

### 3.0 DESIGN CRITERIA

Road design criteria for the Trunk Road Extension South project were developed from the American Association of State Highway and Transportation Officials (AASHTO) A Policy on Geometric Design of Highways and Streets (2004), as supplemented by DOT&PF's current edition of the Alaska Preconstruction Manual. Table 1 summarizes the design criteria; the Project Design Criteria data sheet found in Appendix A has a comprehensive outline of design recommendations used for this project.

**Table 1. Design Criteria**

Item	Criterion
Functional Classification	Rural Major Collector
Design Vehicle	Single-Unit, 30-ft single-axle truck (moving van) or school bus
Design Speed	45 mph
Minimum curve radius	660 ft
Lanes	2, each 12-ft wide
Surface	Paved
Minimum Cross-section	28-ft wide, rural ditches (40-ft preferred)

#### 3.1 FUNCTIONAL CLASSIFICATION

The development or improvement of streets should be based on a functional street classification established as part of a comprehensive community development plan. The MSB LRTP identifies this segment of Trunk Road as a Collector and the Official Streets & Highways Plan (OS&HP) further defines it as a Major Collector. The LRTP defines a major collector as a roadway where the primary purpose is to move traffic from one neighborhood to another, from neighborhoods to arterials, or from one neighborhood to other areas of the community. Residential frontage is limited and/or restricted to encourage mobility and enhance safety. This functional classification sets the design standards to be used for the Trunk Road Extension South project.

#### 3.2 DESIGN TRAFFIC VOLUMES

Per AASHTO, collector highways should be designed for specific traffic volumes and acceptable levels of service. Usually, the design year is 20 years from the date of construction completion but may be any number of years within a range from the present (for restoration projects on existing roads) to 20 years in the future (for new construction projects). For this new

construction project, road improvements should be completed by 2010; therefore, the design year has been identified as 2030.

The average annual daily traffic (AADT) volume for the design year should serve as the basis for the project design. Based upon the Traffic Analysis prepared for this project, design year traffic volumes are as follows:

**Table 2. Traffic Volume Projection Summary**

<b>Road Segment</b>	<b>AADT</b>
South Trunk Road	4,800
Nelson Road	3,200
Fairview Loop	7,800

### **3.3 DESIGN SPEED**

Design speed is a selected speed used to determine the various geometric design features of the roadway. The assumed design speed should be a logical one with the respect to topography, anticipated operating speed, the adjacent land use, and the functional classification of roadway. Except for local streets where speed controls are frequently included intentionally, every effort should be made to use as high a design speed as practical to attain a desired degree of safety.

MSB LRTP indicates a speed of 40 miles per hour (mph) for the proposed South Trunk Road / Nelson Road alignment. Since it is desirable that the average operating speed of a large proportion of drivers be lower than the design speed, this Report recommends a minimum design speed of 45 mph.

### **3.4 TYPICAL SECTION**

The minimum typical section meeting collector standards consist of two 12 foot paved lanes and 2 foot shoulders; however, AASHTO recommends 8 foot shoulders. From the edge of shoulder, a 4:1 traversable and recoverable slope will be implemented throughout the 12 foot clear zone with a 2:1 back slope.

Appendix B provides details of the typical sections used for the various alignment alternatives.