

RESTAURANT UTILITIES PROJECT

TULALIP, WASHINGTON

SECTION 32 12 00 FLEXIBLE PAVING

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. This section also covers: Roadway Subgrade Preparation; Flexible Paving Repair; Bases, Ballasts, and Paving; and Base Courses.
- B. The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to complete roadway and parking lot grading, as required in these specifications, on the drawings and as otherwise deemed necessary to complete the work. Included are the following topics:

1.02 RELATED SECTIONS

- A. Applicable provisions of Division 1 govern work under this Section.
- B. Section 31 12 00 – SITE CLEARING
- C. Section 31 20 00 – EARTHWORK
- D. Section 32 17 23 – PAVEMENT MARKINGS

1.03 REFERENCE STANDARDS

- A. Technical specifications, design detail, construction detail and materials for all newly constructed roadway, storm drainage and utility improvements, and modifications to existing roadway, storm drainage and utility improvements, shall conform to the following reference documents:
 - 1. Water Distribution Design and construction Standards and Specifications, City of Marysville, November 1998, Revised May 2007.
 - 2. Standard Specifications for Road, Bridge and Municipal Construction, WSDOT/APWA, latest edition.
 - 3. Standard Plans for Road and Bridge Construction, WSDOT/APWA, latest edition.
- B. Where conflicts between Standards and specifications occur, the more stringent shall apply.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
 - 1. Job-Mix Designs (JMD): Certification, by authorities having jurisdiction, of approval of each job mix proposed for the work.

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- B. Material Certificates: For each paving material, from manufacturer.
- C. Within ten (10) work days after award of contract, Contractor shall submit to Owner a schedule, detailing sequence and time of completion of phases of work under this section.

1.05 QUALITY ASSURANCE

- A. Testing Agency Services:
 - 1. Contractor to coordinate testing and inspection with Owner's Material Testing Agency.
- B. Manufacturer Qualifications:
 - 1. A paving-mix manufacturer registered with and approved by authorities having jurisdiction or WSDOT.
- C. Regulatory Requirements:
 - 1. Comply with materials, workmanship, and other applicable requirements of the latest edition of the Standard Specifications for Road, Bridge, and Municipal Construction (WSDOT) for asphalt paving work.
- D. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.
- E. Pre-installation Conference:
 - 1. Contractor to coordinate and schedule a pre-installation conference prior to placement of Hot Mix Asphalt.
- F. Provide at least one (1) person who shall be present at all times during execution of this portion of the work, be thoroughly familiar with the type of work being performed and the best methods for its execution and who shall direct all work performed under this section.

1.06 PERMITS/FEES

- A. Owner will be responsible for obtaining the Building Permit for the Project.
- B. Contractor shall be solely responsible for obtaining all other permits necessary to complete the Work.
- C. Contractor shall pay all fees associated with the completion of the Work, including but not limited to permit fees, inspection fees, and temporary utility connection fees.

1.07 SURVEY

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- A. Contractor shall be responsible for transferring benchmarks, control points, lines and grades as necessary to complete his work.

1.08 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
 - 1. Tack Coat: Minimum surface temperature of 60 deg F (15.6 deg C).
 - 2. Asphalt Base Course: Minimum surface temperature of 40 deg F (4.4 deg C) and rising at time of placement.
 - 3. Asphalt Surface Course: Minimum surface temperature of 60 deg F (15.6 deg C) at time of placement.
- B. Pavement Marking Paint:
 - 1. Proceed with Pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil based materials, 50 deg F for water based materials, and not exceeding 95 deg F.
- C. Coordination:
 - 1. Coordinate with Owner's Representative for asphalt paving and patching work requirements within the public right-of-way.

PART 2 – MATERIALS

2.01 AGGREGATES FOR ASPHALT CONCRETE

- A. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.
- B. Fine Aggregate: AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.
- C. Mineral Filler: AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

2.02 ASPHALT MATERIALS

- A. Asphalt Concrete, minimum requirements:
 - 1. Class B Asphaltic Concrete Pavement in accordance with paragraph 1.03 REFERENCE STANDARDS.
- B. Asphalt Binder: AASHTO M 320 or AASHTO MP 1a, PG 58-22.

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- C. Tack Coat: AASHTO M 140 emulsified asphalt, or AASHTO M 208 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

2.03 AUXILIARY MATERIALS

- A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.
- B. Pavement Marking Paint: comply with Specification Section 32 17 23 PAVEMENT MARKINGS.

2.04 MIXES

- A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction; designed according to procedures in AI MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types"; and complying with the following requirements:
 - 1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
 - 2. Base Course: 1/2": HMA per WSDOT Spec. 9-03.8, PG. 58-22 per AASHTO M 320.
 - 3. Surface Course: 1/2": HMA per WSDOT Spec. 9-03.8, PG. 58-22 per AASHTO M 320.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Review plans and prepare work plan and schedule. Coordinate any necessary interruptions in site access with the Owner's Representative.
- B. Verify that subgrade is dry and in suitable condition to support paving and imposed loads. Reference Specification Section 31 20 00 EARTHWORK for subgrade preparation requirements.
- C. Proof-roll subbase using heavy pneumatic-tired rollers to locate areas that are unstable or that require further compaction.
- D. Proceed with paving only after unsatisfactory conditions have been corrected.
- E. Contractor to coordinate observation of proof-roll and approval of subbase with Owner's Material Testing Agency.

3.02 COLD MILLING

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- A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections and indicated.
 - 1. Mill to depth of 2 inches.
 - 2. Mill to uniform finished surface free of gouges, grooves, and ridges.
 - 3. Control rate of milling to prevent tearing of existing asphalt coarse.
 - 4. Repair or replace curbs, manholes, and other construction damage during cold milling.
 - 5. Excavate and trim unbound aggregate base course, if encountered, and keep material separate from milled hot mix asphalt.
 - 6. Transport milled hot-mix asphalt to asphalt recycling facility.
 - 7. Keep milled pavement surface free of loose material and dust.

3.03 PATCHING

- A. Hot-Mix Asphalt Pavement: Saw cut perimeter of trench and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, to a minimum of 12 inches (300 mm) into adjacent sound pavement, unless a greater distance is indicated. Cut excavation faces vertically. Remove excavated material. Re-compact existing unbound-aggregate base course to form new subgrade.
- B. Portland Cement Concrete Pavement: Break cracked slabs and roll as required to reseal concrete pieces firmly.
 - 1. Remove disintegrated or badly cracked pavement. Excavate rectangular or trapezoidal patches, to a minimum of 12 inches (300 mm) into adjacent sound pavement, unless a greater distance is indicated. Cut excavation faces vertically. Remove excavated material. Re-compact existing unbound-aggregate base course to form new subgrade.
- C. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd. (0.2 to 0.7 L/sq.m).
 - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces
- D. Patching: Fill excavated pavement with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces. Apply

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straight CSS-1 emulsified asphalt to the joints between new and existing pavement and top with sand.

3.04 REPAIRS

- A. Leveling course: Install and compact leveling course consisting of hot-mix asphalt surface course to level sags and fill in depressions deeper than one (1) inch in existing pavements.
 - 1. Installing leveling wedges in compacted lifts not exceeding three (3) inches thick.
- B. Crack and Joint Filling: Remove existing joint filler material from cracks and joints to a depth of one-half (1/2) inch.
 - 1. Clean cracks and joints in existing hot-mix asphalt pavement.
 - 2. Use emulsified-asphalt slurry to seal cracks and joints less than one-quarter (1/4) inch wide. Fill flush with existing pavement and remove excess.
 - 3. Use hot-applied joint sealant to seal cracks and joints greater than one-quarter (1/4) inch wide. Fill flush with existing pavement and remove excess.

3.05 SURFACE PREPARATION PRIOR TO INSTALLING PAVEMENT

- A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
 - 1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.
- B. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.
- C. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd.
 - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.06 HOT-MIX ASPHALT PLACING

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- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
 - 1. Place hot-mix asphalt base course in number of lifts and thickness as indicated.
 - 2. Spread mix at minimum temperature of 250 deg F (121 deg C).
 - 3. Begin applying mix along centerline of crown or crowned sections and on high side of one-way slopes, unless otherwise indicated.
 - 4. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- B. Place paving in consecutive strips not less than ten (10) feet wide unless infill edge strips of a lesser width are required.
 - 1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete a section of asphalt base course before placing asphalt surface course.
- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.07 JOINTS

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions with same texture and smoothness as other sections of hot-mix asphalt course.
 - 1. Clean contact surfaces and apply tack coat to joints.
 - 2. Off set longitudinal joints, in successive courses, a minimum of six (6) inches.
 - 3. Offset traverse joints, in successive courses, a minimum twenty-four (24) inches.
 - 4. Construct traverse joints as described in AI MS-22, "Construction of Hot Mix Asphalt Pavements".
 - 5. Compact joints as soon as hot-mix will bear roller weight without excessive displacement.
 - 6. Compact asphalt at joints to a density within two (2) percent of specified course density.

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3.08 HOT-MIX COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
 - 1. Complete compaction before mix temperature cools to 185 deg F (85 deg C).
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
 - 1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- F. Repairs: Removed paved area that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.09 INSTALLATION TOLERANCES

- A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:
 - B. Base Course: Plus or minus 1/2 inch (13 mm).
 - C. Surface Course: Plus 1/4 inch (6 mm), no minus.

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- B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot (3-m) straightedge applied transversely or longitudinally to paved areas:
 - 1. Base Course: 1/4 inch (6 mm).
 - 2. Surface Course: 1/8 inch (3 mm).
 - 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch (6 mm).

3.10 PAVEMENT MARKING

- A. Allow paving to age according to pavement marking manufacturer's recommendation before starting pavement marking.
- B. Sweep and clean surface to eliminate loose material and dust.
- C. Apply paint per Section 32 17 23 Pavement Markings

3.11 FIELD QUALITY CONTROL

- A. Materials Testing Agency Services: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- C. Thickness: In-place compacted thickness of each hot-mix asphalt course will be determined according to ASTM D 3549.
- D. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.
- E. In-Place Density: Owner's Materials Testing Agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979.
 - 1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
 - 2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
 - a. One core sample will be taken for every 1000 square yards or less of installed pavement, with no fewer than three (3) cores taken.

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- b. Field Density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.
- F. Replace and compact hot-mix asphalt where core tests were taken.
- G. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.12 DISPOSAL

- A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.
 - 1. Do not allow excavated materials to accumulate on-site.

END OF SECTION 32 12 00