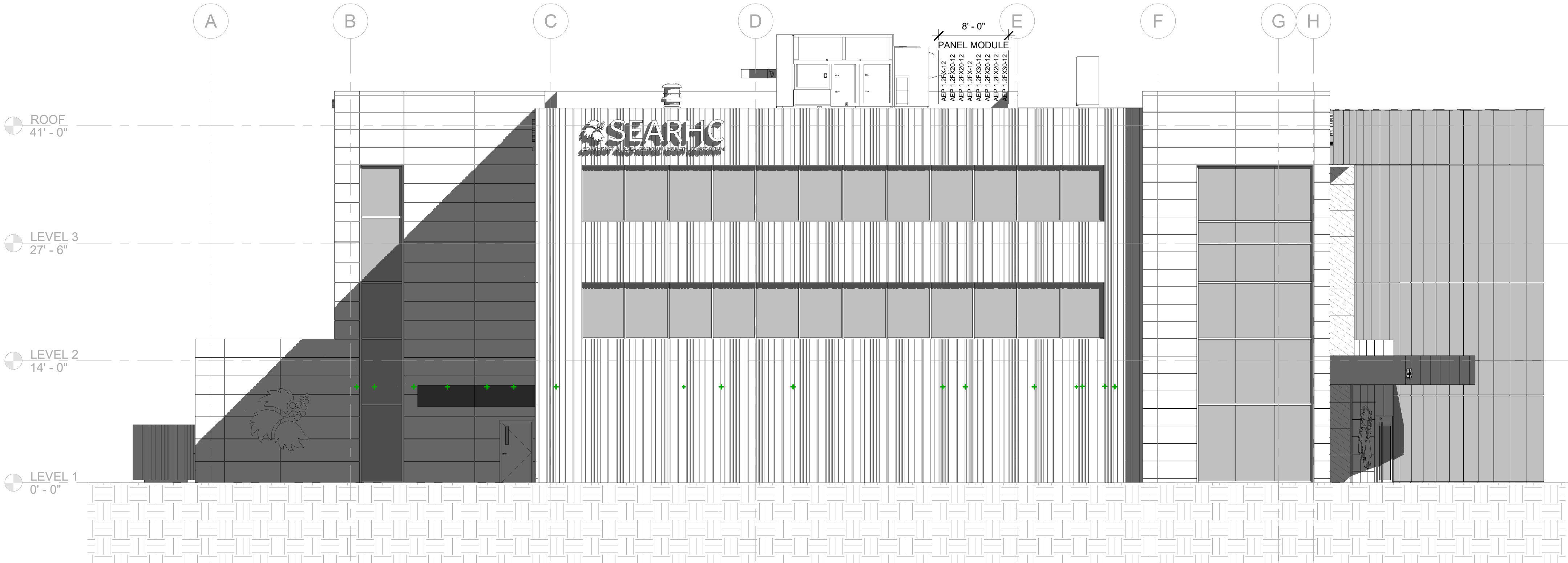
SEARHC
JUNEAU VINTAGE PARK
JUNEAU, AK

REVISION SCHEDULE		
#	DESCRIPTION	DATE

JOB NO.	21-064
DATE	05/31/2022
DRAWN	Author
REVIEWED	DTW

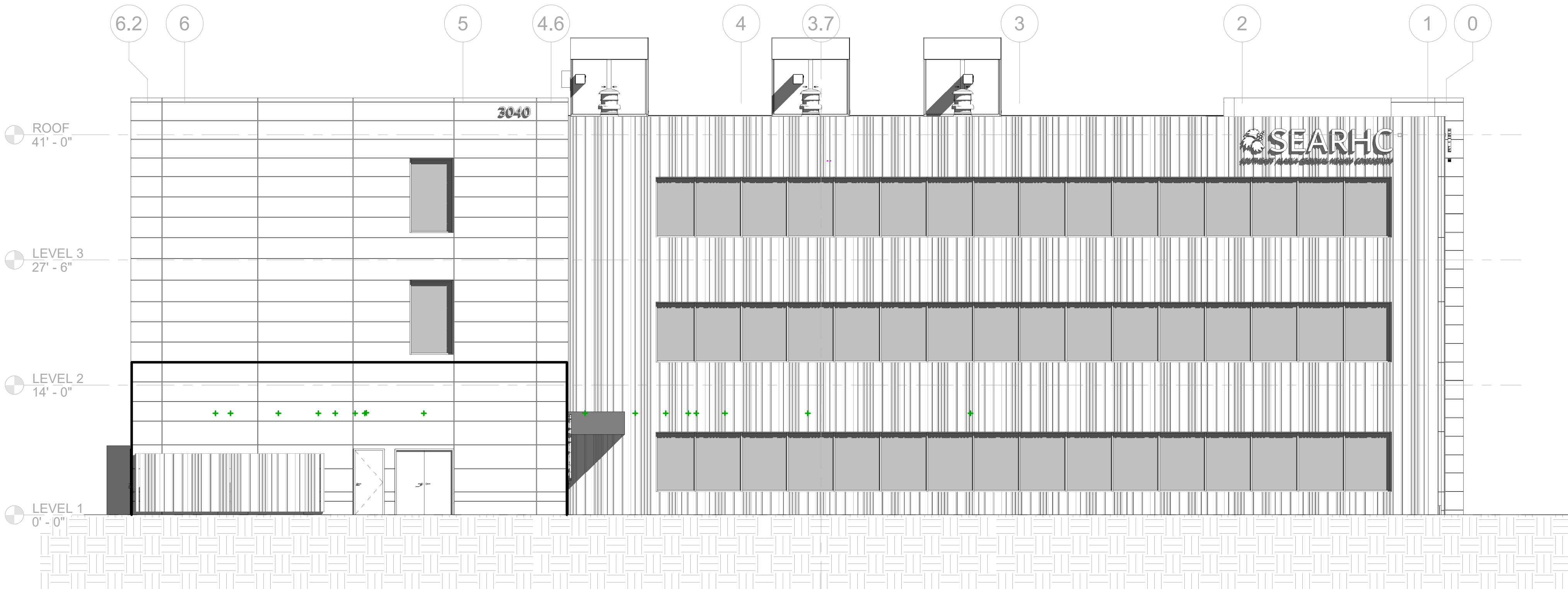
SHEET NAME
PARKING SUMMARY

SHEET NO.
G1.00



1 NORTH
1/8" = 1'-0"

Packet Page 633 of 635



2 EAST
1/8" = 1'-0"

EXTERIOR ELEVATIONS GENERAL NOTES

1. ALL UNISTRUT SUPPORTING UTILITY EQUIPMENT SHALL BE PAINTED TO MATCH THE BUILDING.
2. ALL BLOCKING FOR HOSE BIBS, WALL MOUNTED LIGHTS, RECEPTACLES, ETC. SHALL BE CLAD IN THE SAME SIDING MATERIAL AS THE BUILDING OR A COMPLEMENTARY FINISH AS APPROVED BY THE ARCHITECT.
3. ADDRESS SIGNAGE DIMENSIONAL NUMBERS:
MATERIAL: ANODIZED ALUMINUM
FONT: ADA FUTURA
SIZE: TBD (BOD 20")
MOUNTING: STUDS WITH STANDOFFS

EXTERIOR ELEVATION LEGEND

- METAL PANEL**
MP1: MFG: DRI-DESIGN OR EQUAL
STYLE: PAINTED ALUMINUM
COLOR: WHITE
PANEL WIDTH: 24"
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 1 1/4"
REVEAL: 1/2"
- METAL PANEL**
MP2: MFG: AEP SPAN OR EQUAL, CLIP SYSTEM
STYLE: FLEX SERIES WITH STANDOFF CLIP
COLOR: COOL SLATE GRAY
PANEL WIDTH: 12"
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 18 GA AT LONG SPANS, 20 GA BETWEEN WINDOWS
PROFILE: RECTANGULAR PROFILE PER MODULE LAYOUT, NO BEVELS ETC.
- METAL PANEL ACCENT**
MP3: MFG: TO BE DETERMINED
STYLE: TO BE DETERMINED
COLOR: TBD
PANEL WIDTH: CUSTOM
LENGTH: CUSTOM
THICKNESS: CUSTOM, 1/8" MIN.
REVEAL: AS SHOWN ON ELEVATIONS
- ENTRY CANOPY AND LEVEL 3 SOFFIT**
MP3: MFG: TO BE DETERMINED
STYLE: TO BE DETERMINED
COLOR: TBD
PANEL WIDTH: CUSTOM
LENGTH: CUSTOM
THICKNESS: CUSTOM, 1/8" MIN.
REVEAL: AS SHOWN ON DRAWINGS
- CANOPY FASCIA PANELS**
ACM1: MFG: TO BE DETERMINED
STYLE: ALUMINUM COMPOSITE PANELS
COLOR: WHITE TO MATCH MP1 AND MP3
PANEL WIDTH: CUSTOM
LENGTH: CUSTOM
THICKNESS: 4 MM
REVEAL: WET JOINT, AS SHOWN ON ELEVATIONS

PRELIMINARY NOT
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SEARHC
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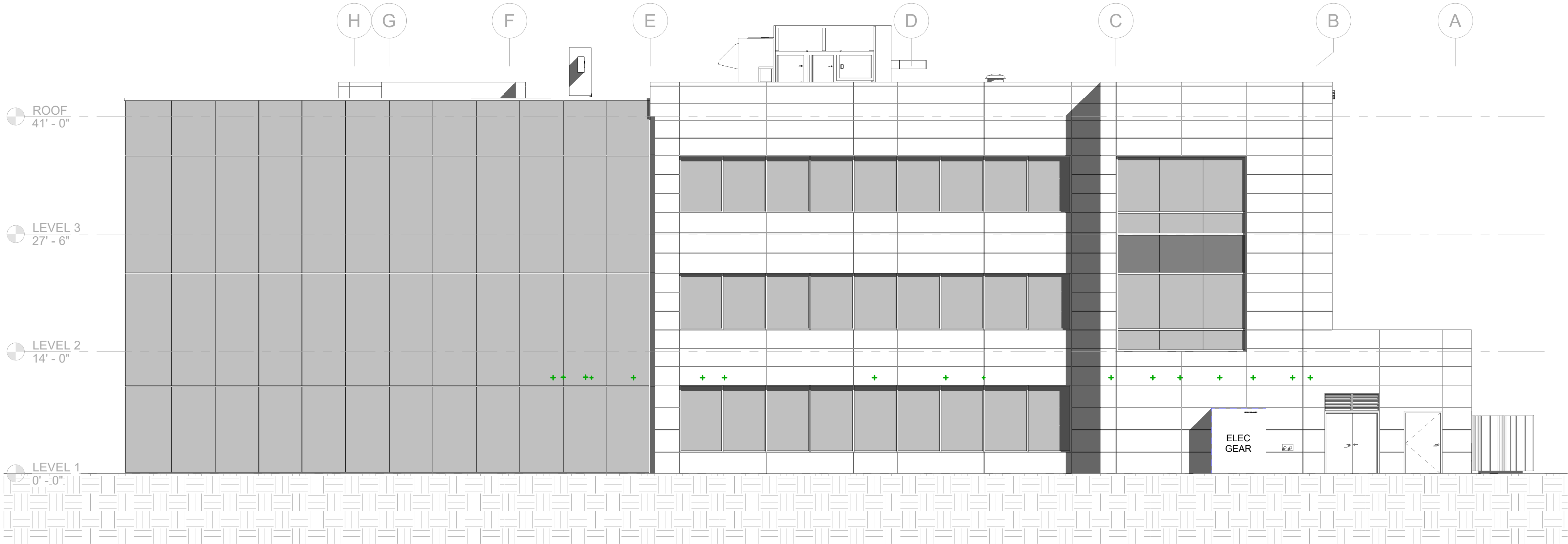
REVISION SCHEDULE		
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DRAWN	Author
REVIEWED	DTW

SHEET NAME
EXTERIOR ELEVATIONS

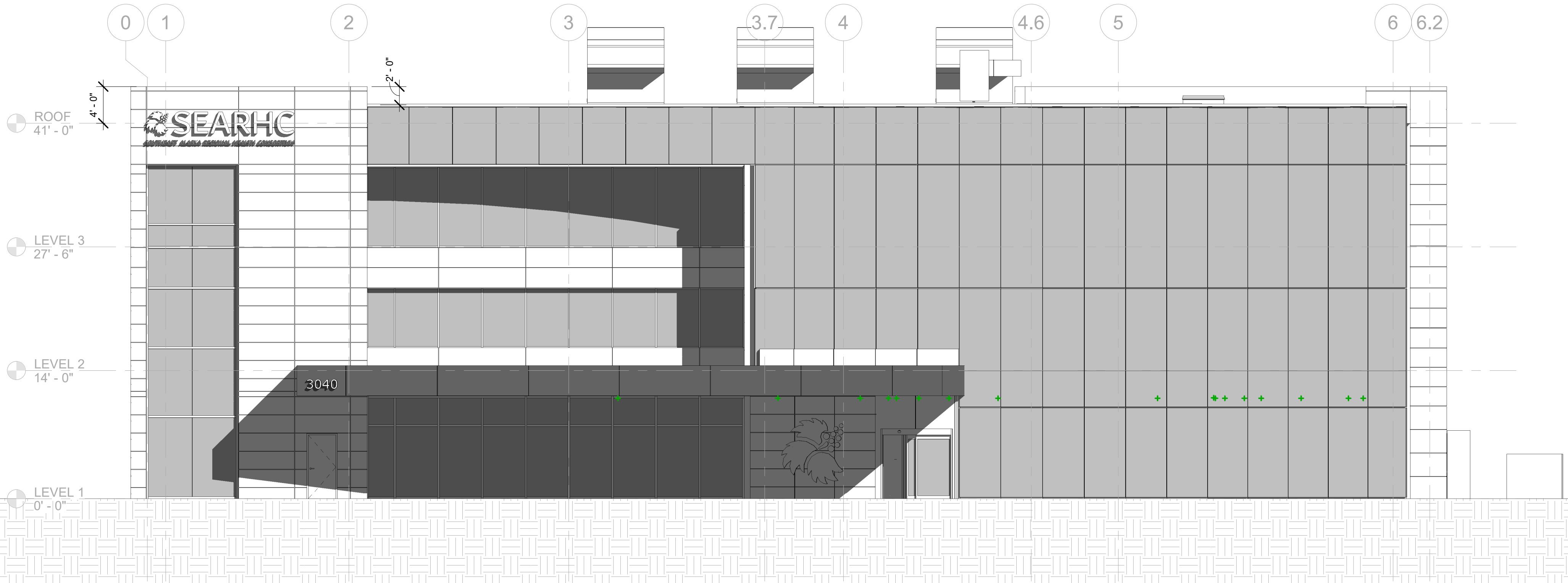
SHEET NO.
A2.00

HALF SCALE WHEN PRINTED AT 11x17



1 SOUTH
1/8" = 1'-0"

Packet Page 634 of 635



2 WEST
1/8" = 1'-0"

EXTERIOR ELEVATIONS GENERAL NOTES

1. ALL UNISTRUT SUPPORTING UTILITY EQUIPMENT SHALL BE PAINTED TO MATCH THE BUILDING.
2. ALL BLOCKING FOR HOSE BIBS, WALL MOUNTED LIGHTS, RECEPTACLES, ETC. SHALL BE CLAD IN THE SAME SIDING MATERIAL AS THE BUILDING OR A COMPLEMENTARY FINISH AS APPROVED BY THE ARCHITECT.
3. ADDRESS SIGNAGE DIMENSIONAL NUMBERS:
MATERIAL: ANODIZED ALUMINUM
FONT: ADA FUTURA
SIZE: TBD (BOD 20")
MOUNTING: STUDS WITH STANDOFFS

EXTERIOR ELEVATION LEGEND

- METAL PANEL**
MP1: MFG: DRI-DESIGN OR EQUAL
STYLE: PAINTED ALUMINUM
COLOR: WHITE
PANEL WIDTH: 24"
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 1 1/4"
REVEAL: 1/2"
- METAL PANEL**
MP2: MFG: AEP SPAN OR EQUAL, CLIP SYSTEM
STYLE: FLEX SERIES WITH STANDOFF CLIP
COLOR: COOL SLATE GRAY
PANEL WIDTH: 12"
LENGTH: AS SHOWN ON ELEVATIONS
THICKNESS: 18 GA AT LONG SPANS, 20 GA BETWEEN WINDOWS
PROFILE: RECTANGULAR PROFILE PER MODULE LAYOUT, NO BEVELS ETC.
- METAL PANEL ACCENT**
MP3: MFG: TO BE DETERMINED
STYLE: TO BE DETERMINED
COLOR: TBD
PANEL WIDTH: CUSTOM
LENGTH: CUSTOM
THICKNESS: CUSTOM, 1/8" MIN.
REVEAL: AS SHOWN ON ELEVATIONS
- ENTRY CANOPY AND LEVEL 3 SOFFIT**
MP3: MFG: TO BE DETERMINED
STYLE: TO BE DETERMINED
COLOR: TBD
PANEL WIDTH: CUSTOM
LENGTH: CUSTOM
THICKNESS: CUSTOM, 1/8" MIN.
REVEAL: AS SHOWN ON DRAWINGS
- CANOPY FASCIA PANELS**
ACM1: MFG: TO BE DETERMINED
STYLE: ALUMINUM COMPOSITE PANELS
COLOR: WHITE TO MATCH MP1 AND MP3
PANEL WIDTH: CUSTOM
LENGTH: CUSTOM
THICKNESS: 4 MM
REVEAL: WET JOINT, AS SHOWN ON ELEVATIONS

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SEARHC
JUNEAU VINTAGE PARK
JUNEAU, AK

REVISION SCHEDULE		
#	DESCRIPTION	DATE

JOB NO.	21-064
DATE	05/31/2022
DRAWN	Author
REVIEWED	DTW

SHEET NAME
EXTERIOR ELEVATIONS

SHEET NO.
A2.01

HALF SCALE WHEN PRINTED AT 11x17

65% DESIGN
REVIEW
SUBMITTAL

CERTIFICATE OF AUTHORIZATION NO:
SPARK DESIGN, LLC #AEC11394

spark design, llc
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5401 cordova street, suite 301
anchorage, alaska 99518
p. 907.344.3424
f. 907.771.9776

P N D

ENGINEERS, INC.
9360 Glacier Highway Suite 100
Juneau, Alaska 99801
Phone: 907-586-2093
AK, LIC# AEC0250

**SEARHC
JUNEAU VINTAGE PARK
MEDICAL OFFICE BUILDING
JUNEAU, ALASKA**

REVISION SCHEDULE

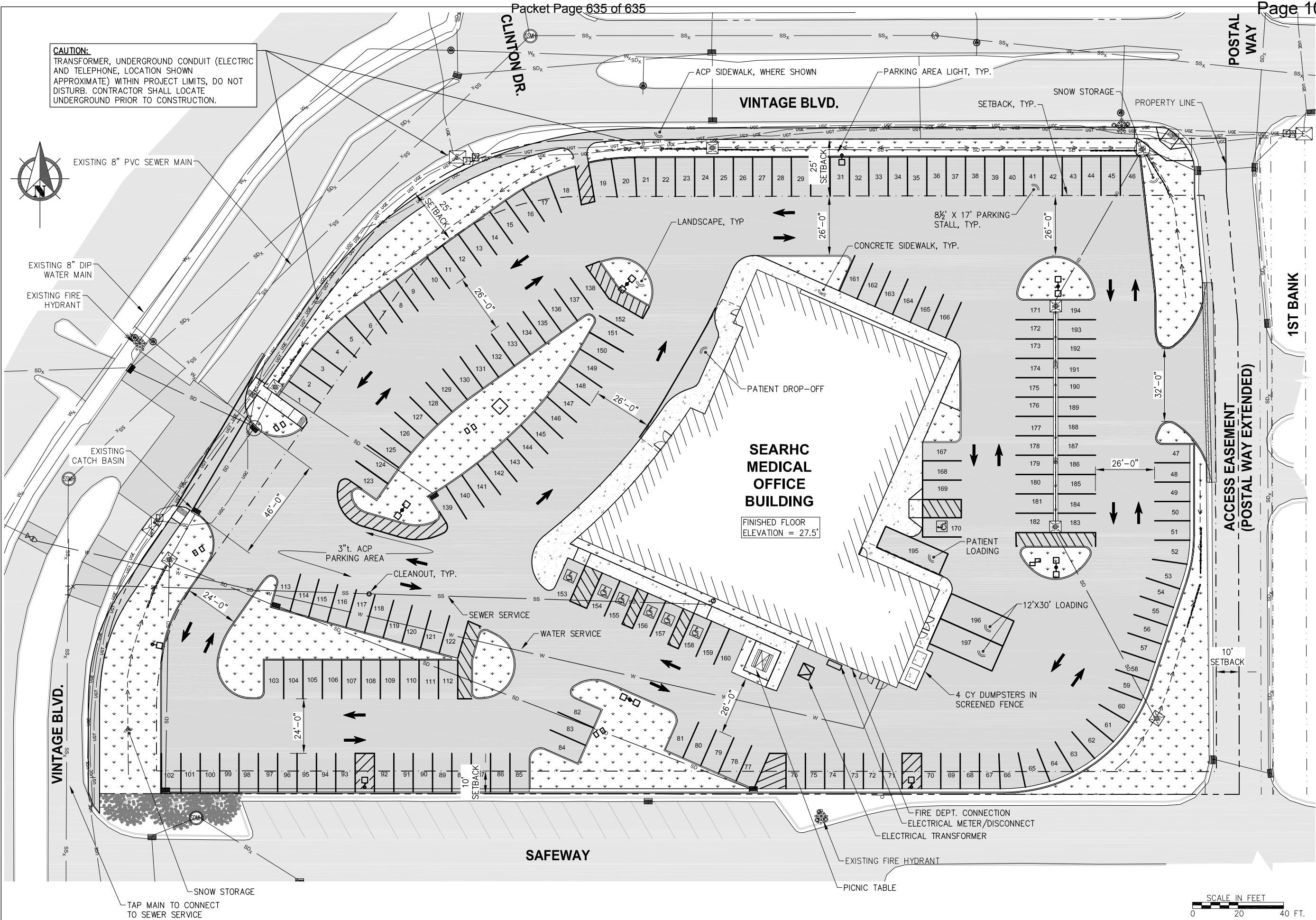
DESCRIPTION DATE

JOB NO. 222016
DATE 04/01/2022
DRAWN WRB
REVIEWED TCB

SHEET NAME
GENERAL SITE PLAN

SHEET NO.
C1.03

HALF SCALE WHEN PRINTED AT 11x17



Attachment - PND Memo - Project Modification & Updated Plans