

## Section 2 Index

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**CITY OF BENTON CITY****SECTION 2****STANDARD SPECIFICATIONS FOR:****ROADWAY CONSTRUCTION AND OVERLAY****2-1 CLEARING AND GRUBBING****2-1.01 GENERAL**

Clearing and grubbing shall consist of the removal of all asphaltic concrete pavement and bituminous pavement built upon earth or granular base materials, all trees, brush, stumps, vegetation, mailboxes, extruded curbs, abandoned culverts and miscellaneous concrete boxes, headwalls, sign footings, buildings, lumber, trash piles, rubbish, objectionable materials, and fencing within the project limits. Complete clearing and grubbing well in advance of grading. All fencing and mailboxes shall be salvaged and/or relocated at the direction of the Engineer.

**2-1.02 CONSTRUCTION**

A. Clearing and grubbing shall be done in accordance with SWSS Sections 2-01.2, 2-01.3, 2-02, and as herein modified.

**2-1.03 LOCATION REFERENCE FOR VALVE BOXES AND MANHOLES**

Prior to removal of pavement or excavation around existing utilities, the Contractor shall reference valve boxes and manholes with a minimum of two references. A reference drawing and notes shall be prepared, and two copies given to the City representative prior to removal of valve boxes or manhole covers. When new valves or manholes are constructed in conjunction with the street construction, they shall be similarly referenced prior to continuing work over the utility.

**2-1.04 MEASUREMENT AND PAYMENT**

The unit contract price for "Clearing and Grubbing," per lump sum, shall be full compensation for all labor, equipment, materials, and all other incidentals required to perform the work in accordance with the plans and specifications or as directed by the Engineer.

**2-2 ROADWAY EXCAVATION****2-2.01 GENERAL**

Roadway excavation shall consist of excavation and grading of the roadway and driveway areas as shown on the plans. All excavation shall be unclassified unless a separate bid item is provided for rock excavation. Construction staking shall be provided as specified in Section 1-40 of these specifications.

**2-2.02 CONSTRUCTION**

Excavation shall be done in accordance with SWSS Section 2-03, Sections 2-03.1 through 2-03.3 (18) and as herein modified by these specifications Section 2-2.03 through 2-5. All unsuitable or excess materials shall be removed from the site and placed in a disposal site provided by the Contractor, unless stated otherwise in the special provisions.

**2-2.03 CONTRACTOR PROVIDED WASTE SITE**

Unless otherwise specified, the contractor shall provide all disposal and waste sites. Disposal and waste sites shall meet all requirements of the Benton County District Health Department and Chapter 173-304 WAC. When a waste site exceeds two thousand cubic yards of inert waste and demolition waste during the life of the landfill, the contractor shall obtain and pay all costs as required to obtain a solid waste handling facility permit from the Health Department.

**2-2.04 MEASUREMENT AND PAYMENT**

The measurement for roadway excavation shall be by the cubic yard, measured in place, prior to excavation and shall be based on the quantities listed in the proposal; unless, in the opinion of the Engineer, sufficient change occurs which requires recalculation or remeasurement of the quantities.

The unit contract price for "Roadway Excavation," per cubic yard, shall be full compensation for all labor, equipment, materials, and all other incidentals required to excavate, load, haul, place, or otherwise dispose of the excavated material in accordance with the plans and specifications, or as directed by the Engineer.

## **2-3 BORROW EXCAVATION**

### **2-3.01 GENERAL**

When called for on the plans or where directed by the Engineer, borrow excavation shall consist of suitable material obtained from pits for the construction of embankments, subgrade, planting strips, sidewalk areas or shoulders, and other facilities as directed by the Engineer. Borrow excavation shall be approved by the Engineer and shall be secured by the Contractor at his own expense and from a source in which the materials are approved by the Engineer.

### **2-3.02 MEASUREMENT AND PAYMENT**

Unless provided in the Special Provisions, a separate measurement and payment will not be made for borrow excavation. If sufficient on-site excavated material is not available, the Contractor shall determine or verify the amount of borrow excavation required, if any.

All costs of providing borrow excavation shall be incorporated into the Embankment In Place bid item(s).

## **2-4 EMBANKMENT IN PLACE**

### **2-4.01 GENERAL**

Excavation materials determined to be suitable for fill material by the Engineer shall be spread and compacted in fill areas as indicated on the plans.

### **2-4.02 CONSTRUCTION**

Embankment shall be accomplished using excavated native material in accordance with SWSS Section 2-03.3(14) C, and as herein modified. Minimum density shall be 95 percent at optimum moisture content when measured in accordance with ASTM D-698 Standard Proctor Density. Testing shall be per City Standard 1-13.04.

### **2-4.03 MEASUREMENT AND PAYMENT**

The measurement for embankment in place shall be by the cubic yard, in place, and based on the quantities listed in the proposal; unless in the opinion of the Engineer, sufficient change occurs which requires recalculation or remeasurement of the quantities.

The unit contract price for "Embankment in Place," per cubic yard, shall be full compensation for all labor, equipment, materials, and all other incidentals required to complete the work in accordance with the plans and specifications or as directed by the Engineer.

## **2-5 SUBGRADE**

### **2-5.01 GENERAL**

Subgrade preparation shall be prepared in accordance with SWSS Section 2-06 and as herein modified.

### **2-5.02 MEASUREMENT AND PAYMENT**

All work required under this section shall be considered as incidental to the placing of "Asphalt Concrete Pavement" and no additional compensation will be made for any work required to accomplish the intent of the plans and specifications.

**2-6 TOP COURSE****2-6.01 GENERAL**

The Contractor shall furnish and place five-eighths inch (5/8") minus crushed surfacing top course in accordance with SWSS Division 4 and SWSS Section 9-03.9(3) and as herein modified. The five-eighths inch (5/8") minus crushed surfacing top course shall be placed to the depth as indicated on the plans. Crushed surfacing top course shall be constructed in layers not to exceed three inches (3") in depth.

**2-6.02 MEASUREMENT AND PAYMENT**

Measurement and payment for "Top Course," per ton, shall be full compensation for all labor, equipment, materials, and all other incidentals required to furnish and place top course in accordance with the plans and specifications or as directed by the Engineer.

**2-7 BASE COURSE****2-7.01 GENERAL**

The Contractor shall furnish and place one and one quarter inch (1-1/4") minus crushed surfacing base course in accordance with SWSS Division 4 and SWSS Section 9-03.9(3) and as herein modified. Crushed surfacing base course shall be constructed in layers not to exceed six inches (6") in depth.

**2-7.02 MEASUREMENT AND PAYMENT**

Measurement and payment for "Base Course," per ton, shall be full compensation for all labor, equipment, material, and all other incidentals required to furnish and place the base course in accordance with the plans and specifications or as directed by the Engineer.

**2-8 HOT MIX ASPHALT****2-8.01 GENERAL**

Unless otherwise provided for in the contract Special Provisions, hot mix asphalt shall be as per SWSS Section 5-04, as modified by Section 2-8.02 of these Standard Specifications

Unless otherwise specified in the contract Special Provisions, hot mix asphalt pavement shall be either HMA Class A PG64-28, HMA Class B PG64-28, HMA "Class G PG64-28, and shall be placed at the locations and compacted to the depth as shown on the plans, or as required by the City Standard Drawings. Pavement depths two inches (2") and less shall be placed as a single lift, unless otherwise shown on the plans. Pavement depths greater than two inches (2") shall be placed in two lifts.

**2-8.02 HOT MIX ASPHALT**

**Section 5-04 of the SWSS is revised in its entirety to read:**

**5-04.1 Description**

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 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 A, Class B, Class D, Class F, and Class G are designated as leveling or wearing courses. HMA Class E is designated as a pavement base course. With the exception of HMA Class D, all mixtures are considered dense graded HMA.

**5-04.2 Materials**

Materials shall meet the requirements of the following sections:

|                             |           |
|-----------------------------|-----------|
| Asphalt Binder              | 9-02.1(4) |
| Cationic Emulsified Asphalt | 9-02.1(6) |
| Anti-Stripping Additive     | 9-02.4    |

|                |             |
|----------------|-------------|
| Aggregates     | 5-04.3(8)A2 |
| Blending Sand  | 9-03.8(4)   |
| Mineral Filler | 9-03.8(5)   |

The Contractor shall be required to furnish all materials in the amounts required for the designated mix. Mineral materials include coarse and fine aggregates, blending sand, and mineral filler.

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.

The grade of asphalt binder shall be PG64-28. The contractor shall provide mix design for each class of HMA to be used on the project. The Contractor may propose the substitution of alternate grades of performance grade (PG) asphalt binder at no cost to the Contracting Agency. The proposal will be approved if the proposed alternate asphalt binder has an average 7-day maximum pavement design temperature that is equal to or higher than the specified asphalt binder and has a minimum pavement design temperature that is equal to or lower than the specified asphalt binder. The substituted alternate grade of asphalt binder shall be used in all HMA contract items of the same class and originally specified grade of asphalt binder. Blending of asphalt binder from different sources is not permitted.

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

Preparation of stockpile site, the stockpiling of aggregates and the removal of aggregates from stockpiles shall comply with the requirements of SWSS Section 3-02.

### 5-04.3 Construction Requirements

#### *5-04.3(1) 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 SWSS 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.

**5-04.3(2) 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 workshift 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 conveyor shall be in operation during the process of applying the release agent.

**5-04.3(3) 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.

When specified in the contract, reference lines for vertical control will be required. Lines shall be placed on both outer edges of the traveled way of each roadway. Horizontal control utilizing the reference line will be permitted. The grade and slope for intermediate lanes shall be controlled automatically from reference lines or by means of a mat referencing device and a slope control device. When the finish of the grade prepared for paving is superior to the established tolerances and when, in the opinion of the Engineer, further improvement to the line, grade, cross-section, and smoothness can best be achieved without the use of the reference line, a mat referencing device may be substituted for the reference line. Substitution of the device will be subject to the continued approval of the Engineer. A joint matcher may be used subject to the approval of the Engineer. The reference line may be removed after the completion of the first course of HMA when approved by the Engineer. Whenever the Engineer determines that any of these methods are failing to provide the necessary vertical control, the reference lines will be reinstalled by the Contractor.

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 Project Engineer may suspend work as allowed by Section 1-08.6. Any cleaning or solvent type liquids spilled on the pavement shall be thoroughly removed before paving proceeds.

#### ***5-04.3(4) 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 SWSS 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.

#### ***5-04.3(5) 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 shown on the plans or approved by the Engineer.

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.

#### ***5-04.3(5) A 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.

#### ***5-04.3(5) B Preparation of Untreated Roadway***

When designated in the plans the existing roadway shall be prepared and the roadway primed as provided in Section 5-02.3(2)A, except that only one application of asphalt and one application of aggregate, which shall conform to aggregate for HMA Class B as listed in Section 5-04.3(8) or other granular materials approved by the Engineer, will be required. All other provisions of Section 5-02 pertaining to bituminous surface treatment Class A shall apply, except as hereinafter modified.

The prime coat shall be applied over the full length of the project, and HMA shall not be placed until the prime coat has cured for 5 days unless otherwise approved by the Engineer.

Should any holes, breaks, or irregularities develop in the roadway surface after the prime coat has been applied, they shall be patched with HMA, as described in Section 5-04.3(5)A, in advance of placing the HMA. The Contractor shall maintain the completed prime coat by blading or brooming with equipment and procedures approved by the Engineer, until the HMA pavement is placed.

After the maintenance, patching or repair work has been completed and immediately prior to placing the HMA, the surface of the prime coat shall be swept clean of all dirt, dust, or other foreign matter.

When the prime coat application is not specified in the Special Provisions or shown in the Plans, the Contractor shall prepare the untreated roadway as described above and shall omit the prime coat treatment. The HMA shall be constructed on the prepared subgrade.

In areas used as turnouts or which will receive heavy service, the Engineer may order a change in the grade to provide a greater depth of pavement.

The Contractor shall prepare untreated shoulders and traffic islands by blading and compacting to provide a sound base for paving and shall omit the prime coat treatment. The HMA shall be constructed on the prepared subgrade.

If the Contractor protects the completed untreated surfacing materials to the degree that the surface meets the requirements of Section 5-02.3(2)A at the time of construction of the prime coat or the construction of the pavement if the prime coat is not required, the Contractor will not be required to perform the work specified in Section 5-02.3(2)A but shall be compensated for the item of work preparation of untreated roadway.

#### ***5-04.3(5) C Crack Sealing***

When the proposal includes a pay item for crack sealing, all cracks and joints  $\frac{1}{4}$ -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. The requirements of 1-06 will not apply to the Portland cement and paving sand used in the Sand Slurry.

#### ***5-04.3(5) D Soil Residual Herbicide***

Where required by the Special Provisions, or where shown in the Plans, 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 at the Contractor's expense. 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.



***5-04.3(5) E Pavement Repair***

The Contractor shall excavate pavement repair areas and shall backfill these with HMA in accordance with the details shown in the Plans and as staked.

The actual excavation depth may vary to a maximum depth of 1-foot maximum, depending upon where stable foundation material is encountered, as determined by the Engineer.

The minimum width of any pavement repair area shall be 3 feet unless shown otherwise in the Plans. All pavement repair areas shall be sawcut before removal, or shall be removed by a pavement grinder approved by the Engineer.

Asphalt for tack coat shall be required as specified in Section 5-04.3(5) A, and shall be applied to all edges of existing pavement in the pavement repair area.

The Contractor shall excavate only within one lane at a time. The areas shall be excavated, backfilled, and compacted within the same day's working shift, in accordance with the details shown in the Plans and to the satisfaction of the Engineer.

Excavated materials will become the property of the Contractor for disposal off the right of way.

The Contractor shall conduct the excavation operations in a manner that will protect the pavement areas not designated to be removed. Pavement not designated to be removed that is damaged as a result of the Contractor's operations shall be repaired by the Contractor to the satisfaction of the Engineer at no cost to the Contracting Agency.

Placement of the HMA backfill shall be accomplished in lifts as called for in the plans or Special Provisions, or as herein specified. All new pavement over 2-inches in depth shall be completed in two lifts. Compaction shall be accomplished by mechanical tamper or a roller as approved by the Engineer.

HMA for pavement repair shall be HMA Class A, B, E, or F at the Contractor's option, unless otherwise specified in the contract.

***5-04.3(6) 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.

***5-04.3(7) Preparation of Aggregates***

The aggregates shall be stockpiled according to the requirements of SWSS Section 3-02. Sufficient storage space shall be provided for each size of aggregate. The aggregates shall be removed from stockpile(s) in a manner to ensure a minimum of segregation when being moved to the HMA plant for processing into the final mixture. Different aggregate sizes shall be kept separated until they have been delivered to the HMA plant.

***5-04.3(7) A Mix Design***

The Contractor shall obtain representative samples from mineral aggregate stockpiles, and blend sand sources to be used for HMA production and submit them for development of a mix design. The grade of asphalt binder shall be PG64-28. The contractor may propose the substitution of alternate grade (PG) at no cost to the city, provided that the proposal equals or exceeds the upper and lower limits of PG64-28. Sample submittal shall include asphalt binder grade and sources; production mix gradation and combining ratios of mineral aggregate stockpiles and blend sand that will be used in production. This will be the basis for the mix design and job mix formula. The Contractor shall allow 20 calendar days for this approval and design once the aforementioned information and material has been received. Additional time may be required if the proportions will not make an adequate design as determined by the Engineer, or if the Contractor requests

more than one asphalt binder source approval. The Contractor is also advised that production of the HMA shall not commence until the job mix formula has been established. Adjustments to the job mix formula may be made per Basis of Acceptance.

The Contractor shall obtain the Engineer's approval prior to changing the source of asphalt binder during the production of HMA. Blending of different asphalt binder grades sources will not be permitted.

#### ***5-04.3(8) Mixing***

After the required amounts of mineral materials and asphalt binder have been introduced into the mixer the HMA shall be mixed until a complete and uniform coating of the particles and a thorough distribution of the asphalt binder throughout the mineral materials is ensured.

When discharged, the temperature of the HMA shall not exceed the maximum temperature recommended by the asphalt binder manufacturer. Maximum water content of 2 percent in the mix, at discharge, will be allowed providing the water causes no problems with handling, stripping, or flushing. If the water in the HMA causes any of these problems, the moisture content shall be reduced as directed by the Project Engineer.

Storing or holding of the HMA in approved storage facilities will be permitted during the daily operation but in no event shall the HMA be held for more than 24 hours. HMA held for more than 24 hours after mixing shall be rejected. Rejected HMA shall be disposed of by the Contractor at no expense to the Contracting Agency. The storage facility shall have an accessible device located at the top of the cone or about the third point. The device shall indicate the amount of material in storage. No HMA shall be accepted from the storage facility when the HMA in storage is below the top of the cone of the storage facility, except as the storage facility is being emptied at the end of the working shift.

#### ***5-04.3(8) A Acceptance Sampling and Testing-HMA Mixture***

1. **General.** Acceptance of HMA shall be as provided under statistical evaluation, nonstatistical evaluation or commercial 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) will be evaluated for quality of gradation and asphalt binder content.

Open graded mixes (HMA pavement Class D) will be evaluated for quality of gradation only, based on samples taken from the cold feed.

Nonstatistical Evaluation will be used for HMA.

Statistical Evaluation procedures will apply only to contracts that specify statistical evaluation in the contract Special Provisions.

Statistical Evaluation will be administered under the provisions of Section 5-04.5(1) for Quality Assurance Price Adjustments and evaluation of quality.

Commercial Evaluation will be used for Commercial HMA and for other classes of HMA in the following applications: sidewalks, road approaches, ditches, slopes, paths, trails, gores and other nonstructural applications as approved by the Project Engineer. The contractor shall select a class of HMA appropriate for the required use. The Project Engineer will determine anti-strip requirements for the HMA. Sampling and testing of HMA accepted by commercial evaluation will be at the option of the Project Engineer. The proposal quantity of HMA that is accepted by commercial evaluation will be excluded from the quantities used in the determination of statistical and nonstatistical evaluation.

## 2. Aggregates.

- A. 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% max |
| Degradation Factor, Wearing Course | 30 min  |
| Degradation Factor, Other Courses  | 20 min  |

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% 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% by weight of material with a specific gravity less than 1.0.

- B. Test Requirements. Aggregate for HMA shall meet the following test requirements:

|                                | Class of HMA |    |     |    |    |    |
|--------------------------------|--------------|----|-----|----|----|----|
|                                | A            | B  | D   | E  | F  | G  |
| Fracture, by weight (See Note) | 1            | 2  | 3   | 4  | 4  | 2  |
| Sand Equivalent Min.           | 45           | 45 | --- | 45 | 35 | 45 |

<sup>1</sup>The fracture requirements are at least one fractured face on 90 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.

<sup>2</sup>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.

<sup>3</sup>The fracture requirements are at least two fractured faces on 75 percent and at least one fractured face on 90 percent of the material retained on each specification sieve, U.S. No. 8 and above, if that sieve retains more than 5 percent of the total sample.

<sup>4</sup>The fracture requirements are at least one fractured face on 50 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.

When material is being produced and stockpiled for use on a specific contract or for a future contract, the fracture and sand equivalent requirements shall apply at the time of stockpiling. When material is used from a stockpile that has not been tested as provided above, the requirements for fracture and sand equivalents shall apply at the time of its introduction to the cold feed of the mixing plant.

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:

|                                 | Class of HMA |       |      |       |       |       |
|---------------------------------|--------------|-------|------|-------|-------|-------|
|                                 | A            | B     | D    | E     | F     | G     |
| Stabilometer Value Min.         | 37           | 35    | ---  | 35    | 35    | 35    |
| Cohesimeter Value Min.          | 100          | 100   | ---  | 100   | 50    | 100   |
| Percent Air Voids               | 2-4.5        | 2-4.5 | ---  | 2-4.5 | 2-4.5 | 2-4.5 |
| Modified Lottman Stripping Test | Pass         | Pass  | Pass | Pass  | Pass  | Pass  |

- C. Gradation. The materials of which HMA is composed shall be of such sizes, grading, 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 percentages of aggregate refers to completed dry mix, and includes mineral filler when used.

| Sieve Size   | Grading Requirements |         |         |         |         |
|--------------|----------------------|---------|---------|---------|---------|
|              | Class A<br>and B     | Class D | Class E | Class F | Class G |
|              | Percent Passing      |         |         |         |         |
| 1-1/4 square | ---                  | ---     | 100     | ---     | ---     |
| 1 square     | ---                  | ---     | 90-100  | ---     | ---     |
| 3/4 square   | 100                  | ---     | ---     | 100     | ---     |
| 5/8 square   | ---                  | ---     | 67-86   | ---     | ---     |
| 1/2 square   | 90-100               | 100     | 60-80   | 80-100  | 100     |
| 3/8 square   | 75-90                | 97-100  | ---     | ---     | 97-100  |
| U.S. No. 4   | 46-66                | 30-50   | 34-56   | 38-70   | 50-78   |
| U.S. No. 8   | ---                  | 5-15    | ---     | ---     | ---     |
| U.S. No. 10  | 30-42                | ---     | 25-40   | 30-50   | 32-53   |
| U.S. No. 40  | 11-24                | ---     | 10-23   | ---     | 11-24   |
| U.S. No. 200 | 3.0-7.0              | 2.0-5.0 | 2.0-9.0 | 2.0-8.0 | 3.0-7.0 |

#### **5-04.3(8)B Basis of Acceptance**

1. HMA will be accepted based on its conformance to the project mix design.

Tolerances — The mixture at the time of acceptance shall conform to the range of the proportion specified in the broad band specifications for gradation and the design mix asphalt binder content plus or minus 0.5percent.

2. Hot Mix Asphalt Mixture

#### A. Sampling

1. A sample will not be obtained from either the first or last 25 tons of mix produced in each production shift.
2. Samples for compliance of gradation and asphalt binder content will be obtained on a random basis from the hauling vehicle. The Contractor shall provide adequate platforms to enable samples to be obtained in accordance with WAQTC FOP for AASHTO T 168. The platforms shall allow the sample to be taken without the Engineer entering the hauling vehicle.

#### B. Definition of Sampling Lot and Sublot.

Sampling and testing for evaluation shall be performed on a random basis at a minimum frequency of one sample for each subplot of 400 tons or each day's production, whichever is least. When proposal quantities exceed 1,200 tons for a class of HMA under nonstatistical evaluation, subplot size shall be determined to the nearest 100 tons to provide not less than three uniform sized sublots, based on proposal quantities, with a maximum subplot size of 800 tons.

- C. Test Results. The Engineer will furnish the Contractor with a copy of the results of all acceptance testing performed in the field at the beginning of the next paving shift.

1. Rejection by Contractor. The Contractor may, prior to sampling, elect to remove any defective material and replace it with new material at no expense to the Contracting Agency. Any such new material will be sampled, tested, and evaluated for acceptance.

2. Rejection Without Testing. The Engineer may, without sampling, reject any batch, load, or section of roadway that appears defective in gradation or asphalt binder content. Material rejected before placement shall not be incorporated into the pavement. Any rejected section of roadway shall be removed.

No payment will be made for the rejected materials or the removal of the materials unless the Contractor requests that the rejected material be tested. If the contractor elects to have the rejected material tested, a minimum of three representative samples will be obtained and tested. If the mix is found to be within specifications, the city will make payment at the contract unit prices. If the mix is found to be out of specification, no payment will be made and in addition, the contractor will pay all costs for the testing.

3. A Partial Sublot. In addition to the preceding random acceptance sampling and testing, the Engineer may also isolate from a normal subplot any material that is suspected of being defective in gradation or asphalt binder content. Such isolated material will not include an original sample location. A minimum of three random samples of the suspect material will be obtained and tested. Any rejected section of roadway shall be removed, or at the city's option, the roadway may be accepted with a negotiated price adjustment.

**5-04.3(9) 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 Engineer or specified in the Plans or in the Special Provisions, the nominal compacted depth of any layer of any course shall not exceed the following depths:

|                   |   |
|-------------------|---|
| HMA Class A and B | 0.17 foot (0.25 with engineer approval) |
| HMA Class G       | 0.10 foot                               |
| HMA Class D       | 0.08 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.

**5-04.3(10) Compaction**

**5-04.3(10)A 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 with 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. Coverage's with a vibratory or steel wheel roller must precede pneumatic tired rolling. When HMA Class D is being constructed, the use of pneumatic rollers will not be required.

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.

***5-04.3(10)B Control***

HMA Classes A, B, E, and F used in traffic lanes, including lanes for ramps, truck climbing, weaving, and speed change, and having a specified compacted course thickness greater than 0.10 foot, shall be compacted to a minimum of 92 percent of the maximum density as determined by WSDOT Test Method 705.

The city, at its option, may require establishment of a roller pattern. The test point evaluation shall be performed in accordance with instructions from the Engineer. The number of passes with an approved compaction train, required to attain the maximum test point density, shall be used on all subsequent paving.

***5-04.3(11) 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 not 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.

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 to the dimensions shown on Standard Plan A-1 and filled with joint sealant meeting the requirements of Section 9-04.2.

**5-04.3(12) Vacant****5-04.3(13) 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:

1. Removal of material from high places by grinding with an approved grinding machine, or
2. Removal and replacement of the wearing course of HMA, or
3. 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 Project Engineer, will not produce satisfactory results, will be removed and replaced. If the Contractor requests, and at the city's option, the roadway may be accepted with a price adjustment. If the city determines that a non-standard section will be retained, the Project Engineer shall deduct from monies due or that may become due to the Contractor, the sum of \$500.00 for each and every section of single traffic lane 100 feet in length in which any excessive deviations described above are found.

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.

**5-04.3(14) Planing Bituminous Pavement**

The surface of existing pavements or the top surface of subsurface courses shall be planed to remove irregularities and to produce a smooth surface.

Planing shall be performed in such a manner that the underlying pavement is not torn, broken, or otherwise damaged by the planing operation. The surface of the underlying pavement shall be slightly grooved or roughened sufficiently to ensure a bond when overlaid.

The planings shall become the property of the Contractor and shall be removed from the right-of-way. The planings may be utilized as RAP, within the requirements of Section 5-04.2 or 9-03.21. The Contractor shall dispose of all other debris resulting from the planing operation in a Contractor-provided site off the right-of-way.

For mainline planing operations, the equipment shall have automatic controls, with sensors for either or both sides of the equipment. The controls shall be capable of sensing the proper grade from an outside reference line, or a mat-referencing device. The automatic controls shall also be capable of maintaining the desired transverse slope. The transverse slope controller shall be capable of maintaining the mandrel at the desired slope (expressed as a percentage) within plus or minus 0.1 percent.

**5-04.3(15) HMA Road Approach**

HMA approaches shall be constructed at the locations shown in the Plans or where staked by the Project Engineer. The work shall be performed in accordance with Section 5-04.

**5-04.3(16) 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 Engineer.

Asphalt for prime coat shall not be applied when the ground temperature is lower than 50°F, without written permission of the Engineer.

HMA Class D shall not be placed when the air temperature is less than 60°F.

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:

| Compacted Thickness<br>(Feet) | Surface Temperature Limitations |                        |
|-------------------------------|---------------------------------|------------------------|
|                               | Surface Course                  | Sub-Surface<br>Courses |
| 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*                  |

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

**5-04.3(17) Paving Under Traffic**

When the roadway being paved is open to traffic, the following requirements shall apply:

Access to business and side streets shall be kept open, except for such time as paving operations require short-term temporary closure. Prior approval of the engineer is required for all scheduled closures and paving procedures.

During paving operations, temporary pavement markings shall be maintained throughout the project. Temporary pavement markings shall be installed on the roadway prior to opening to traffic. Temporary pavement markings shall be in accordance with Section 8-23.

Unless specified bid items are provided, all costs in connection with performing the work in accordance with these requirements, including the cost of installing and removing temporary pavement markings, shall be included in the unit contract prices for the various bid items involved in the contract.

**5-04.3(18) Vacant****5-04.3(19) Sealing of Pavement Surfaces**

Where shown in the Plans, the Contractor shall apply a fog seal. Before application of the fog seal all surfaces shall be thoroughly cleaned of dust, soil, pavement grindings, and other foreign matter. The fog seal shall be CSS-1 or CSS-1h uniformly applied to the pavement free of streaks and bare spots at the rate 0.03 to 0.05 residual gallons per square yard. The emulsified asphalt shall be diluted at a rate of one part water to one part emulsified asphalt unless otherwise directed by the Engineer. The emulsified asphalt shall be applied within the temperature range specified in Section 5-02.3(3). Unless otherwise approved by the Project Engineer, the fog seal shall be applied prior to opening to traffic.



**5-04.3(20) Anti-Stripping Additive**

When directed by the Engineer, an anti-stripping additive shall be added to the HMA material in accordance with Section 9-02.4.

**5-04.4 Measurement**

HMA Cl. \_\_\_ PG \_\_\_ or HMA for \_\_\_ Cl. \_\_\_ PG \_\_\_ or Commercial HMA will be measured by the ton in accordance with Section 1-09.2, with no deduction being made for the weight of asphalt binder, blending sand, mineral filler, or any other component of the HMA. All costs for supply and placement of tack coat, anti-stripping additive, finish grading, water, compaction and all miscellaneous as required to complete the pavement in accordance with the plans and specifications, shall be included in the per ton cost for the HMA.

If the Contractor elects to remove and replace HMA as allowed by Section 5-04.3(8)A, the material removed will not be measured.

No specific unit of measure will apply to the force account item of Crack Sealing.

Soil Residual Herbicide will be measured by the mile for the stated width to the nearest .01 mile or by the square yard, whichever is designated in the proposal.

Pavement Repair. Pavement repair will be completed per the requirements of city standards Section 2-29 or the contract Special Provisions.

Asphalt for Prime Coat will be measured by the ton in accordance with Section 1-09.2.

Prime Coat Aggregate will be measured by the cubic yard, truck measure, or by the ton, whichever is designated in the proposal.

Asphalt For Fog Seal will be measured by the ton, before dilution, in accordance with Section 1-09.2.

Longitudinal joint seals between the HMA and cement concrete pavement will be measured by the linear foot along the line and slope of the completed joint seal.

Planing Bituminous Pavement will be measured by the square yard.

Temporary Pavement Marking installation and removal will not be separately measured unless specifically provided for in the bid proposal, all costs for temporary pavement marking shall be included in the lump sum traffic control bid item.

SWSS Section 8-23.4 and 8-23.5 for measurement and payment of Temporary Pavement Markings is hereby deleted.

No specific unit of measure will apply to the calculated item of Anti-Stripping Additive.

**5-04.5 Payment**

Payment will be made in accordance with Section 1-04.1, for each of the following bid items that are included in the proposal:

"HMA Cl. \_\_\_ PG \_\_\_", per ton.

"HMA for Approach Cl. \_\_\_ PG \_\_\_", per ton.

"HMA for Preleveling Cl. \_\_\_ PG \_\_\_", per ton.

"The unit contract price per ton for "HMA Cl. \_\_\_ PG \_\_\_", "HMA for Approach Cl. \_\_\_ PG \_\_\_", and "HMA for Preleveling Cl. \_\_\_ PG \_\_\_", shall be full compensation for all costs incurred to carry out the requirements of Section 5-04 except for those costs included in other items which are included in this sub-section and which are included in the proposal. If a separate bid item is not

provided for approach and preleveling pavement, all costs for the required paving shall be included in the unit id item for "HMA CI. \_\_ PG \_\_" per ton.

"Preparation of Untreated Roadway", per mile.

The unit contract price per mile for "Preparation of Untreated Roadway" shall be full pay for all work described under Section 5-04.3(5)B, with the exception, however, that all costs involved in patching the roadway prior to placement of HMA shall be included in the unit contract price Per square yard for pavement restoration, as provided for in the bid proposal. If the proposal does not include a bid item for "Preparation of Untreated Roadway", the roadway shall be prepared as specified, but the work shall be included in the contract prices of the other items of work.

All costs for asphalt tack coat shall be included in the unit contract price per ton of the HMA.

"Crack Sealing",

The linear foot, or lump sum as provided for in the bid proposal.

"Soil Residual Herbicide \_\_\_ ft. Wide," per mile, or

"Soil Residual Herbicide", per square yard.

The unit contract price per mile or per square yard for "Soil Residual Herbicide" shall be full payment for all costs incurred to obtain, provide and install herbicide in accordance with Section 5-04.3(5)D.

Pavement Repair Excavation Incl. Haul. All costs for "Pavement Repair Excavation Incl. Haul" shall be included in the unit contract price per square yard for "Pavement Restoration".

"Asphalt for Prime Coat", per ton.

The unit contract price per ton for "Asphalt for Prime Coat" shall be full payment for all costs incurred to obtain, provide and install the material in accordance with Section 5-04.3(5)B.

"Prime Coat Aggregate", per cubic yard, or per ton.

The unit contract price per cubic yard or per ton for "Prime Coat Agg." shall be full pay for furnishing, loading, and hauling aggregate to the place of deposit and spreading the aggregate in the quantities required by the Engineer.

"Asphalt for Fog Seal", per ton.

The unit contract price per ton for "Asphalt for Fog Seal" shall be full pay for all costs of material, labor, tools, and equipment necessary for the application of the fog seal as specified. If there is no bid item and a fog seal is required, it shall be applied and the work shall be included in the unit contract prices of the other work items.

"Longitudinal Joint Seal", per linear foot.

The unit contract price per linear foot for "Longitudinal Joint Seal" shall be full payment for all costs incurred to perform the work described in Section 5-04.3(11).

"Planing Bituminous Pavement", per square yard.

The unit contract price per square yard for "Planing Bituminous Pavement" shall be full payment for all costs incurred to perform the work described in Section 5-04.3(14).

Temporary Pavement Marking

All costs for supplying, placing and removing Temporary Pavement Marking shall be included in the lump sum bid item for "Traffic Control".

Water

For city-administered contracts, the city will supply water at the nearest source, at no cost to the contractor. All costs for loading, hauling and spreading water shall be incorporated in other bid items as provided for in the bid proposal.

Anti-Stripping Additive Anti-Stripping Additive When the contractor's mix design requires all costs shall be incorporated in the unit bid item for the HMA utilized.

## 2-9 WEIGHING

Equipment for the weighing of crushed stone surfacing materials and bituminous surfacing materials shall be in accordance with SWSS Section 1-09.2 Weighing Equipment, and shall also include the use of commercially owned scales that are approved by the Engineer.

All scales used shall be tested and sealed at the expense of the Contractor.

For each load, the Contractor shall furnish the Engineer with a weigh ticket at the point of delivery. The Contractor shall furnish a copy of daily bunker sheets on request by the Engineer at the end of each day's operation.

## 2-10 CONCRETE CURB AND GUTTER

### 2-10.01 GENERAL

Where shown on the plans, the Contractor shall construct integral curb and gutter as shown on the City of Benton City Standard Drawing 2-10.

The Contractor shall mark the face of the concrete curb with an "S" for all sewer services, "W" for all water service lines, "C" on all conduit and utility crossings, "I" for irrigation crossings, and "E" on all street lighting conduit at the locations where such newly constructed or known existing underground lines and conduits cross the new curb line. The letters shall be one and one-half inch (1-1/2") minimum size letters and carefully stamped with an embossed tool. The Contractor shall exercise care in preventing the loss of the location of service lines during construction. The cost of marking the water and sewer crossing points on the curb shall be incidental to "Concrete Curb and Gutter".

### 2-10.02 MATERIALS AND CONSTRUCTION

Concrete materials shall meet the strength requirements as set forth in the City of Benton City Standard Drawing 2-14, Class 5. Construction shall be in conformance with SWSS Section 8-04.3 and as herein modified. Cement concrete curb and gutter shall be provided with through cut joints at ten (10) foot centers. One-half (1/2") mastic material shall be placed full depth in the curb and gutter at the points of tangency on all curb returns. Cold weather protection shall be provided per SWSS Section 5-05.3(14).

All beginning joints and at all points of terminus on curb and gutter, the contractor shall place a one half-inch (1/2") mastic. A bull nose shall be installed at all terminal end points. The concrete bullnose will be typically 18-inches long with the end sloped at a 45 degree angle.

The commercial mix concrete mix design shall be provided to the engineer a minimum of one work day prior to the proposed use. The mix design will be subject to approval of the Engineer.

Immediately after the finish of operations has been completed, the Contractor shall apply curing compound to the exposed surfaces in accordance with SWSS Section 5-05.3(13) A.

Transparent curing compounds shall meet the following requirements:

The compound shall be a liquid that, at the time of application, is free from suspended matter. It shall be sufficiently low in viscosity to result in an even, uniform coating when applied by spraying.

The compound shall be sufficiently transparent and free from permanent color to result in no pronounced change in color from that of the natural concrete at the conclusion of the curing period. The compound shall, however, contain a dye of color strength sufficient to render the film distinctly visible on the concrete for a period of at least four hours after application. Application rate and type of compound shall be subject to the approval of the Engineer.

When tested for moisture retaining effectiveness by the WSDOT "Test for Moisture Reading Effectiveness of Concrete Curing Compounds", the loss of moisture shall not exceed two grams per specimen.

**2-10.03 MEASUREMENT AND PAYMENT**

Measurement shall be made along the length of curb, including driveway depressed curb, radii and ADA ramp curbs.

The unit contract price for "Concrete Curb and Gutter," per linear foot, shall be full compensation for all labor, equipment, materials, and all other incidentals required to perform the work in accordance with the plans and specifications or as directed by the Engineer.

**2-11 CONCRETE DRIVEWAY**

**2-11.01 GENERAL**

The Contractor shall construct cement concrete driveways where shown on the plans or as directed by the Engineer. The concrete driveways are defined as that portion of the concrete sidewalks along the curb, which is depressed for use as a driveway. Driveways will be field staked by the Engineer at the time of construction. All construction shall be in accordance with SWSS Section 8-14., except as modified by City of Benton City Standard Drawing 2-10.

**2-11.02 MEASUREMENT AND PAYMENT**

Measurement for "Concrete Driveway", per linear foot, from top of transition to top of transition, shall include the driveway-sidewalk section only. Depressed curb in front of the driveway section will be included under "Concrete Curb and Gutter" bid items.

The unit concrete price for "Concrete Driveway", per linear foot, shall be full compensation for all labor, equipment, and all other incidentals required to construct the driveway in accordance with the plans and specifications or as directed by the Engineer.

**2-12 CONCRETE SIDEWALK**

**2-12.01 GENERAL**

Where shown on the plans, the Contractor shall construct cement concrete sidewalks in accordance with SWSS Section 8-14.3, except as modified, by the City of Benton City Standard Drawings.

At the termination points of new curb, gutter, and sidewalk, the Contractor shall construct an asphalt concrete pavement ramp from the top of the sidewalk to the existing ground surface.

**2-12.02 MEASUREMENT AND PAYMENT**

Measurement and payment for "Concrete Sidewalk," per linear foot, shall be full compensation for all labor, equipment, materials, and all other incidentals required to perform the work in accordance with the plans and specifications or as directed by the Engineer. Sidewalk within concrete driveways and asphalt ramps at terminal end points shall be measured and paid separately, as per Section 2-11.02 and 2-24.02 of these specifications.

**2-13 PEDESTRIAN RAMPS**

**2-13.01 GENERAL**

Unless specifically directed otherwise by the Engineer, the Contractor shall construct pedestrian access ramps, in accordance with the City of Benton City Standard Drawings, and as otherwise

required to meet the requirements of the Americans with Disabilities Act (ADA). For access ramp construction on streets with grades steeper than 8% and where unusual obstacles prevent the construction of a standard ramp, the contractor/developer/engineer should reference the following web site, <http://www.access-board.gov/prowac/alterations/guide.htm#slope>. ADA ramps are required at all curb radii, street crossings, and in traffic islands where the traffic island interferes with normal pedestrian traffic. Unless otherwise provided for in the bid proposal and with the exception of the "Truncated Domes", all costs for ramps shall be incidental to sidewalk and curb construction.

#### **2-13.02 TRUNCATED DOMES**

Truncated domes on new concrete construction shall be WSDOT approved and shall be preformed fiberglass, masonry, or concrete tiles, per the applicable portions of SWSS Section 8-14.3(3).

Retrofit truncated domes shall be WSDOT product approved and in addition must meet the following requirements and provide the specified five year product and installation warranty.

Glue down and hot melt products shall be WSDOT approved and in addition shall contain an ultra-violet stabilized coating. The surface applied tiles shall be guaranteed in writing for a period of five (5) years from the date of final contract acceptance (final completion), against defective work, separation, breakage, cracking, deformation, discoloration (fading) and loosening or separation of tiles. Prior to ordering, the contractor shall provide three copies of the product submittals, which will include the manufacturer's product specifications, preparation and installation instructions and verification that the specified five year written warranty will be provided to the city.

#### **2-13.03 INSTALLATION**

All preparation of the concrete surface, application procedures, glue, rivets, heat application, perimeter seals and final product installation shall fully meet the requirements of the product manufacturer installation specifications, which must include or exceed the herein minimum requirements.

The installer must be experienced and certified by the product manufacturer for installation of their product. The concrete surface will be cleaned with a diamond cup grinder, or shot blaster and any defects repaired per the manufacturer's requirements. For glue down products, fasteners shall be supplied by the same manufacturer as the tile product used and installed in full accordance with the manufacturer's spacing and installation requirements.

For hot melt products, temperature gauges and installation support equipment shall be provided that fully comply with the manufacturer's installation, equipment and monitoring requirements.

#### **2-13.04 MEASUREMENT AND PAYMENT**

All depressed cement concrete curb and gutter, together with sidewalk required to construct the pedestrian ramp, shall be paid for "Concrete Curb and Gutter", per linear foot, and for "Concrete Sidewalk," per linear foot, respectively, and shall be full compensation for all labor, equipment, materials, and all other incidentals required to perform the work in accordance with the plans and specifications or as directed by the Engineer.

The unit contract price per each, for each designated size of "ADA Truncated Dome", shall be full compensation for all labor, equipment and materials as required to complete the Truncated Dome.

### **2-14 HMA PATCHING BEHIND THE SIDEWALK**

#### **2-14.01 GENERAL**

As indicated on the plans or as directed by the Engineer, the Contractor shall grade, slope, and patch between the back of the new sidewalk or driveway section and existing paved private walks, parking

areas and driveways with HMA pavement, to ensure a smooth transition between the existing and new installations.

**2-14.02 MATERIALS**

The top course, base course and HMA pavement shall be as specified under Sections 2-6, 2-7 and 2-8 of these Roadway Specifications.

**2-14.03 MEASUREMENT AND PAYMENT**

The unit contract price for "HMA Patching Behind Sidewalk," per square yard, shall be full compensation for all labor, equipment, materials, and all other incidentals required to perform the work in accordance with the plans and specifications or as directed by the Engineer.

**2-15 MONUMENT**

**2-15.01 GENERAL**

The Contractor shall install monuments at the locations indicated on the plans. The monuments shall be in accordance with the City of Benton City standard Drawing 2-8.

**2-15.02 MEASUREMENT AND PAYMENT**

The unit contract price for "Install Monument," per each, shall be full compensation for all labor, equipment, materials, and all other incidentals required to perform the work in accordance with the plans and specifications or as directed by the Engineer.

**2-16 CURB AND GUTTER REMOVAL**

**2-16.01 GENERAL**

Where shown on the plans or as directed by the Engineer, and when required for design changes and for added driveways, the Contractor shall saw cut and remove the existing curb and gutter as identified. All waste materials shall be removed from the project and disposed of at a site provided by the Contractor.

**2-16.02 MEASUREMENT AND PAYMENT**

The unit contract price for "Curb and Gutter Removal," per linear foot, shall be full compensation for all labor, equipment, materials, and all other incidentals required to perform the work in accordance with the plans and specifications, or as required to make revisions as directed by the Engineer.

**2-17 SIDEWALK/DRIVEWAY REMOVAL**

**2-17.01 GENERAL**

Where shown on the plans or as directed by the Engineer and where required for design changes, the Contractor shall saw cut and remove the existing sidewalk and driveways. All waste material shall be removed from the project and disposed of at a site to be provided by the Contractor.

**2-17.02 MEASUREMENT AND PAYMENT**

The unit contract price for "Sidewalk/Driveway removal," per linear foot, shall be full compensation for all labor, equipment, materials, and all other incidentals required to perform the work in accordance with the plans and specifications, or as required to make revisions as directed by the Engineer.

**2-18 ADJUST NEW AND EXISTING UTILITIES TO GRADE**

**2-18.01 GENERAL**

All new and existing water valve boxes, manhole rings and covers, catch basin rings and grates, sewer cleanouts, and any other castings within the work area shall be referenced by the Contractor per Section 2-1.03 of these specifications. In those instances where existing manholes are required to be lowered, and adequate adjustment rings are not available, the Contractor shall excavate and remove a section of manhole and provide adjustment rings, a replacement section, and cone or flat top as required for lowering. After the placement of the final finished lift of asphalt pavement, adjust

all utility covers to the finished pavement grade. When located out of the pavement, the casting shall be adjusted and a concrete collar placed. The casting shall be adjusted in accordance with the City of Benton City Standard Drawing 3-4, or as directed by the Engineer.

**2-18.02 MATERIALS AND CONSTRUCTION**

The existing pavement shall be cut neatly around the cast iron frame. The existing asphalt and road base materials shall be removed and the cast iron frame adjusted to finished grade by the use of concrete adjusting rings as shown on the City of Benton City Standard Drawing 3-4. All road base rock materials and native subgrade materials removed during the adjustment of the castings to grade shall be replaced with concrete. Concrete shall be protected for a minimum of 16 hours prior to placement of the asphaltic concrete pavement patch. A shorter time period may be granted by the Engineer if traffic conditions warrant that a shorter time would be to the benefit of the City. On arterial streets that are open to traffic, a concrete mix, which will obtain a minimum 1000 psi within four hours, shall be used and a minimum four hour cure time provided. On arterial streets, the HMA Class G PG 64-28 patch will be placed and barricades removed prior to the end of the daylight hours.

**2-18.03 MEASUREMENT AND PAYMENT**

Measurement and payment for "Adjust Monument, Manhole, Water Valve Box, Catch Basin," and any other casting adjustment shall be on a per each basis, and shall be full compensation for cutting and removing asphalt, adjusting blocks or rings, resetting new and existing frames to finished grade, replacing frames damaged during construction, placing concrete, grouting as required, labor, equipment, materials, and all other incidental work required to complete the work in accordance with the plans and specifications or as directed by the Engineer.

When the contractor is directed to supply new materials and remove and replace substandard valve boxes or misaligned existing valve boxes, or to replace substandard manhole rings and covers, the measurement and payment for "Remove, replace and adjust existing valve box" and "remove, replace and adjust existing manhole ring and cover" shall be full compensation for all costs to supply city standard valve box bottom, top section and cover, or manhole ring and cover, deliver the salvaged materials to the city shops on 10th Avenue, and adjust the casting to finish grade as above specified.

The unit contract price for "Lower Existing Manhole", per each, shall be full compensation for furnishing all labor, materials, equipment, excavation, backfill, salvage and all other incidentals required to lower an existing manhole where adequate adjustment rings are not available, as specified herein and as directed by the Engineer. A separate measurement and payment will be made on completion of paving for adjusting existing casting to grade for those manholes previously lowered.

**2-19 PUD CONDUIT TRENCH EXCAVATION AND BACKFILL**

**2-19.01 GENERAL**

When called for in the contract special provisions, or when called for on the contract plans, the Contractor shall provide all trench excavation, bedding and backfill for the Benton County Public Utility District (PUD).

**2-19.02 TRENCH EXCAVATION AND BACKFILL**

Trench excavation for PUD conduit installations shall provide for a minimum of thirty inches (30") of cover material over the top of the finished conduit grade.

Trench backfill material shall be compacted by means chosen by the Contractor to achieve a minimum of 95 percent maximum density and as herein modified. Compaction shall be completed in such a manner as to preclude future settlement.

**2-19.03 MEASUREMENT AND PAYMENT**

The unit contract price for "PUD Conduit Trench Excavation, Bedding and Backfill," per linear foot, shall be full compensation for all labor, equipment, materials, and all other incidentals required to perform the work in accordance with the plans and specifications or as directed by the Engineer.

## **2-20 INSTALL BARRICADE**

### **2-20.01 GENERAL**

The Contractor shall furnish and install a Type III Barricade when directed by the engineer, or required for traffic safety, in accordance with the current MUTCD, Section 6F-5F.

### **2-20.02 MEASUREMENT AND PAYMENT**

When a separate bid item is included in the bid proposal, the unit contract price for "Install Type III Barricade", per each, shall be full compensation for all labor, equipment, materials, and all other incidentals required to complete the work in accordance with the plans and specifications or as directed by the Engineer.

## **2-21 INSTALL END-OF-ROAD MARKER**

### **2-21.01 GENERAL**

The Contractor shall furnish and install the 18-inch diamond reflectorized red panel end-of-road marker, as directed by the engineer, or as shown on the construction plans. The installation shall be in accordance with the City of Benton City Standard Drawing 7-4.

### **2-21.02 MEASUREMENT AND PAYMENT**

The unit contract price for "Install End-of-Road Marker," per each, shall be full compensation for all labor, equipment, and materials required to complete the work in accordance with the plans and specifications, or as directed by the Engineer.

## **2-22 SOIL RESIDUAL HERBICIDE**

### **2-22.01 GENERAL**

In all areas where sagebrush, alfalfa and crab grass previously existed, or where called for on the plans, special provisions, or directed by the Engineer, the Contractor shall apply one application of an approved soil residual herbicide to prevent vegetation damage to the asphalt pavement. The soil residual herbicide to be used shall not have a detrimental chemical reaction to the asphalt pavement or damage the pavement. Application of the herbicide shall be a uniform spray in accordance with the manufacturer's recommendations and applied by a certified licensed applicator.

Prior to beginning clearing and grubbing, the Contractor shall investigate the work site to determine whether a direct contact herbicide such as Round-Up will be required in addition to the herbicide, to kill deep rooted foliage, such as alfalfa and sagebrush. Applications shall be made as needed to kill the vegetation. The specified soil residual herbicide shall be applied to the finish graded top rock, just prior to paving.

The material to be used must be registered for use under pavement in the state of Washington by the Washington State Department of Agriculture. Before use, the Contractor shall submit to the Engineer and obtain approval of the material to be used and the proposed rate of application. The following information shall be included in the request for approval of the material: name of material, state registration number, manufacturer, and proposed rate of application.

Soil residual herbicide placement shall be performed in accordance with SWSS 5-04.3(5)D as herein modified.

### **2-22.02 MEASUREMENT AND PAYMENT**

The unit contract price for "Soil Sterilant," per acre, shall be full compensation for furnishing all materials, labor, equipment, and all other incidentals required to complete the work in accordance with the plans and specifications or as directed by the Engineer.



**2-23 EXTRUDED CONCRETE CURB**

**2-23.01 GENERAL**

Extruded concrete curb shall be installed where shown and as detailed on the plans or as directed by the Engineer.

**2-23.02 MATERIALS AND CONSTRUCTION**

All materials and construction shall be in accordance with the City of Benton City Standard Drawing 2-11 and SWSS Section 8-04.3 as herein modified.

When required to provide for continuous storm drain passage, construct a two-inch (2") wide "V" section at twenty (20) foot intervals.

**2-23.03 MEASUREMENT AND PAYMENT**

The unit contract price for "Extruded Concrete Curb," per linear foot, shall be full compensation for all labor, equipment, materials, and all other incidentals necessary for complete installation in accordance with the plans and specifications or as directed by the Engineer.

**2-24 SIDEWALK ASPHALT RAMP**

**2-24.01 GENERAL**

At all terminal end points of concrete sidewalks, the Contractor shall construct an asphaltic concrete ramp as per City of Benton City Standard Drawing 2-14. Maximum slope on the ramp shall be 12:1.

**2-24.02 MEASUREMENT AND PAYMENT**

The unit contract price for "Sidewalk Asphalt Ramp", per each, shall be full compensation for all labor, materials, tools, equipment, and incidentals necessary to construct the sidewalk asphalt ramps in accordance with the plans and specifications or as directed by the Engineer.

**2-25 REMOVAL OF EXISTING STREET SIGNS**

**2-25.01 GENERAL**

Traffic control measures shall be completed per Section 7 of these specifications. Prior to beginning roadway construction, all signing and traffic control shall be in place and approved by the Engineer. Following completion of the installation of all required construction signing, detour signing, temporary stop signs, or other signing required by the traffic control plan or Engineer, the Contractor shall notify the inspector and receive approval for removal of the existing city signs and posts. When approved for removal, the Contractor shall remove all signs and sign posts in the work area. Each sign shall be removed from its post, prior to removal of the post. All Telespar posts and bases, sign faces and mounting hardware shall be delivered to the city shops for storage, or city salvage. All other materials and sign components shall be disposed of at a contractor provided site. The Contractor shall be fully responsible for all damage to the city signs as a result of his operations.

**2-26 PROTECTION OF SEWER AND STORM SEWER MANHOLES**

**2-26.01 MANHOLE PROTECTION**

Prior to beginning street reconstruction, which includes pavement removal, grading or excavation work in the vicinity of City sewer and storm sewer manholes, the Contractor shall install a 3/4-inch plywood, steel plate, or equal, cover at the bottom of the manhole over the channels. The protective manhole channelization cover shall be fully capable of preventing construction debris from entering the sewer or storm sewer channel or piping. This protective measure shall be in addition to covers placed over the upper manhole cover or sections.

All costs for repair and damages as a result of sewer blockages that result from improper protection of the manhole by the contractor, are the responsibility of the contractor and will be billed to the contractor. In addition, when city crews are called and required to clean the sewer main, or manhole(s) as a result of the contractor's improper protection of the manhole, the contractor will be billed for the city's maintenance costs.

Following completion of paving and adjustments, all collected debris and protective covers shall be removed by the Contractor. All labor, equipment and materials as required to complete the specified work shall be considered incidental to the other project work.

## **2-27 CATCH BASIN PROTECTION**

### **2-27.01 GENERAL**

All existing and new catch basins on the project shall be protected by a manufactured sediment trap. The manufactured sediment trap shall be the “ultra drain guard” sediment only model 9226, as manufactured by BMP, or the sediment insert as manufactured by Specialty Products L.L.C., or equals. The trap shall be manufactured for the removal of dirt, sand and other sediment from stormwater using a minimum 8 oz. per square yard 180 EX non-woven polypropylene geotextile fabric, or approved equal. The trap shall have a round, or square shaped top, designed to insert under the catch basin grate, without folding. The sediment trap shall extend into the catch basin a minimum of 24-inches. Following placement, the excess fabric shall be trimmed approximately three inches outside of the grate.

On city administered contracts, the Contractor shall supply and install a manufactured sediment trap in each catch basin and secure the top under the grate of all existing and new catch basins on the project and downstream as directed by the Engineer. The top edges of the fabric shall be firmly sealed under the grate. Following completion of the construction project, the Contractor shall remove the sediment trap from all catch basins and clean the catch basin sumps.

On developer and permit projects, catch basins shall be protected as specified above. Where site work, building construction, home construction, etc. will be proceeding after the street construction is completed, the street contractor shall remove the initial sediment trap and reinstall a clean sediment trap, following cleaning of the catch basin sump. The initial sediment trap may be cleaned and reinstalled, providing that it is free of tears and holes.

Following completion of the street construction and during lot development and building construction, the building contractor(s) will be required to provide silt fences, and place course graded crushed ballast rock at the back of the driveway entrances, as required to keep dirt knocked off of vehicle tires and take other measures as required to maintain a clean street. When dirt does accumulate in the street or parking lot, the contractor will be required to periodically shovel and sweep the pavement, as his operation requires. Failure of the builder to safeguard the street and other pavement areas, will require the builder to clean and maintain the catch basin filters contaminated by his activities; and in addition, if the builder fails to maintain the site as herein described, a building stop work order may be issued, or if the city crews, or city hired contractor is required to clean up after the builder’s activities, the builder will be billed for the city’s clean up costs.

Following completion of the majority of the building activity in each development, the city Street Department will remove the filter traps from all catch basins.

## **2-28 ROADSIDE SEEDING**

### **2-28.01 GENERAL**

These specifications cover the furnishing and application of roadside planting materials on construction side slopes, waste site areas, and where directed by the Engineer. The purpose of which is to eliminate wind-born dust and blow-sand problems associated with construction projects and to stabilize and protect such areas.

### **2-28.02 SEED MIX SPECIFICATION**

Grass seed, of the following composition, proportion and quality, shall be applied at the rate of forty-five (45) pounds per acre on all areas requiring roadside seeding within the project:

| KIND AND VARIETY OF SEED IN MIXTURE                       | LBS. PER ACRE  | MINIMUM % SEED | MINIMUM % GERMINATION |
|---|----------------|----------------|-----------------------|
| "Fairway" Crested Wheat Grass<br>(Agropyron Cristatum)    | 27             | 54.00          | 85                    |
| "Durar" Hard Fescus<br>(Festuca Ovina Duriuscal)          | 13.5           | 28.50          | 85                    |
| Perennial Ryegrass<br>(Lolium Perenne)                    | 4.5            | 9.80           | 90                    |
| Percent Weed Seed (Max)<br>(Weedy Bromus Species-1% Max.) |                | 2.00           |                       |
| Inert and Other Crop                                      |                | 5.70           |                       |
| <b>TOTAL</b>  | <b>45 lbs.</b> | <b>100.00</b>  |                       |

The seed supplier's recommendations for planting shall be followed in all work related to the seeding operation. The Contractor shall also be required to follow the appropriate subsections of the SWSS, Section 9-14 that pertain to the general practice of seeding operations of this type.

The Contractor shall be responsible for the care and maintenance of the seeded areas through the duration of the project, and/or until the seed has germinated and is in an active and vigorous state of growth.

### **2-28.03 FERTILIZER**

Fertilizer shall be in accordance with the SWSS, Section 9-14.3 and in addition the SWSS, Section 9-14.3 shall be supplemented with the following:

The Contractor shall apply sufficient quantities of Fertilizer to supply the following amounts of nutrients:

Total Nitrogen as N-30 pounds per acre

Phosphoric Acid as P 0-30 pounds per acre

Soluble Potash as K 0-30 pounds per acre

The fertilizer formulation and application rate shall be approved by the Engineer before use.

### **2-28.04 MULCH AND SEED APPLICATION**

Wood Cellulose fiber shall be applied at a rate of one (1) ton per acre to all areas seeded and fertilized.

### **2-28.05 MEASUREMENT AND PAYMENT**

The unit contract price for "Roadside Seeding," per acre, shall be considered full compensation for all labor, equipment, materials, water, and all other incidentals required to seed, fertilize, and mulch the designated areas complete.

## **2-29 PAVEMENT REPAIR**

### **2-29.01 PAVEMENT PATCHING**

#### **2-29.01.01 General**

Pavement patching shall include the removal and replacement of sections of rough or deteriorated paved surfaces, which require repair prior to being overlaid with HMA pavement.

Where shown on the plans or as directed by the Engineer, the Contractor shall neat cut the existing pavement surfacing a minimum of six inches (6") outside the edges of the damaged surface to be removed. All pavement cuts shall be squared up so that the marginal lines of the patch will be defined with typically four straight edges, with vertical faces. Cuts will be made with a concrete saw, cutting wheel, jack hammer, or similar device that will provide neat, straight, vertical edges. The deteriorated asphalt, together with any unsatisfactory native or base materials, shall be broken up, loaded, hauled away, and disposed of by the Contractor at a disposal site secured by the Contractor.

If the base material is acceptable to the engineer, top course shall be added as required and the patch area recompacted to standard specification density. If the base is determined to be contaminated, or structurally unsound, the subgrade within the patch area shall be prepared in accordance with SWSS 2-06 and as herein modified unless otherwise provided by the contract special provisions. When required by the engineer, the contractor will excavate to subgrade and haul and dispose of all excavated material to a contractor provided waste site. The subgrade shall be graded and compacted to standard density and as required to provide for the placement of six inches (6") of five-eighth inch (5/8") minus crushed rock and two inches (2") of HMA Class A PG64-28 pavement, on all neighborhood streets and a minimum of nine inches (9") of 5/8 inch minus crushed rock and three (3") of HMA Class A PG64-28 (2 lifts) on all other streets.

#### **2-29.01.02 Measurement and Payment**

The unit contract price for "\_\_\_-inch HMA patching and for "\_\_\_ - inch HMA Patching w/ \_\_\_ - inch top course rock", shall be full compensation for furnishing all labor, materials, equipment and all other incidentals required to complete the work as specified or as directed by the Engineer.

### **2-29.02 TRENCH PATCHING**

#### **2-29.02.01 General**

Trench patching will consist of the restoration of paved surfaces, where a utility will be installed. The contractor shall cut and dispose of the pavement in the pavement trench limits as specified in Section 2-29.01.01, to the minimum width as specified in City Standard Drawing 4-7. Following completion of the backfill and placement and compaction of the new rock base, per the requirements of Standard Drawing 2-6, the pavement cuts will be reinspected. Pavement edges that have raveled, broken away, or otherwise been damaged, shall be recut to provide a uniform and straight edge prior to paving. At the determination of the engineer and depending on the length of the trench, small isolated damage areas may be squared up on the edge of the trench without recutting of the entire trench length.

#### **2-29.02.02 Measurement and Payment**

Payment for the specified depth of pavement restoration, will be made at the unit contract price, per linear foot for "\_\_\_ - inch trench pavement restoration", and shall be full compensation for all labor, equipment and materials as required to remove, dispose of and restore the pavement and rock base, to the width required for the installation and trench pavement repair, in accordance with the specifications and the requirements of City Standard Drawing 2-6.

## **2-30 CRACK SEALANT**

### **2-30.01 GENERAL**

Crack sealant shall be installed in accordance with Section 5-04.3(5) C of the State of Washington Standard Specifications, except as herein modified, and the manufacturers recommendations. Materials shall meet the requirements of Section 9-04.10 of the State

When called for in the contract, or when directed by the engineer, sealant shall be applied at all cracks greater than 1/8 - inch, including joints at street-cut patches, utility adjustments and at the joint between the pavement and the concrete curb and gutter. Cracks shall be cleaned using a

compressed hot air/propane lance capable of burning off vegetation, heating and blowing the crack clear. The sealant shall be squeegee flushed with the pavement and allowed to cure, prior to removing traffic control. Crack sealant shall not be applied to alligatored pavement, except for minor areas adjoining a crack being sealed, unless alligatored pavement sealing is required by the contract special provisions.

**2-30.02 TRAFFIC CONTROL**

The contractor shall provide traffic control per City of Benton City Standard Specifications Section 7. The contractor shall conduct his operations so as to maintain two-way traffic at all times.

**2-30.03 NOTIFICATIONS**

The contractor shall provide written notification to businesses and property owners a minimum of 24 hours, and a maximum of 72 hours, in advance of commencing crack sealing operations or blocking parking areas at any of the project locations. The notices shall provide a brief explanation of the scope of work and the name and phone number of a contractor contact person. The Contractor shall provide barricades, cones, etc. as required for parking area closures following distribution of notices. All costs for providing and distributing notices, and for providing and erecting barricades, cones, etc. for parking area closures shall be included in the lump sum contract price for "Traffic Control".

**2-30.04 TAXES**

The City of Benton City is exempt from paying sales tax for crack sealing. The contractor shall include applicable use taxes into the unit bid prices as provided in the bid proposal.

**2-30.05 MEASUREMENT**

Measurement for "Crack Sealant", shall be made along the centerline of the specified streets. The Contractor shall make all site investigations necessary as to the quantity of crack sealing to be performed at each location.

**2-30.06 PAYMENT**

The unit contract price, per mile of street for "Crack Sealant" shall be full compensation for all labor, equipment, materials and all incidentals required to install crack sealant in accordance with the manufacturers recommendations, the State of Washington Standard Specifications and these special provisions.

**2-31 DRIVEWAY APPROACH**

**2-31.01 GENERAL**

Subgrade preparation shall be prepared in accordance with Section 2-05 of these Standard Specifications. The Contractor shall furnish and place five-eighths inch (5/8") minus crushed surfacing top course in accordance with Section 2-6. Hot mix asphalt shall be furnished and placed per Section 2-08 of these Standard Specifications. Construction shall meet requirements in Standard Detail "2-17 Driveway Approach."

**2-31.02 MEASUREMENT & PAYMENT**

Measurement and payment shall be per Section 2-06 for Top Course and Section 2-08 for HMA.