STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES **Policy and Procedure**		POLICY AND PROCEDURE NUMBER **05.05.020**	PAGE 1 of 14
		EFFECTIVE DATE September 3, 2013	
SUBJECT **Establishment of Speed Limits and Zones**		SUPERSEDES **05.05.020**	DATED July 6, 2012
CHAPTER **Design and Construction**	SECTION **Highways**	APPROVED BY **Signature on file**	

PURPOSE

This formalizes the policy and procedure (P&P) of the department on establishing speed zones and setting safe and uniform speed limits.

POLICY

It is the policy of the department to establish speed limits in accordance with applicable statutes and regulations.

Design speed for new construction or major reconstruction should be selected to accommodate operating speeds consistent with the roadways highest anticipated posted speed limit.

Speed limits set on existing Alaska roads should be established based primarily on operational conditions, roadside development, analysis of speed studies, and frequency of enforcement within speed zones. Arbitrarily setting speed limits lower than the 85th percentile speed, because of design speed, is not generally effective.

Speed limits set lower than the 85th percentile speed increase the likelihood for speed variance and hazardous conditions related to speed variation. They are generally viewed by motorists as unnecessary or objectionable, and leads to disregard and reduced effectiveness of other necessary and appropriate regulatory speed limit signs.

PROCEDURE

Definitions

85th percentile speed: The speed 85% of motorists drive at or below, as determined by speed study.

Alaska Roads: Streets, roads, and highways within the State of Alaska, where Alaska DOT&PF has maintenance or operational authority.

Business district: The territory contiguous to and including a highway, other than a controlled-access highway, when within any 600 feet along the highway there are buildings in use for business or industrial purposes, including, but not limited to, hotels, banks, office buildings, railroad stations or public buildings other than schools which occupy at least 300 feet of frontage on one side or 300 feet collectively on both sides of the highway; however, if the highway is physically divided into two or more roadways, only those buildings facing each roadway separately may be regarded.

Controlled-access highway: Every highway, street, or roadway where access to or from the highway is determined by the public authority having jurisdiction over the highway, street or roadway.

Median: Non-traversable barrier or terrain feature, meeting the requirements of the department's current adopted edition of the AASHTO Roadside Design Guide, for separation of high speed opposing traffic.

Pace: The 10-MPH speed range that includes the largest number of vehicles, as determined by speed study.

Residence district: The territory contiguous to and including a highway, except a controlled-access highway and not comprising a business district, if the property fronting the highway for a continuous distance of 300 feet or more that is predominantly improved with residences, or residences and buildings in use for business.

Speed zone: A road segment where posted speed limits differ from regulatory maximums.

Temporary traffic control zone: The portion of a highway construction project, maintenance operation, utility work area, incident management area, special event area, or similar operation that affects traffic and requires traffic control to safely guide and protect motorists, pedestrians, or workers.

Urban district: The territory contiguous to and including a street with structures devoted to business, industry or dwelling houses situated at intervals of less than 100 feet for a distance of at least a quarter of a mile.

Speed Zoning (not including temporary traffic control zones)

A. **Objective**
Speed limits are set to inform drivers of the maximum speed considered safe and reasonable under good conditions. They are also intended to lessen differences in speed between vehicles, thus reducing the potential for conflict.

B. **Determining where speed zones are needed**

Regulation 13 AAC 002.275 sets the following maximum lawful speeds on Alaska roads (hereafter referred to as "regulatory maximum" speeds). Regulatory maximum speed limits are in effect except where speed limit orders establishing different limits have been completed and those limits have been posted.

1. 15 miles per hour in an alley;

2. 20 miles per hour in a business district;

3. 25 miles per hour in a residential district; or

4. 55 miles per hour on any other roadway.

Regulation 13 AAC 02.280 allows establishing speed zones where regulatory maximums do not fit specific road or traffic conditions. They should only be established where the regulatory maximum deviates more than 3 MPH from the speed that would result from the process described under Section C below.

Except for temporary traffic control zones, speed zones shall not be established where intermittent physical conditions such as width, curvature, grade and surface conditions or any other physical condition readily apparent to the driver are the only reasons for a reduced speed. Physical conditions that require reduced speeds are best handled with standard warning signs accompanied by advisory speed plates.

Upgrade of certain warning and regulatory signs, and pass/no-pass lane markings are required when making an operational change that modifies or establishes a speed zone on an existing Alaska road. Improvements to satisfy AASHTO geometric or roadside standards are not required on existing Alaska roads when a speed zone is established as an operational change, according to the process described under Section C below. This does not preclude future projects to reduce or eliminate hazards, including HSIP, 3R, reconstruction, or realignment projects developed according to the Alaska Highway Preconstruction Manual.

Warning sign upgrade when a speed zone is modified or established includes those signs required according to the Horizontal Alignment Sign Selection table, and the Advance Traffic Control Signs subsection of Chapter 2C of the Alaska Traffic Manual. Additional warning signs, recommended or allowed according to Guidance and Option statements in Part 2 of the Alaska Traffic Manual, may be installed but are not required.

C. **Setting speed limits in speed zones**

The 85th percentile speed is the principal determining factor in setting speed limits in speed zones, with adjustment made according to AS 19.10.072. Speed limits within speed zones should be set as follows:

1. Conduct speed studies.

2. Determine the 5-MPH increment nearest the 85th percentile speed.

3. Reduce the speed limit, but not below the median speed of the pace, where police enforce speed limits frequently and either of the following conditions exist:

    a. The road runs through a residential area or business district (characterized by the frequent presence of any of the following factors from AS 19.10.72).

        I. Neighborhood safety, including the presence of children and pedestrian traffic;

        II. The presence of schools, houses, parks, and crosswalks;

        III. The presence of driveways, parked vehicles, and multiple turn locations.

    b. Crash experience indicates a need for a reduced limit, in the judgment of the Regional Traffic Engineer.

4. Consider reducing the speed limit further where there are frequent physical conditions (e.g. width, curvature, grade, or sight distance) designed for lower speeds which cannot be mitigated through installation or upgrade of warning signs.

5. If the resulting speed limit is above 55 MPH, reduce it to 55 MPH unless the following conditions are met:

    a. The zone is outside of an urban district or on a controlled access highway inside of an urban district.
    b. The route is designated as National Highway System (NHS).

6. The maximum speed limit shall not exceed 65 MPH for any street, road, or highway with either:

    a. At-grade intersections; or
    b. Undivided opposing traffic lanes.

7. The maximum speed limit may be increased to, but shall not exceed, 75 MPH for a road, or highway with:

   a. Controlled access;
   b. Median or barrier separating opposing traffic lanes; and
   c. Grade separated intersections.

D. **Speed studies**

Determine the 85th percentile speed, pace, and other speed statistics in accordance with procedures set forth in the latest edition of the Traffic Engineering Handbook by the Institute of Transportation Engineers, except as noted hereafter. Perform speed studies when weather, lighting, or other non-typical conditions are not likely to influence prevailing speeds.

Do spot speed studies on each road segment where travel speeds differ significantly from other segments due to changes in road character. If practical, do at least three studies for each zone (one at each end and one in the center).

Record the speed of 100 vehicles (the sum of both directions) or, if there are less than 100 vehicles per hour, the greater of the vehicles per hour or 30 vehicles. If these recommended minimums are not met, document the reasons in writing. Record only vehicles that are free flowing, whose speed is not appreciably affected by other traffic. Conduct studies during daylight hours, on dry pavement, and on tangent roadway sections, inasmuch as the limit to be posted represents the maximum safe speed under good conditions.

When speed checks are taken near a traffic signal, record only those vehicles that move through the intersection on a green light without slowing or stopping. Do not record vehicles that are impeded by stop signs or other traffic control devices.

On roads with traffic volumes of less than 30 vehicles during the peak hour, an analytical procedure based on road characteristics and comfortable driving speed may be used to estimate the 85th percentile speed.

E. **Speed zone lengths and transitions**

Except for temporary traffic control zones and school zones, short speed zones should be avoided. They are ineffective and difficult to enforce. As a general rule, no speed zone should be shorter than the distance traveled in 25 seconds at the posted limit.

Speed zones for speed limits greater than 55 MPH should be a minimum of five miles long. Shorter segments may be considered for freeways and principal arterials with median separation and grade separated intersections.

Speed limit changes may be made in increments of 5, 10, or 15 miles-per-hour. 10 or 15-mile-per-hour changes with relatively long zones are preferable to multiple short zones with 5-mile-per-hour increments.

When multiple speed studies made on one segment of road result in 85th percentile speeds within 5 MPH of each other, the results should be averaged to minimize the number of speed limit changes.

It may be helpful to plot a speed profile along a road using the 85th percentile speeds from the spot speed checks. Different combinations of speed zone lengths and speed limit change increments may then be overlaid on this to see which combination minimizes the number of speed limit changes while still conforming as closely as practical to spot speeds.

F. **Speed limit sign location and spacing**
Speed limit signs (R2-1) shall be placed at the beginning of each speed zone, and should be placed after major intersections, and at other locations within the zone as necessary to advise the motorist of the posted limit. On urban roads, intermediate signs should be placed at least once every two minutes of travel time. Intermediate signs should be spaced no further than ten minutes apart on rural roads with the following exception: where approved by the Regional Traffic Engineer, intermediate signs on rural roads with low volumes and no speed limit changes may be spaced up to 30 minutes apart. All intervals assume travel at the posted speed limit.

On multi-lane one-way roadways, speed limit signs should be installed on the left as well as the right of traffic.

At the end of each posted speed zone, post a standard speed limit sign (R2-1) indicating the appropriate regulatory maximum speed.

G. **When speed limits become effective**
13 AAC 02.280 states that speed limits that differ from regulatory maximums become effective when they are posted. The appropriate parties must sign speed orders authorizing the new limit (Attachment A) before speed zones are posted.

H. **Public involvement**
AS 19.10.72 (b) states:

"In determining safe speed limits and safe speed zones within a municipality, the department shall consult with that municipality. In determining safe speed limits and safe speed zones on highways and other roadways under its jurisdiction, the department shall also consult with community councils or other community organizations in the affected area if the community councils or other community

organizations request in writing to participate in the determination. The department shall provide notice and opportunity for a hearing before establishing a speed limit or speed zone other than as recommended by a municipality, community council or other community organization."

I. **Documentation**

Speed orders (Attachment A: "Order Establishing a Speed Limit on a State Highway") and other documents shall be prepared and distributed in accordance with the following table. The actual or expected posting date shall be shown on the speed order for the enforcement agency's information, and the actual posting date shall be documented for possible future legal reference.

The Regional Traffic Engineer shall address, in writing, each of the five factors required to be considered by AS 19.10.72. This document shall be kept on file with the original speed order.

The regional director shall ensure that the proposed speed limit complies with this procedure or, if deviation is necessary, that the justification is documented in a memo to the State Director of Design and Engineering Services.

Speed Limit Documentation Responsibility and Distribution	
Action	*Position*
Speed Zone Analysis & Speed Limit Recommendation	• Regional Traffic Engineer
Speed Order Drafting	• Regional Traffic Engineer
Speed Order Sign-off	• Regional Traffic Engineer • Regional Director
Speed Order Distribution	• Regional Traffic Engineer (original) • Regional Director • Regional Operations Director • Chief, Maintenance & Operations (Central Region) • State Traffic Engineer • State HPMS Manager • Enforcement Agency
Drafting justification memo for deviation from speed zoning procedure	• Regional Traffic Engineer
Sign-off of justification memo	• Regional Director
Distribution of justification memo	• Director, Design and Engineering Services (original) • Regional Director • Regional Operations Director • Chief, Maintenance & Operations (Central Region) • Regional Traffic Engineer • State Traffic Engineer
Maintenance of Speed Order Library (including backup speed zone data, analysis, and justification memos)	• Regional Traffic Engineer

Setting Speed Limits in Temporary Traffic Control Zones

A. **Objective**

The purpose of reducing speed limits in temporary traffic control zones is to improve safety for motorists, workers, incident responders, and special event participants. However, reduced speed limits do not achieve this goal in all cases. Drivers typically only reduce speed when the reason for speed reduction is readily apparent. Traffic control in work zones and incident sites should be designed on the assumption drivers will only reduce their speeds if they clearly perceive a need to do so. Reduced speed zones should be avoided when practicable.

Reduced speed limits in areas with no apparent need for speed reduction diminish respect for traffic control devices and may result in speed variation and motorists being ticketed even though they are driving at safe speeds. For these reasons, it is important to keep reduced speed limits reasonable and confined to areas and times when they are necessary and will be effective.

Reduced speed limits are not a substitute for appropriate temporary traffic control. Reducing traffic control devices or traffic control costs should not be used as justification for establishing reduced speed limits. However, when reduced speed limits are determined necessary because of restrictive features from work zone activities, incident management, or special event activities, select and locate traffic control devices using the posted speed limit, off-peak 85th percentile speed prior to temporary conditions starting, or anticipated operating speed according to the requirements of Part 6 of the Alaska Traffic Manual.

B. **Determining where reduced speed limits are needed**

The Regional Traffic Engineer or Regional Construction Engineer, in cooperation with the appropriate department engineers/managers shall determine when regulatory "black-on-white" speed limit signs will be used in temporary traffic control zones. They shall also determine their location, time of use, and the speed limit.

Determination of reduced speed limits in temporary traffic control zones shall be made in accordance with the following guidance:

1. Speed limits in temporary traffic control zones should be reduced from the limits prior to roadwork only in the following circumstances:

    a. Where traffic control devices are placed in or very close to the traveled way, particularly on freeways.
    b. Where workers must work near the traveled way without the protection of a positive barrier for extended periods.

c. Where roads being paved have unmatched asphalt lifts resulting in a vertical lip between lanes.
d. Where pavement has been removed from a segment of a normally paved road.
e. Where horizontal or vertical curves with reduced design speeds cannot be avoided in a work zone, the speed limit should not exceed the design speed.

2. Speed limits in temporary traffic control zones should not be reduced from the limits prior to roadwork for:

a. Traffic control devices and work activities located exclusively on the shoulder or in roadside areas, except as provided in sub-section 1(a) above.
b. For roadside deficiencies such as steep slopes, incomplete guardrail, or incomplete highway sign installations.
c. Road work lasting 48 hours or less.

C. **Setting the appropriate speed limit**
Speed limit reductions of more than 10 MPH below the limit prior to roadwork are generally not effective in reducing speed and should be avoided (unless horizontal or vertical curvature necessitate a reduction greater than 10 MPH).

D. **Speed zone length, speed limit sign location, and time of posting**
Reduced regulatory speed zones shall be confined to the area and time when one or more of the five conditions, in Section B(1) above, are met.

Temporary regulatory speed limit signs should be promptly removed, at the end of each work shift if necessary, when the reasons for the reduced speed limit no longer exist.

E. **Documentation**
Temporary Traffic Control Zone Speed Orders (Attachment B; "Order Establishing a Temporary Speed Limit in a Temporary Traffic Control Zone") and other documents shall be prepared and distributed in accordance with the following table.

The actual or expected posting date shall be shown on the speed order for the enforcement agency's information, and the actual posting dates and times shall be documented for possible future legal reference.

The department's project engineer/manager shall consult with the contractor, the Regional Traffic Engineer and other appropriate department and enforcement officials before including comments in the project completion report on the effectiveness of regulatory speed limit signs in Temporary Traffic Control Zones.

The limits shown on a Temporary Traffic Control Zone Speed Order establish the area where the temporary speed limit may be put into effect. However, the temporary speed limit may not apply to the full length of the zone.

Temporary Traffic Control Zone Speed Limit Responsibility and Distribution

Action	*Position*
Temporary Traffic Control Zone Speed Limit Recommendation	• Regional Traffic Engineer or Regional Construction Engineer
Speed Order Drafting	• Regional Traffic Engineer or Regional Construction Engineer
Speed Order Sign-off	• Regional Traffic Engineer or Regional Construction Engineer • Regional Operations Director (Central Region)
Speed Order Distribution	• Regional Traffic Engineer (original) • Regional Construction Engineer • Regional Operations Director (Central & Southeast Regions) • State Traffic Engineer • Enforcement Agency
Maintenance of Speed Order Library	• Regional Traffic Engineer
Documentation of effectiveness of regulatory speed limits in temporary traffic control zones in the Project Completion Report	• Construction Project Engineer

ATTACHMENTS:

Attachment A: Speed Limit Order
Attachment B: Temporary Traffic Control Zone Speed Limit Order

AUTHORITY

AS 19.10.070
AS 19.10.072

IMPLEMENTATION RESPONSIBILITY

The regional directors are responsible for seeing that the requirements set forth herein are met. See the Speed Limit Documentation Responsibility and Distribution and the Temporary Traffic Control Zone Speed Responsibility and Distribution tables above for responsibilities of other departmental personnel.

DISTRIBUTION

All holders of the Department Procedures Manual, the Highway Preconstruction Manual, the Alaska Construction Manual, the Alaska Highway Maintenance and Operations Manual, the State Traffic Engineer, Regional Traffic Engineers, the Commissioner of the Department of Public Safety and Police Chiefs of all local governments in Alaska.

State of Alaska
Department of Transportation and Public Facilities

Attachment A

IN REFERENCE TO:

State Route Name:
State Route CDS No.:

ORDER
Establishing a Speed Limit on a State Highway

Direction of Travel:			
Between:		CDS MP:	
And:		CDS MP:	

If speed zone boundaries are not the same for both directions, complete the following

Direction of Travel:			
Between:		CDS MP:	
And:		CDS MP:	

WHEREAS Section 19.10.070 of the Alaska Statutes provides that the Department of Transportation and Public Facilities shall establish safe speed limits on the state highways, and

WHEREAS the Department of Transportation and Public Facilities has conducted an engineering and traffic investigation, and

WHEREAS said investigation indicates that the herein ordered speed is the maximum reasonable and safe speed on the herein described state highway or state-maintained road;

IT IS HEREBY ORDERED THAT:

Vehicles traversing the above named road within the above specified boundaries shall not exceed a maximum speed of **Posted Speed** (**00**) ***MPH***.

IT IS FURTHER ORDERED that the appropriate signs be erected along said roadway to advise the motorist of the speed limit set forth herein.

This order supersedes any previous conflicting order(s) issued for that portion of the roadway where the conflict exists.

Date — Regional Traffic Engineer

Date — Regional Director

Actual or Expected Posting Date

Enforcement Agency with Jurisdiction

Original to Regional Traffic Engineer
Copies to Regional Director, Regional Operations Director (Central Region only), Maintenance Chief, State Traffic Engineer, State HPMS Manager and Enforcement Agency

State of Alaska
Department of Transportation and Public Facilities

Attachment B

IN REFERENCE TO:

State Route Name:

State Route CDS No.:

Existing Regulatory Speed Limit:

ORDER
Establishing a Temporary Speed Limit in a Temporary Traffic Control Zone

Between:		CDS MP:	
And:		CDS MP:	

WHEREAS Section 19.10.070 of the Alaska Statutes provides that the Department of Transportation and Public Facilities shall establish safe speed limits on the state highways, and

WHEREAS the Department of Transportation and Public Facilities has conducted an engineering and traffic investigation, and

WHEREAS said investigation indicates that the herein ordered speed is the maximum reasonable and safe speed within construction, incident, or special event areas on the above described state highway or state-maintained road;

IT IS HEREBY ORDERED THAT:

Vehicles traversing the above named road, where posted accordingly,

shall not exceed a maximum speed of **Posted Speed** (**00**) ***MPH***.

IT IS FURTHER ORDERED that when road work or road conditions warrant, appropriate signs be erected in temporary traffic control zones along said roadway to advise the motorist of the speed limits set forth herein. These signs may be installed anywhere within the above specified limits but shall be confined to the area where the road speed is warranted (see DOT&PF Procedure 05.05.020).

Reduced speed limits are not a substitute for appropriate temporary traffic control. Reducing traffic control devices or traffic control costs should not be used as a justification for establishing reduced speed limits.

Date _____ Regional Traffic Engineer _____

-OR-

Date _____ Regional Construction Engineer _____

Actual or Estimated Posting Date _____ Estimated Removal Date _____

Construction Project Name: _____

Original to Regional Traffic Engineer
Copies to Regional Construction Engineer,
Regional Operations Director (Central Region only),
State Traffic Engineer and Enforcement Agency

Enforcement Agency with Jurisdiction _____