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CHAPTER 2

2.000 TRANSPORTATION

2A GENERAL CONSIDERATIONS

2A.010 General

The overall goal of this section is to encourage the uniform development of an integrated, fully accessible public transportation system that will facilitate present and future travel demand with minimal environmental impact to the community as a whole. All design standards shall follow accepted engineering practices with an emphasis on safety. Safety shall override the supplemental Standards as outlined in this document.

This section provides minimum development standards supplementing the applicable standards as set forth in Section 1.010.

All new and re-development projects shall comply with the Low Impact Development Standards set forth in the most current edition of the *City of Gig Harbor Stormwater Management and Site Development Manual* and construction details outlined in this chapter.

2B ROADWAYS

2B.010 General

Roadway design must provide for the maximum vehicular loading conditions anticipated. The width and grade of the pavement must conform to specific standards set forth herein for safety and uniformity.

2B.020 Design Standards

The design of roadways shall depend upon their functional classification and usage. The design elements of City roadways shall conform to City Standards as set forth herein and current design practice as set forth in Section 1.010. Standard design cross-sections and structures are shown in the details at the end of this section. Alternate structural sections may be used based on the criteria as outlined in Section 2B.160. Safety shall be paramount in any roadway design.

Federally classified roadways on the National Highway System shall meet the design standards required for those roadways. Any modification to those standards shall comply with the deviation process as established by the *WSDOT Local Agency Guidelines Manual*. Deviations require justification with safety being a prime consideration.

The layout of roadways shall be based on their functional requirements, i.e., the grouping of roadways based on the service they provide. See Section 2B.025 for Access Management criteria and 2B.030 for Functional Classification applications. See the Minimum Roadway Design Standards table, Figure 2.1, for design criteria.

The layout of roadways shall provide for the continuation of existing principal roadways in adjoining subdivisions or for their proper projection when adjoining property is not subdivided. Minor roadways, which serve primarily to provide access to abutting property, shall be designed to discourage through traffic.

GENERAL ROADWAY LAYOUT REQUIREMENTS ARE AS FOLLOWS:

- A. Alignment. Alignment of boulevards, principal arterials and collectors shall conform to the Transportation Comprehensive Plan. The City of Gig Harbor City Engineer shall approve deviations to the Transportation Element of the Comprehensive Plan.
- B. Grade. Roadway grade should conform closely to the natural contour of the land. In some cases a different grade may be required by the City Engineer. See the Minimum Roadway Design Standards table for specifics.
- C. Width. The pavement and right-of-way width depend on the roadway classification and functional requirements. See roadway details for specifics. Roadway widths shall be measured from face-of-curb to face-of-curb on roadways with a cement concrete curb and gutter. The table of Minimum Roadway Design Standards show the minimum widths allowed.
- D. The general notes listed below on the following pages shall be included on any plans dealing with roadway design in addition to all applicable requirements in Section 1.040.

GENERAL NOTES (ROADWAY CONSTRUCTION)

- 1. All workmanship and materials shall be in accordance with City of Gig Harbor Public Works Standards and the most current copy of the WSDOT Standard Specifications for Road, Bridge and Municipal Construction. In cases of conflict, the most stringent standard shall apply.
- 2. The contractor shall be in compliance with all safety standards and requirements as set forth by OSHA, WISHA and the Washington State Department of Labor and Industries.
- 3. The contractor shall be responsible for all traffic control in accordance with the WSDOT Standard Plans for Road, Bridge and Municipal Construction and/or the Manual on Uniform Traffic Control Devices

(MUTCD). Prior to disruption of any traffic, a traffic control plan shall be prepared and submitted to the City for approval by the Engineer of Record. No work shall commence until all approved traffic control is in place.

4. All curb and gutter, roadway grades, sidewalk grades and any other vertical and/or horizontal alignments shall be staked by a registered surveyor licensed in the State of Washington.
5. All approvals and permits required by the City of Gig Harbor shall be obtained by the contractor prior to the start of construction.
6. If construction is to take place in other jurisdiction's right-of-way (i.e., Pierce County, the State, or other adjacent municipalities), the contractor shall notify the City. All the required approvals and permits shall be obtained prior to starting work. The contractor shall reimburse the City for associated permit fees.
7. A pre-construction meeting shall be held with the City of Gig Harbor Construction Inspector a minimum of 72 hours prior to the start of construction.
8. The contractor shall be fully responsible for the location and protection of all existing utilities. The contractor shall verify all utility locations prior to construction by calling the Underground Locate line at 811 a minimum of 48 hours prior to any excavation.
9. It shall be the responsibility of the contractor to have a copy of an approved set of plans on the construction site at all times.
10. All surveying and staking shall be performed per the corresponding section of the City of Gig Harbor Public Works Standards.
11. Temporary erosion control/water pollution prevention measures shall be required in accordance with Section 1-07.15 of *the WSDOT Standard Specifications for Road, Bridge and Municipal Construction* and the *City of Gig Harbor Stormwater Management and Site Development Manual*. At no time will silts and debris be allowed to drain into an existing or newly installed facility unless special provisions have been designed. Projects that exceed one acre or more in size are required to obtain a General Construction Storm Water permit through the Department of Ecology. A copy of this permit must be submitted to the City prior to the start of any construction.
12. Where new asphalt joins existing, the existing asphalt shall be cut to a neat vertical edge and tacked with Asphalt Emulsion type CSS-1 in accordance with the standard specifications. The new asphalt shall be feathered back over the existing to provide for a seal at the saw cut location and the joint is to be sealed with grade AR-4000W paving asphalt.

13. Compaction of sub-grade, rock, and asphalt shall be in accordance with the most current adopted version of the *WSDOT Standard Specifications for Road, Bridge and Municipal Construction*.
14. Form and sub-grade inspection by the City is required before pouring concrete. 24 hours' notice to the City is required for form inspection.
15. See the City of Gig Harbor Public Works Standards, Section 2B.200, for testing and sampling frequencies.
16. All sign sheeting shall be high intensity prismatic retroreflective and in conformance with the Manual on Uniform Traffic Control Devices (MUTCD).

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Figure 2.1 Minimum Roadway Design Standards

DESIGN STANDARD	Arterials	Major Collectors	Minor Collectors	Major Local Residential	Minor Local Residential	Private
DESIGN LIMITATIONS	Access and intersections are limited.			Access limited to one driveway per SF residential lot.		
MINIMUM STRUCTURAL DESIGN	See Details 2-01 through 2-08					
MINIMUM RIGHT-OF-WAY	See Details 2-01 through 2-08					
MINIMUM PAVEMENT WIDTH	See Details 2-01 through 2-08					
PARKING LANE	None allowed	Allowed on Type I where bulb-out parking is provided. Prohibited on Type II	Allowed on Type I where bulb-out parking is provided. Prohibited on Type II	Bulb-out parking required except in intersection transition section	Prohibited	Bulb-out parking allowed except in intersection transition section
MINIMUM ∇ GRADE	With curb and gutter or concrete roadway, minimum grade 0.5% On ACP roadway with no curb and gutter or curb and gutter on one side only, minimum grade 1.0%					
MAXIMUM ∇ GRADE	8.0%	10.0%	12.0%	15.0%	15.0%	15.0%
	7 % regardless of roadway classification in Commercial and Industrial Zones					
CURB	Longitudinal slope minimum 0.5% on tangents Minimum curb return grade to catch basin 1.0%					
SIDEWALKS	See Details 2-01 through 2-10 for width variances					
INTERSECTION CURB RADIUS	The minor intersecting roadway shall control the curb radii					
W/O MEDIAN	35'	30'	30'	25'	20'	10'
WITH MEDIAN	35'	35'	35'	30'	25'	15'
DESIGN SPEED NEW ROAD	35 mph	30 mph	30 mph	25 mph	20 mph	20 mph
DESIGN SPEED EXISTING RDS	5 mph above posted speed limit					
MINIMUM CENTERLINE RADIUS WITHOUT INTERSECTION	455' @ 30 mph 630' @ 35 mph	860' @ 40 mph	1,120' @ 45 mph 1,430' @ 50 mph	195' @ 20 mph 305' @ 25 mph	100'	Res. = 100' Com. = 195' Industrial = 195'
	Use AASHTO for centerline radius restrictions at intersections.					
SUPER-ELEVATION	Requires approval of the City Engineer. If allowed, design shall be per AASHTO with the maximum super elevation not to exceed 4%			Not allowed		

2B.025 Access Management

The City has adopted these Access Management guidelines. City facilities shall meet these Standards in addition to the access requirements as set forth in RCW 47.50, WAC 468-51, WAC 468-52 and all other applicable RCW's and WAC's.

Access Management is a tool to address traffic congestion, crashes, and loss of roadway capacity. The intent of Access Management is to provide access for land development while preserving the flow of traffic in terms of safety, capacity and speed of travel.

The benefits of access management include:

- Safety – by reducing the number and severity of crashes;
- Operation – by reducing delays while maximizing the roadway potential capacity;
- Environmental – by lowering the amount of air pollution caused by stop-and-go operation thereby increasing fuel economy;
- Economics – by preserving public investment in the roadway infrastructure, avoiding the need for roadway widening or other roadway improvements.

The objective of access management include:

- Establish guidelines for location and design of driveways
- Provide access from public roadways
- Define an access control hierarchy for all roadways
- Regulate access location and design; intersections, signal and access spacing standards; corner clearances; joint and cross access; functional areas of an intersection and medians
- Provide connectivity between neighborhoods and adjoining land uses

A. Determination of Access Classification

Determination of access shall be the responsibility of the City. The developer shall provide the following information at the time of Civil Plan Permit Application along with recommendations to assist the City in determining access locations:

1. City of Gig Harbor land use plans, zoning, and land development regulations as set forth in adopted comprehensive plans.
2. The current and potential functional classification of the roadway. See Section 2B.030.

3. Existing and projected traffic volumes, accident history, and other operational considerations.
4. Existing and projected state, local, and regional planning organization transportation plans and needs, including considerations of new or improved facilities.
5. Drainage requirements.
6. The physical features of lands adjoining the roadway.
7. The type and volume of traffic requiring access.
8. The availability of alternative connections to the existing roadway network.
9. The cumulative effect of existing and projected connections on the roadway's ability to provide safe and efficient movement of people and goods.

B. Access Spacing

Access points shall be located to reduce the possibility of weaving, lane shifts, or other conflicts in the traffic stream. Existing access on both sides of the roadway shall be analyzed to determine proper location for a new access. The following guidelines shall be used for spacing between access points.

Figure 2.2 Access Spacing

Functional Classification	Minimum Spacing* (feet)	Desirable Spacing* (feet)
Boulevard/Arterial	275	350
Major Collector	230	300
Minor Collector	185	235
Major/Minor Local Residential	150	190

*Desirable spacing will be required except in older developments where insufficient frontage exists

Source: Adapted from Iowa Access Management Handbook

The spacing standards are for full access. Restricted access (i.e. right-in, right-out) shall be half the amount shown in the table above provided that the requirements in 2B.025D can be achieved.

If the spacing requirements and the connectivity requirements as outlined in this section cannot be achieved, the access shall be designed by a traffic engineer using the objectives herein. All distances given in this section are measured centerline to centerline.

C. Functional Area

The functional area of an intersection is defined as the area beyond the physical intersection that comprises decision and maneuver distance plus any required vehicle storage length. The “clear area” between functional areas can be defined as the “window” in which direct access can be provided.

See Section 2B.140 for corner clearance restrictions within the functional area of an intersection. See Section 2B.025D for median opening restrictions within an intersection functional area.

D. Medians

Raised or landscaped medians in the center of a road separate opposing lanes of traffic, and shall be used to restrict turning and crossing movements.

Median openings shall not occur within the functional area of an intersection. See Section 2B.025C for more information on functional areas. See Section 2B.140 for driveway restrictions in the functional area of an intersection. A single yellow center stripe is required 6 inches off the face of the median curb unless otherwise approved by the City Engineer.

Medians are required as specified on the applicable roadway detail at the end of this section. Medians shall be designed so as not to limit turning radius or sight distance at intersections. A non-restrictive median or two way left turn lane may be used when special conditions exist. Medians shall be formed in accordance with WSDOT Standard Plans as approved by the City Engineer. Placement of the curbs shall be based on the WSDOT Design Manual requirements. Landscaping and irrigation shall be required. Irrigation shall be installed per Section 4.185.

When retrofitting existing sites where medians cannot be installed because of limited right-of-way, barrier curbs between opposing lanes of traffic shall be installed. The use of a concrete barrier island used to divert traffic (i.e. a “pork chop” shaped barrier) restricting turns to right-in, right-out only, generally need to be combined with a barrier curb or other appropriate treatment as determined by the City Engineer.

2B.030 Functional Classification and Connectivity

Roadway hierarchy based on functional classification provides a network of roadways based on distinct travel movements and the service they provide. Roadway layout shall be based primarily on the safety, efficiency of traffic flow, and functional use of the roadway. Roadways are divided into boulevards, arterials, major and minor collectors, major and minor local residential, private roadways, and alleys.

Roadways of all classifications shall be planned to provide for connectivity of existing and proposed roadways in relation to adjoining parcels and possible future connections as approved by the City. New development roadway systems should be designed so as to minimize pedestrian travel to bus stops.

Roadway classifications have been identified in the most current adopted version of the City of Gig Harbor Transportation Plan. The City Engineer will classify all new roadways according to the factors set below:

Boulevards and arterials are intended for the efficient movement of people and goods and have the highest level of access control. They have limited access and accommodate controlled intersections. Collectors generally connect commercial, industrial, and residential projects to other collectors, arterials and boulevards and have a moderate level of access control. Minor collectors may be used if turn lanes are not required. If the collector connects to another collector or to an arterial, the roadway shall be a major collector. The City will determine if a collector is a major or a minor, type I or type II, based on a review of the development potential of all contributing properties, the existing right-of-way, if it is an existing roadway, and the necessity of turn lanes. Auxiliary left turn and right turn lanes are desired when connecting to boulevards, arterials, and major collectors. The design of left and right turn auxiliary lanes shall conform to the geometric requirements outlined in *“Transportation and Land Development”*.

Major and minor local residential roadways shall interconnect with each other and with minor collectors and have a minimum level of access control. Alleys in residential neighborhoods are encouraged. If the local residential roadway connects to a major collector or to an arterial, the roadway shall be a major local residential. High density, multi-family projects shall be served by a major local residential. In such developments, connectivity shall be a key design factor, although the internal flow shall be discontinuous to discourage cut-through traffic movement and excessive speed. Traffic calming techniques shall be designed into all residential subdivisions. The pedestrian network shall be paramount in the residential roadway network. Minor local residential roadways serve as land access from residences and generally connect with major local residential and minor collectors. Safety is always the major consideration when determining intersection locations and connectivity.

2B.035 Traffic Impact Analysis / Trip Generation and Distribution Study

A. Introduction

A Traffic Impact Analysis (TIA) or Trip Generation and Distribution Report is a specialized study of the impacts a certain type and size of development will have on the surrounding transportation system. The

purpose of these reports are to determine what impact development traffic will have on the existing and proposed roadway network and what impact the existing and projected traffic on the roadway system will have on the “new development”.

These guidelines have been prepared to establish the requirements for a Traffic Impact Analysis or Trip Generation and Distribution Study. The City Engineer will be the person responsible under SEPA as well as City ordinances for determining the need for a Traffic Impact Analysis.

B. Level of Analysis

To adequately assess a new development’s traffic impact on the transportation system and level of traffic service, the City Engineer may require a TIA. The developer of a proposed development or redevelopment has the responsibility of preparing, for City review, a Traffic Impact Analysis as required below:

- Level I TIA. Trip Generation and Distribution Study. (Exhibit A shows a Level I TIA Sample Outline- actual report contents may vary.)
- Level II TIA. Traffic Impact Analysis. (Refer to Exhibit B for Sample Outline- actual report contents may vary.)

C. Conditions for Level I Traffic Impact Analysis

A complete Level I TIA shall be required if any one of the following conditions are met:

- The project generates 11 or more PM peak hour trips; or
- The project requires a SEPA review.
- Other conditions that require this level of analysis as determined by the City Engineer.

A Level I TIA may be required by the City to determine the need and scope of a Level II TIA. A Level I TIA may be expanded to a Level II TIA if any of the conditions in Section D are met.

D. Conditions for Level II Traffic Impact Analysis

The following is a list of specific conditions that may dictate the requirement for preparing a Level II TIA. The City Engineer may require the preparation of a TIA if one or more of the following conditions are satisfied:

- The project generates more than 15 PM peak hour trips.

- The City has required that an Environmental Assessment or Environmental Impact Statement be prepared;
- A re-zone of the subject property is being proposed;
- Current traffic problems exist in the local area as identified by the City or a previous traffic study, such as a high-accident location, poor roadway alignment, or capacity deficiency;
- Adjacent neighborhoods or other areas are perceived to be impacted;
- The current or projected level of service of the roadway system in the vicinity of the development is perceived to be significantly affected, or is expected to exceed City adopted level of service standards;
- The new development may potentially affect the implementation of the roadway system outlined in the Transportation Element of the comprehensive plan, the Transportation Improvement Program, or any other documented transportation project;
- The original TIA is more than 2 years old or the proposed land use intensity increased by more than 10 percent.
- The “new development” is within an existing or proposed transportation benefit area. This may include Latecomer Agreements, Local Improvement Districts (LID), or local/state transportation improvement areas programmed for development reimbursements.
- The “new development” generates more than 25 percent of site-generated peak hour traffic through a signalized intersection or the “critical” movement at an un-signalized intersection.
- Other conditions that require additional study as determined by the City Engineer

E. Estimating Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation Manual provides trip generation rates for a variety of land uses, consisting of average rates or fitted curve equations. Unless otherwise proposed by the applicant and approved in writing by the City Engineer; the latest edition of the ITE Manual shall be used to estimate the number of trips for a proposed development.

F. Report Certification

Traffic Impact Analyses (TIA) and Trip Generation and Distribution Studies shall be conducted under the direction of a responsible individual or firm acceptable to the City Engineer. The TIA shall be prepared by a registered engineer licensed in the State of Washington with special training and experience in traffic engineering and who is a member of the Institute of Transportation Engineers (ITE). The developer shall provide the City Engineer with the credentials of the individual(s) selected to perform the TIA.

G. Extent of Study Area

The study area shall include all site access drives, adjacent driveways, adjacent roadways, and major roadways and intersections in all directions from the site that are impacted by 15 or more inbound and outbound PM peak hour trips, or less as required by the City. Once the trip distribution for the new development has been approved by the City Engineer, a formal "scoping" meeting shall be conducted to clearly identify study area and contents expected in the TIA.

H. Scope of Work

The level of detail and scope of work of a TIA (Level I or II) may vary with the size, complexity, and location of the "new development". A TIA shall be a thorough review of the immediate and long-range effects of the "new development" on the transportation system.

• Mitigation

The TIA shall include a proposed mitigation plan. The mitigation may be either the construction of necessary transportation system improvements and/or contributions to the City for the new development's fair share cost of identified future transportation improvements. Mitigation measures shall be required to the extent that the transportation facilities operate at or above the City's adopted Level of Service (LOS) standards.

I. Access Management

Requests for site access shall be addressed in the Traffic Impact Analysis. Recommendations shall include site access and transportation improvements needed to maintain traffic flow to, from, within, and past the site at an acceptable and safe level of service.

J. Peak Traffic Hours

For traffic analysis, the PM peak hour conditions shall be used. The PM peak hour is defined as the 60-minute period between 4:00 p.m. and 6:00 p.m. with the greatest sum of traffic volumes on a roadway segment or passing through the area of the project. Reversed flow at intersections from morning to afternoon, and other unusual conditions, shall require analysis for both AM and PM peak hour conditions, as required by the City.

K. Estimation of Pass-by Trips

Adjustments to trip generation made for “pass-by” or “mixed-use” traffic volumes shall follow the methodology outlined in the latest edition of the ITE Trip Generation Manual.

L. Traffic Distribution

The directional distribution of traffic to and from the project shall be estimated using local traffic volume data provided by the City of Gig Harbor, Pierce County, and the Washington State Department of Transportation Traffic Data Office.

The City Engineer shall approve the trip distribution for a “development” after the project has been included in the City Traffic Model and the proposed distribution compared to the distribution shown in the Concurring Evaluation Report.

A graphical distribution map shall be submitted showing site-generated PM peak hour traffic. Generally, traffic shall be distributed to one PM peak trip within the Transportation Plan Area if a generic distribution is not used (15 trips if a generic distribution is used). This map shall clearly identify all traffic movements and the percentage of site traffic.

M. Minimum Levels of Service

The minimum level of service (LOS) for roads within the city limits shall be as shown in the transportation element of the city’s comprehensive plan.

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EXHIBIT A – TRANSPORTATION IMPACT ANALYSIS

LEVEL I STUDY REPORT FORMAT

I. Introduction and Summary

1. Report Certification
2. Purpose of Report and Study Objectives

II. Proposed Development

1. Description
2. Location and Vicinity Map
3. Site Plan
4. Proposed Zoning
5. Proposed Land Use and Intensity
6. Phasing and Timing of the Project

III. Existing Conditions

1. Study Area
 - a. Limits of traffic study
 - b. Existing zoning
 - c. Existing land uses
 - d. Accident History
 - e. Existing Access
2. Site Accessibility
 - a. Area roadway system
 - b. Transit service
 - c. Pedestrian and Bicycle Facilities

IV. Trip Generation and Distribution

1. Trip Generation
2. Trip Distribution
3. Estimate of non-motorized trip generation / distribution

V. Access Classification Information

VI. Appendices

1. Trip Generation Calculations
2. Pass-by and Origin-Destination Studies
3. References

EXHIBIT B - TRANSPORTATION IMPACT ANALYSIS

LEVEL II STUDY REPORT FORMAT

I. Introduction

1. Report Certification
2. Project Overview
 - a. Site vicinity map
3. Study Context

II. Project Description

1. Development proposal
 - a. Site plan
 - b. Proposed zoning
 - c. Proposed land use and intensity
 - d. Phasing and timing of project

III. Background Information

1. Area Land Uses
2. Roadway and Existing Access Inventory
3. Traffic Volume Data
 - a. Figure illustrating existing PM peak hour traffic volumes
4. Public Transportation
5. Accident History

IV. Traffic Generation and Distribution

1. Traffic Generation
2. Traffic Distribution
3. Figure illustrating project traffic on roadway network
4. Estimate of non-motorized trip generation / distribution

V. Future Traffic Conditions

1. Roadway Improvements
2. Pipeline Development Projects
 - a. Figure showing pipeline projects traffic volumes at study intersections
3. Future Traffic Volumes
 - a. Figure illustrating projected traffic without project
 - b. Figure illustrating projected traffic with full project
 - c. Figure illustrating projected non-motorized use

VI. Traffic Operations Analysis (Existing & Future)

1. Capacity Analysis
2. Signalized Intersections
3. Un-signalized Intersections
4. Project Driveways

VII. Access Classification Information / Access Management

VIII. Safety Analysis

IX. Mitigation

X. Appendices

1. Trip generation calculations
2. Turning Movement Count worksheets
3. Passer-by and origin-destination studies
4. Pipeline traffic volumes worksheets
5. Capacity analysis worksheets

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2B.040 Naming

Roadways (ways-of-travel) shall be named according to the following specific criteria: (GHMC 12.12)

- A. Streets are major ways-of-travel which run in an east/west direction;
- B. Avenues are major ways-of-travel which run in a north/south direction;
- C. Drives are winding major ways-of-travel or other major ways-of-travel, as designated by the Gig Harbor City Council;
- D. The designation "road," as determined by the City Council, shall be used only where the name has long-standing meaning or public sentiment;
- E. "Places" shall be permanently closed avenues which run in a north/south direction;
- F. "Courts" shall be permanently closed roadways which run east-west, such as a cul-de-sac;
- G. Boulevards and Parkways may run north, south, east and west, or diagonally and shall be named. Boulevards and Parkways shall be functionally classed as a major collector or an arterial and shall contain a landscaped median.
- H. Loops shall be small loop-type roadways to carry the name of the roadway from which they originate;
- I. Lanes shall be private roads;

All proposed names for new or existing ways-of-travel and private roads must be reviewed and approved by the Gig Harbor City Council (private driveways are exempt).

City ways-of-travel shall not have a number or "N.W." as a designator.

An address number will be assigned to all new buildings at the time of final plat, Site Plan Review, or at the time the building permit is issued. It is then the owner's responsibility to see that the house numbers are placed clearly and visibly at the main entrance to the property or at the principal place of ingress (GHMC 12.12).

The developer must check with the Building Official regarding the naming of roadways. This should be done at the time the preliminary plat is submitted and again upon approval of the final plat. The Building Official will insure that the name assigned to a new roadway is consistent with policies of the City (GHMC 12.12).

2B.050 Signing

The developer/contractor is responsible for providing, installing, and maintaining all construction signs and temporary traffic control devices. These shall comply with the provisions as established by the *US Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD)* and the *WSDOT Standard Plans for Road, Bridge and Municipal Construction*. All signs shall be High Intensity Prismatic Retroreflective Sheeting of one of the following grades, Type III, IV or VIII and also conform to the MUTCD requirements.

2B.060 Right-of-Way

Right-of-way shall be dedicated for a plat, short plat, a binding site plan for a project that triggers Site Plan Review or for a conditional use permit. The requirement to dedicate right-of-way shall be determined by the City or Regional Transportation Plans, by a Traffic Impact Analysis, or as determined by the Public Works Department. Although a right-of-way dedication may be required, frontage improvements may be deferred per Section 2B.080 of the Public Works Standards.

Right-of-way is determined by the functional classification of a roadway. See details at the end of this section for specific right-of-way widths. See 2B.090 for radius requirements at a cul-de-sac "bulb." Right-of-way at a "bulb" shall be increased accordingly.

Right-of-way requirements may be increased if additional lanes, pockets, intersection treatments, transit lanes, bus loading zones, bus shelters, loading zones, operational speed, bike lanes, utilities, schools or other factors and/or future planned improvements are required as determined by the City Engineer. The right-of-way boundaries at intersections shall be sufficient to contain all portions of the sidewalk, curb ramps, all signal and lighting appurtenances and any other appurtenance associated with a public utility.

Right-of-way shall be conveyed to the City on a recorded plat right-of-way dedication deed. If the dedication is by deed, the deed shall be submitted to the City and approved before construction begins; before a building permit is issued; before a tenant improvement is issued; or prior to certificate of occupancy, whichever comes first.

When right-of-way is conveyed to the City by plat or by dedication deed, the right-of-way centerline or other appropriate control line shall be monumented by a registered Professional Land Surveyor licensed in the state of Washington. A monumentation plan shall be submitted to the Public Works Department for approval prior to placement of the monument positions. Contact the City of Gig Harbor Public Works Department for an example of a Right-of-Way Dedication Deed.

2B.070 Private Roadways

Private roadways are defined in Section 1.025.

A. Criteria for allowing private roadways.

1. Private roadways will be allowed only if the City Engineer makes a determination that the private roadway is not needed for traffic circulation under the criteria set forth in this Section, the City's Public Works Standards and the Transportation Element of the City's Comprehensive Plan.
2. Private roadways will not be allowed (a) when the roadway connects two public roadways; and (b) when in conflict with the adopted arterial plan or roadway circulation plan, adopted in the City's Transportation Element of the Comprehensive Plan.
3. Private roadways shall be located within separate tracts or parcels.
4. Private roadways shall be no longer than 500 ft. (measured from edge of public right of way to the pivot point of the cul-de-sac or turn around area).
5. Private roadways shall use curb cuts at public roadways.
6. Private roadways shall be named. See Chapter 12.12 GHMC.
7. When three or more lots or dwelling units are served on a dead-end greater than one hundred and fifty feet (150) feet in length, a turnaround having an improved radius of forty-five (45) feet, or an equivalent, workable maneuvering area approved by the City Building Official, shall be provided at the end of the private roadway
8. Any connecting streets connecting to a private street, if not already brought up to City Standards shall be improved to City street and utility standards as part of City approval of the private roadway.

- B. Maintenance - The City will not maintain private roadways, signs or drainage improvements on private roadways. As a condition of constructing a private roadway, the City requires owners of the private roadway enter into a private maintenance agreement between themselves describing their responsibilities and providing notice to subsequent purchasers that the City does not own or maintain the private roadway. The agreement must be on a form approved by the City Attorney and recorded with the Pierce County Auditor. The agreement shall contain the following specific terms: (1) the responsibilities of the individual owners for maintenance, repair and reconstruction of the private roadway; (2) maintenance methods; (3) standards of maintenance; (4) distribution of expenses; (5) remedies for noncompliance with the agreement; (6) exchange of right of use

easements; and (7) the creation of a private roadway maintenance fund and the annual assessment.

- C. Notice on the final plat regarding Private Roadways - Each development, plat or short plat with a private roadway shall contain a notice to the public/purchasers, which shall contain the following language, "The City of Gig Harbor has no responsibility to build, improve, maintain or otherwise serve any private roadways providing access to the property described in this plat. Any private access roadway shall remain a private roadway unless it is upgraded to public roadway standards at the expense of the developer or adjoining lot owners and the City chooses to accept such private roadway for public ownership and maintenance."
- D. Gates - Private roadways may use gates to restrict access. Gates shall be equipped with emergency access in accordance with the requirements of the City Building Official.
- E. Utilities – City water and sewer utilities located within public roadways within a plat, short plat or development shall be owned and maintained by the City. If the City owns utilities within the development and the development is served by a private road, then an easement shall be granted to the City over the road to access, operate and maintain its utilities.
- F. Signs - Private roadway signs with roadway designations shall be provided by the developer at the intersection of private roadways with other private roadways and public roadways. Such signs shall meet the specifications in the City's Public Works Standards and in the case of intersections with public roadways; signs shall either be located within the public right-of-way or within a separate maintenance easement. Maintenance and repair of such roadway signs shall be included in the maintenance agreement between the private property owners.
- G. Bonds - All private roadways shall be constructed prior to the time that the developer makes application for final plat approval. Bonds or other methods of assuring construction of improvements shall not be allowed for the future construction of private roadways after final plat approval.
- H. Construction - Private roadways are the responsibility of the developer to construct to the requirements in the City's Public Works Standards. Upon completion of the required improvements, the developer will be required to submit a statement to the City warranting that the improvements have been completed in accordance with Section 12.06.100 of the Gig Harbor Municipal Code.

2B.072 Private Driveways

Private driveways, also known as "driveways", are defined in Section 1.025. See Section 2B.025, Access Management, for additional access information and spacing requirements.

All abandoned driveway areas along the frontage of redeveloped property shall be removed and the curbing, planter strip and sidewalk or shoulder and ditch section shall be properly restored. All driveway entrances that are within an existing or proposed sidewalk section shall be constructed of Portland Concrete Cement and shall be subject to the same testing and inspection requirements as curb, gutter, and sidewalk construction.

Joint-use driveways serving two adjacent parcels are encouraged whenever feasible. A joint-use driveway serving two adjacent parcels is required if contiguous property is under the same ownership. Where joint-use driveways are installed an easement and a maintenance agreement shall be recorded for both parcels specifying maintenance and joint usage in perpetuity.

The following criteria shall apply to all residential driveways:

A. All Private Driveways

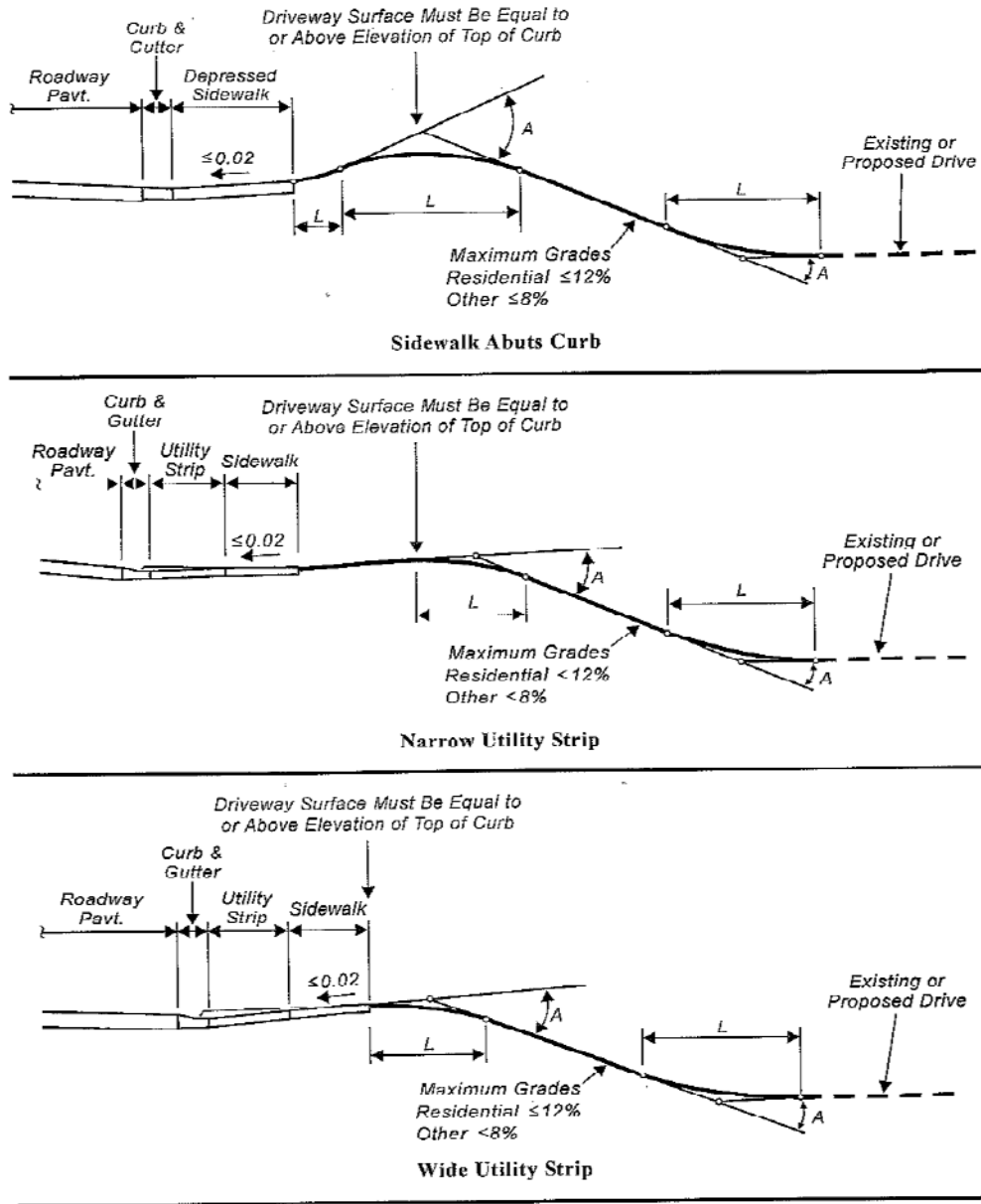
1. Private driveways shall use driveway entrances at public roadways. Construction details of driveway entrances shall meet the requirements of WSDOT Standard Plans.
2. Private driveway accesses shall meet the sight distance requirements of Section 2B.150 and Figure 2.3 below.
3. Private driveways may be gated.
4. Private driveways shall not be named.

B. Residential Driveways

If these criteria cannot be met for residential driveways the developer will have to hire a traffic engineer to design the most appropriate access with safety being the primary design criteria and obtain a City approved variance.

1. In new construction, residential driveways shall not be permitted to access arterials, major collectors, or minor collectors unless the property has no other reasonable access to the general roadway system. Where this is necessary, the driveway shall access the roadway with the lower functional classification.
2. The maximum residential driveway width onto an arterial or collector shall be 24-feet. The maximum residential driveway width onto any other roadway classification shall be 20-feet.
3. The minimum driveway length shall be 20-feet from the residential structure to the back of walk.

FIGURE 2.3 Drive Approach, On a Downgrade



G - Grade (%)
A - Algebraic Difference in Grades (%)
L - Transition (See Tabulated Lengths):
 $A \leq 6\%$, Transition Curve is Optional
 $A > 6\%$, Transition Curve is Required

Source: Adapted from Oregon DOT

C. Commercial Driveways

Commercial driveways shall be those driveways constructed for access to private property to serve commercial, industrial, and multi-family projects. The following criteria shall apply to all commercial driveways.

1. Access to a public roadway shall be limited to one commercial driveway connected to the lowest classified roadway for each tract of property separately owned. Property fronting more than one public roadway may be permitted an access to each public roadway if the City's Traffic Report supports multiple accesses and with the approval of the City Engineer. Properties contiguous to each other and owned by the same person are considered to be one tract.
2. Commercial properties shall provide internal connections between neighboring properties where feasible. Developments must give priority to internal access before access to the public roadway system is permitted. Cross access allows vehicles to circulate between commercial properties without having to re-enter the public roadway system.
3. No commercial driveway shall be approved where backing onto the sidewalk or roadway will occur.
4. Parking lot circulation and signing shall be provided within the site. The public right-of-way shall not be utilized as part of the parking lot flow.
5. Commercial driveway widths and throat length shall be designed in accordance with *Chapter 7 of the Institute of Transportation Engineers Transportation and Land Development Manual*. Widths beyond those identified may be approved by the City Engineer.

2B.075 Access Ways

Access ways are defined in Section 1.025.

A. Criteria for allowing access ways.

1. Access ways shall use driveway entrances at public
2. Access ways shall not be named.
3. Access ways may include parking lots.
4. Access ways are not limited by dimension.

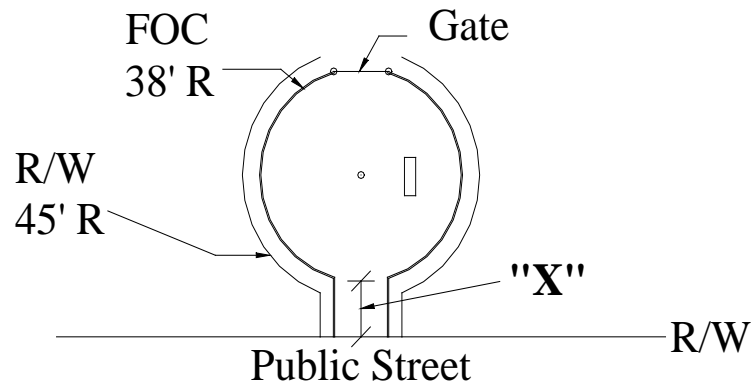
5. Access ways shall have area for emergency vehicles to maneuver and turn around in accordance with requirements of the City Building Official.
- B. Maintenance - The City will not maintain access ways or their related improvements.
- C. Gates – Gates shall not be used along access ways.

2B.076 Gated Access

Gates to neighborhoods or gated communities are be allowed only on private roadways or private driveways, both residential and commercial. Access ways are not considered private driveways. The following conditions shall apply for gated access:

- A. **Private Roadways and Private Commercial Driveways.** A turn around area and minimum stacking distance shall be required as depicted in Figure 2.4 below.

Figure 2.4 Gated Access



Intersecting Public Roadway Classification	"X" Distance
Arterial	If only one access use 5-feet per PM peak hour trip. Minimum "x" distance shall be 100.
Major and Minor Collector	1-foot per PM peak hour trip. Minimum "x" distance shall be 20-feet.
Major and Minor Local Residential and private	0.5-foot per PM peak hour trip. Minimum "x" distance shall be 10-feet.

- B. **Private Residential Driveways.** A minimum stacking distance "x" only per Figure 2.4 shall be required for private residential driveways.
- C. Mailboxes meeting U.S. Postal Service standards shall be located on the public side of the gate. See Section 2G.070.
- D. Gates shall be equipped with emergency access in accordance with requirements of the City Building Official.

2B.080 Roadway Frontage Improvements

Roadway frontage improvements in accordance to this section and the Details at the end of this Chapter shall be installed along the entire public right of way frontage of the property at the time of construction when any one of the following situations occurs:

- A. The property received approval of a site plan, planned residential district, planned unit development, plat; or short plat; or
- B. The property contains an existing commercial or multi-family building and alterations or improvements to existing structures on such properties where the estimated cost of the alterations or improvements constitute 25 percent or more of the value of the existing structures on the property.

See also Section 2C.010. Utility relocations shall follow the requirements as outlined in Section 1.100. Utility extensions shall follow the requirements of Section 1.130.

Typical frontage improvements will include but are not limited to: curb and gutter; sidewalk; roadway storm drainage; roadway lighting system; traffic signal relocation, modification or installation, traffic control devices, signal interconnect, public transit amenities; roadway signing; utility undergrounding; planter strips; landscaping and irrigation; and roadway

widening. Plans shall be prepared and signed by a licensed civil engineer registered in the State of Washington.

All frontage improvements shall be made across full frontage of property from centerline to right-of-way line. Widening and/or overlays shall have a minimum new pavement width of one lane to the centerline of the roadway. Off project site frontage improvements may be required if determined by the City for public safety or due to impacts from the development.

Frontage improvements may be deferred by signing a Development Agreement or by paying a fee in lieu of constructing the improvements. If a fee in lieu of is paid, it shall be based on the engineer's estimate and the City will be responsible for constructing said improvements at a later date.

If the frontage improvements are deferred, all necessary right-of-way must be dedicated prior to development approval. If additional right-of-way is required and the side slopes exceed 7:1 slope, then an additional slope easement shall also be required to facilitate construction of future improvements. The dimensions of the slope easement will be determined by the City Engineer. All methods of deferral, and components thereof, must be in place, signed, collected, and processed prior to the project scheduling a preconstruction meeting.

2B.090**Cul-de-sac**

Cul-de-sacs may be allowed by variance with the approval of the City Engineer where geographical, topographic or environmental conditions preclude connection. When these conditions preclude roadway connections, continuous non-vehicular connections should still be attempted.

Cul-de-sacs may also be allowed for short plats bordered on three sides by properties developed to their maximum use.

Temporary dead-ends or a shared access may be required for plats where the potential for future connectivity exists due to the proximity of underdeveloped properties.

Roadways designed to have one-end permanently closed shall be no longer than 500-feet as measured from the intersecting right-of-way line extended, to the center of the cul-de-sac. At the closed end, there shall be a widened bulb having a minimum paved traveled radius as shown in the Minimum Roadway Design Standards Table. See Section 2B.100 for dead end requirements.

A depressed curb around the cul-de-sac radius shall be required where multiple driveways exist within fifteen-feet of each other as measured from edge of driveway to edge of driveway. This is required to eliminate

the “roller coaster” effect of driveway cuts. Cul-de-sacs shall be sloped at a minimum 2 percent from center-to-edge or edge-to-edge to facilitate drainage.

2B.100 Dead End Roadways

Where a roadway is dead-ended, turn around provisions and a type III red-and-white barricade installed for the full width of the roadway must be provided where the road serves more than one lot. See 2-11 and 2-12 Hammerheads will not be allowed on a dead end in a residential area. Hammerheads may be allowed in commercial or industrial areas. Permanent dead ends shall be properly signed per Section 3C-04 of the MUTCD.

At the end of a sidewalk to be extended in the future, a red-and- white type II barricade, the full width of a sidewalk, is required. See Section 2C.030 (9) for interim requirements at a dead-end sidewalk.

2B.110 Half Roadway

A half roadway is an otherwise acceptable roadway section modified to conform to limited right-of-way on the boundary of property subject to development. See definition in Section 1.025.

- A. A half roadway may be permitted subject to approval by the City Engineer and the following conditions:
1. There is reasonable assurance of obtaining the prescribed additional right-of-way from the adjoining property suitable for future completion of a full section roadway, and;
 2. Such alignment is consistent with or will establish a circulation pattern, and;
 3. The right-of-way width of the half roadway is not less than one-half of the proposed total width of the right-of-way and may be required to be greater than one-half the total proposed width to accommodate adequate driving lanes until the other half of the roadway is constructed, and;
 4. The traveled way shall be surfaced the same as the designated roadway classification, and;
 5. The half roadway shall be graded consistent with the centerline of the ultimate roadway section on the property line, and;
 6. The roadway section meets the ultimate roadway section and all applicable stormwater requirements, and

7. Property line edge of the roadway shall be finished with permanent concrete curb and gutter to insure proper drainage, bank stability and traffic safety.

2B.115 Fire Access Roads

Fire Department access roads shall be designed and installed per the most current adopted edition of the Fire Code as adopted and amended by the Gig Harbor Municipal Code and as accepted by the Building Official.

2B.125 Landscape/Planter Areas

Landscape and planter area widths shall be as shown on details at the end of this section. Landscaping methods shall be in compliance with the current City of Gig Harbor Public Works Standards and City of Gig Harbor Storm Water Management Manual.

The City of Gig Harbor supports a reduction or elimination of lawn in landscape and planter areas. Provide plantings alternative to lawn where appropriate, preferably plantings that are drought resistant.

See Section 4.185 for irrigation system requirements.

The following are planting directions for establishing shrubbery or laws: Excavate the area to be landscaped to the depth of 12" below finished grade. Scarify or aerate the sub-grade by tilling, disking, harrowing, or other method as approved by the City. Remove debris and stones from the surface and subgrade that are larger than 1 inch in any dimension. Backfill the excavated area with Topsoil Type A to a 10" depth. Remove all rocks, sticks, and other debris 1-inch and larger. Cover area with 2" of approved mulch and feather away from trunks of vegetation so not to bury the plant crown. The finished grade of the combined topsoil and mulch shall be flush with adjacent pavement or curbs.

See Appendix A at the end of this chapter for specific information on tree species, size, location, required topsoil volume, and spacing. Trees located in planter strips shall be installed per Detail 2-26. Trees located in tree wells shall be installed per Detail 2-27.

If the volume of Topsoil Type A within the available landscape area does not meet the cubic foot requirement for the selected tree, per the approved street tree list, then CU Structural Soil® must be used under hardscape areas to meet the required volume. Structural Soil® or approved equal shall be installed per manufacturer's recommendations.

Topsoil Type A

Topsoil Type A shall be composed of a three-way mix consisting by volume of:

- 3 parts soil
- 3 parts 5/8-inch compost
- 1 part sand

Soil is classified as gravelly sand, well-graded sand, poorly graded sand, or silt sand.

Compost shall be a weed free, well decomposed, humus-like material derived from the decomposition of grass clippings, leaves, branches, wood and other organic materials. Composts containing shavings, cedar sawdust, or straw will not be permitted. Compost shall be produced at a permitted solid waste composting facility.

Sand shall consist of 100 percent passing the 3/8-inch sieve, minimum 95 percent passing the #4 sieve, and maximum of 5 percent passing the #100 sieve.

2B.130 Traffic Control

The contractor shall be responsible for all traffic control in accordance with the most current *WSDOT Standard Plans for Road, Bridge and Municipal Construction*, and the *Manual on Uniform Traffic Control Devices (MUTCD)*. Prior to the disruption of any traffic, a traffic control plan shall be prepared and submitted to the City for approval. At no time shall a roadway be blocked without the approval of the City Engineer. No work shall commence until the City has approved the plan and the traffic control is in place.

There shall be no restrictions or interruptions to traffic on Saturdays, Sundays or holidays. In addition, there shall be no restrictions or interruptions to traffic after 12:00 noon on the day prior to a holiday or holiday weekend unless approved by the City Engineer.

There shall be no restrictions or interruptions to traffic on arterial roadways during the peak traffic hours of 7:00 A.M. to 9:00 A.M. and from 3:30 P.M. to 6:00 P.M. Monday through Friday, except when deemed necessary by the City. If the City determines the peak hours differ from those specified, the contractor will be required to adjust his working hours accordingly.

No work shall be allowed in or adjacent to a residential zone between the hours of 8:00 P.M. and 7:00 A.M. on weekdays, and between 8:00 P.M. and 8:00 A.M. on weekends and Federal, State or City-observed holidays. A waiver to this ordinance will not be allowed except in the case of an emergency or where operations are necessary during such hours in order to promote the safety of the traveling public.

The City may require roadway work to commence at night when it is in the best interest of the public.

Two-way traffic shall be maintained at all times unless specifically approved in the traffic control plan. Flaggers shall be shown on the traffic control plan except for emergency situations. The developer is responsible for traffic control signing per Section 2B.050, Signing.

All lane restrictions shall be held to a minimum time and length. Lane closures shall comply with the traffic control plans, these specifications, the MUTCD, and the WSDOT Standard Plans. If the City determines that lane restrictions are causing congestion, the contractor will be required to open any lanes, as determined by the City, until the congestion is eliminated.

There shall be no delay to medical, fire, police, or other emergency vehicles with flashing lights or sirens.

The contractor shall maintain pedestrian access through or around the project site at all times without having pedestrians enter the travel lane.

Flaggers shall possess a current flagging card issued by the State of Washington prior to performing any traffic control work on a project. Workers engaged in flagging shall wear reflective clothing and hard hats in accordance with the *WSDOT Standard Specifications for Road, Bridge and Municipal Construction* and the requirements of the Dept. of Labor and Industry. Flagger's paddles shall meet MUTCD standards.

Anyone performing the role of a flagger or spotter shall not operate a personal electronic device at any time. The Engineer may remove from the job site immediately and without warning anyone performing the role of a flagger or spotter AND operating a personal electronic device. A two-way radio used for traffic control purposes shall not be considered a personal electronic device.

Temporary traffic control refers to the control of all types of traffic, including vehicles, bicyclists, and pedestrians (including pedestrians with disabilities).

Any sidewalk closures shall be accomplished by a continuous cane-detectable barrier, and the walkway shall be free from any hazards and clear of obstructions such as signs and traffic barriers. Access shall be maintained to temporary transit stops.

2B.140 Intersections

An intersection may be any access point, whether a public roadway or a public or private driveway, onto a public roadway. See Section 2B.025 for Access Management criteria and 2B.030 for intersections as they relate to Functional Classification. See Section 2B.140 for driveway access issues. See Section 2B.150 for sight obstruction criteria.

- A. Roadway intersections shall be laid out so as to intersect as nearly as possible at right angles. All intersections shall be designed so as not to create a safety problem. Sharp angled intersections shall be avoided. If through traffic is not desired on the minor legs, for reasons of traffic safety, a "T" intersection (three-legged) is preferable to the crossroad (four-legged) intersection for local access roadways. For safe design, the following types of intersection features shall be avoided unless approved by the City Engineer:

1. Intersections with more than four intersecting roadways;
 2. "Y" type intersections where roadways meet at acute angles;
 3. Intersections adjacent to bridges and other sight obstructions.
- B. On sloping approaches at an intersection, landings shall be provided with grade not to exceed 3 percent slope for a distance of 30-feet approaching any arterial or 20-feet approaching a collector or local access roadway, measured from nearest right-of-way line (extended) of the intersecting roadway.

2B.150 Intersection Sight Distance

The sight distance at all intersections shall meet the requirements of Section 9.5 of AASHTO's Policy on Geometric Design of Highways and Roadways (6th Edition). The criteria in this section shall be applied to all intersections with public roadways, including private roads and private driveway entrances. The criteria shall also apply to potential sight obstructions due to roadwayscape amenities such as signs, trees, fences, bus shelters, etc.

The area within the sight triangle shall be subject to said restrictions to maintain a clear view on the intersection approach. The ultimate roadway width (number of lanes) per the most current version of the City's Transportation Plan shall be used to calculate the dimensions of the sight distance triangle.

Exclusions. Sight obstructions that may be excluded from these requirements include: utility poles, regulatory signs, trees trimmed from the base to a height of 10 feet above the roadway centerline, places where the contour of the ground is such that there can be no cross visibility at the intersection, saplings or plant species of open growth habits and not in the form of a hedge which are so planted and trimmed as to leave at all seasons a clear and unobstructed cross view, buildings constructed in conformance with the provisions of appropriate zoning regulations, and preexisting buildings.

The engineer of record shall provide a clear site distance on the plans for each and every driveway intersection and intersection.

2B.160 Surfacing Requirements

The details at the end of this section provide design information on the design methods and pavement requirements for all public roadways. Porous pavements will be evaluated on a case by case basis.

Fire access road structures shall meet the Standards provided in Section 2B.115. Alternate materials may be approved by the City of Gig Harbor Building Official.

All other surfacing located in the public right of way shall meet the following requirements:

A. Sidewalks

Surfacing: 4" Commercial Concrete
Base: 2" Crushed Surfacing Top Course or well graded sand
Alt. Surfacing*: 2-1/2" Hot Mix Asphalt

***Asphalt sidewalks will not be permitted unless approved in writing by the City Engineer.**

B. Driveway Entrances

Surfacing: 6" Portland Cement Concrete with 3-day cure at 4,000 psi
Base: 1" Crushed Surfacing Top Course or well graded sand

C. Class 1 Bike Path

Surfacing: 2-1/2" Hot Mix Asphalt
Base: 2" Crushed Surfacing Top Course

Where a variance to the requirements above is desired, the following information shall be submitted with the variance request:

- A. Designs shall be based on soil tests to determine the actual Washington stabilometer R-value.
- B. One soil sample per every 500 lineal feet of centerline with three (3) minimum per project representative of the roadway subgrade shall be taken to determine a statistical representation of the existing soil conditions.
- C. Soil tests shall be performed by an engineering firm specializing in soils analysis.
- D. The soils report, signed and stamped by a soils engineer licensed by the State of Washington, shall be based on actual soils tests and submitted with the plans. All depths indicated are a minimum compacted depth.
- E. Ballast shall consist of crushed, partially crushed, or naturally occurring granular material from approved sources and shall meet the WSDOT Standard Specifications for Road, Bridge and Municipal Construction ballast specification 9-03.9(1) for grading and quality. The City Engineer or his/her representative will determine the exact point of acceptance.

2B.165 Channelization and Pavement Markings

Channelization and pavement markings shall meet the requirements of this section and shall comply with the WSDOT Standard Plans and all applicable MUTCD, AASHTO, and WAC standards and regulations.

Channelization and pavement markings shall be placed on all roadways in accordance with the Standard Plans unless otherwise noted in Exceptions below. Additional striping and pavement marking requirements shall include the following:

- A blue raised pavement marker is required in the centerline of the traveled roadway at 90 degrees to the location of a fire hydrant.
- A stop bar consisting of 24-inch wide thermoplastic stripe shall be required where a stop sign is required.
- Striping shall be required in conjunction with roundabouts or other traffic calming devices.
- Striping may be required in conjunction with a neighborhood entrance or entrance turn lane.
- Striping shall be required to delineate bulb-out parking except when concrete valley gutters are present.
- The thermoplastic material used to form pavement markings shall be as listed on the most current version of the WSDOT Qualified Products List.

Exceptions:

Minor Local Roadways. Edge line and centerline striping along minor local roadways may be omitted upon written approval from the City Engineer.

Crosswalks. Stamped and pigmented cement concrete crosswalks as specified in the Details at the end of this chapter shall be installed at all legs of an intersection with a classified roadway. Unless otherwise determined as a condition of permit approval, thermoplastic crosswalk markings may be used in accordance with the Standard Plans for all other locations.

2B.166 Removal of Channelization Pavement Markings

For painted pavement markings: the Contractor shall be required to remove all conflicting painted longitudinal line and transverse pavement markings by means of water blasting, no grinding of painted longitudinal line pavement markings shall be allowed, except as noted below. Vacuum shrouded equipment, or other equally effective means, shall be used to contain and collect all pavement marking debris, water, or spent abrasive. Collected debris shall be disposed of off the project site and in accordance with Department of Ecology and other Federal, State, and local regulations.

For chip seal roadways, grinding or other means of painted pavement marking removal may be allowed, if approved by the Engineer. If the chip seal

surfacing is removed during the removal of the pavement markings, then the contractor will be required to re-apply chip seal in the affected areas, in accordance with WSDOT specifications. Collected debris shall be disposed of off the project site and in accordance with Department of Ecology and other Federal, State, and local regulations.

For plastic pavement markings: the Contractor shall be required to remove all conflicting plastic longitudinal line and transverse pavement markings such as: stop lines, crosswalks, words, letters, and symbol markings by means of grinding is allowed to a depth just above the roadway surface, then water blasting to remove the remaining markings. Shot blasting is not allowed. Collected debris shall be disposed of off the project site and in accordance with Department of Ecology and other Federal, State, and local regulations.

The Contractor shall be required to remove vehicle tracking of plastic pavement markings, as identified by the Engineer.

If, in the opinion of the Engineer, the pavement is materially damaged by pavement marking removal or raised pavement marking removal, such damage shall be repaired by the Contractor in to the satisfaction of the City Engineer.

2B.167 Application of Channelization Pavement Markings

Dryness of the pavement shall be defined as having no rain for 24 hours prior to installation. In the event that this is not satisfied and the Contractor wishes to apply paint or Type D plastic pavement markings, a moisture test shall be performed by the Contractor, in the presence of the Engineer.

The moisture test shall consist of the following: the Contractor shall supply and affix a 24-inch by 24-inch square piece of translucent plastic to the pavement surface using duct tape to completely seal all of the edges of the plastic. Let stand approximately 20 minutes and check for moisture bubbles on the inside surface of the plastic. If moisture bubbles on the plastic are larger than a pencil eraser, the pavement contains too much water. Under these conditions, the Contractor will not be allowed to apply paint or Type D plastic pavement markings until the pavement is dry enough to prevent the moisture bubbles from forming on the plastic.

All longitudinal pavement markings shall be applied, in cycle, in the direction of traffic, unless specifically approved by the Engineer.

For Type B plastic markings, the material shall not overlap and there shall not be gaps between individual segments of the material.

For Type D, liquid cold applied methyl methacrylate, longitudinal line markings, Type D-3 or Type D-4 shall be used. Type D-3 or Type D-4 application method shall be defined as machine extrusion. Application by walk-behind carts is not allowed.

Two applications of paint shall be required for all paint stripe markings as per the Plans or WSDOT Standard Specifications. Plastic Pavement Markings shall be applied per the Plans or the WSDOT Standard Specifications.

2B.168 Pavement Marking Material

Paint

White and yellow paint shall comply with the Standard Specifications for low VOC (volatile organic compound) waterborne paint. The use of solvent based paint will not be permitted unless approved by the city engineer. The use of black paint will not be permitted, unless specifically approved by the Engineer.

Low VOC Waterborne Paint

All pavement markings for longitudinal line markings shall be low VOC waterborne paint unless otherwise shown in the Plans.

Plastic

Plastic pavement marking material shall be used, when called for in the Plans. Plastic pavement marking material shall comply with the Standard Specifications, as amended by the Special Provisions for:

Type B – Pre-formed fused thermoplastic with heat indicators

Type D – Liquid cold applied methyl methacrylate

Type B marking material shall be used for symbols, arrows, crosswalk lines, and stop lines, unless otherwise noted in the Plans.

Type D marking material shall be used for longitudinal lines, as shown in the Plans.

Type B – Pre-Formed Fused Thermoplastic

In addition to the requirements for Type B material, pavement markings for each transverse marking shall include heat indicators. Heat indicators shall be included on the top surface of the material (bead side) and shall have regularly spaced indents. These indents will act as indicators for determining the correct amount of heat application and will close upon application when heated to the proper molten state.

Type B plastic material shall have a minimum thickness of 125-mil.

For crosswalk lines only, an enhanced slip/skid resistant material shall be used. Upon application, the material shall provide a minimum skid resistance value of 60 BPN when tested according to ASTM E 303.

Type D - Liquid Cold Applied Methyl Methacrylate

Type D-3 and Type D-4 material shall be applied by machine extrusion.

All pavement markings for longitudinal line markings specified in the Plans as plastic shall be Type D-3 or Type D-4 liquid cold applied methyl methacrylate.

2B.170 Temporary Roadway Patching

All excavations within or across roadways, driveways or failure of the existing pavement which will be exposed to traffic shall be temporarily patched by the end of the working day, or as directed by the City. The patch shall be accomplished by using 2-inch Class B Asphalt Concrete Pavement when available or 2-inch medium-curing (MC-250) Liquid Asphalt (cold mix), 2-inch Asphalt Treated Base (ATB), or steel plates.

Asphalt Treated Base (ATB) used for temporary restoration may be dumped directly into the trench, bladed and rolled. After rolling, the trench must be filled flush with asphalt concrete pavement to provide a smooth riding surface.

The contractor shall maintain all temporary patches until such time as the permanent pavement is in place. If, after reasonable notification, the contractor is unable to maintain a patch for whatever reason, the City will patch it at the contractor's expense for actual cost plus overhead and materials.

Steel plates may be used in lieu of temporary asphalt with the permission of the City engineer or duly appointed representative. Steel plates must be secured to the ground to ensure that no movement occurs. Cold mix will be placed as a transition ramp on all edges of steel plates where traffic or pedestrians will enter onto and exit off of the steel plates. Appropriate warning signs conforming to the latest version of the MUTCD will be used and maintained as long as steel plates are in use.

2B.180 Trench Backfill and Restoration

Trench restoration shall be either by a patch or patch-plus-overlay as required by the City.

All trench and pavement cuts shall be made by saw cuts. The cuts shall be a minimum of 1 foot outside the trench width.

- A. All trenching shall be backfilled as shown in the appropriate trench restoration detail at the end of this section. The trench shall be compacted in accordance with Section 2-03.14 of the *WSDOT Standard Specifications for Road, Bridge and Municipal Construction*.
- B. If, when trenching, cement concrete is encountered, cement concrete shall be used to restore the patch. When cement concrete is anticipated or encountered, a trench restoration detail shall be designed by a geotechnical engineer and submitted to the City for review and approval. The geotechnical engineer shall address existing and proposed joint location, load transfer, and joint pinning, if applicable.

Tack shall be applied to the existing pavement and edge of cut and shall be emulsified asphalt grade CSS-1 as specified in Section 9.02.1(6) of the WSDOT Standard Specifications. Tack coat shall be applied as specified in Section 5-04 of the WSDOT Standard Specifications.

- C. Asphalt concrete pavement shall be placed on the prepared surface by an approved paving machine and shall be in accordance with the requirements of Section 5-04 of the *WSDOT Standard Specifications for Road, Bridge and Municipal Construction*.

Longitudinal trenching within the traveled roadway shall be subject to a full lane HMA overlay for trench restoration.

- D. All joints shall be sealed using paving asphalt AR4000W.
- E. When trenching within the roadway shoulder(s), the shoulder shall be restored to its original or better condition.
- F. The final trench patch shall be completed as soon as possible and shall be completed within two weeks after first opening the trench. This time frame may be adjusted if delays are due to inclement paving weather or other adverse conditions that may exist. See 2B.160 for inclement weather constraints. Delaying of final patch of overlay work is allowable only subject to the City Engineer approval. The City Engineer may deem it necessary to complete the work within the 3-day time frame and not allow any time extensions. If this occurs, the contractor shall perform the necessary work as directed by the City Engineer.

2B.190 Staking

All surveying and staking shall be performed by a licensed engineering or surveying firm capable of performing such work. The engineer or surveyor directing such work shall be licensed as a professional land surveyor by the State of Washington.

A pre-construction meeting shall be held with the City prior to commencing staking. All construction staking shall be inspected by the City prior to construction and all cut sheets will be provided to the City inspector.

The minimum staking of roadways shall be as directed by the City Engineer or as follows:

1. Stake centerline every 50 feet in tangent sections and 25 feet in curved sections plus grade breaks, PVC's, PVT's, high points and low points, with cuts and/or fills to sub-grade.
2. Stake top of ballast and top of crushed surfacing at centerline and edge of pavement at the above-described intervals.

3. Stake top back of curb at a minimum of 3 foot consistent offset at the above-described intervals with cut or fill to finished grade.
4. Stake water mains to center of pipe every 100 feet and at every fitting along with cut and fill information. Stake location of hydrants, blow offs, air vacs, back flow preventers, water services, and any other appurtenance along with cut and fill information.
5. Stake all storm and sewer structures with rim and invert cut/ fill information.
6. Stake all roadway lights locations, sign locations, channelization markings and monuments.

2B.200 Testing

Testing shall be required at the developers or contractors expense. The testing shall be ordered by the City construction inspector from an approved independent certified testing lab approved by the City. Testing shall be done on all materials and construction as specified in the *WSDOT Standard Specifications for Road, Bridge and Municipal Construction* and with frequency as specified in "Sampling and Testing Frequency Guide" located in Section 9-5.7 of the *WSDOT Construction Manual* and the project specifications and/or as requested by the City Engineer.

In addition, the City shall be notified before each phase that roadway construction commences (i.e. staking, grading, sub-grade, ballast, base, top course, and surfacing).

2C SIDEWALKS, CURBS AND GUTTERS

2C.010 General

Portland cement concrete curbs, gutters, and sidewalks in accordance with this section, the WSDOT Standard Plans, City of Gig Harbor Stormwater Management and Site Development Manual and the Details at the end of this Chapter shall be installed along the entire public right of way frontage of a property to establish public access along public rights of way at the time of construction when any of the following situations occur:

- A. The property received approval of a site plan, planned residential district, planned unit development, subdivision; or short subdivision; or
- B. The property contains an existing commercial or multi-family building and alterations or improvements to existing structures on such properties where the estimated cost of the alterations or improvements constitute 25 percent or more of the value of the existing structures on the property; or

- C. The property received any land use or building approval and has frontage along a non-motorized facility as shown in the City's Non-Motorized Facility Plan.

In cases where an existing sidewalk is located adjacent to the curb and a planter strip is required in accordance with Section 2B.080 and the Details at the end of this Chapter, the existing sidewalk shall be removed and a new sidewalk shall be placed to accommodate a new planter strip.

Sidewalk construction may be deferred with the following conditions:

- A. Upon written approval by the City Engineer; and
- B. The necessary right-of-way is deeded to the City prior to approval.

Sidewalks shall be located within the right of way at the back of right of way. Sidewalks may be located within an easement with the approval of the City Engineer.

Building footings shall not be located under a public sidewalk.

2C.020 Design Standards

Plans for the construction of sidewalks, curb and gutters are to be submitted as part of the civil permit application when applicable.

The City has set forth minimum standards as outlined in this section which must be met in the design and construction of sidewalks, curbs and gutters.

2C.030 Sidewalks

- A. All public roadways shall have sidewalks on both sides of the roadway as shown on the roadway details at the end of this section. See Section 2B.070 for sidewalk requirements on private roadways. For specific driveway requirements, see Section 2B.140. For applicable bike path information, see Section 2D.
- B. The design and construction of all sidewalks, curbs, gutters and walkways shall meet the following minimum standards:
 - 1. Sidewalks shall be constructed of commercial concrete a minimum of 4 inches thick. When a portion of the sidewalk functions as a driveway, the sidewalk shall be a minimum 6 inches thick through the driveway section.
 - 2. The design and construction of all sidewalks, curbs, gutters and walkways shall meet the following minimum standards:

The width of sidewalks shall be 5.5 feet minimum unless otherwise approved by the City Engineer. When the sidewalk, curb and gutter are contiguous, the width of the sidewalk shall be

measured from back of curb and gutter to back of sidewalk. Those sidewalks designated in the City's Non-motorized Facilities Plan as bike paths shall, in addition, meet the minimum width requirements established for said bike paths. The City Engineer shall require that the design of all sidewalks provides for a gradual rather than an abrupt transition between sidewalks of different widths or alignments.

3. If sidewalk widening is required, it shall be accomplished with a monolithic width pour. This may require removal of an existing sidewalk.
4. The City Engineer may reduce the sidewalk width for sidewalks over 6 feet wide if the City does not anticipate probable pedestrian traffic through the horizon year indicated by the traffic analysis. If the width of the sidewalk is reduced, the right-of-way width shall not be reduced. Instead, the planter width shall be increased accordingly.
5. To accommodate bicycles on sidewalks, a minimum design speed of 20 mph shall be used; however, when the grade exceeds 4 percent, a design speed of not less than 30 mph shall be used unless otherwise approved by the City Engineer.
6. All sidewalks must be constructed to provide for curb ramps in accordance with the ADA accessibility criteria access. See Section 2B.070 for curb ramp requirements on private roadways. The Engineer of Record shall detail out each and every curb ramp with accompanying finish grade elevations in accordance with the above standards. All ADA ramps shall be designed in accordance with Chapter 1510 (Pedestrian Facilities) of the WSDOT Design Manual showing plan and profile views. All ADA ramps shall be constructed in accordance with the latest *WSDOT Standard Plans for Road, Bridge and Municipal Construction*. Any utility structure lids/hatches and walking surfaces that lay within the pedestrian access path shall have non-skid properties that meet the requirements of the Americans with Disabilities Act (ADA) section A4.5. Special coatings or treatments may need to be applied to these structure lids in order for them to meet the requirements of ADA section A4.5.
7. Form and sub-grade inspection by the City are required before sidewalk and curb access ramps are poured. Forms shall be the same height as the thickness of the sidewalk, curb and gutter, or driveway. Concrete sampling for compressive strength may be required at the discretion of the City Engineer.
8. Monolithic pour of curb, gutter and sidewalk will not be allowed, unless approved by the City Engineer.

9. Sidewalks that dead-end at the project property line shall have a minimum 5-foot wide asphalt concrete pavement ramp constructed, at a maximum 12:1 slope, which abuts the sidewalk and joins to the edge of the roadway. A barricade may be required per Section 2B.100. A 3-foot wide advance-warning strip shall be constructed 5 feet from the end of the sidewalk and prior to the asphalt concrete pavement ramp. When the sidewalk is extended in the future, these interim measures shall be removed.
10. For driveway requirements, see section 2B.072.

2C.040 Curb and Gutter

Portland cement concrete curb and gutter per the details referenced in this chapter shall be used for all roadway edges unless otherwise approved by the City Engineer. See Section 2B.090 and Detail 2-20 for curb requirements around cul-de-sacs.

Form and sub-grade inspection by the City are required before curb and gutter are poured.

The face or top of all new curbs shall be embossed to denote the location of water and sewer services crossings. Water services shall be marked $\frac{1}{4}$ inch into concrete with a "W" and side sewers shall be marked with an "S".

2C.050 Crosswalks

All crosswalks shall be designed in accordance with Chapter 1510 (Pedestrian Facilities) of the WSDOT Design Manual and the MUTCD. See Figure 2.6

2C.060 Staking

All surveying and staking shall be performed by engineering or surveying firm capable of performing such work. The engineer or surveyor directing such work shall be licensed as a professional land surveyor by the State of Washington.

A preconstruction meeting shall be held with the City prior to commencing staking. All construction staking shall be inspected by the City prior to construction.

The minimum staking of curb, gutter and sidewalk shall be as directed by the City Engineer or as described in section 2B-190.

2C.070 Testing

Testing shall be required per Section 2B.200.

In addition, the City shall be notified before each phase of sidewalk, curb and gutter construction commences.

2D PEDESTRIAN FACILITIES

2D.010 General

Pedestrian facilities are to be designed and constructed so they are readily accessible to and usable by persons with disabilities.

Pedestrian crossings that occur at an uncontrolled intersection or mid-block crossing shall be equipped with a Rectangular Rapid Flashing Beacon (RRFB) system. The RRFB system shall be AC powered but solar powered systems will be allowed at the discretion of the City Engineer. RRFB systems shall be the SC315 Gen III (or most current version), manufactured by Carmanah®, or approved equal. Layout of the RRFB system shall comply with WSDOT and MUTCD standards and shall be designed by a licensed engineer. RRFB systems may also be required at other pedestrian crossings such as roundabouts and other intersection designated by the City Engineer.

2D.020 Design Standards

The design of pedestrian facilities shall be in accordance with Chapter 1510 (Pedestrian Facilities) of the WSDOT Design Manual and the 2005 Edition of the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right of Way. See Figure 2.6 on the following pages.

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Design Feature Design Element	Curb Ramp	Sidewalk	Driveway Crossing	Crosswalk	Landing	Crossing Through Island/Median	Pedestrian Circulation Path ^[14]	Building and Facilities Ramp or Independent Walkway ^{[1][2][14]}
Clear Width	4 ft Min [1510.05(6)]	4 ft Min for accessible route within sidewalk width ^{[3][5]} [1510.05(5)]	4 ft Min – See Std Plans	4 ft Min for accessible route within crosswalk ^[4] [1510.05(8),(9),(10)]	See Curb Ramp or Building and Facilities Ramp requirements	Pass-through: 5 ft Min – Island: 6 ft Min [1510.05(11)]	4 ft Min ^[5] [1510.05(2)]	At least the width of widest ramp run connected to landing – 3 ft Min
Cross Slope	2% Max [1510.05(6)]	2% Max [1510.05(5)]	2% Max – See Std Plans	2% Max for accessible portion	2% Max	2% Max	2% Max	2% Max
Running Slope	8.3% Max ^{[7][13]} [1510.05(4)]	5% Max ^[6] [1510.05(5)]	See Note 6 [1510.05(5)]	5% Max	2% Max	5% Max [1510.05(11)] If curb ramp is used, see Curb Ramp requirements	5% Max ^[6] [1510.05(2)]	Above 5% to 8.3% Max ^[7]
Maximum Vertical Rise	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Landing every 2.5 ft vertical rise [1510.07(2)]
Grade Break	Flush – See Std Plans	Flush	½ inch between roadway gutter & curb	Flush	Flush	Flush	Flush	Flush
Surface Discontinuities	N/A	New: Flush Existing: See Note 8	N/A	N/A	N/A	N/A	New: Flush Existing: See Note 8	New: Flush Existing: See Note 8
Curb Flare Slope	10% Max	N/A	10% Max ^[9]	N/A	N/A	If curb ramp is used, see Curb Ramp requirements	N/A	N/A
Horizontal ^[12] Encroachment	4 inches Max [1510.05(2)(a)(3)]	4 inches Max	4 inches Max	4 inches Max	4 inches Max	4 inches Max	4 inches Max	4 inches Max

Figure 2.6 U.S. Access Board Accessibility Requirements for Pedestrian Facility Design (For WSDOT guidance, see referenced chapter sections in table)

Design Element	Design Feature	Curb Ramp	Sidewalk	Driveway Crossing	Crosswalk	Landing	Crossing Through Island/Median	Pedestrian Circulation Path ^[14]	Building and Facilities Ramp or Independent Walkway ^{[1][2][4]}
Vertical Clear Area	80 inches Min ^[10] [1510.05(2)]	80 inches Min ^[10] [1510.05(2)]	80 inches Min ^[10] [1510.05(2)]	80 inches Min ^[10]	80 inches Min ^[10]	80 inches Min ^[10]	80 inches Min ^[10]	80 inches Min ^[10]	80 inches Min ^[10]
Counter Slope	5% Max [1510.05(6)]	N/A	N/A	N/A	See Curb Ramp	N/A	N/A	N/A	N/A
Landing	Width: Min match curb ramp width Length: New: 4 ft min Alteration: 3 ft [1510.05(6)]	N/A	N/A	N/A	---	---	N/A unless a curb ramp is used – See Curb Ramp requirements	N/A	Level landing required for every 2.5 ft vertical rise – Match landings to the width of the widest ramp leading into the landing ^[11]
Detectable Warning Surface	2 ft wide, 6 inches behind face of curb, full width of ramp	N/A	N/A	N/A	N/A	N/A	2 ft wide, each side, 6 inches behind face of curb, full width of opening	2 ft wide, full width when path joins roadway shoulder	N/A

Notes

- [1] A ramp with a rise greater than 6 inches in this context is on a walkway on a separate alignment that is not adjacent to or parallel to a roadway; ramps may have slopes greater than 5% and 8.3% max.
- [2] Ramps with a rise greater than 6 inches. Also, ramps require edge protection and shall have handrails.
- [3] Required sidewalk width: 5 ft where buffer is included, 6 ft when sidewalk is next to curb.
- [4] Unmarked crosswalks require a 10 ft wide area across intersection. Marked crosswalks are required to be 8 ft min., 10 ft desirable. (See RCW 46.04.160 and the MUTCD for crosswalks.)
- [5] If less than 5 ft wide, provide 5 ft x 5 ft passing areas every 200 ft.
- [6] Allowed to match the roadway grade when located adjacent to and parallel to the roadway; landings would not be required.
- [7] For Preservation projects: 10% to 8.33% for rises to 6 inches; 12.5% to 10% for rises to 3 inches.
- [8] Changes in level of ¼ inch max are allowed to be vertical; changes between ¼ inch and ½ inch max to be beveled at 2H:1V.
- [9] Required when sidewalk is provided behind the driveway.
- [10] 7 ft min. vertical clearance required to bottom of signs (see the MUTCD and the *Standard Plans*).
- [11] Change of direction requires 5 ft x 5 ft landing.
- [12] Shall not reduce the clear width required for pedestrian access routes.
- [13] The curb ramp maximum running slope shall not require the ramp Length to exceed 15 feet.
- [14] For additional shared-use path information, see Chapter 1515.

Figure 2.6 U.S. Access Board Accessibility Requirements for Pedestrian Facility Design (For WSDOT guidance, see referenced chapter sections in table)

2E BICYCLE FACILITIES

2E.010 General

Bikeway construction may be required in conjunction with any new plat or short plat as indicated in the Gig Harbor Transportation Plan. See details at the end of this chapter for bikeway classifications.

Bikeways located outside of the public right-of-way may be located within an easement or dedicated as a separate tract of land to the City of Gig Harbor for public use. The easement or tract shall be 20 feet wide.

2E.020 Design Standards

The design of bicycle paths shall depend upon their type and usage. Bike path surfacing shall be as outlined in Section 2B.160. Bike lanes and shared roadways shall be surfaced the same as the adjacent motor vehicle roadway.

All minimum design standards as set forth in Section 1.040 shall apply.

2E.030 Signing and Marking

In general, all bikeway facilities shall be signed per the MUTCD or as specified herein. The bike lane stripes and pavement markings shall be as shown on the details at the end of this section.

2E.040 Staking and Testing

Staking and testing shall be done in accordance with roadway staking and testing as outlined in Section 2B.190 and 2B.200.

2F ILLUMINATION

2F.010 General

All new commercial or residential subdivisions, short subdivisions or property development requiring Site Plan Review shall provide roadway lights in accordance with the standards for such improvements of the City and they shall be owned and operated by the City. Illumination within private roadways shall be privately owned and maintained.

2F.020 Design Standards

A roadway lighting plan submitted by the applicant and approved by the City Engineer shall be required for all roadway light installations. Type of installation shall be as set forth in *WSDOT Standard Specifications for Road, Bridge and Municipal Construction* and as directed by the City except where noted herein.

All public roadway light designs shall be prepared by an engineering firm capable of performing such work. The engineer shall be licensed by the State of Washington. All developments shall submit the lighting plan on a separate sheet. See the Plan Checklist in Section 1.040 for lighting plan and report components. After system is completed and approved, a set of "as-built" drawings, per Section 1.065, shall be submitted to the City as a permanent record.

Lights shall be located in accordance with the illumination standards and the roadway details at the end of this section. In addition, intersections shall be illuminated to 1.5 times the highest foot candle requirement of the roadways surrounding the intersection. Poles shall be opposite across the roadway or on one side of the roadway. Staggered spacing will be allowed. Roadway lighting must be connected to a metered service disconnect.

For the purposes of this section, area classes are determined by zoning as follows:

Commercial

- C1 Commercial/Light Industrial
- B1 Retail, Limited
- B2 Retail, General

Intermediate

- RB1 Residential Business
- RB2 Residential/Business
- DB Downtown Business
- WC Waterfront Commercial
- WM Waterfront Millville

Residential

- R1 Single Family
- R2 Single Family/Duplex
- R3 Multifamily

As new zones are created, they will be classified for the design of illumination by the City Engineer. If road widths differ from those in the Illuminations Standards table, other spacing will be determined by the project engineer and reviewed and approved by the City Engineer using the following criteria:

FIGURE 2.7 Average Maintained Horizontal Illumination (Foot Candles)

<u>Road Class</u>	<u>AREA CLASS</u>			
	<u>Residential</u>	<u>Intermediate</u>	<u>Industrial</u>	<u>Commercial</u>
Residential/Private	0.4	0.6	N/A	0.89
Collectors	0.6	0.8	1.0	1.2
Arterials	0.8	1.2	1.4	1.6
Boulevards	0.8	1.2	1.4	1.6

Uniformity ratio: 6:1 average: minimum for residential and
 4:1 average: minimum for collector
 3:1 average: minimum for arterial and boulevard

Dirt Factor = 0.85, lamp lumen depreciation factor = 0.73
Min. Weak Point Light = 0.2fc except residential roadway

Average illumination at intersections 1.5 times the illumination required on the more highly illuminated roadway.

Line loss calculations shall show that no more than five percent voltage drop occurs in any circuit. Lamp Load factor shall equal 1.2.

Pole foundations shall be per Detail 2-28. Poles located within the clear zone or poles on roadways with no curb shall have break-away foundations per the WSDOT Standard Specifications for Road, Bridge and Municipal Construction.

The General Notes for Street Light Construction need to be included on any plans dealing with street design in addition to all applicable requirements as set forth in Section 1.040.

GENERAL NOTES (Roadway Illumination Construction)

1. All workmanship, materials and testing shall be in accordance with the most current WSDOT Standard Specifications for Road, Bridge and Municipal Construction, National Electrical Code or City of Gig Harbor Public Works Standards unless otherwise specified below. In cases of conflict, the most stringent standard shall apply. When the most stringent standard is not clear, the City Engineer will make the determination. The electrical contractor shall be familiar with all above stated publications and guidelines as they will be strictly enforced by the State of Washington Department of Labor and Industries.
2. The contractor shall be in compliance with all safety standards and requirements as set forth by OSHA, WISHA and the State of Washington, Department of Labor and Industries.
3. The contractor shall be responsible for all traffic control in accordance with the WSDOT Standard Plans for Road, Bridge and Municipal Construction and/or the Manual on Uniform Traffic Control Devices (MUTCD). Prior to disruption of any traffic, a traffic control plan shall be prepared and submitted to the City for review and approval. No work shall commence until all approved traffic control is in place.
4. All approvals and permits required by the City of Gig Harbor shall be obtained by the contractor prior to the start of construction.
5. If construction is to take place in the County and/or Washington State Department of Transportation right-of-way, the contractor shall notify the

City. The City shall obtain all the required approvals and permits. The contractor shall reimburse the City for associated permit fees.

6. Electrical permits and inspections are required for all roadway lighting installations within the City of Gig Harbor. The contractor is responsible for obtaining said permits prior to any type of actual construction. These permits are available from the Washington State Department of Labor and Industries. The developer/ contractor is responsible for all connection fees associated with the electrical systems and should contact Peninsula Light Co. at (253) 857-1541 for connection requirements and fee amounts.
7. A pre-construction meeting shall be held with the City of Gig Harbor Construction Inspector prior to the start of construction.
8. Prior to installation of any materials, the electrical contractor shall submit for approval by the City three copies of material catalog cuts, specifications, shop drawings and/or wiring diagrams. Any materials purchased or labor performed prior to such approval shall be at the Contractor's risk. Mounting heights, arm length, power source, luminaire type and bolt patterns shall follow City of Gig Harbor Public Works Standards, Section 2F.020. Modifications of any portion of the lighting system will not be allowed without prior approval by the City.
9. It shall be the responsibility of the contractor to have a copy of an approved set of plans on the construction site at all times.
10. All surveying and staking shall be performed per the corresponding section of the City of Gig Harbor Public Works Standards.
11. Temporary erosion control/water pollution measures shall be required in accordance with Section 1-07.15 of the WSDOT Standard Specifications for Road, Bridge and Municipal Construction and the Gig Harbor Stormwater Management and Site Development Manual. At no time will silts and debris be allowed to drain into an existing or newly installed facility unless special provisions have been designed.
12. The contractor shall be fully responsible for the location and protection of all existing utilities. The contractor shall verify all utility locations prior to construction by calling the Underground Locate Line at 811 a minimum of 48 hours prior to any excavation. The contractor will also be responsible for maintaining all locate marks once the utilities have been located.
13. A 500 volt Megger Test will be performed by the contractor on each circuit between conductor and ground prior to acceptance of the lighting system. The insulation resistance shall not be less than 6 mega ohms to ground for runs over 2,500 ft. nor less than 8 mega ohms for runs under 2,500 ft. A functional test will be performed by the City in which it is demonstrated that each and every part of the system functions as specified or intended herein. WSDOT Standard Specifications for Road,

Bridge and Municipal Construction 8-20.3(11). Lamp, photocell and fixture shall be under warranty for a period of two years.

14. All lighting poles shall be as specified in Section 2E.020 of the Gig Harbor Public Works Standards. The Sonotube form shall be removed to below ground level. Pole bases shall be grouted and all luminaire heads shall be plumb and level.
15. Cement concrete bases shall follow City of Gig Harbor Public Works Standards Detail 2-28, Decorative Luminaire Base. The depth and size of all concrete street light foundations shall be designed by a licensed professional engineer based on soil conditions, pole height, wind load, etc. Design criteria and calculations shall be submitted to the City with illumination plan submittal.
16. The photo cell window shall face north unless otherwise directed by the City. The service disconnect shall not be mounted on the luminaire pole. The service disconnect shall be manufactured by Skyline Electric and MFG. Company, see Detail 2-23.
17. All lighting wire shall be copper with a minimum size of #8. All wire shall be suitable for wet locations. All wire shall be installed in schedule 40 PVC conduit with a minimum diameter of 2 inches. A bushing or bell-end shall be used at the end of a conduit that terminates at a junction box or luminaire pole. Conductor identification shall be an integral part of the insulation of the conductors throughout the system i.e., color coded wire. Equipment grounding conductor shall be #8 copper. All splices or taps shall be made by approved methods utilizing epoxy kits rated at 600 volts (i.e., 3-M 82-A2). All splices shall be made with pressure type connectors (wire nuts will not be allowed). Direct burial wire will not be allowed. All other installation shall conform to NEC, WSDOT and MUTCD standards.
18. Each luminaire pole shall have an in-line, fused, water-tight electrical disconnect located at the base of the pole. Access to these fused disconnects shall be through the hand-hole on the pole. The hand-hole shall be facing away from on-coming traffic. Additional conductor length shall be left inside the pole and pull or junction box equal to a loop having a diameter of one foot. Load side of in-line fuse to luminaire head shall be cable and pole bracket wire, 2 conductor, 19 strand copper #10 and shall be supported at the end of the luminaire arm by an approved means. Fuse size, disconnect installation and grounding in pole shall conform to NEC standards.
19. Approved pull boxes or junction boxes shall be installed when conduit runs are more than 200 feet. In addition, a pull box or junction box shall be located within 10 feet of each luminaire pole and at every road crossing. Boxes shall be clearly and indelibly marked as lighting boxes by the legend, "L.T." or "LIGHTING". See WSDOT standard plan J-11a. At the end of the project following final acceptance from City Inspector, all junction boxes shall be "tack" welded closed. Tack welds are to prevent

wire theft and shall be two 1" long welds on opposite sides of lid. Welds will then be treated with cold galvanizing spray.

20. Any modification to approved lighting plans shall be reviewed and approved by the City prior to installation. Any approved modifications shall be shown on the Record Drawings supplied to the City after the lighting installation is completed and before final acceptance. It shall be the responsibility of the electrical contractor to ensure these record drawings are provided to the City.

2F.040 Staking

All surveying and staking shall be performed by an engineering or surveying firm capable of performing such work. The engineer or surveyor directing such work shall be licensed as a professional land surveyor by the State of Washington.

A preconstruction meeting shall be held with the City prior to commencing staking. All construction staking shall be inspected by the City prior to construction.

The minimum staking of luminaries shall be as follows:

1. Location and elevation to the center of every pole base.
2. Location and elevation of each service disconnect.

2F.050 Testing

All illumination systems shall be subject to a Dept. of Labor and Industries electrical inspection which shall include Megger testing and a functional test. Lamp, photocell and fixture shall be under warranty for a period of two years.

2G TRAFFIC CONTROL DEVICES and TRAFFIC SIGNAL CONSTRUCTION INSPECTION

2G.010 General

Traffic control devices shall be installed per the requirements set forth herein. This work shall consist of furnishing and installing a complete and functional traffic control system, of controllers, signals and appurtenances as required by the City.

Traffic control devices may include, but are not limited to; signals, traffic islands, modern roundabouts, stop or yield control devices, or traffic calming features.

2G.020 Construction

Traffic signals and illumination on signal poles installed within City right of way shall meet all requirements of the City and WSDOT.

2G.030 Design Standards

If a traffic control device is required, then the developer shall be required to pay the cost for the City's on-call, contracted traffic services, or, if the City's schedule allows, shall pay for the City to design the traffic control device. The City shall retain the right to determine the appropriate traffic control device based on an approved Traffic Impact Analysis. Design of appropriate traffic control devices shall be performed by a City approved traffic design consultant.

Signal systems shall be designed in accordance with the specifications as set forth by the City of Gig Harbor, ITE, AASHTO, Pierce County and or WSDOT. The *WSDOT Standard Specifications for Road, Bridge and Municipal Construction* shall be used unless otherwise authorized by the City. Electrical permits are required for all traffic control devices. The contractor is responsible for obtaining all permits prior to construction.

All new traffic control devices or any alteration or modification to any existing device shall conform to the 2005 Accessible Public Rights of Way Accessibility Guidelines (PROWAG) and shall be equipped with the following APS features; pushbutton locator tone, tactile arrow, audible and vibrotactile walk indications, automatic volume adjustment and countdown signal heads.

All applicable design requirements set forth in Section 1.040 and listed on the plan checklist shall be included. When analyzing intersections for traffic control devices, impacts to the entire roadway corridor shall be considered.

All signal poles and signal bases shall be of the decorative type as described in the *City of Gig Harbor Municipal Code* and per the construction details at the end of this section. All control cabinets and service cabinets shall be green in color outside to match decorative poles and bases and white on inside.

All specifications and material samples shall be submitted to the City for review and approval prior to installation.

Installation of traffic control signal are not the solution for all intersection traffic concerns. Indiscriminate installation of signals can adversely affect the safety and efficiency of vehicle, bicycle, and pedestrian traffic.

As a result, installation of a traffic control signal is to satisfy specific "warrants," which are found in the MUTCD. A signal warrant is a minimum condition in which a signal may be installed. Satisfying a signal warrant does not mandate the installation of a traffic signal; it only indicates that an engineering study, is needed to determine whether the signal is an appropriate traffic control solution.

Properly designed, located, operated, and maintained traffic control signals should offer the following:

- Allow for the orderly movement of traffic.
- Increase the traffic handling capacity of the intersection.
- Reduce the frequency of severe crashes.
- Can be coordinated to provide for continuous or nearly continuous movement of traffic at a definite speed along a corridor.
- Can be used to interrupt heavy traffic at intervals to permit other traffic, vehicular or pedestrian, to cross.
- Can be preempted to allow emergency vehicle passage.

2G.040 Induction Loops

Induction loops shall be constructed per WSDOT Standard Specification 8-20.3(14)C and the following:

- A. Loops shall not be cut into final lift of new asphalt.
- B. Loops shall be pre-formed in crushed surfacing top course (CSTC) before paving or shall be cut in existing asphalt or leveling course to sub-base before intersection is overlaid.

2G.050 Staking

All surveying and staking shall be performed by an engineering or surveying firm capable of performing such work. The engineer or surveyor directing such work shall be licensed as a professional land surveyor by the State of Washington.

A preconstruction meeting shall be held with the City prior to commencing staking. All construction staking shall be inspected by the City prior to construction.

The minimum staking of signals shall be as follows:

- A. Location, with cut or fill to center of all pole bases.
- B. Location of junction box.
- C. Location of all corners of controller base.
- D. Location of the service disconnect.

2G.060 Testing

All traffic control devices shall be subject to any necessary electrical inspections as well as requirements as set forth in Section 2B.200.

A signal system shall not be approved or accepted by the City until the signal has performed correctly to the City's satisfaction for a 30-day "check-out" period as outlined below.

All traffic signal control equipment shall be tested per section 9-29.13 of the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction prior to being installed.

2G.070 Functional Testing

Field testing of illumination, traffic signal systems, and electrical for traffic control systems shall be per Section 8-20 of the *WSDOT Standard Specifications for Road, Bridge and Municipal Construction* with the following exceptions:

The insulation resistance shall not be less than 50 mega ohms between the conductor and ground on all circuits of any length.

A functional test shall be made to demonstrate that each and every part of the system functions as specified.

The contractor shall perform in the presence of the City, frequency response and noise tests between each controller cabinet. The same test shall also be performed on all unused (spare) pairs between the master controller and the most distant cable termination cabinet served by the pair.

The contractor shall perform continuity checks from all wires to ground, to the satisfaction of the City.

The functional test for the traffic signal system shall consist of not less than five days of continuous, satisfactory operation. If unsatisfactory performance of the system develops, the condition shall be corrected and the test shall be repeated until the five days of continuous, satisfactory operation is obtained.

A shutdown of the electrical system resulting from damage caused by public traffic, from a power interruption, or from unsatisfactory performance of City furnished materials may not constitute discontinuity of the functional test.

Turn-on of the new traffic control shall be accomplished by qualified factory signal technicians with three days advance notice to the City. The contractor shall not turn on any signal system or part thereof visible to any traveled roadway without the accompaniment of the City. The temporary and permanent signing and pavement marking shall be installed in accordance with the plans and specifications or as approved by the City before the new traffic controls are turned on.

2G.080 Illumination During Construction

Pre-existing illumination shall be maintained and functional at all times during construction until the new illumination is operational.

2G.090 Traffic Signal Standards – Approval

If the proposed signal standards are not on WSDOT's Pre-approved List (<http://www.wsdot.wa.gov/eesc/bridge/lightsignalstandards/index.cfm>). Signal Pole shop drawings (Six (6) sets of copies) shall be submitted to WSDOT's construction representative for transmittal to WSDOT Headquarters for approval.

2G.100 Temporary Video Detection System

If any induction loop is scheduled to be disabled, a temporary video detection system shall be completely installed and made operational prior to any associated induction loop being disabled.

2G.110 Existing Traffic Detection Loops

The Contractor shall notify the City's construction representative a minimum of five (5) working days in advance of pavement removal or grinding in areas with existing loops.

If the City's construction representative suspects that damage to any loop not identified in the Plans as being replaced may have resulted from the Contractor's operations or is not operating adequately, the City's construction representative may order the Contractor to perform the field tests specified in Section 8-20.3(14)D of the *WSDOT Standard Specifications for Road, Bridge, and Municipal Construction*. The test results shall be recorded and submitted to the City's construction representative. Loops that fail any of these tests shall be replaced.

Loops that fail the tests, as described above, and are replaced shall be installed in accordance with current WSDOT Design Standards and Standard Plans, as determined by the City's construction representative.

If traffic signal loops fail the tests, as described above, are not replaced and operational within 48 hours, the Contractor shall install and maintain interim video detection until the replacement loops are operational. The type of interim video detection furnished shall be approved by WSDOT's construction representative prior to installation.

2G.120 Traffic Signal Heads

Unless ordered by the City's construction representative, signal heads shall not be installed at any intersection until all other signal equipment is installed and the controller is in place, inspected, and ready for operation at that intersection, except that the signal heads may be mounted if the faces are covered with a black opaque material.

2G.130 Signal Head Covering

The signal head covering material shall be manufactured from a durable fabric material, black in color with a mesh front, and designed to fit the signal head configuration properly. The covers shall have an attachment method that will hold the cover securely to the signal in heavy wind. The covers shall be provided with a drain to expel any accumulated water.

2G.140 New Signal Turn-On or Switch-Over Operations

The Contractor shall contact the City's construction representative at least five (5) working days prior to scheduling a signal turn-on in order to assure that all appropriate items of WSDOT's "Traffic Signal Turn-On Checklist" are satisfactorily addressed. The Pre-Turn-On and Turn-On shall not occur until applicable Checklist items are installed and/or connected. The Checklist can be located on the WSDOT's website at: <http://www.wsdot.wa.gov/Northwest/DevelopmentServices/Location/Agency.htm> (Go to: "What is needed to turn on a traffic signal?").

2G.150 Permitted Hours for New Signal Turn-On or Switch-Over Operations

Unless approved by the City's construction representative, no change to signal stop and go will be allowed between 6:00 a.m. to 10:00 a.m. or between 2:00 p.m. to 7:00 p.m. on Monday through Thursday – nor will signal operation changes be allowed on Friday, weekends, holidays, or the day preceding a holiday.

2G.160 New Signal Ahead/Signal Revision Warning Signing

"NEW SIGNAL AHEAD" (W20-902) or "SIGNAL REVISION AHEAD" (W20-903) signs shall be installed in advance of all affected directions of travel on the Project when a new traffic signal system is installed or when modifications to an existing signal are made. The location of the signs shall be per Section 2C.05 of the MUTCD, or as directed by the City's construction representative. These signs are 48" X 48" black letters on orange background, and shall be post mounted. The bottom of the sign shall be mounted seven (7) feet above the pavement elevation. Each sign shall have three 12" x 12" Fluorescent Orange flags or Flag Signs mounted on both sides and on top of the sign. The Flag Signs shall be made of aluminum. Flags shall be made of durable cloth or plastic. The signs and flags shall stay erect for six to eight weeks or as directed by the City's construction representative.

2H ROADSIDE FEATURES

2H.010 General

Miscellaneous features included herein shall be developed and constructed to encourage the uniform development and use of roadside features wherever possible.

2H.020 Design Standards

The design and placement of roadside features included herein shall adhere to the specific requirements as listed for each feature, and, when applicable, to the appropriate Standards as set forth in Section 1.010 and 1.040.

2H.030 Staking

All surveying and staking shall be performed by an engineering or surveying firm capable of performing such work. The engineer or surveyor directing such work shall be licensed as a professional land surveyor by the State of Washington.

A preconstruction meeting shall be held with the City prior to commencing staking. All construction shall be inspected by the City prior to construction.

2H.040 Testing

Testing shall be required per Section 2B.200.

2H.050 Survey Monuments and Benchmark(s)

A. All existing survey control monuments which will be disturbed or destroyed during construction shall be referenced by the developer's professional land surveyor prior to construction and replaced after construction by the developer or a professional land surveyor licensed by the State of Washington. All applicable statutes regulations and ordinances will be complied with, including but not limited to, WAC 332-120, WAC 332-130, and RCW 58.09. The monuments shall be replaced with the proper type as outlined in B or C below at the expense of the responsible builder or developer. As described in Section 332-120 of the WAC, a Remove or Destroy Survey Monument permit is required. This permit application can be obtained at the Public Works Department and is issued through the Washington State Department of Natural Resources. See Detail 2-24 and 2-25.

B. Roadway type: Boulevards, arterials, major collectors, and at the option of the City, bus routes and truck routes.

A poured-in place concrete surface monument per City of Gig Harbor Standards is required.

The monument case shall be installed after the final course of surfacing has been placed.

C. Roadway type: Minor collectors; major, minor, local, residential and private roadways and those roadways not specifically outlined in 2G.050B above.

A poured-in-place per City of Gig Harbor Standards is required.

D. Monument Locations

Appropriate monuments shall be placed:

1. At all roadway intersections. At intersections when roadways listed in 2G.050C intersect with boulevards, arterials or major collectors, the monuments shall be placed at the intersection of the centerline of the minor roadways (listed in 2G.050C) with the right-of-way line of a boulevard, arterial or major collector;
2. At the PC and PT's of all horizontal curves or at the PI if it lies in the traveled roadway;
3. At all DLC corners, section corners, quarter corners and sixteenth corners that fall within the subdivision. Where these points fall outside of the pavement or sidewalks, a poured-in-place monument per City of Gig Harbor Standards shall be set so that the top of the monument is one foot below the surface of the ground.

E. Record of Survey for New Monuments

1. Prior to final acceptance for all new plats, a record of survey shall be included with all record drawings for any monuments that were disturbed during construction and/or for any new monuments that were constructed as part of the project.

2H.060 Bus Pads, Shelters and Amenities

Different population densities dictate the number and placement of bus stops. The location of Pierce Transit and/or public school district bus pads, shelters, or amenities will be evaluated on a case-by-case basis for each project. Pierce Transit and the school district shall make every effort to coordinate the location of bus stops and shall work with the City to determine the best location for the required amenity.

2H.070 Mailboxes

All access ramps servicing transit stops, park & ride lots, rest areas, buildings, and other facilities shall be designed in accordance with Chapter 1510 of the WSDOT Design Manual.

- A. During construction, existing mailboxes shall be accessible for the delivery of mail or, if necessary, moved to a temporary location. Temporary relocation shall be coordinated with the US Postal Service. The mailboxes shall be reinstalled at the original location or, if construction has made it impossible, to a location as outlined below and approved by the U.S. Postal Service.

- B. Mailboxes in new developments shall be clustered. Contact the U.S. Postal Service for location details.
- C. Mailboxes shall be set on posts strong enough to give firm support but not to exceed 4 x 4-inch wood or one 1-1/2-inch diameter pipe, or material and design with comparable breakaway characteristics.

2H.080 Retaining Walls

Rock walls, brick, concrete building block, or other approved material may be used for erosion protection of cut or fill embankments, for structurally retaining embankments, or as desired for aesthetic purposes.

The height of a retaining wall is that distance as measured from the bottom of the footing, regardless of whether the footing is buried or exposed, to the top of the wall.

Retaining walls on private property shall meet the requirements of the adopted Building Code. Retaining walls located on private property shall be set back from any public right-of-way line a distance at least equal to the height of the wall unless otherwise approved by the City Engineer.

Retaining walls located on private property where the public right-of-way line is closer than the height of the wall shall not exceed 4 feet in height unless the wall is designed by a Washington State licensed professional engineer and the wall meets all the requirements of the adopted building code. Walls meeting this criteria must be approved by the City Engineer and the Building Official.

Retaining walls over 4 feet in height located on a public right-of-way shall meet or exceed WSDOT Design Standards and be designed by a Washington State licensed professional engineer.

2H.090 Street Trees

All public roadways within the City will be planted with trees to create a distinct and pleasant character for those roadways and shall not be a sight distance impediment. The street trees identified in the appendices at the end of this chapter shall be required in or along the public right-of-way.

See Appendix A for complete list of approved street trees.

See Section 2B.125 "Landscape/Planter Areas" for specific site preparation requirements.

- A. Planting size: Trees, 1.5" caliper, measured 6 inches above the base. Ground cover, 4" pot or 1-gallon container spaced no greater than 24 inches on center in a triangular pattern to provide 100% coverage in 3-years. Low growth shrubs, 1-gallon container at 3 feet on center in a

triangular pattern. Medium shrubs, 18 to 24 inches in height or 2 to 3-gallon container evenly space in a triangular pattern at 5 feet on center.

- B. Location: Trees shall be centered in the median or as shown on the applicable roadway detail. Trees shall be spaced no greater than the mature spread, as indicated in the approved street tree list, with a maximum spacing of 35-feet on center. Exceptions may be made when there are existing sidewalks. Street trees may then be planted 3 to 5 feet behind the sidewalk. Tree spacing may be adjusted slightly to allow a minimum of 10 foot spacing on either side of a driveway. Tree spacing may also be adjusted as directed by the City Engineer to accommodate for special circumstances and as indicated below:
- Street Lights, Utility Poles, Driveways, Alleys – 15'
 - Hydrants – 10'
 - Intersections – 30'
 - Street Signs (Excluding Parking Signs) – 20'
 - Mail Boxes, Utility Boxes – 8'
- C. Maintenance: All projects, regardless of type or zoning, required to plant street trees will also be required to maintain the trees in perpetuity regardless of ownership. Trees shall be maintained per ANSI A300, Standard Practices for Trees, Shrubs and other Woody Plant Maintenance. All property owners shall be responsible for mowing and weeding planter strips in abutting right of way except owners of single family residential properties that are not part of a home owner's association. The City will be responsible for pruning all street trees located in the right-of-way. The owner/homeowner's association is responsible for mowing and weeding. Medians shall be maintained by the City. See Section 4.185 for installation and maintenance of irrigation systems.
- D. Irrigation or supplemental water must be provided to right of way plantings per Section 4.185 of the City of Gig Harbor Public Works Standards.
- E. Root barriers shall be required to be installed adjacent to back of curb and front of sidewalk. Root barrier shall be DeepRoot 24-2, DeepRoot (800) 458-7668 Tree Root Guide RS-40 by Root Solutions, or approved equal. Root barrier length will be 15-feet centered on tree trunk.
- F. Trees must be in good health and form and conform to current ANSI Z60 American Standard for Nursery Stock or tree will be rejected on site.

2H.110 Parking Lots

The construction of parking lots within the City shall be reviewed and approved by the Public Works Department. Access and drainage issues are governed by the Public Works Standards. Contact the Public Works Engineering Department to determine if the parking lot requires a Site Plan Review process.

Minimum requirements for parking lot capacity shall be determined at Site Plan Review.

The Public Works Department may require plans for the access. Access points to parking lots shall meet all the criteria as outlined in Sections 2B.025, Access Management, and 2B.140, Driveways.

Plans and specifications as required in Section 3, Storm Drainage, shall be required to be submitted for review and approval by the City with respect to storm drainage discharge and on site retention or detention, matching roadway and/or sidewalk grades, access locations, parking layout, and to check for future roadway improvement conformity and City zoning regulations.

Parking lot surfacing materials shall satisfy the requirement for a permanent all-weather surface. Asphalt concrete pavement and cement concrete pavement satisfy this requirement and are approved materials. Gravel surfaces are not acceptable as approved surface material types. Combination grass/paving systems are approved surface material types; however, their use is limited to surplus parking only.

2I ROADWAY SIGNAGE

2I.010 General

All traffic signs must conform to the MUTCD, as adopted by the City of Gig Harbor pursuant to WAC 468-95-010. All traffic signs within the City right of way shall be installed in accordance with the requirements of the City Engineer. All sign sheeting shall be High Intensity Prismatic Retroreflective sheeting of one of the following grades, Type III, VI, or VIII, and also conform to the MUTCD requirements.

2I.020 Stop Signs

Stop signs shall be installed by the developer on all unsignalized local public road approaches to City arterials or State highways, all private road approaches to City arterial roads, and at other locations determined by the City Engineer as soon as the road approach is opened to vehicular use. The stop sign for a private road approach must be maintained by the property owner(s) that have legal access to the private road. Stop sign construction and location must be in accordance with the City of Gig Harbor Standard Drawings.

2I.030 Roadway Name Signs

Roadway name signs for private roads or driveway approaches shall be installed by the developer. Street name signs for private roads and driveway approaches shall be maintained by the property owner(s) that have legal access to the road or approach. Street name signs for public roads will be installed by the developer and maintained by the City. Street name sign construction and location must be in accordance with the City's Standard

Drawings. Street names and/or numbers shall be in accordance with Chapter 12.12 Gig Harbor Municipal Code. Street name signs for private roads and driveway approaches shall be installed prior to the final inspection. All signs shall include a serial number, whose number will be provided by the City.

2I.040 Traffic Control Plans (TCP's)

During the construction and/or maintenance of the roadway facility, the Contractor shall submit traffic control plans (TCP's) to the City for review and approval at least ten (10) working days in advance of the time that signing and other traffic control devices will be required. These TCP's shall be in compliance with the project specific traffic control plans in accordance with WSDOT Work Zone Traffic Control Guidelines M54-44 or the Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways, Part 6, Chapter 6H and Washington Modifications thereto.

2I.050 Hazard Protection

All hazards to vehicular, pedestrian, and bicycle traffic shall be marked by warning signs, barricades, and lights.

2I.060 Working Visibility

All workers within the City-owned right of way who are exposed to either traffic or construction equipment within the work zone shall wear high-visibility safety apparel meeting Performance Class 2 or 3 requirements of the ANSI/ISEF 107-2010 publication titled "American National Standard for High Visibility Safety Apparel and Headwear".

2I.070 Traffic Revision Warning Signing

When the permanent channelization of the roadway is changed, "TRAFFIC REVISION AHEAD" (W20-901) signs shall be installed in advance of the affected directions of travel of the Project. The location of the signs shall be per Section 2C.05 of the MUTCD, or as directed by the City. These signs are 48" X 48" black letters on orange background, and shall be post mounted. The bottom of the sign shall be mounted seven (7) feet above the pavement elevation. Each sign shall have three (3) 12" X 12" fluorescent orange flags or Flag Signs mounted on both sides and on top of the sign. The Flag Signs shall be made of aluminum. Flags shall be made of durable cloth or plastic. The signs and flags shall stay erect for six to eight weeks or as directed by the City.

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