



AMATS: Ocean Dock Road Reconnaissance Engineering Study



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Reconnaissance Engineering Study

Executive Summary

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This document is a summary of the complete reconnaissance engineering study.
For more detail, please see the complete study.



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Abbreviations

AHRS	Alaska Heritage Resource Survey
AMATS	Anchorage Metropolitan Area Transportation Solutions
ANC	Ted Stevens Anchorage International Airport
ARRC	Alaska Railroad Corporation
DOT&PF	Alaska Department of Transportation and Public Facilities
JBER	Joint Base Elmendorf-Richardson
MOA	Municipality of Anchorage
NHS	National Highway System
NRHP	National Register of Historic Places
ODR Study	Ocean Dock Road Reconnaissance Engineering Study
POA	Port of Alaska in Anchorage
ROW	Right-of-Way
STRAHNET	Strategic Highway Network



1 Introduction

This Anchorage Metropolitan Area Transportation Solutions (AMATS): Ocean Dock Road Reconnaissance Engineering Study (ODR Study) examines the road and rail corridor entering the Port of Alaska (POA) from Ship Creek to the south, along Ocean Dock Road, and onto the POA, as shown in Figure 1.

The ODR Study builds off a 2018 study which focused on the intersection of Ocean Dock Road with the C Street ramps (*AMATS: C Street/Ocean Dock Road Access Ramps Reconnaissance Engineering Study*), expanding the study area to allow for opportunities to reconfigure the railroad tracks and road segments and their crossings.

The study corridor is of economic and military significance, including portions of both the POA and the Alaska Railroad Corporation (ARRC) main freight and passenger terminal. Additionally, nearby Joint Base Elmendorf-Richardson (JBER) and the Ted Stevens Anchorage International Airport (ANC) both rely on the transportation systems within the study corridor.

The POA handles half of all Alaska inbound freight, which is then transported to its final destination via pipeline, truck, rail, or a combination of these modes. The port is a Department of Defense commercial strategic seaport, and Ocean Dock Road (the main road into and out of the port) is designated part of both the National Highway System (NHS) and the Strategic Highway Network (STRAHNET, or roads of military significance). Thus, improvements to the study corridor benefit the State and nation economically and strategically.

The transportation system in the study corridor is used by freight (including trains, trucks, and pipeline), commuters, residents of the Government Hill neighborhood, tourists arriving at the POA by cruise ship or traveling by passenger train, and recreational users (including people coming to fish in Ship Creek, pedestrians and bicyclists, and users of the small boat launch). Each of these users have specific characteristics and needs, all of which have been considered in the corridor analysis.

A reconnaissance engineering study provides information so that needed improvements can be funded and included in future planning documents. The study answers:

- *What concerns need to be addressed?*
- *What solutions are possible?*
- *What benefits and impacts are expected from the most feasible solutions?*
- *How much will the project cost?*

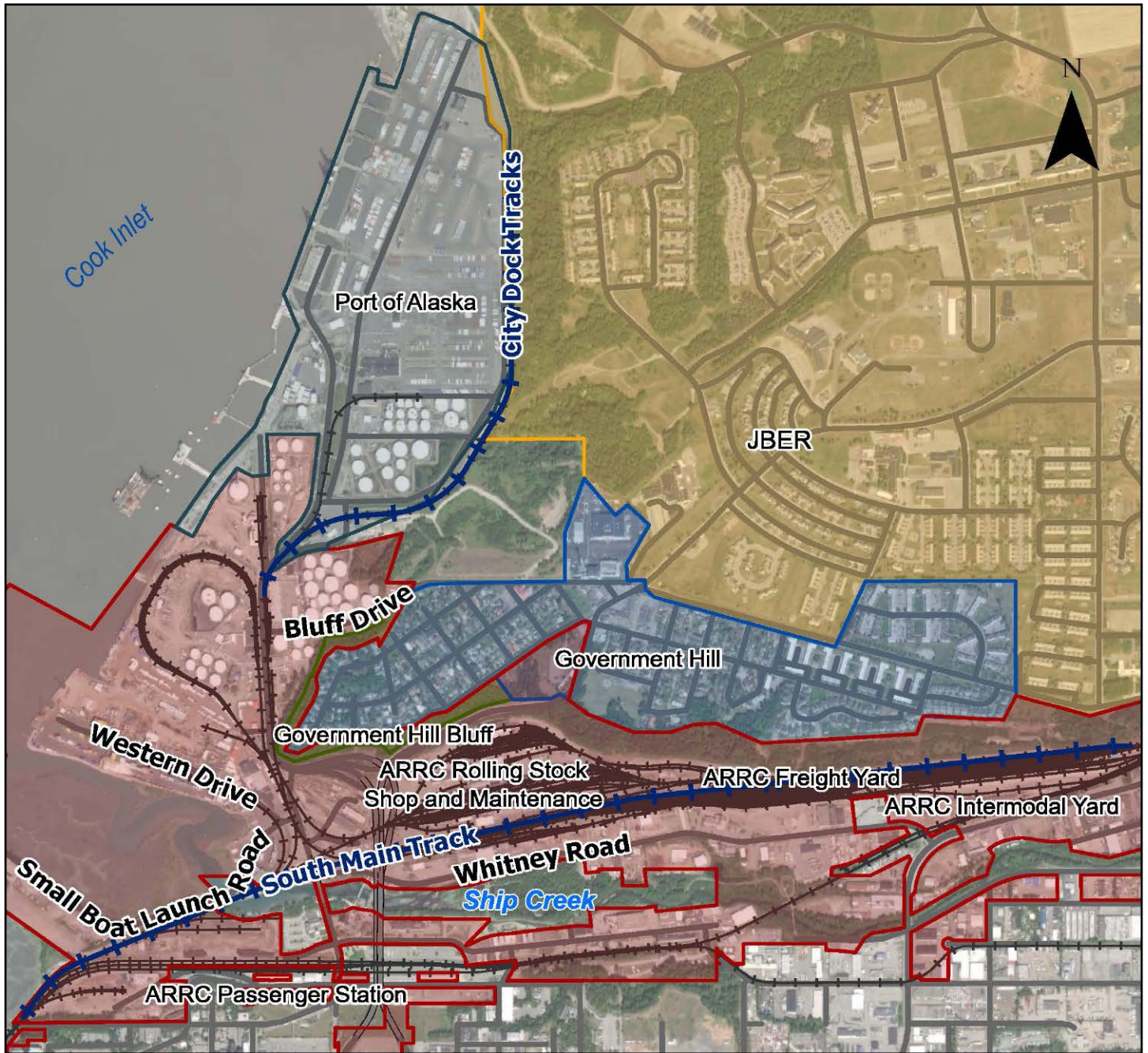


Figure 1: Study Area



2 Study Corridor Existing Conditions

2.1 Land Use

2.1.1 Port of Anchorage

Two companies (Tote and Matson) bring goods into Alaska at the POA on barges that arrive on Tuesdays and on Sundays. These goods are off-loaded from the barges and trucked out of the POA. Some of these goods are carried by truck to intermodal yards, where they are transferred to rail cars for distribution throughout Alaska. Others are trucked to final destinations in Anchorage or throughout Alaska.

Port imports also include fuel and cement, both of which are transferred from ships to holding tanks located at the POA. These goods leave the port by train, truck, and pipeline. Three pipelines convey fuel southbound from the storage tanks located north of the study area and run alongside and under Ocean Dock Road, crossing the road at a number of locations. Figure 2 shows the approximate location of the pipelines. The majority of the piped fuel feeds the air traffic of Ted Stevens Anchorage International Airport (ANC).

Cruise ships dock at POA a few times a week during the summer, and passengers are bussed to downtown or other tourist destinations. Crew members will occasionally walk to downtown while the ships are docked.



Figure 2: Study Area Fuel Pipelines



Snow maintenance is important for maintaining access to the port. POA plows snow on Ocean Dock Road from the C Street Ramps intersection north to the port. The Municipality of Anchorage (MOA) plows snow on the C Street Ramps and on Ocean Dock Road south of the C Street Ramps.

2.1.2 ARRC Anchorage Terminal

ARRC's Anchorage Terminal yard is the central processing facility for nearly all ARRC train traffic and it also includes major maintenance and storage facilities, as well as facilities for maintaining passenger equipment owned by various cruise ship companies.

The tracks serving shippers in the POA originate in ARRC's west freight rail yard area and extend northward to serve the entire port. All of the study corridor south of the port is owned by ARRC, much of which is leased.

Figure 3 shows the railroad tracks within the study area, including a wye track that is used to turn trains around. All passenger trains serving Anchorage are turned around here so that the locomotive is at the front of the train and passengers can face the correct direction of travel. Between mid-May and mid-September ARRC offers multiple daily passenger train services on multiple routes. For the remainder of the year, passenger operations consist of 2-8 passenger trains per week.

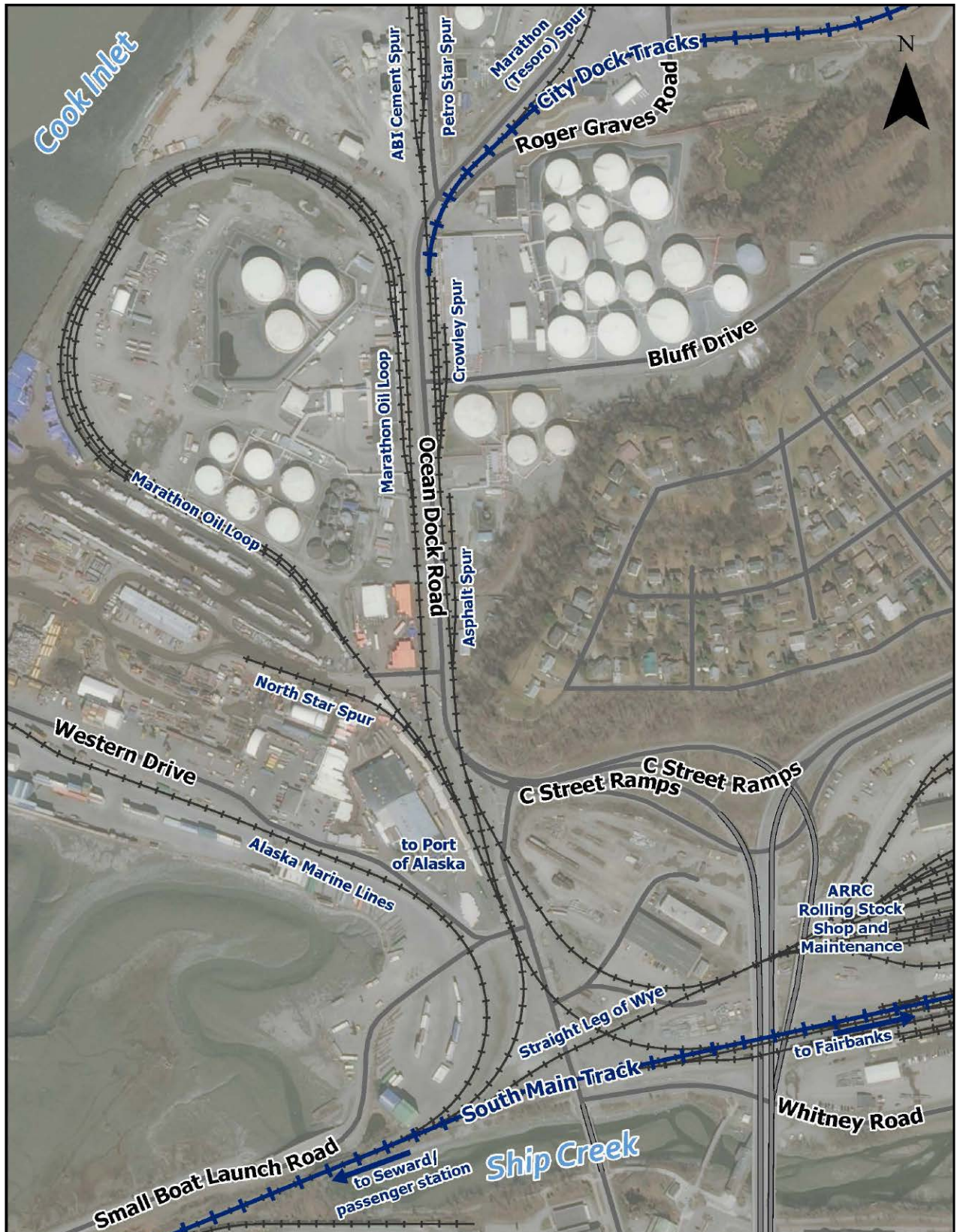


Figure 3: ARRC Track Layout in Study Corridor



2.1.3 Government Hill

Government Hill is a mostly residential area with a small commercial area seated on a bluff overlooking the study corridor. As one of the oldest neighborhoods in Anchorage, some areas have been identified as places of historic significance, two of which are adjacent to the project area (Government Hill Federal Housing Historic District and Brown's Point Park Historic Site).

With walkable neighborhoods and located only a mile from downtown Anchorage and Ship Creek trail, Government Hill generates demand for non-motorized travel through the study area.

2.1.4 Small Boat Launch/Ship Creek Fishing

Small Boat Launch Road, which connects to Ocean Dock Road in the study area, accesses Anchorage's Small Boat Launch and parking area. The Small Boat Launch facilities include two boat ramps, restrooms, and a small park. Recreational users of this area also include people coming to fish in Ship Creek and bird watchers.

2.2 Areas of Concern

2.2.1 At-Grade Rail-Road Crossings

The study area includes 15 rail-road at-grade crossings, six along Ocean Dock Road and nine located across driveways or intersecting roadways, as shown in Figure 4.



Figure 4: Rail-Road At-Grade Crossing Locations



2.2.1.1 Crossing Delay

Trains and vehicle drivers experience delay at the crossings in the study area.

- Vehicle drivers are delayed while a train travels through the crossing and then, once the train has cleared the crossing, while they wait for the queued vehicles in front of them to clear the tracks.
- Busses and trucks carrying hazardous material must stop at each crossing and check for oncoming trains before continuing, causing delay for themselves and other vehicles.
- Trains are delayed while switching from one track to another when they travel through the crossing in one direction and then wait for vehicle traffic to clear before traveling back through the crossing to complete their maneuver.

Table 1 and Figure 5 present an estimate of the amount of delay and the cost of delays for vehicles at the main rail-road at-grade crossings within the study corridor on a Tuesday (the day with the highest volume of vehicle traffic). The delay is estimated to compare the crossings in the study area; actual delay experienced may be different than the delays shown.

Rail-road crossing Ocean Dock Road 5 (just north of the C Street ramps) experiences the most delay because it carries the highest combined volume of trains as well as cars and trucks.

Crossing Name	Daily Vehicle Delay, Tuesday (vehicle-hour)	Cost of Vehicle Delay, Tuesday (\$/day)
Ocean Dock Road 1	26.3	\$1,147
Ocean Dock Road 2	2.1	\$92
Ocean Dock Road 3	10.5	\$457
Ocean Dock Road 4	13.5	\$586
Ocean Dock Road 5	57.6	\$2,509
Ocean Dock Road 6	12.2	\$533
Small Boat Launch Road 1	5.7	\$250

Table 1: Estimated Existing Tuesday Crossing Delay and Cost of Delay

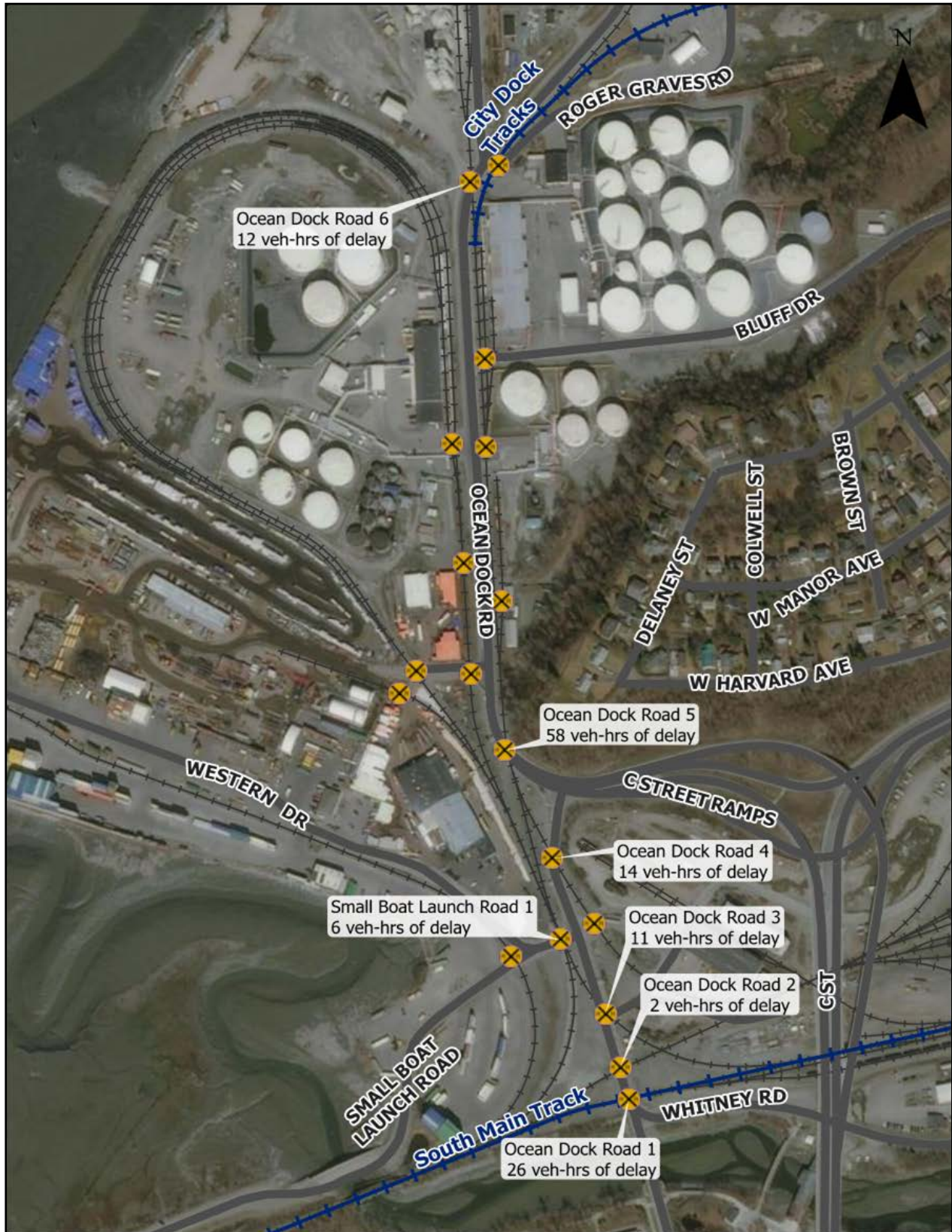


Figure 5: Estimated Existing Daily Crossing Delay



2.2.1.2 Crossing Safety

ARRC provided 10 years of data (2012 to 2021) for vehicle-related crashes involving trains or rail equipment throughout the study corridor. Figure 6 presents the 59 crashes that were reported in the study corridor. The most common crash types include:

- Crashes with rail equipment (51 crashes). These include vehicles striking railroad equipment such as a gate or cantilever, as well as vehicles being struck by gates. Most of these types of crashes occurred at the crossings near Whitney Road (Ocean Dock Road 1 or Ocean Dock Road 2).
- Vehicles stuck on tracks (7 crashes). These crashes occur when vehicles drive along the tracks (instead of on the road) and get stuck on the tracks.

As part of the previous intersection study (*AMATS: C Street/Ocean Dock Road Access Ramps Reconnaissance Engineering Study*), truck drivers complained that sight distance is restricted by the hill/retaining wall located on the north side of the intersection with the C Street ramps, approaching the Ocean Dock Road 5 crossing.

Additionally, the Ocean Dock Road 6 crossing near the Ocean Dock Road and Roger Graves intersection has been identified as having safety concerns because there is limited sight distance for both trucks and trains as they approach the crossing. The crossing is controlled by a yield sign for vehicles and near-misses have been reported between trucks and trains. Alaska Department of Transportation and Public Facilities (DOT&PF) is pursuing near-term improvements at this crossing, such as active traffic control (like flashing lights).



Figure 6: ARRC Reported Vehicle Crashes (2012 to 2021)



2.2.2 Intersection of Ocean Dock Road with C Street Ramps

Ocean Dock Road is the primary access route to the POA. As such, it is classified as a principal arterial roadway, with the primary purpose of serving through traffic making long distance trips. Nevertheless, the road carries relatively low volumes (about 2,000 vehicles per day) at lower speeds (speed limit 20 to 30 mph) when compared to other principal arterial roadways, such as the Seward Highway or the Glenn Highway. Approximately 50% of the vehicles traveling into and out of the port on Ocean Dock Road are trucks.

In addition to the restricted sight distance due to the hill/retaining wall located on the north side of the intersection with the C Street ramps, truck drivers have indicated that they have to slow down as they leave the POA due to the tightness of the curve, and then have difficulty maintaining adequate speeds to climb the C Street ramps, especially in winter conditions.

Drainage is also a concern for the intersection, causing an increased rate of deterioration of the pavement and nearby railroad tracks.

2.2.3 Intersection of Ocean Dock Road with Whitney Road

The traffic control at the Ocean Dock Road and Whitney Road intersection (depicted in Figure 7) is unconventional for a T-intersection, with the northbound North C Street and the westbound Whitney Road approaches under stop-control and the southbound



approach of Ocean Dock Road operating freely (no control), so that southbound vehicles are not forced to stop in the rail-road crossing.

Figure 7: Existing Traffic Control at Whitney Road Intersection with Ocean Dock Road



While the number of crashes are fewer than expected compared to other three-leg intersections, conflicts have been reported, indicating that northbound drivers do not always stop at their stop sign and some close calls have been observed.

When the rail-road crossing just north of the intersection is closed, traffic on Whitney Road is backed up. Westbound drivers on Whitney Road wanting to turn left will sometimes use the oncoming lane to get around vehicles stopped for the crossing, causing conflict with drivers on North C Street who are turning right.

Additionally, the turn from Ocean Dock Road onto Whitney Road or from Whitney Road onto Ocean Dock Road has a tight radius. Because of the tight turn, the automatic road-rail crossing gate just north of the intersection frequently gets hit. Also, drivers on Whitney Road will sometimes stop far back from the stop bar to avoid being hit by a truck turning from Ocean Dock Road. A final concern is that railroad personnel have to flag the Ocean Dock Road 1 crossing when oversized vehicles travel through the intersection due to the tight geometry.

Relatively few vehicles use North C Street. The majority of the traffic travels from Ocean Dock Road onto Whitney Road and from Whitney Road onto Ocean Dock Road.

2.2.4 Non-Motorized Infrastructure

Within the study corridor, non-motorized users are provided 6-foot shoulders with rumble strips along Ocean Dock Road. South of the study corridor, there are sidewalks along North C Street and the popular Ship Creek Trail runs along the south side of Ship Creek. Non-motorized users can travel between Government Hill and downtown Anchorage on a sidewalk on the west side of East Loop Road as it travels on a bridge over the rail yard. However, there are signs prohibiting non-motorized users from traveling along the C Street ramps.

Many of the rail-road crossings are skewed, meaning that the angle between the road and the railroad track is not perpendicular. To increase safety, it is desirable for facilities that are used by bicycles to be perpendicular to the railroad tracks. When bicycles travel across rail-road at-grade crossings perpendicularly, it reduces the potential of bicycle tires getting stuck in the gap between the tracks and the concrete slabs.

As part of the previous intersection study (*AMATS: C Street/Ocean Dock Road Access Ramps Reconnaissance Engineering Study*), non-motorized users were observed for a total of 4 hours on a weekday at the end of April/beginning of May. Approximately 10 people biked or walked on the prohibited route between Government Hill and Ocean Dock Road along the C Street ramps, while about 20 people were observed traveling on the East Loop Road sidewalk. Figure 8 illustrates the routes people were observed traveling.

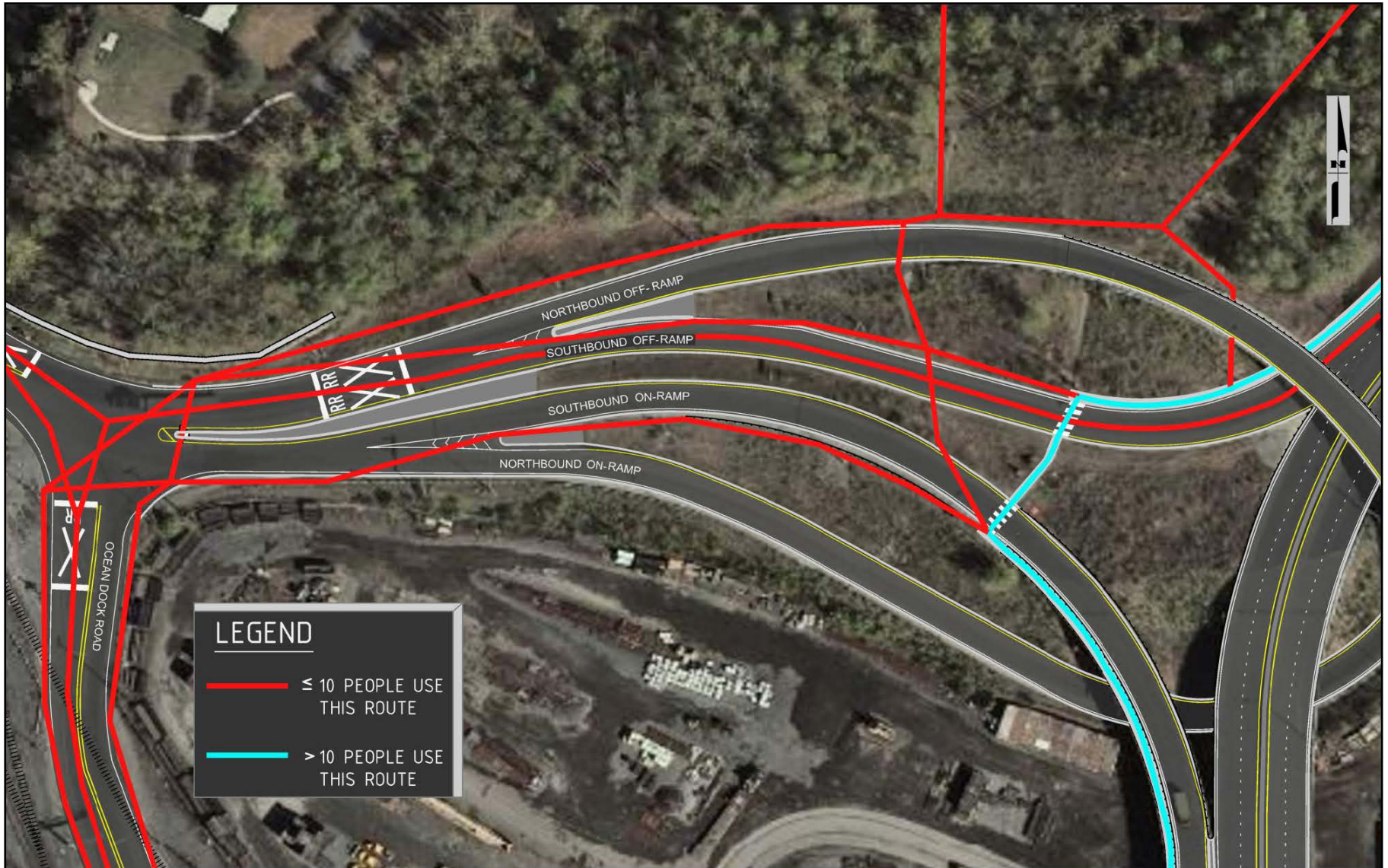


Figure 8: Observed Pedestrian and Bicycle Routes and Volumes



3 Purpose and Need

The study area includes Ocean Dock Road from Ship Creek on the south to Roger Graves Road at the POA. This roadway is the only public access into and out of the POA. It also accesses the ARRC Anchorage rail yard and the small boat harbor. As such, the study area is included as part of both the NHS and the STRAHNET (designating roads of military significance). There is significant train and truck traffic through the study area that interacts at numerous rail-road crossings, resulting in delay for both trains and trucks. Furthermore, the area is frequently used by pedestrians, bicyclists, and recreational vehicles accessing the small boat launch. **The PURPOSE of this study is to reduce delay and improve safety for the multi-modal transportation network into and out of the POA and rail yard.**

The purpose and need statement identifies the objective of and necessity for a project, and may need to be refined through project development and design.

Transportation improvements will address the following **NEEDS**:

- **Delay at Rail-Road Crossings.** There are six at-grade road-rail crossings on Ocean Dock Road north of Whitney Road. Vehicles experience delay each time the crossings are occupied by a train. Trains experience delay whenever they pause in their operations to clear the crossing and allow vehicles to pass. In addition, some vehicles (such as tour buses and trucks carrying hazardous materials) must stop at each crossing, which also causes delay. Delays could be exacerbated in the future with an increase of goods and materials being shipped to the POA resulting in more freight traffic.
- **Truck Operations.** Sight distance on the Ocean Dock Road curve just north of the C Street ramp intersection is limited because of the retaining wall on the north side of the road. While the minimum passenger car sight distance is met, truck drivers have expressed concerns about being able to stop when coming down the hill from the C Street ramps towards the POA. Furthermore, truck drivers leaving the POA slow down due to the tightness of the curve, and then have difficulty maintaining adequate speeds to climb the C Street ramps, especially in winter conditions.
- **Crash Potential.** The number of vehicle-train interactions is a safety concern because the potential for a crash is correlated to the frequency of vehicle and train interactions. While there have been no major injuries or fatalities in the corridor, any collision between a vehicle and a train could be catastrophic. Any crash involving passenger vehicles, commercial trucks, trains, and/or non-motorized users results in traffic delays while the crash is being cleared from the road. Public comments identified the uncommon traffic control at the Ocean Dock Road and Whitney Road intersection (where northbound and westbound vehicles stop and yield to all southbound vehicles) as a safety concern. Sight distance at rail-road crossings is also of concern. The retaining wall near the C Street ramps intersection obstructs sight distance at Ocean Dock Road 5 crossing and stakeholders identified sight distance issues for southbound vehicles at Ocean Dock Road 6 crossing.



- **Maintenance.** There are multiple agencies in charge of maintaining different segments of Ocean Dock Road, within a short distance. This is reported to result in unmaintained or poorly maintained areas where the management transitions between agencies. Furthermore, from 2012 thru 2021, there were 51 crashes reported involving a vehicle striking rail equipment (such as the gate or cantilever). The damaged equipment requires repairs by ARRC maintenance crews and causes train delays.
- **Drainage.** Water sheet flows across the C Street ramps and is not completely captured by the existing drainage system. The existing drainage system is filled with sediment and debris and is not functioning properly. Water ponds at a low point on the C Street ramps causing potholes to develop. Ponding water was observed near railroad tracks throughout the study area. Saturated roadways increase the deterioration rate of pavements and railroad tracks, which increase maintenance needs. Drainage systems north of the C Street ramps need improvements to adequately convey runoff.
- **Non-Motorized Connectivity and Safety.** There are insufficient non-motorized facilities to serve pedestrian and bicycle demand in the area. There are numerous non-motorized generators, such as Government Hill residences, Ship Creek fishing, and the Ship Creek trail system in the area. People employed within the POA also sometimes walk or bike through the area. Safer non-motorized facilities are needed along such a truck-heavy roadway between the POA and the downtown Anchorage business core.



4 Proposed Alternative

The proposed alternative, depicted in Figure 9 through Figure 14 , addresses the purpose and need through the following elements:

- Relocates the railroad track entering the POA to the west side of Ocean Dock Road
 - Reduces delay and improves safety by eliminating the Ocean Dock 5 crossing, reducing train-vehicle conflicts
 - Improves safety by moving the Ocean Dock 6 crossing to a location with better sight lines for trains and trucks
- Reconfigures the intersection of Whitney Road with Ocean Dock Road
 - Improves safety by clarifying the traffic control
 - Reduces delay by eliminating the need to stop for traffic on Whitney Road headed towards the port
 - Improves safety and reduces maintenance burden by eliminating the tight turn from Whitney Road towards the port
- Incorporates previous recommendations for the C Street ramp intersection
 - Increases safety by improving sight lines
 - Reduces maintenance burden by improving drainage
- Builds new paths to connect existing non-motorized sidewalks and trails

The March 2022 Conceptual Study identified concepts to improve non-motorized, rail, and road travel through the study area, as well as potential impacts and constraints. This ODR Study combines compatible elements with the highest benefits to create a proposed alternative.

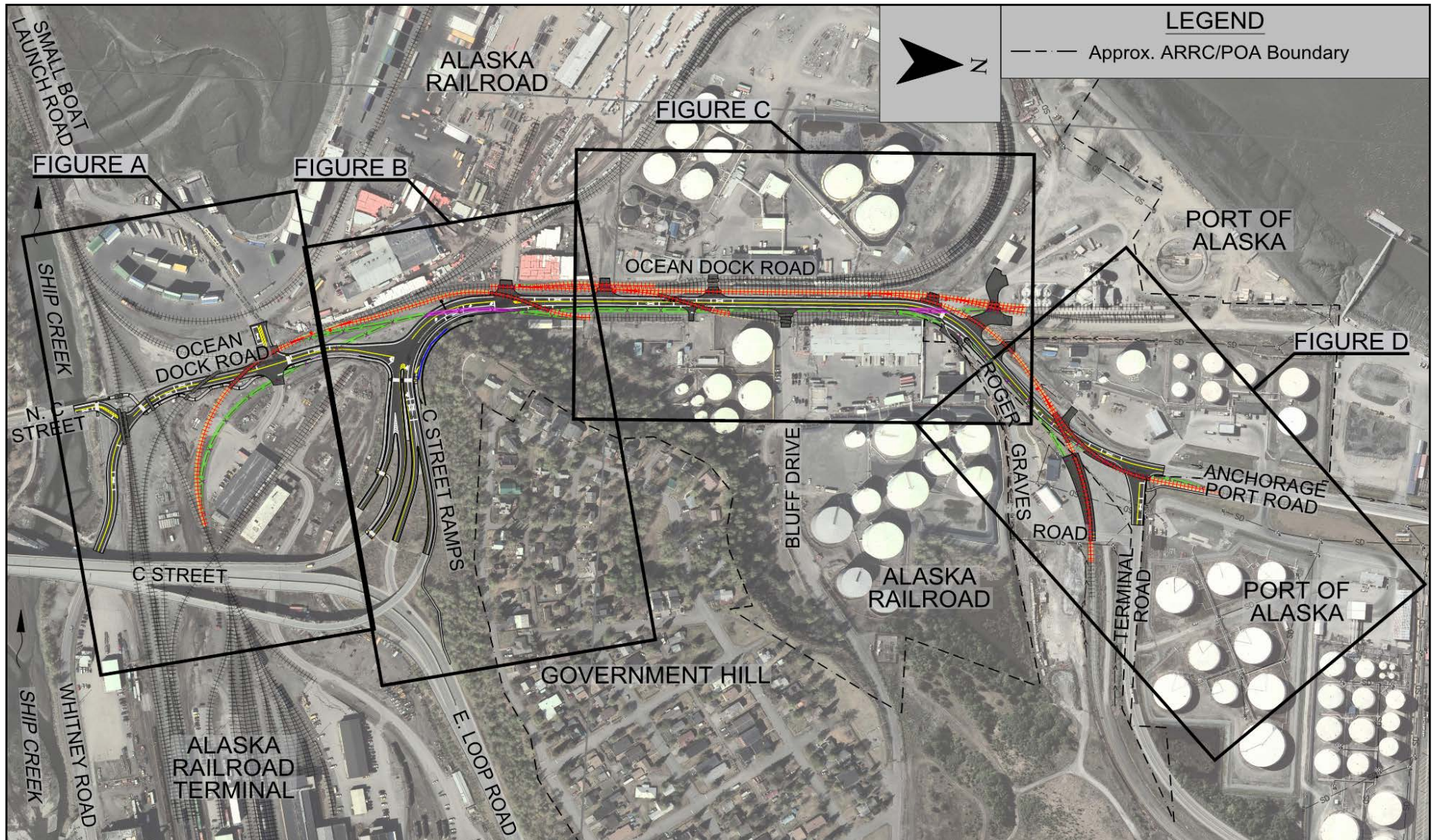


Figure 9: Proposed Alternative - Project Overview

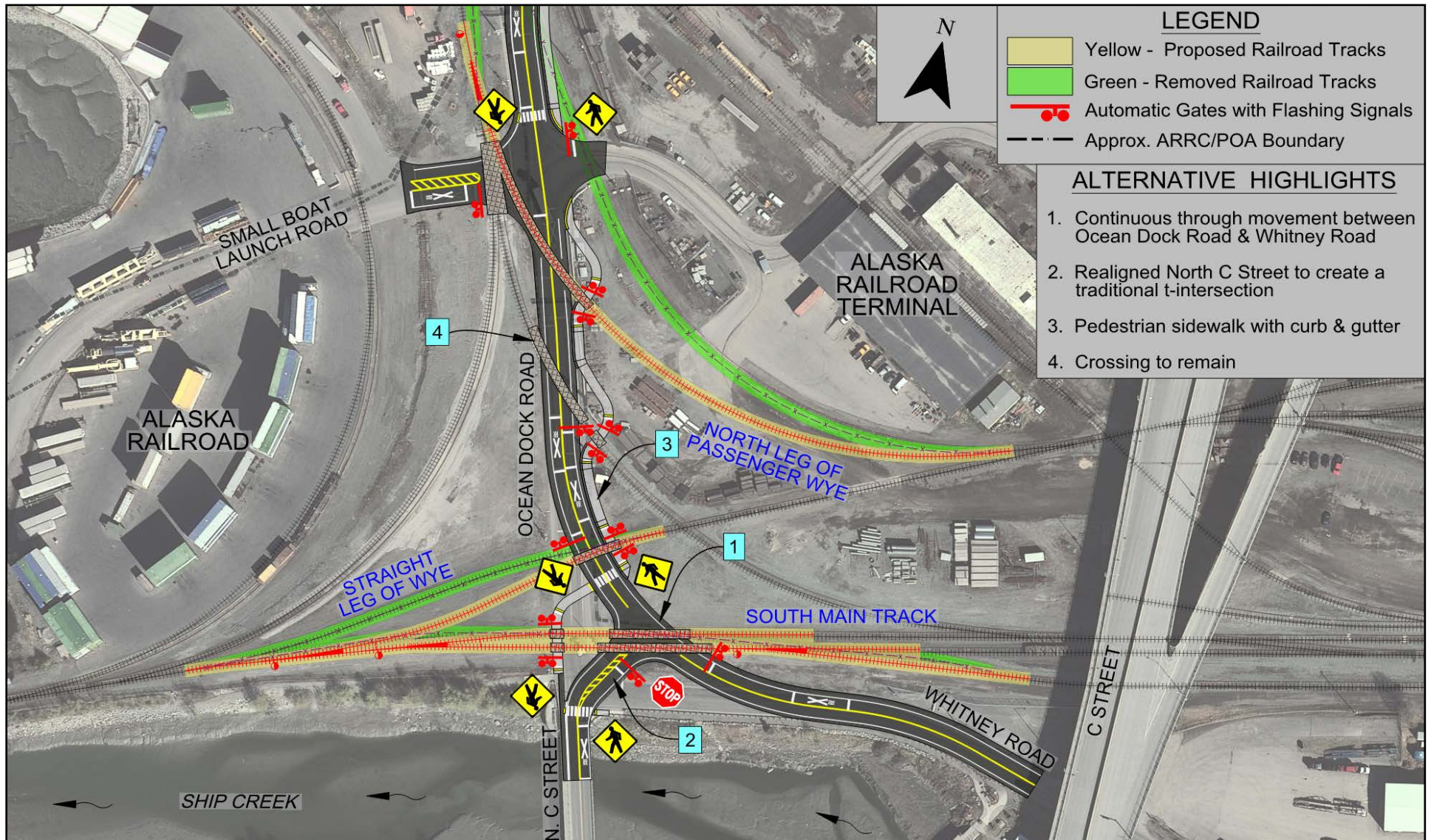


Figure 10: Proposed Alternative - Figure A

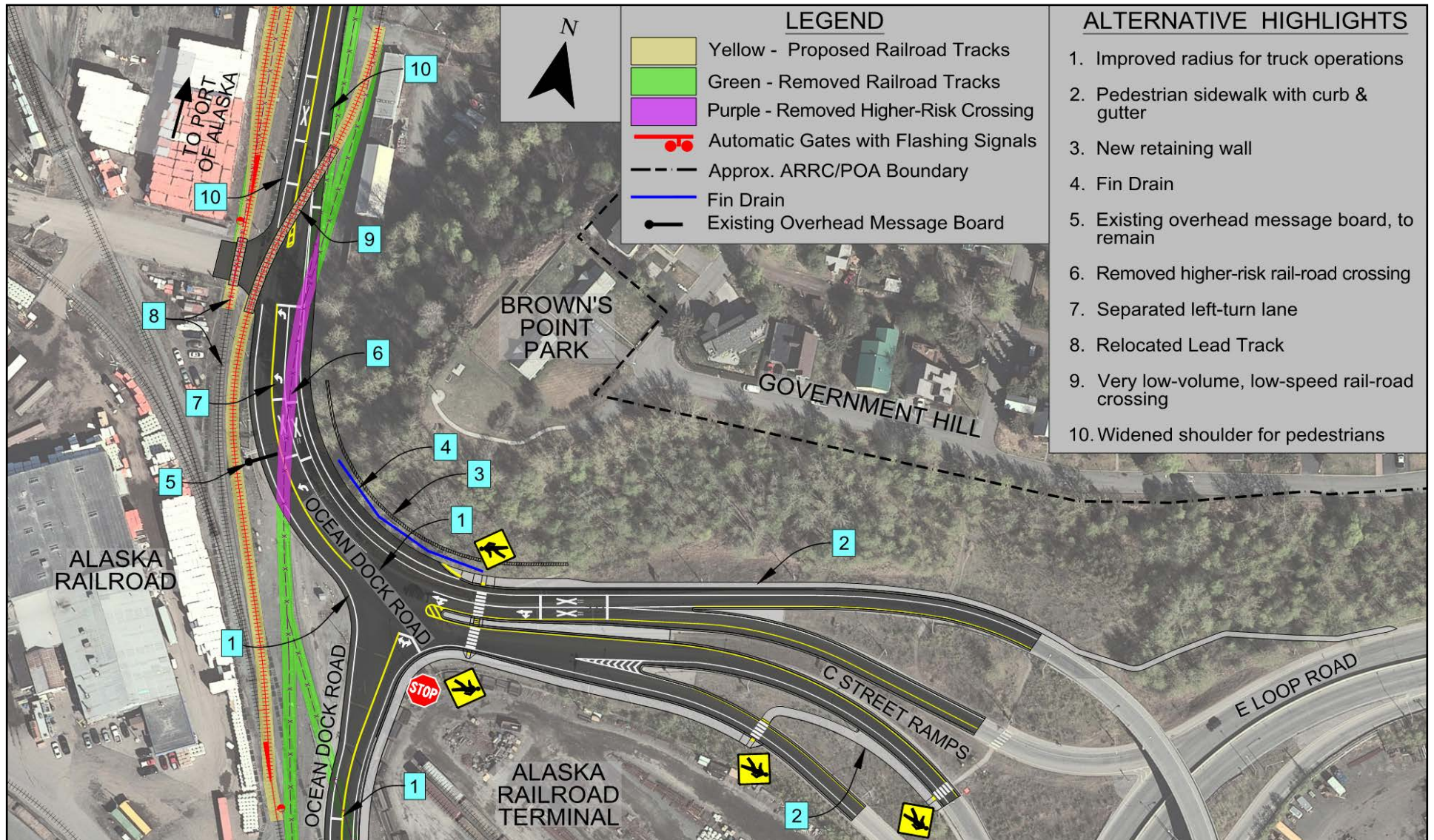


Figure 11: Proposed Alternative - Figure B

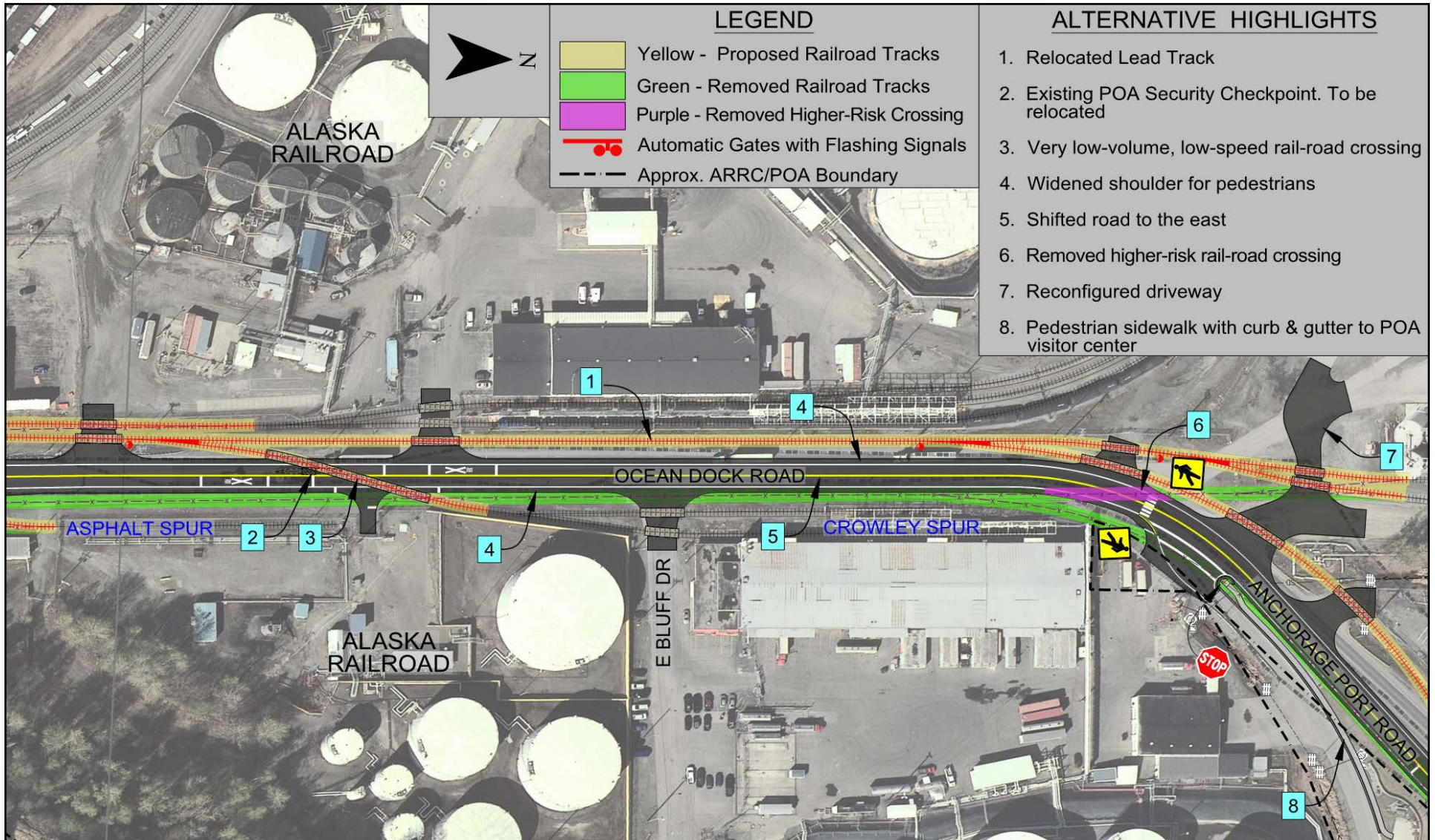


Figure 12: Proposed Alternative - Figure C

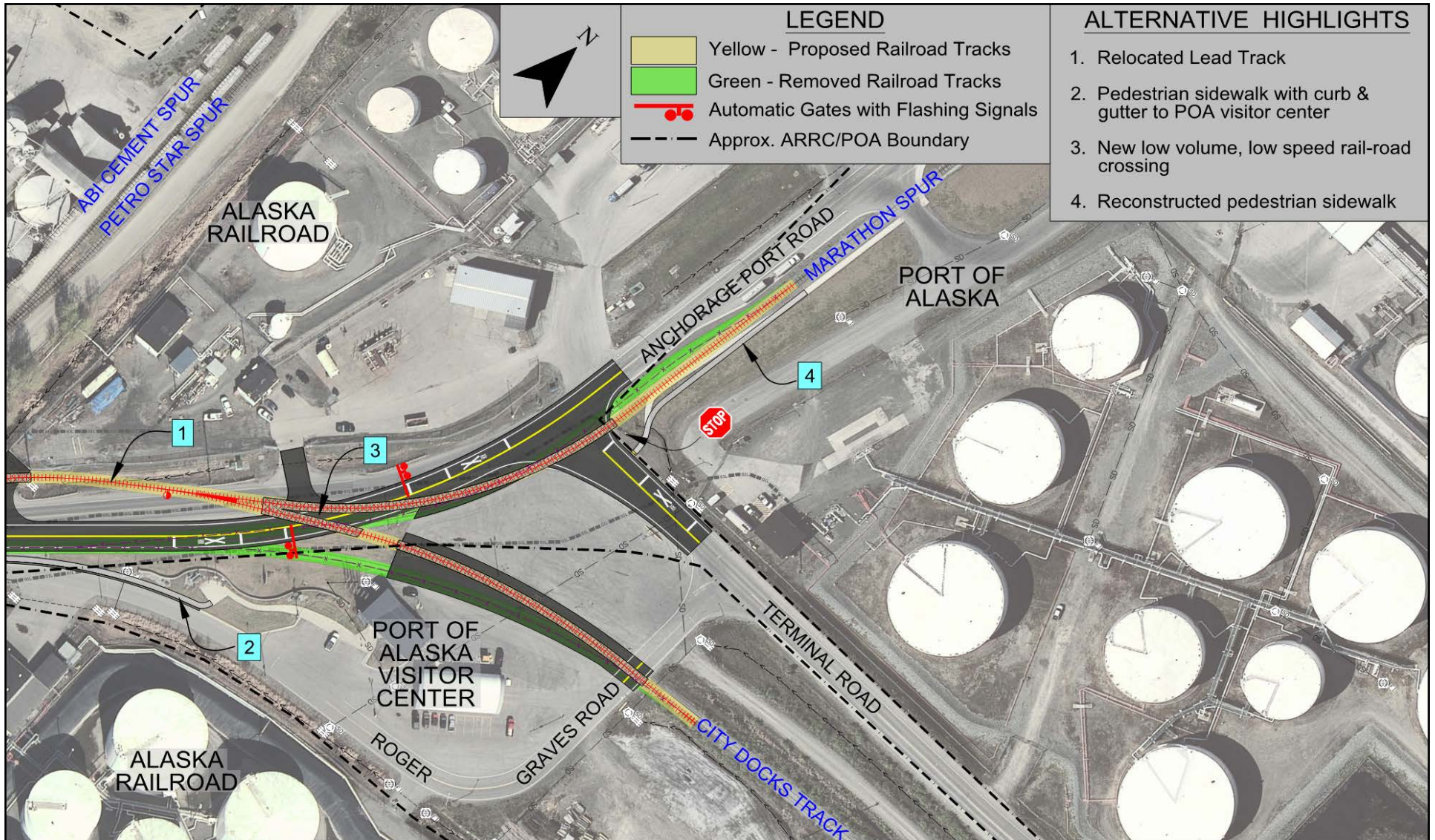


Figure 13: Proposed Alternative - Figure D

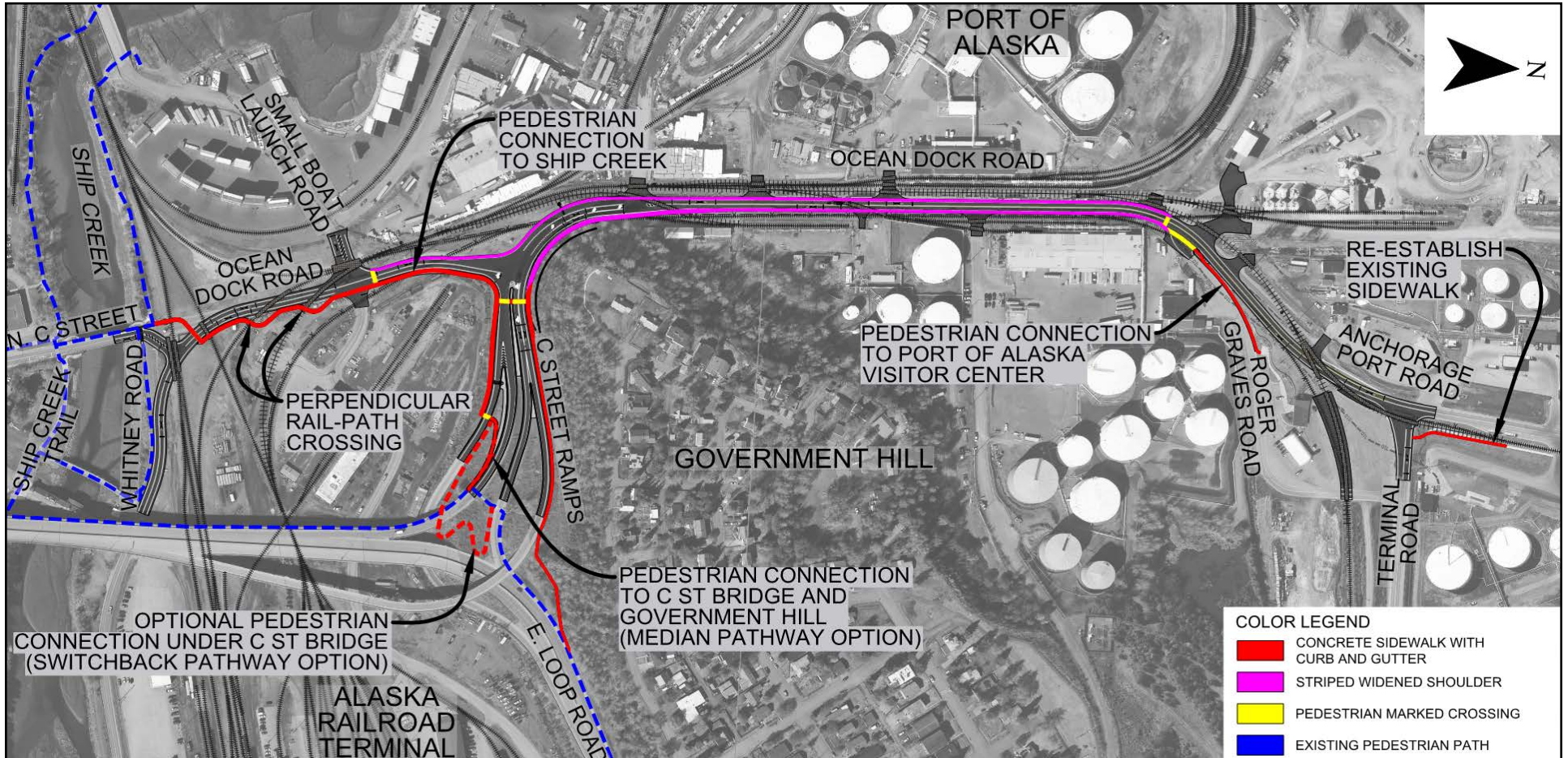


Figure 14: Proposed Pedestrian Facilities



4.1 Benefits (How it Meets the Need)

The proposed alternative allows for all the existing train movements and meets railroad design criteria.

4.1.1 Delay at Road-Rail Crossings

- **About 50% less daily vehicle delay.** The proposed alternative moves the track accessing the port to the west side of Ocean Dock Road and removes the Ocean Dock Road 5 crossing. Under the existing condition, the Ocean Dock Road 5 crossing has the highest number of train movements per day (about twice as many as any other crossing) and is also the main track into the POA.
- **Reduced train delay.** Under the existing condition, the train uses the Ocean Dock Road 5 crossing twice when turning trains or during other maneuvers. If long vehicle queues develop during these maneuvers, the train may clear the crossing and pause to allow the vehicle queues to disperse before completing the maneuver. By building track where these maneuvers do not cross the road, train delay is reduced.

4.1.2 Truck Operations

- **Improved truck operations at the C Street ramps intersection.** The increased radius at the C Street ramps intersection allows trucks to maintain adequate speed to comfortably climb the C Street ramps and would increase driver comfort maneuvering and seeing around the curve. The additional northbound left-turn lane to access the North Star driveway relieves delay caused by vehicles waiting in the through lane.
- **Improved truck operations at Whitney Road.** The Whitney Road intersection realignment allows the heavy truck movements (to and from Ocean Dock Road and Whitney Road) to operate freely without traffic controls. The realignment also removes the tight turn radius from Whitney Road to Ocean Dock Road so that flaggers are no longer needed when oversize trucks are at the Ocean Dock Road 1 crossing.

4.1.3 Crash Potential

- **Reduces train-vehicle conflicts by 30%.** The Ocean Dock Road 5 crossing, which is removed with the proposed alternative, has both the highest number of train movements a day and the highest volume of truck and other vehicle movements.
- **Improved sight distance at C Street ramps intersection.** The increased radius at the C Street ramps intersection improves roadway sight distance and operating speeds, allowing for vehicles to travel at the posted speed limit comfortably and safely.
- **Improved sight distance at Ocean Dock Road 6 crossing.** The Ocean Dock Road 6 crossing near Roger Graves Road is relocated to cross the road farther north where trains and trucks are more visible to each other.



- **Improved safety at Whitney Road.** Driver confusion about the traffic control at the Ocean Dock Road and Whitney Road intersection is corrected. Realigning the intersection of Ocean Dock Road-North C Street and Whitney Road to conform to the intended traffic flow makes it apparent to drivers which vehicle maneuver has the right of way. Additionally, the realignment removes the tight turns between Ocean Dock Road and Whitney Road. Trucks no longer have to occupy the entire road width to make the turns.

4.1.4 Maintenance

- **Fewer crashes with rail equipment.** The proposed alternative would reduce the likelihood of vehicles striking rail equipment by eliminating the tight radius turn at Whitney Road.

4.1.5 Drainage

- **Improved drainage.** The proposed alternative corrects drainage problems and will improve drainage, thereby decreasing pavement and track maintenance needs.

4.1.6 Non-Motorized Connectivity and Safety

- **New and improved non-motorized facilities.** The proposed alternative connects Government Hill to the Ship Creek Trail with a paved pathway, including along the C Street ramps where non-motorized users are currently not allowed. The shoulders are widened for non-motorized use on Ocean Dock Road entering the POA.
- **Improved non-motorized safety.** Pedestrians and bicyclists will have designated facilities separate from the road, with marked crosswalks where needed and perpendicular crossings at the train tracks.

4.2 Constraints and Impacts

4.2.1 Environmental Considerations

- **Section 4(f) potential impacts.** The proposed retaining wall north of the C Street ramps intersection is near two National Register of Historic Places (NRHP) sites adjacent to the study area, Government Hill Federal Housing Historic District and Brown's Point Park Historic Site, that are cited in the Alaska Heritage Resource Survey (AHRs) as historically significant. Any affects to either of these would likely need a Section 4(f) consultation.
- **Site contamination considerations.** The groundwater plume located under the railroad yard and approaching Whitney Road under the C Street Bridge needs to be updated as the project evolves for any contaminated site and hazardous material impacts.
- **Water quality benefits.** Water quality of the surface runoff would improve due to the drainage improvements trapping more sediment before entering the drainage system.



4.2.2 Right of Way Conflicts

- **Roadway-related needs.** Reconstructing the roadway requires increasing the existing permit area. Most of the additional area is on ARRC-owned land without existing leases or other permits; however, a small amount of the acquisition area includes land with leases and permits. Additionally, some of the work is on land owned by the POA.
- **Rail-related needs.** Reconstruction of the rail facilities requires additional land. Approximately half of the additional land required for the rail work is within ARRC-owned land without existing leases or permits, while the rest impacts leased and permitted land. Some of the rail work is also within POA-owned parcels.
- Total anticipated right of way (ROW) acquisition is less than 10 acres.

4.2.3 Utility Conflicts

- **Known utilities.** Utilities within the study corridor include underground gas, fuel, telephone, water, sanitary sewer, and overhead electric. Water and sanitary sewer lines are typically buried ten feet below the ground and therefore, assumed to not be impacted except to adjust water valves and cleanouts to meet finish grade. All other utilities within the proposed alternative footprint are assumed to be removed and replaced.
- **Unknown utilities.** Stakeholders have noted construction activities in the area often encounter unknown utilities. As such, a comprehensive account for all utilities within the study area, active or abandoned, may be unattainable.

4.2.4 Construction Traffic Control Considerations

Construction of the proposed alternative will impact traffic in the area. It is vital to Alaskans to keep transportation of goods from the POA and through the Alaska Railroad Terminal uninterrupted.

- **Business access.** There are numerous businesses along the corridor, and access will need to be maintained to them.
- **Construction phasing and detours.** Construction should be limited as much as possible to non-barge days and should provide adequate detours. Use of Bluff Drive through Government Hill may be a consideration in cooperation with the community. Additionally, the construction should be phased to allow travel via C Street ramps or Whitney Road at all times.



4.2.5 Cost Estimates

Table 2 summarizes the estimated costs associated with the proposed alternative.

Work	Total Cost	Comments
Construction	\$29,300,000	Including 15% construction contract administration
Design	\$2,900,000	10% of construction costs
Right-of-Way (ROW)	\$1,300,000	
Utilities	\$6,100,000	Includes removal and relocation of all impacted utilities
Contingencies	\$7,900,000	20% of Construction+Design+ROW+Utilities
Total	\$47,500,000	

Table 2: Proposed Alternative Cost Estimate