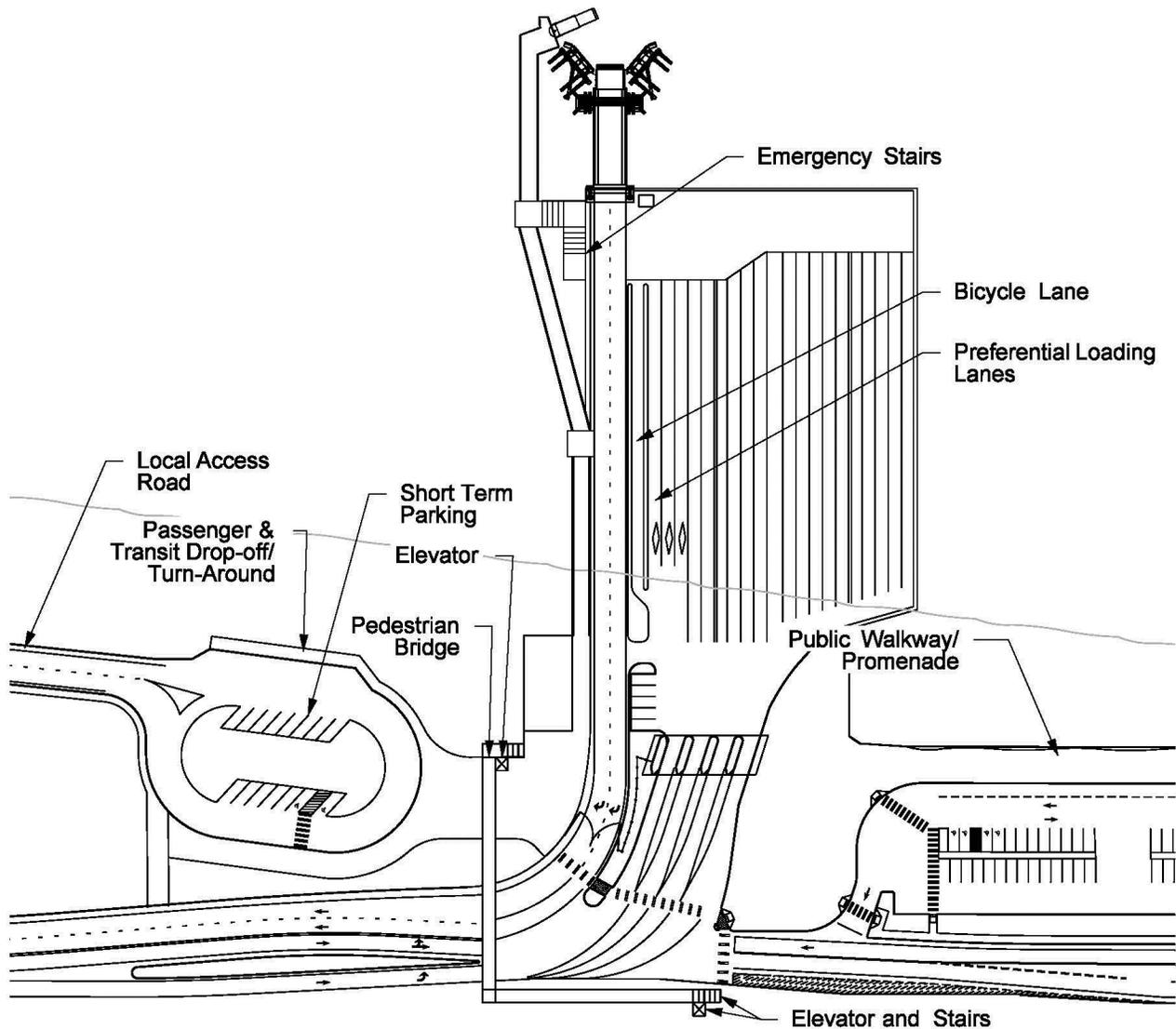


550.01	General	550.05	Vertical Circulation
550.02	References	550.06	Vehicle Circulation
550.03	Design Considerations	550.07	Building Circulation
550.04	Public Access		

550.01 General

This chapter provides general design guidelines for site circulation. Design circulation patterns to be as simple and obvious as possible and to avoid conflicts between vehicular, bicycle and pedestrian traffic. Provide signage, signalization and traffic markings as necessary to facilitate circulation and improve public safety and awareness.



Site Circulation Features
Exhibit 550-1

For additional information, see the following chapters:

Chapter	Subject
300	Accessibility
310	Security
320	Environmental Considerations
340	Civil
410	Circulation and Passenger Waiting
440	Maintenance Buildings, Enclosures, and Support Areas
500	Access, Approaches, and Exits
520	Vehicle Holding and Support Areas
540	HOV and Transit
570	Signage and Wayfinding

550.02 References

Unless otherwise noted, any code, standard, or other publication referenced herein refers to the latest edition of said document.

(1) **Federal/State Laws and Codes**

[28 CFR Part 35](#) *Nondiscrimination on the Basis of Disability in State and Local Government Services*

(2) **Design Guidance**

[Bridge Design Manual LRFD](#) M 23-50

[Design Manual](#) M 22-01

[Roadside Manual](#) M 25-30

[Standard Plans for Road, Bridge, and Municipal Construction](#) M 21-01

[Traffic Manual](#) M 51-02

(3) **Supporting Information**

[Manual on Uniform Traffic Control Devices](#) (MUTCD), FHWA

[A Policy on Geometric Design of Highways and Streets](#) (*Green Book*), AASHTO

550.03 Design Considerations

(1) **Accessibility**

Wherever pedestrian facilities are intended to be a part of a transportation facility, [28 CFR Part 35](#) requires that those pedestrian facilities meet ADA guidelines. Federal regulations require that all new construction, reconstruction, or alteration of existing transportation facilities be designed and constructed to be accessible and useable by those with disabilities and that existing facilities be retrofitted to be accessible. Design pedestrian facilities to accommodate all types of pedestrians, including children, adults, the elderly, and persons with mobility, sensory, or cognitive disabilities. Refer to [Chapter 300](#) for accessibility requirements.

(2) Security

[Chapter 310](#) includes a general discussion of the United States Coast Guard (USCG) three-tiered system of Maritime Security (MARSEC) levels, vessel security requirements, and additional information pertaining to terminal design. Below are links to relevant sections by topic.

Coordinate with the WSF Company Security Officer (CSO) regarding design issues pertaining to security. In addition, coordinate with the USCG and Maritime Security for all terminals, the United States Customs and Border Protection (USCBP) for international terminals, and the Transportation Security Administration (TSA) for TWIC and SSI.

- MARSEC Levels: [310.04](#)
- Vessel Security: [310.05](#)
- Access Control/ Restricted Areas/ TWIC [310.10](#)
- Signage: [310.13](#)

(3) Environmental Considerations

Refer to [Chapter 320](#) for general environmental requirements and design guidance. Refer to the project NEPA/SEPA documentation for project-specific environmental impacts and mitigation.

(4) Civil

Refer to [Chapter 340](#) for general civil design criteria pertaining to circulation. Below are links to relevant sections by topic.

- Channelization: [340.07\(1\)](#)
- Paving: [340.08](#)

(5) Operations and Maintenance

Consider the following operations and maintenance issues in the design of site circulation.

- Design vehicle and pedestrian circulation for a harsh marine environment including potential for heavy wind, rain, snow, and corrosion.
- Provide slip and weather resistant surfaces.
- Consider likely pedestrian short cuts which could create a safety hazard or damage landscaped areas and design to eliminate the short cut or minimize the potential impact.
- Consider the use of Low Impact Development (LID) features in the design of public access features such as pervious pavement in hardscaped areas.

(6) Signage and Wayfinding

Incorporate wayfinding elements into circulation design per guidelines in [Chapter 570](#). Provide wayfinding to terminal building, ticketing, loading area, transit, concessions, nearby services, and attractions.

550.04 Public Access

Pedestrian travel is a vital transportation mode. It is used at some point by nearly all citizens and is the main link to everyday life for many. Be aware of the various physical needs and abilities of pedestrians. Accommodate this variation in design to allow universal access. The Americans with Disabilities Act of 1990 (ADA) requires that pedestrian facilities be designed and constructed such that they are readily accessible and usable by individuals with disabilities. Provide sidewalks, promenades, plazas and other pedestrian access routes in accordance with the accessibility requirements in [Chapter 300](#). In addition to the ADA requirements, design pedestrian facilities using guidance in the [Roadside Manual](#) M 25-30, the [Bridge Design Manual LRFD](#) M 23-50, the [Design Manual](#) M 22-01 and the [Standard Plans](#) M 21-01.

Encourage cooperation and joint use between public agencies and private landowners to increase and diversify recreation opportunities at the shoreline. This may include but is not limited to walking, biking, boating, fishing, and diving. Design public access areas so they do not compromise revenue control features or interfere with vehicle operations at the terminals. For additional information regarding access, not contained in the following sections, see [Chapter 500](#).

(1) Walkways and Promenades

Design pedestrian ways and promenades to provide for maximum pedestrian accessibility along the waterfront. Where possible, maintain or increase visual access to views of the water where topography or private ownership prevents direct access. Provide multiple access routes to increase use and safety.



Example of Waterfront Promenade
Exhibit 550-2

(2) Pedestrian Bridges

Provide pedestrian bridges as necessary to increase safety and efficiency of terminal operations through the separation of pedestrians and vehicles. Example uses for pedestrian bridges include connecting the passenger building to the pedestrian overhead loading transfer span; connecting different modes of transportation such as commuter rail and ferry; and crossing over busy access roads and holding lanes. Design pedestrian bridges in accordance with the *Bridge Design Manual LRFD* M 23-50. Determine if the bridge will be used solely for pedestrians or if it will accommodate bicycles as well. This consideration may affect bridge widths and rail heights.

Consult local jurisdiction for any specific requirements which may include but are not limited to bridge aesthetics. Note that it is WSF policy not to provide cover on pedestrian bridges unless it is a requirement of the local authority. Design bridges for appropriate stormwater drainage and snow and ice removal. Provide materials that are resistive to de-icing compounds.

In locations where pedestrian bridges cross over roadways, consider providing screening along the length of the bridge to discourage objects from being thrown off the bridge. Refer to the *Design Manual* Chapter 720 for guidance.

Pedestrian bridges are beneficial where at grade crossings would: interfere with ferry operations; provide significant concern for pedestrian safety; or would provide a direct route over a major physical barrier. Consider grade-separated crossings where:

- Natural pedestrian crossings would occur at a location with limited site distance.
- There are documented collisions or close calls involving pedestrians and vehicles.
- Ferry operation results in moderate-to-high pedestrian demand to cross a major roadway, vehicle access road, or exit lanes with high volumes and/or high speed traffic.
- There is a major physical barrier such as a water body, gully, etc. which significantly restricts or prohibits an at-grade crossing.



Pedestrian Bridge at Seattle Ferry Terminal
Exhibit 550-3

550.05 Vertical Circulation

Provide vertical circulation features as required in the form of stairs, ramps, escalators, and elevators. Accessible vertical circulation must be in the same area as stairs and escalators, not isolated in the back of the facility.

(1) Vertical Clearance Requirements

When crossing the vehicle holding and exit lanes, the minimum clearance under the OHL system is 16.0 feet with 16.5 feet being desirable. All ferry vessels serving WSF terminals have a tunnel height of 16 feet or less. If any OHL structure is proposed to cross a state route, the minimum clearance must meet highway standards (WSDOT and AASHTO). Refer to the *Design Manual* M 22-01 for vertical clearance requirements for bridges.

(2) Stairs and Ramps

Refer to local building codes and [Chapter 300](#) for the design and placement of ramps and stairs. Where uncovered stairs and ramps are provided, design the elements for appropriate stormwater drainage and snow and ice containment or removal. Specify materials that are resistive to de-icing compounds.



Accessible OHL Ramp at Bainbridge Ferry Terminal
Exhibit 550-4

(3) Escalators and Moving Walkways

Escalators and moving walkways typically have not been employed at WSF terminals due to cost and operations and maintenance issues associated with the marine environment. However, where ridership demand at a terminal requires access to a second level, consider the use of escalators for vertical circulation.

(4) Elevators

Design elevators and their components in accordance with ASME A17.1. Design elevators for a harsh waterfront environment. Specify elevators that are ADA accessible and have the ability to accept a gurney. Provide stainless steel finishes in public areas. Dual elevators are strongly advised in high traffic areas. Consider access by maintenance personnel and equipment when determining the placement of elevators. Provide a space to house hydraulic, mechanical, and electrical components for operation of the elevator system. Utilize concrete construction designed for containment.

550.06 Vehicle Circulation

(1) Design Vehicle

Design terminal facilities to accommodate a WB-67 tractor trailer accessing the general holding areas. Refer to [Section 340.07](#) for additional details on critical operational maneuvers to be analyzed using turn simulation software (such as AutoTURN®) to verify the design. Areas intended for use by specific vehicles only, such as a dock bull, may be designed for those vehicles specifically. Consult with WSF Operations for locations where this is allowable.

(2) Transit Circulation

Link public transportation systems to the waterfront, recreation uses and transit stops/centers in a manner that is compatible with shoreline management goals and policies and results in the least disruption to the shoreline. Design site circulation to accommodate the design vehicle noted in [Chapter 340](#). Provide priority access for buses to ensure arrival and departure with minimum delay. Consider providing transit access to the end of the trestles where feasible. When access is provided, design the terminal to accommodate transit agency standards.

Provide separate bus loading and unloading areas from auto and pedestrian travel ways. Provide covered, enclosed areas for pedestrians to wait for buses. At transit stops truncated domes are required at loading areas. Additional information on the design of transit circulation is contained in the [Design Manual](#) Chapters 1430 and 1510 provides additional guidance on pedestrian facilities.

(3) **Emergency/Fire Access**

Provide access for emergency vehicles including fire and medical aid to the terminal facilities and for preferential loading to the vessel. Coordinate with the local Fire Chief for emergency access requirements. Accommodate fire truck turning requirements in design of terminal roadways.

(4) **HOV, Motorcycle, and Bicycle Circulation**

Provide dedicated site circulation features including HOV lanes, motorcycle lanes, and bicycle lanes as identified in the project terminal program. See [Chapter 520](#) for information regarding motorcycle and bicycle lanes and [Chapter 540](#) for additional information regarding HOV considerations.

(5) **Commercial Materials Delivery**

Provide for circulation and loading/unloading of commercial delivery vehicles. Locate loading and unloading zones as close as feasible to the locations requiring delivery. Consider providing separate access for commercial delivery vehicles so they do not have to wait in toll line queues.



Bainbridge Island Ferry Terminal Motorcycle and Bicycle Holding Area
Exhibit 550-5

(6) Garbage and Recycling

Include a space to support the storage and transfer of vessel and terminal garbage and recycling. For projects with a fencing element in the applicable design matrices project type (see [Chapter 210](#)), unless WSF operations or the local jurisdiction objects (such as part of a shoreline or building permit process), provide a fence around the garbage and recycling to secure the area.

Document operations or local jurisdictional objections to fencing requirements in the Design Documentation Package (See [Chapter 220](#)). Allow for drive through access by locating lockable gates at either end of the area. Provide space for garbage dumpsters, recycle dumpsters, and a large trash compactor where applicable. Refer to [Section 510.06\(10\)](#) for additional garbage and recycling area criteria.



Seattle Ferry Terminal Garbage and Recycling Area
Exhibit 550-6

550.07 Building Circulation

Refer to [Chapter 410](#) for building circulation requirements.

