SPECIFICATION: CLEARING AND GRUBBING

All site Clearing and Grubbing shall be in accordance with section 110 of the "Florida Department of Transportation Specifications for Road and Bridge Construction" unless modified herein. This work shall be performed in the following areas:

A. All street rights-of-way.
B. All areas where excavation or embankment are to take place.
C. Detention areas.

In addition, certain other areas where underground utilities are to be installed are to be cleared and grubbed to the extent necessary to properly install the utilities. Such work shall be incidental to the contract unit price for the utility to be installed.

SCOPE: Site clearing work includes, but is not limited to:

A. Removal of trees and other vegetation.
B. Topsoil stripping.
C. Clearing and grubbing.
D. Removing above grade improvements.
E. Removing below grade improvements.

JOB CONDITIONS:

Traffic:
Conduct site clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from the Owners and or Local approving authority.

Clearing and Protection in Construction Areas:
Preserve trees 6 inches or larger measured breast height (6"dbh) where possible within construction area.

Protection of Existing Improvements:
Provide protection necessary to prevent damage to existing improvements indicated to remain in place.

Protect improvements on adjoining properties and on project site.

Restore damaged improvements to original condition as acceptable to the Owner.

LIMITATIONS:
Clearing will be limited to the extent necessary to allow for construction of the proposed improvements as a result of:

Need for access to the project site for construction equipment.
Essential grade changes.
Surface water drainage and utility installation.
Location of driveways, buildings, and required parking.

CLEARING AND GRUBBING:
Remove trees, shrubs, grass, other vegetation, improvements, or obstructions interfering with the installation of new construction. Removal includes digging out stumps and roots. Do not remove items elsewhere on site or premises unless specifically indicated. Disposal of trees, limbs, stumps, and debris shall be the responsibility of the Contractor.

Strip topsoil to whatever depths encountered to prevent intermingling with underlying subsoil or other objectionable material. Cut heavy growths of grass from areas before stripping.

Stockpile topsoil in storage piles in areas shown or where directed by the Owner. Construct storage piles to freely drain surface water. Cover storage piles if required to prevent windblown dust.

Dispose of unsuitable or excess topsoil same as specified for waste material.

FILLING:
Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.

Place fill material in horizontal layers not exceeding 6" loose depth, and thoroughly compact to density equal to adjacent ground, unless otherwise shown on the plans.

REMOVAL OF IMPROVEMENTS:
Remove existing above and below grade improvements and abandoned underground piping or conduit necessary to permit construction and other work.

DISPOSAL OF WASTE MATERIALS:
No burning of any material, debris, or trash will be allowed.

Remove waste materials from project site on a daily basis and dispose of off-site in an approved area.

SPECIFICATION: EXCAVATION, EMBANKMENT AND SUBGRADE:

EXCAVATION, EMBANKMENT AND SUBGRADE: Shall be performed in accordance with Section 120 of the Florida D.O.T. Specifications. All subgrade fill material, and the top 12 inches in cut area, shall be compacted to 100 percent of maximum density as determined by AASHTO T-99. The Subgrade Compaction (Stabilization) shall conform to Section 160 of the Florida D.O.T. Specifications. In most cases this will consist of compacting existing cleaned soil. However, it is the contractor's responsibility to assure that the finished roadbed section meets bearing value requirements, regardless of the quantity of stabilizing materials to be added. One field density test shall be taken for each 5000 square feet or fraction thereof.

Where required subgrade density cannot be obtained, unsuitable material shall be removed so that the road base will be constructed on a minimum of 3 feet of suitable, properly compacted material. This work shall be included in the contract lump sum price for earth excavation.

SOIL CEMENT BASE: As a minimum the soil cement base course will conform generally to Section 270 of the Florida D.O.T. Specifications for Road and Bridge Construction. The detailed specifications of the soil cement base course are to be determined by an independent testing laboratory after testing of the material the contractor proposes to use. Moisture and cement content will be specified by the laboratory. However, as a guide for bid purposes, estimate 12% cement by weight and include a price reduction schedule if tests show less cement is required. The soil cement mix will be at optimum moisture content, i.e., neither mushy nor dry, but containing sufficient moisture to make a firm case when squeezed in the hand. Water should not appear on the hand when so squeezed. This requires 5 to 6 gallons per square yard but actual quantity of water to be added will depend on latent moisture in the base material. From a practical standpoint the highest moisture content should be maintained that permits packing and finishing without surface checking, shoving or rutting during compaction and finishing operations.

The freshly compacted and finished soil-cement mix must be adequately cured. An application of bituminous material such as RC-2, MC-3, RT-5 or asphaltic emulsion at the rate of 0.15 to 0.20 gal per square yard is preferred as the curing medium. Waterproof paper or moist earth is acceptable if properly maintained.

SAND-CLAY BASE COURSE: Shall comply with the requirements of Sections 911 and 912 of the Florida D.O.T. Specifications. Tests necessary to determine compliance with Section 912 shall be performed prior to placing the material on the roadbed. These tests include:

	Composition and gradation	Percent of material passing the No. 10 mesh sieve
1.	Clay (material smaller than 0.005mm)	8 to 21
	Silt (material from 0.005 to 0.005mm)	0 TO 10
	Combined clay and silt	8 to 25
2.	Limerock Bearing Ratio Value(LBR)	Of at least 100
3.	Liquid Limit	Not greater than 25
4.	Plasticity Index	Not greater than 6

The results of these tests shall be submitted to the engineer for approval. After approval of the material, the sand-clay base course shall be placed in accordance with Section 240. The base course shall be compacted to not less than 98 percent of the maximum density as determined by AASHTO T-180. One density test shall be taken for each 5000 square feet or fraction thereof.
NOTE: Sand Clay base material may not be used in areas where the seasonal high groundwater table is within two(2) feet of the bottom of the base material.

LIMEROCK BASE COURSE: Shall be constructed in accordance with Section 200 of the Florida D.O.T. Specifications for Road and Bridge Construction. The material shall meet the requirements of Section 911 of the Specifications. Tests necessary to determine compliance with Section 911 shall be performed prior to placing the material on the subgrade. These tests include:

Test	Requirement
1. Liquid Limit	Less than 35
2. Plasticity Index	Non-Plastic
3. Gradation	97% passing 3.5 inch sieve
4. Limerock Bearing Ratio	Not less than 100

The results of these tests shall be submitted to the engineer for approval. After approval of the material, the limerock base course shall be placed in accordance with Section 200. The base course shall be compacted to not less than 98 percent of the maximum density as determined by AASHTO T-180. A minimum of three density tests shall be made on each days compaction operations. More frequent tests shall be made as deemed necessary by the Engineer. The base shall be installed to a compacted thickness as shown on the plans, plus or minus one half inch. Deviations from this specification shall be corrected as indicated in the State Specifications.

CONTINUED ON NEXT COLUMN

GRADED AGGREGATE BASE COURSE: Shall comply with the requirements of Section 204 of the Florida D.O.T. Specifications. Tests necessary to determine compliance with Section 204 shall be performed prior to placing the material. These tests include:

1. Soundness Loss, Sodium, Sulfate: AASHTO T 104.
2. Percent Wear: AASHTO T 96 (Grading A).
3. Sieve Analysis.
4. Limerock Bearing Ratio Value.

The results of these tests shall be submitted to the engineer for approval. After the approval of the material, the graded aggregate base course shall be placed in accordance with Section 204. The base course shall be compacted to a density of not less than 100 percent of the maximum density as determined by AASHTO T 180. At least three density tests shall be made on each day's final compaction operation of each course, and the density determinations shall be made at more frequent intervals if deemed necessary by the Engineer.

ASPHALT BASE COURSE: Shall comply with the requirements of Sections 280, 330, 331 and 916 of the Florida D.O.T. Specifications. The design mix for Asphaltic Base Course Type 3 shall conform to the requirements in Tables 331-1 and 331-2. The Minimum Marshall stability shall be 1000 lbs./sq. in. as indicated in Table 331-2. Percent bitumen by weight of total mix: 5.0 (minimum). Two copies each of the actual design mix shall be submitted to the Engineer. Written approval of the Asphalt base course design mix must be obtained from the engineer prior to commencing base course construction. Once the design mix has been approved by the engineer, sieve analysis tolerances indicated in Table 331-5 are allowable during construction. If sieve analysis values fall outside these tolerances, design mix must be resubmitted for acceptance. After the approval of the mix design, the Asphalt base course shall be placed in accordance with Section 280 and compacted in accordance with Section 330-10.

NOTE: STORMWATER DRAINAGE SHALL BE CONTROLLED DURING ALL PHASES OF CONSTRUCTION.

SPECIFICATION: ASPHALT CONCRETE PAVING

SCOPE: This section includes materials and work required for installation of flexible asphaltic concrete pavement for parking and drive areas shown on the plans.

APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced. The publications shall be the most current issue and are referred to in the text by the basic designation only. The following are minimum requirements and shall govern except that all local, state, and/or federal codes and ordinances shall govern when their requirements are in excess hereof. All asphalt construction shall be in accordance with applicable sections of the "Florida Department of Transportation Specifications for Road and Bridge Construction" unless modified herein.

A. Florida Department of Transportation Specifications:

Section 901	Course Aggregate
Section 902	Fine Aggregate
Section 916	Bituminous Materials
Section 917	Mineral Filler
Section 300	Bituminous Treatments, Surface Courses and Concrete Pavement
Section 331	Type S Asphalt Concrete

B. American Society for Testing and Materials (ASTM) Publications:

D 1557	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 kg) Rammer and 18-in. (457 mm) Drop.
D 1559	Marshall Stability Mix Design

SUBMITTALS:

A. Asphalt Design Mix:
1. Before any asphalt surface is constructed, submit two copies of each of the actual design mix to the Engineer and Owner.
2. Written approval of the asphaltic concrete design mix must be obtained from the Engineer and Owner prior to commencing asphalt pavement construction.

B. Material Certificates: Furnish copies of materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

C. Asphalt extraction tests.

D. Aggregate gradation tests.

E. Marshall stability tests.

JOB CONDITIONS:

A. Weather limitations: Apply prime and tack coats when ambient temperature is above 40 degrees, and when temperature has not been below 35 degrees for 12 hours prior to application. Do not apply when base is wet or contains excess moisture.

MATERIALS:

A. Mineral Filler: Rock dust, hydraulic cement, or other inert material complying with section 917 of the Florida DOT Specifications.

B. Asphalt Cement: The bituminous material shall be AC-20, viscosity grade and comply with section 916 of the Florida DOT Specifications.

C. Course Aggregate: Comply with section 901 of the Florida DOT Specifications.

D. Fine Aggregate: Comply with section 902 of the Florida DOT Specifications.

E. Prime Coat and Tack Coat: The bituminous material for the Prime Coat shall be MC-70. Bituminous material for the Tack Coat shall be AC-20, or Emulsified asphalt, grade RS-2 and comply with the requirements in Section 300 and 916 of the Florida DOT Specifications.

Asphaltic Concrete Design Mixes:

1. Asphalt shall conform to the requirements for Type S Asphalt as indicated in Section 331 of the Florida DOT Specifications.
2. Mix shall be within sieve analysis and bitumen range given in Section 331 of the Florida DOT Specifications.
3. Minimum Marshall stability shall be in 1500 lbs./sq. in. as indicated in Table 331-2 of the Florida DOT Specifications.
4. Percent bitumen by weight of total weight mix: 5.0 – 8.5.
5. Once design mix has been accepted by Engineer and Owner, sieve analysis tolerances indicated in Table 331-5 are allowable during construction. If sieve analysis analysis values fall outside these tolerances, design mix must be resubmitted for acceptance.
6. Provide asphalt-aggregate mixture as recommended by local or state paving authorities to suit project conditions. Use locally available materials and graduations which meet Florida DOT Specifications and exhibit satisfactory record on previous installations.

BASE COURSE PREPARATION:

A. Prior to construction of the base course, the top 12 inches of subgrade shall be compacted to a minimum soil density of 98% of the Modified Proctor Test Density (ASTM 1557). The subgrade shall be sterilized by a borate or chlorate sterilant containing not less than 25% sodium chlorate and shall be mixed thoroughly with water at the rate of 1-1/2 lbs. of sterilant per gallon of water. The sterilant shall be applied evenly at the rate of 0.2 gallons per square yard to subgrades that are less than 12" below original grades. If perpared base course will not be immediately covered with asphalt on the same day and wind-blown seeds will contaminate the base course surface, the sterilants shall be applied to the base course contaminate the base course.

B. Remove loose material from compacted base material surface immediately before applying prime coat.

C. Proof roll prepared base material surface to ensure unstable areas have been corrected and are ready to receive paving.

CONTINUED ON NEXT COLUMN

D. Prime Coat:

1. Apply bituminous prime coat to base material surfaces where asphaltic concrete paving will be constructed.
2. Apply bituminous prime coat in accordance with Section 300 of Florida DOT Specifications.
3. Apply at minimum rate of not less than 0.15 gal./sq. yd. over compacted base material. Apply material to penetrate and seal, but not flood, surface.
4. Cure and dry as long as necessary to attain penetration and evaporation of volatile.

E. Tack Coat:

1. Tack coat shall be applied in accordance with Section 300 of Florida DOT Specifications. Apply to contact surfaces of previously constructed asphalt or portland cement and concrete and surfaces abutting or projecting into asphalt concrete pavement.
2. Apply tack coat to full depth asphalt base course and sand asphalt base course. Apply emulsified asphalt tack coat between each lift or layer of full depth asphalt and sand asphalt bases and on surface of such bases where asphaltic concrete paving will be constructed.
3. Distribute at rate of 0.08 gal./sq. yd. of surface.
4. Allow to dry until at proper condition to receive paving.

PLACING ASPHALT MIX:

A. Place asphalt concrete mixture on prepared surface, spread, and strike off. Spread mixture at the following minimum temperatures:

1. When ambient temperature is between 40 degrees F and 50 degrees F: 285 degrees F.
2. When ambient temperature is between 50 degrees F and 60 degrees F: 280 degrees F.
3. When ambient temperature is higher than 60 degrees F: 275 degrees F.

B. Place inaccessible and small areas by hand. Place each course to required grade, cross-section, and compacted thickness.

C. Paver Placing:

1. Place in strips not less than 10'-0" wide, unless otherwise acceptable to the Contracting Officer.
2. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips.

D. Joints:

1. Construct joints between old and new pavements as directed in the plans.
2. Joints between successive days' work shall be constructed to ensure continuous bond between adjoining work.
3. Construct joints to have same texture, density, and smoothness as other sections of asphalt concrete course.
4. Clean contact surfaces and apply tack coat.

COMPACTION:

A. Each lift of asphalt shall be compacted to a minimum of 98% of the Marshall test (ASTM D1559).

B. Begin rolling when mixture will bear roller weight without excessive displacement.

C. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

D. Breakdown Rolling:

1. Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge.
2. Check surface after breakdown rolling, and repair displaced areas by loosening and filling, if required, with hot material.

E. Second Rolling:

1. Follow breakdown rolling as soon as possible, while mixture is hot.
2. Continue second rolling until mixture has been thoroughly compacted.

F. Finish Rolling:

1. Perform finish rolling while mixture is still warm enough for removal of roller marks.
2. Continue rolling until roller marks are eliminated and course has attained maximum density.

G. Patching:

1. Remove and replace paving areas mixed with foreign materials and defective areas.
2. Cut out such areas and fill with fresh, hot asphalt concrete.
3. Compact by rolling to maximum surface density and smoothness.

H. Protection:

1. After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

I. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

FIELD QUALITY CONTROL:

A. An Independent Testing Laboratory, selected and paid by the contractor shall be retained to perform construction testing of in-place asphalt courses for Asphalt Extraction, Aggregate gradation, Marshall Stability, thickness and surface smoothness.

B. Thickness: In-place compacted thickness shall not be less than thickness specified on the drawings.

C. Surface Smoothness: Testing shall be performed on the finished surface of each asphalt concrete course for smoothness, using 10'-0" straightedge applied parallel with, and at right angles to centerline of paved area. The variation of the surface from the edge of the straight edge between any two contact points shall not exceed 1/4". Check surface areas at intervals necessary to eliminate pondering areas. Repair or remove and replace unacceptable paving as directed by the Contracting Officer.

D. Asphalt content, Aggregate gradation, and Marshall Stability shall be as specified in Section 331 of the Florida DOT Specifications.

SPECIFICATION: PORTLAND CEMENT CONCRETE PAVING

SCOPE: This section includes sidewalks, curbs, and miscellaneous concrete pavement.

APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced. The publications shall be the most current issue and are referred to in the text by the basic designation only. The following are minimum requirements and shall govern except that all local, state, and/or federal codes and ordinances shall govern when their requirements are in excess hereof. All concrete construction shall be in accordance with applicable sections of the "Florida Department of Transportation Specifications for Road and Bridge Construction" unless modified herein.

A. Florida Department of Transportation Specifications:

Section 345	Portland Cement Concrete
Section 350	Cement Concrete Pavement
Section 520	Concrete Gutter, Curb Elements and Traffic Separator
Section 931	Metal Accessory Materials for Concrete Pavement and Concrete Structures

B. American Society for Testing and Materials (ASTM) Publications:

A 615	Deformed and Plain Billet Steel Bars for Concrete Reinforcement
D 1557	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb. (4.54 kg) Rammer and 18-in. (457 mm) Drop.
D 1751	Preformed Expansion Joint Filler for Concrete Paving and Structural Construction. (Nonextruding and Resilient Bituminous Types)

SUBMITTALS:

A. Material Certifications: Furnish copies of material certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

MATERIALS:

A. Forms:

1. Steel, wood, or other suitable material of size and strength to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.
2. Use flexible spring steel forms or laminated boards to form radius bends as required.

B. Form Release Agent:

1. Coat forms with nonstaining type coating that will not discolor or deface surface of concrete.

C. Welded Wire Mesh:

1. Welded plain cold-drawn steel wire fabric. Furnish in flat sheets, not rolls, unless otherwise acceptable to Contracting Officer. Welded wire mesh shall be free from rust, dirt, foreign matter and shall not be stored directly on the ground. Wire fabric shall comply with Sections 931 of the Florida DOT Specifications.

D. Reinforcing Bars:

1. Deformed steel bars, ASTM A 615, Grade 40. Reinforcing bars shall be free from rust, dirt, foreign matter and shall not be stored directly on the ground. Deformed steel bars shall comply with Section 931 of the Florida DOT Specifications.

E. Concrete Materials:

1. Comply with requirements of Sections 345 and 350 of the Florida DOT Specifications for concrete materials, admixture, bonding materials, curing materials, and others as required.

F. Joint Fillers:

1. Resilient premolded bituminous impregnated fiberboard units complying with ASTM D1751. Joint fillers shall comply with Section 932 of the Florida DOT Specifications.

MIXING:

A. Design mix to produce normal weight concrete consisting of Portland cement, aggregate, water-reducing or high-range water reducing admixture (super-plasticizer), air-entraining admixture and water to produce following properties:

1. Compressive Strength: Minimum 3,000 psi for curb and walkways and 4,000 psi for pavement, at 28 days. In addition, concrete for pavement shall have a minimum modulus of rupture of 600 psi.
2. Slump Range: 3"-5".
3. Air Content: 3% to 6%

PREPARATION:

A. Surface Preparation:

1. Remove loose material from compacted base material surface immediately before placing concrete.

B. Compact the top 12 inches of subgrade to a minimum soil density of 98% for the Modified Proctor Test (ASTM D1557) to result in a minimum modulus of subgrade reaction (k) of 150 psi/in. Proof-roll prepared base material surface to check for unstable areas. The paving work shall begin after the unsuitable areas have been corrected and are ready to receive paving. Compaction testing for the base material shall be completed prior to the placement of the paving.

CONCRETE INSTALLATION:

A. Form Construction:

1. Set forms to required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.
2. Check completed formwork for grade and alignment to following tolerances:
   A. Top of forms not more than 1/8" in 10'-0".
   B. Vertical face on longitudinal axis, not more than 1/4" in 10'-0".
3. Clean forms after each use, and coat with form release agent as often as required to ensure separation from concrete without damage.

B. Reinforcement:

1. Locate, place, and support reinforcement to ensure compliance with plans.

C. Concrete Placement:

1. Comply with requirements of Sections 345, 350, and 520 of Florida DOT Specifications for mixing and placing concrete.
2. Do not place concrete until base material and forms have been checked for line and grade. Moisten base material if required to provide uniform dampened condition at time concrete is placed. Concrete shall not be placed around manholes or other structures until they are at the required finish elevation and alignment.
3. Place concrete using methods, which prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.
4. Deposit and spread concrete in continuous operation between transverse joints, as far as possible. If interrupted for more than 1/2 hour place construction joint.

D. Curbs and Gutters:

1. Automatic machine may be used for curb and gutter placement at Contractor's option. Machine placement must produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete as specified.

CONTINUED ON NEXT SHEET

CEI
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CERTIFICATE OF AUTHORIZATION No. 1532

Revisions:

HOME2 SUITES
SPECIFICATIONS (1 OF 2)
Not valid unless bearing Engineer's embossed seal.
MARK C. SINER, P.E.
FL. REG. NO. 48831

Job No.:	2017-130-A
Date:	26 JUNE 2018
Fld. Vol.:	N/A
Scale:	N/A
Disk No.:	17130A-MISC
Designed:	MCS
Drawn:	SVD/KMB
Checked:	MCS
Sheet	8 of 9

ESCAMBIA COUNTY SPECIFICATIONS