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540.01 General

This chapter provides guidance and information for designing high-occupancy vehicle (HOV) and transit facilities. HOV and transit facilities include transit centers, bus stops and pullouts, turnarounds, park and ride lots, HOV lanes, and commuter rail facilities. The objectives for the HOV and transit facilities are:

- Improve the capability of the terminal to move more people by increasing the number of people per vehicle.
- Provide travel time savings and a more reliable trip time to HOV lane users.
- Provide travel options for HOVs and individuals without adversely affecting the general- purpose lanes.
- Provide integrated connections for riders between the WSF terminal and adjacent transit facilities.



Bus Pull Out – Near Mukilteo Ferry Terminal
Exhibit 540-1

For additional information, see the following chapters:

| Chapter | Subject |
|---------|-----------------------------------|
| 300 | Accessibility |
| 310 | Security |
| 320 | Environmental Considerations |
| 340 | Civil |
| 520 | Vehicle Holding and Support Areas |
| 530 | Parking |
| 550 | Site Circulation |

540.02 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*

[RCW 46.61.165](#) *High-occupancy vehicle lanes*

[RCW 47.52.025](#) *Additional powers – Controlling use of limited access facilities –High occupancy vehicle lanes*

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

[WAC 468-510-010](#) *High occupancy vehicles (HOVs)*

(2) Design Guidance

Design Manual M 22-01

Standard Plans for Road, Bridge, and Municipal Construction M 21-01

Traffic Manual M 51-02

Local transit agency standards and guidelines

(3) Supporting Information

Guide for the Design of High-Occupancy Vehicle Facilities, AASHTO.

HOV Systems Manual, NCHRP Report 414, 1998.

Manual on Uniform Traffic Control Devices (MUTCD), FHWA

540.03 Design Considerations

Plan, design, and construct HOV facilities that provide intermodal linkages wherever feasible. Give consideration to future terminal capacity needs and planned transit facility related improvements. Design the terminal to accommodate local transit agency standards. Whenever possible, design HOV lanes so that the level of service for the general-purpose lanes is not degraded. Coordinate with the WSF Operations Liaison to determine if the terminal is included in WSF's vanpool priority loading program, as this differs from WSDOT's HOV program.

The ferry terminal will be the hub of access and activity. Users will be coming to the terminal from transit and vehicle drop-off areas and the adjacent waterfront areas. Users of the terminal should have a clear sense of arrival and comfort. Clearly mark areas designated as pedestrian safe zones using paving, bollards, fencing, striping and signing.

(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 security in HOV and transit design. 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.

(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 HOV and Transit design. Below are links to relevant sections by topic.

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

540.04 Transit Facilities

Transit facilities are commonly incorporated into the design of a multimodal ferry terminal facility. Early and continual coordination with the local transit authority and local government agencies is critical in the design of such facilities. Consider each of the following before developing plans for transit facilities:

- Multimodal strategies in the comprehensive plans of applicable local jurisdictions.
- Multimodal strategies in the regional plans of applicable Regional Transportation Planning Organizations (RTPOs).

- Strategies and plans of the applicable transit providers for the site under development.
- Design elements or constraints based on partnership agreements and funding requirements.

Following is some general information on the design of transit facilities. Detailed design guidance for transit facilities is provided in the WSDOT *Design Manual* Chapter 1430.

(1) **Transit Centers**

Transit centers are effectively large multimodal bus stops where buses on a number of routes converge to allow riders the opportunity to change buses or transfer to other modes of transportation. When designing a transit center, consider such features as passenger volume; number of buses on the site at one time; rail schedules; local auto and pedestrian traffic levels; and universal access.

Where several transit routes converge and where buses congregate, multiple bus berths or spaces are sometimes needed. Parallel and shallow saw tooth designs are the options available when considering multiple berths: however, sawtooth designs are often discouraged by many transit providers due to safety concerns.

(2) **Bus Stops and Pullouts**

The bus stop is the point of contact between the passenger and the transit services. The simplest bus stop is a location by the side of the road. The highest-quality bus stop is an area that provides passenger amenities and protection from the weather. Bus stops must meet accessibility requirements. Refer to [Chapter 300](#) for additional design guidelines.

Bus pullouts allow the transit vehicle to pick up and discharge passengers in an area outside the traveled way. The interference between buses and other traffic can be reduced by providing bus pullouts.



Bus Stop – Near Edmonds Ferry Terminal
Exhibit 540-2

Specific bus stop locations are influenced not only by convenience to patrons, but also by the design characteristics and operational considerations of the roadway. Bus stops are usually located in the immediate vicinity of intersections. Where blocks are exceptionally long or where bus patrons are concentrated well away from intersections, midblock bus stops and midblock crosswalks may be used. Consider pedestrian refuge islands at midblock crosswalks on multilane roadways.

Transit stops located at terminals provide transfer points between the ferry system and the local transit system, and provide convenient passenger access to the terminal.

Where appropriate, provide space for expected bus usage based on existing route information and expected future growth rates. Allow space for coaches with independent arrival and departure.

Locate any paratransit vehicle stops close to the terminal for convenient access. Include parking space for school buses at terminals where applicable.

(3) Bus Stop Amenities

Provide bus passengers a comfortable place to wait for the bus. Providing an attractive, pleasant setting for the passenger waiting area is an important factor in attracting bus users. Important elements of a bus stop include:

- Universal access
- Protection from passing traffic
- Lighting
- Security
- Paved surface
- Protection from the environment
- Seating (if the wait may be long)
- Information about routes serving the stop

Locate stops where there is enough space for passengers to wait away from the edge of the traveled roadway. Providing a buffer between the roadway and the bus stop protects pedestrians from passing traffic. The buffering distance from the roadway increases with traffic speed and traffic volume. Where vehicle speeds are 30 mph or below, 5 feet is a satisfactory distance. In a heavy-volume arterial with speeds up to 45 mph, a distance of 10 feet provides passenger comfort.

Passengers arriving at bus stops, especially infrequent riders, want information and reassurance. Provide information that includes the numbers or names of routes serving the stop. Other important information may include a system route map, the hours and days of service, schedules, and a phone number for information. The information provided and format used is the responsibility of the local transit system.

Where shelters are not provided, a bus stop sign and passenger bench are desirable, depending on weather conditions. The sign indicates to passengers where to wait and can provide some basic route information.

(4) **Bus Turnarounds**

WSF does not mandate placing a bus turnaround on the trestle. However, a bus turnaround is a significant convenience to passengers, particularly for those with physical disabilities. Where applicable, consider the cost benefit associated with installing a bus turnaround on the trestle.

Where bus turnarounds are provided, provide a separate access point to allow buses to bypass the toll plaza and/or toll plaza queue backup.

Several existing terminals provide for bus access by local transit agencies to areas near the vessel interface via the trestle/vehicle holding area. These terminals include:

- Southworth
- Fauntleroy
- Vashon
- Kingston
- Clinton

Consider providing transit access to the end of the trestles where feasible. When access is provided, design the terminal to accommodate transit agency standards.



Bus Turnaround at Vashon Terminal
Exhibit 540-3

(5) **Park and Ride Lots**

Park and ride lots provide parking for people who wish to transfer from private vehicles to public transit or carpools/vanpools. Typically, WSF relies on existing commuter parking facilities and/or parking facilities provided by others. Where additional commuter parking is required, coordinate with the local transit authority for input as the need for a park and ride lot and its location may already have been determined in the development of its comprehensive transit plan. When a

memorandum of understanding (MOU) or other formal agreement exists that outlines the design, funding, maintenance and operation of park and ride lots, it must be reviewed for requirements pertaining to new lots.

540.05 Commuter Rail

Sound Transit is currently in the process of expanding their commuter rail service between Everett and Seattle. Commuter rail stations are typically located within the Burlington Northern right of way. Consider, where applicable, connecting the terminal to commuter rail stations by a publicly accessible overhead walkway. Design the walkway to provide a safe route of travel from ferry to train, free of potential pedestrian/vehicle conflicts. Coordinate location, connection and alignment with Sound Transit.



Commuter Train at Edmonds Terminal
Exhibit 540-4

540.06 HOVs and Taxis

(1) *High Occupancy Vehicle (HOV) Lanes*

High Occupancy Vehicle (HOV) lanes are exclusive traffic lanes limited to carrying public transportation vehicles, private motor vehicles with the number of occupants specified on posted signs, motorcycles, and emergency vehicles ([WAC 468-510-010](#)). HOV lanes are typically a characteristic of urban freeways, but may also be designated on urban arterials, highways serving major transportation hubs such as ferry terminals, and within ferry terminal holding areas. The HOV lane objectives are:

- Increase the people-carrying capacity of terminals.
- Reduce total travel time.
- Improve the efficiency and economy of public transit operations.
- Reduce fuel consumption.
- Improve air quality.

Where feasible and if ridership warrants, provide a separate queue bypass lane on the access road to the toll plaza for HOV/priority vehicle access. Note that a distinction exists between HOVs and priority vehicles in that HOVs are not subject to preferential loading as described in [WAC 468-300-700](#). This lane may also provide future use to reservation holders to bypass standby vehicles. Refer to [Chapter 520](#) for additional guidelines on HOV lanes in the holding areas.

(2) Taxi Waiting Areas

Consider the need for a taxi waiting area (taxi stand) near the terminal facility. This could be incorporated into the short term parking area. Provide additional parking stalls to accommodate taxi waiting where applicable. Accommodate taxi pick-up/drop-off, where applicable, in the sizing of curbside drop-off parking. Curbside drop-off parking may also be used for general passenger loading/unloading, vanpools, and paratransit. See [Chapters 530](#) and [550](#) for additional information regarding these areas.