Chapter 9
GREEN COVE BASIN

Formatted: Font: Trebuchet MS

9.000 GENERAL CONSIDERATIONS

9.010 General

The development standards and standard plans in Chapter 9 provide street and stormwater designs required in the Green Cove Basin. Design guidelines and standards not addressed in Chapter 9 are provided in Chapters 1 through 8 of the Engineering Design and Development Standards.

Except where approved chemical treatment, full dispersion, or infiltration is practiced, clearing, grading, and other soil disturbing activities are prohibited in all watersheds as described in the 2009 Drainage Manual. ~~between November 1 and January 31 and in Green Cove, Percival, Woodard, and Ellis Creek watersheds between October 1 and April 30.~~

9A STREETS – GREEN COVE BASIN

9A.010 Streets

A. Streets and Alleys: Residential blocks bounded by streets will not exceed a walking perimeter of 1,700 feet. Commercial blocks will not exceed a walking perimeter of 2,200 feet. Where larger blocks are necessary due to topography, existing development, or other constraints, intervening public cross-block pedestrian, bicycle, and emergency access will be provided.

B. Design Standards: Green Cove Creek design standards are provided in Table 9.1.

C. Surfacing, Pervious Pavement: Pervious pavement materials may be permitted or required at the discretion of the Director of Public Works.

9B DRIVEWAYS – GREEN COVE BASIN

9B.010 Driveways

Pervious pavement materials may be permitted or required in place of cement concrete at the discretion of the Public Works Director.

Table 1: Green Cove Basin Minimum Street Design Standards

Design Standards	FUNCTIONAL CLASSIFICATION														
	Arterial Blvd	Arterial	Major Industrial Collector	Major Comm Collector Blvd	Major Comm Collector	Major Collector Blvd	Major Collector	Neighborhood Collector Blvd	Neighborhood Collector	Low-Impact Neighborhood Collector	Local Access Block Spacing (6) >350 Feet	Local Access Block Spacing (6) < 350 Feet	Low-Impact Local Access	Alleys Comm	Alleys Res
Minimum Structural Design	SEE STANDARD PLAN 4-6A														
ADT	14-000-40,000	14,000-40,000	3,000-14,000	3,000-14,000	3,000-14,000	3,000-14,000	3,000-14,000	500-3,000	500-3,000	500-3,000	0-500	0-500	0-500	N/A	N/.A
Sidewalks	8' Both Sides (1)	8' Both Sides (1)	6' Both Sides	5' Plant Area 5' Awning Area	5' Plant Area 5' Awning Area	6' Both Sides	6' Both Sides	5' Both Sides	5' Both Sides	5' Both Sides	5' Both Sides	5' Step Side	5' One Side	None	None
Planting Strips (4)	10' Between Curb & Walk Both Sides, 14' Center Median	10' Between Curb and Walk Both Sides	6' Between Curb and Walk Both Sides	2-Lane= 10' Median 4-Lane= 14' Median	5' Planting Area 5' Awning Area Both Sides	8' Between Curb and Walk Both Sides, 14' Center Median	8' Between Curb and Walk Both Sides	8' Between Curb and Walk Both Sides (2). 10' Median	8' Between Curb and Walk Both Sides (2)	25' Strip Optional, 8' Between Curb & Walk Both Sides (2)	8' Between Curb and Walk Both Sides (2)	8' Between Curb and Walk Both Sides (2)	25' Strip Optional, 8' Between Curb & Walk Both Sides (2)	N/A	N/A
Street Tree Spacing (5)	40' On Center	40' On Center	40' On Center	40' On Center	40' On Center	40' On Center	40' On Center	40' On Center	40' On Center	40' On Center	40' On Center	40' On Center	40' On Center	None	None
Parking Lanes	None	None	None	8' Both Sides	8' Both Sides	None	None	None	7' One Side	7' One Side	7' One Side	7' One Side	7' One Side	None	None
Curbs (7)	Both Sides	Both Sides	Both Sides	Both Sides	Both Sides	Both Sides	Both Sides	Both Sides	Both Sides	Both Sides	Both Sides	Both Sides	Both Sides	None	None
Lane Widths	Two - 18' 4 Lane = 11' 5 Lane = 11'	11'	11'	Two - 18' 4 Lane = 11'	11'	Two - 18' 4 Lane = 11'	11'	Two - 18'	Two-10'	Two-9'	Two-9'	One-13'	One-11'	12'	Two-36" Ribs
R-O-W	2 Lanes - 88' 3 Lanes - 88' 4 Lanes- 106' 5 Lanes- 106'	2 Lanes - 70' 3 Lanes - 81' 4 Lanes - 92' 5 Lanes - 103'	2 Lanes - 58' 3 Lanes - 69' 4 Lanes - 80' 5 Lanes - 91'	2 Lanes - 80' 3 Lanes - 84' 4 Lanes- 106' (3)	2 Lanes - 70' 3 Lanes - 81' 4 Lanes - 92' (3)	2 Lanes - 80' 3 Lanes - 80' 4 Lanes - 98' (3)	2 Lanes - 62' 3 Lanes - 73' 4 Lanes - 84' (3)	2 Lanes - 74' 2 Lanes with swale - 70'	2 Lanes - 55' 2 Lanes with swale - 51'	53'	2 Lanes 53' 2 Lanes with swale 49'	1 Lane 48' Lane with swale 44'	41'	12'	12' No Dead Ends
Intersection Radii	35'	35'	35'	35'	35'	35'	35'	25'	25'	25'	25'	30'	25'	N/A	N/A
Cul-de-sac Radii	N/A	N/A	60'	N/A	60'	N/A	N/A	N/A	N/A	N/A	47' w/17' Landscaped Island	47' w/17' Landscaped Island	N/A	N/A	N/A
Grades	0.5-8%	0.5-8%	0.5-8%	0.5-10%	0.5-10%	0.5-10%	0.5-10%	0.5-12%	0.5-12%	0.5-12%	0.5-15%	0.5-15%	0.5-15%	0.5-15%	0.5-15%
Maximum Design Speeds	35 mph	35 mph	30 mph	25 mph	25 mph	30 mph	30 mph	25 mph	25 mph	20 mph	20 mph	20 mph	20 mph`	10 mph	10 mph
Site Access	See Driveway and Intersection Criteria Guidelines	20' From Intersection	20' From Intersection	20' From Intersection	20' From Intersection	20' From Intersection	20' From Intersection	N/A	N/A						
Streetlights	Highmast Orn	Highmast Orn	Highmast Orn	Highmast Orn	Highmast Orn	Highmast Orn	Highmast Orn	Highmast Orn	Highmast Orn	Highmast Orn	Ped Scale	Ped Scale	Ped Scale	N/A	N/A

Access Width	See Driveway and Intersection Criteria Guidelines	10' at PL 15' at PL Curb	10' at PL 15' at PL Curb	10' at PL 15' at PL Curb	10' at PL 15' at PL Curb	10' at PL 15' at PL Curb	10' at PL 15' at PL Curb	N/A	N/A
Bicycle Facilities	All classifications of arterials and major collectors will have Class II or Class III bicycle facilities as designated on the Comprehensive Plan Bikeways Map. Exceptions are Plum Street, Olympic Way, Harrison Avenue East of Division Street, and Eskridge Boulevard from Capitol Way to Henderson Boulevard.	Class II or III as designated on Bike Map	Class II or III as designated on Bike Map	Class II or III as designated on Bike Map	Class II or III as designated on Bike Map	Class II or III as designated on Bike Map	Class II or III as designated on Bike Map	N/A	N/A
	(1) Sidewalk width will be 10 feet in the Central Business District of where the existing frontage improvements are being extended and the sidewalk width is 10 feet. (2) Swale will only be used as an alternative design based on environmental consideration. When swale is required, swale width = 12 feet between curb and sidewalk, 6 feet tree easement opposite side of swale. (3) The need for left-turn channelization will be evaluated at intersection and access point. (4) Unless otherwise agreed upon by the City of Olympia, maintenance of street trees, turf, or other landscaping within the planting strips is the responsibility of the adjacent landowner. (5) Exact spacing and species to be determined by Urban Forester. Spacing approximate, except spacing will depend on locations of streetlights, fire hydrants, driveways, sight-clearance triangles, etc. (6) This distance is measured along the development frontage property lines (7) Curbs may be omitted from designs if necessary to facilitate stormwater sheet flow from roadways into roadside dispersion areas. Where curbs are omitted, alternate practices shall be employed to deter vehicles from driving off-road.								

Street Characteristics	Arterial Street	Major Collector	Neighborhood Collector	Low-Impact Neighborhood Collector	Local Access Street	Low-Impact Local Access Street
Types of Traffic Served	Regional & Citywide	Subregional; feed arterial traffic	Sub-area and local traffic; feed major collector traffic	Sub-area and local traffic; feed major collector traffic	Local traffic; feed neighborhood/major collector or arterial traffic	Local traffic; feed neighborhood/major collector or arterial traffic
Traffic Volumes	14,000-40,000 average daily traffic	3,000-14,000 average daily traffic	500-3,000 average daily traffic	500-3,000 average daily traffic	0-500 average daily traffic	0-500 average daily traffic
Percent Local Traffic	0-15% of origins and destinations are within a 2-mile radius of the street.	0-30% of origins and destinations are within a 1-mile radius of the street.	70-100% of origins and destinations are within a 1-mile radius of the street.	70-100% of origins and destinations are within a 1-mile radius of the street.	80-100% of origins and destinations are within a 1-mile radius of the street.	80-100% of origins and destinations are within a 1-mile radius of the street.
Average Travel Length	10 to maximum miles	2 to 15 miles	1-2 miles	1-2 miles	Minimum 2 miles	Minimum 2 miles
Street Spacing	1-2 miles	½ to ¾ mile	1000'-1500'	1000'-1500'	350'-500' (1 block)	250'-350'
Intersection Spacing (1)	500'-700' (2-3 block)	350'-500' (2 blocks)	250'-350' (1 block)	200'-700' (1 block)	250'-350' (1 block)	200'-700' (1 block)
Design Speeds	30-45 miles per hour	25-35 miles per hour	25 miles per hour	25 miles per hour	20-25 miles per hour	20-25 miles per hour
On-street Parking	No, except where parking exists and where exempt.	No, except where parking exists and where exempt.	Yes	Yes	Yes	Yes
Driveway Access	No	No, except for existing development.	Yes	Yes	Yes	Yes
Bike Lanes (Class II or III)	Yes, except where parking exists and where exempt.	Yes, except Eskridge from Capitol to Henderson	No	No	No	No
Planting Strips (between sidewalk & curb)	Yes	Yes	Yes	Yes	Yes	Yes
Sidewalks	Yes	Yes	Yes	Yes	Yes	Yes
Traffic Calming	No	As needed	Yes, if problem is anticipated or determined through and engineering study.	Yes, incorporated into Standard.	Yes, if problem is anticipated or determined through an engineering study.	Yes, incorporated into Standard
Transit Shelters	Every ½ mile	Ever ½ mile	None	None	None	None
Transit Pullouts	Ever ½ mile	Every ½ mile	None	None	None	None
(1) These intersection spacing requirements will not be used as criteria/justification to close existing streets.						

9C SIDEWALKS – GREEN COVE BASIN

9C.010 Sidewalks

A. Sidewalks will be constructed of commercial concrete 4 inches thick, pervious concrete, or alternative pervious surfacing as may be permitted or required at the discretion of the Director of Public Works. When the sidewalk and curb are contiguous, the width of the sidewalk will be measured from face of curb to back of sidewalk.

   1. Base: 2-inch crushed surfacing top course or well-graded sand.

   2. Surfacing: Asphalt. Asphalt sidewalks will not be permitted unless otherwise approved by the Public Works Director.

B. Sidewalks on local access streets: Sidewalks will be required on one side of local access street's interior to the development and on the development side of local access streets abutting the exterior of said development, including cul-de-sacs.

9D ROADSIDE FEATURES – GREEN COVE BASIN

9D.010 General Vegetation Coverage Standards

When the optional street cross section (Standard Drawing 9-4) is to be constructed, the Urban Forester shall require trees and shrubs to be planted at a density to ensure the following minimum vegetation coverage standards are achieved:

A. Coverage: 60% conifer and 40% deciduous;
B. Achieve 75% tree and shrub canopy coverage in 7 years; and
C. Achieve 100% tree canopy in 25 years.

9D.020 Species, Cultivars, or Varieties

A. Recommended plant material palette: Final species selection shall be subject to the discretion of the Urban Forester.

   1. Large trees (coniferous): Western Red Cedar, Douglas Fir, Shore Pine, Alaskan Yellow Cedar.

2. Large trees (deciduous): Green Ash, Big Leak Maple, Oregon White Oak, Swamp White Oak, Jaquomontii Birch.

3. Small trees: Vine Maple, Serviceberry, Mountain Ash, Beaked Hazelnut.

4. Shrubs: Red Flowering Current, Evergreen Huckleberry, Elderberry, Oregon Lilac, Snowberry, Myrica, Hairy Manzanita, Oregon Grape, Nootka Rose, Red-Osier Dogweed, Indian Plum, Ocean Spray, Mock Orange.

B. Grade. Unless otherwise specified by the Urban Forester, all trees shall have comparatively straight trunks, well-developed leaders and crowns, and shall exhibit evidence of proper nursery pruning practices. At the time of planting, all trees must be free of mechanical injuries and other objectionable features that affect the future form and beauty of the plant.

9D.030 Spacing and Location

The Urban Forester may vary the following standards as necessary to ensure public safety and consistent streetscape design. Final spacing and location of plant materials shall be determined by the Urban Forester in accordance with local conditions; the species, cultivars, or varieties used; and their mature height, spread, and form.

A. Large trees shall be spaced 20 feet on center in a multiple row-alternating pattern.

B. Small trees 10 feet on center in a multiple row-alternating pattern.

C. Shrubs 4 to 6 feet on center in a multiple row-alternating patterns.

D. Trees shall be planted at least 10 feet from driveways and alleys and at street intersection; the distance shall be that specified in Chapter 4, Section 4B.150, Site Clearance Triangle.

Field Code Changed

E. No tree shall be planted closer than 20 feet to a utility pole or a streetlight to allow for maintenance and light penetration.

9D.040 Parking Lots

A parking lot construction permit is required prior to surfacing any unsurfaced designated parking area.

Stormwater retention will be provided and will follow the criteria as set forth in Chapter 5 of these Standards.

Field Code Changed

Number of plans and specifications will be as required by the Community Planning and Development Department and be submitted for review and approval by the City with respect to storm drainage discharge and on-site retention or detention, matching street and/or sidewalk grades, access locations, parking layout, and to check for future street improvement conformity and City zoning regulations.

Field Code Changed

Parking lot surfacing materials will be pervious and satisfy the requirement for a permanent all-weather surface. Asphalt concrete pavement and cement concrete pavement do not satisfy this requirement. Gravel surfaces are not acceptable or approved surface material types. Combination grass/paving systems are approved surface material types; however, their use requires submittal of an overall parking lot paving plan showing the limits of the grass/paving systems and a description of how the systems will be maintained. If the City determines the grass/paving system is not appropriate for the specific application, alternate pervious surfacing materials will be utilized.

9E STORM DRAINAGE – GREEN COVE BASIN

9E.010 General

The standards established by this chapter are intended to represent the minimum standards for the design and construction of storm drainage facilities. Requirements for the Green Cove Basin place additional emphasis on stormwater minimization and infiltration.

9E.020 Full Dispersion

All developments shall be designed to achieve full dispersion of stormwater. "Full dispersion" is defined as managing runoff from the specified design event near its point of origin by distributing and infiltrating it into the surface soils. This takes advantage of the soil moisture-holding capacity, while increasing interflow and groundwater recharge, decreasing or eliminating runoff, and greatly flattening and extending the discharge hydrograph.

Full dispersion is achieved when the post-development runoff rate and duration is less than or equal to the predevelopment runoff rate and duration for half of the 2-year event up to the 50-year event and the post-development runoff volume is equal to or less than the runoff volume from the entire area with 10% impervious cover. The post development effective impervious coverage from a

hydrologic modeling perspective of the entire area shall be less than or equal to 10%.

The City requires hydrologic model verification of design compliance. Full dispersion is achieved when post-development runoff is less than or equal to the predevelopment runoff for the specified design event.

To the extent it is demonstrated that achieving full dispersion is impracticable, the City may allow a development to use conventional stormwater detention, treatment, and conveyance practices.

9E.030 Applications and Limitations

All dispersion areas must be permanently protected from development or conversion to incompatible uses in a manner acceptable to the City and be maintained by their owners in such a manner as to preserve the hydrologic characteristics of the design or native condition.

Dispersed runoff from one threshold discharge area may not overlap with dispersed runoff from any other threshold discharge area. Each threshold discharge area shall have its own dedicated dispersion area.

Employing the below-described practices, and others that are functionally equivalent and appropriate to the development setting, is expected to achieve full dispersion.

9E.040 Design Standards

To achieve full dispersion as defined above, use the following techniques or develop site-specific approaches that will achieve a functionally equivalent result.

A. Building lots: Stormwater generated on building lots shall be considered fully dispersed if the following conditions are met:

    1. Driveways, walkways, patios, and other small paved areas: Implement one or more of the following:

        a. Use pervious paving surfaces: Design pervious paving surfaces to City guidelines.

        b. Install impervious paving surfaces a minimum of 3 inches above surrounding grass/soil grade and slope them to drain onto the grass/soil surface. Install washed rock-filled, open-topped

infiltration trenches (no soil backfill; no geotextile) alongside all paved surfaces. Size the trenches to City guidelines.

2. Lawns/yards/landscaped areas: All such areas are to receive compost-amended soil. Prepare and install the soils to City guidelines.

B. Roofs: Stormwater generated from roofs shall be considered fully dispersed if one or more of the following conditions are met:

1. Install a vegetated roof with 8 inches or more of soil media, or one of equivalent hydrologic performance, designed to City guidelines.

2. Install a cistern/rainwater harvesting system and provide a use plan for 100% of average annual rainfall. Design rainwater harvesting systems to City guidelines.

3. Install a drywell to infiltrate roof water sized to City guidelines.

4. Disperse roof runoff onto compost-amended soils where a minimum flow path of 50 feet is available. Where flow paths are shorter, this alternative may be used in conjunction with a bioretention area (or "rain garden") constructed downhill of the downspout. Design compost-amended soils and bioretention areas to City guidelines.

C. Roads and parking lots: Stormwater generated from roads and parking lots shall be considered fully dispersed if one or more of the following conditions are met:

1. All runoff is collected, treated, and infiltrated, and the stormwater design satisfies applicable City stormwater standards.

2. All runoff is infiltrated through pervious pavement surfaces as may be permitted or required at the discretion of the Public Works Director.

3. Runoff is dispersed into forested/native areas or engineered areas according to drainage manual criteria.

D. Stormwater detention facilities: Stormwater detention may be necessary, based on hydrologic modeling results, to manage excess development runoff.

Appendix 1: List of Drawings

Title	Drawing No.
Residential Low-Impact Neighborhood Collector, Sheet 1 of 2	9-1A
Residential Low-Impact Neighborhood Collector, Sheet 2 of 2	9-1B
Residential Low-Impact Local Access, Sheet 1 of 2	9-2A
Residential Low-Impact Local Access, Sheet 2 of 2	9-2B
Residential Low-Impact Angle Point Details	9-3
Residential Low-Impact Optional Tree Tract, Neighborhood Collector/Local Access	9-4