

SECTION 0010 - GENERAL TECHNICAL PROVISIONS

0011 PURPOSE

These Technical Specifications ("Specifications") are adopted by the City of Lawrence, Kansas to provide minimum construction standards to safeguard the public welfare by regulating and controlling construction and the quality of materials, to promote uniformity and clarity of intent, and to encourage standardization.

0012 SCOPE

Alternative Materials, Processes and Equipment: The provisions of these Specifications are not intended to prevent the installation of any material or to prohibit any construction process or equipment not specifically prescribed by these Specifications. Alternative materials, processes or equipment may be approved provided the material or work offered is, for the purpose intended, at least the equivalent in quality, strength, effectiveness, durability and safety to that prescribed by these Specifications as determined by the Department of Municipal Services & Operations. All deviations must be approved in writing by the Engineer.

Specific sections of the Kansas Department of Transportation Standard Specifications for State Road and Bridge Construction ("KDOT Standards") are referenced throughout. These specific sections are hereby made a part of these specifications.

0013 GENERAL REQUIREMENTS

A. Protection of Property Pins and Monuments.

The contractor shall be responsible for the protection and preservation of all property pins and monuments. Prior to the beginning of construction, the contractor shall locate and record the location of all such property pins and monuments and shall erect suitable markers and barricades to protect said pins and monuments. After the construction is complete and before final payment is made by the City, the contractor shall account for all pins and monuments that existed prior to construction and shall have replaced any such pins or monuments which have been damaged or destroyed without the permission of the Engineer. The replacement of any pins or monuments shall be by a surveyor licensed in the state of Kansas and acceptable to the City.

B. Utilities Encountered.

Utility lines and facilities are located on the plans based upon the best information available. The actual location of these facilities is the responsibility of the Contractor and should any such facilities have to be relocated, it shall be the responsibility of the contractor to give adequate notice to do so to the respective utility company.

Where existing utilities and service lines are to be encountered, the owner thereof shall be notified by the Contractor at least 48 hours (not including weekends and/or holidays) in advance of performing any work in the vicinity. All excavation, pipeline installation and backfilling work in the vicinity of such

utilities shall be accomplished in the manner required by the respective owner and, if requested, under their direct supervision. The Contractor shall be responsible for any and all damages to a public or private utility that may occur as the result of the construction.

C. Right-of-Way Management.

The Contractor shall be responsible for obtaining a City of Lawrence temporary right-of-way permit for all work occurring in city right-of-way. There is no cost associated with the permit for City projects. In addition, the Contractor shall obtain a Temporary Traffic Control Permit if required. The Contractor shall review and comply with all requirements included in the Right-of-Way Administrative Regulations located at https://lawrenceks.org/adminregs_signed/.

D. Environmental Compliance.

Contractor shall be responsible for conducting all work in compliance with city, state and federal environmental regulations. Erosion control measures and practices shall conform to the approved Kansas Department of Health and Environment (KDHE) National Pollutant Discharge Elimination System (NPDES) permit and the approved Stormwater Pollution Prevention Plan (SWP3) for the project. No direct discharge of water used for washout, cleanup or other construction processes shall be allowed into the storm drainage system. Inlet protection, designated ponding and settling areas, or other best management practices shall be used to prevent contaminated runoff from entering the drainage system.

E. Access to Adjacent Properties.

When access to adjacent property is required to be maintained during construction, the Contractor shall be responsible for providing and maintaining temporary surfacing to each location to be accessed for the duration of the work. Unless otherwise indicated in the drawings or specifications, temporary surfacing shall be crushed rock, gravel or other approved materials. Material shall be supplemented or replaced as needed to maintain required access. Once permanent access has been restored or provided, all temporary surfacing material shall be removed from the site and the area restored to pre-construction conditions.

Mailboxes shall be maintained in the manner that the Postal Service requires to prevent interruption of mail delivery.

F. Temporary Facilities.

Contractor shall provide portable toilets on the project site. Contractor shall be responsible for providing temporary field offices and sheds, job trailers, and temporary utilities as required for performance of the work. An on-site field office is not mandatory unless specified in the Project Special Conditions or Provisions and/or included in the proposal.

G. Site Maintenance.

The Contractor shall be responsible for maintenance of the site for the duration of the work. Contractor shall execute periodic cleaning to keep the Work, site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris resulting from construction operations.

Provide sufficient onsite containers for the collection of waste materials, debris and rubbish. Containers shall be clearly marked with the Contractor's name and shall be conveniently located for use by workers. Refuse containers shall be covered to prevent wind from removing debris, and Contractor shall relocate containers as required during the course of the Work for convenient use by workers.

Construction debris includes, but is not limited to, excess dirt, rock, pavement materials, concrete splatters, overspray, and oil tracking from the area of the construction. The debris removed on this project becomes the property of the Contractor and must be hauled off site.

Contractor shall not allow concrete trucks to washout on the project site, in curb inlets and storm sewers, or on adjacent or nearby properties unless an approved washout area has been provided. All material in the washout area shall be removed at the end of construction and the area restored to original condition. If no washout area is provided concrete trucks must return to the plant before washing out. Concrete trucks that do not observe restrictions on washout may be prohibited from further deliveries to the project site.

The Contractor shall be responsible for keeping trucks and equipment clean for the duration of the Contract. If mud is deposited as a result of any of the Contractor's actions on any paved area, the Contractor will remove the mud immediately after being notified by the Engineer.

H. Contractor Employee Conduct.

Contractor's personnel shall not use sanitary facilities or utility services on adjacent or nearby private property without specific written permission from the property owner. Any worker observed not using portable toilet facilities provided on the site will be removed from the project. Contractor's personnel must not take breaks or eat lunch on adjacent private property.

0014 CAPITAL PROJECT MANAGEMENT SOFTWARE (CPMS)

Contractor will be required to utilize the City's CPMS (web-based project management software and communications tool) for invoice, submittal, and contract processes. At no charge to the Contractor, the City will provide a license to access the web-based software.

0015 MEASUREMENT AND PAYMENT

The Work of this Contract consists of furnishing all equipment, labor, material, and incidentals required, and performing all construction, installation and testing of all improvements, modifications and additions, all as shown on the drawings and detailed in the specifications. The term "all costs", as used in the payment descriptions is defined as full compensation for all equipment, labor, material and incidental costs.

Measurement and payment shall be as specified in this Section. All work shown on the drawings or detailed in the specifications and not specifically set forth in the Itemized Proposal as a pay item shall be considered a subsidiary obligation of the contractor, and all costs in connection therewith shall be included in the prices named in the proposal.

Items not listed in this Section but included in the Proposal shall be paid for based on the plan quantities and at the unit prices indicated in the Proposal unless otherwise specified in the Project Special Conditions or Provisions.

A. Site Preparation

1. Demolition And Removal.

- a. Final measurement will not be made. Contract quantity shall be plan quantity unless changes to the bid quantity are authorized.
- b. Payment for demolition and removal shall be based on the lump sum price as set forth in the Proposal. Said price shall include all costs necessary to complete the work including, but not limited to, demolishing, removing, disposing, plugging and capping of all structures and improvements, such as existing pavement, curb, sidewalk, pipes and structures (such as sanitary, storm and water) fences, poles and footings, within the construction limits, unless included in other items of work, as required by the drawings and specifications.

2. Clearing And Grubbing.

- a. Final measurement will not be made. Contract quantity shall be plan/bid quantity unless changes to the bid quantity are authorized.
- b. Payment for clearing and grubbing shall be based on the lump sum price as set forth in the Proposal. Said price shall include all costs necessary to complete the work including, but not limited to, demolishing, removing and disposing of all trees, shrubs, bushes, stumps and roots within the construction limits as required by the drawings and specifications.

3. Temporary Surfacing (Aggregate).

- a. Final measurement will be based on the tons of the completed and installed item.
- b. Payment for aggregate (crushed stone or gravel) shall be based on the unit price per ton as set forth in the Proposal. Said price shall include all costs necessary to complete the work, including but not limited to, hauling, grading, placing, tamping, removing, and restoring surfaces after removal as required by the drawings and specifications.

B. Grading

1. Excavation And Embankment.

- a. Final measurement will not be made. Contract quantity shall be plan/bid quantity unless changes to the bid quantity are authorized.
- b. Payment for excavation and embankment shall be based on the unit price per cubic yard as set forth in the Proposal. Said price shall include all costs necessary to complete the work including, but not limited to, roadway grading, excavation of whatever material is encountered (earth, shale, limestone), borrow material, loading, hauling, placement, compacting, finish grading, subgrade preparation and reconstruction, topsoil removal and replacement (including additional materials to sustain plant growth) and loading and hauling excess material as required by the drawings and specifications.

2. Flowable Fill/Mortar.

- a. Final measurement will not be made. Contract quantity shall be plan/bid quantity unless changes to the bid quantity are authorized.
- b. Payment for flowable fill/mortar will be subsidiary to the work done as set forth in the Proposal. Said price shall include all costs necessary to place the material and complete the work as required by the drawings and specifications.

C. Subgrade Preparation

1. Subgrade Stabilization.

- a. Final measurement will not be made. Contract quantity shall be plan/bid quantity unless changes to the bid quantity are authorized.
- b. Payment for stabilized subgrade shall be based on the unit price per square yard as set forth in the Proposal, per the type of material and thickness of the installed item. Said price shall include all costs necessary to complete the work including, but not limited to, placing, compacting, rolling and watering as required by the drawings and specifications.

D. Asphaltic Concrete Pavement

1. Asphalt Pavement.

- a. Final measurement will be based either on the tonnage or the square yards of each type of asphalt used. The Project Special Conditions or Provisions and bid form will indicate which option is to be used. When square yards are used asphalt tickets must still be submitted to the Engineer.
- b. Payment for asphalt pavement shall be based on the unit price per ton or square yard as set forth in the Proposal. Said price shall include all costs necessary to complete the work including,

but not limited to, preparing surface, placing pavement, compacting, rolling, connecting to existing pavement, and sealing, as required by the drawings and specifications.

- c. Prices quoted for asphalt material will be based on the "Computed Monthly Asphalt Material Index" in effect for the month immediately preceding the month the project is bid as listed at

<http://www.ksdot.org/burconsmain/ppreq/AsphaltPriceIndex.asp>.

Hot mix asphalt provided/placed in a subsequent month will be adjusted \$0.50/ton for each \$10.00 increase/decrease in the Computed Monthly Asphalt Material Index, based on the initial price index shown for the month immediately preceding the month the project is bid. For example, if the project is bid in March then the initial price index would be based on the month of February of the same year. The asphalt material index is established on PG 64-22, and will be applied for all grades of asphalt cement oil.

Payment for oil price adjustments will be paid based on tonnage regardless of the method of measurement for in-place pavement.

The following table provides examples of possible adjustments but does not limit any increases/decreases to only those shown in the table.

Change in Price of Asphalt Oil/Ton (Asphalt Material Index)	Change/Adjustment in Bid Price of Combined Asphalt Mix/Ton
\$00.00 to \$9.99	\$0.00
\$10.00 to \$19.99	\$0.50
\$20.00 to \$29.99	\$1.00
\$30.00 to \$39.99	\$1.50
\$40.00 to \$49.99	\$2.00

Adjustments to payments (increase or decrease) will be made for the applicable completed work. If the working days or calendar completion date for work (or a specific portion of the work) expires, payments (or deductions) will continue to be applied, but the maximum adjustment for the rest of the project will be the adjustment for the month the contract time expired.

E. Concrete Pavement.

1. Concrete Pavement (All Types).

- a. Final measurement will be based on the square yard of the completed and installed item.

- b. Payment for concrete pavement shall be based on the unit price per square yard as set forth in the Proposal, per the type of pavement and thickness of the installed item. Said price shall include all costs necessary to complete the work including, but not limited to, placing, compacting, saw cutting, milling, doweling, jointing, curing, sealing, concrete pavement patches and street repair as required by the drawings and specifications.

F. Concrete Curb, Curb and Gutter, Sidewalk, and Driveway Entrances

1. Driveways.

- a. Final measurement will be based on the square yard of the completed and installed item.
- b. Payment for driveways shall be based on the unit price per square yard as set forth in the Proposal, per the type of pavement and thickness of the installed item. Said price shall include all costs necessary to complete the work including, but not limited to, placing, compacting, saw cutting, milling, doweling, jointing, curing and sealing, as required by the drawings and specifications.

2. Sidewalks and Recreation Paths.

- a. Final measurement will be based on the square foot or yard of the completed and installed item.
- b. Payment for sidewalks and paths shall be based on the unit price per square foot or yard as set forth in the Proposal, per the type of pavement and thickness of the installed item. Said price shall include all costs necessary to complete the work including, but not limited to, placing, compacting, saw cutting, doweling, jointing, curing and sealing, as required by the drawings and specifications.

c.

3. Reinforced Concrete Sidewalk (Adjacent to Curb)

- a. Final measurement will be based on the square foot or yard of the completed and installed item.
- b. Payment for reinforced concrete sidewalk (adjacent to curb, access ramps) shall be based on the unit price per square foot or yard as set forth in the Proposal. Said price shall include all costs necessary to complete the work including, but not limited to, subgrade preparation, placing, compacting, saw cutting, jointing, curing, and sealing, as required by the drawings and specifications.

4. Detectable Warning Panels (All Types)

- a. Final measurement will be based on the square foot or yard of the completed and installed item.
- b. Payment for detectable warning panels shall be based on the unit price per square foot or yard as set forth in the Proposal.

Said price shall include all costs necessary to complete the work as required by the drawings and specifications.

5. Integral Sidewalk Curb

- a. Final measurement will be based on the linear foot of the completed and installed item.
- b. Payment for integral sidewalk curb shall be based on the unit price per linear foot as set forth in the Proposal. Said price shall include all costs necessary to complete the work including, but not limited to, subgrade preparation, placing, forming, compacting, reinforcement, doweling, jointing, curing and sealing, as required by the drawings and specifications.

6. Integral Sidewalk and Retaining Wall

- a. Final measurement will be based on the square foot or yard of the completed and installed item as measured horizontally inclusive of the integral sidewalk.
- b. Payment for integral sidewalk retaining wall shall be based on the unit price per square foot or yard as set forth in the Proposal. Said price shall include all costs necessary to complete the work including, but not limited to, subgrade preparation, placing, forming/stripping of forms, compacting, saw cutting, jointing, curing, weep hole installation, and sealing, as required by the drawings and specifications.

c.

7. Curb And Gutter (All Types).

- a. Final measurement will be based on the horizontal length of the completed and installed item, as measured along the gutter line.
- b. Payment for curb and gutter shall be based on the unit price per linear foot as set forth in the Proposal, per the type of curb and gutter. Said price shall include all costs necessary to complete the work including, but not limited to, subgrade preparation, forming, placing, doweling, jointing, deflector construction, finishing, curing and backfilling, as required by the drawings and specifications.

G. Pavement Marking

1. Pavement Marking (Permanent and Temporary).

- a. Final measurement will be based on either the horizontal length or for each of the completed and installed items. The Project Special Conditions or Provisions and bid form will indicate which option is to be used.
- b. Payment for pavement marking shall be based on the unit price per linear foot or per each as set forth in the Proposal. Said price shall include all costs necessary to complete the work item including, but not limited to, removal of old markings, surface preparation, layout, and taping, as required by the drawings and specifications.

H. Permanent Signing

1. Permanent Signage.

- a. Final measurement will not be made. Contract quantity shall be plan quantity unless changes to the bid quantity are authorized.
- b. Payment for erosion control shall be based on the lump sum as set forth in the Proposal. Said price shall include all costs necessary to complete the work item including, but not limited to, excavation, concrete, posts, signs face, and hardware as required by the drawings and specifications. Signage bids shall include a permanent signing summary table.

I. Traffic Signals

1. Traffic Signals (Including Modifications).

- a. Final measurement will not be made. Contract quantity shall be plan quantity unless changes to the bid quantity are authorized.
- b. Payment for traffic signals (including component system packages) shall be based on the lump sum price as set forth in the Proposal. Said price shall include all costs necessary to complete the work including, but not limited to detection, preemption, and all incidental parts and materials required to provide complete installation of the traffic signal and component system are considered subsidiary to the lump sum unit cost.

J. Sanitary Sewer

1. Manhole or Water Valve Lid Adjustments.

- a. Final measurement will be based on each completed and installed item.
- b. Payment for adjustments shall be based on the unit price per each as set forth in the Proposal. Said price shall include all costs necessary to complete the work item including, but not limited to, all pavement removal, adjustment rings, concrete and sealant as required by the drawings and specifications. Contractor shall reuse the existing lids if possible. If lids cannot be reused, Owner will supply new lids.

2. Air Release Valves.

- a. Final measurement will be based on each completed and installed item.
- b. Payment for air release valves will be paid at the unit price per each size and type as set forth in the Proposal. Said price shall include, but not be limited to, furnishing and installing the valve, miscellaneous piping, valve box or manhole, and other appurtenances; excavation and backfill not included under piping; and all other costs not included under other bid items.

3. Sanitary Sewer Pipe (All Types).

- a. Final measurement will be based on the horizontal length of the completed and installed item, as measured along the centerline.

- b. Payment for sanitary sewer pipe shall be based on the unit price per linear foot as set forth in the Proposal, per the type and size of pipe. Said price shall include all costs necessary to complete the work item including, but not limited to, all trenching (earth, rock, shale), dewatering, bedding, placing, testing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.
- 4. Sanitary Sewer Stubs and Plugs.
 - a. Final measurement will be based on each completed and installed item.
 - b. Payment will be based on the unit price per each size and type as set forth in the Proposal. Said price shall include, but not be limited to, furnishing and installing stub or plug, and excavation and backfill (not included under piping) as required by the drawings and specifications.
- 5. Concrete Encasement.
 - a. Final measurement will be based on the horizontal length of the completed and installed item, as measured along the centerline.
 - b. Payment for concrete shall be based on the unit price per linear foot as set forth in the Proposal. Said price shall include all costs necessary to complete the work item including, but not limited to, all placing, reinforcing, and compacting as required by the drawings and specifications.
- 6. Standard Sanitary Manholes (All Types).
 - a. Final measurement will be based on each completed and installed item.
 - b. Payment for manholes shall be based on the unit price per each as set forth in the Proposal, per the type and size of structure. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), bedding, placing or building manhole, invert construction, manhole to pipe connections, final grade adjustments to the top, sealing, curing, backfilling, compacting, grading, testing and removal of excess or unsuitable material, as required by the drawings and specifications.
- 7. Extra Depth Sanitary Manholes.
 - a. Final measurement will be based on the vertical height of the completed and installed item, measured from the base to the top of the cone.
 - b. Payment for extra depth manholes shall be based on the unit price per vertical foot as set forth in the Proposal, per the type and size of structure. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), bedding, placing or building manhole, invert construction, manhole to pipe connections, final grade adjustments to the top, sealing, curing,

backfilling, compacting, grading, testing and removal of excess or unsuitable material, as required by the drawings and specifications.

8. Adjustment of Existing Manhole.

- a. Final measurement will be based on each completed and installed item.
- b. Payment for adjustments shall be based on the unit price per vertical foot of adjustment as set forth in the Proposal. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation, adjustment rings or sections, sealing, curing, backfilling, grading and testing, as required by the drawings and specifications.

9. Connection to Existing Manhole.

- a. Final measurement will be based on each completed and installed connection.
- b. Payment for manhole connections shall be based on the unit price per each as set forth in the Proposal. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), dewatering, bedding, pipe connections, testing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.

10. Force Main Connections.

- a. Final measurement will be based on each completed and installed connection.
- b. Payment for force main connections shall be based on the unit price per each as set forth in the Proposal. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation, dewatering, bedding, pipe connection, testing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.

K. Waterlines

1. Manhole or Water Valve Lid Adjustments.

- a. Final measurement will be based on each completed and installed item.
- b. Payment for adjustments shall be based on the unit price per each as set forth in the Proposal. Said price shall include all costs necessary to complete the work item including, but not limited to, all pavement removal, adjustment rings, concrete and sealant as required by the drawings and specifications. Contractor shall reuse the existing lids if possible. If lids cannot be reused, Owner will supply new lids.

2. Air Release Valves.

- a. Final measurement will be based on each completed and installed item.
 - b. Payment for air release valves will be paid at the unit price per each size and type as set forth in the Proposal. Said price shall include, but not be limited to, furnishing and installing the valve, miscellaneous piping, valve box or manhole, and other appurtenances; excavation and backfill not included under piping; and all other costs not included under other bid items.
- 3. Water Line Pipe (All Types)
 - a. Final measurement will be based on the horizontal length of the completed and installed item, as measured along the centerline.
 - b. Payment for water line pipe shall be based on the unit price per linear foot as set forth in the Proposal, per the type and size of pipe. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), dewatering, bedding, polyethylene encasement, placing, pipe to pipe connections, restraint measures, flushing, disinfection, pressure testing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.
- 4. Water Line Valves (All Types)
 - a. Final measurement will be based on each completed and installed item.
 - b. Payment for valves in water mains will be paid at the unit price per each size and type as set forth in the Proposal. Said price shall include, but not be limited to, furnishing and installing the valve, valve box, and appurtenances; excavation and backfill not included under piping; and all other costs not included under other bid items.
- 5. Water Line Fittings (Bends, Crosses, Reducers, Sleeves, Tees).
 - a. Final measurement will be based on each completed and installed item.
 - b. Payment for water line fittings shall be based on the unit price per each as set forth in the Proposal, per the type and size of fitting. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), dewatering, bedding, polyethylene encasement, placing, pipe to pipe connections, restraint measures, flushing, disinfection, pressure testing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.
- 6. Water Line Connections (Main Line Connections).
 - a. Final measurement will be based on each completed and installed item.
 - b. Payment for water line connections shall be based on the unit price per each as set forth in the Proposal. Said price shall include

all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), dewatering, bedding, polyethylene encasement, placing, pipe to pipe connections, restraint measures, flushing, disinfection, pressure testing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.

7. Water Line Splice and Relocation.

- a. Final measurement will be based on each completed and installed item.
- b. Payment for water line splice and relocation shall be based on the unit price per each as set forth in the Proposal. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), dewatering, bedding, polyethylene encasement, placing, pipe to pipe connections, restraint measures, valve box, flushing, disinfection, pressure testing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.

8. Water Meter Removal and Abandonment.

- a. Final measurement will be based on each completed and installed item.
- b. Payment for water line relocation shall be based on the unit price per each as set forth in the Proposal. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), dewatering, bedding, polyethylene encasement, placing, pipe to pipe connections, capping, restraint measures, flushing, disinfection, pressure testing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.

9. Water Meter Installation or Relocation.

- a. Final measurement will be based on each completed and installed item.
- b. Payment for water line relocation shall be based on the unit price per each as set forth in the Proposal. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), dewatering, bedding, polyethylene encasement, placing, pipe to pipe connections, restraint measures, flushing, disinfection, pressure testing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications. Except for the actual water meter, contractor shall supply all parts to relocate the meter. Contractor shall reuse the existing meter. If meter cannot be reused, Owner will supply a new meter.

10. Fire Hydrant Assembly Installation or Relocation.

- a. Final measurement will be based on each completed and installed item.
- b. Payment for fire hydrant relocation shall be based on the unit price per each as set forth in the Proposal. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), dewatering, bedding, polyethylene encasement, placing, pipe to pipe connections, restraint measures, flushing, disinfection, pressure testing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.

11. (Size)" Tapping Sleeve and (Size)" Tapping Valve.

- a. Measurement will be made on a per each basis for each Tapping Sleeve and Valve of the designated size installed and approved.
- b. Payment will be made at the unit price bid for completing construction necessary to provide a complete tapping sleeve and tapping valve installation in conformance with the plans and specifications. The price shall include all costs for labor, material and equipment to accomplish the task.

12. Water Meter Components (Tiles, Rings, Lids, Setters; All Types and Sizes)

- a. Final measurement will be made on a per each installed basis for each of the indicated components installed individually or in combination.
- b. Payment for water meter components shall be based on the unit price per each as set forth in the Proposal, per the type and size of component. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), dewatering, bedding, polyethylene encasement, placing, pipe to pipe connections, restraint measures, flushing, disinfection, pressure testing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.

13. (Size)" Manifold Assembly.

- a. Measurement will be made on a per each basis to include all portions of the assembly as detailed on the plans.
- b. Payment will be made at the unit price bid for each basis for completing all construction necessary to complete the assembly as indicated on the plans. The Payment shall include compensation for all costs for labor, equipment and materials necessary to install each component or combination of components to provide a complete and functional installation. Service line from the manifold and connections to the meter

setter or existing service line are paid for under separate bid items.

14. (Size)" Cap or Plug and Block.

- a. Measurement will be made on a per each basis for each Cap or Plug and Block of the designated size installed and approved.
- b. Payment will be made at the unit price bid for completing all construction necessary to install the Cap or Plug and Block in conformance with the plans and specifications. The price shall include all costs for labor, material and equipment to accomplish the task.

15. (Size)" Anchor Coupling.

- a. Measurement will be made on a per each basis for each Anchor Coupling of the designated diameter, installed and approved.
- b. Payment will be made at the unit price bid for completing all construction necessary to install the Anchor Coupling of the designated size in conformance with the plans and specifications. The price shall include all costs for labor, material and equipment to accomplish the task.

L. Storm Sewers

1. Storm Sewer Structures (Inlets, Junction Boxes, And Manholes).

- a. Final measurement will be based on each completed and installed item.
- b. Payment for storm sewer structures shall be based on the unit price per each as set forth in the Proposal, per the type and size of structure. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), bedding, placing or building structure, invert construction, structure to pipe connections, final grade adjustments to the top, sealing, curing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.

2. Storm Sewer Pipe (All Types).

- a. Final measurement will be based on the horizontal length of the completed and installed item, as measured along the centerline.
- b. Payment for storm sewer pipe shall be based on the unit price per linear foot as set forth in the Proposal, per the type and size of pipe. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), bedding, placing, pipe to pipe connections, sealing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.

3. Storm Sewer End Sections (All Types).

- a. Final measurement will be based on each completed and installed item.

- b. Payment for storm sewer end sections shall be based on the unit price per each as set forth in the Proposal, per the type and size of end section. Said price shall include all costs necessary to complete the work item including, but not limited to, all excavation (earth, rock, shale), bedding, placing or building the end section, end section to pipe connections, toe wall construction, sealing, curing, backfilling, compacting, grading and removal of excess or unsuitable material, as required by the drawings and specifications.
- 4. Rip Rap (All Types).
 - a. Final measurement will be based on the horizontal length of the completed and installed item.
 - b. Payment for fence shall be based on the unit price per linear foot as set forth in the Proposal, per each type of fence. Said price shall include all costs necessary to complete the work item, as required by the drawings and specifications.
- 5. Sediment Control Devices (All Types).
 - a. Final measurement will be based on counting the number, measuring the linear footage or measuring the area of the completed and installed item.
 - b. Payment for sediment control shall be based on the unit price as set forth in the Proposal, per linear foot for sediment fence and per each for inlet protection and check dams. The unit price shall include full compensation for equipment, labor, material, repair, maintenance and incidental costs, including removal of materials. Removal of sediment, repair and maintenance of installed sediment control shall be subsidiary to sediment control.
- 6. Erosion Control
 - a. Final measurement will not be made. Contract quantity shall be plan quantity unless changes to the bid quantity are authorized.
 - b. Payment for erosion control shall be based on the lump sum price as set forth in the Proposal. Said price shall include all costs necessary to complete the work including, but not limited to, sediment removal and disposal, silt fences, sediment traps, sediment basins, straw bales, rock barriers, dust control, within the construction limits as required by the drawings and specifications.

M. Seeding

- 1. Seeding (Temporary or Permanent).
 - a. Final measurement will not be made. Contract quantity shall be plan/bid quantity unless changes to the bid quantity are authorized.
 - b. Payment for seeding shall be based on the lump sum price as set forth in the Proposal. Said price shall include all costs

necessary to complete the work item including, but not limited to, aeration, fertilization, mulching, and watering, as required by the drawings and specifications. Contractor shall water seed until final acceptance.

2. Sod (All Types).

- a. Final measurement will be based on the square yards of the completed and installed item.
- b. Payment for sod shall be based on the unit price per square yard as set forth in the Proposal, per each type of sod. Said price shall include all costs necessary to complete the work item including, but not limited to, aeration, fertilization, mulching, and watering, as required by the drawings and specifications. Contractor shall water sod until final acceptance.

N. Other

1. Mobilization

- a. Final measurement will not be made. Contract quantity shall be a lump sum item.
- b. Payment mobilization shall be based on the lump sum price as set forth in the Proposal. Said price shall include all costs necessary to complete the work including, but not limited to activities to bring materials, labor, and equipment to the worksite in preparation to begin construction activities. Payment will be made as follows:
 1. When 5% of the original contract amount has been completed, 25% of the contract price for mobilization will be paid.
 2. When 10% of the original contract amount has been completed, 50% of the contract price for mobilization will be paid
 3. When 50% of the original contract amount has been completed, 100% of the contract price for mobilization will be paid.

2. Traffic Control.

- a. Final measurement for lump sum bids will not be made unless changes to the bid quantity are authorized. For work under a force account, final measurement will be based on records of equipment and labor used during the work.
- b. Payment for lump-sum traffic control shall be based on the lump sum price as set forth in the Proposal. Said price shall include all costs necessary to complete the work including, but not limited to, temporary striping, edge drop-off treatment, construction signs, barricades and channelization devices, as required by the drawings and specifications. Payment for relocation and reuse of the items shall be considered subsidiary to the payment for the initial installation.

- c. Payment for force account work shall be based on the actual quantities of equipment, materials, and labor hours used in performance of the work and the unit prices for each item as submitted by the contractor.
- 3. Drainable Base.
 - a. Final measurement will not be made. Contract quantity shall be plan/bid quantity unless changes to the bid quantity are authorized.
 - b. Payment for drainable base shall be based on the unit price per square yard as set forth in the Proposal, per the type of material and thickness of the installed item. Said price shall include all costs necessary to complete the work including, but not limited to, placing, compacting, rolling and watering as required by the drawings and specifications.
- 4. Drain Tile (Edge Drain or Under Drain).
 - a. Final measurement will be based on the horizontal length of the completed and installed item.
 - b. Payment for edge drain shall be based on the unit price per linear foot as set forth in the Proposal, per the type and size of the installed item. Said price shall include all costs necessary to complete the work as required by the drawings and specifications. Note: Drain tile installed in retaining walls will be considered subsidiary to the wall pay item.
- 5. Fence (All Types).
 - a. Final measurement will be based on the horizontal length of the completed and installed item.
 - b. Payment for fence shall be based on the unit price per linear foot as set forth in the Proposal, per each type of fence. Said price shall include all costs necessary to complete the work item, as required by the drawings and specifications.

0016 MATERIAL TESTING

This section shall apply to all required testing services for asphalt, concrete, soils, and grade verification. Unless otherwise indicated or specified, on-site testing may be performed by an inspector employed by the City of Lawrence or by personnel of an approved testing firm hired by the City at the City's option.

A. Asphaltic Concrete Testing.

Sampling and testing of the asphalt mix may be required on all asphalt paving projects constructed in the City of Lawrence. All sampling of materials shall be coordinated between the producer and respective quality control and quality acceptance laboratories to obtain a safe and representative material sample and to ensure delivery of materials for testing to the respective laboratory. Additional information is available on the website www.kcmmb.org.

Samples of the actual asphalt mix being used on a paving project shall be acquired at the batching plant, unless otherwise specified or approved, per ASTM Standards D979 and D3665. These samples shall be used to perform an asphalt extraction, aggregate gradation test (ASTM C136 and C117) and for determining the asphalt specific gravity and volumetrics in accordance with the requirements of ASTM D2041, D2172, D2726, D3203, D6925, and D6995, as applicable. Documentation shall be provided on the Superpave Asphaltic Concrete Test to report if visual evidence is found of fiberglass retained on the #200 sieve. A cold feed belt sample shall also be obtained to perform an aggregate gradation test (ASTM C136 and C117).

In-place density tests may be conducted with a nuclear or low-activity nuclear testing device during the course of the work by City inspectors at the City's option to give general indication of level of compaction. The inspector shall determine the number of tests to be taken and the locations thereof based upon observation of the paving process. Tests performed with a nuclear or low-activity nuclear device shall be conducted as per the requirements of ASTM D2950. Actual in-place density for acceptance and payment purposes shall be determined from pavement cores unless otherwise specified.

Cores (at least 4 inches in diameter) will be taken by the Contractor to determine in-place densities and as an aid for verifying thickness unless otherwise specified. Contractor shall obtain cores in general accordance with the requirements of ASTM D5361. Core locations shall be repaired using epoxy concrete, high-strength non-shrink grout, or other approved product. Contractor shall supply equipment and labor for obtaining cores and repairing holes.

Pavement density requirements, including core sampling and testing frequency, shall conform to the specifications of the Kansas City Metropolitan Materials Board (KCMMB) and Section 1300 – *Asphaltic Concrete Pavement* for Density and Surface Requirements.

B. Concrete Testing.

Sampling and testing may be required on all concrete work including curb and gutter, sidewalk, slope paving, retaining walls, inlets, manholes or any other structures.

During the progress of the work, concrete field tests and compression tests shall be performed as directed by the Engineer in accordance with the requirements of ASTM C31, C39, C138, C143, C172, C231, and C1064. Cylinders will generally be broken at seven (7) days, fourteen (14) days, and twenty-eight (28) days noting the compressive strength of each break. Slump, unit weight, temperature, and air content tests will also be taken with cylinders.

C. Soil Testing.

Sampling and testing may be required on all subgrade preparation for street construction and all trench backfilling operations within the City of Lawrence.

Prior to commencing earthwork for any street improvement project, the Contractor shall acquire samples of soil and submit samples to an approved laboratory to perform a moisture density test (ASTM D698 for cohesive soils and ASTM D4253 for non-cohesive soils). These tests shall be at the Contractor's expense. The number of tests required will be based on the types of soils encountered on the project. Contact project inspector prior to obtaining samples in order to allow inspector to be present during sampling if desired.

Reports for moisture-density tests shall include the date, the location of the tests, the elevation or depth at which the test was taken, the maximum dry density, and the optimum moisture content as well as properly constructed moisture-density curves for each sample. Also included shall be a determination of the soil plasticity index (PI) and liquid limit (LL) and classification in accordance with ASTM D2487. Submit test results to Engineer a minimum of 48 hours prior to beginning earthwork.

During the progress of the earthwork, in-place density tests shall be performed with a nuclear or low-activity nuclear density meter. The inspector shall determine the number of tests to be taken and the location thereof based upon their observation of the work. Results of these tests shall indicate whether or not the performance specifications stated in Sections 1100 and 1200 of this specification manual have been achieved. If the tests indicate the compaction is not sufficient, the Contractor shall increase the compactive effort on all such inadequately compacted areas. Tests performed with a nuclear device shall be conducted as per the requirements of ASTM D6938 or ASTM D8167 for a low-activity nuclear method.

During the progress of the work of trench backfilling, in-place density tests shall be performed with a nuclear or low-activity nuclear meter. The inspector shall determine the number of tests to be taken and the locations thereof based upon their observation of the backfilling process. Results of these tests shall indicate whether or not the performance specifications stated in Sections 1100 and 1200 of this specification manual have been achieved. If the tests indicate the compaction is not sufficient, the Contractor shall increase the compactive effort on all such inadequately compacted areas.

D. Grade Verification via Street Flow Testing.

After completion of new street pavement or new curb and gutter, the new installation must be flow tested with water, at the contractor's expense, to confirm that there are no areas that hold water. The work will not be accepted if it holds water more than one eighth (1/8) inch deep for a distance greater than three (3) feet. Unacceptable work must be removed and replaced. Means and methods for flow testing must be approved by the Engineer.

E. Supplemental General Testing Frequencies.

The described testing frequencies would be superseded by any other project specific testing frequency requirements; for example, a KDOT funded project. In all testing scenarios, if deficiencies are found in any testing procedure or found by visual indicators from observations performed on-site, the material from that batch may be rejected and subsequent tests would be run to confirm compliance. The respective City Project Manager shall be notified to discuss further action. Examples of possible deficiencies or material inconsistencies may include appearance of segregation in an asphalt surface which would lead to further density checks (nuclear or low-activity nuclear density gauge, for example) and in cases of high slump appearance on a concrete pour there could be a full field concrete test follow up along with verification of withheld water/ water added.

1. Asphalt Testing

1. 1 full test (aggregate gradation, oil content, voids, and density) per mix design, per project.

2. Concrete Testing

1. 1 full test (air content, slump, temperature, and unit weight) per mix design, per project AND additionally to meet the frequency parameters below. Strength test cylinder specimens will typically be made and tested in conjunction with the initial field test frequency or as determined by the City Project Manager.
 - a. 500 CY for Street Pavement.
 - b. 2000 LF for Separate Curb and Gutter.
 - c. 1000 LF for Sidewalk/Shared-Use Path.

3. Treated Subgrade Testing

1. 1 density test every 1000 LF per lane on average per project, generally performed by nuclear or low-activity nuclear density gauge.

4. Waterline and Sanitary Sewer Testing

1. Waterline testing shall conform to the requirements outlined in Section 2906 of the technical specifications.
2. Sanitary sewer testing shall conform to the requirements outlined in Section 2505 of the technical specifications.