



DESIGN STUDY REPORT SUMMARY: SEWARD HWY & ALYESKA HWY INTERSECTION IMPROVEMENTS

Project No. Z546190000

Prepared on behalf of:



State of Alaska
Department of Transportation & Public Facilities
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1.0 INTRODUCTION

The Alaska Department of Transportation and Public Facilities (DOT&PF) has contracted with R&M Consultants, Inc. (R&M) to provide engineering, environmental, and public involvement services for the Seward Hwy & Alyeska Hwy Intersection Improvements project.

The project seeks to improve the capacity, operation, and safety of the intersection.

The Alyeska Hwy intersection at milepost (MP) 90 of the Seward Hwy is an important node along the 125-mile scenic byway and falls within the Safety Corridor (see Figure 1. Project Location and Vicinity Map). It is the gateway into Girdwood and offers the only major stop for fuel and groceries between Anchorage and Seward. The current intersection is an at-grade tee configuration with left and right turn lanes on the Seward Hwy and a free right for Anchorage-bound traffic coming from Alyeska Hwy. See Figure 2. Project Area Map.

Seward Hwy traffic is characterized by extreme seasonal peaks, with summer daily volumes approximately twice the annual average daily traffic (AADT) and winter volumes approximately half the AADT. That reduces the number of available gaps for turning vehicles, leading to increased delay. This is exacerbated by the many access points around the Girdwood Station Mall and associated turning movements.

While the intersection itself does not experience a higher-than-expected crash rate when compared to similar intersections throughout the state, many of the crashes that have occurred involve left-turning vehicles. These crashes have the potential to be high-severity and involve the movements that experience the most delay. Alternatives that reduce the delay for left turns are likely to also improve safety for these movements.

The project is currently scoped through the selection of an alternative and development of the design to the 35% level, including compliance with the Municipality of Anchorage's Context Sensitive Solutions Policy and the National Environmental Policy Act (NEPA).

1.1 PURPOSE AND NEED

The purpose of the proposed project is to increase through-traffic highway capacity, improve intersection operation, and improve safety at the intersection of the Seward Hwy and Alyeska Hwy near the community of Girdwood, Alaska. The need for this project is based on the following:

- **Reduce intersection congestion** – This intersection experiences very poor level of service (LOS) during peak periods, which is measured as substantial delays, excessive queues, and risk-taking behaviors which affect operations and result in safety concerns.
- **Improve safety** – Angle crashes are the prevalent crash type with contributing factors including large vehicles parked along the shoulders blocking intersection sight lines. Nearby driveway and local road intersections are in close proximity to the main intersection, affecting operations and increasing conflicts between turning vehicles.
- **Allow future growth** – Projected increases in Seward Hwy traffic volumes may exceed the capacity of an undivided interstate during the design life. Accommodating future expansion without precluding adjacent developments is necessary.

This intersection improvement project is working to address the following issues identified by the public, DOT&PF, and other stakeholders:

- Conflicting left turn movements (primary safety and delay concern)
- Access for Old Girdwood Townsite neighborhood
- Operation of Seward Hwy for through-traffic in the short and long-term

1.2 MOA CONTEXT SENSITIVE SOLUTIONS (CSS)

The MOA requires that the Strategy for Context Sensitive Design of Transportation Projects be applied to transportation projects within the MOA, including those owned and managed by DOT&PF. Therefore, the Seward Hwy & Alyeska Hwy Intersection Improvement project is being reviewed by the Planning & Zoning Commission and Urban Design Commission prior to final design and construction.

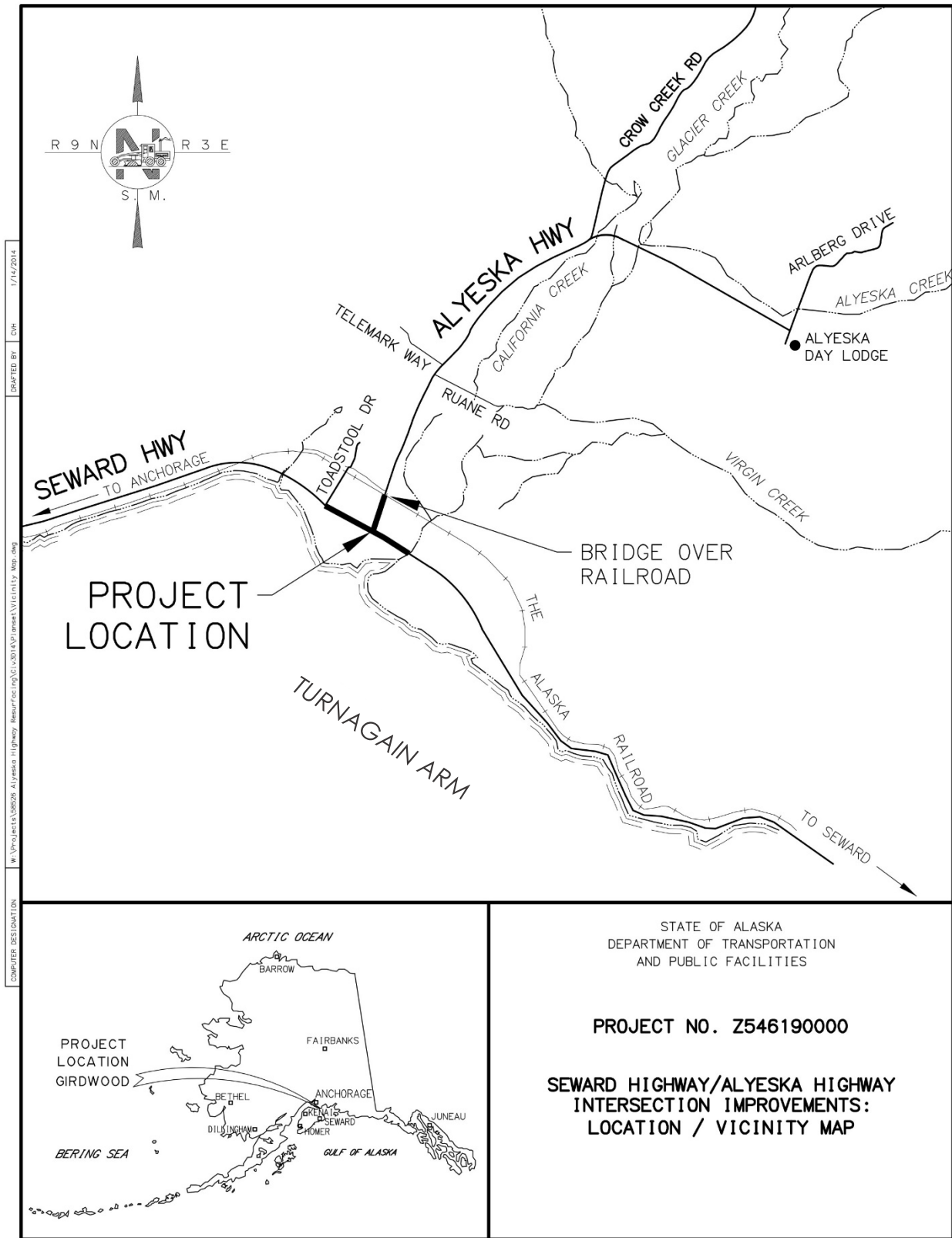


Figure 1. Project Location & Vicinity Map

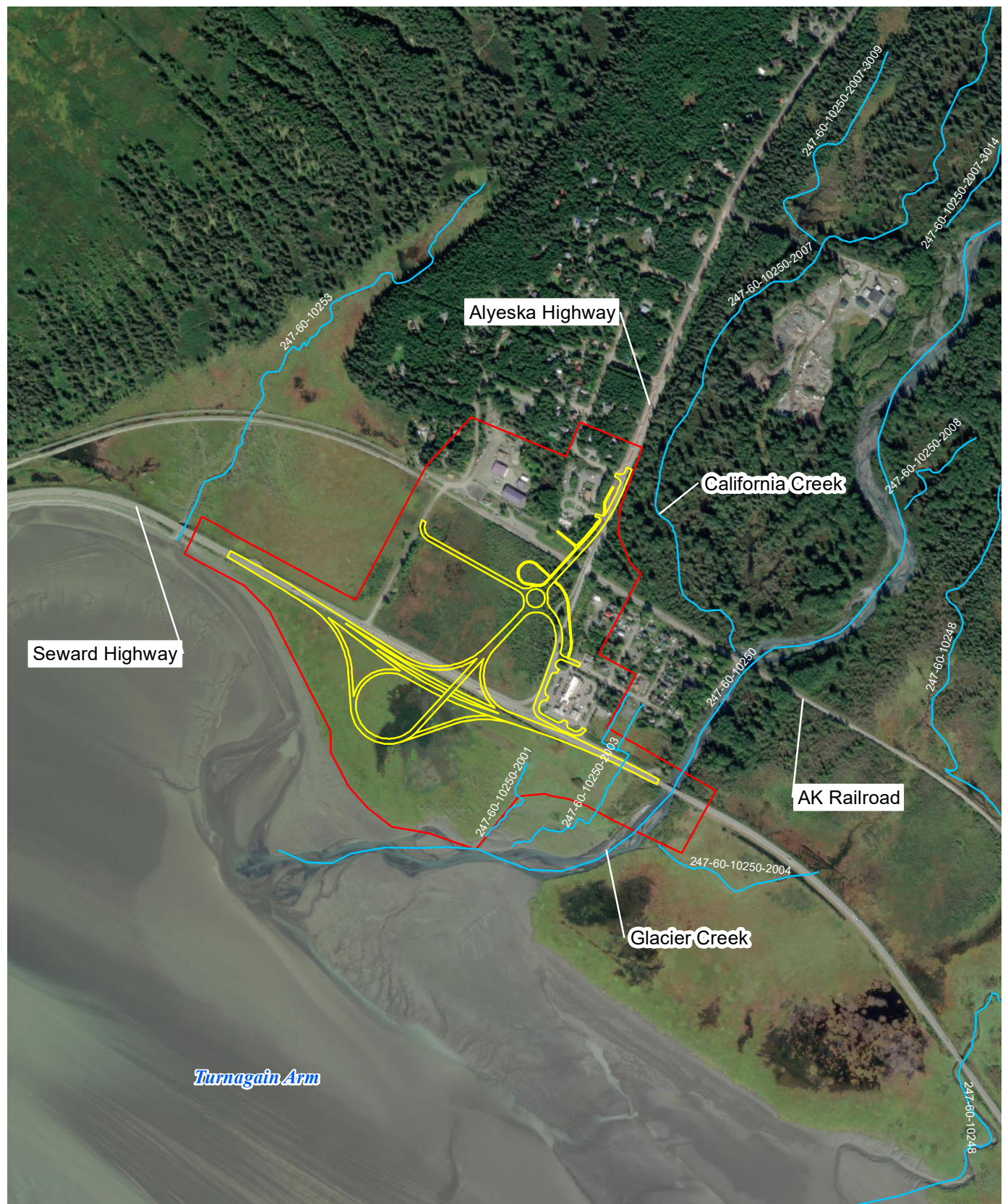
1.3 STATUS

The *CSS Concept Report* was presented to the Planning & Zoning Commission (PZC) in December 2020. Following the PZC meeting, eleven intersection alternatives, including a no-build, were developed and presented to the public and other stakeholders. Since then, detailed analysis and evaluation of the alternatives has been completed and a recommended concept level alternative has been developed. The Recommended Concept Level Alternative was presented to the community in June and July 2022 and the project team has been meeting with stakeholders to discuss and refine it since. The Draft DSR 35% Design Document has been developed and is being submitted for review.

2.0 CONTEXT

The Seward Hwy is the only roadway connecting Seward to Anchorage, serving as the essential corridor for freight, passenger, and occasional non-motorized transportation. The high-volume, high-speed corridor lies between the Turnagain Arm tidelands and the Chugach mountains and is designated as a National Scenic Byway, attracting both recreational visitors and utilitarian users. The intersection of the Seward Hwy and Alyeska Hwy is the gateway to the community of Girdwood; home to more than 1,700 residents and a destination for visitors year-round. The intersection is located within the Seward Highway Safety Corridor, one of four similar corridors in Alaska with a higher-than-average incident of fatal and serious injury crashes.

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ALL LOCATIONS ARE APPROXIMATE
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NOTES:
ESRI World Imagery



- Anadromous Streams
- Preliminary Project Footprint
- Preliminary Project Area

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES
CENTRAL REGION

PREPARED BY:
R&M CONSULTANTS, INC.

SEWARD HWY & ALYESKA HWY
INTERSECTION IMPROVEMENTS
Z546190000

PROJECT AREA MAP

PROJ.NO:	2860.01
DATE:	JUN 2022
REF:	COA
FIGURE:	2

2.1 LAND USE

The current intersection is an at-grade tee configuration with left and right turn lanes on the Seward Hwy and a free right for Anchorage-bound traffic coming from Alyeska Hwy. Northeast of the intersection is the Girdwood Station Mall, which features retail and restaurant tenants and the Tesoro gas station/convenience store, which is one of the most visited stations in the state. Beyond the Girdwood Station Mall is the Old Girdwood Townsite, an established residential neighborhood. North of the intersection, Girdwood Station Mall, and residential neighborhood is the Alaska Railroad, which the Alyeska Hwy crosses above grade. Land northwest of the intersection is vacant, and to the south of the Seward Hwy are Turnagain Arm tidelands.

2.2 GUIDING DOCUMENTS

2.3.1. Girdwood Area Plan, 1995

The Girdwood Area Plan, adopted in 1995, serves as the guiding document for the community of Girdwood. Outside of the Anchorage Bowl, Girdwood is not part of the Anchorage 2040 Land Use Plan or the Anchorage 2020 Comprehensive Plan. The Girdwood Area Plan contains a Land Use Plan which is intended to guide physical development of the Girdwood Area. The Land Use Plan designates the area adjacent to the Seward Hwy & Alyeska Hwy intersection as Commercial and Commercial/Residential use.

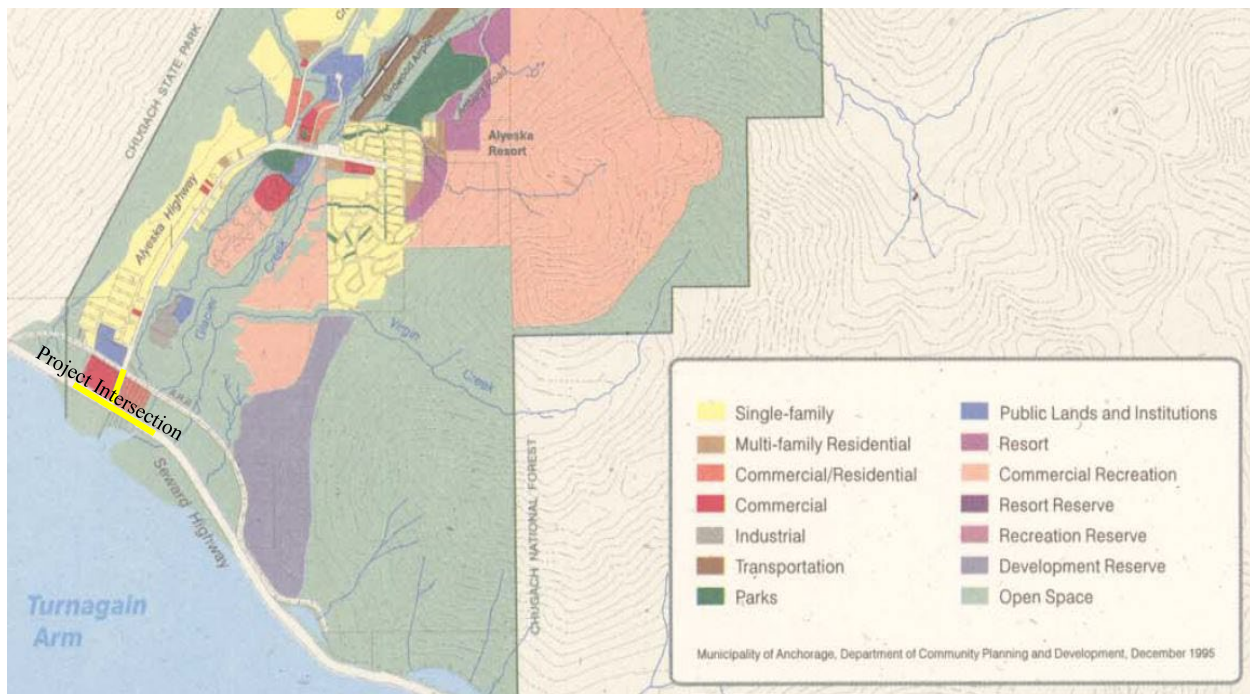


Figure 3. Girdwood Area Plan, Land Use Plan Map

According to the Plan, both Commercial and Commercial/Residential areas “...are primarily intended to provide trade and services for local residents as well as for visitors, and an increasing threshold for feasibility for new and more diversified trade and service providers as the area’s

population and visitorship increases are expected.” Commercial/Residential areas are substantially developed with a mix of commercial and residential uses.

The Girdwood Area Land Use Plan recommends three general areas where commercial development should be concentrated to limit the impact of additional commercial development along the Alyeska Hwy to retain community character. One of these commercial areas is located at the entrance to the valley, centered on the Seward Hwy & Alyeska Hwy intersection. This commercial area is described in the Plan as follows:

Valley Entrance

The old townsite area is classified residential/commercial in keeping with the current mix of uses. New development will require additional public facilities and consolidation of lots that were created with the original platting of the site. However, over time the area will undergo new development and redevelopment. Its location is suitable for capturing the highway traveler-oriented market, as well as local residents.

The commercially designated area across the [Alyeska] highway from the old townsite is current a vacant wetland area, with slightly more than one acre of upland area near the railroad line. This area shares many similar locational attributes with the old townsite area. Use of this area will have to be handled carefully, both from an environmental and community aesthetics perspective.

An important use for a portion of this area will also be for transportation use. Regularly scheduled rail service may likely occur sometime during the timeframe of this Plan. The site could also be used for a park-and-ride for commuters traveling between Girdwood and Anchorage, and for visitors to the resort base areas in the valley. Therefore, any commercial use of this site should consist of complementary uses to any future transportation facilities.

Additionally, the 1995 Girdwood Area Plan has the following recommendations relevant to this intersection improvements project:

- As traffic increases at the intersection of Seward and Alyeska Highways, consideration should be given to channelization in order to allow for smoother traffic flow and safer turning movements.
- The plan encourages the MOA, Alaska Railroad Corporation (ARRC), owner of the Alyeska Resort, and any other future major resort operations to consider actions that will reduce the number of vehicle trips between Anchorage and Girdwood (ex. van pools, ride shares, passenger rail).

Improvements to the safety, operation, and capacity of the Seward Hwy & Alyeska Hwy intersection supports the recommendations made in the Girdwood Area Plan,



Figure 4. Girdwood Area Land Use Plan, Project Area Enhancement

Land Use Plan. Providing improved access, turning movements, and safety at the intersection will likely have similar benefits to the Valley Entrance commercial properties. This project also directly implements the identified Transportation Goal of the plan to improve intersection traffic flow and turning movements.

2.3.2. Girdwood Commercial Areas and Transportation Master Plan, 2001

The Girdwood Commercial Areas and Transportation Master Plan was adopted in 2001 and expands on the Girdwood Area Plan by providing a functional plan focused on the interdependency of land use and the transportation network. The plan is based on the understanding that good mobility results in greater accessibility, bringing more pedestrian activity to commercial areas. The guiding principles established in the Girdwood Area Plan are also reflected in the Commercial Area and Transportation Master Plan.

Chapter 10, *The Valley Entry and the Original Girdwood Townsite*, includes objectives and recommendations that pertain to the Seward Hwy & Alyeska Hwy Intersection Improvements study area. These objectives in this chapter provide the foundation for planning and decisions in the original townsite area, which is identified as the Valley Entry commercial area. The Valley Entry serves a significant function as a commercial crossroad and as the community's front door.

Chapter 10 Community Objectives for the Valley Entry:

- Preserve the expansion of community history
- Respect the environment, especially high-value wetlands, and preserve the sense of connection to the natural landscape
- Maintain the area's eclectic mixed-use, small-scale development pattern
- Provide an attractive gateway to Girdwood
- Improve community and regional connections

Chapter 10 Circulation Improvements Identified include:

- Multimodal Center, Transit & Parking: development of a multimodal transit facility on the vacant property northeast of the Seward Hwy & Alyeska Hwy intersection, south of the AARC tracks, which would provide commuter and recreational visitor parking needs, and a transit terminal for Glacier Valley Transit and railroad passengers.
- Gold Ave: extend Gold Ave to its platted intersection at the Alyeska Hwy to access the Old Townsite and connect it with the planned/intended multimodal center.
- Gold Ave: upgrade Gold Ave to collector status between Alyeska Hwy and Main St. Add accel/decel lanes on both sides of Alyeska Hwy at the new intersection and reconfigure the bike path as needed to accommodate the roadway improvements.
- Tesoro entries: consolidate the access points into the Tesoro station from the highways. Replace the northernmost access from Alyeska Hwy with the new entry from Gold Ave.

The recommendations identified to improve circulation are being taking into consideration for this project. There are currently no known development plans for the vacant property northwest of the subject intersection.

2.3 ZONING

Properties adjacent to the Seward Hwy and Alyeska Hwy feature a mix of commercial and public lands zoning designations. See Figure 5. MOA Zoning Map. Land south of the Seward Hwy (Turnagain Arm adjacent) is zoned Public Lands and Institutions. North of the intersection is commercially zoned land; northwest of the intersection is zoned GC-1, Seward Highway/Alyeska Highway Commercial, northeast of the intersection is zoned GC-2 Girdwood Station/Seward Highway Commercial, and GC-3 Old Townsite Commercial/Residential.

2.3.1. GC-1: Seward Highway/ Alyeska Highway:

Anchorage Municipal Code (AMC) 21.09.040C.2a defines this district as the land located north of the Seward Highway, west of the Alyeska Highway, and south of the railroad at the entrance to the Girdwood Valley, containing approximately 23 acres. The district's intent is to create a mix of rail, bus, trail and highway-related commercial uses and various transportation mode terminals (passenger terminal, trailhead, bus, or auto transfer points). This district shall become an attractive gateway to Girdwood Valley, with visual character approximate to the entry to a mountain resort community. Landmark-quality elements are encouraged in a development visible from the highways, and the design of larger buildings shall make every effort to reduce the perception of building mass and make the building appear to be aggregation of smaller, simple forms.

2.3.2. GC-2 Girdwood Station/Seward Highway Commercial:

AMC 21.09.040C.2b defines this district as the land on the east side of the Alyeska Hwy, west of Dawson Street, at the intersection of the Alyeska Hwy with the Seward Hwy (the district fronts both highways). The district's intent is like that of the GC-1, it is to be part of an attractive gateway to a mountain resort community. Due to proximity to the Seward Hwy, residential uses are not appropriate in this district. Landmark-quality elements are encouraged in any development visible from the highways. Building and landscape materials, such as natural wood, native trees and flowers, and local stone shall be emphasized.

2.3.3. GC-3 Old Townsite Commercial/Residential:

AMC 21.09.040C.2c defines this district as the land north of the GC-2 district, east of the Alyeska Hwy, south of the Alaska Railroad, and west of Glacier Creek at the entrance to Girdwood Valley. This district reflects the development pattern of early Girdwood, with a mix of houses and small businesses on small lots creating the appearance of a small, historic town that is intended to be retained. There are still many vacant lots in this district to be developed with either residences or small commercial and craft-oriented businesses to retain the unique scale and visual quality of this district.

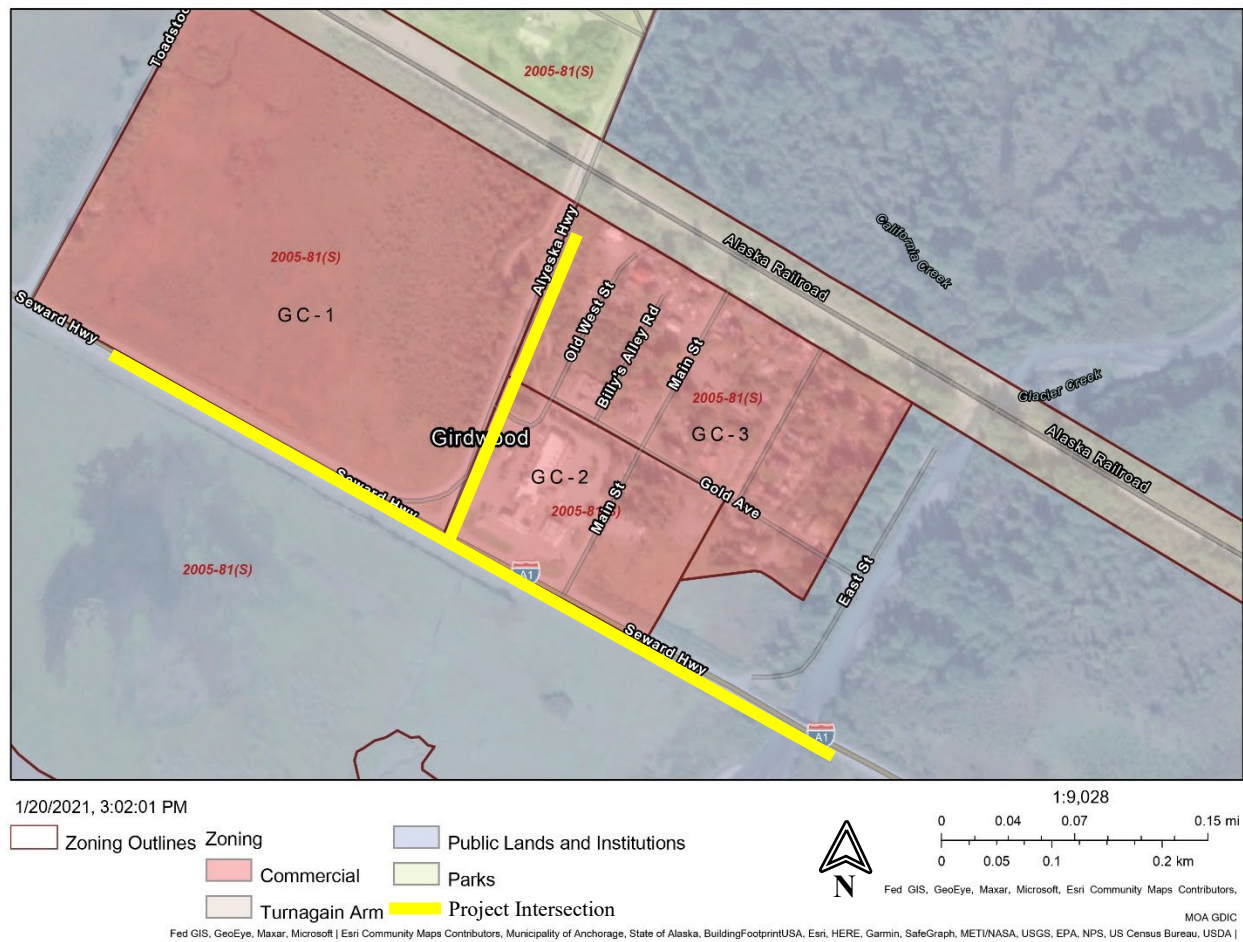


Figure 5. MOA Zoning Map

3.0 EXISTING CONDITIONS

3.1. OWNERSHIP & RIGHT-OF-WAY AVAILABILITY

The Seward Hwy and Alyeska Hwy are owned by the State of Alaska and operated/maintained by DOT&PF. The Seward Hwy Right-of-Way (ROW) is 300 feet wide west of the project intersection and narrows to 180 feet east of the intersection. The Alyeska Hwy ROW varies between 188 feet and 224 feet in the vicinity of the project intersection. See Figure 6.

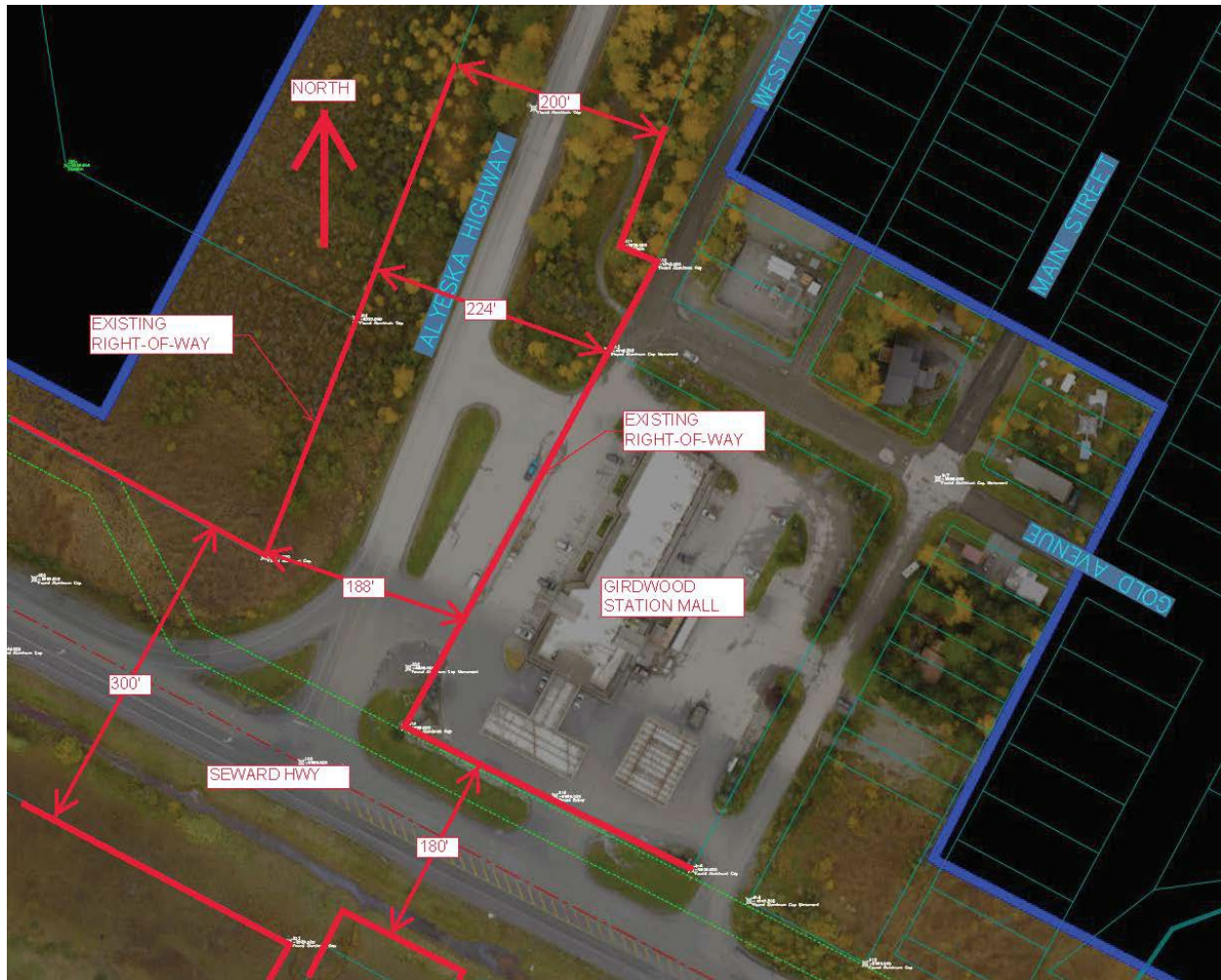


Figure 6. Existing ROW Widths

3.2. TRAFFIC CONDITIONS

Kinney Engineering (KE) prepared a detailed Existing Conditions Report. The following is a summary of key information from their report. Additional details are provided in the Concept Report.

3.2.1. Seward Highway

The Seward Hwy is part of the National Highway System and functions as an Interstate Highway and principal arterial. North of the Alyeska Hwy, the Annual Average Daily Traffic (AADT) on the Seward Hwy is around 7,500 vehicles per day, while south of the Alyeska Hwy the Seward Hwy carries around 5,000 vehicles per day. The interstate has a posted speed limit of 55 miles per hour (mph) at the study intersection which increases to 65 mph on either side of the intersection. Radar data collected by KE in September 2020 suggests that 85th percentile speeds traveling eastbound through the intersection (towards the Placer River) averages around 63 mph while the 85th percentile travel speeds westbound (towards Anchorage) are around 66 mph. However, data was collected near the Seward Highway MP 75-90 construction site and as such 85th percentile speeds under normal conditions may be higher.

3.2.2. Alyeska Highway

The Alyeska Hwy is a minor arterial that provides access to the scenic resort town of Girdwood, which is within the MOA. The Alyeska Hwy carries around 2,800 AADT and has a posted speed limit of 45 mph. 2020 KE radar data suggests 85th percentile speeds of 48 mph on the Alyeska Hwy.

Table 1. Roadway Characteristics

Name	Approx. Location	Classification	Cross Section	Speed Limit (mph)	Sidewalks/ Pathways	Bike Facility
Seward Hwy	Study Area (MP 90)	Principal Arterial: Interstate Hwy	2-Lane Undivided with designated turn lanes, southbound right receiving lane, median striping, and median rumble strips	55	Not at study intersection	Wide shoulders with rumble strips
Seward Hwy	West of Toadstool Drive	Principal Arterial: Interstate Hwy	3-Lane Undivided with 2 lanes westbound, 1 lane eastbound and median rumble strip	65	Bird to Gird Pathway	Wide shoulders with rumble strips
Seward Hwy	Approximately 2000' east of Alyeska Hwy	Principal Arterial: Interstate Hwy	2-Lane Undivided with median rumble strip	65	No	Wide shoulders with rumble strips
Alyeska Hwy	Study Area	Minor Arterial	2-Lane Undivided	45	Separated Pathway	Separated Pathway

3.2.3. Intersections

The study intersection is a 3-leg unsignalized intersection with a free channelized southbound right from the Alyeska Hwy onto the Seward Hwy. The only movements that experience delay due to intersection control are the left turn movements; the southbound left turn from Alyeska onto Seward is stop controlled, while the vehicles wishing to make an eastbound left from Seward onto Alyeska must yield to westbound Seward traffic.

There are four other intersections that are included in the study area:

1. Alyeska Hwy with north Girdwood Station Mall driveway
2. Alyeska Hwy with south Girdwood Station Mall driveway
3. Seward Hwy with Girdwood Station Mall driveway
4. Seward Hwy with Main Street

All movements at the four intersections are unrestricted. Intersections 1, 3, and 4 are T-intersections with stop-control on the minor leg. Intersection 2, which has stop-control on the Girdwood Station mall driveway, function as a 4-leg intersection with the channelized right from Alyeska onto the Seward serving as a one-way fourth leg. See Attachment 3. Turning Conflicts Existing Condition.

3.2.4. Crashes

DOT&PF provided available crash data for the roadways and intersections in the study area from 1977 through 2017. Intersection crashes were defined as crashes that occurred within 250 feet of the study intersection or within an intersection turn lane, even if the turn extended further than 250 feet from the intersection. Segment crashes were defined as crashes that occurred within listed segments of the study area, but not within 250 feet of any intersection or within an intersection turn lane.

The Seward Hwy at Alyeska Hwy intersection has a crash rate above the statewide average but below the Critical Accident Rate (CAR) for similar facilities, indicating that the crash rate is not statistically different from the average for similar facilities. The segment crash rate analysis shows that the Seward Hwy and Alyeska Hwy road segments fall below the statewide average, indicating no statistical evidence that the segments have poor safety performances or an unusually high crash rate.

For the 2013 to 2017 crash period, the intersection and segments studied have crash rates at or below average for similar facilities. Analysis of crash data from 2008 to 2017 indicates that angle crashes are the primary safety concern for this intersection. Analysis of historical crash data from 1977 to 2007 supports the conclusion that right angle and left turn angle crashes are a safety concern at the intersection. Angle crashes frequently occur between southbound left turn vehicles and westbound vehicles. Crash descriptions available for the most recent years indicate that a common theme for these types of crashes is that westbound vehicles turning right either into the Girdwood Station Mall or onto Alyeska Hwy block the sight from southbound drivers turning left from Alyeska Hwy onto the Seward Hwy. This is corroborated by the observations made during sight distance measurements.

From 1980 to 2017, 64% of all Seward Hwy and Alyeska Hwy crashes resulted in property damage only. Minor injury crashes made up 28% of all crashes, 6% were major injury and the remaining 2% of crashes have an unknown severity. No fatal crashes occurred at the intersection during the study period, which was corroborated by the Girdwood Fire Department. The following graph summarize the severity of Seward Hwy and Alyeska Hwy crashes by year.

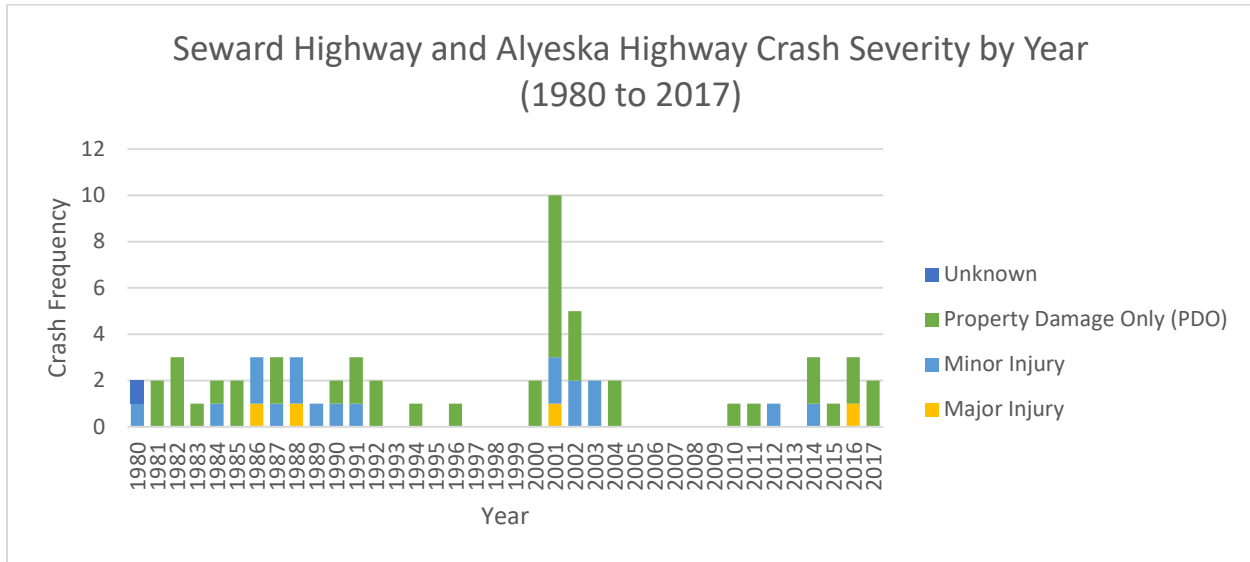


Figure 7. Seward Hwy & Alyeska Hwy Crash Severity by Year

3.3. PEDESTRIAN CONDITIONS

There are no pedestrian and bicyclist accommodations in the traffic study area, although two bicyclists were observed during traffic counts. Pedestrians and cyclists are accommodated by the Bird to Gird pathway which parallels the Alaska Railroad and crosses the Alyeska Hwy north of the study intersection, south of the Alaska Railroad overpass. The Bird to Gird Pathway intersects the Alyeska Hwy separated pathway north of the study area. The pathway connects from the west side of Alyeska to the east via a tunnel under the highway, connecting to Old West Street and Gold Avenue to provide non-motorized users access to the retail and residential uses of the Station Mall and Old Town Girdwood.

3.4. TRANSIT

Glacier Valley Transit serves the project area, with a stop at the Girdwood Station Mall (one-hour headway) and seasonal travel through the study intersection to make a southbound right from Alyeska Hwy onto the Seward Hwy in route to serve the Train Depot.

3.5. ENVIRONMENTAL CONDITIONS

The existing Seward and Alyeska Highway intersection is adjacent to Turnagain Arm in an area consisting of high-value tidal and estuarine wetlands and waters that provide habitat for migratory birds, eagles, and fish, and offshore critical habitat for the Cook Inlet beluga whale. The project vicinity also includes developed commercial areas (Girdwood Station Mall, etc.), the Alaska Railroad, trails, utility infrastructure, and other constructed features. Complete avoidance of

environmental impacts is not possible; however, avoidance, minimization and mitigation measures are being considered throughout the design.

A wetland delineation was conducted and a functional assessment report was prepared for the project in 2020. The 87-acre study area for the delineation encompassed the preliminary project footprints for various alternatives. The goal of this task was to update wetland boundaries, provide a functional assessment, and assign relative ecological values (REV) for the potentially affected wetlands and waters (Figure 8. Wetland Ecological Value¹). Coordination with the U.S. Army Corps of Engineers (USACE) is planned to identify permitting and compensatory mitigation requirements. Additional field or desktop studies (i.e., cultural resources investigation) will be conducted as needed to inform the project and potential effects.

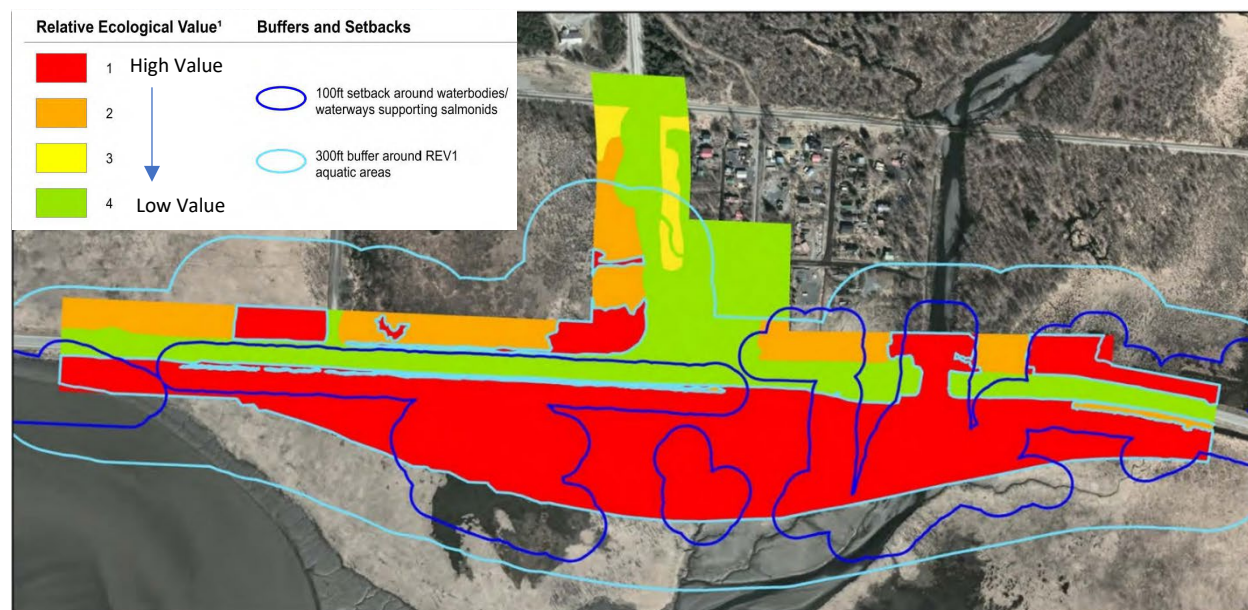


Figure 8. Wetland Ecological Value

DOT&PF is leading environmental efforts for the project including compliance with the National Environmental Policy Act (NEPA) and permitting. The level of NEPA review (Class of Action) is still being determined; however, the project team is striving to avoid and minimize environmental impacts as much as practicable. The study area will be researched and analyzed for wetland, environmental, socioeconomic, cultural, and historic resource impacts in accordance with NEPA, Section 106 of the National Historic Preservation Act, and all other applicable local, state, and Federal regulations and executive orders.

3.6. DRAINAGE

The existing Seward and Alyeska Highway intersection lies within a hydrologically complex area along the margin of Turnagain Arm. The project site is characterized by flat, low-lying terrain within a region that receives high annual precipitation. The combination of high precipitation, flat topography, and relatively fine-grained soils contributes to poor drainage from the site and the

¹ Based on delineation from 2020, subject to US Army Corps of Engineers review and approval.

presence of a shallow groundwater table. Any modifications to the storm drainage system at the site will address the shallow groundwater issues.

The site is located a short distance to the west of the estuary of Glacier Creek, and terrain to the south of the Seward Highway is within the intertidal zone of Turnagain Arm. The project site is therefore subject to both coastal and riverine flooding. MOA Flood Insurance Rate Maps (FIRMs; Map No. 0200051558D) show the area on the south side of the Seward Highway, and areas on the north side of the highway and to the east of the Alyeska Highway as being in a coastal flooding Zone A. This is defined by FEMA as a Special Flood Hazard Area subject to inundation by the 1-percent-annual-chance flood event. No Base Flood Elevations (BFEs) or flood depths are shown on FIRMs in Zone A areas because detailed hydraulic analyses have not been performed. Areas on the north side of the Seward Highway and to the east of the Alyeska Highway are within riverine flooding Zones AE and AO. Zone AE is defined by FEMA as an area subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods, and BFEs are shown within these zones on FIRMs. Zone AO is similar to Zone AE but is restricted to areas of shallow flooding (usually areas of ponding) where average depths are 1–3 feet. BFEs are shown on FIRMs for this zone as well. Regulatory floodways have been defined for Glacier Creek north of the Seward Highway, and for both Glacier Creek and California Creek above their confluence to the north of the Alaska Railroad bridge. A preliminary discussion of MOA flood hazard permitting requirements was conducted with MOA Flood Hazard Administrator Steve Ellis and representatives of the DOT&PF and R&M Consultants, Inc. on August 18, 2020. It was concluded during the meeting that the project will have no impact on coastal flood elevations at the site and a No-Rise Certification will not be required to receive a Flood Hazard Permit.

The Alaska Department of Fish and Game has identified three anadromous waterbodies in the project area in the Anadromous Waters Catalog (AWC). These include Glacier Creek (AWC No. 247-60-10250), a small stream that crosses the Seward Highway in a culvert located midway between the gas station and Glacier Creek (WC No. 247-60-10250-2003), and a small intertidal stream that provides access to a pond on the south side of the Seward Highway via a ditch along the highway embankment (247-60-10250-2001). The two smaller streams have the potential to be impacted by the proposed project. Any new or replacement crossings of these two streams would be designed and constructed to assure unobstructed fish passage.

Surface water in the constructed environment is conveyed via sheet flow, culverts, and storm drain systems. The predominant drainage gradients are northwest to southeast. The most prominent storm drain system is located around the Girdwood Station Mall. Drainage from the Old Girdwood Townsite (between Alyeska Highway and Main Street) is routed to an inlet south of Gold Avenue, midway between West Street and Main Street. From there, an underground storm drain system consisting of several manholes routes the runoff toward the Seward Highway, where it is received by another storm drain system running east-west. This system discharges the runoff to the northeast quadrant of Main Street and Seward Highway.

The portion of the storm drain system that bisects the Girdwood Station Mall parcel does not appear to be covered by an easement or similar permit clarifying ownership and maintenance responsibility.

3.7. LANDSCAPING

Natural vegetation surrounds the intersection to the south and northwest. The Girdwood Station Mall features some landscaping, consisting of vegetated buffers, ornamental trees, decorative fences, and signs.

3.8. UTILITIES

Intersection lighting is provided by two electroliers, one located southwest and the other northeast of the intersection. The Chugach Electric Association substation, which services the Girdwood Valley, is located east of the Alyeska Hwy in the Old Girdwood Townsite, north of the Station Mall, on Gold Ave. Major overhead electric utilities parallel both sides of the Seward Highway, with one crossing Alyeska Highway near Gold Avenue.

A piped sanitary sewer system services the Old Girdwood Townsite, operated by the Anchorage Water and Wastewater Utility (AWWU) and collected at a lift station located near Gold Avenue and Main Street. Potable water is being supplied by private wells located on individual lots. Other utilities located in the project area are natural gas, fiber optic, and storm drains.

4.0 DESIGN STANDARDS AND GUIDELINES

DOT&PF owns and maintains the Seward Hwy and Alyeska Hwy. The Seward Highway is an Interstate Highway (principal arterial) and part of the National Highway System. The Alyeska Hwy is a minor arterial. Project improvements will be designed in compliance with the following standards and guidelines:

Standards

- A Policy on Geometric Design of Highways and Streets (PGDHS), 6th Edition, AASHTO, 2011.
- Roadside Design Guide (RDG), 4th Edition, AASHTO, 2011.
- Alaska Highway Preconstruction Manual (HPCM), DOT&PF, 2005 as amended.
- Alaska Highway Drainage Manual (AHDM), DOT&PF, 2006.
- The Alaska Traffic Manual (ATM), consisting of the Manual on Uniform Traffic Control Devices (MUTCD), 2009 as amended, U.S. DOT, FHWA) and the Alaska Traffic Manual Supplement (ATMS), DOT&PF, 2016.
- ADA Standards for Transportation Facilities, DOT, 2006.
- ADA Standards for Accessible Design, DOJ, 2010.
- Guide for the Development of Bicycle Facilities, 4th Edition, AASHTO, 2012.
- Recommended Practice for Roadway Lighting (RP-8-14), ANSI / IES, 2014.
- Highway Capacity Manual (HCM), 5th Edition, TRB, 2010.

Guidelines:

- Proposed Accessibility Standards for Pedestrian Facilities in the Public Right-of-Way (PROWAG), U.S. Access Board, 2011.
- Guide for the Planning, Design, and Operation of Pedestrian Facilities, 1st Edition, AASHTO, 2004.

Should any MOA owned and operated facilities be impacted by this project, they will be designed in accordance with the following standards:

- Design Criteria Manual (DCM), MOA, Project Management & Engineering Department, 2007 with 2018 revision.

An exception to design standards will be sought if one or more design standards cannot be met by the preferred alternative. At this point it is unknown whether that will be necessary, and all attempts will be made to adhere to design standards.

5.0 PUBLIC ENGAGEMENT SUMMARY

In 2018, the Girdwood Board of Supervisors passed a Resolution of Support for the Improved Seward Highway Interchange at Girdwood (GBOS Resolution 2018-16). GBOS urged DOT&PF to include the Girdwood Interchange in the Milepost 75-90 Project as it would maximize efficiency of DOT&PF planning and construction resources and minimize traffic disruption. The resolution identifies the Seward Hwy and the intersection as a critically important community-connecting link, the Seward Hwy as a major safety concern for fatal and nonfatal accidents, the Girdwood Volunteer Fire Department as the first responders, and increased projected traffic volumes. Resolution 2018-16 is provided as Attachment 1.

Public involvement efforts for this project were planned and conducted using the MOA CSS Policy as a guideline as well as the requirements of NEPA for environmental document development. Outreach was conducted (virtually, to comply with COVID pandemic related mandates) from the initial phase of the project, scoping, by engaging, informing, and educating potentially affected stakeholders, agencies, and elected officials. The following actions have been completed to date to engage stakeholders, agencies, the public and potentially affected interests:

1. Project Specific Website: <http://www.sewardalYESkahwyintersection.com/>
 - Accessible all-in-one place for public project information and engagement opportunities that is updated throughout the project's duration
 - Members of the public can submit comments via the website or email at any time
2. Girdwood Board of Supervisors Meeting: September 21, 2020
 - Appearance at GBOS to introduce the project and collect public input
 - Elected officials or their representatives regularly attend and provide updates at GBOS meetings; Suzanne LaFrance and John Weddleton were in attendance

3. Girdwood Alliance Meeting: October 29, 2020
 - Appearance at Girdwood Alliance to introduce the project and collect public input
4. Meeting with Marathon Petroleum (Girdwood Station Mall operator/tenant): November 2, 2020
 - Stakeholder meeting to learn about current issues and opportunities, specifically related to driveway access, circulation, parking, and peak operating times
5. Anchorage Transportation Fair: November 18, 2020
 - Project was presented multiple times over a 4-hour period and collected public input
 - Event was live streamed on DOT&PF Facebook Pages and on PublicInput.com
6. Public Open House 1: December 10, 2020
 - Advertised Notice in the Alaska Daily News
 - Postcard notifications/invites to the meeting were mailed 21 days in advance to 1,254 property owners in Girdwood, Bird, Indian and Portage, and an additional 1,309 postcards to all PO Box holders in Girdwood to ensure sufficient notice for area residents.
 - GBOS advertised the agenda via their emailing list
 - DOT&PF created and shared a Facebook event
 - See Concept Report and Attachment 8. Public Meeting Summary
7. Kenai Peninsula Transportation Fair: February 25, 2021
 - Project was presented multiple times over a 4-hour period and collected public input
 - Event was live streamed on DOT&PF Facebook Pages and on PublicInput.com
8. Planning & Zoning Commission Appearance: March 1, 2021
 - Concept Report was presented to the PZC and their input collected
9. Girdwood Board of Supervisors Meeting: March 15, 2021
 - Presented preliminary conceptual alternatives, collected public input, and advertised Open House #2 in April
10. Meeting with Marathon Petroleum: April 5, 2021
 - Present preliminary conceptual alternatives with a focus on local access and collect their input
11. Meeting with Alaska Trucking Association: April 13, 2021
 - Present preliminary conceptual alternatives and collect their input
12. Public Open House 2: April 22, 2021
 - Present preliminary conceptual alternatives and collect public input

- Postcard notifications/invites to the meeting were mailed 21 days in advance to 2268 addresses, including property owners in Girdwood, Bird, Indian and Portage and PO Box holders in Girdwood to ensure sufficient notice for area residents.
 - GBOS advertised the meeting via their email list & announcements at their regular March meeting
 - Flyers were posted at high-frequency locations
 - Emails to project contact list were sent
 - See Attachment 8. Public Meeting Summary
13. AMATS Freight Advisory Committee Presentation: May 12, 2021
- Present preliminary conceptual alternatives and collect their input
14. Old Girdwood Townsite Neighborhood Site Visit & Resident Meeting: June 2, 2021
- Review preliminary conceptual alternatives with a focus on local access and collect neighborhood resident and business owner input
15. Meeting with MOA PM&E: June 13, 2022
- Present and discuss preliminary Recommended Concept Level Alternative with a focus on future ownership and maintenance, and collect their input
16. Meeting with Old Girdwood Residents & Businesses: June 28, 2022
- Present Recommended Concept Level Alternative with a focus on local access and collect neighborhood resident and business owner input
17. Meeting with 7-Eleven (operators and building owners of Girdwood Station Mall): June 29, 2022
- Present Recommended Concept Level Alternative with a focus on local access and collect gas station/mall operator input
18. Public Open House 3: July 27, 2022
- Postcard notifications/invites to the meeting were mailed 21 days in advance to 956 property owners in Girdwood, Bird, Indian and Portage, and an additional 1,300+ postcards to all PO Box holders in Girdwood to ensure sufficient notice for area residents.
 - GBOS advertised the meeting via their email list & announcements at their regular July meeting
 - Flyers were posted at high-frequency locations
 - Emails to project contact list were sent
 - See Attachment 8. Public Meeting Summary
19. Pre-Application Conference with MOA: August 31, 2022
- Present Recommended Concept Level Alternative and discuss 35% DSR submittal for PZC review

20. Girdwood Board of Supervisors Work Session: September 13, 2022

- Present Recommended Concept Level Alternative, answer questions and collect public input
 - Watch a recording of the hybrid meeting here:
<https://www.youtube.com/watch?v=lu6Bq4H8HWA>

6.0 ISSUES IDENTIFIED

Through the public engagement efforts completed thus far, technical evaluations, and research, primary issues have been identified for this project and are discussed below. See Attachment 2. Issues Identified Graphic for a figure illustrating the geographic location of some of the issues and concerns expressed by stakeholders.

6.1. TRAFFIC

The Girdwood Station Mall in the northeast corner of the study intersection generates a significant number of pass-by trips. A driveway intersection and a side street intersection serving the businesses and residences in this corner directly access the Seward Hwy within the corner clearance distance (392 feet from the Alyeska Hwy). Multiple stakeholders expressed concerns about access and circulation at this corner and identified it is a significant traffic and safety issue needing to be addressed. This concern included ingress and egress from the Girdwood Station Mall and Seward or Alyeska highways, accessibility of the Old Townsite neighborhood, and internal parking lot circulation.

Angle crashes between southbound left turn vehicles from the Alyeska Hwy and westbound through vehicles on the Seward Hwy are a concern (5 of 12 crashes in the last 10 years). Contributing factors to this type of crash are westbound right turn vehicles and large vehicles parking along the Seward Hwy blocking the sight lines for the southbound left turning driver and the westbound driver continuing through the intersection. See Attachment 3. Turning Conflicts Existing Condition.

Traffic volumes have significant seasonal variation in the study area, with summer daily volumes approximately twice the AADT and winter volumes approximately half the AADT. The peak traffic volume hours are on the weekends. Southbound left turn drivers from the Alyeska Hwy experience very poor level of service (LOS) during the weekend peak period in the summer. LOS is a qualitative measurement, ranging from A (best) to F (worst), of motor vehicle traffic service based on performance measures like vehicle speed, density, congestion, freedom to maneuver, etc. During summer weekend peak periods, the intersection has a LOS 'F' with over a minute and a half delay per vehicle; the amount of traffic is approaching a point exceeding the amount that can be serviced, travel times are poor, drivers have low comfort and convenience, and crash exposure is increased. Drivers experience less delay if they turn from the Girdwood Station Mall driveway or from Main St directly onto the Seward Hwy (because there are fewer eastbound left turn movements at these intersections). This contributes to the friction that through traffic on Seward Hwy experiences in this area. Stakeholders expressed significant safety and delay concerns related to the two left turns at the intersections; it is a primary issue they would like addressed by this project.

Residents expressed concern regarding travel speeds on Alyeska Hwy, particularly if the preferred alternative will smooth traffic flow and reduce conflicting turning movements. Design considerations for speed control will be taken into consideration to articulate the transition from the 65 mph Seward Hwy (55 mph through the existing intersection) to the 45 mph Alyeska Hwy.

6.2. ACCESS: EMERGENCY AND OLD GIRDMOOD NEIGHBORHOOD

Alyeska Hwy is the main road in and out of the Girdwood Valley, with only Toadstool Dr providing alternative emergency access if the Seward Hwy and Alyeska Hwy intersection is not passable. Additionally, law enforcement response times can be around 30 minutes as officers respond from Anchorage. In emergency situations at the Seward Hwy or the intersection, Girdwood first responders struggle to control vehicle travel speeds along the Seward Hwy. Improving the safety of the intersection to reduce these situations is of high importance.

First responders also use the emergency access boat ramp that has recently been removed due to bridge construction work as part of the Seward Hwy MP 75-90 project to respond to situations on the Turnagain Arm. Consideration for this type of emergency access is requested through this project.

Access to the Old Girdwood Townsite (see Figure 2. Project Area Map) residential neighborhood is from the Seward Hwy via Main St, east of the Girdwood Station Mall, or from Alyeska Hwy through the Girdwood Station Mall property connecting to Old West St and Gold Ave. Main St is a local, unimproved road that oftentimes is used by locals as a bypass for the Seward Alyeska intersection for east/south-bound Seward Hwy travel. Improving access to the Old Girdwood Townsite, separate from the Girdwood Station Mall, is a significant consideration for Girdwood residents and first responders.

6.3. PARKING

Parking space, especially for large commercial vehicles, is scarce at the Girdwood Station Mall. This results in tractor/trailers parking on the Seward Hwy shoulder while drivers visit the Girdwood Station Mall facilities. During summer months, tour buses, recreation vehicles, and vehicles towing boats congest the local road network around the Girdwood Station Mall. This exacerbates the access challenges faced by Old Girdwood residents and obstructs sight triangles at the intersections.

The parking area west of the Girdwood Station Mall is within the ROW but utilized for overflow parking and by local merchants to sell goods.

6.4. SCOPE, BOUNDARY, & SIZE OF PROJECT

Girdwood residents have expressed both desire for scope expansion as well as limitation. Limitations in the project boundaries originate from the desire to protect and retain the ecological value of the adjacent wetlands and views of the tidelands. Retention and protection of high value wetlands as much as practical is a priority for the project team.

Scope expansion includes a pathway continuation from the Lower Iditarod Trail to the Bird to Gird pathway to eliminate the current at-grade crossing of Alyeska Hwy was suggested. The Girdwood Station Mall is a destination for pedestrians and bicyclists in the Girdwood Valley and for those traveling on the Bird to Gird pathway; it is requested that planning and design of intersection improvements consider improved non-motorized access.

Scope expansion also includes planned scenic view pullouts south of the Seward Hwy opposite Toadstool Dr to address the issue of people parking at the “Welcome to Girdwood” sign and crossing the Seward Hwy to take pictures was also heard.

6.5. ALTERNATIVE DESIGN CONSIDERATIONS

Maintenance and maintainability were concerns identified by multiple stakeholders. The project team will coordinate with DOT&PF on maintenance strategies to ensure any design alternative recommended will be appropriately maintained in the short and long term.

Lighting was requested to be kept to a minimum to limit light pollution to residents of Old Girdwood.

Ease of traffic flow should be balanced with traffic calming. The transition from the 65 mph Seward Hwy (55 mph through the existing intersection) to the 45 mph Alyeska Hwy should be clear to drivers. As the gateway entrance to the Girdwood Valley, residents request gateway design features be incorporated.

Preservation of viewsheds and access to Turnagain Arm is desired. The tidelands south of the Seward Hwy are an attraction for tourists and recreationalists and so access preservation or dedicated access point, such as a pullout(s), creation is requested.

7.0 CONCEPTUAL ALTERNATIVES UNDER CONSIDERATION

To develop a preferred alternative that addresses the project’s objectives to improve safety, operation, and capacity of the Seward Hwy & Alyeska Hwy intersection, as well as addresses stakeholder issues and concerns, a robust alternatives development and analysis process was conducted. The project team developed eleven alternative concepts intended to meet the defined need and better fit the definition of Least Environmentally Damaging Practicable Alternative (LEDPA).

The project team developed preliminary concept alternatives that considered a wide range of intersection treatments, from the no-build at the low end to a grade separated interchange at the high end. Intermediate alternatives included driveway consolidation, a signal, a roundabout, and a divided highway. In total, eleven preliminary concept level design alternatives were considered. See Attachment 4. Preliminary Concept Alternatives.

Initial Concept Level Alternatives Considered:

1. No Build
2. Signalized Existing
3. Signalized Improved
4. Continuous Flow
5. Continuous Green
6. Grade Separated Intersection & Future Divided Hwy
7. Trumpet Interchange
8. Roundabout
9. Tight Diamond
10. Frontage Road
11. Diamond

Alternative 1 – No-Build Alternative

The No-Build alternative maintains the existing configuration of the intersection.

Alternative 2 – Signalize Existing Intersection

This alternative maintains the existing configuration of the intersection but adds a traffic signal to control turning and through movements on the Seward and Alyeska highways.

Alternative 3 – Signalized Intersection (Improved)

This alternative is similar to Alt 2, but realigns Alyeska Hwy to the west, eliminates the mall approaches on Seward and Alyeska highways, channelizes the right turn movement for northbound Seward Hwy traffic to Alyeska Hwy, and extends Gold Avenue to Alyeska Hwy creating a signalized tee intersection.

Alternative 4 – Continuous Flow Intersection

This alternative is similar to Alt 3 but adds another traffic signal to control southbound Seward Hwy to Alyeska Hwy left turn and northbound Seward Hwy through movements. This additional signal allows for continuous flow traffic after southbound Seward Hwy left turn traffic crosses the northbound lane. This configuration is also known as a displaced left turn intersection.

Alternative 5 – Continuous Green Signal

This alternative is similar to Alt 3, but southbound Seward Hwy traffic is allowed to freely flow through the intersection by a continuous green signal. All other movements are controlled by the signal normally. Southbound left turn Alyeska Hwy to Seward Hwy traffic is provided an acceleration lane on Seward Hwy to allow for vehicles to accelerate and merge safely at highway speeds.

Alternative 6 – Divided Highway

This alternative realigns the Seward Hwy to the south, builds a new bridge over Glacier Creek, extends Alyeska Hwy to the realigned Seward Hwy, transforms the existing Seward Hwy into a one-way northbound frontage road, and adds traffic signals at the new Seward and Alyeska

highway intersection location and the existing intersection location. The configuration with Alyeska Hwy and Gold Avenue and the mall approaches are similar to Alt 3.

Alternative 7 – Trumpet Interchange

This alternative constructs a bridge overpass for Alyeska Hwy over the Seward Hwy to provide a grade-separated intersection. On and off ramps are provided for Girdwood traffic that allow for free-flow movements. Deceleration and acceleration lanes are provided on the Seward Hwy to allow for vehicles going to and coming from Alyeska Hwy to diverge and merge at appropriate speeds. It also constructs a roundabout the Alyeska Hwy and Gold Ave intersection. The driveways for the Girdwood Station Mall along the Seward Hwy and Alyeska Hwy are removed, but the Seward Hwy and Main St intersection remains. Access to the Mall would be located on Gold Ave and Main St.

Alternative 8 – Roundabout

This alternative constructs a large roundabout on the Seward Hwy, maintains the free right turn lane for southbound Alyeska Hwy to northbound Seward Hwy traffic, and provides deceleration and acceleration lanes. The local access modifications and roundabout intersection for Alyeska Hwy and Gold Ave from Alt 7 is also included in this alternative.

Alternative 9 – Tight Partial Diamond

This alternative constructs a bridge overpass for Alyeska Hwy over the Seward Hwy to provide a grade-separated intersection. On and off ramps that allow for deceleration and acceleration are provided for Girdwood traffic. This is similar to Alt 7, however, a traffic signal would be located on the southern side of the Seward Hwy to manage turning traffic. Retaining walls would also be constructed along the on and off ramps. The local access configuration is similar to Alt 7, except that a traffic signal would be located at the Alyeska Hwy and Gold Ave intersection instead of a roundabout.

Alternative 10 – Frontage Road

This alternative realigns the Seward Hwy to the south and converts the existing Seward Hwy roadbed into a two-way frontage road for the local traffic and turning movements around the Girdwood Station Mall. Access from the Seward Hwy would be two at-grade intersections by extending Alyeska Hwy and Main St. These extensions would carry one-way traffic with Alyeska carrying traffic into Girdwood from the Seward Hwy and Main St carrying traffic out of Girdwood and southbound on the Seward Hwy. The existing northbound free right-turn lane from Alyeska Hwy would move out to the new extension with Seward Hwy. The local access configuration is similar to Alt 9.

Alternative 11 – Diamond

This alternative represents a full-build scenario with the Seward Hwy being constructed over the Alyeska Hwy. The Seward Hwy would have two lanes for each direction and a new bridge over Glacier Creek. On and off ramps to allow for deceleration and acceleration and provide access to Alyeska Hwy would be constructed. The existing Seward Hwy roadbed would be converted into a frontage road for northbound traffic travelling to Girdwood. The southbound on-ramp from Alyeska would consist of a new bridge over Glacier Creek. The local access configuration is similar to Alt 9.

7.1 ALTERNATIVE EVALUATION PROCESS

The process for conceptual alternatives development, analysis, evaluation, refinement, and selection is summarized in Figure 9.

7.1.1 Preliminary Alternative Analysis

Each of the eleven preliminary alternatives was evaluated using several criteria; a score was given for each criterion based on how the alternative would impact the criteria, with scores of -1 (negative impact), 0 (moderate impact), and +1 (positive impact). The scoring criteria were weighted based on its relative importance and the purpose and need of the project, as determined by the project team. This weighting ranged from 1 (low importance) to 5 (high importance). Criteria included conflict point reduction, non-motorized user accommodations, mobility of Seward Hwy through-traffic, local access mobility, environmental impacts, right-of-way impacts, consistently with local plans, and more.



Figure 9. Alternative Development Process Summary

With the primary goals of maintaining high mobility and increasing safety on the Seward Hwy and at the intersection, the alternatives that featured grade-separation scored highest. The highest scoring alternative was Alternative 7 - Trumpet Interchange, followed by Alternative 9 - Tight Partial Diamond and Alternative 11 – Diamond. For a full description of the scoring criteria, weighting, and results of the evaluation, see [Attachment 7. Alternatives Analysis Memo](#).

Concurrent to the project team's analysis using the scoring criteria, the alternatives were presented to public and agency stakeholders for their feedback. The eleven preliminary alternatives were presented to the public in the form of open houses, stakeholder meetings, municipal commission review, and project website posts. In addition, the alternatives went through agency reviews by DOT&PF and MOA.

Through this process, there were some prominent issues that were identified:

1. How is the local access to the Old Girdwood neighborhood impacted by the project? There was concern expressed by Old Girdwood residents that the project would increase traffic on the local roads, specifically Gold Ave and Main St, which would be a detriment to the neighborhood context of Old Girdwood.
2. Could the project scope expand to replace the Alyeska Hwy bridge over the railroad?

3. Should the newly constructed Seward Hwy bridge over Glacier Creek be a boundary point for the project scope?
4. Could Alyeska Hwy be realigned to the west, thus moving the intersection away from the Girdwood Station Mall?

7.1.2 Modified Alternatives Development

From the input received from the public and agencies, the issues listed above were resolved by the following:

1. Realign the Seward Hwy to the south to maintain or improve the current Old Girdwood local access and Girdwood Station Mall driveway configuration.
2. The Alyeska Hwy bridge over the railroad should be replaced given its age of nearly 60 years, maintenance cost versus the cost of constructing a new bridge, and its undersized for ideal use by the Alaska Railroad.
3. The cost and benefits of constructing a new bridge over Glacier Creek was weighed by the project team and DOT&PF and it was decided to be outside the scope of this project.
4. Realigning Alyeska Hwy to the west into the undeveloped wetlands allows for the local access and driveways for the Girdwood Station Mall be maintained. It was also necessary to provide the adequate acceleration length for vehicles travelling south on Alyeska Hwy turning south onto Seward Hwy to accelerate up to the proper merge speed. In addition, this realignment allows for the adequate deceleration length for vehicles travelling north on Seward Hwy turning north onto Alyeska Hwy to decelerate before reaching the Alyeska Hwy/Gold Ave intersection.

The top three preliminary build alternatives, Alt 7 – Trumpet Interchange, Alt 9 – Tight Partial Diamond, and Alt 11 – Diamond were decided to be carried forward for a more detailed design and evaluation process. These alternatives went through addition design which included applying applicable design standards, such as the AASHTO Green Book, Roadside Design Guide, DOT&PF Preconstruction Manual, etc. Design modifications applied to the three alternatives included realigning Seward Hwy and Alyeska Hwy, replacing the bridge over the railroad, and maintaining the current local access configuration. These modifications helped separate the arterial road functions of the Seward and Alyeska highways from the local road functions around the Mall. The modified alternatives were presented to agencies for review and the project team gathered additional input on how to improve the designs to develop a recommended alternative.

7.1.3 Modified Alternatives Analysis

The three modified build alternatives went through additional evaluation using a number scoring and criteria weighting system with the goal of determining a recommended alternative to move forward with in the environmental and final design processes. The alternatives were again scored on the same criteria as before but ranged from -2 (negative impact) to +2 (positive impact) to allow for more separation in the total score.

Alternative 11 was eliminated primarily due to its high cost and large environmental impacts. The high embankments and larger footprint also negatively affected this alternative relating to viewshed and wetland impacts.

Alternative 9 was eliminated as it would require construction of a high embankment and retaining wall between the Seward Hwy and on/off ramps to function properly. Per public feedback, impacts to the viewshed from the Mall and Old Girdwood Neighborhood toward Turnagain Arm should be evaluated as a significant detriment to the design. The required embankment and retaining wall would have significant impact on viewshed. Despite its smaller footprint compared to Alternative 7, it still impacted the wetlands south of the Seward Hwy.

Alternative 7 proved to be the best solution that balanced the cost and environmental impacts while solving the issues identified, and best meeting the project's purpose and need. While Alternatives 9 and 11 improved the operations, safety, and mobility of the intersection and roadways, they proved to be too impactful in other areas.

The design of Alternative 7 was further refined based on feedback from the public, agencies, stakeholders, and engineering best practices. The result is the Recommended Concept Level Alternative.

8.0 RECOMMENDED CONCEPT LEVEL ALTERNATIVE

The evaluation of the three modified build alternatives, plus the no-build, yielded Alternative 7 – Trumpet Interchange as the top alternative to move forward with. This design went through additional reviews by the public, stakeholders, DOT&PF, and MOA. The Recommended Concept Level Alternative combines some of the strongest features of the alternatives that were scored highest during the evaluation process including, the roundabout on the Alyeska Hwy included in initial Alternatives 7 and 8, the trumpet concept of Alternative 7, and the grade separated intersection of Alternatives 7, 9, and 11. This Recommended Concept Level Alternative has been designed to meet or exceed all design standards. It also meets the project's purpose and need and addresses the identified issues. See Attachment 5 – Recommended Concept Level Alternative.

Benefits of the Recommended Concept Level Alternative include:

- All movement free flow, no stops
- Reduced conflict points and direct access to local roads/driveways from Seward Hwy removed, provides significant safety benefits
- Provides Old Girdwood Townsite neighborhood with legal access to Alyeska Hwy
- Roundabout provides traffic calming and opportunity to create gateway feel into Girdwood
- Pathway designed to current standards
- Reduce construction impacts due to off-alignment construction
- No change to internal mall circulation
- Seward Hwy designed for 65 mph
- Design accommodates future 4-lane divided highway
- Intersection lighting to improve visibility and safety

8.1. DESIGN COMPONENTS

The major components and design process of the recommended concept level alternative is discussed below. Accompanying the below descriptions are Design Component Figures, see Attachment 6 – Recommended Concept Level Alternative Components.

8.1.1. Alyeska Hwy Bridge

One of the major issues with the current intersection is the southbound Seward Hwy left turning vehicles onto Seward Hwy. At the current and future traffic volume levels, this configuration will increase safety concerns and travel delay along the two highways and at the intersection. To achieve the best possible improvements to safety and traffic flow, a grade separated intersection proved to be the only plausible solution.

8.1.2. Southbound Acceleration Lane

Given that a bridge was needed to grade separate the traffic movements, the location of the bridge was the next critical step in the design process. It was decided amongst the project team and DOT&PF that the Glacier Creek bridge would be a constraint to the project. That bridge was recently completed by the Seward Hwy MP 75-90 project and constructing a new bridge would be too costly to the project. Therefore, the design needed to work back from there. To allow for vehicles to accelerate to 65 mph highway speed from the 20 mph on-ramp speed, an appropriate acceleration lane length dictated by the AASHTO Green Book needed to be provided.

8.1.3. Southbound On-Ramp (Clover Leaf)

With the southbound acceleration lane set, the clover leaf on-ramp could be designed. A horizontal curve with a 20-mph design speed, 4.2% superelevation, and 270 ft radius was chosen as it provided the best balance between driver comfort, truck turning accommodation, consideration for winter icing conditions, and impacts to wetlands. This on-ramp curve, together with the acceleration lane, located the new bridge about 670 ft west of the current intersection.

8.1.4. Northbound Off-Ramp and Deceleration Lane

For northbound Seward Hwy traffic, adequate length is needed to allow vehicles to safely decelerate from 65 mph on the Seward Hwy to 25 mph on Alyeska Hwy. Constructing a dedicated lane allows these vehicles decelerate and turn without impacting or delaying northbound Seward Hwy through traffic. This directly improves safety and free flow traffic.

8.1.5. Over-Height Vehicle Bypass

The new Alyeska Hwy overpass bridge will provide a vertical clearance of 17 ft over the Seward Hwy. To accommodate vehicles carrying loads higher than this, a bridge bypass for southbound traffic will be constructed.

8.1.6. Seward Hwy Realignment

In addition to the turning conflicts at the Alyeska Hwy intersection, there are a number of conflict points at the Mall driveway and Main St intersection on the Seward Hwy. These direct access points needed to be removed and consolidated elsewhere to improve safety

and congestion along the Seward Hwy. Throughout the public involvement process, there was a desire expressed to maintain the neighborhood feel of Old Girdwood and driveway configuration of the Girdwood Station Mall property. To allow for this, the project team developed a solution that realigned the Seward Hwy to the south. Separating the Seward Hwy from the Mall driveways maintains internal mall circulation and 65 mph speeds on the Seward Hwy. This also eliminates congestion and delays on the Seward Hwy for northbound Seward Hwy traffic wanting to turn right into the Mall and on Main St. This realignment also allows for a future project to construct a four-lane divided Seward Hwy and new bridge over Glacier Creek.

8.1.7. Alyeska Hwy Merge Lanes

The next important design component is to provide enough distance for Seward Hwy southbound off-ramp and northbound off-ramp traffic turning onto Alyeska Hwy to merge into the correct lane to continue either to Girdwood, the Mall, or Old Girdwood. These merge lanes will be low speed and allow drivers enough time and space to merge left or right and travel toward their destination.

8.1.8. Alyeska Hwy Roundabout

The DOT&PF has adopted a “Roundabout First” policy, which states that designers must provide a written justification of any decision to install a traffic signal instead of a single-lane roundabout. Roundabouts have been shown to improve congestion and safety over traffic signals and stop signs. The selection and design of roundabouts is heavily influenced by context. Through alternatives development and analysis process, it was apparent that a roundabout would be the best solution at this location. The final design will accommodate the variety of vehicles that travel through the intersection such as large semi-trucks, fuel trucks, tour buses, motorhomes, pick-up truck and trailer combinations, and passenger vehicles.

8.1.9. Alyeska Hwy Realignment

Two key components to roundabout design are visibility of the intersection and speed control of the approaching motorist. The recommended alternative design achieves this by straight lining the Alyeska Hwy alignment which provides as much sight distance as possible while also allowing enough distance for the final design to construct curvilinear approaches to control speed. Another benefit to this realignment is that the Alyeska Hwy bridge over the railroad could be replaced. From discussions with DOT&PF Bridge Section, it became apparent that this bridge needed to be replaced. Rising maintenance costs compared to a new bridge and its minimal clearance envelope for the railroad provided enough justification to construct a new bridge that meets current standards.

8.1.10. Old Girdwood Townsite Neighborhood and Girdwood Station Mall Access

The realignments of the Seward Hwy and Alyeska Hwy allows the Girdwood Station Mall to maintain its current driveway configuration. It also allows for a direct access approach for Gold Ave, providing Old Girdwood residents legal access to a public roadway. Currently residents must traverse Mall private property to access Alyeska Hwy. The conflict points for these driveways are reduced in number and potential crash severity is significantly reduced because all movements will be at a much lower speed than the current

configuration and highway traffic will no longer have direct access to Mall driveways or Main Street.

8.1.11. Toadstool Drive Access

Toadstool Dr. provides access for the DOT&PF Girdwood Maintenance Station and Girdwood residents to the Seward Hwy. To improve safety along the Seward Hwy corridor, this approach needed to be consolidated and moved elsewhere. The logical solution for this was to connect the road to the new roundabout. This approach will remain operational for emergency and maintenance access but will be restricted to the public. The Toadstool Drive Access Road would also provide required access to any future development on the land between Toadstool Drive and Alyeska Hwy.

The recommended concept level alternative was presented to the public and reviewed by DOT&PF to gather input and approval for moving forward with this design. There was some negative feedback from the public mainly related to wetland and viewshed impacts, but overall, the recommended alternative was met with mostly positive comments and sentiment, especially for its significant safety improvements (see [Attachment 8. Public Meeting Summary](#)).

8.2. ADJACENT LAND USES

Some business owners within the Girdwood Station Mall and 7-Eleven, the primary owner/operator, expressed concerns about potential loss of business with the removal of direct access to the Seward Hwy. The existing driveway configuration does not meet DOT&PF or FHWA standards and would likely be eliminated under any roadway or intersection improvement project. The recommended concept level alternative provides free flowing turning movements from the Seward Hwy and Alyeska Hwy into the Mall from a new access road. Though the travel time may increase slightly under certain conditions this is offset by a decrease in delays and an increase in safety and driver comfort. DOT&PF is prepared to work with business owners to provide signage ahead of the intersection alerting Seward Hwy travelers of their presence and to take the off-ramps to access them.

The realignment of the Seward Hwy, Alyeska Hwy, and intersection results in no direct impact on existing developed lands (see Right-of-Way below) and provides improvements for the Old Girdwood Townsite Neighborhood by providing it with legal access from Gold Ave. Alaska Mental Health Trust land between Toadstool Drive and the existing Alyeska Hwy, north of the Seward Hwy is zoned for commercial use. The roundabout and Toadstool Dr access would facilitate access to those lands and any future development. Most land impacted by the recommended concept level alternative is anticipated to be otherwise undeveloped due to the presence of wetlands.

8.3. RIGHT-OF-WAY

ROW acquisition will be required and would include full acquisitions, temporary construction easements, temporary construction permits, potential utility easements, and possible ROW vacation. Due to the intersection alignment shift proposed in the Recommended Concept Level Alternative, no displacements are expected as this additional ROW is primarily located in undeveloped, open space areas owned by the Alaska Mental Health Trust. A portion of this open

space is zoned Public Lands and Institutions while others are zoned for Commercial development. Most Mental Health Trust Land south of the existing Seward Hwy alignment identified for acquisition are within wetland areas and therefore unlikely to be otherwise developed. Preliminary discussions with Alaska Mental Health Trust indicated willingness to negotiate ROW acquisitions.

8.4. UTILITIES

Utility companies with facilities in the project limits include Chugach Electric Association (CEA), Enstar Natural Gas Co, Anchorage Water & Wastewater Utility (AWWU), and GCI Communications (GCI). Utilities will require relocation and agreements will need to be developed at select locations throughout the project.

8.5. ILLUMINATION

The project will install lighting at locations according to DOT&PF lighting guidance. This will include continuous lighting along on and off ramps, at the roundabout and approach legs, and within the pathway tunnel under Alyeska Hwy.

8.6. PEDESTRIAN FACILITIES

As a result of the Alyeska Hwy realignment and bridge replacement over the railroad, the project will realign the Bird to Gird pathway from the DOT&PF Girdwood Maintenance Station to the Girdwood Station Mall. The new bridge will feature a separated pathway to maintain access over the railroad. The realignment will also include a tunnel under Alyeska Hwy similar to the existing one. Current design standards and ADA guidelines will be followed in the design process.

8.7. ENVIRONMENTAL CONDITIONS

The intersection project area is adjacent to Turnagain Arm in an area consisting of tidal and estuarine wetlands and waters and includes developed commercial areas (Girdwood Station Mall, etc.), the Alaska Railroad, trails, utility infrastructure, and other constructed features. The proposed project is being designed to avoid and minimize wetland impacts to the greatest extent practicable; however, unavoidable impacts to wetlands are expected to occur.

A USACE permit and mitigation, likely in the form of compensatory mitigation, will be required for wetland impacts. Wetland and viewshed impacts are of significant concern to the Girdwood community and have been and will continue to be considered during the rest of design and project development. The project team is striving to avoid and minimize environmental impacts as much as practicable. The study area will be researched and analyzed for wetland, environmental, socioeconomic, cultural, and historic resource impacts in accordance with NEPA, Section 106 of the National Historic Preservation Act, and all other applicable local, state, and Federal regulations and executive orders.

8.8. PRELIMINARY ESTIMATED PROJECT COST

The preliminary project cost estimate is as follows:

Design Engineering	\$	5,000,000
Right-of-Way	\$	2,000,000
Utility Relocation	\$	2,000,000
Construction	\$	60,000,000
Total	\$	69,000,000

8.9. MAINTENANCE CONSIDERATIONS

Maintenance of the Seward Hwy, Alyeska Hwy, and Toadstool Dr will remain the responsibility of the State of Alaska and the local DOT&PF Maintenance and Operations Station located at Girdwood. Maintenance responsibilities of the road between the proposed roundabout and the Mall is being discussed between DOT&PF and MOA.

The project will increase maintenance efforts by constructing a new bridge over the Seward Hwy, approximately 1.57 miles of additional roadway, a new roundabout, and approximately 0.14 miles of additional pathway. Maintenance efforts will be reduced due to replacement of the Alyeska Hwy bridge over the railroad and replacement of the pathway tunnel under Alyeska Hwy.

Additional guardrail will be installed along the southbound on and off ramps and the elevated Alyeska Hwy section over the Seward Hwy.

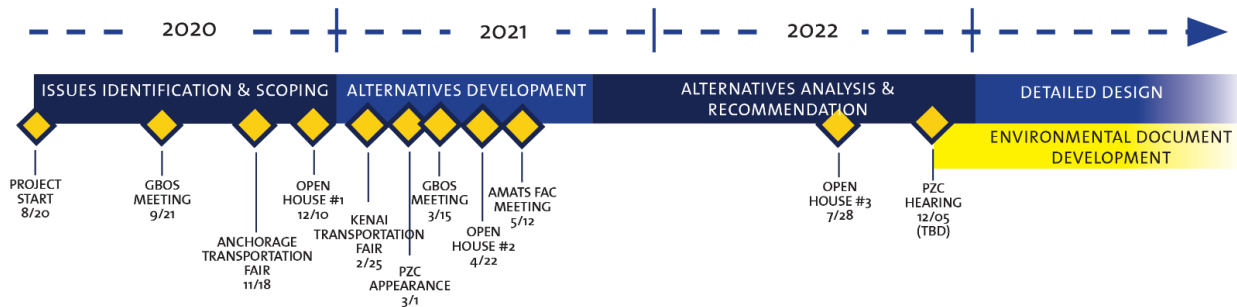
9.0 REFINED RECOMMENDED CONCEPT LEVEL ALTERNATIVE

Based on recent additional input received from the public, stakeholders, and agencies, the recommended design is being further refined. The primary motivation is to decrease the project footprint within the wetlands and pond south of the Seward Hwy. Design modifications include shifting the Seward Hwy southbound on-ramp west, realigning Alyeska Hwy to the west, slightly decreasing the radius on the southbound on-ramp, and increasing the merge distance between the Seward Hwy overpass bridge and the roundabout. These modifications also improve the acceleration and deceleration lengths for vehicles entering and exiting the Seward Hwy. The recommended alternative will continue to be refined as the project progresses.

See Attachment 10. Refined Recommended Concept Level Alternative.

10.0 SCHEDULE

The Seward Hwy & Alyeska Hwy Intersection Improvements Project is currently funded through final design. This includes issues identification and scoping, alternatives development and analysis to recommend a preferred alternative, and develop the final design. Additional funding will need to be allocated for construction. The project is scheduled through the 30% design level and is summarized in the graphic below:



Future milestones will be scheduled once the development of the environmental document is underway.

ATTACHMENTS

The following materials are attached:

1. Girdwood Board of Supervisors Resolution 2018-16
2. Issues Identified Graphic
3. Turning Conflicts Existing Condition
4. Preliminary Concept Alternatives
5. Recommended Concept Level Alternative
6. Recommended Concept Level Alternative Components
7. Alternatives Analysis Memo
 - a. Identified Issues
 - b. Preliminary Concept Level Design Alternatives
 - c. Alternatives Evaluation Matrix (Preliminary Designs)
 - d. Modified Concept Level Design Alternatives
 - e. Alternatives Evaluation Matrix (Modified Designs)
 - f. Recommended Concept Level Alternative
8. Public Meeting Summary
(note: presentations and meeting materials are available on the project website:
<http://www.sewardalyeskahwyintersection.com/>)
9. Preliminary Project Plans
10. Refined Recommended Concept Level Alternative

ATTACHMENT 1

Girdwood Board of Supervisors Resolution 2018-16

ATTACHMENT 2
Issues Identified Graphic

ATTACHMENT 3
Turning Conflicts Existing Condition

ATTACHMENT 4
Preliminary Concept Alternatives

ATTACHMENT 5

Recommended Concept Level Alternative

ATTACHMENT 6

Recommended Concept Level Alternative Components

ATTACHMENT 7
Alternatives Analysis Memo

ATTACHMENT 8
Public Meeting Summary

ATTACHMENT 9
Preliminary Project Plans

ATTACHMENT 10

Refined Recommended Concept Level Alternative