BY COUNCIL MEMBER ELLIS **CITY OF CENTRAL**

ORDINANCE NO. 2015-06

AN ORDINANCE TO AMEND THE DEVELOPMENT CODE OF THE CITY OF CENTRAL CHAPTER 13 RELATIVE TO ROADWAY TESTING AND INSPECTION STANDARDS AND RELATED MATTERS FOR RESIDENTIAL AND COMMERCIAL SUBDIVISIONS, AND TO PROVIDE FOR THE MODIFICATION AND/OR DELETION OF OTHER RELEVANT SECTIONS IN CONNECTION THEREWITH.

WHEREAS, the City of Central has reviewed the existing standards relative to construction, testing, and inspection of City roadways; and

WHEREAS, it has been determined after considerable review that for the health, safety, and welfare of the public that these standards be revised and updated.

BE IT ORDAINED by the Council of the City of Central, State of Louisiana that the City of Central Development Code, Title 7, Chapter 13, Section 8 be enacted as follows:

Section 1:

SEC. 7:13.8. STANDARDS AND SPECIFICATIONS FOR TESTING, INSPECTION, AND ACCEPTANCE OF PUBLIC ROADS INTO THE CITY OF CENTRAL ROADWAY SYSTEM.

GENERAL:

- The requirements stated herein apply to any street constructed in the City of Central which is currently part of the existing City of Central system of roadways or is planned to be dedicated to the City of Central for ownership and maintenance in the future. Roadways built by the City must comply with these standards and testing/inspection requirements.

- The latest edition of the Louisiana Standard Specifications for Roads and Bridges (LSSRB) as amended herein shall apply to Roadway Testing and Inspection Requirements.

- Testing of all materials and construction shall be in accordance with ASTM, AASHTO or LA DOTD standards.

- The developer/contractor must retain and pay a qualified testing laboratory, to perform all required testing in accordance with the City of Central standards.

- The Materials Testing Laboratory, shall be approved by City of Central Department of Public Works Director. The testing and inspection firm must have a minimum of 5 years of experience and operate under the direct supervision of a Louisiana Registered Professional Engineer.

- All testing and inspection reports performed by the independent testing laboratory, employed by the developer/contractor shall be submitted directly by the testing lab to the City of Central Department of Public Works Director within 10 working days after the tests are conducted.

- Notwithstanding the foregoing the City of Central Department of Public Works Director retains the right to require additional requirements for roads to address public safety hazards, to be determined on a case by case basis, including but not limited to, lighting and signage.

1. ROADWAY SUBGRADE PREPARATION

The roadway alignment shall be stripped of all topsoil with organics and other deleterious materials. The topsoil in the City of Central is generally underlain by moisture sensitive silty soils. These near surface silty deposits shall be examined at the time of construction since they tend to lose their support capabilities if they become wet. Consequently, depending on the site condition at the time of construction, the moisture sensitive soils may have to be undercut and replaced with compacted structural fill.

Once the roadway alignment is stripped and undercut to the required sub grade elevation, the entire roadway sub grade shall be proofrolled using a single or a tandem axle dump truck or similar heavily loaded rubber tired vehicle weighing about 20 tons. Soils which are observed to rut or deflect under the moving load shall be undercut and replaced with compacted structural fill, disked open to dry or treated to form a stable non-yielding sub grade prior to fill placement. Proofrolling the roadway subgrade shall be witnessed by City of Central Inspection personnel or their representative prior to proceeding with fill placement. The approval of the subgrade is valid for 5 days. Therefore the subgrade shall be protected and covered with fill as soon as possible. Should the sub grade be exposed to excessive amount of precipitation, re-approval of the subgrade will be required.

The contractor shall protect the subgrade from damage until the base course or fill is placed. Damaged subgrade layers shall be repaired by the contractor and approved by the City of Central Public Works Department prior to application of the base course.

Roadway Subgrade Testing Requirements		
Material Property	**Test Method**	**Max. Freq.**
PI & Liquid Limit	TR 428	1/1,000 lin ft roadway
In-Place Moisture	TR 403	1/1,000 lin ft roadway
In-Place Density	TR 401	1/1,000 lin ft roadway

2. ROADWAY FILL

Fill placed along the roadway alignment shall consist of sandy clays, clayey or silty sands free of organics and other deleterious materials. The fill shall have a maximum liquid limit of 40 and a plasticity index less than 18 percent. The structural fill shall be placed in maximum lifts of 8 inches

of loose materials and shall be compacted within 1 percentage point below to 3 percentage points above the optimum moisture content. The fill shall be compacted to at least 95 percent of the fill's maximum dry density as determined by ASTM D698 (AASHTO T99). Each lift of fill shall be tested by the city approved testing laboratory, and approved prior to placement of subsequent lifts. The edge of the fill shall extend at least 2 feet beyond the edge of the road or face of curb. Field density tests shall be conducted in accordance with ASTM D2922 at 1,000 foot intervals along the roadway alignment.

Once the roadway fill is placed and compacted to the required elevation, the entire limits of roadway fill shall be proofrolled using a single or a tandem axle dump truck or similar heavily loaded rubber tired vehicle weighing about 20 tons. Soils which are observed to rut or deflect under the moving load shall be undercut and replaced with compacted structural fill. Proofrolling the roadway fill area shall be witnessed by City of Central Inspection personnel or their representative prior to proceeding with fill placement. The approval of the roadway fill area is valid for 5 days. Therefore the roadway fill area shall be protected and covered as soon as possible. Should the sub grade be exposed to excessive amount of precipitation, re-approval of the roadway fill area will be required.

The contractor shall protect the roadway fill from damage until the base course is placed. Damaged fill layers shall be repaired by the contractor and approved by the City of Central Public Works Department prior to application of the base course. The testing lab must report the following to the City before authorization to begin the base course can be made.

Roadway Fill Testing Requirements		
Material Property	**Test Method**	**Max. Freq.**
PI & Liquid Limit	TR 428	1/1,000 lin ft roadway
In-Place Moisture	TR 403	1/1,000 lin ft roadway
In-Place Density	TR 401	1/1,000 lin ft roadway

3. LIME TREATED SUBGRADE

Lime treatment may be used to stabilize the clay subgrade or to dry the in situ soil. It is not intended for use as a pavement base. Lime treatment shall be conducted after the soil has been classified and the plasticity index of the soil is determined to optimize the Quantity of lime needed to treat the soil. The following Percent of hydrated lime, by weight, is a guide to treat the cohesive soil. The actual amount shall be verified by the approved testing laboratory prior to field application.

% of Hydrated Lime by Weight	Clay Soil Plasticity Index, %
2	18 to 30
4	31 to 45

The percent of lime required to stabilize clays with plasticity indices over 45 percent shall be determined by the independent testing laboratory. Lime treatment of silty soils shall be conducted for drying purposes only.

Lime treatment shall be designated by type in accordance with LSSRB, Section 304. When lime is used to treat the clay sub-base or to prepare for cement treatment. Type B and Type C shall be used, respectively. For Type B and Type C treatments, the pulverized treated soil shall yield 95 percent passing the 3/4 inch sieve and 50 percent passing the No. 4 sieve, by weight. The mixture shall be compacted to at least 95 percent of the maximum dry density as determined by ASTM D698 (AASHTO T -99). Field density tests shall be conducted at intervals of 1,000 linear feet of roadway. The mixture shall be protected against drying in accordance with LA DOTD specifications.

Once the roadway alignment is lime treated to the required sub grade elevation, the entire roadway sub grade shall be proofrolled using a single or a tandem axle dump truck or similar heavily loaded rubber tired vehicle weighing about 20 tons. Soils which are observed to rut or deflect under the moving load shall be undercut and replaced with compacted structural fill, disked open to dry or treated to form a stable non-yielding sub grade prior to fill placement. Proofrolling the roadway subgrade shall be witnessed by City of Central Inspection personnel or their representative prior to proceeding with base course placement. The approval of the subgrade is valid for 5 days. Therefore the subgrade shall be protected and covered with the base course as soon as possible. Should the sub grade be exposed to excessive amount of precipitation, re-approval of the subgrade will be required.

The contractor shall protect the lime treated subgrade from damage until the base course is placed. Damaged subgrade layers shall be repaired by the contractor and approved by the City of Central Public Works Department prior to application of the base course. The testing lab must report the following to the City before authorization to begin the base course can be made.

Lime Treatment Testing Requirements		
Material Property	**Test Method**	**Max. Freq.**
Density	TR 401	1/1,000 lin ft roadway
% Lime	TR 416	1/1,000 lin ft roadway
Thickness and Width	TR 602	1/1,000 lin ft roadway

4. CEMENT TREATED BASE

Cement treatment of roadways shall be conducted in general accordance with LSSRB Section303. Cement treated base generally involves treatment of the existing subgrade soils or treatment of imported embankment fill to be used as a base course in flexible or rigid pavement sections.

The in situ or embankment fill considered for cement treatment shall have a plasticity index of less than 15 percent. Soils with higher plasticity indices shall be lime treated prior to cement treatment. Cement treated bases for roadways shall be designed to yield a minimum compressive strength as

determined by a mix design in accordance with DOTD TR 432 Standard Procedure. The mix design shall be conducted on representative samples of the subgrade soil by an independent testing laboratory. Unless the results of the mix design indicate otherwise, the silty soils encountered generally in Central shall be treated with at least 10 percent of Portland Cement, by volume. The roadway shall be prepared in general accordance with LSSRB. Section 303-04. The moisture content of the mixture shall be within 2 percent of the optimum moisture at the time of treatment. Pulverization of the treated soils shall yield a mixture with at least 60 percent passing the No.4 sieve.

Compaction and finishing of a treated roadway section shall be completed within 3 hours of the initial cement application to the base course materials. The treated base shall be compacted to at least 95 percent of the mixture's maximum dry density as determined by ASTM D698. Thickness of the cement treated base shall be verified for compliance with the roadway design. The cement treated base shall be immediately protected against rapid drying by applying an asphalt curing membrane. The treated section shall be allowed to cure for a period of at least 7 days prior to exposure to construction traffic.

Once the cement treated base is constructed to the required base course elevation, the entire roadway base course shall be proofrolled using a single or a tandem axle dump truck or similar heavily loaded rubber tired vehicle weighing about 20 tons. Areas which are observed to rut or deflect under the moving load shall be undercut, reworked, and proofrolled again until passing. At the applicant's option areas that fail may be replaced with a minimum 8 inches of full depth asphaltic concrete pavement or approved equal to form a stable non-yielding base course prior to surface course placement. Proofrolling the roadway base course shall be witnessed by City of Central Inspection personnel or their representative prior to proceeding with surface course placement. The approval of the base course is valid for 14 days. Therefore the base course shall be protected and covered as soon as possible. Should the base course be exposed to excessive amount of precipitation, re-approval of the base course will be required.

The contractor shall protect the treated base from damage until the surface course is placed. Damaged base course shall be repaired by the contractor and approved by the City of Central Public Works Department prior to application of the surface course. The testing lab must report the following to the City before authorization to begin the surface course can be made.

Cement Treated Base Course Testing Requirements		
Material Property	**Test Method**	**Max. Freq.**
Density	TR 401	1/1,000 lin ft roadway
Moisture Content	TR 403	1/1,000 lin ft roadway
Thickness and Width	TR 602	1/1,000 lin ft roadway

5. AGGREGATE BASE COURSE

The roadway aggregate base shall consist of Class II Base including 610 limestone or crushed concrete meeting the requirements of the latest edition of Louisiana Standard Specifications for Roads and Bridges (LSSRB) Section 1003.30. A non-woven geotextile fabric is required if

aggregate base is to be used. Fabric shall meet the requirements of the latest edition of Louisiana Standard Specifications for Roads and Bridges. The aggregate base shall be compacted to at least 95 Percent of the aggregate's maximum dry density determined by ASTM D698 (AASHTO T99). Field density tests shall be conducted on the base material in accordance with ASTM D2922 at 1,000 foot intervals along the roadway alignment. In addition, depth checks shall be conducted by the city inspector at the density test locations to verify compliance with the pavement design and City requirements.

Once the aggregate base is constructed to the required base course elevation, the entire roadway base course shall be proofrolled using a single or a tandem axle dump truck or similar heavily loaded rubber tired vehicle weighing about 20 tons. Areas which are observed to rut or deflect under the moving load shall be undercut, reworked, and proofrolled again until passing. At the applicant's option areas that fail may be replaced with a minimum 6 inches of portland cement concrete pavement or approved equal to form a stable non-yielding base course prior to surface course placement. Proofrolling the roadway base course shall be witnessed by City of Central Inspection personnel or their representative prior to proceeding with surface course placement. The approval of the base course is valid for 14 days. Therefore the base course shall be protected and covered as soon as possible. Should the base course be exposed to excessive amount of precipitation, re-approval of the base course will be required.

The contractor shall protect the aggregate base from damage until the surface course is placed. Damaged base course shall be repaired by the contractor and approved by the City of Central Public Works Department prior to application of the surface course. The testing lab must report the following to the City before authorization to begin the surface course can be made.

Aggregate Base Course Testing Requirements		
Material Property	**Test Method**	**Max. Freq.**
Gradation	TR 113	1/1,000 lin ft roadway
Max Density	TR 418	1/1,000 lin ft roadway
Optimum Moisture	TR 403	1/1,000 lin ft roadway
Thickness and Width	TR 602	1/1,000 lin ft roadway

6. PORTLAND CEMENT CONCRETE

Portland Cement Concrete for City of Central roadways shall be LA DOTD PCC Pavement Type B (4,000 psi average compressive strength at 28 days) placed on approved roadway bases. The concrete mix design shall be reviewed and approved by the city engineer and the developers engineer for compliance with the requirements of LSSRB Table 901-3 for Pavement Type B. All materials used in the concrete mix shall be from LA DOTD QPL approved sources. The materials shall be proportioned, batched, cured and placed in accordance with LSSRB Sections 601 and 901. Concrete pavement shall be designed and constructed in compliance with the latest version of LA DOTD Standard Plan CP-01 titled "Portland Cement Concrete Pavement Details," a copy of which is required to be made part of the construction plans.

Prior to placement of concrete, depth checks shall be conducted by string lines trained across the forms to verify the pavement thickness at a frequency of not less than 250 feet and shall be witnessed by a City of Central Department of Public Works representative. Deficiencies noted shall be corrected and approved prior to concrete placement. The contractor shall notify the Department of Public Works at a minimum 48 hours prior to placement of Portland Cement Concrete pavement.

During placement of Portland Cement Concrete pavement, observation and testing shall be done on a full-time basis. At a minimum, slump and mix temperature tests shall be conducted every 500 linear feet of placed concrete. Four (4) compressive strength cylinders shall be cast every work day. Cylinders shall be tested as follows: 2 cylinders at 7 days and 2 cylinders at 28 days. Additional cylinders shall be cast when high/early mix is used and early concrete strength is required to open the road to traffic with the approval of the City of Central Department of Public Works. The pavement will not be opened to traffic, including vehicles of the contractor, until it meets the requirements of LSSRB Section 601.17. Concrete shall not be placed if the U.S. Weather Service forecasts the temperature to be less than 35°F within the 24 hour period following placement unless authorized in writing. Production shall not begin until the temperature at the point of placement is greater than 40°F provided the above temperature limitations are met. Internal temperature of the plastic concrete shall not exceed 95°F at the time of placement.

The final pavement thickness and compressive strength of the mixture shall be verified by obtaining cores which will be obtained by the testing lab at a frequency of not less than 500 feet. The thickness of the PCC cores shall be within 1/4 inch of the design thickness. The City reserves the right to accept or reject the pavement based on the test results. Core holes shall be repaired with like material during the same work day the coring operation takes place.

The placed concrete shall be finished, cured and protected in accordance with LSSRB requirements. Damaged concrete pavement shall be repaired by the contractor and approved by the City of Central Public Works Department prior to acceptance of the roadway. The testing lab must report the following to the City before acceptance of the roadway can be made.

PCC Pavement Testing Requirements		
Material Property	**Test Method**	**Max. Freq.**
Slump	TR 207	1/500 lin ft roadway
Mix Temperature	Ref. 901.11 & 901.06(b)	1/500 lin ft roadway
Compressive Strength (6 in. x12 in. cylinder mold)	TR 226	1/work day
Cores - Thickness & Compressive Strength	TR 225	1/500 lin ft roadway
Thickness and Width	TR 602	1/1,000 lin ft roadway

7. ASPHALTIC CONCRETE

All materials used in the mixture shall be from DOTD approved sources. The materials shall be proportioned to produce a pavement mix meeting LSSRB Section 502 requirements for Superpave Asphaltic Concrete. The Asphalt Cement Grade for wearing and binder courses on low volume roads where average daily traffic (ADT) is less than 2500 shall be Level 1 mix with grade PG 70-22m Asphalt Cement. The Asphalt Cement Grade for wearing and binder courses on higher volume roads where average daily traffic (ADT) is greater than 2500 shall be Level 2 mix with grade PG 76-22m Asphalt Cement. The proposed job mix formula shall be submitted for approval to the City of Central Department of Public Works. The asphaltic concrete mixture shall be placed on a stable and approved base.

During placement of asphaltic concrete, observation and testing shall be on a full-time basis. For each 1,000 tons of materials placed, or a fraction thereof in one day, a sample shall be tested at the plant for percent void, Void Mineral Aggregate (VMA), asphalt content and gradation. The results will be used to control the mixture and form a basis for acceptance of the pavement.

Mix temperature shall be checked on each truck load in the field. Loads with low temperatures not meeting specifications shall not be placed. Asphaltic concrete mixtures shall not be applied on a wet surface or when the ambient temperature is below 50°F for wearing courses and 40°F for base and binder courses.

The final pavement thickness and density of the mixture shall be verified by obtaining 4 inch diameter cores at a minimum frequency of 1 core per 500 linear feet of road and not less than 3 cores per roadway section. Core holes shall be repaired with like material within 48 hours of coring operation. The density of all cores shall be greater than 92% of Maximum Theoretical Gravity (TR 327). The Asphalt Cement Pavement thickness of the cores shall be within 1/4 inch of the design thickness. The City reserves the right to accept or reject the pavement based on the test results.

Asphaltic Concrete Pavement Testing Requirements		
Material Property	**Test Method**	**Max. Freq.**
Loose Mix Temperature (At paver hopper or on Roadway)	Ref. 502.08	1/500 lin ft roadway
Cores - Thickness & Density	TR 304	1/500 lin ft roadway
Thickness and Width	TR 602	1/1,000 lin ft roadway
Theoretical Max Specific Gravity Gmm	TR 327	1/1000 tons
Gradation	TR 309	1/1000 tons
% AC	TR 323	1/1000 tons
% Crushed	TR 306	1/1000 tons

Section 2:

All ordinances or parts of ordinances in conflict with this Ordinance are hereby repealed.

Section 3: Severability

If any section, subsection, sentence, clause or provision of this Ordinance is declared by a court of competent jurisdiction to be invalid, such declaration of invalidity shall not affect the validity of the Ordinance as a whole, or parts thereof, other than the part declared invalid. The remainder of the Ordinance shall not be affected by the declaration of invalidity and shall remain in force and effect.

Section 4: Effective Date

This Ordinance shall be effective upon publication.

Approved by the Zoning Commission on December 18, 2014.

Introduced before the Council on November 11, 2014 and January 13, 2015.

Approved by the Infrastructure Committee on January 26, 2015

Notice of the public hearing was published in The Advocate on the 20th day of January 2015.

This Ordinance having been submitted to a vote, the vote thereon is as follows:

For:	Ellis, Evans, Fralick, Messina, and Vance
Against:	None
Absent:	None

Adopted this 27th day of January, 2015.

Signed this 30th day of January, 2015.

Delivered to Mayor on the 2nd day of February, 2015:

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Mark Miley, City Clerk

Approved:

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I. M. Shelton, Jr., Mayor

Received from Mayor on the 2nd day of February, 2015:

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Mark Miley, City Clerk

Adopted Ordinance published in The Advocate on the 7th day of Febrary, 2015.