RESOLUTION NO. 126

A RESOLUTION ADOPTING THE PROPOSED MINIMUM STREET STANDARDS

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF TONTITOWN, ARKANSAS:

a) **Section 1:** That the City Council hereby adopts the proposed Minimum Street Standards. A copy of the Street Standards are attached hereto marked Exhibit "A" and made a part hereof.

PASSED AND APPROVED this 4th day of October, 2005.

APPROVED:

Paul Maestri, Mayor

ATTEST:

Toni Zulpo,
City Recorder / Treasurer
(seal)

ROLL CALL:

Shall the Ordinance pass:

	YEA	NAY	
Alderman Andrew Penzo	✓		*(Ward 2, Position 2)*
Alderman Arthur Penzo	✓		*(Ward 2, Position 1)*
Alderman Henry Piazza	✓		*(Ward 1, Position 2)*
Alderman Bradley Marveggio	✓		*(Ward 1, Position 1)*
Alderman Ken Robertson	✓		*(Ward 3, Position 2)*
Alderman Steve Smith	✓		*(Ward 3, Position 1)*
Mayor Paul Maestri			

Yeas: 6 **Nays:** 0 *(total)*

CITY OF TONTITOWN, ARKANSAS

MINIMUM STREET STANDARDS

September, 2005

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MINIMUM STREET STANDARDS
SECTION 1. GENERAL REQUIREMENTS

1.1 Definitions:

Whenever the following terms, abbreviations, or acronyms are used in these specifications the intent and meaning shall be interpreted as follows:

a) AASHTO - American Association of State Highway and Transportation Officials.

b) ACCEPTABLE COMPLETION - Substantial completion of the street construction as agreed upon by the CITY and the ENGINEER OF RECORD.

c) ADEQ – Arkansas Department of Environmental Quality, or its successors.

d) AHTD - Arkansas State Highway and Transportation Department.

e) ASTM - American Society for Testing and Materials.

f) CBR - California Bearing Ratio.

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

h) CITY COUNCIL – The Council of the City of Tontitown, Arkansas.

i) CITY ENGINEER – The registered professional engineer designated as the "City Engineer" by the City Council of the City of Tontitown, Arkansas; whether a staff employee of the City or a consulting civil engineer.

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

k) DEVELOPER - The person, firm, partnership, corporation or other entity planning, constructing, altering or reconstructing a public street. The developer may or may not also be the Owner of the property in question.

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

m) ESAL - Equivalent Single Axle Load.

n) 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.

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

p) 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.

q) MASTER STREET PLAN – The current Master Street Plan as adopted by the City Council, and as may be amended from time to time.

r) MODIFIED PROCTOR – ASTM D1557: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3(2,700 kN-m/m^3)). Latest edition, unless noted otherwise.

s) NAVD 88 – The North American Vertical Datum of 1988, a standard for measuring elevations referenced to sea level.

t) PLANNING COMMISSION – The Planning Commission of the City of Tontitown, Arkansas.

u) SSHC – The Arkansas Highway and Transportation Department's Standard Specifications for Highway Construction, latest edition, unless specifically noted otherwise.

v) STANDARD CURB – A concrete combination curb and gutter conforming to AHTD Standard Drawing CG-1, Type A, with a total section width (curb and gutter) of 2'-0" and a minimum gutter thickness of six inches.

w) STANDARD PROCTOR – ASTM D698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)). Latest edition, unless noted otherwise.

x) 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 offsite.

y) STREET WIDTH – Where this or similar terms are used, it shall mean the width of the street as measured from the back of a standard curb on one

side of the street perpendicularly to the back of the curb on the other side of the street. Where no curb is present, the measurement shall be from one edge of the pavement perpendicularly to the opposite side of the pavement.

z) USGS - United States Geological survey.

1.2 Requirement to Extend Streets:

Authority to require street extensions and improvements are included in the subdivision regulations of the City as interpreted by the City Staff and the Planning Commission; and in the Master Street Plan as approved by the Planning Commission and as adopted by the City Council.

All of the rules, regulations, and Standards contained herein have been adopted by ordinance by the City Council.

All new development of any kind shall be required to extend, at the expense of the Developer, streets within the development in accordance with these standards and in accordance with applicable ordinances and other rules and regulations governing the extension of streets. Streets adjacent to and leading to such developments may also be required to be constructed or otherwise upgraded, at the expense of the Developer, to meet the intent of these Standards.

Streets within developments shall be extended to the edge of the property boundaries where required either to conform to the Master Street Plan or to provide for the general circulation of traffic within the neighborhood. Such extensions to property boundaries shall be fully constructed complete with curb and gutter and drainage. A temporary cul-de-sac may be required on such streets.

1.3 City Participation in Street Extension Costs:

The City may participate in the construction of streets either adjacent to a development or on a street leading to a development if the need for such improvement is not totally caused by the development in question. The appropriateness of any such cost sharing between the Developer and the City shall be determined by the Planning Commission based on City Ordinances governing the cost sharing of streets.

In no case shall the City participate in Local or Residential streets within Developments. Where streets classified as collector or higher are required to be constructed as part of a development, the Developer shall be financially responsible for their share of the cost of the higher classified street. The Developer's share shall be that cost which bears a rational nexus to the needs created by the development. In no case shall the Developer be responsible for less than the cost of a standard 29 foot local street. In all cases, regardless of the Developer's cost share, the Developer shall be responsible for securing and/or

granting all street right-of-way required by the higher street classification. City participation in any cost sharing project shall depend on the availability of funds.

1.4 Required Street Right of Way:

Street rights-of-way in connection with required street extensions and improvements shall be granted to the City by the Developer either by virtue of a Final Plat or Easement Plat filed at the Washington County Court House or by a separate instrument. Such rights-of-way shall be owned and controlled by the City and shall be utilized by the City for all purposes allowed by City and State law. Examples of such purposes may include, but are not limited to construction of streets, extension and replacement of utility lines, drainage facilities, and all related appurtenances. Where allowed by the City's franchise agreements, rights-of-way may also be used by public and private utility and/or communications companies holding the appropriate franchise for the placement, maintenance, and replacement of their lines.

Additional rights-of-way may be required in certain instances where no street construction or improvements are anticipated either for the eventual extension or improvement of the street or to bring the existing right-of-way width into conformance with the Master Street Plan.

Rights-of-way and pavement widths shall be as called for in the Master Street Plan and Appendix D of this document. It is understood that the widths listed in Appendix D are minimum widths only. Additional right-of-way may be required where the need for wider rights-of-way is dictated by the topography or other feature of the property.

1.5 Permits:

All permits required to accomplish the work shall be the responsibility of the Developer or the Engineer of Record. Such permits may include but are not limited to permits for work within AHTD rights-of-way, railroad crossing permits, ADEQ stormwater permits (including the Storm Water Pollution Prevention Plan, Notice of Intent and Notice of Termination), and a grading permit.

1.6 Plans and specifications:

Construction plans and specifications, prepared by a Professional Engineer registered in the State of Arkansas and showing all necessary data for all public and private improvements to be installed, shall be submitted to the Planning Commission. In addition to the plans, the Engineer shall certify in writing that all plans and specifications have been prepared in conformance with or in excess of the applicable requirements of the City.

The SSHC, and the AHTD Standard Drawings (11-11-92) 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 them.

Approval of the detailed plans and specifications by the City and/or City Engineer does not constitute a 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.

1.7 Responsibilities of Developer:

The Developer shall be responsible for installation of streets, including all design and construction, and for all costs associated therewith except in situations where cost sharing may be appropriate as described in Section 1.2.

All formal agreements entered into by the City will be with the Developer only. Such agreements will bind each principal of the Developer regardless of the Developer's form of organization.

The Developer 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 and shall be of the form shown in Appendix "C".

The Developer is hereby required to have contained within the construction contract he executes with his Contractor a requirement to obtain a Performance and Payment Bond for the entire contract amount. The Developer shall assign said Performance and Payment Bond to the City in a form approved by the City Attorney. The Bond shall be issued by a company licensed to do business in the State of Arkansas.

The Developer may, in lieu of assignment of the Performance and Payment Bond to the City, post a cash deposit or an irrevocable Letter of Credit with the City in the full amount of the proposed improvements. If a Letter of Credit is issued as assurance of construction, the City shall have the right of approval of the financial institution involved and the terms of the Letter of Credit.

The amount of security shall be the total estimated construction cost associated with the street construction. That amount may not be diminished or drawn down during construction. The total shall remain intact until the job has been accepted.

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.

The Developer shall provide a one (1) year Maintenance Bond to the City as specified in Section 1.11 of these Standards.

1.8 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, specifications, and related information shall bear the name of the Engineer of Record. The documents shall be signed and sealed by the Engineer of Record in accordance with State law. In addition, the appropriate Certificate of Authorization seal shall be placed on the documents when applicable.

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, seal, and signature of a Professional Engineer licensed in the State of Arkansas.

The Engineer of Record shall certify that materials and construction conform to the approved plans and specifications. Inspection and testing requirements are outlined in Section 7 of these Standards.

1.9 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 new sets 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.

1.10 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 Section 7 of the Standards. The City reserves the right to observe the construction at all times.

1.11 Acceptance By The City:

The Developer shall be responsible for the installation of all improvements. Once the developer and Engineer of Record have certified that all improvements are in place, and have been constructed in keeping with or in excess of the City's standards, and in keeping with good engineering practices, the final inspection may be held. Formal acceptance of the project by the City shall be made in writing after the final inspection and following the Developer's posting of the Maintenance Warranty. The date of formal acceptance shall be the same date as given in the Maintenance Warranty.

1.12 Maintenance Warranty:

Following completion of the improvements and the final inspection, the Developer 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 twelve (12) months after the date the Maintenance Warranty. The Maintenance Warranty shall be in the amount of 100 percent of the cost of construction of the improvements.

The Maintenance Warranty may be either:

a) A formal Maintenance Bond issued by a company licensed to do business in the State of Arkansas. The bond shall be for a one (1) year period, beginning with the date on the bond.

b) An extension of the Performance and Payment Bond for the full one (1) year warranty period provided all parties acknowledge and agree to accept the extension and assignment.

c) A cash deposit or letter of credit to satisfy the maintenance warranty requirements.

Regardless of the type of Maintenance Warranty selected the terms, conditions, form, and content must be approved by the City Attorney. Generally, the Maintenance Warranty must state the specific project involved, the warranty amount, how and under what conditions the City has the right to draw upon that Maintenance Warranty.

1.13 Need for Traffic Study:

A formal Traffic Study may be required in connection with a development if, in the opinion of the City, it is required to properly determine future street loadings and/or to determine cost shares between the City and the Developer. A Traffic Study may also be required as a condition of development by the Planning Commission. The cost of the traffic study shall be borne by the Developer.

1.14 Subdivision Signs and Ornamental Structures:

Subdivision signs proposed for installation by the Developer for the benefit of his development shall be shown on the Plans and be sized and located to meet the provisions of the city's Sign Ordinance.

The location and size of all ornamental structures constructed by the Developer/Owner shall be approved by the City. In addition, the need to conform to zoning regulations shall be determined by the City Engineer and/or Planning Commission. Generally, all structures over 30 inches high must meet applicable setback requirements.

Where a subdivision sign or ornamental structure is proposed to be located on City right of way, the exact location and size shall be approved by the Planning Commission. The maintenance of such signs and structures shall be by a properly established property owner's association and provision for maintenance shall be included in the covenants of the subdivision.

Any relocation of such signs and structures necessitated by street widening, utility installation, or any other authorized use of the right of way shall be the financial responsibility of the property owner's association and shall be done at the call of the City.

All permanent street and traffic signs shall be furnished and installed by the City at no cost to the Developer.

1.15 Sidewalks:

Sidewalks shall be constructed according to City standards and specifications in all new developments, as adopted by the City council, along both sides of all streets.

All sidewalks shall be constructed to the following specifications:

(A) Sidewalks shall be located a minimum of two feet from the back of curb for local streets, four feet from the back of curb for collector streets and minor arterials, and six feet from the back of curb for principal arterials;

(B) In all new subdivisions and developments, sidewalks shall be shown by the developer on the preliminary plat along with the streets and presented to the Planning Commission for approval;

(C) Sidewalks will be the responsibility of the builder and shall be in place before final inspection by the City of Tontitown. Sidewalks are subject to inspection prior to pouring;

(D) Handicapped curb ramps shall be provided wherever a sidewalk crosses a curb at crosswalks, driveways and street intersections;

(E) Sidewalks shall be constructed on a compacted grade which shall be free from dust pockets, ruts and other defects;

(F) Sidewalks shall be constructed of Portland cement concrete, containing 5% air entrainment and with a minimum 28-day compressive strength of 3,500 pounds per square inch, reinforced with 6x6 #10 welded reinforcing wire;

(G) Sidewalks shall be constructed with a transverse slope of two percent (2%) toward the roadway;

(H) Sidewalks shall be 48 inches wide;

(I) The concrete shall be four inches thick;

(J) Control joints shall be at maximum intervals of 25 feet and at all points of connection with the driveway;

(K) Transverse joints between expansion joints shall be scored at five foot intervals;

(L) Sidewalks shall be troweled to an even surface and finished with a broom finish;

(M) Sidewalk subgrade shall be inspected by the City Building Inspector prior to pouring the sidewalk;

(N) The property owner shall be responsible for the repair and maintenance of the sidewalk and the green space between the curb and sidewalk after installation.

In addition to the above requirements, sidewalks shall be constructed in accordance with the American National Standards Institutes Accessibility requirements (ANSIA 117.1).

The City Planning Commission and the Code Enforcement Officer shall have the authority and discretion to grant exceptions.

Sidewalks shall be engineered and shown as part of the street plans and specifications to be approved by the City. The sidewalks shall then be constructed as part of the development improvements as required by City Ordinance.

1.16 Applicability

The regulations and requirements contained in these Street Standards shall be applicable to all land or parcels of land being developed for commercial, industrial, or residential use. Where private streets are constructed where approved by the City, the subbase, base, and paving shall meet the applicable requirements of these Minimum Street Standards.

MINIMUM STREET STANDARDS
SECTION 2. DESIGN DATA AND PLAN SUBMISSION

2.1 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 Design Report, the plans, the specifications, and the Drainage Report. No review based on a partial submittal will be made. The final review will be concurrent with the review of all public improvements, including water, sewer, and drainage.

2.2 Design Report:

The Design Report shall be a separately bound document and 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.

2.3 Horizontal and Vertical Datum:

All elevations shall be based on the North American Vertical Datum of 1988 (NAVD 88) and all horizontal controls shall tie to the State Plane Coordinate System. Both vertical and horizontal controls shall be tied to permanent monuments approved by the City.

2.4 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 to scale and no smaller than 1 inch = 50 feet. The layout shall include, but shall not be limited to the following information.

A. Street right of way, proposed and existing
B. Existing and proposed utility easements
C. Curve Data
D. Stationing
E. Location and size of existing and proposed utilities
F. Location and size of existing and proposed drainage facilities
G. Intersection Radii
H. Soil Boring Locations
I. California Bearing Ratio (CBR) Test Locations
J. Elevations at the beginning, mid-point, and end of the radius returns at all intersections
K. A legend showing typical symbols used in the plans
L. Existing and proposed property lines
M. North arrow

N. Street and Right of Way dimensions
O. Sidewalks
P. Areas subject to a Special Flood Hazard Area per the Flood Insurance Rate Map, or subject to flooding as determined by engineering studies, or with a history of flooding.
Q. The name and address of each Owner, the Developer, the surveyor, and the Engineer of Record.
R. Dimensions of all streets, from back-of-curb to back-of-curb.
S. Names of all streets.
T. Topography, referenced to NAVD 88.
U. Erosion control measures.
V. Other items as may be required by Ordinance for subdivisions and other developments.

Street profiles shall be shown on a horizontal scale to match the layout with a vertical exaggeration of 10 to1. The profiles shall include, but shall not be limited to showing:

A. Existing ground elevations
B. Proposed centerline grade and elevations
C. Vertical Curve Data
D. Existing and proposed drainage and utility line crossings (size and location)
E. Proposed finished elevations

Street cross-sections shall be shown on a horizontal scale to match the layout with a vertical exaggeration of 10 to 1. Cross-sections shall be shown at a maximum spacing of 50 feet. Additional cross-sections shall be shown where necessary for clarification. The cross-sections shall include, but shall not be limited to showing:

A. Existing ground line
B. Proposed roadway section, in schematic form (curb jumps, crown, cross-slope, etc.)
C. Proposed centerline elevations
D. Sidewalks
E. Side slopes tied to existing grades

A typical street section shall be included in the Plans and shall show the following:

A. Pavement type, pavement width, and thickness of all layers
B. Compaction requirements
C. Cross slope and crown
D. Location of profile grade reference point
E. Curbs
F. Right of way width
G. Sidewalks

Revisions to drawings shall be indicated above the title block and shall show the nature of the revisions and the date made.

2.5 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.

2.6 Record Drawings:

During construction, the Contractor shall maintain on-site a set of plans in which all deviations of construction from the approved plans shall be noted in red, along with any existing conditions identified during construction which deviate from those shown on the approved plans.

Following the completion of all improvements, the Developer shall submit one copy of record drawings to the City. Record drawings shall be prepared by the Engineer of Record from the Contractor's notes, and shall bear the legend "Record Drawing" on each sheet.

Record drawings shall depict an accurate account of the construction. Construction plans which are "rubber stamped" and submitted as "Record Drawings" shall not be accepted.

One set of "record drawings" shall be submitted by the Engineer of Record along with the final costs associated with the Street Construction. These items shall be submitted to the City prior to the filing of the Final Plat with Washington County.

MINIMUM STREET STANDARDS
SECTION 3. STREET DESIGN PRINCIPLES

3.1 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.

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

3.2 Alignment:

Horizontal curves shall be circular curves with minimum centerline radii of not less than 150 feet for residential 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.

Vertical Curve Coefficient (K)

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

3.3 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 (Minimum)	90 feet	70 feet
Grade Within 100 feet	0 %	4 %
Minimum Angle	75 degrees	50 degrees
Minimum Curb Radius		
Local Streets	30 feet	30 feet
Collector Streets	50 feet	50 feet
Minimum Jogs		
Local Streets	125 feet	125 feet
Collector Streets	125 feet	125 feet

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 when streets with a classification of collector or higher are involved.

3.4 Cross Sections and Right-of-Way Widths:

Pavement cross sections shall conform to the details included in these standards and Appendix D.

Pavement cross-slopes for all streets shall be a minimum of 2 percent with a minimum crown height of 6 inches. Gutters shall be sloped to match the street.

On the elevated side of a uniform cross slope or superelevated street section, 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 superelevated sections shall provide for minimum longitudinal grades. Superelevated sections shall conform to the AHTD Standard Drawings.

The minimum right-of-way shall be as called for in Appendix D. Greater widths may be required if needed to accommodate a particular street design.

3.5 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.

3.6 Minimum and Maximum Grades:

The minimum grades shall be that grade required to provide positive drainage for the street, but shall not be less than 0.5 percent. The maximum allowable grade for local streets shall be 10 percent with a provision for a 15 percent grade for a maximum distance of 300 feet in the case of hilly terrain. For collector streets the maximum grade shall be 8 percent with a provision for 12 percent maximum grade for no more than 300 feet.

3.7 Sight Distance Requirements 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 150-350 feet, depending on the topography. The Arkansas Highway and Transportation Department definition of site distance shall apply. The design speed shall be 20 to 30 mph for local streets and 25 to 35 mph for collector streets.

MINIMUM STREET STANDARDS
SECTION 4. PAVEMENT DESIGN

4.1 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 required on all streets, and shall be constructed of portland cement concrete. The use of asphalt curbs is prohibited.

Flexible pavements may be composed of a crushed stone base course with an asphaltic concrete surface or a full-depth asphalt structure utilizing a bituminous course.

Rigid structures shall be full depth portland cement concrete to the designed thickness with a crushed stone drainage/leveling course of no less than 2 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 SSHC, unless specifically noted otherwise.

Typical design requirements are summarized in Appendices A and B of this document. Typical street width requirements are shown in Appendix D.

4.2 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 SSHC and this document, unless specifically approved otherwise in writing by the City Engineer for a specific and individual exception. All testing shall be in accordance with Section 7, Inspections and Testing, of this document.

4.3 Subgrade Material:

Subgrade soils shall be all materials used for subgrade including in-situ materials and fill materials. Subgrade 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 inches 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).

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.

The adequacy of in-situ soils and fill material as pavement subgrade shall be evaluated based upon soils classifications, Atterberg Limits and CBR values.

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

Subgrade compaction requirements, including both moisture and density requirements, shall be shown both on the plans and in the specifications (minimum 95 percent standard proctor required).

Sampling and testing of subgrade materials shall be as set forth in Paragraph 4.8 of these Standards.

Pavement designs which 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.

4.4 Base Course:

Base course material shall be crushed stone meeting the requirements of AHTD class 7 aggregate base course as specified in Section 303 of the SSHC. 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 Division 400 of the SSHC.

4.5 Surface Course:

The surface course for flexible pavement sections shall be Asphalt Concrete Hot Mix Type 2 or 3 as specified in the 1993 edition of the SSHC. The City will consider other design mixes, including "Superpave" mixes conforming to the requirements of the latest edition of the SSHC, 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 Division 500 of the SSHC.

Where grades are greater than 10 percent for distances of more than 300 feet, the paving material shall be concrete unless the use of an asphalt design is specifically authorized by the City Engineer.

4.6 Curb and Gutter:

Curb and gutter shall consist of a concrete combination curb and gutter conforming to AHTD Standard Drawing CG-1, Type A, with a total section width (curb and gutter) of 2'-0" and a minimum gutter thickness of six inches. Curb and gutter shall be constructed of portland cement concrete and shall conform to the requirements of Section 634 of the SSHC. The use of asphalt curbs is prohibited.

4.7 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 investigations to determine the need of subsurface drainage for each street and segment therefore to be designed and constructed.

4.8 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.

A minimum design period (traffic analysis/forecast) of 20 years shall be used for pavement section design.

Minimum traffic volumes and equivalent 18 kip axle loads (ESAL) shall be as provided in appendix I. A formal traffic study with projections and supporting data shall be submitted for all street classifications where minimum ESAL criteria are not provided.

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 to be tested shall include 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 classifications 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.

   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 the 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 4-8(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.

MINIMUM STREET STANDARDS
SECTION 5. 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.

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 by the City.

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 drain pipe 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.

MINIMUM STREET STANDARDS
SECTION 6 - EROSION CONTROL

6.1 Requirement for Erosion Control:

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.

A copy of the erosion control plan, prepared by the Engineer of Record, shall accompany the construction drawing submittal. In addition, the City may require a copy of the Stormwater Pollution Prevention Plan (SWPPP), proof of Arkansas Department of Environmental Quality (ADEQ) approval of the SWPPP, and/or a copy of the Notice of Intent.

6.2 Permits Required:

All construction sites with a disturbed area of one acre or more are required by State law to have a Stormwater Pollution Prevention Plan. If the disturbed area exceeds certain limits, submission of the SWPPP to the Arkansas Department of Environmental Quality is required prior to commencement of construction activities. In addition, a Notice of Intent may be required to be filed with ADEQ.

The Developer and/or Contractor are solely responsible to obtain any and all permits required by this or other statutes, and to be fully informed of the requirements of County, State, and Federal regulations pertaining to construction activity.

6.3 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 erosion control plan approved in conjunction with the street improvements.

MINIMUM STREET STANDARDS
SECTION 7 - INSPECTIONS AND TESTING

7.1 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.

7.2 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 inspection on the job. 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 AM 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 Maintenance Manager and the Water and Sewer Maintenance Manager may also be a part of the final inspection.

7.3 Quality Control Testing:

The Developer 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 Paragraph 7.4. 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.

7.4 Construction Inspection checklist:

Construction Stage	Inspection Items
Subgrade	Street subgrade constructed to accurate grade and within specified tolerances. Moisture condition of subgrade. Subgrade stability (Proofrolling required in addition to density tests).
Base Course	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).

Curb and Gutter	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.
Surfacing	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. Finished pavement surface shall not be lower than the toe of gutter.

7.5 Additional Tests and Testing Frequency:

Density tests on subgrade and base courses shall be taken every 300 feet or portion thereof, except that each cul-de-sac street shall have one test taken regardless of its length. The subgrade shall be compacted to 95% of Standard Proctor. The base course shall be compacted to 95% of Modified Proctor on Local Streets and 98% of Modified Proctor on higher classified streets. Minimum base course thickness shall be as indicated in Appendix A.

Asphalt streets shall be cored every 500 feet or portion thereof for the purpose of checking density and thickness, except that each cul-de-sac street shall have at least one core taken regardless of length. The location of the core shall be chosen so as to accurately represent the quality of the asphalt laid in a particular area. Samples over a "run" shall be averaged for the purpose of determining asphalt thickness except that in no case shall be thickness be 1/4 inch less than that specified. Maximum thickness used for averaging purposes shall be the specified thickness plus 1/2 inch.

Minimum asphalt density shall be 92.0% of the maximum theoretical density. No density of less than 90.0% shall be acceptable. The asphalt where densities less than 92.0% and more than 90.0% shall be left in place and a penalty of 2 percent of the in-place construction cost of the deficient asphalt shall be paid to the City for each 0.10 % deviation from the required density up to a maximum penalty of 40 percent. Where densities are less than 90.0%, the paving shall be removed and replaced. The asphalt density used for the purpose of computing the penalty shall be the average density over the entire street or streets within the development as determined by the core samples. No densities under 90% shall be used in the average. All areas of less than 90% shall be removed and replaced using the AHTD criteria for determining the area of replacement.

Minimum thickness of concrete streets shall as indicated in Appendix A, and minimum 28 day compressive strength shall be 3,500 psi. One set of cylinders shall be taken for each 100 cubic yards or portion thereof poured.

Concrete for curb and gutters shall be a minimum 28 day compressive strength of 3,000 psi. One set of cylinders shall be taken for each 1,000 feet of curb and gutter poured, or portion thereof.

Concrete streets shall be cored every 500 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 option, choose to leave the deficient concrete slab in place and accept a cash payment equal to 100 percent of the in-place construction cost of the deficient concrete.

Concrete testing out less than 80 percent of design strength shall be removed and replaced. Concrete testing out at 98 percent of the design strength shall be deemed to meet the specifications. A prorated penalty of 0% to 50% of the contract price for concrete placement shall be paid to the City on concrete falling between 98 and 80 percent of design strength.

Any failed density or thickness test may be offset by the taking of new tests in accordance with the procedures contained in the SSHC.

Additional material and in-place testing may be required. Such tests, if required by the City, shall be accomplished and evaluated in accordance with the applicable sections of the SSHC.

APPENDIX A – PAVEMENT DESIGN CRITERIA

General Design Requirements:

Design period shall be 20 year minimum.

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	2	0.44
Asphalt Concrete Binder	2	0.44
Asphalt Stabilized Base	4	0.34
Crushed Stone Base	6	0.14
Portland Cement Concrete	6	**

* Formal pavement design is required, but streets shall also meet minimum thickness requirements.
** Formal rigid pavement design required.

APPENDIX B - TYPICAL PAVEMENT DESIGNS

Minimum Pavement Design Criteria

In lieu of formal designs the following minimum street pavement sections may be used for local streets. The City reserves the right to require a formal design for any streets, including local streets.

ALL OTHER STREET CLASSIFICATIONS SHALL REQUIRE FORMAL DESIGN

Street Type — Section Type

	Flexible Composite	Full Depth Asphalt	Rigid
Local Streets (ADT to 4000 and ESAL of 40)	2 in. surface 3 in. binder 6 in. base (Minimum SN = 3.0)	2 in. surface 3 in. binder 4 in. black base (Minimum SN = 3.0)	7 in. PC 2 in. base

Formal designs are encouraged by the design Engineer to determine specific pavement sections required for specific subgrade and specific project requirements. These designs shall be submitted to the City Engineer for review. Soil testing is required in compliance with the Pavement Design Standards. A minimum subgrade CBR value of 8 is required to utilize the minimum sections shown above without use of a formal design.

Joint spacing and joint design for concrete pavements shall be in accordance with the AASHTO Guide for Design of Pavement Structures.

APPENDIX C - ACKNOWLEDGEMENT FORM LETTER

[Place letter on company letterhead]

Building Official
City of Tontitown
P.O. Box 305
Tontitown, AR 72770

Re: [Insert the name of your project here]

This letter is to certify that I am familiar with the approved Plans and Specifications relating to the above referenced project. It is my intent to construct the improvements in connection therewith in full accordance with the approved Plans and Specifications and with the terms and conditions of the formal Letter of Approval as issued by the City of Tontitown.

SIGNED:

[Insert your name here]
[Insert your title, if applicable]
OWNER/DEVELOPER

APPENDIX "D" - STREET REQUIREMENTS

LOCAL STREETS provide for the lowest level of traffic flow and service. They provide access to abutting land uses and provide connections to higher order systems. They are not intended to provide for through traffic movements.

Design Service Volume:	Less than 4,000 vpd
Speed:	20 - 25 mph
Traffic Lanes:	Two 14' lanes
Parking Lanes:	None
Paved Width:	28' from back of curb
Right of Way:	50'
Sidewalks:	Both sides, 4' wide, at least 2' from curb.

COLLECTOR STREETS provide traffic circulation within residential, commercial, and industrial areas. They collect traffic from local or residential streets in neighborhoods and channel it into the arterial system. Connections between arterials should he indirect to discourage use by traffic from outside the neighborhood. In residential neighborhoods, frontage along collectors is discouraged; houses should front on local or residential streets.

Design Service Volume:	6,000 vpd with left turn bays
Speed:	25 - 30 mph
Traffic Lanes:	Two 12' travel lanes; 12' center turn lane
Parking Lanes:	None
Paved Width:	37' from back of curb
Right of Way:	At least 60'
Sidewalks:	Each side, 6' wide; at least 4' from curb.

MINOR ARTERIAL STREETS connect higher functional class facilities. etc. Residential frontage is strongly discouraged. Access should be from perpendicular local or residential streets.

Design Service Volume:	12,200 vpd; 14,800 vpd with left turn bays
Speed:	35 - 40 mph
Traffic Lanes:	Four 12' travel lanes; 12' turn lanes possible at intersections.
Parking Lanes:	None.
Paved Width:	49' from back of curb
Right of Way:	At least 70'
Sidewalks:	Each side, 6' wide; at least 4' from curb.

PRINCIPAL ARTERIAL STREETS carry high volumes of through traffic, and provide for improved traffic flow by means of a continuous center turn lane. Where the Principal Arterial is a state highway, the stricter of these standards and AHTD standards shall govern.

Design Service Volume:	20,600 vpd
Speed:	40 - 45 mph
Traffic Lanes:	Four 12' travel lanes; 12' center turn lane.
Parking Lanes:	None.
Paved Width:	61' from back of curb.
Right of Way:	At least 90'
Sidewalk:	Each side, 6' wide; at least 6' from curb.
Median:	None