City of Lawrence Department of Municipal Services & Operations
Annual Review
of
Construction Material Specifications, Design Standards, and Standard Details

Summary of Changes

Review Date: February 5, 2019
Reviewed By: Municipal Services & Operations Department Staff
Materials Reviewed: Construction Material Specifications:
Section 0010 – General Technical Provisions
Section 1000 – Site Preparation
Section 1100 – Grading
Section 1200 – Subgrade Preparation
Section 1300 – Asphaltic Concrete Pavement
Section 1400 – Concrete Pavement
Section 1500 – Concrete Curb, Curb and Gutter, Sidewalk, and Driveway Entrances
Section 1600 – Pavement Marking
Section 1650 – Signing
Section 1700 – Traffic Signals
Section 1800 – Pavement Maintenance
Section 2000 – Concrete
Section 2500 – Sanitary Sewer (8” to 18” Mains)
Section 2900 – Waterlines
Section 3000 – Fiber Optics
Section 6000 – Storm Sewers
Section 7200 – Seeding
Section 7300 – Landscaping

Design Standards
Combined Plan Preparation and Design Criteria

Standard Detail Sheets:
0010 – Erosion and Sediment Control
1300 – Asphlatic Concrete Streets
1400 – Concrete Alleys
1400 – Concrete Intersection
1400 – Portland Cement Concrete Streets
1500 – Concrete Driveways
1500 – Concrete Sidewalk
1506 – Concrete Curb and Gutter
1600 – Pavement Marking
1650 – Signing
1700 – Roadway Lighting
1700 – Traffic Signals
1800 – Street Repair
GENERAL NOTES:

Updates and corrections to the City of Lawrence Department of Municipal Services & Operations construction material specifications, design criteria, and standard details are as follows:

--Note that some materials contained grammatical or other minor corrections. Those corrections are not noted in this summation. Additionally, references to the Utilities and Public Works Departments have been replaced with Municipal Services and Operations.
CONSTRUCTION MATERIAL SPECIFICATIONS:

Section 0010 – General Technical Provisions

1) MATERIAL TESTING Section – Included a new subsection “4. Supplemental General Testing Frequencies” for asphalt, concrete, and treated subgrade testing.

2) MATERIAL TESTING Section – Updated and included various ASTM designations within the asphalt, concrete, and soil testing subsections.

Section 1200 – Subgrade Preparation

1) Section 1204 C. 8., 9. – CEMENT OR FLY ASH TREATED SUBGRADE – Construction Requirements – Finishing and Curing, Weather Limitations – Added notation that includes other options for maintaining moisture may be submitted in writing for approval by the Engineer, restriction of construction traffic from operating on the treated subgrade until it can withstand the loads without damage or deformation, and that protection of the treated subgrade includes but not limited to protection from freezing throughout the protection period.

2) Section 1206 A., B., and C. – COMPACTION REQUIREMENTS – Clarified general compaction requirements for subgrade beneath street pavements, commercial driveway apron approaches, multi-use or shared-use paths, residential driveway apron approaches, sidewalks, and curb or curb and gutter.

Section 1400 – Concrete Pavement

1) Section 1402 C. – Isolation Joint Fillers – Revision such that Isolation joint fillers shall be a preformed isolation joint filler of the non-extruding and resilient type conforming to ASTM D1751, D1752, or D7174.

2) Section 1402 D. – Joint Sealing Compound – Updated standards list for compounds.

3) Section 1402 E. - Curing Membrane – Clarified specification as white pigmented membrane conforming to ASTM C309, Type 2, class A or AASHTO M148, Type 2, Class A.

4) Section 1405 B. – Concrete Finishing – Revision and clarification that moisture shall not be applied to the surface of concrete pavement during the finishing process and that only in the event of unusual circumstances may the Engineer allow fog misting.

5) Section 1409 – SURFACE TOLERANCES AND PROFILOGRAPHING – Included “Profilograph smoothness specification” to include: For new construction and reconstruction only, concrete pavement with a design speed greater than or equal to 35 mph shall be profilographed at the Contractor’s expense in accordance with KDOT specifications with no pay adjustments.

Section 1500 – Concrete Curb, Curb and Gutter, Sidewalk, and Driveway Entrances.

1) Section 1503 B. – Isolation Joint Fillers are referenced to Section 1400 Concrete Pavement for material conformance.

2) Section 1503 C. 2. – Color for detectable surfaces has been specified to be the Federal Standard Color Code No. 20109 (Red Brown).
3) Section 1503 E. – Added a new section to include a color designation and standard pattern for colored and stamped concrete. Running Bond Used Brick stamp pattern and Sable or Bark in color.

Section 1650 – Signing
1) New specification section.

Section 1700 – Traffic Signals
4) Section 1702 – Equipment – Added the following section “(A) Material Description and Requirements.” Added the following section “(D) Radar and Video Detector, PTZ Camera, and Cabinet Interface Device (CID). Modified section “(E) Emergency Vehicle Preemption System” to replace optical technology with a preempt priority field monitoring unit (FMU) based upon GPS technology as described in the section.
5) Section 1703 – Installation – Added the following section “(M) Radar and Video Detector, PTZ Camera, Cabinet Interface Device (CID), Preemption Unit, and Other Cabinet Interface Equipment”.
6) 1705 Measurement and Payment – New section.
7) Appendix A – Added Cabinet Interface Device (CID); Preemption and Priority Field Monitoring Unit (FMU). Added additional approved materials for Vehicle Signal Heads, LED Lenses, Backplates, and Brackets.

Section 2000 – Concrete
1) Section 2003 – Materials / Liquid Curing Membrane – Clarified specification as white pigmented membrane conforming to ASTM C309, Type 2, class A or AASHTO M148, Type 2, Class A.
2) Section 2003 – Materials / Fibers – Included specification reference to KDOT Standard Specifications and provided clarification for use of micro fibers and macro fibers.

Section 2500 – Sanitary Sewer (8” to 18” Mains)
1) Section 2502.4.e the following statement was added:

“To connect existing PVC pipe to PVC Composite (truss) pipe or vitrified clay pipe (VCP) with a different outer diameter, fernco fittings or an approved equal shall be used.”

2) REMOVED: Section 2302.5 PVC Composite (Truss Pipe), meeting the requirements of ASTM D2680, will be allowed only for connection to existing truss pipe or existing vitrified clay pipe (VCP).

3) Section 2510.3.3 Manhole Rings and Lids shall be Deeter Foundry model 1048, or approved equal with casing inside diameter of twenty-four (24) inches, lid outside diameter of twenty-five and one-quarter (25.25) inches, and lid seating thickness of one and one-half (1.5) inch plus/minus one-eighth (0.125) of an inch.

4) Section 2510.3.4 Bolt-down type manhole rings shall be anchored to the manhole walls with not less than four (4) five-eighths (5/8) inch diameter steel
bolts embedded a minimum of four (4) inches, except where the entire ring is embedded in a concrete top slab.

5) **REMOVED:** Section 2513.5 Standard bid Items: The following is a list of standard bid items and quantity units for sanitary sewer projects. Project-specific or special items shall be added to the list where appropriate. Lack of inclusion of a specific item from the Standard Bid Items List will not be justification for non-performance. All work must meet City Standards.

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Quantity Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilization</td>
<td>LS</td>
</tr>
<tr>
<td><strong>-inch SSP (SDR-</strong>)*</td>
<td>LF</td>
</tr>
<tr>
<td>__-inch SSP Service Line</td>
<td>LF</td>
</tr>
<tr>
<td>__-inch SSP Service Connection</td>
<td>EA</td>
</tr>
<tr>
<td>Standard Manhole (4’ Dia., 6’ depth)</td>
<td>EA</td>
</tr>
<tr>
<td>Standard Drop Manhole (5’ Dia., 6’ depth)</td>
<td>EA</td>
</tr>
<tr>
<td>Extra Depth Manhole (__’ Dia.)</td>
<td>VF</td>
</tr>
<tr>
<td>Connect to Existing Manhole</td>
<td>EA</td>
</tr>
<tr>
<td>Standard Doghouse Manhole</td>
<td>EA</td>
</tr>
<tr>
<td>Adjustment of Existing Manhole</td>
<td>EA</td>
</tr>
<tr>
<td>Flowable Mortar</td>
<td>CY</td>
</tr>
<tr>
<td>Seed, Fertilize, and Mulch</td>
<td>LS</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
</tr>
<tr>
<td>Construction Staking</td>
<td>LS</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
</tr>
<tr>
<td>Testing</td>
<td>LS</td>
</tr>
<tr>
<td>Demobilization</td>
<td>LS</td>
</tr>
</tbody>
</table>

*For PVC Pipe

**Section 2900 - Waterlines**

1) Section 2902.3.11.2.a – The installation of a concrete pad around a valve box in unpaved areas will not be accepted. If the area is unpaved, the above specification for valve boxes must be followed.

2) Section 2902.6.7.b. Meter Setter: Meter setter shall be Ford VB-81W-44-33-NL for 5/8” meters, Ford VB-84W-44-44-NL for 1” meters, VBH76-18-44-66-NL for 1 ½” meters, and VBH77-18-44-77-NL for 2” meters. Meter setters for 2” and smaller meters shall be provided without a by-pass.

   i. Should the meter box settle and need re-adjustment, VB-71W-4433-NL or VB-74W-44-44-NL will be accepted as a re-setter only. VB-71W-4433-NL or VB-74W-44-44-NL will not be accepted on its own.

3) Section 2902.6.7.e. Meter Box Covers: The Contractor shall furnish and install a meter box cover as specified on the Plans. Meter box covers shall be as follows:
<table>
<thead>
<tr>
<th>Condition</th>
<th>Meter Pit Size</th>
<th>Meter Box Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turf Area</td>
<td>18-inch</td>
<td>Ford A32PR-BR</td>
</tr>
<tr>
<td></td>
<td>20-inch</td>
<td>Ford A3PR-BR</td>
</tr>
<tr>
<td></td>
<td>36-inch</td>
<td>Ford MC-36-P-BR</td>
</tr>
</tbody>
</table>

4) **Section 2903.13.1 Fire Hydrant:** Fire hydrants shall be abandoned at the main. The entire hydrant assembly shall be removed at the tee and the tee shall be plugged and blocked. If a tapping saddle is present the tapping saddle shall be removed the section of the main shall be replaced. A repair clamp shall not be used to replace a tapping sleeve.

5) **REMOVED:** Section 2904.5 Standard Bid Items: The following is a list of standard bid items and quantity units for waterline projects. Project-specific or special items shall be added to the list where appropriate. Lack of inclusion of a specific item from the Standard Bid Items List will not be justification for non-performance. All work must meet City Standards.

<table>
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<td>Mobilization</td>
<td>LS</td>
</tr>
<tr>
<td>__-inch Waterline</td>
<td>LF</td>
</tr>
<tr>
<td>__-inch Gate Valve</td>
<td>EA</td>
</tr>
<tr>
<td>__-inch Bend and Block</td>
<td>EA</td>
</tr>
<tr>
<td>__-inch Fitting (Tee, Cross Reducer, Sleeves)</td>
<td>EA</td>
</tr>
<tr>
<td>Connect to Existing Waterline</td>
<td>EA</td>
</tr>
<tr>
<td>Water Meter Removal and Abandonment</td>
<td>EA</td>
</tr>
<tr>
<td>Water Meter Installation or Relocation</td>
<td>EA</td>
</tr>
<tr>
<td>Fire Hydrant Assembly</td>
<td>EA</td>
</tr>
<tr>
<td>Valve Lid Adjustment</td>
<td>EA</td>
</tr>
<tr>
<td>Air Release Valves</td>
<td>EA</td>
</tr>
<tr>
<td>Seed, Fertilize, and Mulch</td>
<td>LS</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
</tr>
<tr>
<td>Construction Staking</td>
<td>LS</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
</tr>
<tr>
<td>Disinfection and Pressure Testing</td>
<td>LS</td>
</tr>
<tr>
<td>Demobilization</td>
<td>LS</td>
</tr>
</tbody>
</table>

**Section 6000 – Storm Sewer**

1) Section 6003.B – Pipe replaced Sections 6003.B – 6003.D (see attachment)

2) **ADDED:** Section 6004.H. – PP Pipe
   a. PP pipe shall be installed in accordance with ASTM D2321, “Standard Practice for Underground Installation of thermoplastic pipe for sewers and other gravity flow applications”, latest addition, with the exception that the initial backfill may extend to the crown of the pipe. Soil classifications are per the latest version of ASTM D2321. Class IVB materials (MH.CH) as defined in previous versions of ASTM D2321 are not appropriate backfill materials.
PLAN PREPARATION AND DESIGN MATERIALS:

Combined Design Standards

1) Public Works and Utilities Design Criteria documents have been combined into a single Municipal Services and Operations Design Criteria document.
2) Initial, Intermediate and Final Plan Submittal requirements have changed, including documents required for submission (electronic files, etc.)
3) Addition of Capital Project Management Software.
4) New guidance on optional use of color in plan sets is included.
5) Updated plan sheet content requirements (streets, storm, water, sewer).
6) New general notes have been developed from combined previous Public Works and Utilities notes. These notes should be used on all types of projects.
7) Added a list of typical bid items and guidance for describing work in plan notes or special provisions (including measurement and payment).
8) Additional guidance for all types of plan sheets have been added.
9) Added pipe material type selection criteria.
10) Added information on permanent traffic control.
11) Added additional erosion and sediment control guidance.
12) Added reference to Complete Streets policy.
14) Added sidewalk and ADA design guidance.
15) Added ADA checklist in Appendix.
16) Added KDOT LPA letting information in the Appendix.
STANDARD DETAIL SHEETS

0010-Erosion and Sediment Control
  1) No change.

1300-Asphaltic Concrete Streets
  1) All *Typical Sections* – Modified sidewalk cross slope requirements to read “1.5% or Flatter” and modified all slopes to be in terms of percent in lieu of inches per foot.

1400-Concrete Alleys
  1) New standard detail.

1400-Concrete Intersection
  1) No change.

1400-Portland Cement Concrete Streets
  1) All *Typical Sections* – Modified sidewalk cross slope requirements to read “1.5% or Flatter” and modified all slopes to be in terms of percent in lieu of inches per foot.
  2) *Enlarged View of Contraction Joint* – Modified note to read: “Hot-poured joint sealant”
  3) *Longitudinal Construction Joint* – Modified note to read: “#5 x 2’-0” Epoxy Coated Deformed Tie-Bars, 2’-6” on Center, Centered on Longitudinal Joint.”

1500-Concrete Driveways
  1) *Residential Driveway Apron* – Modified sidewalk note to include “proposed or future sidewalk (if present)” and added the following note: “Sidewalk shall match the thickness of the apron throughout the apron approach if sidewalk is reconstructed through the driveway (6” min. typical).”
  2) *Section A-A* – Modified apron depth to 6” minimum; and replaced previous subgrade note with the following: “Top 6” of subgrade shall be clean, leveled with an approved material, and compacted.”
  3) *Commercial Driveway Apron* – Replaced previous detail.
  4) *Section B-B* – Replaced previous detail.
  5) *Profile with Sidewalk* – Added detail.
  6) *Typical Section-36’ Street* – Added the following note: “Tied Joint at Edge of Lane If Monolithic Curb Used.”

1500-Concrete Sidewalk
  1) Sheet 1: Concrete Sidewalk and Shared Use Path Layouts – Reconfigured section layouts, names, and locations. *General Sidewalk Layout Plan* – Added new requirements for crosswalk cross slope, crosswalk grade, and sidewalk grade; and modified ramp flare and detectable warning panels for blended transition. *Section A1-A1* – Modified sidewalk cross slope requirement to read “1.0% to 1.5%”; modified ground slope to be in terms of percent in lieu of inches per foot; modified concrete sidewalk material to “KCMMB 4K Concrete”; added requirement that “Top 6 inches of subgrade shall be clean, leveled with an approved material, and compacted.” *Section A2-A2* – Modified shared use path
cross slope requirement to read “0.5% to 1.5%”; modified ground slope to be in terms of percent in lieu of inches per foot; added requirement that “Top 6 inches of subgrade shall be clean, leveled with an approved material, and compacted to 95% of standard proctor.” Section B-B – Added the following note: “A grade break should not be placed between the turning space and bottom of ramp, unless a landing is required for signal push buttons, or in the case of long ramps, grade should generally be consistent between grade break at bottom of ramp and turning space. Median Ramp Crossing Plan – Replaced previous detail. Section E-E – Replaced previous detail.


1506-Concrete Curb and Gutter
1) CG-1; CG-1, Dry; CG-2, CG-2, Dry; and CG-3 Details – Notes modified for asphalt streets to read “T=6 inches minimum for Asphalt Streets.”
2) CG-2 and CG-2, Dry – Added height dimensions.
3) CG-3 Detail – Modified title to read Curb and Gutter Through Driveways.
4) Curb and Gutter General Notes – The following was added as Item 7: “For the concrete gutter through curb ramp detail, refer to the Standard Details for ‘Concrete Sidewalk Access Ramps.’"

1600-Pavement Marking
1) Sheet 1: General Notes and Details – Modified Pavement Marking General Notes to require that existing pavement be grooved prior to installing pavement markings in conformance with City Specifications and that crosswalk lines be installed/spaced to avoid wheel paths. Modified Pavement Marking Material Matrix.
2) Sheet 5: Roundabout Pavement Marking – Added advanced lane markings to Typical Two-Lane Roundabout Marking Details in conformance with the MUTCD.

1650-Signing
1) New standard detail.

1700-Roadway Lighting
1) Sheet 1: General Notes – Removed Design Parameters.

1700-Traffic Signals
1) No change.
1800-Street Repair
1) Type 1 Monument Box Detail – Modified housing to include two hook points.
2) Portland Cement Concrete Patching Details and Permanent Pavement Removal and Replacement Details – Modified tie bar note to read as follows: “#5 x 2'-0” Epoxy Coated Deformed Tie-Bars, 2'-0” on Center”
3) Portland Cement Concrete Patching Details – Modified concrete note to read “8 inch Minimum KCMMB Fiber Reinforced Concrete”
4) Standard Manhole Adjustment Detail – Modified tie bar note to read as follows: “#4 Deformed Bars Both Directions or Fiber Reinforcement”

2000-Raised Crosswalks
1) Raised Crosswalk Details (Plan, Section A-A, Section B-B) – Replaced previous details.
2) Raised Crosswalk Notes – Replaced previous notes.

2000-Speed Cushions
1) Speed Cushion-Typical (Plan, Section A-A, Section B-B) – Replaced previous details.
2) Speed Cushion Notes – Replaced previous notes.

2000-Speed Humps
1) Speed Hump-Typical (Plan, Section A-A, Section B-B) – Replaced previous details.
2) Speed Hump Notes – Replaced previous notes.

2500-Sanitary Sewer-Gravity
1) Sheet 1 – Modified Sanitary Sewer Trench Detail to reference City of Lawrence Standard Details for Street Repair for trenches performed within existing roadways. Modified Item 7 of Notes to read “manhole rings and lids shall be Deeter Foundry Model 1048 or approved equal” in conformance with modifications to Section 2510.3.3 of the Sanitary Sewer Material Specifications.
2) Sheet 2 – Modified Concrete Collar Detail to read Concrete Pipe Anchor Detail.

2900-Waterline
1) Sheet 1 – Modified Typical 1-1/2” or 2” Service Connection detail to require Ford MC-36-P-BR ring and cover. Modified Blowoff Detail to remove Truflo device and return to standard blowoff assembly. Modified Item 1 of Note to clarify the placement of anodes at service lines.
2) Sheet 2 – Modified Waterline Right-of-Way Crossing Details to reference City of Lawrence Standard Details for Street Repair for trenches performed within existing roadways.

2902.2-Fireline Connection Detail
1) All Sheets – Added Department title block.
2) Modified Item 6 of Backflow Located Outside of Building 3” and Larger Fireline Connection Detail to read “Post Indicator Valve (Private).”
3) Modified Item 6 of Backflow Located Inside of Building 3” and Larger Fireline Connection Detail to read “Post Indicator Valve (Private).”
**2902.6.1-Backflow Manhole Detail**

1) All Sheets – Added Department title block.

**2902.6.1-Backflow Vault Detail**

1) All Sheets – Added Department title block.

**2902.6.7-Meter Vault Detail**

1) All Sheets – Added Department title block.

**3000-Fiber**

1) No change.

**6000-Storm Sewer**

1) No change.

**6000-Underdrain**

1) REMOVED – *Underdrain – Concrete Street* sheet. Consolidated underdrain details into one drawing.

2) All Sections – Removed references to O.P. Special aggregate and replaced with the following “Underdrain Aggregate (BD-1 Aggregate with Geotextile Fabric, JD-1 Aggregate Without Fabric)”

3) *Pipe Underdrain Lateral A-A and Pipe Underdrain Behind the Curb B-B* – Modified to remove replace reference to “Aggregate Base Course” to “9-inch Flyash Treated Subgrade.”

4) *Underdrain Notes* – Modified to remove references to OP Special aggregate.

5) *Rock Outcropping* and *Rock Excavation/Aggregate Base Course* – Replaced previous details.