
Concrete Design Standards/Policy



Concrete Design Standards City of Louisburg, KS

Public/City

CONCRETE FLATWORK (PUBLIC): City sidewalks and approaches shall be inspected prior to concrete being poured. Rebar shall be on chairs. Sidewalks and approaches shall be Granite Mix concrete. Minimum thickness of approaches shall be 6 inches. Approaches shall have at a minimum #4 rebar on a 24 inch grid, tied 50%, and on chairs. Approaches shall have a maximum slope of ¼" per foot. Sidewalks and approaches shall not be poured until all utilities (water, sewer, gas, etc.) have been installed. The use of chloride based accelerants shall not be allowed. Please consult with Building & Zoning Department staff for location of sidewalk and length of approach

NOTE: Fiberglass rebar may be used as a suitable substitute for steel rebar.

(The following paragraphs were taken from City Ordinance 847)

Sidewalks shall be constructed on both sides of all streets, including arterial, collector, residential access, and residential local. Sidewalks constructed on arterial or collector streets, and streets in commercial and industrial districts, shall be not less than five (5) feet in width. Sidewalks constructed on residential access and residential local streets shall be not less than four (4) feet in width. All sidewalks shall be located in the platted street right-of-way, six (6) inches from the property line, and be constructed using "granite mix" Portland Cement Concrete as defined in Paragraph J, Section 402, Article 4, of the Subdivision Regulations of the City of Louisburg. Sidewalks and curbing shall not require rebar unless specifically identified on engineered stamped plans. Approaches, private driveways and ADA Sidewalks with slopes require rebar.

Where sidewalks have not previously been required and were not previously constructed on adjacent lots, tracts, or other locations, any person applying for a building permit to construct a primary structure on any lot or parcel, whether it is residential, commercial, or industrial, shall, as a condition thereof, be required to construct a sidewalk/sidewalks adjacent to such parcel of property, or contribute an equivalent amount to the Capital Improvement Sidewalk Fund.

The determination as to whether the sidewalk shall be constructed or whether the applicant shall contribute to the sidewalk fund shall be rendered by the Planning Commission on any project requiring site plan approval, and by the building and zoning staff on all other sidewalk determinations. The amount of the contribution to the sidewalk fund shall be an equivalent amount per linear foot based on sidewalk type and current construction costs, of the required sidewalk along the entire street frontages of said tract or building lot. Payment of an equivalent amount into the sidewalk fund in lieu of construction of the sidewalk shall relieve the property owner from responsibility of the original improvement for the future construction of the sidewalk/sidewalks adjacent to the property. Such payment is due at the time of issuing the building permit, and shall take the form of cash or certified check and be non-refundable.

Contact the Louisburg Building and Zoning Departments for additional construction specifications for Public Driveway entrances, curbing, and ADA Sidewalks.

Residential/Commercial

CONCRETE SLABS: All basement, garage floor, slab-on-grade and driveways shall be inspected prior to concrete being poured. They shall have at a minimum #4 rebar on a 24 inch grid, tied 50%, and on chairs. A minimum 15 mil vapor barrier is required for all basements and slabs-on-grade. All vapor barrier seams and penetrations shall be taped and/or sealed. Additional, reinforcement and/or grade beams may be required as detailed on the engineered plans.

Garage floor larger than single car shall require additional structural support piers as indicated on engineered stamped plans.

Driveways shall have a maximum slope of 1/4” per foot within Right-of-Way (ROW).

All residential and commercial concrete shall be inspected prior to concrete being poured.

Note: Construction requirements outlined in engineered plans may supersede the above concrete city requirements.

Minimum thickness of concrete is as follows:

Basement	4 inches
Slab-on-grade	4 inches
Garage	6 inches
Driveway	5 inches
Parking Lot	6 inches

PATIOS, STOOPS AND PRIVATE SIDEWALKS: Inspection is required prior to concrete being poured, shall have #4 rebar on a 24-inch grid tied 50%, and on chairs. Stoops require #4 rebar on a 16 inch grid, tied 50%, and on chairs.

NOTE: Fiberglass rebar may be used as a suitable substitute for steel rebar. The requirement for rebar (Steel or Fiberglass) may be waived for privately owned commercial concrete parking lots and sidewalks if engineered stamped construction plans indicate rebar is not required.

Materials

Minimum standards for materials for concrete curbs, gutters, sidewalks and streets in the City shall be:

a. Mix Designs

The mix designs shall be approved by the Kansas City Metro Materials Board as meeting the designation “KCMMB 4K“ or “KCMMB 5K”.

b. Ready-mixed Concrete

Ready-mixed concrete shall be mixed and placed in accordance with the requirements of the Standard Specifications, except that ready-mixed concrete shall be transported with agitation. All concrete shall meet the slump requirements specified. Any addition of water shall be in accordance with the KCMMB specification and prior approval of the Engineer. A diligent effort shall be made by the Contractor and the ready-mix concrete producer to deliver concrete at regular intervals, and to maintain a uniform mix throughout each concrete pour. Concrete shall be delivered at intervals frequent enough to prevent any cold joints.

c. Structural Concrete Construction

All concrete used in construction of reinforced box culverts, concrete bridges, retaining walls, and headwalls shall be classified as KCMMB 5K. The actual mixed proportions of cement, aggregates and water shall be determined by the Contractor.

d. KCMMB 4K Construction

All concrete used in construction of concrete pavement and driveways, curbs and gutters, storm sewer inlets and junction boxes, concrete inverts, aprons, collars, sidewalks, integral sidewalk retaining S-44 walls, concrete ditch liner, and median noses shall be classified as KCMMB 4K. The actual mixed proportions of cement, aggregates and water shall be determined by the Contractor.

e. Curing

Wet covering and waterproof covering shall conform to KDOT Sections 1405- 1407 of the Standard Specifications. Liquid membrane-forming compound shall conform to the requirements for Type 2 White Pigmented Compound as specified in AASHTO M148. Clear liquid membrane-forming compound shall not be used.

f. Water

Water shall be clean and free from deleterious substances.

Cold Weather Concrete Procedures

This procedure may be used as the basis for the acceptance or rejection of any concrete foundation respective to concrete placement during cold weather conditions. It is the intent of this procedure to closely follow ACI 306, Standard Specification for Cold Weather Concreting.

Code requirements

The minimum compressive strength requirements of concrete shall be in accordance with the 2003 International Residential Code:

- 3,500 psi** for interior slabs on grade.
- 3,500 psi** for footings and foundation walls.
- 4.000 psi** for exterior and structural slabs.

The code also specifies that the concrete be air entrained. The total air content (percent by volume of concrete) shall not be less than 5% or greater than 7%. For garage floors with a steel troweled finish, reduction of the total air content (percent by volume of concrete) to not less than 3 percent is permitted if the specified compressive strength of the concrete is increased to not less than 4,000 psi.

Inspection practices

1. The enforcement of cold weather concrete protection requirements will occur when the ambient air temperature is at or below 40 degrees Fahrenheit, or a temperature is forecasted within 48 hours of below 40 degrees Fahrenheit. Footings, walls, structural slabs, sidewalks and driveway approaches shall be protected.
2. The air temperature shall be at least 25 degrees and rising for an inspection of concrete related construction. Exception: If the air temperature is below 25 degrees an inspection may be conducted provided special permission is granted from City Inspectors. Special permission may be granted for approved on-site heating or other approved methods.
3. Inspectors will verify the sub-grade is not frozen prior to concrete placement and that adequate protection components are on site at the time of inspection. They will also be checking the maintenance of the protection for two days following the inspections.
4. If footings were required to be protected from freezing, foundation walls will not be allowed to be poured for at least 48 hours.
5. At the inspector's discretion, concrete drivers batch tickets may be reviewed for the purpose of determining the time the concrete truck left the plant, strength of the concrete, percent of air entrainment or any special additives in the concrete mix.
6. A third party inspector may be used at the expense of the contractor and/or homeowner. The third party inspector must be an American Concrete Institute (ACI) Field Testing Technician. The third party inspector must be on sight when concrete is poured to visually inspect concrete mix, conditions, and site preparation.

Protection during cold weather

In cold weather conditions it is important to protect the concrete from freezing and to maintain curing conditions to ensure adequate strength development. When cold weather conditions exist, surface concrete temperatures must be maintained at 40 Degrees Fahrenheit for three days. Curing time may be reduced to two days if the cement content is increased by 100 lbs. per cubic yard or Type III Portland Cement is used, or if an approved accelerator is employed.

Methods of protection

- For footings, an acceptable method of protection from freezing during the curing process is to cover footings with 6 inches of straw. The straw shall be held in place with tarps, polyethylene sheeting or blankets. Tarps, polyethylene sheeting or blankets shall be properly secured to ensure that they are not blown away in high winds.
- For foundation walls, insulated blankets may be used. Blankets shall be secured to foundation walls to ensure that they are not blown away in high winds.
- After the initial curing period, it is recommended that the concrete be protected from the elements for at least two additional days before it is exposed to freezing conditions. When pouring conventional concrete during cold weather conditions, the concrete shall be protected from freezing for at least 72 hours (three days).
- When pouring concrete utilizing approved accelerators, Type III Portland Cement, or where the cement ratio is increased 100 lbs. per cubic yard; the concrete shall be protected from freezing for at least 48 hours (two days). If footings are required to be protected from freezing, foundation walls will not be allowed to be poured for at least 48 hours.

If the inspector believes that the concrete has not been protected as described above or per another approved method, the inspector will require that the concrete be tested in order to ensure that proper strength of the concrete has been developed.

FOR MORE INFORMATION

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