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**APPENDIX A**

**Project Design Criteria**

<b>3 - LANE ALTERNATIVE</b>		
Design Element	Criterion	Reference
Functional Classification	Minor Arterial Class II Collector	OS&HP CR Traffic Vol. Rpt
Design Year	2025	Design Designation
Current Year ADT (2000)	7,510	Design Designation
Mid-Period ADT (2013)	10,660	Design Designation
Design Year ADT (2025)	14,720	Design Designation
Design Hourly Volume (DHV)	1740	Design Designation
Directional Split	60/40	Design Designation
Trucks (%T)	3.8	Design Designation
Equivalent Axle Loading	509,000	Design Designation
Pavement Design Year	2025	Design Designation PCM p 1180-1
Design Vehicle	WB-67 (Where Possible) WB-50	PGDHS p 20
Design Speed (Terrain)	35 MPH (level)	PGDHS p 71
Stopping Sight Distance Passing Sight Distance	250 FT N/A	PGDHS p 445
Maximum Grade Minimum Grade	7% 0.3% (0.5% Desirable)	PGDHS p 472 PGDHS p 236
Minimum Radius of Curve	510 FT	PGDHS p 147
Min. Curb Gutter Grade	0.50%	PGDHS p 435
Pavement Cross Slope	2 %	PCM p 1130-1
Vertical Curves	Algebraic Difference > 1%	
Minimum K-Value	Crest: 29 Sag: 49	PGDHS p 272 PGDHS p 277
Max. Superelevation	0.06 ft/ft	PCM p. 1120-4

Proposed by \_\_\_\_\_ Date: \_\_\_\_\_ Recommended by \_\_\_\_\_ Date \_\_\_\_\_  
Lounsbury & Associates, Inc. Project Manager

Accepted by \_\_\_\_\_ Date \_\_\_\_\_  
Regional Preconstruction Engineer

<b>3 - LANE ALTERNATIVE</b>		
Design Element	Criterion	Reference
Number of Lanes	3	Design Designation
Lane Width	12 FT (Through Lanes) 10 FT- 12 FT (Auxiliary Lanes)	PGDHS p 475
Width of Outside Shoulders	5 FT	PGDHS p 318
Clear Zone Width	1.5 FT beyond Face of Curb	PGDHS p 481
Surfacing, Lanes & Shoulders	Asphalt Concrete	
Median Treatment	CTWLTL ; Raised Median at Key Intersections	
Vertical Clear Zone at Intersection	2.5 ft to 8 ft	PCM p. 1130-6
Horizontal Sight Triangle	390 ft from Decision Point	PGDHS p 661
Curb & Gutter	Expressway/Mountable	PGDHS p 320
Intersection Return Radii	40-Ft	PCM p. 1190-9
Min. Median Width	4-Ft Face of Curb to Face of Curb	PCM p. 1150-2
Pedestrian/Bicycle Facilities	Existing/ add'l to be determined	
Min. Left-Turn Lane Length	150-ft	PCM p. 1150-2
Max Left-Turn Lane Length	400-ft	PCM p. 1150-2
Taper Ratio	Speed:1	PGDHS p 715
Auxiliary Lane Taper	8:1 to 15:1	PGDHS p 715
Illumination	To be determined	
Signals	Existing/ add'l to be determined	

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 Regional Preconstruction Engineer

<b>Pathway Evaluation Criteria</b>		
<b>Design Element</b>	<b>Criterion</b>	<b>Reference</b>
Functional Classification	Multi-Use	Design Designation
Min. Trail Design Speed	20 MPH	GDBF p. 34
Min. Horizontal Curve	50-ft	GDBF p. 37
Max Design Grade	5%	GDBF p. 39
Max. Grade Break	2.0%	
Cross Slope	2.0%	Areawide Trails Plan p. 84
Horizontal Clearance	2.0-ft	GDBF p. 35
Vertical Clearance	10.0-ft	PCM p. 1210-3
Pathway Paved Width	8.0 ft (10 or 11 ft with Shoulder)	PCM p. 1170-1
Shoulder Width	1.0-ft Paved or 2.0 ft Paved (with vertical obstruction)	PCM p. 1170-1

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Regional Preconstruction Engineer

<b>Drainage Evaluation Criteria</b>		
Design Element	Criterion	Reference
Rainfall Intensity Info.	Ted Stevens Int'l Airport	DCM 2.050B.1
Runoff Analysis Method	Illudas	DCM 2.050C
Min. Storm Drain Pipe Diameter	12 in	DCM 2.070B.2
Min. Catch Basin Lead Dia.	10 in (MOA projects)	DCM 2.070B.3
Min. Pipe Slope	0.30%	DCM 2.070B.4
Min. Pipe Flow Velocity	2-ft/sec	DCM 2.070B.9
Max. Pipe Flow Velocity	13 ft/sec	DCM 2.070B.9
Min. Culvert Diameter	18 in (Driveway Culvert) 24 in (Cross Culvert)	DCM 2.070C.1 PCM p 1120-6
Min. Depth of Cover Over Culvert	12-in	DCM 2.070C.2
Max. Manhole Spacing	300-ft	DCM 2.070D.2
Min. Drop Across Manhole	0.05-ft	DCM 2.070D.4
Min. Subdrain Diameter	12-in	DCM 2.070E.3
Max Subdrain Cleanout Spacing	150-ft	DCM 2.070F.2
Min. Subdrain Cleanout Diameter	10-in	DCM 2.070F.3
Min. Depth of Cover Over Storm Drain	4-ft	DCM 2.070J.1
Design Storm Street Drainage Facilities	10 year - 3 hour	DCM 2.080A
Max. Inlet Spacing	1,100-ft	DCM 2.080D.1
Min. Grade for Valley Gutter	0.4%	DCM 2.080E.2

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 Lounsbury & Associates, Inc. Project Manager

Accepted by \_\_\_\_\_ Date \_\_\_\_\_  
 Regional Preconstruction Engineer

**ESTABLISHMENT OF STATE OF ALASKA DESIGN CRITERIA WAIVER'S**

Project: **Victor Road, 100<sup>th</sup> Avenue to Dimond Boulevard**  
**ADOT&PF Project No. STP-0001(232)/55027**

Design Criteria: **Design Speed**

Applicable Standard(s):

A Policy on Geometric Design of Highways and Streets states: "Urban arterial streets should be designed and control devices regulated, where practical, to permit running speeds of 20 to 45 MPH. It follows that the appropriate design speeds for arterials should range from 30 to 60 MPH."

Discussion:

For Victor Road, a reduction of the design speed to 35 MPH is required due to the sag vertical curve located near Olympic Drive (Station 103+15 to Station 109+15). The longer length of vertical curve required for the 45 MPH design speed would conflict with the intersections at 100<sup>th</sup> Avenue and Olympic Drive. In addition, the change in elevation required for a 45 MPH vertical curve would result in unacceptable wetland and right-of-way impacts. Reducing the design speed to 35 MPH is sufficient to resolve these issues.

See Section 5.4 Environmental Commitments, Section 11.2 Build Alternatives, and Section 11.4 Vertical Alignment of the *Preliminary Engineering Report* for additional information.

Design Criteria Waiver Established:

**The State of Alaska hereby establishes 35 MPH as the design speed for Victor Road.**

Proposed by \_\_\_\_\_ Date: \_\_\_\_\_ Recommended by \_\_\_\_\_ Date \_\_\_\_\_  
Lounsbury & Associates, Inc. Project Manager

Accepted by \_\_\_\_\_ Date \_\_\_\_\_  
Regional Preconstruction Engineer

**ESTABLISHMENT OF STATE OF ALASKA DESIGN CRITERIA WAIVER'S**

Project: **Victor Road, 100<sup>th</sup> Avenue to Dimond Boulevard**  
**ADOT&PF Project No. STP-0001(232)/55027**

Design Criteria: **Design Vehicle**

Applicable Standard(s):

A Policy on Geometric Design of Highways and Streets states: "The WB-67 truck should generally be the minimum size design vehicle considered for intersections of freeway ramp terminals with arterial crossroads and for other intersections on state highways and industrialized streets that carry high volumes of traffic and/or that provide local access for large trucks."

Discussion:

Victor Road is an important north/south corridor and it is desirable for large trucks to utilize Victor from 100<sup>th</sup> Avenue and from Dimond Boulevard. At the 100<sup>th</sup> Avenue intersection and the southwest quadrant of Dimond/Victor, the existing small curb return radii appears to handle the truck traffic. The larger, WB-67, trucks only need to access Fred Meyers via the Dimond Boulevard route. The department would like to discourage trucks accessing Fred Meyers via the 100<sup>th</sup> Avenue route. Utilizing the WB-50 design vehicle for most of the intersections would also eliminate many utility and ROW impacts. The WB-67 design vehicle would only be needed for trucks accessing Fred Meyers.

Design Criteria Waiver Established:

**The State of Alaska hereby establishes a WB-50 as the design vehicle for Victor Road. A WB-67 will be the design vehicle for large truck turning paths associated with Fred Meyers.**

Proposed by \_\_\_\_\_ Date: \_\_\_\_\_ Recommended by \_\_\_\_\_ Date \_\_\_\_\_  
Lounsbury & Associates, Inc. Project Manager

Accepted by \_\_\_\_\_ Date \_\_\_\_\_  
Regional Preconstruction Engineer

## ESTABLISHMENT OF STATE OF ALASKA DESIGN CRITERIA WAIVER'S

Project:           **Victor Road, 100<sup>th</sup> Avenue to Dimond Boulevard**  
                          **ADOT&PF Project No. STP-0001(232)/55027**

Design Criteria:       **Lane Drop Transition**

Applicable Municipal Standard(s):

The 1990 AASHTO Green Book provides design guidance for acceleration auxiliary lanes, refer to Chapter X. Table X-4 on page 986, *Minimum acceleration lengths for entrance terminals with flat grades of 2 percent or less*. For a Speed Reached of 31 MPH from a stop condition, 380 LF is required in the acceleration lane prior to the taper. Table X-5 on page 990, *Speed change lane adjustment factors as a function of grade*. The lowest speed shown in the table is 40 MPH. For 30 MPH, a 1.3 factor is given for 3-4 percent upgrade.

Guidelines for Advance Placement of Warning Signs, MUTCD Section 2C.05, Table 2C-4, State: At 35 MPH, 400 feet of advance warning for Condition A: High judgment required. This would put the lane drop sign north of Sea Parrott intersection.

Discussion:

For 35 MPH, where AASHTO provides values for 30 & 40 MPH only, 40 MPH values are used. The assumed speed at the end of Victor Road is zero because of the turn geometry and the downgrade on Dimond Boulevard. The distance required for acceleration from 0 to 31 MPH is 380 feet at a flat grade.

We propose to rebuild Victor at a 2% grade, but by judgment for winter conditions, we choose to apply the 1.3 factor for a 3% grade. Therefore, approximately 500 feet ( $1.3 \times 380 = 494$  feet) of lane is required prior to the beginning of taper for an acceleration lane.

One additional note about Victor Road, the influence of speed, and the need for acceleration distance is apparent. The presence of 2 right turns (Sea Parrot Circle and Canary Court) is not included in the AASHTO discussions. Right-turning vehicles at these side streets would reduce the speed in the drop lane and begin the acceleration process over again.

The above discussion rationalizes the minimum distance from Dimond Blvd and places the beginning of the taper at the north side of Canary Court. Per the memo from the MOA Traffic Department dated 8-22-03, the lane drop shall begin immediately south of Canary Court. Because of school buses stopping near Canary Court, we are allowing an additional two car lengths (40-ft) before starting the taper. This allows the taper to end will before the steep driveway grades of lot 4. The lane drop sign will be located south of Sea Parrot (curb return) since we want the drivers to utilize the outside lane as much as possible. The taper should start 400-ft south of the sign. The taper length computes at 245-ft. Lot 4 driveway will be near the end of taper.

However, this transition occurs in region where enormous utility impacts would result. Between Canary Court and Sea Parrott Circle, station 118+00 and station 122+00 several guy wires, poles, and a large overhead switch are in place. Relocating these utilities would likely be a detriment to the Victor Road project. The only way to avoid these conflicts is to significantly reduce the taper length. Therefore, the lane drop transition will be reconstructed in the existing location. Lane drop arrows will be placed IAW the Alaska Traffic Manual.

Design Criteria Waiver Established:

**The State of Alaska hereby establishes the Lane Drop Transition will occur north of Sea Parrott Circle.**

Proposed by \_\_\_\_\_ Date: \_\_\_\_\_ Recommended by \_\_\_\_\_ Date \_\_\_\_\_  
Lounsbury & Associates, Inc. Project Manager

Accepted by \_\_\_\_\_ Date \_\_\_\_\_  
Regional Preconstruction Engineer

## ESTABLISHMENT OF STATE OF ALASKA DESIGN CRITERIA WAIVER'S

Project:           **Victor Road, 100<sup>th</sup> Avenue to Dimond Boulevard**  
**ADOT&PF Project No. STP-0001(232)/55027**

Design Criteria:       **Width and Placement of Pedestrian and Bicycle Facilities**

Applicable Municipal Standard(s): .

The Areawide Trails Plan, Figure 7.1, *Standards for Paved Trails Along Roads with Curb and Gutter*, shows 8-10 foot wide paved trails with 2-3 foot wide shoulders, resulting in a total width of 12-16 feet for facilities of this type. A 7-foot distance is shown from the face of curb to the edge of trail. The Areawide Trails Plan shows the existing separated pathway on the east side of Victor Road. The west side of Victor Road is not addressed in the Areawide Trails Plan.

Discussion:

The number and location of residences on the east side of Victor Road warrants the pathway shown in the Areawide Trails Plan. A pathway is also desirable on the west side of Victor Road, because:

1. At the Dimond Boulevard intersection, the pedestrian crossing is located on the west side of Victor Road. Failure to include facilities on the west side will encourage undesirable mid-block crossings by pedestrians and bicyclists accessing the Campbell Creek Trail system as well as destinations along Victor Road and Dimond Boulevard.
2. Facilities are needed to serve residences on the west side of Victor Road. Additional width is needed for children waiting at the school bus stops at Canary Court and Sea Parrot Circle.
3. The Areawide Trails Plan shows the Coastal Trail extended to Overlook Park, approximately one mile south of Victor Road. Immediately north of Victor Road (across Dimond Boulevard) is the south terminus of the Campbell Creek trail system. Victor Road will become the most direct link between the Coastal Trail system and the Campbell Creek trail system. The Municipality has already made investments to enhance this link. On Southport Drive, (south of Victor Road) the Municipality constructed 8-foot wide paved pathways on both sides of the street and 5-foot wide paved shoulders that serve as on-street bike lanes in the summer months.

However, due to the enormous utility and ROW impacts on the west side of Victor Road, the multi-use pathway on the east side of the road will be reconstructed. On the west side, a 5-foot attached sidewalk will be constructed between Sea Parrott Circle and Dimond Boulevard. For Victor Road, a 10-foot pathway width is selected. Ten feet provides an 8-foot wide pathway with two 1-foot wide paved shoulders. The pathway has been reduced from the width required by the Areawide Trails Plan due to right-of-way and utility constraints. See Section 11.5 Pedestrian/Bicycle Facilities of the *Preliminary Engineering Report* for more information.

Design Criteria Waiver Established:

**The State of Alaska hereby establishes that 10-foot wide paved pathways are required and for the east side of Victor Road. The pathway will be separated from the curb and gutter as shown in the Areawide Trails Plan except at cross streets, driveways, and other physical constraints as approved by the Department.**

Proposed by \_\_\_\_\_ Date: \_\_\_\_\_  
Lounsbury & Associates, Inc.

Recommended by \_\_\_\_\_ Date \_\_\_\_\_  
Project Manager

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Regional Preconstruction Engineer