Safer Seward Highway Project
Seward Highway MP 98.5 to 118, Bird Flats to Rabbit Creek

Project No.: Z566310000/0A31034

Environmental Assessment

Appendix C: Project Purpose and Need

DRAFT

December 2025

Prepared for:

Alaska Department of Transportation and Public Facilities

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The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated April 13, 2023, and executed by FHWA and DOT&PF.

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Memorandum

Date:	December 2025
Project Name:	Safer Seward Highway Project
To:	DOT&PF
From:	Project Team
Subject:	**Project Purpose and Need Memorandum**

1 Introduction

The State of Alaska Department of Transportation and Public Facilities (DOT&PF) is proposing to realign and construct safety improvements to the Seward Highway from Mileposts (MPs) 98.5 to 118, Bird Flats to Rabbit Creek, also called the Safer Seward Highway Project (Project). The Project lies entirely within the Municipality of Anchorage (MOA), Alaska, and includes the communities of Rainbow, Indian, and Bird. The proposed Project would be developed with a combination of State of Alaska and Federal-Aid Highway Program funds administered by Federal Highway Administration (FHWA).

The environmental assessment (EA) document was developed in accordance with the National Environmental Policy Act (NEPA) and Section 4(f) of the U.S. Department of Transportation Act of 1966. The environmental review, consultation, and other actions required by applicable federal environmental laws for this Project are being, or have been, carried out by DOT&PF pursuant to 23 U.S. Code (U.S.C.) 327 and a Memorandum of Understanding dated April 13, 2023, and executed by FHWA and DOT&PF.

The Project is located within U.S. Geological Survey map quadrangles Anchorage A-8 and Seward D-7 and D-8, within Sections 5–6, 8–10, 14–15, and 23, Township 10 North (N), Range 1 West (W); Sections 1–4, Township 10N, Range 2W; Sections 30–34, Township 11N, Range 2W; Sections 4, 9–10, 15, 22-23, and 25–26, Township 11N, Range 3W; and Sections 32–33, Township 12N, Range 3W.

The beginning of Project (BOP) is Latitude 60.9511, Longitude 149.4027 (MP 98.5 at Bird Flats) and the end of Project (EOP) is Latitude 61.0871, Longitude 149.8344 (MP 118, north of Potter Marsh, at the intersection/overpass to Rabbit Creek Road). For ease of reading, the Project is described in this memorandum from north (EOP) to south (BOP).

1.1 Project Area Description

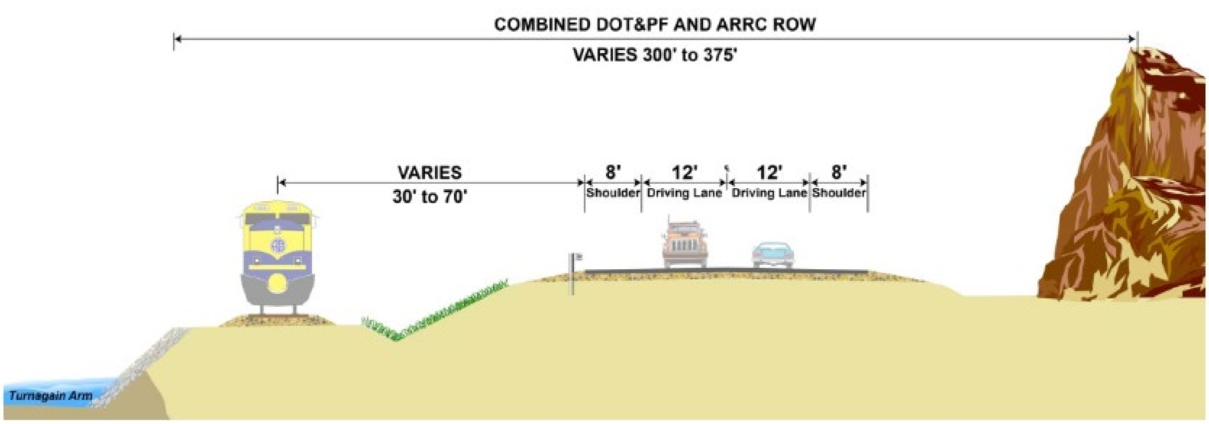
Originally completed in 1951, the Seward Highway extends northward approximately 130 miles from Seward to Anchorage, Alaska. It is the only road corridor between Anchorage and communities to the south along Turnagain Arm, the Kenai Peninsula, and the Alaska Marine Highway System terminals at Whittier, Seward, and Homer. The highway is part of the National Highway System (NHS), designated partially as Interstate A-3, and provides overland travel between local and major cities, ports, and airports. The Seward Highway supports commercial, tourist, industrial, and residential traffic; typical vehicle types range from passenger cars to recreational vehicles (RVs) to industrial heavy trucks.

The highway segment within the Project area is tightly constrained between the tidal waters of Turnagain Arm, the Alaska Railroad Corporation (ARRC) tracks, and the steep slopes of the Chugach Mountains. At the northern terminus, the highway and rail embankments traverse in parallel through the southern end of the Anchorage Coastal Wildlife Refuge, between the mudflats and the constructed wetlands that form the Potter Marsh Recreation Area. From MP 115 to the southern Project terminus at MP 98.5, the highway and rail corridors are within the boundaries of Chugach State Park (CSP), with a few private inholdings, MOA, and state-owned lands near the communities of Rainbow (MP 108.5), Indian (MP 105), and Bird (MP 100).

1.1.1 Existing Roadway Facilities

DOT&PF classifies the Seward Highway as a Rural Principal Arterial roadway[1] and an Interstate[2]. The current configuration consists of two 12-foot-wide travel lanes and 6- to 8-foot shoulders with rumble strips at the centerline and lane edges (see Figure 1-1). The highway is located within a 300-foot-wide DOT&PF right-of-way (ROW), which is adjacent to and frequently overlapping a 200-foot-wide ARRC ROW. The highway segment within the Project area has a 55 mile-per-hour (mph) posted speed limit, except for a short section near the BOP that is posted at 65 mph. As the highway corridor passes through communities, many private driveways and road intersections connect with the highway.

Figure 1-1. Typical Seward Highway section within the Project area.



Source: DOWL 2019

1.1.2 Existing Non-Motorized Facilities

There are numerous developed trailhead parking lots to access trails and recreational activities within CSP and the Project corridor. Additionally, numerous paved and unpaved pullouts provide access to recreational activities such as hiking, biking, rock climbing, photography, and scenic and wildlife viewing. These parking lots and pullouts occur on both sides of the Seward Highway. The Indian to Girdwood Bike Path (commonly referred to as the "Bird to Gird" Trail) is a separated, multi-use pathway that parallels the roadway between the communities of Indian (MP 104) and Girdwood (MP 90; south of the Project area). The path lies within DOT&PF, CSP, and ARRC ROWs. No separated multi-use pathway exists between the northern Project terminus

[1] https://dot.alaska.gov/stwdplng/fclass/
[2] All routes that comprise the Dwight D. Eisenhower National System of Interstate and Defense Highways belong to the Interstate functional classification; https://www.fhwa.dot.gov/planning/processes/statewide/related/hwy-functional-classification-2023.pdf

and the community of Indian; people bicycling and walking currently must do so within the existing roadway shoulders.

1.1.3 Project Termini

DOT&PF has determined that the Seward Highway from MPs 98.5 (Bird Flats) to MP 118 (Rabbit Creek Road intersection) is of sufficient length to ensure that the analyses presented in this EA consider environmental matters, and transportation improvements are broadly considered in a way that covers the entire highway corridor, meeting FHWA guidance (USDOT 2024) and regulations (23 Code of Federal Regulations 771.111(f)).

1.2 Project History

The effort to improve safety along the Seward Highway between Girdwood and Anchorage began during the early 2000s. A NEPA Categorical Exclusion for Seward Highway Safety Improvements, Indian to Potter Marsh MPs 105–115 was approved in 2004 to add passing lanes; however, design and permitting efforts were suspended. DOT&PF started re-evaluating the safety project in 2013 for a project focused on Windy Corner (MPs 105–107). As a result of public feedback and consultation with FHWA, the Class of Action was revised to an EA in 2017. Agency scoping and public involvement was conducted in compliance with NEPA requirements to produce a Draft EA, which was made available to the public in March 2020.

After reviewing public comments received, DOT&PF extended the project 2.5 miles north, between Windy Corner and Rainbow Point. Because of the expanded corridor and time that had passed, DOT&PF decided that rescoping the project was warranted. Public and agency scoping to cover the changed conditions commenced in spring 2021 for the renamed project, Seward Highway MPs 105–109.5, Windy Corner to Rainbow Point.

Following the 2021 scoping, DOT&PF further expanded the project corridor in 2023 and renamed it Seward Highway Reconstruction MP 98.5 to 118, Bird Flats to Rabbit Creek, also known as the Safer Seward Highway Project. On January 24, 2023, DOT&PF published a Notice of Intent to Begin Engineering and Environmental Studies and Floodplain Encroachment in several newspapers of record for this Project (see EA Appendix V Stakeholder Engagement (Public and Agency Coordination)).

2 Purpose of and Need for Action

2.1 Project Purpose

The purpose of the Project is to improve safety by reducing crash rates and severity, improve mobility and reliability, and safely accommodate mixed uses within the corridor.

2.2 Project Needs

This is a safety project driven by three interrelated needs:

- **Need 1: Reduce crash rates and crash severity**. In 2006, this stretch of the Seward Highway was designated as the state's first Highway Safety Corridor. Despite additional enforcement presence, community education, improved signage, and safety improvement projects, high crash rates and crash severity issues remain. Crashes are caused by limited passing opportunities, curvy and constrained road geometry, and poor access management. Extreme driving conditions—including atmospheric (high winds, rain, snow, and dark conditions) and road surface (wet, icy, snowy, and changes that occur at the freeze-thaw line)—increase the risk of drivers losing control and sliding off the road or into oncoming traffic. Due to heavy summer seasonal traffic volumes, drivers spend considerable time following vehicles without safe passing opportunities, resulting in frustrated drivers making high-risk passing maneuvers and increasing the risk of head-on collisions.

- **Need 2: Improve mobility and reliability.** Highway traffic mobility refers to the ability of people and goods to move effectively and efficiently through the transportation network, and it is measured using several metrics: follower density, level of service, free flow speed, and segment density (see EA Appendix E *Highway Configuration Development and Selection Memorandum*). Mobility for vehicular users within the Seward Highway corridor begins to fail during summer weekend peaks. Summer traffic volumes can result in long platoons (i.e., lines) of vehicles. When vehicles slow to turn or pull over for scenic or wildlife viewing, these actions pulse back through the lines, causing variable speeds. Mobility is also degraded by high truck and RV volumes; uncontrolled access to and from scenic turnouts and trailheads, driveways, and intersections; and difficult weather and road conditions. Reliability addresses how predictable travel experiences will be on the highway. Crashes, vehicle breakdowns, and poor weather or road conditions can cause unexpected delays, which reduces reliability. Emergency lane or road closures following collisions, rockfall, or avalanches cause miles- and hours-long backups since no alternative road routes exist through the Project area. Access to the emergency location is limited by the two-lane facility, slowing the response times of emergency services in the event of lane closure or backup. Mobility for bicyclists and pedestrians is limited as there are non-motorized facilities along less than 30 percent of the highway corridor within the Project area.
- **Need 3: Safely accommodate mixed uses in the corridor.** The Project corridor's multitude of scenic, natural, and recreational attractions contribute to the highway's designation as a National Forest Scenic Byway, All-American Road, and Alaska Scenic Byway. However, the popularity of the attractions alongside—and including—the road exacerbates the safety, mobility, and reliability issues. The need exists to maintain the corridor's scenic qualities while safely accommodating the needs of all users, including recreators and tourists accessing attractions, local residents accessing their homes and communities, commercial and through-travelers making long-distance trips, and bicyclists and pedestrians. Numerous access points to pullouts and private driveways mean that vehicles are making many turning movements throughout the corridor. Vehicles pulled onto the highway shoulders create safety hazards. Gaps in non-motorized pathways result in people biking and walking along or across the highway to access attractions, creating safety and mobility issues.

2.3 Safety

The Seward Highway between Anchorage and Girdwood is one of four designated Highway Safety Corridors in Alaska. Safety corridors receive targeted funding, planning, design, enforcement, and education efforts to resolve the elevated rate of severe crashes (crashes resulting in serious injuries or fatalities). Safety corridor efforts are audited annually to determine the effectiveness of the measures and whether additional measures are needed. Since 2006, when it was designated as a safety corridor, over $100 million has been spent on Seward Highway projects (DOT&PF 2023a). This includes improving safety and repairing existing infrastructure. Specific construction investments into the safety corridor within the Project area to date include:

- Rut repairs between MPs 104 and 115 (2008)
- Centerline rumble strips (2010)

- Roadside reflectors, REDDI[3]/Headlights Signing, and rut repair between MPs 115 and 124 (2011)
- Slow vehicle turnouts and dynamic speed signs between MPs 108 and 115 (2013)
- Guardrail reflectors (2014)
- Passing lanes between MPs 99 and 100 (2017)
- Left-turn lanes at MPs 101 and 103; road repaving between MPs 100 and 105 (2020–2022)
- Rockfall mitigation between MPs 108 and 114 (2022–2023)

These safety improvements led to a 56 percent decrease in suspected serious injury crash rates since 2006, but fatal crash rates increased by 2 percent (DOT&PF 2023a). Safety improvements allowed for the decommissioning of the Safety Corridor designation on Seward Highway MPs 87 to 90 in 2021. The Seward Highway MPs 90 to 117 remains a Highway Safety Corridor. Future projects are planned to address additional rockfall and icefall mitigation (2027), and add a southbound left-turn lane into MP 112 (McHugh Creek Day Use area; construction anticipated in 2026). However, the ability to address crash safety using spot improvement projects is limited. Modifications to the highway corridor's roadway design geometry is the most effective remaining option to reduce crash rates.

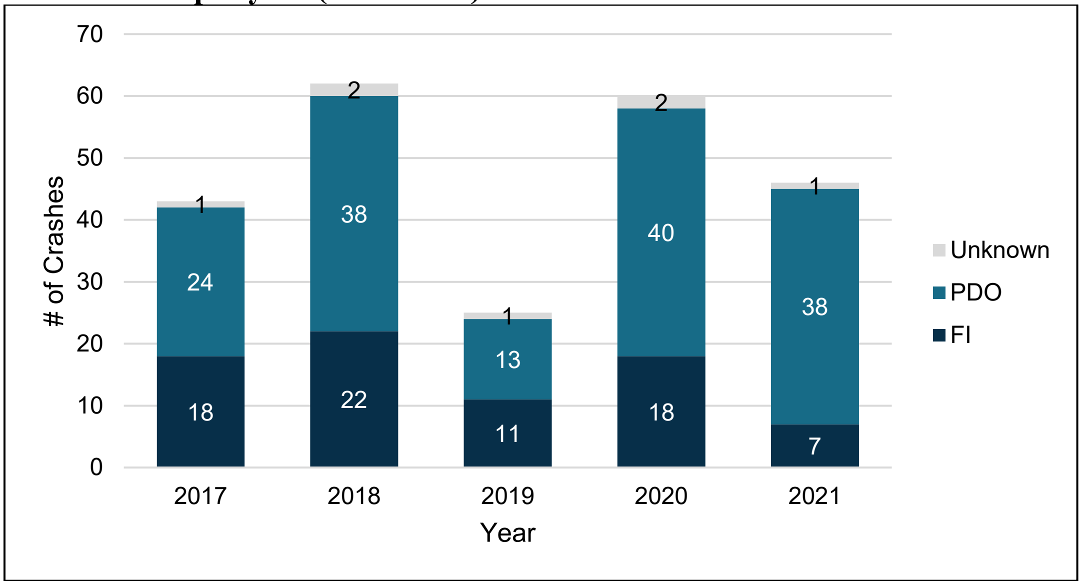
2.3.1 Crash Data

For a detailed safety analysis within the Project area, please see the Project's Traffic and Safety Analysis Report (EA Appendix G Traffic and Safety Analysis). The following provides a summary of the data.

Factors such as weather, lighting, and road conditions have contributed to accidents, congestion, and road closures along the Project corridor. This segment of the Seward Highway was designated a Traffic Safety Corridor in 2006 for its high crash rate and crash severity. There were 236 documented crashes between 2017 and 2021 (the study period; EA Appendix G Traffic and Safety Analysis). Of these, 76 crashes (32 percent) resulted in injuries ranging from minor (small cuts and bruising) to severe (life-threatening) and fatal injuries (collectively referred to as fatality and injury [FI] crashes), with 4 crashes resulting in fatalities and 8 resulting in major injuries. The remaining 160 crashes resulted in property-damage only (PDO) or unknown results. Crash summaries are aggregated by number of events and not individuals involved or impacted by these crash events. Figure 2-1 shows the number of crashes per year, and Figure 2-2 shows the crashes per month between 2017 to 2021.

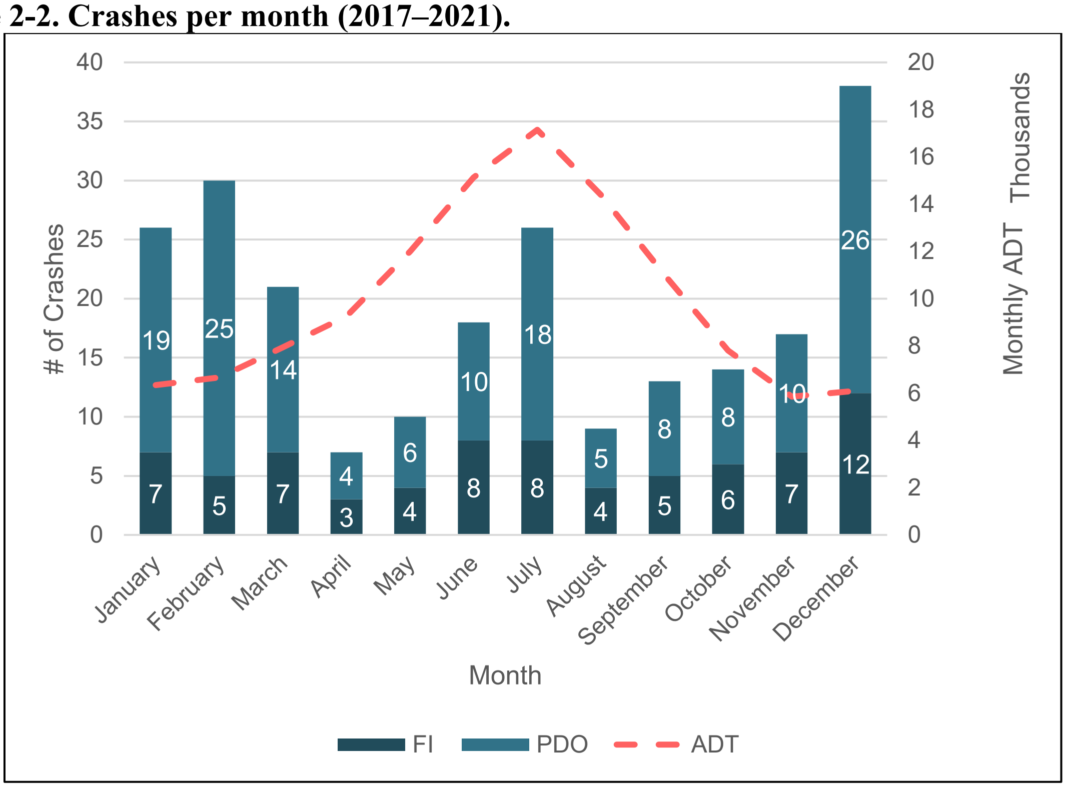
[3] REDDI stands for "Report Every Dangerous/Drunk Driver Immediately"; it encourages people to notify law enforcement when they notice dangerous driving conduct.

Figure 2-1. Crashes per year (2017–2021).



Source: EA Appendix G Traffic and Safety Analysis
Note: FI includes injuries of any type and fatalities. Crash summaries are aggregated by number of events and not individuals involved or impacted by these crash events. The reduced number of crashes during 2019 could be attributed to the travel limitations during summer due to the Swan Lake Fire, which started in June and ended in September, and affected the road system to and from the Kenai Peninsula Borough (EA Appendix G Traffic and Safety Analysis).

Figure 2-2. Crashes per month (2017–2021).



Source: EA Appendix G Traffic and Safety Analysis
Note: Nearly 40 percent of the crashes occurred during winter, between December and February, when ice and frost create slippery roadway surfaces that reduce traction and consequently increase the risk of vehicles losing control, particularly during braking or turning maneuvers. Table 2-1 provides pavement conditions along the corridor observed at the time of each crash.

Table 2-1. Percent of crashes based on roadway surface conditions (2017–2021).

Road surface condition	All crashes (%)	FI crashes (%)
Snow	4.7	5.3
Slush	0.4	1.3
Ice/Frost	47.5	39.5
Wet	7.6	7.9
Dry	37.3	43.4
Mud/Dirt/Gravel	0.4	1.3
Water (Standing/Moving)	0.4	0.0
Unknown	1.7	1.3

Source: EA Appendix G Traffic and Safety Analysis

While the number of crashes has decreased along the entire safety corridor, the number of fatalities and serious injuries remain high. Within this 5-year dataset, 12 crashes resulted in *severe* injuries and/or fatalities. Six (50 percent) of these severe FI crashes occurred when the road conditions were wet, icy/frosty, or slushy. Five of these 12 severe FI crashes (42 percent), and 3 of the 4 crashes (75 percent) that resulted in fatalities, were head-on collisions.

Crashes occur year-round within the Project area. The months of October through March experience a higher frequency of crashes despite traffic volumes being less than half of those in July. Crashes during winter are characterized by incidents related to weather or road conditions, while crashes during summer correlate to incidents due to higher traffic volumes.

The most prevalent crash type was single-vehicle-run-off-road (SVROR; Table 2-2), which accounted for 45 percent of all reported crashes during the study period (EA Appendix G Traffic and Safety Analysis). SVROR crashes typically result from losing control of the vehicle, whether it is from icy conditions; taking a turn too fast; swerving to avoid something and hitting an object such as a ditch, embankment, or guardrail; or overturning the vehicle. Contributing factors can include road surface conditions, weather and visibility issues, and speed. During the 2017 to 2021 study period, 31 percent of SVROR crashes resulted in injuries. Specific road design improvements that have been shown to reduce the number or severity of SVROR crashes include straightening tight curves, improving clear zone limits, and installing medians or barriers between opposing travel lanes.

Rear-end crashes (19 percent) are typically caused by drivers being unable to slow down or stop before hitting the car in front of them. Rear-end crashes mainly occur during seasonal peak traffic levels. Drivers slowing to access the shoulder or a pullout for recreational attractions (e.g., scenic views, wildlife) can surprise vehicles following behind them and send speed “shockwaves” rippling back as drivers hit their brakes to respond. Drivers have been noted to suddenly slow or stop while in the travel lane, frequently due to wildlife sightings. Rear-end crashes can occur when drivers do not leave sufficient space in front of them to react to drivers ahead. This can be due to drivers engaging in behaviors that can slow reaction times such as distracted driving (e.g., texting, eating, sight-seeing), intoxicated driving, inexperienced drivers, lack of familiarity with the road characteristics, or road conditions. Approximately 33 percent of rear-end crashes result in injuries. Angle crashes (5 percent) are similarly correlated with turning movements at intersections and have a similar injury rate.

Table 2-2. Number of crashes based on crash type and time of year (2017-2021).

Crash type	All crashes (FI and PDO), summer (Apr – Sept)	FI crashes-only, summer (Apr – Sept)	All crashes (FI and PDO), winter (Oct – Mar)	FI crashes-only, winter (Oct – Mar)
Angle – Left	5	1	3	1
Angle – T-Bone	1	0	3	2
Animal-Vehicle	11	0	15	1
Bicycle	1	1	0	0
Pedestrian	0	0	1	0
Head-on	6	3	20	11
Rear-end	28	11	17	5
Rear-end Motorcycle	1	1	0	0
Sideswipe	4	1	2	1
SVROR Motorcycle	3	3	0	0
SVROR	23,	10	84	20
Other	3	1	4	3
Other Motorcycle	1	0	0	0
Total	**87**	**32**	**149**	**44**

Source: EA Appendix G Traffic and Safety Analysis

Design improvements that have been shown to reduce the number or severity of rear-end and angle crashes include adding turning lanes to allow vehicles to slow without impacting through-traffic movements, designing for vehicle storage (i.e., queuing) length, and reducing the number or limiting the frequency of locations where traffic can turn onto and off the highway. Installing improved road signs to allow drivers to anticipate upcoming attractions or incoming traffic can also reduce crashes.

Head-on collisions are often the most severe type of crash. These events may occur from drivers losing control of the vehicle due to visibility or road conditions (e.g., snow, ice, rain, dark, sun glare), excessive speed, poorly timed passing maneuvers, or impaired driver behavior (e.g., distracted, drowsy, under the influence of drugs/alcohol). Limited opportunities or space exists for other drivers to react to unexpected oncoming vehicles, with mountain cliffs on one side, and steep embankments and a waterbody on the other side. While head-on crash incidents comprise only 11 percent of total crash incidents, 48 percent of head-on collisions resulted in injuries during the study period. Three of the four (75 percent) fatal and 42 percent of total fatal or severe injury crash incidents within the study period resulted from head-on collisions (EA Appendix G Traffic and Safety Analysis). Design changes that are shown to reduce head-on collisions include improving curves, adding passing opportunities, and adding medians or barriers to physically prevent vehicles from crossing into opposing travel lanes.

2.3.2 Existing Highway Design

The American Association of State Highway and Transportation Officials (AASHTO) publishes *A Policy on Geometric Design of Highway and Streets* manual (referred to as the "Green Book"; AASHTO 2018), which is considered the pre-eminent industry guide to current highway and street design research and practices. For NHS roadways in Alaska, DOT&PF's *Alaska Highway Preconstruction Manual* typically conforms to AASHTO's recommendations (DOT&PF 2025). For this Project, DOT&PF has identified a design speed of 55 mph, which informs many of the design and road geometry decisions on the highway.

Design Speed and Speed Limit

Design speed is a selected speed used to determine the various geometric features of the roadway. The selection of the design speed should be a logical one with respect to topography, anticipated operating speed, and adjacent land use. It is the speed at which the highway should be physically traversable, with adequate ability for a driver to see the road ahead, negotiate turns, and drive comfortably. DOT&PF has identified that this Project will be designed using a ***55-mph design speed.***

Design speed often differs from—and should not be confused with—the posted speed limit. Past design guidance recommended designing roads for speeds 5 to 10 mph higher than the anticipated posted speed limit to allow for those drivers who exceed the posted limit. Current road design guidance suggests matching the speed limit to the design speed to align driver expectations and comfort levels to the desired speed. DOT&PF anticipates that the ***posted speed limit would be 55 mph between MPs 100 and 118.***

2.3.2.1 Typical Road Section

The Seward Highway is classified by DOT&PF as a Rural Principal Arterial roadway and Interstate. The current roadway consists of two 12-foot-wide travel lanes with 6- to 8-foot outside shoulders and rumble strips at the centerline and lane edges. The highway is located within a 300-foot-wide DOT&PF ROW, which is adjacent to and frequently overlapping a 200-foot-wide ARRC ROW. Throughout much of the corridor, the highway is within 50 feet of the railroad tracks, which is closer than current design guidance. The highway has a 55-mph posted speed limit for most of the Project area, and 65 mph for the segment south of Bird.

2.3.2.2 Curves

Within the Project area, the Seward Highway does not meet current design standards for a 55-mph designation, including curve geometry and clear zones. A total of 62 curves are within the Project corridor, of which 6 do not meet highway design standards for curve radius and superelevation. All six of these curves are within a 4-mile stretch between Windy Corner (just south of MP 107) and Beluga (MP 110.5), and have warning signs alerting drivers of the tight curves and decreased speed recommendation. These curves contribute to SVROR crashes, the most common crash type within the Project corridor. In general, the curviness of the existing highway impedes drivers' ability to see upcoming hazards, hinders the ability of drivers to pass efficiently, and reduces the time drivers have available to stop or slow when they see the hazards. Similarly, the visibility required for drivers to pass efficiently and safely are hindered.

Curve Radius

The drivability of curves at specific speeds are a function of the curve radius and roadway superelevation. The minimum curve radius for a 55-mph design speed is 1,060 feet at a 6 percent superelevation. This means that all points on the highway centerline through the curve are at least 1,060 feet from the imaginary center point of a circle, with some minor banking to support vehicles navigating curves. If the roadway is too flat, vehicles can skid or tip at higher speeds; if the roadway is banked too high, it can cause sliding or discomfort at slow speeds.

The highway also contains stretches where the geometric design can support speeds up to 80 mph. Drivers often intuitively match their speed to the road design and road conditions. Roadways that have differentials of 10 to 30 mph between successive curves can contribute to drivers losing control of their vehicles. Best design practices are to keep the roadway speed differences below 10 mph between successive curves to increase safety.

Although 65 percent of the highway within the Project corridor is designated (i.e., striped) as “no passing,” drivers pass or attempt to pass in areas where passing is prohibited, contributing to elevated safety concerns within the Project corridor.

2.3.2.3 Clear Zones

A clear zone is an area alongside a road that allows a driver to stop or regain control of a vehicle that has left the road. Clear zones are unobstructed, relatively flat areas that are free of fixed objects such as trees, utility poles, and rock outcroppings. In consideration of the proposed 55-mph design speed and existing topography, DOT&PF has determined that the clear zones within the Project area should be 30 feet wide.

The existing roadway does not provide sufficient clear zone area for drivers to respond to other drivers’ errors, respond to roadway hazards, or correct for their own driving errors. Only 44 percent of the Project corridor has full clear zones. An additional 36 percent is shielded by guardrail, leaving 20 percent of the Project area without the recommended area for drivers to safely stop or recover vehicle control.

2.3.2.4 Non-Motorized Pathways

The Project corridor has sizeable gaps in non-motorized facilities (see also EA Section 3.3.12 Parks and Recreation for additional information regarding trails). The Indian to Girdwood Bike Path is a separated, paved, multi-use pathway from MP 104 to Girdwood. Pathway tunnels are under the highway at Indian (Indian Creek bridge) and Bird (near Bear Creek) to provide grade-separated connection points for those communities; another underpass is at MP 99 to shift the pathway from the water side to follow the northbound lanes along Bird Flats. Within the northern half of the Project area (MPs 104 to 118), the existing highway does not have any non-motorized transportation facilities; walkers and bicyclists must use the highway shoulder within this area. Cyclists using the corridor typically stay near or within the narrow highway shoulder, but most users would not consider the segment between MPs 104 and 118 a reasonable facility for the general public to walk or bike.

The Turnagain Arm Trail is a challenging, hiking-only trail that traverses the cliffs between Potter Creek and Windy Corner, with interim access points at McHugh Creek and Rainbow. Developed turnouts at Beluga Point, Rainbow, and Windy Corner provide parking and small scenic viewing platforms, and many other pullouts and turnouts provide access to scenic and wildlife viewing, rock climbing adjacent to or near the highway, and other hiking trails.

No constructed facilities currently exist for non-motorized users to safely cross or move along the highway corridor, except pathway tunnels at Indian and Bird as well as the Indian to Girdwood Bike Path.

2.3.3 Rockfall and Ice Areas

Segments of the mountain side cliffs adjacent to the highway have unstable slopes, resulting in rocks falling onto the highway. Fallen rocks can cause a hazard for the traveling public as well as DOT&PF Maintenance and Operations (M&O) staff responsible for responding to and performing cleanup efforts (DOT&PF 2023b). DOT&PF responds to multiple rockfall and icefall events per year, and the frequency of rockfall events within the Project corridor increased after the November 30, 2018, earthquake in Southcentral Alaska. Multiple serious accidents have occurred when rocks fell directly onto vehicles. Figure 2-3 shows an example of ice hazards within the Project corridor.

Figure 2-3. Ice buildup at Seward Highway MP 113.2 (winter 2020; top) and ice collapse at MP 113.2 (March 2022; bottom).

Rock catchments dissipate rockfall energy as well as collect rock and debris before they reach the travel lanes, reducing rockfall danger. The existing rock catchments within the Project corridor do not meet minimum standards or recommended width and are not stabilized sufficiently.

DOT&PF performed a rock fall analysis of MPs 104 to 115 of the Seward Highway—an area of high rock fall activity—to inform development of rock fall and slope mitigation projects, including Highway Safety Improvement Program (HSIP) projects (DOT&PF 2016). Fifty-three previously identified unstable slopes in between the MPs were reviewed, and DOT&PF created a prioritized list of 15 locations for potential HSIP rock fall mitigation efforts based on existing conditions, recent rock fall history, and consultation with DOT&PF M&O staff.

Table 2-3 provides the location and hazard ranking of the 15 sites from the DOT&PF (2016) study, as well as from HSIP project nomination forms, and includes the completion status of the safety improvement projects.

Table 2-3. DOT&PF prioritized sites for rock fall mitigation

MP	USMP rank[a]	HSIP rank[b]	Project status
104.7	19	8	Construction performed – HSIP (CFHWY00414)
106.1	43	5	TBD – improvements were planned as part of MPs 105–109.5 project
106.5	65	15	TBD – improvements were planned as part of MPs 105–109.5 project
106.6	66	20	TBD – improvements were planned as part of MPs 105–109.5 project
106.8	27	4	TBD – improvements were planned as part of MPs 105–109.5 project
108.6	10	6	TBD – improvements were planned as part of MPs 105–109.5 project
109.1	9	7	TBD – improvements were planned as part of MPs 105–109.5 project
109.4	45	2	Construction performed – HSIP (CFHWY00414)
109.6	71	11	Construction performed – HSIP (CFHWY00414)
110.5	61	12	Construction performed – HSIP (CFHWY00414)
111.3	23	3	Construction performed – HSIP (CFHWY00414)
113.2	106	14	Slated for 2026 construction – HSIP (CFHWY01239)
113.6	47	10	Construction performed – HSIP (CFHWY00414)
113.9	115	18	Construction performed – HSIP (CFHWY00414)
114.2	44	1	Monitoring slope to identify patterns

Source: DOT&PF 2016, 2023b

Notes: USMP = Unstable Slope Management Program; TBD = to be determined. The difference in rankings is due to HSIP nomination packages using different ranking criteria, because USMP ranking methodology does not fit HSIP funding criteria.

[a] USMP rankings were developed as part of DOT&PF's Geotechnical Asset Management Program. The statewide ranking begins with 1 as the highest-ranked site, or the site with the most hazard or risk. As of April 2015, there were 1,475 ranked slopes across DOT&PF's Northern, Central, and Southcoast Regions.

[b] HSIP rankings are from the list of top-20-ranked rock slopes on DOT&PF highways, ranked by risk to driver, with 1 being the highest-ranked site, or the site with the most risk to drivers.

At MP 113.2, a paved, widened shoulder was established to provide space for DOT&PF to install a temporary speed zone and traffic pattern to reduce the risk of collision between motor vehicles and falling/fallen rock and ice at that spot. Between 2020 and 2023, DOT&PF cut back slopes at multiple locations between MPs 108 and 114, and installed wire mesh and rock bolts to stabilize faces and reduce the impact range for falling rocks. DOT&PF proposes to excavate rock slopes at MP 113.2 during 2026 in a further effort to reduce rock and ice fall hazards within this corridor.

2.3.4 Climate and Atmospheric Conditions

Wintertime driving hazards commonly occur within the highway corridor, including reduced visibility from rain and snow, blowing winds, and icy/snowy road surfaces that can contribute to crashes (Table 2-1). Fifty-eight percent of crashes occurred during a weather event, such as rain or snow (EA Appendix G Traffic and Safety Analysis). Summertime in Southcentral Alaska is characterized by long daylight hours and a corresponding seasonal peak in travel on the Seward Highway within the Project corridor. The long daylight hours and numerous fishing and other outdoor activities along and connected by the highway corridor can contribute to people driving while tired, reducing concentration and increasing the risk of accidents within the highway corridor.

2.4 Mobility and Reliability

2.4.1 Traffic Volumes and Capacity

The 2022 average annual daily traffic (AADT) along the Seward Highway was approximately 7,730 to 9,550 vehicles per day (at MPs 98.7 to 103.1 and MPs 115.4 to 117.6, respectively; EA Appendix G Traffic and Safety Analysis). Tourism during summer drives a higher monthly average daily traffic (MADT) than other months (EA Appendix G Traffic and Safety Analysis). Table 2-4 provides existing MADT volumes, while Table 2-5 shows the AADT volume across the Project corridor.

Table 2-4. 2022 MADT volumes.

Year 2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
MP 100 at Bird	4,324	4,824	5,842	6,702	9,263	11,654	13,419	10,792	8,601	5,534	3,968	4,279
MP 117.5 at Potter Marsh	5,699	6,390	7,831	9,545	12,367	14,683	16.232	12,993	10,439	7,458	5,560	5,416

Source: EA Appendix G Traffic and Safety Analysis

Table 2-5. 2022 existing AADT.

Seward Highway location	Milepost	AADT
South of Community of Bird Creek – Boretide Road	98.7–103.1	7,730
Boretide Road – Indian Road	103.1–103.8	7,840
Indian Road – Rainbow Valley Road	103.8–108.4	7,980
Rainbow Valley Road – Potter Valley Road	108.4–115.4	8,010
Potter Valley Road – Potter Marsh	115.4–117.6	9,550

Source: EA Appendix G Traffic and Safety Analysis

Most travelers place high value on the scenic qualities of the corridor. Locals and tourists both drive and recreate within the Project corridor, often stopping and/or turning around at trailheads and pullouts. Travel on the Seward Highway within or among the Bird, Indian, and Rainbow communities are not captured by traffic counter data.

2.4.1.1 Operational Performance

The operational performance of the roadway is evaluated using peak hour volumes. In many traffic assessment cases, such peaks may be experienced daily and associated with morning/evening commuting times. For this Project, the peak traffic volumes occur during summer; therefore, summer seasonal traffic volumes are used for all modeling and assessments.

Traffic flow on two-lane highways is characterized by complex interactions of operational features and geometric variables; see EA Appendix G Traffic and Safety Analysis for details. The operational and geometric interactions can ultimately lead to the formation of platoons of faster moving vehicles behind slower moving vehicles. As such, the percent time spent following has emerged as an important traffic measure of performance to determine the level of service (LOS) of two-lane highways. LOS categories range from LOS A (best) to LOS F (worst).

DOT&PF analysis of the Seward Highway operational performance has graded the highway corridor as LOS D (see EA Appendix E *Highway Configuration Development and Selection Memorandum*), which describes unstable traffic flow, where passing demand is high but passing capacity is near zero (TRB 2000). Platoon sizes of 5 to 10 vehicles are common, although speeds may be able to be maintained. Turning vehicles and roadside distractions that cause vehicles to slow down or stop in the roadway can cause waves of delay in the traffic stream. LOS D is typically considered acceptable for urban highways but undesirable for rural highways.

2.4.2 Emergency Services and Closures

Within this corridor, responses to emergency service calls or crash incidents come from either Anchorage or Girdwood, depending on the incident location, incident type and severity, and staff/equipment availability. No boat launches exist between Ship Creek (near Downtown Anchorage) and Portage, which severely limits rescue vessel deployment for marine emergency response and rescue efforts in Turnagain Arm.

Injury and multi-vehicle accidents typically require lane or road closures for law enforcement to respond to and record the incidents. Law enforcement typically attempts to record and "clear" areas to provide some traffic movement; however, closures can often last hours, resulting in long traffic backups in both travel directions. Even shorter events can result in miles of traffic backups. No detour routes exist within the corridor.

2.5 Mixed Uses of Corridor

According to the *Seward Highway Route Development Plan Reconnaissance Study,* the Seward Highway is essential to the efficient movement of people and goods between cities and ports (DOT&PF 2017:40). The large number of access points, such as local roads or side streets along the highway corridor, may improve access but lower mobility by interrupting and slowing traffic moment. An access management strategy that balances both access and mobility is necessary to allow the Seward Highway to function efficiently and safely while also accommodating all types of users, including locals, tourists, and industrial and commercial operators. Access management strategies typically reduce and consolidate access points (i.e., driveways, side streets) to reduce crash rates and promote optimal traffic flow.

There has historically been little access control onto the Seward Highway. Presently, the highway has minimal access management other than limiting driveways through the DOT&PF approach road permit process. Additionally, drivers commonly pull over wherever they desire for viewpoints or corridor access, increasing the risk of rear-end, angle, and sideswipe crashes. CSP and DOT&PF have worked together to widen shoulders or fill ditches to provide informal pullouts to accommodate motorists' desires to stop along the highway corridor.

Table 2-6 lists existing access points. This access results in approximately four turning opportunities per mile on average, although the access points within communities or high-interest areas are far more densely located. The numerous access points affect road operations, as vehicles accelerate onto or decelerate off the highway and other vehicles brake in reaction.

Table 2-6. Existing access points in Project corridor.

Description of access point	Number of access points
Residential driveways	12
Intersecting roads	8
Commercial driveways	6
Pullouts, turnouts, campground/facility access, trailheads, and parking areas[a]	58
Total	**84**

[a] Including some with multiple driveways.

Turnagain Arm is a destination for locals and visitors to enjoy spectacular views of the mountains, inlet, and famous bore tide as well as access camping, fishing, hiking, scenic and wildlife viewing, biking, and rock-climbing opportunities. Many visitors experience the park visually as they travel the corridor by vehicle, rail, or bicycle. Public and agency comments indicate that preserving access to scenic and recreational uses is important for the Project. Comments also note the importance of the Seward Highway's designation as a National Forest Scenic Byway, Alaska Scenic Byway, and All-American Road. Maintaining the high-value aesthetic and natural qualities of the corridor is an important Project goal.

The present highway corridor width is not sufficient to separate traffic types among scenic and recreational visitors, local/community travel, and through travelers. It is therefore necessary to identify and optimize sufficient access and parking throughout the corridor to CSP attractions and recreational opportunities while reducing safety risks to road operations.

2.5.1 Communities within the Corridor

The communities of Rainbow, Indian, and Bird are within the Project area, and the community of Girdwood is just south of the Project area. Many residents of these communities drive this rural stretch of highway as part of their regular commute to Anchorage; they also use the Seward Highway to travel between and within the communities. Comments submitted by local residents recognize the need for safety improvements, but some residents have voiced concerns about losing direct residential and business access to the highway, traffic noise, and the potential for increased speeds through the corridor.

Through-travelers are defined for this analysis as anyone intending to traverse from one end of the Project corridor to the other without stopping. As the only connecting road corridor, Turnagain Arm and Kenai communities regularly depend on the Seward Highway to travel to Anchorage for medical needs, access to the Ted Stevens Anchorage International Airport, and shopping. Through-travelers include commercial, tourist, industrial, and residential traffic as well as vehicle types that range from passenger cars to RVs to industrial heavy trucks. Through-travelers are typically seeking consistent and reliable driving experiences, with an emphasis on maintaining consistent highway speeds to reach their destinations in a timely manner.

3 References

AASHTO (American Association of State Highway and Transportation Officials)

2018 *A Policy on Geometric Design of Highway and Streets*. Seventh edition.

DOT&PF (Alaska Department of Transportation and Public Facilities)

2016 *Rock Fall Analysis Seward Hwy MP 104–115*. Memorandum. September 30, 2016.

2017 *Seward Highway Route Development Plan Reconnaissance Study*. Prepared for DOT&PF by DOWL. January 2017. Accessed at https://safersewardhighway.com/wp-content/uploads/2025/04/WC_Archive_02_20170103_Seward-Recon-Study_Final-V6.BODY_.pdf.

2023a Safety Corridors Audit 2022. *Safety Corridor MP 90-117, Past and Ongoing Safety Improvements, 2006–2022 Serious Injury and Fatal Crashes*, p. 14. April 2023. Accessed at https://dot.alaska.gov/creg/design/highways/Projects/00130/23-04-24_2022_FINAL_Safety%20Corridors%20Audit_DOTPF_DPS.pdf.

2023b *Federal Fiscal Year (FFY) 2023 Highway Safety Improvement Program (HSIP) Candidate Description and Cost Estimate, 19CN05(23): Seward Highway Rockfall Mitigation, MP 113.2*. Prepared by DOT&PF Central Region Traffic & Safety Section.

2025 Alaska Highway Preconstruction Manual. January 1, 2025. https://dot.alaska.gov/stwddes/dcsprecon/assets/pdf/preconhwy/preconstruction_all.pdf.

DOWL
2019 *Seward Highway: MP 105 to MP 107, Windy Corner Improvements. Environmental Assessment*. Draft. Prepared for DOT&PF. August 2019. Accessed at https://dot.alaska.gov/creg/EA/EA1-WindyCorner-DraftProjectEA082219.pdf.

TRB
2000 *Highway Capacity Manual*. Prepared by the TRB National Research Council.

USDOT (U.S. Department of Transportation)
2024 Environmental Review Toolkit. Accessed at https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_project_termini.aspx on September 29, 2025.