CHAPTER 18

SUBDIVISIONS

ARTICLE I. IN GENERAL

SECTION 18-1. SHORT TITLE. The provisions contained in this Chapter shall be known as the Subdivision Code, and may be so cited.

SECTION 18-2. SUBDIVISION, DEFINED. "Subdivision," as used in this Chapter, shall mean the division of a parcel of land into five or more lots or parcels for the purpose of transfer of ownership or building development, or, if a new street is involved, any division of a parcel of land; provided that a division of land for agricultural purposes into lots or parcels of five acres or more and not involving a new street shall not be deemed a subdivision. The term includes a re-subdivision and, when appropriate to the context, shall relate to the process of subdividing or to the land subdivided. To apply to new annexation of land only. (Ord. No. 50, S15A)

SECTION 18-3. INTERPRETATION OF PROVISIONS. The provisions contained in this Chapter shall constitute the minimum requirements for land subdivisions within the town.

SECTION 18-4. APPROVAL OF PLATS---PLAT TO CONFORM TO PROVISIONS. No plat of any subdivision shall be approved unless the plat of the subdivision and all engineering drawings and specifications submitted therewith meet the requirements set forth in this Chapter, and further unless a fee in the amount of two per cent of the amount of the performance bond shall be paid to the town clerk at the time of the filing of such plat and engineering drawings and specifications, such fee to cover the town's costs for necessary legal and engineering certifications and inspections.

SECTION 18-5. SAME---APPROVAL OF ENGINEER. No plat of a subdivision shall be approved until the town's consulting engineer or inspector shall certify that all surface drainage, sanitary sewers, or disposal systems, potable water supplies and like utilities and the streets and roads shown thereon have been installed or constructed in accordance with the provisions of this Chapter.

SECTION 18-6. SAME---INSTALLATION OF IMPROVEMENTS REQUIRED. No plat of a subdivision shall be approved until all surface and storm drainage systems, sanitary sewer systems and disposal facilities, potable water supply systems and gas transmission and distribution piping systems and like utilities required by the minimum requirements set forth in this Chapter have been installed.

SECTION 18-7. SAME---APPROVAL WITHOUT IMPROVEMENTS; PERFORMANCE BOND. The town commission may, at its discretion, approve a plat without utilities required by this Chapter having been installed and without streets and alleys having been paved; and accept in lieu of this requirement a performance bond acceptable to the town commission, issued by a surety authorized to do business in the State of Florida in an amount equal to one hundred ten percent of the amount estimated by the town's consulting engineer or inspector as sufficient to cover the cost of the materials, labor and work upon the streets, alleys and installation of the required utilities shown on the plat or required under the minimum requirements provided by this Chapter. Such bond shall be conditioned upon the faithful completion of the streets, alleys and installation of utilities according to the provisions of this Chapter within one hundred twenty days, or such time as agreed upon at the time of posting of such performance bond.

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SECTION 18-8. SAME---COMPLETION OF IMPROVEMENTS; MAINTENANCE BOND.

(1) No plat of a subdivision shall be approved until all streets, roads, and sidewalks shown thereon have been cleared, graded and paved according to the methods, plans and specifications set forth in this Chapter.

(2) A bond in form acceptable to the town commission, payable to the town, and issued by a surety authorized to do business in the State of Florida, shall be given in an amount equal to fifty per cent of the total construction cost of the utilities, and streets and sidewalks, required by this Chapter, as such cost is certified by the town's consulting engineer or inspector, before the plat of any subdivision may be approved, the condition of which bond shall be the full maintenance and repair of such utilities, surface and storm drainage systems, sanitary sewer systems, sewage disposal systems, potable water systems, gas transmission and distribution piping systems, streets and sidewalks for a period of two years after the completion by the town's consulting engineer or inspector.

(3) In place of a surety bond, the developer may deposit cash or its equivalent in current funds in escrow with a national bank in the town or in the City of Melbourne, giving to the town a bond in form, amount and with conditions as aforesaid, such bond to be secured by such cash escrow deposit. Such bond shall be accompanied by an appropriate written agreement, obligating the developer and the escrow agent to immediate disbursement of such escrow funds upon order from the town attorney and the town's consulting engineer, certifying that the conditions of the bond have been breached.

SECTION 18-9. PERMIT TO IMPROVE STREETS; SUPERVISION OF IMPROVEMENTS.

(1) No person shall open, grade and pave streets within the town, or any addition or subdivision within the town without first obtaining a permit from the town clerk.

(2) All streets opened, graded and paved within the town shall be improved under the supervision of an inspector or engineer appointed by the town commission for that purpose.

SECTION 18-10. STREETS TO CONFORM TO EXISTING STREET SYSTEMS. Every street in an addition or subdivision shall, where practical, conform to existing streets through adjoining and abutting lands so as to avoid jogs, off-sets and dead-ends.

SECTION 18-11. VIOLATIONS PRECLUDE BUILDING PERMITS. No building permit shall be issued for construction of any building or structure upon land subdivided contrary to the provisions of this Chapter.

SECTION 18-12. CONSULTING ENGINEER DESIGNATED. The town superintendent or other person designated by the mayor and commission shall be the consulting engineer for the purpose of this Chapter. (Ord. No. 50, S16)

SECTION 18-13---18-18. RESERVED.

ARTICLE II. DRAWINGS AND MAPS

SECTION 18-19. DRAWINGS---REQUIRED; CONTENTS. Drawings of property to be platted and subdivided shall be prepared to conform with the requirements of the Brevard County Court of Record in regard to the size, information, certificates and descriptions, and such other information as is required by the Brevard County Commission for approval.

SECTION 18-20. SAME---FILING WITH TOWN CLERK. Two prints of the drawings provided by Section 18-19 shall be submitted to the town clerk.

SECTION 18-21. TOPOGRAPHICAL MAPS. Property plats for which the developer, owner or contractor requests approval of the town commission shall be accompanied by a topographical map of the property, giving the following information:

(1) Contours on one-foot intervals showing the existing contours by solid lines, and the proposed contours by dotted lines, if grading by excavation or fill is to be done. The scale of the topographical map shall be not less that one inch to one hundred feet. The elevations shown shall be the true and correct elevations as projected from a known bench mark, as listed by location and elevation in the State of Florida Department of Conservation-Geological Bulletin #32., "Elevations in Florida," or by the Coast and Geodetic Survey, U.S. Department of the Interior. No assumed bench marks shall be used.

(2) The topographical map shall indicate existing streets, roads, drainage structures and water mains abutting or adjacent to the property to be subdivided, their dimensions, size of pipe or ditch, and elevation. Two prints of the topographical map shall accompany the drawing of the plat.

SECTION 18-22---18-26. RESERVED.

ARTICLE III. BOARD OF APPEALS

SECTION 18-27. ESTABLISHED. The town commission shall act as a board of appeals. (Ord. N0. 50, S17)

SECTION 18-20. REPEALED.

SECTION 18-29. REPEALED.

SECTION 18-30. REPEALED.

SECTION 18-31. POWERS. POWER The board of appeals may:

(1) Construe the provisions of this Chapter so that the spirit and true purpose may be observed.

(2) In passing upon appeals, to vary and modify any provisions of this Chapter where there are practical difficulties or unnecessary hardships in carrying out the strict letter of this Chapter, so that the spirit of the Chapter shall be observed, and public safety welfare and substantial justice served.

(3) Authorize, upon appeal in specific cases, such variance from the terms of this Chapter as will not be contrary to public interest where, owing to special conditions, a literal enforcement of the provisions of this Chapter will result in unnecessary hardship.

SECTION 18-32. PROMULGATION OF RULES AS TO APPEALS. The board of appeals shall prescribe by general rule the procedure relative to appeals before it.

SECTION 18-33. APPELLATE POWERS. In exercising its powers, the board of appeals, by majority vote may reserve or affirm, wholly or partly, or may modify the order, requirement, decision, or determination appealed from and may make such order, requirement, decision, or determination, as in its opinion, should be made, and to that end shall have all the powers of the officials from whom the appeal is taken. (Ord. N0. 50, S19)

SECTION 18-34. APPEALS TO---HOW TAKEN. Appeals to the board of appeals shall be taken within thirty days after the action taken by the town commission and shall be made by petition signed by the aggrieved party, his agent or his attorney, to the board of appeals.

SECTION 18-35. SAME---FIXING TIME AND PLACE OF HEARING; NOTICE OF. The board of appeals shall fix a reasonable time for the hearing of the appeal taken within the thirty-day period, and shall give due notice of the time and place of the hearing to the parties in interest.

SECTION 18-36. SAME---APPEARANCE IN PERSON OR BY COUNSEL. At a hearing before the board of appeals any person may appear in person, or by agent, or by attorney.

SECTION 18-37. SAME---DECISION. The board of appeals shall render its decision within a reasonable time.

SECTION 18-38---18-42. RESERVED.

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ARTICLE IV. MINIMUM LOT SIZE AND STREET FRONTAGE

SECTION 18-43. SUBDIVISION OF RESIDENTIAL LOTS.

(1) If any of the lots now* zoned R-2 (Residential) shall be subdivided, the new lots shall be a minimum size of one hundred by eighty-five feet.

(2) Not more than twenty per cent of each lot shall be used for structures containing living areas, including porches. (Ord. No. 50, S 20)

*__Editor's note:__ Ordinance No. 50, from which Section 18-43 derived, was enacted on April 25, 1967.

SECTION 18-44. MINIMUM STREET FRONTAGE. The minimum street frontage of a lot shall be eighty-five feet, plus or minus one foot to permit equalization of lot size to block length.(Ord. No. 50, S21)

SECTION 18-45. REPEALED.

SECTION 18-46. MINIMUM LOT AREA. The minimum lot area shall be eighty-five hundred square feet, plus or minus five per cent. (Ord. No. 50, S23)

SECTION 18-47---18-51 RESERVED.

ARTICLE V. MINIMUM REQUIREMENTS FOR STREET AND ROAD RIGHTS-OF -WAY TO BE DEDICATED TO CITY

SECTION 18-52. MINIMUM WIDTH. The minimum width of street or road rights-of-way within the subdivision to be dedicated and accepted by the town shall be forty feet. (Ord. No. 50, S 24)

SECTION 18-53 REPEALED.

SECTION 18-54---18-58. RESERVED.

ARTICLE VI. MINIMUM REQUIREMENTS FOR POTABLE WATER SYSTEM

SECTION 18-59. APPROVED SYSTEM REQUIRED. The developer shall furnish and install an adequate water supply system from plans and specifications approved by the Florida State Board of Health, Bureau of Sanitary Engineering.

> **State law reference**---Ch. 1, Sanitary Code of Florida (Water Supplies), codified as Ch. 170C-1, Florida Administrative Code.

SECTION 18-60. WATER DISTRIBUTION LINES SMALLER THAN SIX INCHES IN DIAMETER. Water distribution lines less than six inches in diameter may be installed provided that no residence is more than five hundred feet from the six-inch, or larger, water main which serves the smaller size pipe.

SECTION 18-61. FIRE HYDRANTS. Fire hydrants shall be installed on mains not less than six inches in diameter, and so spaced that no residence or structure is more that five hundred feet from a fire hydrant.

SECTION 18-62---18-66. RESERVED.

ARTICLE VII. MINIMUM REQUIREMENTS FOR SANITARY SEWERS AND DISPOSAL

SECTION 18-67. IN GENERAL. Each subdivision shall comply with the provisions of this Code relating to sanitary facilities.

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SECTION 18-68---18-72. RESERVED.

ARTICLE VIII. MINIMUM REQUIREMENTS FOR SURFACE AND STORM DRAINAGE

SECTION 18-73. COMPREHENSIVE STUDY.

(1) The request for acceptance of the subdivision plot plan shall be accompanied by a comprehensive study of the surface and storm drainage system. In making this study, the modified rational formula shall be used in computing the amount of storm water to be carried by the drainage system.

(2) The formula to be used is as follows:

Q, equals CIA, in which

Q, equals total storm water run-off

C, equals a run-off coefficient representing the ratio of run-off to rainfall

I, equals intensity of rainfall, or rate of rainfall in inches per hour

A, equals surface area in acres

In the use of this formula, the following ratio or imperviousness by zoning classifications shall be taken:

Commercial areas	90%
Residential and industrial areas	40%
Parks and undeveloped areas	5%

(3) Since the coefficient of run-off is a combination of these factors, together with other factor's such as retention, imperviousness, etc., the following coefficients of run-off may be used in the study:

Coefficient of Run-Off "C"

Duration of storm (minutes)	10	15	20	30	60	120
Commercial area	.548	.645	.745	.836	.955	.975
Residential areas	.356	.440	.502	.576	.680	.740
Undeveloped areas	.237	.316	.369	.422	.522	.617

(4) The design storm curve "I" to be used in these studies shall be in the five-year frequency curve based on the U. S. Weather Bureau and the U. S. Department of Agriculture data. In moderately sized developments, the rate of rainfall at the one-hour point may be used. For the town this figure is approximately three inches per hour.

(5) In using the formula, consideration can also be given to the fact that the water need not be entirely removed until three hours after the end of the one hour of rainfall.

SECTION 18-74. CURBS, GUTTERS AND DITCHES TRANSPORTING STORM WATER. The storm drainage plan may include the use of street curbs and gutters and open ditches as transportation arteries for the storm water, provided the length and grade of the street is not too great, thereby permitting the accumulation of excessive amounts of water in the street proper.

SECTION 18-75. CULVERTS. Culverts shall be used at all points where open ditches occur at street or driveway crossings.

SECTION 18-76. WHERE UNDERGROUND STORM SEWERS REQUIRED. Underground storm sewers shall be used if the area to be drained is too large for normal sized drainage ditches. The decision in this respect shall be made by the town's consulting engineer.

SECTION 18-77. MINIMUM SIZE OF CULVERT OR STORM SEWER. The minimum size of storm sewer or culvert shall be twelve inches in diameter. (Ord. No. 50, S 26)

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SECTION 18-78. HEADWALLS, RETAINING WALLS, RIP RAP. Concrete or masonry headwalls, rip rap or retaining walls shall be constructed where necessary.

SECTION 18-79. OUTFALL OF SURFACE OR STORM DRAINAGE SYSTEM. The outfall of the subdivision surface or storm drainage system shall be one of the following:

(1) Proper connection between the new subdivision drainage system and the existing town drainage system, if, in the opinion of the town's consulting engineer, the existing town system is adequate.

(2) Proper connection from the new subdivision to existing natural drainage, such as creeks, rivers.

(3) Proper connection from the new subdivision to an existing drainage ditch or canal of the town, country or drainage district, provided written permission has been secured from the political unit having ownership of such drainage facility.

(4) In the event none of the methods of disposal of the storm waters from the subdivision outlined in Subsections (1) through (3) are readily accessible to the subdivision, the subdivider shall provide a suitable outfall for the storm waters of the new subdivision by securing permanent easements or the purchase of right-of-way for the construction of a suitable ditch or underground storm drain through private property, so as to connect the subdivision storm drainage system with a satisfactory disposal area. The cost of obtaining and installing such drainage rights-of-way and structure shall be the responsibility of the developer.

SECTION 18-80. MATERIALS---PIPE. Pipe used in the construction of the storm drainage system shall be reinforced concrete, plain concrete (where approved by the town's consulting engineer), vitrified clay or bituminous coated corrugated metal pipe.

SECTION 18-81. SAME---CATCH BASINS AND MANHOLES. Catch basins and manholes may be either masonry or Class B concrete furnished with cast iron frame and grating or cover.

SECTION 18-82.---18-86. RESERVED.

ARTICLE IX. MINIMUM REQUIREMENTS FOR ROADS AND STREETS

SECTION 18-87. IN GENERAL.

(1) All roads or streets shall be designed and constructed in accordance with the minimum cross-sections as set fourth elsewhere in this Article. The construction work and the construction materials shall conform to the specifications for the sub-grade, base and wearing surface provided by this Article.

(2) Care shall be exercised in making the street layout so as to prevent excessive grades, extreme cuts and fills, or other changes in the natural topography which would induce rapid and unwarranted storm water run-off, thereby causing washing and erosion or diversion of storm water over private or adjoining property.

(3) In addition to the specifications furnished to apply specifically to this construction, all required storm sewers or culverts, sanitary sewers and water lines where such occur in the paved portion of the street, shall be installed prior to the final grading of the base.

(4) Water services may be jacked under the pavement where the water main has been installed on the opposite side of the street from where the services are needed.

SECTION 18-88. CLASSIFICATION OF STREETS.

(1) **Class "A" streets.** These streets within the subdivision which will, in the foreseeable future, become a part of the town's arterial street system, and will receive traffic from other streets and roads outside the subdivision, as well as that traffic which originates or ends within the subdivision, shall be considered Class "A" streets.

(2) **Class "B" streets.** Those streets within the subdivisions which will not, in the foreseeable future, become a part of the town's arterial street system, and will receive only the minimum amount of traffic (estimated to be not greater than seven hundred fifty vehicles a day) from other streets and roads outside of the subdivision, as well as the traffic which originates and ends within the subdivision, shall be considered Class "B" streets.

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SECTION 18-89. WIDTH OF STREETS

(1) **Class "A" streets.** Class "A" streets shall have not less than a twenty foot paved surface.

(a) In the event it appears desirable from the standpoint of the town's traffic pattern and the future plans of the arterial system for streets, that a Class "A" street should be paved with a surface greater than twenty feet and curbed and guttered, the expense for such additional width over twenty feet, and the cost of curbs and gutters in such instances, shall be borne by the town.

(b) The town, prior to requesting the developer to pave such Class "A" streets to a greater width than twenty feet, shall have prepared by its consulting engineer a comprehensive report covering the recommended width for the proposed street, the cost to the town of such widening beyond the twenty feet, and the advantages of such a program.

(2) **Class "B" streets.** Class "B" streets shall have not less than a twenty-foot paved surface. (Ord. No. 50, S 27)

SECTION 18-90. SPECIFICATIONS---CONSTITUTE MINIMUM STANDARDS: OTHER STANDARDS.

(1) The specifications contained in this Article are the minimum standards acceptable to the town, covering street and road construction without subdivisions.

(2)The developer, if he so desires, may submit to the town other detailed specifications covering other types of pavement, prepared by a registered engineer, and accompanied by reports from recognized testing laboratories outlining in detail the differences between the submitted specifications and the town's minimum standards, and the opinion of the testing laboratory that the submitted specifications are equal to or of higher standard than the town's. The town will submit such specifications to its consulting engineer for approval.

SECTION 18-91. SAME---SCOPE. The work specified under this Article shall consist of clearing and grubbing, grading, construction of the base course, construction of curbs and gutters, where required, and construction of the wearing surface, so that these items conform to lines, grades and cross-sections as shown on the plans, or are specified in this Article, or as established by the town's consulting engineer.

SECTION 18-92. EQUIPMENT REQUIRED. Adequate and sufficient equipment to properly perform the work specified shall be furnished at the project site. This equipment shall have been approved by the town's consulting engineer prior to the start of construction.

SECTION 18-93. CLEARING AND GRUBBING; PROTECTING TREES, ETC.

(1) The entire area to be paved, plus an additional distance of two feet out from the edge of the proposed paving, shall be completely cleared and grubbed of all trees, brush, stumps, roots and other obstructions, except such trees and shrubs as may be designated by the town's consulting engineer to remain. Branches of trees extending over the proposed paved area shall be trimmed as directed to give a clear height of fifteen feet above the proposed paving area. The remainder of the street right-of-way shall be cleared and grubbed so as to properly facilitate grading and planting. Trees shall be allowed to remain in park area.

(2) Special attention shall be given to saving, protecting and preserving existing trees, shrubs, or other vegetation designated by the town's consulting engineer to be preserved. Such trees, shrubs, or other vegetation, shall be neatly trimmed as directed. Particular care shall be exercised in both the clearing and grubbing operations and the grading work, to prevent damage to such growths by construction equipment or otherwise, if considered necessary. If so directed by the town's consulting engineer, the developer, or contractor, shall furnish and erect temporary posts or construct temporary fences around the areas or trees to be preserved. Slopes may be made variable and other than shown on standard sections, to protect and save existing growth as the town's consulting engineer may direct.

SECTION 18-94. PREPARATION OF SUBGRADE.

(1) The work of preparing the subgrade shall consist of bringing the bottom of excavations and top of embankments of the roadway between lines three feet out from the edges of the proposed paving to a surface conforming to the grades, lines, and cross sections shown on the plans, of uniform and acceptable density, ready to receive the base or paving course.

(2) All soft or yielding material and other portions of the subgrade which will not compact readily shall be removed and replaced with suitable material and the whole subgrade brought to line and grade and to a foundation of uniform compaction and supporting power. Where the subgrade is of a compacted nature as determined by the town's consulting engineer, it shall be plowed to a depth of not less than six inches for the full

width of the subgrade. The loosed materials shall be spread and manipulated so as to bring all the material to a uniform density.

(3) All submerged stumps, roots or other perishable matter encountered in the preparation of the subgrade shall be removed, as required by the town's consulting engineer.

(4) The top six inches of the subgrade, in both cut and fill sections, shall be compacted to a density of not less than one hundred per cent of the maximum density, as determined by the AASHO Method T 99. Where specified by the town's consulting engineer, any aggregate materials overlying the subgrade (bottom of proposed base or pavement) shall be bladed aside in order to compact the subgrade. Unless the subgrade material at the time of compacting contains sufficient moisture to permit proper compaction it shall be moistened as necessary and then compacted. The subgrade shall be shaped prior to making the density tests. The required density shall be maintained until the base or pavement has been laid, or until the aggregate materials for the base or pavement course have been laid in place.

(5) After the subgrade has been prepared, as specified in this Section, the developer, or contractor, shall maintain it free from ruts and depressions and all damage resulting from the hauling or handling of materials, equipment, tools, etc. Ditches and drains shall be constructed and maintained along the completed subgrade section if necessary. A completed subgrade equal to the length of base of pavement to be laid the next working day shall be maintained at all times.

(6) After the subgrade has been prepared and forms set true to line and grade, and immediately before any base or paving course is laid, the subgrade shall be tested as to crown and elevation by the use of an approved subgrade templet furnished by the developer, or contractor. The subgrade templet shall be so constructed that its lower or testing edge will just come to the true position of the subgrade when the templet is riding on the forms or grade stakes. Testing of the subgrade elevation shall be done by moving the templets back and forth on the forms or grade stakes without tilting or lifting. The templet shall be drawn along just ahead of the point where the materials for base or paving course are being deposited and shall always be kept in position while materials are being placed. If the subgrade is found not to be at the proper elevation at all points, material shall be removed or added as the condition necessitates and compacted to bring all portions of the subgrade to the correct elevation and to the specified density.

(7) Where the subgrade is more than twenty-four feet in width it shall be tested in strips twenty-four feet or less in width by the use of crown stakes, temporary forms or other means approved by the town's consulting engineer. Where no forms are required for the

work the subgrade shall be tested by the use of elevation stakes and other means approved by the town's consulting engineer. (Ord. No. 50, S28)

SECTION 18-95. CONSTRUCTION OF CURBS AND GUTTERS, WHERE REQUIRED.

(1) The work specified in this Section consists of the construction of curbs, curbs and gutters, or valley gutters, of Portland cement concrete. Such work to be constructed in accordance with these specifications and in conformity with the lines, grades, dimensions and notes as shown on the plans, or as ordered by the town's consulting engineer.

(2) Unless otherwise shown on the plans, the concrete shall be Class A and of materials and proportions as required by the town's consulting engineer, with the following additions and exceptions:

(a) The coarse aggregate in the mix shall be Grade 9.

(b) For white concrete curb the coarse aggregate shall be either gravel or light colored stone. The fine aggregate shall be white sand, and the cement shall be white Portland cement.

(3) Where the plans call for steel reinforcement to be placed in the curb or gutter, such reinforcement shall conform to the requirements of the ASTM for like reinforcement.

(4) Forms for construction of curbs and gutters shall be made of wood or metal. They shall be straight, free from warp or bends and of sufficient strength, when staked, to resist the pressure of the concrete without springing. If of wood, they shall be of two-inch surfaced plank; if of metal, they shall be of approved section. Forms shall have a depth equal to the plan dimensions for the depth of the concrete being deposited against them. Forms for combination curbs and gutters shall be so constructed as to insure fastening of the forms to each other.

(5) Excavations shall be made to the required depth and the subgrade or base upon which the curbs, curbs and gutters, or valley gutters is to be set shall be compacted to a firm even surface.

(6) The concrete shall be mixed as specified by the town's consulting engineer. It shall be placed in the forms to the depth specified in layers of not more than six inches, and tamped and spaded until mortar entirely covers its surface. The top of the curbing or gutter shall be floated smooth and the edges rounded to the radius shown on the plans.

(7) Unless otherwise shown on the plans, the curbs, curbs and gutters, and valley gutters shall be constructed in uniform sections ten feet in length except where shorter sections are necessary for closures, but no section shall be less than four feet. These sections shall be separated by sheet steel templets set perpendicular to the face and top of the curbing. The templets shall be held firmly during the placing of the concrete and shall be allowed to remain in place until the concrete has set sufficiently to hold its shape, but shall be removed while the forms are still in place.

(8) The forms shall be removed within twenty-four hours after the concrete has been placed, and minor defects filled with mortar composed of one part of Portland cement to two parts of fine aggregate. Plastering shall not be permitted on the face of the curb and all rejected curbs, curbs and gutters, or valley gutters shall be removed and replaced without additional compensation. The top of the curb and the face from the top to eight inches below, shall be finished while the concrete is still green, by wetting a soft brick or a wood block and rubbing the surface until it is smooth. A liberal amount of water shall be used, either by dipping the brick or block in water, or by throwing water on the curb with a brush. After the concrete has been rubbed smooth, it shall be rubbed again until a uniform color is produced, using in place of water a thin grout composed of one part of Portland cement and one part of fine aggregate.

(9) When completed, the curbs, curbs and gutters, and valley gutters shall be covered with suitable material and kept moist for a period of three days or longer, if necessary, and shall be protected in a satisfactory manner from the elements until thoroughly hardened.

(10) After the concrete has set sufficiently, the spaces in front and back of the curb shall be refilled to the required elevation with suitable material, which shall be tamped in layers of not more than six inches until firm and solid. Where bases are to be constructed adjacent to the curbs or gutters, the curbs, curbs and gutters or valley gutters shall be properly backfilled and shall set for a period of not less than fourteen days before any base material is placed against it.

SECTION 18-96 BASE COURSE---LIME ROCK BASE.

(1) Applicable specifications. Florida State Road Department specifications and other specifications, standards and publications referred to in this Section shall form a part of this Section.

(2) **Materials.** The materials used shall conform to the Florida State Road Department specifications, Section 503 - "Base Course Materials"

(a) Lime Rock - Miami Oolite Formation, Paragraph 503.1

(b)Lime Rock - Ocala Formation, Paragraph 503.2

(3) **EQUIPMENT.**

(a) **In general.** All equipment necessary for the proper construction of this work shall be on the project, in first class working condition, and shall have been approved by the town's consulting engineer before construction is started.

(b) **Scarifiers.** Scarifiers shall have two rows of teeth with teeth not more than eight inches apart, and the rows shall be staggered so that the paths of the teeth will not be more than four inches apart.

(c) **Road machines.** Road machines shall weigh not less than three tons, and shall have a wheel base not less than fifteen feet, and a blade not less than ten feet. Road machines shall not be pulled with rollers.

(4) **Forms.** Forms shall be either:

(a) Two-inch lumber square edge and sound end of sufficient width to extend from the top to bottom of the loose spread lime rock.

(b) Steel sections meeting the approval of the town's consulting engineer.

(c) The forms shall be set true to line and grade and substantially staked in place to insure stability during the spreading and rolling operations.

(5) **Correction of the elevation of manhole frames.** Before spreading lime rock, all manhole frames encountered in the course of preparation of the subgrade shall be raised, by the use of brick and cement mortar, to the elevation of the finished pavement.

(6) **Transporting lime rock.**

(a) Lime rock shall be transported to the point where it is to be used, over rock previously laid, and dumped on the end of the preceding spreading. In no case shall the rock be dumped directly on the subgrade.

(b) No hauling over the subgrade shall be done except with written approval of the town's consulting engineer, in which case the subgrade shall be protected by planking, for a distance of at least one hundred fifty feet from the point where lime rock is being dumped.

(7) **Spreading lime rock.** Lime rock shall be spread uniformly with shovels or forks, or by means of bulldozers or other equipment approved by the town's consulting engineer.

(8) **Compacting and finishing base.**

(a) After spreading is completed, the entire surface shall be scarified and shaped so as to produce the exact grade and cross-section, after compaction.

(b) The base course shall be compacted to an average of ninety-five per cent, for each day's operations, of the maximum density as determined by AASHO Model T 99, modified as follows: "The weight of the tamper shall be ten pounds and it shall be dropped from a height of eighteen inches, and the sample shall be compacted in five equal layers. The density for individual tests shall be not less than ninety per cent of the maximum density.

(c) During final compacting operations, if blading of any area is necessary to obtain the true grade and cross-section, the compacting operations for such area shall be completed prior to making the density determinations on the finished base.

(d) In order to permit the specified density to be obtained, it may be necessary to add moisture if the rock is too dry, or to aerate and reduce the moisture.

(e) At least three density determinations shall be made on each day's final compaction operations, and at more frequent intervals if so directed by the town's consulting engineer.

(f) Immediately prior to the application of the prime coat, the surface shall be "hard planed" with a blade grader so as to remove the thin glazed or cemented surface of the base. This hard planing shall be done in such a manner that only the glazed or

cemented surface will be removed, leaving a granular or porous condition which will allow free penetration of the prime material. The materials planed from the base shall be removed from the base area.

(g) If at any time the subgrade material becomes churned up or mixed with the base course material, the contractor or developer should see that the mixture is dug up and removed, the subgrade reshaped and compacted, and the materials removed replaced with clean lime rock, reshaping and compacting to be done as specified in this Section.

(h) Where cracks or checks appear in the base, either before or after priming, which in the opinion of the town's consulting engineer will impair the structural efficiency of the base course, such cracks or checks shall be removed by rescarifying, reshaping, adding lime rock where necessary, and recompacting.

(9) **Testing the surface.**

(a) The finished surface of the base course shall be checked with a templet cut to the required crown, and with a fifteen foot straight edge laid parallel to the center line of the road. All irregularities greater than one-quarter inch shall be corrected by scarifying to a depth of not less than four inches, and removing or adding work as may be required, after which the entire area shall be recompacted as specified in this Section.

(b) In testing the surface, measurements shall not be taken in small holes where individual pieces of rock have been pulled out by the grader.

(10) **Opening to traffic and maintaining.**

(a) The completed base course shall be opened to traffic for a sufficient period of time, as determined by the town's consulting engineer, to allow the base to become thoroughly cured before the prime coat is applied.

(b) Traffic shall be distributed so as to properly cure the entire area of the base.

(c) The developer, or contractor, shall maintain the base to a true and satisfactory surface and the specified density, until the wearing surface is laid.

(d) After the base has been under traffic the required curing period, and immediately preceding the application of the prime coat, the base shall again be

tested as provided in Subsection (9) of this Section, and if the base shall be found to meet all the requirements, the hard planing, as specified in Subsection (8) (f) of this Section, shall then be done.

(11) **Thickness determinations.**

(a) The thickness of the base shall be measured at intervals of not more than two hundred feet. Measurements shall be taken at various points on the cross-section.

(b) The measurement shall be taken by core borings, not less than one and one-half inches in diameter.

(c) Where the base is more than five-eights inch less than the required compacted thickness, the developer, or contractor, shall correct such area by scarifying and adding rock. The base shall be scarified and rock added for a distance of seventy-five feet in each direction from the edge of the deficient area. The affected areas shall then be brought to the required thickness and cross-section.

(d) The average thickness of the base shall be determined from all measurements taken within each town block.

(12) **Method of measurement.**

(a) The quantity to be paid for under this Section shall be the number of square yards of lime rock base compacted and accepted.

(b) The square yards of base shall be the product of the length, as actually measured on the completed work, and the width, which shall be the width of the base actually constructed within the neat lines on the drawings, or designated by the town's consulting engineer.

SECTION 18-97. SAME---SOIL-CONCRETE BASE.

(1) The Florida State Road Department specifications and other specifications, standards and publications referred to in this Section shall form a part of this Section.

(2) The soil-concrete base course shall be constructed in accordance with the requirements of these specifications, and shall conform to the lines, grades, thicknesses and typical cross-section shown on the plans.

(3) Portland cement shall comply with the requirements and tests of the latest "Standard Specifications for Portland Cement," ASTM Designation C150, or the "Tentative Specifications for Air-Entraining Portland Cement," ASTM Designation C175, for the type specified. One cubic foot of Portland cement shall be considered as weighing ninety-four pounds. The water shall be free from substances deleterious to the hardening of the soil-cement base course, and shall be subject to the approval of the town's consulting engineer. The soil for this base course shall consist of the material existing in the area to be paved, or selected soil, or mixtures of both, which shall be approved by the town's consulting engineer. The soil shall not contain more than five per cent gravel or stone retained on a three-inch sieve, nor more than forty-five per cent retained on a No. 4 sieve.

(4) Any approved combination of machines or equipment, such as those listed below, may be used to produce the completed soil-cement base course meeting the requirements for soil pulverization, cement distribution, water application, incorporation of materials, compaction, finishing, and for providing protection and cover, as controlled by this Section. All machines and equipment used shall be in suitable operating condition and shall meet with the approval of the town's consulting engineer. The recommended necessary equipment and machines are:

(a) Soil pulverizer
(b) Sheepsfoot roller
(c) Five-ton (or more) steel wheel roller
(d) Rubber-tired traffic roller
(e) Two-bottom plow
(f) Disc-harrow
(g) Spike-tooth harrow
(h) Street brooms
(i) Motor grader with scarifier
(j) Portable water tank
(k) Asphalt distributor
(l) Dump trucks
(m) Wheel tractor
(n) Dragline, crane or end-loader
(o) Crawler tractor

(5) Before undertaking other construction operations, the area to be paved shall be graded and shaped as required to construct the base course conforming to the grades, lines, thicknesses, and typical cross-section shown on the plans. Any additional soil needed shall be selected and placed as directed by the town's consulting engineer. Any unsuitable soil or material, including material retained on a three-inch sieve, shall be removed and replaced, when necessary, with acceptable material.

(6) The subgrade shall be firm and able to support without displacement, the construction equipment and compaction hereinafter specified. Any soft or yielding subgrade shall be corrected and made stable before construction proceeds.

(7) When necessary, the soil to be processed shall be scarified and pulverized prior to the application of cement. Pulverizing shall continue, during mixing operations if necessary, until one hundred per cent of the soil by dry weight passes a one-inch sieve, and a minimum of eighty per cent of the soil passes a No. 4 sieve, exclusive of gravel or stone retained on these sieves.

(8) The specified quantity of Portland cement shall be applied uniformly on the soil, and in a manner satisfactory to the town's consulting engineer. When bulk cement is used, suitable equipment for handling, weighing, and spreading the cement shall be provided. At the time of cement application, the percentage of moisture in the soil shall not exceed the quantity which will permit a uniform and intimate mixture of soil and cement during mixing operations. All the operations specified in Subsections (8) through (13) of this Section shall be continuous and surface completed in daylight hours. All the operations specified in Subsection (9) through (12) of this Sections shall be completed within six hours. Any equipment or traffic traveling over the spread cement shall be maintained at slow speed and any cement displaced shall be replaced before mixing is started. No cement shall be applied when the soil or subgrade is frozen. The air temperature shall be at least forty degrees (F.) in the shade, and rising.

(9) After the cement has been applied it shall be mixed with the soil. Mixing shall continue until the cement has been sufficiently blended with the soil to prevent the formation of cement balls when water is applied. Any mixture of soil and cement that has not been compact and finished shall not remain undisturbed for more the thirty minutes.

(10) Immediately after the soil and cement have been mixed, water shall be applied uniformly and incorporated in the mixture. A water supply and pressure-distributing equipment shall be provided which will assure the application within three hours of all water required on the section. After all water has been applied, mixing shall continue until a thorough, uniform and intimate mixture of soil, cement and water has been obtained.

(11) When water application and mixing have been completed, the percentage of moisture in the mixing and in unpulverized soil lumps, based on over-dry weights, shall not be below, nor more than one-fifth above, the specified optimum moisture content, and shall be less than that quantity which will cause the base course to become unstable during compaction and finishing. The specified optimum moisture content shall be determined in the field by a moisture-density test, ASTM Designation D558-44 or AASHO Standard

T134-45, on representative samples of soil-cement mixture obtained from the base course being processed at the conclusion of moist-mixing operation.

(12) Prior to the beginning of compaction, the mixture shall be in a loose condition for its full depth. As a continuation of mixing operations, the loose mixture shall then be compacted by rolling, until the entire soil-cement mixture has been uniformly compacted to the density specified by the town's consulting engineer. The rolling shall be of the type, size and weight specified by the town's consulting engineer, as best suited to give the required densities in the soil-cement mixtures being compacted. The number and rate of operations of rollers shall be sufficient to uniformly compact the section being processed to the required density within two hours. The specified density shall be determined in the field by a moisture-density test, ASTM Designation D558-44, or AASHO Standard T134-45, on representative samples of soil-cement mixture obtained from the base course being processed at the time of compaction.

(13) After the mixture has been compacted, the surface of the base course shall be shaped, if necessary, to the required lines, grades and cross-section. When required, the surface shall be lightly scarified to loosen any imprints left by the compacting or shaping equipment. The resulting surface then shall be thoroughly rolled with steel-wheel or pneumatic-tire rollers, or both, of the type and size specified by the town's consulting engineer. The moisture content of the surface material must be maintained at not less than its specified optimum moisture content during all finishing operations. Surface compaction and finishing of the section being processed shall be done in such a manner as to produce, in not longer then two hours, a smooth, dense surface, free of surface compaction planes, cracks, ridges, or loose material. The completed base course shall conform to the grades, lines and typical cross-section shown on the plans. When directed by the town's consulting engineer, surface finishing methods may be varied, provided a smooth, dense surface, free of surface compaction planes, is produced. Any portion of the base course which has a density of five pounds, or more, per cubic foot below that specified by the town's consulting engineer shall be corrected or removed and replaced to meet these specifications.

(14) After the soil-cement base course has been finished it shall be protected against drying for seven days by applying bituminous materials by applying a two-inch covering of earth, or not less than four pounds dry weight, of straw or hay per square yard, which shall be moistened initially and subsequently as may be necessary, or by applying other cover materials approved by the town's consulting engineer. The cover material shall be applied as soon as possible after the completion of finishing operations. The finished base course shall be kept continuously moist until the cover material is placed.

(15) When a bituminous cover material is used, approximately 0.20 gallons to 0.35 gallons per square yard, or an amount that will give complete coverage without excessive runoff shall be applied to the surface of the soil-cement base course. The bituminous material shall be applied uniformly at the rate and temperature specified by the town's consulting engineer, and by means of approved heating and distributing equipment. At the time of bituminous material application the soil-cement surface shall be dense, free of all loose and extraneous material, and shall contain sufficient moisture to prevent penetration of the bituminous material. If needed, water shall be applied to fill the surface voids of the soil-cement immediately before the bituminous material is applied. Should it be necessary for the construction equipment or other traffic to use the bituminous-covered surface before the bituminous material has dried sufficiently to prevent pick-up, sufficient granular cover shall be applied before such use.

(16) The cover shall be maintained by the contractor during the seven-day protection period so that all of the soil-cement base course will be covered effectively during this period. After the seven-day protection period, all earth, hay or straw cover shall be removed from completed portion of the base course.

(17) Any finished portion of the base course adjacent to construction which is traveled by equipment used in constructing an adjoining section shall be protected in such a manner as to prevent equipment from marring or damaging the completed work.

(18) At any time when the air temperature may be expected to reach the freezing point during the day or night, sufficient protection shall be given the soil-cement to prevent its freezing for seven days after placement and until the soil-cement has hardened.

(19) At the end of each day's construction a straight transverse construction joint shall be formed by cutting back into the completed work to form a true vertical face, and by installing a temporary wooden header if required by the town's consulting engineer. Base course for roads, streets or similar areas shall be processed and finished full width each day without longitudinal construction joints.

(20) Local traffic and construction equipment shall be permitted to use completed portions immediately, provided the base course has hardened sufficiently to prevent marring or distorting of the surface by equipment or traffic, and provided the protection and cover specified is not impaired. After the seven-day protection period, all traffic shall be permitted to use completed portions, provided the base course has hardened sufficiently to prevent marring or distorting of the surface by traffic.

(21) The developer, or contractor, shall, within the limits of his contract, maintain the entire base course in good condition and satisfactory to the town's consulting engineer from the time he first starts work until all work shall have been completed and accepted. Maintenance shall include immediate repairs of any defects that may occur either before or after the cement is applied, which will be done by the developer, or contractor, at his own expense, and repeated as often as may be necessary to keep the area continuously intact. Faulty work shall be replaced for the full depth of treatment. Any low areas shall be remedied by replacing the material for the full depth of treatment rather than by adding a thin layer of soil-cement to the completed work.

SECTION 18-98. BITUMINOUS PRIME AND TACK COATS.

(1) The work specified in this Section consists of an application of bituminous material on a previously prepared base in accordance with the specifications herein contained and in conformity with the lines, grades, dimensions and notes shown on the plans.

(2) A pressure distributor shall be used and shall be equipped with pneumatic tires having a sufficient width of rubber in contact with the road surface to avoid breaking the bond of or forming a rut in such surfacing. The distance between the centers of openings of the outside nozzles of the manifold shall be equal to the width of the application required within an allowable variation of two inches. The outside nozzle at each end of the manifold shall have an area of opening not less than twenty-five per cent nor more than seventy-five per cent in excess of the other nozzles which have uniform openings.

(3) The bituminous materials to be used shall be either cut-back asphalt, grade RC-1, or emulsified asphalt of an approved grade.

(4) Before any bituminous material is applied, all loose material, dust, dirt, caked clay and foreign material which might prevent proper bond with the existing surface shall be moved to the shoulders, to the full width of the treatment by means of revolving brooms or approved mechanical sweepers and by mechanical blowers, of approved types, supplemented by hand sweeping. Dust and other loose material not removed by mechanical means shall be removed with hand brooms. Particular care shall be taken to clean the outer edges of the strip to be treated in order to insure that the prime or tack coat will adhere. Sweeping and blowing shall be continued until all the loose dirt and dust is removed from the surface.

(5) Where the prime or tack coat is applied adjacent to curbs and gutters, valley gutters, or any other concrete pavement surface, such concrete surfaces (except where they are to be covered with bituminous wearing course) shall be protected by means of heavy paper or other material approved by the town's consulting engineer, while the prime or tack coat is being applied. Any bituminous material deposited on such concrete surfaces shall be removed immediately.

(6) No bituminous material shall be applied when the temperature of the air is less than sixty degrees (F.) in the shade, or when, in the opinion of the town's consulting engineer, the weather conditions or the conditions of the existing surface are unsuitable.

(7) The surface to be treated shall be clean and dry. The temperature of the prime material shall be between one hundred and one hundred fifty degrees (F.). The exact temperature shall be such as will insure uniform distribution and shall be designated by the town's consulting engineer. The material applied shall be applied by means of a pressure distributor. The amount applied shall be at the rate of approximately 0.1 to 0.35 gallons per square yard, to be determined by the town's consulting engineer, and will be dependent on the character of the surface, but shall be sufficient to coat the surface thoroughly and uniformly without having any excess to form pools or to flow off the base.

(8) The prime shall be allowed to stand without sanding for a period of at least one hour, unless otherwise ordered by the town's consulting engineer. In the event the prime coat is damaged by rain within this period, the town shall bear the cost of repriming.

(9) If so ordered by the town's consulting engineer, a light, uniform application of clean sand shall be applied prior to opening the primed base to traffic, in which case the sand shall be rolled with a traffic roller in conjunction with traffic, to cure the prime coat. After the sand covering has been applied the surface may be opened to traffic.

(10) If warranted by traffic conditions, in the opinion of the town's consulting engineer, the application shall be made on only one-half the width of base at one time, care being taken to secure the correct amount of bituminous material at the joint. If deemed necessary, the town's consulting engineer may require that the base be lightly sprinkled with water in advance of the application of the prime.

(11) Where a bituminous surface is to be laid and a tack coat is required, it shall be applied as herein specified. On newly constructed base courses the application of the tack coat shall follow the application of the prime coat, immediately prior to placing the wearing surface. When the wearing surface is to be laid over an old pavement and a prime coat is not required, the tack coat shall be applied to the surface without the prime coat as shown

on the plans. The tack coat shall be applied with a pressure distributor except that on small jobs, if approved by the town's consulting engineer, the application may be made by other approved mechanical methods or hand methods. The bituminous materials shall be heated to a suitable consistency as designated by the town's consulting engineer. The rate of application shall be between 0.05 and 0.15 gallon per square yard. The exact rate shall be designated by the town's consulting engineer, who shall also designate the curing period for the tack coat. The tack coat shall be applied sufficiently in advance of the laying of the wearing surface to permit drying, but shall not be applied so far in advance or over such an area as to lose its adhesiveness as a result of being covered with dust or other foreign material. The tack coat surface shall be kept free from traffic until the wearing surface is laid.

SECTION 18.99. WEARING SURFACES---IN GENERAL. Hot plant mixed asphalt wearing surface shall be the construction preferred by the town if such material is readily available to the developer, at reasonable prices. In the event such material is not readily available at reasonable prices, bituminous surface treatment shall be permitted.

SECTION 18-100. SAME---ASPHALT CONCRETE, TYPE II.

(1) **Applicable specifications.** The Florida State road Department specifications and other specifications, standards and publications referred to in this Section shall form a part of this Section.

(2) **General composition of mixture.** The prescribed constituents, prepared as herein specified, shall be combined in such proportions as to produce a mixture conforming with the following composition limits by weight:

Material	Percent of Total
Mineral aggregate	91-95
Asphaltic cement (Bitumen)	5-9

When highly absorptive aggregates are used the upper limit of the bitumen may be raised, as directed by the town's consulting engineer.

(3) **Formula for job mix.**

(a) The developer, or contractor, shall submit his intended job mix formula and samples of all ingredients to be used in the mixture, to the town. These shall be forwarded by the town, at the town's expense, to an approved and nationally recognized testing laboratory for the approval of the formula and the materials which shall hereinafter be designated as the job mix formula.

(b) If, during the course of construction, the developer, or contractor, desires to secure other sources of material than those designated in the original samples, he may resubmit a job mix formula and samples of materials to be used in the mixture, to the town for approval by the testing laboratory, provided that such cost involved shall be borne by the developer, or contractor.

(c) The job mix formula shall be such as to produce a mixture possessing a Hubbard-Field stability at one hundred forty degrees (F.) of not less than twelve hundred pounds.

(d) Mineral filler shall not be required unless the aggregate selected for use requires filler in order to produce the required stability. The quantity of mineral filler used, when combined with the other aggregates shall not produce a mixture containing more than ten per cent by weight of material passing the 200 mesh sieve.

(e) The mixture shall meet the exact formula for the project within the following allowable job tolerance: Bitumen, plus or minus 0.5%.

(4) **Materials.**

(a) Bituminous material shall be asphaltic cement penetration grade 85-100, conforming to the requirements of the AASHO Standard Specification Designation M-20.

(b) Aggregate shall consist of either crushed slag, crushed stone or gravel or a combination of these aggregates with sand that will meet the gradation requirements specified. The aggregate shall pass a one-half inch sieve. At least ten per cent by weight of the total aggregated used shall be retained on the No. 10 sieve, and shall consist of crushed slag, gravel or crushed stone. The sand shall be sharp and nonplastic. It shall be composed of hard durable grains free from excessive quantities of clay, loam or other deleterious substances, and shall be

suitable for use in a bituminous mix as determined by laboratory tests. If the sand deposit consists of stratified layers of varying characteristics and gradations, the developer, or contractor, shall employ such means as may be necessary to secure a uniform material representative of a cross-section of the depth of the deposit. Aggregates having any appreciable amount of phosphates shall not be used.

(c) Mineral filler, if used, shall conform to the requirements of AASHO Standard Specifications Designation M-17.

5) **Plant.**

(a) The plant shall be of an approved type asphalt plant, and shall have a capacity of not less than two hundred fifty cubic yards of mix material per eight hour day.

(b) The plant shall further conform to the requirements of the Florida State Road Department Specifications (April 1, 1954) Section 108.5 A, "Requirements for all Plants."

(6) **Preparation of the asphalt cement.** The asphalt cement shall be heated in kettles or tanks so as to secure even heat of the entire mass. It shall be heated to between two hundred fifty and three hundred fifty degrees. (F.).

(7) **Preparation of aggregates.** The fine aggregates shall be dried and heated at the paving plant before entering the mixer. They shall be heated to a temperature between two hundred fifty and three hundred fifty degrees (F.), as determined on the mixing platform. When fuel oil appears in the dried aggregate, all material in such condition shall be drawn off and thrown away until this condition is corrected.

(8) **Preparation of the mixture.**

(a) The dried aggregates and mineral, combined in batches to meet the job mix formula by weighing each separate size, shall be conveyed to the empty mixer. The aggregate shall be mixed dry for a sufficient period to distribute uniformly the various sizes throughout the batch.

(b) The hot asphalt cement shall then be accurately weighed and introduced, and the mixing continued until the mixture is thoroughly uniform and homogenous in character. The total mixing time will vary in relation to the nature of the aggregates and capacity of the mixer, but in no case shall the mixing time, after the introduction of the hot asphalt, be less than one minute for the twin pub mill-type

mixer, or two and one-half minutes for the rotary drum-type mixer. Each batch shall be kept separate throughout the weighing and mixing operations. The ingredients shall be heated and combined in such manner, as to produce a mixture which shall be at a temperature, when discharged, within thirty degrees of the temperatures set by the town's consulting engineer, between the limits of two hundred fifty and three hundred fifty degrees (F.).

Where the plant used is the continuous mixer type, the aggregate and mineral filler, if required, shall be proportioned and introduced into the mixing box through a strike-off orifice. The bituminous material shall be introduced in the mixer through satisfactory nozzles or spray bars properly adjusted mechanically so that the proper amount can be maintained at all times.

(9) **Transportation of mixture.**

(a) The mixture shall be transported in tight vehicles previously cleaned of all foreign materials, and when directed by the town's consulting engineer, each load shall be covered with waterproof canvas cover of sufficient size to protect it from weather conditions. The inside surface of the truck bodies may be thinly coated with soapy water, or a mixture of water with not more than ten per cent of lubricating oil, but an excess of either shall not be used. After coating, the bodies shall be raised so that all excess water will drain out before placing any mixture therein. Kerosene, gasoline or similar products shall not be used.

(b) No mixture shall be sent out so late in the day as to prevent spreading, finishing, and compacting the mixture during daylight.

(10) **Weather limitations.** No mixture shall be laid when, in the opinion of the town's consulting engineer, weather conditions are unsuitable, or when the air temperature in the shade is below forty degrees (F.), except by written permission of the town's consulting engineer.

SECTION 18-101. SAME---BITUMINOUS SURFACE TREATMENT.

(1) The work specified in this Section consists of a wearing surface composed of a single application of bituminous material covered with a single application of cover material or a double application of bituminous material covered with a double application of cover material. The wearing surface shall be applied in accordance with the specifications

contained in this Section and in conformity with the lines, grades and cross-sections shown on the plans.

(2) Bituminous surface treatment consists of two types. The composition and proportioning of each type is as follows:

(a) **Type I - Single application bituminous material with single application grade 15 cover material.** This bituminous surface treatment shall be composed of approximately 0.35 to 0.45 gallon of asphalt covered with approximately 0.45 to 0.50 cubic foot, loose measurement, of cover material, per square yard; cover material to be applied in a single application. The exact amount of asphalt and cover material shall be as specified by the town's consulting engineer.

(b) **Type II - Double application bituminous material with double application cover material.** This bituminous surface treatment shall be composed of approximately 0.6 gallon of asphalt applied in two applications, covered with approximately 0.76 cubic foot, loose measurement, of cover material per square yard. The two applications of asphalt shall be approximately 0.25 gallon per square yard, first application, and 0.35 gallon per square yard, second application. The cover material shall be applied in two applications, one of Grade 12A and one of Grade 18. The proportion of coarse to fine material shall be approximately two parts of coarse to first application to one part of fine for second application, which may be varied slightly in the discretion of the town's consulting engineer.

(3) The rollers used shall be three-to five-ton, steel-tired tandem rollers, and a pneumatic-tired, traffic type roller equipped with at least nine low-pressure tires capable of carrying gross load of not less than eight tons. The traffic roller shall be loaded as directed by the town's consulting engineer. The drag broom shall be a light, nonrevolving type, not less than twelve feet wide, and shall be mounted on wheels. It shall be so designed as to permit the brooms to be adjusted to the crown of the roadway and to lighten or intensify the pressure exerted by the bristles on the road surface. It shall have at least four rows of brooms, with one row at each end. Drag brooms of a design different from that described above may be used if they are capable of producing the desired results and are approved by the town's consulting engineer. Sufficient trucks and other necessary spreading equipment shall be on the site of the work to insure continuous spreading of the aggregate on the uncovered bituminous material. Spreaders shall be attached to the trucks. If spreaders are to be transferred from truck to truck as spreading is done, the attaching device shall be such that the transfer can be easily and quickly made. The pressure distributor shall meet the requirements of Section 18-98.

(4) The surface to be covered shall be swept clean and free from sand, dirt, and other deleterious matter, by means of mechanical rotary sweepers, hand brooms, and approved mechanical blowers, and shall be free from moisture. Where a prime coat has previously been applied to the surface, no bituminous material shall be applied to the surface until the prime coat has been thoroughly cured, as determined by the town's consulting engineer. Surface treatment shall not be applied over any pavement mixture containing cut-back asphalt while the pavement is hot from exposure to the sun. Where this surface course is applied adjacent to curbs and gutters, valley gutters or any other concrete pavement surface, such concrete surfaces shall be protected by means of heavy paper or other material approved by the town's consulting engineer, while the bituminous material is being applied. Any bituminous material deposited on such concrete surfaces shall be removed immediately.

(5) No bituminous material shall be applied when the temperature is below seventy-five degrees (F.) in the shade and falling, or below seventy degrees (F.), in the shade and rising, or when in the opinion of the town's consulting engineer, weather conditions are otherwise unfavorable.

(6) After the surface to be treated has been cleaned to the satisfaction of the town's consulting engineer, the bituminous material shall be sprayed uniformly over the dry surface by means of a pressure distributor. Each machine used for applying the bituminous material shall maintain pressure of not less than twenty nor more than seventy-five pounds per square inch. Semi-solid asphalt shall be applied at a temperature between two hundred seventy-five and three hundred twenty-five degrees (F.). Emulsified asphalt shall be applied at a temperature between ninety and one hundred forty degrees (F.).

(7) Special precautions shall be observed to the end that an even and uniform distribution of bituminous material shall be obtained and the distributing machine shall be so adjusted and operated as to distribute evenly at all times, the class material being applied. Excessive deposits of bituminous material upon the road surface caused by stopping or starting the distributing machines, by leakage or otherwise, shall be removed immediately.

(8) The area to be covered by any one application of bituminous material shall be not greater, in the opinion of the town's consulting engineer, than can be covered with the aggregate without interruption due to limitations of hauling and spreading equipment or any other cause. Where double application of bituminous material is shown on the plans, other bituminous material shall be applied in two applications in the proportions specified.

(9) The quantity of cover material shall be measured by volume, loose measurement, in truck bodies. Immediately following the application of bituminous material, the cover material shall be distributed uniformly over the bituminous material surface in one or two courses as indicated on the plans. Spreading shall be done directly from trucks by means of approved mechanical spreaders. Only drivers experienced in this type of work shall be used in driving the spreader trucks. Trucks or spreaders shall not be driven on the uncovered bituminous material.

(10) Immediately after each application of cover material has been spread, brooming by experienced and skilled workmen shall be done to secure a uniform distribution which will insure a smooth surface. Additional aggregate shall be placed by hand on any areas not properly covered. The surface shall then be dragged with a light drag broom which will not disturb the embedded aggregate. This operation shall be supplemented by additional hand-brooming shall be repeated in conjunction with the rolling as often as, in the opinion of the town's consulting engineer, is necessary to insure uniform surface. These dragging requirements shall apply to each application of cover material.

(11) For double application the cover material shall be distributed uniformly over the bituminous surface in two separate courses. The course size shall be applied immediately after the first application of bituminous material and shall be distributed uniformly in such an amount as to cover the surface completely with a single layer of material. The first application shall then be broomed to obtain a uniform surface, and so that no one piece of cover material shall rest on another, and then rolled. The second application of bituminous material shall then be applied and immediately thereafter the fine-size cover material shall be distributed uniformly over the surface in the quantity specified or such quantity as may be necessary to fill completely the voids of the first application. The fine-size cover material shall then be broomed by skilled and experienced workmen, to secure a smooth and uniform surface, and thoroughly rolled. For double application of bituminous and cover materials the second application shall be applied the same day as the first application, as far as practicable. In any case, no first application work shall be started until the second application has been applied to all areas which received the first application the previous day, or earlier.

(12) Immediately after spreading and dragging each application of cover material the entire surface shall be rolled. The rolling shall in all cases begin within thirty minutes after the spreading of cover material. Rollings shall begin at the edges and progress to the center of the surface, uniformly lapping each preceding track and covering thoroughly the entire surface. The cover material shall first be rolled with a steel-tired roller. Such rolling shall be discontinued before the aggregate begins to crush under the roller. The cover material shall then be rolled with the traffic roller. On non-rigid bases and where the

surface to be covered is irregular, if so directed by the town superintendent, rolling with the steel-tired roller shall be omitted. The rolling shall be repeated as often as, in the opinion of the town superintendent, is necessary to insure thorough keying of the cover material into the bituminous material and to secure a uniformly closed surface.

(13) The finished surface shall be uniform and shall conform to the lines, grades and typical cross-section shown on the plans, and where tested with a templet and straight edge shall show no appreciable variation. Such portions of the completed surface as are defective, not properly finished, have fat joints, or do not comply in all respects with the requirements of these specifications, shall be taken up, removed, and replaced with suitable material properly laid in accordance with these specifications and at the expense of the developer or contractor.

(14) After the application of bituminous material, traffic shall not be allowed to use the road until the cover material has been placed and thoroughly rolled. If practicable, traffic shall be kept off the finished surface for forty-eight hours. Where it is impracticable to keep traffic off the finished surface for a period of forty-eight hours after the surface is finished, traffic shall be restricted to a maximum speed of fifteen miles per hour during this forty-eight hour period. For this purpose the developer, or contractor, shall furnish and maintain suitable barricades, warning lights and signs.

(15) The application of bituminous and cover materials shall be over the entire width to be treated, unless, in the opinion of the town superintendent, traffic conditions will not permit, in which case the application shall be confined to one side of the road at one time over such an extent as the economical distribution of material from one delivery point will permit, leaving the opposite side open for traffic. Where bituminous surface is to be covered with a wearing course of plant mix seal or asphaltic concrete, the wearing course shall not be placed until the surface has been cured by traffic. This curing period shall be at least one week unless otherwise directed by the town's consulting engineer.

SECTION 18-102---18-106. RESERVED.

ARTICLE X. RESERVED

SECTION 18-107---18-114. RESERVED.

ARTICLE XI. MINIMUM REQUIREMENTS FOR GAS UTILITY SYSTEMS

SECTION 18-115. IN GENERAL.

(1) There shall be submitted with an application for approval with a plat for a subdivision complete engineering drawings and specifications to evidence compliance with standards for installation of gas utility systems as set forth in this Section.

(2) All installations for transmission and distribution of natural gas, liquefied petroleum gas, manufactured gas and mixtures of air and liquefied petroleum gas shall be made in accordance with the Florida Gas Transmission and Distribution Piping Systems Safety Code, Chapter 368, Florida Statutes, which code and which chapter are incorporated herein by reference and made a part hereof.