|  |  |
| --- | --- |
| SECTION 1 – ASPHALTIC CONCRETE PAVING |  |
| Resurfacing |  |
| Repair | 32 01 17 Flexible Paving Repair (Asphalt) |
| Removal and Replacement |  |
|  |  |
| SECTION 2 - Pavement Marking |  |
| Striping (Installing painted instructions, symbols and lines on new and existing asphalt surfaces) | 32 17 23 Pavement Markings |
|  |  |
| SECTION 3 – COAL TAR EMULSION SEALER |  |
| Sealing or resealing of existing asphalt surfaces | 32 12 36 Seal Coats |
|  |  |
| SECTON 4 - MISCELLANEOUS |  |
| Furnish and install compacted base materials | 32 11 00 Base Courses |
| Furnish and install concrete car bumpers | 32 17 13 Parking Bumpers |
| Installation of asphalt speed tables and speed bumps | 32 17 16 Speed Bumps |
| Installation of herbicides | 31 31 19 Vegetation Control |
| Surface cleaning | 32 01 11 Paving Cleaning |
| Demolition (asphalt removal) services | 02 41 13.13 Paving Removal  32 05 05 Selective Demolition for Exterior Improvements |

SECTION 1 – ASPHALTIC CONCRETE PAVING (Resurfacing & Repair)

PART 1 - GENERAL

* 1. Scope of Work:

A. Work done under this Section shall include, but not be limited to, the following work:

1. Asphalt Pavement Resurfacing
2. Asphalt Pavement Repairs
3. Asphalt Pavement Removal & Replacement

PART 2 - PRODUCTS

2.01 Materials:

* + - * 1. Asphaltic Concrete Materials

1. Asphaltic concrete surface course shall be Type S-3 Asphaltic Concrete (a minimum of compacted 1” thickness) and shall conform to Section 311, paragraphs 331-1 through 331-5 of the Florida State Department of Transportation Standard Specifications, 2000 Edition. The contractor shall submit a design mix to be used on the project for approval by the Project Coordinator before placement of the surface course is begun.
2. The asphaltic concrete leveling binder shall be Type S-3 Modified Asphaltic Concrete and shall conform to Section 332, paragraphs 332-1 through 332-4 of the Florida State Department of Transportation Standard Specifications, 2000 Edition.
3. Mixing Asphaltic materials – all Asphaltic concrete shall be hot plant mixed and furnished from a commercial hot-mix asphalt plant.
4. Aggregates shall have a temperature between 275o F and 325o F when placed in the mixer. Liquid asphalt shall be heated to a temperature between 27o F and 350o F and shall be added during mixing.
5. Mix combined aggregate and liquid asphalt in a pug mill mixer with a capacity not less than 3000 lobs per batch. Continue mixing for at least 45 seconds after all ingredients have been placed in the mixture and until liquid asphalt is distributed uniformly throughout the mixture.
6. Mixture shall have a temperature between 290o F and 320o F when it leaves the plant.
   * + - 1. Tack Coat
7. The bituminous material to be used to tack coat shall be emulsified asphalt, Grades RS-L, CRS-L, SS-1, CSS-1, SS-1H, CSS-1H, AE-60, AE-90, AE-150, CRS-2H, Special MS Emulsion, or Asphalt Emulsion Prime (AEP) meeting the requirements of Section 300, paragraphs 300-1, 300-2/3. 300-5, 300-7 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, 2010 Edition and supplements. The materials specified shall not be diluted prior to use.

PART 3 - EXECUTION

* 1. Equipment:

1. Paving Equipment

Spreading, Self-propelled asphalt paving machine capable of maintaining line, grade and minimum surface thickness specified, except spreader boxes may be used in areas where specifically approved by Project Coordinator.

1. Compacting Equipment

Compacting equipment shall be self-propelled tandem rollers having minimum weight of ten (10) tons, and hand-held vibrator compactors, weighing not less than fifty pounds, may be used in areas not accessible to rollers when specially approved by Project Coordinator.

3.02 Preparation for Resurfacing:

1. Cleaning

Where the new surface course is to be placed on the existing pavement, the old pavement shall be cleaned of dust and all deleterious material by use of mechanical power brooms or blowers, supplemented by hand brooming where necessary.

1. Oil and Grease Removal

1) Remove oil and grease spots that have not permanently damaged or softened the pavement by scrubbing with detergent and flushing with water. If spot is so severe as to have caused permanent pavement deterioration, or if pavement has failed due to other causes, remove pavement to full depth of damage and replace with full depth of asphalt mix.

2) Immediately before application of sealer, clean surface of all loose dust, dirt leaves, and any other foreign materials by use of mechanical power brooms or blowers, supplemented by hand brooming where necessary.

1. Weed/Vegetation Control

Areas showing invasive vegetation shall be treated with a herbicide designed to immediately eliminate vegetation and prevent regrowth for a minimum of 3 months.

1. Crack Sealing

Cracks over ½” in width shall be routed, cleaned and filled with Gem Seal Crack Flex Pro-S or approved equal.

1. Tack Coat

1) Areas to be resurfaced or newly prepared sub-base areas shall be given a tack coat prior to installation of new pavement surface per the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, 2010 Edition and supplements.

2) Apply tack coat with pressure distributor (Tack Truck) except that on a small area, application may be by other mechanical devices or by hand methods.

3) Heat bituminous material to suitable temperatures and apply in thin, uniform layer.

4) Rate of application shall be between 0.05 to 0.15 gallons per square yard of surface.

5) Tack coat shall be applied sufficiently in advance of laying asphalt mix to permit drying but shall not be applied so far in advance that it might lose its adhesiveness as a result of being covered with dust of other foreign material.

6) Keep tack coat surface free of traffic until subsequent layer of asphalt mix is applied.

3.03 Paving:

1. Asphalt Application

1) Contractor may lay mixture caught in transit by sudden rain only at his own risk.

2) Should the mixture prove to be unsatisfactory, the Contractor shall remove and replace it with satisfactory mixture at his/her own expense.

3) In no case shall mixture be laid while rain is falling or when there is water on surface.

4) Do not place asphaltic concrete when surface temperature is 40° F or lower nor during fog or other unsuitable conditions.

5) Do not accept material unless it is covered with tarpaulins until unloaded and unless it has a temperature of at least 275° F.

6) Temperature of mixture at time of spreading shall be between 270° and 350° F.

7) Ensure asphalt pavement is minimum recommended temperature immediately after placing and prior to initial rolling, but not lower than 275o F.

8) Place asphalt pavement to a compacted depth of one (1) inch minimum. Asphalt shall be Type S-3. Asphalt mix shall be installed with a box type applicator.

9) Compact asphalt paving course to 95% of required density with approved rolling equipment. Start compaction as soon as pavement will bear equipment without checking or undue displacement

10) Carry out compaction in three (3) operations in pass sequence. Ensure each pass of roller overlaps previous passes to ensure smooth surface free of roller marks. Keep roller wheels sufficiently moist so as not to pick up material. Check surfaces after rolling and repair with hot material. Continue final rolling until all roller marks are eliminated and course has attained maximum density.

11) Perform hand-placement and hand-tampering in areas not accessible to rolling equipment. Compact areas to the required density.

12) Ensure joints made during paving operations are straight, clean, vertical and free of broken or loose materials. Make vertical surfaces of joints to ensure tight bond. Prime joints between old and new pavements. Or between successive days works, to ensure continuous bond between adjoining work. Construct joints to have same texture, density and smoothness as other sections of asphaltic concrete course. Clean contact surfaces and apply tack coat prior to installing new or adjoining sections.

13) Patching: Remove and replace paving areas mixed with foreign materials and effective areas. Cut-out such areas and fill with fresh, hot asphalt concrete. Compact by rolling to 95% maximum, surface density and smoothness. Patch to be 6” placed in 2” lifts.

14) After final rolling, do not allow vehicular traffic on newly paved areas until surface has cooled to atmospheric temperature and hardened.

3.04 Quality Assurance:

1. Workmanship

Perform a flood test in presence of an Engineer or Project Coordinator using a water truck. If a depression is found where water ponds to a depth of more than ¼” fill or otherwise correct to provide proper drainage. Saw-cut area and repair with a full-depth asphaltic patch.

1. Clean-up

Remove excel asphalt, sand, rock and other debris from site after completion of pavement operations.

1. Protection of New Pavement

1) Provide necessary barriers to seal off all wheeled traffic for a period of at least 48 hours.

2) Repair damaged to pavement from any cause, prior to final acceptance of project to owners.

SECTION 2 - Pavement Marking (Striping)

PART 1 - GENERAL

1.01 Scope of Work:

Work done under this section shall include, but not limited to, the following work:

Installing painted instructions, symbols and lines on new and existing asphalt surfaces.

PART 2 - PRODUCTS

2.01 Materials:

1. Paint

1) Material shall be water borne traffic paint.

2) Colors shall be yellow, blue and white

3) Provide products as listed in the (FDOT) Qualified Products List, most recent edition.

4) Stored paint which hardens or livers to the extent that remixing will not produce a smooth, uniform consistency, shall not be used in the work.

1. Mixing

All paint delivered to the work site shall arrive completely mixed.

PART 3 - EXECUTION

3.01 Equipment:

Painting Equipment

1) Use equipment that will produce continuously uniform dimensions for stripes and markings or varying widths.

2) The equipment shall be capable of traveling at a uniform, predetermined rate of speed and capable of following straight lines and making normal curves.

3) Use equipment with a mechanical paint agitator that applies the paint at the required thickness without thinning the paint.

4) Use spray nozzles equipped with automatic cut-off valves to automatically apply broken lines.

3.02 Preparation for Pavement Marking:

Cleaning

1. When painting existing surfaces, immediately before application of paint, clean surface of all loose dust, dirt leaves, and any other foreign materials by use of mechanical power brooms or blowers, supplemented by hand brooming where necessary.
2. When painting new surfaces, remove any materials that would conflict with the proper installation of the new pavement markings.

3.03 Pavement Marking:

Application

1) Paint parking stripes, as shown on the plans or as directed by Project Coordinator using material and equipment in accordance with Section 971, paragraphs 971-1 1.1 through 971-1 1.7 and 971-3 3.1 through 3.4 of the Florida State Department of Transportation Standard Specifications, 2010 Edition.

2) Establish tack lines for the purpose of aligning stripes.

3) Apply paint on dry surfaces when the air temperature is at least 40o F and rising, or per more stringent paint manufacturer instructions.

4) Apply paint only when wind speed will not interfere with application or produce spray dust.

5) The required wet film thickness shall be 15 mils.

6) Apply longitudinal stripes at least 2” away from parallel construction joints in payment.

7) Utilize blue striping on all handicap parking stalls in conformance with the State of Florida accessibility requirements manual.

3.03 Quality Assurance:

1. Workmanship

1) Traffic lines shall be made straight and uniform, regardless of the condition of the existing lines.

2) All markings shall have defined edges.

1. Protection of New Markings

Protect new paint from traffic until sufficiently dry so crossing vehicles will not damage pavement markings.

SECTION 3 – COAL TAR EMULSION SEALER (Seal Coats – Sealing or Resealing)

PART 1 - GENERAL

* 1. Scope of Work:

Work done under this section shall include, but not limited to, the following work:

Sealing or resealing of existing asphalt surfaces.

PART 2 - PRODUCTS

2.01 Materials

1. Coal Tar Pitch

1) Prior to emulsification, the tar pitch shall conform to ASTM D-490, grate RT-12 specification. The pitch shall be derived from High Temperature coal tar pitch. Oil and water gas tars shall not be used even if they comply with the above ASTM specification. The emulsion shall be produced using a colloid mill to insure homogeneity and appropriate size of the particles in suspension.

2) Emulsified Coal Tar Pitch pavement sealer shall conform to Federal Specification R-P-355e.

3) Gem Seal Fed Spec Pavement Sealer or approved equal.

1. Additive Compounds

Additive compounds used shall be “Diamond Shield” or approved equivalent.

1. Sand

Silica sand shall be washed, graded, dry and free of all contaminates. The sand shall conform to the following graduation: #20 - #30 round blasting sand.

1. Crack Sealant

“Gem Seal Crack Flex or approved equal. Crack shall be routered and cleaned prior to the application of any product.

1. Water

Water used for dilution shall be potable and free of excessive mineral and contaminates. If accessible, contractor may use owner’s water source.

PART 3 - EXECUTION

3.01 Equipment:

1. Pressure Distributors

Pressure distributors shall have mechanical mixing devices incorporated in their construction to assure homogenous mixing of the emulsion and required additives. The pumping distribution system must be adequate to apply a uniform coating at the specified rates of application. Compressed air equipment will not be used for tar emulsion application.

1. Conventional Riding Applications

Conventional riding applications shall have two or more devices as such as squeegees and/or grad broom assemblies to assure even distribution of the tar emulsion system. Mechanical mixing devices will be incorporated into the construction of the applicator to assure homogenous mixing of the emulsion and required additives.

1. Mixing or Agitating Equipment

Mixing or Agitating Equipment shall be either portable or tank-type power mixer. In any case, mixers shall be of sufficient capacity to assure homogenous mixing of the emulsions and required additives and to maintain complete suspension of mineral content until the emulsion system is applied to the pavement.

3.02 Preparation for Seal Coating:

1. Surface Inspection

Contractor shall thoroughly inspect all surface areas to be sealed and shall notify the Project Coordinator in writing of any condition that would prevent the installation from being satisfactorily completed and accepted.

B. Cleaning

Where the new seal coating is to be placed on the existing pavement, the old pavement shall be cleaned by of dust and all deleterious material by use of mechanical power brooms or blowers, supplemented by hand brooming where necessary.

1. Oil and Grease Removal

1) Remove oil and grease spots that have not permanently damaged or softened the pavement by scrubbing with detergent and flushing with water until a break free surface is obtained or as directed by the Project Coordinator. If spot is so severe as to have caused permanent pavement deterioration, or if pavement has failed due to other causes, remove pavement to full depth of damage and replace with full depth of asphalt mix.

2) Immediately before application of sealer, clean surface of all loose dust, dirt leaves, and any other foreign materials by use of mechanical power brooms or blowers, supplemented by hand brooming where necessary.

1. Patching

1) Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas to base and fill with fresh, hot asphaltic concrete mixture in 2” lifts per the specifications listed in Section 1 of these specifications.

2) Compact asphalt by rolling to maximum surface density and smoothness.

1. Crack Treatment

Contractor shall use Gem Seal Crack Flex Pro-S or approved equivalent installed per manufacturer’s recommendations.

1. Asphalt Surface Treatment

Surface badly oxidized or that has lost binder erosion showing exposed aggregate shall be treated with a prime coat of asphalt emulsion, grade SS-1h, and apply at a rate of 0.05 gallons to 0.08 gallons per square yard. Thoroughly clean all surfaces prior to applying prime coats.

3.03 Emulsion Preparation:

1. Coal Tar Emulsion Mixture

1) Coal Tar Emulsion Mixture shall consist of a Diamond Shield, sand Slurry mixture per the following ratios:

|  |  |  |
| --- | --- | --- |
| Water Ratio | Sand Ratio | Diamond Shield Ratio |
| 40 gallons per  100 gallons of mixture | 400 lbs. per  100 gallon of mixture | Per manufacturer label directions |

2) Water dilutions ratios are volumetric and are based on receiving the Coal Tar Emulsion with verifiable solids content of 50 to 52%.

3) Samples of raw materials shall be required prior to project date.

1. Additives

Diamond Shield shall be added at the specified rate required prior to project date.

1. Silica Sand

Silica sand shall be added after the mix water and any required latex additives have been dispersed into the tar emulsion. Again, the mixer will be in operation during the addition of the sand to assure uniform dispersion and to prevent over loading of the mixing device. Additional amounts of water may be added if necessary should the tar system become too thick to assist in uniform application. Additional water will be added only after the Project Coordinator has been notified and additions will not exceed those amounts expressly stipulated by the Project Coordinator.

3.04 Sealer Application:

A. Weather Limitations

1. Sealer shall not be applied unless the air temperature is 50o F and rising and pavement temperature is 60o F and rising. Work shall be completed so that there is a minimum of two (2) hours of sunlight remaining after completing the day’s work.
2. Sealer shall not be applied under rainy or wet conditions such as an overcast day with high humidity. Under extremely hot weather conditions, the Project Coordinator will require the use of a water fog coat to cool the pavement to assist in obtaining a uniform coating and a good bond.
3. UNDER NO CIRCUMSTANCES shall work be performed under cold and/or wet conditions, nor shall tar emulsion be used that has been subject to freezing weather.
4. Job Formula and Applications

1) A first coat of tar emulsion with four (4) pounds of sand per gallon and four (4) percent (%) latex. Minimum coverage 35 – 40 SF per gallon. Applied in the travel lanes and turning radii.

2) Second coat shall be tar emulsion with four (4) pounds of sand per gallon and four (4) percent latex additive. Minimum coverage 35 – 40 SF per gallon. Apply to overall areas.

3) Finish coat shall be tar emulsion with two (2) percent (%) latex added, applied at 0.08 to 0.12 gallons per square yard using a spray type method. Apply to overall areas.

4) Subsequent coats shall be applied only after the previous coat has dried to a minimum of six (6) to eight (8) daylight hours for the first coat; 12 hours of daylight on second (2nd) and, 12 hours on third (3rd). All coats shall be applied at right angles to the previous coat.

5) The first and second coat shall be a squeegee application, with the finish coat being spray applied.

1. The first coat shall be squeegee applied to the drive lanes only.
2. The second coat shall be squeegee applied to all surfaces.
3. The third coat shall be spray applied to all surfaces.
4. Pavement Marking

Refer to Pavement Marking Specification in Section 2 of this specification.

3.05 Quality Assurance:

1. Workmanship

1) Contractor shall apply the seal coating mixture uniformly at the rates specified and ensure that the finished surface presents a uniform texture throughout.

2) Contractor shall take care not to coat surfaces that are not intended to receive coating materials such as sidewalks, curbs and car bumpers.

1. Slurry Sample Testing

1) The Contractor shall be responsible for providing testing by a commercial testing laboratory (approved by the Pinellas County School Board) at District expense and for insuring that the required criteria for materials is met. Random testing at the discretion of the Project Leader shall be made to document such findings. All test result documentation shall be submitted to the Project Leader as soon as the results are ready. Test results of slurry samples provided by Pinellas County School Board or its agent supersedes any other test results.

2) Testing equipment to be identified prior to quote.

1. Protection of New Seal Coated Surfaces

Protect new seal coated surfaces from vehicular and pedestrian traffic until coating is sufficiently dry.

SECTION 4 – MISCELLANEOUS

(Base Materials; Concrete Car Bumpers; Speed Bumps & Tables; Herbicides, Surface Cleaning, Asphalt Demolition & Removal)

PART 1 - GENERAL

1.01 Scope of Work:

Work done under this section shall include, but not be limited to, the following work:

1. Furnish and install compacted base materials.
2. Furnish and install concrete car bumpers
3. Installation of asphalt speed tables and speed bumps.
4. Installation of herbicides.
5. Surface cleaning.
6. Demolition (asphalt removal) services.

PART 2 - PRODUCTS

2.01 Materials

1. Shell

1) Shell Base material shall conform to the requirements of Section 913 of the Florida State Department of Transportation Standard Specifications, 2010 Edition and is a graded base material that at least 97% (by weight) of the material shall pass a 3 1/2 inch sieve and be graded uniformly down to dust.

2) Shell Base material shall consist of naturally occurring deposits formed essentially of broken mollusk shell, corals and the skeletal remains of other marine invertebrates. Live or steamed shell or man-made deposits as a by-product of the shellfish industry will not be permitted.

3) Shell materials shall be reasonably free of lumps of clay, organic matter, and other substances not defined which may possess undesirable characteristics. The material shall not contain silica sand in sufficient quantity to prevent bonding.

1. Reclaimed Concrete (crushed)

1) Reclaimed Portland cement concrete shall conform to the requirements of Section 901, paragraph 901-5 of the Florida State Department of Transportation Standard Specifications, 2010 Edition. The material shall be crushed and processed to provide a clean, hard, durable aggregate having a uniform gradation free from adherent coatings, metals, organic matter, base material, joint filers, and bituminous materials.

2) The Contractor’s (Producer’s) crushing operation shall produce an aggregate meeting the applicable gradation requirements. The physical property of requirements of 901-1.3 for Soundness shall not apply and the maximum loss as determined by the Los Angeles Abrasion FM 1-T 096 is changed to 50.

1. Concrete Car Bumpers

1) Precast concrete cement car bumpers shall be constructed using Type I Portland concrete (3000 psi @ 28 day strength, air entrained 5% to 7%) and conform to ASTM specification C150.

2) Concrete profile: Triangular cross section with sloped vertical faces, square ends, nominal size of 4” H x 6” W x 6’ L.

3) Color: Natural grey.

4) Anchor pins shall consist of #4 deformed steel reinforcing rods, 12” minimum length.

1. Herbicide

The contractor shall select, provide, and apply herbicides as required and approved by the project coordinator.

1. Asphalt Speed Tables/Speed Bumps

Refer to Section 1, Part 2 (2.01) for asphalt material requirements.

PART 3 - EXECUTION

3.01 Equipment:

Compacting Equipment

Refer to Section I, Part 3 (3.01) (B) for compaction equipment requirements.

3.02 Base Material Installation

All materials are subject to testing at an independent laboratory at owner’s expense.

1. Shell

1) Transport Shell to installation area, over shell previously placed, and dumped on end of preceding spread. Do not haul over subgrade or dump on subgrade.

2) After completely spreading shell base, shape the entire surface to the required grade and cross section after compaction. Compaction and finishing of base shall conform to the requirements of Section 913 of the Florida State Department of Transportation Standard Specifications, 2010 Edition.

3) Density Requirements: Once the proper moisture condition is obtained, compact the material to a density of not less than 98% of maximum density as determined by AASHYO T180 specifications.

1. Reclaimed Concrete (crushed)

1) Transport Reclaimed Concrete to installation area, over concrete material previously placed, and dumped on end of preceding spread. Do not haul over subgrade or dump on subgrade.

2) After completely spreading reclaimed concrete base, shape the entire surface to the required grade and cross section after compaction. Compaction and finishing of base shall conform to the requirements of Section 200, paragraph 200-6 of the Florida State Department of Transportation Standard Specifications, 2010 Edition.

3) Density Requirements: Once the proper moisture condition is obtained, compact the material to a density of not less than 98% of maximum density as determined by FM 1-T 180 specifications.

4) Moisture Content: When materials do not have proper moisture content to ensure required density, wetting or drying shall be required. Moisture content of base prior to paving shall not exceed 80% of optimum.

3.03 Concrete Car Bumpers

1. Installation

1) Set wheel stop with anchors at each parking space as shown on the plans.

2) Install units without damage to shape or finish, replace or repair damaged units.

3) Install units in alignment with adjacent work.

4) Fasten units in place with two anchors per unit bumper.

5) Drive anchors to within 1" of top surface of wheel stop, then using a setting tool drive anchor below top of stop ½" to 1’’.

3.04 Herbicide

Application

Application Rates: Apply soil treatment solution as specified and in strict accordance with Manufacturer's recommendation for mixing and application.

3.05 Asphalt Speed Tables/Speed Bumps

Installation

1) Refer to Section 1, Part 3 (3.03) (A) for asphalt installation requirements.

2) Speed bump dimensions shall be 3”H x 18”W x 10’L compacted.

3) Speed bump dimensions shall be 4”H x 12’L x 10’W compacted.

(NOTE: Width and length designations above are from FDOT Manual, “Greenbook”.)

3.06 Pavement Cleaning

Preparation

Pavement surfaces shall be cleaned of dust and all deleterious material by use of mechanical power brooms or blowers, supplemented by hand brooming where necessary.

PART 4 - DEMOLITION

4.01 Asphalt Pavement

Removal

1) Asphalt pavement removal shall be accomplished by use of mechanical equipment to either mill or crush existing asphalt pavement to a depth of 1”. Milling of existing pavement shall conform to Section 327, paragraphs 327-1 through 327-6 of the Florida State Department of Transportation Standard Specifications, 2010 Edition.

2) No stockpiling on job site of recycled asphalt pavement shall be permitted unless approved in advance by the Project Coordinator.

3) An acceptable method of removal is to saw cut and lift asphalt in larger areas.

PART 5 - SUBGRADE

5.01 Subgrade Preparation

All Subgrades shall be compacted to 98% of maximum density as determined by AASHTO T-180 specifications.

**END OF SECTION**