

2 Purpose and Need

2.1 Corridor History

The Parks Highway is a 324-mile long Rural Interstate Highway that extends from its intersection with the Glenn Highway north to Fairbanks, Alaska. The Parks Highway serves as the primary link for commerce and tourism between Anchorage and Interior Alaska. The Parks Highway is on the National Highway System (NHS) and is functionally classified as a Rural Interstate by the DOT&PF and as a Principal Arterial by the MSB. This type of facility is intended for movement of regional traffic.

This portion of the Parks Highway was originally built as a pioneer road to access area homesteads and has undergone several upgrades. In 1958, the section from Wasilla to Big Lake Road was upgraded to a two-lane paved highway. In 1975, the highway was overlaid with two-inch hot asphalt concrete and two years later a seal coat was added. In 1983, a five-lane section was constructed through the City of Wasilla, ending between Lucas Road and Church Road. In 1996, the roadway was resurfaced. Most recently, in 2008, a rut repair project was completed between Lucas Road and Big Lake Road.

2.2 Existing Condition

The highway is currently a rural two-lane highway throughout most of the project corridor, with a short five-lane section with a CTWLTL near Lucas Road. The highway has two 12-foot wide lanes and eight-foot wide shoulders with 4H:1V side slopes. The existing alignment has numerous horizontal curves and the vertical alignment generally conforms to the surrounding terrain, which is predominantly flat. Both the horizontal and vertical alignments meet current DOT&PF design standards. The Parks Highway runs roughly parallel to the Alaska Railroad Corporation (ARRC) tracks through Meadow Lakes. East of Museum Road the tracks are south of the highway. From west of Museum Road to the crossing in Houston the tracks are north of the highway. A single span bridge structure crosses over the ARRC tracks near Museum (Neuser) Road.

Numerous driveways and local roads intersect the highway. Land directly adjacent to the highway is generally developed with residences or businesses. Commercial areas are clustered between Stanley Drive, Lamont Way, and Pittman Road. Intersections at Lucas Road, Church Road, Vine Road, and Pittman Road are signalized while the remaining intersections are stop-controlled with stop signs on minor cross-street approaches. Roadway illumination is provided near Lucas Road and limited illumination is provided at signalized intersections and at intersections with turn pockets. Drainage is provided by open ditches and culverts at natural drainage areas.

The five-lane section in Wasilla currently operates well and the DOT&PF anticipates it will operate well for the next 10 years with minor improvements. This section of corridor is functionally classified as an Interstate and is on the NHS; however, the crash rates, access density, and speeds are not consistent with this classification.

2.3 Safety Corridor Designation

In 2006, the DOT&PF, in cooperation with Alaska State Troopers and the Alaska Highway Safety Office, conducted a Traffic Safety Corridor (TSC) study for a 13 mile segment of the Parks Highway between Lucus Road and the Alaska Railroad Crossing (milepost 56) to identify segments with above average incidence of fatal and serious injury crashes. Data was collected on types of collisions, collision locations, existing conditions at times of collisions, and causes of collisions occurring between 1977 and 2005. Historical data on collisions, traffic volumes, vehicle speeds, highway condition and current traffic enforcement was also reviewed.

During the TSC study period, 33 fatal collisions occurred in the study area. Of those, 28 of the most recent fatal collisions occurred between Church Road and Big Lake Road. The fatal accident rate for this segment was 2.68 crashes per 100 million vehicle miles (MVM), which is approximately 183 percent of the national fatal accident rate for 2004. When compared to statewide averages, three factors/conditions were over represented in the fatal collision analysis including: 1) dark and twilight lighting conditions (48 percent compared to a statewide average of 28 percent), 2) improper lane use/change (21.21 percent compared to a statewide average of 5.90 percent), and 3) head-on collisions (60 percent compared to a statewide average of 16 percent). The significant increase in head-on collisions is possibly due to several factors such as the urban characteristics of this portion of Parks Highway, high volumes of both commuter and summer recreational traffic, the disparity in vehicle speeds, and vehicle mass among commuter versus recreation drivers.

To help alleviate these crashes, the eight mile segment from Church Road to Big Lake Road was designated a TSC in October 2006. The proposed project covers the entire length of the TSC. Designation as a TSC is intended to be a short-term measure to address existing safety concerns until long-term solutions are in place. Strategies to alleviate fatal and major injury crashes were implemented shortly after designation. These strategies included installing special signage, increasing enforcement and penalties for traffic violations, and employing education-based measures directed at driver behavior.

A 2009 review of crash data for the Parks Highway safety corridor indicated the short-term measures in place have been successful in reducing the frequency of severe crashes (i.e., the “*combined* Fatal and Major Injury”), which declined from 6.3 to 3.67 crashes per year. The per-mile crash rate fell by nearly 50 percent, declining from 15.39 to 8.1 per 100 MVM.

2.4 Purpose of the Action

The purpose of the proposed project is to improve mobility for people and freight and enhance access management along the Parks Highway between Lucus Road and Big Lake Road. In reference to a roadway, the term mobility is defined by the FHWA as “the ability [of traffic] to move or be moved from place to place”. This ability to move or be moved is not mode-dependent but applies to vehicles, transit, pedestrians, and bicyclists. According to the FHWA, mobility can be measured in terms of “travel times, level of traffic congestion, or duration of congestion-all of which focus on how long it takes to get from place to place”. The term access refers to how vehicles get onto and off of the roadway. Access can be provided via ramps, intersections, frontage roads, and driveways. The level of access to

adjacent property is dependent on the primary function of the roadway. As such, “access management” determines how and where roadway users get on and get off of a roadway, directly impacting traffic flow on the roadway.

This proposed project would correct problems created by unconstrained access, which would improve safety and reduce congestion for highway users. The intent of this proposed project can be defined by three needs: 1) safety, 2) congestion, and 3) travel efficiency.

2.5 Need for the Action

2.5.1 Need 1: Safety

This section of the Parks Highway has experienced above average accident rates and has a significantly higher proportion of high severity crashes when compared to statewide averages for similar facilities. Many of these crashes are access-related and over 60 percent are head-on collisions. In an effort to address safety concerns and slow the rate of severe crashes, the Parks Highway was designated a Safety Corridor in 2006. Since then, the crash rate has reduced slightly, but the designation is intended to be a short-term measure to address safety concerns until long-term measures are in place; it does not address the need to reduce congestion along the corridor. This proposed project will correct serious safety problems and provide capacity for projected increases in traffic volumes over the next 20-30 years.

Ambient Light Conditions

The TSC report states that 48 percent of the fatal collisions and 41 percent of all accidents on this portion of the Parks Highway occurred during dark or twilight ambient light conditions. These percentages greatly exceed the statewide averages for fatal collisions (28 percent) and for total accidents during dark and twilight ambient light conditions (13 percent).

Moose Collisions

Based on the DOT&PF traffic and accident data for crashes occurring between 2000 and 2007, a total of 513 vehicular accidents occurred on the Parks Highway between Lucas Road and Big Lake Road. Of those, 111 (21.6 percent) involved collisions with moose. More than 70 percent of these moose-vehicle collisions occurred during dark or twilight lighting conditions, indicating poor lighting conditions are a major factor in roadway safety throughout the proposed project corridor.

2.5.2 Need 2: Congestion

Heavy traffic during peak travel periods causes unacceptable congestion on the Parks Highway between Lucas Road and Big Lake Road. The current or “existing” year is 2010; a “construction” year of 2013 is assumed; and a future or “design” year of 2033 is assumed. For purposes of traffic data collection and capacity analysis, the project corridor was split into three segments: 1) Lucas Road to Church Road, 2) Church Road to Pittman Road, and 3) Pittman Road to Big Lake Road. Church Road was used as a logical segment break because it is the first major intersection beyond the current transition from the five-lane to two-lane facility. Pittman Road and Big Lake Road were used as logical segment breaks because development in these locations generates a significant amount of traffic.

In 2010, the project corridor had an annual average daily traffic (AADT) count ranging from 13,800 vehicles at the west end of the project corridor to 20,100 vehicles at the east end of

the project corridor. The DOT&PF estimates those traffic volumes will increase to 25,400 vehicles and 37,000 vehicles by 2033 (Table 2).

Table 2: Average Daily Traffic Count

	Current Year 2010 (vehicles/day)	Mid-Year 2023 (vehicles/day)	Design Year 2033 (vehicles/day)
Lucus Road to Church Road	20,100	28,400	37,000
Church Road to Pittman Road	19,700	27,900	36,400
Pittman Road to Big Lake Road	13,800	19,500	25,400

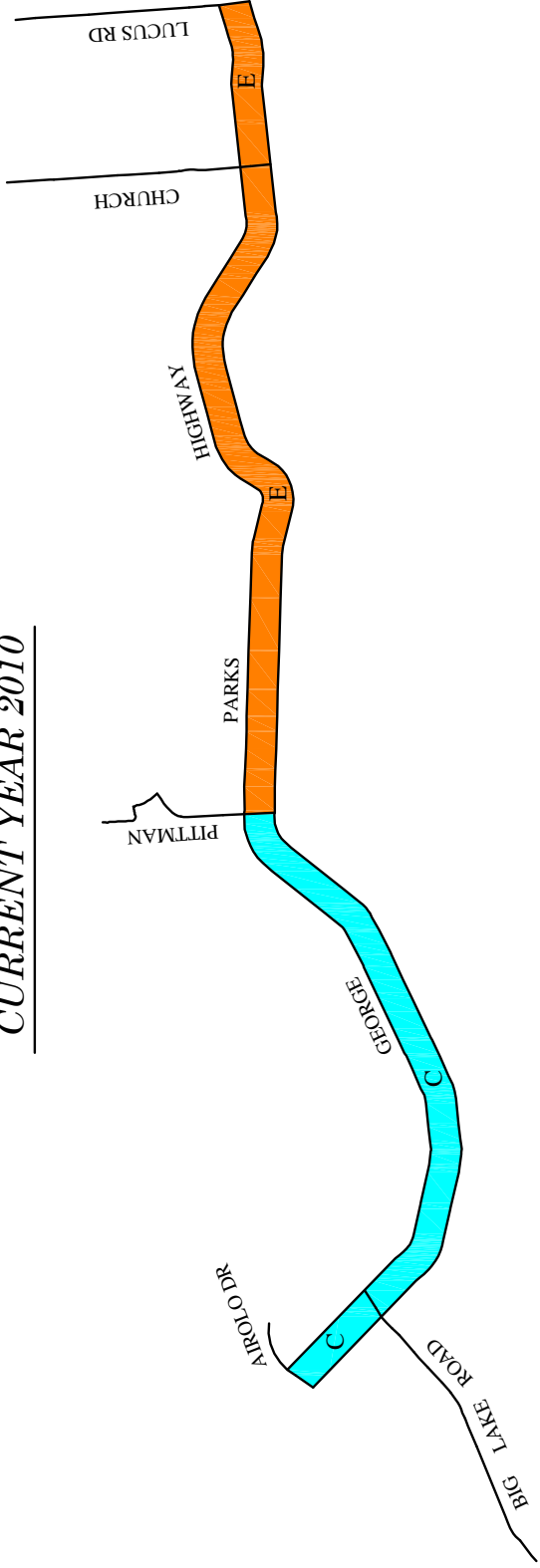
Congestion levels are evaluated using a measure called the “level of service” (LOS). Level of service is represented by a letter “grade” ranging from LOS A for excellent conditions (i.e., free-flowing traffic) to LOS F for failure conditions (i.e., extremely congested, stop-and-go traffic). LOS B through LOS E describes progressively worse traffic conditions. When the capacity of a road is exceeded, the result is congestion and a poor level of service.

The AADT counts were used to predict the LOS for traffic movements along the proposed project corridor for the current and design years if the highway is not improved (Table 3). Segment capacity analysis indicates the highway west of Pittman Road is currently operating at LOS C and the highway east of Pittman Road is operating at LOS E. Without improvements, design year traffic flow is predicted to deteriorate to LOS E west of Pittman Road and LOS F east of Pittman Road, indicating the existing facility’s capacity would be exceeded (Figure 2: Level of Service Designations).

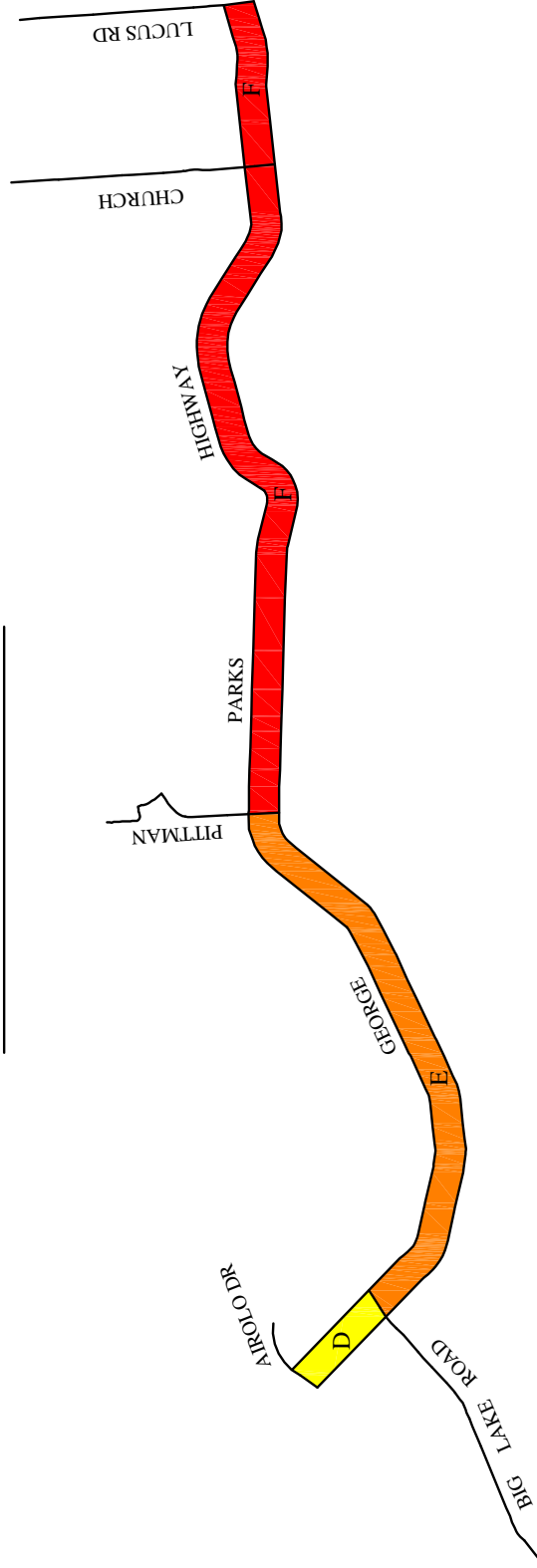
Table 3: Segment Capacity Analysis w/out Improvements

	Current Year 2010	Mid-Year 2023	Design Year 2033
Lucus Road to Church Road	E	F	F
Church Road to Pittman Road	E	F	F
Pittman Road to Big Lake Road	C	D	E

CURRENT YEAR 2010



DESIGN YEAR 2033



LEVEL OF SERVICE



PARKS HIGHWAY MP 44-52
LUCUS RD TO BIG LAKE CUTOFF

FIGURE 2

LEVEL OF SERVICE
WITHOUT IMPROVEMENTS

Congestion at intersections is measured by the amount of delay experienced by vehicles. Increased delay results in increased travel time, increased fuel consumption, and a lower LOS. Travel conditions at the four signalized intersections were analyzed for current and future year traffic volumes. The results indicate all intersections are currently operating at LOS B (Table 4). In the design year, conditions at the Church Road and Pittman Road intersections would deteriorate to an unacceptable LOS F in the evening peak hour. Lucas Road and Vine Road intersections are expected to operate at an acceptable LOS C/D. However, the evening peak hour southbound movement at Lucas Road and both the morning and evening peak hours northbound left turn movements at Vine Road all operate at LOS D, indicating that while the intersection as a whole operates adequately, some critical movements are anticipated to operate below desirable levels in 2033.

Table 4: Major Signalized Intersection Capacity Analysis w/out Improvements

	Current Year 2010	Mid-Year 2023	Design Year 2033
	AM/PM	AM/PM	AM/PM
Lucas Road & Parks Highway	B/B	B/B	B/C
Church Road & Parks Highway	B/B	C/D	E/F
Vine Road & Parks Highway	B/B	B/B	C/D
Pittman Road & Parks Highway	B/B	B/D	C/F
Big Lake Road & Parks Highway*	B/C	B/D	C/F

*the unsignalized intersection at Big Lake Road was included in this analysis because it is anticipated that it may be signalized in the near future.

The Big Lake Road intersection currently operates at LOS C or better during peak hours. In the design year, the intersection is anticipated to operate at LOS C or better with the exception of the northbound left turning movements, which operate at LOS F during the evening peak hour.

2.5.3 Need 3: Travel Efficiency

A functional classification of rural interstate indicates the Parks Highway’s primary purpose is to move large volumes of traffic at high speeds from one area to another while providing reasonable access. For the purpose of this proposed project, travel efficiency is defined as “the ability to accomplish a trip with a minimum expenditure of time and effort.” The presence of commercial driveways and at-grade local road intersections throughout the project corridor are not consistent with good access management principles and reduce overall travel efficiency.

As congestion continues to increase, travel efficiency is anticipated to worsen. This congestion affects regional traffic, commuters, and local traffic. Travel efficiency in this corridor can be measured for 3 types of trips: vehicles traveling through the area from Anchorage to Interior Alaska, commuters traveling from the MSB to Anchorage, and local traffic circulating in the project vicinity. Congestion on the highway affects travel for all of these trip types.

Increased congestion has resulted in long delay times and high delay costs associated with stop-and-go conditions along the highway. In 2007, the DOT&PF examined the delay in its major corridors and estimated the value of lost time to the traveling public using a value of \$15 per hour. This project corridor was ranked third among the top 10 congestion bottlenecks in the Central Region with an estimated cost to the traveling public of \$9 million annually.

2.6 Project Objectives

The following objectives were developed based on the purpose and needs identified in the previous section.

2.6.1 Need 1: Improve Safety

- Reduce high severity crash rates along the corridor, particularly head-on collisions
- Reduce overall crash rates along the corridor for vehicles and all highway corridor users
- Reduce moose/vehicle collisions along the corridor

2.6.2 Need 2: Reduce Congestion

- Reduce unacceptable congestion in the design year for users traveling on the Parks Highway from Lucus Road to Big Lake Road
- Reduce unacceptable delay (congestion) in the design year at signalized and unsignalized intersections along the Parks Highway from Lucus Road to Big Lake Road

2.6.3 Need 3: Increase Travel Efficiency

- Decrease travel time for users commuting from the MSB to the Anchorage area
- Decrease travel time for regional traffic heading north or south through Meadow Lakes
- Safely and efficiently accommodate mobility for longer trips and accessibility to adjacent land parcels and local streets