



**TECHNICAL SPECIFICATIONS & DESIGN CRITERIA**

**FOR**

**UTILITY AND STREET CONSTRUCTION**

April 16, 2018

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**CITY OF OAK GROVE, MISSOURI**

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**OAK GROVE PAVING  
SPECIFICATION MODIFICATION TO  
APWA SPECIFICATION SECTION 2200  
OAK GROVE, MO - 2017**

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Work for the City of Oak Grove shall follow APWA Construction and Material Specification Section 2200 for paving except as modified below. The additions and/or alterations to the APWA Specification 2200 provided below shall apply to execution of the various parts of the work performed within the City.

**APWA SPECIFICATIONS SECTION 2200**

**2201 SUBGRADE PREPARATION**

Add Section 2201.4 (F) as follows:

- F. For privately funded street improvements, the Engineer shall provide a geotechnical report and pavement design for approval by the City Engineer. The geotechnical report shall analyze proposed subgrade materials and if necessary make recommendations for subgrade modifications to meet the subgrade soil stability requirements for the submitted pavement design.***

***For publicly funded projects any subgrade modification shall be as indicated on the plans, or directed by the City Engineer.***

***Subgrade modification shall be in accordance with SECTION 2202 SUBGRADE STABILIZATION.***

**2203 AGGREGATE BASE COURSE**

2203.3. Materials: Add the following sentence at the end of Section 2203.3 A.

***MoDOT Type 5 aggregate may be used for untreated compacted aggregate in lieu of the material specified in this section.***

**2203 AGGREGATE BASE COURSE**

2203.4 C. Plant Mix Bituminous Drainable Base: Delete paragraph 6. and replace with the following:

- 6. Handle, place and compact materials in accordance with the following.***
- a. Contamination of the finished base material that affects the drainage capability of the product shall not be permitted. Any areas determined to be contaminated shall be completely removed without disturbing the adjacent or underlying material and replaced at contractor's expense.***

- b. ***Rutting or other displacement of the permeable base or the underlying base will not be permitted. If displacement occurs, the material shall be completely removed without disturbing the adjacent or underlying material and shall be replaced at the contractor's expense.***
- c. ***Materials for this work will be accepted based on the requirements of Section 2205.***

## 2205 ASPHALTIC CONCRETE SURFACE AND BASE

2205.3 Materials: Delete paragraph of 2205.3 A and replace with the following:

***Asphalt cement used in the manufacture of asphalt paving mixtures shall conform to the Performance Graded (PG) system. The asphalt oil used shall be PG 64-22 for all types of AC mixes.***

Add the following paragraph to the end of Section 2205.3 Materials:

- E. ***All Asphaltic Concrete Mixes, and Tack Coat, used within the City of Oak Grove shall comply with the following:***
  - 1. ***Base Mixtures shall comply with APWA (Section 2205) Type 5-01 or Type 6-01. Reclaimed Asphalt Pavement (RAP), Fractionated Reclaimed Asphalt Pavement (FRAP), and/or Reclaimed Aggregate Materials (RAM) shall represent no more than 30% of the composition of all base mixtures.***
  - 2. ***Surface Coarse APWA (Section 2205), Type 5-01***
  - 3. ***Coarse Aggregate APWA (Section 2205)***
  - 4. ***Fine Aggregate APWA (Section 2205)***
  - 5. ***Asphalt Cement APWA (Section 2205)***
  - 6. ***Tack Coat RC70, or SS-1***

2205.4 Mixing and Proportioning: Delete the first paragraph of 2205.4 C. 1. and replace with the following:

***General: Except as modified herein, Recycled Asphalt Concrete (RAC) shall be equal to that produced as new material. Reclaimed Asphalt Pavement (RAP), Fractionated Reclaimed Asphalt Pavement (FRAP), and/or Reclaimed Aggregate Materials (RAM) shall represent no more than 30% of the composition of all surface and base mixtures.***

2205.9 Construction: Add the following sentence to end of the fourth paragraph of Section 2205.9 A.:

***A tack coat shall not be required between successive layers of base placed in the same working day.***

## 2209 CURBING

2209.4 Construction: Delete paragraph D. and replace with the following:

- D. Slip-Form Curb Machine: A slip-form curb machine shall be used to place any section of curb greater than 100 feet in length. The machine must be equipped with mechanical internal vibrators and capable of placing curb to the correct cross section, line and grade within the allowable tolerances.***

Delete the first sentence of paragraph E. 2. Contraction Joints, and replace with the following:

***Curbing shall have contraction joints at intervals of not more than 10 feet.***

Add the following paragraph after paragraph E. 2.:

- 3. Expansion Joints: Expansion Joints shall be placed as indicated on Curb and Gutter Standard Details SD-41, and SD-42. Expansion joint material shall comply with ASTM D1751.***

## 2211 SMOOTHNESS

2211.4 Construction:

Replace the first sentence of this Section with the following

***Profilographing shall be performed on roadways classified as arterials, major collectors, freeways, expressways and interstates***

Add the following to the end of APWA Section 2200 Paving:

### ***SECTION 2212 INCIDENTAL PAVING ITEMS***

#### ***2212.1 Street Cuts***

***All street cuts will have at least 10" of KCMMB 4K Concrete over street cut, or as approved by the Director of Public Works. A detailed typical section of the street cut shall be provided showing the proper street section.***

***Any construction performed within the City's right-of-way shall be approved by the Public Works Department before any construction activities can begin. A separate Right-of-Way Permit will be issued for any work performed within the right-of-way. The permit conditions shall be met; penalties will be given for non-compliance with these conditions. The Owner and Contractor shall be familiar with the Right-of-Way Ordinance and its contents.***

### **2212.2 Trenching Backfill**

***All trenching under roadway pavement shall be backfilled with removable flowable fill, or as approved by the Director of Public Works.***

### **2212.3 Cleaning Operations**

***All catch basins, manholes, inlets, outlets, and roadway surfaces shall be thoroughly cleaned of any accumulations of silt, debris, or foreign matter of any kind, and shall be free from such accumulations at the time of final inspection.***

## **SECTION 2213 MATERIAL TESTING AND CERTIFICATIONS**

***When requested by the City Engineer, the Contractor shall furnish test results at the contractors' expense and from a testing laboratory approved by the City Engineer showing compliance with the plans, specifications, and all requirements of APWA Section 2200 as modified herein.***

***The contractor shall submit certifications for all materials used for each project to the City Engineer for approval prior to incorporating those materials into the project. Each certification shall indicate that the material is in compliance with the plans, specifications, and all requirements of APWA Section 2200 as modified herein.***

***At the completion of the project the contractor shall certify that the completed project is in compliance with all requirements of the plans, specification, contract documents, and all other requirements of the City of Oak Grove.***

**OAK GROVE SANITARY SEWER  
SPECIFICATION MODIFICATION  
APWA SPECIFICATION SECTION 2500  
OAK GROVE, MO - 2018**

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Work for the City of Oak Grove shall follow APWA Construction and Material Specification Section 2500 for sanitary sewers except as modified below. The following additions and/or alterations to the APWA Specification 2500 provided below shall apply to execution of the various parts of the work performed on this project.

**APWA SPECIFICATIONS SECTION 2500**

**2502 MATERIALS**

**2502.2 Pipe, Fittings, Joints, Coatings and Linings**

**1. Modify Subsection 2502.2.D.3 to read:**

Pipe shall have an integral bell and spigot joint. Wall thickness shall be SDR 26 or SDR 21 as shown on plans. The minimum wall thickness shall conform to SDR 26. Service lines shall be SDR 26 (minimum).

**2. Modify Subsection 2502.2.D.5 to read:**

Fittings defined as tee (T) or wye (Y) connections suitable for assembly to four (4) inch or six (6) inch building service lines shall be bell-end with a minimum wall thickness conforming to SDR 26 and shall be furnished by the pipe manufacturer. A special design is required for service connections 8 inches and larger. Saddle tees or wyes will not be permitted.

**3. Delete Section 2502.2.E- Reinforced Concrete Pipe and Fittings**

**4. Modify Subsection 2502.2.B.6.A to read:**

40 mil ceramic quartz filled amine cured novalac epoxy lining, such as Protecto 401, or approved equal, in accordance with manufacturer's specifications.

**2502.3 Pipe Embedment Materials**

**1. Modify Subsection 2502.3.A to read:**

The Class of bedding required shall be as specified in Section 2100 unless indicated otherwise in the Contract Documents, Contract Drawings, or Standard Details.

**2. Modify Subsection 2502.4.B to read:**

All Sanitary Sewer trenches under roadway pavement shall be backfilled to the subgrade elevation with Flowable Fill (CLSM). All other Sanitary Sewer trenches shall be backfilled in accordance with Section 2100 Clearing and Site Preparation.

**2509 MANHOLES AND SPECIAL STRUCTURES**

**2509.3 Manhole Materials**

**1. Modify Section 2509.3.E to read:**

Concrete shall be KCMMB 4K unless indicated otherwise in the contract documents, contract drawings or standard details

**2. Modify Section 2509.3.G to read:**

Iron Castings: Casting shall conform to the requirements of ASTM A 48, Class 35B. Castings shall be clean and without surface defects that will impair serviceability. Pricing or filling of holes or other defects will not be permitted. Parting fins and pouring gates shall be removed.

**3. Modify Section 2509.3.G.2 to read:**

No steps shall be placed in manholes.

**2509.6 Manhole Installation**

**1. Delete Subsection 2509.6.I Steps**

Add the following at the end of APWA Section 2500 Sanitary Sewers

**SECTION 2511 MATERIAL TESTING AND CERTIFICATIONS**

***When requested by the City Engineer, the Contractor shall furnish test results at the contractor's expense and from a testing laboratory approved by the City Engineer showing compliance with the plans, specifications, and all requirements of APWA Section 2500 as modified herein.***

***The contractor shall submit certifications for all materials used for each project to the City Engineer for approval prior to incorporating those materials into the project. Each certification shall indicate that the material is in compliance with the plans, specifications, and all requirements of APWA Section 2500 as modified herein.***

***At the completion of the project the contractor shall certify that the completed project is in compliance with all requirements of the plans, specification, contract documents, and all other requirements of the City of Oak Grove.***

**OAK GROVE STORM SEWER  
SPECIFICATION MODIFICATION TO  
APWA SPECIFICATION SECTION 2600  
OAK GROVE, MO - 2017**

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Work for the City of Oak Grove shall follow APWA Construction and Material Specification Section 2600 for storm sewers except as modified below. The additions and/or alterations to the APWA Specification 2600 provided below shall apply to execution of the various parts of the work performed on this project.

**APWA SPECIFICATIONS SECTION 2600**

**2602 PIPE SEWER CONSTRUCTION**

**2602.2 Materials**

Add the following to the end of Paragraph D 1.:

***High density polyethylene pipe shall conform to AASHTO M294, type S (non-perforated circular cross section with corrugated outer surface and a smooth inner surface) for pipe diameters of 15 inches to 60 inches, inclusive.***

Revise first sentence of 2602.2 E. Granular Bedding Material to read as follows:

***The class of bedding required shall be as specified in Section 2100 unless indicated otherwise in the Contract Documents, Contract Drawings, or standard details.***

Replace 2602.3 C. 1. Backfill of Trenches with the following:

1. All Storm Sewer trenches under roadway pavement shall be backfilled to the subgrade elevation with Flowable Backfill (CLSM). All other Storm Sewer trenches shall be backfilled in accordance with Section 2100 Clearing and Site Preparation.

**2604 STRUCTURES**

Revise 2604.2. A Concrete Mixes to read as follows:

***Concrete shall be KCMMB 4K unless indicated otherwise in the Contract Documents, Contract Drawings, or standard details.***

Add the following to the end of 2604.2 D. Precast Structures:

5. ***When installed, all gaps and openings intended to be closed, shall be sealed with grout, concrete or other approved material. If an adjustment is required for the top slab which is less than or equal to 2 inches, the adjustment shall be made with non-shrink grout as approved by the Director of Public Works. If the adjustment is greater than 2 inches, the adjustment shall be made with dowelled concrete. Dowels shall be bars embedded 6 inches into the walls. All reinforcement shall be the same size and spacing as the wall steel.***

Add the following at the end of APWA Section 2600 Storm Sewers

**SECTION 2607 MATERIAL TESTING AND CERTIFICATIONS**

***When requested by the City Engineer, the Contractor shall furnish test results at the contractors expense and from a testing laboratory approved by the City Engineer showing compliance with the plans, specifications, and all requirements of APWA Section 2600 as modified herein.***

***The contractor shall submit certifications for all materials used for each project to the City Engineer for approval prior to incorporating those materials into the project. Each certification shall indicate that the material is in compliance with the plans, specifications, and all requirements of APWA Section 2600 as modified herein.***

***At the completion of the project the contractor shall certify that the completed project is in compliance with all requirements of the plans, specification, contract documents, and all other requirements of the City of Oak Grove.***

**OAK GROVE WATER MAIN  
SPECIFICATION MODIFICATION  
APWA SPECIFICATION SECTION 2900  
OAK GROVE, MO - 2018**

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Work for the City of Oak Grove shall follow APWA Construction and Material Specification Section 2900 for waterlines except as modified below. The following additions and/or alterations to the APWA Specification 2900 provided below shall apply to execution of the various parts of the work performed on this project.

**APWA SPECIFICATIONS SECTION 2900**

**2902 MATERIALS**

**2902.3 Valves and Valve Boxes**

- 1. Shall be modified as follows:**

**Delete section 2902.3.F.2 Tapping Sleeves: Iron**

**2902.4 Fire Hydrants**

- 1. Subsection A.4 General. The following shall be added to the end of the subsection.**

**2902.4.A.4:** Hydrants shall be manufactured red in color.

- 2. The following shall be added to the end of 2902.4 Fire Hydrants.**

**F.** Hydrants shall be furnished with temporary black plastic caps or shall be covered with a black plastic bag until the hydrants are available for service.

**G.** Fire hydrant shall be Mueller "Centurion", Waterous, "Pacer" 90 or 100 or Clow Valve "Medallion".

**H.** Hydrants shall be new.

**I.** Hydrant collar shall be installed on the 4 ½ outlet of all new hydrants to indicate the flow in gallons per minute (GPM). The colors shall be as follows:

- |           |                  |
|-----------|------------------|
| 1. Blue   | 1500 GPM or more |
| 2. Green  | 1000 – 1499 GPM  |
| 3. Orange | 500 – 999 GPM    |
| 4. Red    | Below 500 GPM    |

The other side of the hydrant collar shall indicate: "Out of Order"

- J. A gravel pocket or dry well shall be provided. Hydrant drains shall not be connected to or located within ten feet of sanitary sewers or storm drains.
- K. A clearance space of at least three feet (3 ft.) surrounding the hydrant body should be provided around every hydrant.
- L. Utility poles, vaults, walls, plants, and other landscape materials should be kept outside of the hydrants clearance space.
- M. In poor load-bearing soil, special construction such as support collars may be required.

**3. Specification Section 2902.6 Bedding Material, Subsection A. The following shall be added to the end of this subsection.**

Continuous, firm, stable, and uniform bedding shall be provided in the trench for all buried pipe. The bedding design shall insure that there is full support in the haunches of the pipe and be smooth and free of ridges, hollow, and lumps.

**4. Specification Section 2902.7 Location Wire and Tape, Subsection A shall be removed and replaced with the following:**

**2902.7 Location Wire and Tape**

**1. Shall be modified as follows:**

- A. Installation: All non-metal pipes shall be installed with tracer wire or tape to facilitate future location of the pipe. However, tracer wire or tape is not a substitute for accurate as-built plans, GIS mapping, or individual fixture records on each extension or modification of a system.
  - a. All tracer wire for new utility installations shall be tested before acceptance.
  - b. Detectable warning tape is not a substitute for tracer wire.
- B. Type: Tracer wire shall be a #12 AWG (0.0808" diameter) fully annealed, low carbon 1010 grade steel, solid copper-clad steel (CCS) conductor, insulated with a 30 mil, high-density, high molecular weight polyethylene (HDPE) insulation, and rated for direct burial use at 30 volts. CCS Conductor must be at 21% conductivity for locating purposes. Break load of 302 lbs. HDPE insulation shall be RoHS compliant and utilize virgin grade material. Insulation color shall meet the APWA color code standard for identification of buried utilities. Tracer wire shall be Copperhead® SuperFlex CCS, HDPE 30 mil insulation or city pre-approved equal and made in the USA.

**2903.1 Grading and Excavation**

**1. Section 2903.1.H Trench Excavation. The following shall be added to the end of the subsection.**

Bell holes should be excavated so that only the barrel of the pipe receives bearing from the trench bottom.

Add the following at the end of APWA Section 2900 Waterlines

**SECTION 2906 MATERIAL TESTING AND CERTIFICATIONS**

***When requested by the City Engineer, the Contractor shall furnish test results at the contractor's expense and from a testing laboratory approved by the City Engineer showing compliance with the plans, specifications, and all requirements of APWA Section 2900 as modified herein.***

***The contractor shall submit certifications for all materials used for each project to the City Engineer for approval prior to incorporating those materials into the project. Each certification shall indicate that the material is in compliance with the plans, specifications, and all requirements of APWA Section 2900 as modified herein.***

***At the completion of the project the contractor shall certify that the completed project is in compliance with all requirements of the plans, specification, contract documents, and all other requirements of the City of Oak Grove.***