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CITY OF COVE, OREGON
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PART 1 - GENERAL

1.1 Scope

These Specifications cover the construction, reconstruction and overlaying of streets and roads. Work shall include furnishing all equipment, materials, labor, etc., as required to complete the required improvements. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of work to be constructed. All applicable sections, as determined by the City Engineer, shall control the work.

1.2 Submittals

A. Materials Certification and Testing

1. The Contractor shall submit samples of the material to be utilized on the project to the City and/or City Engineer for review. The Contractor shall also submit copies of appropriate test data that demonstrates that the materials meet the suitability requirements of the Specifications.

2. The Contractor will be responsible for performing quality control testing (see the General Requirements) and for providing certification to the City that the materials meet the requirements of the specifications.

3. Materials found to be outside of the specification limits shall be replaced with suitable material at no expense to the City.

PART 2 - MATERIALS

2.1 Water for Compaction

The Contractor shall be responsible for obtaining, transporting and the application of the water. The City will allow the Contractor to use water from the existing water system when a water system exists, provided the Contractor follows the requirements set forth by the City.

2.2 Geotextile Fabric

Geotextile fabric shall be Mirafi 500X, Exxon GTF 200, or approved equal.

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2.3 Aggregate Base and Base Rock

A. Aggregate Base

The aggregate base shall be a well-graded 4"-0 angular basalt material with the fraction passing the No. 200 sieve not greater than 8 percent of the total aggregate weight. Aggregate base shall meet the durability requirements for base rock. Other materials may be considered by the City and/or City Engineer; however, samples must be submitted for review.

B. Base Rock

Base rock shall conform to the requirements of Section 02630 - Base Aggregate, "Oregon Standard Specifications for Construction," current edition, for dense graded aggregate as modified hereafter. Acceptable gradation includes 1-1/2"-0, 1"-0, or 3/4"-0 as selected by the City and/or City Engineer.

2.4 Soil Sterilant

The sterilant shall be Pramitol 5SP as manufactured by CIBA-GEIGY, Monobor-chlorate, or approved equal and shall be applied in accordance with the manufacturer's or suppliers recommendations to adequately sterilize the base.

2.5 Paving Fabric

The paving fabric used shall be non-woven, fabricated from polypropylene resin, and shall have the following properties:

Weight, oz./sq.yd.	4.0 Minimum
Grab Tensile Strength, lbs.	90 Minimum
Elongation at Break, percent	55 Minimum
Asphalt Retention, gals/sq.yd.	0.20 Minimum

2.6 Asphalt Tack Coat

A. The material is to be CRS-1 or CSS-1 emulsified asphalt unless otherwise approved.

B. Furnish emulsified asphalt meeting the requirements of ODOT's publication "Standard Specifications for Asphalt Materials." Copies of the publication are available from the ODOT Pavement Services Engineer. The applicable specifications are those contained in the current publication. The materials may be conditionally accepted at the source or point of loading for transport to the project.

C. Excessive delay in the use of the emulsified asphalt or excessive pumping of the emulsified asphalt may significantly reduce the viscosity and may make the material unsuitable for tack coat use. For this reason, limit pumping between the bulk storage tank, hauling transportation, field storage tanks, and distributors to an absolute minimum to maintain proper viscosity. Final acceptance of emulsified asphalt will be at the point of application.

D. Dilution of the tack coat material may be allowed to a maximum 1:1 ratio. Determine the proportion of water to be added to the emulsified asphalt. Do not dilute the emulsified asphalt until the City Engineer approves the dilution ratio. Add the water to the emulsified asphalt and mix according to the asphalt supplier.

E. Obtain samples according to AASHTO T 40 prior to dilution with water, if allowed. Samples will be tested at the ODOT Materials Laboratory or other laboratory as designated by the City Engineer. Emulsified asphalt will be tested within 30 calendar days from the date it is sampled.

2.7 Hot-Mix Asphalt Concrete

A. General

The asphalt concrete shall consist of a hot mixture of asphalt cement, well-graded high quality aggregate, mineral filler and adhesive as required. It shall be plant mixed into a uniformly coated mass, hot laid on a prepared foundation and compacted to the specified density.

B. Hot-Mix Asphalt Concrete

Materials shall be in accordance with "Section 00744 - Minor Hot Mix Asphalt Concrete (MHMAC) Pavement" and related sections of the Oregon Standard Specifications for Construction, current edition, supplemented and modified as follows:

1. Add the following to subsection 00744.02:

The terms "MHMAC" and "HMAC" as well as "Agency" and "City" may be used interchangeably in this Technical Specification.

2. Project Mix Requirements

a. Level 3 HMAC
b. 1/2- or 3/4-inch Dense Graded
c. Asphalt Cement PG 70-28
d. Lime Treated Aggregate Required

3. Delete subsection 00744.03 and replace with the following:

00744.03 Reclaimed Asphalt Pavement (RAP) Material - No RAP material shall be used on this project.

4. Replace the first two paragraphs of subsection 00744.11 with the following:

(a) Asphalt Cement - Provide asphalt cement conforming to the requirement of ODOT's publication "Standard Specifications for Asphalt Materials." Copies of the publication are available from ODOT's Pavement Services Engineer. The applicable specifications are those contained in the current publication on the date the Project is advertised.

Testing of the asphalt cement used on this Project will be at the discretion and expense of the City.

5. Replace the first paragraph of subsection 00744.13 with the following:

00744.13 Job Mix Formula (JMF) Requirements - Previously prepared JMF will be allowed, provided adequate test data are available to document the suitability of the mix, the Contractor can document that the same materials are being used, the JMF was prepared within the last 12 months, and the JMF meets the requirements of these Specifications. Copies of the results of tests made on the mix during production on previous projects shall also be submitted if any are available.

Do not begin production on the Project until the JMF is reviewed by the City and/or City Engineer and written consent is provided to proceed. A new JMF is required if the asphalt cement grade, any additives, or the source of the aggregate change during production. Provide a JMF for the Project meeting the following criteria:

- For dense graded Level 3 wearing course mixes, the mix design submittal shall include the results of performance testing as outlined in the latest ODOT Contractor Mix Design Guidelines for Asphalt Concrete.

2.8 Street Monument Boxes

The monument boxes shall be equal to Model Number 3680 as cast by East Jordan Iron Works, or approved equal, and shall have the letters MON cast in the cover.

2.9 Culverts

A. Culverts shall be galvanized corrugated steel pipe and shall be 14-gauge with 2-2/3"x1/2" corrugations. Fabrication of pipe shall conform to AASHTO 218 Specifications. Coating shall be minimum 2-ounce zinc per square foot. Joints shall be made with corrugated steel culvert bands over 3/8-inch neoprene gaskets. Culvert bands shall be 12 inches wide.

B. Bedding and backfill material, unless otherwise shown on the Drawings, shall consist of select native material free of particle sizes greater than 1-1/2-inch in diameter.

2.10 Drainage Trenches

A. Geotextile fabric for drainage trenches shall be Mirafi 140N.

B. Drain rock shall be clean washed round river gravel, 1/2-inch to 2-inch size.

PART 3 - EXECUTION

3.1 Earthwork

A. Clearing and Grubbing

1. Clearing and grubbing shall include the removal and disposal of any obstructions, such as existing curbs, sidewalks, pavement, culverts, fences, etc., and organic material such as trees, tree stumps, brush, hedges, vegetation, roots, rubbish, posts, fences, topsoil, and any other obstacles or materials in the construction area which would prevent completing the project, and which are unsuitable for road work construction.

2. All vegetation and rubbish shall be removed and disposed of by the Contractor in conformance with the requirements of local authorities controlling air pollution and solid waste disposal.

B. Roadway Excavation

1. Prior to any excavation, the area to be excavated shall be cleared and grubbed.

2. Roadway excavation shall consist of the excavation, haul, and satisfactory disposal of all materials taken from within the right-of-way for the construction of embankments, subgrade, shoulders, intersections, ditches, waterways, entrances, approaches (including excavation at private entrances outside the right-of-way),

curbs, sidewalks, and incidental work, in accordance with the Technical Specifications and the lines, grades, and cross sections shown on the Drawings.

C. Embankments

1. Prior to construction of any embankment, the area beneath the embankment and the areas from which embankment material will be obtained shall be cleared and grubbed. The existing soil beneath the embankment shall then be compacted to 90 percent of maximum density as determined by ASTM D 1557 for a minimum of 6 inches below ground surface. Any unsuitable material shall be removed prior to placement of any embankment.

2. Upon completion of the embankment foundation, embankment material shall be placed in horizontal lifts and compacted to 90 percent of ASTM D 1557. Embankment lift depth shall not exceed the capability of compaction equipment being used to achieve the required compaction for the full depth of each lift. The embankment material shall be native or import free of vegetative or organic matter, boulders 6 inches or larger in diameter, or frozen material and shall be at or below optimum moisture content at the time of placement. Depending on the type of embankment material, the Contractor may have to scarify, aerate, water, or take other actions as necessary to bring soils to proper moisture in order to achieve the required compaction.

3. The embankment shall be brought to the lines and grade required on the Drawings. Any unsuitable material which may have been used in constructing the embankment shall be removed and replaced with suitable material and compacted at no cost to the City.

D. Roadbed Cuts

1. In roadbed cuts, the subgrade material shall be compacted to 90 percent of maximum density as determined by ASTM D 1557 for a minimum of 6 inches below the top of the subgrade.

2. Depending on the type of material encountered, the Contractor may have to scarify, aerate or water, over-excavate, or take other actions as necessary to bring soils to proper moisture in order to achieve the required compaction.

E. Balancing Earthwork

1. It shall be the Contractor's responsibility to make his own determination of quantities required to complete the work. Any imbalance in the actual earthwork which may occur shall be adjusted by either of the following methods.

2. When sufficient material is not available from the excavation areas to construct the embankments, the Contractor shall arrange for and obtain borrow material to complete the work. Borrow material shall be equal to or better than the on-site embankment material.

3. When excess material exists beyond that required to complete the embankments, the Contractor shall dispose of the excess material at a location selected by the Contractor outside of the project boundaries.

F. Finishing of Subgrade

1. All roadbeds, ditches, and other excavations and embankments shall be trimmed accurately to the lines, grades and cross sections as shown on the Drawings and shall be finished in a thoroughly workmanlike manner to within plus or minus 0.05 foot of the required grade.

2. Upon completion of the subgrade and prior to placement of the geotextile fabric and base rock, the Contractor shall load test the finished subgrade surface. The load test shall consist of slowly driving a loaded dump truck over the road surface. The dump truck shall have a minimum capacity of 10 cubic yards. The City and/or City Engineer and Contractor shall note and mark any soft areas. The Contractor shall excavate out and either replace unsuitable material or properly compact all soft areas in order to provide a firm base that conforms to the Specifications. Any soft areas that occur as part of the project because of over-watering, improper compaction, weather, etc., shall be replaced at no cost to the City. If the soft areas are due to existing condition beyond the Contractor's control, such as existing water lines leaking, swampy areas, springs, etc., then the Contractor will be additionally compensated either by utilizing established unit prices, or by approved change order.

3. When determined necessary by the City, and after significant effort has been made by the Contractor to process and compact native and subgrade soils, the Contractor shall perform subgrade stabilization work as shown on the Drawings. All subgrade stabilization work must be authorized by the City before the work is performed. Any work performed by the Contractor without approval will not be paid for.

G. Dust and Mud Control

1. The Contractor shall be responsible for controlling dust and mud caused by his operations. This shall include, but not be limited to, street work, trench work, shoulder work, sidewalk work, driveways, connecting streets, etc. The Contractor shall be responsible for controlling dust on the roadway surface until the time asphalt pavement is placed.

2. Dust and mud control performed by the Contractor is considered a normal part of the construction project. If the Contractor fails to properly control the dust and mud, the City may request him to do so in writing. If, after 24 hours from this request, the Contractor has not corrected the dust or mud problem, the City may elect to have the corrective work performed and deduct the cost of dust and mud control or removal from payments owed the Contractor on the project.

3.2 Geotextile Fabric

A. Scope

This work consists of furnishing and placing geotextile fabrics in underdrains, under embankments, over roadbed subgrade, and at other locations as shown on the Drawings or directed by the City and/or City Engineer.

B. Fabric placed for subgrade stabilization under embankments or over roadbed subgrade shall be placed parallel to the centerline of the roadway, with placement starting at the low side of the super elevation or crown. The fabric shall either be sewn together at all longitudinal and transverse edges or overlapped a minimum of two feet at all edges. Transverse overlaps shall be made in the direction of base material placement.

3.3 Aggregate Base and Base Rock

A. Scope

Aggregate base and base rock shall be placed to the lines, depths, and grades shown on the Drawings. Prior to placement of the materials, each succeeding lift, i.e., subgrade, aggregate base, base, etc., shall be properly constructed and reviewed by the City.

B. Construction

1. The construction procedure here described shall be understood to apply to each of the courses and/or layers of which the road base is to be constructed. The construction of the road base shall not be limited to the construction of the main roadway to which the contract applies, but shall include the construction of base

on approach roads, driveways, connecting roads and connecting streets as shown on the Drawings.

2. After the subgrade is brought to the proper line, cross section and compaction, the aggregate materials shall be spread and shaped as required. The spreading and shaping of the aggregate materials shall be so performed as to prevent separation of the coarser material from the finer materials including the use of adequate water.

3. The aggregate materials shall be brought to proper moisture content as required for compaction and compacted to 95 percent of maximum density as determined by ASTM D 1557.

4. The finished surface when tested with a 10-foot straightedge shall not vary from the testing edge by more than 0.05 foot at any point.

5. Following construction of each lift, the Contractor shall do such blading, brooming, watering and other work as necessary to prevent raveling and rutting. These operations are to be continued as required until the lift is covered by a following lift or until all work to be done under the contract is completed. If the required compacted depth of the base rock exceeds 6 inches, it shall be constructed in two or more lifts, each lift not exceeding 6 inches in depth.

6. Upon completion of the aggregate materials and prior to placement of asphalt concrete pavement, the Contractor shall load test the finished base surface. The load test shall consist of slowly driving a loaded minimum 10 yard dump truck over the road surface. All soft areas shall be noted. The Contractor shall excavate and/or compact all soft areas in order to provide a firm base that conforms to the requirements of the Technical Specifications. This work shall be done at the Contractor's expense.

7. Gravel shoulders when required shall be constructed as a part of construction of the base and are not to be added on after completion of asphalt paving. The finished gravel shoulder shall be graded, trimmed and compacted to the required lines, grades and cross sections in a neat manner leaving the gravel shoulder flush with the edge of the asphalt pavement. Coarse segregated aggregate shall not be used in the construction of gravel shoulders. All such non-specification material shall be removed and replaced with specification material.

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3.4 Pre-paving Conference

At least one week before paving is scheduled to begin, the Contractor will set up a pre-paving meeting between the Contractor and the City and/or City Engineer. If a paving Subcontractor is being used they shall also be present. The intent of the meeting is to allow the City and the Contractor to jointly review the proposed method of operation, equipment, personnel, mix, schedule, etc., along with the project specifications.

3.5 Overlay Preparation

A. Asphalt Concrete Patching

1. The City and/or City Engineer will mark all unstable or unsuitable areas. The Contractor shall then remove all material from the designated areas to a depth as detailed on the Drawings or as required by the City.

2. The area shall then be backfilled as detailed on the Drawings. All materials shall be properly placed and compacted as outlined in this Technical Specification.

B. Asphalt Crack Sealing

1. All cracks and joints shall be routed and cleaned of all loose material and vegetation. Cleaning shall be accomplished with using a hook or other similar device to loosen the material and either blowing, brooming or flushing the material from the crack. After all cracks are cleaned, the entire paved surface shall be cleaned of foreign material. Care shall be taken not to refill the cracks with foreign material.

2. Filling of cracks and voids shall not commence until they are clean and dry.

a. Voids in the base below the pavement shall be filled with clean sand and compacted. Cracks 1-inch and less in width shall be completely filled to the pavement surface with hot liquid rubberized asphalt conforming to ASTM D 3405.

b. Cracks greater than 1-inch in width shall be filled with a mixture of 50 percent 1/4-0 aggregate and 50 percent CSS-1 asphalt emulsion or other approved mixture to within 1/4 inch of the pavement surface and topped off with hot liquid rubberized asphalt.

c. The following day, any cracks which are not completely full shall be topped off with additional rubberized asphalt. After sealing, the filler

shall be broomed or squeegeed flush with the existing pavement surface and allowed to cure prior to constructing the asphalt concrete overlay.

d. All sealed cracks shall be flush with the existing pavement after sealing is complete.

C. Cleaning

The existing surface of all areas to be overlaid shall be thoroughly cleaned of all loose material, dirt, debris, or other undesirable materials by brooming, flushing with water, or other methods acceptable to the City.

D. Asphalt Concrete Pre-leveling

1. All areas with irregular grades to be pre-leveled shall be marked by the City and/or City Engineer and pre-leveled with 3/8-inch dense asphalt concrete.

2. The pre-leveling will be performed while the street is clean and thoroughly dry and will be accomplished by applying a tack coat of asphalt at a rate of 0.05 to 0.15 gallons per square yard and then placing and compacting the asphalt mix. The actual rate of tack coat application will be determined in the field by the City Engineer.

3. The compaction of the asphalt concrete shall be accomplished with a Pneumatic tired roller. The rolling shall follow directly behind the placement and be performed in such a manner that the entire surface receives at least four coverages of the roller. The pneumatic-tired roller shall be capable of exerting at least 80 pounds per square inch ground pressures and shall not be operated at speeds in excess of 5 mph. Finish rolling shall be accomplished with a steel wheeled roller and shall continue until all roller marks are eliminated.

E. Paving Fabric

Once the street is clean and all repair work is completed the paving fabric shall be installed where called for on the Drawings. The following procedures and materials are to be used.

1. Track Coat Application

a. Apply a tack coat of AR4000W graded asphalt cement at the rate of 0.15 to 0.25 gallons per square yard. This can only be done with the ambient temperatures above 60°F. The actual rate will be determined in the field by the City Engineer to suit the existing surface.

b. The tack material shall be between 275° - 325°F at the time of application and shall be applied with a single pass of distributor truck.

c. An accessory hand sprayer shall be used on patches, lap sections and areas where truck spraying is impractical. It is extremely important that the tack coat be uniformly applied. Application will not be allowed unless the distributor equipment is operating properly.

2. The paving fabric shall be placed directly behind the distributor with the use of equipment that will provide automatic tensioning capabilities to assure fast wrinkle-free unrolling.

a. Any minor wrinkles or air bubbles shall be brushed out with a stiff-bristle push broom. Wrinkles that won't brush out shall be cut out and a patch of fabric layered at least 6 inches in all directions be installed.

b. The fabric shall be cut into sections to match curves and corners. Overlap these sections and the start of all new rolls at least 6 inches and apply approximately 0.20 gallons per square yard tack coat to the seams.

c. If any blistering of the fabric arises a 4-ton tandem roller shall be used to restore the fabric adhesion prior to the overlay application.

3. The overlay work shall begin as soon after lay-down of the paving fabric as practical.

F. Asphalt Tack Coat

1. An asphalt tack coat shall be applied to existing pavement surfaces to be overlaid with new asphalt concrete, except where paving fabric has been placed. All pavement repair work and surface cleaning shall be completed prior to application of tack coat.

2. Provide an asphalt distributor designed, equipped, maintained, and operated so the emulsified asphalt material may be applied uniformly at even heat. The distributor shall be capable of applying the asphalt on variable surface widths up to 16 feet, at readily determined and controlled rates from 0.05 to 2.0 gallons per square yard, and with uniform pressure. The variation allowed from any specified rate shall not exceed 0.02 gallons per square yard. Provide distributor equipment that includes a tachometer, pressure gauges, accurate volume measuring devices, and a thermometer for measuring temperature of tank contents. Provide distributors equipped with a positive power unit for the asphalt pump, and full

circulation spray bars adjustable both laterally and vertically. Set the bar height for triple lap coverage.

3. Apply the emulsified asphalt with a pressure distributor. Apply the emulsified asphalt to the prepared surface at a rate between 0.05 and 0.20 gallons per square yard as directed and with the emulsified asphalt temperature between 140°F and 185°F as recommended by the manufacturer. Application rates for tack coat diluted will be increased as necessary to provide the same amount of residual asphalt as the application rates specified above.

Do not place hot mixed asphalt concrete pavement or emulsified asphalt concrete pavement on the tack coat until the emulsified asphalt separates from the water (breaks), but before it loses its tackiness.

4. All surfaces must be clean and dry at the time of the tack coat application and at a temperature of at least 50°F. Remove all loose material from the surface. The tack coat shall only be constructed far enough in advance as is appropriate to ensure a tacky, sticky condition at the time the asphalt concrete is placed on it.

5. A tack coat will not be required between pavement lifts if paving of succeeding lifts occurs within 24 hours and the pavement surface is kept clean. If the pavement surface is not clean, as determined by the City and/or City Engineer, a tack coat will be required between lifts.

3.6 Hot-Mix Asphalt Concrete Pavement

A. Scope

After completion of the base, the Contractor shall place and compact the hot-mix asphalt concrete to the lines, grades, thicknesses, and cross-sections shown on the Drawings.

B. Construction

Construction shall be performed in accordance with applicable "Section 00744 - Minor Hot Mix Asphalt Concrete (MHMAC) Pavement" and related sections of the Oregon Standard Specifications for Construction, current edition, supplemented and modified as follows:

1. Delete subsection 00744.16 and replace with the following:

00744.16 MHMAC Acceptance - Perform sampling and testing according to the "Quality Control" section of the General Requirements.

2. Replace Section 00744.40 with the following:

00744.40 Season and Temperature Limitations - Place MHMAC when the temperature of the surface that is to be paved is not less than the temperature indicated:

Nominal Compacted Thickness of Individual Lifts and Courses as shown on the typical section of the plans	**All Levels**
	Surface Temperature*
Dense Graded Mixes	
Less than 2 inches	60 °F
2 inches - 2 1/2 inches	50 °F
Greater than 2 1/2 inches	40° F
Temporary	40 °F

* If placing MHMAC between March 15 and September 30, temperature requirement may be lowered 5 °F.

** Do not use field burners or other devices to heat the pavement surface to the specified minimum temperature.

3. Add the following to the end of subsection 00744.44:

Treat all paved surfaces on and against which MHMAC is to be placed with an asphalt tack coat, according to Section 00730. Immediately before applying the tack coat, clean and dry the surface to be tacked. Remove all material, loose or otherwise, that will reduce adhesion of the tack by brooming, flushing with water, or other approved methods.

4. Add the following subsection:

00744.45 Control of Line and Grade - Use a floating beam device of adequate length and sensitivity to control the grade of the paver. Where this method is impractical, manual control of grade will be allowed when approved.

5. Add the following subsection:

00744.48 Hauling, Depositing, and Placing - Haul, deposit, and place MHMAC as follows:

(a) Hauling - Cover MHMAC if rain or cold air temperatures are encountered any time between loading and placement.

MHMAC will be rejected before placing if one or more of the following is found:

- Below specified placing temperature limit
- Slumping or separating
- Solidifying or crusting
- Absorbing moisture

Dispose of rejected loads at no additional cost to the Owner.

Deliver the mixture to the paving machine at a rate that provides continuous operation of the paving machine, except for unavoidable delay or breakdown. If excessive stopping of the paving machine occurs during paving operations, the City and/or City Engineer may suspend paving operations until the mixture delivery rate matches the paving machine operation.

(b) Depositing - Deposit MHMAC from the hauling vehicles so segregation is prevented. Do not deliver the MHMAC directly into the paving machine for wearing courses where the continuous length of the panel is greater than 500 feet. Deliver the MHMAC to the paving machine by either a windrow pick-up machine or an end-dump transfer machine.

When MHMAC is windrowed, the pick-up equipment shall:

- Pick up substantially all of the MHMAC deposited on the roadway.
- Be self-supporting, not exerting any vertical load on the paving machine, or causing vibrations or other motions which could have a harmful effect on the riding quality of the completed pavement.

(c) Placing - Alternative equipment and means may be allowed by the City and/or City Engineer if the use of a paver is impractical.

Do not place MHMAC during rain or other adverse weather conditions, unless allowed by the City Engineer. MHMAC in transit at the time adverse conditions occur may be placed if:

- It has been covered during transit.
- The MHMAC temperature is satisfactory.
- It is placed on a foundation free from pools or flow of water.
- All other requirements are met.

When leveling irregular surfaces and raising low areas, do not exceed 2 inches actual compacted thickness of any one lift, except the actual compacted thickness of intermittent areas of 1,000 square feet or less may exceed 2 inches, but not more than 4 inches. This may require portions of the mixture to be laid in two or more lifts.

Place the mixture in the number of lifts and courses, and to the compacted thickness for each lift and course, as shown. Place each course in one lift unless otherwise specified. Do not exceed a compacted thickness of 3 inches for any lift. Limit the minimum lift thickness to twice the maximum aggregate size in the mix.

Do not intermingle MHMAC produced from more than one JMF. Each base course panel placed during a working shift shall conform to a single JMF. The wearing course shall conform to a single JMF.

6. Replace subsection 00744.49 with the following:

00744.49 Compaction - Immediately after the MHMAC has been spread, struck off, and surface irregularities and other defects remedied, roll it uniformly with rollers meeting the requirements of 00744.24 until compacted to a minimum of 91% for the base course and 92% for the wearing course. Perform finish rolling and continue until all roller marks are eliminated.

Compaction to a specified density will not be required on temporary surfacing (see 00745.50), guardrail flares, mailbox turnouts, road approaches, pavement repair, and areas of restricted width (less than 8 feet wide) or limited length, regardless of thickness. Compact these surfaces according to 00749.45.

7. Add the following subsection:

00744.50 Preparation of Underlying Surfaces - All edges of manholes, valve boxes, curbs, existing pavement, etc., that are to be in contact with the new asphalt concrete shall be cleaned and painted or sprayed with a thin tack coat. This tack coat is to be applied only far enough in advance as is appropriate to ensure a tacky, sticky condition at the time the asphalt concrete comes in contact with the structure. The application of the tack coat shall be done in a neat, workmanlike fashion. Any material inadvertently applied to surfaces outside the limits of the paving, such as on sidewalks, exposed sections of curbs, etc., shall be fully cleaned by the Contractor.

8. Add the following subsection:

00744.51 Paving Crew - Only trained and experienced personnel shall be used on the paving crew performing the work. The Contractor shall submit to the City and/or City Engineer, prior to the pre-paving conference, job assignments, experience history, and training background for all members of the paving crew. Untrained and inexperienced personnel may not be used. The City may request personnel be replaced if it cannot be demonstrated that they have the proper training and experience to be a part of an experienced crew. The paving superintendent and paving machine operator shall have at least five years experience, and the roller operators shall have at least two years experience.

9. Delete the following subsections:

a. 00744.80
b. 00744.90

3.7 Asphalt Fog Seal

A. After the construction of the asphalt concrete, the City Engineer will evaluate the surface to determine whether a fog seal is required. When a seal is determined necessary by the City Engineer, the Contractor shall apply an asphalt fog seal. It is anticipated that the application rate will be between 0.05 to 0.20 (0.03 to 0.10 residual) gallons per square yard. The application rate shall be determined by the City Engineer.

B. The areas to be sealed shall be dry and free of dirt, dust, leaves, or other foreign matter at the time of placement.

C. Provide an asphalt distributor designed, equipped, maintained, and operated so the emulsified asphalt material is applied uniformly at even heat. The distributor shall be

capable of applying the asphalt on variable surface widths up to 16 feet, at readily determined and controlled rates from 0.05 to 2.0 gallons per square yard, and with uniform pressure. The variation allowed from any specified rate shall not exceed 0.02 gallons per square yard. Provide distributor equipment that includes a tachometer, pressure gauges, accurate volume measuring devices and a thermometer for measuring temperature of tank contents. Provide distributors equipped with a positive power unit for the asphalt pump, and full circulation spray bars adjustable both laterally and vertically. Set the bar height for triple lap coverage.

D. Discontinue application of the emulsified asphalt fog seal sufficiently early in the day to permit the termination of traffic control prior to sunset. Apply emulsified asphalt to only one designated traffic lane at a time.

E. All of this work, a portion of it, or none of it may be performed, depending on the evaluation made by the City Engineer.

3.8 Street Monument Boxes

The Contractor shall provide and install cast iron street monument boxes at all points shown on the Drawings. Monument boxes shall be installed after placement of the asphalt concrete pavement. Holes in the pavement shall be neatly cut to a 24-inch diameter. After installation of a street monument box, the hole shall be backfilled with Portland cement concrete (minimum 3000 psi compression strength). The asphalt concrete shall be patched to leave a smooth ride. Monuments within the boxes shall be installed by others.

3.9 Adjustment of Utility Covers to Grade

The Contractor shall adjust the tops of all existing manholes, valve boxes and other utility covers as required to bring the covers or gratings of the structures to the grade required by the improvement involved. The method of adjustment shall be shown on the Drawings. The Contractor shall repair any of these structures which are damaged during performance of the work at no cost to the City.

3.10 Culverts

A. General

Culverts shall be installed in the location and on the grade shown on the Drawings and as specified herein.

B. Installation

Culverts shall be bedded and backfilled uniformly on both sides of the pipe at the same time to prevent displacement or buckling of the pipe. Bedding material shall be worked carefully under the pipe haunches and then compacted. See Technical Specifications - "Excavation and Backfill of Trenches."

3.11 Drainage Ditches

Drainage ditches shall be constructed in the locations shown on the Drawings in accordance with the details and as specified herein.

3.12 Restoration, Finishing, and Cleanup

A. Prior to the final inspection of the work, the Contractor shall restore or replace all paved surfaces, graveled surfaces, curbing, sidewalks, trees and shrubbery, lawns, pastures and fences, or other existing facilities disturbed or damaged by his work.

B. The Contractor shall cleanup and leave in a neat, orderly condition the right of way, and other property occupied in connection with the work.

C. The Contractor shall reshape, clean out ditches, retrieve shoulders and slopes, and do all other work required to bring the project to the final lines, grades, and condition called for. The finished project shall be clean and neat in its final appearance.

D. See Technical Specifications - "Surface Restoration" for additional requirements.

END OF SECTION