PART 1 GENERAL

1.01 SUMMARY

A. Furnish labor, equipment, and material required for cutting, removing, protecting, replacing or stabilizing existing roadways, driveways and pavement of the various types encountered, removed or damaged under this Contract.

B. Existing utility castings, including valve boxes, manholes, handholes, pull boxes, inlets and similar structures in the areas of trench restoration, pavement replacement and pavement overlay shall be adjusted to be flush with the surface of the finished work, at no additional cost to the OWNER.

C. Protection for pavements, limerock base courses and asphaltic surface courses, within the work area.

1. Payment for pavement restoration will be made only where such limerock base courses or surface courses are encountered within the limits defined in the pavement repair details shown in the Drawings and/or in the Standard Details.

2. 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, at no additional cost to the OWNER.

3. In writing, notify the authority having jurisdiction over the street, of existing damaged pavement prior to proceeding with work in the vicinity.

4. Forward a copy of these notices to the ENGINEER.

D. Permanent pavement repair shall be in accordance with the details shown in the Drawings and/or in the FDOT Standard Details herein with edges straight and parallel and patches rectangular in plan.

1. Paving replacement required beyond the limits shown in the details, and as called for in the Specifications, shall be at the CONTRACTOR's expense.

2. Where trenches are located out of the existing pavement and damage occurs to the pavement, it shall also be replaced at no expense to the OWNER.
E. Promptly replace pavement markings removed or obliterated, using like materials and without expense to the OWNER.

PART 2 PRODUCTS

2.01 MATERIALS

A. The percentages of maximum density for subgrade and limerock base specified herein are minimum.

1. Greater percentages of maximum density shall be obtained, if so required by the governing authority having jurisdiction over the work location.

B. 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.

1. General construction requirements for hot bituminous mixtures specified herein shall conform to D.O.T. Specifications, Section 330, as applicable.

C. Equipment necessary for construction shall be on the job site in first class working condition.

1. Spilling or dropping of petroleum products is prohibited and defective equipment shall be removed or replaced immediately.

2. Comply with clean up requirements.

D. 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.

1. The temperature of the mixture at the time of spreading shall be within 25 °F of the temperature set by the ENGINEER.

2. No mixture shall be spread when the air temperature is less than 40 °F nor when the spreading cannot be finished and compacted during daylight hours.

E. Mixture caught in transit by a sudden rain may be laid at the CONTRACTOR's risk, if the base is in suitable condition.

1. Under no circumstances shall asphalt material be placed while rain is falling, or when there is water on the area to be covered.
PART 3 EXECUTION

3.01 TEMPORARY PAVING

A. Prior to commencing excavation, the asphalt surface shall be sawcut within the limits of the allowable trench width.

1. Temporary paving will be required along the entire route where the original paved surface is removed.

2. Temporary paving shall be placed the same day the trench is backfilled.

3. The trench shall be backfilled as required in Trenching - Section 02319, up to 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.

4. The liquid asphalt shall be Grade RC-70 conforming to the requirements of D.O.T. Specifications, Section 916-2.

5. The sand shall conform to the requirements of D.O.T. Specifications, Section 902 for fine aggregate.

B. The cold mix shall be installed one block at a time not crossing intersections to a maximum unpaved ditch length of 1200 feet.

1. When either of these limits is reached, complete the installation of paving prior to continuing with his excavation work.

2. Backfill, compaction and temporary paving is to keep pace with the pipe installation.

3. Written permission must be obtained from the Department and the municipal agency permitting the work to allow greater lengths than 1,200 feet.

4. 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 remove the 1 inch of cold mix and surplus backfill.

1. Replace 1 inch of cold mix and surplus backfill with the specified compacted limerock base course and asphalt within the approved working limits.

2. Municipal agencies permitting this work may accelerate the time for removal of the cold mix, at their discretion.
D. Maintain the temporary pavement in a condition satisfactory to the ENGINEER until its removal.

1. Removal shall include surplus backfill material.

2. Replacement shall be made within 30 days with the permanent pavement.

3. In replacing the temporary paving with permanent pavement, work shall be completed in sections compatible with specified traffic maintenance procedures.

E. No payment shall be made for temporary paving work and the cost for such work shall be included in the prices bid for other applicable items of work.

F. Should the CONTRACTOR elect to install temporary hot mix asphalt, to be left in place, in lieu of cold mix asphalt, a suitable credit for cold mix will be provided to the OWNER when the hot mix temporary asphalt is left in place and installed over properly compacted Limerock base course and shall be incorporated into the specified permanent pavement restoration as part of Type I paving replacement.

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

3.02 TYPE I PAVING REPAIRS (LIMEROCK BASE AND 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 Asphalitic concrete surface.

B. Limerock for pavement base shall be obtained from local sources where the overburden was removed from the pits prior to mining operations.

1. The limerock shall comply with the requirements of D.O.T. Specifications, Section 911.

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 excavations, using an abrasive disc saw to trim the edges to straight and true lines.

1. Eight inches of limerock base shall be placed in two layers, each layer compacted to not less than 98 percent density.

2. During rolling, it shall be wet down as necessary to secure the greatest possible compaction.

3. 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.

4. Rolling and watering shall continue until the entire depth of the base is bonded and compacted into an unyielding mass.

D. If the subgrade material becomes churned up and mixed with the limerock base course materials, 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.

E. After the limerock base course has been properly prepared and is dry and ready to receive the wearing surface, a prime coat of emulsified asphalt (Grade RS 2) shall be applied at a rate of 0.10 gallon per square yard, or as approved by the ENGINEER, immediately followed by the asphaltic concrete.

1. The prime coat shall be applied to the entire limerock base course uniformly, and shall thoroughly coat surfaces.

2. Care shall be taken to tack coat and bond the edges of surrounding pavement.

3. The tack coat shall not advance ahead of the paving by more than 300 feet in business or residential areas unless otherwise approved by the ENGINEER.

F. 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 as ordered by the ENGINEER.

1. Where the width of the repair permits, the material shall be placed by means of an approved mechanical spreader and finisher.

2. The mixture shall be compacted to true grade and cross section by means of a tandem roller weighing not less than eight tons.

3. The compacted asphaltic concrete mixture shall not be less than one inch in thickness.

4. Rolling shall proceed as closely behind the spreader as possible and material shall be completely compacted the same day it is placed.

3.03 TYPE II PAVING REPAIR (SPECIAL LIME ROCK BASE AND ASPHALTIC CONCRETE SURFACE)

A. Type II repairs will 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.

3.04 TYPE V PAVING REPAIRS (ASPHALTIC CONCRETE WEARING SURFACE OVERLAY)

A. Since the quantity of Type V repairs that may be required is usually unknown until Contract pavement restoration work begins, Type V based on pricing listed in the Bid Summary Sheet.

1. A Contingent Item may or may not be used at the option of the OWNER, and provisions contained within the Contract Documents for quantity overruns will not be applicable.

B. Type V paving repairs shall consist of a machine-laid asphaltic concrete wearing surface overlay which shall be nominal one-inch thick asphaltic concrete meeting the material requirements of Type I repairs as specified.

1. As used herein, "overlay" shall mean Type V paving repairs.

2. A special wearing surface may be substituted if required.

C. In general, the overlay will be applied in a full lane width or widths, after the permanent paving repairs over the trench have been made.

D. Longitudinal and transverse asphalt replacement overlay wearing surfaces shall butt into adjacent existing asphalt wearing surfaces in full lane asphalt restoration.

1. The finish elevation of the new full lane overlay shall meet existing elevations adjacent to the new work.

E. 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.

1. The second, or interior, cut edge shall be rolled with a tandem roller weighing not less than 8 tons before the overlay is applied.

2. The stripped area shall be used to provide a smooth transition between the overlay and the existing pavement.

3. Before placing the overlay, cut edges and the stripped area shall be tack coated with specified emulsified asphalt.

F. 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.

1. "Feathering" shall begin 18 inches from the tapered edge.

G. Prior to installing a full lane width overlay over existing asphalt the trench and shoulders over the pipe shall be sawcut and filled with asphalt to the required depth and terminating flush with the existing adjacent asphalt in accordance with the municipality having jurisdiction over the work for Types I, II.

1. Type V overlay will be installed as detailed above.

H. When a minor amount of asphalt surface will remain, generally with large pipe installations, after the pipe is installed and the required longitudinal saw cutting the asphalt, the CONTRACTOR may request permission to remove the asphalt in the lane, at his expense, by saw cutting the asphalt adjacent to the existing lane, then placing the Type V overlay flush with the adjacent asphalt.

1. This would require that the Type I, II finish elevation be lowered 1 inch to allow for the Type V overlay.

I. Before the overlay is applied, existing surfaces shall be swept clean of 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 ENGINEER.

1. Pavement edges shall be cleared of encroaching vegetation, loose sand, rock and other foreign matter.

2. When this existing surface is thoroughly clean, approximately 0.10 gallon per square yard immediately followed by the asphaltic concrete overlay.

3. The tack coat shall not advance ahead of the paving by more than 300 feet in business or residential areas unless otherwise approved by the ENGINEER.

4. When the existing surface is thoroughly clean, a tack coat of Emulsified asphalt, Grade PS-2 (anionic) shall be applied at the rate of approximately 0.10 gallon per square yard, immediately followed by the asphaltic concrete overlay.

5. The tack coat shall not advance ahead of the paving by more than 300 feet in business or residential areas unless otherwise approved by the ENGINEER.

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

K. The compacted overlay shall be thicker as required to produce a smooth
uniform surface free of irregularities, but shall not be less than one inch in thickness.

1. Existing depressed areas in the asphalt collecting water after a rainfall shall be corrected before placing the asphalt overlay.

2. Rolling after proceed as close behind the spreading of the asphalt as possible, and materials shall be completely compacted the same day it is placed.

3.05 STATE ROAD PAVEMENT RESTORATION (1:10 CONCRETE BACKFILL AND BASE AND ASPHALTIC CONCRETE SURFACE)

A. State Road pavement Restoration, where required, shall be made with a backfill/base of 1:10 cement/s concrete mix.

   1. In cases, regardless of water table, the 1:10 mix shall be placed from 12 inches above the top of the pipe to an elevation 3 inches below the adjacent asphalt surface.

   2. A 3-inch thick asphaltic concrete course, machine-laid in two equal layers, cold-milled removal of 1 inch of pavement (for full lane width) 1 inch thick asphaltic concrete wearing surface where shown in the Drawings.

B. 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.

   1. The tack coat shall be applied to the entire base uniformly, and shall thoroughly coat surfaces.

   2. Care shall be taken to tack coat and bond the edges of surrounding pavement.

C. The 3-inch asphaltic concrete course (two 1½-inch lifts) 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 as ordered by the ENGINEER.

   1. Where the width of the repair permits, the material shall be placed by means of an approved mechanical spreader and finisher.

   2. The mixture shall be compacted to true grade and cross section by means of a tandem roller weighting not less than 8 tons.

   3. The compacted asphaltic concrete mixture shall not be less than three inches in thickness.
4. Rolling shall proceed as closely behind the spreader as possible and material shall be completely compacted the same day it is placed.

3.06 COLD MILLING

A. Cold milling of the existing pavement for 1 inch deep shall be done by using an automated pavement planer capable of maintaining an accurate depth of 1 inch.

1. Cold milling equipment shall meet the approval of the Florida Department of Transportation, or other municipality having jurisdiction, before work is started.

B. After the pavement has been milled and mechanically cleaned, a tack coat shall be applied as specified above.

C. A full lane of one-inch thick asphaltic concrete wearing surface Type S-3 Asphalt Concrete (per Florida Department of Transportation Specifications, Sections 331 and 337, respectively) shall then be applied in accordance with the above specifications.

3.07 PAVEMENT MARKINGS

A. Traffic Paint

1. Traffic paint used for this work shall conform with the requirements of Section 971-12 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, or, at the CONTRACTOR's option, fast dry traffic paint, as specified in D.O.T. Specifications, Section 971-13 may be used.

2. The colors of the paint shall be yellow or white as existed before the repair.

3. Equipment shall be of a type and design, which will readily obtain the required uniformity of application of the stripes, both as to thickness of coating and as to alignment.

   a. The paint machine shall be of the spray type and shall be capable of spraying the paint to the required spread without thinning of the paint.

   b. The paint tank shall be equipped with a mechanical agitator.

   c. The nozzle shall have cut-off valves, which will apply broken or skip lines automatically.

   d. Each nozzle shall also be provided with suitable line guides, either metallic shrouds or air blasts.

4. Painting shall be done only during daylight hours and, as far as practicable,
shall be terminated in time to permit sufficient drying by sunset.

a. No paint shall be applied when moisture is present on the surface to be painted or when the air temperature is below 40 °F.

b. Painting shall not be done when winds are sufficient to cause spray dust.

5. The surface that is to be painted shall be cleaned, by compressed air or other effective means, immediately before the start of painting, and shall be clean and dry when the paint is applied.

a. Vegetation or soil shall be removed from the pavement before edge stripping is begun.

6. The paint shall be thoroughly mixed before it is poured into the painting machine and no thinning of the paint will be allowed.

a. Before the start of each day's work the paint container, the connections, and the spray nozzles on the machine shall be thoroughly cleaned with paint thinner or other suitable cleaner.

7. The traffic stripe shall be of the specified width with clean, true edges and without sharp breaks in the alignment.

a. A uniform coating of paint shall be obtained and the finished stripe shall contain no light spots or paint skips.

b. Stripes, which do not have a uniform, satisfactory appearance, both day and night, shall be corrected.

8. Newly painted stripes, including edge stripes, shall be protected until the paint is sufficiently dry to permit vehicles to cross stripe without damage from the tires.

a. While the center line stripes are being painting, traffic shall be routed to the right side of the painting operations and the newly painted stripe.

b. When necessary, a pilot car shall be used to protect the painting operations from traffic interference.

9. Portions of the stripes damaged by passing traffic or from other cause shall be repainted at the CONTRACTOR’s expense.

B. Thermoplastic Traffic Stripes and Markings

1. Thermoplastic pavement markings, including stripes, pavement messages, stop bars, directional arrows, reflective pavement markers and other miscellaneous items, will be replaced as existed before the repair was
made.

a. The thermoplastic compound shall be as specified in Section 711 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

b. The thermoplastic compound shall be extruded or sprayed onto the pavement surface in a molten state by mechanical means, with surface application of glass spheres; when required, and upon cooling to ambient pavement temperature shall produce an adherent pavement marking of specified thickness and width and capable of resisting deformation.

2. The colors of the compound shall be white or yellow as existed before the repair.

3. Reflective Pavement Markers and their installation shall conform to the D.O.T. Specifications, Section 706.

4. Where thermoplastic is to be applied to cement concrete pavement, a sealing primer as specified in D.O.T. Specifications, Sections 711-2.2, shall be applied in advance of the placing of the stripes.

5. The thermoplastic shall be applied to the pavement utilizing extrusion or spray application equipment.

   a. The application equipment shall be so constructed as to provide continuous mixing and agitation of the material.

   b. Conveying parts of the equipment between the main material reservoir and the shaping die or gun shall be so constructed as to prevent accumulation and clogging.

   c. The equipment shall be constructed so that mixing and conveying parts up to and including the shaping die or gun, maintain the material at the plastic temperature with heat transfer oil or electrical element controlled heat.

   d. Direct fire heat transfer will not be allowed.

6. The application equipment shall be so constructed as to insure continuous uniformity in the dimensions of the stripe.

   a. The applicator shall provide a means for cleanly cutting of square stripe ends and shall provide a method of applying "skip" lines.

7. Glass spheres applied to the surface of the completed stripe shall be applied by an automatic bead dispenser attached to the striping machine in such a manner that the beads are dispensed almost instantaneously upon the installed line.
8. Special kettle(s) shall be provided for melting and heating the thermoplastic material.
   a. The kettle(s) shall be equipped with automatic thermostatic control devices in order to provide uniform temperature control and prevent overheating of the material.
   b. The applicator and kettle(s) must be so equipped and arranged as to satisfy the requirements of the National Fire Underwriters, and the State of Florida.

9. Applicators shall be mobile and maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc.
   a. The applicator equipment to be used on roadway installations shall consist of either hand equipment or truck mounted units depending on the type of marking required.

10. The hand applicator equipment shall be insulated and shall have sufficient capacity to hold 150 pounds of molten material and shall be sufficiently maneuverable to install crosswalks; lane, edge and center lines; arrows and legends.
   a. The truck mounted unit for lane, edge, and center lines shall consist of a mobile self contained unit carrying its own material capable of operating at a minimum speed of five miles per hour while installing striping.

11. Application time, weather limitations and surface preparation shall be in accordance with D.O.T. Specifications, Sections 710-4, 710-5 and 710-8.

12. The material, when formed into traffic stripes or other markings must be readily renewable by placing an overlay of new material directly over an old line of compatible material in such a manner that no splitting or separation takes place.

13. The application temperature shall be within the range specified by the manufacturer of the thermoplastic compound being used.

14. All pavement edge lines, gore, island and diagonal strip markings, bike lane symbols and messages, wherever located, shall have a minimum thickness of 0.060 inch at the edges and a maximum thickness of 0.120 inch at the center.
   a. A minimum average film thickness of 0.060 inch shall be maintained.
   b. Lane lines, center lines, transverse markings (except shoulder markings), and pavement markings within traffic wearing area (such as dotted turning guide lines) shall have a minimum thickness of 0.090 inch at the
edges and a maximum thickness of 0.188 inch at the center.

c. A minimum average film thickness of 0.090 shall be maintained.

d. Thickness measurements shall be an average in over a three foot length.

15. The glass sphere top coating shall be applied by a type of glass sphere dispenser or gun, which will embed the spheres into the line surface to at least one-half their diameter.

a. The glass sphere top coating shall not incur more than a 10 percent loss during the first 30 days of traffic exposure.

END OF SECTION