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SECTION 600 – STREET AND ASPHALT CONCRETE PATHS AND/OR BIKEWAYS STANDARDS

601 GENERAL

The overall goal of this chapter 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.

Development of properties on or tributary to substandard or unsafe (safety issues) roadways may, depending on the size and type of development, be cause for “off-site” improvements to the substandard or unsafe corridors, to include road drainage facilities. The City Engineer shall determine when and if such conditions exist. At a minimum “half street improvements” will be required as a condition of development in and along the entire property as it abuts City rights-of-way.

Private roads shall not be allowed within the City limits. Private access corridors shall be allowed when permitted under Section 17 of the BLMC and shall conform to the requirements contained therein. Aside from this exception, all new development shall construct the necessary public roadway as specified in this document.

602 DESIGN STANDARDS

1. General: All street design must provide for the maximum traffic loading and capacity conditions anticipated. The width and grade of the pavement must conform to specific standards set forth herein for safety and uniformity.
2. Design Standards: The design of streets and roads shall depend upon their type and usage. The design elements of streets shall conform to City standards as set forth herein.

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

- a. Grade: Street profile grade should conform closely to the natural contour of the land. In some cases, a different grade may be required by the City Engineer. Unless otherwise approved by the City, the minimum profile grade shall be 0.5 percent. The maximum allowable grade shall be 10 percent for residential streets and 7 percent for arterials and streets in commercial zones.
- b. Width: The pavement and right-of-way width depend upon the street classification.

Street widths shall be measured from face of vertical curb to face of vertical curb on streets with cement concrete curb and gutter, and from edge of pavement to edge of pavement for streets without concrete vertical curb and gutter.

- c. The developer is required to retain a licensed soils engineer to make soils tests and to provide engineering recommendations for design of the sub-base and roadway sections based on “in place” soils, depth of “free draining” structural materials, projected pavement loadings, roadway classification, average daily traffic volume, etc.
- d. In special circumstances, as may be specifically approved/required by the City Engineer, due to local conditions and/or geometric restrictions, other standards may be required which are different than those specifically listed herein.
- e. There shall be no islands in the center of any cul-de-sac.
- f. The location and alignment of streets shall generally conform to existing streets and to the City’s official street naming policy or ordinance except where, in the opinion of the City Engineer, topography or some physical features eliminate the possibility of connecting these streets in the future.
- g. Streets and lots shall be placed in relationship to natural topography so that grading and filling and/or other alternations of existing conditions is minimized. Reserve strips or street plugs controlling access to streets will not be approved unless, in the judgment of the City Engineer, such is necessary for the protection of the public welfare or substantial property rights, and in such cases they will be required. The control and disposal of the land comprising such strips or plugs shall be placed within the jurisdiction of the City.
- h. If, in the opinion of the City Engineer, it is necessary to give access to adjacent land for possible future development, streets shall be extended to the boundary of the subdivision and the resulting dead-end street shall be provided with a cul-de-sac. The cul-de-sac shall be paved, with curbs, gutters and sidewalks and constructed to City standards. A Type III Barricade and signage as shown in the standard details shall be placed in all locations where the right-of-way may be extended in the future for access to adjacent property.
- i. Half streets shall require approval by the City and Fire Marshall’s office. Half street sections shall be based upon the typical street section shown in the Standard Plans as approved by the City.
- j. The street system (in residential subdivisions and short subdivisions) shall be laid out with a minimum number of intersections with other arterial streets at intersections closer than 1,000 feet and no streets shall intersect at intervals closer than 125 feet, unless, in the judgment of the City Engineer, an exception to this rule would be in the public interest and welfare.
- k. Streets shall be laid out so as to intersect as nearly as possible at right angles, and in any event, no street shall intersect with any other street at an angle of less than 85 degrees, without specific written City approval.
- l. Unless otherwise approved by the City, street jogs and intersections with centerline offsets less than 125 feet are prohibited.
- m. Intersecting streets shall be laid out so that blocks between street lines are not more than 1,000 feet in length, except where in the opinion of the City Engineer, extraordinary conditions justify a departure from the maximum.

- n. Streets shall conform to all requirements of the latest edition of the International Fire Code adopted by the City.
 - o. All street construction plans shall be submitted to the City and shall be in conformance with the requirements specified in Section 200.
 - p. The General Notes for Street Construction, as shown and further referenced herein, shall be included on any plans submitted to the City for construction approval dealing with street design.
3. **Functional Classification:** City streets are divided into major (or principal) arterial, minor (or secondary) arterial, collector, local access and half street in accordance with regional transportation needs and the functional use each serves. Function is the controlling element for classification and shall govern right-of-way, road width, and road geometrics. The proponent/developer shall request information on the functional classification of existing streets from the Public Works Director. New streets will be classified by the City.

Generally speaking, the functional classification of streets are defined as follows:

- a. Major arterials are defined as primary roadways for vehicle trips between local urban areas.
- b. Minor arterials are defined as streets connecting two or more arterials together or serving industrial areas.
- c. Collector streets are defined as streets currently serving or anticipated to serve more than 50 dwelling units or connecting to an arterial.
- d. Local access streets are residential only streets which will serve 50 dwelling units or less and/or terminate in non-extendible cul-de-sacs.
- e. Half streets are those streets with a high probability that lots or dwelling units will be proposed for the opposite side of the street eventually resulting in a full street width.

603 STREET NAMES

The developer must check with the Planning and Community Development Department regarding the naming of streets. This should be done at the time the preliminary plat is submitted and again upon approval of the final plat. The Public Works Director will insure that the name assigned to a new street is consistent with policies of the City.

An address number will be assigned to all new buildings 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.

604 SIGNING AND PAVEMENT MARKINGS

The developer is responsible for providing all traffic control signs and pavement markings. All traffic control signs shall conform to the latest edition of the *Manual on Uniform Traffic Control Devices* (MUTCD), except as modified by the practices of the Washington State Department of Transportation, or

by City Standards. All traffic control sign installations shall conform to the location and placement standards noted in the MUTCD, as shown in the standard details, or as required by the City Engineer; and shall include the appropriate pavement markings. The location of the required signing and pavement markings shall be shown on the street improvement drawings, and must be approved by the City Engineer.

Pavement marking materials shall be as noted in the Standard Specifications; however, all stop bars, crosswalk markings, traffic arrows, and symbols shall be thermoplastic or approved equal.

Permanent street signs shall be manufactured and installed in conformance with the standard details.

605 RIGHT-OF-WAY

Right-of-way is determined by the functional classification of a street. Minimum right-of-way widths are shown in Table 600-1. **When the existing right-of-way adjacent to a proposed project is less than the minimum right-of-way widths shown in Table 600-1, the width necessary to make the right-of-way width whole (1/2 of the total width) along the frontage of the proposed project shall be dedicated to the City prior to final acceptance. In situations where existing right-of-way is within a proposed project area, the right-of-way width necessary to make the right-of-way width full, as shown in Table 600-1, shall be dedicated to the City prior to final acceptance.**

Additional roadside easements will be required to facilitate future roadway widening at the discretion of the City.

Right-of-way requirements may be increased if additional lanes, pockets, transit lanes, bus loading zones, operational speed, bike lanes, utilities, schools or other factors are proposed and/or required by the City.

Right-of-way shall be conveyed to the City on a recorded plat or by a right-of-way dedication deed. All costs of same to be borne by the property owner/developer.

606 STREET FRONTAGE IMPROVEMENTS

1. All commercial and residential development, plats, and short plats shall install street frontage improvements at the time of construction as required by the City. Such improvements may include curb and gutter, sidewalk, street storm drainage, street lighting system, utility relocation, landscaping and irrigation, and street widening all per these Standards. Plans shall be prepared and signed by a licensed civil engineer currently registered in the State of Washington.
2. All frontage improvements shall be made across full frontage of the property.
3. Exceptions: When the Public Works Director deems that the above improvements should not be constructed at the time of development, a recorded agreement on forms provided by the City shall be completed which provide for these improvements to be installed at a later date. Funds shall be provided for the required improvements at the time of development or guaranteed by the applicant or by the applicant's signing of a waiver of protest in a Local Improvement District (LID), or Utility Local Improvement District (ULID). An estimate of the funds necessary to complete the required improvements is subject to review and must be approved by the Public Works Department.

Table 600-1. Minimum Street Design Standards^a

Design Standard	Major Arterial	Minor Arterial	Collector	Local Access	Cul-de-Sac
Minimum Right-of-Way	80 feet	70 feet	60 feet	50 feet minimum with 10-foot easements on both sides.	55 feet minimum with 10-foot easement.
Minimum Pavement Width	56 feet	28 feet	26 feet	26 feet	45-foot radius
Minimum–Maximum Grade	0.5%–7%	0.5%–7%	0.5%–10%	0.5%–10%	0.5%–10%
Curb	Cement concrete, curb, and gutter, both sides.	Cement concrete, curb, and gutter, both sides.	Cement concrete, curb, and gutter, both sides.	Cement concrete, curb, and gutter, both sides.	Cement concrete, curb, and gutter, both sides.
Sidewalks	Both sides: 6 feet wide.	Both sides: 5 feet for residential 6 feet for commercial.	Both sides: 5 feet for residential 6 feet for commercial.	Both sides: 5 feet for residential 6 feet for commercial.	Both sides: 5 feet.
Intersection Curb Radius	As Approved	35 feet	35 feet	25 feet	30 feet
Entering Sight Distance ^b	430 feet	335 feet	240 feet	240 feet	Not Applicable
Stopping Sight Distance ^c	360 feet	250 feet	155 feet	155 feet	As approved.
Design Speed (mph)	45	35	25	25	25

^a NOTE: The Public Works Director and/or City Engineer reserves the right to deviate from the above table at their discretion if conditions so warrant.

^b NOTE: ESD values based on 2001 AASHTO, *A Policy on Geometric Design of Highways and Streets*. Designer shall use a sight distance triangle in accordance with the WSDOT Design Manual.

^c NOTE: SSD values based on 2001 AASHTO, *A Policy on Geometric Design of Highways and Streets*.

607 CUL-DE-SAC

Streets designed to have one end permanently closed shall be no longer than 600 feet. At the closed end, there shall be a widened “bulb” having a minimum paved traveled radius as shown in Table 600-1, Minimum Street Design Standards.

608 ACCESS CORRIDORS AND TEMPORARY DEAD ENDS

Where a street is temporarily dead ended, turn around provisions must be provided where the road serves more than one lot. If preapproved by the local Fire Marshall and the City the turn around may be a hammerhead with a minimum inside turning radius of 20 feet and a minimum distance on both sides at the centerline intersection of 40 feet to facilitate emergency vehicle turn-around. Unless otherwise approved by the City Engineer, all roads that may be extended in the future or dead ends that abut undeveloped property (even if future development is not anticipated) shall install a Type III barricade and signage as shown in the standard plans.

609 INTERSECTIONS

1. Traffic control will be as specified in the MUTCD or as may be specifically modified by the City Engineer as a result of appropriate traffic engineering studies.
2. Street intersections shall be laid out so as to intersect as nearly as possible at right angles. Intersection angles less than 85 degrees shall require approval by the City Engineer. At no time shall an intersection angle be less than 75 degrees. For safe design, the following types of intersection features shall not be permitted:
 - a. Intersections with more than four intersecting streets.
 - b. “Y” type intersections where streets meet at acute angles less than 75 degrees;
 - c. Intersections adjacent to bridges and other sight obstructions.
3. Unless otherwise approved, spacing between adjacent intersecting streets, whether crossing or “T” should be as follows:

<u>When highest classification involved is:</u>	<u>Minimum centerline offset should be:</u>
Major Arterial	330 feet
Minor Arterial	300 feet
Collector	300 feet
Local Access	150 feet

4. When different class streets intersect, the higher standard shall apply on curb radii. Deviations to this may be allowed at the direction of the City Engineer.
5. On sloping approaches at an intersection, landings shall be provided with grade not to exceed 1 foot difference in elevation for a distance of 30 feet approaching any arterial or collector or 20 feet approaching a local access street, measured from nearest right-of-way line (extended) of intersecting street.

610 ROAD APPROACHES

All road approaches shall be subject to inspection and approval by the City. Access to any public right-of-way shall only be via an approved approach. Approaches shall be located in accordance with the minimum sight distance requirements shown in Table 600-1. Approaches shall be designed and constructed in accordance with these specifications and in accordance with the following minimum standards:

1. Location of Approaches:

- a. No approach shall be located within 150 feet, as measured from the right-of-way line, of a principal arterial including SR 410.
- b. Approaches shall be located the maximum practical distance from a side street, intersection or other approaches; but in no event shall an approach be located within 35 feet or the posted speed limit (whichever is greater) from the side street except where physical site conditions and spacing of existing approaches may cause the City to require another location.
- c. Approaches shall not be located within 6 feet of a side lot line unless the approach is part of a pipe stem or flag lot (residential approach) or in cases where a common access easement for two or more lots is provided (minor or major approach).
- d. Unless otherwise approved, no approach shall create a new leg of an existing intersection.
- e. Unless otherwise approved by the City Engineer, wherever a potential access exists to any property from both a local access road and a road of higher classification, the City shall refuse access to the higher classification road.
- f. Unless otherwise approved by the City Engineer, wherever a potential access exists to any property from both a public road and a private easement, the City shall refuse access to the public road.
- g. Unless otherwise approved by the City Engineer, wherever a potential access exists to any property from two roads with the same classification, the City shall refuse access to the higher volume road.

2. Residential Approaches:

- a. Maximum and Minimum Surfaced Width: For a single residential driveway approach, the surfaced width shall not be more than 25 feet nor less than 15 feet, exclusive of all the radii of the curb returns, the measurement being made perpendicular to the centerline of the approach along the right-of-way line. For two residential driveway approaches, the surfaced width shall be 15 feet each and access the same road. The minimum distance between two approaches shall be 20 feet, the measurement being made perpendicular to the centerline of the approaches, along the right-of-way line, and from the inside to inside paved surface edges. There shall also be 4 feet minimum clearance between the two inside culverts from end to end. The minimum radius of the curb return at any residential approach shall be 10 feet.

- b. Maximum Number of Approaches: There shall be no more than two (2) residential approaches for any one residence. In circumstances where a second approach cannot be located per these standards or when the City Engineer determines that public safety may be compromised the City may limit the number of residential approaches to no more than one (1) residential approach.
3. Minor Road Approaches:
- a. Maximum and Minimum Surfaced Width: The surfaced width of any minor road approach shall not be more than 30 feet or less than 24 feet, exclusive of the radii of the curb returns, the measurement being made perpendicular to the centerline of the approach roadway. The minimum radius of the curb return at any minor approach shall be 20 feet.
- b. Maximum Number of Approaches: Unless otherwise approved by the City Engineer, there shall be no more than two (2) minor approaches onto any street for any single parcel. In circumstances where a second approach cannot be located per these standards or when the City Engineer determines that public safety may be compromised, the City may limit the number of minor approaches to no more than one (1) approach.
4. Major Road Approaches: When multiple major road approaches are permitted, they shall not be less than 125 feet apart. Dual, one-way road approaches may be allowed for commercial sites if the City Engineer determines it is in the best interest of the public for safety reasons. Dual, one-way road approaches must be separated the maximum distance possible. This type of arrangement requires special approval from the City Engineer.
- Notwithstanding the requirements of this regulation, the number and location of major road approaches may be more restrictive than described herein if deemed necessary by the City Engineer. The City shall base its determination on existing and projected traffic and turning movements generated by the existing and/or proposed project and other applicable traffic design criteria.
 - The City may require the developer to furnish a traffic engineering study and access plan done by a professional engineer which will be used by the City to determine what impact the proposed project will have on the City. Any traffic improvements needed to mitigate any impact(s) of the proposed project as determined by the City shall be built or bonded by the applicant before approval of the road approach permit(s) when so required by the City. Mitigating measures shall include but may not be limited to road improvements such as right- or left-turn lanes, channelization, signalization, additional road and/or shoulder widening, and dedication of additional right-of-way to the City of Bonney Lake for public purposes.
 - When a three-lane approach is requested, a traffic engineering study, along with a signing, striping and traffic channelization plan shall be done by the applicant's engineer for submittal to the City for review and approval.
- a. Maximum Surfaced Width: The surfaced width of any two-lane major road approach shall not exceed 30 feet exclusive of the radii of the curb returns. A three-lane approach may be approved by the City if generated traffic volumes from the development justify a need for such a design. The three-lane approach shall have a maximum width of the 36 feet. The

maximum width of any single lane approach shall be 15 feet. The minimum radius of the curb return at any major approach shall be as determined by the City Engineer but not less than 25 feet.

- b. Minimum Surfaced Width: The surfaced width of any major road approach shall not be less than 15 feet for a single-lane entrance/exit and 24 feet for a two-lane entrance/exit, exclusive of the radii of the curb returns.

5. Temporary Approaches:

a. Compliance with Standards:

- All temporary road approaches built in City right-of-way shall be constructed or altered in conformance with the standards set forth herein. Work shall not commence until a permit for the road approach has been issued by the City of Bonney Lake.
- All standards except paving, as set forth in this chapter for the permanent road approaches, shall be made applicable to the respective temporary road approach and reviewed accordingly by the City.

b. Maximum Time Limit:

- All temporary road approaches shall be removed and the right-of-way restored within 90 days from the date of its approval. The right-of-way restoration must be equal to or better than the original right-of-way condition prior to construction of the temporary approach.
- One, and only one, extension of this time limit may be granted to the original applicant by the City for a period not to exceed 90 days.
- Performance of Work: Prior to the approval of a temporary road approach, a financial guarantee shall be submitted to the City in an amount sufficient to cover all costs of removing the temporary road approach and restoration of the right-of-way.

6. General Design and Construction Standards for Approaches:

a. Geometric Design Standards:

- All road approaches should be constructed to lines perpendicular to the centerline of the traveled way and in all cases shall be constructed at an angle not less than 80 degrees measured at the intersection of centerlines of the approach and the public roadway.
- All road approaches shall incorporate into their design, provisions to keep storm water run-off from entering private property. Conformance to this criterion is the applicant's responsibility.

b. Construction Standards:

- All major and minor road approaches shall be paved as shown in the standard details and with a minimum of 3 inches compacted depth of asphalt concrete over 6 inches compacted depth crushed surfacing top course or 6 inches portland cement concrete if the

existing city road is asphalt concrete, portland cement concrete, bituminous surface treatment (BST), or oil-mat surfacing. For residential approaches or if the existing City road is gravel, an approach constructed of 4 inches compacted depth, crushed surfacing, top course is acceptable.

- All materials and workmanship shall be in accordance with the requirements of the latest State of Washington, Department of Transportation *Standard Specifications for Road, Bridge, and Municipal Construction*.
- Slopes resulting from the construction of a road approach must be stabilized to prevent erosion when required by the City. Seeding, hydroseeding, ditch-lining and/or other erosion control methods must be employed by the applicant to prevent erosion or maintenance problems or damage to the City or adjacent property owners.
- When large cut or fill sections in or adjacent to the City right-of-way are needed to construct a standard road approach, the City may require road construction plans done in accordance with these standards.
- The minimum distance between the paved edge of the road approach and the face of an obstruction within the public right-of-way, including existing utility appurtenances which may cause a traffic hazard shall be no less than 4 feet without curbing and 3 feet with curbing on the approach. Obstructions located closer than these distances or visual obstructions which may cause a traffic hazard shall be relocated at the developer's expense.

c. Approach Drainage:

- Where an approach is to be constructed across an existing drainage ditch or water course, or at a location where a ditch should exist, a culvert that is adequate to handle stormwater shall be installed in accordance with the standard details. If required by the City, the applicant shall submit contributing area mapping and drainage calculations done by a professional engineer and shall construct all necessary drainage facilities to handle all on-site and off-site flows.
- Storm drainage from parking areas, driveways, or any developed area of the project shall not be allowed to flow out onto the public roadway surface. Storm drainage from these areas shall be controlled by onsite retention, detention or other means as specified in Section 700 of these standards.

d. Entering Sight Distance: Entering sight distance must be equal to or exceed the desirable entering sight distance for the legal speed limit. Entering sight distances are listed for various speed limits in Table 600-1.

In situations where the entering sight distance is questionable, the City may require that an entering sight distance diagram and appropriate field measurements be submitted to the City for review and approval. The diagram and measurements shall be stamped and signed by a professional engineer and will be done at the expense of the applicant.

e. Parking Barrier: When a parking area is adjacent to an existing City road right-of-way, whether for public or private parking, the sale of vehicles, or for other reasons, traffic curbing

or other barriers shall be installed on the applicant's property to prevent unrestricted and uncontrolled access to the City road. The City shall determine the adequacy of the curbing or other barriers to physically control or restrict access to the City road.

- f. Maintenance of Road Approach: All road approaches, drainage structures, curbs or any other improvements between the front property line and the public roadway shall be maintained in a safe and stable condition at the expense of the abutting property owner or owner(s) in the case of a joint approach.

It shall be the responsibility of the property owner(s) who use the road approach to keep their road approach clear of debris, vegetation or other items that would impede the safe use of the road approach or would obstruct the sight distance from the road approach. The applicant would be responsible for maintenance of the constructed approach including but not limited to pothole repair, snow removal and drainage conveyance. Routine maintenance of the approach is permitted without a permit from Bonney Lake.

Easements necessary to allow clearing to occur on private property to provide for entering sight distance shall run with the land and will require the property owner(s) who use the road approach to keep their road approach clear of vegetation or other obstructions that would restrict the sight distance from the road approach.

- g. Abandoned Approaches: Any approach which has become abandoned through a change of the conditions for which it was originally intended, or which for any other reason has become unnecessary shall be closed and the owner shall restore the abandoned approach area so that it conforms to the adjacent properties. The restoration work shall be done to the satisfaction of the City. Failure of the property owner to remove an unused approach and/or restore the approach area after proper notification by the City shall be cause for the City to do the work and charge the property owner for costs incurred.
- h. Construction Inspection: Inspection of approaches to City roads shall be made by the City to check for conformance with the approach permit and the design standards as provided for herein. Final approval of the approach shall not be made until the road approach is constructed to the requirements of this ordinance. The contractor or applicant shall notify the City two (2) working days prior to an inspection.

The City requires the contractor or applicant to successfully pass a minimum of two inspections as follows:

- The City must inspect and approve the prepared sub-grade and any formed work that is required prior to the installation of the approach.
 - The City must perform a final inspection and approve the approach for use by the applicant.
- i. Fee Schedule: Road approach fees shall be paid in the amount as set forth in the Bonney Lake Municipal Code.

611 GENERAL MATERIALS AND CONSTRUCTION REQUIREMENTS

All work shall be constructed in conformance with the most current *Standard Specifications for Road, Bridge, and Municipal Construction* and current amendments thereto, State of Washington revised as to form by the APWA Supplement to make reference to Local Governments, herein referenced to as “Standard Specifications” and the “Conditions and Standards” as adopted by the City, shall be included as part of the “Specifications.” Where the Standard Specifications and the “Conditions and Standards” conflict with one another, the “Conditions and Standards” shall take precedence.

1. All streets in the City will be paved with Asphalt Concrete in strict compliance with these standards.
2. Pavement design shall meet the requirements in the latest publication of the AASHTO Guide for Design of Pavement Structures. The pavement section shall be designed and stamped by an engineer currently licensed in the State of Washington. At no time shall a pavement section be provided that is less than the minimum pavement section depths provided in the standard details.

612 ASPHALT PAVEMENT MATERIALS AND TESTING REQUIREMENTS

Section 5-04 of the WSDOT Standard Specifications is revised to read:

This work shall consist of providing and placing one or more layers of plant-mixed hot mix asphalt (HMA) on a prepared foundation or base in accordance with these Specifications and the lines, grades, thicknesses, and typical cross-sections shown in the Standard Plans.

HMA shall be composed of asphalt binder and mineral materials as may be required, mixed in the proportions specified to provide a homogeneous, stable, and workable mixture.

HMA Class B is designated as leveling or wearing course. HMA Class G is designated as a pavement for thin overlays as required by the City.

1. Materials: Materials shall meet the requirements of the following sections:

- | | |
|--------------------------------|-------------|
| a. Asphalt Binder | 9-02.1(4) |
| b. Cationic Emulsified Asphalt | 9-02.1(6) |
| c. Anti-Stripping Additive | 9-02.4 |
| d. Aggregates | 5-04.3(8)A2 |
| e. Blending Sand | 9-03.8(4) |
| f. Mineral Filler | 9-03.8(5) |

The Contractor shall have the option of utilizing recycled asphalt pavement (RAP) in the amount up to 20 percent of total aggregate weight in combination with new aggregate in the production of HMA. The RAP may be from HMA removed under the contract, if any, or old HMA from an existing stockpile. Recycled materials shall not be used in HMA Class D.

Production of aggregates shall comply with the requirements of Section 3-01.

2. Construction Requirements:

- a. HMA Mixing Plant – Plants used for the preparation of HMA shall conform to the following requirements:

- (1) Equipment for Preparation of Asphalt Binder: Tanks for the storage of asphalt binder shall be equipped to heat and hold the material at the required temperatures. The heating shall be accomplished by steam coils, electricity, or other approved means so that no flame shall be in contact with the storage tank. The circulating system for the asphalt binder shall be designed to ensure proper and continuous circulation during the operating period. A valve for the purpose of sampling the asphalt binder shall be placed in either the storage tank or in the supply line to the mixer.
- (2) Thermometric Equipment: An armored thermometer, capable of detecting temperature ranges expected in the HMA mix, shall be fixed in the asphalt binder feed line at a location near the charging valve at the mixer unit. The thermometer location shall be convenient and safe for access by inspectors.

The plant shall also be equipped with an approved dial-scale thermometer, a mercury actuated thermometer, an electric pyrometer, or another approved thermometric instrument placed at the discharge chute of the drier to automatically register or indicate the temperature of the heated aggregates. This device shall be in full view of the plant operator.

- (3) Sampling and Testing of Mineral Materials: The HMA plant shall be equipped with a mechanical sampler for the sampling of the mineral materials. The mechanical sampler shall meet the requirements of Section 1-05.6 for crushing and screening operation.

The contractor shall provide sufficient space as required for the setup and operation of the field testing facilities of the Contracting Agency.

- b. Hauling Equipment: Trucks used for hauling HMA shall have tight, clean, smooth metal beds and shall have a cover of canvas or other suitable material of sufficient size to protect the mixture from adverse weather. Whenever the weather conditions include (or are forecast to include) during the work shift precipitation or an air temperature less than 45°F, the canvas cover shall be securely attached to protect the HMA.

In order to prevent the HMA mixture from adhering to the hauling equipment, truck beds are to be sprayed with an environmentally benign release agent. Excess release agent shall be drained prior to filling hauling equipment with HMA. Petroleum derivatives or other coating materials that contaminate or alter the characteristics of the HMA shall not be used. For hopper trucks, the conveyer shall be in operation during the process of applying the release agent.

- c. Hot Mix Asphalt Pavers: HMA pavers shall be self-contained, power-propelled units, provided with an internally-heated vibratory screed or strike-off assembly and shall be capable of spreading and finishing courses of HMA plant mix material in lane widths required by the paving section shown in the Plans.

The screed or strike-off assembly shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, segregating, or gouging the mixture. Extensions will be allowed provided they produce the same results, including ride, density,

and surface texture as obtained by the primary screed or strike off assembly. Extensions without, augers, vibration and heated screeds shall not be used in the traveled way.

When laying HMA, the paver shall be operated at a uniform forward speed consistent with the plant production rate and roller train capacity to result in a continuous operation. The auger speed and flight gate opening shall be adjusted to coordinate with the operation.

The paver shall be equipped with automatic screed controls with sensors for either or both sides of the paver. The controls shall be capable of sensing grade from an outside reference line, sensing the transverse slope of the screed, and providing automatic signals that operate the screed to maintain the desired grade and transverse slope. The sensor shall be constructed so it will operate from a reference line or a mat referencing device.

The transverse slope controller shall be capable of maintaining the screed at the desired slope within plus or minus 0.1 percent. The paver shall be equipped with automatic feeder controls, properly adjusted to maintain a uniform depth of material ahead of the screed.

Manual operation of the screed will be permitted in the construction of irregularly shaped and minor areas. These areas include, but are not limited to, gore areas, road approaches, tapers and left-turn channelization.

The Contractor shall furnish and install all pins, brackets, tensioning devices, wire, and accessories necessary for satisfactory operation of the automatic control equipment.

If the paving machine in use is not providing the required finish, the City may suspend work. Any cleaning or solvent type liquids spilled on the pavement shall be thoroughly removed before paving proceeds.

- d. Rollers: Rollers shall be of the steel wheel, vibratory, or pneumatic tire type, in good condition and capable of reversing without backlash. Operation of the roller shall be in accordance with the manufacturer's recommendations. When ordered by the Project Engineer for any roller planned for use on the project, the Contractor shall provide a copy of the manufacturer's recommendation for the use of that roller for compaction of HMA. The number and weight of rollers shall be sufficient to compact the mixture in compliance with the requirements of Section 5-04.3(10). The use of equipment that results in crushing of the aggregate will not be permitted. Rollers producing pickup, washboard, uneven compaction of the surface, displacement of the mixture or other undesirable results will not be used.
- e. Conditioning of Existing Surface: When the surface of the existing pavement or old base is irregular, the Contractor shall bring it to a uniform grade and cross-section as required by the City.

Preleveling of uneven or broken surfaces over which HMA is to be placed may be accomplished by using an asphalt paver, a motor patrol grader, or by hand raking, as approved by the Engineer.

- f. Preparation of Existing Surfaces: Before construction of HMA on an existing paved surface, the entire surface of the pavement shall be clean. All fatty asphalt patches, grease drippings, and other objectionable matter shall be entirely removed from the existing pavement. All pavements or bituminous surfaces shall be thoroughly cleaned of dust, soil, pavement

grindings, and other foreign matter. All holes and small depressions shall be filled with an appropriate class of HMA mix and the surface of the patched area shall be leveled and compacted thoroughly.

A tack coat of asphalt shall be applied to all paved surfaces on which any course of HMA is to be placed or abutted. Tack coat shall be uniformly applied to cover the existing pavement with a thin film of residual asphalt free of streaks and bare spots. A heavy application of tack coat will be applied to all joints. For roadways open to traffic, the application of tack coat shall be limited to surfaces that will be paved during the same working shift. The spreading equipment shall be equipped with a thermometer to indicate the temperature of the tack coat material.

Equipment shall not operate on tacked surfaces until the tack has broken and cured. If the Contractor's operation damages the tack coat it shall be repaired prior to placement of the HMA.

Unless otherwise approved by the Engineer, the tack coat shall be CSS-1, CSS-1h, or STE-1 emulsified asphalt. The CSS-1 and CSS-1h emulsified asphalt may be diluted with water at a rate not to exceed one part water to one part emulsified asphalt. The emulsified asphalt shall not exceed the maximum temperature recommended by the emulsified asphalt manufacturer.

- g. Crack Sealing: When the project includes crack sealing, all cracks and joints 1/4 inch and greater in width shall be cleaned with a stiff-bristled broom and compressed air and then shall be filled completely with sand slurry.

The sand slurry shall consist of approximately 20 percent CSS-1 emulsified asphalt, approximately 2 percent Portland cement, water (if required), and the remainder clean U.S. No. 4-0 paving sand. The components shall be thoroughly mixed and then poured into the cracks and joints until full. The following day, any cracks or joints that are not completely filled shall be topped off with additional sand slurry. After the sand slurry is placed, the filler shall be struck off flush with the existing pavement surface and allowed to cure. The HMA overlay shall not be placed until the slurry has fully cured.

- h. Soil Residual Herbicide: Where required by the City, the Contractor shall apply one application of an approved soil residual herbicide. Paving shall begin within 24 hours after application of the herbicide. Any area that has not been paved within the time limit, or that has been rained on, shall be treated again. The herbicide shall be applied uniformly in accordance with the manufacturer's recommendations.

The material to be used shall be registered with the Washington State Department of Agriculture for use under pavement. Before use, the Contractor shall receive approval of the material to be used and the proposed rate of application, from the Engineer. The following information shall be included in the request for approval of the material: Brand name of the material, manufacturer, Environmental Protection Agency (EPA) registration number, material safety data sheet, and proposed rate of application.

- i. Heating of Asphalt Binder: The temperature of the asphalt binder shall not exceed the maximum recommended by the asphalt binder manufacturer. The asphalt binder shall be heated in a manner that will avoid local variations in heating. The heating method shall

provide a continuous supply of asphalt binder to the mixer at a uniform average temperature with no individual variations exceeding 25°F.

j. Acceptance Sampling and Testing-HMA Mixture:

- (1) General: Acceptance of HMA shall be as shown under Paragraph k (below) “Basis of Acceptance” by nonstatistical evaluation. Determination of statistical evaluation, nonstatistical evaluation or commercial evaluation shall be based on proposal quantities and shall consider the total of all bid items involving HMA of a specific class.

Dense graded mixes (HMA Classes A, B, E, F, and G) may be evaluated for quality of gradation and asphalt binder content.

k. Aggregates:

- (1) General Requirements: Aggregates for HMA shall be manufactured from ledge rock, talus, or gravel in accordance with Section 3-01. The material from which they are made shall meet the following test requirements:

Los Angeles Wear, 500 Revs	30 percent maximum
Degradation Factor, Wearing Course	30 minimum
Degradation Factor, Other Courses	20 minimum

It shall be uniform in quality, substantially free from wood, roots, bark, extraneous materials, and adherent coatings. The presence of a thin, firmly adhering film of weathered rock will not be considered as coating unless it exists on more than 50 percent of the surface area of any size between consecutive laboratory sieves.

Aggregate removed from deposits contaminated with various types of wood waste shall be washed, processed, selected or otherwise treated to remove sufficient wood waste so that oven-dried material retained on a U.S. No. 4 sieve shall not contain more than 0.1 percent by weight of material with a specific gravity less than 1.0.

- (2) Test Requirements: Aggregate for HMA shall meet the following test requirements:

	<u>Class of HMA</u>	
	<u>B</u>	<u>G</u>
Fracture, by weight (See Note)	1	1
Sand Equivalent Min.	45	45

¹ The fracture requirements are at least one fractured face on 75 percent of the material retained on each specification sieve size U.S. No. 10 and above, if that sieve retains more than 5 percent of the total sample.

The properties of the aggregate in a preliminary mix design for HMA shall be such that, when it is combined within the limits set forth in Proportions of Materials and mixed in

the laboratory with the designated grade of asphalt binder, HMA mixtures with the following test values can be produced:

	<u>Class of HMA</u>	
	<u>B</u>	<u>G</u>
Stabilometer Value Minimum	35	35
Cohesimeter Value Minimum	100	100
Percent Air Voids	2-4.5	2-4.5
Modified Lottman Stripping Test	Pass	Pass

- (3) **Gradation:** The materials of which HMA is composed shall be of such sizes, gradings, and quantities that, when proportioned and mixed together, they will produce a well graded mixture within the requirements listed in the table which follows.

The percentage of aggregate refers to completed dry mix, and includes mineral filler when used.

<u>Sieve Size</u>	<u>Grading Requirements</u>	
	<u>Class B</u>	<u>Class G</u>
	(Percent Passing)	
1-1/4 inch square	–	–
1 inch square	–	–
3/4 inch square	100	–
5/8 inch square	–	–
1/2 inch square	90–100	100
3/8 inch square	75–90	97–100
U.S. No. 4	46–66	50–78
U.S. No. 8	–	–
U.S. No. 10	30–42	32–53
U.S. No. 40	11–24	11–24
U.S. No. 200	3.0–7.0	3.0–7.0

- (4) **Basis of Acceptance:** At the discretion of the City, HMA may be tested for Fracture, Sand Equivalent, Stabilometer Value, Cohesimeter Value, Percent Voids, Modified Lottam Stripping test, and Grading Requirements.

Testing will be based on samples provided by the Contractor or samples taken the day of paving. Additional samples may be taken from the completed mat; repair of the completed mat shall be the responsibility of the Contractor. Acceptance of HMA outside the required tolerances shall be at the sole discretion of the City.

The following tolerances shall apply:

<u>Constituent of Mixture</u>	<u>Tolerance Limits</u>
	The tolerance limit for each mix constituent shall not exceed the broad band specification limits specified in 5-04.3(8)C except the tolerance limits for sieves designated as 100 percent passing will be 99–100.
Aggregate passing 1", 3/4", 5/8", 1/2", and 3/8" sieves	Broad band specification limits Section 5-04.3(8)C.
Proportions of Materials	
Aggregate passing No. 4 sieve	± 6%
Aggregate passing No. 10 sieve	± 5%
Aggregate passing No. 40 sieve	± 4%
Aggregate passing No. 200 sieve	± 2.0%
Asphalt cement	± 0.5%

(5) Test Methods:

- (a) Acceptance testing for compliance of asphalt binder content will be WSDOT FOP for AASHTO Test Method T308.
- (b) Acceptance testing for compliance of gradation will be WAQTC FOP for AASHTO T7 and T11.

- 1. Spreading and Finishing: The HMA shall be laid upon an approved surface, spread, and struck off to the grade and elevation established. HMA pavers complying with Section 5-04.3(3) shall be used to distribute the HMA mixture. Unless otherwise directed by the City, the nominal compacted depth of any layer of any course shall not exceed the following depths:

HMA Class A and B when used for Base Course	0.35 foot
HMA Class A, B, and F	0.25 foot
HMA Class G	0.10 foot

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the paving may be done with other equipment or by hand.

m. Compaction:

- (1) General: Immediately after the HMA mixture has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted. The completed course shall be free from ridges, ruts, humps, depressions, objectionable marks, or irregularities and in conformance with the line, grade, and cross-section shown in the Plans or as established by the Engineer. If necessary, the mix design may be altered to achieve desired results.

Compaction shall take place when the HMA is in the proper condition so that no undue displacement, cracking, or shoving occurs. All compaction units shall be operated at the speed, within specification limits, that will produce the required compaction. Areas inaccessible to large compaction equipment shall be compacted by mechanical or hand tampers. Any HMA that becomes loose, broken, contaminated, shows an excess or deficiency of asphalt binder, or is in any way defective, shall be removed and replaced at no additional cost with fresh HMA which shall be immediately compacted to conform to the surrounding area.

The type of rollers to be used and their relative position in the compaction sequence shall generally be the Contractor's option, provided specification densities are attained. An exception shall be that the pneumatic tired roller shall be used between October 1 and April 1.

Vibratory rollers shall not be operated in the vibratory mode when the internal temperature of the HMA is less than 175°F without permission of the Engineer. In no case shall a vibratory roller be operated in a vibratory mode when checking or cracking of the mat occurs at a greater temperature. Vibratory rollers in the vibratory mode are also prohibited on bridge decks.

- (2) Control: The City will employ an independent test firm to perform the compaction test at the expense of the developer. Compaction test will be taken on the day of paving and will be based on a theoretical RICE value supplied by the Contractor 48 hours prior to paving. Samples of the asphalt will be taken on the day of paving to determine the actual value. Final acceptance of the compaction test results will be based on the actual RICE value result from the samples taken on the day of paving. The basis of acceptance will be the revised compaction values.

HMA Class B used within the right-of-way shall be compacted to level with a minimum of 91.0 percent of the reference maximum density as determined by WSDOT FOP for AASHTO T209.

In addition to the randomly selected locations for tests of the density, the City may also isolate any area that is suspected of being defective in relative density. Such isolated material will not include an original sample location. A minimum of five randomly located density tests will be taken. The isolated area will then be evaluated for acceptance.

- n. Joints: The Contractor shall conduct operations such that the placing of the top or wearing course is a continuous operation or as close to continuous as possible. Unscheduled transverse joints will be allowed and the roller may pass over the unprotected end of the freshly laid HMA only when the placement of the course must be discontinued for such a length of time that the HMA will cool below compaction temperature. When the work is resumed, the previously compacted HMA shall be cut back to produce a slightly beveled edge for the full thickness of the course.

Where a scheduled transverse joint or when an unscheduled joint that must be left in place after a work shift is being made in the wearing course, strips of heavy wrapping paper shall be used. The wrapping paper shall be removed and the joint trimmed to a slightly beveled edge for the full thickness of the course prior to resumption of paving. When the transverse

joint will be open to traffic a temporary wedge of HMA shall be constructed 50H:1V or flatter.

The material that is cut away shall be wasted and new HMA shall be laid against the fresh cut. Rollers or tamping irons shall be used to seal the joint.

The longitudinal joint in any one course shall be offset from the course immediately below by not more than 6 inches nor less than 2 inches. All longitudinal joints constructed in the wearing course shall be located at a lane line or an edge line of the traveled way. Except, on one-lane ramps a longitudinal joint may be constructed at the center of the traffic lane, subject to approval by the Project Engineer, if:

- (1) The ramp must remain open to traffic, or
- (2) The ramp is closed to traffic and a hot-lap joint is constructed.

If a hot-lap joint is allowed, two paving machines shall be used; a minimum compacted density in accordance with Section 5-04.3(10)B shall be achieved throughout the traffic lane; and construction equipment other than rollers shall not operate on any uncompacted HMA.

When HMA is placed adjacent to cement concrete pavement, the Contractor shall construct longitudinal joints between the HMA and the cement concrete pavement. The joint shall be sawed and filled with joint sealant meeting the requirements of Section 9-04.2.

- o. Surface Smoothness: The completed surface of all courses shall be of uniform texture, smooth, uniform as to crown and grade, and free from defects of all kinds. The completed surface of the wearing course shall not vary more than 1/8 inch from the lower edge of a 10-foot straightedge placed on the surface parallel to the centerline. The transverse slope of the completed surface of the wearing course shall vary not more than 1/4 inch in 10 feet from the rate of transverse slope shown in the Plans.

When deviations in excess of the above tolerances are found that result from a high place in the HMA, the pavement surface shall be corrected by one of the following methods when approved by the City:

- (1) Removal and replacement of the wearing course of HMA, or
- (2) By other method approved by the Project Engineer.

Correction of defects shall be carried out until there are no deviations anywhere greater than the allowable tolerances.

Deviations in excess of the above tolerances that result from a low place in the HMA, and deviations resulting from a high place where corrective action, in the opinion of the City will not produce satisfactory results, will not be accepted.

When utility appurtenances such as manhole covers and valve boxes are located in the traveled way, the roadway shall be paved before the utility appurtenances are adjusted to the finished grade.

- p. Weather Limitations: HMA for wearing course shall not be placed on any traveled way between October 1 of any year and April 1 of the following year without written approval from the City.

HMA shall not be placed on any wet surface, or when the average surface temperatures are less than those specified in the following table, or when weather conditions otherwise prevent the proper handling or finishing of the HMA mixtures:

<u>Compacted Thickness (Feet)</u>	<u>Surface Temperature Limitations</u>	
	<u>Surface Course</u>	<u>Sub-Surface Courses</u>
Less than 0.10	55°F	55°F
0.10 to 0.20	45°F	35°F
0.21 to 0.35	35°F	35°F
More than 0.35	DNA	25°F ¹

¹ Only on dry subgrade, not frozen and when air temperature is rising.

613 TEMPORARY STREET PATCHING

Temporary restoration of trenches shall be accomplished by using 4 inches of medium-curing (MC-250) liquid asphalt (cold mix) at the end of each working day. Under special circumstances and if approved by the City Engineer, steel plates suitable for H20 traffic loading conditions may be used. Steel plates shall be provided with a cold mix “lip” to accommodate a smooth transition from pavement to steel plate.

Steel plates, if approved for use, shall be in good condition and suitable to provide a safe transition to and from the existing paved surface. The plates shall be placed with a cold mix “lip” to provide a smooth transition from the pavement to the steel plate. Materials, placement, and use of plates shall be as approved by the City Engineer or his/her authorized representative(s).

Asphalt 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.

All temporary patches shall be maintained by the contractor until such time as the permanent pavement patch is in place.

If the contractor is unable to maintain a patch for whatever reason, the City will patch it at actual cost plus overhead and materials. The property owner/developer/permittee shall be invoiced for any City expenses incurred to comply with this Contractor requirement.

614 TRENCH BACKFILL AND RESTORATION

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

1. All overlay, trench and pavement cuts shall be made by saw cuts. The cuts shall be a minimum of 1 foot outside the trench width and extend to the center of the road or as directed by the City.
2. All trenching shall be backfilled and streets shall be restored as shown in the standard details.

3. If multiple trench cuts (perpendicular to the direction of travel) are made in the same road and the cuts, as measured from the edge of the trench, are within 200 feet, then the road area in between the cuts shall also be overlaid to the widths specified by the City. In cases where a trench cut is made within 100 feet of an existing trench restoration, the road area between the existing trench restoration and the new trench shall be overlaid to the widths specified by the City.
4. When longitudinal trench cuts are made (parallel to the direction of travel), the roadway shall be overlaid to the widths as specified by the City.
5. When trenching within the roadway shoulder(s), the shoulder shall be restored in accordance with these standards.
6. Unless otherwise approved, **the final patch shall be completed as soon as possible and shall be completed within 30 days after first opening the trench.**

615 SURVEY STAKING

All surveying and staking shall be performed by an engineering or surveying firm employed by the Developer and capable of performing such work in conformance with the most recent edition of the Washington State Department of Transportation Construction Manual.

616 SIDEWALKS, CURBS AND GUTTERS

1. General: All properties within commercial zones of the City, properties abutting arterial streets, collectors or local access streets shall, in conjunction with new construction on such properties or alterations, reconstruction, or improvements, where the total cost of construction, reconstruction or remodeling in the opinion of the City warrants frontage improvements, shall be required to provide sidewalks, curbs and gutters along abutting streets. Single-family residences, not associated with short plats or large plats, shall be exempt from this requirement.
2. Design Standards: Plans for the construction of sidewalks, curbs and gutters are to be submitted as part of the street plans when applicable.

All sidewalks, curbs, and gutters shall be constructed as specified in the standard details.

3. Form and subgrade inspections by the City are required before sidewalk, curbs, and gutters are poured.
4. Curb and Gutter: Cement concrete curb and gutter shall be used for all street edges unless otherwise approved by the City Engineer. All curbs and gutters shall be constructed as shown in the standard detail. Curbs shall be of the vertical face type.
5. ADA Accessible Curb Ramps: All sidewalks must be constructed to provide for accessibility in accordance with the current standards of applicable state law and the Americans with Disabilities Act.

Ramps shall be constructed in conformance with the Standard Specifications and Standard Plans.

6. Testing: Testing shall be required and will be conducted by the City at the developer's or contractor's expense on all materials and construction as specified in the WSDOT Standard Specifications.

At a minimum, one slump test and two test cylinders shall be taken once per day.

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

617 STREET LIGHTING

Street lighting shall be provided as required by the City of Bonney Lake Municipal Code.

618 SIGNALS

1. General: Signalization will be required if warranted as determined by an existing study and/or transportation study performed at the request of the City by the Developer. Design, materials, and construction methods for signals will be reviewed and approved by the City on an individual basis.

619 ROADSIDE FEATURES

1. Survey Monuments:

- a. All existing (or new) survey control monuments and/or markers which are disturbed, lost, or destroyed during surveying or construction shall be replaced with the proper monument as outlined below by a land surveyor currently registered (licensed) in the State of Washington at the expense of the responsible contractor, builder, or developer.

- b. A precast concrete monument with cast iron monument case and cover installed per City Standards is required.

If the monument case and cover are placed in cement concrete pavement, the pre-cast base will not be necessary.

- c. Monument Locations: Appropriate monuments shall be placed:

- At all street intersections.
- At the PC and PT's of all horizontal curves.
- At PI of all horizontal curves of streets where the PI lies within the limits of the traveled roadway.

- At all corners, control points and angle points around the perimeter of subdivisions as determined by the City.
 - At all section corners, quarter corners, and sixteenth corners that fall within the right-of-way.
- d. All work associated with the monument shall conform to all local, state, and federal regulations.

2. Mailboxes:

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 local U.S. Postal Service. The mailboxes shall be reinstalled at the original location or to a new location as may be required by the local Postmaster, as further outlined below and approved by the U.S. Postal Service.

b. Location:

- Bottom or base of box shall be 38 inches to 44 inches above the road surface.
- Front of mailbox 12 inches behind back of sidewalk or outside edge of shoulder.
- New developments. Locked/secured clustered mailboxes will, in all likelihood, be required. Contact the City not the U.S. Postal Service for details. Sidewalks shall be constructed to facilitate same (see standard details).

c. Mailboxes shall be set on posts strong enough to give firm support but not to exceed 4- by 4-inch wood or one 1-1/2-inch-diameter pipe, or material and design with comparable breakaway characteristics. Deviations may be allowed only with the written approval of the City.

3. Guard Rails: For purposes of design and location, all guard rails along roadways shall conform to the criteria of the *Washington State Department of Transportation Design Manual* as may be amended or revised.

4. Rock Walls:

Rock walls may be used for erosion protection of cut or fill embankments up to a maximum height of 4 feet in stable soil conditions, which will result in no significant foundation settlement or outward thrust upon the walls. For heights over 4 feet, or when soil is unstable, structural wall of acceptable design stamped by a structural engineer currently licensed in the State of Washington shall be used. Design and construction shall be per the Association of Rockery Contractors (ARC) Specifications and/or applicable geotechnical recommendations. Rock walls over 4 feet high shall be subject to inspection by a geotechnical engineer as outlined in the following paragraph.

Any rock wall over 4 feet high in a fill section shall require an engineered design by a geotechnical engineer. The geotechnical engineer shall continuously inspect the installation of the wall as it progresses and shall submit inspection reports, including compaction test results and

photographs taken during the construction, documenting the techniques used and the degree of conformance to the geotechnical engineer's design.

In the absence of such a rock wall design, all walls having heights over 4 feet or walls to be constructed in conditions when soil is unstable require a structural wall having a design approved by the City. The design of structural walls shall be by a professional engineer currently licensed in the State of Washington qualified in retaining wall design.

620 PARKING LOTS

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

Stormwater detention shall be provided and shall follow the criteria as set forth in these standards.

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 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 irrigated and maintained. If the City Engineer determines the grass/paving system is not appropriate for the specific application, alternate approved surfacing materials shall be utilized.

621 UTILITIES

Utilities shall be furnished and installed within the right-of-way beneath new roads, or in existing roadways and rights-of-way so as to provide minimal interference with existing utilities. Where existing utilities are in place, new utilities shall conform to these Standards as nearly as practical and yet be compatible with the existing installations.

1. Other Utilities: Other utilities (gas, power, telephone, and cable TV) shall be located as follows:
 - **Preferable**: Underground, either side of road, at horizontal location and depth compatible with other utilities and storm drains. Within new plats, utilities shall be located within the easements provided.
 - **Otherwise**: On poles (existing only) set back of ditch line or sidewalk, at locations compatible with driveways, intersections, and other essential road features. To extent practical, utilities should share facilities so that a minimum of poles are needed, and preferably on only one side of road.
 - Notwithstanding other provisions, "private" underground systems shall be located at least 5 feet away from road edge and where they will not otherwise disturb existing survey monumentation.
2. Utility Crossings in Existing Streets: For smaller diameter pipes and wires the crossing shall be made without surface cut of the traveled portion where the street is of oil mat or better. The crossing shall be made by pushing or boring a pipe under the road. Where rock is known or expected in the area of the crossing, open cutting will be permitted, but prior approval of the City is required.

622 ASPHALT CONCRETE PEDESTRIAN PATHS AND/OR BIKEWAYS

1. Minimum Easement or Right-of-Way Width: 20 feet minimum.
2. Construction Width: 8 feet minimum; greater widths may be required by City.
3. Paths shall be constructed as specified in the standard details.

623 GENERAL NOTES (STREET CONSTRUCTION)

1. All workmanship and materials shall be in accordance with current City of Bonney Lake Standards and current amendments thereto and the latest edition of the State of Washington *Standard Specifications for Road, Bridge, and Municipal Construction*, and any current amendments thereto, amended as per City Standards.
2. The contractor shall be responsible for all traffic control in accordance with the MUTCD manual. Prior to disruption of any traffic, traffic control plans shall be prepared and submitted to the City for possible approval. No work shall commence until all approved traffic control is in place. Work shall cease when traffic control fails to meet minimum requirements.
3. All curb and gutter, street grades, sidewalk grades, and any other vertical and/or horizontal alignment shall be staked by an engineering or surveying firm capable of performing such work. Such firms shall be currently licensed in the State of Washington to perform such work.
4. 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 existing to provide for a seal at the saw cut location and the joint sealed with grade AR-4000W paving asphalt. A sand blanket shall be applied to the surface to minimize “tracking” of same.
5. Compaction of subgrade, rock, and asphalt shall be in accordance with the WSDOT Standard Specifications.
6. Form and subgrade inspection by the City is required before pouring concrete. A minimum two (2) working days notice are required to be provided to the City Inspector for form inspection.
7. All streets, curb and gutters, sidewalks, and associated appurtenances shall be cleaned to the satisfaction of the City prior to final acceptance.