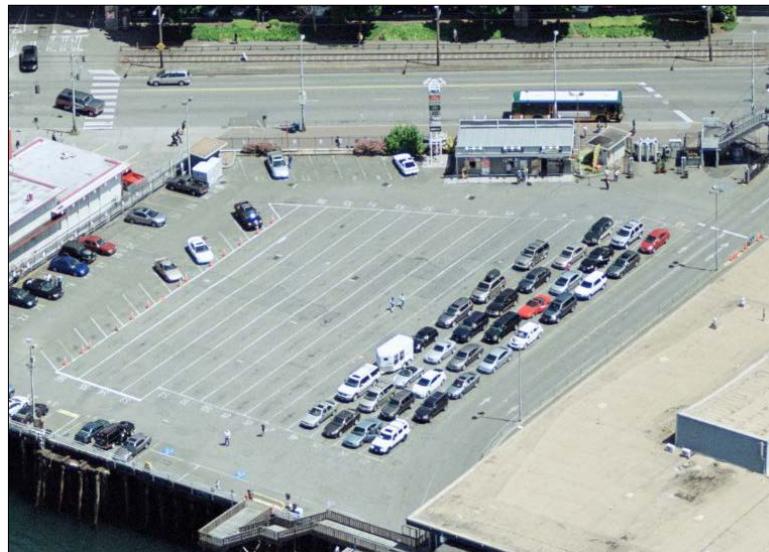


- 520.01** General
- 520.02** References
- 520.03** Design Considerations
- 520.04** Vehicle Holding

- 520.05** Motorcycle/Bicycle Access and Holding
- 520.06** Outdoor Passenger Waiting
- 520.07** Passenger Amenities
- 520.08** Landscaping

520.01 General

This chapter provides design guidelines for the vehicle holding area, motorcycle and bicycle access lanes/holding, outdoor passenger waiting, and pet/service animal area. Additional guidance can be found in the *Design Manual* M 22-01 and *Standard Plans* M 21-01. Refer to [Exhibit 600-2](#) for a sample layout of a vehicle holding area.



Seattle Ferry Terminal Vehicle Holding Area
Exhibit 520-1

The vehicle holding area, as defined for this manual, includes vehicle holding that is located on property owned by WSF and shown on the Sundry Site Plan. Two other potential conditions exist: (1) holding lanes are located on WSDOT right of way; or (2) holding lanes are located on property owned by another agency.

WSDOT has decision authority on state right of way in unincorporated areas and within cities below a specified population as set forth in the *Design Manual* M 22-01. WSDOT also maintains decision authority in limited access areas. Obtain approval through the local WSDOT district/region for modifications to state right of way in unincorporated areas. Shoulder holding lanes (or queuing lanes) on WSDOT right of way are addressed in the *Design Manual* M 22-01. Coordinate with both WSDOT and the local jurisdiction for improvements and any associated permit requirements within incorporated areas. If holding lanes are located on or over state-owned aquatic lands, a DNR authorization to use state-owned aquatic lands is required.

WSF/WSDOT is responsible for contacting the DNR early in the design process to determine any requirements for attaining or altering existing leases. Coordinate with the WSDOT Right of Way Branch on issues regarding DNR leased property.

Several topics pertaining to vehicle holding areas are addressed in other chapters of this *Terminal Design Manual*. These include, but are not limited to: pavement (see [Chapter 340](#)), park and ride lots (see [Chapter 530](#)), emergency and service vehicle access (see [Chapter 550](#)), and stormwater treatment for holding area runoff (see [Chapter 560](#)).

For additional information, see the following chapters:

Chapter	Subject
300	Accessibility
310	Security
320	Environmental Considerations
340	Civil
400	Passenger Building
410	Passenger Waiting Area Sizing
460	Landscape Architecture
500	Access, Approaches, and Exits
510	Toll Plaza
550	Site Circulation
560	Site Utilities
570	Signage and Wayfinding
600	Trestle

520.02 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

[RCW 46.61.165 High occupancy vehicle lanes](#)

[RCW 47.60.550 Parking or holding area for ferry patrons in conjunction with municipal off-street parking facilities](#)

[WAC 468-300-700 Preferential Loading](#)

[WAC 468-300-100 Leases of Facilities and Facility Space](#)

(2) Design Guidance

[Design Manual M 22-01](#)

[Standard Plans M 21-01](#)

[Standard Specifications M 41-10](#)

Traffic Manual M 51-02

WSF Terminal Design Standards, Specifications, and Procedures - Electrical Engineering (Electrical Engineering Manual), WSF

(3) Supporting Information

WSDOT [Ferries Division Final Long-Range Plan](#) (Long Range Plan), WSDOT, 2009.
WSF [Traffic Statistics](#), WSDOT.

520.03 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.

Additionally, [49 CFR Part 39](#) prohibits owners and operators of passenger vessels from discriminating against passengers on the basis of disability, requires vessels and related facilities to be accessible, and requires owners and operators of vessels to take steps to accommodate passengers with disabilities.

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](#)
- Trestle Security Requirements: [330.09\(1\)](#)
- 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 the vehicle holding area. Below are links to relevant sections by topic.

- Channelization: [340.07\(1\)](#)
- Design Vehicle: [340.07\(5\)](#)
- AutoTURN Analyses: [340.07\(6\)](#)
- Paving: [340.08](#)

(5) Illumination

Refer to [Section 560.10](#) and the WSF *Electrical Engineering Manual* for information on site illumination.

(6) Operations and Maintenance

Consult with WSF Operations and Terminal Engineering Maintenance throughout the design process and provide opportunities for their review of the project drawings and specifications.

Consider the following operations and maintenance issues when designing the vehicle holding area:

- Minimize repair and maintenance required during the design life.
- Provide corrosion protection of steel piles as required to achieve the design life specified in the Life Cycle Cost Model.

(7) Emergency and Service Vehicle Access

Refer to [Chapter 550](#) for requirements.

(8) Signage and Wayfinding

Provide sign bridges/variable message signs with public information, lane assignments and sailing status information prior to the toll booths and/or within the holding area as needed. Refer to [Chapter 570](#) for signage requirements.

520.04 Vehicle Holding

The requirements for vehicle holding vary by terminal. The optimum size and configuration of vehicle holding areas are impacted by numerous factors including ridership, vessel capacity, vessel headway, and site and environmental constraints. Vehicle holding areas can be located either upland, over water, or a combination of the two.

(1) Vehicle Holding at Existing Terminals

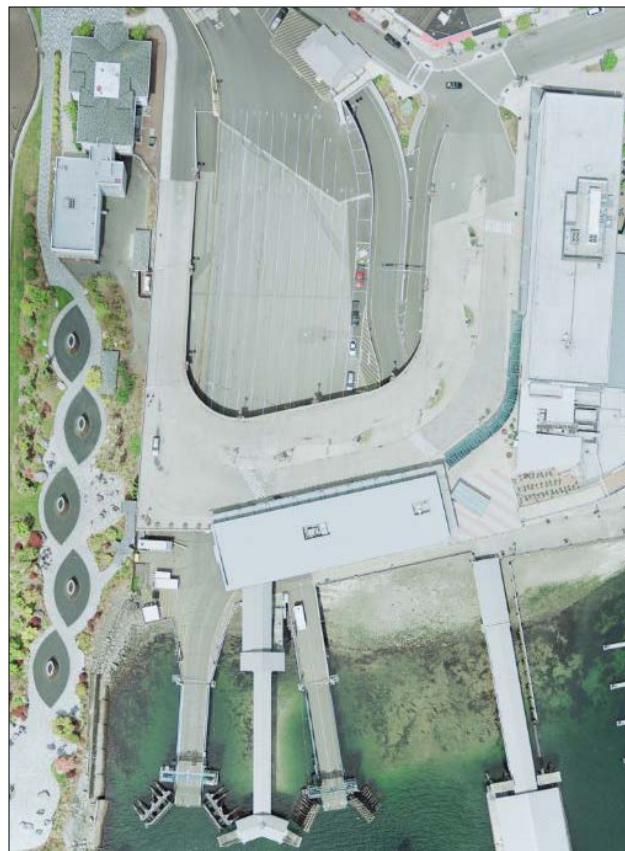
A summary of existing vehicle holding area data, by terminal, for WSF facilities is contained in [Exhibit 520-2](#). This vehicle holding area data is based on WSF's 2006 *Route Reference Book*. Post-2006 terminal modifications are not reflected in this data. The identified holding lane capacity is based on the holding lane areas depicted in the site layout drawings included in [Appendix R](#) and assumes an average vehicle length of 20 feet. Note that some terminals have additional holding capacity in off-site lots and queuing lanes upstream of the toll plaza area, which are not included in these totals.

Off-site vehicle holding, in the form of a remote parking lot or a designated ferry holding lane along the shoulder of the access route, may be necessary at some terminals to reduce vehicle backup outside the terminal limits. The design of off-site vehicle holding lanes on state routes is not addressed in this manual. Ferry queuing lanes fall under WSDOT Highway Division's responsibility, and is therefore outside WSF's jurisdiction. WSF is currently in the process of implementing a vehicle reservation system and other operational strategies designed to significantly reduce vehicle backups outside their holding areas.

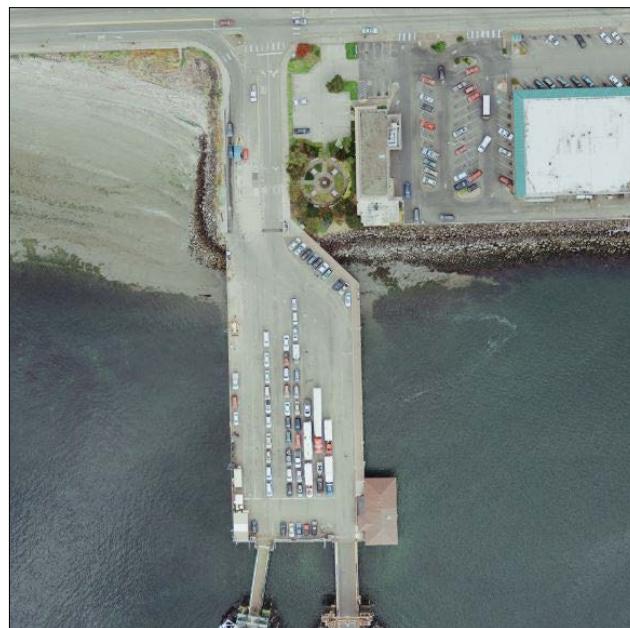
Aerial photos of an upland holding facility and an over-water holding facility are included as Exhibits [520-3](#) and [520-4](#).

Terminal	Holding Lane Width	Number of Holding Lanes	Holding Lane Capacity (vehicles)	Upland Holding	Over-water Holding
Anacortes	10'	15	450	Yes	No
Bainbridge Island	10'	14	212	Yes	Yes
Bremerton	10.5'	13	230	Yes	No
Clinton	9'	10	190	Yes	Yes
Coupeville	10'	10	120	Yes	No
Edmonds	10'	8	174	Yes	Yes
Fauntleroy	9'	4	84	Yes	Yes
Friday Harbor	9'	12*	136	Yes	No
Kingston	10'	24	288	Yes	No
Lopez	10'	4	88	Yes	No
Mukilteo	9'	12	103	Yes	No
Orcas	9'	8	175	Yes	No
Point Defiance	10'	2	50	Yes	No
Port Townsend	11'	10	100	No	Yes
Seattle	10'	40	650	Yes	Yes
Shaw	12'	2	22	Yes	No
Southworth	10'	9	160	Yes	Yes
Tahlequah	10'	1	4	Yes	Yes
Vashon	8'-11'	4	80	Yes	Yes

Existing Vehicle Holding Area Data by Terminal
Exhibit 520-2



Upland Vehicle Holding at Bremerton Ferry Terminal
Exhibit 520-3



Over-water Vehicle Holding at Port Townsend Ferry Terminal
Exhibit 520-4

(2) Location of Vehicle Holding Area

Locate the vehicle holding area as close as possible to the vessels. Site constraints, the cost of upland holding verses over-water holding, and associated environmental impacts may affect where the holding area can feasibly be located. Consider impacts to adjacent businesses and driveways when locating and designing holding areas and queuing lanes. Provide measures to maintain access to businesses and driveways during queuing.

Over-water holding is constructed on a trestle resulting in a higher construction cost and more environmental constraints. Refer to Chapter 600 for additional requirements associated with trestle construction.

(3) Sizing of Vehicle Holding Area

(a) Total Number of Vehicles

Design the vehicle holding area with a capacity of one and one-half full boat loads¹ (per destination). The area associated with the “extra” one-half boat load allows for vehicle staging necessary to sort priority vehicles (as defined below) and maintain vessel headways. This rule of thumb for sizing the vehicle holding area does not address vehicle backups that may occur upstream of the holding area, if more than one boat load of vehicles is present for a given sailing. Currently, some terminals accommodate vehicle holding area overflow with a designated ferry holding lane along the shoulder of the terminal vehicle access road (referred to as a queuing lane), see [Exhibit 520-5](#). Some terminals also have off-site vehicle holding lots.



Mukilteo Ferry Terminal Vehicle Holding Lane on Shoulder
Exhibit 520-5

¹ This holding area sizing criteria does not apply to the Shaw Terminal. The Shaw terminal is served by intra-island vessels which make stops at multiple islands. Vessels departing from Shaw only have a small allotment of vehicle spaces on the vessel since the majority of the spaces are reserved for cars originating from other terminals. Consult with WSF Operations for vehicle holding area sizing at the Shaw Terminal.

The design of new vehicle overflow holding areas (queuing lanes and off-site lots) is not addressed in this manual as these areas are built outside WSF terminal boundaries. WSF is currently in the process of implementing a vehicle reservation system and other operational strategies designed to significantly reduce vehicle backups upstream of the toll plaza. Depending on the timing and effectiveness of implementing a vehicle reservation system at each of the terminals, off-site queuing lanes and holding lots may still be necessary. Refer to the [Roadside Manual Chapter 630](#) for the design of off-site vehicle holding lots (parking lots).

(b) Number and Length of Holding Lanes

The dimensions of the holding area are based on operational criteria for the optimal number and length of individual lanes. Each ferry load requires staging vehicles in a first-come, first-served order and the capability to separate priority vehicles for preferential loading. The ideal number of lanes accommodates load management and sorting of a wide range of vehicle types while maintaining a per lane vehicle count between 10 and 20 vehicles. (Assume an average length of 20 feet per vehicle, which accounts for oversized vehicles and the space between vehicles.) Lanes shorter than 10 vehicles reduce loading efficiency due to the delay associated with starting a new lane in motion. Lanes longer than 20 vehicles impact the ability to sort vehicles. In addition, the breakdown of a vehicle in a holding lane can impede the loading of the entire lane, making longer lanes undesirable.

1. Priority Vehicles for Preferential Loading

[WAC 468-300-700](#) *Preferential Loading* gives preferential loading privileges to certain exempt vehicles “in order to protect public health, safety and commerce; to encourage more efficient use of the ferry system; and to reduce dependency on single occupant private automobiles.” Vehicles falling under the categories described in the preferential loading WAC are deemed “priority” vehicles. Exempt vehicle types that are granted preferential loading privileges on all WSF routes include the following (refer to WAC for route-specific “priority” vehicles):

1. Emergency medical vehicles
2. Emergency police or fire vehicles
3. Public utility vehicles
4. Private vehicles carrying persons with medical conditions of such a nature that waiting for passage is detrimental to such conditions, or vehicles of family members who need passage under dire medical emergencies.
5. School vehicles
6. Publicly or privately owned public transportation vehicles
7. Ride-sharing vehicles
8. Mail delivery vehicles
9. Oversized or overweight vehicles requiring transport at special times
10. Scheduled bicycle groups or events

2. Preferential Lane for Registered Carpools and Vanpools

A designated preferential lane for registered carpools and vanpools is commonly provided at WSF terminals. Current WSF practice is to load registered carpools and vanpools prior to the general traffic. The WAC guarantees these priority vehicles a spot on the first vessel sailing after their arrival, but it does not specify that they are to be loaded prior to the general traffic. Note that buses are staged in the Tall Holding lanes.

3. Tall Holding

Tall vehicles (vehicles over 7.5 feet) require placement in designated areas of a ferry vessel with greater overhead clearance. For this reason, tall vehicles are often separated in the holding area prior to loading.

4. Preferential Lane for Emergency Vehicles and Accessibility Holding

It is WSF policy to provide accommodations for drive-on passengers with disabilities which are compatible with their needs to access elevators, restrooms and other passenger amenities both while waiting for the ferry and on the ferry. Where feasible, operations preference is to provide accessible parking stalls on the trestle, near the vehicle transfer span and convenient to restrooms and other passenger amenities. Where this is not feasible, provide a 12-foot wide preferential lane for accessibility holding. This preferential lane may be used jointly to accommodate emergency vehicles, although emergency vehicles only require a 10-foot wide holding lane.

A pedestrian accessible route is required from accessible parking stalls or an accessible holding lane to passenger amenities within the holding area or passenger building, as applicable.

5. Utility Lanes

Utility lanes are lanes designated for holding area operations requiring a greater amount of maneuvering room such as the turning and staging of trucks required to back onto the ferry and emergency access for fire trucks and oversized service vehicles. Trucks are required to back onto the ferry at the Vashon (to Southworth Ferry Terminal) and the San Juan Island Terminals. [Exhibit 520-6](#) shows a truck preparing to back on to the ferry in route to Southworth at the Vashon Island Ferry Terminal.

The WAC does not specify a certain number of required holding lanes for priority vehicles. Provide designated preferential lanes and special use lanes such as tall holding and utility lanes as identified in the terminal program and as recommended by WSF Operations Design/Construction Manager.



Vashon Island Ferry Terminal Holding Lanes
Exhibit 520-6

(c) Vehicle Holding Lane Width

The standard vehicle holding minimum lane width for WSF facilities is as follows:

- General traffic lanes: 9 feet
- Tall holding lanes: 10 feet
- Carpool/vanpool lanes: 10 feet
- Shoulder holding lanes: 10 feet
- Utility lanes: 11 feet
- Accessibility holding lanes: 12 feet

Consider 10-foot holding lane widths for general traffic at ferry terminals that are categorized as recreational routes. Recreational routes tend to have drive-on passengers arrive well ahead of the scheduled sailing time. This behavior results in the passengers exiting their vehicles more frequently than passengers on commuter routes. Providing wider holding lanes at recreational routes allows passengers to exit and enter their vehicles more safely and lower the incident rate of vehicle doors damaging adjacent vehicles. Refer to [Chapter 410](#) for additional information on recreational routes.

If existing lanes (see [Exhibit 520-2](#)) are below the minimum lane widths identified above, and it is beyond the scope of the project to widen the lanes, document the deficiency in the Design Documentation Package (See [Chapter 220](#)). Concurrence is to be obtained by the Assistant State Design Engineer assigned to WSF. No further action is required.

520.05 Motorcycle/Bicycle Access and Holding

Evaluate demand for motorcycle and bicycle facilities on a route by route basis. Access lanes are intended to provide both motorcycles and bicycles access for priority loading and unloading.

Locate motorcycle/bicycle holding area at the dock end of the vehicle holding area. This allows for priority loading of motorcycles and bicycles prior to vehicles. The motorcycle/bicycle holding area is typically incorporated into the buffer located at the end of the trestle. Consider incorporating the motorcycle/bicycle holding area and access lanes in areas already covered such as under an upper level of the terminal building or overhead loading structure. Do not provide cover exclusively for cyclist benefit.

Motorcycle access lanes are not to be combined with bicycle access lanes. For new terminal facilities, a 4-foot wide bicycle lane is required for both the vehicle holding and exit lanes. Motorcycle access is generally provided via unused vehicle holding lanes.



Bainbridge Island Ferry Terminal Motorcycle and Bicycle Holding Area
Exhibit 520-7



Seattle Ferry Terminal Motorcycle Access Lane
Exhibit 520-8

520.06 Outdoor Passenger Waiting Area

At new terminals, provide outdoor waiting space for passengers in the holding area who choose to leave their vehicles without going to the terminal building. Refer to [Chapter 410](#) for requirements.

520.07 Passenger Amenities

Passenger amenities may be located within the terminal building, within the holding area, or a combination of the two. Amenities contained within the secure holding area are available to drive-on passengers only. The presence of select amenities within the holding area, such as restrooms and vending, could lessen the need for drive-on passengers to use the terminal building, reducing the required passenger waiting area within the terminal building. Evaluate the type of passenger amenities to be included within the holding area on a terminal by terminal basis based on ridership, dwell times and the amount of use anticipated throughout the day (coordinate with WSF retail/concessions expert in determining appropriate passenger amenities). At terminals that provide passenger amenities, provide a pedestrian accessible route to the amenities. Refer to [Chapter 400](#) for additional information.



Seattle Ferry Terminal Passenger Amenities in Holding Area
Exhibit 520-9

(1) Restrooms

Refer to [Chapter 400](#) for restroom requirements both inside the terminal building and in the vehicle holding area.

(2) Passenger Conveniences

Refer to [Chapter 400](#) for information on passenger conveniences both inside the terminal building and in the vehicle holding area.

(3) Retail and Concessions

Per [WAC 468-300-100](#), “It is hereby declared to be the policy of the department to lease toll and ferry facilities and toll and ferry facility space in excess of current needs where feasible and where such lease will not interfere with the normal functioning or the primary operation of the toll or ferry facility. Such leasing should promote maximum use of the toll or ferry facility and constitute a benefit to the taxpayers of the state.”

Inclusion of retail/concessions in the vehicle holding area will be made on a case by case basis to be justified in the predesign study (see [Chapter 210](#)). Factors influencing whether retail/concessions are incorporated in the holding area include available budget, return on investment, and the source of capital funding. Refer to [Chapter 410](#) (Circulation and Passenger Waiting) and [Chapter 420](#) (Passenger Amenities, Business Case) for additional information.

(4) Pet /Service Animal Relief Areas

Consider providing an outdoor pet/service animal relief area in the holding area. This feature is more commonly provided for terminals serving recreational routes which experience longer wait times and carry a larger number of animals.

Design a low maintenance area (approximately 100 square feet), which may consist of sand, natural or artificial turf, and other low maintenance vegetation. Avoid the use of long grass in the pet/service animal area which may hide pet waste and hinder waste removal. Equip pet/service animal area with a potable water source (a hose bib for cleaning and drinking water), bag dispensers, pet waste receptacles, and appropriate drainage. Design pet/service animal relief area to either biologically treat animal waste or drain runoff to a treated stormwater outlet.



Pet Area at Seattle Ferry Terminal
Exhibit 520-10

520.08 Landscaping

Landscaping may be required within the vehicle holding area for a variety of reasons including local code requirements and/or mitigation for environmental impacts. Landscaping within or between the vehicle holding lanes is undesirable due to its impact on the efficiency of WS's sorting and loading operations. Refer to [Chapter 460](#) for general landscaping requirements.