

REGULATIONS FOR STREETS AND RELATED WORK

Chapter 6

CITY STREET TYPES AND MONUMENTATION

Sec. 601. CITY STREET CLASSIFICATION SYSTEM

- A. **General.** Street design standards and geometrics are determined by the functional classification of the street. Once the functional classification is determined, roadway design standards can be obtained from the information in Appendix A (the Technical Standards).
- B. **Street Categories.** City Streets are classified by location and function, as listed below. The appropriate specifications are listed in attached details R1-R5.
 - 1. **Primary Arterials.**
 - 2. **Commercial and Industrial Streets.**
 - 3. **Standard Asphalt Concrete Streets.**
 - 4. **Residential Concrete Streets.**
 - 5. **Special Streets.** In addition to the functional categories listed above, city streets can further be classified by whether they are alleys, cul-de-sacs, private streets, P.U.D. streets or expressways.

Sec. 602. STREET MONUMENTATION

- A. **General.** Survey control monuments shall be placed or replaced in accordance with recognized good practice in land surveying, and in conformance with all applicable State and local regulations. The control and boundary survey shall be tied to the Washington State Coordinate system per RCW 58.29 if suitable control is available within one (1) mile of the survey.
- B. **Replacement of Disturbed Monuments.** All existing survey control monuments which are disturbed, lost, or destroyed during construction or maintenance shall be replaced by the responsible party at his own expense. A land corner record shall be recorded by a licensed land surveyor with the County Auditor and filed with the Public Works Director, showing methods used to establish the monuments' position and references.

- C. **Plat Monumentation Locations.** Survey monuments shall be placed at the following locations:
1. At all exterior boundary corners of plats.
 2. At the intersections of road or right-of-way centerlines within the short plat or plat.
 3. At the beginning and ends of center line curves.
 4. At all block corners not at intersections.
- D. **Standard Survey Monuments - Construction.** Standard survey monuments shall conform to City of Ferndale Standard Details S-1 or S-2 and shall be cast in concrete, reinforced with a 5/8 inch (No. 8) reinforcing bar, and have a 2 inch minimum brass cap with a 2 inch long shank.
1. Permanent control monuments may be placed on offset lines. The position and types of every permanent monument shall be noted on all short plats or plats.
 2. Permanent control monuments within streets shall be set after the roads are graded.
- E. **Supplemental Survey Markers.** Each supplemental survey marker shall conform to the City of Ferndale Standard Details S-1 and S-2 and shall be a brass disk encased in concrete placed at all points of curves, points of tangent, intersections, as needed for intervisibility in streets, and at the intersection of street centerlines with plat boundary line.
- F. **Surveyor's Certification.** A land surveyor shall certify in writing under his seal that all monuments and lot corners indicated on the plat have been set. No Street maintenance bonds shall be released until the City has received this certification.

Sec. 603. STREET GEOMETRICS

- A. **General.** Street geometrics are based primarily on the function of the street and secondarily on such considerations as Average Daily Traffic (ADT), terrain, and sight distance
- B. **Street Design Criteria.** Table 6-1 on Page 5 of this chapter lists the criteria for right-of-way, street width, and other geometrics for streets based on their function. The information in the table is also illustrated in City of Ferndale Standard Details R-1 through R-4.

C. **Street Definitions.** Existing street classifications are shown on Ferndale Transportation plan. New streets shall be determined as follows:

1. **Major Arterial:**

Major arterials are those streets serving primarily through traffic, with negligible emphasis placed on local access. Restrictions may be placed on entry and exit locations, to preserve the priority of through movements as well as to preserve safe and efficient traffic flow. Major arterials may serve any level of traffic volume, up to full utilization of the road capacity. In peak hours, significant delay and congestion may be unavoidable. Major arterials often have multiple travel lanes.

2. **Minor Arterial:**

Minor arterials are those streets serving primarily through traffic but with a minor emphasis placed on local access. Restrictions may be placed on entry and exit locations to preserve safe and efficient traffic flow first, and access movements second. Minor arterials may serve any level of traffic volume, but should not utilize quite the total capacity of the roadway. In peak hours, moderate delay and congestion is acceptable. Minor arterials may have multiple travel lanes.

3. **Industrial and/or Collector:**

Collector streets serve predominantly local access functions in combination with a moderate amount of through traffic. Restrictions may be placed on entry and exit locations to preserve safe and efficient traffic access movements first, and traffic flow second. Collectors should serve low to moderate traffic volumes relative to the capacity of the roadway, to ensure negligible delay and high freedom for access movements at all times. Collectors rarely have multiple travel lanes.

4. **Neighborhood Collector:**

Neighborhood collectors serve primarily local access to abutting lots with a minor emphasis on serving through traffic to adjoining subdivisions. Restrictions may be placed on entry and exit locations for traffic safety relative to intersections. Traffic volumes should be low relative to road capacity and compatible with the abutting land uses, but may be somewhat higher than local streets. Neighborhood collectors never have multiple travel lanes, but may include extra turn pockets.

5. Local Street:

Local streets are intended for use within commercial, single-family, and multi-family subdivisions for access to abutting lots, and to collect traffic from cul-de-sacs. Restrictions may be placed on entry and exit locations for traffic safety relative to intersections. Traffic volumes should be very low for compatibility with abutting land uses and with significant amounts of pedestrian activity, and minimal disturbance to the tranquility of the residential environment. Local streets never have more than two lanes.

6. Cul-de-sac:

Cul-de-sacs are intended for use within commercial, single-family, and multi-family subdivisions for lot access only, where no possibility exists of future extension to connect with or serve traffic from other areas. Restrictions may be placed on entry and exit locations for traffic safety relative to intersections. Traffic volumes on cul-de-sacs will be extremely low, giving priority to pedestrian movements and not disturbing the tranquility of the residential environment. Cul-de-sacs never have more than two lanes, or exceed 600 feet in length.

**TABLE 6-1
Ferndale Road Design Information**

| Roadway Classification (asphalt concrete except as noted) | Major Arterials | Minor Arterials | Industrial Collector | Neighborhood Collector | Local & Commercial Streets | Local Cul-de-sac |
|---|--|-----------------------|-------------------------|---------------------------|-------------------------------|---------------------|
| Design speed (MPH) (See Note 3) | 35-45 mph | 35-45 mph | 35-45 mph | 25-35 mph | 25-35 mph | 25 mph (min) |
| Maximum Grade (See Note 4) | 10% | 10% | 10% | 10% | 10% | 10% |
| Minimum Stopping Sight Distance See D.O.T. standard Section 30 | | | | | | |
| Horizontal Curvature See D.O.T. Standard | 200 feet or AASHTO super-elevation transition req. whichever is greater. (See Section 606B) | | | | | |
| Vertical Curvature See D.O.T. Standard | See Section 606C | | | | | |
| Maximum Super Elevation (%) | 2 | 4 | 4 | 4 | 4 | 4 |
| Min. Curb to Curb (ft) (See Notes 5 & 6) [2 Lane] | 44 | 44 | 44 | 44 | 36 | 36 |
| Min. R-O-W width (feet) (See Note 1) [2 Lane] | 80 | 60 | 60 | 60+ | 60 | 50 |
| New Bridges - Roadway Width (See Note 9) | Greater than minimum roadway width above | | | | | |
| New Bridges - Vertical Clearance | 16.5 feet minimum | | | | | |
| New Bridges - Design Live-load | AASHTO HS20-44 (Minimum) | | | | | |
| Minimum Intersection Offset Spacing (ft) | See Section 607 | | | | | |
| Parking Allowed | Council Appr. Req. | Council Appr. Req. | Council Appr. Req. | Council Appr. Req. | Both Sides | Both Sides |

NOTES:

- All roadway & R.O.W. widths shown above are minimum. Additional width may be required based on the City Councils discretion. (Desirable R.O.W.: Major & Minor Arterials - 84-100, Industrial - 72-90, Neighborhood - 60-80)
- ADT shall be based on a 10 year traffic projection, at a minimum.
- Actual design speed value(s) shall be determined by the engineer subject to City Council approval. Design speed is a basis for determining geometric elements and does not imply posted or legally permissible speed.
 - Maximum grades may be exceeded, subject to City Council approval, if:
 - No practical alternative exists
 - ADT is under 250' and grades are relatively short & do not exceed 15%.
- The City Council may require a collector road climbing lane if warrants are met in accordance with AASHTO.
- Use of shoulders vs. curb sections shall be at City Council discretion.
- Shoulders shall be widened two feet where guardrail is planned.
- Right of way widths assume curb sections. Add 10 feet for shoulder sections.
- Bridge roadway width shall be measured between curbs or between faces of bridge railing, which is less.
- To be reviewed under best engineering practices.

Sec. 604. SPECIAL STREET GEOMETRICS

The following special street geometric and related standards shall apply in addition to the standards contained in Table 1.

- A. **3/4 Roadsection.** A 3/4 roadsection may be used if approved by the City for the improvement of abutting off-site roadway. A 3/4 section shall consist of the construction of 1/2 the full standard roadway on the project side of the road centerline. The opposite side of the road centerline shall be constructed to a 12' paved width with a 2' gravel and crushed rock shoulder. The gravel base, ATB, crushed surface course, and pavement for the 12' width shall match the full section.
- B. **Alleys.** Alleys and service drives shall have a minimum width of 24 feet. This may be reduced to 20 feet with approval of the City Council.
- C. **Cul-de-Sac.** Cul-de-sacs shall conform to City of Ferndale Standard Detail R-5.
 - 1. Geometrics of stem section are same as local streets (Standard Details R-3 & R-4)
 - 2. Minimum right-of-way width across bulb section: 110' as shown on Detail in urban curb and gutter sections.
 - 3. Minimum pavement width across bulb: 90 feet in urban curb and gutter section.
- D. **Private Streets.** Private streets will be permitted when so provided in appropriate ordinances or at the discretion of the City Council when:
 - 1. Covenants have been approved and recorded with the City which provide for maintenance of the private streets and associated parking areas by owners in the development, including placing of liens upon non-payment of fees, and
 - 2. Provision is made for the streets to be open at all times for emergency and public service vehicle use, and
 - 3. The private streets will not obstruct public street circulation, and
 - 4. At least one of the following conditions exist:
 - (a) Existing abutting development precludes the construction of a public street, or

- (b) Topographic, geological or soil conditions make development of a public street undesirable, or
 - (c) The streets are within a private community with a corporate identity, or
 - (d) Neighborhood traffic circulation and lot access can be met more logically by private streets than by public streets.
5. **Criteria for Construction.** Private streets shall conform to these standards. However, it is intended that a broader flexibility will be granted on proposed variance requests than given for public streets. See the City of Ferndale Standard Details for minimum specifications.
- E. **P.U.D. Street.** All streets within planned unit developments shall conform to the same standards as a public street. However, the minimum right-of-way and pavement width for private and public access streets exclusively serving the needs of a development may be reduced if adequate consideration of the following factors is made during the review of a planned unit development request:
- 1. Provision of off-street parking;
 - 2. Restriction of on-street parking;
 - 3. Provision of adequate clearance for emergency vehicles;
 - 4. Provision of clear vision at intersections;
 - 5. Provision of alternative bicycle and/or pedestrian paths;
 - 6. Service of not more than 100 average daily trips for the narrowest streets;
 - 7. Provision of turnarounds at acceptable intervals for two-way streets; and
 - 8. Provisions of adequate utility easements outside of street.
 - 9. Future street revision or extension is not planned.
- F. **Expressways.** Expressways are higher classification streets which are usually State or Federal responsibility. In the event that the City has jurisdiction over the construction or improvement of such a facility, the work shall be done in accordance with appropriate State or Federal standards.

- G. **Other Street Design Criteria.** Alternate criteria under recognized street classifications, such as those of the current Local Agency Guidelines as prepared by WSDOT, may be applied by the City.

Sec. 605 SIGHT DISTANCE

General. The standards for sight distance are provided in the Washington State Department of Transportation Design Manual - current edition. City standards limit maximum grade to 10%.

Sec. 606. STREET ALIGNMENT

- A. **General.** Factors that should be considered when establishing street alignment include design speed, public safety and comfort, topography, aesthetics, land use, physical features, and availability of right-of-way. In general, alignment should be as consistent as possible with the topography.

- B. **Horizontal Curves.** Tangents between curves shall be at least 200 feet or the distance required to complete the superelevation transition per AASHTO, whichever is greater.

Circular curves shall be used; except that upon approval by the Public Works Director, compounded curve may be used for special or channelized turning lanes.

Where restrictive conditions exist, the minimum horizontal curve radius on centerline (R) in feet shall be determined as follows:

$$R = \frac{V^2}{15(e+f)}$$

Where: V = Design speed in miles per hour (mph)
e = Superelevation (street section cross slope), feet per foot
f = Side friction factor

(for V less than 30 mph, f=0.16; for V greater than 30 mph, f shall be reduced 0.005 for each 5 mph increase in V)

The Radii (R) shall be rounded to the next higher even multiple of five (5) feet.

Curves may either be expressed in terms of radii or degree of curvatures where:

The Degree of curvature (D), which is the angle subtended at the center of curve by an arc of 100 feet in length is computed as follows:

$$D = 5,729.578/R$$

Values of D shall be rounded to the nearest even multiple of 0.5 degrees.

- C. **Vertical Curves.** Symmetric, parabolic curves shall be used. The minimum length of vertical curve shall be computed from the formula:

$$L = KA$$

Where: L = The length of vertical curve, in feet

K = A constant for design

A = The algebraic difference in grades, in percent

K is constant for each design speed. Its selection for crest vertical curves is based on stopping sight distance requirements. For sag vertical curves, K is based on headlight stopping distance. The formula above shall use the K values from Table 6-2.

**Table 6-2
K Values for Selected Design Speeds**

| <u>Design Speed (mph)</u> | <u>Crest Curve</u> | <u>Sag Curve</u> |
|---------------------------|--------------------|------------------|
| 25 | 15 | 22 |
| 30 | 28 | 35 |
| 35 | 35 | 40 |
| 40 | 55 | 55 |
| 45 | 73 | 70 |
| 50 | 85 | 75 |
| 55 | 139 | 100 |
| 60 | 160 | 105 |

Vertical curves are not required where the algebraic difference in grades is less than one percent. Vertical curves shall be of sufficient length to provide adequate sight distance, but never shorter than three times the design speed.

- D. **Minimum Street Grades.** Straight sections of street shall have a minimum grade of 0.4 percent provided that streets with grades between 0.4 and 0.8 percent shall have an integral curb and cutter (Section 615). Straight sections of street may have a grade less than 0.4 percent if the pavement is cement concrete and drainage inlets are spaced no further than 150 feet apart.

Sec. 607. **INTERSECTIONS**

- A. **Intersecting City Streets.** Intersections of streets shall be designated in accordance with the following criteria:

1. Angle of intersection 85° TO 95°
2. Minimum centerline radius (2-lane) 55 feet
3. Minimum curb radius 40 feet
4. Minimum property line radius 25 feet
5. Minimum stopping sight distance See Washington State Department of Transportation Design Manual
6. Minimum centerline offset of adjacent streets from intersection or low speed curves:
 - (a) All access streets and any combination: 150 feet
 - (b) Access streets, and collector streets, crossing or connecting to any collector or arterial; or arterials intersecting arterials: 300 feet
 - (c) On sloping approaches at an intersection, landing not to exceed one foot difference in elevation for a distance of 30 feet approaching an arterial or 20 feet approaching a residential street, measured from nearest right-of-way line of the intersecting street

- B. **State Highway-City/Private Street Intersections.** The developer shall prepare and submit to the Public Works Director a design of the proposed State Highway-City/Private Street Intersection acceptable to the Washington State Department of Transportation. WSDOT approval of the proposed design must be received prior to the filing of the plat or construction. Improvements of the State Highway are to be the responsibility of the developer and may either be constructed or a bond to cover the cost of such improvements

furnished to the Public Works Director in the amount as determined by the Public Works Director and the WSDOT.

- C. **Railroad Grade Crossings.** As a minimum, standard signs and markings in accordance with the MUTCD shall be installed at all rail-street grade crossings.

Flashing light signals and gates which indicate the approach of presence of trains shall be installed at those rail-street crossings where studies by the Public Works Director indicate the need of warning beyond that provided by standard signs and markings. The crossings shall be designated in accordance with the current WSDOT Design Manual.

Sec. 608. DRIVEWAYS

- A. **Driveway Type.** Driveways that serve a single dwelling unit or a joint driveway serving two (2) single dwelling units are residential and all others shall be considered as commercial.
1. Driveways which enter onto a City right-of-way require a City Revocable Encroachment Permit. Driveways which enter onto state routes require an Access Permit from WSDOT.
- B. **Dimension and Details.** Permissible dimensions, slope, and detail shall be as indicated in the City of Ferndale Details R-6, R-7, and R-15 and as further specified in the following subsections:
- C. **General Standards**
1. Driveways directly giving access onto arterials shall be denied if alternate access is available.
 2. All abandoned driveway areas on the same frontage shall be removed and the curbing and sidewalk, or shoulders and ditch sections, shall be properly restored.
 3. Maintenance of driveway approaches, including drainage culverts, shall be the responsibility of the owner whose property they serve.
 4. Every driveway must provide access to an off street parking area located on private property. Every vehicle entering the driveway must be able to park, stand, or load entirely off the street right-of-way, sidewalk, or pathway. An adequate turn-around area shall be provided for any driveway off arterial and collector streets, so vehicles exit the property in a forward motion.

5. No driveway shall be allowed to a public or private parking area in conjunction with industrial, commercial, multiple-family dwelling, or any like use that requires a vehicle to back out on to any street.
6. No driveway shall be so constructed in such a manner as to be a hazard to any existing drainage inlet, culvert, street lighting standard, utility pole, traffic regulating device, fire hydrant, or other public facility. The cost of relocating any such public facility, when necessary to do so, shall be borne by the applicant. Said relocation of any public facility shall be performed only through the agency holding authority for the particular structure involved.
7. All surface drainage from driveways must be contained and directed to the open ditch and/or curb and gutter section. No surface drainage shall be allowed to flow onto the City street surface.
8. For driveways crossing an open ditch section, culverts shall be 12 inches in diameter or larger if so required to carry anticipated stormwater flows. The culvert size shall be as approved by the Public Works Director.

D. Location and Width of New Driveways.

1. No portion of any driveway shall be permitted within 35 feet of the intersection point of City right-of-way lines for access streets. On arterials and collectors, the distance shall be 75 feet.
2. On commercial or industrial parcels with street frontage 75 feet or less, no more than one driveway shall be constructed; on frontages over 75 feet, two or more driveways may be permitted, subject to approval by the Public Works Director.
3. Joint-use driveways serving two adjacent parcels may be built upon formal written agreement of both property owners and approved by the Public Works Director.
4. Driveways providing access to arterial streets shall be spaced a minimum of 200 feet apart; however, the Public Works Department may issue a permit which will result in lesser spacing when all of the following factors are present:
 - a) The parcel does not have adequate frontage on the arterial street to provide the 200 foot spacing;
 - b) After good faith attempts, the owner of the parcel is unable to secure joint access through an adjoining parcel;

- c) The parcel to be served cannot be served from another street; and,
- d) The resultant driveway provides a maximum spacing from adjacent driveways giving access to the arterial street, and proper corner clearance is provided.

Sec. 609. MEDIANS

Medians are an optional design feature. A median is an addition to, not part of, the specified width of traveled way. Edges must be similar to outer street edges: urban, extruded or formed vertical curbs; except that median shoulders shall be minimum 4 feet in width. Medians may be grassed, landscaped, or surfaced with aggregate or pavement. Medians shall be designed so as not to limit turning radii or sight distance at intersections. Plants used for landscaping shall: not exceed three (3) feet in height above the street surface or four (4) inches in trunk diameter (caliper) at maturity; and not extend beyond the neat lines of the median onto the street. Additional right-of-way shall be provided for the median. Medians shall be approved by the Ferndale City Council.

Sec. 610. STREET ENDS

- A. **General.** Minimum access dimensions for allowing emergency vehicles on public dead end streets shall be as shown in City of Ferndale Standard Detail R-5.
- B. **Cul-de-Sacs.** Maximum cul-de-sac length is 600 feet and shall be provided at all public street ends. See attached standard Detail R-5.
- C. **Hammerheads.** Hammerheads may be used in lieu of a cul-de-sac on private streets provided that the street serves six or less lots. See standard detail R-5A.
- D. **Temporary Dead Ends.** Where a street is temporarily dead-ended, provisions for a turnaround must be provided when the street is longer than one hundred and fifty (150) feet. The turnaround may be a hammerhead or a cul-de-sac with a minimum radius of 35 feet.

Sec. 611. STREET BASE AND SURFACING

- A. **Minimum Requirements.** Materials and construction procedures shall be in accordance with the WSDOT Standard Specifications and in the amounts shown on City of Ferndale Standard Details R-1 through R-4.

- B. **Design.** Roadway sections of arterials, collectors, industrial and commercial streets shall be designed consistent with the load bearing capacity of the soils and the traffic-carrying requirements of the roadway. The soils and traffic analysis upon which the design is based shall accompany the plans at time of submittal. This design will be based on a 20-year traffic projection beyond the year of construction.

Sec. 612. BRIDGES

- A. **Bridge Design Standards.** Bridges, whether on public roads or on private roads, shall be designed and constructed to meet the minimum requirements set forth in the AASHTO Bridge Specifications. All new bridges shall be designed to carry an AASHTO HS 25 live load or greater, unless otherwise approved by the Public Works Director. Bridge design shall be prepared by a Professional Civil Engineer licensed by the State of Washington. Final approval shall be made by the Public Works Director.
- B. **Bridge Roadway.** In the general case, the bridge roadway shall comprise the full width and configuration of the road being served; to include the traveled way plus curbs, shoulders, sidewalks, walkways, and/or bike lanes. Requirements of utilities shall be duly considered.
- C. **Bridge Retaining Walls.** Retaining walls on public or private roads shall be designed and constructed to meet the minimum requirements of the AASHTO Bridge Specifications.

Sec. 613. ROCK RETAINING WALLS

- A. **General.** Rock retaining walls may be used for the containment of cut or fill embankments up to a maximum height of 8 feet in stable soil conditions which will result in no significant foundation settlement or outward thrust upon the walls. For heights over 8 feet or when soil is unstable, a structural wall designed by an engineer qualified in retaining wall design shall be used. See attached Detail R-18.
- B. **Materials**
1. Size categories shall include:
 - (a) Two-man rocks (300 to 600 pounds), 13 inches in least dimension;
 - (b) Three-man rocks (800 to 1200 pounds), 16 inches in least dimension;

- (c) Four-man rocks (1500 to 2200 pounds), 18 inches in least dimension.
2. The rock material shall be as nearly rectangular as possible. No stone shall be used which does not extend through the wall. The rock material shall be hard, sound, durable, and free from weathered portions, seams, cracks, and other defects. The rock density shall be a minimum of 160 pounds per cubic foot (pcf).
- C. **Foundation Course.** The retaining wall shall be started by excavating a trench, not less than six (6) inches in depth. Four-man rocks shall be used for bottom course rock in all rock retaining walls over 6 feet in height.
- D. **Rock Selection and Placement.** Rock selection and placement shall be such that there will be a minimum of voids and, in the exposed face of the wall, no open voids over six (6) inches across in any direction. The final course shall have a continuous appearance and be placed to minimize erosion of the backfill material. The larger rocks shall be placed at the base of the rockery so that the wall will be stable and have a stable appearance. The rocks shall be placed in a manner such that the longitudinal axis of the rock shall be at right angles or perpendicular to the rockery face. The rocks shall have all the inclining faces sloping to the back of the rockery. Each course of rocks shall be seated as tightly and evenly as possible on the course beneath. After setting each course of rock, all voids between the rocks shall be chinked on the back with quarry rock to eliminate any void sufficient to pass a 2 inch square probe.
- E. **Backfill.** The wall backfill shall consist of quarry spalls with a maximum size of four (4) inches and a minimum size of two (2) inches. This material shall be placed to an eight (8) inch minimum thickness between the entire wall and the cut or fill material. The backfill material shall be placed in lifts to an elevation approximately six (6) inches below the top of each course of rocks as they are placed, until the uppermost course is placed. Any backfill material on the bearing surface of one rock course shall be removed before setting the next course.
- F. **Sidewalk Above Wall.** When a sidewalk is to be built over a rock retaining wall, the top of the wall shall be sealed and leveled with a cap constructed of Cement Concrete, Class 3000, in accordance with the applicable provisions of Section 6-02 of the State Standard Specifications, but with reduced water content resulting in slump of not over two (2) inches.
- G. **Sight Distance Preservation.** The location of the rock or structural retaining walls shall not restrict sight distance as detailed in the Title 18, Official City of Ferndale Zoning Ordinance. See attached Detail R-19.

Sec. 614. STREET SIDE SLOPES

- A. **Slope Steepness.** Side slopes shall be constructed no steeper than 3 to 1. Flatter slopes are preferred and may be required if there are indications that the earth is unstable and subject to sliding or sloughing.
- B. **Slope Stabilization.** Side slopes shall be stabilized by grass sod or seeding, or by other planting or surfacing materials acceptable to the Public Works Director.

Sec. 615. CURBS AND GUTTERS

- A. **Required.** Curb and gutter shall be utilized for street edges whenever possible and shall always be used under the following conditions:
 - 1. Street grade is less than 0.8 percent.
 - 2. On street sections where the grades exceed 10 percent.
 - 3. On frontages with commercial usage.
- B. **Vertical Curb.** Vertical curb shall be used for edges of islands and may also be used for street edges where curb and gutter is not required.
- C. **Thickened Edge.** Thickened edge may be used on private streets when approved by the Public Works Director.
- D. **Curb Details.** Curb details are shown in City of Ferndale Standard Detail R-9 and R-10.
- E. **Ramps.** On all streets with vertical curb, ramp sections to facilitate passage of handicapped persons shall be constructed through curb and sidewalk street intersections and other crosswalk locations and as shown in City of Ferndale Standard Detail R-14. Where a ramp is constructed on one side of the street, a ramp shall also be provided at a corresponding location on the opposite side of the street.

Sec. 616. GUARDRAILS

Guardrail shall be provided as specified in the WSDOT Design Manual. The guardrail shall conform to Standard Plans entitled "Beam Guard Rail," "Beam Guard Rail Anchors," and "Beam Guard Rail Details," or "Concrete Median Barrier" with related details. Cross-sections shall be submitted to assure proper guardrail location.

Sec. 617. **TRAFFIC CONTROL**

- A. **Signing.** All traffic control devices shall conform to the Manual for Uniform Traffic Control Devices (MUTCD). Within public right-of-way the City shall install all traffic control signs which shall include but not be limited to street name, stop, dead end, and pedestrian signing, except for private street signing. The developer shall be responsible for the cost of materials and installation. All signs shall be installed or the cost of installing all signs shall be paid to the City before a plat is recorded; or before a building permit is issued. Private street signing shall be as shown in the MUTCD or as approved by the Public Works Director.
- B. **Pavement Marking.** In new plats or for commercial developments, pavement markings, including buttons, striping, and delineators may be required to provide street safety. Such markings shall be provided by the developer. All materials shall conform to the State Standard Specifications. All work shall be approved by the Public Works Director prior to installation.
- C. **During Construction.** It is the responsibility of the developer to provide adequate traffic control to ensure traffic safety during construction activities. All construction signing and temporary pavement markings shall conform to the MUTCD.
- D. **Miscellaneous.** Other necessary traffic controls, such as for logging or gravel operations, should follow the requirements of both the MUTCD and the City of Ferndale Public Works Director.

Sec. 618. **MAILBOXES**

- A. **General.** Mailboxes shall conform with the following standards provided that the type and location of mailboxes is subject to the approval of the U.S. Postal Service. See attached detail M-1.
- B. **Mailbox Design and Location.** All mailboxes shall be of a type approved by the U.S. Postal Service. In general, mailboxes shall be set so the bottom or base of the mail box is between 38 and 42 inches above street surface for both urban delivery and rural delivery. The installation shall not create a street obstruction or restrict sight distance.
- C. **Maintaining Sidewalk Width.** When mailboxes are located in the sidewalk, individually or in clusters, they shall be located such that the width of the abutting sidewalk (the distance from the back edge of the sidewalk to the mailbox) is not less than four feet.

Sec. 619. **UTILITY INSTALLATION STANDARDS AND MATERIALS**

- A. **General.** Pipe materials and overall installation work shall be in accordance with the current edition of WSDOT or APWA Standard Specifications.
- B. **Trenching and Cutting Procedure.** In instances where trenching or cutting is permitted, the following procedures will apply:

Pavement patching shall include cutting existing pavement, removal of existing pavement, preparation/placement, and compaction of backfilling material, placement and compaction of aggregate base material, temporary patch (if required), application of tack coat, and construction of asphaltic concrete or Portland cement concrete pavement "patch" in accordance with the applicable sections of the current edition of the WSDOT or APWA Standard Specifications and the following:

1. **Pavement Cutting.** The existing pavement shall be first cut by an appropriate means to facilitate removal. Immediately prior to placement of the permanent "patch," the existing pavement shall be cut with a saw along rectangular lines as shown on the plans or as directed by the Engineer. The pavement shall be removed so as to provide a firm, neat, straight, vertical edge to join. The Contractor shall be responsible for maintaining the edge. Additional saw cuts will be required to correct broken or damaged edges.
2. **Backfilling.** Backfilling shall be done in accordance with the WSDOT Standard Specifications, including Section 7-04.3(3), or equivalent.
3. **Quality Control.** Quality control of subgrade backfill and embankment material shall be by a certified, independent laboratory approved by the City and secured and paid for by the Developer. A minimum of one test shall be taken within every 200 ft. of trench length and at depths of 50% of trench depth and at the surface, or as required by the City.
4. **Temporary Pavement Patching.** A temporary two inch thick cold asphalt plant mix patch may be required to be placed and maintained over the trench area until final settlement is satisfactory to the Public Works Director. The temporary patch shall be removed and the existing pavement cut before permanent repairs are made.
5. **Permanent Pavement Repair.** The structural section of the patch shall be equal to the section of the existing pavement, but in no case shall the thickness of asphaltic concrete be less than three and one-half (3½) inches. Full depth asphaltic concrete patches shall be placed in layers not exceeding three (3) inches with adequate compaction.

6. **Tack Coat.** A tack coat shall be uniformly applied to all edges to be joined and lapping six (6) inches over the existing pavement. The lines from the new asphalt pavement shall be raked over the tack coat, feathered and rolled or tamped to seal the joint.
 7. **Asphaltic Concrete.** Asphaltic concrete used for patching shall be Class "B" and shall be furnished, placed, and compacted in conformance with State or APWA Standard Specifications.
 8. **Portland Concrete Cement.** Portland cement concrete mix used for patching shall be a 6.5 sack mix and shall be furnished, placed, and compacted in conformance with the State or APWA Standard Specifications.
- C. **Pavement Restoration.** Permanent pavement restoration shall be performed according to City of Ferndale Standard Detail R-11. Performance bonds may be required to guarantee final restoration work.

Sec. 620. **EROSION AND SEDIMENTATION CONTROL**

- A. **General.** Care shall be taken during construction activities to minimize erosion in sensitive areas.
1. **Silt Fences.** Silt fences as shown in City of Ferndale Standard Detail ST-10 (DOE II-5.18) shall be installed on downhill slopes of projects as shown on the engineering plans.
 2. **Straw Bale Barriers.** Straw dams conforming to Standard Detail ST-11 (DOE II-5.20) should be placed within small drainage channels on project sites to impede the flow of sediments.
 3. **Slope Protection.** Where the Engineer or Public Works Director determines critical slopes exist in a construction area, slope protection as shown in Standard Detail ST-12 shall be provided.