IV. Stakeholder/Public Involvement

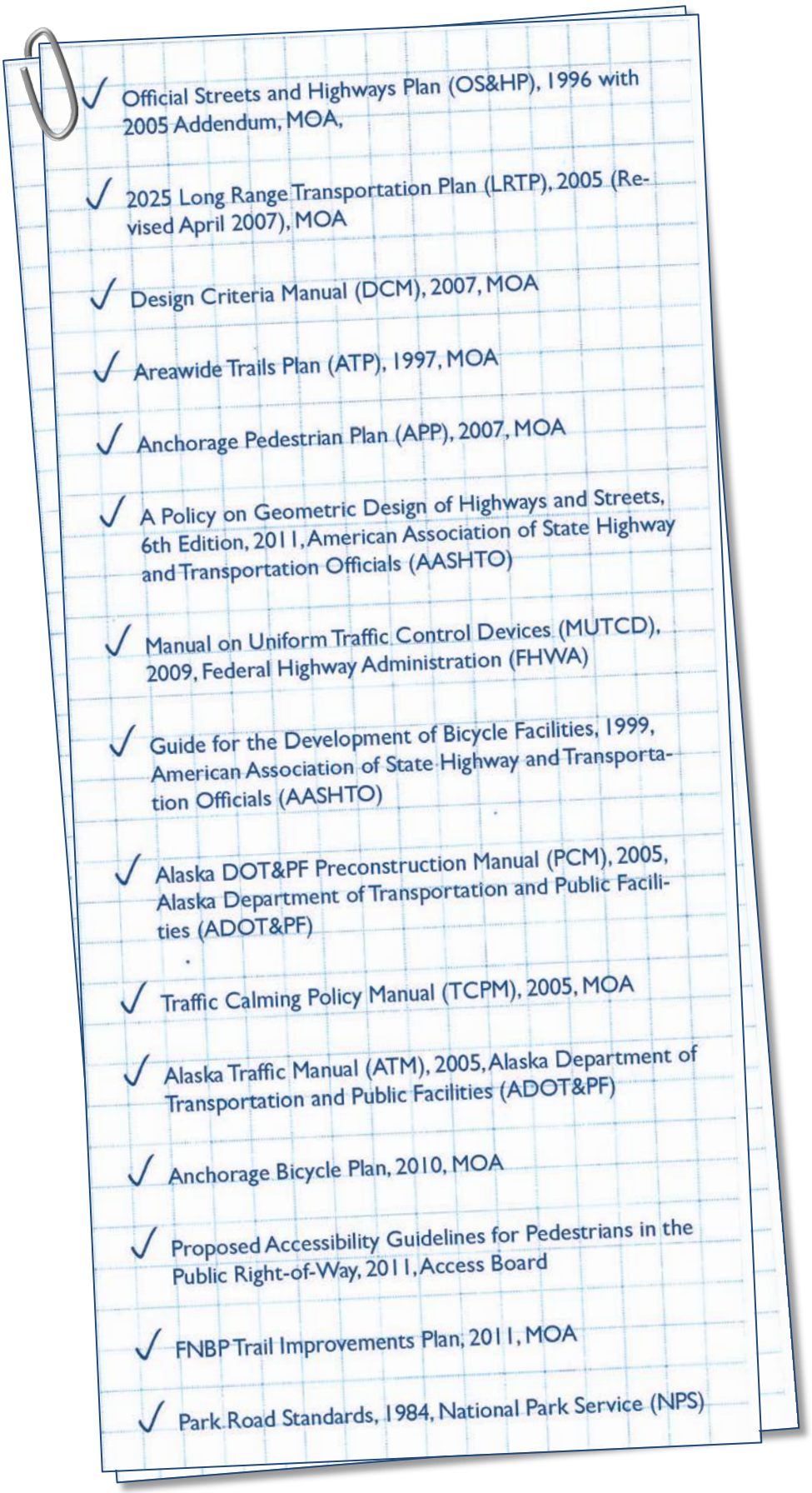
The CSS process will continue throughout the design phase of the project with additional opportunities for stakeholders to obtain information and provide feedback through the web page, e-newsletter updates, open houses, community council presentations, and direct feedback through phone calls and e-mail.

Campbell Airstrip Road Open House, May 2011

V. Design Criteria

A. Design Standards

Project design criteria are a function of the roadway characteristics and the design standards used. The owner of the facility and the funding source often dictate design standards that are used. Funding for the design and construction of Campbell Airstrip Road has not yet been secured. The documents listed on the next page provide the design guidance, standards and requirements used for this project.


✓ Official Streets and Highways Plan (OS&HP), 1996 with 2005 Addendum, MOA,
✓ 2025 Long Range Transportation Plan (LRTP), 2005 (Revised April 2007), MOA
✓ Design Criteria Manual (DCM), 2007, MOA
✓ Areawide Trails Plan (ATP), 1997, MOA
✓ Anchorage Pedestrian Plan (APP), 2007, MOA
✓ A Policy on Geometric Design of Highways and Streets, 6th Edition, 2011, American Association of State Highway and Transportation Officials (AASHTO)
✓ Manual on Uniform Traffic Control Devices (MUTCD), 2009, Federal Highway Administration (FHWA)
✓ Guide for the Development of Bicycle Facilities, 1999, American Association of State Highway and Transportation Officials (AASHTO)
✓ Alaska DOT&PF Preconstruction Manual (PCM), 2005, Alaska Department of Transportation and Public Facilities (ADOT&PF)
✓ Traffic Calming Policy Manual (TCPM), 2005, MOA
✓ Alaska Traffic Manual (ATM), 2005, Alaska Department of Transportation and Public Facilities (ADOT&PF)
✓ Anchorage Bicycle Plan, 2010, MOA
✓ Proposed Accessibility Guidelines for Pedestrians in the Public Right-of-Way, 2011, Access Board
✓ FNBP Trail Improvements Plan, 2011, MOA
✓ Park Road Standards, 1984, National Park Service (NPS)

Following is a discussion of the design standards used by the three most likely funding sources: the Municipality of Anchorage, the State of Alaska, and the Federal Government. TABLE 4 provides a summary of the design criteria based on design standards from the varying agencies and TABLE 5, in SECTION G DESIGN CRITERIA SUMMARY, provides a listing of the design criteria recommended for the proposed roadway and multi-use trail improvements.

1. Municipality of Anchorage

The 2005 Official Streets and Highways Plan (OS&HP) has been the current planning document providing policies and standards for the transportation needs within the MOA. The OS&HP lists the functional classification for primary roadways located within Anchorage, Eagle River and Girdwood based on the Long-Range Transportation Plan. The OS&HP provides general roadway design standards based on functional classification including the number of lanes, width of ROW, and distance between intersections. Campbell Airstrip Road is classified as a Country Lane in the OS&HP.

Table 3 – Street Classifications

Street Classifications					
Facility Type	**Street Class**	**Number of Lanes**	**Min. ROW Width**	**Average Daily Traffic**	**Example Reference Road**
Major Arterial	IIIA	4-6	130’	Over 20,000	Tudor Road
Collector	IC	2	60’	2,000 – 10,000	Baxter Road
Local	-	2	50-60’	Under 2,000	Midden Way

Information obtained from 2005 Municipality of Anchorage Official Streets and Highways Plan

TABLE 3 shows the roadway classifications in the project vicinity. Country Lane is a special type of local or collector street having unique scenic attributes. The following standards apply to a Country Lane:

- Utility Lines: Minimize conflicts and duplications when installing. After installation, landscaping shall be used to restore the area as quickly as possible to natural conditions.
- Lighting: When lights are deemed necessary, use low-profile, low density illumination lamps of a design compatible with the surrounding natural environment.
- Construction: Clearing should be done within the ROW only as necessary to ensure adequate snow storage and drainage. Care shall be taken to retain

the visual quality of the roadway. Landscaping shall be used to restore the area as quickly as possible to natural conditions.

- Ditches: No larger than required for drainage of the roadway and adjacent development.
- Easements: May be acquired to protect areas crucial to the maintenance or enhancements of visual quality.

The Anchorage Bowl 2025 Long Range Transportation Plan (LRTP) retains most of the existing functional classification categories in the OS&HP but further refines the designation of some streets based on typology. The street typology designation is intended to augment the traditional functional classification and emphasizes a more balanced street function including all users – pedestrian, bicyclists, transit user, and motorists. The LRTP identifies a Park Land street type with the following primary and secondary elements: bicycle lanes, retention of natural vegetation to the extent possible, separated bicycle paths, narrower lanes for traffic management, and horizontal and vertical curves designed just to the design speed (not higher speeds).

The MOA PM&E Design Criteria Manual (DCM) is an implementation document and provides detailed design criteria for roadways developed within the MOA using local or state funds. The design standards are based on the functional classifications included in the OS&HP; however, the DCM does not have design guidelines or standards for a Country Lane. The DCM does have standards for a Rural Residential/Neighborhood Collector Road and Rural Local Road. Design waivers are required for recommended solutions that do not meet the DCM design criteria. No design waivers are anticipated at this time.

2. State of Alaska

The ADOT&PF Highway Preconstruction Manual (PCM) provides detailed design criteria for federally-funded roadway projects within the State of Alaska. The PCM is intended to interpret and amend the goals and objectives of the AASHTO “Policy on Geometric Design of Highways and Streets”, the “Green Book”, (AASHTOGB). The PCM references other documents, including AASHTOGB, for many design parameters including alignment, intersection design, sight distance, design speed, grades, lane width and shoulder width.

3. Federal

AASHTOGB is a comprehensive reference manual for planning and design of highways and streets in the United States. The most current publication year for the AASHTOGB is 2004. The manual provides roadway design standards based on functional classification.

The National Park Service's 1984 Park Road Standards (NPS) provide road design and maintenance standards for roadways developed within the National Park System. The guidelines consider the variation in types and intensities of park use and the importance of maintaining natural and cultural resources of a park. The guidelines provide design criteria for roads based on functional classifications considering the specialized functions of park roads. The functional classifications from the NPS do not correspond to the classifications contained in AASHTOGB.

Based on the Federal Park Road Standards, the functional classification of Campbell Airstrip Road would be a Class I Principal Park Road since the road "...constitutes the main access route, circulatory tour, or thoroughfare for park visitors."

Table 4 – Design Standards Table, Various Agencies

	Design Standard			
	Municipality of Anchorage		Federal	
Design Criteria	OS&HP	DCM	AASHTO	NPS
Functional Classification	Country Lane	Rural Local	Rural Local	Class I - Principal Park Road
Lane Width	-	11' - 12'	11'	11'
Shoulder Width	-	4'	6'	3'
Number of Lanes	2	2	2	2
Side slope (H:V)	-	2:1	2:1	-
Multi-use trail width	-	8' - 10'	8' - 10'	-
Maximum Grade	-	6% or 10%	10%	8% - 9%
Clear Zone Width	-	per AASHTO	7' - 10'	
Design Speed	-	25 MPH	40 MPH	35 - 45 MPH

B. Design Speed

The design speed affects the length of sight distance available along the roadway's horizontal alignment and vertical profile, particularly at intersecting roadways and pedestrian facilities. As design speeds increase, longer sight distances are required to

provide more reaction time and braking distance to respond to roadway obstacles. Additionally, higher design speeds require a more gradual change in horizontal and vertical alignment, which typically increases the extent of cut and/or fill near hills. It is important that the design speed is slightly higher than the posted speed (typically 5 to 10 MPH higher) to provide a margin of safety for drivers driving at the speed limit in unfavorable conditions such as poor weather.

The posted speed of Campbell Airstrip Road to the north and south of the project is 30 MPH. The traffic speed analysis, collected in May 2011, indicates that the existing average 85-percentile speed is 46 MPH. Generally, the posted speed should be the same as the 85-percentile speed.

The OS&HP does not provide recommended design speeds based on roadway classifications, although the DCM recommends Rural Local Roads have a design speed of 25 MPH. The National Park Standards recommend Class I roadways in rolling terrain have a design speed between 35 and 45 MPH (based on 1000 < ADT < 4000). AASHTO recommends a minimum design speed of 40 MPH for rural local roads in rolling terrain (400 < ADT < 2000).

During the Draft Design Study Report Comment Review Meeting (November 28th, 2011), the MOA Traffic Engineering Division recommended a posted speed of 40 MPH south of the mailboxes (approximate Mile 0.2). North of the mailboxes, the posted speed will remain at 30 MPH where the school, fire station, and mailbox pullout create situations where a lower posted speed is appropriate. Immediately south of the project limits (Mile 0.7), there is a sharp horizontal S-curve which utilizes a design speed of 60 km/hr (~37 MPH), per the record drawings. This S-curve should be signed appropriately to warn motorists of the sharp, 30 MPH reduced-speed curves.

Since low-speed roadways typically have a posted speed 5 MPH lower than the design speed, the design speed for this project should be 45 MPH.

C. Accessibility Guidelines

The currently adopted requirements for accessibility in the MOA are based on the Americans with Disabilities Act (ADA). The project uses ADA guidelines as minimum criteria, but also incorporates the Access Board's Proposed Accessibility Guidelines for Pedestrians in the Public Right-of-Way (July 2011).

D. Typical Section

The typical lane width for a local street is 11 or 12 feet depending on existing and forecasted neighborhood densities, zoning, and traffic volumes. Shoulder widths can be as narrow as 3 feet for Park Roads.

The DCM does not provide a recommendation for pedestrian improvements along a country lane or rural local road. If pedestrian accommodations are provided, they will be compliant with ADA and the Proposed Accessibility Guidelines for Pedestrians in the Public Right-of-Way: a minimum width of 5 feet, a maximum cross slope of 2 percent, a maximum vertical step of one-quarter inch, a minimum vertical clearance of 80 inches, a maximum sustained running slope of 5 percent or equal to the road grade if paralleling the roadway, and a maximum curb ramp slope of 8.33 percent.

Multi-use trails and sidewalks are typically separated from the roadway to provide pedestrian comfort and safety, increase intersection sight distances, and provide room for snow storage.

Snow storage area is required by Anchorage Municipal Code 21.80.330:

> *All street rights-of-way shall include an open area, which may contain sidewalks, for snow storage. The open area (buffer) shall extend 7-feet outward from the back of the curb.*

Having the landscaping buffer beyond the shoulder becomes even more important when using a narrow shoulder (3.5 foot or less) cross section. This narrower shoulder provides little room for snow storage on the street, and snow will need to be temporarily placed beyond the shoulder. Lack of an adequate landscape buffer could mean pedestrian passage is blocked partially or completely during major snow events.

E. Clear Zone

The DCM does not directly address clear zone requirements but requires adherence to AASHTO's A Policy on Geometric Design of Highways and Streets "Green Book" (AASHTOGB). AASHTOGB defines the clear zone as the area outside of the traveled way, including the shoulder, which will be available for recovery by errant vehicles. The recommended clear zone width is a function of the design speed, traffic volume, functional classification of the roadway, and the side slope of the area. The clear zone required for a freeway-type roadway with a design speed of 45 MPH and an AADT of

1,500 to 6,000 is 16 to 18 feet, with a fore slope of 1V:6H or flatter. However, for Local Rural Roads, “A clear zone of 7 to 10 feet or more from the edge of the traveled way, appropriately graded with relatively flat slopes and rounded cross-sectional design, is desirable.” (AASHTOGB 2011, pg. 5-8).

F. Lighting

Chapter 5 of the DCM provides the criteria to which MOA lighting systems are to be designed. Roadway lighting is required on all roadways in urban-zoned areas and is optional in rural-zoned areas. When installed, lighting systems shall be designed to the DCM’s Chapter 5 criteria, enhancing traffic and pedestrian safety. Lighting standards apply to existing roadway luminaires that may be removed and replaced due to impacts from the proposed improvements. A properly designed lighting system will:

- Provide the minimum maintained average luminance and illuminance levels specified for roadways, sidewalks, and intersections.
- Provide a uniformity of lighting that does not exceed the maximum ratios specified for roadways, sidewalks, and intersections.
- Minimize construction and maintenance costs.
- Avoid adverse impacts to adjacent properties.
- Reveal hazards to pedestrians and vehicular traffic.

**Campbell Airstrip Road,
Mile 0.05 looking south**

G. Design Criteria Summary

Table 5 – Design Criteria Table - Campbell Airstrip Road, MP 0.3-0.7
Country Lane/ Local Rural Road

	Criteria	Recommended Design Value	Reference
Traffic Data	Functional Classification	Country Lane	OS&HP
	Design Criteria Base	Local Rural Road	DCM
	Design Vehicle	WB-50	DCM 6.4.B
	Design Speed	45 mph	DCM 1.5.E
	Posted Speed	40 mph	MOA Traffic Division
Horizontal Alignment	Horizontal Curve Radius, Minimum, no Super-elevation	1039 ft	AASHTOGB, Table 3-13b
	Stopping Sight Distance, Min	360 ft	DCM 1.9.D
Vertical Alignment	Vertical Grade, Maximum	6.0% (non-hillside) or 10.0% (hillside)	DCM 1.9.D
	Vertical Curve K-Values, Min:		
	Crest Curve	61	DCM 1.9.D
	Sag Curve	79	DCM 1.9.D
Cross Section	Number of Lanes	2	OS&HP
	Lane Width	11 ft	AASHTOGB
	Paved Shoulder Width	5 ft	AASHTOGB, Exhibit 5-5, DCM 1.6.D
	On-Street Parking	Prohibited	DCM 1.6.D
	Curb & Gutter	None	DCM 1.6.D
	Side slopes	2:1 maximum	DCM 1.9.D
	Clear Zone	7 - 10 ft	AASHTOGB, pg. 387
Miscellaneous	Multi-use trail width	8 - 10 ft	DCM 4.2.I
	Driveway width, maximum, rural farm	14 – 24 ft	DCM Appendix 1D
	Maximum driveway grade	± 10%	DCM Appendix 1D
Lighting	Pedestrian Conflict Areas	Low	DCM, 5.4.B
	Maximum Veiling Luminance Ratio	0.4	DCM 5.4.B
	Minimum Illumination Level	0.4 fc	DCM 5.4.B
	Maximum Uniformity Ratio	6:01	DCM 5.4.B

AASHTOGB = American Association of State Highway and Transportation Officials Geometric Design of Highways and Streets (“Green Book”)

DCM = Municipality of Anchorage’s Design Criteria Manual

OS&HP = Official Streets and Highways Plan