LOW ACTIVITY WASTE PRETREATMENT SYSTEM

Project No. 31269 (T5L01)

Document No. 12-2-009
CSI Section 32 12 00

Safety Related ☐ Non-Safety Related ☒

HOT MIX ASPHALT PAVING SPECIFICATION

Prepared for
Washington River Protection Solutions, LLC

Revision: 0 Status: Final
<table>
<thead>
<tr>
<th>Status</th>
<th>Rev. No.</th>
<th>Date</th>
<th>Prepared By</th>
<th>Pages</th>
<th>Description of Changes</th>
</tr>
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<tr>
<td>Final</td>
<td>0</td>
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<td>MTC</td>
<td>14</td>
<td>Approved for Construction</td>
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</table>

**Safety Related:**  Yes ☑  No ☐

**Quality Level:**
- Full QA ☐
- Enhanced QA ☐
- Commercial QA ☑
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Abbreviations and Acronyms

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<th>Definition</th>
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<tr>
<td>AASHTO</td>
<td>American Society of State Highway and Transportation Officials</td>
</tr>
<tr>
<td>ASTM</td>
<td>American Society of Testing and Materials</td>
</tr>
<tr>
<td>CSI</td>
<td>Construction Specifications Institute</td>
</tr>
<tr>
<td>DOE</td>
<td>United States Department of Energy</td>
</tr>
<tr>
<td>LAWPS</td>
<td>Low Activity Waste Pretreatment System</td>
</tr>
<tr>
<td>NCR</td>
<td>Nonconformance Report</td>
</tr>
<tr>
<td>QA</td>
<td>Quality Assurance</td>
</tr>
<tr>
<td>RFI</td>
<td>Request for Information</td>
</tr>
<tr>
<td>WSDOT</td>
<td>Washington State Department of Transportation</td>
</tr>
</tbody>
</table>

Units

U. S. Customary

Definitions

BUYER – The company for whom the VENDOR is performing work or services.

COMMERCIAL QUALITY ASSURANCE (CQA) – Level of controls for those items, services or processes where, based on an evaluation of risk or nuclear safety, no additional quality controls beyond the provider’s published or stated attributes of the item, service, or process is required.

ENHANCED QUALITY ASSURANCE (EQA) – Level of controls for those items, services, or processes where, based on an evaluation of risk or nuclear safety, additional controls beyond the provider’s published or stated attributes of the item, service, or process are needed to verify critical attributes.

FULL QUALITY ASSURANCE (FQA) – Level of controls applied for items, services, or processes that are commensurate with the controls invoked under ASME NQA-1 or other appropriate national consensus standards.

HOLD POINT- A mandatory inspection activity beyond which work shall not proceed until (1) the inspection is performed by an independent inspector and/or BUYER acceptance is authenticated, or (2) a written release is authorized by the organization who established the hold point.

INDEPENDENT SOILS TESTING FIRM – The BUYER approved, qualified, third party geotechnical testing firm responsible for quality control testing.

MORE CONSERVATIVE – “More conservative” shall be interpreted as “more protective of the health, safety and well-being of Site workers and facilities, the public, and environment, as applicable.”

PROCUREMENT QUALITY CLAUSE (QA CLAUSES) – Procurement quality clauses are to be used for the acquisition of items and services. The clauses establish contractual obligations for quality program systems, identification, traceability, documents submittals, testing, reporting, qualifications, special process controls, inspections, etc.
PRODUCT DATA  – Printed information including, but not limited to, catalog cuts, color charts, illustrations, diagrams, templates, performance curves, brochures, and other forms of Product literature.

SHALL / MUST  – Denotes project requirements, compliance is required.

SHOULD  – Denotes recommendation or expectation, compliance is expected.

SPECIFICATION  – Refers to any design, fabrication or supply specification.

SUBSTITUTION  – Any change or deviation from issued approved drawings, designs, methods, or contract terms and conditions.

VENDOR  – The Company responsible for the supply of equipment or services.
1.0 PART 1 - GENERAL

1.1 Section Scope

1.1.1 This specification covers the site conditions, submittals, materials, and construction requirements for placement of Hot Mix Asphalt Pavements for the Low Activity Waste Pretreatment System (LAWPS) Project. Services provided for this work shall consist of the following: placing and compacting asphalt pavement. State and local laws concerning pollution abatement shall be followed.

1.2 Related Sections

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 25 00</td>
<td>Substitutions and Design Changes</td>
</tr>
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<td>01 33 00</td>
<td>Submittals</td>
</tr>
<tr>
<td>01 40 00</td>
<td>Quality Assurance</td>
</tr>
<tr>
<td>01 66 00</td>
<td>Delivery, Storage and Handling</td>
</tr>
<tr>
<td>02 21 00</td>
<td>Surveying Specification</td>
</tr>
<tr>
<td>31 00 00</td>
<td>Site Preparation Specification</td>
</tr>
<tr>
<td>31 23 00.01</td>
<td>Excavating, Backfilling and Compacting for Structures Specification</td>
</tr>
<tr>
<td>32 11 23</td>
<td>Aggregate Base Course Specification</td>
</tr>
</tbody>
</table>

1.3 Codes and Standards

1.3.1 Work shall be performed in accordance with the referenced codes, standards, and documents for this specification.

1.3.2 The following codes and standards, of the exact issue shown, form a part of the Buyer basis of design to the extent specified in the applicable sections of this document. In the event of a conflict between documents referenced herein and the requirements of this specification, the requirements of this specification shall take precedence only when this specification’s requirements are more stringent or conservative. If a code or standard not listed below is to be applied to the scope (see Section 1.1), apply the latest Code as of April 16, 2015.

1.3.2.1 American Society for Testing and Materials (ASTM)

- ASTM D946 (2009), Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction
- ASTM D2027 (2013), Standard Specification for Cutback Asphalt (Medium-Curing Type)
- ASTM D2489 (2008), Standard Practice for Estimating Degree of Particle Coating of Bituminous-Aggregate Mixtures
- ASTM D3744 (2011), Standard Test Method for Aggregate Durability Index
- ASTM D6938 (2015), Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.3.2.2 Washington State Department of Transportation (WSDOT)
- Manual M 41-10 (2014), Standard Specifications for Road, Bridge, and Municipal Construction

1.3.2.3 American Association of State Highway and Transportation Officials (AASHTO)
- AASHTO T335-09 (2013), Determining the Percentage of Fracture in Course Aggregate

1.3.3 Should a conflict be found to exist between any applicable portion of the referenced codes and standards and this Specification, the conflict shall be submitted to the BUYER for resolution before proceeding with the affected work.

1.4 System Description (Not Used)

1.5 Submittals

1.5.1 Submittals that are listed within this section shall be prepared and processed in accordance with requirements of CSI Section 01 33 00 “Submittals” and shall include all of the required Quality Assurance documentation in accordance with CSI Section 01 40 00 “Quality Assurance”.

1.5.1.1 The Vendor shall submit a Technical Proposal Package consisting of the following:
- Quality Assurance Program Manual
- Work Plan
- Project schedule

1.5.1.2 Technical Submittals:
- Job Mix Formula shall be submitted for design approval for Hot Mix Asphalt.
- Requests for Information (RFI) shall be submitted on form A-6003-417 provided by the Buyer.

- Certificates of calibration for all instruments used/furnished by the VENDOR in accordance with QA Clause B12.

- If any nonconformance is encountered during survey activities, a Nonconformance Report (NCR) shall be submitted to the BUYER in accordance with QA Clause B22.

- Test reports for tests specified in Section 3.3, in accordance with QA Clause B52.

- Certified Material Test Reports in accordance with QA Clause B49.

- Certificates of Conformance for the materials used and their installation per requirements and standards listed herein, in accordance with QA Clause B79.

### 1.6 Delivery, Storage & Handling

1.6.1 Refer to related CSI Section 01 66 00 “Delivery, Storage and Handling” for delivery, storage and handling requirements.

### 1.7 Quality Assurance

1.7.1 Refer to CSI Section 01 40 00 “Quality Assurance” for quality related requirements.

1.7.2 Applicable QA Clauses are summarized in the table below. The full QA Clause definition and associated requirements are located in CSI Section 01 40 00 “Quality Assurance”.

<table>
<thead>
<tr>
<th>Table 1.7-1 Procurement Quality Clauses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SUPPLIER FABRICATION</strong></td>
</tr>
<tr>
<td>B12 Supplier Use of Calibrated Equipment</td>
</tr>
<tr>
<td>B22 Nonconformance Documentation and Reporting</td>
</tr>
<tr>
<td><strong>TESTING AND TEST DATA</strong></td>
</tr>
<tr>
<td>B49 Certified Material Test Reports</td>
</tr>
<tr>
<td>B52 Inspection and Test Report</td>
</tr>
<tr>
<td><strong>INSPECTION AND ACCEPTANCE CRITERIA</strong></td>
</tr>
<tr>
<td>B79 Certificate of Conformance</td>
</tr>
</tbody>
</table>

1.7.3 The following verification points required by this section shall be in accordance with CSI Section 01 40 00 “Quality Assurance”, verified by the BUYER, as applicable. At a minimum, the following hold points shall apply:
<table>
<thead>
<tr>
<th>Verification Point Description</th>
<th>Type of Verification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to Initiating Field Activities</td>
<td>H</td>
</tr>
<tr>
<td>Prior to Field Inspection</td>
<td>H</td>
</tr>
</tbody>
</table>

(H) Hold

1.7.4 The VENDOR shall provide required notifications of verification points in accordance with CSI Section 01 40 00 “Quality Assurance” as applicable, and shall not proceed past required hold points without written authorization from the BUYER.

1.8 Site Conditions


1.8.2 The LAWPS site design conditions are as follows:

- Outdoor Temperature: -25°F to 115°F
- Outdoor Relative Humidity: 0 – 100%
- Barometric Pressure: 14.35 psia (measured at a meteorological tower 733 feet above sea level)

1.8.3 Site investigation information provided is not a warranty of subsurface conditions and may not reflect subsurface conditions over the entire proposed construction area. The VENDOR shall be responsible for its interpretations and use of the information. The following shall be verified and reported properly by the VENDOR:

- Underground Water Conditions: Report to BUYER or its designated representative any such condition encountered.

- Existing Utilities: Do not interrupt utilities serving facilities occupied by BUYER or others unless permitted in writing by BUYER or its designated representative and then only after arranging to provide temporary utility services according to requirements indicated.
2.0 PART 2 - PRODUCTS

2.1 Manufacturers (Not Used)

2.2 Materials

2.2.1 All materials used in the paving mix shall meet or exceed the applicable Washington State DOT Specifications in conjunction with the following:

2.2.2 Bituminous Materials

2.2.2.1 Asphalt Binder: Shall be performance graded asphalt cement, PG 64-28, and shall conform to ASTM D946.

2.2.2.2 Prime Coats: Shall be cut-back asphalt CSS-1, and shall conform to ASTM D2027.

2.2.2.3 Tack Coat: Shall be CSS-1 or CSS-1h emulsified asphalt complying with ASTM D977.

2.2.3 Mineral Aggregates

2.2.3.1 Mineral aggregates for hot mix asphalt shall be Class 1/2". The mixture of fine and coarse aggregates shall be graded and combined into a blend which will satisfy gradation established in the following table:

<table>
<thead>
<tr>
<th>Table 2.2-1 – Aggregate Material Gradation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sieve Size</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>3/4&quot;</td>
</tr>
<tr>
<td>1/2&quot;</td>
</tr>
<tr>
<td>3/8&quot;</td>
</tr>
<tr>
<td>No. 8</td>
</tr>
<tr>
<td>No. 200</td>
</tr>
</tbody>
</table>

2.2.3.2 Course Aggregate (Material Retained on No. 4 Sieve): Shall have not more than 30% wear per the Los Angeles Abrasion Test (500 Revolutions) per ASTM C131, and shall have a minimum Degradation Factor of 30 per ASTM D3744.

2.2.3.3 Fine Aggregate (Material Passing No. 4 Sieve): Shall comply with the requirements of ASTM D1073.

2.2.3.4 Aggregate shall be free from organic matter, clay and deleterious substances.

2.2.3.5 A minimum of 90 percent by weight of the combined coarse aggregate shall consist of crushed pieces having one or more fractured faces in accordance with AASHTO T 335.

2.2.3.6 The combined aggregate shall have a minimum sand equivalent of 45 as per ASTM D2419.
2.2.3.7 Mineral Filler shall comply with the requirements of ASTM D242.

2.2.4 Asphalt-Aggregate Mixture, Plant Mix Formula

2.2.4.1 The VENDOR shall develop a mix design prior to the initial production of Hot Mix Asphalt. The mix design shall be developed in accordance with WSDOT Standard Operating Procedure 732 and meet the requirements of Sections 9-03.8(2) and 9-03.8(6). During the production of Hot Mix Asphalt, adjustments to the aggregate gradation and the asphalt binder content shall conform to the tolerances given in WSDOT Section 9-03.8(7).

2.3 Equipment

2.3.1 In order to maintain the project schedule the VENDOR shall use only equipment and materials fully capable of performing the required operations.

2.3.2 The VENDOR shall maintain equipment in satisfactory operating condition and provide sufficient quantity of equipment to maintain the scheduled progress of the work.

2.3.3 The VENDOR shall replace or augment any defective or unreliable equipment or materials within three (3) working days at no additional cost to the BUYER.

2.3.4 Prior to use, equipment shall be checked at least daily to ensure safe operation.

2.4 Components (Not Used)

2.5 Fabrication (Not Used)

2.6 Shop Quality Control (Not Used)
3.0 PART 3 - EXECUTION

3.1 Preparation

3.1.1 Asphalt Binder: Heat asphalt binder at the mixing plant to a temperature at which it can be applied uniformly to the aggregate.

3.1.2 Aggregates: Heat the aggregates to the required temperature for drying. Immediately after heating and drying, the aggregates shall be screened and stored in two or more bins or drums to await mixing with asphalt binder.

3.1.3 Dried Aggregates: The prepared aggregates shall be combined in the mixer in the amounts necessary to satisfy the plant-mix formula. Directly thereafter, asphalt binder shall be measured and introduced into the mixer in its formula specified amount.

3.1.4 Asphalt Binder and the aggregate shall be introduced into the mixer within 25 degrees F of each other. The mixing temperature shall be greater than 225 degrees F and less than 325 degrees F.

3.1.5 After the required amounts of asphalt binder and aggregate have been introduced into the mixer, the materials shall be mixed until a complete and uniform coating of the particles is attained and a thorough distribution of the asphalt binder throughout the aggregate is secured. Mixing times shall be established by testing per ASTM D 2489.

3.2 Erection, Installation & Application

3.2.1 The VENDOR shall arrange the work in such a manner as to cause a minimum of inconvenience to the construction site activities.

3.2.1.1 The VENDOR shall submit to the BUYER a paving operation plan.

3.2.1.2 All traffic barriers, warning signs and flags shall be provided by the VENDOR.

3.2.1.3 The VENDOR shall arrange to have haul vehicles operate over roads which will not be damaged by such vehicles.

3.2.2 Delivery

3.2.2.1 Transport of asphalt hot mix asphalt from the mixing site shall be by use of trucks having tight, clean compartments.

3.2.2.2 Any release agent used in order to prevent the hot mix asphalt from adhering to the hauling equipment shall be certified as environmentally benign.

3.2.2.3 Provide covers over the asphalt concrete mixture when transporting to protect it from weather and to prevent loss of heat.

3.2.2.4 If warranted by environmental conditions or haul distances that could cause cooling of the mix, provide insulation around all truck bed surfaces. The trucks should be equipped with a
water repellant tarp to cover the load and extend down the sides and tail gate that can be tied down to protect the load from wind and rain.

3.2.2.5 The mixture shall not be delivered for use at less than 235 degrees F nor greater than 280 degrees F.

3.2.3 Weather Limitations

3.2.3.1 Apply bituminous prime and tack coats only when the ambient temperature in the shade is above 50 degrees F and when the temperature has not been below 35 degrees F for more than 12 hours immediately prior to applications.

3.2.3.2 Do not apply the prime or tack coats when the base surface is wet or contains an excess of moisture that would prevent uniform distribution and the required penetration.

3.2.4 Paving Surface

3.2.4.1 The VENDOR shall prepare the pavement base for the prime coat by broom removal of any loose material prior to the prime coat application.

- The rate of application of the prime coat shall be 0.30 gallon per square yard or as directed by the BUYER.
- Edges of all contact surfaces such as curb and gutter, manholes, cross pans and other surfaces shall be coated with the prime coat material as described herein before paving.

3.2.5 Prime Coat

3.2.5.1 A prime coat shall be placed by means of an approved pressure distributor capable of applying the prime coat uniformly to the surface. The surface shall be treated with the required quantity and the specified rate shall be maintained for the entire load regardless of changes in grade.

- Before application, the liquid asphalt shall be heated to the proper viscosity for spraying but the temperature shall not exceed 130 degrees F.
- The rate of application shall be 0.30 gallon per square yard or as directed by the BUYER.
- Prime coat shall not be applied when the surface is wet, the atmospheric temperature is less than 50 degrees F, or when precipitation is imminent.

3.2.5.2 If excessive amounts of curb, sidewalks or other structures are sprayed with liquid asphalt, they shall be cleaned as directed by the BUYER at the VENDOR’s expense.

3.2.5.3 The prime coat shall be allowed to cure for a minimum of 24 hours prior to the paving operation.

3.2.5.4 If, after the curing period, the prime coat has not penetrated the base material and the surface must be used by traffic, a suitable blotter material shall be applied in amounts needed to absorb excess liquid asphalt.

- Blotter material shall be a dry, gritty sand.
3.2.6 Placing of Asphalt

3.2.6.1 Unless otherwise permitted by the BUYER, the VENDOR shall spread the mixture by means of a self-contained, power-propelled paver, with a heater, and an activated screed or strike-off assembly capable of spreading and finishing the asphaltic concrete mixture to the lines, grades and crowns as indicated on the Drawings.

3.2.6.2 The paver(s) shall be equipped with a receiving hopper having sufficient capacity for a uniform spreading operation.

3.2.6.3 Paver hopper shall be equipped with a distributing system to place the mixture uniformly in front of the screed.

3.2.6.4 Paver screed or strike-off assembly shall effectively produce an even finished surface without tearing, shoving or gouging the mixture.

3.2.6.5 When laying mixtures, the paver shall be capable of being operated at forward speed for satisfactory placement and shall maintain the mixture at a laydown temperature of 270 degrees F.

3.2.6.6 Operation of the paver shall be such to attain continuous paving.

3.2.6.7 The VENDOR shall place the mixture upon the approved base surface, spread and strike off to the grade and elevation required.

3.2.6.8 The compacted thickness shall be laid in lifts not exceeding three (3) inches.

3.2.6.9 Longitudinal and transverse joints shall be well bonded and sealed.

3.2.6.10 On areas where the use of mechanical pavers cannot be used, the mixture shall be spread, raked, and luted by hand tools.

3.2.6.11 Hand placed material shall be smoothed and left higher than the machine laid material by about 1/4 inch per inch of depth prior to rolling.

3.2.6.12 Segregation of materials shall not be permitted. If segregation occurs, the spreading operation shall be immediately suspended until the cause is determined and corrected.

3.2.6.13 Placing the mixture shall be as continuous as possible.

3.2.6.14 All surface irregularities shall be adjusted by the addition or removal of mixture prior to rolling.

3.2.6.15 After the mixture has been spread, struck off and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling.

3.2.7 Compaction

3.2.7.1 Hot mix asphalt shall be compacted in 3 stages, breakdown, intermediate and finish. A roller or a set of rollers shall be dedicated to the breakdown compaction operation immediately after the placement of the hot mix asphalt. Separate rollers shall follow the breakdown operation with the intermediate and finish compaction operation. The same roller or set of rollers may be utilized for both the intermediate and finish compaction operation. The
roller(s) used in the breakdown operation shall not be utilized in the intermediate and finished operation. Rollers shall be steel wheel and/or pneumatic tire rollers weighing between 8 and 12 tons in good condition, capable of reversing without backlash.

3.2.7.2 All rollers shall have a water system capable of keeping the wheel properly moistened to prevent adhesion of the mixture to the wheel.

3.2.7.3 The number, weight and type of rollers furnished shall be sufficient to obtain the required compaction while the mixture is in a workable condition.

- Compaction shall be verified by conducting in-place density tests per ASTM D6938.
- Heavy equipment or rollers shall not be allowed to stand on freshly placed pavement.

3.2.7.4 The surface shall be rolled when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking or shoving.

- Rollers shall operate at a speed slow enough to avoid displacements or “crawl” of the mixture.
- Any displacement shall be immediately corrected.

3.2.7.5 Unless otherwise directed, rolling shall begin at the sides and precede parallel to the street centerline, each pass overlapping one-half the roller width and gradually progressing to the crown of the street. When paving adjacent to a previously placed lane, the longitudinal joint shall be rolled first followed by the regular rolling procedure.

3.2.7.6 Rolling shall be continued until all roller marks are eliminated and no further compression is possible. Minimum density of the compacted mixture shall be 97 percent of the maximum density obtained from a laboratory compacted specimen made in the same proportions as the plant-mix formula.

3.2.7.7 Along forms, curbs, manholes and other places not accessible to heavy rollers, the mixture shall be thoroughly compacted with hand mechanical tampers to the same density specified above. Joints between these structures shall be effectively sealed.

3.2.7.8 Any mixture that becomes loose, broken, mixed with dirt, or is in any way defective shall be removed and replaced with a fresh hot mixture and compacted to conform with the surrounding area.

3.2.8 Joints

3.2.8.1 The VENDOR shall carefully make joints between old and new pavements or between previous work to ensure a continuous bond between adjoining work as specified below.

3.2.8.2 Joints shall be constructed in such a manner as to have the same texture, density and smoothness as adjacent sections of asphalt concrete.

3.2.8.3 Clean contact surfaces of sand, dirt or other objectionable material and apply the tack coat.

3.2.8.4 Offset transverse joints in succeeding courses by not less than 24 inches.
3.2.8.5 Cut back the edge of the previously placed course to expose an even, vertical surface for the full course thickness.

3.2.8.6 Offset longitudinal joints in succeeding courses by not less than 6 inches.

3.2.8.7 When the edges of longitudinal joints are irregular, cracked or inadequately compacted, cut back satisfactory sections to expose an even, vertical surface for the full course thickness.

3.2.8.8 A coat of cut back asphalt cement shall be used on contact surfaces of all joints just before additional mixture is placed.

3.2.9 Paving Around Manhole and Catch Basin Frames

3.2.9.1 Surround frames previously set, if any, to proper elevation with a ring of asphalt concrete base prior to paving. Place asphalt concrete mixture up to one inch below top of frame, slope to grade, and compact by hand tamping.

3.2.9.2 Adjust frames to proper position to meet paving, as required.

3.2.9.3 If permanent covers are not in place, provide temporary covers over openings until completion of rolling operations.

3.2.9.4 Surfaces around all frames shall meet density and tolerance requirements specified above and shall be flush with surface of adjacent pavements.

3.3 Field Quality Control

3.3.1 Quality control tests referenced in this section shall be performed by a qualified independent soils testing firm approved by the BUYER and with the experience and capability to conduct testing and inspecting indicated, as documented per ASTM E329, Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection. Tests shall be recorded on standard forms produced by the independent testing firm and approved by the BUYER. Tests shall be submitted daily to the BUYER. If tests indicate results below specified densities, VENDOR shall provide additional compaction and bear the expense of retesting.

3.3.2 All bituminous hot mix asphalt pavements shall be uniform and smoothly graded and the finished surfaces shall be free from irregular surface changes. The paved surfaces shall be properly graded leaving no depressed areas where water will accumulate or puddle.

3.3.3 The finished pavement surface shall be free from depressions exceeding on 1/4 inch in 10 feet when tested with a straightedge. All depressions exceeding the specified tolerances shall be corrected by removing defective work and replacing it with new material as directed by the BUYER.

3.3.4 Thickness tolerances shall be plus or minus on 1/4 inch. In-place compacted thickness will not be acceptable if not meeting this allowable variation from the thickness shown on the Drawings and shall be corrected as directed by the BUYER.

3.3.5 Test crowned surfaces with crown templates, centered and at right angles to the crown. Surfaces will not be acceptable if the finished crown surface varies more than 1/4 inch from the crown template and shall be corrected as directed by the BUYER.
3.3.6 Quality control testing which will be performed by the testing laboratory during construction shall include:

3.3.6.1 In-place density tests per ASTM D6938
   - Placed asphalt shall be compacted to 97 percent of the maximum density obtained from a laboratory compacted specimen made in the same proportions as the plant-mix formula

3.3.6.2 Core samples with a minimum diameter of four (4) inches.

3.3.6.3 Location of tests to be taken shall be determined by the BUYER.

3.3.7 Frequency of Testing

3.3.7.1 For testing purposes, a “lot” shall be considered the asphalt pavement placed in a full working day. A “sublot” shall be considered a single lift one paver width wide and 2,000 feet long. Testing shall be performed at the following frequencies:
   - In-place density tests shall be performed on a random sampling basis with a minimum of five tests per lot and spaced at least 20 feet apart.
   - Core sample shall be performed to obtain two cores from each sublot at randomly selected locations.

3.3.8 If quality control tests indicate results below specified densities, the VENDOR shall provide additional compaction and retesting at no additional cost to the BUYER.

3.3.9 Compaction tests shall not serve as a guaranteed indication that all compacted areas meet the minimum requirements, but it shall be the responsibility of the VENDOR’s personnel in charge of the paving operation to inform the BUYER that, in their opinion, the pavements are not compacted to the minimum requirements.

3.4 Adjusting and Cleaning

3.4.1 The VENDOR shall repair all damaged or defective areas as directed by the BUYER. Repair work shall be done in the manner and with the quantity and type of material designated by the BUYER and as specified below.

3.4.2 The VENDOR shall repair all holes from test specimens as a result of the density testing.

3.4.3 Patching: Remove and replace defective areas as directed by the BUYER and as specified below.
   3.4.3.1 Cut sides perpendicular and parallel to the direction of traffic with edges vertical.
   3.4.3.2 Remove deficient areas for the full depth of the paving course.
   3.4.3.3 Apply a tack coat to exposed surfaces before placing new asphalt concrete mixture.
   3.4.3.4 Fill the opened area with fresh, hot asphalt concrete.
   3.4.3.5 Compact the filled area by rolling to specified surface density and smoothness.
3.4.4 Cleaning: After completion of paving operations, clean all surfaces of excess or spilled asphalt materials to the satisfaction of the BUYER.

3.5 Demonstration (Not Used)

3.6 Protection

3.6.1 After final rolling, do not permit vehicular traffic on asphalt concrete pavement until it has cooled and hardened but in no case sooner than 6 hours.

3.6.2 Provide barricades and warning devices as required to protect pavement and the general public.

3.6.3 Cover openings of structures, if any, in the area of paving until permanent coverings are placed.
4.0 LIST OF APPENDICIES (NOT USED)