

CITY OF BENTONVILLE

MINIMUM STANDARD SPECIFICATIONS FOR STREETS

**ADOPTED BY
CITY OF BENTONVILLE
CITY COUNCIL
NOVEMBER 28, 2006**

**PREPARED BY CITY OF BENTONVILLE ENGINEERING DEPARTMENT,
STREET DEPARTMENT, AND TRANSPORTATION DEPARTMENT**

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ARTICLE 100

GENERAL PROVISIONS

SEC. 100.1 PURPOSE

These regulations are set forth to govern the design, construction, and maintenance of streets, alleys, and sidewalks which lie within the jurisdiction of the City of Bentonville. The specifications presented within are the minimum requirements and it is understood that more stringent requirements may be mandated by the Planning Commission, City Engineer, and/or the project design engineer with regard to a specific project.

SEC. 100.2 JURISDICTION

These regulations shall be applicable to all lands within the City of Bentonville and its planning area and, also, to lands either contiguous to or served by Bentonville water and/or sanitary sewer. The planning area includes those areas depicted on the Planning Area Map, copies of which are on file with the City Clerk and the Benton County Recorder.

SEC. 100.3 APPLICABILITY

All construction and development within the jurisdiction of the City of Bentonville is subject to these regulations.

SEC. 100.4 APPROVAL REQUIRED

All street designs are subject to the review and approval by the City Engineer and/or City Transportation Engineer or their respective designee(s). Street improvements associated with private development must receive Planning Commission approval prior to commencing construction.

SEC. 100.5 AMENDMENTS

Amendments to these regulations must be presented to the City Council for adoption.

SEC. 100.6 WAIVERS

When strict interpretation of these regulations causes undue restrictions, the City of Bentonville Planning Commission may grant a waiver of specific requirements. Waiver requests shall be submitted to the Planning Commission pursuant to the requirements and procedures set forth in Article 300 - Administration and Enforcement of the Subdivision Code.

SEC. 100.7 CONFLICTING REGULATIONS

All City ordinances or parts of ordinances inconsistent or in conflict with these regulations are hereby repealed and amended to comply herewith by virtue of the ordinance adopting this regulation. In the event design and construction specifications prepared separately by a registered professional engineer for improvements associated with private development conflict with these regulations, the more stringent requirement shall govern.

ARTICLE 200

GENERAL REQUIREMENTS

SEC. 200.1 PERMITS

All permits required to accomplish the work shall be the responsibility of the Developer/Owner or the Engineer of Record. Such permits may include but are not limited to permits for work within Arkansas Highway and Transportation Department Right-of-Way, railroad crossing permits, "Notice of Intent" and "Notice of Termination" for Erosion Control (Arkansas Department of Environmental Quality).

SEC. 200.2 PLANS AND SPECIFICATIONS

Detailed Plans and Specifications shall be required for all new streets and street extensions and shall be prepared by a Professional Engineer registered to do business in the State of Arkansas.

The *Standard Specifications for Highway Construction* as promulgated by the Arkansas State Highway and Transportation Department (AHTD), 1996 edition and latest edition, and the *Standard Drawings* of the Arkansas State Highway and Transportation Department shall be the basis for the preparation of the Detailed Plans and Specifications and shall apply in all cases except where these Standards are in direct conflict with AHTD standards. AHTD standard drawings and details may be obtained on their website at www.arkansashighways.com.

Address: Arkansas Highway and Transportation Department
P.O. Box 2261
Little Rock, AR 72203-2261

Phone Number: 501-569-2000

Approval of the Detailed Plans and Specifications by the City of Bentonville does not constitute warranty of the Plans and Specifications and does not relieve the Engineer of Record of his professional responsibility in the design of the facilities or in the preparation of any engineering reports done in association with the project.

SEC. 200.3 RESPONSIBILITY OF DEVELOPER/OWNER

The Developer/Owner shall be responsible for installation of streets, including all design and construction, and for all costs associated therewith.

The Developer/Owner shall provide all engineering services required for planning, design, investigations, inspection, testing, and related activities necessary for street development, and shall be responsible for construction of street improvements in accordance with the design approved by the City as satisfying the requirements of these standards.

The Developer shall post a letter which 1.) guarantees that the construction will conform to the plans and specifications approved by the City, 2.) acknowledges the conditions of the approval, and 3.) agrees to honor those conditions. This letter must be posted prior to the beginning of construction.

The City shall have the right of access to sites during the planning, design, and construction phases of street development. The Developer shall schedule all activities to provide the City with adequate notice and review time.

SEC. 200.4 ENGINEERING SERVICES

All engineering services, including but not limited to, planning, design, investigations, inspection, and testing shall be under the supervision of a Professional Engineer registered in the State of Arkansas (Engineer of Record).

The design data, plans, specification, and related information shall bear the name of the Engineer of Record. The registration seal of the Engineer of Record shall be placed on each sheet of the Plans along with his/her signature.

Soils investigations, materials testing, and quality control testing shall be performed by a laboratory approved by the City Engineer. All reports submitted shall bear the name of the Engineer of Record.

Written Certification by the Engineer of Record that materials and construction conform to the approved Plans and Specifications is required. Inspection and testing requirements are outlined in Article 800 of these specifications.

SEC. 200.5 PLAN SUBMITTAL

Plans, Specifications, and all data submitted in conjunction with the plans and specifications shall constitute a complete design. Approval by the City will not be issued until all requirements have been fulfilled. Approval of the Plans and Specifications shall remain in effect for one (1) year from the approval date. After that time a new set of Plans and Specifications must be submitted and any regulations or rules promulgated between the time of the original submittal and the new submittal date must be followed.

All significant changes in the design or construction of a project or development, including all significant changes in the Plans and/or Specifications, shall be submitted to the City for approval. The City shall be notified immediately of all significant field changes in order that a timely approval may be issued.

SEC. 200.6 OBSERVATION OF CONSTRUCTION BY THE CITY

The observation of street construction by the City will be limited to general observations of the project at various stages as outlined in Article 800 of these specifications. The City reserves the right to observe the construction at all times.

SEC. 200.7 ACCEPTANCE BY THE CITY

After the Final Inspection and Acceptable Completion of the street construction, the Developer/Owner shall provide a Maintenance Warranty to the City which guarantees the maintenance, repair, and/or reconstruction of the project in whole or in part for a period of 12 months after the date of the Maintenance Warranty. The Maintenance Warranty shall be in the amount of 25 percent of the cost of construction of the improvements and shall meet the requirements of Article 1700 in the current City of Bentonville Subdivision Code.

Formal Acceptance of the project by the City will be made in writing after the posting of the Maintenance Warranty. The date of the formal acceptance shall be the same date as given in the Maintenance Warranty.

SEC. 200.8 NEED FOR TRAFFIC STUDY

A formal Traffic Study (*Firm to be approved by the City - Developer responsible for the cost*) may be required in connection with a development if, in the opinion of the City Engineer and/or Community Development Director, it is required to properly determine future street loading. A Traffic Study may also be required as a condition of development by the Planning Commission.

SEC. 200.9 DEFINITIONS

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

AASHTO - American Association of State Highway and Transportation Officials

ACCEPTABLE COMPLETION - This term shall mean substantial completion of the street construction as agreed upon by the CITY and the ENGINEER OF RECORD.

ADEQ-Arkansas Department of Environmental Quality

AHTD - Arkansas State Highway and Transportation Department

ASTM - American Society for Testing and Materials

CBR - California Bearing Ratio

CITY - The City of Bentonville, Arkansas, and its employees expressly authorized by the Mayor to accomplish the specified task.

CONTRACTOR - The licensed contracting company hired by the Developer/Owner to construct the street improvements.

DEVELOPER/OWNER - The person, firm, partnership, corporation or other entity planning, constructing, altering or reconstructing a public street.

ENGINEER OF RECORD - The Arkansas Registered Professional Engineer responsible for the design of the improvements, usually engaged by the Developer/Owner.

ESAL - Equivalent Single Axle Load

FINAL INSPECTION - The final inspection shall be the formal inspection of the street construction by the CITY, the ENGINEER OF RECORD, and the CONTRACTOR, which results in a declaration of acceptable completion.

FORMAL ACCEPTANCE - Acceptance of the street construction in writing after a Maintenance Warranty has been submitted to and approved by the CITY.

MAINTENANCE WARRANTY - The security instrument which binds the Owner/Developer to a one (1) year responsibility for street construction repairs and/or reconstruction in the event of street construction failure.

STREET CONSTRUCTION - Where this or similar terms are used, it shall mean construction of the street, curb and gutter, drainage (whether on the street or not), and all other appurtenances normally associated with street construction and approved as part of the street plans, whether on-site or off-site.

SUBSTANTIAL COMPLETION – The construction stage at which point all improvements and

associated appurtenances have been fully constructed and are functional.

USGS - United States Geological Survey (Ord. of 7-20-1999, § 1)

ARTICLE 300

DESIGN DATA AND PLAN SUBMISSION

SEC. 300.1 GENERAL

The submittal shall be complete with all necessary information included for review of the project. The material required shall include, but shall not be limited to the Plans, the Specifications, and the Drainage Report. Review based on a partial submittal will be at the discretion of the City Engineer. The final review will be concurrent with the review of all public improvements, including water, sewer and drainage.

SEC. 300.2 DESIGN REPORT

The Design Report shall contain all information not normally shown on the plans or given in the specifications, including design calculations, results of soil borings, soil test results, and any other design data used in the development of the Plans and Specifications, and shall be made available for review upon request by the City.

SEC. 300.3 HORIZONTAL AND VERTICAL DATUM

All street and road construction in the City of Bentonville shall be tied to the City of Bentonville Survey Monumentation System based upon the State Plane Coordinate System, Arkansas North Zone using the North American Datum of 1983 (NAD 83). All information for newly constructed streets and roads at the time of approval shall be delivered to the City of Bentonville Engineering Department, georeferenced, in an AutoCad compatible digital format for review and acceptance.

All street and road construction shall use the above mentioned coordinate system and shall identify which monuments that were used for horizontal and vertical control. Elevation of controlling points shall be based on USGS NAVD 88 datum.

SEC. 300.4 PLANS

The Plans shall be submitted on 24" x 36" sheets. No other size will be allowed unless specifically approved by the City.

Plans shall be submitted at the scale necessary to make the plans easily read and interpreted. Plans shall be on a scale of not less than 1" = 50'. The layout shall include, but shall not be limited to the following information:

1. Street right-of-way, proposed and existing
2. Existing and proposed utility and drainage easements
3. Horizontal curve data
4. Centerline stationing
5. Street names
6. Location and size of existing and proposed utilities
7. Location and size of existing and proposed drainage facilities
8. Intersection Radii.

9. Soil boring locations
10. California Bearing Ratio (CBR) Test Locations
11. Elevations at the beginning, mid-point, and end of the radius returns at all intersections
12. A legend showing typical symbols used in the plans
13. Existing and proposed property lines
14. North arrow and scale
15. Street and Right-of-way dimensions
16. Sidewalks and trails with dimensions
17. Handicap access ramp locations

Street profiles shall be shown on a horizontal scale to match the layout with a vertical scale of not less than 1"=5'. Information to be shown with the profiles shall include, but shall not be limited to:

1. Existing ground elevations
2. Vertical curve data
3. Proposed and existing drainage and utility line crossings (size and location)
4. Proposed finished grades at street centerline
5. Cross sections at a maximum spacing of 50 feet. Additional cross sections shall be where needed for clarification purposes.

A typical street section for all classes of streets designed shall be included in the Plans and shall show the following with associated dimensions:

1. Pavement type, width and thickness including subgrade and base layers
2. Dimensions from back of curb to back of curb
3. Cross slope and crown
4. Location of profile grade
5. Curb and gutter
6. Existing and proposed grades
7. Right of way width
8. Sidewalks or trails, if required. Include dimensions for locating behind back of curb
9. Landscaping, if required

Revisions to drawings shall be indicated above the title block and shall show the nature of revisions and preparation date. Cloud revision(s) in plan and /or profile view(s).

SEC. 300.5 SPECIFICATIONS

Technical specifications shall include material requirements and methods of construction, quality control requirements, sampling, and testing procedures and frequency as delineated in other sections of these standards.

SEC. 300.6 AS-BUILT PLANS

"As-Built" plans shall depict an accurate account of the construction. Construction plans which are "rubber stamped" and submitted for the purposes of "As-Built" Plans are not acceptable.

Three sets of "As-Built" plans shall be required along with the final costs associated with the Street construction, and shall be due prior to the filing of the Final Plat. Engineer of record shall certify in writing that all improvements meet the requirements of the approved construction drawings and City of Bentonville Minimum Standard Specifications for Streets along with the "as-built" plans.

(Ord. of 7-20-1999, § 2)

ARTICLE 400

STREET DESIGN PRINCIPLES

SEC. 400.1 GENERAL

The principles governing the design of streets shall conform to the requirements of these standards, to the standards that may be referenced herein, and to appropriate City Ordinances.

General criteria with regard to street classification and other characteristics shall be as stated in other sections of these standards.

All pavement markings placed shall be thermoplastic unless otherwise approved by the City. Acceptable materials may be found on the current AHTD "Qualified Products List".

Parking, parking lots, driveways, stormwater drainage, and erosion control requirements are specified in separate ordinances and are not included in these standards.

SEC. 400.2 ALIGNMENT

Horizontal curves shall be circular curves with a minimum centerline radius of not less than 100 feet for residential streets, 150 feet for local streets, and 200 feet for collector streets. Curves on streets with higher classifications shall be designed on an individual basis. A tangent of at least 100 feet shall separate reverse curves.

All vertical curves shall be parabolic type curves. Minimum vertical curve lengths (L) shall depend on the design speed and shall be equal to K times A where K equals the coefficient as shown in the table below, and A equals the algebraic difference in grades when the grades are expressed as a percentage. ($L_{min}=KxA$)

Vertical Curve Coefficient (K)

Speed (mph)	K Values	
	Crest	Sag
25	20	30
30	30	40
35	40-50	50

SEC. 400.3 INTERSECTIONS

Intersections shall be planned and designed to provide a safe system for present and prospective traffic. Intersections shall be graded to provide positive drainage and shall conform to the alignment and grading requirements of these standards.

The following standards shall apply to intersection design:

Design Consideration	Ordinary	Hilly
Approach speed	25 mph	20 mph
Sight distance (Min.)	250 feet	200 feet
Grade within 100 feet	0.5% to 2%	4% (max.)
Minimum Angle	75 degrees	75 degrees
Minimum Curb Radius		
Local Streets	25 feet*	30 feet
Collector Streets	50 feet	50 feet
Arterial Streets	60 feet	60 feet
Minimum Jogs		
Local Streets	150 feet	150 feet
Collector Streets	200 feet	200 feet
Arterial Streets	300 feet	300 feet

* 30 feet where occasional truck traffic expected

Invert of intersecting streets shall align with the tangent line of the gutter through the intersection with the direction of flow. Note that variable intersection grades require radius grade change point to begin where the tangent of the back of curb intersects the gutter flow line.

It is understood that the sight distances listed above are a minimum and that longer sight distances may be required where topography will allow and/or higher speeds are present and/or when streets with a classification of collector or higher are involved.

SEC. 400.4 CROSS-SECTIONS AND RIGHT-OF-WAY WIDTHS

Skewed street sections will not be allowed without specific approval of the City Engineer.

The minimum right-of-way shall be as follows: Major Arterial - 84', Minor Arterial – 72', Collector - 60', Local - 52', Residential - 50'. Greater widths may be required if needed to accommodate a particular street design. *Typical street cross sections shall be as follows: Major Arterial - 60', Minor Arterial – 48', Collector - 36', Local - 30', and Residential - 27' from back of curb to back of curb.*

Pavement cross slopes for residential and local streets shall be 3% and for collector and arterial streets shall be 2%, unless otherwise approved by the City. Gutters shall be sloped to match the street cross slope.

On the elevated side of a uniform cross slope or super-elevated street, the gutter may slope toward the street centerline, provided the gutter cross slope does not exceed the cross slope of the adjacent lane. Transitions from normal crowns to uniform cross slope or super-elevated sections shall provide for minimum longitudinal grades. Super-elevated sections shall conform to the AHTD standard drawings.

SEC. 400.5 RAILROAD CROSSINGS

Grade crossings at railroads shall provide for the same minimum sight distances as street intersections. The Engineer of Record shall be responsible for all coordination with the railroad company connected with approval of the crossing and shall work with the City in obtaining a Joint Use Agreement with the railroad.

SEC. 400.6 MINIMUM AND MAXIMUM GRADES

The minimum grades outside of the 100 ft. intersection requirement shall be 1.0% for the street unless otherwise approved by the City. The maximum allowable grade for local and residential streets shall be 12%, and for collector and arterial streets the maximum grade shall be 8%. In situations where topography does not allow for compliance with these standards, a waiver may be requested from the planning commission. Where grades are greater than 10% for distances of more than 300 feet, the paving material shall be concrete.

SEC. 400.7 SIGHT DISTANCE AND DESIGN SPEEDS

Minimum sight distance for local and residential streets shall be 250 feet under ordinary conditions and 200 feet for hilly conditions. Collector streets shall have a minimum sight distance of 250-350 feet, depending on the topography. AASHTO "Policy on Geometric Design of Highways and Streets" definition of site distance shall apply. The design speed shall be 20 to 30 mph for local and residential streets and 25 to 35 mph for collector streets.

SEC. 400.8 DEAD END STREETS

The maximum length for dead end streets shall be 660 feet. The minimum radius required for cul-de-sac right-of-way shall be 53 feet with the street radius of 42 feet to back of curb. The Planning Commission may grant a variance to the maximum length for dead end streets where it can be determined that terrain is a deterrent to through street development. The local Fire Code may have more stringent requirements. The most restrictive regulation shall govern cul-de-sac design.

SEC. 400.9 DRIVEWAYS

Driveways shall meet the standards for driveway design as defined by Chapter 15, Article 1100, Section 1100.10 of the current City of Bentonville Subdivision Code. Concrete thickness for drives within City right-of-way shall be a minimum of 6 inches. Asphalt thickness for residential drives within City right-of-way shall be 2 inches of asphalt over 4 inches of compacted Class 7 Aggregate Base Course. Asphalt thickness for commercial drives within City right-of-way shall be 3 inches of asphalt over 6 inches of compacted Class 7 Aggregate Base Course. The slope of the driveway shall match the cross slope of the sidewalk which shall have a cross slope of no more than 2%.

ARTICLE 500

PAVEMENT DESIGN

SEC. 500.1 PAVEMENT TYPES

Street pavement sections shall be either flexible type with an asphalt concrete surface or rigid type consisting of a Portland Cement Concrete section and surface. Curb and gutter shall be Portland Cement Concrete.

Flexible pavements may be composed of a crushed stone base course with an asphaltic concrete surface.

Rigid structures shall be full depth Portland Cement Concrete to the designed thickness with a crushed stone drainage/leveling course of no less than 3 inches.

Pavement sections shall be designed in accordance with the procedures and criteria of the AASHTO Guide for Design of Pavement Structures, latest edition, and the criteria contained herein. Any conflicts shall be resolved in favor of the more stringent criteria resulting in a stronger and deeper pavement section.

References to various materials, testing and construction shall refer to the latest editions of AASHTO, ASTM, and the Standard Specifications of the Arkansas State Highway and Transportation Department.

Typical design requirements are summarized in Section 500.9 and Section 500.10 of this Article.

SEC. 500.2 PAVEMENT MATERIALS AND CONSTRUCTION

All pavement materials, construction methods, standards, time and temperature constraints, seasonal constraints, and performance requirements shall be in accordance with the 1996 edition of the AHTD Standard Specifications for Highway Construction, and this set of requirements (Article 500, Pavement Design, and Article 600, Utilities and Utility Crossings) unless specifically approved otherwise in writing by the City for a specific and individual exception. All testing shall be in accordance with Article 800, Inspections and Testing.

SEC. 500.3 SUBGRADE MATERIAL

Subgrade soils shall be all materials used for subgrade including in-situ materials and fill materials. Subgrades for pavement shall be stabilized by mechanical compaction or by other methods approved in writing by the City Engineer. Stabilization methods such as fabrics and chemical stabilization may be submitted for approval when supported by engineering data and calculations to substantiate the adequacy of the stabilization procedure.

The top 24" of the subgrade shall be a material not susceptible to frost action unless modified with cement, lime or another method approved specifically by the City Engineer to resist frost action (Soils classified as A-4 and A-5, including sandy silts, fine silty sand or lean clays are highly susceptible to frost action).

In-situ soils meeting the requirements outlined in these specifications may be utilized as subgrade material. In-situ soils used as subgrade shall be scarified to a minimum depth of 8 inches below finish subgrade, recompacted, and tested as described in Section 800.5 of these specifications. Fill material for subgrade shall be placed in lifts not to exceed 8 inches compacted depth.

Methods and procedures for establishing the total depth of soil replacement and/or modification shall be specified by the design engineer and included in the project plans and specifications. The **minimum** depth of replacement shall be 24 inches in the absence of engineering data showing otherwise.

A "bridge lift" is defined as material that meets the requirements of these standards and is utilized to span areas of unsuitable material that lie below the 24 inch subgrade requirement. Bridge lift depth shall be determined by a geotechnical firm but in no case shall the lift be less than 24 inches in depth. A bridge lift will be placed in one lift in its entirety or as otherwise directed by the geotechnical firm and approved by the City and will require a "wheel roll" test prior to construction of the final 24 inch subgrade. Additional bridge lift depth may be required by the City dependent on field conditions.

The adequacy of in-situ soils and fill materials as pavement subgrade shall be evaluated based upon the soils classifications, liquid limit, plasticity index and California Bearing Ratio (CBR) values.

All soils with a liquid limit greater than 40, or a plasticity index greater than 15, or a CBR value of less than eight (8) shall be undercut and removed from the street section or improved by a designed method of stabilization accepted by the City Engineer.

Soils with a CBR of eight (8) or greater, and classified as GM or GC soil, shall be accepted as "Hillside" material and no further treatment or upgrade will be required.

Subgrade compaction requirements including the moisture density requirements shall be shown both on the plans and in the specifications (Compaction shall be a minimum of 95% standard proctor. Moisture content shall be $\pm 3\%$ optimum moisture unless otherwise supported by site specific geotechnical data and approved in writing by City Engineer).

Sampling and testing of subgrade materials shall be as set forth in Section 500.8 of these Standards.

Pavement designs that utilize a subbase course shall include test data and specifications for the subbase material in the calculations submitted to the City Engineer for review and approval.

SEC. 500.4 BASE COURSE

Base course material shall be crushed stone meeting the requirements of AHTD class 7 aggregate base course as specified in the AHTD specifications (Division 300, Bases and Granular surfaces, AHTD Standard Specifications latest edition). Base course materials shall be certified by the supplier to meet the AHTD class 7 requirements and identified as to the type of material, properties (including gradation, density and proctor), and source.

The base course for full depth asphalt pavement designs shall utilize plant mix bituminous base and binder courses conforming to AHTD Specifications (Division 400, Asphalt Pavements, AHTD Standard Specifications 1996 edition).

SEC. 500.5 SURFACE COURSE

The surface course for flexible pavement designs shall utilize plant mix bituminous base and binder courses conforming to AHTD Specifications (Division 400, Asphalt Pavements, AHTD Standard Specifications 1996 edition). The City will consider other design mixes, including "Superpave" mixes on an individual basis.

The surface course for rigid pavement shall be reinforced or non-reinforced (as determined by design calculations) Portland Cement Concrete as specified in the AHTD specifications (Division

500, Rigid Pavement, AHTD Standard Specifications 1996 or latest edition). Joint spacing details and specifications shall be submitted for all rigid pavement designs.

SEC. 500.6 CURB AND GUTTER

All curb and gutter shall be Portland cement concrete conforming to AHTD Standard Drawing CG-1 Type A (Curbing Details) with a minimum width of 24 inches with radius being a minimum of 2 inches. Mountable curbs will not be allowed in the City of Bentonville without written authorization of the City Engineer. Construction of all concrete curb and gutter shall utilize the following specifications:

Materials Concrete shall be Class "S" Portland Cement Concrete in accordance with Section 802 or 501, AHTD Standard Specifications with a 28-day compressive strength of 3,500 psi. Admixtures shall not be used unless specifically approved by the City Engineer. Maximum slump shall not exceed 4".

Expansion joints shall be made with preformed expansion joint filler of a nonextruding type conforming to ASTM Designation D1751 or AASHTO M153. Acceptable materials may be found on the current AHTD "Qualified Products List".

Joint sealing compound for contraction joints shall be CRS-2 Asphalt Emulsion meeting the requirements of ASTM Designation D3405 or current products listed on the AHTD "Qualified Products List".

Curing compound shall be a white pigmented membrane-forming liquid conforming to the requirements of ASTM Designation C309, Type 2.

Forms. Forms shall be made of metal or wood and shall have a depth equal to or greater than the thickness of the pavement slab. The minimum length of each section of form used shall be ten (10) feet. Each section or form shall be uniform and free from undesirable bends or warps.

The maximum deviation of the top surface of any section shall not exceed one-eighth (1/8) inch, or the inside face not more than 1/4 inch from planned alignment. The method of connection between sections shall be such that the joint thus formed shall be free from movement in any direction. Forms shall be of such cross-section and strength and so secured as to resist the pressure of the impact and vibration of any equipment which they support, without springing or settlement.

Every 10 foot length of form shall have at least three form braces and pin sockets which shall be spaced at intervals of not more than 5 feet, having the end brace and socket not more than six inches from the end of the form. Approved flexible forms shall be used for construction where the radius is 150 feet or less.

The subgrade under the forms shall be cut and compacted to a width not less than one foot behind the back of curb and gutter, removing all soft and yielding areas and replacing with suitable material compacted. Forms shall be joined neatly and in such a manner that the joints are free from play or movement in any direction. The supply of forms shall be sufficient to permit their remaining in place for at least twelve hours after the concrete has been placed. All forms shall be cleaned and oiled prior to use.

The alignment and grade elevations of the forms shall be checked by the Contractor and the necessary corrections made immediately before placing the concrete. When any form has been disturbed or any subgrade there under has become unstable, the forms shall be reset and rechecked.

Placing Concrete The subgrade shall be moist, but not muddy, at the time of placing of the

concrete. If required by the City, the prepared subgrade shall be saturated with water the previous night, or not less than 6 or more than 20 hours prior to placing the concrete. If the subgrade subsequently becomes too dry, it shall be sprinkled again ahead of placing the concrete, in such a manner as not to form mud or puddles of water.

Contractor shall give the City Engineer at least twenty-four (24) hours advance notice before placing concrete, and the subgrade shall be checked and approved by the City Engineer or his/her designated representative before any concrete is placed.

The concrete shall be mixed in quantities required for immediate use and shall be deposited on the subgrade to the required depth and width of the curb and gutter in successive batches and in a continuous operation without the use of intermediate forms or bulkheads. The concrete shall be placed as uniformly as possible in order to minimize the amount of additional spreading necessary. While being placed, the concrete shall be vibrated with suitable tools so that the formation of voids or honeycomb pockets is prevented.

The concrete shall be especially well vibrated and tamped against the forms along all joints. Care shall be taken in the distribution of the concrete to deposit a sufficient volume along the outside form lines so that the curb section can be consolidated and finished simultaneously with the slab.

No concrete shall be placed around manholes or other structures until they have been adjusted to the required grade and alignment.

Mechanical Placement. Curb and gutter placed by slip-form or extruding equipment will be accepted providing it complies with all of the above requirements other than forms.

Finishing. The curb shall be tooled to the required radii as soon as possible after the concrete takes its initial set. The gutter shall be shaped with a wood float at least 4 feet long. After the face forms and templates are removed, the joints shall be tooled and the surface shall be finally finished with a hard bristle broom to remove all imperfections without additional mortar or dryers. In all cases, the resulting surface shall be smooth and of uniform color, free from sags, twists or warps and true to the specified lines and grades shown on the plans.

Expansion joints, formed with bituminous preformed expansion joints one-half inch thick or as specified on the plans and precast to exact cross section of curb, shall be placed at all driveway radii, intersection radii, stationary structures and at intervals of not more than one hundred ninety-five (195) feet, and at the location shown on the plans or standard drawings, so that they are not moved by depositing and compacting the concrete at these joints. Preformed expansion joint filler shall be of nonextruding type and shall conform to ASTM Designation D1751 or AASHTO M153. Acceptable materials may be found on the current AHTD "Qualified Products List". Material shall completely separate concrete the full width and depth of the curb and gutter cross-section.

Contraction joints shall be sawed or formed with templates at intervals not greater than 15 feet and at the location shown on the plans or standard drawings and shall be sawed to a depth of 1-1/2" and a width of 1/4". Asphaltic material used in filling these joints shall be as specified in Section 501 AHTD Standard Specifications or as approved by the City Engineer. Contraction joints in proposed medians shall match the location of joints in pavement.

Templates shall be 1/4" thick, cut to the configuration of the curb section shown on the plans. Templates shall be secured so that depositing and compacting the concrete does not move them. Unless otherwise shown on the plans, and as soon as the concrete has hardened sufficiently, the templates shall be rounded with an edging tool of 1/8" radius.

Curing. Immediately after the finishing operation has been completed and as soon as marring of the concrete will not occur, the entire surface of the newly placed concrete shall be cured according to Section 501 of AHTD Standard Specifications.

Cold Weather Protection. Cold weather protection shall be as specified in Section 501 AHTD Standard Specifications.

Backfilling. After curing, the curb shall be immediately backfilled to within 4" of the top curb to eliminate any possibility of washing beneath the curb. The remaining 4" shall be topsoil.

Driveway Entrance. At all entrances to residences or commercial buildings the concrete curb shall be removed by saw cutting of either side of the entrance. All driveway entrances shall require a minimum of 2 foot formed and poured transition that will tie to the saw cut curb. Removal of curb by sledgehammer without first saw cutting shall not be allowed. The practice of excavating behind the curb and gutter and then backfilling with the broken curb section concrete is not acceptable. Any backfill shall be Class 7 crushed limestone.

SEC. 500.7 SUBSURFACE DRAINAGE

The requirement for drainage layers, subsurface drainage, and underdrains shall be evaluated by the design engineer on an individual project basis. Pipe underdrains shall be installed at all locations where subsurface moisture will affect the stability of the subgrade or result in unsatisfactory pavement performance.

Special attention is called to the typical need for all streets in cut sections and on hillsides to include subsurface drainage systems. The design engineer shall be required to perform, or acquire, geotechnical and subsurface investigation to determine the need of subsurface drainage for each street and segment thereof to be designed and constructed.

SEC. 500.8 PAVEMENT SECTION DESIGN REQUIREMENTS

Unless specifically authorized in writing by the City Engineer as an exception for a specific project, all pavement sections shall be designed in accordance with the AASHTO Guide for Design of Pavement Structures, latest edition.

In lieu of formal design for "Residential" and "Local" streets the designer may use the minimum criteria as provided in Section 500.9 and Section 500.10.

A minimum design period (traffic analysis/forecast) of 20 years shall be used for pavement section design. A formal traffic study with projections and supporting data shall be submitted for all street classifications to provide minimum ESAL criteria.

All street designs shall use a factor of 4.5 for the Initial (present) serviceability index. All street designs shall use a factor of 2.5 for the terminal serviceability index.

Subgrade soils shall be all materials used for subgrade including in-situ materials and fill materials. The investigation and evaluation of subgrade soils shall be an integral component of all pavement designs and shall include the following minimum requirements:

- A. Geotechnical: All testing and geotechnical work shall be provided by a firm approved by the City Engineer and provided at the expense of the developer or the design engineer. The geotechnical firm shall provide copies of all test results, reports, soils classifications and subsurface drainage requirements directly to the City Engineer.
- B. Sampling and Testing: The investigation and sampling of soils shall conform to AASHTO T 86 (ASTM D420) or latest revision and test procedures referenced therein. The sampling of in-situ subgrade soils may be accomplished by boring or excavation of test pits. The minimum sampling and testing frequency shall be one (1) density test, one (1) liquid limit, one (1) plasticity index, one (1) gradation and soils classification and one (1)

CBR for each 500 feet of street or section thereof, or change in subgrade material, with a minimum of three sets of tests per project. The minimum depth of boring or excavation for in-situ materials shall be four (4) feet below the top of the elevation of the final compacted subgrade. Additional depth shall be required when deemed necessary by the design engineer or the City Engineer.

For import material, the minimum sampling and testing frequency shall be one (1) density test, one (1) liquid limit, one (1) plasticity index, one (1) gradation and soils classification and one (1) CBR per supplier. Said test results shall be within 90 days of import placement and initial testing. If date of information provided is more than 90 days prior to import placement, new samples and testing will be required and results from field density tests will not be accepted until updated information provided.

Additional sampling and tests will be requested when deemed necessary by the City Engineer. The specific locations for all additional samples shall be determined by the City Engineer's representative.

- C. Soil Classification: Subgrade soils shall be classified in accordance with AASHTO system and the Unified Soil Classification system. All tests required for the classification of the soils shall be performed and reported unless specifically waived by the City Engineer.
- D. Load Bearing Strength: Load bearing strength of soils shall be determined by the California Bearing Ratio (CBR) test in accordance with AASHTO T 193 or ASTM D 1883. The frequency and location for samples for CBR tests shall be as noted in Section 500.8 (B) above with the specific sample for the CBR test taken at the proposed finished subgrade elevation.

Subgrade support capacity for all pavements (resilient modulus for flexible pavements and modulus of subgrade reaction for rigid pavements) shall be determined from the load bearing strength (CBR) of the soils based upon the correlation contained in the AASHTO guide for the design of Pavement Structures except where other correlation data are approved in writing by the City Engineer.

(Ord. of 7-20-1999, § 4)

SEC. 500.9 PAVEMENT DESIGN CRITERIA SUMMARY

General Design Requirements

Design period shall be 20 year minimum

Formal traffic study with projections and supporting data shall be submitted for design of all street classifications to provide minimum ESAL criteria

Initial (present) serviceability index factor shall be 4.5

Terminal serviceability index factor shall be 2.5 minimum

All designs shall be in accordance with the AASHTO Guide for Design of Pavement Structures, latest edition

Structural Number Layer Coefficients

Pavement Materials	Min. Thickness of course (inches)	Structural Coefficient per inch thickness
Asphaltic Concrete Surface	3	.44
Asphalt Concrete Binder	2	.44
Asphalt Stabilized Base	4	.34
Crushed Stone Base (Flexible)	6	.14
Crushed Stone Base (Rigid)	3	.14
Portland Cement Concrete	6	*

SEC. 500.10 TYPICAL PAVEMENT DESIGNS

In lieu of formal designs, the following minimum street pavement sections may be used; however, the City reserves the right to require a formal design for any street section.

	Flexible Composite	Rigid*
1. Residential Streets (ADT to 1000 and ESAL of 10)	3" surface 6" base (Minimum SN = 3.0)	6" PC 3" base
2. Local Streets (ADT to 4000 and ESAL of 40)	3" surface 8" base (Minimum SN = 3.0)	6" PC 3" base

*All rigid pavement designs require a joint layout plan and associated details.

ALL OTHER STREET CLASSIFICATIONS SHALL REQUIRE FORMAL DESIGN

1. Formal designs may be performed (are encouraged) by the design Engineer to determine specific pavement sections required for specific subgrade and specific project requirements and these designs submitted to the City Engineer for review. Soils testing is required in compliance with the Pavement Design Standards and a minimum acceptable subgrade CBR value of 8 shall be required to utilize the minimum sections shown above.
2. Joint spacing and joint design shall be in accordance with the AASHTO Guide for Design of Pavement Structures.
(Ord. of 7-20-1999, app. B)

ARTICLE 600

UTILITIES AND UTILITY CROSSINGS

SEC. 600.1 UTILITIES AND UTILITY CROSSINGS

All utilities to be located within the street right of way shall be installed in accordance with the specifications of the utility company involved and shall be subject to City Ordinances governing utilities in street rights-of-way. The placement of utilities in the right-of-way outside of the pavement surface in the green area between the back of curb and sidewalk is encouraged.

Utilities or encasements for utilities either under the street or located within 3 feet of the back of the curb shall be installed prior to the subgrade being completed.

Minimum depth of water and sewer lines and testing requirements for backfill shall be as specified elsewhere in these standards and in the Standard Specifications for water line construction or Standard Specifications for sewer line construction.

Flowable Fill may be utilized as backfill for utility crossings if authorized specifically in writing by the City. A formal written request including product specifications shall be submitted to the City for review.

Where encasement pipe is installed for future utility installation the encasement shall extend, as a minimum, from 3 feet from the back of the curb on one side of the street to 3 feet back of the curb on the other side of the street. Where a storm drainpipe or French drain is located parallel to the street, the encasement pipe shall extend a minimum of 3 feet beyond the outside edge of the drainage pipe.

Encasements shall extend from right-of-way to right-of-way when required by the individual utility companies to avoid conflict with sidewalks, etc.

ARTICLE 700

EROSION CONTROL

SEC. 700.1 GENERAL

Erosion control measures shall be taken during construction to minimize the amount of silt and soil from entering adjacent streams and storm drainage facilities and to protect slopes and fill areas.

SEC. 700.2 PERMITS REQUIRED

If the site to be disturbed is greater than or equal to 5 acres, then a "Notice of Intent" shall be filed with the Arkansas Department of Environmental Quality in accordance with State Law and the requirements of current City of Bentonville ordinances with regard to storm water discharge and erosion control. All requirements shall be met and necessary permits submitted to the City Engineer for review prior to scheduling a preconstruction conference.

SEC. 700.3 PERMANENT EROSION CONTROL MEASURES

Permanent erosion control measures shall include seeding and mulching, sodding, etc., and shall be used in all areas within the right of way and temporary construction easements in accordance with the provisions of the City's ordinance on the physical alteration of land and the approved erosion control plan approved in conjunction with the street improvements. Additional erosion control measures may be required at the time of final inspection.

ARTICLE 800

INSPECTIONS AND TESTING

SEC. 800.1 GENERAL

Materials and construction employed in street improvements will be subject to inspection and quality control testing. All testing shall be provided by the Developer.

SEC. 800.2 INSPECTIONS

The Developer shall provide for inspections of street improvements during construction. The inspections shall be accomplished under the supervision of the Engineer of Record. The Engineer of Record shall provide certification that all materials and construction conform to the approved plans and specifications and with these minimum street standards.

The Engineer of Record shall furnish full-time inspection on the job as required by state law. This law is interpreted by the City to mean that a representative of the Engineer of record must be on the job whenever a critical construction activity is taking place.

All field tests required for a project shall be witnessed by the City, the Engineer of Record, and the Contractor, or their authorized representatives.

A 24 hour notice is required on all tests. Calls to the City for the purpose of setting test times shall be made to the City Engineer's office by 10:00 a.m. for test on the following day. Tests delayed by weather or other factors will be rescheduled on the same basis. If a representative of the City cannot be present, the City Engineer may authorize the Engineer of Record to witness the test and certify to the City the results.

It is the responsibility of the Engineer of Record and the Contractor to coordinate the scheduling of such tests with the City.

Prior to final acceptance by the City, the project shall be subject to a joint final inspection by the City, the Engineer of Record, and the Contractor. The City Street Manager and the Water & Sewer Manager may also be a part of the final inspection.

SEC. 800.3 QUALITY CONTROL TESTING

The Developer/Owner shall provide quality control testing for all materials and construction involved in the street improvements. All testing shall be accomplished by a testing firm approved by the City Engineer and shall be performed under the supervision of a Professional Engineer.

Minimum test requirements and minimum frequency of sampling and testing shall be given in Section 800.4 and Section 800.5. Projects will be evaluated individually and additional testing may be required. The inclusion of tolerances in project specifications will be subject to approval by the City Engineer. Deficiencies in quality of materials and/or construction exceeding the tolerance limits will not be approved.

Submission of test results shall be coordinated with the various stages of construction. Sampling and testing locations will be subject to approval of the City.

Exceptions to the number of required tests for materials may be granted at the sole discretion of the City Engineer when current test data are available.

SEC. 800.4 CONSTRUCTION INSPECTION CHECKLIST

Construction Stage	Inspection Items
Subgrade	<ul style="list-style-type: none">*Street subgrade constructed to accurate grade and within specified tolerances.*Moisture condition of subgrade (\pm 3% of optimum unless otherwise approved in writing).*Subgrade stability (Proof rolling required in addition to density tests. Proof-roll to be performed with rubber-tired construction vehicle weighing a minimum of 25 tons such as a fully loaded, tandem-axle dump truck unless otherwise approved in writing by City Engineer.).
Base Course	<ul style="list-style-type: none">*Base course constructed to accurate grade and within specified tolerance*Surface texture uniform (no evidence of segregation).*Moisture condition of base course*Base course stability (Proof rolling required in addition to density tests. Proof-roll to be performed with rubber-tired construction vehicle weighing a minimum of 25 tons such as a fully loaded, tandem-axle dump truck unless otherwise approved in writing by City Engineer.)
Curb and gutter	<ul style="list-style-type: none">*Curb and gutter alignment and grade accuracy*Cross section in conformance with typical detail*Concrete finish as specified. No toppings or thin patches permitted. No cracks or other defects.*Joint spacing accurate. Joint filler and sealer complete.*Where removal and replacement of curb and gutter is required, the replacement section shall extend from joint to joint or as directed by the City Engineer.
Surfacing	<ul style="list-style-type: none">*Grade and cross section accurate. Surfaces within prescribed tolerance.*Texture and finish uniform*Joints straight and smooth. Joint filler and sealer completed. No cracks or openings at joints.*Finish pavement surface shall not be lower than the top of gutter.

SEC. 800.5 ADDITIONAL TESTS AND TESTING FREQUENCY

Density tests on subgrades and base courses shall be taken every 300 feet or portion thereof, except that each cul-de-sac street shall have a minimum of two tests taken regardless of its length. The subgrade shall be compacted to 95% of Standard Proctor (AASHTO T99 Method A or C). The base course shall be compacted to 95% of Modified Proctor (AASHTO T180 Method D) on local and residential streets and higher classified streets. Base course placed under curb and gutter that is 4 inches or less in thickness will not require density test but will require "proof rolling". Minimum base course thickness for residential streets is 6 inches, and for local and higher classified streets is 8 inches. For concrete streets the minimum base course required is 3 inches. Base course shall not be more than $\frac{1}{4}$ inch less than specified thickness. Random soundings will be performed to ensure thickness is achieved. Rectification for base course which does not meet tolerance shall be submitted by Engineer of Record for review and consideration by City Engineer. Remedial work will be at the discretion of the City Engineer.

Asphalt streets shall be cored every 300 feet or portion thereof for the purpose of checking density and thickness, except that each cul-de-sac street shall have a minimum of two cores taken regardless of length, with one being taken within the cul-de-sac. The location of the core shall be chosen by the City Engineer or his/her designated representative so as to accurately

represent the quality of the asphalt laid in a particular area. Lanes of streets laid on different days may be required to have additional cores at City Engineer's discretion. Core samples shall be used to indicate asphalt thickness, and in no case shall be more than $\frac{1}{4}$ inch less than specified thickness. For cores that indicate thickness $\frac{1}{4}$ inch to $\frac{1}{2}$ inch less than that specified, "isolation" cores will be required. To "isolate", the contractor, at no expense to the City, shall cut cores 10 feet either side of the initial core. If one or both of the cores are in the acceptable tolerance, the section will be accepted. If one or both cores fail, then additional cores will be cut 25 feet away from the initial core in the failing directions. Subsequent cores will be cut at 50 foot intervals in the direction of failure until a core that passes tolerance is obtained. The isolated area will be that which falls within the limits of acceptable thickness. The areas that fall within the $\frac{1}{4}$ inch to $\frac{1}{2}$ inch less than specified thickness may be removed and replaced or warranted for five (5) years at 150% of construction cost based on the estimate provided by the Engineer of Record. Areas that are determined to exceed the $\frac{1}{2}$ inch less than specified thickness shall be removed and replaced within the limits of the acceptable thickness determined by the isolation method.

Minimum asphalt density for black base, binder, and surface courses shall be 92.0% of the maximum theoretical density. Maximum asphalt density for black base, binder and surface courses shall be 96% of maximum theoretical density. Asphalt densities that fall between 90% to 92% and 96% to 98% shall be left in place and an extended warranty of five (5) years at 150% of construction cost based on the estimate provided by the Engineer of Record will be required on the deficient asphalt pavement. Where densities are less than 90% or greater than 98%, the paving shall be removed and replaced. The limits of the deficient asphalt pavement shall be determined by the "isolation method" by first cutting two cores within 2 feet each side of the failing core, then add the results of the density of the original core and the two additional core densities. Divide by three and if the average of the three core densities fall within the acceptable ranges as specified above, then that section will be accepted per the aforementioned requirements. If the average of the original and the two re-cores fall below acceptable range, then additional cores will be cut first going 25 feet longitudinally in each direction from the original core and determining the densities of each. A resulting failing core from that point will require an additional core being cut 50 feet from that previous core and will continue in 50 foot increments until a passing core density is obtained. The failed area will consist of the area falling within the limits of the passing re-cores and will be addressed per the aforementioned requirements..

Minimum thickness of residential and local concrete streets shall be 6 inches and minimum 28 day compressive strength shall be 3,500 psi. A formal pavement design is required for higher classified streets but in no case shall be less than 6 inches in depth. A set of cylinders shall be taken for each 100 cubic yards or portion thereof poured. Admixtures for concrete pavement shall be approved by the City Engineer prior to placement.

Concrete for curb and gutters shall be a minimum 28 day compressive strength of 3,500 psi. One set of cylinders shall be taken at beginning of pour then for every 1,000 linear feet of curb and gutter poured, or portion thereof.

Concrete streets shall be cored every 300 feet or portion thereof for the purpose of checking thickness. Thickness shall not be more than 0.50 inches deficient. Areas of more than 0.50 inches deficiency shall be removed and replaced. The City may at its sole discretion choose to leave the deficient concrete slab in place and accept an extended five (5) year warranty for concrete placement at 150% of construction costs based on estimate provided by the Engineer of Record.

Concrete testing out less than 85% of design strength shall be removed and replaced. For concrete falling between 85% and 100% of design strength, an extended five (5) year warranty for concrete placement shall be provided at 150% of construction costs based on estimate provided by the Engineer of Record.

All core test holes for concrete and asphalt streets shall be filled with non-shrink grout flush with final surface within 24 hours of test.

ARTICLE 900

SIDEWALKS

SEC. 900.1 GENERAL

Sidewalks are to provide for safe pedestrian circulation within the City and promote pedestrian transportation. Sidewalks are defined as a pedestrian way constructed along public or private right-of-way to provide pedestrian access removed from traffic lanes.

SEC. 900.2 LOCATION AND WIDTH

Sidewalks and Trails will be built to meet all current Federal "Americans with Disabilities Act" requirements, with the location from back of curb and width as follows:

Street Type	Distance from Back of Curb	Width of Surface
Residential	5 ft	5 ft
Local	5 ft	5 ft
Collector	5 ft	6 ft
Arterial	5 ft	6 ft
Boulevard	5 ft	6 ft

Note: Street sections that include trails shall meet the "City of Bentonville Master Trail Plan" or as directed by the City.

Planning Commission may permit construction of the sidewalk in another position if it can be shown that the topography, existing vegetation, or functional utility of the area creates a need for an alternate location. Upon approval of the Planning Commission, the required footage of sidewalk may be constructed in another location within the immediate neighborhood if the above conditions preclude construction of sidewalks within the development. The boundaries of the immediate neighborhood will be based on the neighborhood boundaries established by the Planning Commission.

Upon approval of the Planning Commission, alternative pedestrian pathways such as walking trails may be constructed in lieu of sidewalks.

SEC. 900.3 DESIGN REQUIREMENTS

All sidewalks and trails shall meet all current Federal Americans with Disabilities Act (ADA) design and construction requirements.

Transverse slopes shall not exceed 2% (0.02 ft/ft).

When adjacent to streets, sidewalks shall be constructed at an elevation 1% above the adjacent curb and shall slope toward the street at a grade not exceeding 2%. There shall be a minimum of one (1) foot between the sidewalk and the beginning of a slope. No walls shall be constructed within two (2) feet of any sidewalk unless otherwise approved in writing by the City.

Sidewalks shall be constructed in a manner that will conform to the existing grade and landscaping. Sidewalks which extend or link existing sidewalks shall adjoin the existing sidewalks to form a continuous, even pathway.

Where sidewalks cross driveways, said driveway shall be designed and graded such that the sidewalk cross-slope and grade continues through the driveway the same width as the adjacent sidewalks. Slope shall not exceed 2% where sidewalk crosses driveway.

Utility poles, utility boxes, mailboxes, and other similar obstructions shall not be located in sidewalk. Sidewalk location behind back of curb may be varied at the discretion of the City to avoid such obstacles.

Sidewalks shall be constructed of Portland cement concrete with a minimum 28-day compressive strength of 3,500 pounds per square inch. Alternative materials must be approved in writing by the City Engineer and/or Planning Commission. Sidewalks shall be a minimum of four inches (4") thick.

Compacted granular base course shall be a minimum of three (3) inches thick.

Transverse tooled joints shall be provided perpendicular to the sidewalk at intervals equal to the sidewalk width.

Expansion joints shall be installed perpendicular to the sidewalk at intervals equal to five (5) times the sidewalk width. Joint material shall be the same as approved for AHTD sidewalk construction (AASHTO M 213). Alternate material must be approved in writing by the City.

Wheelchair ramps shall be installed in accordance with current ADA requirements including the placement of detectable warning devices. Accessible ramps shall be constructed where sidewalk intersects a curb, commercial driveway, street or alley. Width of ramp shall match width of adjoining sidewalk. Detectable warning device shall extend two (2) feet in the direction of travel and shall be the full width of the curb ramp or flush pedestrian access surface. Detectable warning device shall be placed such that the domes align in the predominant direction of pedestrian travel. Detectable warning device shall be located so that the nearest edge of the device is 6 inches from the face of curb. Maximum slope of ramp shall be 8.33% in the direction of travel. Cross-slope shall not exceed 2%.

SEC. 900.4 CONSTRUCTION

An excavation shall be made six inches (6") minimum below grade line at all points.

Said excavation to be well and firmly tamped with rammer and brought to a firm and solid surface upon which to construct the sidewalk.

Excavation to be filled with a minimum of three (3) inches of Class 7 Aggregate Base Course and firmly tamped down, said base to be at least three inches (3") deep after tamping.

After the Class 7 Aggregate Base Course has been compacted and inspected by the City Building Inspection Department, four inches (4") of Class S (3,500 psi) Portland Cement Concrete shall be placed, tamped to consolidate concrete, brought to a smooth level surface with the top of the form, then floated well and troweled to a smooth surface, or if required by the City, a broom finish surface. Tooled transverse joints shall be placed perpendicular to the sidewalk at intervals equal to the width of the sidewalk. Concrete shall be properly protected from damage until sufficiently hard for use.

Subgrade and formwork for sidewalks constructed prior to final plat shall be required to be inspected by a City Construction Inspector (Engineering Department) prior to pouring of the sidewalk. Subgrade and formwork for sidewalks constructed after final plat shall be required to be inspected by a City Building Inspector (Building Inspection Department) prior to pouring of the sidewalk. All sidewalks installed along a public street or right-of-way associated with a large scale development shall be inspected by City Construction Inspector (Engineering Department).

SEC. 900.5 WARRANTY

Developer shall guarantee installation of sidewalk and appurtenances for a period of one year after acceptance of the final plat or receipt of Certificate of Occupancy.

Sidewalks must be completed before the Certificate of Occupancy will be issued and permanent connection to utilities permitted. The owner(s) of record will be required to install sidewalks on any lot(s) which remain undeveloped three years after filing of the final plat or within 90 days from notification by the City if sidewalks are constructed on both sides of said lot. In the event that the sidewalks are not constructed within three years of filing of the final plat or upon notification by the City, the City shall have the right (but shall not be required) to construct the sidewalks and to charge the cost thereof to the property owner(s) through placement of a lien on the real property. The final plat and protective covenants shall state these requirements.

SEC. 900.6 MAINTENANCE

The property owner shall be responsible for repair and maintenance of all sidewalks installed to fulfill the provisions of these regulations. This requirement shall be included on the face of the final plat and shall be enforced as per the provisions of Ordinance No. 87 of the City of Bentonville.

ARTICLE 1000

EXCAVATIONS AND ALTERATIONS

SEC. 1000.1 EXCAVATIONS

- A. Permit. It shall be unlawful for any person to excavate, bore under or cut any street, alley, sidewalk, road, highway or other public way, or curb and gutter in the City of Bentonville, Arkansas, without first obtaining a permit from the Street Manager. Such permit shall be granted only after a written application has been filed, all fees have been paid, and surety bonds are in place as set forth herein. Information to be indicated in such application shall include:
 - 1. Name and address of the owner or agent in charge of the property abutting the proposed work area.
 - 2. The name and address of the party doing the work.
 - 3. A map that indicates the location of the work area and the dimensions of the excavation area.
 - 4. A plan or a clear description of the work to be done.
 - 5. A traffic control plan that meets the "Manual on Uniform Traffic Control Devices" latest edition.
- B. Inspection fee; Surety bond. At the time of making application for a boring, jacking or open cut permit, an inspection fee of Fifteen Dollars (\$15.00) shall be paid. An applicant for such permit shall deposit a cashier's check or a sufficient surety bond with the City of Bentonville, Arkansas, before a permit for boring, jacking or open cut shall be issued. The cashier's check and/or bond shall be forfeited for failure to comply with rules of public safety, as provided for by Section 9.08.05 of this ordinance. (Ord. No. 93-67, Sec. 2)

Upon satisfactory completion and approval of the bore, jack, or open cut, the City shall authorize the return of any sum deposited as provided above. In the event that the Permit holder shall fail, refuse or neglect to make such repair or shall fail, refuse or neglect to remove and replace any rejected work as provided in this ordinance, the City may make such repair or cause such repair to be made and deduct the cost thereof from the amount on deposit with the City, and the balance of the deposit, if any, shall be paid to the Permit holder.

SEC. 1000.2 APPLICATION FOR PERMIT – BOND AMOUNTS

No person shall make any bore, jack, or open cut for which a permit is required by Section 1000.1 above, until he has deposited a cashier's check or a surety bond required herein at the time of obtaining the permit as set forth in Section 1000.1. The amount of such cashier's check or surety bond shall be determined by the criteria as follows:

- A. The amount for a boring or jacking permit shall not be less than Seven Hundred and Fifty Dollars (\$750.00).
- B. The amount for an open cut shall be estimated by square surface yards and calculated by the current fees for open cuts as set forth in the Municipal Code and then multiplied by 150%.

- C. In the case of sidewalks and curb and gutter, or other public way, the amount shall be determined by the current fee schedule as set forth in the Municipal Code but shall not be less than One Hundred Dollars (\$100.00).
- D. No fees or bonds shall be required for those projects which are borne by the City.

SEC. 1000.3 PUBLIC / TRAFFIC SAFETY

Every person making an excavation or cut as provided for in this article shall submit a traffic control plan for vehicular or pedestrian traffic flow at the time of obtaining a permit. The plan shall comply with the Manual on Uniform Traffic Control Devices, and be stamped for approval by the Street Manager.

SEC. 1000.4 BORED CROSSINGS – REQUIREMENTS

The intent of this section is that all street, alley, sidewalk, road, highway or other public way, or curb and gutter crossings by utilities and other parties shall be required to be bored unless an open cut is approved by the City. Open cut approvals shall not be withheld unreasonably and if required, shall meet the following requirements:

- A. Handling of Excavated Material. In making excavations or making improvements in or to any street, alley, sidewalk, road, highway or other public way or curb and gutter in the City, all material or earth removed and new material necessary for repairs or for new work shall be handled in a safe manner and placed where it will cause the least possible inconvenience to the public. In no case shall such material or earth be stock piled or scattered over the surface of the pavement or impede vehicular or pedestrian traffic flow.
- B. Making open trench repairs promptly. No trench or opening made on any street, alley, sidewalk, road, highway, or other public way, or curb and gutter in this City shall remain open longer than is absolutely necessary, and in no event more than 24 hours, except by special written permission of the City. If a cut is required to be open for longer than 24 hours and the party making it failed to secure the necessary extension of time, and having been notified to refill the same, failed to do so, then the such refilling shall be made under the direction of the City at the expense of the party that has secured the permit. Temporary bridging of the open cut such as "plating" shall be required if a cut is required to stay open more than 12 hours. For public safety a minimum "plate" thickness of one inch shall be required.
- C. Backfilling generally. Immediately upon the completion of any job, the backfilling of cuts into any street, alley, sidewalk, road, highway or other public way, or curb and gutter shall be done as per the City of Bentonville's current standard details for such a repair. If no standard detail is available for such a repair, it shall be repaired in a manner approved by the Street Manager.
- D. Settling. If the backfilling of any trench or opening settles prior to the making of permanent repairs, such trench or opening shall immediately be brought to proper grade by the party that secured the permit as directed by the Street Manager. If such repair has not been made within three days of notification to permit holder, repairs will be made by the City at the permit holder's cost.
- E. Length of Excavation. No excavation shall be made in any street, alley, sidewalk, road, highway, or other public way or curb and gutter in the City that exceeds 400 feet in length at any one time, except by special written permission of the Street Manager.

- F. Emergency Cuts and Excavations. Nothing in this article shall prevent any person from opening any street, alley, sidewalk, roadway or other public way or curb and gutter as may be necessary for the preservation of life or property when necessity may arise during the times when city offices are closed. The person making such excavation shall make application for a permit within 24 hours after city offices are first opened subsequent to the making of such excavation.
- G. The Permittee shall notify the City prior to the beginning of such repair work, of the time and manner of repair and obtain the approval of the City prior to the beginning of such repair, and afford the City the opportunity of being present during the progress of such repair until completed.
- H. After the repair work has been completed, the permittee shall notify the City that such work has been completed. The City shall make an inspection to ensure that the work has been done in accordance with the requirements of this chapter and reasonable specifications provided to the Permittee by the City prior to the commencement of the repair work. In the event any or part of any work is not done in a satisfactory manner or not in conformity with this chapter or specifications, the City shall notify the contractor and owner in writing of the non-acceptance of the work. All such rejected work shall be removed and replaced within thirty (30) days of the notification.

SEC. 1000.5 BORING AND JACKING PROCEDURES AND REQUIREMENTS

At the time of application for a permit for boring or jacking the following procedures and requirements shall apply as follows:

- A. The Permittee shall provide a map that clearly depicts the location of each individual bored or jacked crossing.
- B. The Permittee shall mark each individual bored or jacked crossing with "pink" chalk paint, as to provide the City inspector a reference line as to where the boring or jacking took place.
- C. When jacking or boring, the depth of bury on installations which are jacked or bored under any street shall have a minimum depth of bury of two and one-half (2 ½) feet below the low points of the street cross section to the top of the pipe or casing, or three and one-half (3 ½) feet below the bottom of the pavement structure (top of subgrade) to the top of the pipe or casing, whichever gives the greatest depth. In the case of a street section with a ditch section, the bury shall be a minimum of one (1) foot below flow line, but still a minimum of the above referenced depth below street section, whichever is greater. If the pavement or curb and gutter structure is damaged by the jacking or boring installation, it shall be repaired in a manner approved by the Street Manager.
- D. After the completion of the jacking or boring, the permittee shall contact the Street Manager within forty-eight (48) hours of such completed work for an inspection. Upon satisfactory completion and approval of the jack or bore and upon satisfactory completion of any repairs required as a result of the jack or bore, the Mayor or his/her duly authorized representative shall authorize the return of any sum deposited. In the event that the permittee shall fail, refuse or neglect to remove and replace any rejected work as provided in this ordinance, the City may deduct the cost from the amount on deposit with the City, and the balance of the deposit, if any, shall be paid to the permittee.

SEC. 1000.6 PENALTY

Should any excavation, cut, jacking or boring in project be willfully started by a person, firm, organization, contractor or engineer before receiving from the City of Bentonville, Arkansas, the

permit required by this chapter, said person, firm, organization, contractor or engineer shall for each violation be punished by a fine not to exceed one thousand dollars (\$1,000.00) and such excavation, cut, jacking or boring shall be stopped and temporarily repaired until a proper permit has been issued.

SEC. 1000.7 STREET CUTS AND REPAIRS BY THE CITY

The intent of this section is to indicate that the City may choose to cut and repair any street, alley, sidewalk, road, highway or other public way or curb and gutter for individuals, if the City determines that it is in their best interests. A fee for such a cut and repair will be collected from the individual requesting such a service from the City in accordance with the fee schedule as set forth in the Municipal Code. If this individual requires any after hours services from the City for this cut and repair, a Thirty Dollar (\$30.00) an hour after hours fee shall be required in addition to the normal fee.