

## 1170. Special Design Elements

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### 1170.8. Fencing

#### 1170.8.1. Introduction

Fencing may be required or desirable on some highway projects. The need for fencing can be identified during planning, scoping, environmental document, design, ROW, or construction phases of a project.

This section covers permanent fence installation. Temporary installations, such as during construction, are not covered in this Section.

#### 1170.8.2. Functions

Fencing serves a number of purposes including:

1. Barrier to human and wildlife encroachment
2. Safety
3. Property boundary delineation
4. Security
5. Channelization
6. Privacy
7. Noise reduction
8. Snow drift abatement

Fences may, and often do, serve multiple purposes.

#### 1170.8.3. Types

The Department normally uses the following types of fence:

- Chain link
- Woven wire
- Barbed wire
- Decorative

The *Standard Specifications for Highway Construction* – Sec. 607 - covers construction of chain link, woven wire and barbed wire fences. The *Alaska Standard Drawings Manual* contains standard plans and details for these types of fences.

#### 1170.8.4. Design Considerations

Install fence consistent with the clear zone concept outlined in Section 1130.2.3 of this manual. Avoid installing fence in drainage collection areas.

### Barrier Fence

Barrier fence provides maximum protection against ROW encroachments by pedestrians, bicyclists, wildlife and other motorized vehicles such as snow machines and ATVs.

Consider barrier fence:

- Along fully or partially access controlled highways
- Between freeways or expressways and adjacent frontage roads or business districts
- Near schools, colleges, playgrounds, parks and athletic fields
- Where existing streets dead end at a freeway controlled access line
- In industrial areas or large residential developments
- Adjacent to military reservations
- At other locations where a barrier is needed to protect against vehicular, pedestrian, bicycle, or wildlife encroachment.

Barrier fence is generally installed parallel to centerline and on, or just inside, the ROW line or access control line. Fencing on a continuous alignment usually has a pleasing appearance and is the most economical to construct and maintain.

### Safety Fence

Safety fence is installed:

- To protect users of sidewalks and paths located within the ROW from hazards adjacent to or near these transportation features
- To protect the general public and maintenance workers from other readily accessible hazards within the ROW
- To protect adjacent private property from hazards at or near the ROW line

Consider safety fence when:

1. Vertical drop offs equal, or exceed 4 feet
2. Side slope and slope height is steeper than 2H:1V and greater than 8 feet, respectively
3. Permanent bodies of water over 3 feet deep or swift flowing water are present

4. Children or mobility impaired persons are present in significant numbers near the hazard(s)

Other factors such as proximity and likelihood of exposure to hazard from paths and sidewalks, and severity of hazard need consideration. When deciding the necessity for safety fence, engineering judgment should prevail.

Install 4 foot high, minimum, safety fence. In some circumstances, safety rail will serve the same function as safety fence. Safety rail is not part of this Section.

#### **Property Boundary Delineation**

Fencing can delineate property boundaries, but this purpose is usually secondary to a primary function such as a barrier or safety fence.

#### **Security Fence**

Security fence is commonly used on or adjacent to military reservations.

#### **Channelization Fence**

Channelization fence is commonly used for directing and funneling pedestrians or wildlife to, or away from, specific locations or structures. In the case of wildlife, this could be an at-grade crossing or an underpass structure.

#### **Privacy Fence**

Privacy fence is used for visual screening. Materials, geometry and alignment are selected to meet the location-specific terrain, vistas and aesthetics.

Plastic coated chain link with vinyl slats, available in a variety of colors, is a cost-effective privacy fence.

Custom privacy fence may be used in special cases where the context of the physical and human environmental dictates it, or when stipulated in ROW agreements.

#### **Noise Fence**

Refer to the Alaska DOT&PF Alaska Environmental Procedures Manual Noise Policy for guidance on when to consider installing noise fence.

<http://www.dot.state.ak.us/stwddes/desenviron/resoures/noise.shtml>

Select alignment, geometry and material for the target level of noise reduction.

#### **Snow Drift Abatement Fence**

Consider the use of snow fence where blowing and drifting snow can inhibit maintenance and operations. Also consider fencing where snow removal operations could cause private property damage.

#### **1170.8.5. Other Considerations**

Except where warranted for highway applications, fencing is normally the responsibility of the abutting property owner. Existing private fences within the State ROW are considered encroachments that property owners must remove at their own expense.

If a request by a private property owner, public agency or local government is made for additional fencing during construction, field personnel should confer with Design on its merits. If warranted, provide documentation justifying the need in the change order.

Metallic fencing can interfere with airport traffic control radar. When locating fencing in the vicinity of an airport, contact the Federal Aviation Administration to determine whether metal fence will create radar interference at the airport. If so, use non-metallic fencing.

#### **1170.8.6. References**

1. AASHTO - *An Informational Guide on Fencing Controlled Access Highways* - 3<sup>rd</sup> Edition November 1990.