CITY OF LEAVENWORTH

MANUAL OF INFRASTRUCTURE STANDARDS

October 27, 2020

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I. New Residential and Commercial/Industrial Developments and Public Infrastructure Extensions - all new developments and sewer line extensions will require an engineer's estimate of construction to be approved by the City Engineer/Public Works Director.

a. **Bonding** - all new developments will require a Performance Bond in the amount of 125% of the approved engineer's estimate of construction.

b. Construction shall be in accordance with the requirements outlined in the following sections of this documents and/or City of Leavenworth KDHE approved Sewer Construction Specifications.

c. Testing shall be in accordance with the requirements outlined in the following sections of this document and/or APWA or KDOT published standards as approved by the City Engineer/Public Works Director.

d. **Inspection Fee** - all new developments and sewer line extensions shall pay an inspection fee to the City in the amount of 6% of the approved engineer's estimate of construction. (Payable at the end of construction and may be based on actual costs rather than estimates.) (Fee to be paid prior to final acceptance of the subdivision or sewer line extension and before issuance of any building permits.)

II. Street Design Standards - streets will be designed in accordance with existing subdivision standards. Technical specifications not covered in the adopted Subdivision Regulations will meet current Kansas City Metro Chapter APWA published standards.

III. Street Construction Standards

a. Street widths will be based upon street classification.

1. Residential Streets will be 28' back to back, parking allowed on one side.

2. Collector Streets - 36' back to back with no parking.

3. Arterial Streets - 12' lane widths with no parking.

b. Residential street pavement sections will be designed and sealed by a professional engineer and approved by the City Engineer. (Pavement design is NOT required if the design engineer uses the minimum standard as identified below unless exceptionally bad conditions exist as determined by the City Engineer.)

1. Standard residential street pavement section will be minimum of 8" asphaltic concrete placed upon a minimum of 6" AB-3 base rock with a

layer of geo-textile grid (Tensar Triax 160 or an equivalent triaxle geo-grid approved by the City Engineer) on compacted sub-grade in accordance with Kansas City Metro Chapter APWA or KDOT specifications.

2. Sub-grade - the sub-grade shall be proof-rolled in accordance with the criteria outlined by the City Engineer to verify the sub-grade is solid prior to the placing of the geo-grid and AB-3. Developers will perform the necessary soils testing to determine the appropriate method of constructing the sub-grade should the soil fail the proof-roll. The proof-roll on all roadways shall be conducted using a tandem axle truck loaded with a minimum of 10 tons in weight. Should the soils testing recommend improvements beyond the standard requirements, those improvements will be provided at no cost to the City of Leavenworth. Such improvements may include such items, but not limited to:

    - Sub-surface drains
    - Geo fabrics
    - Special backfill requirements for drainage pipe
    - Soil additives installed in accordance with Kansas City Metro Chapter APWA or KDOT specifications

NOTE: all utility street crossings MUST be in place prior to the application of soil additives and the installation of the geo-grid and AB-3 sub-grade.

c. Collector and arterial streets design will include a pavement design to specify pavement section. The pavement design will include a geotechnical report. The pavement design will be designed and sealed by a registered professional engineer and approved by the City Engineer.

1. Standard collector street pavement section will be a minimum of 10” of asphaltic concrete placed upon a minimum of 6” AB-3 base rock with a layer of geo-textile grid (Tensar Triax 160 or an equivalent triaxle geo-grid approved by the City Engineer) on compacted sub-grade in accordance with Kansas City Metro Chapter APWA or KDOT.

2. Standard arterial street pavement section will be a minimum of 12” of asphaltic concrete placed upon a minimum of 6” AB-3 base rock with a layer of geo-textile grid (Tensar Triax 160 or an equivalent triaxle geo-grid approved by the City Engineer) on compacted sub-grade in accordance with Kansas City Metro Chapter APWA or KDOT.

3. Sub-grade - the sub-grade shall be proof-rolled in accordance with the criteria outlined by the City Engineer to verify the sub-grade is solid prior

to the placing of the geo-grid and AB-3. Developers will perform the necessary soils testing to determine the appropriate method of constructing the sub-grade should the soil fail the proof-roll. The proof-roll on all roadways shall be conducted using a tandem axle truck loaded with a minimum of 10 tons in weight. Should the soils testing recommend improvements beyond the standard requirements, those improvements will be provided at no cost to the City of Leavenworth. Such improvements may include such items, but not limited to:

- Sub-surface drains
- Geo fabrics
- Special backfill requirements for drainage pipe
- Soil additives installed in accordance with Kansas City Metro Chapter APWA or KDOT specifications

NOTE: all utility street crossings MUST be in place prior to the application of soil additives and the installation of the geo-grid and AB-3 sub-grade.

d. All street construction will include a two (2) year maintenance bond for all items associated with street construction to include drainage, grading, erosion control, and sidewalks.

IV. Sidewalks

a. All new residential and commercial construction will include sidewalks. All new sidewalks will be placed 5' from the back of the curb unless a variance is approved by the City Engineer.

1. Residential street improvements will include a minimum of sidewalks on one side of the street. The City Engineer may require sidewalks on both sides. Sidewalks will be required on both sides under the following circumstances:

   a. Around a school

   b. Around a park

   c. Around public buildings

   d. Where existing sidewalks are on both sides

2. Collector or arterial streets will have sidewalks constructed on both sides.

Public improvements within new subdivisions will include sidewalks at the intersections to include ADA ramps. Public improvements will also include access points (ADA ramps) for mail delivery.

b. All sidewalks will be concrete unless otherwise approved by the City Engineer.

1. All new sidewalks will be a minimum of 5' in width and 4" in thickness. Sidewalks adjacent to the curb will be 6' in width and 4" in thickness. In areas where trails are planned or exist, wider sidewalks may be required.

2. All sidewalks repaired will match the width of existing sidewalks or a minimum of 4' whichever is greater. All repaired sidewalks will match the material of the existing sidewalk unless a variance is granted by the City Engineer. Line and grade shall be compliant, to the extent feasible, with PROWAG and/or required by the ADA ruling.

Sidewalks crossing driveways or adjacent to a street section, such as in the area of access ramps, will be a minimum of 6" in thickness. (This applies to the area within the right-of-way.)

Brick sidewalks are not approved for sidewalk surfaces except in historic districts.

c. All work performed adjacent or near a sidewalk and the adjacent curbing will be reason for the contractor/owner to install a curb ramp if required by current PROWAG accessibility regulations. All sidewalk construction will meet current legal requirements for ADA and/or PROWAG regulations. KDOT and/or APWA KC Metro Area standard specifications will be used as plan details. All curb ramps will be constructed using cast iron ADA compliant truncated dome panels manufactured by Neenah Manufacturing or TufTile, red in color or an equal approved by the City Engineer. Ramps will be constructed at maximum allowable grade to promote drainage, water to remain in the gutter line.

d. Concrete for all new and replacement sidewalks will meet the most current requirements of a 4K KCMMB (Kansas City Metropolitan Materials Board) mix with coarse aggregate of Granit or Trap Rock. (Standard City Mix)

e. All sidewalks will be constructed with tooled joints at a minimum distance equal to the width of the sidewalk. All joints will have a minimum depth of ¼ of the sidewalk thickness. The tooled joints will have a 1/8" radius. All new sidewalk construction will be picture framed. For replacement sidewalk construction, the picture frame requirement will be dependent on the adjoining sidewalk. Expansion joints will be installed a minimum of every 250 lineal feet or at the intersection of an existing sidewalk. Expansion joints will be formed

with ½" wide prefabricated, non-extruding filler, and shall extend the full depth of the slab.

f. All sidewalk construction will require an inspection prior to placement.

g. A cost share program for the improvements of public sidewalks is available for the replacement of existing sidewalks or the construction of new sidewalks not related to new subdivisions or building construction. The City will participate in the cost of sidewalk improvements at the rate identified in the guidelines for the cost share program. The property owner must request to participate in the cost share program, in writing, **prior** to performing the work. The property owner must obtain a building permit and all work must be inspected. Once complete, the property owner may submit a bill with the appropriate documentations for reimbursement. Cost sharing does not apply to the installation of brick sidewalks.

h. Prior to final acceptance of public improvements for any development or subdivision, the developer or contractor will post a performance bond for construction of sidewalks prior to the end of two (2) years from the date of acceptance of the public improvements. Should the contractor not have all sidewalks constructed 30 days prior to the two (2) year deadline, the contractor will be placed on notice that the bond is being called. The sidewalks will then be installed. *(The developer will be required to construct the sidewalk across all lots not built on prior to the release of the two (2) year maintenance bond.)*

V. Curbing Construction

a. All curbing will be constructed in accordance to the standard specifications on file in the Office of the City Engineer.

b. All curbing impacted by driveway construction, ADA ramp construction, or utility construction will be replaced between the nearest construction joints.

c. All collector or arterial streets will be constructed with Type B - Stand Up Curb and Gutter.

d. All residential streets will be constructed with Type A - Roll Back Curb and Gutter.

e. Downtown curbing will be constructed with 18" Stand Up Curbing.

f. The City Engineer may approve the use of other types of curbing on an individual basis.

g. Concrete for all new and replacement curbing will meet the most current requirements of a 4K KCMMB mix with coarse aggregate of Granite or Trap Rock. (Standard City Mix)

h. All curbing will be constructed with tooled joints at a maximum distance of ten (10) feet. All joints will have a minimum depth of ¼ of the curb thickness. The tooled joints will have a 1/8" radius.

VI. Valley Gutter Construction

a. All new or replacement valley gutters will be a minimum of 6' in width and 12" in thickness.

b. All valley gutters will be constructed with tooled joints at a maximum distance of six (6) fee. All joints will have a minimum depth of ¼ of the concrete thickness. The tooled joints will have a 1/8" radius.

c. Concrete for all new and replacement valley gutters will meet the most current requirements of a 4K KCMMB mix with coarse aggregate of Granite or Trap Rock. (Standard City Mix)

VII. Driveway Entrances

a. Driveways on curbed streets will not exceed 30' (including wings and flares) or the requirements of the Zoning Ordinance for the driveway on private property; whichever is less.

b. Driveways on non-curb and gutter streets shall not be wider than 20' and will not extend into the street.

c. Driveways on non-curb and gutter streets will be installed with a 15" minimum CMP, HDPE, or concrete driveway tube. Maximum tube length shall not exceed 24'. The City Engineer may require additional diameter of driveway tube in certain areas. In certain areas, the City Engineer may waive the requirements for a driveway tube. Maintenance of the tube is the property owner's responsibility. For tube replacement, the property owner shall purchase the new tube and the City Stormwater crew will install it at their convenience.

d. Driveways and approaches to structures on the cul-de-sacs bulb shall not be wider than 20' from the curb line to the property line.

e. Driveways and approaches constructed on the right-of-way will be constructed of concrete unless otherwise approved by the City Engineer.

f. The contractor may saw the existing curbing to facilitate the installation of a driveway. All curbing impacted by driveway construction will be replaced between the nearest construction joints.

g. The contractor may not impact the flow of water in the gutter line when installing the driveway.

h. All driveways will be a minimum of 6" of concrete. Driveways shall meet the standard specification sheet for driveway construction on file at the Office the City Engineer. All driveways will have a non-slip finish applied transversely to the centerline of the driveway. All joints will be tooled to sidewalk standards.

i. Removal of old driveways will include saw cutting full depth prior to removal. The new installation will include ½" pre-molded expansion joint at the sawed joint.

j. All driveways will be constructed to maintain the on-street drainage.

k. All new or replacement driveway construction will be graded to allow for future or existing sidewalks crossing the driveway. Such areas shall be constructed to meet the current ADA accessibility guidelines and ADA regulations (PROWAG).

l. All concrete to the right-of-way line for all new and replacement driveways will meet the most current requirements of a 4K KCMMB mix with coarse aggregate of Granite or Trap Rock. (Standard City Mix)

m. All new or replacement driveway construction must be inspected prior to installation.

VIII. Excavations - Private Property and in the Right-of-Way

a. **All excavations (Public or Private) shall require the locating of all underground utilities by utilizing the 811 locating system prior to the start of any digging operations.**

b. All excavations, including utility service cuts, on private property and in the right-of-way will be performed in accordance with all permits, notification requirements, and all standard specifications and drawings on file in the Office of the City Engineer.

c. All excavations located under or within 2' of a paved surface shall be backfilled utilizing a flowable concrete backfill material. Backfilling with AB-3 utilizing moisture and compaction control in 8" lifts may be approved by the City Engineer.

d. All excavations in the right-of-way will be performed with proper traffic control compliant with the current edition of the MUTCD when traffic is impacted. The City Engineer may require a formal traffic control plan prepared by a licensed engineer or a traffic control specialty firm that employs certified personnel.

e. No excavation in the street will be left open for over 48 hours. After 48 hours the area will be plated to allow traffic. All plates will be secured to the paving.

f. Excavations allowed to remain open to weather will require the unsuitable backfill material be removed and replaced with suitable material.

g. Excavations behind the street-traveled way will be restored to preconstruction condition immediately upon completion of work. Compaction will be TYPE B MR90.

h. Excavations and repairs performed in improved alleys will be completed to Street Service Cut Specifications. Repairs performed within non-open alley right-of-ways will comply with requirements for excavations behind the curbing. A separate detail for alley repair is provided.

i. All surface restoration for non-paved areas will be completed with soil material free of clods and rocks. The top 6” of materials shall be organic in composition and capable of supporting vegetation. Areas to be seeded beyond the normal seeding seasons (KDOT seeding specifications) will be temporarily seeded to obtain temporary soil stabilization and then permanently seeded during the appropriate seeding season.

j. All excavations will meet KDHE and City of Leavenworth requirements for erosion control. A Land Disturbance Permit (LDP) is required for all excavations as described in Article III. - Land Disturbance Permits, Sec. 18-91 of City Code Ordinances.

k. Excavations of one acre or more will be required to obtain an NOI permit and must comply with KDHE general guidelines for erosion control and best management practices (BMPs). Excavations less than one acre will be required to obtain an LDP. This will include new home construction.

l. The permit holder of any construction will be responsible for maintenance of the public improvements in the area as a result of failed or non-existent erosion control.

m. Builders not complying with LDP requirements may have the building permit suspended until such time as the corrections have been made.

IX. Utility Installations

a. All utility installation will comply with the rules within this document. Compaction will be to the established standards.

b. Directional boring is an approved method of installing utilities if the boring does not damage other infrastructure. Any damage to existing utilities or facilities and/or heaving of existing pavement - including sidewalks, cause by the contractor's boring methods - shall be repaired by the contractor in an acceptable manner approved by the City Engineer.

c. Utilities will grade and restore the right-of-way to pre-installation condition in a timely manner. Grading shall be to a tined raked condition with rocks and debris removed. A minimum 300 lbs. per acre of similar grass seed will be applied in accordance with KDOT standards. Straw may be used for cover, but must be crimped in place.

d. The contractor will place erosion control (BMPs) at all excavations and be responsive in providing maintenance after a storm event. (See LDP requirements)

e. Utilities and contractors must repair damaged sidewalk, curbing, or other similar improvements to the nearest established construction joint. Short sections will not be allowed.

f. Utilities and contractors will not tunnel beneath existing curing and sidewalks unless a minimum 3' of cover exists from the top of the tunnel to the bottom of the curbing or sidewalk. The void area beneath the curbing or sidewalk must be filled with flowable fill material.

g. All areas where curbing or sidewalks are damaged to the point of repair will be reconstructed to meet the current ADA accessibility guidelines an ADA regulations (PROWAG).

h. The contractor will be responsible for sweeping the entire area to include streets/sidewalks/alleys within 24 hours of completion of the project.

i. All repairs to the public infrastructure (pavement, curbs, sidewalks, driveway approaches, etc.) resulting from utility installations shall have a minimum 2-year warranty period.

X. Materials

a. Concrete

   1. All concrete to include sidewalks, curbing, paving, inlet box tops, and any other improvement exposed to a freeze/thaw cycle shall meet the current 4K KCMMB standards with Granite or Trap Rock as the coarse aggregate (Standard City Mix).

   2. All concrete will be installed in accordance to KDOT Standard Specifications with the exception that all joints will be tooled.

b. Asphalt - all asphalt paving will be a super-pave design meeting the requirements of KDOT SR-12.5A HMA - Commercial Grade. The City Engineer will approve the design mix.

XI. Street Lighting

a. A streetlight will be installed at every intersection. Streets over 600 feet between intersection centers will have a mid-block light installed if electrical supply is available.

b. New subdivisions are responsible for supplying the appropriate easements and underground conduit for street lighting.

c. All installations shall meet Evergy requirements

d. Subdivisions requesting the deletion of street lighting will have a homeowner's association agreement in place specifying responsibility for street lighting. The subdivision plat will provide adequate easements should street lighting be requested in future years and all installation costs will be the responsibility of the homeowner's association.

e. Street lighting will be by Evergy contract as far as possible. Poles supplied will be wood, concrete, fiberglass, or steel. Pole type will be decided by the City Engineer.

f. All installations in new subdivisions will utilize underground wiring. The poles will be centered 3' behind the curbing or at the direction of the City Engineer.

XII. Stormwater

a. A drainage plan is required for all developments.

b. All new subdivisions or new commercial developments will meet the current Stormwater Design Guidelines or:

- All new subdivision or new commercial developments will meet APWA Specifications Section 5600, Storm Drainage Systems and Facilities.

- All new subdivision and individual lots within subdivisions shall provide adequate temporary and permanent erosion control measures in accordance with the City's Land Disturbance Permits and Regulations.

c. Subdivisions or developments that include stormwater detention or open channel drainage must have an approved maintenance plan on file in the Office of the City Engineer to include a method of funding maintenance prior to the issuance of any building permit. Open channels not otherwise noted will be considered the property owner's responsibility.

d. All drainage pipe utilized within the right-of-way will be reinforced concrete pipe meeting KDOT Standard Specifications. Drainage pipe exiting a storm drainage structure and running directly off right-of-way may be of concrete or HDPE upon approval of the City Engineer. All drainage pipe will extend to the right-of-way line and/or to the nearest drainage way.

e. The City Engineer will require CCTV review of storm sewers upon completion of construction. This CCTV inspection shall be performed by the contractor and a copy provided to the City. The City will complete a 2nd CCTV inspection prior to the end of the warranty period.

f. All inlets and junction boxes, and appurtenances will comply with standards on file in the Office of the City Engineer.

XIII. Sanitary Sewer

a. All sanitary sewer installations will comply with the City of Leavenworth Standard Sanitary Sewer Specifications on file in the Office of the City Engineer.

b. All sanitary sewer installations will include a 2-year maintenance warranty to include a maintenance bond.

c. The City Engineer will require CCTV review of sanitary sewers upon completion of construction. This CCTV inspection shall be performed by the contractor and a copy provided to the City. The City will complete a 2nd CCTV inspection prior to the end of the warranty period.