TECHNICAL SPECIFICATIONS
FOR
LIDE HOUSING COMPLEX – PARKING LOT REPAIR
LANDER UNIVERSITY

PREPARED BY:

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-01. SCOPE:

This section covers a crusher run stone base course to receive bituminous paving under another section, complete.

-02. PREPARATION OF SUBGRADE:

The subgrade to receive the crusher run stone base course shall be constructed in accordance with requirements of Section 208 of the Standard Specifications for Roads and Structures of the South Carolina Department of Transportation.

-03. MATERIALS FOR BASE COURSE:

Materials for the crusher run stone base course shall be in accordance with Section 306 of the Standard Specifications for Roads and Structures of the South Carolina Department of Transportation, for Type A Aggregate.

-04. APPLICATION OF BASE COURSE:

The stabilized aggregate base course shall be applied in accordance with Section 306 of the standard specifications.

-01. SCOPE:

This section covers the construction of pavement for all roads and parking areas, complete.

-02. GENERAL:

Construction of the sub-grade, base course and paving of the roadways and parking areas shall be undertaken immediately after completion of all storm drain lines and structures, all curbs and gutters, conduits and other facilities passing beneath paved areas, and all structural slabs and foundations required within or adjacent to the paved areas.

-03. SEASONAL LIMITATIONS:

No bituminous mixtures shall be applied for surface treatment between December 1st and February 28th/29th, except as directed by the Engineer.

-04. WEATHER LIMITATIONS:

Bituminous mixtures shall not be produced or placed during rainy weather, when the sub-grade or base course is frozen or shows any evidence of excess moisture nor when the moisture on the surface to be paved would prevent proper bond nor when the air temperature is less than 45 degrees F. in the shade away from artificial heat.

-05. APPLICABLE SPECIFICATIONS:

All work and materials required under this section of the specifications shall conform to the applicable sections of the Standard Specifications of the South Carolina Department of Transportation for Highway Construction, latest edition.

-06. SUBGRADE:

The subgrade shall be prepared as specified under the sections of the above specifications covering subgrade preparation, including but not limited to Section 208.

-07. CURBS AND GUTTERS:

After the subgrade has been compacted and approved by the Engineer, curbs and gutters shall be placed where shown on the plans and constructed in accordance with the requirements of the section, CURBS AND GUTTERS, CONCRETE.

-08. PRIME COAT:

A prime coat, meeting the requirements of section 303, 304, 305 or 306 of the South Carolina Department of Transportation Standard Specifications for Highway Construction, latest edition.

of 0.3 to 0.8 gallons per square yard of medium curing cut-back asphalt (RC-250 or emulsion grades RS-2 or SS-1) shall be applied with a pressure distributor at a temperature between 80 degrees F. and 140 degrees F. The prime coat shall be applied to the previously prepared base course when the atmospheric temperature is above 50 degrees F.

-09. <u>SURFACE COURSE</u>:

1. ASPHALT CONCRETE: The asphalt concrete mixture shall conform to the South Carolina Department of Transportation, Standard Specifications for Highway Construction, for Type 1 hot mix asphalt, found in Section 401 and 403. The job mix shall be approved by the engineer and no material shall be used until approved.

2. TRANSPORTATION AND DELIVERY: The mixture shall be transported from the mixing plant to the point of use in approved vehicles. Loads shall not be of such size or weight as to interfere with the efficient operation of the spreader. Loads shall not be sent out so late in the day as to prevent the completion of spreading and compaction of the mixture during daylight, unless artificial light is provided. The mixture shall be delivered at a temperature between 225 degrees F. and 325 degrees F. and within 20 degrees F. of temperature set at the mixing plant.

3. SPREADING: Upon arrival at the point of dumping, the mixture shall be dumped into the hopper and spread by mechanical pavers, true to line, grade and cross section specified and to the loose depth that will secure the required compacted thickness. The hot mixture shall be free from lumps and shall be spread while it is in a workable condition.

   After the mixture has been screeded and before roller compaction is started, the surface shall be checked, all fat spots and irregular areas removed and replaced with satisfactory material. All irregularities in alignment and grade along the outside edge shall also be corrected by the addition or removal of mixture before the edge is rolled.

4. COMPACTION: While the mixture is hot, it shall be compacted thoroughly and uniformly by rolling. The surface of the compacted mixture shall be smooth, and true to crown and grade. Any mixture that becomes loose or broken, mixed with dirt, or is in any way defective, shall be removed and replaced with fresh hot mixture which shall be immediately compacted to conform to the surrounding area. Any area showing an excess of bituminous materials shall be removed and replaced, and the edges shall be kept to a reasonable straight line and trimmed.

   The density after compaction shall be at least 98 percent of the laboratory-determined density.

5. PROTECTION OF PAVEMENT: The newly finished pavement shall be protected from vehicular traffic of any kind until the pavement has cooled and hardened and in no case less than 6 hours.

6. TOLERANCE: The finished surface shall not vary more than 1/8 inch in 10 feet from the true profile and cross section.

-10. <u>TESTS</u>:

The above work will be subject to thickness and compaction tests as deemed necessary by the Engineer. Such tests will be at the expense of the Contractor.

This section covers the installation of woven geotextile fabric for weak subgrades, complete.

1.0 INSTALLATION

1.1 PREPARE SURFACE

1.1.1 Contractor shall remove all tree stumps and any protruding objects such as large rocks.
- 1.1.1.1 Depressions shall be filled with a suitable granular material.
- 1.1.1.2 Smaller stone from an existing driveway or parking lot may be left in place.

1.1.2 Contractor shall replace pockets of very weak soils with select, granular fill.

1.1.3 For areas that consistently hold water:
- 1.1.3.1 Contractor shall replace the wet pumping soils with select, granular fill.
- 1.1.3.2 If grading to shed water is not effective, contractor shall install a drainage system or drain tile.

1.2 SMOOTH & LEVEL SUBGRADE

1.2.1 Area shall be graded level as possible.

1.2.2 Contractor shall excavate as shallow as possible to avoid creating areas that will hold water.

1.2.3 For very soft soils, contractor may consider leaving vegetation, roots and topsoil in place.

1.3 PLACE SEPARATION/STABILIZATION GEOTEXTILE

1.3.1 Separation/stabilization geotextile shall be placed directly on the prepared subgrade.

1.3.2 Geotextile shall be rolled out flat in the direction of construction traffic, minimizing folds and creases.

1.3.3 Pins or staples are typically not required to hold the fabric in place.
- 3.3.2.1 If required, 6 or 12 inch sod staples may be used.

1.4 OVERLAPPING

1.4.1 Soil CBR shall determine if overlapping or sewing is the correct option:

Soil CBR > 3	Minimum overlaps of 1 – 1.5 feet
Soil CBR 1-3	Minimum overlaps of 2 – 3.25 feet
Soil CBR < 0.5	Must be sewn

1.4.2 Geotextile shall be overlapped both side-to-side and end-to-end in the direction of aggregate placement.

1.4.3 Curves may be accomplished by folding or cutting the fabric to conform to the curve.

1.5 PLACE AGGREGATE

1.5.1 Place and compact the aggregate.

1.5.2 Lift thickness shall not be less than 6 inches.

1.5.2.1 Dozer operator may identify areas in need of additional aggregate thickness by observing aggregate layer rutting.

1.5.3 Where possible, the preferred method is to dump aggregate onto the geotextile and push it outward with bulldozer blade tilted slightly upward.

1.5.4 Dump trucks and rubber-tired loaders may be driven directly on the geotextile if lack of space is an issue.

1.5.4.1 Contractor shall avoid quick stops, starts and turns.

1.5.4.2 Contractor shall keep speeds less than 10 mph.

1.5.4.3 Contractor shall observe initial vehicle operation to insure geotextile is not damaged.

1.5.5 Aggregate shall be spread in the same direction as any geotextile overlap to avoid separation between the two pieces.

1.5.6 Contractor shall ensure geotextile is not moved out of position during aggregate spreading.

1.6 AGGREGATE COMPACTION

1.6.1 Intial compaction shall be achieved by walking tracked bulldozer back and forth over the aggregate.

1.6.2 Construction traffic shall work the aggregate until reasonable stability is achieved.

1.6.3 Final compaction shall be achieved by rolling area with vibratory compactor.

1.6.3.1 Initial passes shall be made without vibration.

1.6.3.2 Final passes shall be made with full vibration.

1.6.4 After final compaction, weak areas shall be be filled with additional aggregate and compacted.

1.6.4.1 Ruts shall not be graded down.

1.7 AGGREGATE

1.7.1 Aggregate shall be crushed and angular, ranging from 10% dust (or fines) up to 1 or 2 inches in diameter.

1.7.2 Use of rounded stone is prohibited.

1.8 REPAIR

3.8.1 Damaged areas shall be overlapped according to section 3.4.

1.9 STORAGE

1.9.1 Upon delivery to the project site, the contractor shall insure geotextile rolls are adequately protected from, moisture, ultraviolet radiation, chemicals that are strong acids or bases, temperatures in excess of 140°F and animal destruction.

1.9.2 If stored outdoors for a prolonged period, contractor shall elevate the geotextile from the ground and cover with a tarpaulin or opaque plastic.

1.9.3 Exposure of the geotextile to the elements following lay down shall be limited to 14 days.

US 315

NTPEP APPROVED - GTX-2016-01-089. A woven geotextile fabric made of 100% polypropylene slit film yarns. US 315 resists ultraviolet and biological deterioration, rotting, naturally encountered basics and acids. Polypropylene is stable within a pH range of 2 to 13. US 315 will satisfy the requirements as outlined in AASHTO M-288-06 for Class 1 Stabilization & Separation applications and meets the following M.A.R.V. values except where noted:

Property	Test Method	English	Metric
Weight - Typical	ASTM D-5261	6.0 oz/sy	204 g/sm
Tensile Strength	ASTM D-4632	315 lbs	1,402 N
Elongation @ Break	ASTM D-4632	15%	15%
Mullen Burst*	ASTM D-3786*	600 psi	4,136 kPa
Puncture Strength*	ASTM D-4833*	120 lbs	533 N
CBR Puncture	ASTM D-6241	1,000 lbs	4,450 N
Trapezoidal Tear	ASTM D-4533	120 lbs	533 N
Apparent Opening Size	ASTM D-4751	40 US Sieve	0.425 mm
Permittivity	ASTM D-4491	0.05 Sec-1	0.05 Sec-1
Water Flow Rate	ASTM D-4491	4 g/min/sf	163 l/min/sm
UV Resistance @ 500 Hours	ASTM D-4355	70%	70%

Roll Size	Roll Diameter	Area	Weight
12.5' x 360'	12.0 in	500 sys	230 lbs
15' x 300'	12.0 in	500 sys	230 lbs
17.5' x 258'	12.0 in	500 sys	230 lbs

* Historical averages (current values not available): Mullen Burst Strength ASTM D3786 is no longer recognized by ASTM D-35 on Geosynthetics as an acceptable test method. Puncture Strength ASTM D4833 is not recognized by AASHTO M288 and has been replaced with CBR Puncture ASTM D6241.

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END OF SECTION