

**CITY OF HOLTON
HOLTON, KANSAS**

**STREET CONSTRUCTION
STANDARDS AND
SPECIFICATIONS**

(amended 3/18/91)

**Authority: City of Holton Code 1983 Chapter XVI Article 4, Section
403**

SECTION 1. PAVEMENT OPTIONS

A. Local Residential								
		Hot Mix Asphalt			Concrete		Double Seal Coat	
Width	Crown	Agg*	Base	Surface	Agg	Plain	Aggr	Asphaltic
B to B curb		Base	Course	Course	Base	concrete	Base	Seal Coat
28 ft	3/16"	8"	2"	1.5"	0	6"	8"	First Course
	per							1/2" Chips
	foot							Second Course
								3/8" Chips
B. Collector Street								
		Hot Mix Asphalt			Concrete			SIZE
Width	Crown	Agg*	Base	Surface	Agg	Plain		SIEVE
B to B curb		Base	Course	Course	Base	concrete	3/8" chips	1/2"
								3/8"
32 ft	3/16"	10"	2.5"	1.5"	6"	6"		No. 4
	per							No. 10
	foot							
							1/2" chips	3/4"
C. Arterials								
		Hot Mix Asphalt			Concrete			1/2"
Width	Crown	Agg*	Base	Surface	Agg	Plain		3/8"
B to B curb		Base	Course	Course	Base	concrete		No. 4
								No. 10
33 ft	3/16"	12"	3.5"	1.5"	6"	8"		
	per							
	foot							
* 1" asphalt may be substituted for 2" of aggregate base								

SECTION 2. SITE PREPARATION

A. Definitions

1. Clearing: Clearing shall consist of removing all vegetable matter, such as trees, brush, down timber, rotten wood, rubbish, and other objectionable combustible materials found on or above the surface of the site. It shall include removing wood buildings, fences, lumber, waste

dumps and trash, and the salvaging of such of the materials as may be specified and disposing of the debris.

2. Grubbing: Grubbing shall consist of removing all stumps, roots, buried trees and brush, wood piling, wood curb planking, wood culverts, wood catch basins and drains, and wood stairs appearing on or below the surface of the ground which has not been included in the section entitled "Clearing".

3. Demolition: Demolition shall consist of demolishing and removing or incorporating into embankment all nonvegetable matter appearing above, on or below the ground surface. This shall include all material derived from the demolition of portland cement concrete items such as base courses, curb and gutters, sidewalks, floors, steps, driveways, drainage structures of all sorts, guard fences, and other miscellaneous items such as foundations or walls of any sort, and iron or steel items; and shall included all asphaltic items such as pavement and base courses.

4. Trees: Vegetable growth six (6) inches in diameter and larger, measured three (3) feet above the ground shall be classified as trees.

5. Brush: Vegetable growth less than six (6) inches in diameter measured three (3) feet above the ground shall be classified as brush.

B. Construction Details

1. In Developed Areas: In developed and semi-developed areas where streets exist, the limits for clearing, grubbing and demolition will not extend beyond the limits of the right-of-way, city property or easement.

2. In Undeveloped Areas: In undeveloped areas where improvements are very scattered or non-existent, clearing, grubbing and demolition shall extend to the limits of the right-of-way, city property or easement.

3. Protection of Existing Facilities: The contractor shall be responsible for protecting any improvement of any agency, public or private in the vicinity of clearing, grubbing or demolition operations. When necessary the Contractor shall enlist the assistance of the affected agencies in the location of their facilities. The Contractor shall be responsible for the cost to any agency for assistance in the location of it's facilities because of his carelessness or negligence.

C. Progress of Clearing

1. The refuse resulting from clearing may be hauled to a waste site secured by the contractor and approved by the city or shall be burned in such a manner as to meet all

requirements of the State, County and Municipal regulations regarding health, safety and public welfare. When authorized by the Fire Department the Contractor may dispose of such refuse by burning on the site of the project provided all requirements set forth by the Fire Chief are met. In all cases the authorization to burn on the site shall not relieve the contractor in any way from damages which may result from his operations.

D. Progress of Grubbing

1. All stumps, roots and other objectionable matter within the construction area shall be removed to a depth of at least twelve (12) inches below the subgrade or the original ground whichever is lower. All stumps, roots and other objectionable matter within the right-of-way but outside of the limits of the construction area shall be cut off flush with the ground.

E. Progress of Demolition

1. Miscellaneous foundations, masonry and concrete walls of all sorts or other objects extending below the ground shall be removed to a minimum depth of twelve (12) inches below sub-grade or the original ground whichever is lower.

SECTION 3. GRADING

A. Construction Details - General

1. Grading, excavation and backfilling for roadways, roadway intersections, shoulders or other such improvements shall be made to the lines, grades and cross-sections shown on the plans. During construction the area shall be maintained in such condition that it will be well drained at all times.

B. Subgrade Preparation

1. Definitions

a. Subgrade: Subgrade is defined as a well graded and compacted surface constructed as specified herein to the grades, lines and cross-sections shown bladed and compacted to the specified density, preparatory to construction pavements.

b. Subgrade Preparation: Subgrade preparation is the repeated operation of fine-grading and compacting the sub-grade until the specified lines, grades and cross-sections are obtained and the materials are compacted to the specified depth and density.

C. Construction Details

1. General: All underground work contemplated including clearing, grubbing and demolition shall be completed in accordance with the requirements prior to commencing any sub-grade work.

The sub-grade surface shall be brought to the specified lines, grades and cross-sections by repeatedly adding or removing material and compacting to the specified density with a suitable roller to perform these operations. Tolerance allowed on all lines, grades and cross-sections shall be plus or minus 0.05 ft in 10 feet.

2. Compacting the Sub-Grade for Pavements: The sub-grade for pavements shall be compacted to a density of at least ninety-five (95) per cent of the maximum density for the material used as determined by ASTM Designation D-698 for a depth of at least six (6) inches below the finished sub-grade elevation and within the tolerance of the moisture for the type of materials at ninety-five (95) per cent of maximum density as shown on the moisture-density curve obtained. Any further compacted layers shall be accomplished in the same manner as specified.

3. Protection and Maintenance of Subgrade: The newly finished sub-grade shall be repaired from action of the elements. Any settlement or washing that occurs prior to the acceptance of the work shall be repaired and the specific lines, grades and cross-sections re-established.

SECTION 4. UNTREATED COMPACTED AGGREGATE BASE

A. Material

1. The base material shall consist of crushed stone aggregate free from lumps or balls of clay and other soft and objectionable material. The gradation of the material shall meet the standard AB3 gradation as approved in the Standard Specifications for State Road and Bridge Construction, Kansas Department of Transportation; current edition.

B. Placement

1. Sub-grade: Prior to placement of base material the previously prepared subgrade shall be cleared of all foreign substances and restored in shape, tolerance and density.

2. Material Placement: Immediately in advance of spreading the mixture, the subgrade shall be sprinkled. After sprinkling the subgrade the mixture shall be uniformly spread by blades in successive layers of courses to such depth that when compacted the base will have the minimum thickness specified or as otherwise directed by the City. The Contractor may construct the base in any number of layers that he chooses except that in no case shall any individual layer have a compacted thickness of more than four (4) inches. Each layer shall be

compacted as hereinafter specified before any succeeding layer is placed. The top one-half (1/2) inch of the base may be constructed of material having a maximum size of 1/2 inch with 15 to 50 per cent passing the No. 200 sieve.

Compacting of such a top course shall be obtained by rolling with a pneumatic tired or flat wheeled rollers or both s may be required to obtain the specified density.

After spreading a layer of mixture, water in an amount sufficient to insure the desired compaction shall be added and uniformly mixed with the aggregate in a manner to prevent segregation. Excess moisture resulting in run-off shall be avoided. If for any reason the mixture and sub-grade become too wet to permit satisfactory work they shall be allowed to dry to a moisture content which will permit satisfactory work.

Compaction of the aggregate base material shall be secured by rolling with pneumatic-tired , smooth wheeled rollers or vibratory equipment as required. Shaping and compacting shall be carried on continuously until a true, even and uniform surface of proper grade and cross-section is obtained and until the density of the complete base is at least ninety-five (95) per cent of maximum density as determined by the Tentative Methods of Test for Moisture-Density Relations of Soils using 5.5 lb. rammer and 12 inch drop (ASTM Designation D-698, Method D.) The proper moisture content shall be maintained by wetting the surface as required during shaping and compacting operations. Final rolling shall be accomplished by use of a self-propelled smooth-wheeled roller weighing two (2) to five (5) tons.

SECTION 5. HOT MIX ASPHALT - BASE COURSE

A. Materials

1. The plant mix base course shall be constructed with materials meeting BM2 Mix Designation as specified in Section 1103 of the Standard Specifications for State Road and Bridge Construction. Mix designation may be changed with proper justification, however the change must be approved in writing by the Street Superintendent. The Street Superintendent may change the mix designation if the pavement construction is full depth asphalt.

2. Recycled Asphalt Pavement (RAP) may be used in the mix according to current KDOT specifications on approval of the Street Superintendent.

B. Placement

1. The plant mix base course shall be constructed and placed as specified in Section 603 of the Standard Specifications for State Road and Bridge Construction. The mixture shall be delivered to the paver at a minimum temperature of 275 degrees Fahrenheit. Base course shall be placed in lifts of four (4) inches maximum. The final lift of the base course shall be a leveling course not to exceed a nominal two (2) inch thickness.

Tack coat between lifts shall consist of five hundredths (0.05) to one tenth (.10) gallon per square yard of SS-1 or SS1-h in accordance to Section 1202 of the Standard Specifications.

SECTION 6. HOT MIX ASPHALT - SURFACE COURSE

A. Materials

1. The plant mix surface course shall be constructed with materials meeting BM2 Mix Designation as specified in Section 1103 of the Standard Specifications herein incorporated. Mix designation may be changed with proper justification, however the change must be approved in writing by the Street Superintendent.

2. Recycled Asphalt Pavement (RAP) may be used in the mix according to current KDOT specifications on approval of the Street Superintendent.

B. Placement

1. The plant mix surface course shall be constructed and placed as specified in Section 603 of the Standard Specifications. The mixture shall be delivered to the paver at a minimum temperature of 275 degrees Fahrenheit.

SECTION 7. ASPHALT SEAL COAT

A. Aggregate Chips (uncoated)

1. The aggregate chips shall be crushed limestone mined from the Bethany Falls ledge or approved equal. The contractor shall submit certification if equality. The gradation shall be as follows or as called for in the Special Provisions:

SIZE	SIEVE	% PASSING	% RETAINED
3/8" chips	1/2"	100	0
	3/8"	95-100	0-5
	No. 4	15-25	75-85
	No. 10	0-3	97-100
1/2" chips	3/4"	100	0
	1/2"	95-100	0-5
	3/8"	55-70	30-45
	No. 4	12-18	82-88
	No. 10	0-3	97-100

The chips shall be relatively surface dry when applied by the chip spreader.

B. Construction

1. Time for Seal Coating: Asphalt seal coating shall not be performed before June 1 or after August 31 except as otherwise authorized by the Street Superintendent.

2. Sealing the Surfaces: For double seal coating the asphalt shall be applied at a uniform rate of between 0.15 to 0.20 gallon per square yard for the first application and between 0.20 to 0.25 gallon per square yard for the second application. The liquid asphalt shall be distributed at a temperature between 150 degrees F. and 350 degrees F. The grade, amount and temperature at the time of application of the seal coat shall be as directed by the Street Superintendent.

The Contractor shall not apply the asphalt over a greater distance than the chip spreader can cover in ten (10) minutes or more than one block ahead of the chip spreader, whichever is the shorter distance and under no condition shall he apply the asphalt on other lanes of the surface before he is ready to start the chip spreader thereon.

To insure uniform application of the asphalt sealer the contractor shall operate the distributor to avoid overlapping a previous pass by the distributor by more than three (3) inches either between adjoining lanes or at the beginning of each distributor load.

In the event the contractor cannot otherwise make an overlap of three (3) inches or less at the beginning of each distributor load he shall be required to cover a portion of the surface with building paper to be used as the starting point for each distributor load (or for each part of the load after a temporary delay) and the spray bar shall be discharged on this paper until all nozzles are working properly. After use the building paper shall be removed and disposed of by the contractor.

The contractor shall make provisions to prevent the surfaces of the curb or curb and gutters being covered with the asphalt spray.

3. Spreading the Chips: Within ten (10) minutes after the application of the asphalt sealer, the contractor shall spread a uniform layer of chips over the sealed area by use of a mechanical chip spreader. The chips shall be applied at the rate of twelve (12) to twenty (20) pounds per square yard. The exact amount of chips to be used shall be as directed by the Street Superintendent. Hand spreading of the chips will be permitted only in areas inaccessible to the chip spreader.

4. Compacting the Seal Coat: Immediately after spreading the chips the surface shall be compacted by the use of a pneumatic tired roller weighing not less than ten (10) ton. The contractor shall keep a uniform covering of chips on the surface as the compaction is

progressing until such time that no more chips will bond to the surface. In areas where bleeding occurs additional material shall be spread so long as it will bond to the surface.

5. Double Seal Coating: The surface shall be covered with two (2) seal coats in the manner specified herein. The second coat (top coat) shall be placed and compacted immediately after the compaction of the first coat.

6. Protecting the Surface: The contractor shall maintain adequate traffic control and shall keep traffic off all portions of the seal coat until after it is completed.

C. Measurements

1. The amount of asphalt used will be the number of gallons as evidenced by approved delivery tickets. The amount of chips used will be the number of tons as evidenced by approved delivery tickets less the tons of excess chips removed from the surface.

SECTION 8 CONCRETE PAVEMENTS

A. General

1. Concrete pavement shall be constructed to established lines and grades and to the thickness, type and section outlined in this Specification and the plans submitted to the City Manager before construction begins. The Standard Specifications for State Road and Bridge Construction, Kansas Department of Transportation; Current edition shall prevail except as is incorporated herein.

2. The concrete pavement shall be Plain concrete pavement with the only reinforcing steel shall be 2'0" deformed #4 tie bars @ 3 feet spacing, extending through the longitudinal joints and #4 X 3' 0" bars @ 2' 6" centers placed in the longitudinal joint abutting the curb and gutter and tied into storm sewer drop inlets. 6" thick pavement shall have 6X6 mesh installed.

B. Concrete

1. The actual mix design shall be air-entrained concrete and the mix design shall be submitted to the Street Superintendent for approval.

C. Subgrade

1. The subgrade shall be maintained as outlined in Sections 3 and 4 of these Specifications. Depressions shall be filled with concrete or with approved material compacted as specified for subgrade preparation.

2. Sprinkling of the subgrade with water shall be done immediately prior to placing of the concrete. Care shall be taken to prevent excess moisture as to create a muddy condition.

D. Finish

1. The finish shall be Burlap drag finish by any approved method.

E. Inspection

1. The City will provide inspection at the developers expense on the project site to assure the concrete pavement is placed in accordance with the plans and specifications.

SECTION 9. CURB AND GUTTER

A. General

1. Combined curb and gutter or gutter adjoining concrete pavement may at the option of the contractor be poured either monolithically or separately using either the mix used in the concrete pavement or Class "A" Concrete, Air Entrained (AE). The combined curb and gutter or gutter shall have the same section as shown on the plans. If poured monolithically, dowel bars may be omitted from the curb and gutter or gutter. Pavement joints shall be continued through the curb or gutter and no other planes of weakness will be required. Joints in the curb and gutter shall be filled with the same material used in the concrete pavement. The use of asphalt curbs is not allowed.

2. Expansion joints in the combined curb and gutter are to be placed opposite expansion joints in the pavement. Where the curb and gutter abuts an asphaltic pavement, place a 1/2" expansion joint filler cut to the dimensions of the curb and gutter and placed at a spacing not to exceed 160 feet and at the ends of curb returns. The expansion joint filler material shall meet or exceed Federal Specifications HH-F-341_F, Type III.

3. Contraction joints shall be cut in the curb and gutter every fifteen (15) feet. The joint may be formed in any approved method. If sawed, the sawing shall proceed as soon as the concrete will allow without tearing the sawed edge.

4. Joining New Curb to Existing Curb; In the event the new curbing will be joined to an existing curbing, place three (3) smooth dowels placed in holes drilled larger than the dowels and greased to allow for movement in the ends of the existing curb 8" deep and allowed to extend into the new curbing a minimum of 8".

B. Finish

1. The surfaces of the curb and gutter shall be finished with a wooden or steel float and broomed. Brooming should be perpendicular to the curb line lightly broomed. Brooming shall be completed before the concrete is in such condition that it will be torn or unduly roughened.

C. Cold Weather Placement

1. Concrete shall not be mixed or placed while air temperature is at or lower than forty (40) degrees Fahrenheit, or is forecast by the National Weather Service to be lower than forty (40) degrees Fahrenheit within twenty-four (24) hours after placing, unless precautionary measures are taken as directed by the City Street Superintendent. Such precautionary measures shall include heating the mixing water to not over one hundred seventy-five (175) degrees Fahrenheit, and the aggregate to not over one hundred fifty (150) degrees Fahrenheit maintaining a minimum temperature of the concrete of seventy (70) degrees F. and not to exceed one hundred (100) degrees F. until it is placed in the forms preventing the newly placed concrete from becoming colder than fifty (50) degrees F. for five (5) days after placing by protecting with canvas, straw or other precautionary measures as may be required by the Street Superintendent. Regardless of what precautions are taken, the contractor shall be considered as having elected to assume all risks, and frozen or damaged concrete shall be replaced at the contractors expense.

D. Curb Types

1. Residential Streets; The contractor at his option may install one of two types of curb and gutters. Straight Back (Type 1) curb and gutter requires the driveway entrances to be installed at the time of construction. Roll Back (Type 2) curb and gutter allows the driveway entrance to abut the curb without requiring a curb cut.

2. Collector and Arterial Streets; All collectors and arterials must have Straight Back (Type 1) curb and gutter installed.

3. Business Districts (including the Square); All business districts must have Straight Back (Type 1) curb and gutter installed.

4. Specifications and dimensions for both types of curb and gutter will be found in Appendix A attached to these Standard Specifications.

E. Drop Inlet Boxes

1. The drop inlet boxes shall be the Type II -P Inlet Precast.

SECTION 10. STORM SEWERS

A. Sizing

1. Storm sewers shall be sized and an adequate number of drop inlets installed to contain a 10 year flood rain.

B. Materials

1. Storm sewers may be constructed of approved Reinforced Concrete Pipe (RCP) or Corrugated Metal Pipe (CMP). Any type of plastic tubing or pipe may not be used unless specific written approval is obtained from the Street Superintendent.

C. Construction

1. Proper construction procedures as outline in Section 814 of the Standard Specifications for State Road and Bridge Construction shall prevail.

D. Plans

1. The sizes, types of materials, grades, etc. are to be shown on the plans submitted to and approved by the City Manager before construction begins.

E. Drainage Considerations

1. The Developers Engineer shall take into consideration running the pipe outfalls and drainage onto adjacent properties and shall, if there is a possibility of increasing the volume and/or amount of storm water, design and include additional storm sewers and structures to handle the increase and the cost of the additional engineering and structures to be born by the developer.