New Home Construction Requirements & Reference

The Community Development Office has prepared an information packet for new home builders. This packet contains both City requirements and reference materials. Please ensure that all information listed below is included in this packet.

- ☐ New Home Construction Required Inspections
- ☐ Erosion Prevention and Sediment Control for Residential Building Lots
- ☐ Driveways & City Sidewalks Requirements
- ☐ Residential Drive Detail, Type A Curb
- ☐ Stoop Flashing Requirements
- ☐ Concrete Cold Weather Protection
- ☐ House Numbers Requirements
- ☐ Single Family Landscaping Requirements
- ☐ Preferred Trees for Northeast Kansas (informational)
- ☐ Top Ten Steps for Successful Tree Planting (informational)

By signing below, I acknowledge receiving and understanding the above requirements.

Permit Holder Signature: _____ Date: _____

Permit Number:_____

New Home Construction Required Inspections

The following are required inspections that must be performed. It is the responsibility of the permit holder to request and schedule an inspection when work is ready for inspection and to provide access to the building inspection department so that inspections may be performed. All work requiring inspections shall remain accessible and not be concealed until approved by the building inspection department.

Call 913-259-3611 to request inspections between 8:00 a.m. and 4:00 p.m. Building inspection staff is not responsible for fax, email or voice mail inspection requests being lost or misplaced.

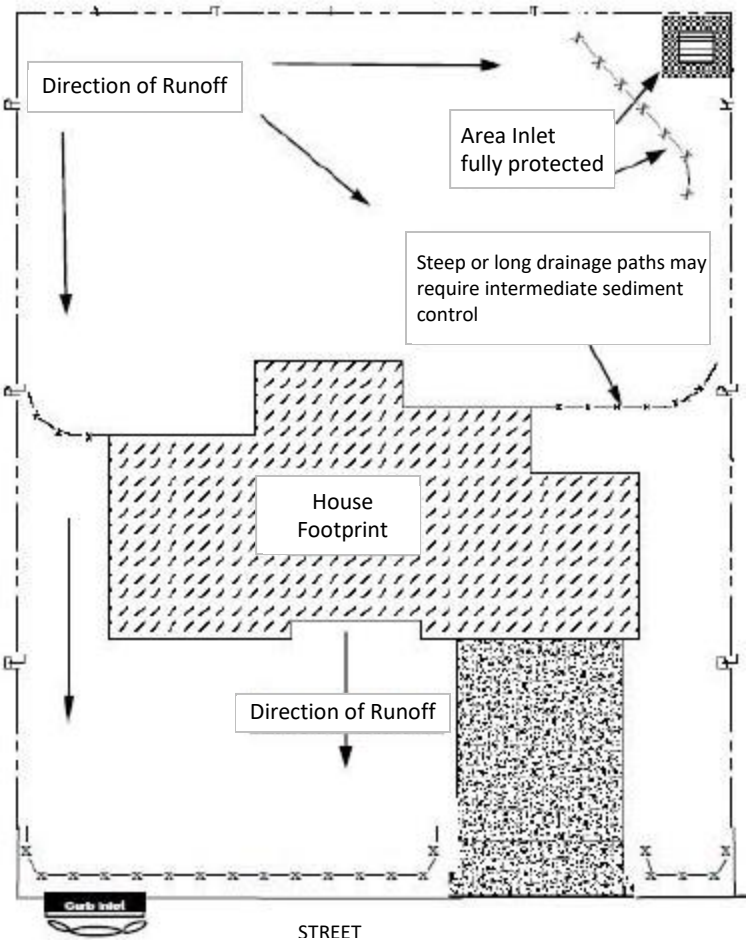
	Type of Inspection	**Comments**
	Footings and Piers/Pier Pads	
	Foundation Walls and Drains	
	Pre-back Drain Tile and Waterproofing	Inspection required to verify installed as required.
	Under Slab/Under Floor	Includes any plumbing, electrical, mechanical or other systems installed under a floor slab or beneath a building.
	Structural Slabs, Driveway, Patio, Sidewalk and Curbs	Inspections are required prior to the placement of concrete for all slabs, driveways, patios, sidewalks and curbs.
	Rough In - Framing (Structural / Non Structural) - Mechanical/Electrical/Plumbing	The rough-in inspection includes framing, electrical, plumbing and mechanical. Separate inspections of each trade will not be performed due to time constraints placed upon inspection department staff.
	Roof Midway: Ice/Water, Felt Roof Final: Flashing and Installation	Inspection is required to verify moisture barrier, felt paper, flashing and final roof installation. Ice and water shield is required by code.
	Insulation	Inspection is to verify the R-value and placement of insulation.
	Drywall	Inspection is to verify garage firewall and bathroom greenboard.
	Electrical Service	Grounding shall be completed to water service piping and ground rod.
	Gas Piping and Testing	Air pressure test shall be set up prior to inspection. Minimum 10 psi air held for a minimum of 10 minutes.
	Outside Gas Piping	Metallic piping requires minimum 12” burial depth, plastic piping requires 18” burial depth.
	Outside Water Piping	Minimum 42” burial depth.
	Outside Underground Electric	Underground electrical requires minimum 24” burial depth. Evergy requires 36” burial depth. Any conductors shall be listed for wet locations.
	Final Inspection	Call 913-259-3611 when work is completed.

Erosion Prevention & Sediment Control for Residential Building Lots

Construction sites in Paola, KS, regardless of size, are regulated to ensure Best Management Practices (BMPs) are installed and maintained to prevent sediment and other pollutants from leaving the site. Lack of erosion and sediment control BMPs can allow large quantities of sediment and other pollutants to leave the site and enter streams, lakes and rivers.

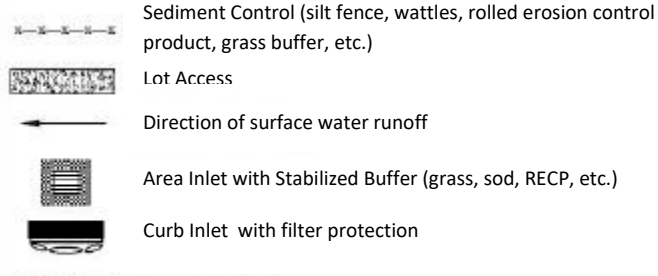
Additionally, a Stormwater Pollution Prevention Plan (SWPPP) may be in effect for your lot in accordance with the subdivision's coverage under the Construction General Permit issued by the Kansas Department of Health and Environment (785-296-6804). Check with the developer of the subdivision to complete an Individual Lot Certification (ILC) as required by the State of Kansas and to obtain a copy of the SWPPP, as you may be responsible for that portion of the plan that affects your lot.

This fact sheet contains plans and practices appropriate for residential building lots. It is not intended to address all circumstances. Local permits and regulations may prevail over information contained here.



Single Family Lot Erosion and Sediment Control Plan

This sample plan represents a typical single family lot. Users of these standards must make their own assessment (or seek professional advice) as to the conditions and drainage patterns of individual sites. These conditions should determine the selection and location of appropriate BMPs.

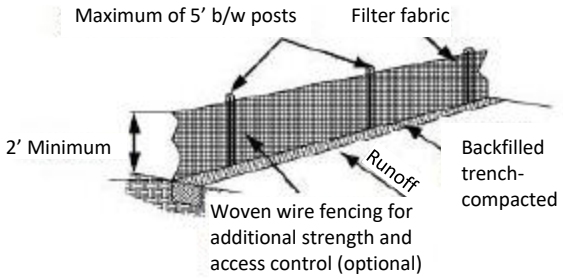


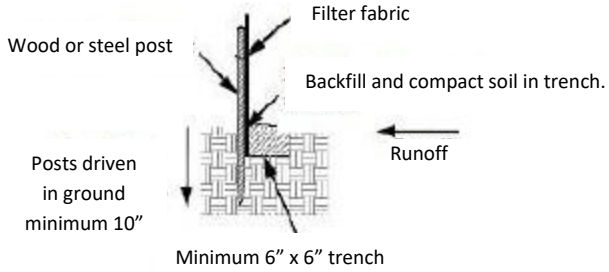
Note: Once sidewalk is installed, BMPs shall be moved to the back of the sidewalk to prevent sediment from reaching the sidewalk.

Erosion Prevention & Sediment Control for Residential Building Lots

Silt Fence

- Turn ends of silt fence uphill to capture runoff
- Overlap next to stake when joining two sections.
- Remove accumulated sediment to maintain capacity and reduce stress on fence.





Silt Fence Alternatives

Straw wattles, compost logs, blankets, grass buffers and mulch are good alternatives to silt fence, reducing erosion and filtering sediment. These BMPs can be installed in all weather conditions and are easily repaired if necessary. They are appropriate for perimeter control on most individual building lots and work well in small areas such as the right-of-way between the curb and sidewalk. Installation of manufactured products should follow the instructions provided with the product.

Wattle / Log

Blanket

Grass Buffer

Mulch

Inlet Protection

Many products are available for inlet protection. Regular maintenance of all inlet BMPs is critical to prevent localized flooding and to prevent sediment from entering the stormwater system. Area inlets can be protected with a stabilized buffer and wattle placed in front or by wrapping the inlet with reinforced silt fence. Curb inlets can be protected with a manufactured product or clean gravel placed in a non biodegradable bag.

Erosion Prevention & Sediment Control for Residential Building Lots

Inspections and Enforcement

Building Inspectors will inspect BMPs in conjunction with routine inspections. The first inspection will occur at the time of the footing inspection. Standard items to be checked are inlet protection, lot access gravel and perimeter controls. If BMPs are not installed and maintained properly the requested inspection will be denied.

BMP Compliance Checklist

- ☐ **PERIMETER CONTROLS** – BMPs are installed along back of curb and along the lot line of adjacent properties which are downhill and receive runoff from the permitted lot. Following sidewalk installation, BMPs are moved to the back of sidewalk to prevent sediment from reaching the sidewalk. BMPs are maintained to ensure proper function, including repair or replacement of torn, degrading, missing or otherwise ineffective materials. Sediment deposits are removed as necessary to provide adequate protection.
- ☐ **LOT ACCESS** - Required for each individual lot. A surface suitable for parking and unloading that prevents the tracking of mud and rock onto the street is installed. A minimum of 2” or larger aggregate is suggested. All vehicles that access the lot shall use the construction entrance. Restrict other access if necessary to prevent tracking onto the street.
- ☐ **INLET PROTECTION** - BMPs are in place and functioning for both area inlets and curb inlets along street. Maintenance includes removal of sediment following each rain event and replacement of failing materials. Do not allow sediment to enter inlet during maintenance.
- ☐ **STOCKPILES** - Stockpiles are protected to prevent sediment from reaching the street and adjacent properties. Stockpiles are located away from street and property lines.
- ☐ **INTERMEDIATE CONTROL** - Long or steep drainage paths have intermediate or interior BMPs installed to help slow the flow of runoff. Failure of perimeter controls due to the force of runoff often determines the need for intermediate controls.
- ☐ **OTHER POLLUTANTS** - Dewatering is done in such a manner as not to deposit sediment offsite or cause erosion. Trash and debris are contained. All waste water, including concrete washout, is properly disposed of. Materials and chemicals are properly stored.

Special thanks to the City of Overland Park, KS and the Unified Government of Wyandotte County / Kansas City, KS for the use of enclosed pictures and details.

Driveways & City Sidewalks Requirements

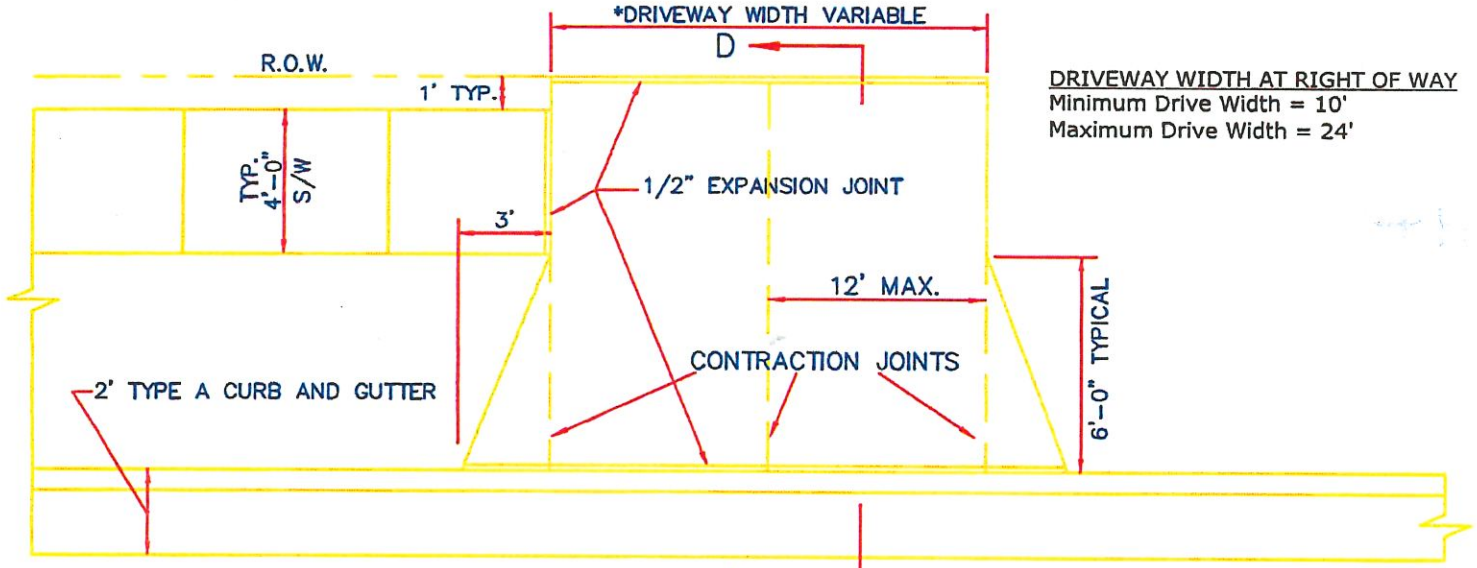
The City of Paola will inspect the whole driveway, from the curb to the house, when performing inspections. Driveway and approach may be inspected separately, as may sidewalks.

DRIVEWAY SPECIFICATIONS

- A Right-Of-Way permit and building permit are required by the City of Paola. These may be obtained through the Community Development Department at City Hall or online at paolagov.org.
- All work, not performed by the property owner, is to be performed by a licensed contractor in the City of Paola. A list may be obtained from the Community Development Department.
- Minimum of ten (10) feet and maximum of twenty-four (24) feet at right-of-way line.
- Twelve (12) feet minimum if distance between sidewalk and pavement edge is less than four (4) feet.
- Where alley access is available, the garage or carport shall take access from the alley.
- If curbs are provided, access shall be by a saw cut of the curb. Where there are no curbs, a five (5) foot radii shall be used.
- In the right-of-way, there shall be a minimum concrete depth of six (6) inches. This includes a gravel base, #4 or larger rebar and chairs holding up the rebar. The concrete shall be minimum 4000 psi.
- On the house side of the right-of-way, minimum concrete depth shall be four (4) inches with a gravel base, and rebar is to be 2 foot by 2 foot minimum on center. Concrete shall be minimum 3200 psi.
- **Exception:** Steel may be omitted if the driveway is poured at a depth of six (6) inches.
- The driveway must be thoroughly pinned to garage slab to prevent settlement. The approach should **not** be pinned to the street.
- An inspection shall be performed prior to concrete being poured. We request a *minimum* 2-hour notice before you pour. Please call the Building Inspection Department at (913) 259-3611.

MINIMUM REQUIREMENTS FOR CITY SIDEWALKS

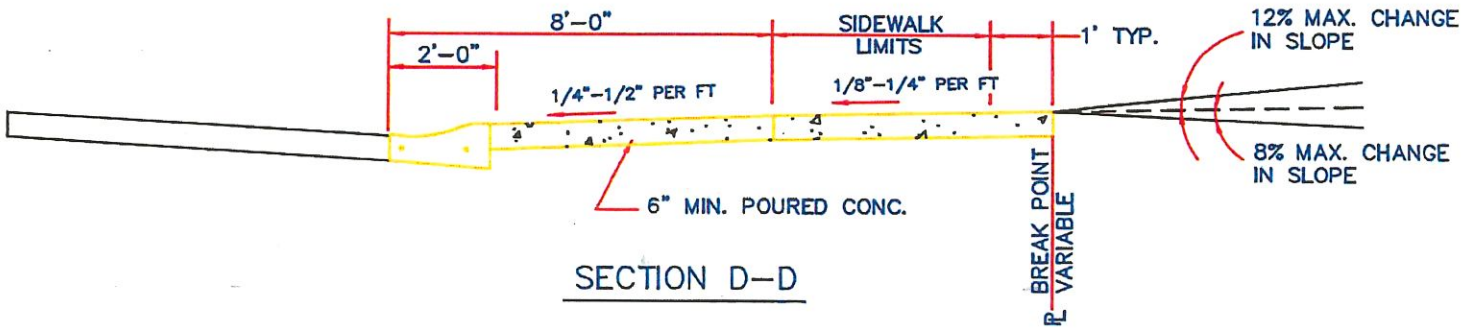
- Shall not be less than five (5) feet in width of Portland cement concrete
- Located in the platted street right-of-way, six (6) inches from the property line. When natural vegetation, topography or other factors make locating the sidewalk in the right-of-way impractical, the sidewalk shall be located as close to the right-of-way as possible.
- A minimum of two lengths of #4 rebar spaced equally down the middle for the length of sidewalk is required. At all utility crossings, pits or other ditches a minimum of three lengths of rebar is required. Chairs shall be installed to maintain steel at a point + or – ½" from the center depth of the sidewalk. Sidewalks shall only be formed over an adequate base.
- **Exception:** Steel may be omitted if the sidewalk is poured at a depth of six (6) inches.
- All sidewalks shall meet the requirements of the most current edition of the "Americans with Disabilities Act" sidewalk requirements for grade, slope, width and intersection approaches.



PLAN

DRIVEWAY WIDTH AT RIGHT OF WAY
Minimum Drive Width = 10'
Maximum Drive Width = 24'

NOTES:
4000 P.S.I. CONCRETE WITH 6% AIR ENTRAINMENT REQUIRED.
DRIVE APPROACHES WITHOUT ADJACENT SIDEWALKS SHALL SLOPE 1/4" TO 1/2" PER FOOT FROM THE R.O.W. TO THE BACK OF THE CURB



SECTION D–D

CITY OF PAOLA, KANSAS PUBLIC WORKS DEPARTMENT	RESIDENTIAL DRIVE DETAIL TYPE A CURB	STANDARD DETAIL 21–10	

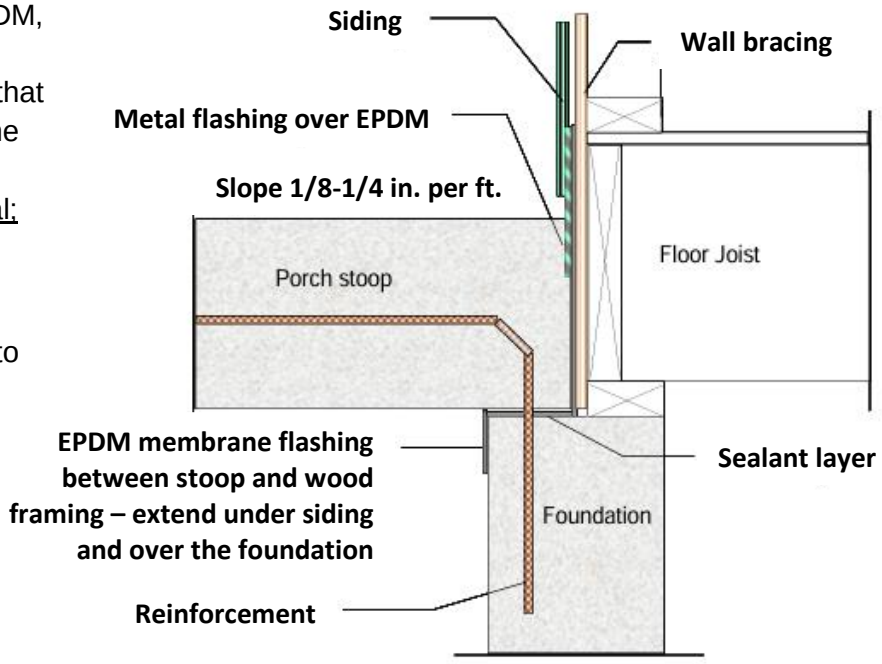
Stoop Flashing Requirements

The 2018 International Residential Code (IRC) requires stoop flashing to prevent water from entering the building and from causing potential decay of framing members. Since the area under a porch stoop is a common entrance point for termites, flashing must be sealed to form a physical barrier at the top of the foundation to minimize termite access.

General Requirements

- Flashing or another approved weather resistive barrier shall be placed between the concrete porch stoop and the dwelling (IRC R317).
- The weather resistive barrier shall extend under the wall covering and down over the edge of the foundation wall to form a continuous barrier to prevent water intrusion into the building (IRC R703.4). Penetrations, seams, and joints shall be effectively sealed.
- The flashing and sealants shall form a physical barrier to restrict termite access (IRC R318.3).

Approved flashing products include EPDM, pond liner, Protecto Wrap, or other products **(min. 45 mil recommended)** that can form an effective barrier between the stoop and the dwelling. Note: Metal flashing may be difficult to form and seal; therefore, it is not recommended as the primary flashing material.



Roofing product sealants may be used to create an effective seal between the membrane and the top of the foundation wall, and to seal penetrations and seams at corners to restrict termite access and prevent water entry.

Where UV sensitive materials are exposed to the sunlight and weathering, physical protection in the form of metal flashing or other approved protective measures shall be provided.

Required Inspection: Stoop flashing shall be left visible for verification of proper installation during building rough-in inspection.

Concrete
Cold Weather Protection

The temperature must be 32° degrees Fahrenheit and rising to pour concrete. When air temperature is below 40° degrees or forecast to fall below 40° degrees in the next 24 hours, weather protection must be on the project site in order to receive a passing inspection.
(Blankets, straw and plastic are preferred.)

This procedure may be used as the basis for the acceptance or rejection of any concrete foundation. Section 402.2 of the International Residential Code (IRC) references American Concrete Institute (ACI) 318 as the standard to follow for concrete. It is the intent of this procedure to closely follow the ACI 318, *Standard Specification for Cold Weather Concreting.*

Code requirements IRC
The building code requires that the minimum compressive strength of concrete for footings be 2500 psi, for foundation walls, 3000 psi. The code also specifies that the concrete be air entrained. The total air content (percent by volume of concrete) shall not be less than 50% or greater than 7%.

Cold weather refined
The provisions that follow apply to "cold weather," which is defined as a period of three consecutive days when the average temperature is below 40° F, and not above 50° F for more than half of any one of those days. A "cold weather" situation is solely based upon previous temperature, and not upon forecasted temperatures.

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 55° F 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 or polyethylene sheeting.
- For foundation walls, insulated blankets may be used.
- After the initial curing period, it is recommended that the concrete be kept dry (protected from the elements) for at least two or three additional days before it is exposed to freezing conditions.

Inspection Practices
1. Inspectors shall approve only the foundation elements that are going to be poured that same day.

2. The inspectors will be checking to ensure that the subgrade is not frozen and whether the proper protection components are on site at the time of inspection when daily temperatures are below 32° F or forecasted to drop below 32° F within the next 24 to 48 hours. The minimum time period for which the concrete must be protected against freezing is as follows:
    - When pouring conventional concrete during "cold weather" conditions, the concrete shall be protected from freezing for at least **72 hours (3 days)**.

Cold Weather Protection

- 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 (2 days)**.
- *When pouring conventional concrete during “non-cold weather” conditions, protection from freezing shall be maintained for at least **24 hours**.

3. If footings were required to be protected from freezing, foundation walls will not be allowed to be poured for at least 48 hours. **Exception:** If protection from freezing can be maintained for the period specified above the wall may be poured after 24 hours has elapsed from the time of the original footing pour.

4. 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 additive that may have been added to the concrete.

When this procedure mandates protection of footings and walls, the inspector shall give only a partial approval on the initial inspection. Final approval will be given only when it can be established that proper procedures have been taken to protect the concrete from freezing. If the inspector believes that the concrete has not been properly protected as described above or per another approved method, the inspector shall require that the concrete be tested in order to ensure that proper strength of the concrete has been developed.

House Number Requirements

The Land Development Ordinance of the City of Paola outlines in Chapter 4, Article 6 specific requirements for displaying residential and commercial addresses in a conspicuous position on buildings. Police and Fire personnel recommend placing numbers on the left side of the front door to your property.

- Houses—Use numbers at least 4 inches high
- Businesses—numbers at least 6 inches high and illuminated or reflective
- Use numbers that contrast the background
- Address numbers must be Arabic numerals or alphabet letters
- Make sure numbers are visible from the street

Single Family Landscaping Requirements

Address: _____

Zoning District: _____

Plant Units (per residential lot): _____

Street Yard Trees: _____

Definitions:

Plant Unit: There are several options. Follows are some examples of plant units. Each line represents a single plant unit. One 2.5" caliper canopy tree is one plant unit as is 13 3' high shrubs.

Quantity		Size on installation
1	-	2.5" caliper canopy tree
2	-	1.5" caliper understory tree
13	-	3' high shrubs

Street Yard Trees: 2.5" caliper canopy tree (are in addition to lot landscaping) planted in the yard facing front street or side streets for corner lots.

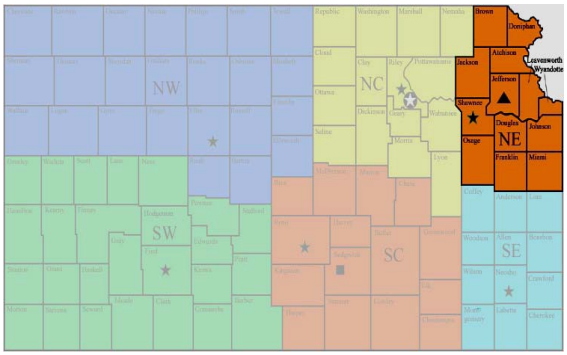
Caliper: The size (diameter) of new landscape plantings measured six (6) inches above the ground.

Existing landscaping (typically found in existing infill lots) can count towards the total.

Zoning District & Development Type	Lot Requirements	Open Space Requirements	Street Yard Trees
Suburban: Single Family Conventional	2 plant units per dwelling	4 plant units per 1 acre of open space	1 - 2.5" caliper canopy tree per 50 linear feet of frontage
Thoroughfare Access: Single Family Conventional	1 plant unit per dwelling	5 plant units per 1 acre of open space	1 - 2.5" caliper canopy tree per 50 linear feet of frontage
Neighborhood Conservation: R1, R2, R3 Single Family	1 plant unit per dwelling	4 plant units per 1 acre of open space	1 - 2.5" caliper canopy tree per 50 linear feet of frontage
Downtown: Single Family Conventional	1 plant unit per dwelling	6 plant units per 1 acre of open space	1 - 2.5" caliper canopy tree per 50 linear feet of frontage

Table 4.110A Use and Lot Standard, Paola Land Development Ordinance

Preferred Trees for Northeast Kansas



Growing trees successfully depends on the selection of the right trees for the intended planting site. It is important to match the growing conditions and space available on the site with the cultural requirements and projected size of each tree to be planted. The following four charts show the tolerances of individual trees to various environmental conditions as well as the major landscape attributes of each tree. Not all recommended trees for planting in Northeast Kansas are included. The preferred trees listed were recommended by industry professionals such as city foresters, local tree boards, county and horticulture extension agents, commercial arborists, and retail/production nursery interests.

KEY TO USING THIS INFORMATION:

***TREE SPECIES AND CULTIVARS*:** The names of the trees are listed in the center of the four charts. Three of the charts list deciduous trees according to average mature height (a plus sign (+) indicates they may grow slightly larger). The fourth chart lists evergreen trees. If improved cultivars of the trees are available and recommended, they are also listed. Cultivars often possess improved plant characteristics like better fall color, a unique form, more attractive flowers, fruit or bark, greater heat tolerance, or increased pest resistance. Many trees are available in single and multi-stemmed form. Multi-stemmed forms are more likely to be damaged from snow, ice, or wind.

***ENVIRONMENTAL TOLERANCES*:** The left side of each chart indicates whether the tree is tolerant to various environmental conditions including full sun, light shade, alkaline soil, drought, or wet soil. Each chart also shows how resistant each tree is to pest insects and diseases. A "**G**" (for good) under the appropriate column indicates the tree is strongly tolerant of the characteristic indicated. A "**F**" (for fair) signifies that the tree shows some tolerance. A blank space in a column indicates the tree is not tolerant and should not be subjected to that environmental condition. Specific information on the alkaline soil and pest categories follows:

ALKALINE SOIL: **G** = tree may tolerate soils with a pH up to 8.0 or more; **F** = tree will tolerate an alkaline soil up to a pH of 7.5; **blank** = tree may not tolerate alkaline soils; do not plant in alkaline soils to avoid the problem of iron or manganese chlorosis.

PESTS: **G** = tree is usually free of insect and disease problems; **F** = tree encounters insect or disease pests on an infrequent basis and often is not permanently damaged; **blank** = tree may suffer from pests which may permanently damage or kill the tree and/or the tree may exhibit minor insect and disease problems on a frequent basis which may affect the aesthetics of the tree or insects may commonly be a nuisance.

LANDSCAPE ATTRIBUTES: The right side of each chart includes average mature height and spread of each tree. The size is sometimes variable due to the size and shape of different cultivars planted and variability among growing sites. The landscape attributes of flowers, fruit, autumn color, and ornamental bark are also listed.

DESIRABLE FLOWERS: **G** = the flowers are showy, adding unique ornamental interest to the landscape; **F** = the flowers are not particularly showy, but may possess other desirable characteristics such as fragrance; **blank** = the flowers are considered insignificant.

SHOWY OR USEFUL FRUIT: **G** = fruits or nuts are aesthetically pleasing; **F** = fruits or nuts are not considered unusually showy but may provide other interest or benefits such as attracting wildlife; **blank** = no showy or useful fruit.

AUTUMN FOLIAGE COLOR: **G** = the autumn leaf color is typically quite good (may vary with individual trees, cultivars and environmental conditions, however); **F** = the fall color may provide interest in some years; **blank** = autumn foliage color is not considered an asset of this particular tree.

ORNAMENTAL BARK: **G** = the bark or twigs are considered to be exceptionally ornamental; **F** = the bark or twigs (on at least some cultivars) lend interest to the landscape (good color, texture, etc.); **blank** = the bark or twigs are not considered to be ornamental.

This publication is made available in cooperation with the USDA Forest Service. Kansas State University and the Kansas Forest Service is committed to making their services, activities and programs accessible to all participants. Support and input for this publication is provided by:

KANSAS FOREST SERVICE KANSAS STATE UNIVERSITY

KANSAS Nursery & Landscape Association

K-STATE Research and Extension

KANSAS ARBORISTS ASSOCIATION

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

ENVIRONMENT (tolerant of)							LANDSCAPE ATTRIBUTES					
FULL SUN	LIGHT SHADE	ALKALINE SOIL (HIGH pH)	DROUGHT	WET SOIL	PESTS (RESISTANT TO)	**SMALL DECIDUOUS TREES** **(usually under 20 feet at maturity)** ***Trees with mature height 20 feet or less can be used within 15 feet on either side of utility lines.***	MATURE HEIGHT	MATURE SPREAD	DESIRABLE FLOWERS	SHOWY OR USEFUL FRUIT	AUTUMN FOLIAGE COLOR	ORNAMENTA L BARK
	G				F	**Japanese Maple** (*Acer palmatum*) Protect from summer wind and heat exposure.	15-25	15-25			G	
	F	F	G	F	F	**Amur Maple** (*Acer tataricum* var. *ginnala*) **Cultivars:** 'Compactum', 'Flame' and other improved selections	15-20	15-20			G	
G	G					**Serviceberry (***Amelanchier x grandiflora)* **Cultivar:** 'Autumn Brilliance'. Choose superior cultivars and native species.	15-25	15-20	G	G	F	
G	F	G	F		F	**Eastern Redbud** (*Cercis canadensis*) **Cultivars**: 'Alba', 'Forest Pansy'	20-25+	20-25+	G		F	F
G	F	G	F		F	**Oklahoma Redbud** (*Cercis canadensis* subspecies *texensis 'Oklahoma'*)	15-20+	15-20+	G		F	F
G	G				F	**Chinese Fringetree** *(Chionanthus retusus)*	15-25	10-25	G	G		G
G	G				F	**White Fringetree** (*Chionanthus virginicus*)	10-20	10-20	G			
G		F	F		F	**Common Smoketree** (*Cotinus* spp.*)* Purple and green leaf cultivars available	10-15	10-15	G			
G	F	G	G		F	**Winterberry Euonymus** (*Euonymus bungeanus*)	15-20+	10		G	F	
	G				G	**Star Magnolia** (*Magnolia stellata*) Protect from summer wind and heat exposure.	15-20	10-15	G			
	G			F	G	**Sweetbay Magnolia** (*Magnolia virginiana*) Protect from summer wind and heat exposure.	10-30	10-20	F			
G		F	F			**Flowering Crabapple** (*Malus spp*.) Many cultivars available. Choose disease resistant cultivars only. Superior cultivars include: 'Prairiefire', 'Adirondack', 'Adams', 'Sargeant', Also refer to KSU Research and Extension Crabapple Publication MF-875.	varies	varies	G	G		F
G	F				F	**Chokecherry** *(Prunus virginiana)* **Cultivar:** 'Canada Red Select'	15-25	10-15	G	G	F	
G		G	F		F	**Japanese Tree Lilac** (*Syringa reticulata*) **Cultivar:** 'Ivory Silk'	20-25	15-25	G			G

ENVIRONMENT (tolerant of)							LANDSCAPE ATTRIBUTES					
FULL SUN	LIGHT SHADE	ALKALINE SOIL (HIGH pH)	DROUGHT	WET SOIL	PESTS (RESISTANT TO)	**MEDIUM DECIDUOUS TREES** **(usually 20 to 40 feet at maturity)**	MATURE HEIGHT	MATURE SPREAD	DESIRABLE FLOWERS	SHOWY OR USEFUL FRUIT	AUTUMN FOLIAGE COLOR	ORNAMENTAL BARK
G	F	F	F	F	F	**Trident Maple** (*Acer buergeiranum)* Some trees could suffer winter injury.	20-35	20-30			G	F
G	G	F	G		G	**Hedge Maple** (*Acer campestre*) **Cultivar**: Queen Elizabeth™('Evelyn')	25-35	25-35			F	
F	F	F			G	**Paperbark Maple** (*Acer griseum*)	20-30	15-30			F	G
G	F	F	F		G	**Shantung (Purpleblow) Maple** (*Acer truncatum*) **Cultivars**-hybrid with *A. platanoides*: 'Keithsform' (Norwegian Sunset™), 'Warrensred' (Pacific Sunset™).	25-30	25-30			F	
F	G				F	**American Hornbeam** (*Carpinus caroliniana*)	20-30	20-30				

G		F			G	**American Yellowwood** (*Cladrastis kentukea)*	30-50	40-55	F		F	
G		G	G			**Goldenraintree** (*Koelreuteria paniculata*)	30-40	30-40	G	G	F	
G		G	G	F	G	**Osage Orange** (*Maclura pomifera*) **Cultivars**: 'Wichita', 'Whiteshield. Fruitless and thornless cultivars recommended for most community plantings.	30-40+	20-40			G	F
F	G					**Saucer Magnolia** (*Magnolia x soulangiana)* Protect from summer wind and heat exposure.	20-30	15-25	G			
G		F	F			**Flowering Crabapple** (Malus *species*) Many cultivars available. Choose disease resistant cultivars only. Superior cultivars include: 'Centurion'; 'Ralph Shay'; Siberian Crab (*M. baccata* 'Jackii'); 'Spring Snow'; 'Van Eseltine'; White Angel™ ('Inglis'); 'Red Splendor'. Also refer to KSU Research and Extension Crabapple Publication MF-875.	varies	varies	G	G		F
G	G	F	F		G	**Hophornbeam (Ironwood)** (*Ostrya virginiana*)	25-40	20-30		F	F	F
G		G	G		G	**Chinkapin Oak** (*Quercus muehlenbergii*)	35-40+	40-45		F	F	
G		G	G		G	**Western Soapberry** (*Sapindus drummondii*)	25-40+	25-30	G	G	G	F

ENVIRONMENT (tolerant of)							LANDSCAPE ATTRIBUTES					
FULL SUN	LIGHT SHADE	ALKALINE SOIL (HIGH pH)	DROUGHT	WET SOIL	PESTS (RESISTANT TO)	**LARGE and VERY LARGE DECIDUOUS TREES** **(usually 40 feet and larger at maturity)**	MATURE HEIGHT	MATURE SPREAD	DESIRABLE FLOWERS	SHOWY OR USEFUL FRUIT	AUTUMN FOLIAGE COLOR	ORNAMENTAL BARK
G	F	F				**Freeman Maple** (*Acer x freemanii*) **Cultivar:** 'Armstrong'; 'Jeffersred' (Autumn Blaze ®); Autumn Fantasy ™. Poisonous to horses.	50-60	40-50			G	F
G	F	G	G			**Norway Maple** (*Acer platanoides*) Several cultivars available. Superior cultivars include: 'Emerald Queen', 'Superform' (Green leaf cultivars) and ''Fairview', 'Crimson King', 'Royal Red' (Red leaf cultivars).	40-50	40-50				
G	F			G		**Red Maple** (*Acer rubrum*) **Cultivars**: Red Sunset ® ('Franksred'); October Glory ®; 'Autumn Flame'; Burgundy Belle ® 'Magnificent Magenta' and columnar forms; Poisonous to horses.	40-60	35-50	F		G	F
G	G	F				**Sugar Maple** (*Acer saccharum*) **Cultivars:** 'Commemoration'; 'Legacy'; Caddo; 'Fall Fiesta'; 'Bonfire'; all are more heat tolerant/leaf tatter resistant cultivars.	40-60+	30-50			G	
G				G	F	**River Birch** (*Betula nigra*) **Cultivar**: 'Heritage'	40-60	40-50	F		F	G
G	F		F		F	**European Hornbeam** (*Carpinus betulus)* Upright cultivars available.	40-60	30-40+				
G		F	G		F	**Persimmon** *(Diospyros virginiana*)	35-50+	20-35	F	G	F	G
G		G	G		G	**Ginkgo** (*Ginkgo biloba*) **Cultivars:** 'Autumn Gold'; 'Princeton Sentry'; 'Magyar'. Male cultivars recommended for most community plantings.	50-60+	25-40			G	F
G		G	G	F		**Thornless Honeylocust** (*Gleditsia triacanthos* var. *inermis*) **Cultivars**: 'Shademaster', 'Skyline', 'Imperial'.	40-60+	30-50			F	
G		G	G	F	G	**Kentucky Coffeetree** (*Gymnocladus dioicus*) Seedless cultivars available.	50-60+	30-45		F	F	F
G				G		**Sweetgum** *(Liquidambar styraciflua)*	50-75	35-50		F	G	F
G	F			G		**Black Tupelo (Black Gum)** (*Nyssa sylvatica)*	30-50	20-30			G	G
G	F	G	F	G		**London Planetree** (*Platanus x acerifolia*)	60-80	50-60		F		G

						Cultivar: 'Bloodgood'.						
G		F	G		G	**Sawtooth Oak** (*Quercus acutissima*)	35-40+	30-45		F	F	
G						**White Oak** (*Quercus alba)*	60-80	40-60		F	G	
G			F	G	F	**Swamp White Oak** (*Quercus bicolor)*	50-60	40-60		F	G	F
G			G	F	F	**Shingle Oak** (*Quercus imbricaria*)	50-60	40-60		F	F	
G		G	G	F		**Bur Oak** (*Quercus macrocarpa*)	60-80	50-70		F		
G			F	F	G	**Willow Oak** (*Quercus phellos)*	40-60	30-40			F	
G						**Chestnut Oak** (*Quercus prinus*)	60-70	60-70				
G		G	F		F	**English Oak** (*Quercus robur*)	40-60+	45-65		F		
G					F	**Red Oak** (*Quercus rubra*)	60-75	40-60		F	G	
G		F	F	F	F	**Shumard Red Oak** (*Quercus shumardii*)	60-80	40-60		F	G	
G			G	G	G	**Baldcypress** (*Taxodium distichum*)	50-70+	20-50		F	G	F
G	F	F			F	**American Linden** (*Tilia americana*) **Cultivars**: 'Redmond'	50-60+	35-40	F		F	
G	F	G			F	**Littleleaf Linden** (*Tilia cordata*) **Cultivars**: 'Greenspire'.	50-60	25-40	F		F	
G	F	G	G	F	F	**Lacebark Elm** (*Ulmus parvifolia)* **Cultivars: '**Emeri I' (Athena®); **'**Emer II' (Allee®); Bosque™; 'Emerald Prairie'; 'Frontier'.	40-60	35-50		F	F	G

ENVIRONMENT (tolerant of)							LANDSCAPE ATTRIBUTES					
FULL SUN	LIGHT SHADE	ALKALINE SOIL (HIGH pH)	DROUGHT	WET SOIL	PESTS (RESISTANT TO)	**EVERGREEN TREES**	MATURE HEIGHT	MATURE SPREAD	DESIRABLE FLOWERS	SHOWY OR USEFUL FRUIT	AUTUMN FOLIAGE COLOR	ORNAMENTAL BARK
G		G	G			**Upright Chinese Juniper** (*Juniperus chinensis*) Many cultivars available. See your KSU-County Extension office or local nursery for the best recommendations.	varies	varies		G		F
G		G	G			**Eastern Red Cedar** (*Juniperus virginiana)* Many cultivars available**.** Superior cultivars include: 'Canaertii' (Canaert Red Cedar), 'Taylor', 'Burkii';	30-40+	10-30		G		F
G						**Black Hills Spruce** (*Picea glauca 'Densata'*)	30-40+	15-20		F		
G						**Norway Spruce** (*Picea abies*)	40-60	25-30		F		
G		F	G			**Limber Pine** (*Pinus flexilis*) **Cultivar**: 'Vanderwolf's Pryamid'	30-40	15-30		F		

This publication is coordinated and updated by the Kansas Forest Service. For further information and assistance, or to provide feedback and recommendations to the preferred tree listing please contact:

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Preferred tree lists are available for other areas of the state. Visit kansasforests.org for more information.

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KANSAS STATE UNIVERSITY

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Top Ten Steps for Successful Tree Planting

1. Select the right tree for the right location – this avoids serious problems in the future when an adaptable plant is planted in the ideal spot. Recommended Trees for Kansas.

2. Move and store properly – Keep the tree well-watered and in a shady location until planting. When move the tree, lift it by the root ball or pot – not by the trunk.

3. Before planting, remove all labels, wires, cords or anything else attached to the plant. Items left on the tree can later girdle a branch or root. Plant the tree on solid ground, not in fill dirt.

4. Dig a hole deep enough to that the tree sits slightly above nursery level. The width should be three times the width of the root ball.

5. Remove all containers from the root-ball – cut away plastic or peat pots. Roll burlap and wire baskets back into the hole, cutting as much of the excess away as possible. This helps develop a healthy root system.

6. Backfill the hole with the same soil that was removed. Make sure the soil is loosened, without clods or clumps.

7. Don't cut back the branches of the tree after planting with the exception of those that are damaged or rubbing. Leaf buds release a hormone that encourages root growth. If the tree is cut back, the reduced number of leaf buds results in less hormone release and fewer roots being formed.

8. Water the tree thoroughly – and then once a week for the first season if there is insufficient rainfall.

9. Mulch around the tree – supply a 2 to 4-inch deep layer, about 2 to 3 times the diameter of the root ball. Keep the mulch away from the base of the trunk. Mulching conserves moisture and encourages root development.

10. Stake only when necessary – trees establish more quickly and grow faster when not staked. Staking should only limit root-ball movement rather than immobilize the trunk.

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Have a garden question? Ask a Master Gardener.
Hotline is open Thursday – 8am-Noon – April 1 to October 1
(913) 294-4306