

2022 | Plan Preparation & Design Criteria



City of Lawrence

Municipal Services & Operations



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SECTION 1 – PLAN SUBMITTAL REQUIREMENTS

1.1 Initial Plan Submittal

The initial plan submittal shall include all the following documentation: one (1) set of plans, the draft final plat or parcel legal description if the property will not be platted, and one (1) copy of the project specifications. In addition, all plan submittal documentation shall be provided in portable document format (pdf), uploaded using e-Builder, the City's Capital Project Management Software (CPMS) or as coordinated with the Municipal Services and Operations contact person assigned to the project.

The submittal will not be reviewed if any of the items listed above are incomplete or omitted from the submittal.

1. Plan Sets: One (1) set of plans shall be submitted with the initial submittal. All plan sheets in the initial submittal shall be submitted by a Professional Engineer (P.E.) licensed in the State of Kansas in accordance with Kansas Board of Technical Professions requirements. Plans will not be reviewed if they are not submitted by a Professional Engineer (P.E.) licensed in the State of Kansas. All references to the Engineer in this document shall be to the Professional Engineer (P.E.) preparing the plans. Initial plans are generally not sealed. A transmittal memorandum is sufficient to show initial plans were developed under the direct supervision of a Professional Engineer (P.E.).
2. Draft Final Plat or Parcel Legal Description: The draft final plat shall be provided with the initial plan submittal. The property legal description shall be included on the layout sheet if the property will not be platted. The legal description shall be signed, sealed, and dated by a Professional Surveyor (P.S.) licensed in the State of Kansas in accordance with Kansas Board of Technical Professions requirements. It is recommended that draft written easements be submitted with the initial plan submittal.
3. Project Specifications: One (1) copy of the draft project specifications shall be provided with the initial submittal. The Engineer shall identify any special conditions that warrant deviation from the current edit of the City of Lawrence Standard Technical Specifications.
4. Comments: The initial submittal and all subsequent submittals shall be reviewed by the City of Lawrence. The City of Lawrence shall provide written comments as well as plan "mark-ups" to the Engineer. The Engineer is encouraged to schedule a meeting with staff to review comments following the initial submittal. The Engineer must address all comments by revisions to the initial submittals or by written response as applicable. Plans will not be released for construction until all comments have been addressed by the Engineer.

1.2 Intermediate Submittals

Intermediate submittals shall include all of the following documentation: one (1) set of plans, one (1) copy of the draft final plat or parcel legal description if the property will not be platted, one (1) draft copy of any written easements (if required), one (1) copy of the project specifications (if required), one (1) copy of a written response to comments, and original "mark-ups" as provided to the Engineer with the review of the previous submittal. In addition, all plan submittal documentation shall be provided in portable document format (pdf), uploaded using e-Builder, the City's Capital Project Management Software (CPMS) or as coordinated with the Municipal Services and Operations contact person assigned to the project.

The submittal will not be reviewed if any of the items listed above are incomplete or omitted from the submittal.

1. Plan Sets: One (1) set of plans shall be submitted with the intermediate submittal. All plan sheets in the initial submittal shall be submitted by a Professional Engineer (P.E.) licensed in the State of Kansas in accordance with Kansas Board of Technical Professions requirements. Plans will not be reviewed if they are not submitted by a Professional Engineer (P.E.) licensed in the State of Kansas. All references to the Engineer in this document shall be to the Professional Engineer (P.E.) preparing the plans. Intermediate plans are generally not sealed. A transmittal memorandum is sufficient to show intermediate plans were developed under the direct supervision of a Professional Engineer (P.E.).
2. Draft Final Plat or Parcel Legal Description: One (1) copy of the draft final plat shall be provided with intermediate plan submittals. The draft final plat shall fully address all comments from the previous submittal. The property legal description shall be included on the layout sheet if the property will not be platted. The legal description shall be signed, sealed, and dated by a Professional Surveyor (P.S.) licensed in the State of Kansas in accordance with Kansas Board of Technical Professions requirements.
3. Written Easements: One (1) draft copy of all easements required for the project shall be submitted with intermediate submittals. The written easements shall be signed, sealed, and dated by a Professional Surveyor (P.S.) licensed in the State of Kansas in accordance with Kansas Board of Technical Professions requirements.
4. Project Specifications: One (1) copy of the project specifications shall be provided with the intermediate submittal. The Engineer shall fully address all comments from the previous submittal.
5. Written Response to Comments and "Mark-Ups": The engineer shall prepare a written response to all comments received from the previous submittal. The Engineer shall return "mark-ups" received from the previous submittal with corrective actions taken noted on the "mark-up".

1.3 Final Submittal Requirements

Final plan submittal shall include one (1) set of full-size complete plans, four (4) sets of half-size complete plans, two (2) sets of the project specifications, and one (1) electronic copy containing all final plan submittal documentation in portable document format (pdf).

Submit AutoCAD base and design files including:

- Street alignments and profiles (survey compatible format),
- Proposed Water, Storm Sewer, Sanitary Sewer alignments and profiles (survey compatible format),
- Existing and proposed ground surface,
- Property/easement lines with monuments found used to define them.

All plan sheets shall be sealed, signed and dated by the Professional Engineer (P.E.) preparing the plans. A project summary letter should accompany the final plan submittal, including Project Name and Number, Project Description, Project Schedule and anticipated Completion Date, Owner/Developer contact information, Engineer's Estimate (or signed bid, if applicable), and Project Funding information. See the "Public Improvements Standards" section in the [Land Development Code](#) for further requirements of Public Improvement Plan (PIP) submittals, including financial guarantee requirements. For sanitary sewer projects, a Kansas Department of Health and Environment (KDHE) permit application must be submitted (see the Appendix). Project deliverables shall be uploaded using Capital Project Management Software (CPMS) or as coordinated with the Municipal Services and Operations contact person assigned to the project.

1.4 Review Period

Review time for the initial and subsequent submittals shall be ten (10) business days.

1.5 Capital Project Management Software (CPMS)

Capital Project Management Software (CPMS) is a workflow management tool used to manage and track project files, schedules, budgets, invoices and other pertinent

information. The City of Lawrence uses e-Builder (www.e-builder.net). See the e-Builder user guide or contact e-builderadmin@lawrenceks.org for additional information.

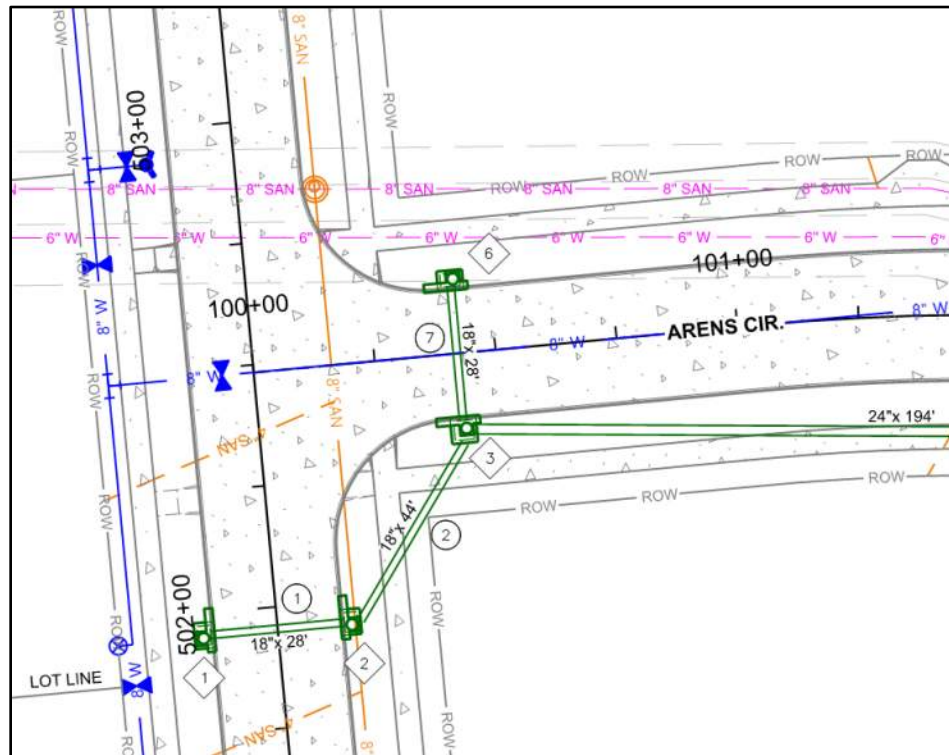
SECTION 2 – PLAN REQUIREMENTS

2.1 General

The following is intended to provide a uniform system of plan preparation that will aid the Engineer in preparing plans for the City of Lawrence.

1. All plans shall include all information necessary to build and check the design of streets, storm sewer, sidewalk and bike/pedestrian facilities, and other related work. If any atypical circumstances surround a proposed project, additional information and analysis beyond the minimum requirements set out below may be required.
2. A set of engineering drawings must be submitted to the City Engineer for approval for all improvements in the public right-of-way and for improvements that will be maintained by the City once construction is completed. No public improvement projects may be constructed in the City of Lawrence without approval of the City Engineer.
3. The design and construction of private improvements for development plans including streets, sidewalks, storm sewer, sanitary sewer, and waterlines shall conform to City of Lawrence Plan Preparation and Design Criteria.
4. The City of Lawrence plan review is to check for conformance with City specifications and City code. It is not responsible for the accuracy of the design, dimensions, and elevations of plans after they are approved. All private improvements shown on Public Improvement Plans (PIPs) shall be clearly identified as such and will not be maintained by the City of Lawrence.
5. The project name and project number shall appear on each sheet in a set of plans with the exception of the cross sections and City of Lawrence standard detail sheets. Any special detail sheets showing improvements unique to a particular project shall also have the project name and project number noted on them. All full-size plans shall be 24 inches x 36 inches. All public improvement plans are approved for one year, after which they become void and must be resubmitted for approval by the City Engineer before construction.
6. Color may be used to add clarity to the plans, unless otherwise prohibited by other factors (e.g. KDOT submittals). Line types, regardless of color shall be labeled accordingly (e.g. ---W--- for Water, ---St. S--- for Storm Sewer, etc.). Profile items should be the same color as plan view items. When using color, the following guidelines apply:
 - a. Existing Utilities: Magenta
 - b. Proposed Storm Sewer: Green
 - c. Proposed Sanitary Sewer: Brown/Orange

d. Proposed Water: Blue



EXAMPLE COLOR PLANS

e. ADA/Sidewalk Details (detail sheets only, not plan-profile sheets)

- i. Normal Sidewalk: Tan
- ii. Curb Ramps: Pink
- iii. Landing/Turning Space: Blue
- iv. Special Shaping: Grey/Tan



EXAMPLE COLOR SIDEWALK DETAILS

7. The plans shall consist of:
- a. Title Sheet
 - b. General Layout, General Notes & Summary of Quantities
 - c. Project Control (if not on General Layout)
 - d. Typical Sections
 - e. Street Plan and Profile Sheets
 - f. Side Street Plan and Profile Sheets
 - g. Intersection/Entrance/Sidewalk Details
 - h. Temporary Traffic Control/Staging
 - i. Permanent Signing & Striping
 - j. Traffic Signal Details
 - k. Grading Plan
 - l. Storm Sewer Drainage Area Map
 - m. Storm Sewer Plan and Profile
 - n. Sanitary Sewer/Forcemain Plan and Profile
 - o. Waterline Plan and Profile
 - p. Erosion and Sedimentation Control Plan Sheets
 - q. Standard and Special Detail Sheets
 - r. Cross-Sections

2.2 Title Sheet

This section establishes the minimum standards relating to all items that must be included on the title sheet for the project.

1. The City of Lawrence Title Sheet template should be used as a starting place for all plan sets.
2. Project Title: The plat name and phase number, if applicable, shall be included in the project title. If the project will not be platted the physical address shall be used in the project title. For utility relocation only projects, the word "Relocation" must be included in the project title.
3. Project number (provided by Municipal Services & Operations Department).
4. Index of sheets: A numerical list of plan sheets.
5. General Location Map: A general location map shall be included on the cover sheet. The location map shall show the nearest north-south and east-west arterial streets surrounding the section, township, and range and those in the immediate vicinity of the project area must be shown and labeled. The scale of the vicinity map shall be, at a minimum, 1" = 2000'. A north arrow and scale for the map must be noted. The project area shall be labeled and shaded. The section, township, and range where the project is located shall be noted on the general location map.
6. Name and telephone number of the Consulting Engineer and Owner/Developer if not the City of Lawrence.
7. Utility Information: The following information shall be provided for all utilities providing service to the project area:
 - a. Utility Name
 - b. Address
 - c. Phone Number
 - d. Fax Number
 - e. Contact Person
 - f. Contact Email Address
8. Signature and Date Line: Signature and date line shall be provided, as applicable, for the City Engineer.
9. Signature and stamp of a Professional Engineer registered in the state of Kansas.

2.3 General Notes, General Layout, and Quantities

This section establishes the minimum requirements relating to all items that must be included regarding the General Notes, General Layout, and Quantities for the project.

1. General notes. Refer to Appendix G for a list of General Notes.
2. Summary of Quantities: A summary of quantities for the project shall be provided and include all bid items of work for the project. Each bid item shall be numbered and accompanied by a specification, special provision, or plan note with:
 - a. DESCRIPTION of the work required,
 - b. MATERIALS required to complete the work,
 - c. CONSTRUCTION requirements for completion and acceptance of the work,
 - d. METHOD OF MEASUREMENT including units, how items will be measured (e.g. plan quantity, placed, etc.), and other factors such as temperature, waste, spillage, etc.
 - e. BASIS OF PAYMENT defining pay items needed to complete the work (including incidental items).

A general list of possible bid items is shown below, a current listing is included in CPMS (see CPMS documentation for more information):

Section	Description	Unit of Measure
General	Contractor Construction Staking	LS
	Mobilization	LS
	Temporary Erosion Control	LS
	Field Office and Laboratory	LS
Site Prep	Clearing & Grubbing	LS
	Demolition & Removal	LS
	Remove Existing Asphalt Pavement (XX")	SY
	Remove Existing Concrete Pavement (XX")	SY
	Remove Existing Curb & Gutter	LF
	Remove Existing Sidewalk	LF
	Remove Existing Ramp	EA
	Remove Existing Driveway	SY
	Remove Existing Structure (X' x X') (Structure)	EA
	Remove Existing Pipe (XX") (Material)	LF
	Remove Existing Fence (Material)	LF
	Remove Existing Retaining Wall (X") (Material)	LF
	Remove Existing Trees	LS
	Salvage Existing (Material)	EA
	Salvage Existing (Material)	LS
	Temporary Construction Entrance	LS
	Geotechnical Testing	LS

Earthwork	Earthwork	LS
	Unclassified Excavation	CY
	Common Excavation	CY
	Rock Excavation	CY
	Embankment	CY
	Grading and Compaction of Earthwork	SY
	Flowable Fill (Abandonment)	CY
	Aggregate Base (AB-1)(X")	SY
	Aggregate Base (AB-3)(X")	SY
	Fly Ash Treated Subgrade (X")	SY
	Cement Treated Subgrade (X")	SY
	Geotextile (Type)	SY
	Retaining Wall (Segmental Block)	SF
	Concrete Retaining Wall	SF
Traffic	Temporary Traffic Control	LS
	Pavement Marking, Temporary, White (XX")	LF
	Pavement Marking, Temporary, Yellow (XX")	LF
	Pavement Marking, Temporary, Solid Double Yellow Lane Line (XX")	LF
	Pavement Marking Symbol, Temporary, White, Lane Reduction Arrow	EA
	Pavement Marking Symbol, Temporary, LT Arrow	EA
	Pavement Marking Symbol, Temporary, RT Arrow	EA
	Pavement Marking Symbol, Temporary, Through Arrow	EA
	Pavement Marking Symbol, Temporary, Combo Turn/Through Arrow	EA
	Conduit Array (SDR-11)(3 x 1-1/4")	LF
	Fiber Optic Hand Hole (Type 1, Tier 15)	EA
	Street Lighting Wiring & Conduit	LS
	Street Light	EA
	Traffic Signal	LS
	Video Detection System	LS
	Radar Detection System	LS
	Emergency Vehicle Preemption System	LS
	Pedestrian Push Button	EA
	Rectangular Rapid Flashing Beacon System	LS
	Pedestrian Hybrid Beacon System	LS
	Remove Existing Pavement Markings	LS
	Pavement Marking, Patterned Cold Plastic, Solid Yellow (XX")	LF
	Pavement Marking, Patterned Cold Plastic, Solid White (XX")	LF
	Pavement Marking, Patterned Cold Plastic, Solid Double Yellow Lane Line (XX")	LF
	Pavement Marking, Patterned Cold Plastic,	LF

	Solid/Broken Combo Yellow Lane Line (XX")	
	Pavement Marking, Patterned Cold Plastic, Dotted Yellow Lane Line (XX")	LF
	Pavement Marking, Patterned Cold Plastic, Dotted White Lane Line (XX")	LF
	Pavement Marking, Patterned Cold Plastic, Broken Yellow Lane Line (XX")	LF
	Pavement Marking, Patterned Cold Plastic, Broken White Lane Line (XX")	LF
	Pavement Marking, Patterned Cold Plastic, Diagonal Yellow (XX")	LF
	Pavement Marking, Patterned Cold Plastic, Diagonal White (XX")	LF
	Pavement Marking, Patterned Cold Plastic, White Chevron (XX")	LF
	Pavement Marking Symbol, Patterned Cold Plastic, Bike Lane Rider w/ Arrow	EA
	Pavement Marking, Pre-formed Thermoplastic, Solid White (XX")	LF
	Pavement Marking, Pre-formed Thermoplastic, Solid Yellow (XX")	LF
	Pavement Marking, Pre-formed Thermoplastic, Solid Double Yellow Lane Line (XX")	LF
	Pavement Marking, Pre-formed Thermoplastic, Dotted Yellow Lane Line (XX")	LF
	Pavement Marking, Pre-formed Thermoplastic, Dotted White Lane Line (XX")	LF
	Pavement Marking, Pre-formed Thermoplastic, Broken Yellow Lane Line (XX")	LF
	Pavement Marking, Pre-formed Thermoplastic, Broken White Lane Line (XX")	LF
	Pavement Marking, Pre-formed Thermoplastic, Diagonal Yellow Line (XX")	LF
	Pavement Marking, Pre-formed Thermoplastic, Diagonal White Line (XX")	LF
	Pavement Marking, Pre-formed Thermoplastic, White Chevron (XX")	LF
	Pavement Marking, Pre-formed Thermoplastic, White Stop Line (XX")	LF
	Pavement Marking, Pre-formed Thermoplastic, White Crosswalk Line (XX")	LF
	Pavement Marking Symbol, Pre-formed Thermoplastic, LT Arrow	EA
	Pavement Marking Symbol, Pre-formed Thermoplastic, RT Arrow	EA
	Pavement Marking Symbol, Pre-formed Thermoplastic, Through Arrow	EA

Pavement	Pavement Marking Symbol, Pre-formed Thermoplastic, Combo Turn/Through Arrow	EA
	Pavement Marking Symbol, Pre-formed Thermoplastic, "ONLY"	EA
	Pavement Marking Symbol, Pre-formed Thermoplastic, Merge Arrow	EA
	Pavement Marking Symbol, Pre-formed Thermoplastic, Yield Line	EA
	Pavement Marking Symbol, Pre-formed Thermoplastic, Bike Lane Rider w/ Arrow	EA
	Pavement Marking Symbol, Pre-formed Thermoplastic, Sharrow Symbol w/ Chevrons	EA
	Pavement Marking Symbol, Pre-formed Thermoplastic, Railroad Crossing	EA
	Remove Existing Permanent Signage	LS
	Signage	LS
	Milling (X")	SY
	Asphalt Base Course (XX")	TON
	Asphalt Surface Course (X")	TON
	Asphalt Leveling Course (X")	TON
	Asphalt Edge Patching (XX")	TON
	Asphalt Driveway Wedging	TON
	Asphalt Pavement Patch (Full Depth)	TON
	Asphalt Pavement Patch (Surface)	TON
	Microsurfacing (Surface, 22 lb.)	SY
	Microsurfacing (Leveling Course, 25 lb.)	SY
	Concrete Pavement Patch (XX", Reinforced)	SY
	Concrete Pavement Patch (XX", Reinforced, Post Milling)	SY
	Concrete Pavement (XX", NRDJ, 4K)	SY
	Concrete Pavement (XX", Unreinforced, 4K)	SY
	Concrete Pavement (XX", Reinforced, 4K)	SY
	Stamped Colored Concrete Pavement (XX", Unreinforced, 4K)	SY
	Stamped Colored Concrete Pavement (XX", Reinforced, 4K)	SY
	Concrete Pavement (XX", NRDJ, 5K)	SY
	Concrete Pavement (XX", Unreinforced, 5K)	SY
	Concrete Pavement (XX", Reinforced, 5K)	SY
	Stamped Colored Concrete Pavement (XX", Unreinforced, 5K)	SY
	Stamped Colored Concrete Pavement (XX", Reinforced, 5K)	SY
	Exposed Aggregate Concrete Pavement (XX")	SY
	Concrete Curb (Type C-1)	LF
	Concrete Curb and Gutter	LF

	(24", Type CG-1, XX" Toe)	
	Concrete Curb and Gutter (24", Type CG-2, XX" Toe)	LF
	Concrete Curb and Gutter (24", Type CG-3, XX" Toe)	LF
	Concrete Curb and Gutter (30", Type CG-1, XX" Toe)	LF
	Concrete Curb and Gutter (30", Type CG-2, XX" Toe)	LF
	Concrete Curb and Gutter (30", Type CG-3, XX" Toe)	LF
	Concrete Sidewalk (4")	SY
	Concrete Recreational Path (6", Fiber Reinforced)	SY
	Integral Concrete Sidewalk and Retaining Wall	LF
	Integral Concrete Recreational Path and Retaining Wall	LF
	Reinforced Concrete Sidewalk (Adjacent to Curb)	SF
	Detectable Warning Panels	SF
	Detectable Warning Panels (Radial, XX ft Radius)	SF
	Concrete Median Reinforced Sidewalk Crossing	SF
	Concrete Median Nose	EA
	Manhole Adjustment (Paved)	EA
	Valve Adjustment (Paved)	EA
	Monument Box Adjustment	EA
	Material Testing (Concrete/Asphalt/Aggregate)	LS
	Temporary Surfacing Material	TON
	Temporary Gravel Road	TON
	Concrete Speed Hump (Including Signage and Pavement Markings)	EA
	Asphalt Speed Hump (Including Signage and Pavement Markings)	EA
	Concrete Speed Cushion (Including Signage and Pavement Markings)	EA
	Stamped Colored Concrete Raised Crosswalk (Including Signage and Pavement Markings)	EA
Storm Sewer	XX" Storm Sewer (RCP)	LF
	XX" Storm Sewer (CMP)	LF
	XX" Storm Sewer (PPP)	LF
	XX" Storm Sewer (HDPE)	LF
	XX"xxX" Storm Sewer (RCHE)	LF
	XX" End Section (RC)	EA
	XX" End Section (Metal)	EA
	Riprap	SY

	X'xX' Curb Inlet	EA
	X'xX' Area Inlet	EA
	XX" Diameter Manhole	EA
	X'xX' Junction Box	EA
	Outlet Headwall	LS
	Connect to Existing Storm Sewer	EA
	Connect to Existing Storm Sewer Inlet	EA
	Connect to Storm Sewer to Existing Inlet, Reshape Invert	EA
	Connect to Existing XX"xXX" RCB	EA
Sewer Sanitary	XX" Sanitary Sewer Pipe	LF
	XX" Sanitary Sewer Service Pipe	LF
	XX" Sanitary Sewer Service Connection	EA
	X' Diameter Standard Manhole (6' Depth)	EA
	X' Diameter Drop Manhole (6' Depth)	EA
	X' Diameter Doghouse Manhole (6' Depth)	EA
	X' Diameter Flat Top Manhole (6' Depth)	EA
	Extra Depth (X' Diameter)	VF
	Connect to Existing Manhole	EA
	Manhole Adjustment (Unpaved)	EA
	Concrete Encasement	LF
	Abandon Existing XX" Sanitary Sewer	LS
	Abandon Existing X' Diameter Manhole	LS
	Sanitary Sewer Pipe Cleaning	LS
	Manhole Corrosion Protection Coating	VF
Waterline	XX" Waterline	LF
	XX" Waterline (Restrained Joint) by Boring	LF
	XX" Steel Casing by Boring	LF
	XX" Gate Valve with Valve Box and Cover	EA
	XX" Butterfly Valve with Valve Box and Cover	EA
	XX" MJ Bend and Block	EA
	XX" x XX" MJ Tee and Block	EA
	XX" x XX" MJ Cross and Block	EA
	XX" x XX" MJ Reducer	EA
	XX" Anchor Coupling	EA
	XX" MJ Sleeve	EA
	XX" Plug or Cap and Block	EA
	XX" Blind Flange	EA
	XX" x XX" Tapping Sleeve and XX" Tapping Valve	EA
	Connect to Existing Waterline	EA
	XX" Water Service Installation (Short)	EA
	XX" Water Service Installation (Long)	EA
	XX" Manifold Assembly	EA
	XX" Water Service Relocation	EA
	XX" Tile, Setter, and Ring/Lid	EA
	XX" Meter Tile	EA

	XX" Meter Setter	EA
	XX" Meter Ring/Lid	EA
	Fire Hydrant Assembly	EA
	Fire Hydrant Assembly with Swivel 90	EA
	Valve Lid Adjustment (Unpaved)	EA
	XX" Air Release Valve	EA
	Meter Vault	EA
	Backflow Vault	EA
	XX" PIV and Indicator Post	EA
	Abandon Existing Waterline	LS
	Water Meter Removal and Abandonment	EA
	2" Blowoff Assembly	EA
	XX" Tapping Saddle with XX" Corp. Stop	EA
	Concrete Straddle Block	EA
	XX" Corp. Stop	EA
Landscaping	Mulching (Temporary)	LS
	Mulching (Permanent)	LS
	Fertilizing (Temporary)	LS
	Fertilizing (Permanent)	LS
	Seeding (Temporary)	LS
	Seeding (Permanent)	LS
	Sodding	SY
	Irrigation (Repair)	FA
	Irrigation (New)	LS
	Fence (Chain Link) (4'-0")	LF
	Fence (Chain Link) (5'-0")	LF
	Fence (Chain Link) (6'-0")	LF
	Fence (Wood) (4'-0")	LF
	Fence (Wood) (5'-0")	LF
	Fence (Wood) (6'-0")	LF
	Gate (Chain Link) (4'-0")	EA
	Gate (Chain Link) (6'-0")	EA
	Gate (Chain Link) (5'-0")	EA
	Gate (Wood) (4'-0")	EA
	Gate (Wood) (5'-0")	EA
	Gate (Wood) (6'-0")	EA
	Trees	EA
	Plants	LS
	Topsoil	CY

3. A General Layout should be included with the following:
 - a. A legend of symbols
 - b. North arrow and scale. Scale of the general layout map shall be a minimum of one inch (1") equals 100 feet (100'), unless otherwise approved.
 - c. Names of subdivision

- d. Block designation and lot designation, or proposed block and lots. If surrounding parcels are unplatted they shall be identified as "Unplatted".
 - e. All streets and paved areas with name labels.
 - f. Boundary line of project area.
 - g. Accurate tie to at least one quarter section corner for platted tract. An unplatted tract shall have an accurate tie to at least two quarter section corners.
 - h. Project control benchmarks shall be identified as to location and elevation (may be placed on another sheet as needed).
 - i. Location of existing and proposed storm sewer, water main, and sanitary sewer lines, manholes, and easements/rights-of-way.
 - j. Location of all existing utilities with pertinent information listed as appropriate.
 - k. On site parcels and buildings shall be shown and labeled as appropriate. Buildings not requiring sewer service shall be noted "Service Not Required".
4. Project Control Points:
- a. A minimum of two (2) permanent benchmarks shall be referenced for the project.
 - b. A minimum of three (3) horizontal control points shall be reference for the project.
 - c. All benchmarks and control points shall include a verbal description and the location of shall be noted on the General Layout Sheet or specific Project Control Sheet.
 - d. Methodology of topographic map obtainment must be described (Ground survey, LIDAR, etc.).
 - e. All survey datum shall be NAD83 (2011) Kansas State Plane North Zone or Kansas Regional Zone 11 coordinates (US feet) for horizontal control and NAVD88 (Geoid Model 12B or 18) for vertical control.
 - f. The Combined Adjustment Factor (CAF) and scale point (if other than N-0, E-0) shall be published on plans having coordinates based on State Plane Kansas North, NAD83.
 - g. All benchmarks and control points must be verified by the Municipal Services and Operations Department before construction notice to proceed is issued.
5. Project specific typical section for all cross sections with corresponding stationing, right of way, and lane width. Show also existing pavement depths, where removal is required.

2.4 Street Plan and Profile

1. The plan and profile may be shown on the same sheet with the profile view directly below the plan view. For plan drawings, the minimum scale shall be 1" = 50'.
2. All side roads shall have their own plan and profile, to follow the mainline sheets.
3. Plan sheets shall include the following:
 - a. North arrow and scale. North should be up or to the right on the plan sheet unless otherwise approved by City staff.
 - b. Stationing and centerline marked at 100-foot increments, side roads and driveways, and at pertinent locations. Mainline stationing should run south to north or west to east. Side road stationing may run left to right with respect to the mainline stationing.
 - c. Elevation and location of all applicable bench marks.
 - d. Existing and final contours not to exceed 5 (five) feet.
 - e. Existing and proposed streets with names and widths.
 - f. Horizontal curve data.
 - g. All pavement including sidewalks, bikeways, alleys, driveways, and edge of pavement.
 - h. Locations and widths of existing and proposed sidewalks and ramps, and dimension from the back of the curb.
 - i. Station and grade at curb returns (at 1/4 points), unless detailed on Intersection Detail Sheet.
 - j. All existing and proposed public and private utilities.
 - k. Location of test borings.
 - l. Property lines, Right of way, utility easements, drainage easements, pedestrian easements and, construction limits.
 - m. Trees, buildings, retaining walls, structures, fences, bodies of water, landscaping, signs, lights, traffic signals, monuments, and other items of note within 20 feet of the project limits.
 - n. All trees, landscaping, storm sewer structures, pavement, curb, and other items to be removed shall be clearly noted on the plan sheets or on a separate demolition sheet showing all demolition and removals.
4. The profile view shall include the following:
 - a. Preferred scale of 1" = 20' horizontal and 1" = 5' vertical. The minimum allowable drawing scale is 1" = 50' horizontal and 1" = 10' vertical.
 - b. Proposed surface at the centerline of the road.
 - c. The grade of proposed surface
 - d. Borings (if applicable).
 - e. Existing surface (if different than proposed).
 - f. Elevations of proposed and existing at a minimum of 50 intervals for new construction or reconstruction with grade changes.

- g. For new construction or reconstruction with a new profile show PVI stations, PVI elevations, K values, length of vertical curves, high and low point stations and elevations, and beginning and end of vertical curves.
- h. Crossing utilities (existing and proposed).

2.5 Grading Plan

1. Plan sheets shall include the following:
 - a. North arrow and scale. North should be up or to the right on the plan sheet unless otherwise approved by City staff.
 - b. Existing and proposed property lines and lot and block numbers.
 - c. Elevation and location of nearest benchmark (U.S.G.S datum).
 - d. Final grading spot elevations shown for all lot corners.
 - e. 100-year (1% chance) floodplain line with elevations.
 - f. Property owner information for all properties directly adjacent to development.
 - g. One-hundred year overflow swales with calculations.
 - h. Adequately labeled existing and final contours not to exceed two (2) feet intervals.
 - i. Proposed storm sewer locations and drainage areas. Specifically callout locations where overflow swales are located immediately above storm sewer locations.
 - j. Proposed low floor elevation and low openings when adjacent to an engineered swale or one-hundred year floodplain.
 - k. Existing and proposed water and sanitary sewer lines.
 - l. Retaining wall locations, stationing and elevations.
 - m. Preblast survey limits if applicable.
 - n. All enclosed and improved open channel conveyance system components shall be designed for the 10-year return period peak flow or the capacity of the existing upstream improved system, whichever is greater with the following exceptions:
 - i. Facilities located within the floodway of the 100-year flood, as defined by the current Federal Emergency Management Administration (FEMA) flood insurance study, shall be designed for the 100-year (1% chance) peak flow.
 - ii. Bridges, pipes and culverts crossing arterial streets shall be designed for the 50-year peak flow, unless subject to the requirements of i, above.

2.6 Storm Sewer Plan & Profile, Drainage Area Map, and Design Information

1. All design, calculation methods, and construction plan requirements must follow the Stormwater Management Criteria.
2. All construction plans shall be prepared as follows:
 - a. Storm system plan and profile views may be shown on the same sheet. The profile limits must match the plan limits on each sheet. All construction notes referencing the drainage system must be provided on the storm system plan and profile sheets only. Where junction boxes are located below proposed pavement, show Rim, Top of Lid, and Flowline elevations.
 - b. Detailed alignment of the storm sewer along with all appurtenances, sizes of lines, conduit material and wall thickness, and other details relating to the storm drainage system including inlet and junction box (manhole) stations and top and invert elevations.
 - c. Proper ties to existing permanent facilities.
 - d. Proposed low floor elevation and low openings when adjacent to an engineered swale or one-hundred year floodplain
 - e. Distances between storm sewer system components and other existing or proposed utilities within the right-of-way or drainage easement.
 - f. The drainage area map must show existing contours, proposed contours, proposed streets, property lines and easements. Drainage areas must be identified for each point of discharge to the drainage system. Drainage areas must be labeled with the receiving structure number. Calculations are not necessary on the drainage area map.
 - g. Size, slope and material of each pipe on the profile.
 - h. Erosion control and energy dissipation devices.
 - i. Location, cross-section, and capacity of overflow swales, including the velocity in the swale and erosion protection where necessary.
 - j. Allowable pipe types shall be as follows:

Location	RCP ^{A,B}	PPA	CMP ^{A,C}	HDPE ^A
Arterial Street Right-of-Way	X			
Collector Street Right-of-Way ^B	X	X		
Residential Street Right-of-Way ^{B,C}	X	X	X	
Private Storm Sewer outside of Public Right-of-Way	X	X		X

Notes:

A. Definitions:

- RCP – Reinforced Concrete Pipe, Round or Elliptical
 - PP – Polypropylene Pipe
 - CMP – Corrugated Metal Pipe
 - HDPE – High Density Polyethylene Pipe
- B. All Cross Road Pipe shall be Reinforced Concrete Pipe (RCP)
- C. Corrugated Metal Pipe (CMP) may only be used for private driveway culverts in the street right-of-way along residential streets.
- D. Changes in pipe material shall only occur at manhole or junction box structures.
- k. Design information must be provided per the following format. One table per element shall be provided on the profile view. Additional design information is not required unless specifically requested.
- i. Insert this table on the profile near each pipe:

PIPE [Name]					
DA	0.00	ac	n	0.000	
C	0.0		Q _{full}	0.0	cfs
T _c	0.0	m			
Q ₁₀	0.0	cfs	V ₁₀	0.0	fps
Q ₁₀₀	0.0	cfs	V ₁	0.0	fps

NOTES:

- DA total drainage area to pipe
- C composite C for total DA
- T_c T_c for total DA to pipe
- Q₁₀ 10-year peak (minimum design)
- Q₁₀₀ 100-year peak (must be within R/W or D/E)
- n pipe roughness
- Q_{full} pipe full capacity
- V₁₀ actual velocity for Q₁₀ (used for outlet structure requirements)
- V₁ actual velocity for Q₁ (3 fps min or pipe slope min per table)

Size, slope and material must be listed in construction notes.

HGL lines must be plotted on profile for design storm.

Substitute Q₅₀ for Q₁₀ where 50-year minimum design required.

- ii. Insert this table on the profile near each overflow channel:

OVERFLOW CHANNEL [Name]		
Q ₁₀₀	0.0	cfs
n	0.000	
d ₁₀₀	0.0	ft

NOTES:

Q₁₀₀ total 100-year bypass to overflow channel
n roughness for uniform channel reach
d₁₀₀ depth for 0100 (verify D/E width)

Cross-section, slope and fining material must be listed in construction notes.

- iii. Insert this table on the profile near each curb inlet:

CURB INLET [Name]					
DA	0.00	ac	s road	0.0000	ft/ft
C	0.0		L	0.0	ft
T _i	0.0	m			
Q ₁₀	0.0	cfs	Q _{i10}	0.0	cfs
Q ₁₀₀	0.0	cfs	Q _{i100}	0.0	cfs
R ₁₀	0.0	cfs	B ₁₀	0.0	cfs
R ₁₀₀	0.0	cfs	B ₁₀₀	0.0	cfs

NOTES:

DA total drainage area to inlet
C composite C for total DA
T_i T_i for total DA to inlet
Q₁₀ 10-year peak to inlet (add bypass from other inlets)
Q₁₀₀ 100-year peak to inlet (add bypass from other inlets)
R₁₀ allowable 10-year street flow for road slope
R₁₀₀ allowable 100-year street flow for road slope
s road road slope or zero for sump
L inlet length (5' minimum)
Q_{i10} inlet capacity with 10-year gutter spread
Q_{i100} inlet capacity with 100-year gutter spread
B₁₀ bypass flow from Q₁₀
B₁₀₀ bypass flow from Q₁₀₀

- iv. Insert this table on the profile near each field inlet:

FIELD INLET [Name]					
DA	0.00	ac	L	0	ft
C	0.0		Q _i	0.0	cfs
T _i	0.0	m			
Q ₁₀	0.0	cfs			
Q ₁₀₀	0.0	cfs	B ₁₀₀	0.0	cfs

NOTES:

- DA total drainage area to inlet
 C composite C for total DA
 T_i T_i for total DA to inlet
 Q₁₀ 10-year peak to inlet (add bypass from other inlets)
 Q₁₀₀ 100-year peak to inlet (add bypass from other inlets)
 L inlet length
 Q_i inlet capacity
 B₁₀₀ bypass flow from Q₁₀₀

- v. Insert this table on the profile near each open channel reach:

OPEN CHANNEL [Name]					
DA	0.00	ac	n	0.000	
C	0.0		V ₁₀	0.0	fps
T _c	0.0	m	d ₁₀	0.0	ft
Q ₁₀	0.0	cfs	d ₁₀₀	0.0	ft
Q ₁₀₀	0.0	cfs			

NOTES:

- DA total drainage area to channel
 C composite C for total DA
 T_c T_c for total DA to channel
 Q₁₀ 10-year peak
 Q₁₀₀ 100-year peak
 n channel roughness
 V₁₀ velocity for Q₁₀ (use for lining design)
 d₁₀ depth for Q₁₀ (use for lining design)
 d₁₀₀ depth for Q₁₀₀ (verify D/E width)

Cross-section, slope and lining material must be listed in construction notes.

- vi. Insert this table on the profile near each culvert:

CULVERT [Name]					
DA	0.00	ac	K _e	0.0	elev.
C	0.0		n	0.000	
T _c	0.0	m			
Q ₁₀	0.0	cfs	h ₁₀	0000.00	elev.
Q ₁₀₀	0.0	cfs	h ₁₀₀	0000.00	elev.
TW	0000.0	elev.	h _{road}	0000.00	elev.
	0				

NOTES:

- DA total drainage area to culvert
- C composite C for total DA
- T_c T_c for total DA to culvert
- Q₁₀ 10-year peak
- Q₁₀₀ 100-year peak
- TW assumed tailwater elev
- K_e assumed entrance loss coefficient
- n pipe roughness
- h₁₀ headwater elevation for Q₁₀
- h₁₀₀ headwater elevation for Q₁₀₀
- h_{road} lowest elevation for overtopping

Size, slope and material must be listed in construction notes.
Substitute Q₅₀ for Q₁₀ where 50-year minimum design required

- vii. A drainage calculations design table providing a stand-alone summary of all information for all items included above is an acceptable alternative to individual design tables.

2.7 Sanitary Sewer Plan & Profile

1. This section governs all information to be shown on the Plan and Profile sheets for the plan set. All sanitary sewers and forcemains are required to be shown in both plan and profile views. The horizontal alignment is examined for conflicts or access restrictions, service availability to all lots and buildings, and the needs of the entire tributary area (watershed or sewershed). The vertical alignment is reviewed for depth, protection of the main at creeks and water courses, minimum and maximum cover, conflicts with other underground utilities, maintaining hydraulic gradients, general location of other sewerage and storm water facilities and other issues. These standards are intended to minimize the need for future extensions or realignments and excessive maintenance of the sanitary sewer.
2. General Drafting Standards: While the construction drawings are used primarily for construction, the project drawing as-builts are the permanent record of the City of Lawrence sewer system. The information provided on these drawings is also used for additional extensions to the system, system modeling, system maintenance, and is used in providing location services under the one call system. This information is used by engineers, developers, contractors, builders, architects, and the public in general. It is critical for long-term management of the system that the information provided on these drawings be accurate and clearly shown.
 - a. General Drafting Requirements:
 - i. A single plan/profile view format for each sheet shall be used for each plan and profile sheet. A plan view is required for each profile on the same sheet. The profile should be located immediately under the corresponding plan view.
 - ii. Preferred scales are 1" = 20' horizontal and 1"=5' vertical. The minimum allowable drawing scale is 1" = 50' horizontal and 1"=10' vertical.
 - iii. Stationing shall increase from left to right across the plan sheet and generally run west to east or south to north.
 - iv. Stationing shall be indicated at 100-foot intervals in both plan and profile views.
 - v. Labels shall be positioned as close as possible to the feature they are identifying without conflicting with other lines. Text overwrites are not permitted.
 - vi. Revisions to plans that have been released for construction shall be clouded and checked with an explanation of the change included in the revision. All revisions to previously approved plans shall be approved by the City of Lawrence Municipal Services & Operations Department prior to construction.

3. Plan sheets shall include the following:
- a. North arrow and scale. North should be up or to the right on the plan sheet unless otherwise approved by City staff.
 - b. Show and label the proposed and existing sanitary sewer mains, easements, and service line stubs.
 - c. Show and label all structures such as retaining walls, trash enclosures, carports, separate garages, signs, subdivision monuments, etc.
 - d. Show and label elevation and location of all applicable bench marks.
 - e. Existing and final contours not to exceed 5 (five) feet.
 - f. Existing and Proposed Streets and Rights-of-Way:
 - i. Label all existing and proposed streets. All paved areas must be shown and identified as necessary.
 - ii. Show and label all street right-of-way in the vicinity of the sewer. Label the width of the right-of-way for streets and the radius of the right-of-way at cul-de-sacs.
 - iii. Label all private drives as "private". The "private" label must be included with the street name as applicable. Drives that are private and will not be named must be labeled as "private drive".
 - g. Show and label existing and proposed easements.
 - h. Lot or Property Lines:
 - i. Label all lot numbers, tracts, and block numbers, if applicable. Property lines and lot lines shall be shown and a draft copy of the final plat provided for each labeled reference.
 - ii. Unplatted parcels shall be labeled as "unplatted".
 - iii. For projects other than single family residential, label all buildings with a unique designation or number and where applicable label units within the building.
 - iv. Label all surrounding areas with the plat name and lot number or as "unplatted". Do not provide lot numbers for unplatted future lots. Label those lot areas as "unplatted" or "future platting".
 - v. Show and label the building setback lines for residential projects.
 - i. Plan/Profile view(s) of existing main(s) must be shown and labeled in the plan set for those lots or parcels to be served by existing main(s).
 - j. Show and label all proposed and existing utilities.
 - i. All existing and proposed utilities (and their appurtenances) shall be shown in the plan and profile views, as applicable. Specific crossing requirements shall be noted on the plans for each affected utility.
 - ii. Label the existing and proposed pipe size, slope and length.
 - iii. Label the existing and proposed manholes. Existing manholes shall be referenced by the City of Lawrence Facility ID which can be

obtained from the GIS interactive map located at <http://gis.lawrenceks.org/viewer/index.html>

- iv. In the event that the Facility ID is not available, existing manholes may be identified by their original designation as shown on the as-built drawings for the project.
 - k. Label all concrete encasements as "reinforced concrete encasement".
 - i. Label the beginning and ending stations of reinforced concrete encasements on the main in the profile view and on the plan view. The stationing of the reinforced concrete encasement may be rounded to the nearest foot.
 - l. Creek and/or Watercourse Crossings
 - i. Show and label the centerline and top of banks for all creeks and/or watercourses, existing or proposed, for the project in plan and profile views.
 - ii. Protection of the sewer, as required, shall be clearly identified on both the plan and profile view.
 - m. Detention and Retention Basins:
 - i. Show and label all existing or proposed water detention or retention facilities including dam structure limits. For retention and detention basins the maximum and normal water surface elevations and elevation outlines must be clearly shown and labeled.
 - ii. For detention basins, a note must be included to indicate whether the detention basin will or will not retain water after the storm event routing has been completed, i.e. if it is a "dry" or "wet" basin.
4. The profile view shall include the following:
- a. Show and label the existing and proposed ground profiles along the centerline of the sanitary sewer or forcemain. Show existing profiles as a dashed line and proposed profiles as a solid line.
 - i. If the proposed grade equals the existing grade, label the grade as "Proposed Grade = Existing Grade".
 - b. Elevations shall be provided in the profile view at a minimum of 10-foot intervals. The elevation grid label shall be placed on the horizontal grid line instead of in the middle of the grid line.
 - c. Type, Size, and Depth of existing and proposed crossing utilities.
 - d. Where the top of the proposed main is three (3) feet or less from the existing ground surface, provide the following note: "Compacted fill must be placed to a minimum height of three (3) feet above the top of the proposed sewer main prior to the installation of the main." Show and label the compacted fill to be placed in the profile.

2.8 Waterline Plan & Profile

1. This section governs all information to be shown on the Waterline Plan and Profile sheets for the plan set. All waterlines are required to be shown in both plan and profile views. The horizontal alignment is examined for conflicts or access restrictions, and service availability to all lots and buildings. The vertical alignment is reviewed for depth, protection of the main at creeks and water courses, minimum and maximum cover, conflicts with other underground utilities, and other issues.
2. General Drafting Standards: While the construction drawings are used primarily for construction, the project drawing as-builts are the permanent record of the City of Lawrence water system. The information provided on these drawings is also used for additional extensions to the system, system modeling, system maintenance, and is used in providing location services under the one call system. This information is used by engineers, developers, contractors, builders, architects, and the public in general, it is critical for the long-term management of the system that the information provided on these drawings be accurate and clearly shown.
 - a. General Drafting Requirements:
 - i. A single plan/profile view format for each sheet shall be used for each plan and profile sheet. A plan view is required for each profile on the same sheet. The profile should be located immediately under the corresponding plan view.
 - ii. Preferred scales are 1" = 20' horizontal and 1"=5' vertical. The minimum allowable drawing scale is 1" = 50' horizontal and 1"=10' vertical.
 - iii. Stationing shall increase from left to right across the plan sheet and generally run west to east or south to north.
 - iv. Stationing shall be indicated at 100-foot intervals in both plan and profile views.
 - v. Labels shall be positioned as close as possible to the feature they are identifying without conflicting with other lines. Text overwrites are not permitted.
 - vi. Revisions to plans that have been released for construction shall be clouded and checked with an explanation of the change included in the revision. All revisions to previously approved plans shall be approved by the City of Lawrence Municipal Services & Operations Department prior to construction.
3. Plan sheets shall include the following:
 - a. North arrow and scale. North should be up or to the right on the plan sheet unless otherwise approved by City staff.
 - b. Show and label elevation and location of all applicable bench marks.

- c. Existing and final contours not to exceed 5 (five) feet.
- d. Existing and Proposed Streets and Rights-of-Way:
 - i. Label all existing and proposed streets. All paved areas must be shown and identified as necessary.
 - ii. Show and label all street right-of-way in the vicinity of the waterline. Label the width of the right-of-way for streets and the radius of the right-of-way at cul-de-sacs.
 - iii. Label all private drives as "private". The "private" label must be included with the street name as applicable. Drives that are private and will not be named must be labeled as "private drive".
- e. Show and label existing and proposed easements.
- f. Lot or Property Lines:
 - i. Label all lot numbers, tracts, and block numbers, if applicable. Property lines and lot lines shall be shown, and a draft copy of the final plat provided for each labeled reference.
 - ii. Unplatted parcels shall be labeled as "unplatted".
 - iii. For projects other than single family residential, label all buildings with a unique designation or number and where applicable label units within the building.
 - iv. Label all surrounding areas with the plat name and lot number or as "unplatted". Do not provide lot numbers for unplatted future lots. Label those lot areas as "unplatted" or "future platting".
 - v. Show and label the building setback lines for residential projects.
- g. Show and label all structures such as retaining walls, trash enclosures, carports, separate garages, signs, subdivision monuments, etc.
- h. Show and label all proposed and existing utilities.
 - i. All existing and proposed utilities (and their appurtenances) shall be shown in the plan and profile views, as applicable. Specific crossing requirements shall be noted on the plans for each affected utility.
 - ii. Label the existing and proposed pipe size and length.
- i. Label all concrete encasements as "reinforced concrete encasement".
 - i. Label the beginning and ending stations of reinforced concrete encasements on the main in the profile view and on the plan view. The stationing of the reinforced concrete encasement may be rounded to the nearest foot.
- j. Creek and/or Watercourse Crossings
 - i. Show and label the centerline and top of banks for all creeks and/or watercourses, existing or proposed, for the project in plan and profile views.
 - ii. Protection of the waterline, as required, shall be clearly identified on both the plan and profile view.

- k. Detention and Retention Basins:
 - i. Show and label all existing or proposed water detention or retention facilities including dam structure limits. For retention and detention basins the maximum and normal water surface elevations and elevation outlines must be clearly shown and labeled.
 - ii. For detention basins, a note must be included to indicate whether the detention basin will or will not retain water after the storm event routing has been completed, i.e. if it is a "dry" or "wet" basin.
- 4. The profile view shall include the following:
 - a. Show and label the existing and proposed ground profiles along the centerline of the waterline. Show existing profiles as a dashed line and proposed profiles as a solid line.
 - i. If the proposed grade equals the existing grade, label the grade as "Proposed Grade = Existing Grade".
 - b. Elevations shall be provided in the profile view at a minimum of 10-foot intervals. The elevation grid label shall be placed on the horizontal grid line instead of in the middle of the grid line.
 - c. Type, Size, and Depth of existing and proposed crossing utilities.

2.9 Traffic Control

Provide a traffic-sequencing plan or traffic sequencing notes on the plans when a project will impact travel lanes on an arterial or collector street or will necessitate a road closure of any street. This is NOT a traffic barricade plan. The following items must be addressed within the sequencing plans/notes:

1. Identify each phase of work and the work items that will be completed with each phase.
2. Detail traffic impacts for each phase and how traffic will be maintained or obstructed.
3. Provide a time frame for each phase.
4. Include the following notes:
 - a. Any deviations from approved sequencing plan/notes require City of Lawrence approval.
 - b. Traffic Sequencing Plan intent is to detail the general handling of traffic and does not include every detail or consideration that should be considered in each phase of construction.
 - c. Contractor shall obtain all permits required prior to beginning work to include Temporary Traffic Control Permits. Temporary Traffic Control Plans shall be developed and are required for permit approval.

Temporary Traffic Control (TTC) Plans are not required as part of plan approval, however, if provided they will be reviewed and approved with the overall plan approval. If TTC plans are not included in the project plans or if the contractor deviates from the approved plans then the contractor is responsible for TTC plan preparation as part of the Temporary Traffic Control Permit application. See Right of Way (ROW) Administrative Regulations for additional plan requirements.

2.10 Permanent Signing and Striping

Permanent Signing and Striping plans shall show all locations and types of permanent traffic control features, including street name signs. Permanent Traffic Control layout, material, type, and hardware shall be in accordance with the *Manual on Uniform Traffic Control Devices* and City of Lawrence Technical Specifications and Standard Drawings. The designer should coordinate with traffic field operations, through their Municipal Services and Operations contact, to discuss Traffic Signal requirements and special situations, as needed.

2.11 Intersection and Driveway Details

An intersection or driveway detail shall be shown for all reconstructed intersections, approaches to intersections, and for all drives with any grade change. The intersection and drive detail shall include the following:

1. Elevations of all four corners of ramp landings (if applicable).
2. Top of curb elevations (TOC) at a minimum of 15-foot increments and at the beginning and end of curves.
3. TOC elevations at the tie in to the existing pavement, at any point where the grade changes, and any other points that would be needed by the contractor for construction.
4. Jointing pattern including all dimensions needed for construction with the contraction, isolation, and dowel joints shown shall be provided (for concrete).
5. Radius points with station, offset, northing, and easting.
6. Elevation points or contour lines with enough detail to show drainage, crown, flowline, and cross slope for pedestrians in between sidewalk ramps.
7. Curb type shall be clearly labeled including areas of dry curb or transitions from city curb to match private curb.

A profile of the top of curb may be submitted as an alternative for top of curb elevation points.

2.12 Erosion and Sediment Control

1. Stormwater Pollution Prevention Plans (SWP3) and Erosion Control Plans (ECP) shall be developed as follows:
 - a. For grading which disturbs more than an acre of ground a stamped approved Notice of Intent (NOI) from the Kansas Department of Health & Environment (KDHE) must be submitted to the City of Lawrence Municipal Services & Operations Stormwater Division as well as the corresponding SWP3.
 - b. For grading disturbing less than an acre of ground an ECP must be submitted to the City of Lawrence Municipal Services & Operations Stormwater Division for review and approval.
2. Each stage shall be completed and immediately stabilized before any subsequent stage is initiated. Clearing, grubbing, and topsoil stripping shall be limited only to those areas described in each stage.
3. All excavation for utility line installation shall be limited to the amount that can be excavated, installed, backfilled and stabilized within one working day. All excavated material shall be deposited on the upslope side of the trench. Sediment laden water that accumulates in the trenches shall be pumped through a filtration device, or equivalent sediment removal facility, or over non-disturbed

vegetated areas. Discharge points should be established to provide for maximum distance to active waterways.

4. The Contractor must receive approval from the City of Lawrence before implementing any revisions to the approved erosion and sediment control plan.
5. All building materials and wastes must be removed from the site and recycled or disposed of in accordance with the Kansas Department of Health and Environment's regulations. Wasted or unused materials shall not be burned, buried, dumped, or discharged at the site.
6. Before disposing of soil or receiving borrow for the site, each spoil or borrow area must have an approved Erosion and Sediment Control Plan. Implementation and maintenance of the plan shall be according to City of Lawrence approvals and regulations.
7. Any disturbed area on which activity has ceased must be stabilized immediately. During non-germinating periods, mulch must be applied at recommended rates. Disturbed areas which are not at finished grade and will be re-disturbed before winter shall be stabilized in accordance with temporary seeding specifications. Disturbed areas that are either at finished grade or will not be re-disturbed before winter must be stabilized with permanent seeding specifications.
8. Only limited disturbance will be permitted to construct sediment traps, diversion terraces, etc.
9. At the end of each working day, any sediment tracked or conveyed onto a public roadway will be removed and re-deposited onto the construction site. Removal can be completed through use of mechanical or hand tools but must never be washed off the road using water.
10. Sediment removal from erosion and sediment controls and facilities shall be disposed of in landscaped areas outside of steep slopes, wetlands, floodplains, or drainage swales and immediately stabilized or placed in topsoil stockpiles.
11. Immediately upon discovering unforeseen circumstances posing potential for accelerated erosion and/or sediment pollution, the Contractor shall implement appropriate best management practices (BMPs) to eliminate the potential for accelerated erosion and/or sediment pollution.
12. A copy of the approved erosion and sediment control plan and Stormwater Pollution Prevention Plan (SWPPP) or Erosion Control Plan (ECP) must be available at the project site at all times. All pumping of sediment laden water shall be through a sediment removal facility or over undisturbed vegetated areas.
13. Stabilization is defined as a minimum uniform 70% perennial vegetated cover or other permanent non-vegetated cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
14. An erosion control blanket will be installed on all disturbed slopes steeper than 3:1 and all areas of concentrated flows.

15. Until the site is stabilized, all erosion and sediment control BMPs must be maintained properly. Maintenance must include inspections of all erosion and sediment control BMPs after each runoff event and on a weekly basis. All preventative and remedial maintenance work, including clean out, repair, replacement, regrading, reseeding, re-mulching, and re-netting must be performed immediately. If erosion and sediment control BMPs fail to perform as expected, replacement BMPs, or modifications of those installed will be required.
16. Any sediment removed from BMPs during construction shall be returned to upland areas on site and incorporated into site grading.
17. Upon completion of all earth disturbance activities and permanent stabilization of all disturbed areas, the Owner and or Contractor shall contact the City for a final inspection.

2.13 Cross Sections

Cross sections shall be provided for all new construction projects and other projects with construction limits outside of the existing curb. The cross section shall include a minimum of 10' beyond right-of-way or 10' beyond the construction limits.

Cross sections shall be shown at a minimum of every 50' and at all intersection streets and driveways. Additional cross sections shall be shown as required to clearly describe the extent of construction.

Each cross section shall include:

1. Existing grade shown by dashed lines and proposed grade by a solid line
2. Centerline elevation of top of pavement
3. Existing bottom of pavement and sidewalks shown by dashed lines.
4. Proposed bottom of pavement and aggregate base shown by solid lines.
5. Cross slope of pavement and sidewalk
6. Elevations of top of curb and sidewalk. (Elevations may be shown on another sheet at a minimum of every 50' and at all intersection streets and driveways)
7. Slope of grades and drainage arrows
8. Right-of-way

SECTION 3 – TRANSPORTATION

3.1 Governing Specifications

Design shall be in accordance with the latest edition of the following standards, policies and guidance:

1. Manual on Uniform Traffic Control Devices for Streets and Highways. FHWA (MUTCD)
2. A Policy on Geometric Design of Highways and Streets. AASHTO (Green Book)
3. Guide for the Development of Bicycle Facilities. AASHTO
4. Roadside Design Guide. AASHTO
5. Urban Street Design Guide. NACTO
6. Urban Bikeway Design Guide. NACTO
7. Transit Street Design Guide. NACTO
8. Essentials of Bike Parking. APBP
9. Highway Capacity Manual. TRB
10. Kansas Roundabout Guide. Kansas Department of Transportation
11. Public Rights-of-Way Accessibility Guidelines. (PROWAG)
12. City of Lawrence Stormwater Management Criteria

Project development on Capital Improvement Plan (CIP) projects shall also comply with the City of Lawrence Complete Streets Policy (See Appendix H). For projects with oversight by the Kansas Department of Transportation, project development shall comply with the Local Public Authority (LPA) Project Development Manual (<https://kart.ksdot.org/>). See Appendix for City of Lawrence LPA Certification.

3.2 Classification of Streets

Street classifications are used by the designer to identify design criteria appropriate to the facility being designed. There may be situations where the context of a street would indicate a higher level of criteria should be applied, apart from its base classification. These situations may be as directed by the City Engineer. Street classifications are described as follows:

1. **Principal Arterial:** Principal arterials are streets and highways that serve major activity centers, typically carry the highest traffic volumes, and provide for long-length trips. These roads often define the edges of neighborhoods. They are also often the major roads serving large employment and/or commercial land use

clusters. Examples of principle arterials include 6th Street, Iowa Street, and 23rd Street in Lawrence.

2. **Minor Arterial:** Minor arterials such as 19th Street in Lawrence serve to interconnect with the principal arterial system to provide trips of moderate length and to carry lower traffic volumes. These roads may run through neighborhoods or define neighborhood boundaries, and they may connect major activity centers in neighborhoods (e.g., schools, small commercial centers) to the principal arterial network.
3. **Collector:** Collector streets provide the connection between local roads and the arterial road system. They are the roads that have about half mobility function and about half property access function. These roads may look similar to some minor arterial streets, but collectors usually have more direct access points to adjoining properties. These roads in other cases may look similar to local roads, but collectors often have much higher traffic volumes than nearby local roads. Collectors are divided into two classes (Major and Minor) for Functional classification purposes. Examples of collectors include Harvard Road between Kasold and Wakarusa in Lawrence.
4. **Local Road:** Local roads provide direct access to adjacent property. Through traffic is discouraged. The overwhelming function of this type of road is property access, and many residential and commercial driveways connect to this class of roadway. Frequent long-distance trips made on this road class and/or high-speed travel on these roads often indicates that there is a problem with the network, especially nearby collector and arterial streets. Highways, streets and roads are functionally classified to establish their importance to the overall roadway network, qualification for funding, necessary access control measures, corridor preservation needs, and design standards.

The layout of new streets shall conform to the City of Lawrence Land Development Code.

<http://www.lawrenceks.org/assets/pds/planning/documents/DevCode.pdf>

A map of Major Thoroughfares can be found at:

<https://assets.lawrenceks.org/assets/mpo/T2040/Thoroughfares.pdf>

3.3 Sidewalks

Where sidewalks are provided, they must be accessible. Accessible features shall be as recommended by the Public Rights-of-Way Accessibility Guidelines (PROWAG), <https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines>.

3.3.1 Applicability

1. New Construction: Newly constructed facilities within the scope of the project shall be made accessible to persons with disabilities, except when it is demonstrable it is structurally impracticable to provide full compliance with these requirements. Structural impracticability is limited to those rare situations when the unique characteristics of terrain make it physically impossible to construct facilities that are fully compliant. If full compliance is structurally impracticable, compliance is required to the extent that is not structurally impracticable.
2. Alterations: Whenever alterations are made to the pedestrian circulation path, the pedestrian access route shall be made accessible to the maximum extent feasible within the scope of the project. If full compliance is technically infeasible, compliance is required to the extent that it is not technically infeasible. Alterations shall not “gap” pedestrian circulation paths to avoid ADA compliance. Alterations which require installation of curb ramps are defined by Department of Justice/Department of Transportation Joint Technical Assistance on the Title II of the Americans with Disabilities Act Requirements to Provide Curb Ramps when Streets, Roads, or Highways are Altered through Resurfacing. Original guidance and supplemental guidance can be found at the following locations:
 - a. 2013 Joint Technical Assistance: <https://www.ada.gov/doj-fhwa-ta.htm>
 - b. Supplement: <https://www.ada.gov/doj-fhwa-ta-supplement-2015.html>

Examples of physical or site constraints that may make it technically infeasible to make an altered facility full compliant include, but are not limited to, the following:

- a. Right-of-way availability. While not mandatory to acquire right-of-way to achieve full compliance, it should be considered. Improvements may be limited to the maximum extent practicable within the existing right-of-way.
- b. Underground structures that cannot be moved without significantly expanding the project scope.
- c. Adjacent developed facilities, including buildings that would have to be removed or relocated to achieve accessibility.
- d. Drainage cannot be maintained if the feature is made accessible.

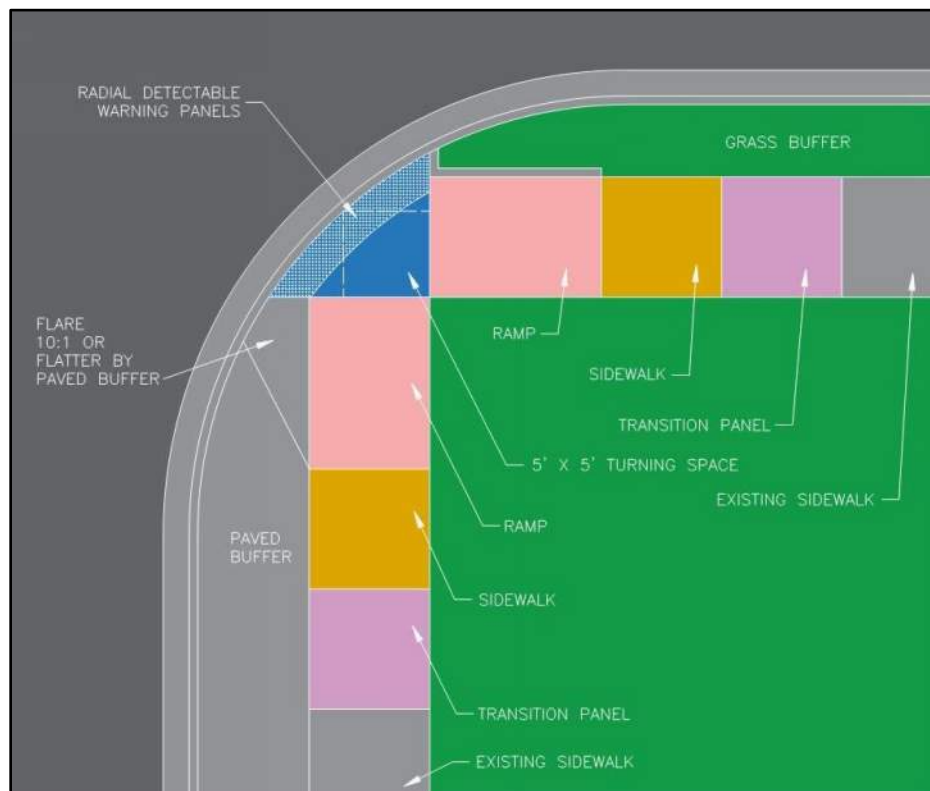
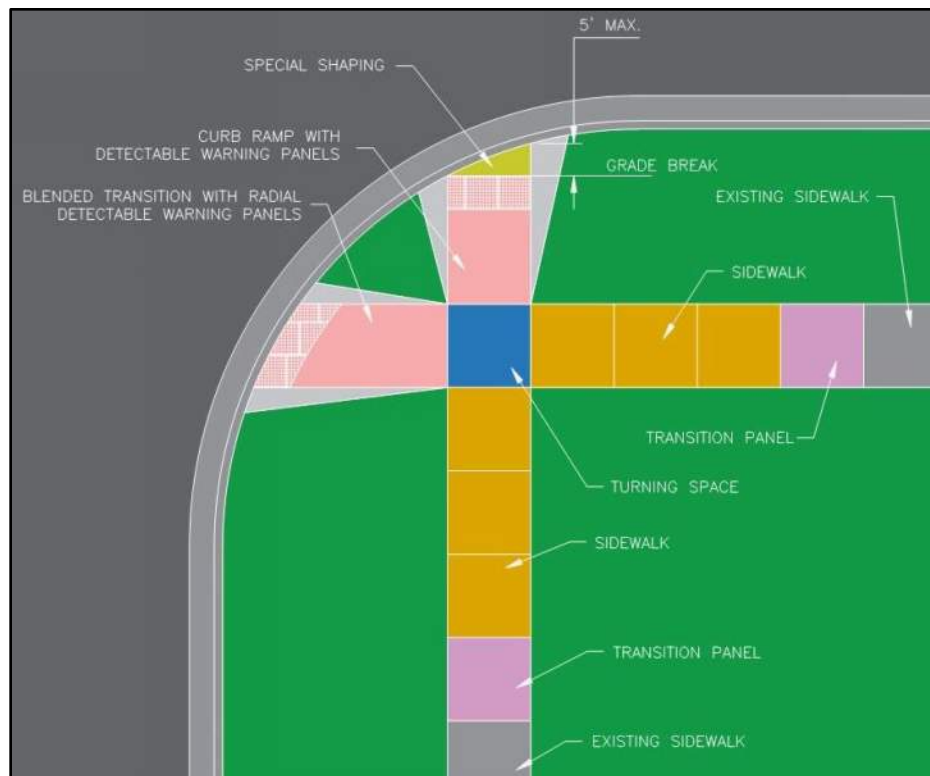
- e. Notable natural or historic features that would have to be altered in a way that lessens their aesthetic or historic value.
 - f. Underlying terrain that would require a significant expansion of the project scope to achieve accessibility.
 - g. Street grades within the crosswalk exceed the pedestrian access route maximum cross slopes, provided an engineering analysis has concluded it cannot be done without significantly expanding the project scope (e.g. changing from resurfacing an intersection to reconstructing the intersection).
 - h. When accessibility requirements would cause safety issues, compliance is required to the maximum extent practicable.
3. Where elements are altered or added to existing facilities, but the pedestrian circulation path is not altered, the pedestrian circulation path is not required to be modified. However, features added shall be made accessible to the maximum extent feasible. For example, benches, signs or utilities added to the right-of-way may be adjacent to an existing sidewalk. While these features do not necessarily require reconstruction of the sidewalk, they should not cause a situation that violates another accessibility requirement, such as protruding objects or minimum circulation path widths.
 4. Maintenance: The following items are considered maintenance and do not require accessibility improvements:
 - a. Painting pavement markings, excluding parking stall delineations
 - b. Crack filling and sealing
 - c. Surface sealing
 - d. Chip seals
 - e. Slurry seals
 - f. Fog seals
 - g. Scrub sealing
 - h. Joint crack seals
 - i. Joint repairs
 - j. Dowel bar retrofit
 - k. Spot high-friction treatments
 - l. Diamond Grinding
 - m. Minor patching (less than 50% of the pedestrian street crossing area)
 - n. Curb and gutter repair or patching outside of the pedestrian street crossing
 - o. Minor sidewalk repair that does not include the turning space and curb ramps
 - p. Filling potholes.
 5. Documentation: If the project cannot fully meet accessibility requirements because improvements are structurally impracticable, technically infeasible or cause safety issues, an exception document should be developed to describe

how the existing physical or site constraints or safety issues limit the extent to which facilities can be made compliant. Example documentation is provided in the Appendix. A documented exception does not remove the responsibility to consider making accessibility improvements the next time a facility is altered, as physical, site, or safety constraints may change over time. The determination of exceptions should be made each time a facility is altered, based on existing conditions and the scope of the proposed project.

3.3.2 Accessibility Standards

The following summarizes design features for select elements of an accessible pedestrian access route. Values listed are design targets. Use of these design targets allow minor construction variations to fit actual field conditions. Absolute minimum and maximum values, as well as information on gaps, surfacing, changes in level, and other features can be found in PROWAG. City of Lawrence Standard Drawings also reflect target design values, although PROWAG limits may be used in special design or construction situations. Design exception documentation is only needed where PROWAG limits cannot be feasibly met.

1. The following diagrams depict typical features of sidewalks and curb ramps:



2. Sidewalk cross slope: The design target cross slope is 1.5%.
 3. Running slope: Sidewalk running slope shall be 5% or flatter, unless following the grade of the adjacent roadway. For design, the general grade of the adjacent roadway is considered to be within 2% of the profile grade.
 4. Width: See design criteria table corresponding to the classification of street.
 5. When connecting from new sidewalk to existing sidewalk, transition the width and cross slope over at least one panel (5-ft. minimum) or 1% cross slope change per foot, whichever is greater. Transition panels should be located beyond curb ramps or turning spaces.
 6. Pedestrian Street Crossings:
 - a. Cross slope: The longitudinal grade of a street becomes the cross slope for a pedestrian street crossing. Pedestrian crossings shall be designed as follows:
 - i. Crossings controlled by Stop or Yield Signs: the street grade perpendicular to the crossing shall be 2.0% or flatter.
 - ii. Crossings controlled by traffic signals or Uncontrolled crossings: The street grade perpendicular to the crossing shall be 5% or flatter.
 - iii. Midblock Crossings: The cross slope of the pedestrian crossing may equal the street grade.
 - b. Running slope: The running slope of pedestrian street crossings (i.e. crown or superelevation of roadway crossed) shall be 5% or flatter.
 - c. Curb Ramps and Blended Transitions:
 - i. Design target cross slope at the top of ramp (adjacent to the turning space) is 1%. Cross slope at the bottom of the ramp shall match the crossing roadway. See above for grade requirements at pedestrian street crossings.
 - ii. The minimum width of curb ramp is 4-feet; however, the target ramp width should match the approach sidewalk width.
 - iii. Curb ramps have grade breaks perpendicular to the direction of travel while blended transitions have grade breaks which may cross the path of travel at an angle or along a curve (e.g. curb return).
 1. The design target running slope of curb ramps is 7%. However, steeper slopes may be allowable if conditions would require a ramp length longer than 15-feet using flatter slopes. Very short ramps resulting from use of maximum slopes should be avoided where practicable.
 2. Running slopes of blended transitions shall be 5% or flatter (4% design target).
- Generally, curb ramps should be used in lieu of blended transitions when the grade break would be less than 5-feet from the back of curb.

- iv. Detectable warnings shall be placed at the grade break of a curb ramp. For blended transitions, radial detectable warnings shall be placed at the back of curb.
- v. See City Standard Drawings for details of flared sides. Where located within a pedestrian circulation route, flared sides shall be 10:1 or flatter. Flared sides or curbed sides shall be located outside of the ramp width.
- vi. A turning space is required where the pedestrian access route requires a pedestrian to turn. This is a common situation where two sidewalks intersect. The target cross slope and running slope of turning spaces is 1%. The target size of turning spaces is 5' X 5' (or larger if approach sidewalks are wider). Landings which meet turning space requirements are encouraged at the top of ramps, even in the absence of an intersecting walkway. In cases where the sidewalk is adjacent to the back of curb, turning space may be at the bottom of the ramp.
- vii. Special Shaping refers to the transition area between the back of curb and the grade break of a curb ramp. The longest side shall not exceed 5 feet and the running slope shall not exceed 5%.
- viii. The City of Lawrence has a construction checklist for validating accessibility compliance (see the Appendix). While intended for construction, it is also a useful design aid. However, values listed in the checklist generally follow PROWAG dimensional limitations as opposed to the design targets outlined above.

3.4 Bikeway Plan

Bikeway elements at a minimum must comply with the Countywide Bikeway Plan.

<https://lawrenceks.org/assets/mpo/study/reports/lawrencebikemap.pdf>

The Lawrence-Douglas County Metropolitan Planning Organization also is developing a local Bikeway Design Guide for future use.

3.5 Design Criteria Table

	Major Arterial	Minor Arterial	Collector	Residential
Number of Through Lanes	4-5	3-5	2-4	2
Minimum Width of Traffic Lanes	11	11	10	10
Minimum R/W Width (Development Code Article 8)	150'	100' (for 3 lane)	80' 60' Residential	50' 60' Cul-de-sac
Minimum Design Speed	35-45 mph	35-45 mph	30-35 mph	25 mph
Minimum Stopping Sight Distance (grades 3% or less)	250' - 360'	250' - 360'	200' -250'	200' - 155'
Minimum K Crest Vertical Curve	29 - 61	29 - 61	19 - 29	12 - 19
Minimum K Sag Vertical Curve	49 - 79	49 - 79	37 - 49	26 - 37
Minimum Radii Horizontal Curve (no super elevation)	510' - 1039'	510' - 1039'	375' - 583'	219' - 375'
Maximum Grade (Development Code Article 8)	5%	5%	8%	10%
Minimum Grade (Development Code Article 8)	1.0%	1.0%	1.0%	1.0%
Sidewalk Width (Development Code Article 8)	6' on one side 10' Bicycle/ Recreation Path on the other side	6' on one side 10' Bicycle/ Recreation Path on the other side	5' minimum	5' minimum width. 4' allowed in the Original Townsite area
Curb Return Radius	25' minimum	25' minimum	25' minimum	15' minimum
Minimum Distance from Intersection of R/W to Driveway Curb-cut	300' & in accordance with Access Management Plan	300'	300' Signalized 250' Non-signalized	25'
Intersection Sight Distance	Per AASHTO Requirements			
Maximum Grade at Intersection w/stop			3% within 50'	5% within 25'
Cross Slope	2.0%	2.0%	4.0% (max)	4.0% (max)
Cul-de-sac Radius				39' min

3.6 Maximum and Minimum Grade

The City Engineer, as applicable, shall be authorized to approve minor deviations for short distances from these grade standards when it is determined that compliance with these standards is impracticable. Maximum grade of streets serving industrial areas shall be 5% regardless of street classification.

3.7 Intersecting Streets

Where any two arterial streets intersect, the crowns of both streets shall be uniformly transitioned into a plane at the intersection unless otherwise approved. The changes from one cross slope to another shall be gradual. See A Policy on Geometric Design of Highways and Streets (AASHTO) for superelevation transition guidelines based on width of roadway and design speed for more guidance.

Local street intersections on opposite sides of another local or collector street, when offset, shall be offset 300 feet or more.

Streets should intersect as nearly as possible at right angles.

3.8 Local Street Length

Local streets should be less than 1,320 feet in length. Local streets exceeding 800 feet in length shall include Traffic Calming devices, shown in an adopted City of Lawrence Traffic Calming Policy document.

Cul-de-sac lengths shall not exceed 10 times the required minimum lot width of the base zoning district or 1,000 feet (1,320 feet in Unincorporated Area), whichever is less. More information is available in the City of Lawrence Development Code.

3.9 Pavement Section

Pavement sections shall be installed in accordance with the asphalt street detail sheet or the concrete sheet detail sheet. Any variances from these standard detail sheets must be approved by the City Engineer.

3.10 Pavement Transition

Reduction in pavement width in the direction of traffic flow shall be accomplished by a taper. The minimum desirable length for merging taper shall be determined by the formula $L=WS^2/60$ where posted speeds are 45 mph or less. The formula $L= WS$ should be used for roadways having a posted speed limit greater than 45 mph. Under either formula, L= taper length in feet, W = taper offset in feet, and S = design speed in mph. See the Manual on Uniform Traffic Control Devices, FHWA and A Policy on Geometric Design of Highways and Streets, AASHTO for additional information.

SECTION 4 – SANITARY SEWER

4.1 Design Requirements

For sanitary sewer projects, a Kansas Department of Health and Environment (KDHE) permit application must be submitted (see the Appendix).

4.1.1 Design Flow Rates

1. Design flow rates shall be calculated based on total acreage of the development, weighted average density, per capita usage, and estimated infiltration and inflow.
2. A spreadsheet is available for download that allows the user to input acreage, density, and interpolation information and calculates the design flow for the development. The spreadsheet can be downloaded from http://www.lawrenceks.org/utilities/technical_resources

Per capita usage, infiltration and inflow, time of concentration, flow intensities, and peaking factors are based on data from the City of Lawrence 2003 Wastewater Master Plan. An Example is provided in Appendix of these criteria.

4.1.2 Pipe Requirements

1. Pipe Size: Pipes shall be sized to provide adequate capacity in accordance with Section 4.1.1 of these criteria. The minimum pipe diameter shall be eight (8) inches.
2. Pipe Slope: Pipe slope shall be as follows for eight (8) inch diameter sewer mains:

Calculated Design Flow (gpm)	Minimum Slope
0-70	1.00%
71-141	0.80%
142 or more	0.64%

For pipe larger than eight (8) inches in diameter the slope shall provide a minimum velocity of two (2) feet per second when flowing half full. The following table indicates the minimum permissible slopes for this condition.

Minimum Pipe Slopes

Pipe Diameter (in)	Hydraulic Radius (ft)	Minimum Slope (%)
10	0.208	0.248%
12	0.250	0.194%
15	0.313	0.144%
18	0.375	0.113%

All public sewers should be designed such that the mean velocity does not exceed ten (10) feet per second when flowing full. The following table indicates the maximum permissible slopes for this condition.

Maximum Pipe Slopes

Pipe Diameter (in)	Hydraulic Radius (ft)	Maximum Slope (%)
8	0.167	8.344%
10	0.208	6.197%
12	0.250	4.860%
15	0.313	3.609%
18	0.375	2.830%

3. Where pipe velocities are greater than ten (10) feet per second special provisions shall be made to protect against erosion. Methods shall be approved on a case by case basis by the Municipal Services & Operations Department.
4. Pipe Anchors: Where pipe slopes exceed 15% and manhole spacing exceeds one hundred (100) feet, special provisions shall be made to anchor the pipe securely as described in the City of Lawrence Construction and Material Specifications – Sanitary Sewer (8" to 18" Mains).
5. Pipe Angles: The interior angle between incoming and outgoing lines for both existing and new mains shall be clearly labeled at all manholes in the plan view in ddmmss format. Interior angles less than ninety (90) degrees shall not be acceptable under any circumstance.
6. Minimum Cover: A minimum of thirty (30) inches of cover is required over the top of the main and service stubs in all locations.

7. Pipe Protection:

- a. Retaining Walls: Where retaining walls are proposed over or near existing or proposed mains or service lines, the main or service line shall be encased in reinforced concrete or installed in a steel casing pipe conforming to the requirements set forth in the City of Lawrence Construction and Material Specifications – Sanitary Sewer (8" to 18" Mains). Encasement or casing pipe protection shall extend a minimum of five (5) feet either side of the retaining wall. Walls, footings, or keys shall not bear directly or indirectly upon the encasement or casing pipe and shall not parallel the main within the easement.
 - b. Pipeline and Highway Crossings: Where the sanitary sewer main crosses an existing highway or pipeline, the main shall be installed in a steel casing pipe conforming to the requirements set forth in the City of Lawrence Construction and Material Specifications – Sanitary Sewer (8" to 18" Mains). Casing pipe protection shall extend, at a minimum, to the limits of the pipeline easement or highway right-of-way. Pipe protection requirements as listed above are considered a minimum requirement. When crossing details and specifications are published by the respective governing authority, pipe protection shall conform to the more restrictive requirement.
8. Pipe Depth: The depth of sewers generally shall be limited to twenty (20) feet as measured from flowline of pipe to finished grade. Exceptions to this requirement will be made on a case by case basis and only if no other feasible alternatives exist. In general, exceptions will not be approved if the sole purpose of the extra depth is to provide service to areas outside the watershed or sewershed to be served by the project.
9. Larger Diameter Mains: For gravity mains and force mains greater than eighteen (18) inches and six (6) inches respectively the Design Engineer shall submit type of pipe proposed for approval by the Municipal Services & Operations Department. Along with this submittal the Design Engineer shall evaluate and compare the proposed pipe specifications to the City Technical Specifications and Design Criteria for Sanitary Sewer Mains. Where specifications differ from the City's standard specifications the Engineer shall supply the City with a detailed list of the differences for review.

4.1.3 Manhole Requirements

1. Manholes shall be required at all changes in horizontal and vertical alignment and at all changes in pipe size and pipe material. Curved alignments, cleanouts and lampholes will not be permitted. Existing sanitary sewer cleanouts and

lampholes within the limits of the project shall be removed in design and replaced with a manhole.

2. Typical manhole spacing shall be 400 feet. Greater spacing may be approved by the Municipal Services & Operations Department on a case by case basis.
3. Manholes shall be located a minimum of ten (10) feet beyond the top of bank when adjacent to a watercourse.
4. Wall thickness for manholes less than sixteen (16) feet deep shall be 1/12 of the internal shell diameter or four (4) inches, whichever is greater. For manholes sixteen (16) feet or greater in depth the wall thickness shall be 1/12 of the internal shell diameter plus one (1) inch or five (5) inches, whichever is greater.
5. The minimum diameter for manholes shall be four (4) feet.
6. The minimum depth for manholes, from the rim to the lowest invert, shall be four (4) feet.
7. A minimum drop of 0.20 feet or, at locations where a change in pipe size occurs, the difference in pipe diameter, is required across all manhole inverts.
8. Drop manholes shall be used if the difference in invert elevations is equal to or greater than twenty-four (24) inches. Only inside drop manholes shall be permitted. The minimum diameter of a drop manhole shall be five (5) feet.
9. Manholes located on interceptor sewer lines, force main receiving manholes, or other manholes, as determined by the Municipal Services & Operations Department, shall have the interior surface lined with an epoxy or polyurethane system installed per manufacturers' recommendation, conforming to the City of Lawrence Construction and Material Specifications – Sanitary Sewer (8" to 18" Mains).

Requirements 10 through 12 shall apply to the following:

- Manholes located within the FEMA delineated 100-year floodplain.
 - Manholes within the limits of the 100-year water surface elevation of natural watercourses. Manholes adjacent to manmade watercourses may be subject to these guidelines and will be reviewed on a case by case basis by the Municipal Services & Operations Department.
 - Manholes adjacent to detention/retention or storm water impoundment areas.
10. Manholes shall be installed with bolt down gasketed lids conforming to the provisions of the City of Lawrence Construction and Material Specifications – Sanitary Sewer (8" to 18" Mains).
 11. Manholes shall maintain a rim elevation of at least two (2) feet above the 100-year water surface or flood pool elevation.
 12. All joints in manholes shall be sealed. Sealant shall conform to the City of Lawrence Construction and Material Specifications – Sanitary Sewer (8" to 18" Mains).

4.1.4 Service Line Requirements

1. A service connection stub out shall be provided for each lot and/or building. The service stub is provided on the main to accommodate connection of the building service line.
2. The building service line shall generally be less than 200 feet in length. A minimum of five (5) feet of separation shall be provided between the end of the stub and the building.
3. Service lines shall extend a minimum of five (5) feet into the lot to be served. In addition, the service line shall extend through all easements and/or rights-of-way that may contain other utilities.
4. A service line for a lot shall generally not cross another lot to access the sewer main. The service line for a lot may enter another lot only if the other lot is contiguous with or located immediately across the street right-of-way from the lot to be served. The service line entering another lot shall be located only in the sanitary sewer easement or utility easement for the sanitary sewer main.
5. Service lines shall not cross watercourses, wetland areas or any basins including detention or retention areas.
6. If an existing or proposed building will not require sanitary sewer service, provide the following label on the building: SEWER SERVICE NOT REQUIRED. A written explanation of why service is not required must be submitted.
7. When a project includes multi-unit buildings such as duplex, 3-plex, 4-plex buildings, etc. or other commercial buildings located on a common lot, a service line stub shall be provided for each unit. Single service stubs to multi-unit buildings located on a common lot are permissible provided that a homeowners, tenants or other form of community association is formed or in existence and will be responsible for the maintenance of the single service lines.
8. Connections shall be provided for all future lots or buildings. For lots with an existing main and no connection, the connection shall be made utilizing a tee or wye service saddle. Service connections will not be permitted on sewer mains larger than twelve (12) inches in diameter.
9. Manhole stubs are not permitted without the approval of the Municipal Services & Operations Department.
10. Connections shall be a minimum of five (5) feet apart and shall not be installed in the same trench.
11. All tee or wye service connections must be installed at a minimum of 45 degrees from horizontal.
12. The minimum slope for a six (6) inch service line shall be 1.00%. The minimum slope for a four (4) inch service line shall be 2.00%.

13. For stubs to be installed on a sewer main running between two lots, stubs shall be located in front of the front building line or a minimum of fifty (50) feet behind the front building line to avoid connections between foundations.
14. End of stub locations shall be identified by station and offset referenced to the sewer main.
15. The flow line elevation of the upstream end of the service stub shall be labeled in the plan view.
16. Risers are required when the depth of the end of the stub exceeds five (5) feet.
17. For all buildings and/or lots to be serviced by the sewer main minimum serviceable floor elevations (MSFE) shall be provided. A distance of three feet between the floor elevation and the flow line of the main at the connection is considered the minimum vertical clearance provided for connection. This clearance must be increased to account for service line length, depth of the lot, and other site-specific circumstances.

4.1.5 Potable Waterline Separation Requirements

1. Horizontal Separation:
 - a. A minimum of ten (10) feet horizontal separation, as measured from the outside edge to outside edge, shall be required between a sanitary sewer main, forcemain, service line, or manhole and potable waterline.
 - b. Under no circumstance shall potable waterline and sanitary sewer be placed in the same trench.
 - c. Sanitary sewers shall meet the minimum separation requirements from public water supply wells or other water supply sources and resources as set forth by the appropriate reviewing agency.
2. Vertical Separation:
 - a. A minimum of two (2) feet vertical separation, as measured from the outside walls of the pipe, shall be required between a sanitary sewer main or service line and potable waterline.
 - b. In general, sanitary sewer lines shall be located below potable waterlines.
 - c. Sanitary sewer force mains shall always be located below potable waterlines and shall maintain a minimum of two (2) feet of vertical separation, as measured from the outside of the walls of the pipe.
3. Protective Measures: When sanitary sewers and potable waterlines cross with less than two (2) feet of vertical clearance, and in all cases where the potable waterline, is located below the sanitary sewer, additional measures must be employed to protect the potable waterline. Acceptable measures include:
 - a. Construction of the sanitary sewer line using one of the following materials:

- i. Ductile iron pipe conforming to ASTM A536 or ANSI/AWWA C151/A21.52 with a minimum thickness class 50, and gasketed, push-on, or mechanical joints in conformance with ANSI/AWWA C110/A21.10 or ANSI/AWWA C111/A21.11.
- ii. PVC pipe conforming to ASTM D3034 with minimum wall thickness of SDR41, ASTM F679, or ASTM F794, with gasketed push-on joints in conformance with ASTM D3215.
- iii. Reinforced concrete pipe conforming to ASTM C76 with gasketed joints in conformance with ASTM C361 or ASTM C443.

Install a minimum twenty (20) foot length of sanitary sewer pipe on the crossing to maximize the joint spacing to a minimum of ten (10) feet from the crossing.

- b. Provide concrete encasement of the sanitary sewer line a minimum of six (6) inches in thickness for a minimum distance of ten (10) feet either side of the pipeline crossing.
- c. Sanitary sewer service lines may be constructed using schedule 40 PVC pipe with solvent welded joints. Pipe joints shall be located a minimum of ten (10) feet either side of the pipeline crossing.

4.1.6 General Utility Separation Requirements

- 1. Horizontal Separation: A minimum of five (5) feet of horizontal separation, as measured from outside walls of the pipe, shall be required between all utilities, excluding potable waterlines, and sanitary sewer main, force main, service line or manhole.
- 2. Vertical Separation: A minimum of two (2) foot of vertical separation, as measured from the outside walls of the pipe, shall be required between all utilities and sanitary sewer main, force main or service line.

4.1.7 Abandonments

1. Gravity and Pressure Pipeline: Gravity and pressure pipeline shall be plugged and filled with flowable fill or cement mortar.
2. Manholes: Manhole cones or the top four (4) feet shall be removed, penetrations shall be plugged and grouted, and the manhole shall be filled with flowable fill if under pavement or sidewalk, otherwise the manhole shall be filled with sand.
3. Manhole Connections: Manhole connections shall be cut, plugged and grouted within two (2) feet of the manhole.
4. Service Lines: Service lines shall be cut and plugged within eighteen (18) inches of the sanitary sewer main and the cap shall be encased in concrete.

4.2 Alignment and Location

4.2.1 General

1. Sanitary sewer alignments shall be designed to minimize pipe depth, length of main and service lines, and the number of manholes required.
2. Sanitary sewer alignments shall be designed such that the requirements of City of Lawrence Code Section 19-214 can be met.
3. Sanitary sewer shall generally be located along rear lot lines within a permanent easement.
4. Sanitary sewer mains shall not be located in public right-of-way unless approved by the Municipal Services & Operations Department.
5. Where sanitary sewers are installed in easements on rear lot lines the sewer shall not terminate after the last shared lot line, but shall extend to the adjacent street right-of-way and terminate with a manhole to provide access for maintenance purposes.
6. All sewers shall be designed on straight alignments between manholes, curved alignments are not permitted.
7. Sanitary sewer shall be located a minimum of fifteen (15) feet from any building structure and a minimum of eight (8) feet from all other structures. Structures of any kind shall not be located within the sanitary sewer easement limits.

4.2.2 Watercourse Crossings

1. Aerial crossings shall not be permitted.
2. Inverted siphons shall not be permitted.
3. Sanitary sewers crossing watercourses shall be designed to cross the watercourse as nearly perpendicular to the flow direction as possible and shall be on a constant grade.
4. Sanitary sewer systems shall be designed to minimize the number of stream crossings.
5. Protection of the sanitary sewer main shall be provided at all watercourse crossings as required to prevent erosion.
6. If the depth of cover over the main is five (5) feet or less, reinforced concrete encasement, casing pipe, or other protective measure as appropriate shall be provided extending the full width of the watercourse crossing to a point ten (10) feet beyond the top of bank.
7. Impervious ditch checks, as detailed on the standard drawings, shall be provided immediately downstream of the watercourse crossing.

4.2.3 Detention and Retention Basins

1. Sanitary sewer mains or service lines shall not run through a detention or retention facility.
2. All existing and proposed sanitary sewer mains or service lines shall be located a minimum of two (2) feet horizontally away from the edge of the maximum water surface elevation for each foot of depth of the sanitary sewer main.
3. An impervious ditch check, as detailed on the standard drawings, shall be provided immediately downstream of any detention or retention basin.

4.3 Easement Requirements

4.3.1 General

1. All sanitary sewer lines must lie in either a platted utility or sanitary sewer easement or a utility or sanitary sewer easement dedicated to the City of Lawrence, Kansas.
2. A standard utility easement is provided in the Appendix of these criteria.

3. A standard temporary construction easement is provided in the Appendix of these criteria.
4. When easements are to be dedicated by separate instrument, draft easements shall be submitted for review with the first intermediate plan submittal. The entire easement form including legal description and an exhibit map shall be provided.
5. Plans will not be released for construction until the signed easements and/or recorded final plat have been received by the City of Lawrence.

4.3.2 Easement Width Requirements

1. Permanent easements for sanitary sewer mains shall be centered on the main.
2. Permanent easements for sanitary sewer mains shall be a minimum of fifteen (15) feet in width.
3. Permanent easements shall increase in width according to pipe depth as follows:

Depth to Invert	Easement Width
0 to 10 feet	15 feet
11 to 15 feet	20 feet
16 to 20 feet	30 feet

4. Sewer depths generally shall not exceed twenty (20) feet per section 5504.2 of these criteria. In such cases where the pipeline depth exceeds twenty (20) feet, easements shall be submitted for review and approval by the Municipal Services & Operations Department.
5. Easements shall extend beyond the center of a terminating manhole a distance equal to one half of the required easement width as determined from the above table.

4.3.3 Standard Easement Forms

1. Permanent Utility Easement:
 - a. The permanent easement form is included as Attachment D of these criteria.
 - b. The easement form shall be completed and executed prior to the release of plans for construction.
 - c. A written legal description shall be included with the easement form as Exhibit "A".
 - d. An easement exhibit shall be included with the easement form as Exhibit "B".

- e. The grantor signature line must be completed by an individual owner, a president, vice president, or authorized representative of a corporation, or a member or manager for a limited liability company or by trustee(s) of a trust. The grantor's ownership name must be accurate in all aspects as would be required for a deed transfer.
2. Temporary Construction Easement:
- a. The temporary construction easement is included as Attachment C of these criteria.
 - b. The easement form shall be completed and executed prior to the release of plans for construction.
 - c. A written legal description shall be included with the easement form as Exhibit "A".
 - d. An easement exhibit shall be included with the easement form as Exhibit "B".
 - e. The grantor signature line must be completed by an individual owner, a president, vice president, or authorized representative of a corporation, or a member or manager for a limited liability company or by trustee(s) of a trust. The grantor's ownership name must be accurate in all aspects as would be required for a deed transfer.

4.3.4 Platted Easement Requirements

- 1. Easement dedication of platted easements to the City of Lawrence shall be included on the plat.
- 2. Utility easements shall be clearly delineated on the plat and shall be clearly labeled throughout. Irregular easement shapes shall require dimensional labeling sufficient to clearly determine the easement limits such that any land surveyor can locate and stake the easements in the field.

4.3.5 Off-Site Easements

- 1. Projects may require the acquisition of temporary and/or permanent utility easements. It is the responsibility of the Developer or Engineer to obtain all required easements.
- 2. Efforts to acquire any required off-site easements must commence as soon as the alignment of the pipeline is set and draft easements have been approved.
- 3. All offers to the affected property owner shall be made in writing and sent to the property owner as certified mail with return receipt requested. The City of

Lawrence should be copied on all correspondence with affected property owners.

4. If the developer has demonstrated reasonable effort to acquire an off-site easement and the affected property owner refuses to execute the easement, the following remedies may apply:
 - a. If the main extension is to service the adjoining property exclusively, the affected property owner must deny the easement in writing and specifically decline their right to direct sanitary sewer access. Full documentation of all acquisition efforts must be presented to the City of Lawrence before this option may be considered.
 - b. If the main extension must cross an off-site property to serve the project property, the use of eminent domain (condemnation) may be proposed. The use of eminent domain is the method of last resort when all efforts to negotiate/purchase the offsite easements have been unsuccessful. Full documentation of all acquisition efforts must be presented to the City of Lawrence before eminent domain (condemnation) may be considered. All costs associated with eminent domain proceedings shall be paid by the developer. Payment of these costs may need to be secured by an escrow account, non-revocable letter of credit or other means.

SECTION 5 – WATERLINES

5.1 Scope

This section establishes the minimum standards of design for water main extensions and relocations within the jurisdiction of the City of Lawrence, Kansas. The following requirements are minimum requirements.

5.2 General

1. Pipe Size: Minimum pipe size shall generally be eight (8) inches in diameter. Pipe shall be PVC or ductile iron for water mains. Pipe shall be type K soft copper or polyethylene tubing (PE pipe) for all water mains or service lines two (2) inches or less in diameter.
2. Phasing: Project phasing is permitted within a single set of improvement plans. Phase lines shall be delineated on the plans with consideration given to ensure that the phasing plan will permit all requirements of these design criteria to be met. Plan quantities shall be itemized for each phase of the project.
3. System Sources: Water mains shall generally be designed with a minimum of two feed sources. Dead end lines will not be allowed without the approval of the Municipal Services & Operations Department.
4. Connection to Existing Mains: Connections to existing mains shall be made in such a manner as to provide the least amount of interruption to water service. In the event that closing of valves to make a connection will affect a customer who cannot be without service, provisions shall be made on the plans for a temporary service. Where possible, connections to existing mains shall be made using tapping sleeves and valves as noted in the City of Lawrence Construction and Material Specifications – Waterlines. When connections are made to an existing system under normal conditions, the exposed pipe and fittings shall be disinfected per the City of Lawrence Construction and Material Specifications – Waterlines.
5. Customer Service: Water mains shall generally be designed such that not more than twenty-five (25) customers will be without service when sections of the water main are isolated for service or emergency repairs.
6. Easements: Where required, easements shall be provided for the installation and maintenance of the public water line. Permanent easements shall be a minimum of ten (10) feet in width when adjacent to right-of-way or access easements. Permanent easements shall be a minimum of fifteen (15) feet in width if not adjacent to right-of way or access easements. Temporary easements shall be of

sufficient width to allow the installation of the waterline as shown on the plans. Consideration should be given to size of equipment, materials storage, and trench spoils stockpiling when establishing temporary construction easement widths.

- a. A standard utility easement is provided in the Appendix of these criteria.
 - b. A standard temporary construction easement is provided in the Appendix of these criteria.
7. Cross Connection: There shall be no physical connection between the public water main and any pipe, pump, hydrant, tank, or non-potable water supply whereby unsafe water or other contaminating material may be discharged or drawn into the system.

5.3 Location

5.3.1 Horizontal

1. Waterlines shall generally be located three (3) feet from the back of curb.
2. Waterlines, if located within dedicated easements, shall generally be centered within the easement and maintain a minimum separation of five (5) feet from the centerline of the pipe to the edge of the easement.
3. Waterlines shall be located a minimum of fifteen (15) feet from a building structure and eight (8) feet from all other structures.
4. Waterlines shall generally be located to minimize special engineering conditions and to provide adequate separation from other utilities.
5. Allowable joint deflection shall not exceed manufacturers recommended maximums. Minimum radii are listed below. Should a smaller radius than the listed minimum be required, fittings shall be used to achieve the required deflection.

Radius of Curvature for C900 PVC Pipe	
Pipe Diameter (In)	Radius* (ft)
4" - 12"	573
>12"	764

Radius of Curvature for DIP Pipe Push-On Joints	
Pipe Diameter (In)	Radius* (ft)
6"	230
8"	230
12"	230
16"	380
24"	380

Radius of Curvature for DIP Pipe Mechanical Joints	
Pipe Diameter (In)	Radius* (ft)
6"	160
8"	220
12"	220
16"	320
24"	500

*Radius based on laying lengths of twenty (20) feet

5.3.2 Vertical

1. Back of curb waterlines shall be installed with a minimum of forty-two (42) inches of cover.
2. Waterlines installed under pavement shall be installed with a minimum of sixty (60) inches of cover.
3. Operable appurtenances such as hydrant and line valves shall generally be located at a depth of six (6) feet or less. Depths of cover for operable appurtenances greater than six (6) feet require the approval of the Municipal Services & Operations Department.

5.3.3 Sanitary Sewer Separation

1. Horizontal Separation:
 - a. A minimum of ten (10) feet horizontal separation, as measured from the outside edge to outside edge, shall be required between a potable waterline and a sanitary sewer main, forcemain, service line, or manhole.
 - b. Under no circumstance shall potable waterline and sanitary sewer be placed in the same trench.
 - c. Potable waterlines shall meet the minimum separation requirements from all pollution sources as set forth by the appropriate reviewing agency.

- d. When waterlines and other utilities are laid parallel to each other the separation distance shall be determined based on geotechnical considerations. A minimum of three (3) feet of undisturbed earth separating the trenches shall be required. Under no circumstance shall waterlines and other utilities be installed in the same trench.
2. Vertical Separation:
 - a. A minimum of two (2) feet vertical separation, as measured from the outside walls of the pipe, shall be required between a sanitary sewer main or service line and potable waterline.
 - b. In general, potable waterlines shall be located above sanitary sewer lines.
 - c. Potable waterlines shall maintain a minimum of two (2) feet of vertical separation, as measured from the outside walls of the pipe, and shall always cross above any sewer force main.
3. Protective Measures: When potable waterlines and gravity sanitary sewers cross with less than two (2) feet of vertical clearance, and in all cases where the potable waterline is located below the gravity sanitary sewer, additional measures must be employed to protect the potable waterline.

Acceptable measures include:

- a. Construction of the sanitary sewer line using one of the following materials:
 - i. Ductile iron pipe conforming to ASTM A536 or ANSI/AWWA C151/A21.52 with a minimum thickness class 50, and gasketed, push-on, or mechanical joints in conformance with ANSI/AWWA C110/A21.10 or ANSI/AWWA C111/A21.11.
 - ii. PVC pipe conforming to ASTM D3034 with minimum wall thickness of SDR41, ASTM F679, or ASTM F794, with gasketed push-on joints in conformance with ASTM D3212.
 - iii. Reinforced concrete pipe conforming to ASTM C76 with gasketed joints in conformance with ASTM C361 or ASTM C443.

Install a minimum twenty (20) foot length of sanitary sewer pipe on the crossing to maximize the joint spacing to a minimum of ten (10) feet from the crossing.

- b. Provide concrete encasement of the sanitary sewer line a minimum of six (6) inches in thickness for a minimum distance of ten (10) feet either side of the pipeline crossing.
- c. Sanitary sewer service lines may be constructed using schedule 40 PVC pipe with solvent welded joints. Pipe joints shall be located a minimum of ten (10) feet either side of the pipeline crossing.

5.3.4 General Utility Separation

1. Horizontal Separation: A minimum of five (5) feet of horizontal separation, as measured from outside walls of the pipe, shall be required between all utilities, excluding sanitary sewer, and potable waterlines.
2. Vertical Separation: A minimum of two (2) foot of vertical separation, as measured from the outside walls of the pipe, shall be required between all utilities and potable waterlines.

5.3.5 Watercourse Crossings

1. Aerial Crossings: The pipe shall be adequately supported, protected from damage and freezing, and be accessible for repair or replacement.
2. Waterlines crossing a watercourse shall be designed to cross the watercourse as nearly perpendicular to the flow direction as possible and shall be on a constant grade.
3. Water distribution systems shall be designed to minimize the number of watercourse crossings.
4. Protection of the waterline shall be provided at all watercourse crossings as required to prevent erosion.
5. If the depth of cover over the waterline is five (5) feet or less, reinforced concrete encasement, casing pipe, or other protective measure as appropriate shall be provided extending the full width of the watercourse crossing to a point ten (10) feet beyond the top of bank.
6. Valves shall be provided on both sides of the crossing to facilitate testing and repair of the pipeline. Valves should be easily accessible and shall be placed a minimum of ten (10) feet outside the top of bank.
7. Impervious ditch checks, as detailed on the standard drawings, shall be provided immediately downstream of the watercourse crossing.

5.4 Appurtenances

5.4.1 Fire Hydrants

1. Fire hydrants shall be placed no less than four (4) and no more than twelve (12) feet from the back of curb.

2. Hydrant spacing shall generally not exceed six hundred (600) feet. Fire hydrant spacing will be reviewed and approved by Lawrence Douglas County Fire and Medical Services on a case by case basis.
3. Fire hydrants shall generally be placed at intersections, end of permanent dead end lines, and intermediate points when block lengths exceed the required spacing. It is preferred to locate mid-block hydrants at property lines.
4. Only dry-barrel hydrants will be approved for installation and shall comply with the City of Lawrence Construction and Material Specifications – Waterlines.
5. Hydrant installation shall conform to the standard drawings.
6. Hydrant drains shall not be connected to a sanitary or storm sewer.

5.4.2 Valves

1. Line valve spacing shall not exceed eight hundred (800) feet.
2. Valves shall be placed at all tees, crosses, and other pipe intersections such that pipes in the system can be isolated and service interruptions, if required, may be limited to no more than twenty-five (25) customers at a time.
3. Valves shall generally be placed no more than three (3) feet from the tee, cross or other pipe intersection unless the valves can be appropriately relocated to an unpaved area.
4. Line valves shall generally be located at property lines or placed such that they can be referenced with respect to certain obvious monuments.
5. At high points in the waterline where air can accumulate, provision shall be made to remove air by means of hydrants or air relief valves. Automatic air relief valves shall not be used where flooding of the vault may occur.

5.4.3 Flushing Assemblies

Flushing assemblies, in accordance with the standard details, shall be placed at the end of all public two (2) inch waterlines, at temporary dead-end lines, and at other locations as specified by the Municipal Services & Operations Department.

5.4.4 Thrust Restraint

1. Thrust restraint shall be provided for all fittings and shall extend to solid undisturbed earth.
2. Thrust restraint shall be installed so that all joints are accessible for repair.
3. The bearing area of concrete reaction blocking shall be as shown on the standard drawings or as determined by the Engineer.
4. If adequate support against undisturbed ground cannot be obtained, metal harness anchorages consisting of steel rods across the joint and securely anchored to pipe and fitting or other adequate anchorage facilities shall be installed to provide the necessary support.

5.4.5 Casing Pipe

1. Casing pipe and appurtenant materials shall be installed at locations identified on the plans and materials shall conform to City of Lawrence Construction and Material Specifications – Waterlines.
2. Waterline to be inserted in casing pipe shall be restrained joint to a point ten (10) feet either side beyond the limits of the crossing.

5.5 Fire Lines

5.5.1 General

1. All water lines and hydrants connected to a dedicated fire line shall be considered private.
2. A fire line shall be defined as a fire protection water main which only has connections to hydrants and/or building fire sprinkler systems.

5.5.2 Backflow Prevention

1. Construction of all private waterlines requires the installation of an isolation valve located at the point the fire line becomes privately owned as well as an approved backflow prevention assembly. At a minimum, backflow assemblies shall consist of a double check detector assembly.

2. For fire lines two (2) inches in diameter and smaller, backflow prevention may be located in a building only if the backflow prevention is within one hundred (100) feet of the water main. If the building is greater than one hundred (100) feet from the water main, then backflow prevention may not be located in the building unless approved by the Municipal Services & Operations Department. Backflow prevention located outside the building must be within a privately owned and maintained manhole.
3. For fire lines greater than two (2) inches in diameter, backflow prevention may be located in a building only if the backflow prevention is within fifty (50) feet of the water main. If the building is greater than fifty (50) feet from the water main, then backflow prevention must be located outside the building within a privately owned and maintained vault.

5.6 Abandonments

5.6.1 Scope

This section governs construction methods and procedures for the abandonment of waterlines, service lines, fire lines, fire hydrants, and appurtenances.

5.6.2 General

All waterline abandonments shall conform to the following requirements.

1. Waterline: The abandoned waterline shall be disconnected and capped. At the point of disconnection any valve remaining shall be removed and the waterline remaining active shall be capped with a mechanical joint plug and a thrust block shall be installed.
2. Service Line: Water service lines shall be abandoned at the main. The curb stop/corporation stop and tapping saddle shall be removed, and the main shall be repaired with stainless steel repair clamp. If in the opinion of the Municipal Services & Operations Department a repair clamp cannot be properly installed, a section of main may need to be replaced as directed by the Department.
3. Fire Line: Fire lines shall be abandoned at the main. The curb stop, corporation stop, or valve and tapping saddle or tapping sleeve shall be removed and the main shall be repaired with a stainless steel repair clamp. If in the opinion of the Municipal Services & Operations Department a repair clamp cannot be properly

installed, a section of main may need to be replaced as directed by the Department.

4. Fire Hydrant: Fire hydrants shall be abandoned at the main. The entire hydrant assembly shall be removed at the tee and the tee shall be plugged and blocked. If a tapping saddle is present the tapping saddle shall be removed and the main repaired with a stainless steel repair clamp. If in the opinion of the Municipal Services & Operations Department a repair clamp cannot be properly installed, a section of main may need to be replaced as directed by the Department.

APPENDIX A: SIDEWALK INSPECTION CHECKLIST & EXCEPTION DOCUMENTATION

Project:

City of Lawrence, KS: ADA Compliance Checklist

Inspection Date:	Mark Inspected Ramps
Inspector:	Road 1:
Contractor:	Road 2:

Please provide photo documentation of all inspected ramps.
Record your measurements in the blanks provided.
A 'No' signifies a possible violation.

Instructions: Enter "0" when measurement is N/A.



Compliance Questions		Curb Ramp A	Curb Ramp B
1	Type: <u>Curb Ramp</u> (grade break/det. warnings perpendicular to direction of travel) OR <u>Blended Transition</u> (grade break/det. warnings radial or NOT perpendicular to direction of travel)?	[Choose from Pull Down]	[Choose from Pull Down]
2	Traffic control on street approach crossing:	[Choose from Pull Down]	[Choose from Pull Down]
3	Is the street grade at the ramp crossing flatter than allowable (5% for Signal or Uncontrolled; 2% for Stop or Yield Control; General grade of road for Mid-Block)?		
4	Does the curb ramp meet cross slope requirements? 2% or flatter at Top of Ramp Road grade or flatter at Bottom of Ramp* <i>*See Question 3 for Roadway Slope Requirements</i>	N/A Measured At Top of Ramp: % Measured At Bottom of Ramp: %	N/A Measured At Top of Ramp: % Measured At Bottom of Ramp: %
5	Does the ramp meet running slope requirements? (Curb Ramp = 8.33% or flatter; Blended Trans. 5% or flatter)	Measured: %	Measured: %
6	If ramp running slope is steeper than 8.33% does the ramp length measure 15' or greater?	N/A Measured Length: FT.	N/A Measured Length: FT.
7	Is the curb at bottom of the ramp 5% or flatter along direction of travel (slope and counterslope)? Slope (BOC to Flowline) Measured: Counterslope (Flowline to EOP) Measured:	N/A % %	N/A % %
8	Does the curb ramp measure at least 4' wide (excluding the flares and/or side curb)?	N/A Measured Width: FT.	N/A Measured Width: FT.
9	Is there a continuous 4' wide pedestrian route through the intersection corner?	N/A Measured: FT.	N/A Measured: FT.
10	Is there a turning space at the curb ramp? (Perpendicular Ramp: Turning space at top; Parallel Ramp: Turning space at bottom)	[Choose from Pull Down]	[Choose from Pull Down]
11	Are all turning spaces equal to or greater than the sidewalk width?	[Choose from Pull Down] Measured Width: FT.	[Choose from Pull Down] Measured Width: FT.
12	Do all turning spaces have a 5' minimum unobstructed length (in the direction of the crossing)?	N/A Measured Length: FT.	N/A Measured Length: FT.
13	If turning space is where a change in direction could occur, does it measure 5'x5' min.?	N/A Measured: FT.	N/A Measured: FT.
14	Does slope of turning space, measured in any direction, measure 2% or flatter? Cross slope measurement: Running slope measurement:	N/A % %	N/A % %
15	If side curbs or side flares are used, are they outside the pedestrian access route?	[Choose from Pull Down]	[Choose from Pull Down]
16	If side flares are in pedestrian circulation path, do the side flares measure 10% or flatter?	N/A Measured: %	N/A Measured: %
17	Do the detectable warning surfaces match appearance of the other detectable warning surfaces at adjacent curb ramps?	[Choose from Pull Down]	[Choose from Pull Down]
18	Does the detectable warning surface measure 2' long and extend the full width of the ramp, excluding the flares?	[Choose from Pull Down]	[Choose from Pull Down]
19	If detectable warnings were installed perpendicular to the running slope of the ramp, does the nearest edge of detectable warning surface measure 5' or less from the back of curb?	N/A Measured: FT.	N/A Measured: FT.
20	Is the running slope between the detectable warnings and back of curb 5% or flatter?	N/A Measured: %	N/A Measured: %
21	If the truncated domes were installed along the back of curb, does the nearest edge of the truncated dome measure 2" or less from the back of curb?	N/A Measured: IN.	N/A Measured: IN.
22	Do the vertical changes in level along the pedestrian access routes measure 1/4" or less?	[Choose from Pull Down]	[Choose from Pull Down]
23	Is the ADA ramp curb and gutter flush with adjacent ramp and pavement?	[Choose from Pull Down]	[Choose from Pull Down]
24	Do the horizontal gaps along the pedestrian access routes measure 1/2" or less?	[Choose from Pull Down]	[Choose from Pull Down]

If you answered 'No' for any of the questions above, note reasons for non-compliance (Exceptions Shall be Approved By Engineer)

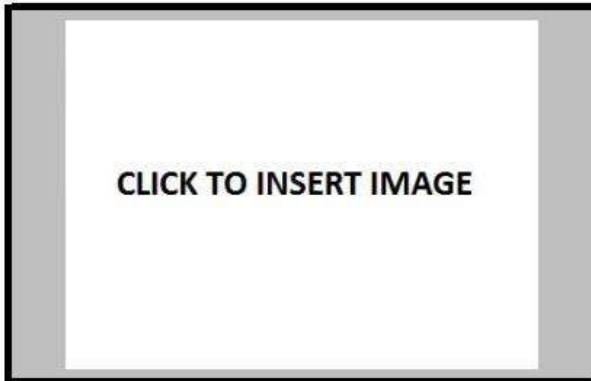
Comments:

Contractor Signature: _____ Date: _____

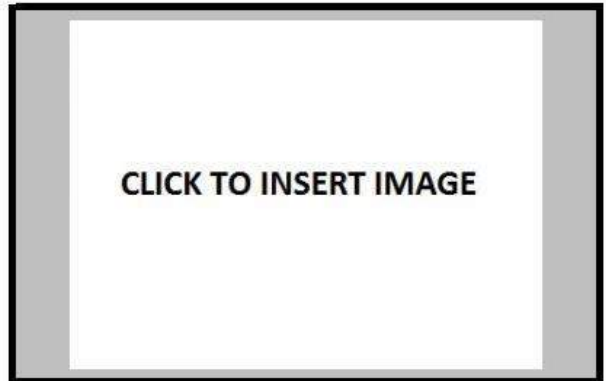
Lawrence Representative: _____ Date: _____

Ramp Photos

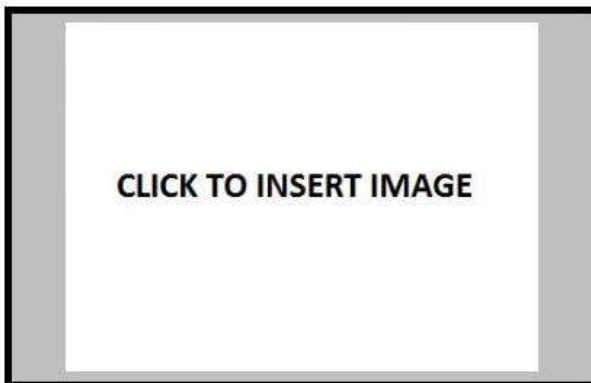
(Click Box to Insert Photos)



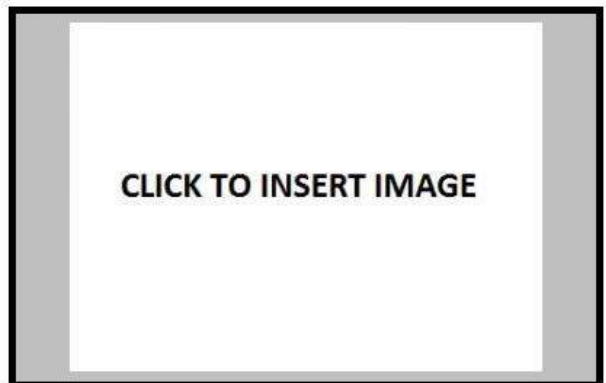
Ramp A (From Top of Ramp)



Ramp A (From Street)



Ramp B (From Top of Ramp)



Ramp B (From Street)



Other as Needed:

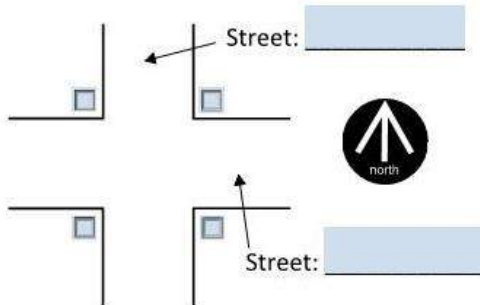


Other as Needed:

Accessibility Exceptions Certification

Project Number:

Project Description:



Insert Image Here

CLICK TO INSERT IMAGE

As a registered professional engineer responsible for the design of this project, I do hereby verify the project described above has been designed to meet the Americans with Disabilities Act (ADA) accessibility requirements, except as indicated below.

Full compliance has been determined as:

- ☐ Structurally Impractical (New Construction)
- ☐ Technically Infeasible (Alterations of Existing Facilities)
- ☐ Resulting in an Unsafe Condition

The exception and mitigating strategies employed (if applicable) are described as follows:

Additional supporting documentation, including drawings, calculations, or other information, as appropriate, is attached.

Name:

Signature:

License Number:

Date:

APPENDIX B: KDOT LPA LETTING INFORMATION



City of Lawrence

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MAYOR
STUART BOLEY

COMMISSIONERS
LISA LARSEN
JENNIFER ANANDA, JD, MSW
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LESLIE SODEN

June 22, 2018

Bill Legge, P.E.
Local Road Engineer
Bureau of Local Projects
Eisenhower State Office Building
700 S.W. Harrison St., 3rd Floor West
Topeka, Ks 66603

Re: City of Lawrence - LPA Administered Project Request

Dear Mr. Legge,

The City of Lawrence is requesting approval to become recertified to administer KDOT projects. Attached is the city's Re-Certification Application form. The City of Lawrence is requesting to use its specifications for use on LPA-Administered KDOT projects. Specifications can be found at https://lawrenceks.org/public_works/specifications/. The City of Lawrence agrees to follow the procedures in Section 15.0 LPA-Administered Procedures, 2018 Edition of the "Local Projects LPA Project Development Manual".

Please contact me at (785) 832-3130 if you have any questions regarding the attached application or request.

Sincerely,

David Cronin, P.E.
City Engineer

Attachments:
KDOT LPA Re-Certification Application Form
Public Works Org Chart
LPA Project Development Manual – Section 15

KDOT Bureau of Local Projects

LPA-Administered Projects, Re-Certification Application

General Information

Local Public Authority / City / Department: City of Lawrence – Public Works Department

Professional Staff (in-house)

List the name and position responsible for the following functions. Only list non-consultant staff positions within your organization. If function is the responsibility of the Project Manager (PM), enter "PM" in lieu of name. (Attach the most current organizational chart. The LPA must notify BLP within 30-days of any name or position changes reflected below.)

Director or Manager of Agency: Charles Soules
BLP-Certified Project Managers (PM), (list LPA-employed PMs, may attach separate sheet): David Cronin, Zach Baker, Jonathan Marburger, Amanda Sahin
LPA-Administered Procedures: David Cronin
Design Criteria Manuals / Specifications: David Cronin
Standard Drawings: David Cronin
Title VI Policy: Charles Soules
Public Involvement: PM
Accounts-Payable / Accounting: Jennifer Werth
ROW Certification: Scott Wagner
Status of Utilities: PM
Bid Analysis: PM
Bid Approval: PM
Project Contracts / Agreements: PM
Project Final Acceptance: PM

Procedures

The LPA has reviewed and agrees to follow the procedures set forth in **Section 15.0 LPA-Administered Procedures, 2018 Edition** of the "**Local Projects LPA Project Development Manual**" available at:
<https://kart.ksdot.org/default.aspx>.

Consultants

For which areas shown below does the LPA expect to use consultants?

- | | |
|--|---|
| <input checked="" type="checkbox"/> Design | <input checked="" type="checkbox"/> ROW Relocation |
| <input checked="" type="checkbox"/> PS&E Preparation | <input checked="" type="checkbox"/> Construction Administration |
| <input checked="" type="checkbox"/> ROW Appraisal | <input checked="" type="checkbox"/> Construction Inspection |
| <input checked="" type="checkbox"/> ROW Negotiation | <input checked="" type="checkbox"/> Surveying |
| <input checked="" type="checkbox"/> Utilities | <input checked="" type="checkbox"/> Sampling and Testing |

David P. Cronin, P.E.,
City Engineer
June 22, 2018

Digitally signed by Dave Cronin
DN: C=US, OU=Public Works, O=City
of Lawrence, CN=Dave Cronin,
E=dcronin@lawrenceks.org
Reason: I am the author of this
document
Location:
Date: 2018-06-22 08:46:55

LPA-Admin_RE-Cert_App_2018_Rev0.docx

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graph TD
    CPSD[Charles Soules, P.E.  
Public Works Director] -.-> AAB[Aviation Advisory Board]
    CPSD --> MTH[Mark Thiel  
Assistant Public Works Director]
    CPSD --> DCE[David Cronin  
City Engineer]

    MTH --> PM[E]
    MTH --> BFM[E]
    MTH --> MP[S]

    PM --> PI[Project Inspection  
John Vannicola  
Patrick Weyer  
Chavlis Nioce  
Ryan Takafemo]
    BFM --> FFS[Facilities Field Supervisor  
Jimmy Wilkins]
    BFM --> CHD[Community Health  
Dale Seale]
    BFM --> PS[Parking Structures  
Mike Cardone]
    BFM --> A[Airport  
Loren Stone]
    BFM --> HVAC[HVAC  
Dan Easter]
    BFM --> E[Electrician  
Bill Musick]
    BFM --> CHC[City Hall Custodian  
Chad Ousdahl]

    MP --> AS[Asphalt Field Supervisor  
Bill Nye  
Direct reports: 7]
    MP --> CFS[Concrete Field Supervisor  
Tim Cast  
Direct reports: 9]
    MP --> LWS[Leaves and Sweeping  
Field Supervisor  
Bryce Campbell  
Direct reports: 10]
    MP --> SFS[Stormwater Field Supervisor  
David Kraus  
Direct reports: 8]
    MP --> TO[Traffic Operations Supervisor  
Todd Lohman  
Direct reports: 7]
    MP --> SO[Support Operations Admin:  
Bibi Callahan  
Bam: Mark Kice]

    DCE --> TES[Traffic Engineering  
Amanda Sabo]
    DCE --> DP1[Design and Projects  
Jonathan Marburger]
    DCE --> ET[Engineering Tech  
Lyle Morris]
    DCE --> DP2[Design and Projects  
Zach Baker]
    DCE --> CS[City Surveyor  
Jeff Kubota]

    F[Functions  
Construction  
Right of Way / Street Events  
Sewer Program  
—  
DLJ Board Liaison]
    F --> E60[Employees: 60]

    DCE --> F2[Functions  
Development management  
Traffic Engineering  
Stormwater Engineering  
Capital Projects  
Surveying  
Mapping / GIS  
Venture Park Remediation  
—  
Transportation Commission]
    F2 --> E8[Employees: 8]
  
```

The organizational chart for the City of Chicago Department of Public Works is structured as follows:

- Charles Soules, P.E., Public Works Director**
 - Aviation Advisory Board** (Advisory role)
 - Mark Thiel, Assistant Public Works Director**
 - Pavement Management Engineer: Steve Lashley, P.E.**
 - Project Inspection:** John Vannicola, Patrick Weyer, Chavlis Nioce, Ryan Takafemo
 - Buildings and Facilities Manager: Jason Stowe**
 - Facilities Field Supervisor: Jimmy Wilkins**
 - Community Health: Dale Seale**
 - Parking Structures: Mike Cardone**
 - Airport: Loren Stone**
 - HVAC: Dan Easter**
 - Electrician: Bill Musick**
 - City Hall Custodian: Chad Ousdahl**
 - Mika Perkins, Street Division Manager**
 - Asphalt Field Supervisor: Bill Nye** (Direct reports: 7)
 - Concrete Field Supervisor: Tim Cast** (Direct reports: 9)
 - Leaves and Sweeping Field Supervisor: Bryce Campbell** (Direct reports: 10)
 - Stormwater Field Supervisor: David Kraus** (Direct reports: 8)
 - Traffic Operations Supervisor: Todd Lohman** (Direct reports: 7)
 - Support Operations Admin:** Bibi Callahan, Bam: Mark Kice
 - Functions**
 - Construction
 - Right of Way / Street Events
 - Sewer Program
 - DLJ Board Liaison
- David Cronin, City Engineer**
 - Traffic Engineering:** Amanda Sabo
 - Design and Projects:** Jonathan Marburger
 - Engineering Tech:** Lyle Morris
 - Design and Projects:** Zach Baker
 - City Surveyor:** Jeff Kubota
 - Functions**
 - Development management
 - Traffic Engineering
 - Stormwater Engineering
 - Capital Projects
 - Surveying
 - Mapping / GIS
 - Venture Park Remediation
 - Transportation Commission

Employee Counts:

- Functions (Construction, Right of Way / Street Events, Sewer Program, DLJ Board Liaison):** 60 Employees
- Functions (Development management, Traffic Engineering, Stormwater Engineering, Capital Projects, Surveying, Mapping / GIS, Venture Park Remediation, Transportation Commission):** 8 Employees

15.0 LPA-Administered Procedures

15.1 Introduction

15.1.1 Purpose

KDOT, in cooperation with the FHWA, has developed a program through which local units of government may administer their own state and federal funded projects with oversight from KDOT.

Under this program, the LPA will certify that it will follow the LPA-Administered Procedures identified in this Section. The purpose of this section of the Manual is to outline the responsibilities of BLP and the LPA for federal-aid and/or state-aid projects that are administered by the LPA with oversight by BLP.

MAP-21 has identified all principle arterials as being a part of the NHS. For additional procedures that involve projects with principle arterials, see [Section 15.3.2.2.11](#) below for more information.

15.1.2 Compliance Requirements

BLP will determine, by review of plans and other project documents, whether the requirements of the program have been met.

Certain minimum criteria have been established for the LPA to be approved to administer state and federal funded projects. These criteria are intended to provide verification that projects will be developed in accordance with all applicable laws, regulations, criteria, and accepted engineering practices. The following are the minimum criteria for certification and recertification:

1. LPA must have a full-time, publicly employed, licensed professional engineer in responsible charge.
2. LPA must have a full-time professional staff to administer projects.
3. BLP approval of all locally developed design criteria manuals and specifications.
4. Review by the LPA of this section of the Manual including all appendices.
5. Meet with BLP staff and discuss procedures and responsibilities.
6. Develop procedures for project development including planning, design, letting, and contract administration. These procedures shall be submitted to BLP for approval every **three years** to maintain their certification. All subsequent changes to the LPA's procedures shall be submitted to BLP immediately for approval.

15.1.3 KDOT Responsibilities

KDOT has oversight of the projects administered under this program. In cooperation with the FHWA, KDOT has determined this oversight will include the following:

1. Determine that the LPA is suitably equipped and organized to discharge the duties of the [Code of Federal Regulations, Title 23 CFR Part 771](#).
2. Review of LPA's design and construction policies, manuals, standards, and specifications.
3. Confirm that adequate acceptance, independent assurance sampling and testing, and manufacturers' materials certifications are incorporated in the LPA's materials process.
4. Develop and approve the Project Authorization (KDOT Form 883).
5. Authorize the LPA to proceed with the project.
6. Provide environmental oversight and coordinate with resource agencies.
7. Participate in project field checks.
8. Review and concur in PS&E.
9. Request authorization of federal funds.
10. Obligate federal funds for the project.
11. Issue an Authority to Administer the project (the LPA may proceed to Advertise the project for a minimum of 30-days).
12. Concur in award of the construction contract.
13. Review LPA Approved Sub-Contractors form.
14. Confirm all Contractors have an EEO policy on file with the Office of Contract Compliance.
15. Attend the Pre-Construction conference.
16. Create a contract in CMS for tracking of project costs and for reimbursement documentation.
17. Process LPA invoices in CMS for payment.
18. Track DBE participation monthly.
19. Determine funding participation in change orders. This includes concurrence in/approval of all change orders prior to the Contractor beginning the work.
20. Assist the LPA during construction with issues involving materials testing, inspection, and construction.
21. BLP will provide project closeout documents to KDOT Bureau of Fiscal Services including all changes from the original contract.
22. Participate in the final inspection of the project.

23. Confirm compliance with non-[Title 23 CFR Part 771](#) laws and regulations, i.e., Davis-Bacon, NEPA, Relocation Assistance Act, Buy America, Debarment, etc.

15.1.4 **LPA Responsibilities**

1. Include project on applicable transportation plan. This must be complete prior to submitting [Request for Construction Project \(KDOT Form 1302\)](#). For more information, see [Section 2.0 Programming](#) in this Manual.
2. Submit a request to develop the project under the approved procedures.
3. Develop a project schedule ([City Administered Project Schedule](#)) and cost estimate.
4. Execute the project agreement through BLP and proceed with project development.
5. Submit Field Check review package in accordance with the [E-plans submittal instructions](#).
6. Conduct Field Check meeting and provide written meeting minutes to PM.
7. Submit Final Check review package in accordance with the [E-plans submittal instructions](#).
8. Submit PS&E review package in accordance with the [E-plans submittal instructions](#) (including [required contract specifications for Federal-aid projects](#).)
9. Advertise project (minimum 30-day).
10. Award construction contract.
11. Submit signed contracts and Letting Summary Documents along with Bid Tabs and PIL organized by work type in Excel format to be used by KDOT Bureau of Fiscal Services.
12. Fill out [LPA Approved Sub-Contractors Form](#) and submit to BLP.
13. Invite PM to the pre-construction meeting.
14. Provide PM with half-size set of construction plans.
15. Send PM a copy of the Notice to Proceed (NTP) document.
16. Submit **monthly** reimbursement requests to PM.
17. Submit change orders with necessary documentation including determination of participating and non-participating items to PM.
18. Review materials certifications.
19. Provide PM with the Construction Summary Documents, including the [Final Paid Items List \(FPIL\)](#) and the Notice of Acceptance.

15.2 Administration

Federal-aid fund categories and fiscal and audit responsibilities are discussed in [Section 2.0 Programming](#) in this Manual.

15.3 Procedures

15.3.1 Procedures Outline

Normal phases of project development will include Initiation; Scoping and Scheduling; Preliminary Design; Final Design; and Construction. Each phase involves activities and events needed to complete the project while verifying to KDOT compliance with applicable State Laws and Regulations as well as the [Code of Federal Regulations, Title 23 CFR, Part 771](#) and applicable Non-Title 23 CFR, Part 771 federal requirements. Activities listed are common to the various types and scopes of projects that are developed under federal aid non-full oversight procedures. Activities are designated by a number, and instructions are provided for the completion of each. Forms listed in the Activities instructions may be used, or the LPA may develop, with KDOT's approval, its own forms for submittal to KDOT to accomplish the verification.

15.3.2 Project Development Procedures for Locally Administered Projects

15.3.2.1 Initiation, Scoping and Scheduling Phase

15.3.2.1.1 LPA Project Identification – Primary Responsibility - LPA

For more information, see [Section 2.0 Programming](#) in this Manual.

15.3.2.1.2 Public Involvement – Primary Responsibility – LPA

The LPA is responsible for a public involvement process that is commensurate to the scope, complexity and potential of environmental impact of the proposed project. Public involvement should begin at the earliest stages of project development and continue throughout the project development process. It should be done in accordance with KDOT's [Sharing the Future: Public Involvement in the Kansas Transportation System](#). The level of public involvement will be dependent upon the complexity of the project, potential for significant social or environmental impacts, and amount of controversy generated. Less complex projects involving little or no environmental impact may involve only a public informational meeting. More complex projects which have a high potential for environmental impact will need early and continuous public participation during project development and extensive documentation in accordance with [Code of Federal Regulations, Title 23 CFR, Part 771](#). Documentation in these cases may be in the form of either an Environmental Impact Statement (EIS) (Class I) or an Environmental Assessment (EA) (Class III). The public involvement process flow charts included in KDOT's [Sharing the Future: Public Involvement in the Kansas Transportation System](#) provide the process used to categorize projects along with the sequence of events that need to be completed for each classification in order to comply with the federal requirements.

15.3.2.1.3 Request for Construction Project – Primary Responsibility - LPA

Once approved in the TIP, the LPA shall submit the [Request for Construction Project \(KDOT Form 1302\)](#) along with a copy of the approved TIP page showing the approved project. The LPA shall also provide a project schedule. (See [LPA Administered Project Schedule](#) in the *Forms and Documents* area of the BLP [LPA Administered Projects](#) webpage for an example.) Once this information is received by BLP, the project shall be programmed. After review, the BLP shall generate the Project Authorization (KDOT Form 883) and create the City/State Agreement.

For more information, see [Section 2.0 Programming](#) in this Manual.

15.3.2.1.4 Environmental Process – Primary Responsibility – BLP

When the project is authorized and the Project Authorization (KDOT Form 883) is executed, the KDOT Bureau of Right of Way, Environmental Services Section (ESS) will perform initial reviews and make initial contacts with the environmental regulatory agencies to ascertain the potential for environmental impacts. For more information, see [Section 4.0 Environmental](#) in this Manual.

15.3.2.2 Preliminary Design**15.3.2.2.1 Consultant Selection Process – Primary Responsibility – LPA**

For information, see [Section 3.0 PE Consultant Selection and Agreement](#) and [Section 8.0 CE Consultant Selection and Agreement](#) in this Manual.

15.3.2.2.2 Consultant Selection Process Certification – Primary Responsibility – LPA

When federal funds are used in the preliminary engineering, the LPA will provide KDOT a certification that appropriate steps have been completed and that the process complied with all applicable regulations. Any work done prior to obligation of federal funds will be non-participating.

For more information, see [Section 3.0 PE Consultant Selection and Agreement](#) and [Section 8.0 CE Consultant Selection and Agreement](#) in this Manual.

15.3.2.2.3 Field Surveys - Primary Responsibility – LPA

The LPA is responsible for the acquisition of all survey and geotechnical data that is necessary for the development of the plans. Data gathering techniques and procedures will be commensurate with the complexity of the project and will be in accordance with State statutes and accepted survey practices.

15.3.2.2.4 Design Exception Request – Primary Responsibility – LPA

For information, see [Section 5.0 Plan Development](#) in this Manual.

15.3.2.2.5 Field Check Plans Preparation and Submittal – Primary Responsibility – LPA

The development of Field Check plans by the LPA shall be in accordance with recognized prevailing design criteria which are provided in [Section 5.0 Plan Development, Appendix A](#). The LPA may request use of local criteria if they are consistent with these criteria/guidelines. The LPA administering the project is responsible for the completeness and accuracy of the plans. KDOT's [Design Manual](#), Volume 1 (Part A and B), Road Section, Section 2.3, FIELD CHECK PLANS is the guide for plan preparation.

The LPA shall provide electronic Field Check plans and project cost estimate, per the instructions on submitting [E-Plans](#), to BLP for KDOT distribution, review and processing.

15.3.2.2.6 Field Check Plans Review - Primary Responsibility – BLP

BLP will distribute the Field Check plans for review within KDOT and external agencies, as applicable.

15.3.2.2.7 Field Check Meeting and Report - Primary Responsibility – LPA - Coordination with BLP

The LPA will schedule the Field Check meeting time and location in coordination with BLP, Consultant and all other necessary parties. The LPA will conduct and take minutes of the meeting. The Consultant or LPA will provide sets of plans for use at the meeting. BLP will review comments and will discuss any necessary actions with LPA and Consultant. After the meeting, the Consultant or the LPA will distribute meeting minutes and provide BLP with a response to the issues identified/discussed in the meeting. When BLP receives the meeting minutes and issues response, BLP will generate a Field Check Report and provide to the LPA, Consultant, and all other necessary parties.

During the site review/field check meeting it should be determined if the proposed project will have a potential impact on rail facilities. If it appears that work will be near or on railroad right-of-way, the LPA will coordinate with the railroad to determine the need for flagging, liability insurance, agreements and a possible diagnostic review.

15.3.2.2.8 Environmental Process Continuation - Primary Responsibility –LPA

For information, [see Section 4.0 Environmental](#) in this Manual.

15.3.2.2.9 Public Involvement Process Continuation - Primary Responsibility – LPA

Although the public is involved in the early stages of project development for the more complex projects, additional public input may be needed in the early stages of preliminary design so that public opinion can be reflected in final design. Informational meetings may be needed at this stage along with environmental investigations to confirm the Environmental Classification shown on the Project Authorization (KDOT Form 883) and/or to provide input for use in the appropriate environmental documents.

15.3.2.2.10 Public Interest Finding – Primary Responsibility - LPA

If the LPA requests to use a proprietary product, the LPA shall submit a [Proprietary Product Certification Form](#) (PPC) or a Public Information Finding (PIF) to BLP explaining the need for the proprietary product and why it is in the public's best interest to allow it. The BLP shall review the request and approve or deny the PPC or the PIF.

15.3.2.2.11 NHS Approval Procedure – Primary Responsibility - LPA

For projects on principle arterials, the LPA must request special approval to administer federally funded projects on the NHS. This request needs to document the reasons for the request and be submitted to BLP for approval.

15.3.2.3 Final Design**15.3.2.3.1 Design Exception Approval – Primary Responsibility – BLP**

BLP will respond to the LPA approving or denying any design exception request. Requests made prior to Field Check will be addressed as a part of the Field Check discussions. When the request is made after or because of Field Check discussion, the approval may be made prior to Final Check plan submittal if sufficient plan information or other details are provided to support the request. Approved items will be reflected in the Design Summary Document.

For more information, see [Section 5.0 Plan Development](#) in this Manual.

15.3.2.3.2 ROW Activities Initiated - Primary Responsibility – LPA

For information, see [Section 6.0 Right of Way](#) in this Manual.

15.3.2.3.3 Utility Adjustments Initiated – Primary Responsibility – LPA

Coordination with affected utility companies may begin at any time in the project development process. Early coordination is recommended to minimize negative impacts on the project schedule.

15.3.2.3.4 Environmental Review Process – Primary Responsibility – KDOT

All environmental reviews and clearances (such as noise, air quality, farmland, archaeological, historical, wildlife, Section 4(f), etc.) will conform to applicable federal and state law. When the reviews are complete, and all agencies have submitted their comments, KDOT's Environmental Services Section will transmit a "Status of Project's Environmental Concerns – Final" memo to BLP. Once received by BLP, the PM will distribute to the LPA.

15.3.2.3.5 NEPA Documentation Completion – Primary Responsibility – LPA/BLP

For information, see [Section 4.0 Environmental](#) in this Manual.

15.3.2.3.6 ROW Acquisition Completion – Primary Responsibility – LPA – Coordination with BLP

[Right of Way Clearance for Federal Aid Projects \(KDOT Form 1306\)](#) must be completed and returned to BLP on all projects even if no rights of way are being acquired.

For more information, see [Section 6.0 Right of Way](#) in this Manual.

15.3.2.3.7 Utility Adjustments Completion – Primary Responsibility – LPA – Coordination with BLP

For information, see [Section 7.0 Status of Utilities](#) in this Manual.

15.3.2.3.8 Permits Obtained – Primary Responsibility – LPA

For information, see [Section 4.0 Environmental](#) in this Manual.

15.3.2.3.9 PS&E Package Submittal – Primary Responsibility – LPA

The LPA will submit to BLP all necessary documentation for the PS&E approval. As a minimum, this documentation will include completed plans, project specifications and bid documents, engineer's estimate of probable cost, [Status of Utilities \(KDOT Form 1304\)](#), [Right of Way Clearance for Federal Aid Projects \(KDOT Form 1306\)](#) and [List of Permits and Status of Same \(KDOT Form 1307\)](#). This shall all be submitted to the PM electronically via the [FTP site](#).

PS&E documents shall be submitted a **minimum of 30 days** prior to the desired advertisement date.

15.3.2.3.10 PS&E Review – Primary Responsibility – BLP

Upon receipt of the PS&E package from the LPA, BLP will review the documents to confirm that the project complies with State and/or Federal requirements.

The estimate will be distributed by BLP to the Program Consultant in KDOT's Office of Contract Compliance to determine the DBE goal. Once the PM receives the DBE Goal, the LPA will be notified so that the DBE Goal may be updated in the project proposal.

The PM will review the LPA's documents to verify that all required specifications are included. Federal-aid projects have [Required Contract Specifications](#) that must be included.

Upon completion of the review, PS&E approval by the STE will be obtained to allow the LPA to advertise. The project must be advertised for a **minimum of 30 days** prior to the opening of bids.

15.3.2.3.11 Additive Work – Primary Responsibility – LPA – Coordination with BLP

The use of additive work bidding will require prior approval from the PM.

If the LPA chooses to include additive work bidding procedures, the LPA shall be required to prioritize the additions in order of consideration. Selection of the Contractor shall be based on the sum of the base bid plus the selected additive work items in order of consideration. If the LPA has any questions regarding the procedures for this, please contact the PM to discuss.

15.3.2.3.12 Obligation of Funds – Primary Responsibility – BLP/FHWA

After PS&E plans and documents have been approved by BLP, KDOT BPPM will request FHWA to obligate the project's federal funds.

After the funds have been obligated, the PM will submit the Authority to Administer the project for approval by the BLP Bureau Chief.

After the Authority to Administer has been approved, it will be submitted to the LPA via electronic memo ([Authority to Bid](#)) by email. The LPA shall advertise the project for a **minimum of 30 days**.

15.3.2.3.13 Contract Addenda – Primary Responsibility – LPA – Coordination with BLP

If it is necessary that changes must be made after a project is advertised, project addenda shall be provided to all potential bidders and shall be issued with sufficient time for contractors to prepare their bids. Copies of all addenda shall be submitted to BLP for review and to confirm that the previous PS&E approval continues to be valid after the changes are made. The LPA shall not let the project to bids until all applicable addenda have been approved by the BLP.

15.3.2.3.14 Construction Engineering Agreement – Primary Responsibility – LPA – Coordination with BLP

For information see [Section 8.0 CE Consultant Selection and Agreement](#) in this Manual.

15.3.2.3.15 Public Involvement Continuation – Primary Responsibility – LPA

The public involvement process should be continuous and provide input from interested parties throughout the project development.

15.3.2.4 Letting**STATEMENT OF POLICY**

The Kansas Department of Transportation's [Construction Manual](#) (CM), [Standard Specifications for State Road and Bridge Construction](#) (Standard Spec), required contract provisions, and recurring special provisions have been approved by the Federal Highway Administration (FHWA) for use on highway and similar

construction projects when Federal money is involved as a means to comply with Federal laws and regulations. Therefore, when projects sponsored by local units of government involve federal money, all letting, and construction activities shall be regulated by these documents. All activities contained therein are not listed below as procedures to follow since not all activities are applicable to LPA's projects; however, as foreseen and unforeseen situations arise during the course of a project that are not covered below, policies and procedures contained in the CM and Standard Spec shall be used to resolve the situation.

These procedures and regulations were written for KDOT personnel; however, since these projects involve federal monies and are being completed with oversight of KDOT, appropriate representatives of the local units of government should use the procedures and regulation as if they were written for their use.

Exception: The LPA can use their own specifications and procedures if they have been reviewed and approved by KDOT.

15.3.2.4.1 Letting Process -- Primary Responsibility –LPA

15.3.2.4.2 Project Schedule and Plans Distribution - Primary Responsibility – LPA

After PS&E approval, the LPA will confirm the project letting date and provide full, complete and accurate plans, specifications and special provisions for examination purposes by interested and qualified contractors. These will be made available **at least 30 days before** the scheduled letting date.

15.3.2.4.2.1 Advertisement - Primary Responsibility-LPA

After the date is set for receipt of proposals, the LPA will give notice of such letting to prospective bidders. The notice shall conform to the requirements set forth in KDOT's "Standard Specifications for State Road and Bridge Construction", [Section 102.1](#).

15.3.2.4.3 Contractor Prequalification: Prime, Sub-Contracting, and EEO – Primary Responsibility – LPA

All prime contractors must be on [KDOT's list of pre-qualified contractors](#) as a prerequisite to submitting a responsive bid. (The LPA's proposal must include this requirement.) After award, the LPA will submit the BLP [LPA Sub-Contractor Approval Form](#) to the PM for review prior to BLP issuing the Notice to Proceed to the Contractor.

All contractors and sub-contractors working on any State/Federal-Aid project must have an EEO policy on file with the Office of Civil Rights Compliance. Each contractor and sub-contractor is responsible for submitting their company's [EEO policy](#) on their company letterhead, a [letter of appointment](#) of the company's EEO officer, and the [DOT 1049 CFR Form](#). If a contractor or sub-contractor has 50 or more employees, an Affirmative Action Plan is also required. Please contact KDOT's Office of Civil Rights Compliance with any questions. (785.296.7940).

The PM will notify the LPA if a sub-contractor does not have a policy on file. The sub-contractor will not be allowed to work on the project until the Office of Civil Rights Compliance verifies they have a policy on file.

Below is a table of EEO and DBE documents that are required for Federally funded projects. The LPA is responsible for receiving, checking and submitting to BLP.

EEO and DBE Documentation

Document	Frequency	Who Retains
EEO Policy – prime & subs	Calendar Year	Office of Civil Rights Compliance
DBE Certification	At Contract Award ● Only 60% of DBE supplier value can be used	DBEs and Office of Civil Rights Compliance
Wage Rate Interviews	One employee/company/quarter	LPA
Certified Payroll	Weekly (within 7 calendar days of pay)	Contractor and LPA
Bulletin Board	Details posters required for project	Contractor
Bulletin Board Check Sheet	Maintain during project	LPA
Form 239* Field Construction Administrator's Report	When Project is 20-30% complete	LPA and BLP
Form 270 (or similar from LPA) DBE Payment Affidavit	End of Project	LPA, BLP and Office of Civil Rights Compliance
Form 294* Additional Classification Request Form	As needed for job classes not in contract	Contractor, LPA, BLP and BOCM
Form 1003 Federal-Aid Highway Construction Employment Data Summary	Monthly (contracts over \$500,000)	Contractor and BLP
Form 1008 Monthly DBE Payment Affidavit	Monthly - One per each DBE subcontractor (by the 5 th for preceding month)	BLP
Form 1010LP Certificate of Subcontractor Work and Payment	Monthly (within 15 calendar days after making subcontractor payment)	Contractor, LPA and BLP
Form 1014* Commercially Useful Function	One for Each DBE per project (when DBE's work is 1/3 to 1/2 complete)	LPA and BLP
Form 1391 (FHWA) Federal-Aid Highway Construction Contractors Annual EEO Report	Annually to Civil Rights Compliance (last full pay period of July)	Office of Civil Rights Compliance

*Request from the BLP PM

15.3.2.4.4 Contract Documents - Primary Responsibility- LPA

The LPA shall be responsible for the completion, execution and implementation of all contract documents, which may include, but are not limited to, proposals, notice to contractors, special provisions, bidding requirements and conditions (KDOT's "Standard Specifications for State Road and Bridge Construction",

[Section 102](#)), bid bond, and the proposal schedule. The [Required Contract Specifications](#) shall be included on all Federal-aid projects.

The following two (2) paragraphs **must be placed above the signature line in the bidding document**.

PARAGRAPH #1 (For projects WITH Federal funds)

REQUIRED CONTRACT PROVISIONS:

*The current versions of the following Required Contract Provisions (I-IV) require the Contractor to furnish information. The Contractor shall complete and submit with its proposal these provisions. The City of _____ **will reject** proposals that fail to contain completed Required Contract Provisions I, II and III and **may reject** proposals that fail to contain completed Required Contract Provision IV.*

- | | | |
|------|----------------|--|
| I. | 08-10-66 (LPA) | Certification – Non-collusion & History of Debarment |
| II. | 04-26-90 (LPA) | Declaration – Limitations on Use of Federal Funds for Lobbying |
| III. | 07-19-80 (LPA) | DBE Contract Goal |
| IV. | 01-01-11 (LPA) | Tax Clearance Certificate |

PARAGRAPH #1 (For projects with NO Federal funds)

REQUIRED CONTRACT PROVISIONS:

*The current versions of the following Required Contract Provisions (I-IV) require the Contractor to furnish information. The Contractor shall complete and submit with its proposal these provisions. The City of _____ **will reject** proposals that fail to contain completed Required Contract Provision I and **may reject** proposals that fail to contain completed Required Contract Provision IV.*

- | | | |
|-----|----------------|--|
| I. | 08-10-66 (LPA) | Certification – Non-collusion & History of Debarment |
| IV. | 01-01-11 (LPA) | Tax Clearance Certificate |

PARAGRAPH #2 (For ALL projects)

CERTIFICATION:

I CERTIFY THAT I AM AUTHORIZED TO REPRESENT THE CONTRACTOR IN PREPARING AND PRESENTING THIS PROPOSAL. I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING (INCLUDING, BUT NOT LIMITED TO, THE INFORMATION CONTAINED IN THE REQUIRED CONTRACT PROVISIONS REFERENCED ABOVE) IS TRUE AND CORRECT. EXECUTED ON _____ (DATE).

Note: [Davis-Bacon wage rates](#) used for a project shall be those in effect **no more than 10 days** prior to the letting. Per FHWA, "A contracting agency is responsible for incorporating the applicable wage rate determination into each federally-assisted contract entered into pursuant to competitive bidding

procedures. When notice of a change to a wage determination is published in the Federal Register 10 days or more before the opening of bids, the USDOL requires that the new wage determination be incorporated into the contract by amendment. [29 CFR1.6\(c\)\(3\)\(i\)](#)”.

Some LPA’s may wish to utilize contract incentives/disincentives (liquidated damages) for either timely or untimely completion of part or all of the work for a specified period (hourly, working day, calendar day, or calendar completion date.

Should the LPA choose to use Contract Incentives/Disincentives, this shall be included in the preliminary contract documents submitted during PS&E. If the LPA has adopted the Kansas Department of Transportation Standard Specifications for Road and Bridge Construction (Current Version) and accompanying Special Provisions, the Incentive/Disincentives are outlined in Sections 108.7 and 108.8. If the LPA has their own Specifications, the incentive/disincentive language should be included in the Current Specification or in a Special Provision with the requirements for the incentive/disincentive defined for the prospective bidders.

15.3.2.4.4.1 Public Opening of Proposals – Primary Responsibility – LPA

The LPA shall be responsible for the letting place and schedule and for the notification of interested participation of the same. The LPA shall conduct the letting in accordance with state laws and regulations. Proposals shall be opened and read in public at the time and place indicated in the Notice to Contractors. This procedure shall follow instructions listed in [Sections 102.15-18](#) of KDOT’s “Standard Specifications for State Road and Bridge Construction”.

15.3.2.4.5 Letting Review and Authority to Award

15.3.2.4.5.1 Bid Analysis - Primary Responsibility – LPA/KDOT

The LPA will, after the proposals are opened and read, evaluate the bids to confirm that funds are being spent in the most effective manner, that there was good competition in the bidding, and the lowest practicable price for the project was received. The review will include a comparison of the bid prices with respect to the Engineer’s Estimate and other factors that may include the following:

- Number of bids
- Distribution or range of the bids
- Identity and geographic location of the bidders
- Urgency of the project
- Unbalancing of the bids
- Current market conditions and workloads
- Comparison of bid prices with similar projects in recent lettings
- Justification for significant bid price differences
- Potential for savings if the project is re-advertised
- Other factors as warranted

As a part of this review, the LPA must review the bids for collusion. The Department of Justice, Antitrust Division has a [Red Flags of Collusion checklist](#) to help prevent and detect collusion.

Copies of the detailed bid tabulations will be submitted to KDOT for review by the BOCM.

15.3.2.4.5.2 Bid Approval - Primary Responsibility – LPA – Coordination with BLP

The proposals shall be considered by the LPA in accordance with [Section 103.1](#) of KDOT's "Standard Specifications for State Road and Bridge Construction". Once reviewed, the lowest responsible and responsive bidder should be approved. If any of the required certifications have not been signed by the Contractor, their bid will be considered non-responsive and will be rejected. In addition, the DBE goal for the project must be met for the bid to be considered responsive. The LPA shall submit to BLP its recommendation for award, detailed bids from all bidders, and copies of all required certifications for the apparent low bidder ([Checklist for Authority to Award](#)).

15.3.2.4.5.3 Concurrence in Award - Primary Responsibility - BLP

BLP will review the information submitted by the LPA and confirm that all requirements have been satisfactorily met. When it has been determined that all requirements are met, the LPA will submit "[Authority to Award Contract](#)" document for STE execution. The executed "[Authority to Award Contract](#)" document will then be sent to the LPA.

15.3.2.4.5.4 Award and Execution of Contract – Primary Responsibility - LPA

Upon notification of the "Authority to Award" from KDOT, the LPA shall award and execute a contract in accordance with [Section 103](#) of KDOT's "Standard Specifications for State Road and Bridge Construction", or the LPA's KDOT-approved procedures may be used.

Both a Hard Copy and an electronic copy of the fully executed contract with all required certifications will be submitted to the PM prior to issuing the Notice to Proceed. The electronic copy shall be in pdf form and all sections shall be bookmarked.

15.3.2.4.6 Letting Summary Document - Primary Responsibility – LPA

Upon completion of the Letting Phase, the LPA shall provide BLP with a "[Letting Summary Document](#)" that certifies the letting process has been completed and the contract has been awarded in accordance with the requirements of this document as well as Section 102, 103, and 104 of the KDOT "Standard Specifications for State Road and Bridge Construction". The "[Letting Summary Document](#)" shall be submitted to the PM prior to issuing the Notice to Proceed.

An example of the "[Letting Summary Document](#)" is included in [Appendix A](#) of this section. A breakdown of the project construction costs (Bid Item List) by work type (i.e., roadway, surfacing, bridges, traffic signals, and common items) and with non-participating items identified shall be submitted to BLP at this time.

15.3.2.4.7 Request for Project Exemption Certificate – Primary Responsibility LPA

After the “Authority to Award” has been issued by BLP, the LPA must complete a “REQUEST FOR PROJECT EXEMPTION CERTIFICATE (Department of Revenue Form PR-76)” available from KDOR at:

<https://ksrevenue.org/pdf/pr76.pdf>

If the LPA has attained “agent” status through KDOR, they must submit a copy of the document granting them “agent” status and a copy of the Form PR-76 issued by the LPA to the Contractor. A publication containing more information about this form and the process can be found at:

<https://www.ksrevenue.org/pdf/pub1520.pdf>

or you may contact the Kansas Department of Revenue (KDOR) directly at the address or phone shown below:

The Office of Policy & Research
Docking State Office Building
Kansas Department of Revenue (KDOR)
915 SW Harrison Street, Room 230
Topeka, KS 66612-1588
Phone: (785)296-3081
FAX: (785)296-7928

After the LPA completes the form, they need to return it to the address stated above. KDOR will assign the LPA an Exemption Certificate Number specific to the project. A copy of the document from KDOR assigning the Exemption Certificate Number must be provided to BLP prior to issuing the “Notice to Proceed.”

After the project is completed, the LPA shall complete the “State of Kansas Project Completion Certification” (KDOR Form PR-77) available from KDOR at:

<https://www.ksrevenue.org/pdf/pr77.pdf>

This certifies that all materials purchased by the Contractor were exempted from payment of sales tax. This form must be delivered to the LPA and kept on file for 5 years after project finalization.

15.3.2.5 Construction Phase**15.3.2.5.1 Pre-Construction Meeting – Primary Responsibility - LPA/KDOT**

The LPA shall coordinate with the PM regarding the Pre-Construction Conference date and location.

15.3.2.5.2 Notice to Proceed - Primary Responsibility - LPA

Following the instructions in [Section 108.1](#) of KDOT’s “Standard Specifications for State Road and Bridge Construction”, the LPA shall provide a written notice to the Contractor to proceed with the contract work including, when applicable, the date for commencement of the contract time for performance. This notice shall be submitted to BLP electronically.

15.3.2.5.3 Contract Administration - Primary Responsibility - LPA - Coordination with KDOT

The LPA is responsible for implementing and controlling the work described and required in the project contract including requirements of the Construction Engineering agreement. Control of the work should follow instructions provided in Sections 2.07 through 2.13 of KDOT's "[Construction Manual](#)", current edition. Traffic is to be handled during construction in accordance with the plans and the current edition of FHWA's "[Manual on Uniform Traffic Control Devices](#)" (MUTCD). Monitoring shall be performed to confirm the Contractor's compliance with Davis-Bacon wage requirements, EEO, DBE, and other contractual requirements.

The LPA shall pay the Contractor and submit a voucher for reimbursement to BLP on a **monthly** basis using the [Payment Request Form \(KDOT Form 1313\)](#). Appropriate data shall be provided to justify the amount of reimbursement and non-participating amounts clearly noted, with a billing summary sheet. The voucher will be checked by BLP and processed for payment. A copy of the [Certificate of Subcontractor Work Payment \(KDOT Form 1010LP\)](#) and [Monthly DBE Payment Affidavit \(KDOT Form 1008\)](#) shall be included with the reimbursement requests.

The LPA shall maintain contact with BLP throughout the project. The LPA shall submit monthly construction progress reports to the PM. BLP will conduct audits of documentation, certifications and billing during the project construction. BLP shall be invited to all project progress meetings; given 24-hour notice for all paving operations, concrete or asphalt work; and be invited to the final inspection.

15.3.2.5.4 Change Orders - Primary Responsibility - LPA - Coordination with KDOT.

Often changes occur during construction of a project that requires adjusting the compensation paid to a Contractor. All changes must be within the scope and limits of the project. All change order requests must be submitted to the PM using the [Contract Change Order Form \(KDOT Form 1314\)](#) for review and approval **before the work is initiated**. KDOT will provide email concurrence on all changes within **3 business days**. If the LPA does not receive prior approval, the items on that change order may be deemed non-participating, as per the "Code of Federal Regulations", Title [23 CFR 635.120](#). KDOT's role is to provide general administrative oversight and to determine the amount of federal participation.

Change orders will be submitted using the unit prices from the original bid tabs when possible. If unit prices for the work aren't included in the original paid items list, the LPA and Contractor will negotiate a price. The LPA will conduct a cost analysis and submit the proposal from the Contractor as backup documentation to BLP. If line items are deleted or zeroed out by change order, they will be listed at the bottom of the pay estimate, in the change order section, as negative amounts. Line items shall never be completely removed from the original bid tabs/paid items list. When changing an existing item, you must use the existing unit price.

Non-participating items shall be clearly marked on the original bid tabs, plans, pay estimates and change orders. Email correspondence regarding the prior approval and determination of federal participation of the change order items, between the LPA and KDOT, shall be submitted as backup documentation with change

orders. Once the determination of participation has been made, the items will be marked accordingly on the pay estimates.

The LPA will conduct a cost analysis of all changes to the contract included in the change order request. Per KDOT's "Standard Specifications for State Road and Bridge Construction", [Section 104.9a](#), all direct and indirect costs associated with the Contract Change, including labor, materials, equipment, overhead, profit, impact costs and other costs for which the Contractor claims compensation is owed. Do not include prohibited costs as listed in Subsection 104.9c.

All changes must be listed on the [Final Paid Items List \(FPIL\)](#), and units and unit prices must be the same as on the Bid Item List. For example, if the bid item is 1 LS \$10,000, it can only be adjusted in \$10,000 increments.

15.3.2.5.5 Public Involvement Complete – Primary Responsibility – LPA

Public involvement is a continuous and ongoing process during project development and should continue through the construction phase. The LPA is responsible to implement measures, appropriate for the specific project, to keep the public informed of project activities and to respond to their input.

15.3.2.5.6 Materials Certification - Primary Responsibility - LPA

The LPA is responsible for materials certifications as documented in KDOT's "Construction Manual", [Section 2.07](#), and KDOT's "Standard Specifications for State Road and Bridge Construction", [Section 2600](#). These certifications will verify the Contractor has furnished materials that meet specified requirements.

Materials sampling, testing procedures and materials certification requirements must be included in the LPA procedures manual and followed on each project. Materials testing personnel must be properly certified.

See KDOT's "Standard Specifications for State Road and Bridge Construction", [Section 106](#) for information on QC/QA or Verification testing.

Materials testing personnel performing materials tests on Federal-aid projects must be witnessed by BCM personnel. Mass witnessing events take place in each KDOT District on a yearly basis. Most consultants already participate. It is the LPA's responsibility to contact the local KDOT construction office to inquire about mass witnessing events.

15.3.2.5.7 Final Closeout - Primary Responsibility – LPA

Once the project is substantially complete, the LPA will coordinate with the Contractor, the Inspector, the Designer, and the PM to perform a walk-through of the project. Any corrective measures to be addressed by the Contractor will be noted and a schedule to complete the corrective work (if any) will be determined. Once the LPA is satisfied that the project is complete, they will begin the final closeout process for the project.

The LPA is responsible for creating and submitting the following documents to the PM:

- **Notice of Acceptance.** This document notifies the Contractor that the LPA has accepted the project and that the Contractor is relieved of their responsibility for maintenance of barricades, lights and watchmen, and will no longer be required to perform additional work or maintenance.
- **DBE Summary Report.** This document shows that the DBE goals were met.
- **Construction Summary Document.** This document certifies that all project activities (PE, CE, and Construction) have been completed in accordance with federal and state laws and regulations as well as KDOT's "Construction Manual" and/or the LPA's approved procedures manual. The document will include a final statement that the Contractor has provided appropriate materials certification for the project.
- **Final Acceptance of Federal-Aid Project Constructed Under Exempt Oversight.** This document states the LPA's acceptance of the project and compliance with all federal regulations and material certifications.
- **State of Kansas Project Completion Certificate (PR-77).** This document certifies that all tax-exempt materials purchased under the exemption certificate were incorporated into the project.
- **Paid Items List by Work Type.** This document provides a final breakdown of costs by work type (i.e., roadway, surfacing, bridges, traffic signals, and common items) with the participating and non-participating items clearly separated. It must include all costs associated with the project regardless of funding source.
- **Final Invoice.**

Examples of these documents are provided in [Appendix A](#) below.

15.3.2.5.8 Project Audit - Primary Responsibility – KDOT

Costs shall be audited according to the "The Single Audit Standards" set forth in [Federal O.M.B. Circular A-133, "Audits of States, Local Governments, and Non-Profit Organizations"](#) and in the "Code of Federal Regulations", Title [49 CFR 18](#).

15.3.2.5.9 Final Payment - Primary Responsibility – KDOT

After the audit is completed, KDOT will submit the final claim to FHWA. After FHWA concurs with the final claim, KDOT will provide the LPA with a "Final Statement of Costs" for final settlement.

APPENDIX C: SANITARY SEWER DESIGN FLOW EXAMPLE

Design Flow Example:

Develop the design sanitary sewer flow rate for a development with the following characteristics:

Land Use:

10 ac medium density residential

6 ac office/multi family

4 ac office/commercial

Solution:

- Step 1: Input the land use acreages into column A of the Land Use sheet as shown.
- Step 2: Input the density into column E of the Land Use sheet as shown.
- Step 3: Input the bounding values from the Design Table for developed acreage in column B of the Design Flow sheet as shown.
- Step 4: Read the design flow as calculated in column N of the Design Flow Sheet as shown.

DEVELOPMENT LAND USE INPUT

Input Area Zoned Acres	Calculated Percent Zone as Decimal	Zone Type	Land Use Description	Input Density units/acre	Given Equivalent capita/unit	Calculated Equivalent capita/acre	Calculated Equivalent capita	Given Capita Usage gal/capita/day	Calculated Average WWP gal/acre/day	Given Infiltration gal/acre/day	Given Inflow Coeff K
0	0.00	1	Very Low Density Res	1.0	2.3	2.3	0	100	230	500	0.0035
0	0.00	2	Low Density Res	4.0	2.3	9.2	0	100	920	500	0.0035
10	0.50	3	Medium Density Res	12.0	2.3	27.6	276	100	2760	500	0.0035
6	0.30	4	Office//Multi Family	12.0	2.3	27.6	166	100	2760	200	0.0030
4	0.20	5	Office/Commercial	2.0	3.0	6.0	24	100	600	200	0.0030
0	0.00	6	Heavy Industry	1.0	25.0	25.0	0	100	2500	200	0.0030
0	0.00	7	Public	1.0	7.0	7.0	0	100	700	0	0.0005
0	0.00	8	Agriculture/Park	1.0	1.0	1.0	0	100	100	0	0.0005
20	1.00	Calculated Weighted Averages		10.0	2.4	23.3	466	100	2328	350	0.0033

DEVELOPMENT DESIGN FLOW CALCULATION

Inflow +													
Peak WWP +													
Infiltration =													
Calculated Calculated Calculated Calculated Calculated Calculated Calculated Calculated Calculated Calculated Calculated Calculated Calculated													
Design Flow Design Flow ADF Peaking Equivalent Design Flow (acres) (minutes) (in/hr) Peaking Factor (cfs) (cfs) (cfs) (cfs) (mgd) (mgd)													
Developed Tc 10 Yr i WWP Inflow Peak WWP Infiltration Design Flow Design Flow ADF Peaking Equivalent Design Flow (acres) (minutes) (in/hr) Peaking Factor (cfs) (cfs) (cfs) (cfs) (mgd) (mgd)	Factor Population (gpm)												
Lesser value from Design Table	10.00	66.6	2.58	2.00	0.084	0.072	0.005	0.161	0.104	0.023	4.48	233	72
Results for Development	20.00	69.1	2.58	1.95	0.168	0.141	0.011	0.319	0.206	0.047	4.43	466	143
Higher value from Design Table	25.00	70.4	2.58	1.93	0.210	0.174	0.014	0.397	0.257	0.058	4.41	582	178

Lawrence Design Data From 2003 Wastewater Master Plan			
Developed Acres	Tc minutes	10 Yr "i" in/hr	WWP Peaking Factor
1	62.1	2.58	2.17
10	66.6	2.58	2.00
25	70.4	2.58	1.93
50	74.7	2.58	1.88
75	78.1	2.16	1.85
100	80.9	2.16	1.83
250	93.0	1.89	1.76
500	106.6	1.69	1.71
750	117.1	1.69	1.68
1000	126.0	1.54	1.66
1250	133.7	1.54	1.64
1500	140.8	1.40	1.63
1750	147.3	1.40	1.62
2000	153.3	1.30	1.61
2500	164.3	1.30	1.59
3000	174.2	1.21	1.58
4000	191.9	1.13	1.56
5000	207.5	1.13	1.54
7000	234.5	1.00	1.52
7500	240.6	0.90	1.51
10000	268.6	0.90	1.49
50000	526.4	0.53	1.37

APPENDIX D: STANDARD EASEMENT DOCUMENT – PERMANENT

UTILITY EASEMENT

THE UNDERSIGNED, for and in consideration of the sum of One Dollar (\$1.00) and other valuable considerations, receipt of which is hereby acknowledged, hereby grants, sells, conveys, and delivers unto the City of Lawrence, Kansas, a municipal corporation, a permanent and perpetual Easement for the construction, installation, and maintenance of utilities, in, over, under, and through the following described tract of real estate situated in Douglas County, Kansas, to-wit:

See attached Exhibit "A" for easement description
See attached Exhibit "B" for easement exhibit

Grantee shall have the right of ingress and egress upon the above described Easement for the purpose of maintaining, repairing, or replacing said utilities and otherwise make all uses of said Easement and do all things necessary or proper for the use of said Easement for said public facilities and structures.

Grantor shall do or cause nothing to be done to interfere with the Grantee's right of use of said Easement for the purposes herein stated.

THE UNDERSIGNED FURTHER WARRANT that it has good and lawful right to convey said easement, and will forever defend the title thereto.

THIS AGREEMENT is and shall be binding and obligatory upon the heirs, administrators, executors, personal representatives, successors, and assigns of the parties hereto.

DATED THIS _____ day of _____, 20__.

STATE OF KANSAS)
 :SS
COUNTY OF DOUGLAS)

INDIVIDUAL ACKNOWLEDGMENT

BE IT REMEMBERED, that on this _____ day of _____, 20__, before me, the undersigned, a Notary Public in and for the County and State aforesaid came _____, who is personally known to me to be the same person who executed the within and foregoing instrument of writing, and duly acknowledged the execution of the same.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last above written.

Notary Public

My Commission Expires: _____

CORPORATION ACKNOWLEDGMENT

BE IT REMEMBERED, that on this _____ day of _____, 20__, before me, the undersigned, a Notary Public in and for the County and State aforesaid came _____, an authorized agent of _____, a corporation duly organized, incorporated and existing under and by virtue of the laws of the State of _____, who is personally known to me to be such officer, and who is personally known to me to be the same person who executed, as such officer, the within instrument on behalf of said corporation, and such person duly acknowledged the execution of the same to be the act and deed of said corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last above written.

Notary Public

My Commission Expires: _____

LIMITED LIABILITY COMPANY ACKNOWLEDGMENT

BE IT REMEMBERED, that on this ____ day of _____, 20__, before me, the undersigned, a Notary Public in and for the County and State aforesaid came _____, of _____ L.L.C., who is personally known to me to be the same person who executed the within and foregoing instrument of writing, and duly acknowledged the execution of the same on behalf of said Limited Liability Company..

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last above written.

Notary Public

My Commission Expires: _____

APPENDIX E: STANDARD EASEMENT DOCUMENT – TEMPORARY

TEMPORARY CONSTRUCTION EASEMENT

THE UNDERSIGNED, for and in consideration of the sum of One Dollar (\$1.00) and other valuable considerations, receipt of which is hereby acknowledged, hereby grants, sells, conveys, and delivers unto the City of Lawrence, Kansas, a municipal corporation, a Temporary Construction Easement for the construction of utilities, and other appurtenances thereto, in, over, under, and through the following described tracts of real estate situated in Douglas County, Kansas, to-wit:

See attached Exhibit "A" for easement description
See attached Exhibit "B" for easement exhibit

Within reasonable time following the termination of the temporary easement, Grantee shall leave the area thereof free of litter and debris; shall cause such area to be of a level and grade compatible with that of the area around said temporary easement; and shall re-seed the area disturbed at the earliest practical time.

This temporary easement shall terminate and be of no further force and effect ninety (90) days after the completion of the said improvements or _____, 20__, whichever shall first occur.

Grantor shall do or cause nothing to be done to interfere with the Grantee's right of use of said Easement for the purposes herein stated.

THE UNDERSIGNED FURTHER WARRANTS that it has good and lawful right to convey said easement, and will forever defend the title thereto.

THIS AGREEMENT is and shall be binding and obligatory upon the heirs, administrators, executors, personal representatives, successors, and assigns of the parties hereto.

DATED THIS _____ day of _____, 20__.

STATE OF KANSAS)
 :SS
COUNTY OF DOUGLAS)

INDIVIDUAL ACKNOWLEDGMENT

BE IT REMEMBERED, that on this _____ day of _____, 20__, before me, the undersigned, a Notary Public in and for the County and State aforesaid came _____, who is personally known to me to be the same person who executed the within and foregoing instrument of writing, and duly acknowledged the execution of the same.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last above written.

Notary Public

My Commission Expires: _____

CORPORATION ACKNOWLEDGMENT

BE IT REMEMBERED, that on this _____ day of _____, 20__, before me, the undersigned, a Notary Public in and for the County and State aforesaid came _____, an authorized agent of _____, a corporation duly organized, incorporated and existing under and by virtue of the laws of the State of _____, who is personally known to me to be such officer, and who is personally known to me to be the same person who executed, as such officer, the within instrument on behalf of said corporation, and such person duly acknowledged the execution of the same to be the act and deed of said corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last above written.

Notary Public

My Commission Expires: _____

LIMITED LIABILITY COMPANY ACKNOWLEDGMENT

BE IT REMEMBERED, that on this _____ day of _____, 20____, before me, the undersigned, a Notary Public in and for the County and State aforesaid came _____, of _____ L.L.C., who is personally known to me to be the same person who executed the within and foregoing instrument of writing, and duly acknowledged the execution of the same on behalf of said Limited Liability Company..

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last above written.

Notary Public

My Commission Expires: _____

APPENDIX F: KDHE APPLICATION



STATE OF KANSAS
DIVISION OF ENVIRONMENT
APPLICATION FOR SEWER EXTENSION PERMIT

The applicant hereby requests a permit for extension of sanitary sewers in compliance with the requirements of K.S.A. 65-165 and K.S.A. 65-166. Plans and specifications submitted must comply with the Kansas Department of Health and Environment, Division of Environment, "Minimum Standards of Design for Water Pollution Control Facilities."

APPLICANT DATA

1. _____
Name of Project (as it appears on plans)
2. _____
Name of Applicant (Governmental Unit)
3. _____
Kansas Water Pollution Control Permit Number for the Wastewater Treatment Facility which will treat the flow from this sewer extension.
4. _____
Name the engineer or engineering firm responsible for inspection of this extension.

In making application for a sewer extension permit, I hereby certify that continuous engineering observation of the construction of the proposed improvement, including building connections, shall be provided in accordance with Kansas Department of Health and Environment Regulation 28-16-55.

Signature: _____
Authorized Official

Print Name: _____

Title: _____

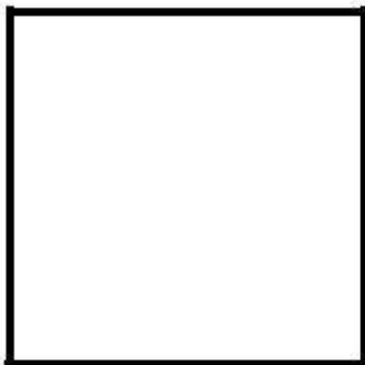
Mailing Address: _____

DESIGN ENGINEER DATA

1. _____
Name of Project (as it appears on plans)
2. Engineers estimate of construction cost _____
3. What are the conditions and capacity of the existing sewer system downstream of this sewer extension?
 - a. What is the present average daily flow at the wastewater treatment facility? _____ MGD
CIRCLE YES OR NO
 - b. Do the downstream sewer lines presently convey the peak flow without inducing backup into buildings or bypass to the environment? YES NO
 - c. Can the downstream receiving sewers convey the additional peak design flow generated after completion of this sewer extension without backup into buildings or bypassing to the environment? YES NO
 - d. If the answer to either of the above questions is NO, what steps are being taken to eliminate or prevent bypass or service line backup conditions?

_____ Attach additional pages if necessary.
4. What are the design flows for this sewer extension?
(Include a copy of the calculations for flow and list the following values)
Average daily _____ MGD Peak _____ MGD
5. If wastewater pumping facilities are included in the project, provide with this application the following: system curve, pump curve and total head calculations and planned control elevations i.e. pumps off, low level on, high level on, and alarm level.

The information contained above is accurate to the best of my knowledge.



P.E. Stamp/Date/Signature

Signature: _____
Kansas Licensed Engineer

Print Name: _____

Address: _____

APPENDIX G: GENERAL NOTES

GENERAL NOTES

General Notes

1. Plans are initially approved for a period of one (1) year, after which they automatically become void and must be updated and re-approved by the City before any construction will be permitted.
2. The City of Lawrence plan review is only for general conformance with City of Lawrence Design Criteria and City Code. The City of Lawrence is not responsible of the accuracy or adequacy of the design. The City of Lawrence through the approval of this document assumes no responsibility other than stated above for the completeness and/or accuracy of this document.
3. Inspection Fees are to be paid by the Developer.
4. The Contractor shall always have one (1) signed copy of the plans (approved by the City of Lawrence) and one (1) copy of the Project Specifications on site.
5. All construction shall conform to the City of Lawrence Complete Standard Technical Specifications and Standard Details in effect on the City's approval date shown on these plans.
6. Material submittals and shop drawings shall be submitted in portable document format (pdf), uploaded using e-Builder, the City's Capital Project Management Software (CPMS) to appropriate City staff and approved prior to Notice to Proceed, unless otherwise directed by the City. The Contractor should anticipate up to ten (10) business days for review per submittal. City approval of submitted shop drawings and details is for general conformance with the plans and specifications only. The City of Lawrence is not responsible for the accuracy or constructability of the shop drawings. Errors or omissions shall be corrected at Contractor expense.
7. All work quality and materials regulated by the City shall be subject to the inspection and approval by City personnel.
8. Unless otherwise noted, construction staking is to be provided by the Contractor. Survey stakes, benchmarks, and property pins destroyed by the Contractor shall be replaced at Contractor's expense.
9. Contractor shall not be allowed to work Sundays. Holiday or Saturday work shall be as approved by the Municipal Services & Operations Department.
10. The Contractor shall notify all landowners in writing at least one (1) week prior to any construction activities which would take place adjacent to their property. Individual detailed notices of access restrictions shall be hand delivered forty-eight (48) hours prior to construction. Twenty-four (24) hour notice shall be given to any water customer prior to interruption of service to make connections.

11. All work shall be confined within the construction limits, right-of-way, easements, or City property as shown in the plans. Any damage to adjacent surfacing, pavement markings, curb, sidewalks, bikeways, driveways, streetlights, signal poles, or other objects within or out of the right-of-way shall be repaired at the Contractor's expense.
12. Contractor shall call 1-800-DIG-SAFE prior to any project excavation.
13. All sidewalk and sidewalk ramps constructed will be required to comply with the Public Right-of-Way Accessibility Guidelines (PROWAG). Building sites located outside of the right-of-way shall comply with the appropriate Americans with Disabilities Act (ADA) requirements.
14. When blasting is permitted by Lawrence-Douglas County Fire and Medical Services, the Contractor shall use the utmost care to protect life and property. The Contractor shall comply with all laws, ordinances, and the applicable safety code requirements and regulations relative to the handling, storage and use of explosives and protection of life and property, and they shall be responsible for all damage thereto caused by their or their subcontractor's operations.
15. The Contractor shall provide insurance as required by the General Provisions and Covenants and Special Project Specifications before performing any blasting. The governing agency shall be notified at least twenty-four (24) hours before blasting operations begin.
16. The Contractor shall contact the City of Lawrence Traffic Division at 785-832-3035 to remove and replace traffic signs which are in conflict with the proposed improvements but are not specified to be removed as a part of this project.
17. All disposal sites must be approved by the Kansas Department of Health and Environment. Materials either stockpiled or disposed of in a flood plain require a Kansas State Board of Agriculture Permit. Any material dumped in waters of the United States or Wetlands is subject to U.S. Corps of Engineers permitting regulations.
18. Geological information as shown herein was completed with the best information available to the Engineer at the time of plan preparation. The Contractor shall be responsible for verifying, identifying and making their own determinations of subsurface conditions. All excavation shall be unclassified. No direct payment will be made for rock, debris, or pavement excavation. All work shall be considered subsidiary to other bid items unless otherwise shown in the plans.

Erosion & Sediment Control Notes

1. The Contractor is responsible for providing erosion and sediment control to prevent sediment from reaching paved areas, storm sewer systems,

drainage courses and adjacent properties. In the event the prevention measures are not effective, the Contractor shall remove any debris, silt, or mud and restore all disturbed areas to original or better condition.

2. The Contractor shall comply with Chapter 9, section 903 of the Code of the City of Lawrence regarding storm water pollution prevention. Unless otherwise noted in the plans or special provisions, all work related to this will be paid for in the bid item "Storm Water Pollution Prevention." This shall include, but not be limited to items such as street cleaning, protecting piled soils from eroding, temporary seeding, regular inspection reporting and documentation, etc.
3. All areas disturbed during construction shall be fertilized, seeded, and mulched by the Contractor in accordance with current City of Lawrence Technical Specifications.
4. All surface features disturbed by construction activities shall be restored by the Contractor to original condition.
5. Maintenance of drainage shall be the contractor's responsibility. Dewatering shall be subsidiary to other items of work.

Paving & Sidewalks Notes

1. All concrete for publicly maintained infrastructure shall be KCMMB unless otherwise noted in the plans.
2. All asphalt and concrete to be removed shall be neatly saw cut. Saw cuts shall be full depth and shall be subsidiary to related bid items. If the Contractor exceeds the pavement removal limits without approval from the Engineer, removal and replacement shall be at the Contractor's expense.

Utility Notes

1. In areas to be graded, all exposed manholes shall be backfilled to within 1-foot of the top of rim at a 3:1 (horizontal:vertical) or flatter slope. Place backfill per City Specifications. Positive drainage shall be maintained away from manholes.
2. Where existing utilities and service lines are to be encountered, the Owner thereof shall be notified by the Contractor at least forty-eight (48) hours in advance of performing any work in the vicinity.
3. The utility information shown herein is based on the best information available to the engineer; however, all existing utilities within the construction limits may not be shown. The Contractor shall verify all utility ownership, type, size, depths and locations prior to construction and coordinate any necessary relocations. Utilities damaged through the

negligence of the Contractor to obtain the location of same shall be repaired and replaced by and at the expense of the Contractor.

4. Utilities exposed during construction shall be adequately supported by the Contractor to prevent the conduits/lines from sagging and putting stress on any joints.
5. Abandoned utilities exposed by Contractor operations shall be removed as directed by the Engineer. This work shall be considered subsidiary to other bid items unless otherwise noted on the plans.
6. All manholes, utility valves, and meter pits shall be adjusted or rebuilt to grade as required and set in concrete if in roadway for field adjustment.
7. During a period of one year from the date of acceptance by the City, the City shall perform a video inspection on the sanitary sewer line installed under this contract. Per resolution number 5614, or latest update, an inspection fee is required for this service. Contractor shall be responsible for all repairs needed as determined from the video inspection.
8. Only authorized employees of the City of Lawrence, Municipal Services & Operations Department shall operate valves.
9. The Contractor shall install proposed waterlines without disruption of water service to customers until connections to proposed waterlines are ready to be made. Once service to customers has been interrupted, the Contractor shall work continuously until service is restored.
10. The Contractor shall install and properly maintain a mechanical plug at all connection points with existing lines until such time that the new line is tested and approved.
11. All water required for the construction of this project shall be purchased from the City of Lawrence Municipal Services & Operations Department using a fire hydrant water meter. Meters can be obtained from the Municipal Services & Operations Department for a nominal deposit, refundable upon the return of the meter.
12. Flowable fill shall be used to backfill all excavations within two feet of existing or proposed public pavement areas. Flowable fill shall be placed to the top of the subgrade.

ROW & Temporary Traffic Control Notes

1. A Temporary ROW permit is required for any temporary use of the ROW or work within the ROW. Any placement of barricades, cones, or equipment in the ROW that affects pedestrian, bicycle, or vehicular traffic shall also require the possession of a Temporary Traffic Control ("TTC") Permit.
2. Temporary Traffic Control Plans, when included, are intended to provide a general overview of traffic handling and may not be exhaustive. Traffic control requirements shown on these plans do not attempt to address in

depth the variety of situations that may occur once construction has started. In no way do the requirements shown on these plans relieve the Contractor of their responsibility to select proper traffic control devices and implementation procedures to accommodate the safety of motorists, bicyclists, pedestrians, and workers at all times. Additional signs, temporary striping, barricades, sidewalk closures, or other measures necessary to complete the construction and accommodate Contractor staging, as required by the Engineer, shall not be paid for directly, but shall be considered subsidiary to other Temporary Traffic Control items.

3. Lane closure hour restrictions listed in the ROW Administrative Regulations, section 8.4 shall be complied with unless an exception is approved and noted on the permit.
4. All traffic control devices shall be provided, installed, and maintained in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).
5. At least one (1) person present for installation of traffic control devices shall have training in the installation of temporary traffic control devices and provide proof of training on request.
6. All flaggers shall possess a flagger certification card issued by American Traffic Safety Services Association (ATSSA), by Kansas Department of Transportation (KDOT), or other approved entity.
7. Flaggers shall be equipped with sign paddles.
8. All workers in construction zones shall wear MUTCD compliant high-visibility garments.
9. The ROW Permit Holder is responsible for maintenance of traffic control devices at all times. Maintenance may be required after hours and on non-working days. Deficiencies shall be corrected in a timely manner. The permit shall include an individual who can be contacted 24 hours a day, 7 days a week in case of emergencies.
10. The ROW Permit Holder shall contact the City of Lawrence Traffic Division at 785-832-3035 a minimum of 24 hours in advance about any conditions that will impact the operation of a traffic signal. That includes lane closures, turning restrictions, and any other potential impacts.
11. When a difference in pavement elevation is created perpendicular to traffic flow, the ROW Permit Holder shall provide, at the end of the work day, a temporary wedge over an 18" length. The ROW Permit Holder is required to mill the wedge prior to final pavement placement.
12. A traffic lane shall not be considered satisfactorily open to traffic unless it is paved to a condition that matches existing pavement material and markings are in place. Where all existing pavement has been removed, a traffic lane shall not be considered as satisfactorily open to traffic, unless

graded reasonably smooth and maintained dust free as determined by the City. Hot or cold mix asphalt may be used on a conditional basis only in order to open traffic lanes on a temporary basis; a written letter must be submitted to the City at the time of ROW permit application stating when permanent repairs will be made.

13. Small openings in the roadway surface may be bridged with steel plates. An asphalt wedge (or approved device) shall be installed around all edges of the steel plate and the plate shall be anchored so that it does not shift under traffic. Steel plates that are located in travel lanes of roadways with a posted speed of 35 mph or more for a duration of more than 3 days shall be level with the abutting pavement (pavement milled around edges of opening) unless another appropriate solution is approved by the Inspector. Roadway depressions should not exceed 1" in 10'. All visible pushing/shoving of pavement shall be corrected. All temporary pavement shall be inspected daily by the ROW Permit Holder and all maintenance issues corrected within 24 hours.
14. The ROW Permit Holder shall be required to post a W8-1 "Bump" advance warning sign 250 feet ahead of a steel plate.
15. Private vehicles shall not be parked in a roadway within the work zone.
16. Vehicles shall not be parked or driven on sidewalks. If work necessitates that vehicles travel over sidewalks then the condition of the sidewalk should be documented by video or pictures prior to vehicles crossing it. The sidewalk condition shall be inspected after work is complete and any new or undocumented cracks or other damage shall be corrected by the Permit Holder.
17. Vehicles shall not drive over non-mountable curb without first properly ramping the gutter to avoid damage to the curb.
18. The ROW Permit Holder is responsible to remain at the work site until all barricading is removed from the roadway. All barricading must be removed from the roadway within two hours of work completion or prior to any work hour restrictions detailed in the ROW Administrative Regulations or on the Temporary Traffic Control Permit. If barricades remain longer than two hours after work completion, without prior approval, the City may remove the barricades and may charge the contractor for any time and equipment expended on their behalf.
19. Any work zone that requires a TTC Permit shall have a sign posted at each end of the work zone that meets the following requirements:
 - a) Be placed in a position that can be read by traffic from each direction;
 - b) Be colored "construction orange" with block letters at least six inches in height; and

- c) Contain the name of the company using the ROW and a phone number for a representative of the company.
- 20. Placement of temporary signs shall not obstruct or be obstructed by existing signs to remain active during construction. Temporary signs shall be placed so as to not be obstructed by other existing features (such as foliage, utility poles, etc.).
- 21. All existing signs that are contradictory to the temporary traffic control shall be covered or removed by the contractor. Signs shall be restored immediately upon removal of the temporary traffic control.

APPENDIX H: COMPLETE STREETS POLICY & CHECK LIST

APPENDIX I: TRAFFIC IMPACT STUDY GUIDELINES

CITY OF LAWRENCE, KANSAS, COMPLETE STREETS POLICY (adopted December 4, 2018)

SECTION 1: SHORT TITLE.

This policy shall be known as the “Complete Streets Policy.”

SECTION 2: INTRODUCTION.

The City of Lawrence, Kansas, desires to establish this Complete Streets Policy to foster the continued development of a sustainable environment and, through the policy, shall consider all aspects of multi-modal transportation in the design and implementation of street and related infrastructure projects. The health, safety, and well-being of its residents and visitors, including those with disabilities, is foremost in the City’s intent in creating this policy and in establishing a complete and connected street network, with emphasis on active modes of transportation, including biking, walking, and wheeling. The benefits of Complete Streets include: improving safety for pedestrians, bicyclists, children, older citizens, non-drivers, and mobility-challenged, as well as those that cannot afford a car or choose to not have a car; providing connections to bicycling and walking trip generators such as places of employment, educational institutions, residences, recreational centers, retail centers, transit stops, and public facilities which promotes healthy lifestyles; creating more livable communities by reducing the need for a vehicle which will, in turn, reduce traffic congestion and reduce air pollution; and saving money and efficiencies by incorporating sidewalks, bike facilities, safe crossings, and transit amenities into the initial design of a project, thus sparing the expense of retrofits later. It is the intent of the City that, under this Complete Streets Policy, diverse populations should be included in the decision-making process.

SECTION 3: APPLICABILITY.

The City should follow this Complete Streets Policy for each transportation and land use project that uses public funds, unless the City determines, through the exception process, that it cannot be followed. The Complete Streets Policy should be applied during the planning, design, construction, maintenance, and operation phases of new, retrofit, or reconstruction projects. The Complete Street Policy shall not apply to street maintenance, sidewalk maintenance, or other maintenance-funded projects. However, when feasible, the City should consider pedestrian and bicycle improvements in maintenance projects. For the purposes of this Complete Streets Policy, street maintenance is defined as the minor, routine, upkeep and maintenance of streets, such as mill and overlay, microsurfacing, crack seal, concrete rehab, curb repair, spot repair, and restriping, and signal operations.

The Complete Streets Policy includes a checklist that should be used by project team members when making decisions about those components of Complete Streets elements that will be included in a particular project. The multimodal staff team shall ensure that there is interdepartmental involvement and coordination in the decision-making process. The checklist should, among other things, include clear-cut guidelines identifying who is responsible for maintenance and repairs.

SECTION 4: GOALS.

The Goals of the Complete Streets Policy are, as follows:

- (a) To create a comprehensive, integrated, connected multi-modal transportation network by facilitating connection to bicycling and walking trip generators such as places of employment, educational institutions, residences, recreational centers, retail centers, transit stops, and other public facilities.
- (b) To create safe and accessible accommodations for pedestrians, bicyclists, and transit users. The City should give consideration to future demand and should include provisions for future improvements, if warranted.
- (c) To address the needs of people walking, biking, or wheeling in all designs. The design of intersections and other interchanges should provide safe and convenient elements for these users.
- (d) To provide for all users when closing roads or sidewalks during construction. The provisions shall be Manual on Uniform Traffic Control Devices (MUTCD) and Americans with Disabilities Act Accessibility Guidelines (ADAAG) compliant.
- (e) To consider connections to Safe Routes to School, transit routes, shared use path crossings and connections, and areas or population groups with limited transportation options, when making improvements.
- (f) To consider the community context as a factor in the design and implementation of all future applicable projects. Projects should demonstrate how designs will serve current and future land use in addition to transportation functions.
- (g) To design and construct pedestrian and bicycle facilities to the best currently available standards and practices, in accordance with Municipal Services and Operations Design Criteria.
- (h) To consider Complete Streets elements in the planning, design, and construction of privately-funded development projects.
- (i) To provide educational materials and opportunities to residents to raise awareness of other modes of transportation and to promote a culture of safe multi-modal transportation.

SECTION 5: CHECKLIST.

The Complete Streets Checklist should be used in both the planning and conceptual design phase (30% design). The planning level checklist should detail items that are included in the budget for the project. The checklist should be provided to the Transportation Commission in the conceptual design stage, if possible but not later than at field check design (60% design).

SECTION 6: EXCEPTIONS.

Every project shall incorporate Complete Streets elements sufficient to enable reasonably safe travel along and across streets and sidewalks for all persons using the same, provided, however, that such infrastructure may be excluded from a project where the documentation and data indicate that:

- (a) Non-motorized users are prohibited from the roadway.
- (b) Limited trip generators, both existing and in the future, indicate an absence of need for such Complete Streets elements.
- (c) Detrimental environmental or social impacts outweigh the need for Complete Streets elements.
- (d) Cost of Complete Streets elements are excessively disproportionate to the cost of the project.
- (e) The safety or timing of the project is compromised by the inclusion of Complete Streets.

SECTION 7: PERFORMANCE MEASURES.

City Staff will track the following performance measures annually, or as data is available. The performance measures are all also part of the Metropolitan Transportation Plan, Transportation 2040 (T2040). The performance measures will be collected as a joint effort between the Lawrence-Douglas County Metropolitan Planning Organization (MPO) and City of Lawrence, Kansas, Department of Municipal Services & Operations (MSO). The results will be reported to the Transportation Commission and City Commission on an annual basis, or as data is available. Items to be considered include but are not limited to the following:

- Percentage of people who have access within a ¼ mile to the bikeway network*
- Percentage of public streets with sidewalks on at least one side*
- Percentage of public streets with bikeway network*
- Percentage of population with access within ¼ mile to a bus stop for fixed route transit*
- Number of non-motorized fatalities and serious injuries on public roads

*these items will be tracked for the entire City of Lawrence and also for the Environmental Justice (EJ) Zones of Lawrence established by the MPO

COMPLETE STREETS CHECKLIST				
PROJECT NAME				
LOCATION				
PROJECT INFORMATION				
		Explanation		
Classification				
Speed limit				
AADT				
Right-of-way width				
Safe Route to School				
Bus/Transit route				
On planned bikeway network				
Existing bicycle accommodations				
Existing sidewalk				
Checklist Consideration		Yes	No	Explanation
Does the project provide a main route to a significant destination?	Park/Recreation area			
	School			
	University			
	Shopping/Commercial area			
	Employment center			
	Community facility			
	Other:			
Does the project provide access across a natural or human-made barrier?				
Are there nearby parallel routes that provide a similar level of convenience and connectivity?				
Pedestrian and bicycle demand	Is there a high amount of bicycle and pedestrian traffic along route			
	Is there a high amount of bicycle and pedestrian crossings			
	Is there a history of bicycle or pedestrian crashes (last 3 yrs)			
CONSTRAINTS				
Are there constraints to consider in reviewing this project for possible inclusion of Complete Streets elements?				
Constraint Type		Yes	No	Explanation and Date of Comment
Right-of-Way				
Utilities				
Environmental				
Funding				
Maintenance				
Other Existing Condition				
Other:				
COMPLETE STREETS ELEMENT REVIEW				
For each of the sections below, indicate whether a Complete Streets Element is/is not included. Provide an explanation of the element to be used or rationale why the element is not being included.				
Complete Streets Element	Checklist Consideration	Included	Not Included	Explanation and Date of Comment
Traffic Calming				
Does the roadway design consider elements to improve safety for pedestrians, bicyclists, and motorists?	Narrower driving lanes			
	Lane reduction			
	Other:			
Pedestrian and Bicycle Facilities:				
Reduce pedestrian crossing distance at intersections where high motor vehicle counts and high pedestrian counts are expected.	Pedestrian island			
	Curb bump-outs			
	Other:			
Does it provide appropriate pedestrian accommodations?	Sidewalks			
	Crosswalks			
	Mid-block crosswalks			
	Buffers between roadway and sidewalks			
	Lighting			
	Street furniture			
	Other:			
Does it provide appropriate accommodations in accordance with bikeway plan?	Bike lane			
	Buffered bike lane			
	Protected bike lane			
	Shared use path			
	Bike boulevard			
	Bike sharrow			

	Bike racks			
	Other bike parking			
	Other:			
Transit Facilities				
Does it provide appropriate transit accommodations?	Transit shelters			
	Accessible location (sidewalk, pad)			
	Bus turnout			
	Public seating			
	Signage/maps			
	Trash/recycling receptacles			
	Other:			
On-Street Parking				
Existing Parking	One side			
Planned Parking	No change			
Streetscaping				
Does the project include streetscaping along newly constructed or reconstructed roadways?	Street trees			
	Landscape plantings			
	Planters			
	Buffer strips			
	Other:			
ADA Accessibility				
Does it include appropriate ADA design features?	Curb ramps			
	Detectable warning surface			
	Crossing distance consideration			
	Signal timing			
	Other:			
IMPLEMENTATION AND EVALUATION				
<i>Checklist Consideration</i>		<i>Yes</i>	<i>No</i>	<i>Explanation and Date of Comment</i>
Have you provided advance notification and/or opportunity for review to key groups impacted by the project?	Parks and Recreation			
	Historic Resources			
	Transit			
	Fire/Med			
	Other City Departments			
	Neighborhood Association			
	School Districts			
	University			
Maintenance Are there any added maintenance projections for this project?	Pavement rehabilitation			
	Pavement marking			
	Street sweeping			
	Snow removal			
	Street trees			
	Site furnishings			
	Pavers			
	Other:			