Sec 57-10. Minimum improvements required

(4) *Infrastructure and development standards.*

a. Utilities shall be served by City water, sewer, and electricity. If the City sewer is not available, one of the following private systems may be used:

1. Low-pressure system

2. Septic tank (regulated by the Missouri Department of Health)

3. Lift station

b. Streets shall be constructed to city street standards. Rural-style street sections with open ditches or swales are preferred in the EL-1 District. Curb and gutter may not be required unless the Public Works Director or their designee determines it is necessary for drainage, safety, or infrastructure protection.

(c) Streets. Street plans, profiles, and specifications shall be prepared by a registered professional engineer on plan and profile paper and shall be reviewed and approved by the director, planning and zoning commission, and board of aldermen.

(1) *Construction.*

a. Alleys and local streets shall be constructed of Portland Cement Concrete with integral curbs (or concrete curb and gutter), or bituminous plant mix roadway with a concrete curb and gutter in accordance with city standard street specifications.

b. Collector and arterial streets shall be constructed of Portland Cement Concrete with integral curbs (or concrete curb and gutter) in accordance with city standard street specifications.

c. In rights-of-way, all storm sewer, drainage, and culvert piping shall be restricted to Portland Cement Concrete pipe only.

(2) *Roadway sections.* Typical roadway sections showing various widths of roadway and rights-of-way, and required thicknesses shall be provided with improvement plans.

(3) ***Pavement design/surface types.*** **Pavement surfacing for public streets and alleys shall be either Portland Cement Concrete or Plant Mix Bituminous Surface Course material in compliance with city street standards. The particular type of surfacing selected for use on alleys and local streets is at the option of the developer and determined based upon the surface type of existing connecting streets, length of project, type of project, etc. Widening of existing lanes shall be done using the same surface type as the existing street.**

(4) ***Drainage facilities.*** **Prior to the placement of street or alley pavements, adequate surface and subsurface drainage facilities (if required) shall be installed by the subdivider. All pipe used for drainage purposes shall be installed as per manufacturer's specifications.**

(5) ***Standards.*** **All construction shall be completed in accordance with the city street and sewer standards and the improvement plans, and in a manner acceptable to the authorities having jurisdiction.**

(6) ***Widths.*** **All specified street widths are to be measured back to back of curbs.**

(7) ***Changes or amendments.*** **If changes from the accepted plans and specifications become necessary during construction, written approval from the director shall be secured prior to the execution of said changes.**

(8) ***Compacted granular back fill material.*** **Compacted granular back fill material shall be required in all trenches located under pavements regardless of the type of work performed. Granular materials meeting the requirements of Type 1 or 2, Section 1007, Aggregate For Base, of the Missouri Standard Specifications for Highway Construction shall be used full depth under roadways and in shoulder areas in which the distance from the edge of the roadway surface is equal to the depth of the excavation, except twelve (12) inches of topsoil on the surface for turf establishment behind curbs. All back fill materials shall be compacted in twelve (12) inch layers in a manner as to prevent future settlement. No utilities shall be located within two (2) feet of the back of curb, except in special instances where approved by the director. This back fill must be compacted to at least ninety-five (95) percent relative density. Compacted earth is not considered an acceptable back fill material under pavement limits or within two (2) feet**

thereof. Pavement sub grade in all areas shall be compacted prior to paving.

(9) ***Compacted earth back fill material.*** **Compacted earth back fill material shall be required in all trenches located outside pavement limits and rights-of-way. Said earth back fill material shall be compacted to a minimum of ninety-five (95) percent standard proctor density at optimum moisture (2 percent). Earth back fill material shall be compacted in maximum twelve (12) inch lifts.**

(10) ***Manholes.*** **All manholes located within pavement limits shall be poured monolithic. Manhole diamonds or box-outs are prohibited.**

(11) ***Utilities.*** **All utilities must be installed and successfully tested prior to the paving of street and sidewalk pavements, unless waived in writing by the director. However, said paving of streets and sidewalk pavements does not constitute acceptance of any subsurface utilities or infrastructure improvements. However, in those situations where the director has permitted utilities to be installed following the placement of street pavements, necessary conduits shall be bored and jacked. In some cases, the pavement may be removed in panels and replaced, and correct installation and back fill operations shall be performed. In all cases, the installation procedure shall be submitted in writing to the director for his approval prior to the installation, and approved by the director in writing.**

(12) ***Coring tests.*** **The developer shall core all new street and sidewalk pavements to ensure minimum thickness requirements prior to the city's acceptance of any improvements. Core samples for strength and depth shall be taken at one (1) core per every five hundred (500) linear feet of pour width, or as required by the director.**

(13) ***Storm sewer boxes.*** **The use of concrete block storm sewer boxes more than four (4) feet deep is prohibited. In all cases where boxes are more than four (4) feet deep, pre-cast reinforced concrete structures, as per Missouri Department of Transportation standards, shall be utilized.**

(14) ***Concrete tests.*** **A minimum of one (1) concrete test shall be taken for each day's pour. Additional tests shall be taken for each one hundred and fifty (150) cubic yards of concrete, or at the director's request and shall include the following testing information:**

a. Slump.

b. Air.

c. Cylinders for seven (7), fourteen (14), and twenty-eight (28) day breaks.

(15) *Density tests.* Density tests shall be recorded for all earthwork operations. The sub grade of all street pavements shall be re-tested for compaction if the road is to be used as a haul road for concrete trucks and other heavy equipment. One (1) density test shall be taken and recorded as a minimum every one thousand (1,000) cubic yards of earth back fill placed, and every five hundred (500) square yards of pavement sub grade cut to grade. See also section 57-8 for more information.

c. Sidewalks shall not be required in the EL-1 District unless the Public Works Director or their designee determines they are necessary for public safety, such as along narrow streets or at roadway curves or to provide essential pedestrian connectivity to existing or planned sidewalks, trails, or public facilities.

d. Streetlights shall be required at public street intersections. Additional lighting shall not be required unless it is necessary for public safety due to roadway geometry, sight-distance limitations, or similar conditions.

(k) Street lighting. Street lighting shall be installed in all subdivisions developed within the city in accordance with the following design and installation standards.

(1) Each developer shall submit a street lighting plan clearly set forth on the final plan submitted to the director. The street lighting plan shall be reviewed and approved by the director or his designated representative as part of the city staff review.

(2) In a subdivision, a lighting unit shall be installed at each intersection and cul-de-sac turnaround.

(3) Lighting standards shall be staggered longitudinally a minimum of one hundred fifty (150) feet and a maximum of four hundred fifty (450) feet apart.

(4) Each lighting unit shall be set back and centered on a point three (3) feet to four (4) feet from the rear curb line.

(5) Mounting height shall be a minimum of twenty (20) feet from pavement to luminaire.

(6) Lamp posts shall be round tube type of galvanized steel or black fiberglass and a minimum of twenty (20) feet in height. Lighting brackets or mast arms shall be a minimum of six (6) feet in length and made of aluminum alloy or galvanized steel.

(7) Lamps or luminaires shall be as specified in chapter 41 of this Code or that recommended by the director or his designate.

(8) Installation of lighting shall be independently contracted by the developer. Inspection of installation shall be made by the director or his designate and city crews shall make all final connections to the city's power source.

(9) All street lighting shall be installed in accordance with the National Electrical Code edition adopted by the city at the time of installation. All electric lines, poles, and fixtures shall be assembled and wired through the base of the pole.

(10) In all cases the subdivider shall pay the cost of all materials, equipment, accessories, and installation necessary for street lighting within the subdivision as well as any trenching, if necessary.

e. Stormwater may be conveyed primarily through natural or open drainage systems, including swales, ditches, and other above-ground methods, unless the Public Works Director or their designee determines that enclosed storm sewer improvements are necessary for public safety or infrastructure protection.

f. Detention basins are not required in the EL-1 District unless the Public Works Director or their designee determines they are necessary to prevent flooding, protect downstream properties, or safeguard public infrastructure. Natural drainage patterns and open conveyance methods are the preferred stormwater approach for estate-lot development.