SECTION 02745

PAVEMENT REMOVAL AND REPLACEMENT

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Work included under this Section covers the furnishing of all labor, equipment and material required for cutting, removing, protecting, constructing, replacing or stabilizing all existing roadways, driveways and pavements.

B. All existing utility castings, including valves boxes, junction boxes, manholes, handholes, pull boxes, inlets and similar structures in the areas of trench restoration, pavement replacement and pavement overlay shall be adjusted by the Contractor to bring them flush with the surface of the finished work.

1.02 QUALITY CONTROL

The phrase "DOT Specifications" shall refer to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition. The DOT Specifications, are referred to herein and are hereby made a part of this Contract to the extent of such references, and shall be as binding upon the Contract as through reproduced herein in their entirety.

1.03 DAMAGE BY CONTRACTOR

A. The Contractor shall protect from damage by construction operations, all pavements, including all base courses and surface courses, within the work area.

B. Any base course or surface course beyond those limits, damaged as a result of the Contractor's operation, shall be restored in accordance with the applicable requirements of these Specifications, to the satisfaction of the Department, and to the satisfaction of the governing authority having jurisdiction over the work area.

C. Any damage to adjacent lanes of pavement will require the Contractor to resurface the entire lane width for a length, as approved by the Department. When the damage amounts to 25 percent or more in any one block (approximately 600 feet), the Contractor shall resurface the entire width of the lane in which the damage occurred for the entire block.

D. The Contractor is hereby notified that wherever the line for repaving for trenches extends one foot into the edge of the existing paving, he shall repave to this edge only. Full lane paving will not be required. Damage to the pavement beyond this line by the Contractor will require that he repave the full width.

E. In order to protect himself from being held liable for any existing damaged pavement, including detour routes, the Contractor is advised to notify in writing the authority having jurisdiction over the street where such defective pavement exists prior to proceeding with any work in the vicinity. A copy of all such notices shall be forwarded to the Department.

PART 2 - PRODUCTS

2.01 MATERIAL, GENERAL

A. Limerock Base: The limerock base shall consist of either one or two courses limerock obtained from local sources where the overburden was removed from the pits prior to mining operations. The limerock shall comply with the requirements of DOT Specifications, Section 200 and Section 911 for Miami Oolite limerock, with a maximum size of the aggregate to be 1-1/2 inches.

B. Prime Coat and Tack Coat shall be as specified Section 02741.

C. Asphaltic Concrete: The materials and construction of the asphaltic concrete patch and surface courses shall be Type S-1 Asphaltic Concrete conforming to Sections 330, 331 and 916 of the DOT Specifications.

D. Sand cover material shall be clean and non-plastic, and shall be composed of hard durable grains, free from loam, roots, silt, clay, or rock particles and other deleterious substances. Local sand meeting such requirements may be used. Sand shall be subject to approval by the Department.

E. 1:10 Mix: Sand-cement mix for backfill within state roads shall be a 1:10 mix of Type I or II Portland Cement and Sand that shall produce a slump of 4 to 6 inches.

F. Flowable fill: Flowable fill, as specified in Section 03375, shall be used as backfill only when indicated per FDOT permit requirement or as directed by the Engineer of Record. It shall be used for trenches, support for pipe structures, culverts, utility cuts and other works where cavities exist and where firm support is needed for pavements and structural elements.

2.02 BITUMINOUS PAVING MATERIAL

Asphalt cement for asphaltic concrete mixes shall be Viscosity Grade AC-20, homogeneous, free from water and shall meet the requirements of D.O.T Specifications, Section 916-1. Unless otherwise specified, all test samples required shall be supplied by the Contractor. For friction courses, in addition to meeting the above requirements, the bituminous material shall contain 0.5% of a heat-stable, anti-stripping additive from an approved source.

A. Asphaltic Concrete - Type S-I Mix shall meet the requirements of D.O.T. Specifications for Type S-I Asphaltic Concrete, Sections 330, 331 and 916 of D.O.T Specifications.

B. Asphaltic Concrete - Type I Mix shall meet the requirements of Dade County Public Works Department Specifications for Type I Asphaltic Concrete Surface Course, Section 133 of the Public Works Manual.

C. Asphaltic Concrete - Type III Mix for asphaltic concrete wearing surface overlay, both machine laid and standard (skin patch), shall meet the requirements of D.O.T. Specifications for Type III Asphaltic Concrete, Section 333-1 through Section 333-6.

D. Type V paving repairs shall consist of a machine-laid asphaltic concrete wearing surface overlay, which shall be a nominal one-inch thick asphaltic concrete, meeting the material requirements of Type I repairs. See subsection 3.07, below.

E. Asphaltic Concrete - Type FC-1, FC-2, FC-3 and FC-4 shall meet the requirements of D.O.T Specifications for Friction Courses, Sections 337-1 through Section 337-7.

F. Emulsified Asphalt for Slurry Seal Coat shall be of the slow-setting, mixing type and shall be homogeneous, meeting the requirements of the Asphalt Institute, Grade SS-1 or SS-1h.

G. Liquid Asphalt for Prime and Tack Coat: See Section 02741.

H. Liquid Asphalt for Sand and Asphalt Paving shall be asphalt cement, viscosity Grade AC-5 or emulsified asphalt, Grade RS-2 (anionic) conforming to the requirements of D.O.T. Specifications, Section 916-1 and 916-4, respectively.

I. Mineral Aggregate for Slurry Seal Coat shall consist of screened sand or limestone screenings or gray granite screenings or a mixture of sand and screenings plus not less than 3%, by weight, of Type I or Type II Portland cement.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Permanent pavement repair shall be in accordance with the details shown in the Standard Details herein, with edges straight and parallel and patches rectangular in plan. Replace any paving, beyond the limits shown in the details and as called for in the Specifications, as required. Where trenches are located out of the existing pavement and damage occurs to the pavement, that pavement shall also be replaced by the Contractor.

B. Pavement markings removed or obliterated by the Contractor's operations shall be promptly replaced, in kind, to the satisfaction of the Miami-Dade County Department of Public Works, Traffic Engineering Division, or other authority having jurisdiction over the work area.

C. All equipment necessary for construction shall be on the job site in first class working condition. Spilling or dropping of petroleum products is prohibited and all defective equipment shall be removed or replaced immediately. The Contractor shall be subject

to all DERM (Department of Environmental Resources Management) regulations and clean up requirements.

D. The percentages of maximum density for subgrade and limerock base specified herein are minimum. Greater percentages of maximum density shall be obtained, if so required, by the governing authority having jurisdiction over the work location.

E. Asphaltic concrete mixtures shall be obtained only from plants which comply with the requirements of D.O.T. Specifications, Section 320 as applicable, using materials specified herein, and producing the specified mixture. General construction requirements for all hot bituminous mixtures specified herein shall conform to D.O.T. Specifications, Section 330, as applicable.

F. Asphaltic concrete shall be laid only where the surface to be covered is intact, firm, cured and dry, and only when weather conditions are suitable. The temperature of the mixture at the time of spreading shall be within limits of Florida D.O.T. specifications or within 25 degrees of the temperature set by the Department. No mixture shall be spread when the air temperature is less than 40 degrees Fahrenheit.

G. Any mixture caught in transit by a sudden rain may be laid at the Contractor's risk, if the base is in suitable condition. Under no circumstances shall asphaltic material be placed while rain is falling, or when there is water on the area to be paved.

H. Subgrade: Roadway subgrades shall be stabilized to the minimum depth shown on the Drawings to a Limerock Bearing Ratio of not less than 40. Stabilizing shall be Type B as defined in Section 160 of the DOT Specifications. Stabilization may require the addition and thorough mixing in of crushed limerock, course limerock screenings, or any other stabilizing material acceptable to the Department. The stabilizing material shall be applied in such quantity that, after mixing and blending, the subgrade will have a LBR of not less than 40. Stabilizing material shall be mixed or blended in the subgrade material by plowing, scarifying, disking, harrowing, blading and mixing with rotary tillers until the mixed materials are of uniform bearing value throughout the width and depth of the layer being processed.

I. At least three density determinations shall be made on each day's final compaction operations on each course, and the density determinations shall be made at more frequent intervals if deemed necessary by the Department.

J. Limerock Base: The limerock base shall be constructed in accordance with Sections 200 and 911 of the DOT Specifications, to the thickness and width indicated on the Drawings.

K. After spreading of the base material is completed, the entire surface shall be scarified and shaped so as to produce the exact grade and cross section after compaction. For double course base, this scarifying shall extend a depth sufficient to penetrate slightly the surface of the first course. The maximum depth of each lift shall be 8-inches.

L. When the material does not have the proper moisture content to insure the required density, wetting or drying shall be required. If the material is deficient in moisture, water

will be added and uniformly mixed in by disking the base course to its full depth. If the material contains an excess of moisture, it shall be allowed to dry before being compacted. As soon as proper conditions of moisture are attained, the material shall be compacted to an average density not less than 98 percent maximum density as determined in more than one course, the density shall be obtained in each lift of the base.

M. During final compacting operations, if blading of any areas is necessary to obtain the true grade and cross section, the compacting operations for such areas shall be completed prior to making the density determination on the finished base.

N. Unless otherwise directed by the Engineer of Record, the surface shall be "hard-planed" with a blade grader immediately prior to the application of the prime coat to remove the thin glaze or cemented surface and to allow free penetration of the prime material. The materials planed from the base shall be removed from the base area.

O. If cracks or checks appear in the base, either before or after priming, which in the opinion of the Department, would impair the structural efficiency of the base course, the CONTRACTOR shall remove such cracks or checks by rescarifying, reshaping, adding base material where necessary and recompacting.

P. Mixing Base and Subgrade: If at any time the subgrade material shall become mixed with the base course material, the CONTRACTOR shall, without additional compensation, dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean base material, which shall be shaped and compacted as specified above.

Q. Asphaltic Concrete: The spreading, compacting and jointing the wearing surface shall be in accordance with Sections 330 and 331 of the DOT Specifications to the thickness indicated on the Drawings.

3.02 TEMPORARY PAVING

A. Prior to commencing excavation, the asphalt surface shall be sawcut within the limits of the allowable trench width. Temporary paving will be required along the entire route where the original paved surface is removed. Unless otherwise approved by the Department, temporary paving shall be placed the same day the trench is backfilled. The trench shall be backfilled up to a level 1 inch below the existing pavement surface and a temporary, cold mixed sand/asphalt pavement shall be constructed up to the level of the existing pavement surface. The liquid asphalt shall be Grade RC-70, conforming to the requirements of D.O.T. Specifications, Section 916-2. The sand shall conform to the requirements of D.O.T. Specifications, Section 902 for fine aggregate.

B. The cold mix is to be installed one block at a time, not crossing any intersection, or a maximum of 1,200 feet shall be completed before the Contractor may move forward with his excavation work. Backfill, compaction and temporary paving is to keep pace with the pipe installation. Written permission must be obtained from the Department and the municipal

agency permitting the work to allow greater lengths than 1,200 feet. Permitting agencies may reduce the allowable limits in their permit, or for other unforeseen right-of-way conditions.

C. Prior to completion of the work and within a maximum of 30 calendar days, the Contractor shall remove the 1 inch of cold mix and surplus backfill. He shall replace it with the specified compacted limerock base course and asphaltic within the specified working limits. Municipal agencies permitting this work may accelerate the time for removal of the cold mix, at their discretion.

D. The temporary pavement shall be maintained by the Contractor in a condition satisfactory to the Department until its removal. Removal shall include any surplus backfill material. Replacement of the temporary pavement with permanent pavement shall be made within 30 days. In replacing the temporary paving with permanent pavement, all work shall be completed in sections compatible with specified traffic maintenance procedures.

E. The Contractor may elect to install a suitable temporary hot mix asphaltic pavement, to be left in-place, in lieu of cold mix, when the hot mix asphalt is left in-place and installed over properly compacted limerock base course. This temporary pavement shall be incorporated into the specified permanent pavement restoration as part of Type I paving restoration.

F. Sand seal on the limerock base course will not be permitted in lieu of temporary paving.

G. Unless otherwise approved by the Department, temporary paving, shall be placed within twenty-four hours following the completion of backfilling.

3.03 TYPE I PAVING REPAIR (Limerock Base - Asphaltic Concrete Surface)

A. Type I paving repairs shall be made with an 8-inch thick compacted limerock base and a minimum 1-inch thick asphaltic concrete surface, as detailed in the Standard Details. On Public Works roads asphaltic concrete shall have a compacted thickness of 2-inch, placed in a minimum of two (2) compacted 1-inch lifts.

B. The backfill previously placed and compacted shall be excavated to the required depth below the existing road surface and the existing paving shall be cut back beyond all excavations, using an abrasive disc saw to trim the edges to straight and true lines, minimum width for the limerock base shall be equal to the trench width plus 2 feet. Eight inches of limerock base shall be placed in two layers, each layer compacted to not less than ninety-eight percent (98%) density in accordance with Section 200 of D.O.T. Specifications. During rolling, the base shall be wetted down, as necessary, to secure the greatest possible compaction. After rolling, the entire surface of the base shall be thoroughly scarified to a depth of not less than 3 inches and shaped to conform to and be parallel with the existing surface, then watered and rolled again. Rolling and watering shall continue until the entire depth of the base is bonded and compacted into an unyielding mass.

C. If at any time the subgrade material becomes mixed with the limerock base course materials, the Contractor shall, without additional compensation, dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean rock which shall be watered and rolled until satisfactorily compacted.

D. After the limerock base course has been properly prepared and is dry and ready to receive the wearing surface, a tack coat of emulsified asphalt, in accordance with Section 02741, shall be applied at a rate of 0.10 gallon per square yard, immediately followed by the asphaltic concrete. The tack coat shall be applied to the entire limerock base uniformly, and shall thoroughly coat all surfaced. Care shall be taken to tack coat and bond the edge of surrounding pavement.

E. The asphaltic concrete shall be plant mixed, using the best grade of local aggregates of approved size and gradation and mixed with an approved binder and conforming the either the State of Florida Department of Transportation Specifications, Type S-1 Asphaltic Concrete, Sections 330, 331 and 916 of D.O.T Specifications, or Dade County Public Works Type I, as ordered by the Engineer of Record.

F. Where the width of the repair permits, the asphaltic concrete plant mix material shall be placed by means of an approved mechanical spreader and finisher. The mixture shall be compacted to true grade and cross section by means of a tandem roller weighing not less than eight tons. The compacted asphaltic concrete mixture shall not be, in any case, less than one inch in thickness. Rolling shall proceed as closely behind the spreader as possible and all material shall be completely compacted the same day it is placed. The minimum width of the wearing surface shall be the same as the base.

3.04 TYPE II PAVING REPAIR (Special Limerock Base - Asphaltic Concrete Surface)

A. Type II repairs shall be used only when the restoration work falls within the limits of a State Road and shall be performed in accordance with the latest Florida Department of Transportation Standard Specifications for Road and Bridge Construction. Type II repairs shall be similar to Type I paving repairs except for the dimensions of the limerock base and the asphaltic concrete surface course.

B. The dimensions shall be as shown in the Department's Standard Detail or 1:10 mix to within 3 inches of grade as required by the Florida D.O.T., except that the limerock base course shall be a minimum of 18 inches and the asphaltic concrete surface course shall be 3 inches. Minimum width for the base shall be equal to the trench width plus 3 feet.

C. The compacted limerock base shall be primed at the rate of 0.10 gallons per square yard and the topped with a compacted 3-inch thick wearing surface of Type S-I asphaltic concrete. Minimum width for surface replacement shall be equal to the trench width plus 4-feet.

D. A friction type surface course may be required in addition to the standard repair. Friction courses shall be constructed using the type and thickness of asphaltic concrete specified by permit, and in accordance with the applicable provisions for Type V paving repairs.

3.05 TYPE III PAVING REPAIR (Concrete Base - Asphaltic Concrete Surface)

A. This type of repair shall be made only on Florida Department of Transportation roadways when the original pavement is composed of a concrete base and an asphaltic concrete wearing surface. The use of Type III repairs is usually confined to restoration of pavement over trenches cut across existing pavement (and traffic flow), and short

trenches cut parallel to the roadway center line. A trench cut 200 feet or less in length shall be considered a "short trench".

B. Type III paving repairs shall be made with a 6-inch thick reinforced concrete base and a minimum 1-inch thick asphaltic concrete wearing surface, in accordance with the Standard Detail. Minimum width for the concrete base shall be equal to the trench width plus 2 feet.

C. The existing pavement shall be saw cut in straight lines, to form a shoulder of the required width on each side of the trench, as outlined by the Department at the location of the replacement. The pavement shall be removed and the fill shall be mechanically compacted to 98% of the maximum density obtainable as determined by AASHTO Standard T-180.

D. The fill material in the trench and shoulders shall be brought to the depth of the pavement or nine inches, whichever is greater. The fill disturbed by the removal of this material shall be recompacted, as specified above. A layer of six gauge, 6-inch X 6-inch roadway reinforcing mesh, supported on chairs or bricks, shall be placed 2-inch above the bottom of the slab. The subgrade shall then be wet down and filled to within one inch of the existing pavement surface, unless otherwise required by the Governing Municipality, with Type III High Early Strength concrete. The concrete shall be placed using a vibrator to insure a uniform density.

E. Concrete base shall be cured to comply with the requirements of D.O.T. Specifications Section 350-13.3 or other approved non-chemical method. When the concrete base has become at least 24 hours old a tack coat shall be applied at the rate of 0.10 gal. per square yard and then topped with a minimum 1-inch thick wearing surface of Type S-I asphaltic concrete, or as ordered by the Engineer, unless otherwise required by the Governing Municipality. Minimum width of the wearing surface shall be the same as the base.

F. Should the repaired area be six feet or more in width and have a length of one city block or more, the asphaltic concrete shall be placed with a finishing machine and rolled with an 8-ton tandem roller to conform to the grade of the existing pavement. For smaller repairs, the asphaltic concrete shall be spread by hand and struck off with a straight edge sufficiently high so that when it is compacted with an 8-ton roller it will conform to the grade of the existing pavement.

3.06 TYPE IV PAVING REPAIRS (Concrete Slab - Rigid Pavement)

A. Type IV repairs will be used when the restoration work falls within the limits of existing rigid pavement.

B. Paving repairs shall be similar to Type III paving repairs except that No. 4 reinforcing steel bars spaced 12 inches on centers both ways shall be substituted for the mesh reinforcement, and the slab shall be 8 inches thick instead of 6 inches, with the top of the concrete matching the elevation and finish of the existing pavement. The asphaltic concrete surface course is not required.

3.07 TYPE V PAVING REPAIRS (Asphaltic Concrete Wearing Surface Overlay)

A. Type V paving repairs shall be made where noted on the Plans and/or as ordered by the Engineer or Record. Type V paving repairs shall consist of a machine-laid asphaltic concrete wearing surface overlay, which shall be a nominal one-inch thick asphaltic concrete, meeting the material requirements of Type I repairs, as specified hereinabove. As used herein, "overlay" shall mean Type V paving repairs. A special wearing surface may be substituted, if required.

B. In general, the overlay shall be applied in a full lane width or widths, after the permanent paving repairs over the trench have been made. Type V is usually in addition to required Type I and Type II paving repairs. Since the quantity of Type V repairs that may be required is usually unknown until pavement restoration work begins, Type V repairs may be established in the Proposal on a contingent basis.

C. All longitudinal and transverse asphalt replacement overlay wearing surfaces shall butt into adjacent existing asphalt wearing surfaces in full lane asphaltic pavement restoration. The finish elevation of the new full lane overlay shall meet existing elevations adjacent to the new work.

D. The existing asphaltic concrete surface shall be saw cut for its full depth or 1-inch minimum, and then stripped back for at least 2 feet into the area to be overlaid to a second cut which shall also be in clean straight lines. The second, or interior, cut edge shall be rolled with a tandem roller weighing not less than 8 tons before the overlay is applied. The stripped area shall be used to provide a smooth transition or "feather" area between the overlay and the existing pavement. Before placing the overlay, all cut edges and the surface of the stripped area shall be tack coated with emulsified asphalt as specified hereinbelow.

E. If the Contractor requests in writing to "feather" the longitudinal edge, and if written permission is granted to "feather" the asphalt by the Department and the local municipality, a sanded mix of 70-30 type shall be used. "Feathering" shall begin 18 inches from the tapered edge.

F. Prior to installing a full lane width overlay over existing asphaltic pavement the trench and shoulders over the pipe shall be sawcut and filled with asphaltic concrete to the required depth, terminating flush with the existing adjacent asphalt in accordance with the municipality having jurisdiction over the work for Types I, II or M. Type V overlay will be installed as detailed above.

G. When a minor amount of asphalt surface will remain, generally with large pipe installations, after the pipe has been installed and the required longitudinal saw cutting of the asphaltic pavement completed, the Contractor may request permission to remove all the asphalt in the lane, by saw cutting the asphalt adjacent to the existing lane, then placing the Type V overlay flush with the adjacent asphalt. This would require that the Type I, II or M finish elevation be lowered 1 inch to allow for the Type V overlay.

H. Before the overlay is applied, existing surfaces shall be swept clean of all dirt and debris, using a power driven broom if warranted by the size of the location to be overlaid and/or as ordered by the Department. Pavement edges shall be cleared of all encroaching vegetation,

loose sand, rock and all other foreign matter. When the existing surface is thoroughly clean, a tack coat of Emulsified Asphalt Grade RS-2 (anionic) shall be applied at the rate of approximately 0.10 gallon per square yard, in accordance with Section 02741, immediately followed by the asphaltic concrete overlay.

I. Machine-laid overlay shall be placed by means of an approved mechanical spreader and finisher, and the mixture shall be compacted to true grade and cross section by means of a tandem roller weighing not less than 8 tons.

J. The compacted overlay shall be thicker as required to produce a smooth uniform surface free of any irregularities, but shall not be less than one inch in thickness. Existing depressed areas in the asphaltic pavement, which could collect water after a rainfall shall be corrected before placing the asphaltic overlay. Rolling shall proceed as close behind the spreading of the asphaltic overlay as possible, and all materials shall be completely compacted the same day it is placed.

3.08 TYPE VI PAVING REPAIRS (Limerock Base - Sand Seal Surface)

A. The use of Type VI repairs is usually confined to the restoration of excavations in existing sand-seal surface areas or streets.

B. Repairs for restoration of excavations in existing sand-seal areas or roads shall consist of an 8-inch thick limerock base over the excavation and forming a shoulder 12 inches wide on each side, with the surface level with the existing grade, and a sand-seal surface course over the prepared base and complete width of the existing area or street where such existing sand-seal surface exists, for the full length of the cut.

C. Limerock base courses over excavations shall be as specified under Type I paving repairs. After the bonded base has dried sufficiently, the entire surface shall be swept to break the glaze and remove all traces of loose dirt, sand and other debris.

D. A bituminous surface treatment shall then be applied consisting of emulsified asphalt, Grade RS-2 (anionic) at a rate of approximately 0.10 gallon per square yard. The surface treatment shall immediately be covered with clean approved sand, spread by mechanical device at a rate sufficient to insure against bleeding through the sand cover, rolled and then opened to traffic and permitted to cure. During the curing period, additional sand shall be applied, if required, to prevent possible pickup of the new surface by traffic. Excess sand cover shall be swept away and removed.

3.09 TYPE M PAVING REPAIRS (Limerock Base - Asphaltic Concrete Surface)

A. Type M paving repairs shall be made where noted on the Plans and will be used only when the restoration work falls within the limits of the City of Miami. Repairs shall be similar to Type I paving repairs except for the dimensions of the limerock base and the asphaltic concrete surface course.

B. Type M paving repairs shall be made with an 12-inch thick compacted limerock base and a minimum 1½-inch thick asphaltic concrete surface as detailed in the Standard Details. Minimum width for the base shall be equal to the trench width plus one foot.

C. The backfill previously placed and compacted shall be excavated to the required depth below the existing road surface and the existing paving shall be cut back beyond all excavations, using an abrasive disc saw to trim the edges to straight and true lines. Twelve inches of limerock base shall be placed in two layers, each layer compacted to not less than 98 percent density. During rolling, it shall be wet down as necessary to secure the greatest possible compaction. After rolling, the entire surface shall be thoroughly scarified to a depth of not less than 3 inches and shaped to conform to the existing surface, then watered and rolled again. Rolling and watering shall continue until the entire depth of the base is bonded and compacted into an unyielding mass.

D. The asphaltic concrete shall be plant mixed, using the best grade of local aggregates of approved size and gradation and mixed with an approved binder and conforming to either the State of Florida Department of Transportation Specifications, Type S-1 Asphaltic Concrete, Section 331-1 through 331-5, or, City of Miami Public Works Type M, as ordered by the Department. Where the width of the repair permits, the material shall be placed by means of an approved mechanical spreader and finisher. The mixture shall be compacted to true grade and cross section by means of a tandem roller weighing not less than eight tons. The compacted asphaltic concrete mixture shall not be, in any case, less than 1½-inch in thickness. Rolling shall proceed as closely behind the spreader as possible and all material shall be completely compacted the same day it is placed.

E. The asphaltic concrete wearing surface shall match the thickness of the adjacent roadway, but not greater than 3 inch nor less than 1-1/2 inches as specified in the Standard Details. Minimum width for the wearing surface shall be equal to the trench width plus two feet.

3.09 SLURRY SEAL COAT

A. When pavement restoration work falls within the City of Coral Gables, the existing pavement may have to be slurry-sealed as specified in Coral Gables Ordinance No. 1779. Slurry-seal repairs shall be made where ordered by the Engineer of Record or the Department.

B. Before any material is laid, the existing surface shall be cleaned with brooms or power blowers. Vegetation which has overgrown the edges shall be removed. All cracks, potholes and depressions shall be brought up to grade with bituminous concrete skin patching.

C. A tack coat, if required, shall consist of emulsified asphalt SS-1h, diluted with 3 parts of water, sprayed and squeegeed or broomed at a rate of 0.1 to 0.2 gallons per square yard.

D. A minimum thickness of 1/8-inch to a maximum of 1/4-inch of slurry mix shall be spread by a drag distributor at a maximum rate of 180 feet per minute. Any ridges or surplus material shall be smoothed by hand squeegee. The pavement shall be kept damp with a fog spray just ahead of the machine.

E. A second coat shall not be applied to, nor traffic permitted to drive upon, the first application until it has thoroughly dried. (A dry condition is such that an automobile tire track does not show after driving on the surface).

3.10 ASPHALT COLD MILLING

A. The Contractor shall perform asphalt cold milling where called for on the Plans or as required for a complete installation, when approved or requested by the Department. Cold milling shall be done using an automated pavement planer capable of maintaining an accurate depth. Cold milling equipment shall meet the approval of the Department and governing agency having jurisdiction at the location of the pavement milling operation. All charges for maintenance of traffic, transportation of personnel, equipment and other mobilization charges shall be considered as incidental to the cold milling operation.

B. Cold asphalt milling shall be provided to improve the rideability of the finished pavement, lower the finished grade adjacent to an existing curb prior to resurfacing or to completely remove existing pavement. The overall length of the milling machine (excluding the conveyor) shall be a minimum of 18 feet, and having a minimum cutting width of six feet. The milling operation shall be operated to effectively minimize the amount of dust being emitted from the machine. Prewetting of the pavement may be required. In areas where milling is to be performed around Department utility structures such as manholes, valve boxes etc., proper caution shall be taken as not to damage any of the structures. Saw-cutting of the concrete surrounding the structure and using a pick or other means so as not to disturb the structure shall be employed to prevent any damage. Prior to opening an area which has been milled to traffic, the pavement shall be thoroughly swept with a power broom or other approved equipment to remove to the greatest extent practicable, the fine material which will dust under traffic. This operation shall be conducted in a manner so as to minimize the potential for creating a traffic hazard and to minimize air pollution.

C. The milling operation shall be continuous so as to complete each site without any delays. All milling operations shall be coordinated by the Department Inspector.

D. Traffic maintenance charges shall include the installation and maintenance of all traffic control and safety devices, in accordance with specifications outlined in the Dade County Public Works Manual. In addition, the Contractor shall provide all barricades, flashing warning lights and/or arrow boards necessary to maintain safety and warn motorists of the construction.

3.11 REPAIR OF DAMAGE PAVEMENT

A. All damage to pavement by the Contractor as a result of Work under this project shall comply with "DAMAGE BY CONTRACTOR", above, and shall be repaired in a manner satisfactory to the Department. The repair shall include the preparation of the subgrade, the placing and compacting of the limerock base, the priming of the base, the placing and maintaining of the surface treatment, all as specified herein.

B. The width of all repairs within the work area shall extend at least 12 inches beyond the limit of the damage. The edge of the pavement to be left in place shall be cut to a true

edge with a saw or other acceptable method so as to provide a clean edge to abut the repair. The line of the repair shall be uniform with no irregularities. Repair of damage by the Contractor beyond the work area shall be approved by the governing agencies having jurisdiction over the work prior to commencing the work.

3.12 CONCRETE PAVEMENT REPAIR

A. This type of repair shall be made only on Florida Department of Transportation roadways when the original pavement is concrete.

B. The existing pavement shall be saw cut in straight lines as outlined by the Department at the location of the replacement. The pavement shall be removed and the fill shall be mechanically compacted to 98% of the maximum density obtainable as determined by AASHTO Standard T-180. The fill in the trench and shoulders shall be brought to a depth equal to the thickness of the existing concrete pavement, but not less than 8 inches in any case. The opening thus formed, shall be filled with concrete having a design strength of 5,000 psi and made with High Early Strength Cement. The concrete slab shall be reinforced with ½-inch steel reinforcing rods, 12 inches on center each way, placed 2 inches above the bottom of the slab. The surface of the slab shall be struck off with a screed and finished with a wood float and brush to conform to the grade and finish of the existing pavement. Apply liquid curing compound after initial set. The Contractor shall provide adequate means to protect the slab until it has cured sufficiently to withstand vehicular traffic without spalling or breaking apart. Construction joints and expansion joints in the original pavement shall be reproduced in the repair with matching materials.

3.13 STATE ROAD PAVEMENT RESTORATION (1:10 Mix / Flowable Fill Backfill and Base and Asphaltic Concrete Surface)

A. General

1. All work performed within the right-of-way of the Florida Department of Transportation (DOT) shall comply with the requirements and conditions of the DOT, including the requirements and conditions of the DOT permits and with all requirements and conditions of these specifications.

2. The installation shall be coordinated with the DOT, the Department and the Contractor. The existing pavement shall be saw cut in straight lines, as outlined by the Department at the location of the restoration. The Contractor shall not begin work until he has received permission from them to do so.

3. State Road pavement restoration, where required and where specifically authorized by the Engineer in writing, shall be made with a backfill and base of "1:10 cement/sand concrete mix" or "flowable fill", as specified in Section 03375, a 3-inch thick asphaltic concrete course, machine-laid in two equal layers, and a 1-inch thick asphaltic concrete wearing surface(for full lane width).

B. Installation of Sand/Cement Mix

1. Installation of 1:10 Mix: In all cases, regardless of water-table location, the 1:10 mix shall be placed from a plane 12 inches above the top of the pipe to an elevation 3 inches below the adjacent asphaltic surface.

2. Installation of "Flowable Fill" Mix:

   See Section 03375, "Flowable Fill".

C. Installation of Asphaltic Concrete Course

1. A 3-inch thick asphaltic concrete course shall be machine-laid in two equal layers. Then as required by the Florida D.O.T., the Contractor may be directed to cold-mill one inch, as described in Article 3.10, herein, and replace with one inch of material.

2. After the base surface has been properly prepared and is dry and ready to receive the wearing surface, a tack coat of emulsified asphalt (Grade RS-2) shall be applied at a rate of 0.10 gallon per square yard, immediately followed by the asphaltic concrete. The tack coat shall be applied to the entire base uniformly, and shall thoroughly coat all surfaces. Care shall be taken to tack coat and bond the edges of surrounding pavement.

3. The 3-inch asphaltic concrete course shall be plant mixed, using the best grade of local aggregates of approved size and gradation and mixed with an approved binder and conforming to the State of Florida Department of Transportation Specifications, Type S-1 Asphaltic Concrete, Section 331-1 through 331-5. Where the width of the repair permits, the material shall be placed by means of an approved mechanical spreader and finisher. The mixture shall be compacted to true grade and cross section by means of a tandem roller weighing not less than eight tons. The compacted asphaltic concrete mixture shall not be, in any case, less than three inches in thickness. Rolling shall proceed as closely behind the spreader as possible and all material shall be completely compacted the same day it is placed.

D. Installation of Friction Courses

1. This type of repair shall be made only on Florida Department of Transportation roadways to replace damaged existing friction courses. The particular friction course to be used at any repair location shall be as designated by the D.O.T. for that location.

2. There are 4 mixes designated by the D.O.T. as Friction courses, FC-1, FC-2, FC-3 and FC-4. Each is specified in D.O.T. Specifications, Section 337. The basic ingredients are also covered above in "Bituminous Paving Materials".

3. Methods of application are similar to those of Type S-I asphaltic concrete as specified above for Type III repairs, except that friction courses shall have a nominal thickness of 5/8 inch. The 5/8-inch nominal friction course may be placed over the 3-inches of newly placed Type S-1 asphaltic concrete or the existing asphalt concrete pavement may be milled to a nominal depth of 5/8-inch to allow for the placement of the FC-2 over the existing asphaltic concrete, as approved by the Department. Additional depth of milling of asphaltic concrete may be required by the Department for Type S-1 asphaltic concrete.

4. If the friction course is laid the same day that the underlying course was laid, no tack coat or primer is required, but if the underlying course is old enough to have cured, a tack coat of emulsified asphalt shall be applied at the rate of 0.10 gallons per square yard and topped with a 5/8-inch thick, machine-laid friction course.

3.14 STATE ROAD PAVEMENT RESTORATION (Rock Base and Asphaltic Surface Pavement)

A. These types of repairs shall be made only on Florida Department of Transportation roadways when the original pavement is other than concrete.

B. The existing pavement shall be saw cut in straight lines, as outlined by the Department at the location of the replacement, for the new asphaltic concrete. The pavement and fill in the trench and shoulders shall be removed for a varied depth of between 3 inches at the sides of the repair, and 21 inches over the trench and recompacted, if necessary. The opening thus formed shall be filled to a point 3-inches below the pavement surface with a base course of new limerock placed in layers, each 4-inches thick. The top 6-inches of sub-base and each 4-inch layer of new limerock shall be mechanically compacted to 98 percent of the maximum obtainable density but need not be water-bonded.

C. The compacted limerock base shall be primed at the rate of 0.10 gal. per square yard and then topped with a 3-inch thick wearing surface of Type S-I asphaltic concrete, or a 2-inch thickness of Type S-I and a 1-inch thickness of wearing surface. The asphaltic concrete shall be placed and finished as specified above.

END OF SECTION