CITY AND BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY
COMMUNITY DEVELOPMENT

PLANNING COMMISSION STAFF REPORT
CONDITIONAL USE PERMIT USE2024 0006
HEARING DATE: APRIL 23, 2024

(907) 586-0715
CDD_Admin@juneau.gov
www.juneau.org/community-development
155 Heritage Way • Juneau, AK 99801

DATE: **April 19, 2024TO:** Mandy Cole, Chair, Planning Commission

BY: Joseph Meyers, Senior Planner

THROUGH: Jill Lawhorne, Director, AICP

PROPOSAL: A proposal for three, 16-unit apartment buildings for a total of 48 single-room occupancies with private facilities in the D15 zoning district.

STAFF RECOMMENDATION: Approval with conditions

KEY CONSIDERATIONS FOR REVIEW:

- Units are less than 400 square feet and meet the criteria for single-room occupancies with private facilities (SROs w/PF)
- SROs with private facilities count as ½ of a dwelling unit
- Hooter Lane must be accepted for maintenance by the CBJ prior to TCO
- Received funding from the Affordable Housing Fund
- Undergoing lot line adjustment to qualify for tax abatement

GENERAL INFORMATION	
Property Owner	William & Michael Heumann
Applicant	William Heumann
Property Address	Hillcrest Avenue
Legal Description	CHILKAT VISTAS TR A3
Parcel Number	7B1001160014
Zoning	D15
Land Use Designation	Medium Density Residential (MDR; Map H)
Lot Size	100,730 square feet
Water/Sewer	CBJ
Access	CBJ
Existing Land Use	Vacant
Associated Applications	PAC2022 0005; SMF2022 0003

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:
  - 49.15.330
  - 49.25.510(j)(2)
  - 49.80

The Commission shall hear and decide the case per *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 procedures are 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 (ROW)	Hooter Lane
East (single-family)	D15
South (single-family)	D5
West (single-family)	D15

SITE FEATURES	
Anadromous	None
Flood Zone	Zone X; Panel 02110C1551E
Hazard	No known
Hillside	Yes
Wetlands	No known
Parking District	N/A
Historic District	N/A
Overlay Districts	N/A

BACKGROUND INFORMATION

Project Description – The applicant is requesting a Conditional Use Permit to construct three, 16-unit, two-story, apartment buildings containing a total of 48 single-room occupancy units (SROs) with private facilities. SROs with private facilities count as one-half dwelling unit [CBJ 49.25.510(j)(2)]. For comparison, under the existing zoning (D15), up to 35 standard units could be constructed. An SRO with private facilities is defined as a dwelling unit composed of a private bathroom and a combined kitchen, living, and sleeping area, designed for occupancy by a single person. (CBJ 49.80).

Background – The lot was platted in its current form in 2023 through Plat 2023-7, Juneau Recording District.

Item	Summary
2020 Traffic Impact Analysis	Traffic impact analysis for full buildout of subdivision.
2022 Drainage Plan	Approved drainage plan from SMF2022 0003 which platted Tract A3
Plat 2023-7	Lot A3 was created through plat 2023-7 in the Juneau Recording District.

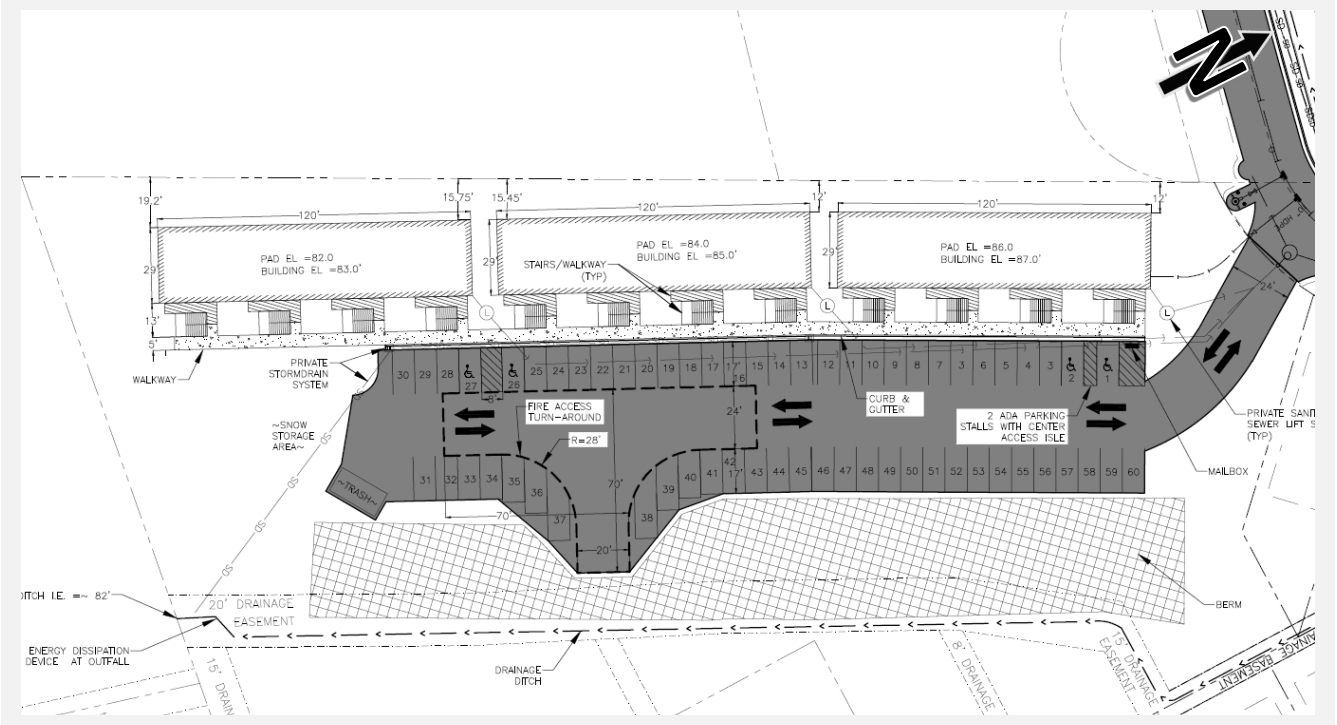
ORD2023-14(b)(V)	Appropriation of funds by the Assembly from the Juneau Affordable Housing Fund for Chilkat Vistas apartment complex

ZONING REQUIREMENTS

Standard (D15)		**Requirement**	**Existing**	**Code Reference**
Lot	Size	5,000 square feet	100,730 square feet	49.25.400
	Width	50 feet	58 feet	49.25.400
Setbacks	Front (N)	20 feet	N/A	49.25.400
	Rear (S)	20 feet*	N/A	49.25.400
	Side (E)(W)	5 feet	N/A	49.25.400
	Street Side	13 feet	N/A	49.25.400
Lot Coverage Maximum		50%	0%	49.25.400
Vegetative Cover Minimum		30%	100%	49.50.300
Height	Permissible	35 feet	N/A	49.25.400
	Accessory	25 feet	N/A	49.25.400
Maximum Dwelling Units (15/Acre)		35 dwelling units	None	49.25.500
Use		Residential	Vacant	49.25.300

***Lot is zoned D15 and borders a D5 zoning district. The greater setback of 20 feet applies on shared property line per CBJ 49.25.400 (Note 3).**

SITE PLAN



ANALYSIS

Project Site – The lot was platted in 2023 with the creation of the Chilkat Vistas Phase 2 subdivision through Plat 2023-7. The subdivision and adjacent land uses consist of condominiums, single-family dwellings, and bungalow dwellings. The lot is located between the Lemon Creek and Twin Lakes geographical areas and due north of the Mountainside Estates neighborhood. The lot is 2.31 acres in size with an average slope of approximately 9.5% that descends toward Glacier Highway in the west.

Access to the lot is through Hooter Lane by way of Glacier Highway. Hooter Lane, as of the writing of this report, has not been accepted for maintenance by the City & Borough of Juneau (CBJ). Prior to issuance of a Temporary Certificate of Occupancy (TCO), Hooter Lane must be accepted for maintenance by the CBJ. The subdivision is connected to CBJ public water and sewer.

Condition: Prior to Temporary Certificate of Occupancy, Hooter Lane must be accepted by CBJ.

Project Design – The applicant is proposing construction of three, two-story, 16-unit apartment buildings containing a total of 48 SROs with private facilities. Each proposed unit is 399 square feet in size. The site is designed to include a two-lane driveway with a hammerhead turnaround for emergency access and 60 parking spaces including four (4) ADA compliant spaces, two (2) of which are van accessible per CBJ 49.40.225(b)(2). Required fire access and signage will be reviewed through the building permit process.

Condition: None

Traffic – The applicant submitted a Traffic Impact Analysis under Phase I (Attachment F). That analysis considered the impact of an eventual 47 single-family structures and 356 multi-family units. The trip generation numbers below were estimated by CDD staff using the ITE Trip Generation Manual, 9th Edition for low-rise multi-family buildings on an average weekday. This estimate assumes full occupancy.

Use	Dwelling units	Trips Generated	Total Trips
Multi-family residential	48	6.59	316.32
		Total ADTs:	**316.32**

Condition: None

Vehicle Parking & Circulation – SROs with private facilities require one (1) parking space each plus one (1) additional space for every four SROs with private facilities. Three (3) ADA spaces are required, however the submitted site plan shows four (4) dedicated ADA spaces. Two (2) of the dedicated ADA spaces are van accessible.

Use	Unit/Total Sq. Ft.	Spaces Required	Total Spaces
Multi-family residential	48 SRO units	60	60
		Total Parking Requirement:	**60**
		Off-Street Loading Spaces Required:	**0**
		ADA Accessible Spaces Required:	**3**

Condition: None

Noise – Noise is not expected to be out of character with the existing neighborhood.

Condition: None

Lighting – Per CBJ 49.40.235(d), parking areas must be suitably lit, and lighting fixtures must be "full cutoff" styles that direct light only onto the project site to minimize impacts to adjacent neighbors. Exterior lighting should also be provided along pedestrian pathways and immediately adjacent to the building. Submitted lighting specifications show full-cutoff lighting. Lighting will be reviewed with a building permit application.

Condition: Prior to issuance of a building permit, the applicant shall submit a lighting plan illustrating the location and type of exterior lighting proposed for the development. Exterior lighting shall be designed and located to minimize offsite glare. Approval of the plan shall at the discretion of the Community Development Department, according to the requirements at CBJ 49.40.230(d)

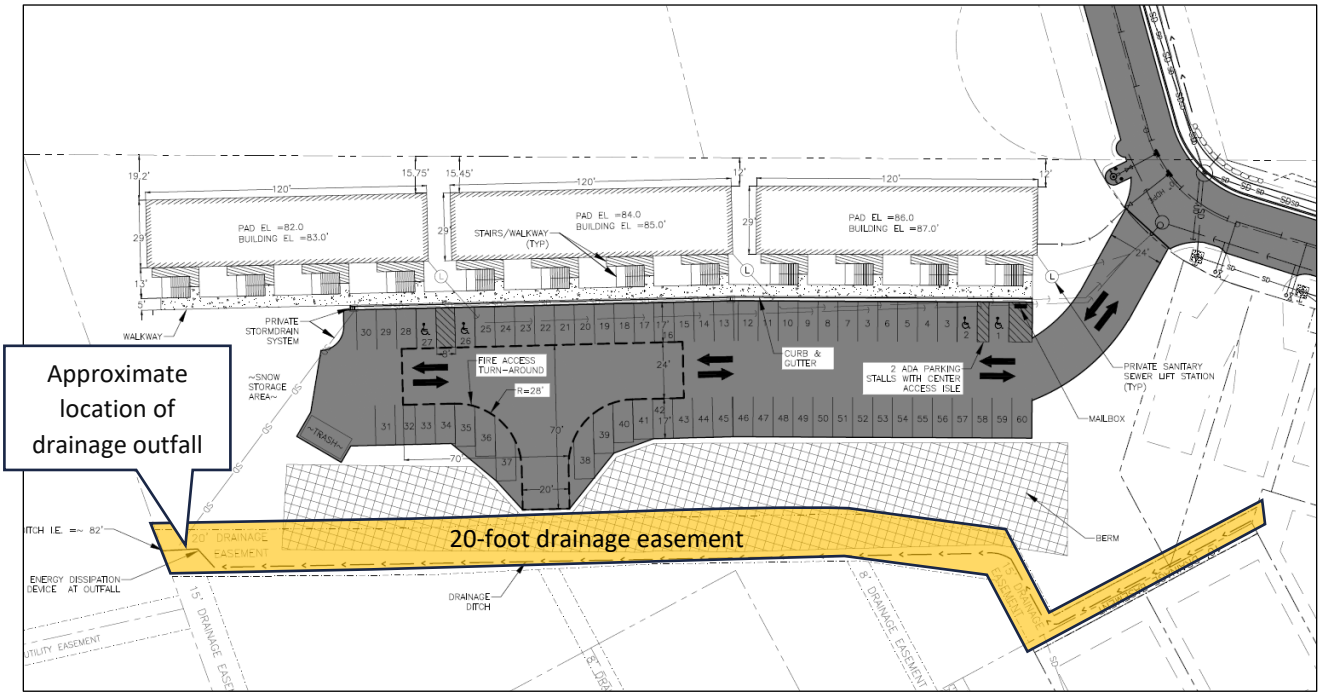
Vegetative Cover & Landscaping – Minimum vegetative cover in the D15 zoning district is 30%. The applicants' proposal indicates that the total vegetative cover retained is approximately 62% of the total lot area.

Condition: None

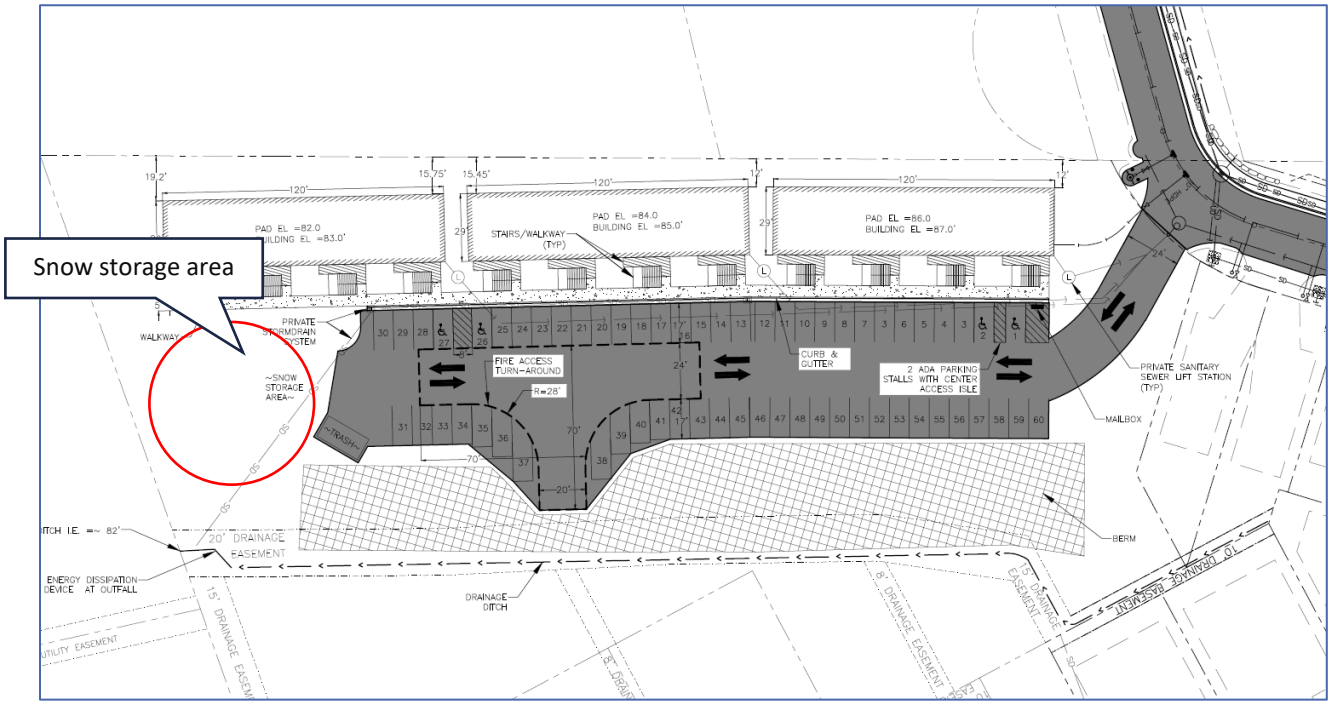
Habitat – No known habitat regulated by Title 49 will be affected by this proposal.

Condition: None

Drainage – The submitted site plan identifies a 20-foot-wide drainage easement across the eastern edge of Tract A3. This is consistent with the approved drainage plan submitted with SMF2022-0003 (Attachment E). Drainage will be assessed through the building permit process.



Snow Storage – The proposed snow storage area is at the southern end of the parking lot (circled in red). Snow storage will be addressed through the building permit.



Condition: None

Historic District – The proposed development is not within the Downtown Juneau Historic District.

Condition: None

Hazard Zones – The lot is not within a mapped hazard zone.

Condition: None

Public Health, Safety, and Welfare – No information has been submitted that suggests the proposed development will materially endanger public health, safety, and welfare.

Condition: None

Property Value or Neighborhood Harmony – The proposed use is within the D15 zoning district. Multi-family residential use is consistent with the description of the zoning district. No information has been submitted that suggests the proposed use will negatively affect property values or neighborhood harmony.

The lot for this project is lower in elevation than the residential development to the east and may be obscured by a variable height berm that averages approximately 15 feet in height. The berm is intended to mitigate impacts to the single-family neighborhood immediately east of the proposed development.

Mitigating impacts to existing neighbors could be further addressed through a landscaping plan, which the commission may require under CBJ 49.15.330(g)(18).

AGENCY REVIEW

CDD conducted an agency review comment period between February 26, 2024, and March 4, 2024, and received the following responses. Full responses are available in Attachment C.

Agency	Summary
CBJ Assessors Office	No comments as of the writing of this report.
Capital City Fire Rescue	No issues with the development, signage will be required for the hammerhead turnaround through the building permit.
CBJ Buildings	No comments as of the writing of this report.
CBJ General Engineering	Drainage, sewer, water will be addressed through a building permit.
DOT/PF	The Traffic Impact Analysis conducted for the development of Richland Manor in 2020 included analysis of future development for up to 47 single family homes (detached) and approximately 356 multifamily homes in the vicinity of Hooter Lane and Craig Street. The conclusion of the TIA at that time was that at full build out, no major mitigation past the development of Hooter Lane and some pedestrian facility improvements at Vanderbilt and Glacier Highway would be necessary. Approach Road permit 30955 was issued for the development of Hooter Lane by DOT&PF and the subject TIA was reviewed by the Department at that time with no comment. The TIA and its findings that no additional mitigation to that previously mentioned was accepted by the Department. At this time, no additional analysis is required as the proposed multifamily development is within the original TIA's scope of work.

PUBLIC COMMENTS

CDD conducted a public comment period between March 12, 2024, and April 19, 2024. 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. Public comments submitted at time of writing this staff report can be found in Attachment D.

No comments were received at the time of writing of this report.

CONFORMITY WITH ADOPTED PLANS

The proposed development is in general conformity with the 2013 Comprehensive Plan, and the 2015 Juneau Economic Development Plan.

PLAN	Chapter	Page No.	Item	Summary
2013 Comprehensive Plan	11	158	Map H	According to the Land Use Maps outlined in the 2013 Juneau Comprehensive Plan, the designation of this lot is MDR (medium density residential). The MDR land use designation is described as follows: *These lands are characterized by urban residential lands for multifamily dwelling units at densities ranging from 5 to 20 units per acre. Any commercial development should be of a scale consistent with a residential neighborhood, as regulated in the Table of Permissible Uses (CBJ 49.25.300).*
	3	20	3.2	To promote compact urban development within the designated urban service area to ensure efficient utilization of land resources and to facilitate cost effective provision of community services and facilities while balancing protection of natural resources, fish and wildlife habitat and scenic corridors.
	4	36	4.1	To facilitate the provision and maintenance of safe, sanitary and affordable housing for Juneau residents.
	4	37	4.2	To facilitate the provision of an adequate supply of various housing types and sizes to accommodate present and future housing needs for all economic groups.
	10	131	10.3	To facilitate residential developments of various types and densities that are appropriately located in relation to site conditions, surrounding land uses, and capacity of public facilities and transportation systems.
2015 Economic Development Plan	5	94	-	The proposal is consistent with the following initiative from the Juneau Economic Development Plan: *Initiative: Promote Housing Affordability and Availability*

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 a full review of the proposed development. The application submittal by the applicant substantially conforms to the requirements of CBJ 49.15.

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

   Analysis: The application is for 48 SROs with private facilities. The use is listed at CBJ 49.25.300, Section 1.610.

   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 further analysis needed.

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

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

   Analysis: No further analysis needed.

   Finding: No. There is no evidence to suggest that with appropriate conditions, the requested single-room occupancy units with private facilities in a D15 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: No further analysis needed.

   Finding: No. There is no evidence to suggest that with appropriate conditions, the requested single-room occupancies with private facilities in a D15 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 further analysis needed.

   Finding: Yes. The proposed SROs with private facilities with the recommended conditions, will be in general conformity with the 2013 Comprehensive Plan, the 2015 Economic Development Plan, and the 2016 Housing

Action Plan.

RECOMMENDATION

Staff recommends the Planning Commission adopt the Director's analysis and findings and APPROVE the requested Conditional Use Permit. The permit would allow the development of three, 16-unit, two-story apartment buildings containing a total of 48 single-room occupancy units with private facilities.

The approval is subject to the following conditions:

1. Prior to Temporary Certificate of Occupancy, Hooter Lane must be accepted by the CBJ for maintenance.
2. Prior to TCO, a new plat of Chilkat Vistas Tract A3 must be recorded.

STAFF REPORT ATTACHMENTS

Item	Description
Attachment A	*Application Packet*
Attachment B	*Abutters Notice and Public Notice Sign Photo*
Attachment C	*Agency Comments*
Attachment D	*Public Comments*
Attachment E	*Approved drainage plan*
Attachment F	*Traffic Impact Analysis*

CITY AND BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY
COMMUNITY DEVELOPMENT

DEVELOPMENT PERMIT APPLICATION

NOTE: Development Permit Application forms must accompany all other Community Development Department land use applications. This form and all documents associated with it are public record once submitted.

To be completed by Applicant

PROPERTY LOCATION

Physical Address: Hillcrest Avenue

Legal Description(s) (Subdivision, Survey, Block, Tract, Lot): Chilkat Vistas Tract A3

Parcel Number(s): 7B1001160014

☐ This property is located in the downtown historic district
☐ This property is located in a mapped hazard area, if so, which _____

LANDOWNER/ LESSEE

Property Owner: William and Michael Heumann | Contact Person: Michael Heumann

Mailing Address: P.O. Box 34024 Juneau, Ak. 99803 | Phone Number(s): 971-261-8014

E-mail Address: chilkatvistas@gmail.com

LANDOWNER/ LESSEE CONSENT

Required for Planning Permits, not needed on Building/ Engineering Permits.

Consent is required of all landowners/ lessees. If submitted with the application, alternative written approval may be sufficient. Written approval must include the property location, landowner/ lessee's printed name, signature, and the applicant's name.

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 the City and Borough of Juneau officials/employees to inspect my property as needed for purposes of this application.

William Heumann — Landowner — Landowner/Lessee (Printed Name) — Title (e.g.: Landowner, Lessee)

X _____ 2-13-24
Landowner/Lessee (Signature) — Date

Michael Heumann
Landowner/Lessee (Printed Name) — Title (e.g.: Landowner, Lessee)

X _____ 2-13-24
Landowner/Lessee (Signature) — Date

NOTICE: The City and Borough of Juneau staff may need access to the subject property during regular business hours. We will make every effort to contact you in advance, but may need to access the property in your absence and in accordance with the consent above. Also, members of the Planning Commission may visit the property before a scheduled public hearing date.

APPLICANT

If same as LANDOWNER, write "SAME"

Applicant (Printed Name): Chilkat Vistas LLC | Contact Person

Mailing Address | Phone Number(s)

E-mail Address: chilkatvistas@gmail.com

X _____ 2/13/24
Applicant's Signature — Date of Application

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

Intake Initials	
Case Number: USE24-006	Date Received: 2/14/2024

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

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

Attachment A - Application Packet

CITY AND BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY
COMMUNITY DEVELOPMENT

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

3 - 16 UNIT APARTMENT BUILDINGS

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: _____

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 100,730 square feet Total Area of Existing Structure(s) 0 square feet

Total Area of Proposed Structure(s) 18,720 square feet

EXTERNAL LIGHTING

Existing to remain ○ No ○ Yes – Provide fixture information, cutoff sheets, and location of lighting fixtures
Proposed ○ No ⊗ 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

☐ **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)

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

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

ALLOWABLE/CONDITIONAL USE FEES

	Fees	Check No.	Receipt	Date
Application Fees	$ 4,000.00	Class IV		
Admin. of Guarantee	$			
Adjustment	$			
Pub. Not. Sign Fee	$ 50			
Pub. Not. Sign Deposit	$ 100			
Total Fee	$ 4,150			

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.

Case Number	Date Received
USE24-006	2/14/2024

Chilkat Vistas Tract A3 Conditional Use Permit Narrative:

2-10-24

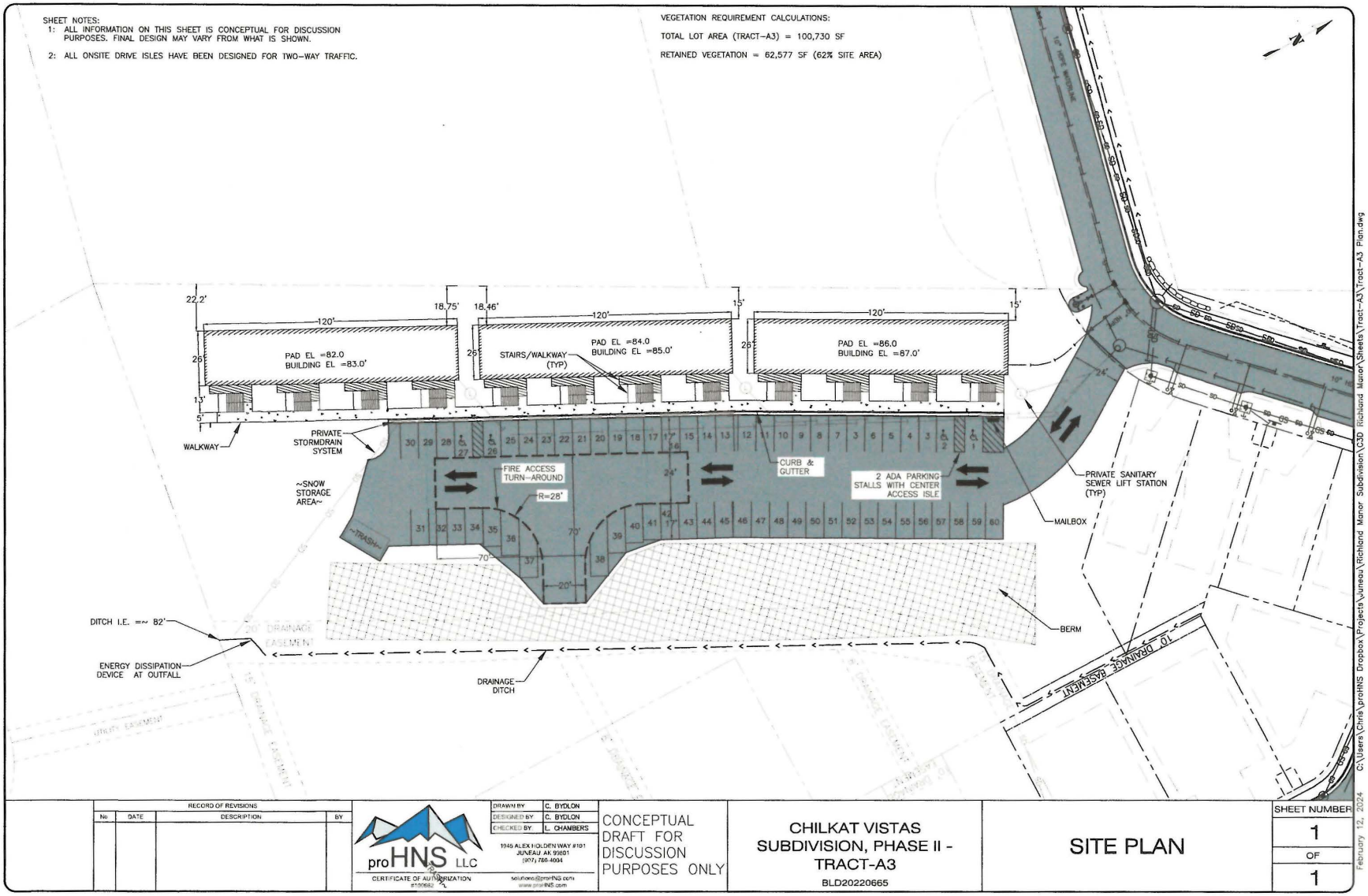
Tract A3 in Chilkat Vistas Subdivision is currently used as vacant land. This application is for a project to construct 48 efficiency apartment units. The site gently slopes towards the southwest and the building itself will face west, ensuring ample sunlight and offering picturesque views of the channel, Mendenhall wetlands, and Chilkat mountain range. 61 parking spaces, including 4 ADA, will be provided by a two-lane driveway with a hammerhead turnaround for fire access. A berm will be used to separate the project from the adjacent single-family development. The comprehensive plan designates this as medium density residential with a maximum density of 20 units per acre which our project satisfies. The project's strategic location offers central access to public transportation and is situated in a beautiful and desirable area.

Juneau faces a well-documented housing problem characterized by a limited housing supply, restricted housing options, and high-cost burdens, forcing many residents to spend significantly more than 30% of their income for housing (see CBJ Housing Action Plan). This project will have a significant impact on the Juneau housing crisis, and has received $2.25M in subsidized loans from the Juneau Affordable Housing Fund as it will provide housing for potentially cost burdened residents.

FRONT ELEVATION

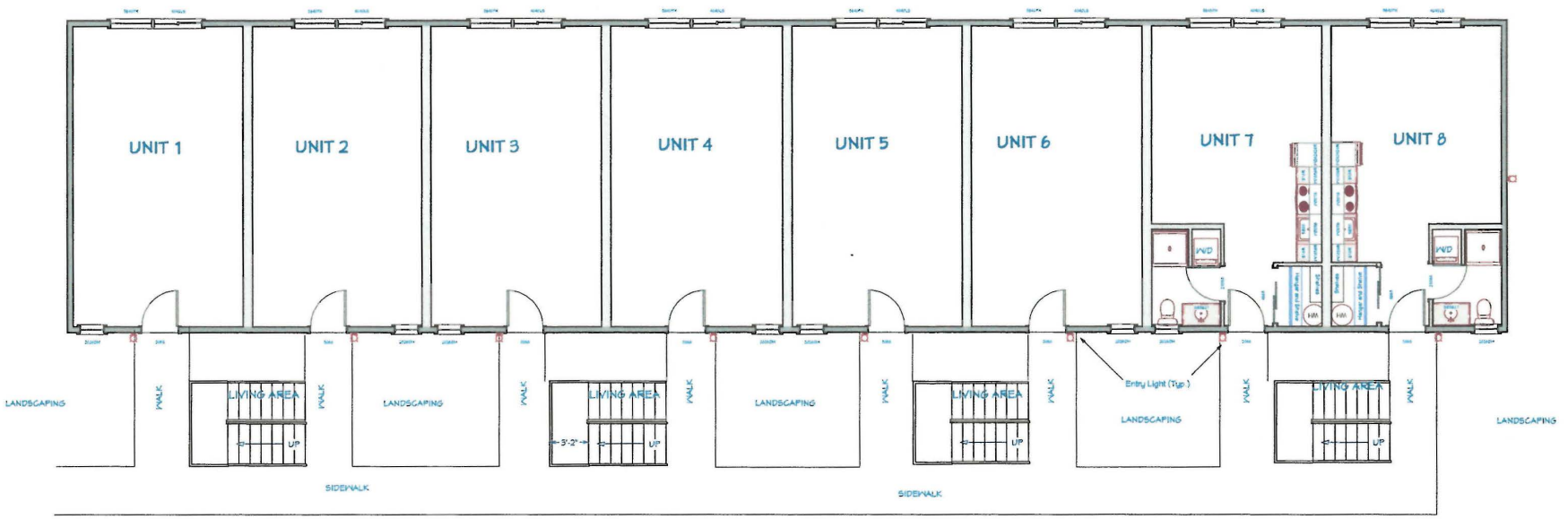
16 UNIT APARTMENT BUILDING

CHILKAT VISTAS LLC



Attachment A - Application Packet

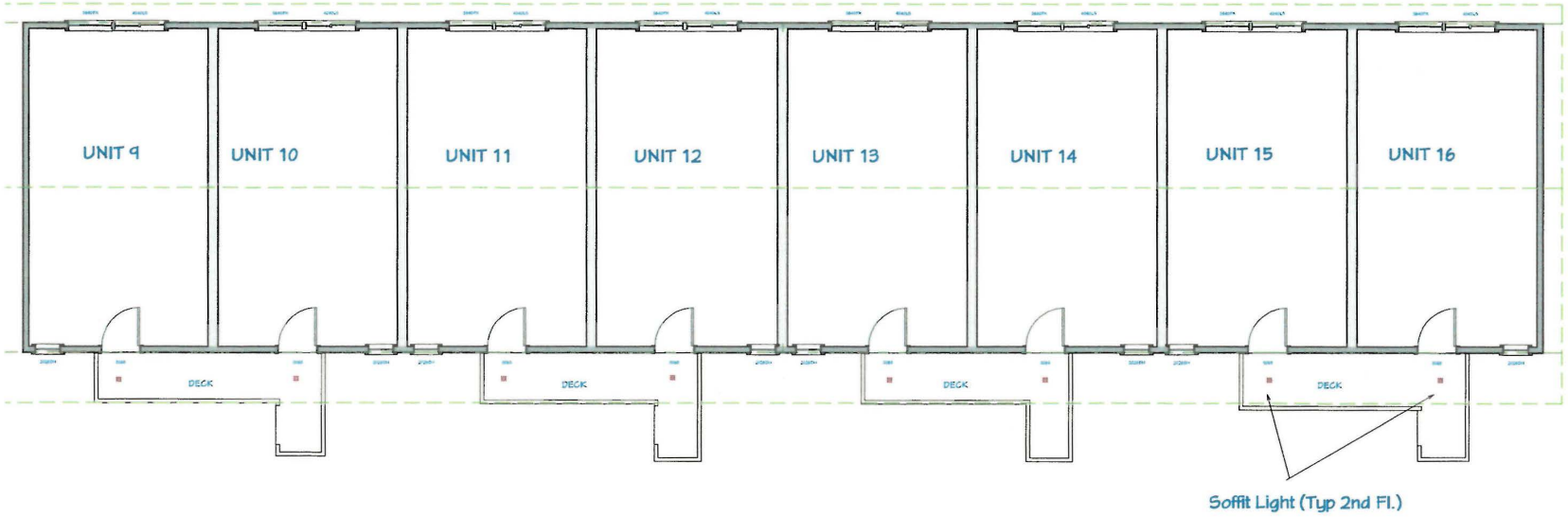
FIRST FLOOR



16 UNIT APARTMENT BUILDING

CHILKAT VISTAS LLC

SECOND FLOOR

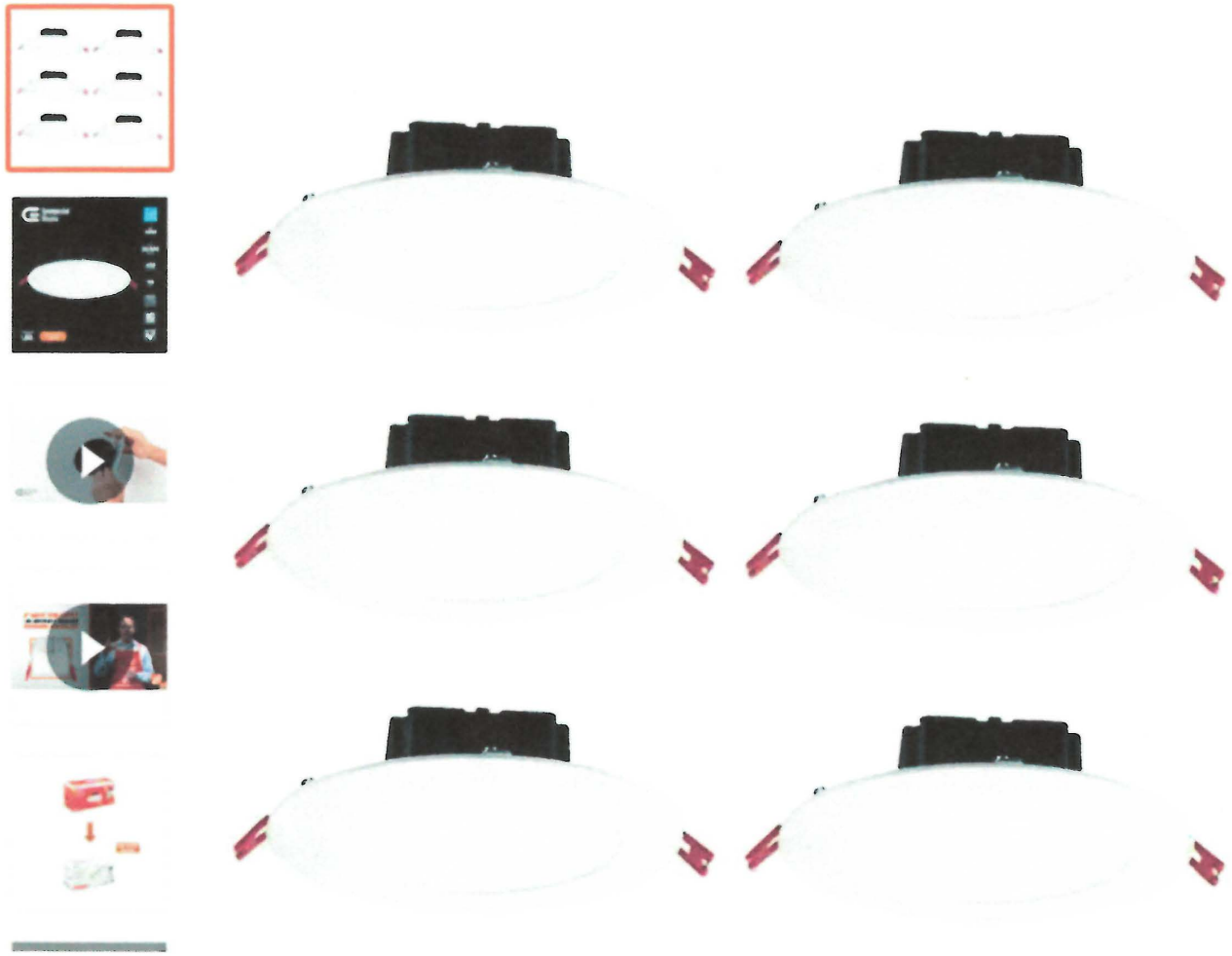


16 UNIT APARTMENT BUILDING

CHILKAT VISTAS LLC

6 in. White Flush Round Wet Rated LED Integrated Recessed Lighting Kit (6-Pack)

★★★★½ (667) Questions & Answers (111)



Attachment A - Application Packet

CITY AND BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY
COMMUNITY DEVELOPMENT

(907) 586-0715
CDD_Admin@juneau.org
www.juneau.org/community-development
155 S. Seward Street • Juneau, AK 99801

Raven's Perch Apartments

Case Number:	PAC2022 0005
Applicant:	William Heumann
Property Owner:	William Heumann
Property Address:	N/A
Parcel Code Number:	TBD
Site Size:	100,730 square feet, 2.31 acres
Zoning:	D15 Multifamily
Existing Land Use:	Vacant

Conference Date:	March 22, 2023
Report Issued:	June 26, 2023

DISCLAIMER: Pre-application conferences are conducted for the purpose 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
William Huemann	Applicant	WHeumann@msn.com
David Peterson	Planning	David.Peterson@juneau.gov
David Sevdy	Building	David.Sevdy@juneau.gov
Eric Vogel	General Engineering	Eric.Vogel@juneau.gov

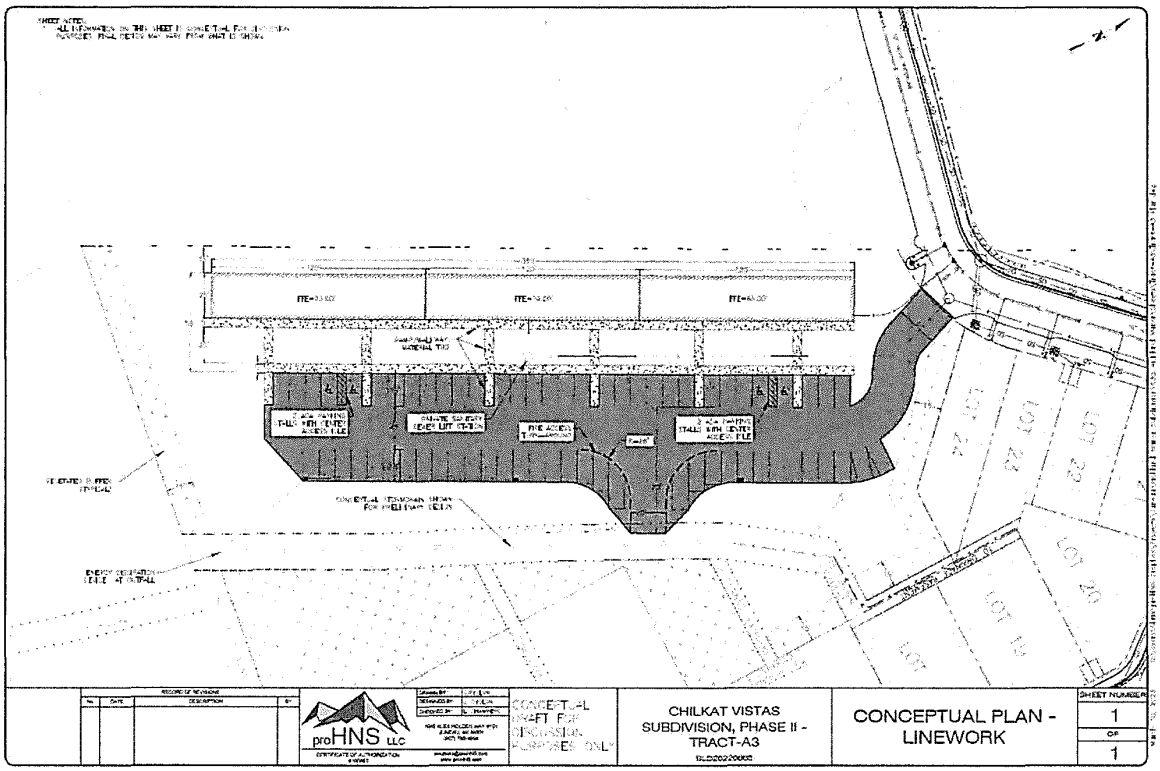
Conference Summary

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.

- Consideration for trash removal. Will need to be discussed with Alaska Waste.
- Mail delivery location. Will need to be discussed with USPS. Pamela.J.Nicholson@usps.gov
- Snow storage
- Routing sewer to not be under the driveway.
- Building Height

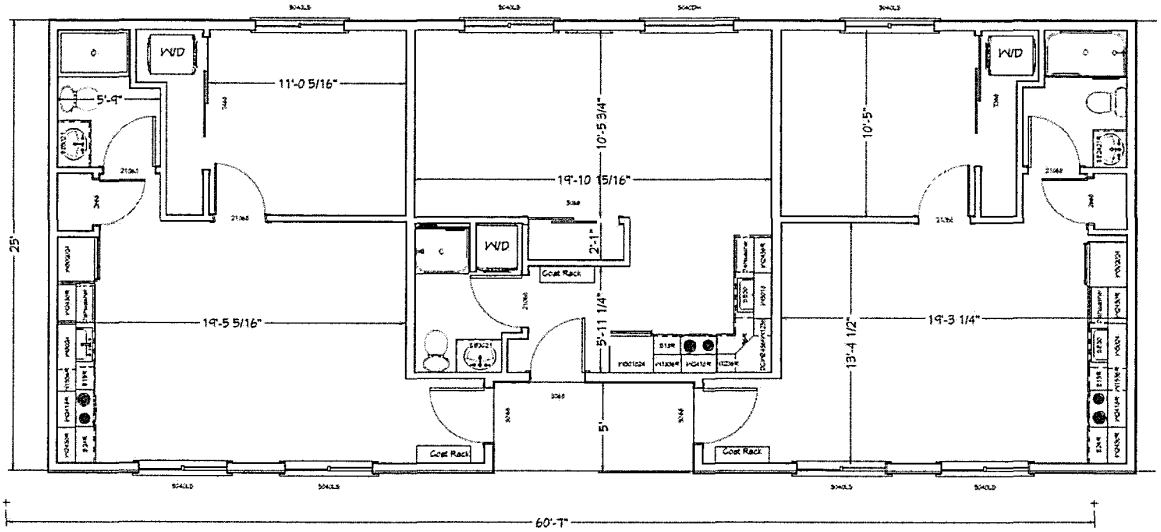
Project Overview

This project will include 18 efficiency (<400 ft.) and 24 1-bedroom units. The project will be located on Chilkat Vistas Subdivision Tract A3. Tract A3 is 2.31 Acres and the project will cover 1.13 acres with the rest left as green space. The project includes 65 parking spaces, 4 of which are ADA. The parking plan has provided for a fire-truck turnaround. The project will be surrounded by green space of varying widths. Access will be provided by Hooter Lane. The project is entirely surrounded by D-15, other than its southern border which is D-5 and over 40' from the building and even further from the parking area.



RAVEN'S PERCH APARTMENTS

Typical Floor Plan



Chilkat Vistas Subdivision Phase 2

This project is major development and will require a Conditional Use Permit [CBJ 49.25.300(c)(3)(C)].

Planning Division

1. **Zoning** – D15 zone. 15 units per acre. Minimum lot size is 5,000 square feet, 3,000 square feet for a bungalow lot, and 3,500 square feet for a common wall dwelling.

   Minimum lot width = 50'. Bungalow Lot Width = 25'. Common Wall Dwelling = 30'. Ref US Survey 4807 Tract A Chilkat Vista, C1 arc that denotes the front of the proposed multifamily housing development is 52.17' in length.

   Maximum number of dwelling units allowable on 2.31 acres is (2.31 acres * 15 allowable units/acre = 34.65 = 35 units).

   Per 49.25.510(j)(2) – Each single-room occupancy with private facilities shall count as one-half of a dwelling unit for purposes of calculating density, permitting requirements, and land use permit application fees.

   (24 single bedroom units) + (18 efficiency units) = 24+9 = 33 total units.

2. **Subdivision** – Chilkat Vistas Subdivision, Phase II – Tract A3.
3. **Setbacks** –
   a. Front = 20 ft. (north, onto Hooter Lane);
   b. Rear = 25 ft. (south – abuts D5 so must use D5 setback);
   c. Side = 5 ft. (east and west);

   d. Street side = 13 ft. (not apparently applicable to this development)

4. **Height** – Maximum = 35 ft.; Accessory/Bungalow = 25 ft. (Reference 49.25.420)
5. **Access** – Subdivision will have direct and practical access through the frontage on to Hooter Lane.
6. **Parking & Circulation**– Per 49.40.210, Multi-family units require 1 parking space per bedroom unit. 24 + 18 = 42 spaces. The proposed parking plan shows 65 parking spaces.
   ADA Parking:
   26-50 spaces = 2 ADA Compliant spaces;
   51-75 spaces = 3 ADA Compliant Spaces
   Prelim plat shows (4) ADA compliant spaces.
7. **Lot Coverage –** Lot Coverage means the percentage of horizontal lot area that is occupied by all buildings on the lot, each measured at the outside of those exterior walls of the floor having the greatest horizontal dimensions. Maximum/Permissible/Conditional Lot Coverage = 50%.

   Proposed building footprint = 25' x 360' = 9,000 square feet building footprint.

   Tract A3 = 2.31 acres x 43,560suare feet/acre = 100,623.6 total square feet.

   9,000/100,623.6 = .089 = 8.9% coverage.
8. **Vegetative Coverage** – 49.50.300 – Percentage of required vegetative coverage is 30% in D15 zoning.
9. **Lighting** – Must be in compliance with 04 CBJAC 080.530.
10. **Noise** – Community Development has no zoning related code to contest noise. Per 42.20.095(c), It is unlawful to operate any pile driver, power shovel, pneumatic hammer, derrick, power hoist, or similar heavy construction equipment, before 7:00 a.m. or after 10:00 p.m., Monday through Friday, or before 9:00 a.m. or after 10:00 p.m., Saturday and Sunday, unless a permit shall first be obtained from the City and Borough building official. Such a permit shall be issued by the building official only upon a determination that such operation during hours not otherwise permitted under this section is necessary and will not result in unreasonable disturbance to surrounding residents. The building official may revoke any *noise* permit after making written findings that the construction activity has resulted in unreasonable disturbance to surrounding residents or that operation during hours not otherwise permitted is not necessary.
11. **Flood** – Per CBJ Flood maps, site is not located in a mapped flood zone.
12. **Hazard/Mass Wasting/Avalanche/Hillside Endorsement –**
    a. Hazard/Mas Wasting/Avalanche– No recorded hazards present on the site.
    b. Hillside Endorsement – 49.70.210, Excavation or creation of any slope in excess of 18%, will require a Hillside Endorsement. All hillside endorsement applications shall be reviewed by the planning commission, accept minor development (ref 49.70.210(b)(1-8). **Note that the hillside endorsement must be completed before this project goes before the Planning Commission.**
13. **Wetlands** – No recorded wetlands present in CBJ records. If wetlands are discovered on parts of the proposed development, special regulations may apply.

    NOTE: SMP2021 0004, Condition 1. Provide a wetlands fill permit from the United States Army Corps of Engineers.
14. **Habitat** – Check with the U.S. Fish and Wildlife on the presence of eagle nests in the area. The presence of eagle nests may impact construction scheduling. No anadromous waterbodies are on the subject parcel, or within 50 feet.

15. **Plat or Covenant Restrictions** – None apply. The Applicant has a Stipulated Settlement Agreement with the Mountainside Estates Neighborhood Association (MENA). Under the agreement, the CBJ's responsibility is limited to access development requirements. While other elements of the agreement are between the Applicant and MENA, a cursory review does not indicate this development would conflict with that agreement. Contact your attorney for confirmation.
16. **Traffic** – Applicants have submitted a Traffic Impact Analysis for a build-out of 403 dwelling units. This was reviewed with the major subdivision applications SMP2021 0004 and SMP2019 0004. The analysis included 47 single-family homes and 356 multifamily homes. To date, 27 single-family lots have been platted, with 18 additional proposed under Phase 3. This development would be the first multi-family development.
17. **Nonconforming situations** – N/A

Building Division

18. **Building** – Show sound and fire protection on architectural plans. Full submittal requirements will be determined during the permitting process.
19. **Outstanding Permits** – N/A

General Engineering/Public Works

20. **Engineering** –

1. **Grading:** Slopes and retaining structures shall be shown on the Grading Plan. The heights and slope ratios must be quantified.
    a. Easements: Site plan (plat) shall include all existing (and proposed) easements for drainage, utility lines, plumbing lines, access, snow storage, trash (dumpster) storage, or any other shared use that requires crossing the property line
2. **Drainage** – Drainage must be directed to pre-approved drainage ways and cannot be directed at neighbors or otherwise cause a nuisance. Drainage shall be shown in the Grading Plan with arrows. Any drainage structures shall be identified, and sizes called out.

21. **Utilities** – (water, power, sewer, etc.) Water service will need to be provided. A CBJ ROW Permit and Utility Permit will be required. The plans shall include a Utility Plan that shows the location of buried sewer and water utilities including valve, unions, cleanouts, and system components. Sizes and materials must be called out. Power by others.

a. **CBJ right-of-way (ROW) permit -** Once the construction plan for the utilities is approved, CBJ will create the ROW permit. The permit will cover the tapping of the water main and road restoration within the right-of-way (if required). Inspection fees, refundable bond amount, and conditions will be determined after review of the proposed construction plan. The extension of the utilities within the property will require further permitting and fee assessments. This process is done separately from the subdivision and typically in conjunction with the building permit application. Utility as-builts shall be submitted to GE prior to return of Bond and closure of permits.

b. **Water Utility permit –** for the water/fire line to be installed to the new structure. The line sizing shall be determined by the engineer. The meter is required to be installed prior to any branches in the plumbing line. The meter location and sizing shall be shown on the mechanical plans. The meter installation and conduit installation is the responsibility of the applicant. A water assessment will need to be paid and will be determined after sizing of meter and domestic line are identified.

c. **Sewer Utility permit** – for the sewer line to be installed to the new structure. The line sizing is determined by the engineer. The mechanical plans shall include a drainage fixture unit (DFU) count. A

sewer assessment and inspection fees will need to be paid and will be determined after review of the DFU's and the configuration of the underground sewer line.

Fire Marshal

3. **Fire Items/Access** – No comments at this time.

Other Applicable Agency Review

4. DOT&PF / Alcohol Beverage Control Board / Army Corps / DEC (wastewater) / DNR / USF&W / F&G / FAA / Corrections...

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. Materials can be submitted electronically to the Permit Center via email to Permits@juneau.gov.

1. Conditional Use permit application (see attached)
2. Building permit application (see attached)
3. Development Permit application (required with both forms)

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.

1. A copy of this pre-application conference report.
2. Site Plan – (PDF)
3. Architectural Plans – (PDF)

Exceptions to Submittal Requirements

Submittal requirements that 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. The building permit cost will be determined during the submittal process by square footage.

For informational handouts with submittal requirements for development applications, please visit our website at www.juneau.org/community-development.

Submit your Completed Application

You may submit your application(s) online via email to permits@juneau.gov
OR 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
49.25.300 – Table of permissible uses
49.25.400 – Dimensional Standards
49.25.420 – Measuring building height
49.25.510 – Special Density Consideration
49.35.250 – Access
49.49.200 – Parking
49.40.210b – ADA Parking
Article II – Hillside Development
Article III – Traffic
Chapter 49.85 - Fees
69.10.023 - https://juneau.org/community-development/grants-cbj-tax-abatement-programs
Development Permit Application
Conditional Use Permit Application
Building Permit Application

49.15.330 Conditional use permit.

(a) *Purpose.* 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.

(b) *Preapplication conference.* Prior to submission of an application, the developer shall meet with the director for the purpose of discussing the site, the proposed development activity, and the conditional use permit procedure. The director shall discuss with the developer, regulation which may limit the proposed development as well as standards or bonus regulations which may create opportunities for the developer. It is the intent of this section to provide for an exchange of general and preliminary information only and no statement by either the developer or the director shall be regarded as binding or authoritative for purposes of this code. A copy of this subsection shall be provided to the developer at the conference.

(c) *Submission.* The developer shall submit to the director one copy of the completed permit application together with all supporting materials and the permit fee.

(d) *Director's review procedure.*

(1) The director shall endeavor to determine whether the application accurately reflects the developer intentions, shall advise the applicant whether or not the application is acceptable and, if it is not, what corrective action may be taken.

(2) After accepting the application, the director shall schedule it for a hearing before the commission and shall give notice to the developer and the public in accordance with section 49.15.230.

(3) The director shall forward the application to the planning commission together with a report setting forth the director's recommendation for approval or denial, with or without conditions together with the reasons therefor. The director shall make those determinations specified in subsections (1)(A)—(1)(C) of subsection (e) of this section.

(4) Copies of the application or the relevant portions thereof shall be transmitted to interested agencies as specified on a list maintained by the director for that purpose. Referral agencies shall be invited to respond within 15 days unless an extension is requested and granted in writing for good cause by the director.

(5) Even if the proposed development complies with all the requirements of this title and all recommended conditions of approval, the director may nonetheless recommend denial of the application if it is found that the development:

(A) Will materially endanger the public health or safety;

(B) Will substantially decrease the value of or be out of harmony with property in the neighboring area; or

(C) Will not be in general conformity with the land use plan, thoroughfare plan, or other officially adopted plans.

(e) *Review of director's determinations.*

(1) At the hearing on the conditional use permit, the planning commission shall review the director's report to consider:

(A) Whether the proposed use is appropriate according to the table of permissible uses;

Attachment A - Application Packet

(B) Whether the application is complete; and

(C) Whether the development as proposed will comply with the other requirements of this title.

(2) The commission shall adopt the director's determination on each item set forth in paragraph (1) of this subsection (e) unless it finds, by a preponderance of the evidence, that the director's determination was in error, and states its reasoning for each finding with particularity.

(f) *Commission determinations; standards.* Even if the commission adopts the director's determinations pursuant to subsection (e) of this section, it may nonetheless deny or condition the permit if it concludes, based upon its own independent review of the information submitted at the hearing, that the development will more probably than not:

(1) Materially endanger the public health or safety;

(2) Substantially decrease the value of or be out of harmony with property in the neighboring area; or

(3) Lack general conformity with the comprehensive plan, thoroughfare plan, or other officially adopted plans.

(g) *Specific conditions.* The commission may alter the director's proposed permit conditions, impose its own, or both. Conditions may include one or more of the following:

(1) *Development schedule.* A reasonable time limit may be imposed on construction activity associated with the development, or any portion thereof, to minimize construction-related disruption to traffic and neighborhood, to ensure that development is not used or occupied prior to substantial completion of required public or quasi-public improvements, or to implement other requirements.

(2) *Use.* Use of the development may be restricted to that indicated in the application.

(3) *Owners' association.* The formation of an association or other agreement among developers, homeowners or merchants, or the creation of a special district may be required for the purpose of holding or maintaining common property.

(4) *Dedications.* Conveyance of title, easements, licenses, or other property interests to government entities, private or public utilities, owners' associations, or other common entities may be required.

(5) *Performance bonds.* The commission may require the posting of a bond or other surety or collateral approved as to form by the city attorney to guarantee the satisfactory completion of all improvements required by the commission. The instrument posted may provide for partial releases.

(6) *Commitment letter.* The commission may require a letter from a public utility or public agency legally committing it to serve the development if such service is required by the commission.

(7) *Covenants.* The commission may require the execution and recording of covenants, servitudes, or other instruments satisfactory in form to the city attorney as necessary to ensure permit compliance by future owners or occupants.

(8) *Revocation of permits.* The permit may be automatically revoked upon the occurrence of specified events. In such case, it shall be the sole responsibility of the owner to apply for a new permit. In other cases, any order revoking a permit shall state with particularity the grounds therefor and the requirements for reissuance. Compliance with such requirements shall be the sole criterion for reissuance.

(9) *Landslide and avalanche areas.* Development in landslide and avalanche areas, designated 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 assembly ordinance, shall minimize the risk to life and property.

(10) *Habitat.* Development in the following areas may be required to minimize environmental impact:

(A) Developments in wetlands and intertidal areas.

(11) *Sound.* Conditions may be imposed to discourage production of more than 65 dBa at the property line during the day or 55 dBa at night.

(12) *Traffic mitigation.* Conditions may be imposed on development to mitigate existing or potential traffic problems on arterial or collector streets.

(13) *Water access.* Conditions may be imposed to require dedication of public access easements to streams, lake shores and tidewater.

(14) *Screening.* The commission may require construction of fencing or plantings to screen the development or portions thereof from public view.

(15) *Lot size or development size.* Conditions may be imposed to limit lot size, the acreage to be developed or the total size of the development.

(16) *Drainage.* Conditions may be imposed to improve on and off-site drainage over and above the minimum requirements of this title.

(17) *Lighting.* Conditions may be imposed to control the type and extent of illumination.

(18) *Other conditions.* Such other conditions as may be reasonably necessary pursuant to the standards listed in subsection (f) of this section.

(Serial No. 87-49, § 2, 1987; Serial No. 2006-15, § 2, 6-5-2006; Serial No. 2015-03(c)(am), § 9, 8-31-2015 ; Serial No. 2017-29, § 3, 1-8-2018, eff. 2-8-2018)

49.25.300 Determining uses.

(a) (1) *Listed uses.* There is adopted the table of permissible uses, table 49.25.300. The uses permitted in a zoning area shall be determined through the table of permissible uses by locating the intersection of a horizontal, or use axis and a vertical, or zone axis. The conditions and procedures applicable to the use in the zone thus located shall be as indicated thereat by the digits "1," "2," or "3" as more fully set out in this section and by letters of the alphabet as more fully set out by footnotes in the table. The absence of a digit at the intersection of use and zone axes means that the identified use is not permitted in the identified zone.

(2) *Unlisted uses.* The permissibility of a use not listed shall be determined pursuant to section 49.20.320.

(3) *Uses listed more than once.* Where a use might be classified under more than one category, the more specific shall control. If equally specific, the more restrictive shall control.

(4) *Accessory uses.* Uses constituting an incidental or insubstantial part of a permissible use and commonly associated with the permissible use may be allowed as an accessory use.

(5) *Nonconforming uses.* Nonconforming uses, including nonconforming residential densities, are subject to chapter 49.30.

(b) (1) When used in conjunction with a particular use in the table of permissible uses, the number "1" indicates that the use requires department approval pursuant to chapter 49.15, article III, in conjunction with the issuance of a building permit. The use is allowed in the district, but limited conditions may be attached to the approval.

(2) The number "2" indicates the use requires an allowable use permit from the planning commission. Such uses are allowed in the district, but specified conditions may be attached to the allowable use permit by the commission. The permit procedure is outlined in chapter 49.15, article I.

(3) The number "3" indicates the use requires a conditional use permit from the commission. The use may or may not be allowed at a particular location, depending on a determination of its compatibility with surrounding or proposed land uses. The planning commission may attach any condition to ensure the compatibility of the proposed use. The conditional use permit procedure is outlined in chapter 49.15, article I.

(c) A combination of digits such as "1, 3" or "2, 3" indicates that the approval procedure for the identified use in the identified zone will vary depending on whether the project is a major or minor development.

(1) If the project is a minor development the first number of the combination shall indicate the applicable procedure.

(2) If the project is a major development the second number shall indicate the applicable procedure.

(3) Minor development means development which is classified by zoning district as follows:

(A) *Rural reserve district:* A residential development containing two or fewer dwelling units, two or fewer bedrooms leased on a daily or weekly basis, or a nonresidential building totaling less than 10,000 square feet or using less than one acre of land in total.

(B) *Single-family residential districts:* A residential development containing two or fewer dwelling units, two or fewer bedrooms leased on a daily or weekly basis, or a nonresidential building totaling less than 5,000 square feet or using less than 10,000 square feet of land in total.

(C) *Multifamily residential districts:* A residential development containing eight or fewer dwelling units, eight or fewer bedrooms leased on a daily or weekly basis, or a nonresidential building totaling less than 5,000 square feet or using less than 10,000 square feet of land in total.

(D) *Commercial and mixed use districts:* A residential development containing 12 or fewer dwelling units, 12 or fewer bedrooms leased on a daily or weekly basis, or a nonresidential building totaling less than 10,000 square feet or using less than one-half acre of land in total.

(E) *Industrial districts:* Non-residential buildings totaling 15,000 square feet or using less than one acre of land in total.

(4) Major development means all development activity that is not a minor development.

(5) Exceptions. Exceptions to the use of minor and major development classifications as a method of determining the applicable approval procedure shall be as noted in the table of permissible uses.

(Serial No. 87-49, § 2, 1987; Serial No. 89-01, § 2, 1989; Serial No. 89-14, § 2, 1989; Serial No. 89-16, § 2, 1989; Serial No. 89-20, § 2, 1989; Serial No. 89-28, § 2, 1989; Serial No. 89-29, § 2, 1989; Serial No. 89-30, § 2, 1989; Serial No. 89-31, § 2, 1989; Serial No. 90-21, § 2, 1990; Serial No. 90-52, § 3, 1990; Serial No. 90-54, §§ 2, 3, 1991; Serial No. 91-01, § 3, 1991; Serial No. 91-36, § 2, 1991; Serial No. 92-09, § 3, 1992; Serial No. 93-05, § 2, 1993; Serial No. 93-46, §§ 2—4(Exh. A) and (Exh. B), 1993; Serial No. 94-07, §§ 2, 3(Exh. A) and (Exh. B), 1994; Serial No. 94-40, § 2(Exh. A), 1994; Serial No. 95-09, §§ 2, 3(Exh. A) and (Exh. B), 1995; Serial No. 97-10, § 2(Exh. A), 1997; Serial No. 97-19, § 2(Exh. A), 1997; Serial No. 97-47, §§ 2, 3(Exh. A), 1997; Serial No. 98-09, § 4(Exh. A), 1998; Serial No. 98-39, §§ 2—4(Exh. A), 1998; Serial No. 98-40, § 2(Exh. A), 1999; Serial No. 99-22, § 7, 1999; Serial No. 2000-46, § 2(Exh. A), 11-20-2000; Serial No. 2001-12, § 2(Exh. A), 4-02-2001; Serial No. 2010-22, §§ 2, 3(Exh. A), 7-19-2010; Serial No. 2015-07(b)(am), § 2, 2-23-2015, eff. 3-26-2015 ; Serial No. 2015-03(c)(am), § 18, 8-31-2015 ; Serial No. 2019-37, § 2, 3-16-2020, eff. 4-16-2020)

TABLE OF PERMISSIBLE USES - CBJ 49.25.300

			Zones																
	Use Description		RR	D-1	D-3	D-5	D-10 SF	D-10	D-15	D-18	LC	GC	MU	MU2	MU3	NC	WC	WI	I
1.000	Residential																		
	1.100	Single-family dwellings																	
	1.110	Single-family detached, one dwelling per lot	1	1	1	1	1	1	1	1	1	1	1	1			1	1A	1A
	1.120	Single-family detached, two dwellings per lot	1	1	1														
	1.130	Single-family detached, accessory apartment[X]	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3			1, 3		
	1.140	Single-family detached, two dwellings per lot, accessory apartments[X]	1, 3	1, 3	1, 3														
1.200	Duplex		1	1	1	1		1	1	1	1	1	1	1			1		
1.300	Multifamily dwellings							1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	3		
1.500	Child and Day care homes																		
	1.510	Child; 12 or fewer children under the age of 12	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
	1.520	Reserved																	
	1.530	Adult; 12 or fewer people, 12 years and older	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
	1.540	Reserved																	
	1.550	Child care residence, 6 to 9 children under 18 years of age		3	3	3	3	3	3	3	3	3	3	3	3	3			
1.600	Miscellaneous, rooms for rent situations																		
	1.610	Rooming, boarding houses, bed and breakfasts, single room occupancies with shared facilities, transitional housing, and temporary residences.	3	3	3	3	3	1, 3	1, 3	1, 3	1, 3	1, 3	1	1	1, 3	1, 3	3[N]		

		Owner or manager must live on site.																	
	1.620	Hotels, motels	3								1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	3[N]	3[N]	
	1.630	Single room occupancies with private facilities						1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3		
1.700	Home occupations		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1.800	Mobile homes																		
	1.810	Residential mobile homes on individual lots[E]	3	3	3														
	1.815	Caretakers mobile homes on individual lots[E]	3	3	3	3	3	3	3	3	3	3	3	3			3	3	3
	1.820	Mobile home parks[E]					3	3	3	3	3	3							
	1.830	Mobile home subdivision[E]				3	3	3	3	3	3	3							
	1.840	Recreational vehicle parks[F]	3[F]	3[F]	3[F]														
1.900	Common wall development																		
	1.910	Two dwelling units				1	1	1	1	1									
	1.911	Accessory apartments[X]	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3		
	1.920	Three or more dwelling units					1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3			
	1.930	Two dwelling unit structures allowed under special density considerations, subsections 49.25.510(h)			3	3	3	3	3	3	3			3					
2.000	**Sales and Rental Goods, Merchandise or Equipment[G]**																		
2.100	With less than 5,000 square feet and less than 20 percent of the gross floor area of outside merchandising of goods																		
	2.110	Reserved																	
	2.120	Miscellaneous									1	1	1	1	1	1	3[N]	3[N]	3
	2.130	Marine merchandise and equipment	3[T]								1, 3	1, 3	1, 3	1, 3	1	1	1, 3	3[N]	3
2.200	Storage and display of goods with greater or equal to 5,000 square feet										1, 3	1, 3	1, 3	1, 3			3[N]	3[N]	3

	and/or 20 percent of the gross floor area of outside merchandising of goods																		
2.300	Marijuana retail store	3								3	3	3	3	3	3	3	3	3
3.000	**Professional Office, Clerical, Research, Real Estate, Other Office Services[G]**																		
3.050	Offices of not more than 1,000 square feet		3	3	3	3	3	3	3	1	1	1	1	1	1	1^N		
3.100	Offices greater than 1,000 but not more than 2,500 square feet						3	3	3	1	1	1	1	1	1	3^N		
3.200	Reserved																		
3.300	Research, laboratory uses	3^T								1, 3	1, 3	1, 3	1, 3	1, 3		1^N, 3^N	1^N, 3^N	1, 3
3.400	Offices greater than 2,500 square feet									1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1^N, 3^N		3^S
3.500	Marijuana testing facility	3								3	3	3	3					3
4.000	**Manufacturing, Processing, Creating, Repairing, Renovating, Painting, Cleaning, Assembling of Goods[G]**																		
4.050	Light manufacturing	3^T						3	3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1^N, 3^N	1^N, 3^N	1, 3
4.070	Medium manufacturing	3^T									3	3	3			3^N	1^N, 3^N	1, 3
4.100	Heavy manufacturing	3^T	3^Q														3^N	3
4.150	Rock crusher	3^T	1^Q	1^Q													3^N	3
4.200	Storage of explosives and ammunition	3															3^N	3
4.210	Seafood processing	3^T														3	1, 3	1, 3
4.220	Marijuana product manufacturing facility	3^{AC}									3	3						3
5.000	**Educational, Cultural, Religious, Philanthropic, Social, Fraternal Uses**																		
5.100	Schools																		
	5.110 Elementary and secondary schools including associated grounds and other facilities		3	3	3	3	3	3	3	3	3	3	3	3	3			
	5.120 Trade, vocational schools, commercial schools	3^T								3	3	3	3	3		3^N	3^N	3
	5.130 Colleges, universities	3^T	3	3	3	3	3	3	3	3	3	3	3	3	3	3^N	3^N	3
5.200	Churches, synagogues, temples	3^T	3	3	3	3	3	3	3	1, 3	1, 3	1,3	1, 3	3	3	1^N, 3^N	3^N	1, 3

5.300	Libraries, museums, art galleries		3[T]	3	3	3	3	3	3	3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	3[N]		
5.400	Social, fraternal clubs, lodges, union halls, yacht clubs		3T								1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1[N], 3[N]	3[N]	1, 3
6.000	**Recreation, Amusement, Entertainment**																		
6.100	Indoor activity conducted entirely within building or substantial structure																		
	6.110	Bowling alleys, billiard, pool halls									1, 3	1, 3	1, 3	1, 3	1, 3	1, 3			3
	6.120	Tennis, racquetball, squash courts, skating rinks, exercise facilities, swimming pools, archery ranges				3	3	3	3	3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3			3
	6.130	Theaters seating for 200 or fewer	3[T]						3	3	1	1	1	1	1, 3	1, 3	3[N]		3
	6.135	Theaters seating from 201 to 1,000									3	1	1	1	1, 3	1, 3	3[N]		3
	6.140	Coliseums, stadiums, and other facilities in the 6.100 classification seating more than 1,000 people										3	3	3			3[N]		
	6.150	Indoor shooting range	1, 3									3							3
6.200	Outdoor activity conducted outside enclosed buildings or structures																		
	6.210	Recreational facilities such as golf, country clubs, swimming, tennis courts not constructed pursuant to a permit authorizing the construction of a school	3	3	3	3	3	3	3	3	3	1, 3			1, 3	1, 3	3[N]		3
	6.220	Miniature golf courses, skateboard parks, water slides, batting cages	3	3	3	3	3	3	3	3	3	1, 3	3	3	1, 3	1, 3	3[N]		3
	6.240	Automobile, motorcycle racing tracks; off-highway vehicle parks	3									3							3
	6.250	Reserved																	

	6.260	Open space	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	6.262	Parks with improved facilities, not approved in conjunction with a major subdivision																	
	6.264	Capacity for up to 20 people[W]	1[T]	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3[N]	
	6.266	Capacity for more than 20 people[W]	3[T]	3	3	3	3	3	3	3	3	3	3	3	3	3	3[N]	3[N]	
	6.270	Aerial conveyances and appurtenant facilities	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3[N]	3[N]	3
	6.280	Shooting ranges	3																3
7.000	**Institutional Day or Residential Care, Health Care Facilities, Correctional Facilities**																		
7.100	Hospital										3	3	3	3					
7.150	Health care clinics, other medical treatment facilities providing out-patient care								3	3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3			
7.200	Assisted living			3	3	3	3	3	3	3	3	1, 3	1, 3	1, 3	1, 3	1, 3			
7.300	Day care centers							3	3	3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3			
7.310	Child care centers	3	3	3	3	3	3	3	3	3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3			
7.500	Correctional facilities	3	3	3	3	3	3	3	3	3	3	3	3	3					
7.600	Sobering centers										3	3	3	3					
8.000	**Restaurants, Bars, Nightclubs**																		
	8.050	Small restaurants, less than 1,000 ft^2 without drive through service	3[T]					3	3	3	1	1	1	1	1	1	1[N]		3
8.100	Restaurants, bars without drive through service		3[T]								1, 3	1	1, 3	1, 3	1, 3	1, 3	1[N], 3[N]	3[N]	3
8.200	Restaurants, coffee stands with drive through service										1, 3	1		3			1[N], 3[N]	3[N]	3
8.300	Seasonal open air food service without drive through		3								1, 3	1	1, 3	1, 3	1, 3	1, 3	1[N], 3[N]	3[N]	
9.000	**Boat or Motor Vehicle, Sales and Service Operations**																		

	9.050	Motor vehicle, mobile home sale or rental									1, 3	1, 3	3	3					1, 3
9.100	Motor vehicle repair and maintenance, including body work											3							1
9.200	Automotive fuel station		3^T								3	1							1
9.300	Car wash										3	1							1
9.400	Boat sales or rental		3^T								3	1					1	1	1
9.450	Boat repairs and maintenance		3^T									3					1	1	1
9.500	Marine fuel, water sanitation		3^T														1, 3	1, 3	1, 3
9.600	Marine commercial facilities including fisheries support, commercial freight, passenger traffic		3														3	3	
10.000	**Storage, Parking, Moorage**																		
10.100	Automobile parking garages or parking lots not related to a principal use on the lot										3	1	1, 3	1, 3	1, 3	1, 3			1
10.200	Storage and handling of goods not related to sale or use of those goods on the same lot on which they are stored																		
	10.210	All storage within completely enclosed structures	1, 3	3							3	1	1^U, 3^U	1^U, 3U			1^N, 3^N	1N	1
	10.220	General storage inside or outside enclosed structures	1, 3	3								1, 3					1^N, 3^N	1N	1
	10.230	Snow storage basin																	
	10.232	Neighborhood, less than ½ acre	3	3	3^Z	3^Z	3^Z	3^Z	3^Z	3^Z	3^Z	1			3^Z	3^Z	3^Z	1	1
	10.235	Regional, ½ to 1 acre	3	3	3^Z						3^Z	3					3^Z	1	1
	10.237	Area wide, over 1 acre	3	3^Z	3^Z							3^Z						3	3
10.300	Parking of vehicles or storage of equipment outside enclosed structures where they are owned and used by the user of the lot and parking and storage is more than a minor and incidental use of the lot		1, 3	3								1, 3					1^N, 3^N	1^N, 3^N	1

10.400	Temporary contractor's storage connected with construction project off-site for a specified period of time		1, 3	3	3	3	3	3	3	3	3	1, 3	3	3	3	3	3	1N	1
10.500	Moorage																		
	10.510	Public, commercial	3	3	3						3	3	3	3	1, 3	1, 3	1, 3	1, 3	1, 3
	10.520	Private	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3
10.600	Floating structures supporting seasonal, commercial recreation		3	3	3										3	3	3	3	
11.000	**Materials Salvage Yards, Waste Management**																		
11.100	Recycling operations																		
	11.110	Enclosed collection structures[0] of less than 80 square feet total and less than six feet in height	1^P	1^P	1^P	1^P	1^P	1^P	1^P	1^P	1	1	1^P	1^P	1^P	1^P	1	1	1
	11.120	Enclosed structures for recyclable materials collection	1^P, 3	1^P ,3	1^P, 3	1^P, 3	1^P, 3	1^P, 3	1^P, 3	1^P, 3	1^P, 3^P	1^P, 3^P	3	3	3^P	3^P	1	1	1^P
	11.130	Sorting, storage, preparation for shipment occurring outside an enclosed structure																1^N	1
11.200	Reclamation landfill not associated with a specific use		1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3			3^N	3^N	1, 3
11.300	Sanitary landfill		3																3
12.000	**Services and Enterprises Related to Animals**																		
12.100	Veterinary clinic		3	3	3						3	1, 3	3	3	3	3	1^N, 3^N	1^N, 3^N	1
12.200	Kennel		3	3							3	3							1, 3
12.250	Day animal services, grooming, walking, day care		3	3	3	3	3				3	3	3	3	1, 3	1, 3			1, 3
12.300	Zoos, aquaria, or wild animal rehabilitation facilities with a visitor component		3	3							3	3		3			3^N		3
12.310	Wild animal rehabilitation facilities without a visitor component		3	3	3	3					3	3					3^N		3

12.400	Horseback riding stables, dog team yards		3	3							3	3							3
13.000	**Emergency Services**																		
13.100	Fire, police, ambulance		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3^N	3^N	1, 3
14.000	**Aquaculture, Agriculture, Silviculture, Mining, Quarrying Operations, Spring Water Bottling**																		
14.100	Aquaculture		3	3	3						3	3	3	3	1, 3	1, 3	1	1	3
14.150	Weirs, channels, and other fisheries enhancement		1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3			1	1	1
14.200	Commercial agricultural operations																		
	14.210	Excluding farm animals	1, 3	1, 3	3	3	3	3	3	3	3	3			3	3			1, 3
	14.220	Including farm animals[M]	1, 3	3															1, 3
	14.230	Stabling of farm animals[M]	3	3	3	3					3	3							1, 3
	14.240	Marijuana cultivation (500 square feet or more under cultivation)	3								3	3							3
	14.245	Marijuana cultivation (fewer than 500 square feet under cultivation)	3	3^{AB}							3	3							3
14.250	Personal use agriculture																		
	14.253	Hens, 6 maximum	1	1	1	1	1	1	3	3	1	1	3	3	1	1	1	1	1
14.300	Silviculture and timber harvesting[J]		3	3															3
14.400	Mining operations		2, 3^K	3	3												3^N	3^N	2
14.500	Sand and gravel operations[J]		3	3	3						3	3					3^N	3^N	3
14.800	Spring water bottling		3	3			3	3	3	3	3	3				3			1, 3
15.000	**Miscellaneous Public and Semipublic Facilities**																		
15.100	Post office		3	3	3	3	3	3	3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	3^N	3^N	1, 3
15.200	Airport		3																1, 3

15.400	Military reserve, National Guard centers		3	3	3						3	3					3[N]	3[N]	3
15.500	Heliports, helipads		3									3					3[N]	3[N]	3
15.600	Transit facilities																		
	15.610	Transit center			3	3	3	3	3	3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	3		1, 3
	15.620	Transit station		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	15.630	Park and ride not associated with transit station	3	3	3	3	3	3	3	3	1	1	3	3		3			1
15.700	Public works facility		3	3	3	3					3	3							1, 3
16.000	**Dry Cleaner, Laundromat**																		
16.100	Drop off and pickup only, no onsite laundry or dry cleaning process									1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1[N], 3[N]	1[N], 3[N]	1, 3
16.200	Full service onsite laundry and/or dry cleaning										3	1, 3	3	3	1, 3	1, 3	3[N]	1[N], 3[N]	1, 3
17.000	**Utility Facilities**																		
17.100	Minor		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17.150	Intermediate		3	3	3	3	3	3	3	3	3	1, 3	3	3	3	3	1, 3	1	1
17.200	Major		3	3	3	3	3	3	3	3	3	3			3	3	3	3	3
17.300	Driveways and private roads																		
18.000	**Towers and Related Structures**																		
18.100[AA]	Towers and antennas 35 feet or less		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18.200[AA]	Towers and antennas 35 to 50 feet		1	3	3	3	3	3	3	3	1	1	1	1	3	3	1	1	1
18.300[AA]	Towers and antennas more than 50 feet in height		3	3	3	3	3	3	3	3	3	3	3	3			3	3	1
18.400	Amateur (ham) radio towers and antennas more than 35 feet in height[R]		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18.500	Wireless Communication Facilities					See CBJ 49.65, Wireless Communication Facilities													
19.000	**Open Air Markets, Nurseries, Greenhouses**																		
19.100	Open air markets (farm, craft, flea, and produce)		1, 3	1, 3							1, 3	1	1, 3	1, 3	1, 3	1, 3	1[N], 3[N]	1[N], 3[N]	1, 3
19.200	Nurseries, commercial greenhouses																		
	19.210	Retail sales	3	3	3	3	3	3	3	3	1, 3	1	1[V]	1[V]	1, 3	1, 3			1

	19.220	Nonretail sales	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1, 3	1	1[V]	1[V]					1
	19.230	Marijuana cultivation (500 square feet or more under cultivation)	3								3	3							3
	19.240	Marijuana cultivation (fewer than 500 square feet under cultivation)	3	3[AB]							3	3							3
20.000	**Cemetery, Crematorium, Mortuary**																		
20.100	Cemetery		1, 3	3	3	3	3	3	3	3	3	3							
20.200	Crematorium		3																1, 3
20.300	Funeral home		3	3	3	3	3	3			1, 3	1	3	3	1, 3	1, 3			
21.000	**Visitor-Oriented, Recreational Facilities**																		
21.100	Resort, lodge		3	3															
21.200	Campgrounds		1, 3	3															
21.300	Visitor, cultural facilities related to features of the site		3	3							3	3	3	3	3	3	3[N]		
22.000	**Temporary Structures Associated With Onsite Construction**																		
22.100	Temporary structures used in connection with construction		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Key:

1. Department approval requires the department of community development approval only.

1, 3. Department approval required if minor development, conditional use permit required if major development.

2. Allowable use permit requires planning commission approval.

3. Conditional use permit requires planning commission approval.

2, 3. Allowable use permit required if minor development, conditional use permit required if major development.

Notes:

A. A single-family residence is allowed as an owner or caretaker residence that is accessory to an existing permitted use in the industrial zone.

B. Reserved.

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C. Reserved.

D. Reserved.

E. See special use regulations for mobile homes, chapter 49.65, article III.

F. See special use regulations for recreational vehicles, chapter 49.65, article IV. This use allowed by service area designation not zoning district.

G. All uses subject to additional performance standards, chapter 49.65, article VIII.

H. Reserved.

I. Reserved.

J. Applies to over 2 acres of harvest area.

K. See special use regulations, chapter 49.65, article I. Mining operations are a conditional use in the urban mining district and an allowable use in the rural mining district.

L. See special use regulations, chapter 49.65.200, article II.

M. Only applicable to the commercial or private stabling of more than three farm animals, or where the running or stabling area is closer than 100 feet to the nearest residence other than the owner for any number of farm animals.

N. Use must be water-dependent, water-related, or water-oriented.

O. Standards for collection structures: containers must be well maintained and allow no spillage of contents; a specific person or group must be responsible for maintenance of the structure and that person or group shall have a contact telephone number posted on the collection structure; collection structure must be situated so as to not affect traffic or parking; directional signs shall be limited to six square feet and identification signs shall be limited to 24 square feet; such signs will not be included in total sign area allowed for a complex; and the structure shall not exceed a height of six feet. Identification is to be in the following format: greater prominence, the City and Borough recycling logo and the recyclable material identification; lesser prominence, the sponsor name and the contact phone number.

P. Preexisting allowable or conditional use permit: If recycling activity is determined by the director to be an accessory use to a use previously permitted under either an allowable or a conditional use permit, the activity may be approved by the department. Other conditions may be required before recycling activity is permitted.

Q. Must be in conjunction with an approved state or municipal public road construction project, and must be discontinued at the completion of the project. Road construction by private parties for subdivision development is excluded except as provided in this title. Rock crushed on-site must be used on-site. Crushing shall be limited to 8:00 a.m.—5:00 p.m. unless the director authorizes otherwise.

R. Towers shall: be for amateur use only; meet the setback requirements of the zoning district; be unlit except as required by the Federal Aviation Administration. Towers shall be installed in conformance with a valid building permit, application for which shall include a copy of the applicant's amateur station license.

S. Limited to lots directly fronting on Glacier Highway West of Industrial Boulevard.

T. Must be associated with a unique site specific feature in order to function. Example: Glacier research station - Juneau Icefield location.

U. No storage permitted on the first floor of a building.

V. Primarily intended for rooftop locations in urban areas.

W. The capacity of a park shall be determined by the Director of the Community Development Department or designee in consultation with the Director of the Parks and Recreation Department.

X. Special requirements apply to accessory apartment applications. See CBJ § 49.25.510(k).

Z. Snow storage may be permitted for a maximum of five years. After five years a new application must be filed.

AA. Does not apply to wireless communication facilities.

AB. Use is prohibited in the urban service area but allowed outside the urban service area. An owner or manager must live on site.

AC. Use is prohibited within 1,000 feet of recognized neighborhood association established in accordance with CBJ chapter 11.35.

(Serial No. 2002-14, § 2, 4-1-5-2002; Serial No. 2002-29, § 2, 11-4-2002; Serial No. 2003-27am, § 5, 6-16-2003; Serial No. 2003-41, § 2, 9-22-2003; Serial No. 2003-41, § 2, 9-8-2003; Serial No. 2004-09, § 2, 4-12-2004; Serial No. 2006-07, § 2, 4-3-2006; Serial No. 2007-39, § 8, 6-25-2007; Serial No. 2009-22(b), § 2, 10-12-2009; Serial No. 2010-22, § 3(Exh. A), 7-19-2010; 2014-32(e)am, §§ 6—8, 9-29-2014, eff. 10-29-2014 ; Serial No. 2015-07(b)(am), §§ 2—4, 2-23-2015, eff. 3-26-2015 ; Serial No. 2015-34(am), § 2, 7-20-2015, eff. 8-20-2015 ; Serial No. 2015-03(c)(am), § 19, 8-31-2015 ; Serial No. 2015-32, §§ 2, 3, 8-10-2015 ; Serial No. 2015-38(b)(am), § 6, 5-2-2016, eff. 6-2-2016 ; Serial No. 2015-39(am), §§ 2—7, 11-9-2015 ; Ord. No. 2018-31, § 2, 6-4-2018, eff. 7-5-2018 ; Serial No. 2021-35(am), § 3(Exh. A), 2-7-2022, eff. 3-10-2022)

49.25.400 Minimum dimensional standards.

There is adopted the table of minimum dimensional standards, table 49.25.400. Minimum dimensional standards for all zoning districts shall be according to the table of minimum dimensional standards, subject to the limitations of the following sections and as otherwise specifically noted in the special area or use sections, chapters 49.65 and 49.70.

(Serial No. 87-49, § 2, 1987; Serial No. 89-32, § 2, 1989; Serial No. 98-09, § 5(Exh. B), 1998; Serial No. 98-20, § 2(Exh. A), 1998; Serial No. 2004-13, § 2, 9-27-2004; Serial No. 2006-13, § 2, 5-15-2006; Serial No. 2007-13, § 2, 4-2-2007; Serial No. 2012-24, § 3, 5-14-2012, eff. 6-14-2012 ; Serial No. 2021-28 , § 4, 8-23-2021, eff. 9-22-2021)

TABLE 49.25.400

TABLE OF DIMENSIONAL STANDARDS

Zoning Regulations	RR	D-1	D-3	D-5	D-10 SF	D-10	D-15	D-18	MU	MU2	MU3	NC	LC	GC	WC	WI	I
Minimum Lot Size[1]																	
Permissible Uses	36,000	36,000	12,000	7,000	3,600[10]	6,000	5,000	5,000	4,000	4,000	3,000	3,000	2,000	2,000	2,000	2,000	2,000
Bungalow[9]		18,000	6,000	3,500	2,500	3,000	3,000	2,500									
Duplex	54,000	54,000	18,000	10,500													
Common Wall Dwelling				7,000	3,600[10]	5,000	3,500	2,500		2,500							
Single-family detached, two dwellings per lot	72,000	72,000	24,000														
Minimum lot width	150′	150′	100′	70′	40′	50′	50′	50′	50′	50′	40'	40'	20′	20′	20′	20′	20′
Bungalow[9]		75′	50′	35′	25′	25′	25′	25′									
Common wall dwelling				60′	40′	40′	30′	20′		20′							
Maximum lot coverage																	
Permissible uses	10%	10%	35%	50%	50%	50%	50%	50%	None	80%	75%	None	None	None	None	None	None
Conditional uses	20%	20%	35%	50%	50%	50%	50%	50%	None	80%			None	None	None	None	None

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Maximum height permissible uses	45′	35′	35′	35′	35′	35′	35′	35′	None	45′[4]	35'	35'	45′	55′	35′[4]	45′[4]	None
Accessory	45′	25′	25′	25′	25′	25′	25′	25′	None	35′	25'	25'	35′	45′	35′[4]	45′[4]	None
Bungalow[9]		25′	25′	25′	25′	25′	25′	25′									
Minimum front yard setback[3]	25′	25′	25′	20′	20′[10]	20′	20′	20′	0′	5′5,8	0'	0'	25′	10′	10′	10′	10′
Maximum front yard setback											20′	15′					
Minimum street side yard setback	17′	17′	17′	13′	10′	13′	13′	13′	0′	5′	0'	0'	17′	10′	10′	10′	10′
Maximum street side yard setback											15′	10′					
Minimum rear yard setback[3]	25′[2]	25′	25′	20′	10′	20′	15′	10′	0′	5′	5′	0'11	10′	10′	10′	10′	10′
Minimum side yard setback[3]	15′[2]	15′	10′	5′	3′	5′	5′	5′	0′	5′	0'	0'11	10′	10′	10′	10′	0′
Common wall dwelling				10′[6]	3′	5′[7]	5′[7]	5′[7]		5′[7]							

Notes:

1. Minimum lot size is existing lot or area shown on chart in square feet.
2. Sixty feet between nonresidential and designated or actual residential site; 80 feet between industrial, extractive and other uses.
3. Where one district abuts another the greater of the two setbacks is required for both uses on the common property line.
4. (Height Bonus) Reserved.

5. (Pedestrian Amenities Bonus) Reserved.

6. Zero-foot setback for the portion of the dwelling with a common wall, five-foot setback or five-foot wide easement for the portion of the dwelling at the common lot line without a common wall, and ten-foot setback for the remaining side yards of the lot.

7. Zero-foot setback for the portion of the dwelling with a common wall, five-foot setback or five-foot wide easement for the portion of the dwelling at the common lot line without a common wall, and five-foot setback for the remaining side yards of the lot.

8. On corner lots, buildings shall be set back 15 feet from a street intersection. The area in which buildings shall be prohibited shall be determined by extending the edge of the traveled ways to a point of intersection, then measuring back 15 feet, then connecting the points.

9. Special restrictions apply to construction on bungalow lots. See special use provisions 49.65.600.

10. For lots adjacent to an alley, the following reductions to the dimensional standards apply:

    (a) Minimal lot area includes 50% of adjacent alley (see graphic).

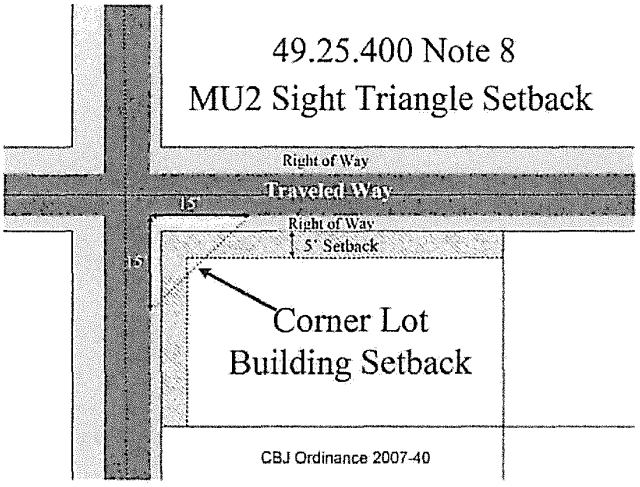
    (b) Reserved.

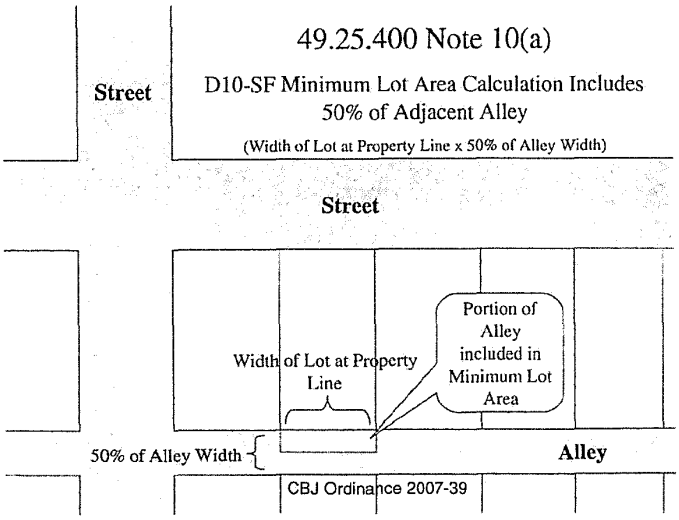
    (c) Minimum front yard setback of ten feet.

11. Additional setbacks apply when lot abuts a multi-family or single-family residential zoning district.

(Serial No. 2008-04, § 2, 2-25-2008, eff. 3-27-2008; Serial No. 2012-24, § 3, 5-14-2012, eff. 6-14-2012 ; Serial No. 2021-28 , § 4, 8-23-2021, eff. 9-22-2021; Serial No. 2021-35(am), § 4(Exh. B), 2-7-2022, eff. 3-10-2022)

Attachment A - Application Packet





(Serial No. 2007-39, § 9, 6-25-2007; Serial No. 2007-40, § 2, 6-25-2007)

Measuring or Calculating Building Height: CBJ 49.25.420

(a) The height of a building is the vertical distance above a reference datum measured to the highest point of the coping of a flat roof or to the deck line of a mansard roof or to the average height of the highest gable of a pitched or hipped roof. Roofs with slopes greater than 75 percent shall be regarded as walls. The height of a stepped or terraced building is the height of the highest segment thereof.

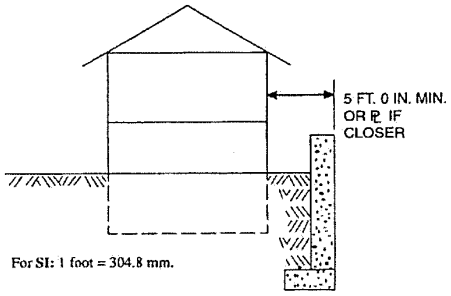
(b) The reference datum shall be whichever of the following yields the greater height of building:

(1) The highest point within a horizontal distance of five feet from the exterior wall of the building, when such point is not more than ten feet above the lowest point within said five-foot radius.

(2) An elevation ten feet higher than the lowest point, when the highest point described in subsection (b)(1) of this section is more than ten feet above the lowest point.

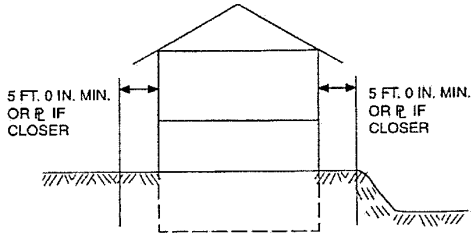
Note that the complete text of this section is not reproduced here—as always, refer to the full text of the current edition of the Code!

The graphic below is taken from the 1997 UBC Code Applications Manual. It is not adopted as part of CBJ Code, but it does show graphically what the adopted text says:



For SI: 1 foot = 304.8 mm.

FIGURE 2-1



For SI: 1 foot = 304.8 mm.

FIGURE 2-2

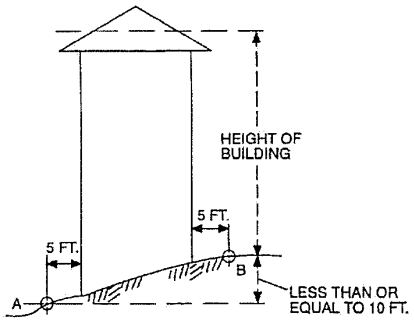


FIGURE 2-3

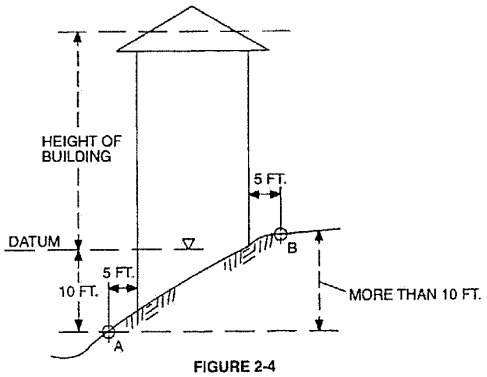


FIGURE 2-4

For SI: 1 foot = 304.8 mm.

DETERMINATION OF BUILDING HEIGHT IN FEET

49.25.510 Special density considerations.

(a) *Fractions of units.* If a density calculation results in fractions of dwelling units allowable, such fractions shall be rounded to the nearest whole number.

(b) *Factors precluding maximum density.* The number of units allowed by section 49.25.500 is a maximum, achievement of which may be prevented by other factors, including topography, dimensional standards or dedication requirements.

(c) *Mobile home subdivisions.* Mobile home subdivisions shall meet the density requirements of the zoning district in which they are located, regardless of the lot size allowed.

(d) *Two-unit dwellings.*

(1) *Duplexes.* The minimum lot size for a duplex dwelling shall be at least 150 percent of the square footage required for a single-family dwelling in the same zoning district, except in multi-family, mixed-use, and commercial zoning districts, where duplexes may be constructed on any lot of sufficient size for two dwelling units.

(2) *Reserved.*

(e) *Detached single-family dwellings.* Two detached single-family dwellings located on a single lot within the Rural Reserve D1 and D3 zoning districts shall each meet 100 percent of the applicable square-footage requirement.

(f) *Reserved.*

(g) *Duplex and common wall structures.* The commission, through the conditional use permit process, may allow duplex and common wall structures on lots of less than the required size if the applicant can demonstrate that the same number of dwelling units already exist on the lot or may lawfully be created on the lot as a result of the nonconforming development provisions of chapter 49.30. Applications of this provision include the following:

(1) Common wall subdivision lots of less than the required size may be created if the original parcel contains a common wall structure that was lawfully built and all other common wall structure requirements can be met.

(2) A duplex or a two unit common wall structure may be built on a pair of existing lots of record which together are less than the required size for a duplex or a two unit common wall structure, provided each of the lots could have been developed with a single-family dwelling when the lots were created.

(h) *Building a two unit common wall structure.* The commission, through the conditional use permit process, may approve the building of a two unit common wall structure on less than the required lot area if the lot was legally platted prior to November 9, 1987; the subdivision or a portion thereof was designed specifically for two unit common wall structures; and 60 percent or more of the lots in the subdivision or of the portion thereof designed specifically for two unit common wall structures have been developed with two unit common wall structures.

(i) *Subdivision rights-of-way.* In calculating the number of dwelling units and thereby the number of lots allowed within a proposed single-family subdivision, any proposed rights-of-way shall be included in the total square footage of the parcel. In multifamily subdivisions, rights-of-way shall not be so included.

(j) *Single-room occupancies with private facilities.* A permit to construct single-room occupancies may be issued by the Director or the Planning Commission, as specified in the Table of Permissible Uses, CBJ 49.25.300, if all of the requirements of this subsection are met.

(1) Single-room occupancies shall be efficiency units not exceeding 400 square feet in net floor area.

(A) Areas common to more than one dwelling unit, including entry ways, furnace rooms, laundry rooms, common storage areas, and interior stairways, shall not be included in the computation of net floor area.

(2) Each single-room occupancy with private facilities shall count as one-half of a dwelling unit for purposes of calculating density, permitting requirements, and land use permit application fees.

(k) *Accessory apartments.* No person shall construct or maintain an accessory apartment except in accordance with a permit issued under this section.

(1) *Application.* Accessory apartment applications shall be submitted on a form provided by the director and shall include:

(A) A completed application form;

(B) The application fee required by chapter 49.85;

(C) A site plan drawn to scale or dimensioned indicating all required parking, minimum setbacks, and actual lot size; and

(D) A floor plan drawn to scale or dimensioned indicating all dwelling units and including each room labeled as to use;

(E) A statement that the property is connected to sewer. If the property is not connected to sewer, a statement from the department of environmental conservation confirming that the existing wastewater disposal system is sufficient for the development, including the proposed accessory apartment, and a statement from a qualified inspector that the existing wastewater disposal system is functioning as designed.

(2) *Approval standards.*

(A) Unless otherwise provided, the accessory apartment shall be a one-bedroom or efficiency unit not exceeding 600 square feet in net floor area.

(B) Areas common to more than one dwelling unit - including entry ways, furnace rooms, laundry rooms, and interior stairways - shall not be included in the computation of the net floor area for the accessory apartment.

(C) The minimum lot size as used in this section refers to the minimum lot size for permissible uses listed in the table of dimensional standards, CBJ 49.25.200.

(D) A permit under this subsection may be issued if the applicant establishes:

(i) The development meets all setback requirements;

(ii) The total building footprint does not exceed the maximum lot coverage allowable under section 49.25.400, the table of dimensional standards, or, in the case of nonconforming structures, the total building footprint does not increase with the proposed accessory apartment;

(iii) The development does not violate the vegetative cover requirements imposed by section 49.50.300; or, in the case of nonconforming structures, the proposed accessory apartment does not decrease the existing vegetative cover;

(iv) The development meets the parking standards required by chapter 49.40; and

(v) The development is connected to public sewer or the existing wastewater disposal system has adequate capacity for the development, including the proposed accessory apartment.

(E) Single-family detached accessory apartment approval.

(i) The director may approve a 49.25.300.1.130 accessory apartment application if all of the requirements of this section and the following are met:

(a) The application is for an efficiency or one-bedroom unit that does not exceed 600 square feet in net floor area and is on a lot that exceeds the minimum lot size; or

(b) The application is for an efficiency, one-bedroom, or two-bedroom unit that has a net floor area equal to or less than 50 percent of the primary dwelling unit's net floor area but not to exceed 1,000 square feet, and is on a lot that exceeds 125 percent of the minimum lot size.

(ii) The commission may approve, with a conditional use permit, a 49.25.300.1.130 accessory apartment application if all of the requirements of this section and the following are met:

(a) The application is for an efficiency or one-bedroom unit that does not exceed 600 square feet in net floor area, and is on a lot that is less than the minimum lot size; or

(b) The application is for an efficiency, one-bedroom, or two-bedroom unit that has a net floor area equal to or less than 50 percent of the primary dwelling unit's net floor area but not to exceed 1,000 square feet, and is on a lot that exceeds 125 percent of the minimum lot size.

(iii) An application for an accessory apartment with a net floor area that exceeds 600 square feet shall not be approved on a lot that is less than 125 percent of the minimum lot size.

(F) Single-family detached, two dwellings per lot, accessory apartment approval.

(i) When a lot has two primary dwelling units, each primary dwelling unit may have up to one accessory apartment that is consistent with the requirements of this section. The lot shall not have more than two accessory apartments.

(ii) An application for an accessory apartment with a net floor area that exceeds 600 square feet shall not be approved on a lot that is less than 250 percent of the minimum lot size.

(iii) The director may approve a 49.25.300.1.140 accessory apartment application if all of the requirements of this section and the following are met:

(a) The application is for an efficiency, or one-bedroom unit that does not exceed 600 square feet in net floor area, is on a double sized lot (two times the minimum lot size), and the lot does not have another accessory apartment in excess of 600 square feet in net floor area; or

(b) The application is for an efficiency, one-bedroom, or two-bedroom unit that has a net floor area equal to or less than 50 percent of the primary dwelling unit's net floor area but not to exceed 1,000 square feet, on a lot that exceeds 250 percent of the minimum lot size, and the lot does not have more than one other accessory apartment in excess of 600 square feet in net floor area.

(iv) The commission may approve, with a conditional use permit, a 49.25.300.1.140 accessory apartment application if all of the requirements of this section and the following are met:

(a) The application is for an efficiency, or one-bedroom unit that does not exceed 600 square feet in net floor area, is on a lot that is less than the minimum lot size, and the lot does not have another accessory apartment in excess of 600 square feet in net floor area;

(b) The application is for an efficiency, one-bedroom, or two-bedroom unit that has a net floor area equal to or less than 50 percent of the primary dwelling unit's net floor area but not to exceed 1,000 square feet, is on a lot that exceeds 250 percent of the minimum lot size, and where the lot does not have more than one other accessory apartment in excess of 600 square feet in net floor area.

(G) Multifamily dwelling and accessory apartment approval. Unless authorized by this section, an accessory apartment is prohibited in multifamily, commercial, and mixed-use zoning districts.

(i) The director may approve a 49.25.300.1.300 accessory apartment application if all the requirements of this section and the following are met:

(a) The application is for an efficiency, or one-bedroom unit that does not exceed 600 square feet in net floor area, is on a lot that exceeds the minimum lot size, and the primary use of the lot is a single-family dwelling.

(ii) The commission may approve, with a conditional use permit, a 49.25.300.1.300 accessory apartment application if all of the requirements of this section and the following are met:

(a) The application is for an efficiency, or one-bedroom unit that does not exceed 600 square feet in net floor area, is on a lot that is less than the minimum lot size, and the primary use of the lot is a single-family dwelling.

(H) Common wall accessory apartment approval.

(i) Each common wall dwelling may have up to one accessory apartment that does not exceed 600 square feet in net floor area and that is consistent with the requirements of this section.

(ii) The director may approve a 49.25.300.1.911 accessory apartment application if all of the requirements of this section and the following are met:

(a) The application is for an efficiency, or one-bedroom unit that does not exceed 600 square feet in net floor area, and is on a lot that exceeds the minimum lot size.

(iii) The commission may approve, with a conditional use permit, a 49.25.300.1.911 accessory apartment application if all of the requirements of this section and the following are met:

(a) The application is for an efficiency, or one-bedroom unit that does not exceed 600 square feet in net floor area, and is on a lot that is less than the minimum lot size.

(Serial No. 87-49, § 2, 1987; Serial No. 89-33, § 2, 1989; Serial No. 91-01, § 2, 1991; Serial No. 94-07, § 4, 1994; Serial No. 95-33, § 8, 1995; Serial No. 97-49, § 3, 1998; Serial No. 2001-12, § 3, 4-2-2001; Serial No. 2006-15, §§ 5, 6, 6-5-2006; Serial No. 2007-39, § 11, 6-25-2007; Serial No. 2009-22(b), § 3, 10-12-2009; Serial No. 2012-24, § 4, 5-14-2012, eff. 6-14-2012 ; Serial No. 2012-36, § 3, 9-17-2012 ; Serial No. 2015-7(b)(am), § 5, 2-23-2015, eff. 3-26-2015 ; Serial No. 2019-37, § 4, 3-16-2020, eff. 4-16-2020)

Attachment A - Application Packet

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. 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;

(2) Use of an existing publicly maintained street;

(3) Upgrading the roadway within an existing right-of-way to public street standards. This existing right-of-way must be connected to another publically maintained street; or

(4) A combination of the above.

(c) *Privately maintained access within a subdivision.* Lots shall front and have direct access to a publically maintained street except as:

(1) *Privately maintained public access.* A subdivision may create new lots served by a privately maintained access within a public right-of-way not maintained by an agency of government as provided by CBJ 49.35, article II, division 3. All lots must have either a minimum of 30 feet of frontage on a right-of-way, or the minimum lot width for the zoning district or use as provided in CBJ 49.25.400.

(2) *Private shared access.* A lot in a subdivision is exempt from having the minimum frontage on a public right-of-way when a shared access is approved pursuant to CBJ 49.35, article II, division 2. All lots served by a shared access shall have a minimum of 30 feet of frontage on the shared access.

(d) *Remote subdivisions accessible by navigable waterbodies.* All lots in a remote subdivision solely accessible by navigable waterbodies must have a minimum of 30 feet of frontage on, and direct and practical access to, either the navigable water or a right-of-way. The right-of-way must have direct and practical access to the navigable water.

(e) *Access within remote subdivisions accessible by pioneer paths.* All lots must either have direct and practical access with a minimum of 30 feet of frontage on the right-of-way, or the minimum lot width for the zoning district or use as provided in CBJ 49.25.400.

(Serial No. 2016-26(b) , § 9, 4-3-2017, eff. 5-3-2017)

49.40.200 General applicability.

Developers must provide off-street parking spaces for automobiles in accordance with the requirements set forth in this chapter at the time any structure is erected, expanded, or when there is a change in the principal use.

~~(a) *Special parking areas.*~~

~~(1) *Town center parking area.* The town center parking area, as depicted in Ordinance 2022-04(b) is adopted. The town center parking area consists of the lots within the area bound by West Tenth Street, Egan Drive, West Twelfth Street, D Street, West Ninth Street, C Street and its projection, West Eight Street and its projection, the rear lot lines of property between 370 through Distin Avenue, Sixth Street and its projection, Harris Street, projection of Third Street, projection of East Street, projection of Second Street, projection of Harris Street, the rear lot lines of property between 143 and 400 Gastineau Avenue, the rear lot lines of property between 511 and 889 South Franklin Street, and Gastineau Channel.~~

~~(2) *No parking required area.* The no parking required area, as depicted in Ordinance 2022-04(b) is adopted. The lots within the area bound by Gastineau Avenue, Fourth Street, Seward Street, Gastineau Channel, 490 South Franklin Street, and Layton Way are excluded from the parking requirements of this chapter. No additional parking is required for development in this area.~~

(b) *Conforming parking.* The requirements, alternatives and reductions of this chapter can be combined to meet parking requirements of a development.

(c) *Developer responsibility.* Developer must submit documentation to demonstrate that applicable parking code requirements have been met, in conformance with this chapter.

(d) *Owner/occupant responsibility.* The provision and maintenance of off-street parking and loading spaces required in this chapter is a continuing obligation and joint responsibility of the owner and occupants.

(e) *Determination.* The determination of whether the parking requirements of this chapter are satisfied, with or without conditions, and deemed necessary for consistency with this title, must be made by:

(1) The director for minor development;

(2) The commission for major development; or

(3) The commission if the development application relates to a series of applications for minor developments that, taken together, constitute major development, as determined by the director.

(f) *Expansion.* In cases of expansion of a structure on or after the effective date of Ordinance 2022-04(b) :

(1) The number of additional off-street parking spaces required must be based on the gross floor area added.

(2) No additional parking spaces are required if the additional spaces would amount to less than ten percent of the total required for the development and amount to two or less spaces.

(3) For phased expansion, the required off-street parking spaces is the amount required for the completed development, as determined by the director.

(g) *Change in use.* In cases of a change in use on or after the effective date of Ordinance 2022-04(b) , the number of spaces required will be based on this chapter.

(h) *Replacement and reconstruction of certain nonconforming structures.* Off-street parking requirements for the replacement and reconstruction of certain nonconforming structures in residential districts must be governed by chapter 49.30.

(i) *Mixed occupancy.* Mixed occupancy is when two or more of the parking uses in section 49.40.210 share the same lot(s). For mixed occupancy, the total requirement for off-street parking facilities is the sum of the requirements for the uses computed separately.

(j) *Uses not specified.* The requirements for off-street parking in section 49.20.320 are based on the requirements for the most comparable use specified, as determined by the director for minor development or by the commission for major development.

(k) *Location.* Off-street parking facilities must be located as provided in this chapter. If a distance is specified, such distance is the walking distance measured from the building being served to the parking provision. Off-street parking facilities for:

(1) Single-family dwellings and duplexes must be on the same lot as the building served;

(2) Multifamily dwellings may not be more than 100 feet distant, unless compliant with section 49.40.215; and

(3) Uses other than those specified above, may be not more than 500 feet distant, unless compliant with section 49.40.215.

(l) *Off-street parking requirements for a lot accessible by air or water only.* Off-street parking requirements do not apply to a lot if it is accessible only by air or water. If the director determines that public access by automobile to the lot later becomes available, the owner of the property must be given notice and within one year must provide the required off-street parking.

(Serial No. 2022-04(b) , § 2, 4-25-2022, eff. 5-26-2022)

49.40.210 Number of off-street parking spaces required.

(a) *General.* The minimum number of off-street parking spaces required must be as set forth in the following table. The number of spaces must be calculated and rounded down to the nearest whole number:

Use	Spaces Required in All Other Areas	Spaces Required in Town Center Parking Area
Single-family and duplex	2 per each dwelling unit	1 per each dwelling unit
Multifamily units	1 per one bedroom unit	0.4 per one bedroom unit
	1.5 per two-bedroom unit	0.6 per two-bedroom unit
	2.0 per three- or more bedroom unit	0.8 per three- or more bedroom unit
Rooming house, boardinghouse, single-room occupancies with shared facilities, bed and breakfast, halfway house, and group home	1 per 2 bedrooms	1 per 5 bedrooms
Single-room occupancies with private facilities	1 per each single-room occupancy plus 1 additional per each increment of four single-room occupancies with private facilities	1 per 5 single-room occupancies, plus 1 per each increment of ten single-room occupancies with private facilities.
Accessory apartment	1 per each unit	0 per each unit
Motel	1 per each unit in the motel	1 per each 12 units in the motel
Hotel	1 per each four units	1 per each 12 units
Hospital and nursing home	2 per bed OR one per 400 square feet of gross floor area	2 per bed OR one per 400 square feet of gross floor area
Senior housing	0.6 parking spaces per dwelling unit	0.3 spaces per dwelling unit
Assisted living facility	0.4 parking spaces per maximum number of residents	0.4 parking spaces per maximum number of residents
Sobering center	1 parking space per 12 beds	2 parking spaces
Theater	1 for each four seats	1 for each 10 seats
Church, auditorium, and similar enclosed places of assembly	1 for each four seats in the auditorium	1 for each 10 seats in the auditorium
Bowling alley	3 per alley	1.2 per alley
Bank, office, retail commercial, salon and spa	1 per 300 square feet of gross floor area	1 per 750 square feet of gross floor area
Medical or dental clinic	1 per 200 square feet of gross floor area	1 per 400 square feet of gross floor area
Funeral Home	1 per six seats based on maximum seating capacity in main auditorium	1 per 15 seats based on maximum seating capacity in main auditorium
Warehouse, storage, and wholesale businesses	1 per 1,000 square feet of gross floor area	1 per 2,500 square feet of gross floor area
Restaurant and alcoholic beverage dispensary	1 per 200 square feet of gross floor area	1 per 750 square feet of gross floor area
Swimming pool serving general public	1 per four persons based on pool capacity	1 per 10 persons based on pool capacity

Shopping center and mall	1 per 300 square feet of gross leasable floor area	1 per 750 square feet of gross floor area
Convenience store	49.65 Article V	1 per 750 square feet of gross floor area
Watercraft moorage	1 per three moorage stalls	2 per 15 moorage stalls
Manufacturing uses; research, testing and processing, assembling, industry	1 per 1,000 square feet gross floor area except that office space must provide parking as required for offices	1 per 2,500 square feet gross floor area except that office space must provide parking as provided for offices
Library and museum	1 per 600 square feet gross floor area	1 per 1,500 square feet of gross floor area
School, elementary	2 per classroom	2 per classroom
Middle school or junior high	1.5 per classroom	1.5 per classroom
High school	A minimum of 15 spaces per school; where auditorium or general assembly area is available, one per four seats; one additional space per classroom	A minimum of 15 spaces per school; where auditorium or general assembly area is available, one per four seats; one additional space per classroom
College, main campus	1 per 500 square feet of gross floor area of an enclosed area, or, where auditorium or general assembly area is available, one per four seats, whichever is greater	1 per 500 square feet of gross floor area of an enclosed area, or, where auditorium or general assembly area is available, one per four seats, whichever is greater
College, satellite facilities	1 per 300 square feet of gross floor area of an enclosed area, or, where auditorium or general assembly area is available, one per four seats, whichever is greater	1 per 300 square feet of gross floor area of an enclosed area, or, where auditorium or general assembly area is available, one per four seats, whichever is greater
Repair/service station	5 spaces per bay. For facilities with two or more bays, up to 60 percent of the required non-accessible parking spaces may be in a stacked parking configuration.	3 spaces per bay. All but two of the required non-accessible parking spaces may be in a stacked configuration
Post office	1 per 200 square feet gross floor area	1 per 500 square feet of floor area
Childcare Home	49.65 Article X, cannot be varied or FIL	49.65 Article X, cannot be varied or FIL
Childcare Center	49.65 Article X, cannot be varied or FIL	49.65 Article X, cannot be varied or FIL
Indoor sports facilities, gyms	1 per 300 square feet gross floor area	1 per 750 square feet gross floor area
Mobile Food Vendors	No parking requirement	No parking requirement
Open air food service (TPU 8.3)	1 per 400 square feet of gross floor area.	Zero

(b) *Accessible parking spaces.* Accessible parking spaces must be provided as part of the required off-street parking spaces, according to the following table (Table 49.40.210(b)). Except, Accessible parking spaces are not required for residential uses that require fewer than ten parking spaces and there are no visitor parking spaces.

Table 49.40.210(b)	
Total Parking Spaces in Lot	**Required Minimum Number of Accessible Parking Spaces**
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1,000	2 percent of total spaces
1,001 and over	20 plus 1 space for each 100 spaces over 1,100 total spaces in lot

(c) *Facility loading spaces.* In addition to the required off-street parking requirements, a development must provide loading spaces as set forth in the following table:

	Gross Floor Area in Square Feet		
Use	**All other areas**	**Town Center Parking District**	**Loading Space Required**
Motels and hotels	5,000—29,999	6,000—60,000	1
	30,000—60,000		2
	Each additional 30,000	Each additional 30,000	1
Commercial	5,000—24,999	6,000—50,000	1
	25,000—50,000		2
	Each additional 30,000	Each additional 30,000	1
Industrial, manufacturing, warehousing, storage, and processing	5,000—24,999	6,000—50,000	1
	25,000—50,000		2
	Each additional 30,000	Each additional 30,000	1
Hospital	5,000—40,000	6,000—40,000	1
	Each additional 40,000	Each additional 40,000	1
School	For every two school buses		1
Home for the aged, convalescent home, correctional institution	More than 25 beds		1

(Serial No. 2022-04(b) , § 2, 4-25-2022, eff. 5-26-2022)

Table 49.40.210(b)	
Total Parking Spaces in Lot	Required Minimum Number of Accessible Parking Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1,000	2 percent of total spaces
1,001 and over	20 plus 1 space for each 100 spaces over 1,100 total spaces in lot

ARTICLE II. HILLSIDE DEVELOPMENT

49.70.200 Purposes.

The purposes of this article are to:

(1) Ensure that hillside development provides erosion and drainage control to protect adjoining parcels;

(2) Protect waterways from sedimentation and pollution;

(3) Minimize injury or damage to people or property from natural or artificial hazards in hillside development; and

(4) Minimize any adverse aesthetic impact of hillside development.

(Serial No. 87-49, § 2, 1987)

49.70.210 Applicability and scope.

(a) This article applies to all development on hillsides in the City and Borough that involves the following:

(1) Removal of vegetative cover;

(2) Excavation of any slope in excess of 18 percent;

(3) Creation of a new slope in excess of 18 percent for a vertical distance of at least five feet; or

(4) Any hazard area identified 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 or any other areas determined to be susceptible to geophysical hazards.

(b) All hillside development endorsement applications shall be reviewed by the planning commission, except the following may be reviewed by the director:

(1) An excavation below finished grade for basements and footings of a building, a retaining wall or other structure authorized by a building permit, provided that this shall not exempt any fill made with the material from such excavation nor any excavation having an unsupported height greater than two feet after the completion of the associated structure.

(2) Graves.

(3) Mining, quarrying, excavating, processing, or stockpiling of rock, sand, gravel, aggregate or clay provided such operations do not affect the location or peak volume of runoff, the location or amount of standing water, or the lateral support for, the stresses in, or the pressure upon, any adjacent or contiguous property.

(4) Exploratory excavations less than 200 square feet in area and under the direction of a civil engineer with knowledge and experience in the application of geology in the design of civil work.

(5) An excavation which:

(A) Is less than two feet in depth and covers less than 200 square feet; or

(B) Does not create a cut slope greater than five feet in height or steeper than one and one-half horizontal to one vertical.

(6) A fill less than one foot in depth and intended to support structures which fill is placed on natural terrain with a slope flatter than five horizontal to one vertical, which does not exceed 20 cubic yards on any one lot and which does not obstruct a drainage course.

(7) A fill less than three feet in depth and not intended to support structures which fill is placed on natural terrain on a slope flatter than five horizontal to one vertical, which does not exceed 50 cubic yards on any one lot and which does not obstruct a drainage course.

(8) Minor development.

(Serial No. 87-49, § 2, 1987; Serial No. 2006-15, § 22, 6-5-2006; Serial No. 2015-03(c)(am), § 51, 8-31-2015)

49.70.220 Hillside development endorsement application.

(a) All development on hillsides shall be pursuant to a hillside development endorsement.

(b) The developer shall apply for and obtain a hillside development endorsement prior to any site work other than land and engineering surveys and soils exploration.

(Serial No. 87-49, § 2, 1987; Serial No. 2015-03(c)(am), § 52, 8-31-2015)

49.70.230 Fees.

The City and Borough shall charge the developer the gross hourly rate for professional review of the application and for inspection. The developer shall deposit one percent of the value of the site development, excluding that portion of the site determined by the engineer to be subject to a public transmission facility permit, in a specially designated reserve account, against which the City and Borough may bill its documented time and expenses. The developer shall promptly replenish this amount when requested, and no endorsement may be issued if there is any deficiency in the developer's reserve account. All unexpended funds in the reserve account shall be returned to the developer upon final approval of development or when the engineer is satisfied that the work under the hillside development endorsement has been completed and the requirements of this chapter have been met.

(Serial No. 87-49, § 2, 1987)

49.70.240 Application.

The application shall be accompanied by the following materials, which shall be signed and stamped by a civil engineer, architect, geologist or land surveyor licensed in the State of Alaska:

(1) A vicinity map, at a clear and legible scale, showing roads, place and street names and natural waterbodies.

(2) Site maps, showing the present condition of the site at a clear and legible scale compatible with the size of the development and including:

(A) Two-foot contours for flat terrain or five-foot contours for steep terrain and extending 50 feet in all directions beyond the development site; 12 percent line, 30 percent line;

(B) Water bodies, tidelands and drainage ways from the development site to accepting natural waterbody;

(C) Lot boundaries and easements for the site and adjacent lots; and

(D) Existing improvements on the site and adjacent lots, including structures, roads, driveways and utility lines.

(3) The application shall include a finished proposed site plan at a clear and legible scale that includes the following information:

(A) Finished grade at two-foot contours for flat terrain or five-foot contours for steep terrain and extending 50 feet in all directions beyond the development site; 12 percent line, 30 percent line.

(B) Water bodies, tidelands and drainage ways, and temporary and permanent drainage systems from the development site to the accepting natural waterbody.

(C) Lot boundaries, easements and setback lines.

(D) The location of improvements including structures, roads, driveways, utility lines, culverts, walls and cribbing.

(E) Clearing limits of existing vegetative cover.

(F) A cross section of the development site.

(4) The application shall include detailed engineering drawings of roads, driveways, parking areas, structural improvements for foundations, off-site stormwater runoff systems; cross sections and road elevations.

(5) A description of the source and type of any off-site fill, and the site for depositing excess fill.

(6) A landscaping plan, including all trees to be retained in excavation areas, all plant species and locations; temporary slope protection measures; erosion and siltation control measures; seeding or sodding materials, a planting and maintenance program; and methods of stabilization and protection of bare slopes.

(7) An engineering geologic report, including a summary of the relevant surface and bedrock geology of the site, a discussion of active geologic processes with conclusions and recommendations regarding the effect of geologic factors on the proposed development; data regarding the nature, distribution and relevant parameters of existing soils, recommendations for grading procedures; design criteria for corrective measures as necessary, and recommendations covering the suitability of the site for the proposed development.

(8) A work schedule, by phase.

(9) Such other different or more detailed submissions as may be required.

(Serial No. 87-49, § 2, 1987; Serial No. 2015-03(c)(am), § 54, 8-31-2015)

49.70.250 Standards for approval.

Hillside development shall meet the following minimum standards:

(1) *Roads.* The City and Borough road standards shall apply to hillside development, except that:

(A) *Modification of standards.* The engineer or planning commission may modify road standards as identified in subsections (1)(B) and (C) of this section, if:

(i) The developer's traffic analysis and circulation, land ownership, and development patterns indicate future use of the roadway at less than collector street levels;

(ii) The modification would enable the development to meet, or more closely approximate, the criteria set forth in section 49.70.260; and either

(iii) The proposed road or access in question would result in a permanent cul-de-sac; or

(iv) A secondary access to the proposed development exists or will be developed as a part of the project.

(B) *Road width.* The width of a section of residential roadway may be narrowed to 20 feet, with a single four-foot pedestrian way and underground storm drain system, if:

(i) The section is not more than 200 feet in length, and is separated from other such sections by at least 100 feet of standard roadway;

(ii) No entrances, intersections or parking are allowed in the section;

(iii) Guard rails, if any, are designed to permit the passage of plowed snow;

(iv) There is at least a 200-foot line of sight along the centerline of the section;

(v) The section enables the development to meet, or more closely approximate, the criteria set forth in section 49.70.260;

(vi) Grouped off-street parking spaces are provided at the entry to the section; and

(vii) Adequate provision is made for storage of snow.

(C) *Road grade.* The grade of a section of residential roadway may be increased to a maximum of 15 percent if:

(i) The section is not more than 200 feet in length and separated from other such sections by at least 100 feet of roadway;

(ii) No entrances or intersections are allowed in the section;

(iii) Through intersections at the end of the section have approaches at least 50 feet long measured from the edge of the traveled way of the crossroad and are at a grade of eight percent or less; intersections requiring a full stop have approaches no less than 20 feet long at a grade of two percent or less, or no less than 50 feet long at a grade between two and six percent;

(iv) Any guard rails are designed to permit the passage of plowed snow;

(v) All sight distances conform to standards of the American Association of State Highway and Transportation Officials; and

(vi) The section enables the development to meet, or more closely approximate, the criteria set forth in section 49.70.260.

(2) *Weather.* The engineer may prohibit a developer from earthmoving during periods of very wet soil conditions, in which case the permit shall be extended by a like period.

(3) *Sediment.* The developer shall not allow any increase in sediment to flow off-site during or after construction if such would be likely to cause an adverse impact on a down slope lot or waterbody.

(4) *Peak discharge.* The developer shall ensure that during and after construction of major development, the peak discharge of all streams and natural drainage ways at the down slope boundary shall be no greater than that occurring prior to excavation.

(Serial No. 87-49, § 2, 1987)

49.70.260 Criteria.

The commission or director shall consider the extent to which the development meets the following criteria:

(1) *Soil erosion.* Soil disturbance and soil erosion shall be minimized and the effects thereof mitigated.

(2) *Existing vegetation.* Depletion of existing vegetation shall be minimized.

(3) *Contours.* The developer shall recontour the finished grade to natural-appearing contours which are at or below 30 percent or the natural angle of repose for the soil type, whichever is lower, and which will hold vegetation.

(4) *Time of exposure and soil retention.* The developer shall minimize the period of time that soil is exposed and shall employ mats, silt blocks or other retention features to maximize soil retention.

(5) *Replanting.* The developer shall mat, where necessary, and plant all exposed soil in grass or other soil-retaining vegetation and shall maintain the vegetation for one full growing season after planting.

(6) *Drainage.* The developer shall minimize disturbance to the natural course of streams and drainage ways. Where disturbance is unavoidable, the developer shall provide a drainage system or structures which will minimize the possibility of sedimentation and soil erosion on-site and downstream and which will maintain or enhance the general stream characteristics, spawning quality, and other habitat features of the stream and its receiving waters. Where possible, development shall be designed so lot lines follow natural drainage ways.

(7) *Foundations.* The developer shall ensure that buildings will be constructed on geologically safe terrain.

(8) *Very steep slopes.* The developer shall minimize excavation on slopes over 30 percent.

(9) *Soil retention features.* The developer shall minimize the use of constructed retention features. Where used, their visual impact shall be minimized through the use of natural aggregate or wood, variation of facade, replanted terraces, and the like.

(10) *Wet weather periods.* The developer shall minimize exposure of soil during the periods of September 1—November 30 and March 1—May 1.

(Serial No. 87-49, § 2, 1987; Serial No. 2015-03(c)(am), § 54, 8-31-2015)

49.70.270 Conditions on approval.

The commission or director may place conditions upon a hillside development endorsement as necessary or desirable to ensure that the spirit of this chapter will be implemented in the manner indicated in the application. Fulfillment of conditions shall be certified by the engineer. The conditions may consist of one or more of the following:

(1) *Development schedule.* The commission or director may place a reasonable time limit on or require phasing of construction activity associated with the development or any portion thereof, in order to minimize construction-related disruption to traffic and neighbors or to ensure that the development is not used or occupied prior to substantial completion of required improvements.

(2) *Dedications.* The commission or director may require conveyances of title or other legal or equitable interests to public entities, public utilities, a homeowner's association, or other common entities. The developer may be required to construct any public facilities, such as drainage retention areas, to City and Borough standards prior to dedication.

(3) *Construction guarantees.* The commission or director may require the posting of a bond or other surety or collateral providing for whole or partial releases, in order to ensure that all required improvements are constructed as specified in the approved plans.

(4) *Lot size.* If justified by site topography, the commission or director may require larger lot areas than prescribed by zoning requirements.

(Serial No. 87-49, § 2, 1987; Serial No. 2015-03(c)(am), § 55, 8-31-2015)

ARTICLE III. TRAFFIC[1]

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.

(4) The applicant shall provide the traffic projections for the project, and the department will review and approve the final figures.

(5) A TIA must be prepared by a licensed engineer, or a transportation planner, with traffic analysis experience, approved by the director.

(b) The department shall require the applicant to contact the Alaska Department of Transportation and Public Facilities to determine whether a state permit or TIA will be required.

(Serial No. 2008-01, § 2, 1-28-08)

49.40.305 Traffic impact analysis (TIA) requirements.

(a) A TIA prepared under this section must identify and assess the impacts of the proposed development on all affected transportation systems. The TIA shall identify any effective development design or operational measures that would mitigate impacts of a development on transportation systems. The study area for the TIA shall be that area in which it is anticipated that the proposed development will increase ADT by five percent or more.

(b) A TIA must forecast traffic generated by a development in accordance with the most recent edition of Institute of Traffic Transportation Engineers' Trip Generation Handbook.

(c) A TIA must address the following items:

(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;

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[1]Editor's note(s)—Serial No. 2008-01, § 2, adopted January 28, 2008, effective February 28, 2008, repealed former Art. III, §§ 49.40.300, 49.40.310 and enacted provisions designated as a new Art. III to read as herein set out.

Cross reference(s)—Traffic, CBJ Code tit. 72.

(2) Each driveway or approach road that will allow egress from or ingress to the proposed development;

(3) Existing and proposed pedestrian and bicycle facilities, if any, within the proposed development, and existing and proposed pedestrian and bicycle facilities to be used for access to the proposed development;

(4) Projected traffic at the development's anticipated opening date, and at full build out, both with and without the traffic generated by the development;

(5) Locations where road improvements are necessary to mitigate traffic impacts due to the development at the opening date, or where improvements are necessary to prevent the level of service (LOS) from deteriorating further at the opening date without the development;

(6) Road improvement alternatives or other measures that will achieve an acceptable LOS or minimize degradation of service below an already unacceptable LOS according to section 49.40.310 Traffic; minimum standards;

(7) Internal circulation and parking plans; and

(8) An accident analysis that contains the following elements:

(A) An accident diagram showing accidents over the most recent three years of accident data, at all intersections or roadway segments identified as being impacted by the development, using the State of Alaska Department of Transportation's accident database, if available.

(B) An analysis of the type of accidents.

(C) An analysis of the accidents to determine if any pattern exists, and whether the accident pattern will be impacted by the development.

(D) If an accident pattern exists that will be exacerbated by the development, a determination whether there is a cost-effective solution which would mitigate the problem and how it can be implemented.

(d) Level of service (LOS) and operational analysis for a traffic impact analysis prepared under this section must be performed in accordance with the most recent edition of the Transportation Research Board's publication Special Report 209, Highway Capacity Manual.

(Serial No. 2008-01, § 2, 1-28-08)

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.

(b) If an intersection or roadway segment affected by the development has a pattern of accidents resulting in personal injuries, and the development will aggravate this accident pattern, then mitigation shall be required, regardless of the projected LOS.

(Serial No. 2008-01, § 2, 1-28-08)

49.40.320 Traffic impact analysis review.

(a) The department will review the traffic impact analysis prepared under this section.

(b) Mitigation measures may be subject to financial guarantee pursuant to Chapter 49.55, if appropriate considering safety and scheduling.

(Serial No. 2008-01, § 2, 1-28-08)

49.40.330 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.

(b) An applicant for a project for which a traffic impact analysis report has been prepared and mitigation required, shall install signs and markings on approaches to roadways within the development that conform to the Manual on Uniform Traffic Control Devices and the Alaska Traffic Manual, 2003, described in 17 AAC 20.950(1), as it may be amended from time to time.

(c) Internal circulation and parking layout must provide sufficient queuing distance within the development between the roadway and internal restrictions to ensure that no traffic backs up onto a roadway, including bicycle or pedestrian facilities (See Section 49.40.230 Parking and circulation standards).

(d) If a traffic impact analysis discloses impacts to pedestrian or bicycle traffic, an applicant shall make the necessary improvements to mitigate the impact.

(Serial No. 2008-01, § 2, 1-28-08)

49.40.340 Mitigation waiver.

(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.

(Serial No. 2008-01, § 2, 1-28-08)

Chapter 49.85 FEES FOR LAND USE ACTIONS

49.85.100 Generally.

Processing fees are established for each development, platting and other land use action in accordance with the following schedule:

(1) Minor development.

(A) Reserved;

(B) Staff review, no charge if a building permit is required;

(C) Sign permit, $50.00 for the first two signs, and $20.00 for each additional sign.

(2) Minor subdivision or consolidation.

(A) Subdivision creating additional lots, $400.00 plus $25.00 for each resulting lot;

(B) Subdivision creating no additional lots, $110.00 plus $25.00 for each lot changed.

(3) Major development, conditional use permits or modifications, allowable use permits, and wetlands permits. The fees for these land use actions are based on classes of uses, and shall be paid upon application for permit issuance or modification as set forth in subsections (3)(A)—(E) of this section. The fee for an extension of a permit shall be $250.00 for any class of use.

(A) Class I uses, $350.00. Class I uses are:

(i) Mobile homes on single lots;

(ii) Agricultural uses of under 50,000 square feet;

(iii) Residential structures, four or fewer units;

(iv) Transient structures, 12 or fewer rooms for rent;

(v) Day care and child care homes;

(vi) Accessory or incidental recycling activities under section 49.25.300, category 11.120 uses;

(B) Class II uses, $500.00. Class II uses are:

(i) Commercial, mixed use or enclosed industrial uses with less than 10,000 square feet of building space and using less than one acre of land;

(ii) Agricultural uses of 50,000 or more square feet;

(iii) Residential structures, five to ten dwelling units;

(iv) Transient structures, 13 to 30 rooms for rent;

(v) Day care and child care centers;

(vi) Floating residences and floating structures under 2,500 square feet;

(vii) Churches, schools, and additions thereto;

(C) Class III uses, $750.00. Class III uses are:

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(i) Commercial, mixed use or enclosed industrial uses with 10,000 to 20,000 square feet of building space or using one to three acres of land;

(ii) Residential structures, 11 to 30 dwelling units;

(iii) Transient structures, 31 to 90 rooms for rent;

(iv) Floating structures, 2,500 to 10,000 square feet;

(D) Class IV uses, $1,000.00. Class IV uses are:

(i) Commercial, mixed use or enclosed industrial uses with 20,001 to 40,000 square feet of building space or using more than three but less than six acres of land;

(ii) Residential structures, 31 to 60 dwelling units;

(iii) Transient structures, 91 to 180 rooms for rent;

(iv) Unenclosed industrial uses using less than three acres of land (e.g., batch plants, quarries, sand and gravel operations, junkyards, heliports, and outside storage);

(v) Floating structures over 10,000 square feet.

(E) Class V uses, $1,600.00. Class V uses are:

(i) Commercial, mixed use or enclosed industrial uses with more than 40,000 square feet of building space or using six or more acres of land;

(ii) Unenclosed industrial uses using three or more acres of land;

(iii) Residential structures, over 60 dwelling units;

(iv) Transient structures, over 180 rooms for rent;

(v) City and state projects with estimated project cost over $2,500,000.00.

(4) Major subdivisions, including mobile home subdivisions.

(A) Preliminary plat, $110.00 per lot;

(B) Final plat, $70.00 per lot;

(C) Reserved;

(D) Plat amendment, $110.00 plus $25.00 per lot.

(5) Street vacation, $500.00.

(6) Administration of developer's subdivision improvement guaranty.

(A) Performance bond, $50.00;

(B) Deposit in escrow, $140.00;

(C) Deed of trust, reconveyance, agreement or substitution of trust and reconveyance lots, $140.00 for first lot, plus $25.00 for each additional lot.

(7) Access driveways in rights-of-way, $400.00.

(8) Special use or area.

(A) Mining.

(i) Exploration approval, $200.00;

(ii) Small mine permit and amendment, $1,200.00;

(iii) Large mine permit and amendment, $3,600.00, plus any special fee established pursuant to section 49.65.130;

(iv) Technical revision $500.00;

(v) Ownership transfer requests $500.00;

(vi) Summary approval. The fees for a summary approval action shall be based on the classes of uses as established in 49.85.100(3).

(B) Mobile home parks.

(i) Preliminary review, $90.00 per lot or $250.00, whichever is greater;

(ii) Final review, $60.00 per lot or $250.00, whichever is greater.

(C) Recreational vehicle parks, conditional use permit, $400.00.

(D) Hillside development endorsement. Gross hourly rate for professional review and inspection, $60.00.

(E) Planned Unit Development (PUD) and Cottage Housing.

(i) Preliminary plan application approval, $400.00 plus $80.00 per residential unit;

(ii) Final plan approval, $300.00 plus $60.00 per residential unit.

(F) Development in landslide or avalanche hazard area conditional use, $400.00.

(G) Alternative residential subdivisions.

(i) Preliminary plan application review, $400.00 plus $80.00 per residential unit;

(ii) Final plan review, $300.00 plus $60.00 per residential unit.

(H) Floodplain development permit.

(i) Minor development, no building permit required, $45.00.

(ii) Major development, building permit required, $100.00.

(iii) Exception, $400.00.

(9) Zone changes and comprehensive plan amendments, $600.00.

(10) *Variances and alternative development permits.*

(A) Administrative variance, $120.00;

(B) Non-administrative variance, $400.00.

(11) Street name change, $400.00.

(12) Preparation of deed restrictions, certificates of common ownership, and similar documents, $100.00.

(13) Sidewalk obstruction permit under CBJ 62.10.010: $100.00.

(14) Certification of zoning compliance letters, $150.00.

(15) Appeal of director's decision, refundable if applicant prevails, $200.00.

(16) Fee not listed. The processing fee for any development, platting, or other land use action not specifically listed in this section shall be the fee established for the most similar action listed, as determined by the community development director.

(17) Fee cancellation. The director may authorize the refunding of a portion of the fee paid for a land use action when the permit application is cancelled before completion of the land use review process. The director may estimate the amount of work not completed and set the amount of the refund at that amount, less ten percent of the fee.

(18) Wireless communication facility application fees.

(A) Application fees required by subsection 49.65.940(b): $350.00.

(B) Additional fee required for special use permit applications required by subsection 49.65.970(b)(1): $500.00.

(C) Any actual costs incurred for technical expert review, publication and mailings.

(19) Marijuana license fee, $250.00.

(20) Certification of nonconforming status, $150.00; fee is waived if applied for in conjunction with a development permit.

(21) Parking waiver, $400.00. If the application is filed in conjunction with a major development permit the fee shall be reduced by 20 percent.

(22) Fee in lieu, $10,000.00 per off-street parking space required.

(Serial No. 87-49, § 2, 1987; Serial No. 91-02, § 2, 1991; Serial No. 91-42, § 2, 1991; Serial No. 92-42, § 4, 1992; Serial No. 94-24, § 2, 1994; Serial No. 95-33, § 10, 1995; Serial No. 95-40, § 5, 1996; Serial No. 96-30, § 8, 1996; Serial No. 97-04, § 2, 1997; Serial No. 97-12, § 3, 1997; Serial No. 2000-38, § 2, 10-16-2000; Serial No. 2003-07(am), § 7, 5-12-2003; Serial No. 2010-15(c), § 3, 5-19-2010; Serial No. 2014-32(e)am, § 4, 9-29-2014, eff. 10-29-2014 ; Serial No. 2015-03(c)(am), § 61, 8-31-2015 ; Serial No. 2015-38(b)(am), § 2 5-2-2016, eff. 6-2-2016 ; Serial No. 2017-16, § 3, 6-26-2017, eff. 7-27-2017 ; Serial No. 2018-04(b), § 3, 5-14-2018, eff. 6-14-2018 ; Serial No. 2018-41(c), § 4, 12-17-2018, eff. 1-17-2019 ; Serial No. 2019-37, § 8, 3-16-2020, eff. 4-16-2020 ; Serial No. 2021-06, § 7, 4-26-2021, eff. 5-26-2021; Serial No. 2021-19, § 10, 8-2-2021, eff. 9-1-2021; Serial No. 2022-04(b) , § 5, 4-25-2022, eff. 5-26-2022; Serial No. 2021-36 , § 4, 9-12-2022, eff. 10-13-2022)

49.85.110 Amendment of rates.

The manager may adjust the rates in this chapter from time to time to reflect changes in the cost of providing municipal services generally.

(Serial No. 87-49, § 2, 1987)

49.85.130 Payment of fees.

No application, petition, request or appeal for which a fee is established under this title shall be complete unless accompanied by the required fee and shall be returned unless accompanied by such fee. All fees shall be nonrefundable except, if the appellant prevails in an appeal to the assembly or if the appeal is withdrawn prior to commencement of the hearing, the appeal fee shall be refunded less $25.00 and hearing officer expenses incurred to withdrawal.

(Serial No. 87-49, § 2, 1987)

49.85.140 Development, work, or use commencing before permit application or issuance.

(a) Any development, work, or use for which a permit is required under this title, but for which no permit is applied for and issued prior to the commencement of the development, work, or use requiring the permit, shall be subject to processing fees in an amount double that specified in section 49.85.100 for the permit.

(b) The director may waive processing fees in excess of those listed in section 49.85.100 upon a finding that processing the permit application will not require staff time and/or materials in excess of what would have been required to process the permit application if it had been applied for prior to commencing the development, work, or use.

(Serial No. 2009-04, § 2, 6-8-2009)

69.10.023 Property tax incentives for economic development property.

(a) *Purpose.* This section authorizes property tax exemptions for the following on a property that meets the definition of economic development property in AS 29.45.050(m):

(1) *Assisted living for senior citizens:* At least 15 new residential units on one lot of assisted living for senior citizens. The term residential units includes the assisted living residential units for senior citizens and only those building spaces that are necessary and incidental to the assisted living of senior citizens that qualify for inclusion in the exemption like common space, support space, and shared facilities. A residential unit qualifies for the exemption even if a non-senior citizen resides in the unit with a senior citizen. The property is located entirely within the urban service area as defined by Title 49. An assisted living for senior citizens tax exemption runs with the land for the duration of the exemption so long as all of the tax-exempt residential units remain under a single common ownership. The tax abatement terminates on the following January 1 for any residential unit sold, during the prior year, to an individual owner that terminates the common unit ownership.

(2) *Downtown multifamily:* At least four new residential units on one lot in the Downtown Juneau Residential Tax Abatement Map, dated January 20, 2021. Such units must not be used as short-term rentals during the property tax abatement period. A downtown multifamily tax exemption runs with the land for the duration of the exemption so long as all of the tax-exempt residential units remain under a single common ownership. The tax abatement terminates on the following January 1 for any residential unit sold, during the prior year, to an individual owner that terminates the common unit ownership. No new downtown multifamily tax exemption applications may be accepted or granted after October 1, 2032.

(3) *High-density residential:* At least four new residential units on one lot and the residential development meets or exceeds 75 percent of the maximum density for the lot as allowed by Title 49. Such units must not be used as short-term rentals during the property tax abatement period. The property is located entirely within the urban service area as defined by Title 49. A high-density tax exemption runs with the land for the duration of the exemption so long as all of the tax-exempt residential units remain under a single common ownership. The tax abatement terminates on the following January 1 for any residential unit sold, during the prior year, to an individual owner that terminates the common unit ownership. No new high-density tax exemption applications may be accepted or granted after October 1, 2032.

(b) *Reserved.*

(c) *Exclusions.* Repair and rehabilitation property as defined in CBJC 69.10.025 for which an exemption application has been filed or granted is not eligible for this housing tax incentive. Submission of an application for exemption pursuant to this section shall automatically terminate any existing CBJC 69.10.025 application or designation for the property.

(d) *Application.* An application for an exemption under this section shall be made in writing to the assessor's office prior to issuance of a building permit for the residential units. Applications made after issuance of a building permit for the residential units shall not be accepted, or rejected if accepted. The application shall at a minimum contain the following:

(1) *Name.* The name of the applicant;

(2) *Address.* The legal description and street address of the property for which the application is made;

(3) *New residential units.* Drawings of the residential units that the applicant will construct, including a floor plan that includes approximate square footages;

(4) *Existing structures.* Drawings showing the square footage of all existing structures and structures to be constructed on the property;

(5) *Increase in residential units.* Plans showing the construction will increase the total number of residential units on the property;

(6) *Acknowledgement of liability.* Applicant acknowledges that the residential units will be taxable if and when the residential units are no longer eligible for tax exemption under this section;

(7) *Economic development property justification.* A narrative describing how the application qualifies as economic development property consistent with AS 29.45.050(m);

(8) *Other information.* Other information as may be required by the assessor; and

(9) *Application requirements specific to the Downtown Juneau Residential Tax Abatement.* In an application for CBJC 69.10.023(a)(2), the property owner must agree not to rent any new residential units as short-term rentals while receiving the tax abatement. A property owner who breaches this provision forfeits the remaining property tax abatement and must reimburse the City and Borough of Juneau for the property tax abatement received since first granted plus interest at the legal maximum rate of interest allowed by state law. If the property owner does not reimburse the City and Borough within 30 calendar days of notice being mailed or served, a lien shall be recorded against the property with the new residential units.

(e) *Provisional approval.* The assessor shall provisionally approve an application for tax exemption if:

(1) The applicant submitted a complete application; and

(2) The applicant acknowledges it must:

(i) Construct not less than the required residential units in accordance with the plans and drawings submitted with its application; and

(ii) Increase the total number of residential units on the property in order to receive final approval under this section.

(f) *Final approval of exemption.* The assessor shall finally approve an application for tax exemption if:

(1) The applicant has completed construction of residential units in accordance with the plans and drawings submitted with its application and a certificate of occupancy has been issued pursuant to Title 19 for each structure that contains a residential unit described in the application; and

(2) The total number of residential units on the property has increased.

(g) *Magnitude of exemption.* Consistent with this subsection, the total potential exemption shall not reduce the amount of taxes below the amount levied on other property for the school district's required local contribution under AS 14.17.410(b)(2).The taxes eligible for exemption under this section are those attributable only to the newly constructed residential units exclusive of previously existing residential units (whether remodeled or not), all nonresidential improvements, and land. Except as provided by subsection (m), the magnitude of exemption shall be determined on a spatial basis as follows: the square footage of the newly constructed residential units shall be divided by the square footage of all structures on the property, then multiplied by the assessed value of all improvements on the property and by the mill rate applicable to the property.

(h) *Duration of tax exemption.* Tax exemptions approved under this section shall be for a period of 12 consecutive years beginning on January 1 of the first full calendar year after final approval of the application.

(i) *Recording of exemption.* The assessor shall memorialize the terms of an exemption granted under this section in a memorandum recorded in the Juneau Recording District and kept on file in the assessor's office.

(j) *Termination of exemption upon reduction in number of residential units.* An exemption granted under this section shall terminate immediately if and when the number of residential units on the property is less than the number existing at the time of final approval of the application under this section. An exemption granted under this section does not terminate if the property or residential unit is sold and the new owner continues to comply with this section.

(k) *Appeal.* Any decision of the assessor under this section may be appealed to the assembly in accordance with CBJC 01.50.

(l) *Annual compliance and status report*. Not later than March 31 of each year, the owner of the property for which an exemption has been granted, shall file with the assessor a report with the following information:

(1) *Occupancy.* A statement of occupancy and vacancy of the residential units for the prior 12 months;

(2) *Residential units remain as described*. A certification that the newly constructed residential units described in the application continue to exist and have not been converted to a nonresidential use;

(3) *Further changes.* A description of physical changes or other improvements constructed since the last report or, on first report, since the filing of the application; and

(4) *Additional information.* Any additional information requested by the assessor.

(m) *Late-file penalty*. The failure for the owner to file the annual compliance and status report by March 31 shall result in ten percent reduction of the taxes exempted in the prior year.

(n) *Definitions*. In this section, the following definitions apply:

Assisted living means a facility providing housing and institutional care for people unable to live independently or without assistance. Assisted living includes facilities that provide nursing care services.

New residential unit means new construction and a condemned or uninhabitable existing dwelling unit that is renovated to current code for a residential dwelling unit according to CBJC Title 19.

Previously exempt property means real or personal property exempt under CBJC Title 69 in the prior calendar year but taxable in the next calendar year.

Residential unit means a dwelling unit as defined by CBJC 49.80.120 and is either owner-occupied or only leased for periods of at least one month.

Senior citizen means a person who is:

(1) Sixty-five years or older; or

(2) At least 60 years of age and the widow or widower of a senior citizen who qualified for an exemption under AS 29.45.030(e) and CBJC 69.10.020(1)(A)(i) and (ii).

Short-term rental means a dwelling unit that is rented, leased, or otherwise advertised for occupancy for a period of less than 30 days.

Widow or *widower* means a person whose spouse has died and who has not remarried.

(Serial No. 2019-23, § 3, 7-22-2019, eff. 8-22-2019 ; Serial No. 2021-01(c)(am), § 2, 3-1-2021, eff. 3-31-2021; Serial No. 2022-42 , § 2, 10-24-2022, eff. 11-24-2022)

CITY AND BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY

HOUSING PROGRAMS

Juneau Affordable Housing Fund

up to $50,000 per unit

The Juneau Affordable Housing Fund was created to promote the creation of affordable housing in the Capital City. This program runs annually in the Fall.

To review the requirements and guidelines and to learn more about the next funding competition round, please visit:

juneau.org/community-development/grants-juneau-affordable-housing-fund

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Mobile Home Down Payment Assistance

up to $10,000

CBJ has partnered with True North Federal Credit Union (TNFCU) to create a program that will provide low interest loans to qualified residents for up to 50% of the down payment. Residents must be able to match the other 50%. Loans will be available at 1% interest. The borrower will have up to five (5) years to pay back the loan.

juneau.org/community-development/grants-mobile-home-down-payment-assistance

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Accessory Apartment Grant Program

$6,000

The Accessory Apartment Grant Program is a one time grant to homeowners creating an eligible accessory apartment. This apartment cannot be used as a short-term rental.

juneau.org/community-development/grants-aapgp

Property Tax Abatement Programs

- ***Downtown Tax Abatement:*** Provides 12-year tax abatement for projects that develop four or more new residential units in the mapped area. *See map on reverse.*

- ***Senior Assisted Living Tax Abatement:*** Provides 12-year tax abatement for projects that provide at least 15 new residential units of assisted living for senior citizens in the urban service area.

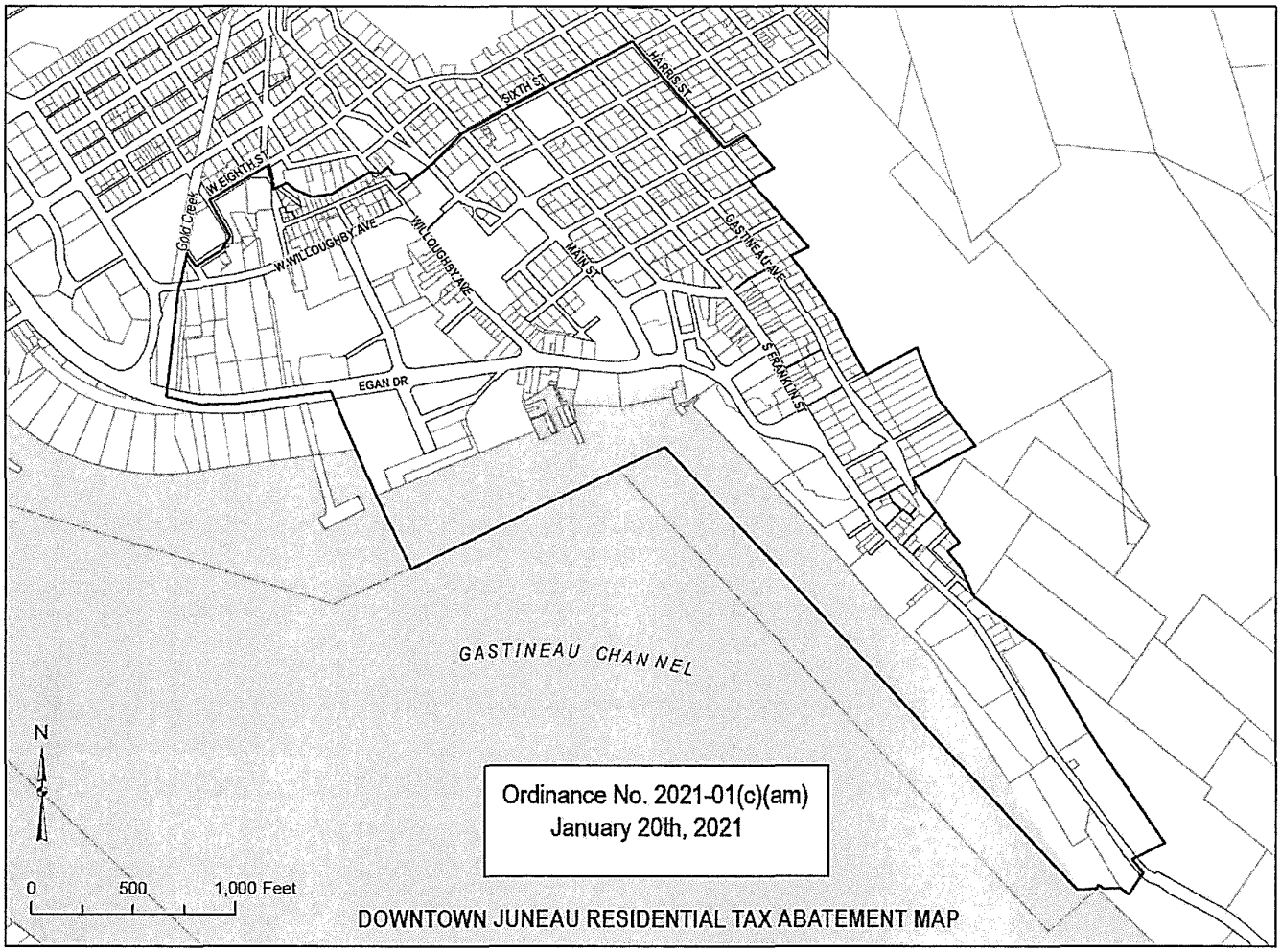
- ***Subdivision Property Tax Abatement:*** 5-year tax abatement program for improvements related to subdivision of one lot into three or more lots.

- ***High Density Tax Abatement:*** 12-year tax abatement for projects that develop at least four new residential units within the Urban Service Area.

For more information on CBJ tax abatement program eligibility criteria and to apply, please visit:

juneau.org/community-development/grants-cbj-tax-abatement-programs

For more information on CBJ Housing Programs, please contact the Community Development Department at: ***(907)586-0753*** and press "1" to speak to the Planner on Call, or visit: juneau.org/community-development/grants



For more information on CBJ Housing Programs, please contact the Community Development Department at: ***(907)586-0753*** and press "1" to speak to the Planner on Call, or visit: juneau.org/community-development/grants

Last update: 2/6/2023

CITY AND BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY
COMMUNITY DEVELOPMENT

DEVELOPMENT PERMIT APPLICATION

NOTE: Development Permit Application forms must accompany all other Community Development Department land use applications. This form and all documents associated with it are public record once submitted.

To be completed by Applicant

PROPERTY LOCATION

Physical Address

Legal Description(s) (Subdivision, Survey, Block, Tract, Lot)

Parcel Number(s)

☐ This property is located in the downtown historic district
☐ This property is located in a mapped hazard area, if so, which _____

LANDOWNER/ LESSEE

Property Owner	Contact Person
Mailing Address	Phone Number(s)
E-mail Address	

LANDOWNER/ LESSEE CONSENT

Required for Planning Permits, not needed on Building/ Engineering Permits.

Consent is required of all landowners/ lessees. If submitted with the application, alternative written approval may be sufficient. Written approval must include the property location, landowner/ lessee's printed name, signature, and the applicant's name.

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 the City and Borough of Juneau officials/employees to inspect my property as needed for purposes of this application.

_____
Landowner/Lessee (Printed Name) **Title (e.g.: Landowner, Lessee)**

X _____ _____
Landowner/Lessee (Signature) **Date**

_____
Landowner/Lessee (Printed Name) **Title (e.g.: Landowner, Lessee)**

X _____ _____
Landowner/Lessee (Signature) **Date**

NOTICE: The City and Borough of Juneau staff may need access to the subject property during regular business hours. We will make every effort to contact you in advance, but may need to access the property in your absence and in accordance with the consent above. Also, members of the Planning Commission may visit the property before a scheduled public hearing date.

APPLICANT

If same as LANDOWNER, write "SAME"

Applicant (Printed Name)	Contact Person
Mailing Address	Phone Number(s)
E-mail Address	

X _____ _____
Applicant's Signature **Date of Application**

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

	Intake Initials
Case Number	Date Received

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

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

Attachment A - Application Packet

BUILDING PERMIT APPLICATION

(Including Water, Sewer, Driveway, Grading, Mechanical, Plumbing, Electrical, and Building Safety Inspections)

(APPLICANT PLEASE FILL IN TOP PORTION OF PAGE AFTER FIRST LINE)

Project No:	Project Name: (City Staff to assign name)	Case No:	Date Received:

APPLICANT AREA

CONTRACTOR/OWNER-BUILDER ☐ Contact by E-Mail _____		Contact Person	Phone No.
Mailing Address		FAX No.	License Number
ARCHITECT / ENGINEER ☐ Contact by E-Mail _____		Contact Person	Phone No.
Mailing Address		FAX No.	License Number

PERMIT CLASS

☐ NEW ☐ ADDITION ☐ REPAIR/REMOD ☐ ELECTRICAL ☐ PLUMBING ☐ MECHANICAL ☐ WOODSTOVE ☐ WATER ☐ SEWER ☐ DEMOLITION ☐ GRADING ☐ DRIVEWAY ☐ BUILDING SAFETY ☐ OTHER _____

BUILDING TYPE ☐ Residential ☐ Commercial ☐ Other _____

EXISTING DWELLING UNITS ON PROPERTY _____ NEW DWELLING UNITS THIS PROJECT _____ TOTAL EXISTING BUILDINGS ON PROPERTY _____

DESCRIPTION OF WORK:

_____

_____

_____

_____

VALUE: TYPE (ie: house, garage, deck, unfinished)

New: _____ _____ Sq. Ft.

New: _____ _____ Sq. Ft.

New: _____ _____ Sq. Ft.

New: _____ _____ Sq. Ft.

Cost of Remodeling: $_____ (if any)

I hereby certify that I have read and examined this application and know the same to be true and correct. All provisions of laws and ordinances governing this type of work will be complied with whether specified herein or not. The granting of a permit does not presume to give authority to violate or cancel the provisions of any other federal, state or local law regulating construction or the performance of construction.

Signature of Owner, Contractor or Authorized Agent: X _____

Date: X _____

(OFFICE USE ONLY BELOW THIS LINE)

STAFF AREA

BUILDINGS Occupancy Class _____ Type of Construction _____

FCC Code _____ Permit Classification _____

Occupancy	Square Feet	@ Rate	= Valuation

Bedrooms _____ Stories _____

BUILDING PERMIT FEES

PLAN REVIEW FEES

___ Building Plan Review $_____

___ Grading Plan Review $_____

Total Review Fees $_____

PLAN REVIEW PAYMENT

___ Date _____ Receipt No. _____ CK _____

LAND USE.

PARKING _____

FLOOD ELEV. _____

FIRM ZONE _____

FIRM MAP _____

LAND USE PERMITS:

_____ Case Number

_____ Case Number

_____ Case Number

_____ Case Number

ENGINEERING/PUBLIC WORKS

CITY WATER Units: _____

Case No: _____

Service - Size _____

Fire Line - Size _____

Metered _____

Extended Pay # _____

CITY SEWER Units: _____

Case No: _____

BOND Case No: _____

OTHER Case No: _____

ADEC On-site Water

No _____ Date _____

ADEC On-site Sewer

No _____ Date _____

PLAN REVIEW APPROVALS

	Initials	Date
___ Fire		
___ Zoning		
___ Engineering		
___ Water		
___ Sewer		
___ Architectural		
___ Structural		
___ Plumbing		
___ Mechanical		
___ Electrical		
___ Access		
___ Special Inspection Form		

APPROVED FOR ISSUANCE

_____ Signature

_____ Date

PERMIT ISSUANCE FEES

___ Adjusted Plan Review Fee $_____

___ Fast Track Fee $_____

___ Early Start Fee $_____

___ Building Permit Fee $_____

___ Water Assessment Fee $_____

___ Water Inspection Fee $_____

___ Sewer Assessment Fee $_____

___ Sewer Inspection Fee $_____

___ Grading Permit Fee $_____

___ Driveway Permit Fee $_____

___ Bond for _____ $_____

___ Other _____ $_____

Total Issuance Fees $_____

PERMIT ISSUANCE PAYMENTS

_ Date _____ Rcpt _____ Ck _____ $_____

_ Date _____ Rcpt _____ Ck _____ $_____

_ Date _____ Rcpt _____ Ck _____ $_____

_ Date _____ Rcpt _____ Ck _____ $_____

Water Connection Permits

I hereby acknowledge receipt of a _____ inch meter yoke.

X _____ Date: _____

CONDITIONS AND HOLDS ON PERMIT:

_____

_____

_____

_____

_____

devappbd.xls rev. 9 1/26/99

Continued on Reverse Side

NOTE: MUST BE ACCOMPANIED BY DEVELOPMENT PERMIT APPLICATION *FORM*

BUILDING PERMIT APPLICATION (Continued)

TYPES OF INSPECTIONS

The inspections indicated below are normally required for each permit type. (Staff marks applicable items)

BU (Commercial Buildings)
BI (Com. Building Safety Inspection)
C100 Setback
C110 Excavation/Footing
C120 Forms & Rebar
C130 Steel/Masonry
C140 Framing
C150 Insulation/Drywall
C160 Rated Walls & Assemblies
C170 Smoke Detect. & Alarm Systems
C180 Underground Plumbing
C190 Water Piping Test
C210 DWV Piping Test
C220 Plumbing Fixtures Final
C250 Cross Connection Control
C255 Meter Yoke with Meter
C265 Gas Piping
C270 Plenums & Ducts
C300 Furnace/Stove Clearance
C301 Combustion Air
C400 Ventilation
C410 Fire Dampers/Sprinklers
C420 Commercial Hoods
C430 Temporary Power
C440 Service/Panel
C450 Conduit & Raceway Systems
C460 Bonding/Grounding
C470 Grading/Drainage
C480 Landscaping/Parking
C490 Planning Requirements
C500 Roofing
C600 Zoning Final
C800 Commercial Final

DM (Demolition)
E100 Sewer Capped
E110 Debri Filled
E120 Excavation Filled
E500 Demolition Final

MS (Install Mobile Home)
I100 Setbacks
I110 Foundation
I120 Electrical Hookup
I130 Plumbing Hookup
I140 Porches & Stairs
I150 Skirting
I500 Mobile Home Final

SF (Single Family - 4 Units)
BI (Res. Building Safety Inspection)
D100 Setbacks
D110 Excavation/Footing
D115 Stem Walls/Forms/Rebar
D120 Temporary Power
D140 Rough Framing
D150 Rough Electrical
D160 Rough Plumbing
D170 Underslab Utilities
D180 Vents (Bath, Dryer, etc.)
D190 Firewall Separation
D210 Yellow Tag Electrical
D220 Woodstove/Chimney
D230 Smoke Detection
D240 Insulation
D250 Cross Connection Control
D255 Meter Yoke
D257 Oil & Gas Piping/Tanks
D260 Grading/Drainage
D263 ADEC On-Site Water Final
D266 ADEC On-Site Sewer Final
D270 Repair/Rehab Exemption
D280 Res Zoning Final
D800 Residential Final

WS (Wood Stove)
K100 Approved Model
K110 Stove Clearances
K120 Stack Clearances
K130 Hearth
K200 Woodstove Final

FS (Fire Sprinkler)
FA (Fire Alarm)
L100 Pressure Test
L110 Underground Flush
L120 Proper Bracing
L130 Return Bends
L140 Head Placement
L150 FDC Location
L160 Alarm Panel/Transmitter
L170 Alarm Zones
L180 Battery/Backup
L190 Phone Connection
L200 Reset Procedures
L210 System Test
L220 Detectors Spare
L500 Fire Final

PB (Plumbing)
J100 Underground Plumbing
J110 Water Piping
J120 DWV Piping
J130 Hydronic System
J140 Water Heater
J150 Water Softener
J160 Water Service
J170 Gas Piping
J180 Cross Connection Control
J500 Plumbing Final

MC (Mechanical)
H110 Plenums & Ducts
H120 Furnace
H130 Inlets & Outlets
H140 Combustion Air
H150 Compressor
H160 Appliance Clearance
H170 Smoke Detection Systems
H190 Commercial Hood
H500 Mechanical Final

EC (Electrical)
F100 Temporary Power
F110 Building Service
F120 Conduit & Raceway Systems
F140 General Wiring
F150 Cable Systems
F160 Bonding
F170 Grounding
F180 Devices & Equipment
F190 Smoke Detection
F500 Electrical Final

DW (Driveway)
N160 Location
N200 Grade
N210 Width
N330 Headwalls
N350 Culvert
N400 Curb Cut
N410 Curb Box/Thaw Wire
N420 Bond Return Request
N800 Driveway Final

WC (Water Connection)
WE (Water Extended)
WI (Water Inspection)
FC (Fire Connection)
D100 Water Meter/Yoke
D105 Water Meter Required
D110 Size of Water Service
D120 Depth (Water) Depth
D130 Cross Connection Contr
D140 Pressure Test
D150 Thaw Waiver
D500 Turn Water OFF
D510 Seasonal Water Turn O
D550 Hold
D600 Turn Water ON
D610 Seasonal Water Turn O
Z080 Billing Authorization - W
D800 Water Final

SC (Sewer Connection)
SI (Sewer Inspection)
C100 Depth
C110 Soil
C120 Material
C125 Grade
C130 Cleanouts
C140 Sewer Connection
C150 Sewer Disconnect
Z070 Billing Authorization - Se
C500 Sewer Final

GR (Grading)
G100 Retaing Walls, etc.
G120 Drainage
G130 Slopes
G140 Compaction
G150 Material
G200 Grading Final

ADDITIONAL CONDITIONS AND HOLDS (STAFF)

CITY AND BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY
COMMUNITY DEVELOPMENT

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

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: _____

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 _____ square feet Total Area of Existing Structure(s) _____ square feet

Total Area of Proposed Structure(s) _____ square feet

EXTERNAL LIGHTING

Existing to remain ◯ No ◯ Yes – Provide fixture information, cutoff sheets, and location of lighting fixtures

Proposed ◯ No ◯ 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	$_____			
Admin. of Guarantee	$_____			
Adjustment	$_____			
Pub. Not. Sign Fee	$_____			
Pub. Not. Sign Deposit	$_____			
Total Fee	$_____			

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.

Case Number	Date Received

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.

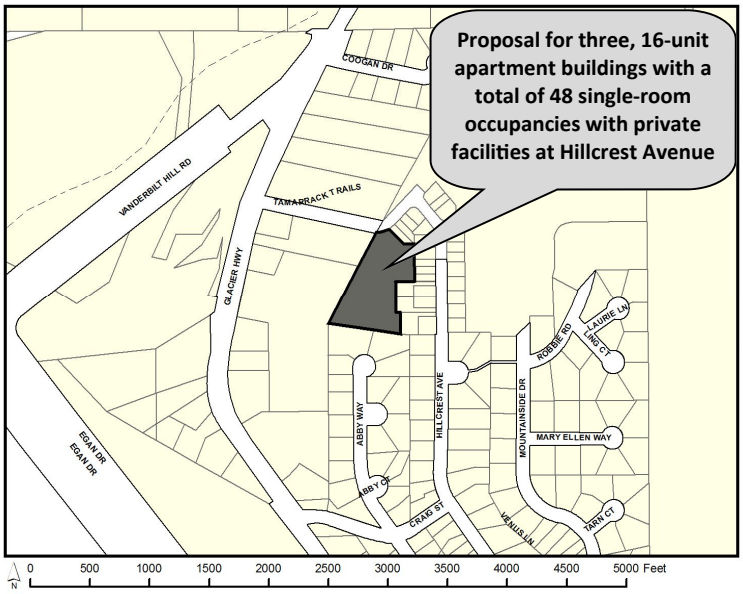
The Applicant will post a sign on the site at least 14 days prior to the meeting. The sign shall be visible from a public right-of-way or where determined appropriate by CDD. Signs may be produced by the Community Development Department for a preparation fee of $50, and a $100 deposit that will be refunded 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

Invitation to Comment

On a proposal to be heard by the CBJ Planning Commission

Your Community, Your Voice



CITY AND BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY
COMMUNITY DEVELOPMENT
155 Heritage Way Juneau, Alaska 99801

TO

Conditional Use Permit has been submitted for consideration and public hearing by the Planning Commission for **three, 16-unit apartment buildings with a total of 48 single-room occupancies with private facilities** at **Hillcrest Avenue** in a **D15** zoning district.

PROJECT INFORMATION:
Project Information can be found at:
https://juneau.org/community-development/short-term-projects

PLANNING COMMISSION DOCUMENTS:
Staff Report expected to be posted **May 6, 2024** at
https://juneau.org/community-development/planning-commission
Find hearing results, meeting minutes, and more here, as well.

Now through April 22

Comments received during this period will be sent to the Planner, **Joseph Meyers,** to be included as an attachment in the staff report.

April 23 — noon, May 10

Comments received during this period will be sent to Commissioners to read in preparation for the hearing.

HEARING DATE & TIME: 7:00 pm, May 14, 2024

This meeting will be held in person and by remote participation. For remote participation: join the Webinar by visiting https://juneau.zoom.us/j/86939674618 and use the Webinar ID: 869 3967 4618 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 Heritage Way Juneau, Alaska.

May 15

The results of the hearing will be posted online.

FOR DETAILS OR QUESTIONS,

Phone: **(907)586-0753 ext. 4209**
Email: **pc_comments@juneau.gov or joseph.meyers@juneau.gov**
Mail: **Community Development, 155 Heritage Way, Juneau AK 99801**

Case No.: USE2024 0006
Parcel No.: 7B1001160014
CBJ Parcel Viewer: http://epv.juneau.org

Printed April 4, 2024

Attachment B - Abutters Notice and Public Notice Sign Photo

Attachment B - Abutters Notice and Public Notice Sign Photo

CITY AND BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY
COMMUNITY DEVELOPMENT

(907) 586-0715
CDD_Admin@juneau.gov
www.juneau.org/community-development
155 Heritage Way • Juneau, AK 99801

COMMUNITY DEVELOPMENT DEPARTMENT - REQUEST FOR AGENCY COMMENT

DEPARTMENT:	CCFR
STAFF PERSON/TITLE:	T. Ross, Fire Marshal
DATE:	2/26/2024
APPLICANT:	Chilkat Vistas, LLC
TYPE OF APPLICATION:	Conditional Use Permit

PROJECT DESCRIPTION:

48-unit multifamily development at Chilkat Vistas

LEGAL DESCRIPTION:	Chilkat Vistas, Tract A3
PARCEL NUMBER(S):	7B1001160014
PHYSICAL ADDRESS:	NHN

SPECIFIC QUESTIONS FROM PLANNER:

Does the proposed site plan including the hammerhead and second access meet the requirements of the fire code?

AGENCY COMMENTS:

So as long as access has already been addressed and hydrant locations approved under that permit as well the only thing I can think of would be the requirement of signage for the hammerhead, that will be called out when the actual buildings are submitted for review.

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COMMUNITY DEVELOPMENT DEPARTMENT - REQUEST FOR AGENCY COMMENT

DEPARTMENT: Alaska DOT

STAFF PERSON/TITLE: Arthur Drown, ROW Agent

DATE:

APPLICANT: Heumann

TYPE OF APPLICATION: Conditional Use Permit

PROJECT DESCRIPTION:

LEGAL DESCRIPTION:

PARCEL NUMBER(S): 7B1001160014

PHYSICAL ADDRESS: TBD

SPECIFIC QUESTIONS FROM PLANNER:

Does DOT see any issues with the site plan or the applicable TIA?

AGENCY COMMENTS:

The Traffic Impact Analysis conducted for the development of Richland Manor in 2020 included analysis of future development for up to 47 single family homes (detached) and approximately 356 multifamily homes in the vicinity of Hooter Lane and Craig Street. The conclusion of the TIA at that time was that at full build out, no major mitigation past the development of Hooter Lane and some pedestrian facility improvements at Vanderbilt and Glacier Highway would be necessary. Approach Road permit 30955 was issued for the development of Hooter Lane by DOT&PF and the subject TIA was reviewed by the Department at that time with no comment. The TIA and its findings that no additional mitigation to that previously mentioned was accepted by the Department. At this time, no additional analysis is required as the proposed multifamily development is within the original TIA's scope of work.

From: Maralee Guiher
To: Joseph Meyers
Subject: Chilkat Vistas
Date: Monday, April 22, 2024 9:42:45 AM

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

USE2024 0006
7B1001160014

No, No, No! 48 efficiency apartments attached to our quiet Mountainside community!?

Please, consider not allowing this to take place. Our quiet neighborhood has already been impacted by the newest addition and its traffic (vehicle and foot.) The addition of these apartments really scares me. I'm afraid for our security and safety. For instance, traffic has increased and more and more vehicles are not observing the posted speed limits since the connecting of Glacier Hwy to Hillcrest Ave. Foot traffic down Hillcrest has considerably increased.

Please be considerate of the current residents of Mountainside Estates.

Maralee Guiher
Crest Ct. Mountainside Estates

1945 Alex Holden Way #101 | Juneau, AK 99801 | 907-780-4004 | solutions@proHNS.com
219 Main Street #13 | Haines, AK 99827 | 907-419-6070 | www.proHNS.com

August 11, 2022

Michael and William Heumann
6000 Thane Rd
Juneau, AK 99801
mpheumann@hotmail.com
(971) 261-8014

RE: Chilkat Vistas Subdivision, Phase II – Drainage Report

To Whom It May Concern,

The following Drainage Plan has been prepared for the Chilkat Vistas Subdivision, Phase II in Juneau, AK, a proposed multi-phase major subdivision on a 30-acre site at the 4500 block of Hillcrest Avenue. This drainage report addresses the second phase of the overall subdivision that will create 13 new single family lots, plus 3 tracts. Phase II of the subdivision will also include extending Hillcrest Avenue and improvement/extension of Hooter Lane, which will result in a looped connection between the two streets. This drainage report is independent of any previous drainage reports as it examines all on-site and upland stormwater that will be directed through the entire project area (phase I and phase II). Phase II of this subdivision will involve rerouting a stormdrain that currently flows across private property so that this stormwater will remain within the Hillcrest Ave and Hooter Lane right-of-way in the developed conditions. Improvements include extending Hillcrest Avenue and Hooter Lane by constructing new sidewalk, street, ditches, driveways and utilities along with building pads on the newly subdivided Lots. The 2010 CBJ Manual of Stormwater Best Management Practices was used to evaluate if the proposed and existing drainage features could convey runoff during the 25-year storm event.

Attachments to this report include sheets depicting survey data, proposed ROW improvements, as-built information, calculations and rainfall data used for the drainage analysis.

Site Runoff Calculation Method:

The existing conditions include 2 sub-basins and 2 discharge points, and the developed conditions will include 3 sub-basins and 3 discharge points. Though stormwater will be rerouted through the project area, all discharge points combine in the wetlands on the west side of Glacier Highway, which will preserve historic drainage patterns. It should be noted that the basin for Chilkat Vistas Subdivision phase I was used as the "pre-developed" condition. Since the phase I/pre-developed phase II conditions were analyzed in a previous drainage report, the existing conditions will not be discussed in detail in this report (see the Chilkat Vistas Phase I drainage report in appendix "G" for details on the existing conditions"). The catchment areas we determined using the proposed design model, Lidar data and aerial photos in AutoCAD C3D and were verify by several site visits. A delineation of the catchment areas can be found in Appendix A. Soil conditions were based on information from Shoephorster and Furbush (1974) and the National Engineering Handbook (see appendix E for more information about the on-site soils).

To calculate the site runoff for Drainage Basins A, B, and C we have elected to use the SCS TR-55 method. The SCS TR-55 is most appropriate for evaluating drainage basins of 10 acres to 1,300 acres. Appendix D of the "2010 CBJ Manual of Stormwater Best Management Practices" was utilized as a guide. The calculations and supporting documentation can be found in Appendix B, C & F of this Report.

Anticipated Site Runoff (Q):

Using the SCS Unit Hydrograph Method, the amount of stormwater runoff during the 25-year storm event per catchment area was determined. The analysis shows that approximately 1.13 cfs of runoff will be removed from the discharge point A due to the proposed development. See Table 1.1 below for results, the calculations can be found in Appendix B.

Catchment Area	Q (cfs)
Drainage Basin A, Discharge Point A	**11.58**
Drainage Basin B, Discharge Point B	**1.03**
Drainage Basin C, Discharge Point C	**3.24**
Table 1.1	

Conveyance/Discharge Structure Capacities:

The capacity of the existing and proposed drainage systems was calculated to determine if proposed 25-year storm event flows could be conveyed. The entire network was analyzed in AutoCAD SSA, and the most vulnerable drainage structures/conveyance systems to failure along the analyzed flow path were also evaluated using HY-8 software. See Table 1.2 below for results on the most vulnerable drainage element in each basin's conveyance system. The supporting calculations can be found in Appendix C.

Catchment Area	Q (cfs)
Drainage Basin A – (P-1) Proposed 36" CMP Culvert	**47.75**
Drainage Basin B – (P-EX-1) Existing 18" CPP	**8.89**
Drainage Basin C – No net increase over existing conditions.	**5.58**
Table 1.2	

Summary:

Table 1.3 below compares anticipated 25-year runoff in the proposed and existing conveyance systems to their available hydraulic capacity. To simplify and provide a conservative evaluation runoff from the entire drainage basin was used for comparison even though uphill conveyance systems would not need to handle all of the calculated runoff from the lower discharge point.

Drainage Basin/Discharge Point	Anticipated Runoff Q (cfs)	Capacity Check	Available Capacity Q (cfs)
Basin A/P-1	**11.58**	**<**	**47.75**
Basin B/P-EX-1	**1.03**	**<**	**8.89**
Basin C/Existing Ditch Near Tract-A3	**3.24**	**<**	**5.58**
Table 1.3			

Our analysis shows the proposed 36-inch CMP pipe under Glacier Highway will have an excess of capacity to accommodate the stormwater that will result from phase II of the Chilkat Vistas Subdivision, as well as potential future development. It demonstrates that there is excess capacity in the existing 18-inch CPP culvert on the southern side of Hooter Lane. Our analysis also shows that the drainage along the southern portion of Hooter Lane will see a reduction in water from the existing conditions due to a redirection of upland flows into the new 36-inch pipe on the opposite side of the street. Similarly, the existing ditch that leaves the project area at the southern portion of tract-A3 will see a net reduction in water due to the elimination of a stormdrain outfall from Hillcrest Ave in the ditch above Tract-A3.

Respectfully,

Lucas Chambers, P.E.
Principal Engineer – proHNS LLC Juneau
License #CE-106593

Appendices:

A – Catchment Areas & Flow Paths
B – SSA Calculations
C – HY-8 Calculations
D – Rainfall Intensity
E – Soil Data
F – SCS Hydrograph
G – Prior Drainage Reports "Richland Manor Subdivision – Drainage Report dated 10/31/19, Hooter Lane Phase I ROW Improvements – Drainage Report dated 1/23/20

App A - Catchment Areas & Flow Paths

NOTE: FLOW PATH REPRESENTS THE MOST HYDRAULICALLY DISTANT POINT IN A GIVEN DRAINAGE BASIN.

RICHLAND MANOR TRACT A

VINTAGE BLVD

ANALYSIS DISCHARGE POINT "PRE B" (1.90 CFS)

HOOTER LN ROW

TAMARACK TRAILS CONDOS

4815 GLACIER HWY

4825 GLACIER HWY

4770 GLACIER HWY

4670 GLACIER HWY

GLACIER HWY

UNDEVELOPED TRACT C

DRAINAGE BASIN "PRE B"

DRAINAGE BASIN "PRE A"

PRIMARY FLOW PATH (TYP)

MAPPED EXISTING DRAINAGE CHANNELS

LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7
LOT 8
LOT 9
LOT 10
LOT 11
LOT 12
LOT 13
LOT 14

ROBBIE RD

ANALYSIS DISCHARGE POINT "PRE-A" (5.58 CFS)

ABBY WAY

HILLCREST AVE

MOUNTAINSIDE DR

100 0 100 200
SCALE IN FEET

RECORD OF REVISIONS			
No.	DATE	DESCRIPTION	BY

proHNS LLC
CERTIFICATE OF AUTHORIZATION #100662

DRAWN BY:	C. BYDLON
DESIGNED BY:	L. CHAMBERS
CHECKED BY:	L. CHAMBERS

1945 ALEX HOLDEN WAY #101
JUNEAU, AK 99801
solutions@proHNS.com
www.proHNS.com

HILLCREST EXTENSION SUBDIVISION

WILLIAM & MICHAEL HUMEANN

PREDEVELOPED DRAINAGE BASIN CATCHMENT AREAS

SHEET NUMBER 1 OF 2

June 16, 2022

C:\Users\Chris\Dropbox (proHNS)\Projects\Juneau\Richland Manor Subdivision\C3D Richland Manor\Sheets\Drainage\DrainageMap_Hillcrest_Extension_Phase_II.dwg

Attachment E - Approved Drainage Plan

App A - Catchment Areas & Flow Paths

NOTE: FLOW PATH REPRESENTS THE MOST HYDRAULICALLY DISTANT POINT IN A GIVEN DRAINAGE BASIN.

RICHLAND MANOR TRACT A

RICHLAND MANOR TRACT A2

RICHLAND MANOR TRACT A3

ANALYSIS DISCHARGE POINT A (11.58 CFS)

ANALYSIS DISCHARGE POINT B (1.03 CFS)

ANALYSIS DISCHARGE POINT C (3.24 CFS)

HOOTER LN ROW

TAMARACK TRAILS CONDOS

DRAINAGE BASIN A

DRAINAGE BASIN B

DRAINAGE BASIN C

CONTRIBUTING FLOW PATH (TYP)

PRIMARY FLOW PATH (TYP)

MAPPED EXISTING DRAINAGE CHANNELS

VINTAGE BLVD

GLACIER HWY

4815 GLACIER HWY

4770 GLACIER HWY

ROBBIE RD

ABBY WAY

HILLCREST AVE

MOUNTAINSIDE DR

LOT 1 LOT 2 LOT 3 LOT 4 LOT 5 LOT 6 LOT 7 LOT 8 LOT 9 LOT 10 LOT 11 LOT 12 LOT 13 LOT 14 LOT 15 LOT 16 LOT 17 LOT 18 LOT 19 LOT 20 LOT 21 LOT 22 LOT 23 LOT 24 LOT 25 LOT 26 LOT 27

100 0 100 200
SCALE IN FEET

RECORD OF REVISIONS

No.	DATE	DESCRIPTION	BY

proHNS LLC
CERTIFICATE OF AUTHORIZATION #100662

DRAWN BY:	C. BYDLON
DESIGNED BY:	L. CHAMBERS
CHECKED BY:	L. CHAMBERS

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HILLCREST EXTENSION SUBDIVISION

WILLIAM & MICHAEL HUMEANN

DEVELOPED DRAINAGE BASIN CATCHMENT AREAS

SHEET NUMBER 2 OF 2

June 16, 2022

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Attachment E - Approved Drainage Plan

App B - SSA

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Inlet Invert Offset	Outlet Invert Elevation	Outlet Invert Offset	Total Drop	Average Slope	Pipe Shape	Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Peak Flow	Max Flow Velocity	Travel Time	Design Flow Capacity	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged	Max Flow Depth	Reported Condition
			(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)		(inches)	(inches)					(cfs)	(cfs)	(ft/sec)	(min)	(cfs)			(min)	(ft)	
P-1	S-1	END_OF_P-1	76.08	24.40	0.00	24.02	0.00	0.38	0.5000	CIRCULAR	36.000	36.00	0.0120	0.5000	0.5000	0.0000	0.00	11.58	5.84	0.22	51.07	0.23	0.32	0.00	0.97	Calculated
P-2	S-2	S-1	50.06	27.80	0.00	24.50	0.10	3.30	6.5900	CIRCULAR	30.000	30.00	0.0120	0.5000	0.5000	0.0000	0.00	11.60	14.96	0.06	114.09	0.10	0.22	0.00	0.54	Calculated
P-3	S-3	S-2	68.52	36.80	0.00	27.90	0.10	8.90	12.9900	CIRCULAR	30.000	30.00	0.0120	0.5000	0.5000	0.0000	0.00	11.60	19.00	0.06	160.14	0.07	0.18	0.00	0.45	Calculated
P-5	S-4	S-3	119.66	49.70	0.00	36.90	0.10	12.80	10.7000	CIRCULAR	30.000	30.00	0.0120	0.5000	0.5000	0.0000	0.00	11.61	17.78	0.11	145.33	0.08	0.19	0.00	0.48	Calculated
P-7	S-5	S-4	165.23	69.70	0.00	49.80	0.10	19.90	12.0400	CIRCULAR	30.000	30.00	0.0120	0.5000	0.5000	0.0000	0.00	10.12	17.67	0.16	154.21	0.07	0.17	0.00	0.44	Calculated
P-8	S-6	S-5	136.84	85.80	0.00	69.80	0.10	16.00	11.6900	CIRCULAR	30.000	30.00	0.0120	0.5000	0.5000	0.0000	0.00	9.96	17.40	0.13	151.94	0.07	0.17	0.00	0.43	Calculated
P-9	S-7	S-6	35.09	86.10	0.00	85.90	0.10	0.20	0.5700	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	0.47	2.61	0.22	8.59	0.06	0.16	0.00	0.24	Calculated
P-10	S-8	S-7	30.23	87.20	0.00	86.20	0.10	1.00	3.3100	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	0.47	4.69	0.11	20.70	0.02	0.11	0.00	0.16	Calculated
P-11	S-9	S-8	32.20	92.60	0.00	87.30	0.10	5.30	16.4600	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	0.47	8.42	0.06	46.17	0.01	0.07	0.00	0.11	Calculated
P-12	S-10	S-9	37.49	96.80	0.00	92.70	0.10	4.10	10.9400	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	0.47	7.34	0.09	37.63	0.01	0.08	0.00	0.12	Calculated
P-13	S-11	S-10	22.24	99.50	0.00	96.90	0.10	2.60	11.6900	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	0.47	7.50	0.05	38.91	0.01	0.08	0.00	0.12	Calculated
P-14	S-12	S-6	129.11	97.90	0.00	85.90	0.10	12.00	9.2900	CIRCULAR	30.000	30.00	0.0120	0.5000	0.5000	0.0000	0.00	9.64	16.00	0.13	135.47	0.07	0.18	0.00	0.45	Calculated
P-15	SED-TRAP-INLET_1	S-12	100.78	106.40	0.00	98.00	0.10	8.40	8.3400	CIRCULAR	24.000	24.00	0.0120	0.5000	0.5000	0.0000	0.00	0.36	5.80	0.29	70.76	0.01	0.05	0.00	0.10	Calculated
P-16	S-13	S-12	66.08	101.00	0.00	98.00	0.10	3.00	4.5400	CIRCULAR	24.000	24.00	0.0120	0.5000	0.5000	0.0000	0.00	9.44	12.58	0.09	52.22	0.18	0.29	0.00	0.58	Calculated
P-17	S-14	S-13	32.98	104.10	0.00	103.00	2.00	1.10	3.3400	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	0.57	5.12	0.11	20.78	0.03	0.11	0.00	0.17	Calculated
P-18	S-15	S-14	29.31	104.40	0.00	104.20	0.10	0.20	0.6800	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	0.57	2.93	0.17	9.40	0.06	0.17	0.00	0.25	Calculated
P-19	S-16	S-15	33.76	104.90	0.00	104.50	0.10	0.40	1.1800	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	0.57	3.57	0.16	12.39	0.05	0.15	0.00	0.22	Calculated
P-20	S-17	S-16	50.97	105.90	0.00	105.00	0.10	0.90	1.7700	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	0.57	4.09	0.21	15.12	0.04	0.13	0.00	0.20	Calculated
P-21	S-18	S-13	143.72	101.90	0.00	101.10	0.10	0.80	0.5600	CIRCULAR	24.000	24.00	0.0120	0.5000	0.5000	0.0000	0.00	9.03	5.80	0.41	18.28	0.49	0.50	0.00	0.99	Calculated
P-22	S-EX-1	S-18	126.08	106.00	0.00	105.00	3.10	1.00	0.7900	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	5.87	5.94	0.35	10.13	0.58	0.55	0.00	0.82	Calculated
P-23	S-19	S-18	43.47	102.50	0.00	102.00	0.10	0.50	1.1500	CIRCULAR	24.000	24.00	0.0120	0.5000	0.5000	0.0000	0.00	3.12	5.61	0.13	26.28	0.12	0.23	0.00	0.47	Calculated
P-24	SEDIMENT-TRAP_2	S-19	31.54	108.00	-0.20	102.50	0.00	5.50	17.4400	CIRCULAR	18.000	18.00	0.0150	0.5000	0.5000	0.0000	0.00	0.16	5.31	0.10	38.70	0.00	0.05	0.00	0.07	Calculated
P-25	S-20	S-19	40.45	106.00	0.00	105.50	3.00	0.50	1.2400	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	3.04	5.88	0.11	12.65	0.24	0.33	0.00	0.50	Calculated
P-26	S-21	S-20	42.85	106.40	0.00	106.10	0.10	0.30	0.7000	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	3.04	4.79	0.15	9.52	0.32	0.39	0.00	0.58	Calculated
P-27	S-22	S-21	38.35	106.90	0.00	106.50	0.10	0.40	1.0400	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	3.04	5.54	0.12	11.62	0.26	0.35	0.00	0.52	Calculated
P-EX-1	P-EX-1_INLET	END_OF_P-EX-1	34.92	27.50	0.00	27.10	0.00	0.40	1.1500	CIRCULAR	18.000	18.00	0.0120	0.5000	0.5000	0.0000	0.00	1.03	4.20	0.14	12.18	0.08	0.20	0.00	0.30	Calculated

App B - SSA

SN	Element ID	X Coordinate	Y Coordinate	Description	Invert Elevation	Boundary Type	Flap Gate	Fixed Water Elevation	Peak Inflow	Peak Lateral Inflow	Maximum HGL Depth Attained	Maximum HGL Elevation Attained
					(ft)			(ft)	(cfs)	(cfs)	(ft)	(ft)
1	END_OF_P-1	2526888.51	2379837.82		24.02	FREE	NO		11.58	0.00	0.97	24.99
2	END_OF_P-EX-1	2526933.45	2379754.07		27.10	FREE	NO		1.03	0.00	0.30	27.40
3	SWALE_NEAR_TRACT_A3	2527489.84	2379116.91		0.00	FREE	NO		3.24	3.24	0.00	0.00

App B - SSA

Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)	Minimum Pipe Cover (inches)	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Maximum Surcharge Depth Attained (ft)	Minimum Freeboard Attained (ft)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)
S-1	24.40	29.03	4.63	24.40	0.00	29.03	0.00	0.00	19.59	11.60	0.00	0.00	3.66	0.00	0.00
S-2	27.80	32.26	4.46	27.80	0.00	32.26	0.00	0.00	22.28	11.60	0.00	0.00	3.90	0.00	0.00
S-3	36.80	40.47	3.67	36.80	0.00	40.47	0.00	0.00	12.84	11.61	0.00	0.00	3.09	0.00	0.00
S-4	49.70	54.83	5.13	49.70	0.00	54.83	0.00	0.00	30.36	11.60	1.68	0.00	4.60	0.00	0.00
S-5	69.70	74.66	4.96	69.70	0.00	74.66	0.00	0.00	28.31	10.12	0.29	0.00	4.43	0.00	0.00
S-6	85.80	90.62	4.82	85.80	0.00	90.62	0.00	0.00	26.63	9.96	0.00	0.00	4.27	0.00	0.00
S-7	86.10	90.61	4.51	86.10	0.00	90.61	0.00	0.00	34.91	0.47	0.00	0.00	4.25	0.00	0.00
S-8	87.20	93.06	5.86	87.20	0.00	93.06	0.00	0.00	51.15	0.47	0.00	0.00	5.66	0.00	0.00
S-9	92.60	96.93	4.33	92.60	0.00	96.93	0.00	0.00	32.72	0.47	0.00	0.00	4.11	0.00	0.00
S-10	96.80	101.43	4.63	96.80	0.00	101.43	0.00	0.00	36.32	0.47	0.00	0.00	4.41	0.00	0.00
S-11	99.50	103.00	3.50	99.50	0.00	103.00	0.00	0.00	24.00	0.47	0.47	0.00	3.38	0.00	0.00
S-12	97.90	105.21	7.31	97.90	0.00	105.21	0.00	0.00	57.76	9.64	0.00	0.00	6.64	0.00	0.00
S-13	101.00	108.20	7.20	101.00	0.00	108.20	0.00	0.00	44.38	9.44	0.00	0.00	5.03	0.00	0.00
S-14	104.10	107.68	3.58	104.10	0.00	107.68	0.00	0.00	23.74	0.57	0.00	0.00	3.23	0.00	0.00
S-15	104.40	108.02	3.62	104.40	0.00	108.02	0.00	0.00	24.22	0.57	0.00	0.00	3.30	0.00	0.00
S-16	104.90	108.52	3.62	104.90	0.00	108.52	0.00	0.00	24.20	0.57	0.00	0.00	3.32	0.00	0.00
S-17	105.90	109.43	3.53	105.90	0.00	109.43	0.00	0.00	24.42	0.57	0.57	0.00	3.34	0.00	0.00
S-18	101.90	110.56	8.66	101.90	0.00	110.56	0.00	0.00	48.67	9.03	0.08	0.00	4.74	0.00	0.00
S-19	102.50	109.91	7.41	102.50	0.00	109.91	0.00	0.00	34.87	3.12	0.00	0.00	3.91	0.00	0.00
S-20	106.00	109.67	3.67	106.00	0.00	109.67	0.00	0.00	24.80	3.04	0.00	0.00	2.98	0.00	0.00
S-21	106.40	110.01	3.61	106.40	0.00	110.01	0.00	0.00	24.13	3.04	0.00	0.00	2.99	0.00	0.00
S-22	106.90	110.47	3.57	106.90	0.00	110.47	0.00	0.00	24.87	3.04	3.04	0.00	3.05	0.00	0.00
S-EX-1	106.00	108.47	2.47	106.00	0.00	108.47	0.00	0.00	11.60	5.88	5.88	0.00	1.65	0.00	0.00
P-EX-1_INLET	27.50	27.50	0.00	0.00	-27.50	6.00	-21.50	0.00	0.00	1.03	1.03	0.00	1.20	0.00	0.00
SEDIMENT-TRAP_2	108.20	108.20	0.00	0.00	-108.20	6.00	-102.20	0.00	0.00	0.16	0.16	0.00	1.43	0.00	0.00
SED-TRAP-INLET_1	106.40	106.40	0.00	0.00	-106.40	6.00	-100.40	0.00	0.00	0.36	0.36	0.00	1.90	0.00	0.00

App B - SSA

SN	Element ID	Description	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1	MOUNTAINSIDE_RAIN		Time Series	TS-01	Cumulative	inches	Alaska	Juneau (B)	25	4.82	SCS Type IA 24-hr

App B - SSA

SN	Element ID	Description	Area (acres)	Drainage Node ID	Weighted Curve Number	Rain Gage ID	Peak Rate Factor	Total Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
3	GRAVEL_A-1		0.07	SED-TRAP-INLET_1	91.00	MOUNTAINSIDE_RAIN	484	4.82	3.81	0.07	0 00:05:00
4	GRAVEL_A-2		0.16	SEDIMENT-TRAP_2	91.00	MOUNTAINSIDE_RAIN	484	4.82	3.81	0.16	0 00:05:00
5	LOTS_10-14		0.65	S-EX-1	92.00	MOUNTAINSIDE_RAIN	484	4.82	3.91	0.67	0 00:06:55
6	LOTS_15-17		0.27	S-22	92.00	MOUNTAINSIDE_RAIN	484	4.82	3.91	0.28	0 00:06:06
8	LOTS_22-25		0.33	S-11	92.00	MOUNTAINSIDE_RAIN	484	4.82	3.91	0.34	0 00:11:31
9	Lots_25-27		0.34	S-17	92.00	MOUNTAINSIDE_RAIN	484	4.82	3.91	0.35	0 00:05:00
10	ROAD_A-1		0.25	S-5	98.00	MOUNTAINSIDE_RAIN	484	4.82	4.58	0.29	0 00:05:00
11	ROAD_A-2		0.10	SED-TRAP-INLET_1	98.00	MOUNTAINSIDE_RAIN	484	4.82	4.58	0.12	0 00:05:00
12	ROAD_A-3		0.12	S-11	98.00	MOUNTAINSIDE_RAIN	484	4.82	4.58	0.14	0 00:05:00
13	ROAD_A-4		0.07	S-17	98.00	MOUNTAINSIDE_RAIN	484	4.82	4.58	0.08	0 00:05:00
14	ROAD_A-5		0.07	S-18	98.00	MOUNTAINSIDE_RAIN	484	4.82	4.58	0.08	0 00:05:00
15	ROAD_A-6		0.07	S-22	98.00	MOUNTAINSIDE_RAIN	484	4.82	4.58	0.08	0 00:05:00
16	ROAD_A-7		0.21	S-EX-1	98.00	MOUNTAINSIDE_RAIN	484	4.82	4.58	0.24	0 00:05:00
17	ROAD_A-8		0.12	S-22	98.00	MOUNTAINSIDE_RAIN	484	4.82	4.58	0.14	0 00:05:00
19	TAMARACK_TRAIL_APARTMENTS		1.54	S-4	95.00	MOUNTAINSIDE_RAIN	484	4.82	4.24	1.68	0 00:09:54
21	UPLANDS_A-1		10.90	S-EX-1	77.00	MOUNTAINSIDE_RAIN	484	4.82	2.47	5.36	0 00:32:45
22	UPLANDS_A-2		5.86	S-22	77.00	MOUNTAINSIDE_RAIN	484	4.82	2.47	2.79	0 00:36:34
23	UPLANDS_A-3		0.34	S-17	77.00	MOUNTAINSIDE_RAIN	484	4.82	2.47	0.17	0 00:27:44
24	UPLANDS_A-4		0.25	SED-TRAP-INLET_1	80.00	MOUNTAINSIDE_RAIN	484	4.82	2.74	0.17	0 00:05:00
18	ROAD_B-1		0.34	P-EX-1_INLET	98.00	MOUNTAINSIDE_RAIN	484	4.82	4.58	0.39	0 00:05:00
1	ADJACENT_RESIDENTIAL_B-1		0.63	P-EX-1_INLET	92.00	MOUNTAINSIDE_RAIN	484	4.82	3.91	0.64	0 00:05:00
20	TRACT_A3		1.18	SWALE_NEAR_TRACT_A3	95.00	MOUNTAINSIDE_RAIN	484	4.82	4.24	1.29	0 00:07:50
7	LOTS_1-9_18-20		1.35	SWALE_NEAR_TRACT_A3	92.00	MOUNTAINSIDE_RAIN	484	4.82	3.91	1.38	0 00:06:43
2	GRASS/DRAINGE_EASEMENT		0.86	SWALE_NEAR_TRACT_A3	80.00	MOUNTAINSIDE_RAIN	484	4.82	2.74	0.57	0 00:08:15

App C - Hy-8

HY-8 Analysis Results

Calculated Flow

Crossing Summary Table

Culvert Crossing: 36-INCH CMP (PROPOSED)

Headwater Elevation (ft)	Total Discharge (cfs)	P-1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
24.89	1.00	1.00	0.00	1
25.63	5.90	5.90	0.00	1
26.17	11.58	11.58	0.00	1
26.50	15.70	15.70	0.00	1
26.86	20.60	20.60	0.00	1
27.20	25.50	25.50	0.00	1
27.54	30.40	30.40	0.00	1
27.89	35.30	35.30	0.00	1
28.29	40.20	40.20	0.00	1
28.86	45.10	45.10	0.00	1
29.29	50.00	48.73	1.25	8
29.17	47.75	47.75	0.00	Overtopping

Discharge Needed to Overtop Top P-1

App C - Hy-8

HY-8 Analysis Results

Crossing Summary Table

Calculated Flow During 25 Year

Culvert Crossing: P-EX-1

Headwater Elevation (ft)	Total Discharge (cfs)	P-EX-1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
28.11	1.03	1.03	0.00	1
28.67	3.40	3.40	0.00	1
29.12	5.80	5.80	0.00	1
29.72	8.20	8.20	0.00	1
30.07	10.60	9.06	1.51	13
30.12	13.00	9.19	3.78	5
30.17	15.40	9.28	6.06	4
30.21	17.80	9.37	8.39	4
30.24	20.20	9.46	10.67	3
30.28	22.60	9.53	13.01	3
30.31	25.00	9.63	15.37	3
30.00	8.89	8.89	0.00	Overtopping

Discharge Needed to Overtop Top P-

App D - Rainfall

NOAA Atlas 14, Volume 7, Version 2
Location name: Juneau, Alaska, USA*
Latitude: 58.3454°, Longitude: -134.4896°
Elevation: 120.33 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Douglas Kane, Sarah Dietz, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Svetlana Stuefer, Amy Tidwell, Carl Trypaluk, Dale Unruh, Michael Yekta, Erica Betts, Geoffrey Bonnin, Sarah Heim, Lillian Hiner, Elizabeth Lilly, Jayashree Narayanan, Fenglin Yan, Tan Zhao

NOAA, National Weather Service, Silver Spring, Maryland
and
University of Alaska Fairbanks, Water and Environmental Research Center

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.131 (0.106-0.166)	0.153 (0.122-0.197)	0.187 (0.146-0.246)	0.215 (0.165-0.287)	0.253 (0.189-0.346)	0.282 (0.207-0.393)	0.312 (0.225-0.442)	0.350 (0.248-0.505)	0.400 (0.277-0.590)	0.438 (0.299-0.657)
10-min	0.176 (0.142-0.223)	0.206 (0.164-0.265)	0.251 (0.195-0.330)	0.288 (0.220-0.385)	0.339 (0.253-0.464)	0.379 (0.278-0.528)	0.418 (0.302-0.592)	0.470 (0.333-0.678)	0.537 (0.372-0.792)	0.588 (0.401-0.882)
15-min	0.206 (0.166-0.261)	0.241 (0.192-0.310)	0.293 (0.228-0.385)	0.337 (0.258-0.450)	0.397 (0.297-0.543)	0.443 (0.325-0.617)	0.490 (0.353-0.694)	0.549 (0.389-0.791)	0.629 (0.436-0.927)	0.689 (0.470-1.03)
30-min	0.273 (0.220-0.346)	0.320 (0.255-0.411)	0.389 (0.303-0.511)	0.447 (0.342-0.597)	0.527 (0.394-0.721)	0.588 (0.432-0.819)	0.650 (0.469-0.921)	0.729 (0.517-1.05)	0.834 (0.578-1.23)	0.914 (0.623-1.37)
60-min	0.374 (0.302-0.474)	0.438 (0.349-0.563)	0.533 (0.415-0.700)	0.613 (0.469-0.819)	0.722 (0.539-0.988)	0.806 (0.592-1.12)	0.890 (0.642-1.26)	0.999 (0.708-1.44)	1.14 (0.792-1.69)	1.25 (0.853-1.88)
2-hr	0.552 (0.445-0.700)	0.647 (0.515-0.832)	0.789 (0.614-1.04)	0.906 (0.693-1.21)	1.07 (0.798-1.46)	1.19 (0.875-1.66)	1.32 (0.949-1.86)	1.48 (1.05-2.13)	1.69 (1.17-2.49)	1.85 (1.26-2.77)
3-hr	0.729 (0.588-0.925)	0.854 (0.680-1.10)	1.04 (0.811-1.37)	1.20 (0.915-1.60)	1.41 (1.05-1.93)	1.57 (1.15-2.19)	1.73 (1.25-2.46)	1.95 (1.38-2.81)	2.23 (1.54-3.29)	2.44 (1.66-3.66)
6-hr	1.17 (0.944-1.48)	1.37 (1.09-1.76)	1.67 (1.30-2.19)	1.92 (1.47-2.56)	2.26 (1.69-3.09)	2.52 (1.85-3.51)	2.78 (2.01-3.94)	3.13 (2.22-4.51)	3.58 (2.48-5.27)	3.92 (2.67-5.88)
12-hr	1.76 (1.42-2.23)	2.06 (1.64-2.65)	2.50 (1.95-3.29)	2.87 (2.19-3.83)	3.38 (2.53-4.62)	3.79 (2.78-5.27)	4.21 (3.04-5.96)	4.73 (3.35-6.82)	5.42 (3.76-7.99)	5.94 (4.05-8.91)
24-hr	2.54 (2.30-2.84)	2.97 (2.65-3.37)	3.59 (3.14-4.16)	4.10 (3.52-4.83)	4.82 (4.05-5.81)	5.41 (4.46-6.64)	6.04 (4.90-7.54)	6.78 (5.41-8.61)	7.76 (6.05-10.1)	8.51 (6.52-11.2)
2-day	3.45 (3.12-3.87)	4.01 (3.58-4.55)	4.79 (4.19-5.55)	5.42 (4.65-6.38)	6.29 (5.28-7.59)	7.00 (5.77-8.59)	7.74 (6.28-9.66)	8.59 (6.85-10.9)	9.72 (7.57-12.6)	10.6 (8.10-13.9)
3-day	4.10 (3.70-4.58)	4.73 (4.22-5.36)	5.61 (4.90-6.49)	6.30 (5.41-7.42)	7.26 (6.09-8.75)	8.03 (6.62-9.85)	8.82 (7.15-11.0)	9.72 (7.75-12.3)	10.9 (8.51-14.2)	11.8 (9.06-15.6)
4-day	4.63 (4.18-5.18)	5.32 (4.75-6.04)	6.28 (5.49-7.27)	7.03 (6.04-8.28)	8.07 (6.77-9.72)	8.88 (7.33-10.9)	9.73 (7.89-12.1)	10.7 (8.51-13.6)	11.9 (9.30-15.5)	12.9 (9.87-17.0)
7-day	5.98 (5.40-6.69)	6.84 (6.10-7.75)	8.02 (7.00-9.28)	8.94 (7.68-10.5)	10.2 (8.57-12.3)	11.2 (9.25-13.8)	12.3 (9.93-15.3)	13.4 (10.7-17.0)	15.0 (11.7-19.4)	16.1 (12.4-21.3)
10-day	7.07 (6.39-7.92)	8.07 (7.20-9.15)	9.44 (8.24-10.9)	10.5 (9.02-12.4)	12.0 (10.0-14.4)	13.1 (10.8-16.1)	14.3 (11.6-17.8)	15.6 (12.5-19.8)	17.4 (13.6-22.6)	18.7 (14.4-24.7)
20-day	10.6 (9.59-11.9)	12.1 (10.8-13.7)	14.1 (12.3-16.3)	15.6 (13.4-18.3)	17.6 (14.8-21.2)	19.2 (15.8-23.5)	20.7 (16.8-25.9)	22.4 (17.9-28.5)	24.7 (19.3-32.1)	26.4 (20.2-34.8)
30-day	14.0 (12.6-15.6)	15.9 (14.2-18.1)	18.5 (16.2-21.4)	20.4 (17.5-24.0)	22.9 (19.3-27.7)	24.9 (20.5-30.5)	26.8 (21.7-33.4)	28.8 (23.0-36.6)	31.5 (24.6-40.9)	33.5 (25.7-44.2)
45-day	18.5 (16.7-20.7)	21.1 (18.8-23.9)	24.5 (21.4-28.4)	27.0 (23.2-31.8)	30.1 (25.3-36.3)	32.5 (26.8-39.8)	34.8 (28.2-43.4)	37.1 (29.5-47.1)	40.1 (31.3-52.0)	42.4 (32.5-55.9)
60-day	22.1 (19.9-24.7)	25.4 (22.6-28.8)	29.5 (25.7-34.1)	32.3 (27.8-38.1)	35.9 (30.1-43.3)	38.4 (31.7-47.1)	40.8 (33.1-50.9)	43.0 (34.2-54.5)	45.8 (35.7-59.5)	48.0 (36.8-63.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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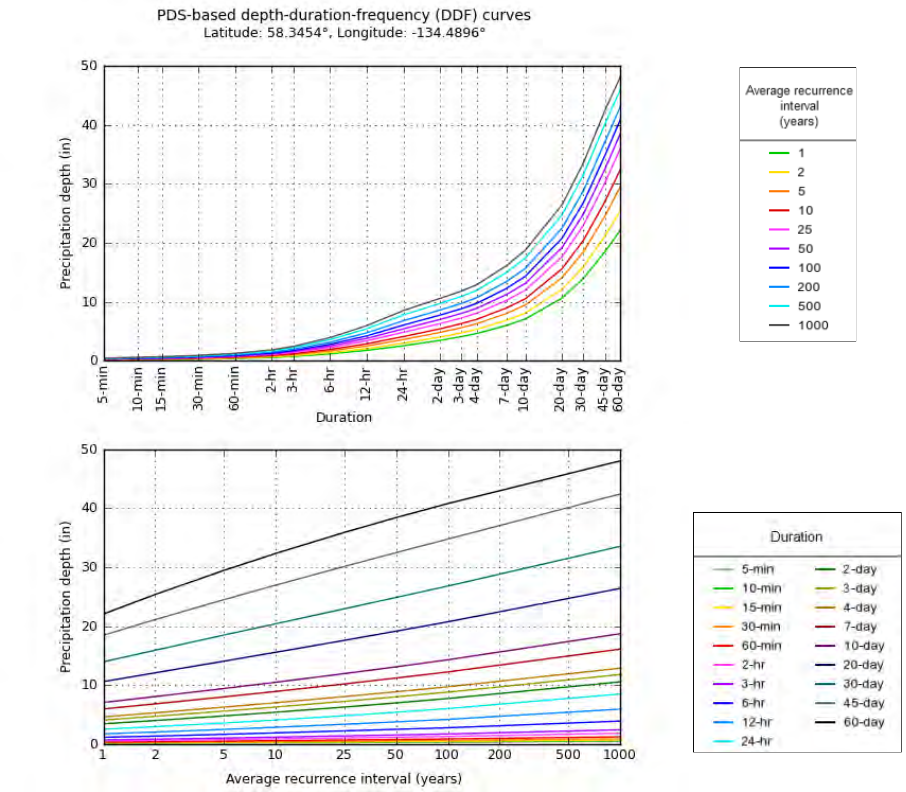
PF graphical

Attachment E - Approved Drainage Plan

App D - Rainfall



NOAA Atlas 14, Volume 7, Version 2 Created (GMT): Fri Oct 18 00:03:14 2019

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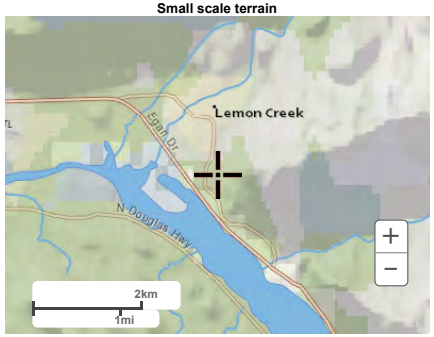
Maps & aerials

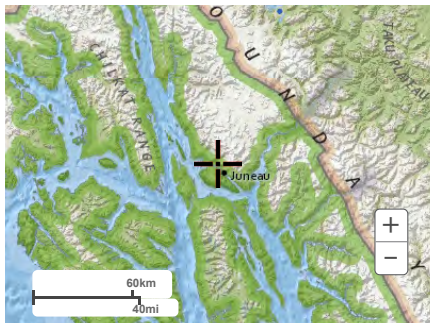
Small scale terrain



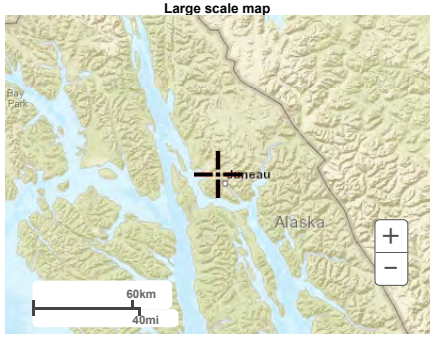
Large scale terrain

Attachment E - Approved Drainage Plan

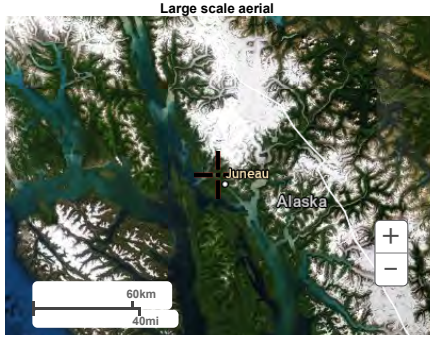
App D - Rainfall



Large scale map



Large scale aerial



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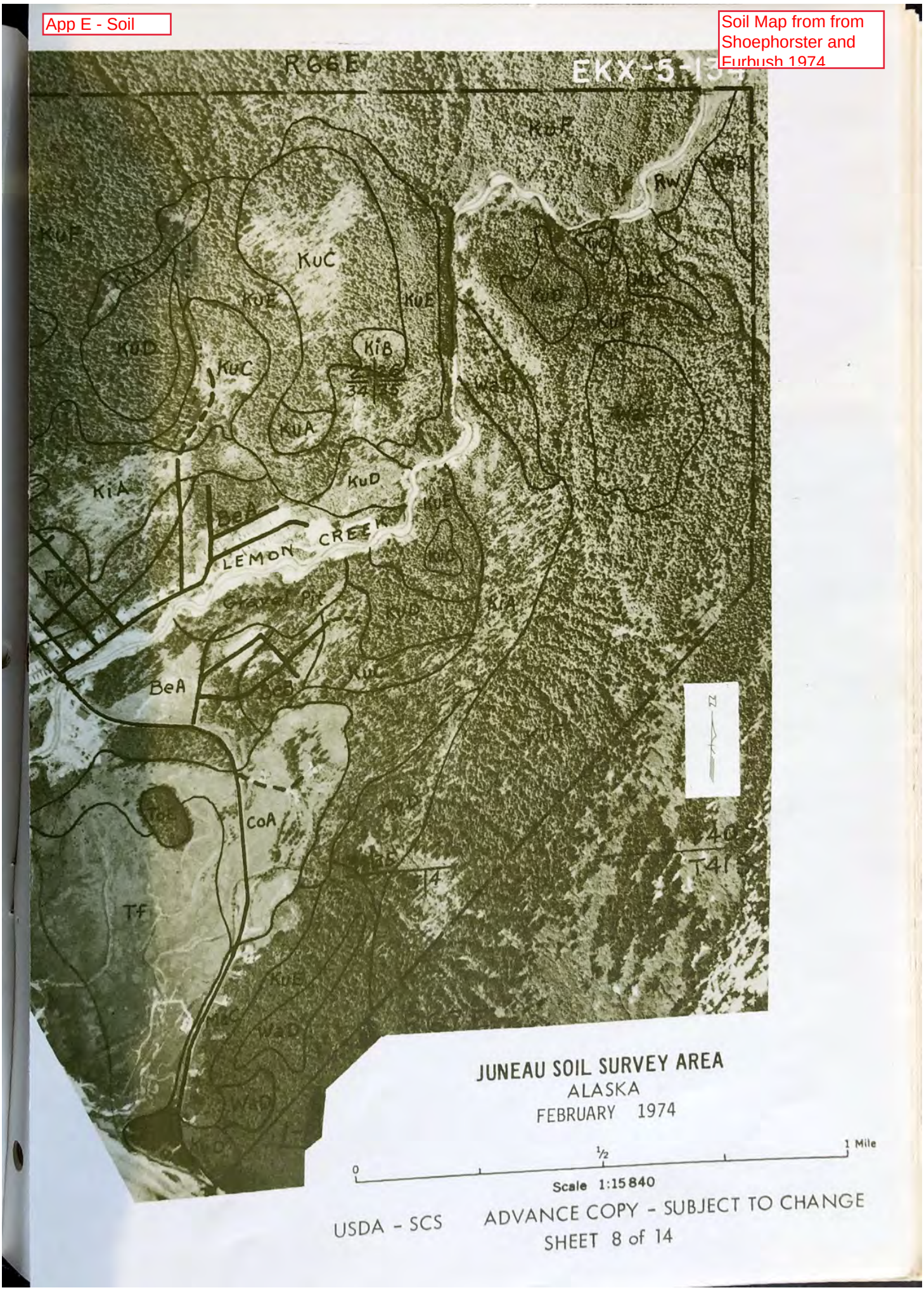
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Attachment E - Approved Drainage Plan

App E - Soil

Soil Map from from Shoephorster and Furbush 1974



Attachment E - Approved Drainage Plan

App E - Soil

Soil info for Kupreanof Series from from Shoenhorster and

Oi2 18-60" Yellowish brown (10YR 5/6) peat, yellow (10YR 7/6) pressed; about 80 percent fiber, 50 percent after rubbing; largely sphagnum moss fibers; extremely acid.

The peat materials are more than 5 feet thick. They may be underlain by till, bedrock, or alluvial sediments. The water table is usually near the surface.

Mapping Units:

(KoA) - Kogish peat, 0 to 3 percent slopes
(KoB) - Kogish peat, 3 to 7 percent slopes
(KoC) - Kogish peat, 7 to 12 percent slopes
(KoD) - Kogish peat, 12 to 20 percent slopes

The Kogish soils in these mapping units are similar except for gradient. In places, small ponds and patches of Kina and Fu soils are included in the mapped areas.

Kupreanof Series

The Kupreanof series consists of well drained soils on moraines. These soils are formed in very gravelly loamy till. Beneath a layer of forest litter, they have a thin light brownish gray layer, fairly thick layers with dark reddish brown to dark grayish brown colors, and an olive gray substratum. They support a forest dominated by Sitka spruce and western hemlock.

Representative profile of Kupreanof gravelly silt loam; NW¼, NW¼, Sec. 11, T39S, R64E, Copper River Meridian.

O1 7-2" Black (10YR 2/1) partially decomposed forest litter; many roots; abrupt smooth boundary.

O2 2-0" Black (5YR 2/1) muck; many roots; extremely acid; abrupt smooth boundary.

A2 0-1½" Light brownish gray (10YR 6/2) gravelly silt loam; massive; very friable; smeary; many fine roots; extremely acid; abrupt irregular boundary.

App E - Soil

Soil info for Kupreanof Series from from Shoenhorster and

B21 1½-4" Dark reddish brown (5YR 2/2) gravelly silt loam; weak fine granular structure; very friable; smeary; few roots; extremely acid; abrupt wavy boundary.

B22 4-9" Dark reddish brown (5YR 3/4) gravelly silt loam; weak fine subangular blocky structure; very friable; smeary; extremely acid; gradual boundary.

B23 9-18" Dark brown (7.5YR 4/4) gravelly silt loam; weak fine subangular blocky structure; very friable; smeary; few roots; very strongly acid; clear wavy boundary.

B3 18-24" Dark grayish brown (2.5Y 4/2) very gravelly sandy loam; few patches of dark brown (7.5YR 3/3); massive; friable; strongly acid; clear wavy boundary.

C1 24-60" Olive gray (5Y 4/2) very gravelly sandy loam; massive; friable; strongly acid.

The texture of the mineral surface layer ranges from gravelly silt loam to very gravelly sandy loam. The substratum ranges in texture from very gravelly loam to very gravelly sandy loam. Coarse fragments make up 40 to 60 percent of its volume. Large stones and boulders are common.

Mapping Units:

(KuA) - Kupreanof gravelly silt loam, 0 to 3 percent slopes
(KuB) - Kupreanof gravelly silt loam, 3 to 7 percent slopes
(KuC) - Kupreanof gravelly silt loam, 7 to 12 percent slopes
(KuD) - Kupreanof gravelly silt loam, 12 to 20 percent slopes

The Kupreanof soils in each of these mapping units are similar except for gradient. The mapped areas include small spots of Wadleigh, Maybeso, and Karta soils. There are also a few patches of Tolstoi soils.

(KuE) - Kupreanof gravelly silt loam, 20 to 35 percent slopes
(KuF) - Kupreanof gravelly silt loam, 35 to 75 percent slopes

Mapped, but not consistent with soils encountered on-site during

These soils occur on moderately steep and steep uplands. In addition to small spots of Tolstoi and Karta soils, the mapped areas include a few nearly level to moderately sloping Kupreanof soils on narrow benches and rounded ridgetops.

Mapped and consistent with soils encountered on-site

App E - Soil

Soil info for Wadleigh Series from from Shoephorster and Furbush 1974

In the Tolstoi soils, depth to bedrock ranges from 5 to 20 inches. The texture of the soil materials ranges from stony silt loam to very stony sandy loam.

In the McGilvery soils, the forest litter ranges from 6 to 20 inches in thickness. In places, 1 to 4 inches of loamy material occurs between the litter and the underlying bedrock.

Mapping Units:

(ToC) & (ToD) - Tolstoi-McGilvery complex, 12 to 20 percent slopes
(ToE) - Tolstoi-McGilvery complex, 20 to 35 percent slopes
(ToF) - Tolstoi-McGilvery complex, 35 to 75 percent slopes

The soils in these mapping units are similar except for gradient. They commonly have very rough irregular slopes. The mapped areas include many sheer rocky cliffs and other rock outcrops, and wet spots with Wadleigh, Maybeso, and Kaikli soils.

Wadleigh Series

The Wadleigh series consists of somewhat poorly drained soils that occur on lower slopes of hills and mountains. These soils are formed in very gravelly loamy materials underlain by firm glacial till that impedes internal drainage. They have a mat of forest litter, a thin grayish brown layer, and dark reddish brown to dark yellowish brown layers above the firm substratum. The vegetation is a forest of western hemlock and scattered Sitka spruce.

Representative profile of Wadleigh gravelly silt loam; NE¼ NW¼, Sec. 25, T37S, R63E, Copper River Meridian.

01 8-3" Dark reddish brown (5YR 2/2) partially decomposed forest litter; many roots; clear smooth boundary.

02 3-0" Black (5YR 2/1) finely divided organic matter; many roots; abrupt smooth boundary.

App E - Soil

Soil info for Wadleigh Series from from Shoephorster and Eurbush 1974

A2	0-3"	Grayish brown (10YR 5/2) gravelly silt loam; few fine prominent (7.5YR 4/4) mottles; very weak medium subangular blocky structure; friable; roots common; abrupt wavy boundary.
B21	3-5"	Dark reddish brown (5YR 2/2) very gravelly silt loam; moderate fine granular structure; very friable; few soft fine concretions; few weakly cemented fragments; smeary when rubbed; roots common; very strongly acid; clear irregular boundary.
B22	5-10"	Dark brown (7.5YR 3/2) very gravelly sandy loam; weak fine subangular blocky structure; friable; slightly smeary; roots common; very strongly acid; clear wavy boundary.
B23	10-16"	Dark yellowish brown (10YR 3/4) very gravelly sandy loam; very weak medium subangular blocky structure; friable; roots common; very strongly acid; clear smooth boundary.
B3x	16-23"	Olive brown (2.5Y 4/4) very gravelly sandy loam; few fine prominent strong brown (7.5YR 5/6) mottles, and many streaks of dark brown (10YR 4/3); weak medium platy structure; weakly cemented; slightly brittle; clear smooth boundary.
C1x	23-30"	Patchy olive gray (5Y 4/2) and dark grayish brown (2.5Y 4/2) very gravelly sandy loam; few medium distinct olive brown (2.5Y 4/4) mottles; very weak medium platy structure; weakly cemented; slightly brittle; clear smooth boundary.
C2	30-60"	Olive gray (5Y 4/2) very gravelly loam; few medium faint dark gray (5Y 4/1) mottles; massive; slightly sticky, slightly plactic; very strongly acid.

The surface texture ranges from silt loam to very gravelly sandy loam. Below 10 inches coarse fragments, including cobblestones, make up 35 to 65 percent of the soil volume. Depth to the firm substratum ranges from 15 to 25 inches. Seepage water from adjacent higher areas is commonly perched above the very slowly permeable compact substratum.

Mapping Units:

(WaA) & (WaB) - Wadleigh gravelly silt loam, 3 to 7 percent slopes
(WaC) & (FoC) - Wadleigh gravelly silt loam, 7 to 12 percent slopes
(WaD) - Wadleigh gravelly silt loam, 12 to 20 percent slopes
(WaE) & (WaF) - Wadleigh gravelly silt loam, 20 to 50 percent slopes

Mapped and consistent with soils encountered on-site

App E - Soil

Estimated pysical property table from Shoephorster and Furbush 1974

Table 1. Estimated Physical and Chemical Properties of the Soils.

Soil series or land type	Map Symbol	Depth to seasonally high water table (feet)	Depth to bedrock (feet)	Depth from surface typical profile (inches)	Classification			Permeability 2/ (inches/hour)	Reaction pH	Shrink-swell potential	Corrosivity potential	
					USDA Texture 1/	Unified	AASHO				Untreated steel pipe	Concrete pipe
Am	AmA AmB	<2	>5	0-60	fsl	SM or ML	A-2 or A-4	0.6 -2.0	5.1-5.5	low	high	moderate
Au	AuA	>5	>5	0-9	vgsl	GM	A-1 or A-2	2.0 -6.0	4.0-5.0	low	moderate	moderate
	AuB			9-60	vgs	GP or GW	A-1	>6.0	4.0-5.0	low		
Be	BeA BeB BeC BeD	4 to 5	>5	0-60	vgs	GP or GW	A-1	>6.0	5.1-5.5	low	moderate	moderate
Co	CoA	<2	>5	0-60	sil	ML	A-4	0.6 -2.0	5.1-5.5	low	high	moderate
Fu	FuA	<1	>5	0-24	pt	Pt	A-8	-	5.1-5.5	high shrink, low swell	high	high
				24-60	si	ML	A-4	0.6 -2.0	5.5-6.0	low		
Gravelly beach	Gb	0	>5	0-60	vgs or vgsl	GW or GM	A-1	>6.0	-	low	high	high
Gravel pit	Gp	Variable material										
He	HeA	4 to 5	>5	0-52	fsl	SM or ML	A-2 or A-4	0.6 -2.0	5.1-5.5	low	high	moderate
				52-60	vgs	GP or GW	A-1	>6.0	5.1-5.5	low		
Kaikli	KaB KaC KaD	<1	1 to 3	0-19	pt	Pt	A-8	-	4.5-5.5	high shrink, low swell	high	moderate
	KaE			19-26	vgl	GM	A-1 or A-2	0.2 -0.6	4.5-5.5	low		
				26+	bedrock	-	-	-	-	-	-	-
Karheen	KhA KhC	<2	>5	0-60	very gravelly muck	GM	A-1	0.6 -2.0	5.1-5.5	low	high	high
Karta	KtC KtE	>5	>5	0-11	gsil	ML	A-4	0.6 -2.0	4.5-5.0	low	high	moderate
				11-34	vgsl	GM	A-1	<0.06	4.5-5.0	low		
	KtF			34-60	vgsl	GM	A-1	0.2 -0.6	4.5-5.5	low		
Kina	KiA KiB KiC KiD	<1	>5	0-60	pt	Pt	A-8	-	4.5-5.0	high shrink, low swell	high	high
Kogish	KoA KoB KoC KoD	<1	>5	0-60	pt	Pt	A-8	-	<4.5	high shrink, low swell	high	high
Kupreanof	KuA,KuB, KuC,KuD, KuE,KuF	>5	>5	0-18	gsil	ML	A-4	0.6 -2.0	4.5-5.0	low	high	moderate
				18-60	vgsl	GM	A-1	0.6 -2.0	5.1-5.5	low		

App E - Soil

Estimated pysical property table from Shoephorster and Furbush

Table 1. Estimated Physical and Chemical Properties of the Soils. (Continued)

Soil series or land type	Map Symbol	Depth to seasonally high water table (feet)	Depth to bedrock (feet)	Depth from surface typical profile (inches)	Classification			Permeability 2/ (inches/hour)	Reaction pH	Shrink-swell potential	Corrosivity potential	
					USDA Texture 1/	Unified	AASHO				Untreated steel pipe	Concrete pipe
Le	LeA	<1	>5	0-60	sil	ML	A-4	0.6 -2.0	5.1-5.5	low	high	moderate
Maybeso	MaA,MaB, MaC,MaD MaE	<2	>5	0-27	pt	Pt	A- 8	-	4.5-5.5	high shrink, low swell	high	moderate
				27-60	vgl	GM	A-1 or A-2	0.06-0.2	5.1-5.5	low		
McGilvery-in complex with Tolstoi	-		½-1½	0-14	pt	Pt	A-8	-	4.5	high shrink, low swell	high	moderate
				14+	bedrock	-	-	-	-		-	-
Mh	MhB,MhC, MhD	>5	>5	0-60	gsl	GM	A-1	0.6 -2.0	5.1-5.5	low	high	moderate
Riverwash	Rw	0	>5	0-60	vgs	GP or GW	A-1	>6.0	-	low	high	moderate
Salt Chuck	SaA SaB SaC	4 to 5	>5	0-17	vgsil or vgsl	GM	A-1 or A-2	0.6-2.0	4.5-5.5	low	high	moderate
				17-60	vgls	GP-GM	A-1	2.0-6.0	4.5-5.5	low		
Tidal Flats	Tf	0	>5	0-60	variable material			-	-	-	-	-
Tolstoi	ToC ToD ToE ToF	-	½ to 2	0-9	vstsil	ML	A-4	0.6 -2.0	4.5-5.0	low	-	-
				9+	bedrock	-	-	-	-	-		
Wadleigh	WaA,WaB WaC,FoC, WaD,WaE, WaF	<1	>5	0-16	vgsil or vgsl	GM	A-1 or A-2	0.6 -2.0	4.5-5.0	low	high	moderate
				16-30	vgsl	GM or SM	A-1	<0.06	4.5-5.5	low		
				30-60	vgl	GM	A-1 or A-2	0.2 -0.6	4.5-5.5	low		

1/ Symbols have the following meanings (see glossary):

fsl - fine sandy loam
gsil - gravelly silt loam
pt - peat
si - silt
gsl - gravelly sandy loam
vgs - very gravelly sand
sil - silt loam
vgsil - very gravelly silt loam
vgsl - very gravelly sandy loam
vstsil - very stony silt loam

2/ Permeability is for soil without comapction; for wet soils, the permeability is that to be expected after removal of free water.

App E - Soil

Soil Classification Table from National Engineering

Table 7–1 Criteria for assignment of hydrologic soil group (HSG)

Depth to water impermeable layer 1/	Depth to high water table 2/	K_{sat} of least transmissive layer in depth range	K_{sat} depth range	HSG 3/
<50 cm [<20 in]	—	—	—	D
50 to 100 cm [20 to 40 in]	<60 cm [<24 in]	>40.0 µm/s (>5.67 in/h)	0 to 60 cm [0 to 24 in]	A/D
		>10.0 to ≤40.0 µm/s (>1.42 to ≤5.67 in/h)	0 to 60 cm [0 to 24 in]	B/D
		>1.0 to ≤10.0 µm/s (>0.14 to ≤1.42 in/h)	0 to 60 cm [0 to 24 in]	C/D
		≤1.0 µm/s (≤0.14 in/h)	0 to 60 cm [0 to 24 in]	D
	≥60 cm [≥24 in]	>40.0 µm/s (>5.67 in/h)	0 to 50 cm [0 to 20 in]	A
		>10.0 to ≤40.0 µm/s (>1.42 to ≤5.67 in/h)	0 to 50 cm [0 to 20 in]	B
		>1.0 to ≤10.0 µm/s (>0.14 to ≤1.42 in/h)	0 to 50 cm [0 to 20 in]	C
		≤1.0 µm/s (≤0.14 in/h)	0 to 50 cm [0 to 20 in]	D
>100 cm [>40 in]	<60 cm [<24 in]	>10.0 µm/s (>1.42 in/h)	0 to 100 cm [0 to 40 in]	A/D
		>4.0 to ≤10.0 µm/s (>0.57 to ≤1.42 in/h)	0 to 100 cm [0 to 40 in]	B/D
		>0.40 to ≤4.0 µm/s (>0.06 to ≤0.57 in/h)	0 to 100 cm [0 to 40 in]	C/D
		≤0.40 µm/s (≤0.06 in/h)	0 to 100 cm [0 to 40 in]	D
	60 to 100 cm [24 to 40 in]	>40.0 µm/s (>5.67 in/h)	0 to 50 cm [0 to 20 in]	A
		>10.0 to ≤40.0 µm/s (>1.42 to ≤5.67 in/h)	0 to 50 cm [0 to 20 in]	B
		>1.0 to ≤10.0 µm/s (>0.14 to ≤1.42 in/h)	0 to 50 cm [0 to 20 in]	C
		≤1.0 µm/s (≤0.14 in/h)	0 to 50 cm [0 to 20 in]	D
	>100 cm [>40 in]	>10.0 µm/s (>1.42 in/h)	0 to 100 cm [0 to 40 in]	A
		>4.0 to ≤ 10.0 µm/s (>0.57 to ≤1.42 in/h)	0 to 100 cm [0 to 40 in]	B
		>0.40 to ≤4.0 µm/s (>0.06 to ≤0.57 in/h)	0 to 100 cm [0 to 40 in]	C
		≤0.40 µm/s (≤0.06 in/h)	0 to 100 cm [0 to 40 in]	D

WaD Soil Type Classification

KuE Soil Type Classification

1/ An impermeable layer has a K_{sat} less than 0.01 µm/s [0.0014 in/h] or a component restriction of fragipan; duripan; petrocalcic; orstein; petrogypsic; cemented horizon; densic material; placic; bedrock, paralithic; bedrock, lithic; bedrock, densic; or permafrost.

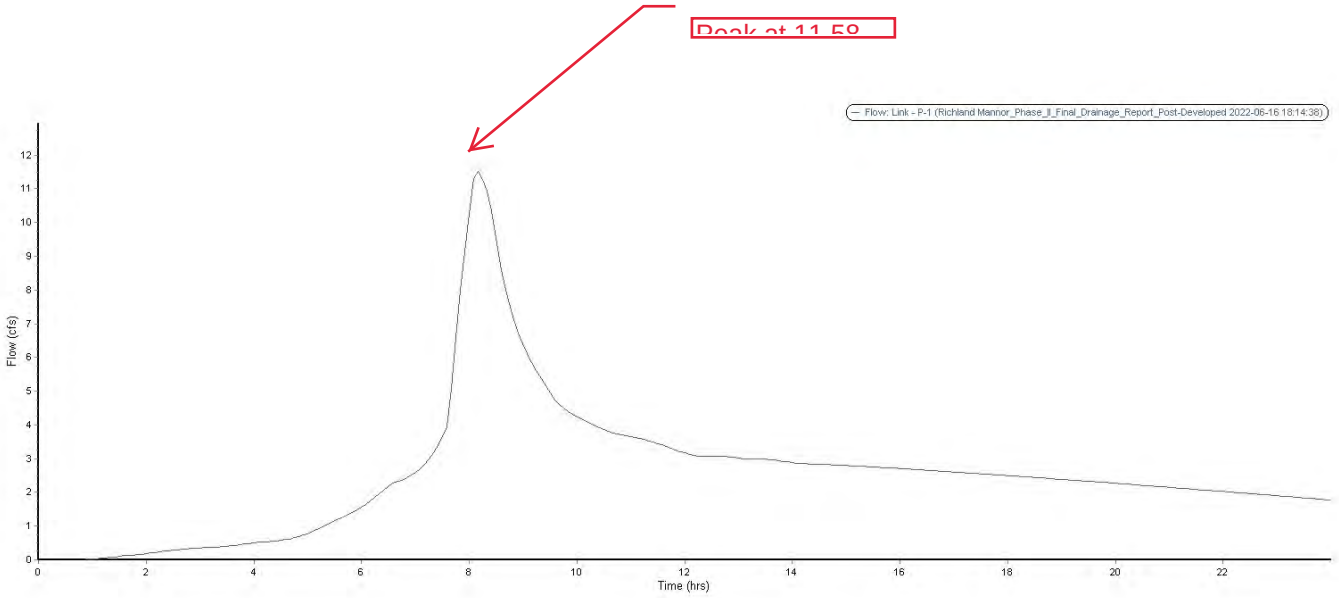
2/ High water table during any month during the year.

3/ Dual HSG classes are applied only for wet soils (water table less than 60 cm [24 in]). If these soils can be drained, a less restrictive HSG can be assigned, depending on the K_{sat}.

Attachment E - Approved Drainage Plan

App F - SCS

Hydrograph for P-1

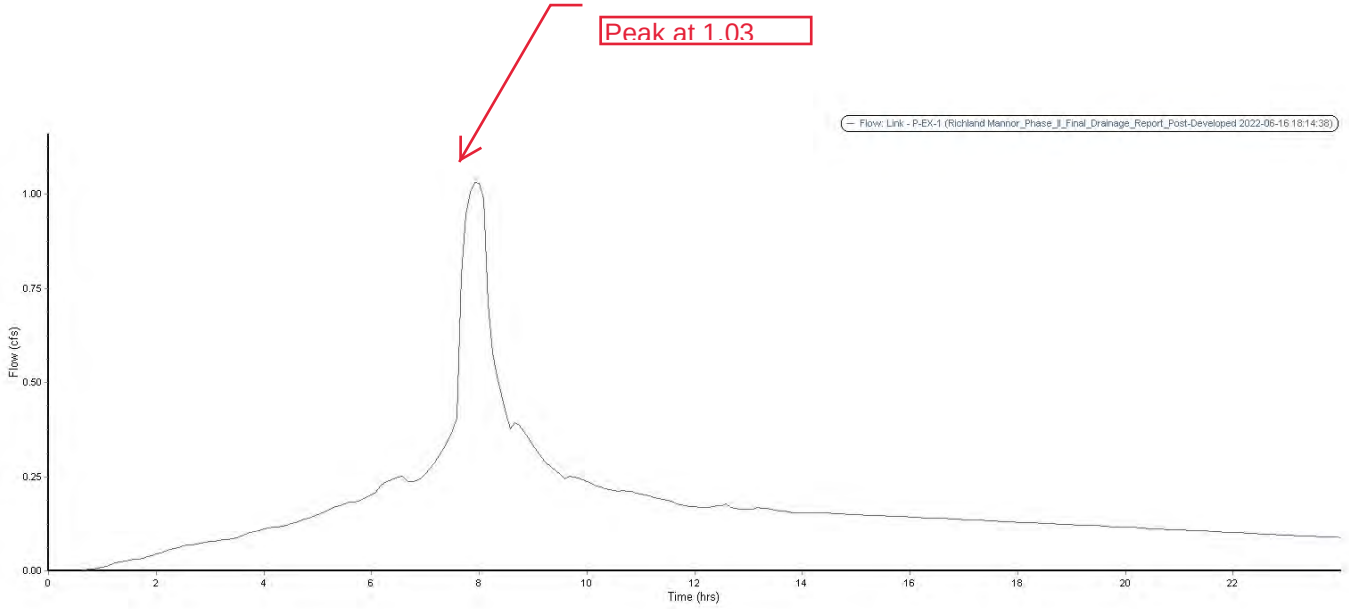


Autodesk Storm and Sanitary Analysis

App F - SCS

Hydrograph for P-EX-1

Peak at 1.03



Autodesk Storm and Sanitary Analysis

App G - Prior Drainage

proHNS LLC
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219 Main Street #13 | Haines, AK 99827 | 907-419-6070 | www.proHNS.com

March 23, 2020

Michael and William Heumann
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mpheumann@hotmail.com
(971) 261-8014

RE: Hillcrest Extension Subdivision – Draft Drainage Report

To Whom It May Concern,

The following Drainage Plan has been prepared for the Richland Manor Subdivision in Juneau, AK, a proposed multi-phase major subdivision on a 30-acre site at 4506, 4508, and 4510 Hillcrest Avenue. This drainage report addresses the first phase of the overall subdivision that will create 14 new Lots and extend Hillcrest Avenue. The drainage report supplements the Richland Manor Subdivision – Drainage Report dated 10/31/19 and the Hooter Lane Phase I ROW Improvements – Drainage Report dated 1/23/20, attached in Appendix H, by providing an in-depth analysis of the improvements specific to this phase of the development. Improvements include extending Hillcrest Avenue by constructing new sidewalk, street, ditches, driveways and utilities along with building pads on the newly subdivided Lots. The 2010 CBJ Manual of Stormwater Best Management Practices was used to evaluate if the proposed and existing drainage features could convey runoff during the 25-year storm event.

Attachments to this report include sheets depicting survey data, proposed ROW improvements, as-built information, calculations and rainfall data used for the drainage analysis.

Site Runoff Calculation Method:

A total of three catchment areas were analyzed representing the existing and proposed drainage conveyance systems relevant to the project. The catchment areas include: the predeveloped subdivision labeled on the drainage map as Drainage Basin A, the post developed subdivision labeled on the drainage map as Drainage Basin C and, the post developed subdivision labeled on the drainage map as Drainage Basin D. The three catchment areas we determined using the proposed design model, Lidar data and aerial photos in AutoCAD C3D and were verify by several site visits. A delineation of the catchment areas can be found in Appendix A.

To calculate the site runoff for Drainage Basin D we have elected to use the Rational Method. The Rational Method is most appropriate for evaluating drainage basins less than 10 acres. Appendix D of the "2010 CBJ Manual of

Attachment E - Approved Drainage Plan

Stormwater Best Management Practices" was utilized as a guide[1]. The calculations and supporting documentation can be found in Appendix B, C, D & E of this Report.

To calculate the site runoff for Drainage Basin A and C we have elected to use the SCS Unit Hydrograph Method. The SCS Unit Hydrograph Method is most appropriate for evaluating drainage basins of 10 acres to 1,300 acres. Appendix D of the "2010 CBJ Manual of Stormwater Best Management Practices" was utilized as a guide[2]. The calculations and supporting documentation can be found in Appendix B, C, D & F of this Report.

Anticipated Site Runoff (Q):

Using the Rational Method and SCS Unit Hydrograph Method, the amount of stormwater runoff during the 25-year storm event per catchment area was determined. The analysis shows that approximately 1.13 cfs will be removed from the discharge point due to the proposed development. See Table 1.1 below for results, the calculations can be found in Appendix E &F.

Catchment Area	Q (cfs)
Drainage Basin A	**6.71**
Drainage Basin C	**5.58**
Drainage Basin D	**1.90**
Table 1.1	

Conveyance/Discharge Structure Capacities:

The capacity of the existing and proposed drainage systems was calculated using the Manning's Equation to determine if proposed 25-year storm event flows could be conveyed. The most vulnerable drainage structures to failure along the analyzed flow path were evaluated. See Table 1.2 below for results, the calculations can be found in Appendix F.

Catchment Area	Q (cfs)
Existing 18" CPP Culvert (P-7)	**7.02**
Existing Driveway Ditch Hooter LN	**10.58**
Table 1.2	

[1] There are no current municipal code requirements dictating adherence with the "2010 CBJ Manual of Stormwater Best Management Practices" when preparing a drainage plan that complies with 49.35.510. Regardless, we have elected to utilize portions of this Manual as a guide in the preparation of this Drainage Plan for the proposed development.
[2] There are no current municipal code requirements dictating adherence with the "2010 CBJ Manual of Stormwater Best Management Practices" when preparing a drainage plan that complies with 49.35.510. Regardless, we have elected to utilize portions of this Manual as a guide in the preparation of this Drainage Plan for the proposed development.

Summary:

Table 1.3 below compares anticipated 25-year runoff in the proposed and existing conveyance systems to their available hydraulic capacity. Runoff from the entire drainage basin was used for comparison even though in some cases the conveyance system would not need to handle the entire runoff making the comparison a conservative evaluation.

Drainage Basin	Anticipated Runoff Q (cfs)	Capacity Check	Available Capacity Q (cfs)
Proposed 18" CPP Culvert (P-7)	**5.58**	**<**	**7.02**
Existing Driveway Ditch Hooter LN	**1.90**	**<**	**10.58**
Table 1.3			

Our analysis shows that there is enough capacity in the existing and proposed drainage structures to handle flows from the altered drainage patterns as a result of the proposed Hooter Lane Phase I ROW improvements.

Respectfully,

Lucas Chambers, P.E.
Principal Engineer – proHNS LLC Juneau

Appendixes:

A – Catchment Areas
B – Runoff Coefficient
C – Time of Concentration
D – Rainfall Intensity
E – Rational Method
F – SCS Hydrograph
G- Existing Capacity Calcs
H – Prior Drainage Reports "Richland Manor Subdivision – Drainage Report dated 10/31/19, Hooter Lane Phase I ROW Improvements – Drainage Report dated 1/23/20"

App G - Prior Drainage

Appendix A

Catchment Areas

HILLCREST EXTENSION SUBDIVISION DRAINAGE MAP

JUNEAU, AK

PREPARED FOR:

MICHAEL & WILLIAM HEUMANN

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	COVER SHEET
2	PREDEVELOPED DRAINAGE BASIN CATCHMENT AREAS
3	DEVELOPED DRAINAGE BASIN CATCHMENT AREAS

PROJECT LOCATION MAP

NTS

ALASKA

RECORD OF REVISIONS			
No.	DATE	DESCRIPTION	BY

proHNS LLC
CERTIFICATE OF AUTHORIZATION #100662
1945 ALEX HOLDEN WAY #101
JUNEAU, AK 99801
solutions@proHNS.com
www.proHNS.com

DRAWN BY:	C. BYDLON
DESIGNED BY:	L. CHAMBERS
CHECKED BY:	L. CHAMBERS

HILLCREST EXTENSION SUBDIVISION

WILLIAM & MICHAEL HUMEANN

COVER SHEET

SHEET NUMBER 1 OF 3

March 23, 2020 C:\Users\lucas\Dropbox (proHNS)\Projects\Juneau\Richland Manor Subdivision\C3D Richland Manor\Sheets\Drainage\DrainageMap_TITLE.dwg

App G - Prior Drainage Reports

NOTE: FLOW PATH REPRESENTS THE MOST HYDRAULICALLY DISTANT POINT IN A GIVEN DRAINAGE BASIN.

N

VINTAGE BLVD

RICHLAND MANOR TRACT B

ANALYSIS DISCHARGE POINT B

HOOTER LN ROW

FLOW PATH

DRAINAGE BASIN B

DRAINAGE BASIN A

FLOW PATH

MAPPED EXISTING DRAINAGE CHANNELS

GLACIER HWY

LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7
LOT 8
LOT 9
LOT 14
LOT 13
LOT 12
LOT 11
LOT 10

ROBBIE RD

ANALYSIS DISCHARGE POINT A

ABBY WAY

HILLCREST AVE

MOUNTAINSIDE DR

100 0 100 200
SCALE IN FEET

RECORD OF REVISIONS

No.	DATE	DESCRIPTION	BY

proHNS LLC
CERTIFICATE OF AUTHORIZATION #100662

1945 ALEX HOLDEN WAY #101
JUNEAU, AK 99801

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DRAWN BY:	C. BYDLON
DESIGNED BY:	L. CHAMBERS
CHECKED BY:	L. CHAMBERS

HILLCREST EXTENSION SUBDIVISION

WILLIAM & MICHAEL HUMEANN

PREDEVELOPED DRAINAGE BASIN CATCHMENT AREAS

SHEET NUMBER 2 OF 3

March 23, 2020

C:\Users\lucas\Dropbox (proHNS)\Projects\Juneau\Richland Manor Subdivision\C3D Richland Manor\Sheets\Drainage\DrainageMap_Hillcrest_Extension.dwg

Attachment E - Approved Drainage Plan

App G - Prior Drainage Reports

NOTE: FLOW PATH REPRESENTS THE MOST HYDRAULICALLY DISTANT POINT IN A GIVEN DRAINAGE BASIN.

RICHLAND MANOR TRACT B

VINTAGE BLVD

GLACIER HWY

HOOTER LN ROW

ANALYSIS DISCHARGE POINT B

ANALYSIS DISCHARGE POINT A

DRAINAGE BASIN D

DRAINAGE BASIN C

FLOW PATH

FLOW PATH

MAPPED EXISTING DRAINAGE CHANNELS

ROBBIE RD

HILLCREST AVE

ABBY WAY

MOUNTAINSIDE DR

LOT 1 LOT 2 LOT 3 LOT 4 LOT 5 LOT 6 LOT 7 LOT 8 LOT 9 LOT 10 LOT 11 LOT 12 LOT 13 LOT 14

50 75 100 125 150 175 200 225 250 275 300 325 350 375 400 425 450 475 500 525 550 575 600 625 650 675 700 725 750 775 800 825

100 0 100 200
SCALE IN FEET

RECORD OF REVISIONS			
No.	DATE	DESCRIPTION	BY

proHNS LLC
CERTIFICATE OF AUTHORIZATION #100662

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DRAWN BY:	C. BYDLON
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CHECKED BY:	L. CHAMBERS

HILLCREST EXTENSION SUBDIVISION

WILLIAM & MICHAEL HUMEANN

DEVELOPED DRAINAGE BASIN CATCHMENT AREAS

SHEET NUMBER 3 OF 3

March 23, 2020

C:\Users\lucas\Dropbox (proHNS)\Projects\Juneau\Richland Manor Subdivision\C3D Richland Manor\Sheets\Drainage\DrainageMap_Hillcrest_Extension.dwg

Attachment E - Approved Drainage Plan

App G - Prior Drainage

Appendix B

Runoff Coefficient

App G - Prior Drainage

SCS Curve Number Hillcrest Extension Predeveloped		
Project:	Hillcrest Ext Subdivision Drainage Analysis, PAC2018 0054	
Owner:	Michael and William Heumann	
Date:	3/21/2020	
Prepared By:	Chris Bydlon	
Checked By:	Lucas Chambers	

Total Basin Area(SQFT)=	**867827**					
Surface Type	**Location**	**Area (SQFT)**	**Total (SQFT)**	**Total (Acre)**	**% Overall Basin**	**Unit Hydrograph CN***
Pavement	Mountianside/ Robbie Rd	23565				
			23565	0.540977961	2.72%	98
Building Roofs	Robbie Rd Homes	14048				
			14048	0.322497704	1.62%	98
Gravel	Existing Hillcrest Pads	10824				
			10824	0.248484848	1.25%	89
Lawns	Robbie Rd Homes	14230				
			14230	0.326675849	1.64%	74
Woods	Every where else	805160				
			805160	18.48393021	92.78%	70
		Total=	867827	19.92256657	100.00%	**71.52**

*Unit Hydrograph curve numbers were developed from Table D-6 & D-7 of the CBJ Manual of Stormwater BMP Manual. NRCS's online GIS database does not have data for the project location. I looked at adjacent areas with similar slopes and ground cover and the hydraulic soil group was C or D. For this analysis I am assuming the project location falls under soil group C.

Attachment E - Approved Drainage Plan

App G - Prior Drainage

SCS Curve Number Proposed Hillcrest Ext. Subdivision		
Project:	Hillcrest Ext. Subdivision Drainage Analysis, PAC2018 0054	
Owner:	Michael and William Heumann	
Date:	3/21/2020	
Prepared By:	Chris Bydlon	
Checked By:	Lucas Chambers	

Total Basin Area(SQFT)=	**642649**					
Surface Type	**Location**	**Area (SQFT)**	**Total (SQFT)**	**Total (Acre)**	**% Overall Basin**	**Unit Hydrograph CN***
Pavement	Hillcrest Extension	12788				
	Mountianside/ Robbie Rd	23565				
			36353	0.834550046	5.66%	98
Building Roofs	Lot 1 Roof +Deck	988				
*Areas from Developer	Lot 2 Roof +Deck	988				
	Lot 3 Roof +Deck	988				
	Lot 4 Roof +Deck	1350				
	Lot 5 Roof +Deck	1350				
	Lot 6 Roof +Deck	1350				
	Lot 7 Roof +Deck	1350				
	Lot 8 Roof +Deck	1350				
	Lot 9 Roof +Deck	1350				
	Lot 10 Roof +Deck	1350				
	Lot 11 Roof+Deck	1350				
	Lot 12 Roof+Deck	1350				
	Lot 13 Roof+Deck	1350				
	Lot 14 Roof+Deck	1350				
	Robbie Rd Homes	14048				
			31862	0.731450872	4.96%	98
Gravel	Driveways & Ditches	19536				
	Building Pad Lot 4	690				
	Building Pad Lot 5	1250				
	Building Pad Lot 6	1250				
	Building Pad Lot 7	690				
	Building Pad Lot 8	900				
	Building Pad Lot 9	900				
	Building Pad Lot 10	315				
	Building Pad Lot 11	315				
	Building Pad Lot 12	315				
	Building Pad Lot 13	315				
	Building Pad Lot 14	315				
			26791	0.615036731	4.17%	89
Lawns	Robbie Rd Homes	14230				
	Lot 1-14 Lawns & Fill Slopes	27815				
			42045	0.965220386	6.54%	74
Woods	Every where else	505598				
			505598	11.60693297	78.67%	70
		Total=	642649	14.753191	100.00%	**74.03**

*Unit Hydrograph curve numbers were developed from Table D-6 & D-7 of the CBJ Manual of Stormwater BMP Manual. NRCS's online GIS database does not have data for the project location. I looked at adjacent areas with similar slopes and ground cover and the hydraulic soil group was C or D. For this analysis I am assuming the project location falls under soil group C.

Attachment E - Approved Drainage Plan

App G - Prior Drainage

Runoff Coefficient Basin B Developed		
Project:	Hillcrest Extension Drainage Analysis, PAC2018 0054	
Owner:	Michael and William Heumann	
Date:	3/17/2020	
Prepared By:	C. Bydlon	
Checked By:	L. Chambers	

Total Basin Area(SQFT)=	**400337**					
Surface Type	**Location**	**Area (SQFT)**	**Total (SQFT)**	**Total (Acre)**	**% Overall Basin**	**Runoff Coefficient**
Pavement	Tamarack Trails Condos	24950				
			24950	0.572773186	6.23%	0.9
Building Roofs	Tamarack Trail Condos	15130				
			15130	0.347337006	3.78%	0.9
Lawns	Tamarack Trails	6690				
			6690	0.153581267	1.67%	0.25
Shot Rock Base & Ditch	Hooter Lane ROW	21355				
			21355	0.490243343	5.33%	0.8
Woods	Every where else	332212				
			332212	7.626538108	82.98%	0.1
		Total=	400337	9.190472911	100.00%	**0.22**

Attachment E - Approved Drainage Plan

App G - Prior Drainage

Appendix C

Time of Concentration

App G - Prior Drainage

SCS TR-55 Time of Concentration Computations Report
==========

Sheet Flow Equation

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)
n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)

App G - Prior Drainage

Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

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Subbasin PhaseAPreDevelop
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Sheet Flow Computations

-	Subarea A	Subarea B	Subarea C
Manning's Roughness:	.8	0.00	0.00
Flow Length (ft):	188	0.00	0.00
Slope (%):	79.80	0.00	0.00
2 yr, 24 hr Rainfall (in):	2.97	0.00	0.00
Velocity (ft/sec):	0.21	0.00	0.00
Computed Flow Time (minutes):	14.72	0.00	0.00

Shallow Concentrated Flow Computations

-	Subarea A	Subarea B	Subarea C
Flow Length (ft):	2046	0.00	0.00
Slope (%):	29.86	0.00	0.00
Surface Type:	Forest	Unpaved	Unpaved
Velocity (ft/sec):	1.37	0.00	0.00
Computed Flow Time (minutes):	24.89	0.00	0.00

Channel Flow Computations

-	Subarea A	Subarea B	Subarea C
Manning's Roughness:	.05	0.00	0.00
Flow Length (ft):	715	0.00	0.00
Channel Slope (%):	3.48	0.00	0.00
Cross Section Area (ft²):	13	0.00	0.00
Wetted Perimeter (ft):	11.4	0.00	0.00
Velocity (ft/sec):	6.07	0.00	0.00
Computed Flow Time (minutes):	1.96	0.00	0.00

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Total TOC (minutes): 41.57
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Attachment E - Approved Drainage Plan

App G - Prior Drainage

SCS TR-55 Time of Concentration Computations Report
==========

Sheet Flow Equation

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)
n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)

App G - Prior Drainage

Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

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Subbasin HillcrestExtPostDevelemonet
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Sheet Flow Computations

-	Subarea A	Subarea B	Subarea C
Manning's Roughness:	.8	0.00	0.00
Flow Length (ft):	188	0.00	0.00
Slope (%):	79.8	0.00	0.00
2 yr, 24 hr Rainfall (in):	2.97	0.00	0.00
Velocity (ft/sec):	0.21	0.00	0.00
Computed Flow Time (minutes):	14.72	0.00	0.00

Shallow Concentrated Flow Computations

-	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1977	0.00	0.00
Slope (%):	30.65	0.00	0.00
Surface Type:	Forest	Unpaved	Unpaved
Velocity (ft/sec):	1.38	0.00	0.00
Computed Flow Time (minutes):	23.88	0.00	0.00

Channel Flow Computations

-	Subarea A	Subarea B	Subarea C
Manning's Roughness:	.035	.015	.035
Flow Length (ft):	91.6	82	489
Channel Slope (%):	6.10	1.22	5.32
Cross Section Area (ft²):	3.0	1.77	1.74
Wetted Perimeter (ft):	5.47	4.71	4.59
Velocity (ft/sec):	7.04	5.71	5.14
Computed Flow Time (minutes):	0.22	0.24	1.58

Total TOC (minutes):	40.64

Attachment E - Approved Drainage Plan

App G - Prior Drainage

SCS TR-55 Time of Concentration Computations Report
==========

Sheet Flow Equation

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)
n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)

App G - Prior Drainage

Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

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Subbasin HillcrestHooter
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Sheet Flow Computations

-	Subarea A	Subarea B	Subarea C
Manning's Roughness:	.8	0.00	0.00
Flow Length (ft):	234	0.00	0.00
Slope (%):	37.2	0.00	0.00
2 yr, 24 hr Rainfall (in):	2.97	0.00	0.00
Velocity (ft/sec):	0.16	0.00	0.00
Computed Flow Time (minutes):	23.80	0.00	0.00

Shallow Concentrated Flow Computations

-	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1098	0.00	0.00
Slope (%):	21.54	0.00	0.00
Surface Type:	Forest	Unpaved	Unpaved
Velocity (ft/sec):	1.16	0.00	0.00
Computed Flow Time (minutes):	15.78	0.00	0.00

Channel Flow Computations

-	Subarea A	Subarea B	Subarea C
Manning's Roughness:	.035	.035	.03
Flow Length (ft):	361	439.5	141
Channel Slope (%):	5.7	11.37	7.8
Cross Section Area (ft²):	6	2	3.42
Wetted Perimeter (ft):	7.71	5.6	6.12
Velocity (ft/sec):	8.60	7.23	9.41
Computed Flow Time (minutes):	0.70	1.01	0.25

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Total TOC (minutes): 41.53
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Attachment E - Approved Drainage Plan

App G - Prior Drainage

Appendix D

Rainfall Intensity

App G - Prior Drainage

NOAA Atlas 14, Volume 7, Version 2
Location name: Juneau, Alaska, USA*
Latitude: 58.3454°, Longitude: -134.4896°
Elevation: 120.33 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Douglas Kane, Sarah Dietz, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Svetlana Stuefer, Amy Tidwell, Carl Trypaluk, Dale Unruh, Michael Yekta, Erica Betts, Geoffrey Bonnin, Sarah Heim, Lillian Hiner, Elizabeth Lilly, Jayashree Narayanan, Fenglin Yan, Tan Zhao

NOAA, National Weather Service, Silver Spring, Maryland
and
University of Alaska Fairbanks, Water and Environmental Research Center

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.131 (0.106-0.166)	0.153 (0.122-0.197)	0.187 (0.146-0.246)	0.215 (0.165-0.287)	0.253 (0.189-0.346)	0.282 (0.207-0.393)	0.312 (0.225-0.442)	0.350 (0.248-0.505)	0.400 (0.277-0.590)	0.438 (0.299-0.657)
10-min	0.176 (0.142-0.223)	0.206 (0.164-0.265)	0.251 (0.195-0.330)	0.288 (0.220-0.385)	0.339 (0.253-0.464)	0.379 (0.278-0.528)	0.418 (0.302-0.592)	0.470 (0.333-0.678)	0.537 (0.372-0.792)	0.588 (0.401-0.882)
15-min	0.206 (0.166-0.261)	0.241 (0.192-0.310)	0.293 (0.228-0.385)	0.337 (0.258-0.450)	0.397 (0.297-0.543)	0.443 (0.325-0.617)	0.490 (0.353-0.694)	0.549 (0.389-0.791)	0.629 (0.436-0.927)	0.689 (0.470-1.03)
30-min	0.273 (0.220-0.346)	0.320 (0.255-0.411)	0.389 (0.303-0.511)	0.447 (0.342-0.597)	0.527 (0.394-0.721)	0.588 (0.432-0.819)	0.650 (0.469-0.921)	0.729 (0.517-1.05)	0.834 (0.578-1.23)	0.914 (0.623-1.37)
60-min	0.374 (0.302-0.474)	0.438 (0.349-0.563)	0.533 (0.415-0.700)	0.613 (0.469-0.819)	0.722 (0.539-0.988)	0.806 (0.592-1.12)	0.890 (0.642-1.26)	0.999 (0.708-1.44)	1.14 (0.792-1.69)	1.25 (0.853-1.88)
2-hr	0.552 (0.445-0.700)	0.647 (0.515-0.832)	0.789 (0.614-1.04)	0.906 (0.693-1.21)	1.07 (0.798-1.46)	1.19 (0.875-1.66)	1.32 (0.949-1.86)	1.48 (1.05-2.13)	1.69 (1.17-2.49)	1.85 (1.26-2.77)
3-hr	0.729 (0.588-0.925)	0.854 (0.680-1.10)	1.04 (0.811-1.37)	1.20 (0.915-1.60)	1.41 (1.05-1.93)	1.57 (1.15-2.19)	1.73 (1.25-2.46)	1.95 (1.38-2.81)	2.23 (1.54-3.29)	2.44 (1.66-3.66)
6-hr	1.17 (0.944-1.48)	1.37 (1.09-1.76)	1.67 (1.30-2.19)	1.92 (1.47-2.56)	2.26 (1.69-3.09)	2.52 (1.85-3.51)	2.78 (2.01-3.94)	3.13 (2.22-4.51)	3.58 (2.48-5.27)	3.92 (2.67-5.88)
12-hr	1.76 (1.42-2.23)	2.06 (1.64-2.65)	2.50 (1.95-3.29)	2.87 (2.19-3.83)	3.38 (2.53-4.62)	3.79 (2.78-5.27)	4.21 (3.04-5.96)	4.73 (3.35-6.82)	5.42 (3.76-7.99)	5.94 (4.05-8.91)
24-hr	2.54 (2.30-2.84)	2.97 (2.65-3.37)	3.59 (3.14-4.16)	4.10 (3.52-4.83)	4.82 (4.05-5.81)	5.41 (4.46-6.64)	6.04 (4.90-7.54)	6.78 (5.41-8.61)	7.76 (6.05-10.1)	8.51 (6.52-11.2)
2-day	3.45 (3.12-3.87)	4.01 (3.58-4.55)	4.79 (4.19-5.55)	5.42 (4.65-6.38)	6.29 (5.28-7.59)	7.00 (5.77-8.59)	7.74 (6.28-9.66)	8.59 (6.85-10.9)	9.72 (7.57-12.6)	10.6 (8.10-13.9)
3-day	4.10 (3.70-4.58)	4.73 (4.22-5.36)	5.61 (4.90-6.49)	6.30 (5.41-7.42)	7.26 (6.09-8.75)	8.03 (6.62-9.85)	8.82 (7.15-11.0)	9.72 (7.75-12.3)	10.9 (8.51-14.2)	11.8 (9.06-15.6)
4-day	4.63 (4.18-5.18)	5.32 (4.75-6.04)	6.28 (5.49-7.27)	7.03 (6.04-8.28)	8.07 (6.77-9.72)	8.88 (7.33-10.9)	9.73 (7.89-12.1)	10.7 (8.51-13.6)	11.9 (9.30-15.5)	12.9 (9.87-17.0)
7-day	5.98 (5.40-6.69)	6.84 (6.10-7.75)	8.02 (7.00-9.28)	8.94 (7.68-10.5)	10.2 (8.57-12.3)	11.2 (9.25-13.8)	12.3 (9.93-15.3)	13.4 (10.7-17.0)	15.0 (11.7-19.4)	16.1 (12.4-21.3)
10-day	7.07 (6.39-7.92)	8.07 (7.20-9.15)	9.44 (8.24-10.9)	10.5 (9.02-12.4)	12.0 (10.0-14.4)	13.1 (10.8-16.1)	14.3 (11.6-17.8)	15.6 (12.5-19.8)	17.4 (13.6-22.6)	18.7 (14.4-24.7)
20-day	10.6 (9.59-11.9)	12.1 (10.8-13.7)	14.1 (12.3-16.3)	15.6 (13.4-18.3)	17.6 (14.8-21.2)	19.2 (15.8-23.5)	20.7 (16.8-25.9)	22.4 (17.9-28.5)	24.7 (19.3-32.1)	26.4 (20.2-34.8)
30-day	14.0 (12.6-15.6)	15.9 (14.2-18.1)	18.5 (16.2-21.4)	20.4 (17.5-24.0)	22.9 (19.3-27.7)	24.9 (20.5-30.5)	26.8 (21.7-33.4)	28.8 (23.0-36.6)	31.5 (24.6-40.9)	33.5 (25.7-44.2)
45-day	18.5 (16.7-20.7)	21.1 (18.8-23.9)	24.5 (21.4-28.4)	27.0 (23.2-31.8)	30.1 (25.3-36.3)	32.5 (26.8-39.8)	34.8 (28.2-43.4)	37.1 (29.5-47.1)	40.1 (31.3-52.0)	42.4 (32.5-55.9)
60-day	22.1 (19.9-24.7)	25.4 (22.6-28.8)	29.5 (25.7-34.1)	32.3 (27.8-38.1)	35.9 (30.1-43.3)	38.4 (31.7-47.1)	40.8 (33.1-50.9)	43.0 (34.2-54.5)	45.8 (35.7-59.5)	48.0 (36.8-63.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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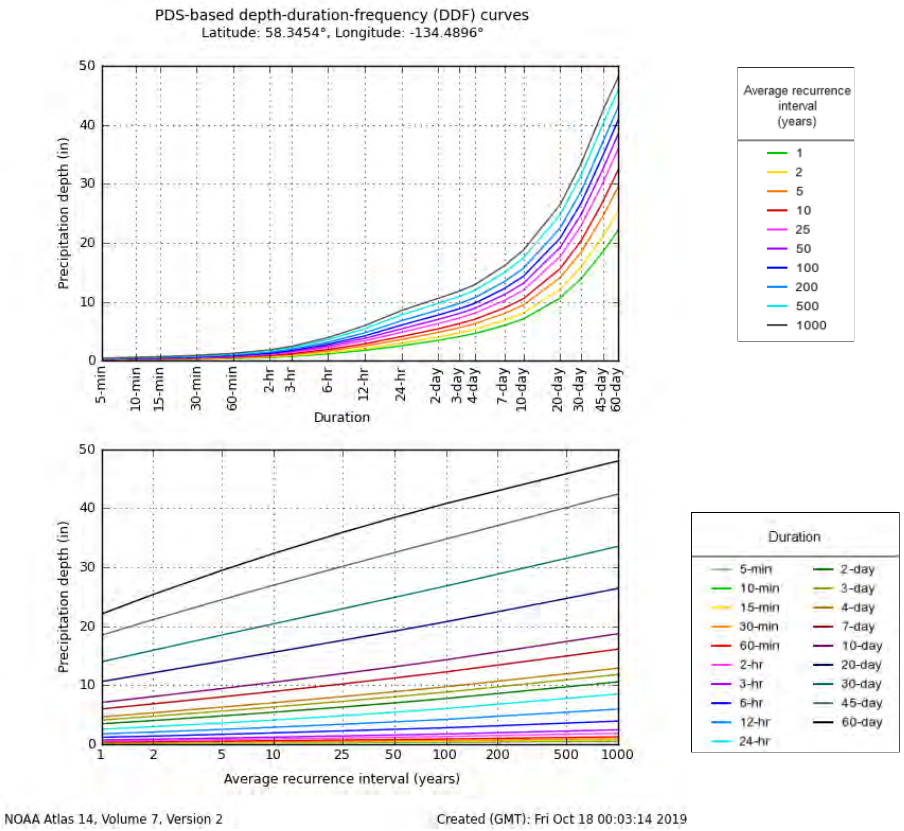
PF graphical

Attachment E - Approved Drainage Plan

App G - Prior Drainage



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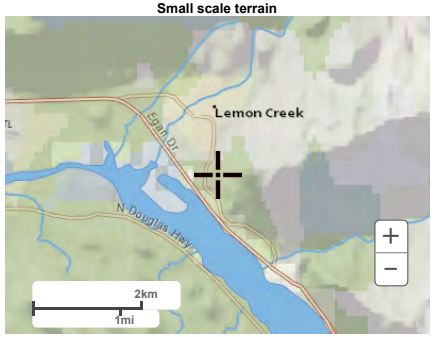
Maps & aerials

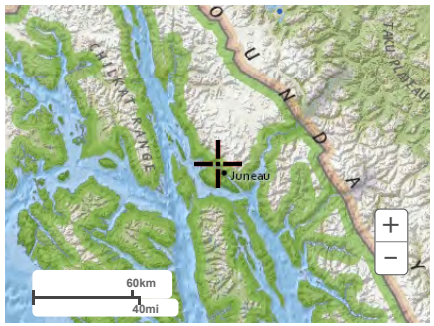
Small scale terrain



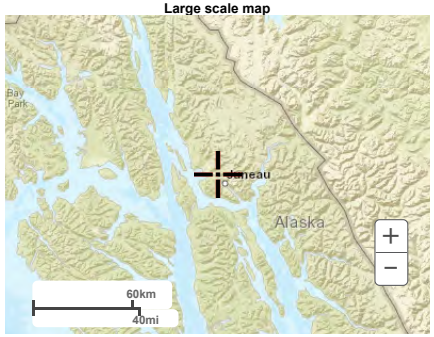
Large scale terrain

Attachment E - Approved Drainage Plan

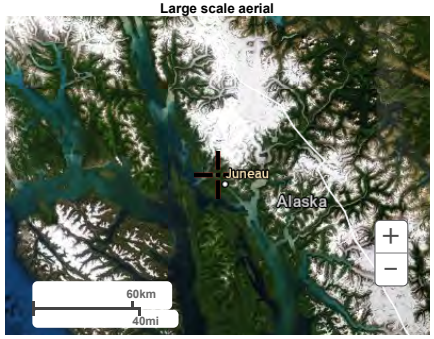
App G - Prior Drainage



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Attachment E - Approved Drainage Plan

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NOAA Atlas 14, Volume 7, Version 2
Location name: Juneau, Alaska, USA*
Latitude: 58.346°, Longitude: -134.4904°
Elevation: 101.4 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Douglas Kane, Sarah Dietz, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Svetlana Stuefer, Amy Tidwell, Carl Trypaluk, Dale Unruh, Michael Yekta, Erica Betts, Geoffrey Bonnin, Sarah Heim, Lillian Hiner, Elizabeth Lilly, Jayashree Narayanan, Fenglin Yan, Tan Zhao

NOAA, National Weather Service, Silver Spring, Maryland
and
University of Alaska Fairbanks, Water and Environmental Research Center

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.58 (1.27-2.02)	1.86 (1.48-2.40)	2.27 (1.75-3.00)	2.62 (1.99-3.52)	3.08 (2.29-4.25)	3.44 (2.51-4.82)	3.80 (2.72-5.42)	4.30 (3.02-6.23)	4.94 (3.41-7.33)	5.42 (3.67-8.17)
10-min	1.06 (0.852-1.36)	1.25 (0.984-1.61)	1.52 (1.18-2.02)	1.75 (1.33-2.35)	2.07 (1.54-2.85)	2.31 (1.69-3.23)	2.56 (1.83-3.64)	2.89 (2.03-4.18)	3.32 (2.29-4.92)	3.64 (2.47-5.49)
15-min	0.828 (0.664-1.06)	0.972 (0.768-1.26)	1.19 (0.920-1.57)	1.37 (1.04-1.84)	1.62 (1.20-2.22)	1.80 (1.32-2.53)	2.00 (1.43-2.84)	2.25 (1.59-3.26)	2.59 (1.78-3.84)	2.84 (1.93-4.29)
30-min	0.550 (0.440-0.702)	0.646 (0.510-0.836)	0.788 (0.610-1.04)	0.908 (0.690-1.22)	1.07 (0.796-1.47)	1.20 (0.874-1.68)	1.32 (0.950-1.89)	1.49 (1.05-2.17)	1.72 (1.18-2.54)	1.89 (1.28-2.84)
60-min	0.377 (0.302-0.481)	0.442 (0.349-0.571)	0.540 (0.418-0.713)	0.622 (0.473-0.836)	0.734 (0.545-1.01)	0.820 (0.598-1.15)	0.907 (0.650-1.29)	1.02 (0.721-1.48)	1.18 (0.810-1.74)	1.29 (0.875-1.95)
2-hr	0.278 (0.223-0.356)	0.326 (0.258-0.422)	0.399 (0.308-0.527)	0.460 (0.350-0.618)	0.543 (0.403-0.747)	0.606 (0.442-0.850)	0.670 (0.480-0.954)	0.756 (0.532-1.10)	0.869 (0.598-1.29)	0.954 (0.646-1.44)
3-hr	0.245 (0.196-0.312)	0.286 (0.226-0.370)	0.351 (0.271-0.463)	0.404 (0.307-0.543)	0.477 (0.354-0.657)	0.533 (0.389-0.746)	0.588 (0.422-0.838)	0.664 (0.468-0.962)	0.763 (0.525-1.13)	0.838 (0.568-1.26)
6-hr	0.197 (0.158-0.251)	0.231 (0.182-0.298)	0.282 (0.218-0.372)	0.324 (0.247-0.436)	0.383 (0.284-0.527)	0.428 (0.312-0.600)	0.473 (0.339-0.675)	0.534 (0.376-0.774)	0.614 (0.423-0.910)	0.675 (0.457-1.02)
12-hr	0.147 (0.118-0.188)	0.172 (0.136-0.223)	0.210 (0.162-0.277)	0.241 (0.183-0.323)	0.284 (0.211-0.391)	0.319 (0.233-0.447)	0.356 (0.255-0.507)	0.402 (0.283-0.582)	0.462 (0.318-0.686)	0.508 (0.344-0.767)
24-hr	0.107 (0.096-0.119)	0.125 (0.111-0.142)	0.151 (0.132-0.175)	0.172 (0.148-0.203)	0.203 (0.171-0.245)	0.229 (0.189-0.281)	0.256 (0.208-0.320)	0.289 (0.230-0.367)	0.332 (0.259-0.431)	0.365 (0.280-0.482)
2-day	0.073 (0.066-0.081)	0.084 (0.075-0.096)	0.101 (0.088-0.117)	0.114 (0.098-0.134)	0.133 (0.111-0.160)	0.148 (0.122-0.182)	0.164 (0.133-0.205)	0.183 (0.146-0.233)	0.209 (0.162-0.271)	0.227 (0.174-0.300)
3-day	0.057 (0.052-0.064)	0.066 (0.059-0.075)	0.079 (0.069-0.091)	0.088 (0.076-0.104)	0.102 (0.086-0.123)	0.113 (0.094-0.139)	0.125 (0.101-0.156)	0.139 (0.110-0.176)	0.156 (0.122-0.203)	0.170 (0.130-0.224)
4-day	0.049 (0.044-0.054)	0.056 (0.050-0.063)	0.066 (0.058-0.076)	0.074 (0.063-0.087)	0.085 (0.071-0.103)	0.094 (0.078-0.115)	0.103 (0.084-0.129)	0.114 (0.091-0.145)	0.128 (0.100-0.166)	0.139 (0.106-0.183)
7-day	0.035 (0.032-0.040)	0.040 (0.036-0.046)	0.047 (0.041-0.055)	0.053 (0.046-0.062)	0.061 (0.051-0.073)	0.067 (0.055-0.082)	0.074 (0.060-0.092)	0.081 (0.064-0.103)	0.091 (0.071-0.118)	0.098 (0.075-0.130)
10-day	0.029 (0.026-0.033)	0.033 (0.030-0.038)	0.039 (0.034-0.045)	0.043 (0.037-0.051)	0.049 (0.041-0.060)	0.054 (0.045-0.067)	0.060 (0.048-0.074)	0.066 (0.052-0.083)	0.073 (0.057-0.095)	0.079 (0.061-0.105)
20-day	0.022 (0.020-0.024)	0.025 (0.022-0.028)	0.029 (0.025-0.033)	0.032 (0.027-0.038)	0.036 (0.030-0.044)	0.040 (0.033-0.048)	0.043 (0.035-0.054)	0.047 (0.037-0.059)	0.052 (0.040-0.067)	0.056 (0.043-0.073)
30-day	0.019 (0.017-0.021)	0.022 (0.019-0.025)	0.025 (0.022-0.029)	0.028 (0.024-0.033)	0.031 (0.026-0.038)	0.034 (0.028-0.042)	0.037 (0.030-0.046)	0.040 (0.032-0.051)	0.044 (0.034-0.057)	0.047 (0.036-0.062)
45-day	0.017 (0.015-0.019)	0.019 (0.017-0.022)	0.022 (0.019-0.026)	0.025 (0.021-0.029)	0.028 (0.023-0.033)	0.030 (0.025-0.037)	0.032 (0.026-0.040)	0.034 (0.027-0.043)	0.037 (0.029-0.048)	0.039 (0.030-0.052)
60-day	0.015 (0.014-0.017)	0.017 (0.016-0.020)	0.020 (0.018-0.024)	0.022 (0.019-0.026)	0.025 (0.021-0.030)	0.027 (0.022-0.033)	0.028 (0.023-0.035)	0.030 (0.024-0.038)	0.032 (0.025-0.042)	0.034 (0.026-0.044)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

Attachment E - Approved Drainage Plan

App G - Prior Drainage

Appendix E

Rational Method

App G - Prior Drainage

Rational Method Site Runoff Drainage Basin D		
Project:	Hillcrest Extension Drainage Analysis, PAC2018 0054	
Owner:	Michael and William Heumann	
Date:	3/23/2020	
Prepared By:	L. Chambers	
Checked By:	G. Gladsjo	

$$Q = CIA$$

Q = peak flow in cubic feet per second (cfs)
C = runoff coefficient
I = rainfall intensity (inches per hour)
A = catchment area (acres)

$$C_c = (C_1A_1 + C_2A_2)/A_t$$

C_c = composite runoff coefficient
$C_{1,2}$ = runoff coefficient for each area land cover type
A_t = total area (acres)
$A_{1,2}$ = areas of land cover types (acres)
***Cc = 0.22**, See Appendix C for calculation*

$$T_c = T_1 + T_2 + \cdots + T_n$$

T_c = time of concentration (min)
$T_{1,2}$ = travel time across separate flow path segments (min)
***Tc = 41.51 min.**, See Appendix D for calculation*

$$T_t = L/60V$$

T_t = travel time (min)
L= the distance of flow across a given segment (feet)
$V=k_R Sqrt(S_0)$=average velocity (feet/sec) across land cover
k_R = time of concentration velocity factor (CBJ Manual of Storm Water BMP 2010, Table D-5, PG. D-10)
S_0 = slope of flow path (feet/feet)

Per CBJ Manual of Storm Water BMP 2010, Table 5-1, page. 5-1, design event frequencies are specified. For driveway culvert, a 25-year storm event is the required design return period. We will base our analysis on a 25-year design return period for all drainage structures and catchment areas. Per CBJ Manual of Storm Water BMP 2010, page. D-9, Basins with a time and concentration 10 minutes or less shall use the 10 minute intensity. Basins with a time of concentration greater than 10 minutes and less than 30 minutes shall interpolate between the 10 and 10 minute values. Rainfall intensity for the site was sourced from the NOAA Atlas 14, Point Precipitation Frequency Estimates, see Appendix E, and is summarized as follows:

		Design Return Period
	Tc 41.51(min)	25-year
Interpolated Intensity (in/hr) =		**0.94**

There is an existing 24" CMP culvert that drains into the existing Glacier Highway ditch system at the location where the new subdivision access will tie into the shoulder of the Highway. The area currently contributing runoff to this culvert was delinated in AutoCAD from aerial photos and 2013 Lidar Data provided by CBJ.

A = 400337 sqft / 43,560 **= 9.19 acres**

	Cc	**I**	**A**		
Q (cfs)=	0.22	0.94	9.19	=	**1.90**

Attachment E - Approved Drainage Plan

App G - Prior Drainage

Appendix F
SCS Hydrograph

App G - Prior Drainage

Hydrograph Report

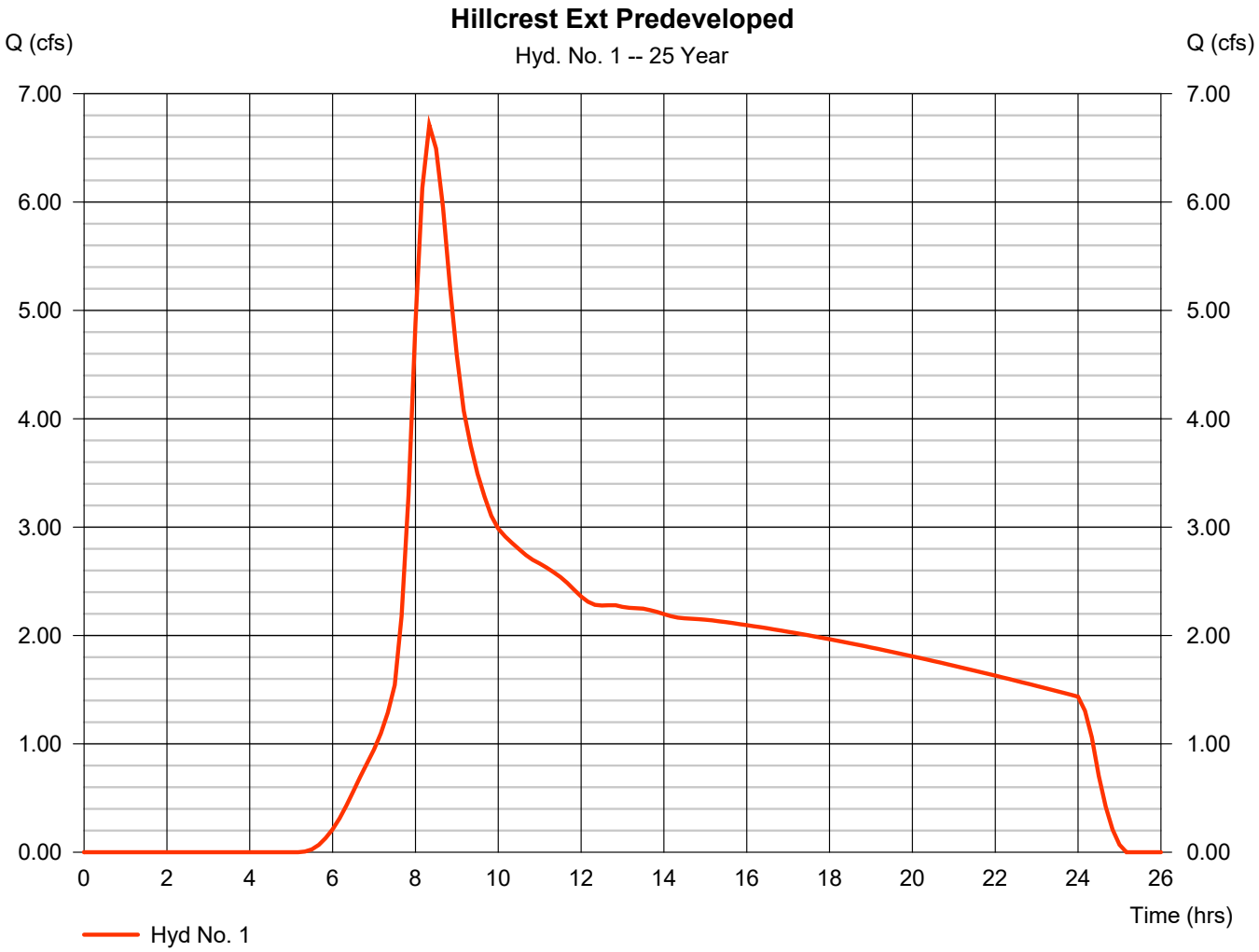
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Saturday, 03 / 21 / 2020

Hyd. No. 1

Hillcrest Ext Predeveloped Drainage Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 6.711 cfs
Storm frequency	= 25 yrs	Time to peak	= 8.33 hrs
Time interval	= 10 min	Hyd. volume	= 148,969 cuft
Drainage area	= 19.920 ac	Curve number	= 72*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 41.60 min
Total precip.	= 4.82 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.540 x 98) + (0.320 x 98) + (0.250 x 89) + (0.330 x 74) + (18.480 x 70)] / 19.920



App G - Prior Drainage

Hydrograph Report

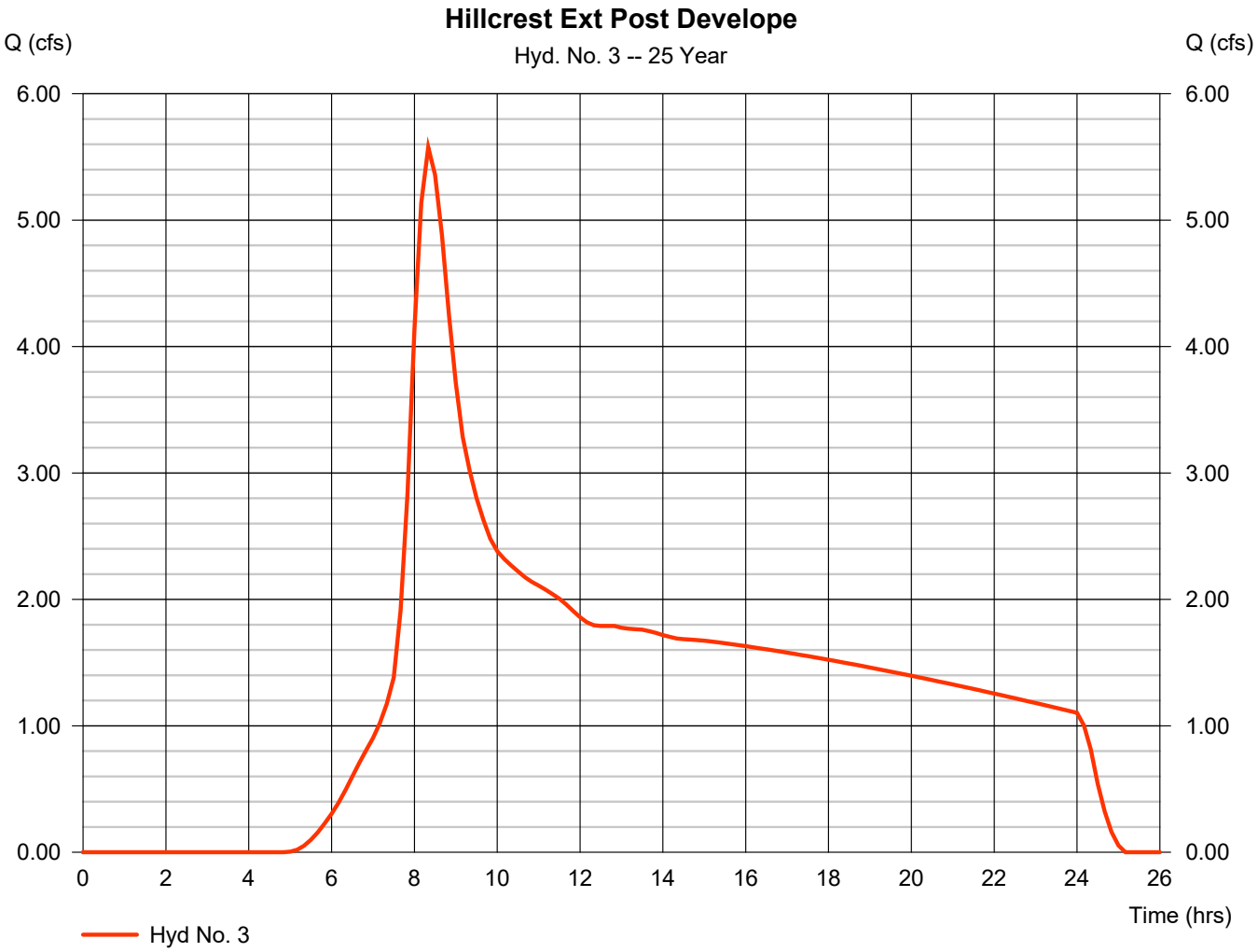
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Saturday, 03 / 21 / 2020

Hyd. No. 3

Hillcrest Ext Post Develope Drainage Basin C

Hydrograph type	= SCS Runoff	Peak discharge	= 5.576 cfs
Storm frequency	= 25 yrs	Time to peak	= 8.33 hrs
Time interval	= 10 min	Hyd. volume	= 118,944 cuft
Drainage area	= 14.750 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 40.60 min
Total precip.	= 4.82 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.835 x 98) + (0.731 x 98) + (0.615 x 89) + (0.965 x 74) + (11.607 x 70)] / 14.750



App G - Prior Drainage

Appendix G
Existing Capacity

App G - Prior Drainage

Proposed 18" CPP Discharge Capacity		
Project:	Hillcrest Ext. Subdivision Drainage Analysis, PAC2018 0054	
Owner:	Michael and William Heumann	
Date:	3/23/2020	
Prepared By:	L. Chambers	
Checked By:	G. Gladsjo	

The following equations were used to calculate the proposed 18" CPP culvert P-7 acts as the driveway culvert to Lot 14 and is the first pipe in the proposed storm drain system and were obtained from "Urban Drainage Design Manual: Hydraulic Engineering Circular No. 22, Third Edition".

$$Q = (K/n) \times A \times R^{0.67} \times S^{0.5}$$

Q = discharge rate in ft^3/sec
K = coefficient for English units (1.486)
n = Manning's coefficient of roughness, obtained from Table 5-3, Page 5-5, of the CBJ Stormwater Manual
A = cross sectional area in ft^2
R = hydraulic radius
S = slope

Existing 18" Ditch Culvert; Inlet Invert =30.0 ', Outlet Invert =29.0', Length =40 ', n = 0.014. The Manning's n value of 0.014 was determined by the pipe type (CPP-smooth interior) Table 5-3.

	K	n	A	R	S		
Q (cfs)	1.486	0.014	1.77	0.375	0.0052	=	7.022094

Attachment E - Approved Drainage Plan

App G - Prior Drainage

Existing Driveway Ditch Discharge Capacity			
Project:	Hillcrest Ext. Subdivision Drainage Analysis, PAC2018 0054		proHNS LLC
Owner:	Michael and William Heumann		
Date:	3/23/2020		
Prepared By:	L. Chambers		
Checked By:	G. Gladsjo		

The following equations were used to calculate the capacity of the driveway ditch leading into the 18" CPP at the bottom of the ditch run and were obtained from "Urban Drainage Design Manual: Hydraulic Engineering Circular No. 22, Third Edition".

$$Q = (K/n) \times A \times R^{0.67} \times S^{0.5}$$

Q = discharge rate in ft^3/sec
K = coefficient for English units (1.486)
n = Manning's coefficient of roughness, obtained from Table D-10, Page D-19, of the CBJ Stormwater Manual
A = cross sectional area in ft^2, from survey basemap
R = hydraulic radius, from survey basemap
S = slope, from survey basemap

Existing driveway ditch; Top Elev. = 37.0', Bottom Elev. = 30.0', Length = 80', n = 0.03. The Manning's n value of 0.03 comes from Table D-10 (grass, some weeds), elevation and length data are from survey basemap.

	K	n	A	R	S		
Q (cfs)	1.486	0.03	1.55	0.319588	0.0875	=	10.57569

TENW
Transportation Engineering NorthWest

MEMORANDUM

DATE: February 28, 2020

TO: William Heumann, Owner

FROM: Michael Read, PE, Principal, TENW

SUBJECT: Richland Manor- Traffic Impact Analysis
TENW Project No. 3709

This memorandum summarizes a traffic impact analysis of *Richland Manor*, a proposed residential development in the vicinity of Hooter Lane and Craig Street north of Glacier Highway in Juneau, Alaska. This memo includes a summary of the project, a description of existing transportation conditions within the immediate site vicinity, methodology used to derive the trip generation estimate, traffic operational traffic impact analysis at key study intersections, review of site access, and identification of any transportation mitigation measures.

Project Description

The proposed *Richland Manor* residential development would consist of up to 47 single family homes (detached) and approximately 356 multifamily homes in the vicinity of Hooter Lane and Craig Street north of Glacier Highway in Juneau, Alaska. A site vicinity map is provided in Figure 1. The proposed development would be constructed in phases, beginning in 2020, with full build-out and occupancy anticipated by 2029.

Primary vehicular access would be provided via construction of a public roadway within the undeveloped right-of-way of Hooter Lane, with secondary vehicular access via Hillcrest Drive and Abey Way via Craig Street. Additional gated access would be provided onto Robbie Road for emergency vehicles only. A conceptual site plan has been developed for the project and is shown in Figure 2.

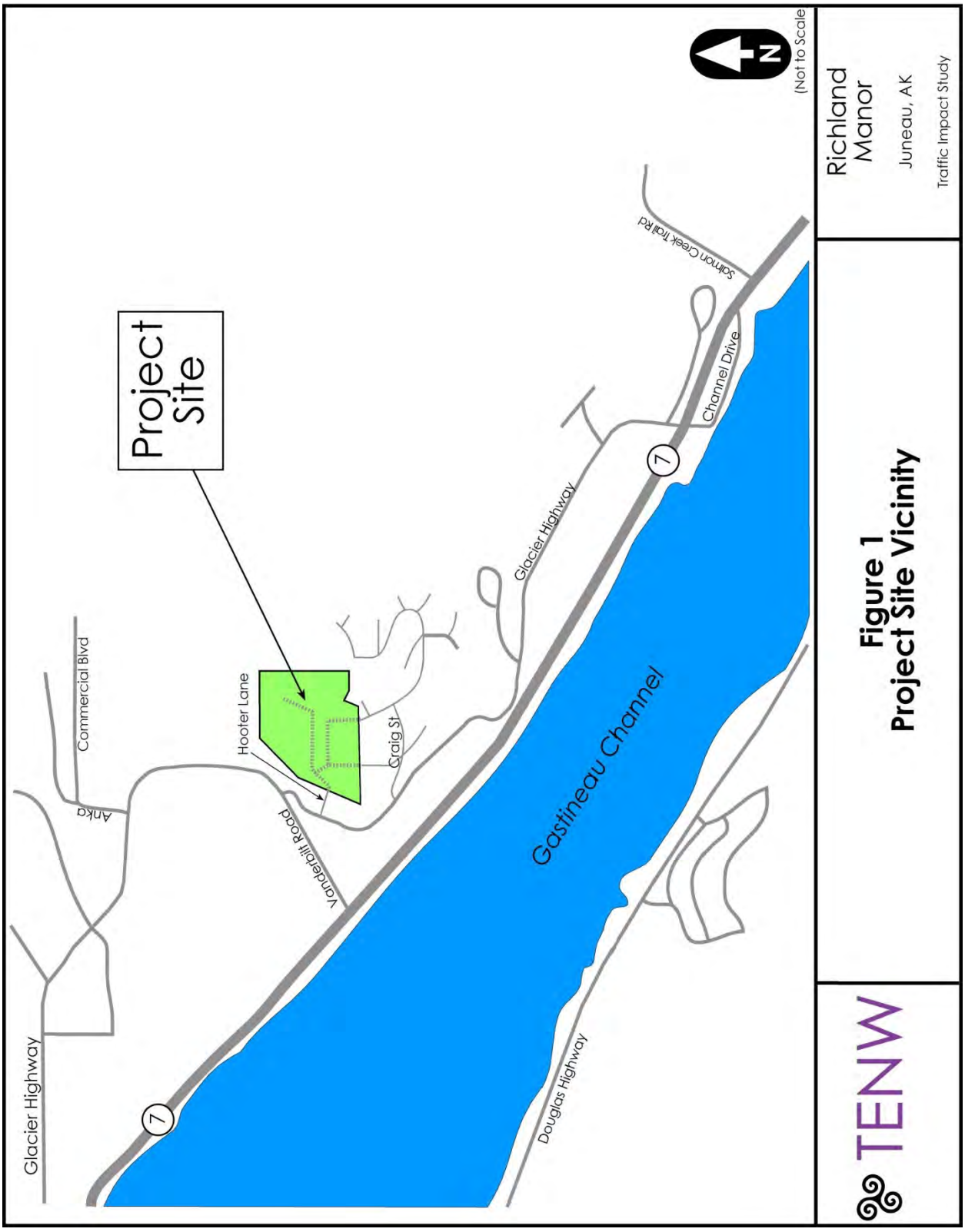
Existing Transportation Conditions

This section includes an inventory of existing roadway conditions, traffic volumes, levels of service and planned roadway improvements.

Roadway Conditions

The following paragraphs describe existing arterial roadways that would be used for site access. Roadway characteristics are described in terms of number of lanes, speed limits, shoulder types and widths.

Glacier Highway is a three-lane roadway with a center southbound left-turn lane north of Glacier Highway. East of Vanderbilt Road and Glacier Highway, the roadway consists of two lanes with curbs and gutters on both sides of the street, and a sidewalk on the north side of street. Bicycle lanes are provided on both sides of the street. The posted speed limit is 40 mph.



Attachment F - Traffic Impact Analysis

Attachment F - Traffic Impact Analysis

Vanderbilt Road is a three-lane roadway with a center refuge lane, which transitions into a left turn lane at Egan Drive. Bicycle lanes are provided on both sides of the street. The posted speed limit is 45 mph south of Glacier Highway.

Hillcrest Drive is a local street approximately 26 feet in width. The roadway is unchannelized with two travel lanes, curbs, and gutters, but no sidewalks. There is no posted speed.

Traffic Counts

Peak hour traffic volumes represent the highest hourly volume of vehicles passing through an intersection during a typical 7-9 a.m. and 4-6 p.m. weekday peak period. Peak period turning movement counts at several study intersections during the afternoon p.m. peak period were conducted by PDC Engineers early December 2019 (Attachment 1). Figure 3 overviews channelization/traffic control at study intersections. Figure 4 summarizes the existing p.m. peak period turning movements at study intersections determined in scoping discussions with the Alaska Department of Transportation and Public Facilities (DOT&PF).

Intersection Levels of Service

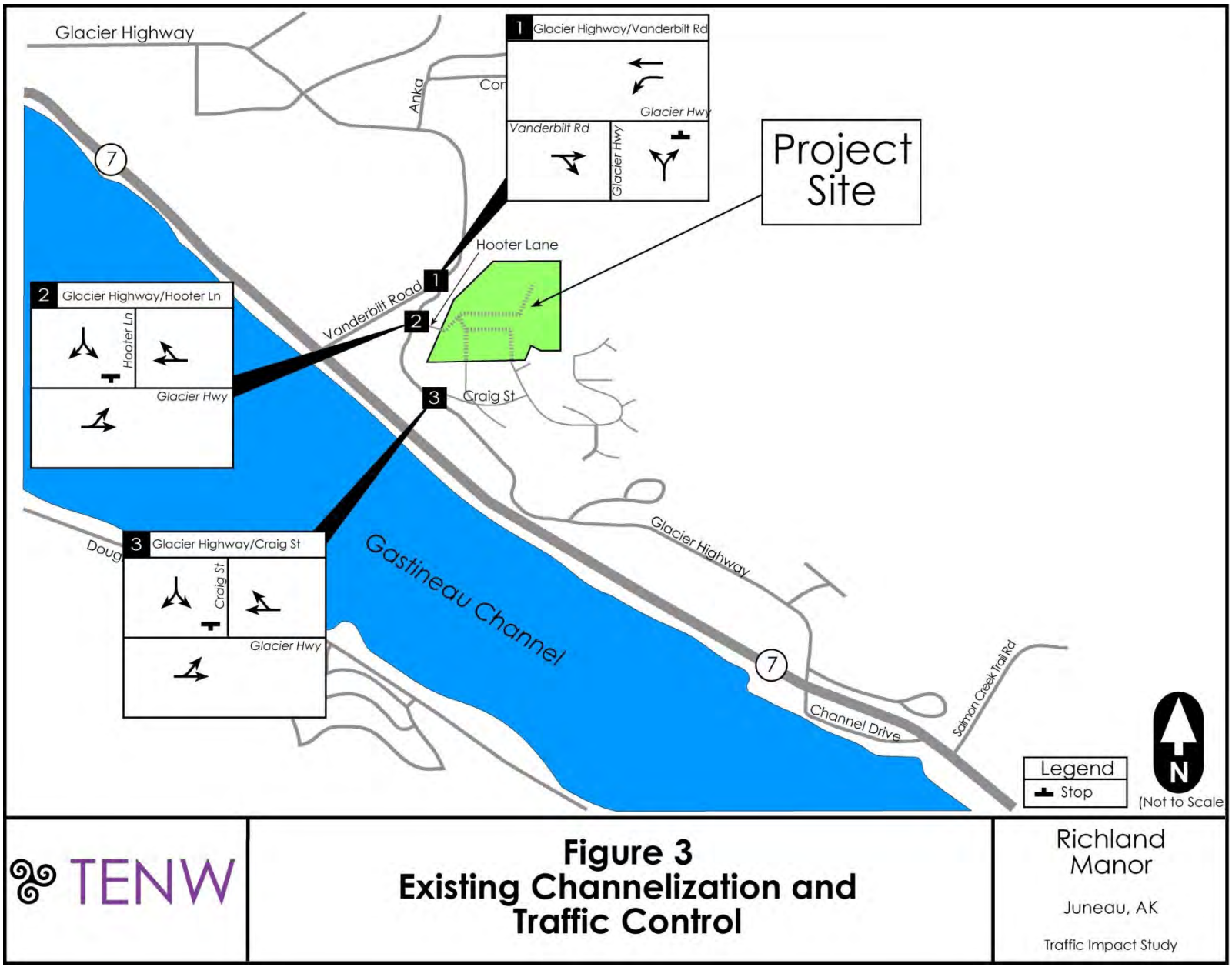
Intersection level of service (LOS) analyses were conducted at the study intersections during the weekday p.m. peak hour of existing conditions and with and without project traffic generated by the proposed development. LOS refers to the degree of congestion on a roadway or intersection. It is a measure of vehicle operating speed, travel time, travel delays, and driving comfort. A letter scale from A to F generally describes LOS. At signalized intersections, LOS A represents free-flow conditions-motorists experience little or no delays, and LOS F represents forced-flow conditions-motorists experience an average delay in excess of 80 seconds per vehicle. The LOS reported for signalized intersections represents the average control delay per vehicle entering the intersection. The LOS reported at stop-controlled intersections is also based on the average control delay (sec/veh) and is reported for each movement. Therefore, the reported LOS at unsignalized intersections does not represent a measure of the overall operations of the intersection.

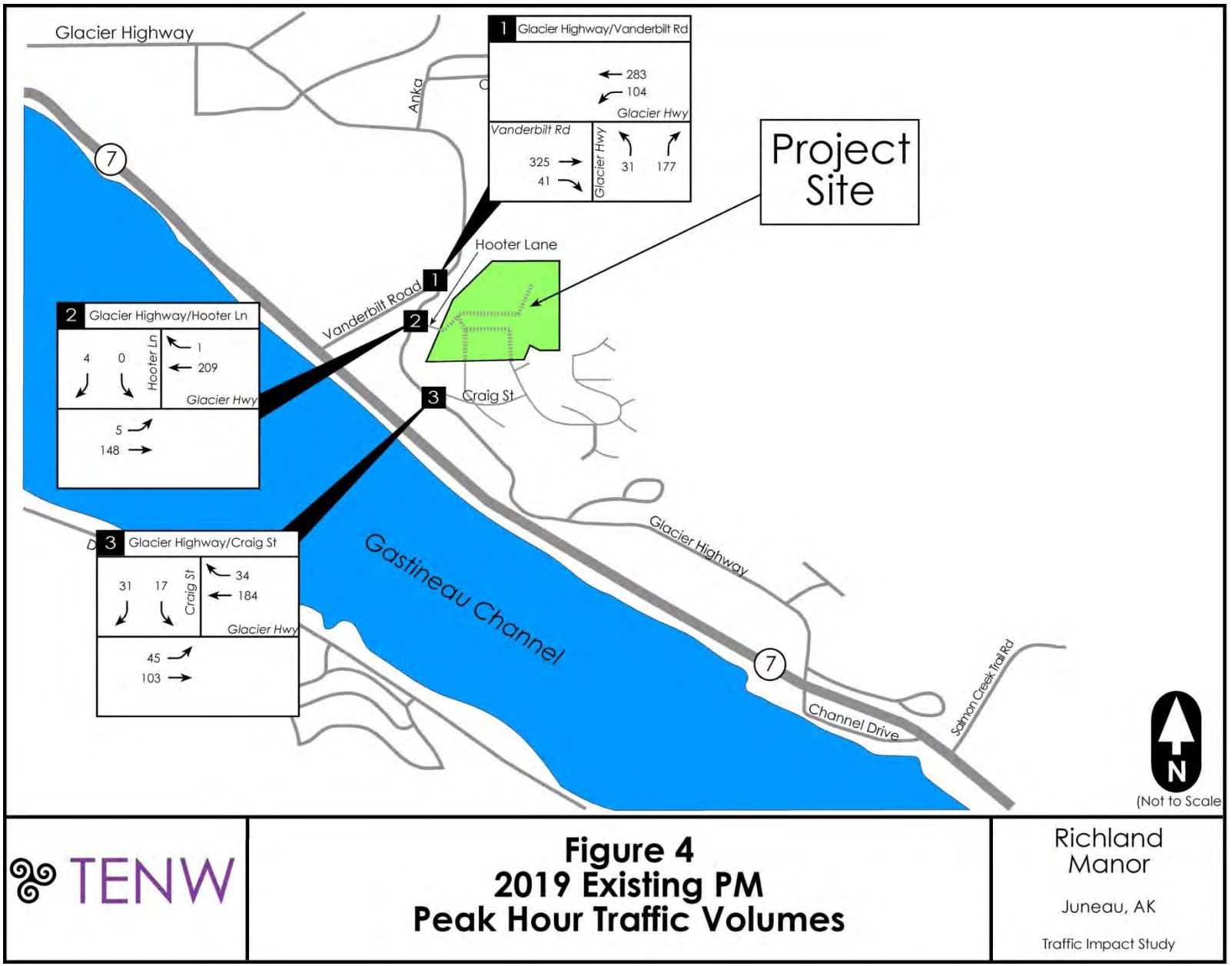
LOS calculations for both signalized and stop-controlled intersections were calculated using the methodologies and procedures outlined in the 2000 and 2010 *Highway Capacity Manual (HCM)*, Special Report 209, Transportation Research Board (TRB), using the *Synchro 10* software program. Table 1 outlines the LOS criteria for signalized and unsignalized intersections based on these methodologies. ADOT&PF maintains a level of service standard of LOS D for development review. Existing p.m. peak hour LOS analyses are summarized in Table 2. As shown, all intersections or critical movements operate at LOS B or better under existing conditions. Detailed LOS summary worksheets are included in Attachment 2.

Table 1: Level of Service Criteria for Signalized and Unsignalized Intersections

Level of Service	Signalized Intersection Average Delay Range (sec)	Unsignalized Intersection Delay Range (sec)
A	≤ 10	≤ 10
B	> 10 to ≤ 20	> 10 to ≤ 15
C	> 20 to ≤ 35	> 15 to ≤ 25
D	> 35 to ≤ 55	> 25 to ≤ 35
E	> 55 to ≤ 80	> 35 to ≤ 50
F	> 80	> 50

Source: "Highway Capacity Manual", Special Report 209, Transportation Research Board, 2000.


Glacier Highway
1 Glacier Highway/Vanderbilt Rd
Glacier Hwy
Vanderbilt Rd
Glacier Hwy
Project Site
Hooter Lane
Vanderbilt Road
1
2
2 Glacier Highway/Hooter Ln
Hooter Ln
Glacier Hwy
3
Craig St
3 Glacier Highway/Craig St
Craig St
Glacier Hwy
Gastineau Channel
Glacier Highway
7
Channel Drive
Salmon Creek Trail Rd
Legend
Stop
N
(Not to Scale
TENW
Figure 3
Existing Channelization and
Traffic Control
Richland
Manor
Juneau, AK
Traffic Impact Study



TENW

Figure 4
2019 Existing PM
Peak Hour Traffic Volumes

Richland Manor
Juneau, AK
Traffic Impact Study

Table 2: Existing PM Peak Hour Intersection Levels of Service

Study Intersection		PM Peak Hour LOS	PM Peak Hour Delay (sec)	PM Peak Hour V/C Ratio
Stop Controlled Intersections				
#1 – Glacier Highway at Vanderbilt Road	(NB – Stop)	B	14.2	0.37
	(WB – Left)	A	8.4	0.10
#2 – Glacier Highway at Hooter Lane	(SB – Stop)	A	9.6	0.01
#3 – Glacier Highway at Craig Street	(SB – Stop)	B	10.4	0.07

Source: TENW.

Planned Transportation Improvements

ADOT&PF has a programmed improvement at the intersection of Glacier Highway and Vanderbilt Road intersection. The improvement is part of a larger regional trail/bicycle plan and would involve installation of a pedestrian/bicycle crossing treatment west side of the intersection to include a median refuge island and pedestrian-activated rectangular rapid flashing beacon (RRFB) system. The currently planned improvement would eliminate the existing median refuge lane for northbound left turning movements from Glacier Highway onto Vanderbilt Road.

Traffic Impact Analysis

The following section describes projected future baseline traffic growth, new trips generated by the proposed development, distribution and assignment of new project trips, intersection level of service impacts, site access, safety and circulation issues, and identification of transportation mitigation to offset impacts.

2029 Baseline Traffic Volumes

To evaluate project traffic impacts at full buildout, traffic counts obtained in 2019 were factored by a 1 percent annual background growth rate to forecast 2029 future baseline traffic volumes.

Project Trip Generation

Documented trip rate equations compiled by the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*, 2017, were used to estimate daily, a.m. peak hour and p.m. peak hour traffic that would be generated by the proposed residential uses within *Richland Manor,* assuming new detached single-family homes (ITE Land Use Code 210) and Low-Rise Multifamily uses (LUC 220).

As shown in Table 3, total site trip generation of the project is estimated to generate a approximately 3,050 new weekday daily trips, 199 new a.m. peak hour trips (46 entering and 153 exiting), and 246 new p.m. peak hour trips (155 entering and 91 new exiting).

Table 3: Richland Manor - Trip Generation

Time Period	In	Out	Total
Weekday Daily	1,525	1,525	3,050
Weekday AM Peak Hour	46	153	199
Weekday PM Peak Hour	155	91	246

Source: TENW. See also Attachment 3.

Trip Distribution and Assignment

To distribute trips onto the vicinity-street and arterial network, trip distribution patterns were determined based on review of existing travel patterns, and the relative distribution of employment and residential density in the vicinity (see also Attachment 4). Generally, average distribution and assignment of project trips were assumed as:

- 45 percent easterly via Glacier Highway; and
- 55 percent westerly and northwesterly via Glacier Highway and Vanderbilt Road.

Figure 5 shows p.m. peak hour trip distribution, while Figure 6 summarizes p.m. peak hour trip assignment. Figure 7 summarizes p.m. peak hour traffic volume forecasts without and with the proposed *Richland Manor* project for the 2029 horizon year.

Intersection Level of Service Impacts

Table 4 summarizes level of service impacts in 2029 with and without completion of the proposed project. All study intersections and site access driveways would operate at LOS D or better with and without the project in the 2029 horizon year. Per the footnote in Table 4, the Alaska DOT&PF's proposal to remove the median refuge lane for vehicular capacity would drop the future level of service with buildout of *Richland Manor* to LOS D by 2029. If the existing intersection capacity is maintained, buildout of *Richland Manor* would operate at LOS C and not require any mitigation. Detailed LOS summary worksheets are included in Attachment 1.

Table 4: 2029 PM Intersection Level of Service Impacts

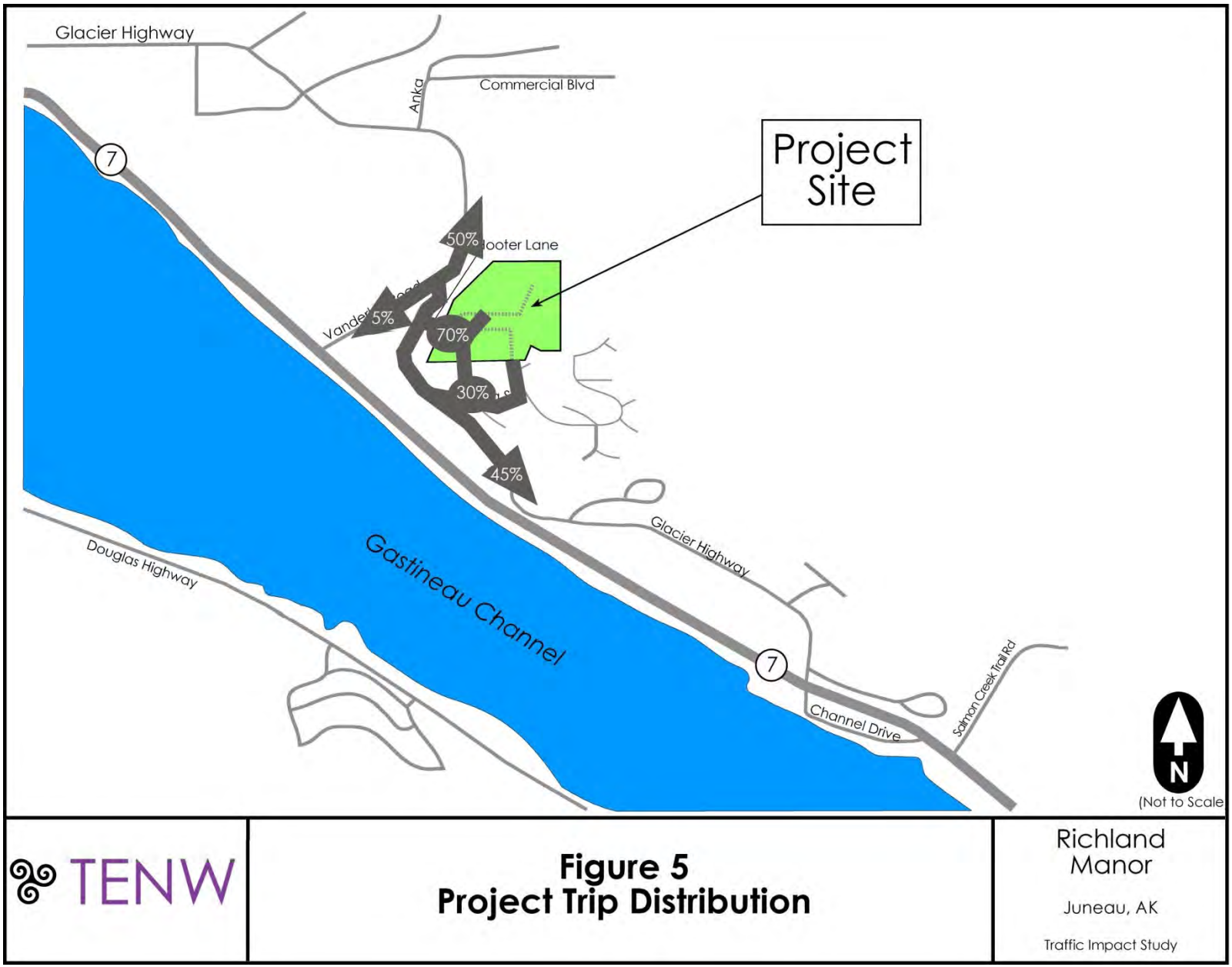
		PM Without Project			PM With Project		
Study Intersection		LOS	Delay (sec)	V/C Ratio	LOS	Delay (sec)	V/C Ratio
Stop Controlled Intersections							
#1 – Glacier Highway at Vanderbilt Road	(NB – Stop)	C	18.3	0.48	D*	25.8	0.65
	(WB – Left)	A	8.6	0.11	A	9.0	0.19
#2 – Glacier Highway at Hooter Lane	(SB – Stop)	A	9.8	0.01	B	11.9	0.14
#3 – Glacier Highway at Craig Street	(SB – Stop)	B	10.7	0.09	B	19.3	0.55

Source: TENW. * - At the intersection of Glacier Highway and Vanderbilt Road, the DOT&PF project to remove intersection capacity to install the RRFB results in a LOS D condition in at buildout of *Richland Manor* by 2029. If the median refuge lane remains available for left turns, with buildout of the project in 2029 this approach would operate at LOC C with an average delay of 19.3 Seconds per vehicle.

Site Access and Circulation

Primary vehicular access would be provided via construction of a public roadway within the undeveloped right-of-way of Hooter Lane, with secondary vehicular access via Hillcrest Drive and Abey Way via Craig Street. Additional gated access would be provided onto Robbie Road for emergency vehicles only to meet the minimum fire accessibility codes (above 200 multifamily housing units) per the International Fire Code to provide for secondary access beyond the Hooter Lane and Abey Way intersection.

The main access points to the site would be located on Glacier Highway at Hooter Lane and Craig Street. As identified previously, all critical stop-controlled movements at these two intersections are anticipated to operate at LOS B or better with the proposed development in 2029, with little or no vehicular queuing.


Glacier Highway
Anka
Commercial Blvd
Project Site
50%
looter Lane
5%
70%
30%
45%
Glacier Highway
Douglas Highway
Gastineau Channel
7
7
Channel Drive
Salmon Creek Trail Rd
N
(Not to Scale
TENW
Figure 5
Project Trip Distribution
Richland Manor
Juneau, AK
Traffic Impact Study

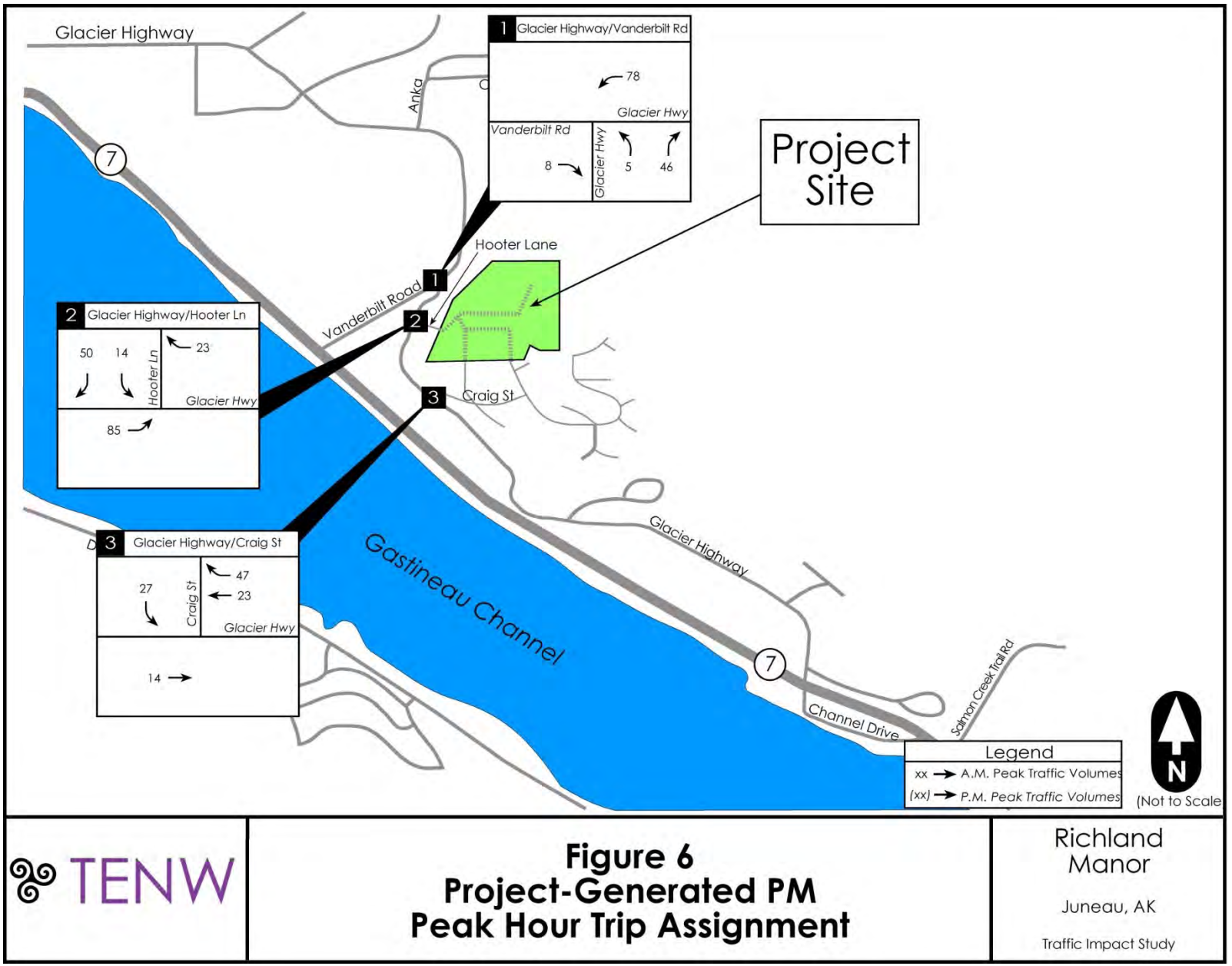


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Figure 6
Project-Generated PM Peak Hour Trip Assignment

Richland Manor
Juneau, AK
Traffic Impact Study

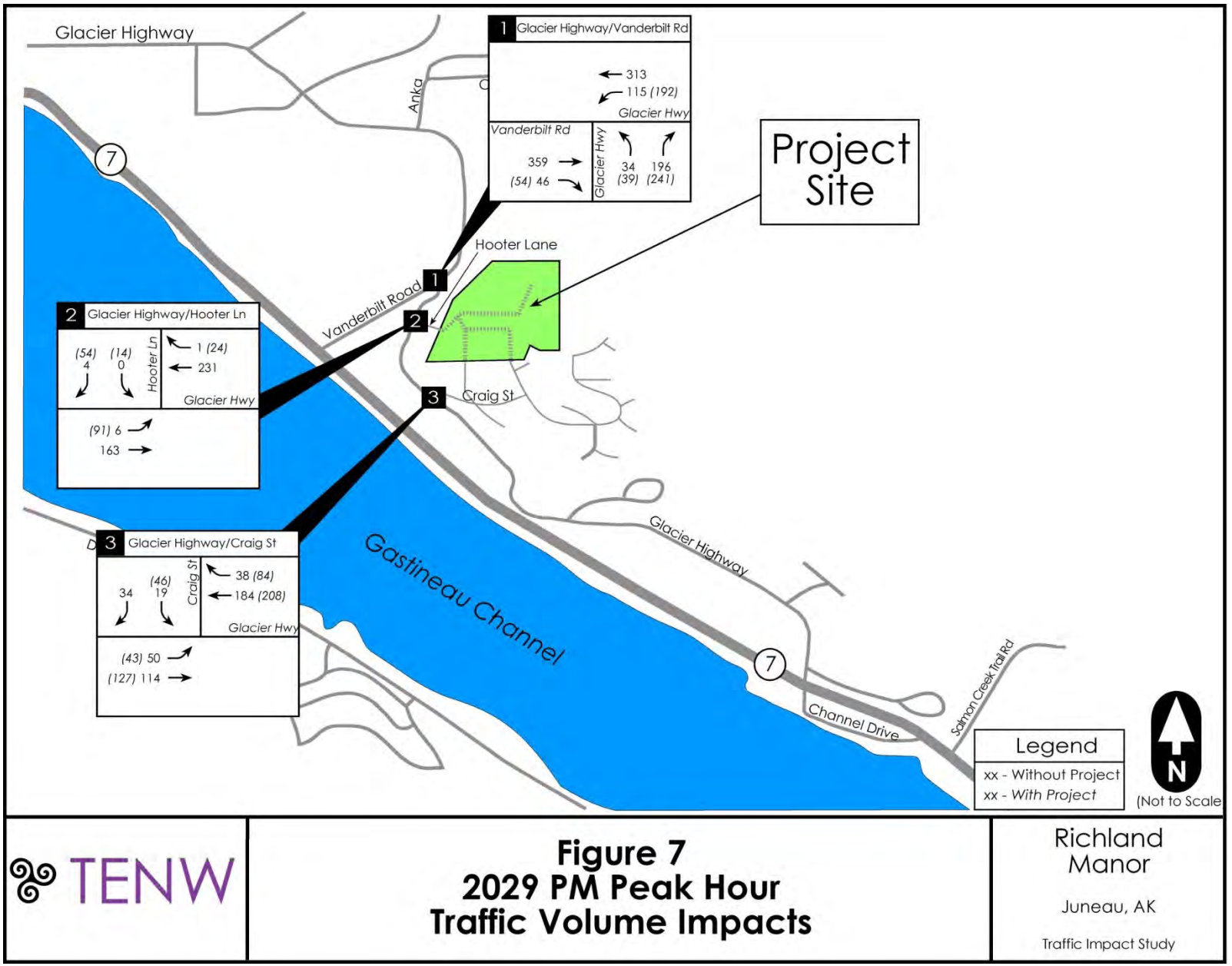

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Figure 7
2029 PM Peak Hour
Traffic Volume Impacts

Richland Manor
Juneau, AK
Traffic Impact Study

Sight Distance

The American Association of State and Highway Transportation Officials (AASHTO) was used to determine entering and stopping sight distance requirements. AASHTO requires 555 feet of entering sight distance and 425 feet of stopping sight distance for a 50 mph design speed (10 mph over posted speed limit of 40 mph) on Glacier Highway. Field-measured sight distances by TENW in 2006 on Glacier Highway east and west of Hooter Lane are estimated to be greater than 700 feet, and are estimated to be greater than 1,000 feet east of and more than 700 feet west of Craig Street. Therefore, entering sight distance at the main site access points onto Glacier Highway at Hooter Lane and Craig Street would exceed AASHTO requirements.

Left-Turn Lane Warrants

Left-turn movements represent critical turning movements at unsignalized intersections, increasing the potential for intersection delay and safety issues. Therefore, the potential need for a left-turn lane onto Glacier Highway at Hooter Lane was analyzed considering typical evening commute periods.

Based upon procedures and guideline's found in Volume Warrants for Left-Turn Storage Lanes at Unsignalized Intersections (Highway Research Record 211), an eastbound left-turn lane is not warranted based upon approximately 35 percent of eastbound left-turns, a 40 mph posted speed limit, advancing volume of approximately 255 vehicles and an opposing volume of 255 vehicles (Attachment 5).

Project Mitigation

A traffic analysis and review was conducted of vehicular trip generation, intersection impacts, and site access, circulation, and safety issues for the proposed *Richland Manor* residential development in Juneau, AK. No direct mitigation measures were found to be necessary as a result of the proposed project. To meet level of service objectives of DOT&PF, the planned pedestrian/bicycle crossing treatment should be modified to preserve existing intersection capacity at its intersection with Vanderbilt Road or review of traffic operational impacts consider that level of service standards would not trigger any project mitigation if existing intersection capacity was maintained under existing conditions per 17 AAC 10.070.

As part of the development, the development would pay for the improvement and/or construction of all new site public access roadways and access connections including construction of Hooter Lane the extension of Abey Way and Hillcrest Drive, and Robbie Road (to serve as secondary fire/emergency vehicle access). A gated control for fire/emergency vehicles utilizing Opticom pre-emption is recommended for ease of fire/emergency vehicle access via Robbie Road.

If you have any questions regarding the information presented in this memo, please call me at (206) 361-7333 x 101 or mikeread@tenw.com.

Attachments:
1. 2019 Traffic Counts
2. Level of Service Summary Sheets
3. Trip Generation Estimates
4. Trip Distribution Observations
5. Turn Lane Warrant per HRR 211

Attachment 1
2019 Traffic Counts

TABULAR SUMMARY OF TURNING MOVEMENT COUNTS

Name: PDC **Date:** 9/25/2019 **City:** Juneau

Project: Richland Manor

Intersection of: Craig Street **and** Glacier Highway

Street:	Craig Street			Craig Street			Glacier Highway			Glacier Highway			Total All	Hour Total
Time	East Bound			West Bound			North Bound			South Bound				
Begins	L	T	R	L	T	R	L	T	R	L	T	R		
3:00 PM													0	
3:15 PM													0	
3:30 PM													0	
3:45 PM													0	0
4:00 PM				3		12		39	12	14	17		97	97
4:15 PM				4		10		36	16	8	27		101	198
4:30 PM				3		8		45	10	9	33		108	306
4:45 PM				3		3		35	11	12	24		88	394
5:00 PM				8		13		50	8	12	21		112	409
5:15 PM				3		7		37	5	12	25		89	397
5:30 PM				1		5		24	11	12	19		72	361
5:45 PM				3		7		37	5	12	25		89	362
Peak Hour	0	0	0	18	0	34	0	166	45	41	105	0		1506

Peak Hour Factor = 409 / (4 × 112) = **0.913**

Transportation Engineering Northwest MJR

TABULAR SUMMARY OF TURNING MOVEMENT COUNTS

Name: PDC **Date:** 9/25/2019 **City:** Juneau

Project: Richland Manor

Intersection of: Hooter Lane **and** Glacier Highway

Street:	Hooter Lane			Hooter Lane			Glacier Highway			Glacier Highway			Total All	Hour Total
Time	East Bound			West Bound			North Bound			South Bound				
Begins	L	T	R	L	T	R	L	T	R	L	T	R		
3:00 PM													0	
3:15 PM													0	
3:30 PM													0	
3:45 PM													0	0
4:00 PM				0		0		52	1	1	30		84	84
4:15 PM				0		1		42	1	0	37		81	165
4:30 PM				0		0		65	1	2	45		113	278
4:45 PM				0		0		34	0	1	30		65	343
5:00 PM				0		2		62	0	2	34		100	359
5:15 PM				0		2		48	0	0	39		89	367
5:30 PM				1		0		35	1	1	29		67	321
5:45 PM				0		1		33	0	0	27		61	317
Peak Hour	0	0	0	0	0	4	0	209	1	5	148	0		1347

Peak Hour Factor = $\frac{367}{4 \quad 113}$ = 0.812

Transportation Engineering Northwest MJR

TABULAR SUMMARY OF TURNING MOVEMENT COUNTS

Name: PDC **Date:** 9/26/2019 **City:** Juneau

Project: Richland Manor

Intersection of: Glacier Highway **and** Vanderbilt Road

Street:	Glacier Highway			Glacier Highway			Vanderbilt Road			Vanderbilt Road			Total All	Hour Total
Time Begins	East Bound			West Bound			North Bound			South Bound				
	L	T	R	L	T	R	L	T	R	L	T	R		
3:00 PM													0	
3:15 PM													0	
3:30 PM													0	
3:45 PM													0	0
4:00 PM				15		47		97	5	25	56		245	245
4:15 PM				11		46		85	10	26	61		239	484
4:30 PM				8		53		80	8	27	61		237	721
4:45 PM				7		36		84	8	20	65		220	941
5:00 PM				12		40		74	15	28	89		258	954
5:15 PM				4		48		87	11	29	68		247	962
5:30 PM				10		32		45	9	18	55		169	894
5:45 PM				12		16		45	10	18	38		139	813
Peak Hour	0	0	0	31	0	177	0	325	42	104	283	0		3578

Peak Hour Factor = $\frac{962}{4 \quad 258}$ = 0.932

Transportation Engineering Northwest MJR

Attachment 2
Intersection LOS Summary Sheets

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	31	177	325	42	104	283
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	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	33	190	349	45	112	304

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	900	372	0	0	395	0
Stage 1	372	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	309	674	-	-	1164	-
Stage 1	697	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	279	674	-	-	1164	-
Mov Cap-2 Maneuver	400	-	-	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	535	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.2	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	612	1164	-
HCM Lane V/C Ratio	-	-	0.365	0.096	-
HCM Control Delay (s)	-	-	14.2	8.4	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.7	0.3	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	148	209	1	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	183	258	1	0	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	259	0	-	0	454	259
Stage 1	-	-	-	-	259	-
Stage 2	-	-	-	-	195	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1306	-	-	-	564	780
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	838	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1306	-	-	-	561	780
Mov Cap-2 Maneuver	-	-	-	-	561	-
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	834	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1306	-	-	-	780
HCM Lane V/C Ratio	0.005	-	-	-	0.006
HCM Control Delay (s)	7.8	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	45	103	167	34	17	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	113	184	37	19	34

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	221	0	-	0	414	202
Stage 1	-	-	-	-	202	-
Stage 2	-	-	-	-	212	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1348	-	-	-	595	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	823	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1348	-	-	-	572	839
Mov Cap-2 Maneuver	-	-	-	-	572	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	791	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1348	-	-	-	720
HCM Lane V/C Ratio	0.037	-	-	-	0.073
HCM Control Delay (s)	7.8	0	-	-	10.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	4.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	34	196	359	46	115	313
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	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	37	211	386	49	124	337

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	995	411	0	0	435	0
Stage 1	411	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	271	641	-	-	1125	-
Stage 1	669	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	241	641	-	-	1125	-
Mov Cap-2 Maneuver	241	-	-	-	-	-
Stage 1	669	-	-	-	-	-
Stage 2	496	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.3	0	2.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	515	1125	-
HCM Lane V/C Ratio	-	-	0.48	0.11	-
HCM Control Delay (s)	-	-	18.3	8.6	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	2.6	0.4	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	6	163	231	1	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	201	285	1	0	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	286	0	-	0	502	286
Stage 1	-	-	-	-	286	-
Stage 2	-	-	-	-	216	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1276	-	-	-	529	753
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	820	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1276	-	-	-	526	753
Mov Cap-2 Maneuver	-	-	-	-	526	-
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	815	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1276	-	-	-	753
HCM Lane V/C Ratio	0.006	-	-	-	0.007
HCM Control Delay (s)	7.8	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	50	114	185	38	19	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	125	203	42	21	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	245	0	-	0	459	224
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	235	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1321	-	-	-	560	815
Stage 1	-	-	-	-	813	-
Stage 2	-	-	-	-	804	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1321	-	-	-	535	815
Mov Cap-2 Maneuver	-	-	-	-	535	-
Stage 1	-	-	-	-	813	-
Stage 2	-	-	-	-	768	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1321	-	-	-	686
HCM Lane V/C Ratio	0.042	-	-	-	0.085
HCM Control Delay (s)	7.8	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	7.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	39	241	359	54	192	313
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	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	42	259	386	58	206	337

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1164	415	0	0	444	0
Stage 1	415	-	-	-	-	-
Stage 2	749	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	215	637	-	-	1116	-
Stage 1	666	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	175	637	-	-	1116	-
Mov Cap-2 Maneuver	175	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	381	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.8	0	3.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	466	1116	-
HCM Lane V/C Ratio	-	-	0.646	0.185	-
HCM Control Delay (s)	-	-	25.8	9	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	4.5	0.7	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	91	163	231	24	14	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	112	201	285	30	17	67

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	315	0	-	0	726	300
Stage 1	-	-	-	-	300	-
Stage 2	-	-	-	-	426	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1245	-	-	-	391	740
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	659	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1245	-	-	-	352	740
Mov Cap-2 Maneuver	-	-	-	-	352	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	592	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1245	-	-	-	603
HCM Lane V/C Ratio	0.09	-	-	-	0.139
HCM Control Delay (s)	8.2	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.5

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	50	127	208	84	46	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	140	229	92	51	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	321	0	-	0	524	275
Stage 1	-	-	-	-	275	-
Stage 2	-	-	-	-	249	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1239	-	-	-	514	764
Stage 1	-	-	-	-	771	-
Stage 2	-	-	-	-	792	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1239	-	-	-	489	764
Mov Cap-2 Maneuver	-	-	-	-	489	-
Stage 1	-	-	-	-	771	-
Stage 2	-	-	-	-	754	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1239	-	-	-	577
HCM Lane V/C Ratio	0.044	-	-	-	0.152
HCM Control Delay (s)	8	0	-	-	12.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	39	241	359	54	192	313
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	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	42	259	386	58	206	337

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1164	415	0	0	444	0
Stage 1	415	-	-	-	-	-
Stage 2	749	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	215	637	-	-	1116	-
Stage 1	666	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	175	637	-	-	1116	-
Mov Cap-2 Maneuver	292	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	381	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.3	0	3.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	547	1116	-
HCM Lane V/C Ratio	-	-	0.55	0.185	-
HCM Control Delay (s)	-	-	19.3	9	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	3.3	0.7	-

Attachment 3
Trip Generation Estimates

Richland Manor Site Plan (47 SF and 356 MF units) October 2019

New	Land Use Code	Size	X	AM Peak Enter	AM Peak Exit	AM Peak Trips	PM Peak Enter	PM Peak Exit	PM Peak Trips	Daily Trips	Method
Single Family Detached Housing	210	47	Units	9	26	35	30	17	47	444	average
Residential Condominiums/Townhouses/Apartments	220	356	Units	38	126	164	125	74	199	2,606	average
Total Trip Generation				**46**	**153**	**199**	**155**	**91**	**246**	**3,050**	

Attachment 4
Trip Distribution Observations

Neighborhood Traffic Distribution along Glacier Highway

AM Peak 2006		
To/From West	69	57%
To/From East	52	43%
	122	

PM Peak 2006		
To/From West	93	56%
To/From East	72	44%
	165	

PM Peak 2019		
To/From West	94	62%
To/From East	57	38%
	151	

Study Assumptions Were:		Average From Observations Above:
To/From West	55%	58%
To/From East	45%	42%

Attachment 5
Turn Lane Warrants per HRR 211

Contents

Volume Warrants for Left-Turn Storage Lanes At Unsignalized Grade Intersections

M. D. HARMELINK, Project Research Engineer (Traffic), Department of Highways, Ontario

This paper describes the derivation of volume warrants and design charts for left-turn storage lanes at unsignalized grade intersections on four-lane and two-lane highways. The design charts are based on a theoretical analysis and on a series of field studies of traffic behavior at intersections.

The analysis is based on a queuing model in which arrival and service times are assumed to follow a negative exponential distribution. The arrival rates are determined by the volumes of left-turning, through or "advancing," and opposing traffic, and by the time interval required by the left-turning vehicle to clear the advancing lane. The service rates are determined by the volume of opposing traffic, and by the time interval required to make a left-turn maneuver.

Field studies of traffic behavior conducted at seven unsignalized Ontario intersections provided average values of the time interval required by a left-turning vehicle to make a left turn and to clear the advancing lane, the delay experienced by a left-turning vehicle because of opposing traffic, gap acceptance and rejection behavior, and actual arrival rates and headway distributions at various volume levels.

•THIS study was undertaken because of the lack of consistent volume warrants for left-turn storage lanes at unsignalized intersections. The usual method of analyzing such intersections individually on the basis of past experience, accident records, complaints from the traveling public, and engineering judgment has led to inconsistency from location to location.

It was felt that the volume warrants developed should be consistent in their evaluation of traffic parameters from location to location; they should provide reasonable recommendations for specific intersections; and they should be based on traffic and operational considerations, rather than on a benefit-cost analysis, because of the difficulty of translating the benefits received to a monetary value on a suitable rational basis.

The study contained three phases: a theoretical analysis, a series of field studies of traffic behavior, and analysis of a series of questionnaires completed for specific intersections by Department of Highways regional traffic engineers.

THEORETICAL ANALYSIS

Queuing theory may be used to analyze operational flow problems where the state of the system changes from time to time and which have elements that follow this basic behavior: A sequence of units arrives at some facility which services each unit and eventually discharges it (1). In our problem, a sequence of left-turning vehicles arrives at some intersection that permits each left-turning vehicle to proceed if and when there is a suitable gap in the opposing traffic stream, and then discharges the vehicle from the intersection. Morse (1) explains that instead of trying to predict in detail how the state of the system changes with time, we can calculate the probabilities that the system is in each of the possible states.

Paper sponsored by Committee on Traffic Control Devices.

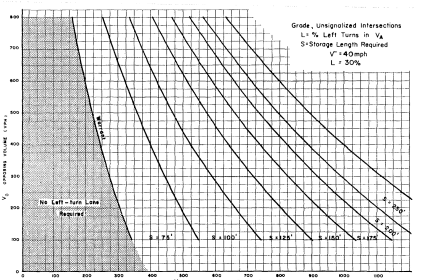

Figure 6. Warrant for left-turn storage lanes on two-lane highways.

Attachment F - Traffic Impact Analysis