

**AMENDMENT TO THE CODE OF ORDINANCES OF THE CITY OF BRANDON,
MISSISSIPPI, AMENDING APPENDIX B DEVELOPMENT ORDINANCE ARTICLE V,
SECTION 16-41 STREETS AND ARTICLE VI, SECTION 16-53 STREET DEVELOPMENT**

BE IT ORDAINED BY THE MAYOR AND BOARD OF ALDERMEN OF THE CITY OF BRANDON, MISSISSIPPI, that Appendix B Development Ordinance Article V and VI, of the Code of Ordinances of the City of Brandon, should be, and the same is hereby amended to read in full as follows:

SECTION 1: Appendix B, Article V, Section 16-41 of the Code of Ordinances of the City of Brandon is amended, to read in full as follows:

Sec. 62-41: All cul-de-sacs shall terminate in a circular area with a minimum right-of-way diameter of 100 feet with a minimum paved surface diameter of at least 80' unless the city engineer approves a variation of the turning facility. Cul-de-sac length shall be determined by the public works director and consulting engineer and presented to the board of aldermen for consideration during the preliminary plat approval process. Factors that shall determine the length of a cul-de-sac shall be determined by topography, number of lots on proposed cul-de-sac, and number of other ingress/egress points into proposed development.

SECTION 2: Appendix B, Article VI, Section 16-53 of the Code of Ordinances of the City of Brandon is amended, to read in full as follows:

Sec. 62-53:

1. General. All streets shall be constructed with a standard 24-inch-wide combination vertical curb and gutter or a Type 2 six-inch mountable curb and gutter. Streets designed without curb and gutter will not be allowed unless written approval has been granted by the city. All approved curb shall be the same throughout the development, unless otherwise approved by the board of aldermen.

The typical cross-section for streets shall conform to minimum standards as follows:

Type of Street	Pavement Width In Feet Back of Curb to Back of Curb
Arterial highway	Variable
Industrial collector	42
Commercial	30
Residential, collector	34
Residential, minor or local	27
Cul-de-sacs and dead end*	27

*Not to exceed 600 feet unless special conditions warrant as determined by the city engineer.

Street pavement designs shall be based on consideration of the anticipated traffic volumes by weight, subgrade soil, surface drainage, ground water and climatic condition. The pavement thickness shall be a function of the load supporting value of the subgrade soil beneath the pavement and the load distribution characteristics of the proposed pavement structure. Except for residential development, the developer shall submit a proposed pavement design to the director of planning and development. Set forth herein below are the minimum acceptable thicknesses for pavement structures in residential developments:

Residential: One and one-half inch asphalt surface course, five inch asphalt base course and twelve inch lime treated subgrade.

Other: One and one-half inch asphalt surface course, six inch asphalt base course and 12 inch lime treated subgrade.

Subgrade compaction:

- a. All subgrades shall be compacted at 96% standard proctor density before the asphalt base course.
- b. Trenches in areas to be paved shall be compacted to 98% Standard Proctor.

Streets shall be designed with a two percent cross slope.

All street improvements including base, sub-base, curb and gutter and appurtenances shall be constructed in accordance with approved plans and specifications. Unless the developer provides detailed specifications the current edition of the Standard Specifications for State Aid Road and Bridge Construction (English Edition) shall govern.

The street surface course required pursuant to this section shall be placed no sooner than one year from the date of approval of the final plat, or until such time as structures have been completed on 85 percent of the lots in the subdivision. In no event shall the date of application of the street surface course be more than three years from the date of approval of the final plat.

2. Construction.

- a. Subgrade construction.

Site preparation. As an initial step of site preparation, trees located within the pavement area shall be removed, including stumps and roots. Stripping shall be performed to a sufficient depth throughout the construction area to remove organic-laden surficial soils, vegetation, debris, brush and roots. Excavation shall be performed to remove weak soils. The lateral and vertical extent of excavation required to remove weak soils must be determined in the field during earthwork construction. Excavation to remove weak soils shall extend laterally not less than 3 ft. beyond pavement edges or back of curb.

Bridging. Bridging over weak soils can be allowed. Excavation shall be performed to a sufficient depth to allow placement of an adequate bridging lift and not less than 3 ft. of compacted select fill materials to directly underlie the pavement structure. Bridging materials shall consist of either clean sands (SP) or slightly silty sands (SP-SM) with less than 10 percent fines passing the No. 200 sieve. The bridging lift shall not be more than 18 in. thick. The bridging materials shall be spread and compacted by repeated passes of a dozer not larger than a D4. A geotextile shall be utilized beneath the bridging materials to initiate compaction with stability. That the geotextile utilized for this purpose shall be Type V geotextile as specified in the Mississippi Standard Specifications for Road and Bridge Construction (1990 Edition).

Undercutting. Undercutting shall be performed to remove expansive clays (CH) as required to allow for the placement of compacted select low permeability soils to create a nonexpansive soil buffer that shall extend not less than 3 ft. below the subgrade level for pavements. Undercutting will be needed within areas where existing on-site silty clays (CL), silts (ML) and sandy clays (CL) by themselves or in combination with select fill do not provide the recommended buffer thickness. The lateral extent of undercutting required to remove expansive clays (CH) must be determined in the field during earthwork construction. Undercutting shall extend laterally not less than 3 ft. beyond pavement edges or back of curb.

Scarification and compaction. The soils exposed after stripping, excavation and undercutting shall be scarified to a minimum depth of 12 in. and compacted to not less than 96 percent of standard Proctor maximum dry density (ASTM D 698) with stability present. The exposed soils shall be proof rolled to demonstrate stability. Stability is defined as the absence of significant pumping or yielding of soils during compaction or proof rolling. If stability is not evident in some areas, either additional excavation or treatment of the in situ soils with an admixture, or a combination of these approaches, will be required to achieve stable conditions. Scarification/compaction and/or proof-rolling of the in situ soils is not required in areas where bridging is to be conducted.

Pumping soils. on-site natural silty clays (EL), clayey silts (ML) and silts (ML) exposed after stripping and excavation are susceptible to pumping under wet conditions. The construction techniques and types of equipment utilized and site drainage provided during construction will have a great effect on the performance of these soils throughout the project. The routing of heavy rubber-tired equipment shall be controlled to minimize, as much as possible, traffic over the site. All traffic shall be discouraged during periods of inclement weather. If pumping is initiated in subgrade soils (CL or ML), as a construction expedient the pumping can be counteracted by treating these materials with hydrated lime. It is estimated that about 4 to 6 percent hydrated lime by dry weight of soil will be required. The actual lime percentage needed to hydrate moisture and eliminate pumping shall be determined during construction by laboratory testing conducted on representative samples of the pumping soils. Lime treatment shall be performed in conformance with Section 307 of the Mississippi Standard Specifications for Road and Bridge Construction (2004 Edition). On-site natural soils treated with lime shall be compacted to not less than 96 percent of standard

Proctor maximum dry density (ASTM D 698). Class C lime treatment which requires spreading the lime, mixing, compacting and finishing shall be used.

Fill placement. Fill materials shall be placed to achieve planned grades. Excavated onsite silty clays (CL) and sandy clays (CL) that are free of organic matter can be utilized as select fill. Imported fill soils shall consist of select, non-organic and debris-free silty clays (CL) or sandy clays (CL) having a plasticity index (PI) within the range of 10 to 24 and a liquid limit less than 45, or clayey sands (SC) or silty sands (SM) with a plasticity index of 4 to 15 and a liquid limit less than 35. To be classified as silty clays (CL) or sandy clays (CL), the fill materials must have more than 50 percent fines passing the No. 200 sieve. Sands (SC or SM) shall not be used as backfill placed in undercut areas over expansive clays (CH). Select fill materials placed along the roadway shall be compacted from maximum 9-in. thick loose lifts to not less than 96 percent of standard Proctor maximum dry density (ASTM D 698) at moisture contents within 3 percentage points of optimum.

Proof-rolling. Stability must be evident during compaction of each lift before any subsequent lifts of fill material are added. Stability is defined as the absence of significant pumping or yielding of soils under compaction. In addition to density requirements the final layer of fill material (finished subgrade elevation) shall be proof-rolled in the presence of a city representative with a loaded dump truck to demonstrate stability after compaction requirements have been achieved. Finished site grades shall be sloped to provide for quick runoff of storm waters.

- b. Lime stabilization. All subgrade soils must be treated with 6 percent hydrated lime by dry weight of soil to a minimum depth of 12 in. Lime treatment shall be performed in conformance with Section 307 of the Mississippi Standard Specifications for Road and Bridge Construction (2004 Edition). Class C lime treatment which requires mixing with a pulver mixer shall be used. The lime treated subgrade soils shall be compacted to not less than 96 percent of standard Proctor Maximum dry density (ASTM D 698) at moisture contents within 3 percentage points of optimum moisture content.

Sandy soils (SM and SM-SC) having a PI less than 7 will not require lime treatment. A minimum of two (2) tests will be required to verify the PI and in no case shall a single test represent more than 1,000 feet of subgrade.

3. Hot mix asphalt specifications. The hot mix asphalt (HMA) mixtures shall meet the following production requirements:

At least 10 days prior to the start of work the contractor shall submit for approval by the city engineer a proposed job-mix formula (JMF) signed by a MDOT Certified Mixture Design Technician meeting the requirements listed as follows. The bituminous base course and asphalt surface course materials shall conform with all applicable specifications for BB-1 and SC-1 presented in the Mississippi Standard Specifications for Road and Bridge Construction (1990 Edition) plus requirements listed in the following tables.

Hot Mix Asphalt Gradations
Master Design Requirements

Sieve Size	Base Course	Surface Course
1 > 1/2 inch	100	—
1 inch	83—100	—
> 1/2 inch	56—95	100
> 3/8 inch	—	87—100
No. 4	29—70	54—80
No. 8	19—54	32—63
No. 30	8—30	12—33
No. 50	4—20	6—20
No. 200	2—10	2—10

Hot Mix Asphalt Mixture Design Requirements
Marshall Compaction - 75 blows (MT -35)

Mixture Requirements	Base Course		Wearing Course	
	BB-1A	BB-1B	SC-1A	SC-1B
Stability (lbs.)	1400	1400 (min)	1500	1500 (min)
Total Air Voids (%)	3.0—5.0	3.0—5.0	3.0—5.0	3.0—5.0
VMA (%)	12.0	12.0	15.0	15.0
Tensile Strength Ratio (%)	85	75	85	75
Hydrated Lime (%)	1.0	0	1.0	0
Minimum Asphalt Content (%)	4.0	4.0	4.0	4.0
Crushed Limestone Content (%)	0	0	20—30	0
Fractured Faces - + No. 4 Sieve (%)	70	0	90	90
Natural Sand Content (%) max	20	20	20	20

RAP Material (%) max	30	30	15	15
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4. Testing requirements.

Subgrade - Testing requirements include, at a minimum, classification of subgrade soils, determination of Atterberg limits, percent passing No. 200 sieve, optimum moisture content, maximum dry density and in-place field moisture density. Soil classification tests and laboratory moisture-density relationship (Proctor) tests shall be conducted at the beginning of earthwork construction and for every 1,000 cu. yd. placed. As a minimum, one moisture/density test shall be taken per lift for each 300 ft. of roadway or each 2,500 sq. ft. of parking area. These quality control tests shall be run by a MDOT Certified Soil Technician. Laboratory tests shall be conducted by a certified laboratory.

Asphalt - Testing requirements include, at a minimum, determination of HMA mixture gradation, total voids, VMA, asphalt content, maximum specific gravity of the HMA mixture, Marshall stability and roadway density tests. These test samples shall be randomly taken at the HMA production plant or at the placement site during production. These quality control tests shall be run by a MDOT Certified Asphalt Technician 1. At least one quality control sample shall be obtained and tested for each 500 tons produced (minimum one per day) or at intervals determined by the City of Brandon. The contractor shall report all quality control tests to the City on a daily basis. While the contractor is responsible for production quality control of the HMA, the City may obtain and test HMA samples on a random basis during production.

A minimum of five (5) roadway density tests shall be conducted for each day's production. For each day's production found not to meet the density requirement of 92.0 percent of maximum density may remain in place if approved by the City Engineer. Any day's production or portion thereof with density of less than 90.0 percent maximum density shall be removed and replaced projects contracted by the City shall be reduced in payment as set forth in the following table:

Payment Schedule for Asphalt Compaction	
Pay Factor	Average Density
1.00	92.0 and above
0.90	91.0—91.9
0.75	90.0—90.9
0	

Note (*) - Any day's production or portion thereof with density of less than 90.0 percent maximum density shall be removed and replaced at no additional cost to the City of Brandon.

Concrete - Testing requirements include, at a minimum, evaluating the quality of the concrete every 50 cu. yd. or fraction thereof of concrete placed each day. The slump, air

content and temperature of the concrete mixture shall be evaluated. Compressive strength specimens shall be molded to determine 7 and 28 day strengths. These quality control field tests shall be run by an ACI/MDOT certified field technician. Compressive strength tests shall be conducted by a certified laboratory.

Material Submittals and
Job Control Sampling and Testing

Layer	Tests	Frequency
Subgrade	Classification	1,000 C. Y.
	Proctor	1,000 C. Y.
	Density	300—500 ft. per layer
	Subgrade Profile	200—500 ft. intervals
	Proof rolling	Final layer
	Material Submittal	5 days prior to construction
Lime Treated Subgrade	Proctor	1,000 C. Y.
	Proof rolling	Final layer
	Density	300—500 ft. per layer
Granular Base	Classification	1,000 C. Y.
	Proctor	1,000 C. Y.
	Proof rolling	Final layer
	Density	300—500 ft. per layer
	Material Submittal	5 days prior to construction
Hot Mix Asphalt	Mix Tests	1 per 500 tons
	Density	5 per day
	TSR	1 per 10 days of production
	Mix Design	10 days prior to construction
Concrete	Compressive Strength	50 C. Y.
	Air Content	50 C. Y.
	Slump	50 C. Y.
	Temperature	50 C. Y.
	Mix Design	10 days prior to construction

5. Minimum pavement thickness recommendations. Currently the Standards of Design and Specifications for Subdivisions for the City of Brandon categorizes city streets according to the pavements intended purpose and expected traffic volume. The four classes of city streets, ranging from highest to lowest traffic volumes are arterial streets, collector streets, local streets, and cul-de-sacs. The primary difference in the traffic level

categories is the anticipated level of heavy truck traffic and the total number of vehicles over the design life of the pavement. Cul-de-sac and local streets (light duty) are anticipated to carry a very limited amount of heavy truck traffic (i.e. moving van and garbage truck). Collector streets (medium duty) are designed to accommodate a minimal amount of daily heavy truck traffic. Arterial streets (heavy duty) are designated as principal traffic ways and are designed to accommodate moderate to heavy levels of daily heavy truck traffic.

Minimum pavement thicknesses are presented in the following tables for asphalt and concrete pavement sections for each of the city traffic level categories and commercial developments. The minimum pavement thicknesses are valid for typical soil conditions in the Brandon area (CBR=5 and K=150 pci). All pavement thicknesses shall be verified for actual expected traffic volumes and loadings using appropriate design parameters for subgrade soils and pavement structure materials. Pavement sections for heavy traffic streets shall be designed according to anticipated heavy truck volumes to insure adequate structural capacity.

Table 1. Minimum Requirements for Asphalt Pavements City Streets

Pavement Layer	Thickness (In.)					
	Arterial Street (Heavy Duty)		Collector Street (Medium Duty)		Local Street/Cul-De-Sac (Light Duty)	
	1	2	1	2	1	2
Asphalt Surface	3	5	3	4	3	4
Bituminous Base	6	—	4	—	3	—
Crushed Limestone	—	10	—	8	—	6
Lime Treated Subgrade (1)	12	12	12	12	12	12

(1)Subgrade soil shall be treated with 6% hydrated lime by dry weight of soil. Lime treatment shall extend at least 1 foot beyond back of curb.

Table 2. Recommended Minimum Requirements
for Asphalt Pavements
Commercial Development

Pavement Layer	Thickness (In.)			
	Light Duty		Heavy Duty	
	1	2	1	2
Asphalt Surface	3	4	3	5
Bituminous Base	3	—	6	—
Crushed Limestone	—	6	—	10
Lime Treated Subgrade (1)	12	12	12	12

Note: (1) Subgrade soil shall be treated with 6% hydrated lime by dry weight of soil. Lime treatment shall extend at least 1 foot beyond back of curb.

Table 3. Minimum Requirements for Concrete Pavements

Traffic Category	Thickness (In.)		
	Concrete	Crushed Stone (1)	Lime Treated Subgrade (2)
Arterial Street	8.0	6.0	8.0
Collector Street	6.0	6.0	8.0
Local Street	5.0	—	8.0
Cul-de-sac	5.0	—	8.0
Light duty-commercial	5.0	—	8.0
Heavy duty-commercial	7.0	6.0	8.0

Note:

(1) Subbase material - No. 610 or % down limestone (MDOT Section 703.04).

(2) Subgrade soil shall be treated with 6 percent hydrated lime by dry weight of soil. Lime treatment shall extend at least 1 foot beyond back of curb.

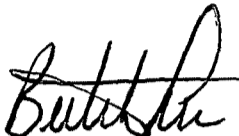
(Ord. of 1-6-04(1), § 1; Ord. of 6-15-04; Ord. of 4-21-09(2), § 1)

SECTION 3. For the preservation of the public peace, health and safety and for other good cause shown, including but not limited to the need to insure proper enforcement of sign ordinances in the City of Brandon, this Ordinance shall be in force and effect from and after its adoption, unless the same receives less than a unanimous vote and if receiving less than a unanimous vote, this Ordinance shall be in force and effect 30 days after its adoption. All Ordinances in conflict herewith are repealed.

SECTION 4: This Ordinance having been reduced to writing and no request for the same to be read by the Clerk having been made, the same was introduced by Alderman Morris seconded by Alderman Coker and was adopted by the following vote, to-wit:

James Morris, Alderman at Large	<u>Aye</u>
Monica Corley, Alderman Ward 1	<u>Aye</u>
Cris Vinson, Alderman Ward 2	<u>Aye</u>
Harry Williams, Alderman Ward 3	<u>Aye</u>
Lu Coker, Alderman Ward 4	<u>Aye</u>
Bobby Christopher, Alderman Ward 5	<u>Aye</u>
Bob Morrow, Alderman Ward 6	<u>Aye</u>

The Mayor thereby declared the Motion carried and the Ordinance adopted and approved on this the 20th day of July, 2015.



BUTCH LEE, MAYOR

ATTEST:



ANGELA BEAN, CITY CLERK

