

Design Standards for Subdivision Streets Crawford County, Kansas

1.0 Purpose of Document

The intent of this document is to supplement and provide additional guidance for the preparation of the plans and specifications necessary to construct subdivision streets within Crawford County. The primary document pertains to all subdivision development contained in the Crawford County Subdivision Regulations 1998 and amended in 2005, containing Articles 1 thru 7. Some of the street related development items are repeated here for the ease of use. This document shall replace the existing "Design Standards for Subdivision Street", dated April 1995.

2.0 Applicability

2.01 All subdivision lands shall be suited to the purpose for which it is to be subdivided; and its proposed use shall be in accordance with the requirements of any zoning ordinance. Land subject to hazards to life, health or property shall not be subdivided for residential purposes; until all such hazards have been eliminated or unless adequate safeguards against such hazards are provided by the subdivision plan.

2.02 All proposed subdivision plats shall be coordinated with existing nearby neighborhood development plans, applicable county policies and other existing, planned or committed public improvements. All subdivision plats shall comply with all local, state and federal laws and regulations.

2.03 All subdivisions of land subject to these regulations shall conform to the following minimum design standards. Such design criteria shall govern the approval of subdivision plats by the Planning Commission and the Governing Body.

2.04 All subdivisions shall be platted with due consideration toward sound traffic engineering principles, safe and accessible building sites, adequate methods of storm water drainage and provisions for a sanitary water supply and effective sewage disposal system.

2.05 All engineering aspects of the plats shall be designed under the direct supervision of a registered professional engineer of the State of Kansas and all submittals shall bear the seal of said Professional Engineer. All survey controls for the plats shall be prepared under the direct supervision of a registered Land Surveyor of the State of Kansas and all submittals shall bear the seal of said registered Land Surveyor.

2.06 Upon the completion of the engineering aspects of the subdivision, the design engineer shall as-built certify that all engineering projects (i.e. road construction,

drainage, etc) have been completed in accordance with these design standards. Two copies of the as-built plans shall be submitted to the County Engineer. Any proposed variances to these standards shall be approved in writing by the County Engineer or his/her representative prior to construction.

3.0 General Street Standards

3.01 Comprehensive Plan Compliance: The arrangement, character, extent and location of all streets shall conform to the Comprehensive Plan or other plan and standards as adopted.

3.02 External Street Considerations: The arrangement, alignment, and width of streets in new subdivisions shall be properly integrated with the existing principal street or road system; and where appropriate, shall provide for the continuation of existing principal streets in adjoining subdivisions or their projection where adjoining property is not platted. In no case, shall the width of streets in new subdivisions be less than the minimum street width established in the Articles of the Crawford County Subdivision Regulations (2005).

3.03 Internal Street Considerations: The location, arrangement, character and type of all streets shall be designed in relation to topographical conditions, the extent and impact of stormwater runoff, the safe and convenient circulation of traffic within the subdivision, and the uses of the land to be served by such streets. When possible, local streets shall be planned so as to discourage through traffic and to conveniently channel traffic onto collector and arterial streets.

3.04 Internal Street Layout, Residential Development: The use of curvilinear streets, cul-de-sacs, U-shaped loop streets, or cluster developments shall be encouraged in residential areas, when appropriate. However, the excessive use of cul-de-sacs shall be discouraged. No streets shall be laid out so as to intersect with themselves, unless topographic conditions warrant.

3.05 Internal Street Layout, Non-Residential Development: In commercial or industrial developments, the streets and other access ways shall be planned in connection with the grouping of buildings, location of rail facilities, the provisions of alleys, truck loading and maneuvering areas, walks, and parking areas as to minimize conflict of movement between the various types of traffic, including pedestrian.

3.06 Street Intersections: Streets shall be designed to intersect as nearly as possible at right angles, except where topography or other natural conditions justify a variation. However, in no instances shall two local streets intersect at an interior angle of less than 75 degrees without written consent of the County Engineer.

3.07 Multiple Intersections: Intersections involving the junction of more than two (2) streets shall be avoided whenever possible.

3.08 Intersection Curvature: When connection streets deflect from each other with an interior angle of less than 75 degrees they shall be connected by a curve with a radius adequate to ensure a sight distance of not less than two hundred (200) feet for local and collector streets, and of such greater radii as the County Engineer shall determine for arterial or collector streets.

3.09 Intersection Pavement Radii: Street pavement at intersections shall be rounded by the following minimum radii:

<u>Street Classification</u>	<u>Intersection With</u>	<u>Minimum Curb Radii</u>
Arterial or Collector	Arterial or Collector	50 feet
Local	Arterial	30 feet
Local	Collector or Local	25 feet

The Planning Commission may set specifications for intersection pavement radii, upon advice of the County Engineer greater than the minimum standards herein.

3.10 Offset Streets: Offset streets whose centerlines are separated by less than 150 feet shall be avoided, except where topography or other conditions justify a variation.

3.11 Reserve Strips: There shall be no reserve strips controlling access to streets. The subdivision of land shall be such as to provide each lot with satisfactory access to an existing public highway or street.

3.12 Private Streets: In order to protect the overall public interest, the following policy for use of private streets shall apply:

- a. Where new residential development will occur within R-1 or V-1 zoning districts and such lands are serviced by existing or proposed public sanitary sewer services and public water services, no private streets shall be allowed. All new streets within such new developments within R-1 and V-1 zoning districts shall be public streets built to the standards established within these design standards.
- b. Private streets are allowed in all other subdivisions, however design specifications must be provided with a preliminary plat. The Planning Commission may require minimum street standards to protect public safety.

3.13 Driveways. All access for public or private streets will be by driveways which shall be constructed of suitable alignment, grade, width and driving surface materials to permit access at all times for private traffic and emergency vehicles. All surfacing materials from the street to the edge of the right of way shall be of a similar material to the adjoining street. A driveway may be shared by up to 3 property owners; provided that an easement describing the driveway has been filed with the County

Register of Deeds and placed in record upon all sharing properties.

3.14 Half Streets: Half streets shall be prohibited, except where essential to the reasonable development of the subdivision in conformity with the other requirements of these design standards; and where the Planning Commission finds it will be practicable to require the dedication of the other half when the adjoining property is subdivided. Whenever a half street is adjacent to a tract to be subdivided, the other half of the street shall be platted within such tract.

3.15 Visibility: Clear visibility, measured along the centerline of a street, shall be provided for at least two hundred (200) feet on all streets.

3.16 Access to Major Streets:

- a. Where a proposed commercial or industrial subdivision borders on or contains an existing or proposed limited access arterial, the Planning Commission may require a street system design which affords separation of through and local traffic. This may be accomplished through reverse frontage lots with access control provisions along the rear property line, deep lots with rear service areas, frontage roads, or other similar means.
- b. Where a new R-1 or V-1 residential subdivision served by public sanitary sewers borders on or contains an existing or proposed major street, the Planning Commission shall require that access to such streets be limited by any of the following means:
 1. The subdivision of lots so as to back onto the major street and front onto a parallel local street. No access shall be provided directly to any lot from the major street, and front onto a parallel local street. No access shall be provided directly to any lot from the major street, and screening may be required of the Developer in a screening easement along the rear property lines of such lots.
 2. A series of cul-de-sacs, u-shaped streets, or short loops entered from and designed generally at right angles to such a parallel street, with the street lines of their terminal lots backing onto the major street. No direct access to the major street shall be allowed.
 3. A frontage road having access to the major street at suitable points.
- c. Where all other residential subdivisions borders on or contains an existing or proposed major street, the Planning Commission may require that access to such streets be limited by any of the means listed above.

3.17 Railroad Right-of-Way: Where a subdivision borders on or contains a railroad right-of-way, the Planning Commission may require a street approximately parallel to and on each side of such right-of-way at a distance suitable for the appropriate use of the intervening land, such as for park purposes in residential districts or for commercial and industrial purposes in appropriate districts. Such

distances shall also be determined with due regard for the requirements of approach grades and future grade separations.

3.18 Dead-End Streets and Cul-de-Sacs: Permanent dead-end streets shall be cul-de-sacs. A cul-de-sac shall be no longer than one thousand (1,000) feet in length, measured along the centerline of the cul-de-sac from the centerline of the intersecting street to a radius point, and shall have an adequate turnaround with a minimum 75 foot radius right-of-way at the closed end. Temporary dead-end streets longer than 100 feet intended to be continued for access to adjoining property shall have a temporary turnaround area to provide service equal to the cul-de-sac requirement stated above.

3.19 Centered Improvements: The improved portion of streets shall be centered within the right-of-way, except in the cases where the Planning Commission, after review and recommendation of County Engineer, may allow.

3.20 Vertical and Reverse Curves: Vertical curves are required for changes in grade greater than 1.5%. Vertical curves shall provide for a desirable stopping sight distance of approximately 135 feet for all vertical curves. Rate of curvature (K) for a "crest" condition is recommended as K=9 and for a "sag" condition is recommended as K=37 to compute this length of vertical curve. For the reverse curve (sag) the length shall be sufficient to produce a smooth flow of traffic.

3.21 Super Elevation Curves: Shall be designed to meet the requirement for vertical alignment. Super-elevation curve rates should not exceed 4% for local streets, nor 6% for arterial or collector streets.

3.22 Road Grades: No street grade shall be greater than seven percent (7%) nor less than four-tenths of one percent (0.4%). Alternative grades may be approved by the County Engineer on a case by case basis.

3.23. Street Surfacing: All streets shall be constructed according to the standards and specifications of the County as established by and discussed in Section 4.01 and 4.04.

4.0 Street Design Criteria

4.01 Right-of-Way and Street Widths: In order to provide for streets of suitable location, width and improvements to accommodate future traffic and afford satisfactory access to emergency and service vehicles (particularly fire trucks and school buses), and to coordinate streets so as to develop a convenient system that avoids undue hardships to adjoining properties, the following design standards are hereby required. Street classifications may be indicated on the Comprehensive Plan or other plans or standards as adopted, or shall be as determined by the Planning Commission with consultation by the County Engineer.

<u>Street Classification</u>	<u>Minimum Right-of-Way (ft.)</u>	<u>Minimum Roadbed (ft.)</u>	<u>Pavement Width (ft.)</u>	<u>Pavement Type</u>	<u>Standard Drawing No.</u>
Major, (Arterial, Collector) ⁽¹⁾	80	31	31	Asphalt with 6" Vertical Curb	CR 100
Minor (Local Cul-de-Sac, Loop) Lot Size 2 Ac. or Less	60 ⁽²⁾	27	27	Asphalt with Curb & Gutter	CR 101
Minor (Local, Cul-de-Sac, Loop) Lot Size > 2.0 Ac., Service to 4 Lots or More	60 ⁽²⁾	24	20	Crushed Aggregate with Open Ditch	CR 102 CR 104 ⁽⁴⁾
Minor (Local, Cul-de-Sac, Loop) Lot Size >2.0 Ac., Service to 3 Lots or Less	60 ⁽²⁾	24	16	Crushed Aggregate with Open Ditch	CR103
Cul-de-Sac Radius ⁽³⁾	75	54	50	Asphalt/Crushed Aggregate	----

(1) For Major streets additional consultation with KDOT may be required.

(2) Additional drainage and utility easements on one or both sides of the street right-of-way may be required as determined by the governing body or its designee.

(3) Pavement Type and Curbing as per connecting street classification.

(4) Asphalt street with open ditching.

4.02 Additional Street Width: In front of areas designated and zoned for a commercial or industrial use, or where a petition for a change in zoning is contemplated for a commercial or industrial use, to permit such use, the street width shall be increased by such amount on each side deemed necessary by the Planning Commission after review and recommendation of the County Engineer to assure the free flow of through traffic without interference by parked or parking vehicles, and to provide safe parking space for such commercial or industrial districts.

4.03 Streets and Lot Splits: For the purpose of review by the Planning Commission, all street right-of-ways, roadbed widths, pavement widths and types shall be governed by the potential for future lot splits; unless the plat specifically states that no lot splits shall be allowed. If a lot split can or may occur at a future date, then the street criteria as described in Section 4.01 shall be required with the original platting or prior to the approval of any lot split.

4.04 Street Surfacing Options: The following surfacing options have been developed based upon the local soil conditions, anticipated traffic loads and subdivision density provisions. Additional construction procedures and product specifications are discussed in Section 7.0. Drawings, CR-100 thru CR-104 show street cross section details.

<u>Street Classification</u>	<u>Surface Pavement Option</u>	<u>Type & Thickness Minimum</u>
Major: Arterial, Collector (Drawing CR100)	Asphalt w/ Concrete 6" Vertical Curb	2" HMA Commercial Grade SM-9.5A, PG 64-22 Asphalt Binder (Surface)
		7 1/2 " HMA Commercial Grade SM-19A, PG 64-22 Asphalt Binder (Base)
Minor: Local, Cul-de-Sac, Loop, (Lot Size 2.0 Ac. or Less) (Drawing CR101)	Asphalt w/Concrete Curb & Gutter	1 1/2" HMA Commercial Grade SM-9.5A, PG 64-22 Asphalt Binder (Surface)
		4 1/2" HMA Commercial Grade SM-12.5A, PG 64-22 Asphalt Binder (Base)
Minor Local, Cul-de-Sac, Loop (Lot Size >2.0 Ac.) (Drawing CR102, CR103)	Crushed Aggregate	6" Crushed Aggregate KDOT Type AB-3 (Base & Surface)

4.05 Concrete Streets: may be approved by the Planning Commission as a substitute for asphaltic cement. Similar total thickness will be required; and the Developer shall provide specific plan and specification details to the Planning Commission and County Engineer for approvals.

5.0 Subdivision Street Plans & Specifications

5.01 Subdivision Plat: Prior to the completion of the detailed street plans, the Developer should proceed to fulfill all the requirements of the subdivision platting process, including zoning approvals as required. Thereafter as discussed herein, the detailed Street Plans and Specifications, Stormwater Management Plans, Drainage Plans and other requirements such as Engineer's Cost Estimate and financing assurances should be completed and submitted to the County Engineer for final approvals.

5.02 Street Plan Set: Each plan set shall be comprised of the following:

- Title Sheet
- Street Plan and Profile Sheets
- Stormwater Drainage Plan and Profile Sheets
- Grading Cross Sections
- Street Construction Cross Section Details
- Intersection Details
- Other Drawings, Details, Notes, Specifications as necessary to complete the project.

Two (2) complete document sets shall be provided to the County Engineer.

5.03 Title Sheet: shall provide a general location map, project name and number, owner/Developer information, design engineer information, key, map symbols, general notes, benchmark information and the listing of all utilities with contact information.

5.04 Street Plan and Profile Sheets: shall be at an appropriate horizontal scale between 1" = 10' thru 1" = 50' so long as the scale is in an increment of 10 feet and is sufficiently clear in reflecting the details of the proposed construction. A minimum vertical scale of 1" = 5' shall be used for the profile. All horizontal and vertical control information shall be clearly shown.

5.05 Stormwater Drainage Plan and Profile Sheets: shall be provided, as necessary, to clearly illustrate all required drainage features or stormwater management for the project; including both surface conveyance of flow and any stormwater sewer piping details and information, erosion control practices, etc.

5.06 Grading Cross Sections: shall be at a 25' to 50' interval from right-of-way to right-of-way; and at special locations where additional detail is required. Cross sections shall illustrate center line of road, existing grade, proposed grade, cut and fill information; and at a sufficient scale and exaggeration to illustrate the project features.

5.07 Street Construction Detail: shall be provided to illustrate the subgrade, base and surfacing requirements for the street.

5.08 Intersection Details: and other features requiring additional information shall be at an appropriate exaggerated scale and shall be sufficiently annotated to provide construction details (i.e. driveway approaches, valley gutters, inlets and manholes, etc.).

5.09 General and Technical Specifications: shall be provided in sufficient detail to clearly define and administer the construction of the project for successful completion and county approval.

5.10 Cost Estimate: A cost estimate based upon engineering calculations and material quantities shall be submitted with the subdivision project plans and specification packet.

5.11 Professional Sealing of the Plans: All plans, drawings, specifications, cost estimates, plats, reports and surveys shall be properly sealed and dated by a properly licensed professional authorized by the State of Kansas for the completion of said documents.

6.0 Storm Water Drainage

6.01 General: The Developer shall make adequate provisions for the control and discharge of storm water from the platted area; and in doing so, shall give

consideration to the alternatives and principles of storm water management. When necessary, the construction of storm sewers shall be properly integrated with any existing storm sewer system; and shall provide for the anticipated extension of said system to serve additional areas. The storm drainage plan and subsequent installation of culverts, bridges, storm sewers, stabilization ditches, storm water detention or retention ponds, and other improvements shall follow accepted engineering standards and principles of design and construction. All stormwater drainage plans shall be prepared by a registered engineer of the State of Kansas and shall bear the seal of said registered engineer.

6.02 Additional Permits and Consultation: The Developer shall be responsible for the inquiry, consultation and/or permit acquisition requirements relating to the construction of any roads, bridges, and culverts within the subdivision. Governmental agencies which may require consultation, clearance or permitting include, but are not limited to:

- a) Local cities within one mile of the subdivision
- b) Corps of Engineers
- c) Federal Emergency Management Agency, Flood Plain Development
- d) Kansas Department of Health and Wildlife
- e) Kansas Department of Health and Environment, Surface Mining Section
- f) Kansas Department of Wildlife and Parks
- g) Kansas Department of Transportation
- h) Kansas Board of Agriculture, Division of Water Resources

6.03 Drainage Structure Design:

- a) Pipes and Culverts. All storm sewer pipes and drainage culverts shall be reinforced concrete, coated corrugated metal pipe, coated steel or high density polyethylene (i.e. ADS N-12) pipe of sufficient strength to withstand anticipated loadings. All piping shall be of true alignment and properly bedded in accordance with the manufacturers recommendations. Pipe slopes shall be sufficient to establish self cleaning velocities of three (3) feet/sec. For pipe diameters smaller than thirty six inches (36") a minimum one percent (1%) grade shall be required. A minimum pipe diameter of twelve (12) inches shall be used for all storm sewer and driveway culverts. Adequate headwall and exit protection shall be provided to ensure general public safety and erosion control.
- b) Design Flows. Culverts not at low points or for minor watershed areas shall be designed for the 10 yr storm event using entrance control and a minimum of 1.5 feet of freeboard at the street shoulder line. Culverts to be located in major watershed drainage areas or near low points in the 100 yr flood plain shall be designed for the 50 yr storm event with entrance or exit control depending upon the controlling criteria, and a minimum of 1.5 feet of freeboard at the street shoulder height.

- c) Bridge Structures. All bridge structures shall be constructed to properly protect the safety and well being of the general public. Bridge sizing, strength and structural protection measures shall be in accordance with Kansas Department of Transportation standards for rural roads. All bridge structures shall be at a minimum width of 24 feet.
- d) Roadways. When a water course exists or is proposed approximately parallel to or near an existing or proposed roadway, the low shoulder elevation of the roadway shall be established from the high water elevation with a minimum of two (2) feet of freeboard.
- e) Driveways. All required driveway culverts in subdivision streets with open ditches shall be designed by the project engineer and clearly stated on the plat drawing. The exact location of the culvert within the lot need not be specified; however the culvert design should be based upon the worst case location within the frontage length of the lot.

6.04 Storm Water Management: All subdivisions will be required to prepare and obtain from the Kansas Department of Health and Environment, Bureau of Water, a Storm Water Pollution Prevention Plan for Construction Activities. Said plan and KDHE permit (when obtained) shall be submitted to the Planning Commission, implemented at the beginning of the project and maintained throughout the development until authorized for release by KDHE.

7.0 Street Construction

7.01 General: All work shall be done in conformance to these specifications, the Crawford County Subdivision Regulations; and the Standard Specifications for State Road and Bridge Construction, Kansas Department of Transportation, Edition 2007 and any subsequent special provisions, corrections and revisions adopted thereafter.

Whenever the specifications herein written conflict with the plans or the KDOT Standard Specifications for State Road and Bridge Construction, these specifications shall govern.

The street construction work consists of furnishing all labor, equipment, materials, transportation, disposal and incidentals necessary for the installation of street paving, road base preparation, excavation, clearing and grubbing, curb and gutter and related work according to the plans and specifications.

Construction staking shall be performed by the Developer for horizontal, vertical control and for all drainage work related to the improvement. All property pins and survey monuments shall be placed by a Surveyor licensed to practice land surveying in the State of Kansas.

The Developer shall provide adequate signs and barricades to keep traffic from

entering the construction site, except as may be required to complete the project.

All barricades, signs, light and other protective devices shall be installed and maintained in conformance with the Manual on Uniform Traffic Control Devices, Latest Edition, and these specification.

Parking of employees shall be on-street or other such designated location. In no case will parking take place on private property unless arrangements have been made in advance with the property owner.

7.02 Utilities: The Developer is required to verify exact locations of utilities within the project area prior to construction. This list may include but is not limited to:

- Kansas One Call (Statewide)
- Westar Energy
- Heartland Rural Electric Coop
- Kansas Gas Service
- AT & T
- Cox Communications
- Craw-Kan Telephone
- City and Rural Sewer and Water Departments

Any damage to utilities shall be repaired at the Developer's expense.

7.03 Clearing and Grubbing: This work shall consist of clearing, grubbing, removing and properly disposing of all vegetation and debris in advance of the construction operation.

The Developer shall be responsible for protecting any improvement of any agency, public or private, in the vicinity of clearing, grubbing or removed operation.

In no case shall any materials be left on the project site, shoved onto abutting properties (without prior approval) or buried in embankments or trenches on the project site.

7.04 Excavation: Topsoil stripping shall be accomplished prior to embankment construction. All soft, yielding, or unsuitable material shall be removed. Roadway and drainage excavation shall be carried to the lines and grades as determined by the plans and specifications. Excavation shall include all materials of whatever nature encountered.

In the areas at the point of transition from cut to embankment, the excavation shall be made to the depth and extent as required by the plans and specifications. Excavations shall be well drained at all times.

In areas directly under curb and gutter or paving, compaction shall be 95 percent of

standard density with the specified moisture content within a tolerance of plus 2 percent and minus 3 percent optimum moisture for maximum density of the soil. Compaction as specified above shall be carried to a depth of 6 inches into the pavement subgrade or base.

7.05 Embankment: Topsoil stripping shall be accomplished prior to embankment construction. All soft, yielding, or unsuitable material shall be removed. Earth fill shall be placed in successive horizontal layers and distributed uniformly over the full width of the embankment area. Each layer of material shall not exceed six to nine (6-9) inches in thickness (loose state) and shall be compacted to not less than the required density (i.e. 95% maximum density) before the next layer is placed thereon. As the compaction of each layer progresses, continuous blading will be required to level the surface and to ensure uniform compaction. Embankment construction shall not be performed when material contains frost, is frozen or a blanket of snow prevents proper compaction.

Compaction of the embankment shall be such that the tamping device or sheepfoot roller, properly mixes and combines the new lift with previously placed lifts. The moisture content of the soil at the time of compaction shall be uniform and shall be not lower than 5 percentage points below the optimum moisture content of the soil.

The Developer shall be responsible for all settlement of backfill, fills and embankments which may occur within maintenance warranty period after final completion of the project.

The Developer shall make, or cause to be made, all repairs or replacements made necessary by settlement, within 48 hours after discovery.

7.06 Subgrade Preparation: Subgrade preparation is the repeated operation of fine-grading and compacting the subgrade until the specified lines, grades, and cross-section, as indicated on the plans, are obtained; and the materials are compacted to the specified depth and density.

The top 6 inches of subgrade for pavements shall be compacted to 95 percent of the maximum density for the material used as determined by ASTM D-698 and within a tolerance of plus 2 percent and minus 3 percent of the optimum moisture at maximum density as determined by the moisture density curve obtained.

The newly finished subgrade shall be repaired from action of the elements or others. Any settlement or erosion that occurs prior to placing the pavement thereon, shall be repaired and the specific lines, grades and cross-sections reestablished.

Any subgrade that has become unacceptable shall be reworked as necessary to restore the subgrade to shape, tolerance, density, and moisture content range for such density, immediately prior to the placing of the pavement.

7.07 Fly Ash, Cement, or Lime Treated Subgrade: Subgrade treatments shall be constructed as specified in Division 302 or 303 of the KDOT Standard Specifications, 2007 Edition. The work shall consist of constructing one or more courses of a mixture of soil, amendment materials, and water in accordance with these specifications in reasonably close conformity with the lines, grades, thicknesses and typical cross-sections shown on the plans and established by the Engineer.

7.08 Aggregate Subbase: Crushed limestone aggregate material AB-3 as defined in Division 1104 of the KDOT Standard Specifications, 2007 Edition, shall be placed in accordance with procedures outlined in Division 305.

Shaping and compacting shall be carried on continuously until a true, even and uniform surface of proper grade and cross-section is obtained, and until the density of the completed base is at least 95 percent of maximum density as determined by ASTM D-698, Method D. The proper moisture content shall be maintained by wetting the surface as required during shaping and compacting operations. Final rolling shall be accomplished by use of a self-propelled smooth wheeled roller.

7.09 Asphaltic Concrete Pavement: All asphaltic concrete pavement to be constructed shall comply with Division 611 of the KDOT Standard Specifications for State Road and Bridge Construction 2007 Edition.

All pavement shall be laid using equipment that complies with Division 150 to produce, haul, spread and compact the Hot Mix Asphalt-Commercial Grade mixture.

7.10 Concrete Curb and Gutter: When required, shall be completed to the elevation lines and grades as illustrated on the plans and specification. Concrete construction shall be completed as described in KDOT Standard Specifications, 2007 Edition, Division 710. Additionally, control joints for the curb and guttering shall be spaced at 10 feet intervals.

Concrete curing compounds applied at the manufacturer's specifications shall be sprayed to form a liquid membrane, to retard the loss of water during the early hardening period.

Concrete shall not be poured during cold weather conditions when proper curing and protection cannot be provided.

7.11 Traffic Control: All streets, roads, highways, and other public thoroughfares which are closed to traffic, under the authority of a proper permit, shall be protected by means of effective barricades on which shall be placed acceptable warning signs, such barricades being located at the nearest intersecting public highway or street on each side of the block section of such public thoroughfare.

All open trenches and other excavations shall be provided with suitable barriers, signs, and lights to the extent that adequate protection is provided to the public against accident by reason of such open construction. Obstructions such

as material piles and equipment shall be provided with similar warning lights and signs.

All barricades and obstructions shall be illuminated by means of amber lights at night, and all lights used for this purpose shall be kept burning from sunset to sunrise. Materials stored upon or alongside public streets and highways shall be so placed, and the work at all times shall be so conducted as to cause the minimum obstruction and inconvenience to the travelling public.

All barricades, signs, lights and other protective devices shall be installed and maintained in conformity with applicable statutory requirements, and where with State highway right-of-ways, as required by the authority having jurisdiction thereover.

All barricades and flashing warning lights shall meet the requirements of the Manual on Uniform Traffic Control Devices, latest edition.

8.0 Requirements for Subdivision Street Improvements

8.01 Applicability: As detailed in the County Subdivision Design Standard 4-102(12), all new streets occurring within R-1 or V-1 zoning districts and property serviced by sanitary sewers (i.e. developments with Lots < 2.0 acres in size) shall become County streets built to County standards, inspected and approved upon completion by the County Engineer.

At other County locations, private street developments will be allowed; however design specifications must be provided in the preliminary plat and the Planning Commission may require minimum street standards to protect the public safety.

8.02 Street Improvements and Building Permits: There shall be no building permits issued until all subdivision street improvements have been completed as per the plat requirements. If a phased development has been approved, then each phase shall be completed prior to building permit issuance.

8.03 Private Street Conversion to County Public Street: A private street can be converted to a public street if the following conditions are fulfilled:

- A proper application for conversion is submitted to the Governing Body,
- The streets have been constructed to the appropriate current subdivision street standards and with as-built drawings submitted to the County from the Developer,
- The street has a durable surface of a minimum 20 feet width with asphaltic cement or concrete, and
- The County Engineer has reviewed and approved the street as being in conformance with the appropriate street standards.

8.04 Crushed Aggregate Street to Durable Surface: If an aggregate street is found to meet all the acceptance criteria; except for the final paving of a durable

surface, then the subdivision lot holders may elect to form a Benefit District for the purpose of completing the street requirements and adoption by the Governing Body.

8.05 Improvement of Streets by Benefit District: As detailed below in the Kansas Statutes Annotated KSA 68-728 and 729, the following actions shall occur to form a Benefit District.

Statute 68-728: Improvements of public roads in areas platted outside of cities; petition; authority of county commissioners; apportionment of costs; special assessments; bonds. Whenever any land shall be platted and laid off into lots and blocks within any county, and outside the limits of any incorporated city, and whenever the owners of fifty-one percent (51%) or more of the front feet of the lots abutting on or fronting on the street, road or avenue sought to be improved, or if fifty percent (50%) or more of the land abutting on or fronting on any such street, road or avenue be platted as above provided, then whenever the owners of sixty percent (60%) or more of the unplatted frontage on any such street, road or avenue, together with the owners of a sufficient percentage of the frontage of the platted land abutting on or fronting on any such street, road or avenue to make fifty-one percent (51%) or more of the total frontage platted and unplatted on any such street, road or avenue sought to be improved, petition the board of the county commissioners to make the improvements provided for by this act, the Board of County Commissioners shall have the power to provide for the construction or reconstruction of the curbing, guttering, paving, macadamizing or grading, including drainage, of any public road outside of the limits of any incorporated city whenever it shall deem the same necessary. Whenever any such work is done or improvements made, the Board of County Commissioners shall have the power either:

(a) To apportion the full cost thereof including its pro rata share of the cost of street intersections equally per front foot on all land abutting on or fronting on the street, road or avenue so improved, or apportion the costs as hereinafter provided, and to levy special assessments for the full cost or proportion thereof on all lots as platted and on any unplatted land abutting on or fronting on any such street, road or avenue, a distance back therefrom not exceeding one hundred and fifty (150) feet for the distance improved or to be improved in the manner provided for the payment of the cost of paving and curbing; or

(b) to apportion and to levy special assessments for the full cost thereof, including its pro rata share of the cost of street intersections upon the property on each side of the street, road, or avenue so improved, to the middle of the block or otherwise, all in the same manner and to the same extent as is provided in K.S.A. 12-606 and 12-608, and amendments thereto or K.S.A. 12-6a08 to 12-6a11, inclusive, and amendments, thereto; and under either subparagraph (a) or (b) to issue improvement bonds therefore in like manner as is provided by law for the paving and curbing of the streets, alleys and public places of cities of the first class (except that the bonds may be issued to mature over a period of not exceeding twenty (20) years from the date of their issuance), and the entire distance to be

improved shall constitute the improvement district provided for herein. Where, under subparagraph (b) such improvements have, prior to the effective date of this amendment, been initiated by proper petition and action taken thereon by the Board of County Commissioners, the method of apportionment and assessment heretofore prescribed by this section shall be utilized except where the owners of all property subject to assessment consent in writing to the method required by subparagraph (b) of this amendment.

None of the debt limitations prescribed by law for any such county shall apply to any bonds issued under the authority conferred by this section. Whenever the Board of County Commissioners shall determine that any part of a street, road or avenue, in addition to being of public utility, shall be of general importance to the county, and the improvement of which would incur unusual expense, the said board may adopt a resolution of the affect, and may charge not to exceed sixty percent (60%) of the expense of the improvement to the county, the expense to the lands within the benefit districts to be decreased in proportion.

After the adoption of such a resolution, the Board may accept aid or donations, establish an improvement fund, issue bonds, levy taxes and pay costs out of the general fund and road fund in the same manner as authorized for like purposes under the provisions of K.S.A. 68-707 to 68-709, inclusive, and whenever improvements are made in accordance with the provisions of this act in which part of the cost of the improvement shall be apportioned to the county, the provisions of said K.S.A. 68-707 to 68-709, inclusive, shall apply, insofar as same can be made applicable.

Whenever any street, road or avenue is improved by the doing of any of the things provided for by this act, then thereafter the township within which such improvements are done or built may maintain such improvements within such township. The provisions of this act shall not apply to any road on which less than fifty percent (50%) of the property abutting on it is platted into lots and blocks. If the Board of County Commissioners has adopted a resolution creating such Benefit District, it shall complete such work or improvements even though all or any part of the land therein is annexed to a city.

Statute 68-729: Improvement of roads in platted areas outside cities; petition; resolution; publication. If, in any county having a population of more than 20,000, a petition is filed in accordance with K.S.A. 68-728 for an improvement for which a special tax is to be levied and the board deems it necessary to make the improvement, the Board of County Commissioners shall, by resolution, declare such improvement necessary to be done. Such resolution shall be published once in the official paper of the county and shall be sent by certified mail to the owners of the property liable for taxation of the improvement, at the address where the owner's tax statement is sent. If the owners of more than ½ the property liable for taxation, for the improvement do not, within 20 days from such last publication, file with the county clerk their protest against such improvement, the Board of County Commissioners shall have power to cause such

roads and highways to be constructed or built, to contract therefore and to levy taxes as provided by law. The work may be done before, during or after the collection of the special assessment, as deemed property by the Board of County Commissioners.

As used in this section "improvement" means curbing, guttering, paving, macadamizing, grading, recurbing, reguttering, repaving, remacadamizing or regrading a public road outside any incorporated city.

8.06 Street Construction Oversight and Inspection: Upon completion, the Project Engineer shall submit to the County two copies of the as built street documents attesting to its completion according to the appropriate street standards. For any street that will become a public roadway, the County Engineer shall be routinely involved with all phases of the construction and shall provide a final approval acceptance report to the Governing Body. Thereafter the Governing Body shall approve by resolution to temporarily accept said subdivision streets.

Upon the completion of the maintenance period; and reauthorization and acceptance of said street(s) by the County Engineer; the streets shall become public and thereafter belong to the County.

8.07 Cost of Inspection: All construction and installation shall be inspected by the Project Engineer: with notice of ongoing construction provided to the County Engineer. The Developer shall also pay for inspection personnel furnished by the County, under the supervision of the County Engineer, on all improvements constructed by the Developer as contractor or subcontractor. A schedule of fees shall be prepared by the County Engineer and provided to the Developer.

8.08 Subdivision Improvement Financing: As detailed in the Subdivision Regulation as amended 2005, Article 5-103 and incorporated herein, a method for financing proposed improvements and a breakdown of anticipated costs shall be submitted with the Final Plat. This shall be accomplished by filing a Subdivision Improvements Agreement or a Benefit District Petition, and shall be required for all subdivisions of land except for Lot Splits or for developments which require no improvements. The Governing Body shall have sole responsibility to accept or reject the Subdivision Improvement Agreement or Benefit District Petition; provided, however, the provisions of Section 5-102(7)(c) above, shall apply for new developments in the R-1 and V-1 zoning districts. Financing methods may include, but are not limited to, the following guarantees.

- Petition for Establishment of a Benefit District: The percentage split of costs shall be based on the policy established by the Governing Body. The County may decide not to participate in Benefit Districts that do not comply with the Capital Improvements Program, or those which are inconsistent with the Comprehensive Plan.
- Surety Bonds: The Developer shall provide the County Engineer with all calculations and information needed to check the cost estimates of said

improvements. This cost shall be estimated by the Developer and shall be verified by the County Engineer. The Developer shall then be required to obtain a security bond from a surety bonding company authorized to do business in the State of Kansas. The bond shall be made payable to Crawford County and shall be a percentage of the total improvements costs as recommended by the County Engineer or such other financial assurance accepted by the Governing Body. The duration of the bond shall be until such time as the improvements are completed, inspected and accepted by the County.

- Alternatives: Other financing methods may include cash or collateral, Escrow Accounts, Property Escrow Accounts, or any other guarantee the Governing Body shall deem acceptable.

8.09 Default of Developer : The Governing Body may, upon advice of the County Engineer, find that the Developer is in default of the Subdivision Improvements Agreement. Such finding shall occur at a regularly scheduled meeting of the Governing Body. Two (2) weeks prior to such scheduled meeting, the Developer shall be notified by registered mail of possible default proceedings. At the meeting the Developer shall be given the opportunity to rebut findings of default. Defaulting results from:

- Improper construction standards and specifications.
- Failure to install agreed upon improvements.
- Construction of improvements not according to agreed upon time schedule, allowing for unexpected or unavoidable delays.
- Other financial and/or contractual conditions which might lead to the Developer being unable to complete the agreed upon improvements.

8.10 Default Proceedings: The Governing Body may find the Developer not in default, extend the time limit, or:

- Should the Governing Body find the Subdivision Improvements Agreement to have been violated, it may liquidate the improvements guarantee, in whatever form it takes, and apply the proceeds of this guarantee to the construction of the improvements set out in the Subdivision Improvements Agreement.
- Should the proceeds of the guarantee not be sufficient to cover the costs of said improvements, the Governing Body may assess to the Developer, property owners, or both, the construction costs of the improvements that exceed the amount provided by the Developer. This may take the form of a lien against the property covered in the Subdivision improvements Agreement.
- Should the proceeds of the guarantee exceed the actual cost of the improvements, and any cost incurred in the default procedures, the County shall return the unexpended balance to the individual named on the Subdivision Improvements Agreement as the one having secured the guarantee.

8.11 Guarantee Release: When all improvements have been completed and have been inspected, approved and accepted, the County shall authorize the release of the guarantee.

8.12 Maintenance Bond: As a guarantee that all public improvements, especially street improvements, have been done in a satisfactory manner, the Developer shall provide a maintenance bond to the County for all subdivisions in the unincorporated portion of the County subject to these Regulations. Said maintenance bond shall be for a period of two (2) years. The time period shall begin upon final acceptance of all improvements within the subdivision. Said final acceptance shall be made by the County Engineer in the County. The maintenance bond shall be in an amount acceptable to the County Engineer and shall be in a form acceptable to the Governing Body, based upon advice from the County Counselor.