

City of Prairie Grove, AR

DEVELOPMENT CODE

Ordinance 2024-06

Amendments:

Ordinance #	Date Passed	Description
2024-14	7/15/24	Table at 4.5.4.3 corrected
2025-06	2/24/25	RV Park Amendment
2025-07	2/24/25	PC Notice Amendment
2025-09	3/17/25	Add Appendix D Historic Overlay Map
2025-13	5/20/25	Accessory Dwelling Units
2025-22	7/21/25	Small Additions

City of Prairie Grove Development Code

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ARTICLE I

SECTION 1.1 TITLE AND PURPOSE AND ADMINISTRATION

1.1.1 Citation

This Code shall be known as the Prairie Grove Development Code. Adopted by Ordinance 2023-____

1.1.2 Purpose

These codes, regulations, and planning guidelines are enacted to carry out or protect the development and future planning and to support all other adopted plans and policies of the City of Prairie Grove. These codes shall promote planning that shall incorporate safety, proper design, future land use, protections from incompatible uses, highest and best uses of land, protections of health, beauty, adequate utilities, and roads, streets, and traffic, in accordance with present and future needs of the City of Prairie Grove Arkansas.

SECTION 1.2 ADMINISTRATION

The principal functions of each of the entities authorized to administer this Ordinance are as follows:

- 1.2.1 The Board of Zoning Adjustment is authorized, in accordance with the provisions of this Ordinance, to hear appeals from the decision of the administrative officers in respect to the enforcement and application of said ordinance; and may affirm or reverse, in whole or in part, said decision of the administrative officer. In addition, the Board of Adjustment is responsible for hearing requests for variances from the literal provisions of the Zoning Ordinance in instances where strict enforcement of the Zoning Ordinance would cause undue hardship due to circumstances unique to the individual property under consideration, and grant such variances only when it is demonstrated that such action will be in keeping with the spirit and intent of the provisions of the Zoning Ordinance. The Board of Zoning Adjustment may impose conditions in the granting of a variance to ensure compliance and to protect adjacent property.
- 1.2.2 The Planning Commission is authorized pursuant to the provisions of Act 186 of the Arkansas Acts of 1957, as amended, to secure the benefits to the public of a

coordinated, adjusted and harmonious development of the City of Prairie Grove, to promote the health, safety, morals, order, convenience, prosperity and general welfare of the citizens thereof and shall make recommendations on planning issues and report to the Mayor and City Council concerning the operation of the Commission and the status of planning within its jurisdiction

SECTION 1.3 JURISDICTION

1.3.1 Planning Area Boundary

The City Limits are those areas previously annexed and incorporated into the City of Prairie Grove and will include any future annexations or changes in the boundaries of the incorporated City. The City's planning jurisdiction is described on the official Planning Area Boundary Map of the City of Prairie Grove, Arkansas. This map is filed with the City Clerk as well as with the Washington County Recorder. Planning Areas may change from time to time in accordance with A.C.A. §14-56-413.

1.3.2 Applicability

Those portions of this code dealing with development and subdivision regulations apply to corporate limits of the City of Prairie Grove, Arkansas and to any property within the Planning Area. Those portions dealing with zoning apply only within the corporate limits of Prairie Grove. Specific applicability standards occur in the appropriate sections.

SECTION 1.4 VALIDITY AND REPEAL

1.4.1 Repeal

All or parts of ordinances in conflict with the Prairie Grove Development Code or inconsistent with provisions of this Code are hereby repealed to the extent necessary to give the Prairie Grove Development Code the full force and effect upon its adoption by ordinances of the City Council of the City of Prairie Grove, AR.

ARTICLE II: UNIVERSAL APPLICATIONS

SECTION 2.1 AMENDMENTS TO CODE

Amendments may be made to this code from time to time by the City Council of the City of Prairie Grove and will only be made when applicable laws or ordinances are adopted, passed, or approved as applicable to the changes made.

SECTION 2.2 APPLICATIONS & FEES

2.2.1 APPLICATIONS

In order for a private party to request a change to the Zoning or Subdivision Code, the party must first submit an application to the Administrative Official. The process for filing specific kinds of applications may be found in the section pertaining to the objective purpose of the application.

Rezoning Change	Section 4.19
Zoning Variance (includes paving)	Section 4.20
Conditional Use Permit	Section 4.16
Sign Permit	Section 4.11, section 9
Sign Variance	Section 4.11, section 10
Concept Plat	Section 5.2.2
Preliminary Plat	Section 5.2.3
Final Plat	Section 5.2.4
Planned Unit Development (PUD)	Section 4.5.5, zoning, Section 5.9 subdivision
Subdivision Ord Variance	Section 5.8.2
Large-Lot Split	Section 5.7
Lot Split	Section 5.7
Large Scale Development	Section 4.17
Small Site Plan/Grading Plan	Article XI

Applicants should obtain the forms and directions for all applications at the office of the Administrative Official. The Administrative Official will maintain a calendar showing the required date for all applications.

2.2.2 FEE SCHEDULE

The City of Prairie Grove requires fees for various requirements of the code and may amend these fees from time to time by ordinance adopted by the City Council of the City of Prairie Grove

Fee Schedules

Large-Lot Split \$50.00

Lot Split, Lot Line Adjustment (un-platted), Lot Combination \$50.00

Development:

Preliminary Plat

\$100 + \$20 per lot (See also
section (formerly 3.5 (b)
Subdivision requirements
regarding compensation for
additional engineering

Final Plat

\$100 + \$5 per lot

Large Scale Developments:

\$750

Grading Permit: Less than 1 acre:

\$100

1-5 acres \$200 Over

5 acres \$250

Re-zoning Requests: \$50

Conditional Use Permit \$50

Certificate of Occupancy (to be charged
as part of building permit process) \$35

Planned Unit Developments: Same fees
for Concept, Preliminary, and Final Plats
as listed above

Variance Request: \$50.00

Fence Permit: \$25.00

Sign Permit: \$25

Appeals to the Decision of :

Administrative Official decision: \$50.00

Planning Commission decision: \$50.00

Communication (Cell) Tower Permit: \$350.00

Small Cell Wireless Permit: \$100

SECTION 2.3 PUBLIC HEARINGS

2.3.1 Public Hearings

All Meetings of the Prairie Grove Planning Commission or the Board of Adjustment are public meetings and shall be posted on the City's website a minimum of 7 days prior to the meeting date. Public hearings shall be held for all re-zoning requests, and shall meet the requirements of Section 4.19 of this Development Code. Submittal of all Development Plans, variance requests, appeals, conditional use requests, Board of Adjustment meetings, shall meet any additional requirements as listed in those sections of this Development Code.

2.3.2 Means of Notification

All Meetings, including any business submitted to the City shall be posted on the City's website a minimum of 7 days prior to the meeting date.

2.3.3 Board of Adjustment

Meetings of the Board of Adjustment shall be a public meeting with public notice of the meeting and business to be carried on posted on the City's website a minimum of 7 days prior to the meeting and shall also be posted on a sign of no less than 4 square feet on the property with a general description and hearing date.

2.3.4 Meetings

The Planning Commission shall conduct all meetings in accordance with its most recently adopted ordinances of the City. All meetings are open to the public and may be held in person or virtually, however, if virtual the public must still be granted access to the meeting.

SECTION 2.4 APPEALS

2.4.1 Appeals from the decisions of the Planning Commission

Any person, with a vested interest, aggrieved by a decision of the Planning Commission in interpreting any section of these zoning regulations may make an appeal to City Council.

- A. **Notice of Appeal:** Notice of an appeal to the City Council of a decision of the Planning Commission to approve, conditionally approve, or deny a request shall be filed by the applicant or any other party with legal standing with the Administrative Official within thirty (30) calendar days of the decision together with such appeal fee as may be set by resolution of the City Council.

The Notice of Appeal shall be filed on forms and in a format prescribed by the City. As a minimum, however, the applicant shall provide the following information:

- (1) Summary of any reasons provided by the Planning Commission concerning the decision made in the case.
- (2) Reasons why the applicant of the appeal contends that the Planning Commission erred in its decision.
- (3) Reasons why the applicant of the appeal believes that the public health, safety, welfare, and morals would be better served if the Planning Commission's decision were reversed.
- (4) Any new and pertinent information bearing on the case not previously considered by the Planning Commission that came to light following the meeting at which the Planning Commission made its decision.

Upon receipt of the notice of appeal and appeal fee, the Administrative Official shall promptly forward the notice of appeal to the City Clerk together with any appropriate staff reports and the decision of the Planning Commission from which the appeal is made.

- B. **Public Notice:** Following receipt of the notice of appeal, the City Clerk shall set the matter for consideration on the City Council's next available agenda and give due notice to interested parties of the time and place of the public hearing

Notice of such hearing shall be published at least one (1) time and at least fifteen (15) calendar days prior to the date of the public hearing in a newspaper of general circulation in the City of Prairie Grove. The applicant shall be responsible for this publication, bear the cost of such advertising, and provide an Affidavit of Publication as proof of the notice.

Notice of such hearing shall be given by conspicuously posting a sign on the property involved by the applicant at least fifteen calendar (15) days prior to the hearing.

- (1) Posting of the sign by the prescribed time shall be the responsibility of the applicant.

SECTION 2.5: EXPIRATIONS, EXTENSIONS

Planning Commission and City Council approvals covered by the Development Code shall be subject to the following expiration requirements.

- A. **Rezoning - Non PUD:** No expiration.
- B. **Conditional Use:** No expiration unless the terms of the Conditional use are violated. In the case where any of the specific terms and conditions of a Conditional Use Permit are violated, ignored or otherwise not observed the City Inspector or other designated representative has the obligation and authority to revoke said permit. ten (10) days written notice shall be addressed to the applicant indicating the nature of the non-compliance and the applicant's right to file an official appeal to the Board of Zoning Adjustment. If no appeal is filed within the ten day period, and the non-compliance has not been corrected the permit shall be revoked. Revocation of a Conditional Use Permit for any use shall immediately constitute revocation of the applicant's right to conduct business, occupy, rent or otherwise use the subject property for the purpose originally permitted. The subject property shall revert to its use status prior to the issuance of the conditional use permit.
- C. **Planned Unit Development:** Approvals shall expire within one (1) year if construction has not started and within three (3) years if construction has not been completed, unless an approved phasing plan is followed. If construction has not started within one year, developer can ask for an additional 6-month

extension by petitioning the planning commission.

- D. **Preliminary Plat:** Approvals shall expire within one (1) year if construction has not started, and within three (3) years if construction has not been completed, unless an approved phasing plan is followed. The applicant may request one (1) Six-month extension from the Planning Commission.
- E. **LSD Plan:** Approvals shall expire within one (1) year if construction has not started. The applicant may request one (1) Six-month extension from the Planning Commission.
- F. **Grading Plan:** Grading plan approvals shall expire within six (6) months of grading permit issuance if grading has not commenced. See Article IX
- G. **Variance:**
 - (1) Where buildings or construction is involved, if a building permit for the construction tied to the Variance is not issued within six (6) months or completed within two (1) years, the approvals shall expire. The applicant may request one (1) six-month extension from the Planning Commission.

- (2) Where no building or construction is involved, approvals shall expire within six (6) months if the activity subject to the variance has not commenced.

ARTICLE III ENFORCEMENT

SECTION 3.1 COGNIZANT OFFICIAL

Provisions of this Code shall be administered by the Cognizant Official or their designee. For purposes of this Code, the Mayor shall determine the Cognizant Official, or Officials designated to enforce the code.

- A. The Cognizant Official(s) shall oversee and enforce the following provisions of the code:
 - (1) Oversee and approve any applications in regards to development, variances, land use, zoning, buildings, signs, or structures to determine if the application conforms with the provisions of this Code.
 - (2) Confirm Code compliance, and issue certificates of occupancy and keep permanent records of them.
 - (3) Conduct inspections of buildings, structures, land use, development, storm water protections, permit compliance, signs, fences, and other appurtenances as permitted by the City of Prairie Grove.
 - (4) Revoke approvals and/or issue stop work orders where provisions of this Code are being violated.

SECTION 3.2 GENERAL REQUIREMENTS & ENFORCEMENT

SECTION 3.2.1 REQUIREMENTS

- A. It is illegal to erect, construct, reconstruct, alter, maintain or use any land, building, or structure in violation of any order of the City Council, Board of Adjustment or Planning Commission.
- B. Appropriate actions and proceedings may be taken in law or in equity to prevent any violation of these regulations, to prevent unlawful construction, to recover damages, to restrain, correct, or abate a violation and to prevent illegal occupancy of a building structure or premises.

- C. All complaints of violations of the Prairie Grove Development Code may be submitted in writing to the cognizant official and shall state the location and the nature of the alleged violation. Upon receipt, the alleged violation shall be investigated, and appropriate action taken.
- D. When someone applies for approval, or an applicant pulls a permit in the City of Prairie Grove, for building, grading, stormwater compliance, or development of any kind they consent to the inspection and entry onto property where these inspections take place whether they be outside or inside a structure. Inspections shall be scheduled with the owners when necessary to assure accessibility.
- E. Owner of Record. The owner of record of any real property who violates any provisions of the code may be held liable and be held responsible including the penalties and remedies prescribed in the Development Code.
- F. Engineers, architects, builders, contractors, agents or other persons, who participate or represent the owner of record on their behalf, who violate any provisions of the code may be held liable and be held liable and responsible including the penalties and remedies prescribed in the Development Code.

SECTION 3.2.2 ENFORCEMENT

- A. **NOTICE OF VIOLATION** *Content.* When an owner or other person participates in, assists, directs, creates, or maintains any situation in violation of the Development Code, a notice of violation shall immediately be issued to the person liable and shall contain the following: Notice shall be delivered in person to the person responsible or sent by certified letter.
 - a. The Owner of record as well as the name of any agent, developer, or professional who has contributed to the violation.
 - b. The street address or a description of the building, structure, or land where the violation is occurring.
 - c. Description of the nature of the violation.
 - d. Actions necessary to correct the violations that are ongoing and any actions by the City, such as stop work orders needed to prevent harm, damage, or mitigate the violation.
 - e. Notice shall state that corrections shall commence within 14 days of notice
 - f. A notice of any penalty, or penalties that shall or may be assessed.

g. Requirements for a notice of appeal.

- B. *Lien*. Within the prescribed time frame issued in the notice of violation, when conditions pose a significant risk of health and safety or damage to property, if corrective actions have not been completed the City is authorized to enter upon the property and take necessary actions to correct or remove the conditions described in the notice. The costs of correcting said condition shall be charged to the owner, and the city shall have a lien against such property for such costs.
- C. *Permit Revocation*. For work related to other violations that do not constitute an emergency, but are requirements of the code, if work is not undertaken within the time frame directed by the violation notice, any or all development related permits may be revoked. A stop work order may be issued until corrections are made to mitigate the violations.
- D. *Failure to Obtain Permit or Plan*. Any development work that is begun contrary to the code requirements of the Development Code, may be subject to action by the City of Prairie Grove. A stop work order may be issued for all work being performed without required permits, approvals, or plan submittals.
- E. *Occupancy Without Certificate of Occupancy*. The Building Official shall have the right, after notice is given, to disconnect the water service to a building, if occupied before a certificate of occupancy is issued or if all law, ordinances, and code violations are not remedied and inspected as approved.
- F. The Court, having jurisdiction, in its discretion, may require that the structure be removed or altered to comply with the provisions of these regulations. Any court having jurisdiction of misdemeanor cases shall have jurisdiction to try such offenders and, upon conviction, to fine them for each offense or violation.

3..2.3 Certificate of Occupancy and Compliance

No building erected or structurally altered shall be used, occupied, or changed in use until a certificate of occupancy and compliance is issued by the Administrative Official, stating that the building or proposed use of the building or premises complies with the building laws and provisions of this

Code. The Administrative Official shall keep a record of all certificates of occupancy and compliance. The Administrative Official may revoke a certificate of occupancy and compliance when it is found that the building or land does not conform to the use or condition, if any, in the certificate. Each day a use continues after revocation of the certificate shall constitute a separate offense and shall be punished as provided therein.

ARTICLE IV ZONING REQUIREMENTS

SECTION 4.1 AUTHORITY, ADMINISTRATION AND PURPOSE

4.1.1 AUTHORITY

Act 186 of 1957, as amended by Act 128 of 1959, Act 36 of 1963, Act 134 of 1965, Act 138 of 1965, Act 66 of 1967, and Act 379 of 1969, of the General Assembly of the State of Arkansas, empowers the City to engage in municipal planning, to adopt plans and ordinances to regulate land-use and development practices, and to provide for the administration, enforcement, and amendment thereof.

SECTION 4.1.2 ADMINISTRATION

The principal functions of each of the entities authorized to administer this Ordinance are as follows:

- (a) The Board of Zoning Adjustment is authorized, in accordance with the provisions of this Ordinance, to hear appeals from the decision of the cognizant officials in respect to the enforcement and application of said ordinance; and may affirm or reverse, in whole or in part, said decision of the cognizant official. In addition, the Board of Adjustment is responsible for hearing requests for variances from the literal provisions of the Zoning Ordinance in instances where strict enforcement of the Zoning Ordinance would cause undue hardship due to circumstances unique to the individual property under consideration, and grant such variances only when it is demonstrated that such action will be in keeping with the spirit and intent of the provisions of the Zoning Ordinance. The Board of Zoning Adjustment may impose conditions in the granting of a variance to insure compliance and to protect adjacent property.

- (b) The Planning Commission is authorized pursuant to the provisions of Act 186 of the Arkansas Acts of 1957, as amended, to secure the benefits to the public of a coordinated, adjusted and harmonious development of the City of Prairie Grove, to promote the health, safety, morals, order, convenience, prosperity and general welfare of the citizens thereof and shall make recommendations on planning issues and report to the Mayor and City Council concerning the operation of the Commission and the status of planning within its jurisdiction

SECTION 4.1.3 PURPOSE

The Zoning Regulations set forth herein are enacted to implement the land use portion of the Land Development Plan and the transportation elements of the Master Street Plan for the City of Prairie Grove and to promote, in accordance with present and future needs, the safety, order, convenience, prosperity, to insure the coordinated, adjusted, and harmonious development and general welfare of the citizens of Prairie Grove, Arkansas, and to provide for efficiency and economy in the process of development for the appropriate and best use of land, for the use and occupancy of buildings, for healthful and convenient distribution of population, for good civic design and arrangement, and for adequate public utilities and facilities.

The City Planning Commission of Prairie Grove, Arkansas, having made a comprehensive study of present conditions and of the projected future growth of the City and its neighboring territory and having prepared and adopted a Land Development Plan, finds that these regulations carry out the intent of the Land Development Plan and, in accordance with present and future needs, the public safety, order, convenience, efficiency, and economy; allow for convenience in population distribution, good civic design, and arrangement; and insure adequate provisions for public utilities and other public improvements.

SECTION 4.1.4 NATURE AND APPLICATION

For the purposes herein before stated, the City has been divided into zoning districts in which the regulations contained herein will govern lot coverage; the height, area, bulk, location, and size of buildings; open space, parking requirements, and the uses of land, buildings, and structures. In interpreting and applying the provisions of this Development Ordinance, they shall be held to be the minimum requirements for the promotion of public health, safety, comfort, convenience, and general welfare.

Except as hereinafter otherwise provided, no land shall be used and no building, structure, or improvement shall be made, erected, constructed, moved, altered, enlarged, or rebuilt which is designed, arranged, or intended to be used or maintained for any purpose or in any manner except in accordance with the requirements established in the district in which such land, building, structure, or improvement is located, and in accordance with the provisions of the sections contained herein relating to any or all districts.

No proposed plat of any new subdivision of land shall hereafter be considered for approval by the City Planning Commission unless the lots within such plat equal or exceed the minimum size and area regulations specified in the applicable zoning district of the Development Code.

SECTION 4.2 ESTABLISHMENT OF ZONING DISTRICTS

4.2.1 The Official Zoning Map

The City of Prairie Grove is hereby divided into zones or districts as shown on the Official Zoning Map, which (together with all explanatory matter thereon) is hereby declared to be a part of these regulations and which shall be the final authority for current zoning status of lands and buildings in the City of Prairie Grove.

The Official Zoning Map shall be filed in the Office of the City Clerk where it shall be available to the

public, and if, in accordance with the provisions of these regulations, changes shall be authorized in the district boundaries or any other lines portrayed on the map, such changes shall be made and certified by the City Clerk.

4.2.2 Interpretation of District Boundaries

When uncertainty exists with respect to the boundaries of districts as shown on the Official Zoning Map, the following rules shall apply:

- 4.2.2.1 District boundary lines are intended to be along or parallel to the center line of streets, alleys, railroads, easements, other rights-of-way, and creeks, streams, or other water channels.
- 4.2.2.2 District boundary lines are intended to be along or parallel to property lines or the lot lines of platted additions

4.2.2.3 In the absence of specific distances, such dimensions shall be determined by the scale of the official map, or by supplemental filings with more precise legal descriptions of specific parcels.

4.2.2.4 When the street or property layout existing on the ground is at variance with that shown on the Official Zoning Map, the City Planning Commission shall interpret the district boundaries of these regulations.

4.2.3 Use Areas, Zones, or Districts

Zoning Districts within the City of Prairie Grove will be designated on the Adopted Zoning Map which may change from time to time to meet the changing land use needs. Descriptions of districts and permitted uses therein shall be as designated by color, and description on the Official Zoning Map

4.2.4 Compliance with City Ordinances

Any uses in these zones shall comply with present or future legally adopted ordinances of the City of Prairie Grove, regulating the location and maintenance of streets, sidewalks, drainage structures, control of animals, signs, mobile homes, use, transportation and storage of explosives, inflammable liquids, environmental hazards; and nuisances.

4.2.5 Application of Zoning District Regulations

4.2.5.1 The bulk and area regulations pertaining to each zoning district shall be applied uniformly within the zoning district except as may be varied by the Board of Zoning Adjustment (BZA).

4.2.5.2 The uses permitted or prohibited in each zoning district establish the character of the zoning district and shall include, but shall not be limited to, those uses enumerated as being permitted or prohibited within the respective zoning district.

4.2.5.3 When a use is proposed for a zoning district that is not explicitly permitted or prohibited within the zoning district, the Planning Commission shall determine whether said use is compatible (i.e., in character with other uses in the district) and shall recommend to the City Council for authorization of said use to be established or disallowed for that District or if it should be allowed by Conditional Approval only. The Planning Commission shall decide each application on its merits, taking into consideration such factors as existing uses, access, location, major streets, plans, etc. When a use is permitted by Conditional Use approval, The Planning Commission and City Council may impose conditions under which a use may be permitted in order to insure compatibility. The finding of a use to be compatible in one location does not imply that the same use is compatible at another location, even within the same zoning district.

4.2.5.4 No building or structure or part thereof shall hereafter be erected, constructed, reconstructed, moved, or structurally altered unless in conformity with all of the regulations herein specified for the zoning district in which it is located.

4.2.6 Building Groups

Plans for all building groups shall be submitted to the Planning Commission for approval to ensure that such building groups shall conform to the character of the district. Requirements of these regulations may be waived at the discretion of the Planning Commission where such waiver does not nullify the intent of the regulations and where waiver will facilitate a more desirable design for building groups. Such waiver must be approved by a majority of the members of the Planning Commission and the reasons therefor entered into the minutes of the meeting.

4.2.7 Conformance with Land Use Plan and Considerations of Zoning

Consideration for zoning and re-zoning requests should be consistent with recommendations established in the Prairie Grove Land Use Plan, however, there are times when deviations from the plan may be warranted or necessary. All zoning considerations should be considered for the highest and best use of the property and consideration given for what are in the best interests of neighboring property, including compatibility, noise, traffic, or other nuisances that may come from rezoning the property. Spot or isolated zoning, although allowed is not recommended as it creates islands of non-compatible use in the City with surrounding property.

4.2.8 Classification of Newly Annexed Lands into the City

All land annexed to the City of Prairie Grove after the adoption of this Code, shall be brought in initially as A-1 Agricultural Zoned Land. Once annexed, rezoning can and should be considered to upgrade to the highest and best use of the land coming in. Once annexed land can be requested by the owner to be rezoned to its highest and best use, recommended by the planning commission to be rezoned, or can remain agricultural until future development or occupancy dictates changes. Territory annexed after adoption of these regulations shall be governed by the following rules and regulations until the Zoning Map has been amended by ordinance to include the newly annexed territory.

4.2.8.1 Zoning of Annexed Areas: The Planning Commission shall recommend to the City Council a proposed zoning plan for any area to be annexed to the City. The proposed Zoning Plan shall be a requirement for the annexation of any area.

4.2.8.2 The Planning Commission shall study the affected area and make a recommendation for zone designations. Proposed designations shall be advertised in a newspaper of general circulation at least

fifteen (15) days in advance of a public hearing to be conducted by the Planning Commission. After public hearing, the Planning Commission shall make a report and recommendation to the City Council pertaining to the proposed zoning for the newly annexed territory. The City Council action on the report and recommendation shall be final. The Zoning Map shall be amended.

4.2.9 Scope of Regulations & Non-Conforming Uses

- A. All uses of land or buildings established hereafter, all structural alteration or relocation of existing buildings occurring hereafter, and all enlargements of or additions to existing uses occurring hereafter shall be subject to all regulations of this Code which are applicable to the zoning districts in which the buildings, uses, or land shall be located. Any existing uses that do not at the time of passage conform with the zoning regulations will be considered non-conforming uses and may continue to exist until a time when the property changes occupancy, is enlarged, remains unoccupied for more than 3 months, or is significantly altered.
- B. Nonconforming Uses Include: That which does not meet the requirements of the use district in which it is located at the time of the effective date of these regulations. Nonconforming Use of Land: That which does not conform to the permitted uses of the district in which it is located and which does not utilize a principal or permanent structure. Nonconforming Use of Structure: That which does not conform to the permitted uses of structure of the district in which it is located and that which has a nonconforming use as the principal use of the structure. Nonconforming uses shall not be changed unless changed to a conforming use. Nonconforming uses which shall cease for a continuous period of more than ninety (90) days shall be deemed permanently abandoned, and any uses thereafter established shall be in conformity with these regulations. In all use districts may be continued until deemed permanently abandoned.
- C. Nonconforming uses are permitted to continue and are subject to such regulations as to the maintenance of premises and conditions of operation as may be required for the protection of adjacent property as approved by the Board of Adjustment. They may be extended to any portion of a structure arranged or designed for such nonconforming use at the time of passage of these regulations. They may be changed to a similar use, the similarity of said use shall be determined by the Board of Adjustment, if no structural changes are necessary.
- D. Once a Nonconforming use is changed to a conforming use cannot be changed to a nonconforming use.
- E. **A Nonconforming Structure** located on a residential uses district may be remodeled, rebuilt or added to if the remodeling, rebuilding, or addition conforms to the area requirements of the residential use district for single-family structures of these regulations and has the approval of the Board of Adjustment.
- F. A residential structure, which exists as a non-conforming structure, may be repaired or rebuilt as a residential structure whenever the damage or destruction of the structure is the result of an involuntary catastrophic event. This provision shall not apply whenever the structure is abandoned; or when the damage or destruction is voluntary or willful on the part of the building owner.
- G. No building, structure, or land shall be used or occupied, and no building/structure or part thereof shall be built, moved, reconstructed, extended, enlarged, or altered except to meet the regulations specified for the district in which it is located.
- H. No lot shall be divided into two or more lots unless all lots resulting from each such division conform with all the area and bulk regulations of the zoning district in which the property is located or unless a variance request is made and approved based on an inherent hardship. See additional restrictions Section 5.7 :

4.2.10 Determination as to Uses Not Listed

See Section 4.5.1

4.2.11 Areas not to be Diminished

- A. No Lot Area Requirements, required setback or yard area, no minimum parking or offstreet parking, green or open space requirements, or off-street parking, required in connection with any building or use shall be reduced in dimension or area below the minimum requirements of this Code without going through procedures listed in the code for variance from the minimum dimensions and requirements.

4.2.12 Principal Structure on Lot

In residential districts only one principal structure and its customary accessory structures may be erected on any lot unless otherwise provided in this Code.

4.2.13 Lots of Record

Any single lot or parcel of land, which was of record at the time of adoption of this Code, that does not meet the requirements of minimum lot size or density as specified for the zoning district in which it is located, or which was built upon such that the building setback, yards, open space, building height, or location of parking or loading spaces, do not now comply with the requirements for the District in which it is located, may be utilized for a permitted use with the yards, courts, or usable open spaces reduced to not less than seventy-five (75) percent of the requirements specified for the District in which it is located.

SECTION 4.3 DEFINITIONS

GENERAL

Unless the context otherwise requires the following definitions shall be used in the interpretation and construction of this Ordinance; words used in the present tense include the future; the singular number includes the plural, and the plural includes the singular; the word "building" includes the word "structure"; and the word "used" includes arranged, designed, converted, constructed, altered, rented, leased, or intended to be used; the word "shall" is mandatory and not directive; and the word "person" includes a firm, partnership, or corporation as well as an individual.

Accessory Dwelling Unit

A self-contained and independently accessed living unit on the same parcel as a single-family dwelling of greater square footage that includes its own cooking, sleeping, and sanitation facilities and complies with or is otherwise exempt from any applicable regulatory requirements.

Accessory Structure or Use

A subordinate structure located on the same lot with the main structure, (except in the case of off-street parking space) or a subordinate use of land, either of which is customarily incidental to the main structure or the principal use of the land.

Accessory dwelling units, storage buildings, garages and carports, hobby shops and similar facilities, either portable or affixed to a permanent foundation, ham radio towers, and swimming pools, both below-ground and above-ground when some type of permanent structure is affixed (e.g. decking) are examples of accessory structures. Where a substantial part of the wall of the accessory structure is a part of the wall of the main building or where an accessory structure is attached to the main building in a substantial manner, as by a roof, such accessory structure shall be counted as a part of the main structure.

A portable accessory structure is one not affixed to any footing, foundation or any other method of securing it to the ground in a semi-permanent fashion.

An accessory use includes, but is not limited to the following:

- Keeping of domestic animals for personal enjoyment or household use, but not including a commercial stable or kennel.
- Domestic or agricultural storage.
- Home occupation (See definition in this Section.)
- Incinerator or compost shed incidental to a principal use.
- Storage of merchandise normally carried in stock in connection with a commercial or manufacturing use.
- Accessory signs.

Addition

Any construction that adds square footage, whether it be heated, unheated, finished, unfinished, enclosed, or open to a structure or building.

Alley

A minor public way used for utility easements and vehicular services access to the back or side of properties abutting a street.

Apartment

A multiple family dwelling (See "Dwelling, Multiple").

Appurtenance

An improvement that is generally temporary in nature, such as above-ground swimming pools that are only erected during summer months.

Area

The amount of land within a parcel, lot, plot, or property. Area may be expressed in acres, square footage, or another quantifying measurement used by surveyors or engineers.

Automobile Junk or Salvage Yard

An area outside of a building where motor vehicles are disassembled, dismantled, junked, or "wrecked", or where motor vehicles not in operable condition or used parts or motor vehicles are stored.

Automobile/Motor Vehicle Repair Facility

Any business that works on motor vehicles to repair, alter, rebuild or modify them for a charge and any place where this type of work is done as an incident of a business of selling new or used motor vehicles or new or used motor vehicle parts.

Automobile/Motor Vehicle Towing and Impound Facility

Any business, which as part of its operation, tows disabled motor vehicles for a charge, or temporarily impounds vehicles and stores them for a charge.

Basement

A story whose floor is more than one (1) foot, but not more than one-half (1/2) of its story height below the average level of the adjoining ground (as distinguished from a cellar, which is used as a dwelling, shall be counted as a story for purposes of height measurements and as a half story for purposes of side yard determination).

Bed & Breakfast Inn

A use (1) that takes place within a building that was designed and used as a single family detached dwelling, (2) that consists of a single dwelling unit together with the rental of one or more rooms on a daily or weekly basis to tourists, vacationers, or similar transients, (3) where provision of meals, is provided at all, is limited to the breakfast meal, and (4) where the bed and breakfast operation is conducted primarily by persons who reside within the dwelling unit, with the assistance of not more than the equivalent of one full-time employee.

Board of Adjustment

The Board of Adjustment of the City of Prairie Grove is the Planning Commission, as appointed by the Mayor and approved by the City Council.

Boarding or Lodging Home

A dwelling or part thereof where meals and/or lodging are provided for compensation for two (2) or more persons, not transients. Boarding Houses typically are rooms for sleeping only and cooking and bathrooms are located in common areas.

Building

Any structure including a roof supported by walls, designed, or intended for the support, enclosure, shelter, or protection of persons, animals, chattels, or property and forming a construction that is safe and stable; the word building shall include the word structure.

Block Front

All of the property on one side of the street between two (2) intersecting streets or between and intersecting street and the dead end of a street.

Building Coverage

The percentage of the lot area covered by the building(s). The building area shall include all overhanging roofs.

Building, Height of

The vertical distance measured from the average elevation of the finished grade at the front of the building to the highest point of the structure, exclusive of chimneys, ventilators, or other extension above the roof line that are not intended for occupancy or internal usage by persons.

Building, Main or Principal

A building in which is conducted or intended to be conducted, the main or principal use of the lot on which said building is located.

Cellar

A story the floor of which is more than one-half (1/2) of its story height below the average contact ground level at the exterior walls of the buildings.

City Council

The legislative body of the City of Prairie Grove, Arkansas.

Clinic, Dental or Medical

A facility for the examination and treatment of ill and afflicted human out-patients; provided, however, that patients are not kept overnight except under emergency conditions.

Communications Tower

A structure, over 30 feet in height, used commercially for providing or assisting with radio, television, telephonic, wireless or any other type of electronic communications.

Conditional Use

A conditional use is a use allowed in a designated zoning district only by review and approval by the planning commission. The planning commission shall look at the compatibility of the surrounding properties adjacent to the location of the request. The approval of a conditional use is based upon the owner/developer's compliance with various special conditions imposed by the Planning Commission. Special conditions such as site improvements, buffers, ingress and egress controls, number of occupants or employees, hours or days of operation, control of light and noise may be required to enable a proposed land use to function with minimal conflicts on neighboring properties and implement the policies of the Land Development Plan. A conditional use is valid only for the development its proposed for and additionally shall expire after 18 months if no development occurs.

Condominium

A multiple unit land development in which there is a system of separate ownership of individual units of occupancy and undivided interests of land and common facilities and where common building walls may be included.

Country Club

A chartered, non-profit membership club catering primarily to its membership, providing one or more of the following recreational and social activities: golf, tennis, swimming, riding, outdoor recreation, club house, locker room, and pro shop.

Court

An open, unoccupied, and unobstructed space, other than a yard, on the same lot with a building or group of buildings.

Coverage, Lot or Site

The percentage of the lot or site area permitted to be covered by a building or buildings.

Child Care Center:

Any place, home, or institution which receives five (5) or more children under the age of sixteen (16) years, and not of common parentage, for care apart from their natural parents, legal guardians, or custodians, which received for regular periods of time for compensation; A Child Care Facility is one that is conducted under public or private supervision on a profit or nonprofit basis providing direct care and protection for minor children. Any facility that is open more than five (5) hours during any 24 hour period or more than a total of ten (10) hours during a seven (7) day period is considered a Child Care Center and shall be subject to provisions of the Child Care Facility Licensing Act. This definition includes, but is not limited to, a nursery, a nursery school, a registered home day care, a day care family home, or day care center. However, this definition does not include:

- A. Special schools or classes operated solely for religious instruction.
- B. Facilities operated in connection with a church, shopping center, business or establishment where children are cared for not more than five (5) hours during any 24-hour period or more than a total of ten (10) hours during a seven (7) day period.
- C. Educational facilities, whether public or private, which operate solely for educational purposes in grades one (1) or above and does not provide any custodial care.
- D. Kindergartens operated as a part of the public schools of this state.
- E. Any situation, arrangement, or agreement by which one (1) or more persons care for fewer than six (6) children from one (1) family at the same time.
- F. Any recreational facility or program, whether public or private, which operates solely as a place of recreation for minor children, where children are not cared for more than five (5) hours during any 24 hour period or more than a total of ten (10) hours during a seven (7) day period.

- G. Children in custody as part of fixed court agreement or state supported foster care.
- H. Religious or public institutions caring for children within the institutional building while their parents or legal guardians are attending services or meetings or classes or engaged in religious activities.

Daycare Center /Child Care Center, Public or Non-profit:

A child care center conducted by a religious institution, school or other non-profit organization and providing direct care and protection for children excepting that this definition does not apply to facilities meeting this definition but operating no more than three weeks at a time, specifically including religious studyschools and day camps.

Daycare Center/Child Care Center, Private:

A commercial childcare center conducted underprivate, for-profit, auspices providing direct care and protection for children.

Distance between Structures

The shortest horizontal distance measured between the outside walls of two structures.

Discontinuance of a Nonconforming Use of Land, or Sign

Discontinuance of a nonconforming use of land or sign shall mean the discontinuance of the activity and removal of all nonconforming above-surface improvements, equipment, signs, goods, and materials. The requirement of removal shall not apply to the contents of a dump.

District, Zoning

Any section, sections, or divisions of the City for which the regulations governing the use of land density, bulk, height, and coverage of buildings and other structures are uniform.

Drive-In Commercial Uses

Any retail commercial use providing considerable off-street parking and catering primarily to vehicular trade such as drive-in restaurants, drive-in theaters, and similar uses.

Dwelling

Any building, or portion thereof, which is designed or used as living quarters for one or more families, but not including house trailers, mobile homes, or travel trailers.

Dwelling, Attached

A dwelling having any portion of one or more walls in common with adjoining dwellings.

Dwelling, Detached

A dwelling having open space on all sides.

Dwelling, Single-Family

A dwelling designed to be occupied by one family.

Dwelling, Two Family

A dwelling designed to be occupied by two families living independently of each other, commonly referred to as a duplex.

Dwelling, three or four Family

A dwelling unit designed to be occupied by three or four families living independently of each other, commonly referred to as tri-plexes and four-plexes.

Dwelling, Multiple-Family

A dwelling designed for occupancy by five (5) or more families living independently of each other, exclusive of auto or trailer courts or camps, motels, hotels, or inns.

Dwelling, Rear Dwelling

Any structure (whether movable or immovable) which is designed primarily for use for residential purposes and which is located or proposed to be located behind and on the same lot or parcel as an existing residential structure and which is not connected by a common wall.

Dwelling, Townhouse, Condominium or Row House

Two (2) or more dwelling units attached at the side or sides, each unit of which has separate outdoor entrance and is designed to be occupied and may be owned by one (1) family.

Dwelling Mixed use

A dwelling unit where another use, such as retail or office use is conducted within the same building or building unit.

Dwelling Unit

A room or group of rooms within a dwelling and forming a single habitable unit with facilities for living, sleeping, and cooking, including a bathroom.

Family

One or more persons related by blood or marriage, or domestic partnership, including adopted children, or a group or not to exceed four (4) persons not all related by blood or marriage, occupying premises and living as a single, non-profit housekeeping unit, as distinguished from a group occupying a boarding or lodging house, hotel, club, or similar dwelling for group use. A family may include domestic servants employed by said family.

FEMA

The Federal Emergency Management Agency, the Federal agency that issues flood plain maps for flood insurance purposes.

Floor Area

The sum of the gross horizontal areas of all of the floors of a building or buildings measured from the exterior faces of exterior walls of from the center line of walls separating two buildings.

Garage, Private

An accessory building or a part of a main building used for storage purposes only, designed for automobiles used solely by the occupants and their guests of the building to which it is necessary.

Garage, Public or Repair

A building in which are provide facilities for the care, servicing, repair, or equipping of automobiles.

Gasoline or Service Station

Any building, structure, or land used primarily for the dispensing, sale of fuels, oils, accessories, or minor maintenance and repair services but not including painting, major repairs, or automatic washing facilities.

Group Residence

A private or public housing facility that provides living quarters and meals for unrelated people.

Hardship

Special and unique circumstances affecting a particular lot or parcel of land, including; extreme slopes, wetlands and springs, natural and cultural resources that should not be developed or altered, irregular lot size or shape not caused by the owner. The normal and usual financial requirements necessary for quality development as encountered by the owner or developer are not considered hardships.

Home Occupation

A use conducted entirely within an enclosed dwelling, which is clearly incidental and secondary to residential occupancy and does not change the character thereof. Specifically excluded is any

activity involving building alterations, window display, construction features, equipment, machinery or outdoor storage, any of which is visible from off the lot on which located. Any occupation or profession carried on only by the inhabitants and which is conducted entirely within the main or accessory building; provided that no trading in merchandise is carried on and in connection with which there is no display of merchandise. No mechanical equipment is used or activity is conducted which creates any noise, dust, odor, or electrical disturbance beyond the confines of the lot on which said occupation is conducted.

The term "Home Occupation" may include, but is not limited to, the following uses,:

Custom dressmaking, millinery, tailoring, sewing of fabrics for custom apparel and custom home furnishings.

Fabrication and/or assembly of handicraft articles, not involving heating, refining, chemical, or similar processes.

Laundering or pressing.

Professional office.

Rooming or boarding of not more than one (1) person.

Teaching or tutoring, limited to one (1) pupil at a time.

Beauty or Barber Shop.

The term "Home Occupation" shall not be interpreted to include any of the following uses: commercial kennel or stable, sales to customers on the premises, veterinary surgeon, commercial repair of automobiles, appliances, or similar items.

Hospital

An institution providing health services primarily for human inpatient or medical or surgical care for the sick or injured, and including related facilities such as laboratories, out-patient departments, training facilities, central service facilities, and staff offices which are an integral part of the facilities.

Institution

An establishment providing for resident and/or aid to persons for charitable, educational, therapeutic, corrective, or religious purposes.

Kennel, Commercial

A place where five (5) or more dogs, ten (10) weeks in age or older, are kept or a location where dogs or other animals are being commercially kept, marketed, or sold.

Land Development Plan

The Land Development Plan consists of a written text and supporting maps that state the existing conditions in the community and future development patterns and practices that will promote orderly growth. The policies adopted in the Land Development Plan are the guiding concepts used by the Planning Commission and City Council in the administration of the Zoning Ordinance.

Large-Scale Development

A Large-Scale Development is any commercial, multi-family, industrial, office, institutional, or recreational development is proposed. All projects other than residential single family, or a singular duplex/triplex/four plex project are subject to the requirements of the Large Scale Development application and approval requirements.

Lot Area

The product of the width multiplied by the length of a zoning lot, or the generally accepted geometrical calculation for irregularly shaped lots.

Lot, Back-up or Through

An interior lot whose rear line abuts on a thoroughfare other than an alley.

Lot, Corner

A lot located at the intersection of and abutting two (2) or more streets.

Lot Depth

The mean horizontal distance between the front lot line and rear lot line of a zoning lot.

Lot, Interior

Any zoning lot which is not a corner lot.

Lot Line

A boundary of a zoning lot.

Lot Line, Front

The street line at the front of a zoning lot. On corner lots, the direction of the front facing (front door) wall of home or building shall be considered the front lot line for purposes of this ordinance.

Lot Line, Rear

The lot line opposite and most distant from the front lot line.

Lot Line, Side

A lot line which is not a front lot line or a rear lot line.

Lot Width

The mean horizontal distance between the side lot lines of a zoning lot.

Lot, Zoning

A piece, parcel, or tract of land which is located within a single block fronting on an improved and accepted public street, and is occupied or utilized, or designated to be occupied, developed, or utilized as a unit under single ownership or control for a principal use and uses accessory thereto, together with such open spaces as are required by the Ordinance.

Manufactured Home

Factory built dwellings built to minimum construction standards mandated by HUD. A structure transportable in one (1) or more sections, which in the traveling mode is eight (8) body feet or more in width or forty (40) body feet or more in length or, when erected on site, is three hundred twenty square feet (320) or more and which is built on a permanent chassis or steel frame for transport, designed to be used as a dwelling with or without a permanent foundation when connected to the required utilities as defined in ACA §29-25-102 AND 24 CRF 3280.

Master Street Plan

The Master Street Plan consists of a written text and supporting map (s) that sets forth the minimum standards for street design and construction and indicate the functional classification of existing and proposed roadways within the City of Prairie Grove's Planning Jurisdiction.

Mobile Eating Cart

A self-propelled or towed vehicle equipped with facilities for preparation, cooking and/or dispensing food and drink.

Mobile Home

A dwelling constructed in a factory before 1976, when the enactment of federal standards which required that they meet regulations adopted by the FHA and administered by HUD.

Mobile Home Park

Any lot or plot of ground upon which two or more mobile homes, occupied for dwelling or sleeping purposes, are located, regardless of whether or not a charge is made for such accommodation, but excluding any lot upon which a single mobile home is permitted by the Planning Commission.

Modular Home

Prefabricated dwelling, usually built in a manufacturing facility, but built to meet all national, state and local building codes.

Motel/Hotel

A business consisting of a building or buildings with room(s) available for rent for overnight and transient guests. A motel/hotel means every building or other structure commonly referred to as a motel, hotel, motor lodge, or other similar name which is kept, used, maintained, advertised, and held out to the public to be a place where sleeping accommodations are offered for adequate pay to travelers or guests, whether transient, permanent, or residential, in which ten (10) or more

rooms are used for sleeping accommodations of such guest(s); such sleeping accommodations being conducted in the same building or in separate buildings or structures used in connection therewith that are on the same premises and are part of a hotel operation.

Nonconfirming Use

Any lawful use of a building, structure, or land which does not conform to the applicable use regulations for the district in which it is located, either at the effective date of this Ordinance or as a result of a subsequent amendment thereto. No existing principal use shall be deemed nonconforming because of lack of required off-street parking or loading space.

Nursing Home

Any premises where more than three (3) unrelated persons are lodged and furnished with meals and nursing care.

Off Site Improvements

When a project development impacts safety, drainage, or infrastructure an off-site improvement one that is required not on the property being developed by "off" site" to mitigate the problems causing the impact.

Open Space

Area in any side, rear, or front yard or any other unoccupied space on a lot that is open and unobstructed to the sky except for ordinary projection of cornices, eaves, or porches.

Open Use of Land

A use which does not involve improvements other than grading, drainage, fencing, surfacing, signs, utilities, or accessory structures. Open uses of land involve, but not limited to, auto wrecking yards, junk or salvage yards, dumps, sales yards, storage yards, and race tracks.

Parking Lot

An off-street facility including parking spaces and drives and aisles for maneuvering, and providing access and for entrance and exit, developed in a way to accommodate the parking of automobiles. Parking Lots may be public, meaning spaces are typically available for anyone to use with a specific purpose within that area, or they may be private and be at the exclusive use and control of a private land owner.

Parking Space

An off-street space available for the parking of one (1) motor vehicle and having dimensions called out in section 4.10 , of the development code.

Permitted Use

A use that by rights is specifically allowed in a particular zoning district.

Planning Commission

The City Planning Commission, City of Prairie Grove, Arkansas.

Planning Jurisdiction

The Planning Jurisdiction of the City of Prairie Grove is that area indicated on an officially adopted map that includes the corporate limits of the City and those areas beyond the corporate limits up to a distance of five miles, where the City Council and Planning Commission have determined that the community will eventually grow and develop. Zoning jurisdiction is limited to the corporate boundaries. Subdivision regulations may be enforced outside the corporate limits through cooperation with officials of the Washington County Planning Board and County Road Department.

Principal Use

The specific primary purpose for which land, building, or structure is used or intended to be used.

Principal Structure(s) or Building(s)

The main or primary building(s) or structure(s) on a lot whose permitted use by right is allowed by use within the District it resides or existed at the time of the adoption of this ordinance as non-conforming use. All other structures located on the same lot or parcel shall be accessory to the Principal Structure(s).

Profession

A vocation requiring specialized knowledge and skills in some department of learning or science. The following criteria must be met to be considered a profession under this ordinance:

1. Graduate of a recognized College or University.
2. A Profession Licensed by the State of Arkansas.

Property Line

The legal boundary of a lot or parcel of land the locates it through a word description and physically locates it on the ground.

Professional Office

An office in which no activity is carried on catering to retail trade with the general public and no stock of goods is maintained for sales to customers.

Public Utility

Any person, firm, corporation, municipal department, board or commission, duly authorized to furnish and furnishing to the public, electricity, gas, television cable, telecommunications, transportation, drainage, water, or sanitary sewage.

Recreational Vehicle

Any motor home or trailer designed for occupancy, typically on a short-term basis.

RV Park or Court

A facility specifically designed to park recreational vehicles, tents, campers, or other transient type housing for overnight or transient accommodations. An RV Park will typically provide parking pads, utilities, and other amenities for guests.

Salvage Yard

Any land or area used, in whole or in part, for commercial storage and/or sale of scrap iron, and metals for remelting purposes, and other related items such as hides, inoperable or immobile automobile and trucks, car and truck bodies and parts, engines, batteries, waste paper, rags, and other scrap which is not to be sold for purpose for which it was originally intended.

Setback

The minimum allowable horizontal distance from a given point or line of reference, such as a thoroughfare right-of-way, to the nearest permanent part of a building or structure. This could be walls, porch roofs, permanent awnings, breezeways, Eaves and roof overhangs.

Shopping Center or shopping mall

Two or more retail or office establishments located under a single roof or connected by a common wall or two or more retail or office establishments operating on a single parcel of land, regardless of ownership, or any business development where shops are grouped and combined purposely into one development.

Sign

A sign is any structure or part thereof, or any device attached to, painted on, or represented on a building or other structure, upon which is displayed or included any letter, work model, banner, flag, pennant, insignia, decoration, device, or representation used as , or which is in the nature of an announcement, direction, device, or representation used as, or which is in the nature of an announcement, direction, advertisement, or other attention getting device. A sign shall not include a similar structure or device located within a building except for illuminated signs within show windows. A sign includes any billboard, but does not include the flag, pennant, or insignia of any state, city, or other political unit, or any political, charitable, educational, philanthropic, civic, professional, religious, or like campaign, drive, movement, or event.

Sign Area

The area within a line including the outer extremities of all letters, figures, characters, and delineations, or within a line including the outer extremities of the framework or background of the sign, whichever line includes the larger area. The support for the sign background, whether is be columns, a pylon, or a building or part thereof, shall not be included in the sign area.

Signs, Accessory

A sign that is incidental to the principal use of the structure or land on the lot on which the sign is located.

Sign, Advertising

A sign which directs attention to a business, commodity, or service which is entirely or primarily conducted, sold, or offered elsewhere than upon the lot on which the sign is located.

Sign, Bulletin

An accessory board or sign erected by a church, school, community center, public agency, or institution on its own premises for announcement purposes.

Sign, Business

An accessory sign which directs attention to a profession, business, commodity, or service conducted, sold, or offered on the same zoning lot.

Sign, Identification

An accessory sign whose content is limited to the name, address, contact information, and/or occupation of the occupant of the premises.

Small Cell Facility

A facility, excluding a satellite television dish antenna, established for the purpose of providing wireless voice, data and/or image transmission within a designated service area. A small cell telecommunications facility must not be staffed, and consists of one or more antennas attached to a Support Structure. An antenna or wireless antenna base station, which provides wireless voice, data and/or image transmission within a designated service area as part of a small cell telecommunications facility, and may not be larger than a maximum height of three (3) feet and a maximum width of two (2) feet.

Storage Facility, Commercial

Mini Storage, or Temperature Controlled, or Commercial Storage Rental Facilities are a building or group of buildings with the purpose of allowing persons to rent out individual "units" for short term or long term storage.

Storm Shelter

A building, or accessory structure with the primary use and design to provide a place of safety and refuge in inclement weather or other pending disaster. For purposes of this ordinance, Storm Shelters are considered an accessory structure and must meet setback requirements unless a variance is granted by the board of adjustment.

Story

That portion of a building, other than a basement, included between the surface of any floor and the surface of the floor next above it or, if there is no floor above it, the space between the floor and ceiling next above it. A half story is a partial story under a gable, hip, or gambrel roof, the wall plates of which on at least two (2) opposite exterior walls are not more than four (4) feet above the floor of each story.

Street

Any public or private thoroughfare which affords the principal means of access to abutting property.

Street Right of Way

The width dedicated for a specific street for pavement, sidewalks, drainage, and other infrastructure.

Structure

Anything constructed or erected, the use of which requires a fixed location on the ground or attached to something having a fixed location on the ground, or anything that is a size or weight that would make it difficult to move manually.

Structural Alterations

Any change in the supporting members of a structure or building, such as bearing walls or partitions, columns, beams, or girders, building foundation, or any substantial change in the roof or in the exterior walls, including door or window framing.

Top-Level professional

A professional such as a doctor, dentist, attorney or realtor. When determining the number of top-level professionals, normally associated professionals or para-professionals, such as nurses or paralegals, are not counted.

Variance

A deviation from these regulations that requires approval of the Planning Commission, Board of Zoning Adjustment, City Council or City staff to be legal. Variances shall be granted only when a clear demonstration of a Hardship inherent with the property relief is being sought for, as defined herein is presented by the applicant.

Visual obstruction:

Any fence, structure, sign, wall, tree, hedge or shrub, or a combination of them which limits visibility. Such obstructions are prohibited at corners to assure good visibility for motorist.

Wall, architectural, exterior, or engineered:

An upright structure of masonry, wood, plaster, or other building materials serving to

enclose, divide, or protect an area.

Wall Shared or Common Wall

A common wall, shared by two properties often associated with a condominium or shared structure that may or may not be located on separate parcels of property.

Warehouse and Warehousing:

A commercial facility and a commercial operation for the sole purpose of storing, housing, or facilitating the movement of goods and products. For building code purposes, warehouse space used in connection with and on the same premises as wholesale or retail operation is considered storage space if the total "warehousing" space occupies less than 60% of the structure/s, and the primary use is the associated wholesale or retail operation.

Wireless Communications:

Any personal wireless service as defined in the Telecommunications Act of 1996, which includes FCC-licensed commercial wireless communications services including cellular, personal communication services (PCS), specialized mobile radio (SMR), enhanced specialized mobile radio (ESMR), paging, and similar services that currently exist or that may in the future be developed.

Wireless Communication Facility (WCF) or Tower:

Any unstaffed facility covered under the Telecommunications Act of 1996 used for the transmission or reception of wireless telecommunications services, usually consisting of an Antenna Array, connection cables, an Equipment Facility, and a Support Structure to achieve the necessary elevation.

Yard

An open space on the same lot with a building unobstructed from the ground upward and measured as the minimum horizontal distance between the lot line and the main building.

Yard Corner

Any yard that is bordered on two sides by public street or right of way

Yard Interior

Any yard which does not run adjacent or parallel to a public or private right-of-way or a designated floodway.

Yard, Front

A yard extending across the front of a lot between the side yard lines, and being the minimum horizontal distance between the street line and the main building or any projections thereof other than terraces, or uncovered porches. On corner lots the front yard shall be considered that which the main entrance of the house faces.

Yard, Rear

A yard extending across the rear of the lot between the side lot lines and the minimum horizontal

distance between the rear lot line measured between the main building or any projection other than steps, unenclosed porches, or entrance ways.

Yard, Side

A yard existing between the main building and the side line of the lot, and extending from the front lot line to the rear yard, and being the minimum horizontal distance between a side lot line and the side of the main building or any projection thereof.

Zero Lot Line

A residential development that has no side yard and where a common wall exists or anticipated between dwellings that are located on the property line.

Zoning District:

An area of land designated in the zoning ordinance that establishes allowable uses within the district and in which requirements for the use of land and building and development standards are enforced.

Zoning District Boundary:

That boundary line which separates unlike zoning districts as determined in 4.2.2

END OF DEFINITIONS

SECTION 4.4 ZONING DISTRICTS ESTABLISHED

4.4.1 RESIDENTIAL DISTRICTS

The residential zoning districts are intended as areas of residence with related uses for such things as churches, schools, home occupations, select low intensity professional uses and recreational facilities allowed only by conditional use permit to insure protection of the residential uses.

- 4.4.1.1 Single Family Residential zoning district A-1 (agricultural) is a zone where agricultural and low-density residential uses can co-exist and as an area of transition on the urban fringe that is anticipated to develop into urban uses in the future.
- 4.4.1.2 Residential zoning district R-1 is a zone of low density for single family detached dwellings and is an area protected from all commercial and industrial uses. This zone is typically associated with large lots of one fifth acre per dwelling unit or larger.
- 4.4.1.3 Residential District R-1.5 is a zone of medium density for single family dwellings on smaller lots than those in R-1.
- 4.4.1.4 Residential District R-1.75 is a zone of high density for single-family dwellings on small lots. From the date of this ordinance adopting this code, this zone is no longer available for new lots and has been replaced by the

PUD process, and is not a rezoning option for any property in the city which is not already so designated. The description of this designation is preserved here so that the public and the City staff and officials can reference the definition of the zone when reviewing the land use regulations of any parcels or areas which were so designated prior to this zone being removed as a rezoning option by the City Council. Instead of utilizing this zone further, the City has created zoning districts and use categories which comply with state and federal law and better serve the goal of harmonious, safe and efficient development in the city of Prairie Grove.

4.4.1.6 Residential zoning district R-2 is of higher density than R-1 and R-1.5 permitting single family, duplex, and small multi-use units not to exceed 4 units on relatively small lot areas.

4.4.1.7 Residential zoning district R-3 is reserved for high density single family, single family attached and multi-family residential developments designed to provide innovative and alternative housing. The R-3 district is intended to allow and encourage affordable housing through use of zero lot lines, mixed single family and multifamily dwellings, manufactured home subdivisions and energy efficient community development. Compliance with the City of Prairie Grove Subdivision Regulations may be a condition of approval for an R-3 rezoning.

4.4.2

PUD RESIDENTIAL (PUDR)

The purposes of the Planned Unit Development, known as PUD zoning class is to promote and encourage imaginative design, flexibility and innovation in the design of subdivisions and large-scale developments that may not be allowable within traditional zoning designations. The zone also promotes open space in the project design. A PUD can result in relief from rigid compliance from lot dimensions, setbacks, and lot sizes. The Planned Unit Development is a combination of zoning designation and development plan. A detailed development plan is required for the approval of a PUD zone. The Development plan should specify everything a Subdivision Concept Plat would include, but also include things like specific building design, access, parking, lighting, or features that are unique to the PUD. Development must follow the development plan exactly. Failure in this respect will result in reversion of the property to the original zoning. If a PUD has not started construction within 12 months of approval, it shall be determined invalid without further action. Within 30 days of expiration, the developer may request an additional 6 months to be approved by the planning commission. After 18 months, the project must be resubmitted and go

through another public hearing to be approved. See Section 5.9 of the Subdivision regulations for specific requirements.

4.4.2.1 Minimum Size and Use Criteria

4.4.2.2 Development Standards

4.4.3 Mixed Use Zones

Districts which mix commercial and residential uses into one district.

4.4.3.1 Central Business District (CBD), Mixed Use, is the designation for the historic retail center of the community, as defined on the zoning map. This zone allows for a mixed-use variety of retail, mixed use residential, wholesale, professional and governmental functions have developed in the CBD over the past one hundred plus years. The intent of the CBD District regulations is to encourage a diversity of uses that sustain the historic character of downtown Prairie Grove. Mixed use developments are allowed such as commercial use on street level with apartment dwellings located upstairs. The district encourages the creation of compact blocks with gridded street patterns within the existing block structure of the downtown residential areas. This district is designed to encourage walkable areas and accommodate zero lot line development that includes retail as well as single and multi-family uses that are combined with commercial space within the district. The Central Business District in total is included in a design overlay district with requirements specified in 4.18.2 of this code.

4.4.3.2 Mixed Use 1 (MU-B1)

Mixed Use B1 District is to provide locations for the conduct of retail trade and personal-service enterprises to meet the regular needs of, and for the convenience of, people in adjacent residential areas. The types of uses authorized in this District are limited to those that serve the everyday need of the household. Residential uses will be incorporated directly into this district to provide even better access to the businesses.

4.4.3.3 Mixed Use 2 (MU-B2)

Mixed Use B2 District is the designation for all types of retail centers for "shopping goods" commercial sales and service, equipment sales, and also for banking, offices, commercial recreation, and restaurants for the City and region. Additionally, higher density residential developments will be incorporated into this zone.

4.4.3.4 Neighborhood Mixed Use (NH-M)

This district is to allow higher density residential and a mix of residential and non-residential uses. Commercial areas will be gradually incorporated into this district and will be in character with the surrounding residential area. This district will allow pedestrian access to nonresidential uses and services, as well as open space amenities.

4.4.3.5 Neighborhood Commercial (NH-C)

This district will be primarily nonresidential uses that follow the existing character of this corridor. Appropriate residential uses will be mixed into this zone, but will not be the main focus along the corridor frontage. Walkability and access will be a key component of this district.

4.4.3.6 Overlay District(s) impose additional requirements on all property, regardless of its zoning district classification, within the boundaries of the Overlay District(s). Overlay districts are outlined in section 4.18 of this development code.

4.4.3.7 PUD Commercial/Business (PUDC)

PUD Commercial (PUD-C) The purposes of the Planned Unit Development, known as PUD zoning class is to promote and encourage imaginative design, flexibility and innovation in the design of commercial and large-scale developments that may not be allowable within traditional zoning designations. The zone also promotes open space in the project design. A PUD can result in relief from rigid compliance from lot dimensions, setbacks, and lot sizes. The Planned Unit Development is a combination of zoning designation and development plan. A detailed development plan is required for the approval of a PUD zone. The Development plan should specify everything a normal LSD Plan would include, but also include things like specific building design, access, parking, lighting, or features that are unique to the PUD. Development must follow the development plan exactly. Failure in this respect will result in reversion of the property to the original zoning district designation. A PUD-C may or may not include mixed uses in its design. See *Section 5.9 in the Subdivision Regulations for specific procedures.*

4.4.4. Commercial Districts

Commercial Districts are included in the Mixed Use Zones as defined in 4.4.3

4.4.5 Manufacturing/Industrial Use Districts

Industrial use districts are intended for manufacturing and industrial activities and for the bulk storage of goods.

4.4.5.1 (HM) Heavy Manufacturing Zone represents proposed industrial parks and locations. It is an area primarily for the assembly, fabrication, research, and storage uses including land area for parking and landscaping, adjacent transportation facilities, and adequate utilities. The borders of manufacturing areas abutting (within 100 feet) residential and commercial areas are reserved for wholesaling, storage, shipping, and distribution functions of larger facilities or independent operations that can occur in a clean and quiet manner.

4.4.5.2 (LM) Light Industrial/Manufacturing represents areas adjacent to or bordering on other commercially zones areas where the industrial use is compatible with normal commercial uses.

SECTION 4.5 ZONING DISTRICT REGULATIONS, ALLOWABLE USES, AREA REQUIREMENTS

4.5.1 DETERMINATIONS FOR USES NOT LISTED

When a use is proposed for a zoning district that is not explicitly permitted or prohibited within the zoning district, the Planning Commission shall determine whether said use is compatible (i.e., in character with other uses in the district) and shall recommend to the City Council for authorization of said use to be established or disallowed. The Planning Commission shall decide each application on its merits, taking into consideration such factors as existing uses, access, location, major streets, plans, etc. The Planning Commission and City Council may impose conditions under which a use may be permitted in order to insure compatibility. The finding of a use to be compatible in one location does not imply that the same use is compatible at another location, even within the same zoning district.

4.5.2 AGRICULTURAL DISTRICT REGULATIONS

Agricultural Districts are intended for agricultural and aquacultural uses with accompanying single-family residences. The agricultural district may also be used as a "holding zone" for large undeveloped tracts of land that have not yet developed an urban character.

4.5.2.1 Permitted Uses

- a. Single-family dwellings.
- b. Truck gardening, orchards, customary row-crop farming, and pastures.
- c. May include traditional farm activities that include grazing and hay production, but do not allow the construction of new commercial agricultural facilities such as chicken houses, breeder hens, stock yards,

feed lots, sale barns, or commercial agricultural operations without conditional use approval from the planning commission.

4.5.2.2 Area and Bulk Regulations: The minimum area requirement for this district shall be one (1) acre.

4.5.3 RESIDENTIAL DISTRICT REGULATIONS

4.5.3.1 USES ALLOWED

("P" indicates the use is permitted. "C" indicates the use is permitted only by issuance of a Conditional Use Permit¹. "N" indicates the use is prohibited. See Section 4.16 Conditional Use Permits. Zone R1.75 is no longer allowed for New zoning, but still remains in some areas)

	A-1	<u>R-1</u>	<u>R-1.5</u>	<u>R1.75</u>	<u>R-2</u>	<u>R-3</u>
a. Single-family structure	P	P	P	P	P	P
b. two/three/four-family structure	N	N	N	N	P	P
c. Multi-family (>4) structure	N	N	N	N	N	P
d. Manufactured Home	C	N	N	N	C	P
e. Mobile Home	C	N	N	N	N	N
f. Churches and recreational bldg.	C	C	C	C	C	P
g. Public parks, playgrounds, recreational buildings	P	C	C	C	C	C
h. Private playgrounds & swimming	P	C	C	C	C	C
i. Hospitals and nursing homes	C	N	C	C	C	C
j. Libraries, museums (public)	C	C	C	C	C	C
k. Home occupations	p ²	p ¹	p ¹	p ¹	p ¹	p ¹
l. Public and private schools, and kindergartens	C	C	C	C	C	C
m. Child care center	C	C	C	C	C	C
n. Day care family home	C	C	C	C	C	C
o. Clubs, lodges, etc.	C	N	C	C	C	C
p. Golf courses, except commercial miniature golf	C	C	C	C	C	C
q. Public utility sub & pump station ²	C	C	C	C	C	C
r. Bed & Breakfast Inns	C	C	C	C	C	C
s. Vacation Rentals by Owner	C	C	C	C	C	C
t. Boarding Houses	C	C	C	C	C	C
u. Institutional Boarding, rehab, etc.	C	N	N	N	C	C
v. Compatible accessory buildings ³	P	P	P	P	P	P
w. More than 6 operable vehicles	P	C	N	N	N	N
x. Residential Development						
y. Sales Office (real estate temporary)	N	C	C	C	C	C
z. Communications Tower	C	N	N	N	N	N
aa. Small Cell Facility	C	C	C	C	C	C

- bb. Agricultural Facilities Commercial C N N N N N
- cc. Residential Ag -livestock P P(4) P(4) P(4) N N
- *see PGMC 6.08.11. - Residential chickens.

4.5.3.2 RESIDENTIAL ACCESSORY, SPECIAL USE and SPECIAL STRUCTURES

- 1/ See Section 4.6 of this Regulation.
- 2/ This use permitted if housed in buildings that harmonize with the character of the neighborhood and having adequate fences and other safety devices.
- 3/ Accessory Structures & Uses Are defined and explained in SECTION 4.7 of this Code
- 4/ See PGMC 6.08.11. - Residential chickens.

4.5.3.3 AREA and DENSITY REQUIREMENTS RESIDENTIAL

The following chart lists area and setback requirements for single family and multi-family dwellings in residential zones. The Maximum building coverage of a lot in any residential zone is 50%.

RESIDENTIAL ZONES					
Title	SF-R1	SF-R1.5	SF-R1.75	R2	R3
Abbreviation	R1	R1.5	R1.75	R2	R3
Maximum Density					
Single Family detached	4 units/acre	6 units/acre	7 units/acre	10 units/acre	10 units/acre
Single Family attached (townhome on indiv. lots)	NA	NA	NA	maximum of two attached 10 units/acre	maximum of eight attached 15 units/acre
Single Family Zero Lot	NA	NA	NA	15 units/acre	15 units/acre
Two Family	NA	NA	NA	15 units/acre	10 units/acre
Three Family	NA	NA	NA	15 units/acre	16 units/acre
Four Family	NA	NA	NA	15 units/acre	18 units/acre
Multi Family	NA	NA	NA	NA	18 units/acre
Mixed Use Development	NA	NA	NA	NA	up to 24 units/acre **
Non Residential Lot Area	Min. Lot Size 5000 SF	Min. Lot Size 5000 SF	Min. Lot Size 5000 SF	Min. Lot Size 5000 SF	Min. Lot Size 5000 SF

Setbacks SF detached	R1	R1.5	R1.75	R2	R3
Front (existing lots)	25'	25'	25'	25'	25'
Front (new subdivision developments)	20'***	20'***	20'***	20'***	25'
Side (min)	10'	8'	5'	5'	5'
Side (street)	25'	25'	25'	25'	25'
Side (street-new subdivision developments)	20'***	20'***	20'***	20'***	25'
Rear	5'	5'	5'	5'	5'
Setbacks SF attached					
Front	NA	NA	NA	20'	15'
Interior unit side	NA	NA	NA	0	0
Exterior unit side	NA	NA	NA	5'	5'
Side (street)	NA	NA	NA	20'	15'
Rear	NA	NA	NA	10'	10'
Setbacks SF Zero Lot Line					
Front	NA	NA	NA	20'	20'
Side	NA	NA	NA	2'/10'	2'/10'
Side (spacing)	NA	NA	NA	10	10
Side (street)	NA	NA	NA	20'	20'
Rear	NA	NA	NA	10'	10'
Setbacks Two family and MF					
Front	NA	NA	NA	20'	20'
Side (each, min)	NA	NA	NA	5'	10'
Side (street)	NA	NA	NA	20'	20'
Rear (from property li	NA	NA	NA	5'	10'
Min Lot Width Non-Residential					
	NA	NA	NA	NA	NA
Maximum height					
Fire department approval required for R3 over 60'	45'	45'	45'	45'	60'
All Structures more than two (2) stories in height or thirty-five (35) feet measured from the foundation of the highest part of the roof line shall be required to increase the side yard by one (1) foot for every additional foot of height. Sprinkler Systems & Fire Dept. approval required.					

PUBLIC ASSEMBLY USES in R ZONES

4.5.3.3 Area Requirements - Places of Public Assembly Constructed or Established after Effective Date of These Regulations on a New Site.

Churches, museums, meeting halls, community buildings, for example

Zoning Category	Minimum Lot Area	Maximum Building Coverage	Front	Side (corner)	Side	Rear	
A-1	1 acre	50%	25	25	25	25	
R-1	1 acre	50%	25	25	25	25	
R1.5	1 acre	50%	25	25	25	25	
R1.75	1 acre	50%	25	25	25	25	
R-3	1 acre	50%	25	25	25	25	
B/MU	1 acre	50%	25	25	25	25	

SECTION 4.5.3.4 Additional Residential zoning, area, and setback requirements

- A. All residential construction, either new construction or exterior additions shall include the construction of sidewalks if they do not currently exist at the time of permitting.
- B. In Residential zones, where drainage studies are not a requirement for permitting, the owner, developer, builder should take into consideration the impact of any construction, alterations, or additions will have on storm water flow, especially as it affects neighboring properties, and mitigate any additional storm water discharges that could cause harm, damage, or flooding, to adjoining property.
- C. Minimum foundation requirements; all residential structures shall have a continuous footing and foundation system, excluding access openings, ventilation openings, or flood control openings, of concrete block, concrete, masonry stone, or other cementitious products, meeting applicable requirements for building code, in all zones with the exception of areas classified as flood plain. All residential structures regardless of building type shall conform with these requirements.
- D. For all residential construction, regardless of whether it is in a subdivision or infill lot, sidewalks are required along all street facing sides to the property line. Sidewalks shall be a minimum of 5' in width, and meet the standards for sidewalks listed separately in this code.

SECTION 4.5.4 BUSINESS, Commercial, and Mixed Use DISTRICT REGULATIONS

4.5.4.1 Commercial Districts Permitted Uses: ("P" indicates the use is permitted. "N" indicates the use is prohibited. "C" indicates the use requires a conditional use permit issued by the Planning Commission. See Section 4.16 Conditional Use Permits). All listed commercial uses and any residential or public uses are permitted in the CBD upon issuance of a conditional use permit. *BUSINESSES MUST COMPLY WITH ZONING REQUIREMENTS WITHIN THE ZONE THEY ARE LOCATED

COMMERCIAL/Mixed Use Zone USES	CBD	MUB2	MUB1	NHC	NMU
Apartments (residential) /R	C	C	Y	C	C
Apartments (mixed use with Business)	Y	Y	Y	Y	C
Appliances (small) repair	P	P	P	C	C
Appliances (major) repair	C	P	C	N	N
Appliance Sales	P	P	P	C	N
Automotive car wash	C	P	C	C	C
Automotive service stations	C	P	P	C	N
Automotive repairs	C	P	C	N	N
Automotive Salvage	N	C	N	N	N
Automotive/motorcycle sales (New and used)	N	P	C	N	N
Bakery/retail	P	P	P	P	P
Banks, savings and loan, etc.	P	P	P	P	P
Barber Shops	P	P	P	P	P
Bars, Clubs	C	C	C	C	C
Beauty Salons / Shops	P	P	P	P	P
Bed and Breakfast Inns	P	P	P	P	P
Boat and marine sales and service	N	P	C	N	N
Camera Sales and Supplies	P	P	P	P	P
Carnival, circus or similar temporary amusement enterprise	C	P	C	N	N
Catering (off premise)	P	P	P	C	C
Chemical Sales	C	P	C	N	N
Cleaning service (home and office)	P	P	P	P	C
Churches	P	P	P	P	P
Commercial recreation, small sites less than 2 acres; bowling alleys, video game centers, arcades, pool halls, skating rinks, etc.	P	P	C	C	N
Commercial recreation, large sites over 2 acres; drive in theatres, golf driving ranges, miniature golf, moto-cross, go-cart tracks, etc.	N	P	C	C	N
Communication Tower	C	C	C	N	N
Computer & Software sales and service	P	P	P	P	P
Construction Company (equip./storage)	N	P	N	N	N
Convenience Store (fuel and food sales)	P	P	P	C	C

Dept/Discount Store < 5001 sq. ft	P	P	P	P	C
Dept/Discount Store>5000 sq. ft.	C	P	C	C	N
Drug Store	P	P	P	P	P
Duplex (residential) ^R	C	N	P	P	P
Duplicating, fax, quick printing	P	P	P	P	P
Eating establishments (with drive-thru)	C	P	P	P	C
Eating establishments, eat in only	P	P	P	P	C
Eating establishments (service in autos)	C	P	C	C	N
Event Center/Event Venue	C	P	C	C	N
Farm equipment, sales and service	N	P	C	N	M
Feed and fertilizer sales	C	P	P	N	M
Flea Market (enclosed)	P	P	P	C	N
Floor covering sales, retail	P	P	P	C	N
Florist shop	P	P	P	P	P
Florist Shop with Greenhouse	C	P	C	C	N
Food locker plant/Processing	C	P	C	C	N
Freight depot, rail or truck	N	P	N	N	N
Funeral home, mortuary	P	P	C	N	N
Furniture, repair	P	P	P	C	N
Furniture, used sales	P	P	P	C	N
Furniture, new sales	P	P	P	C	N
Garage/Parking lot, fee based	P	P	C	N	N
Gift, novelty store	P	P	P	P	P
Governmental offices, Police, Fire, Courts, Post Offices, Library, offices, Jails, Utility offices	P	P	P	C	C
Small Gym/Exercise Facility-Commercial	C	P	P	C	C
Large Gym >3000 sq. foot	N	P	C	C	N
Green House/Nurseries	N	p	C	N	N
Grocery store Small<3000 sq.ft	P	P	P	P	C
Grocery store Large>3000 sq.ft	C	P	P	C	N
Hardware store	P	P	P	P	C
Health Food / Nutrition Center	P	P	P	P	P
Health spa/tanning salon	P	P	P	P	P
Hobby shop	P	P	P	P	
Home building supply	C	P	C	N	N
Hospitals, nursing homes	C	P	C	C	C
Hotels, motels	P	P	C	N	N
Ice cream, frozen dessert store	P	P	P	P	P
Ice vending establishment	C	P	C	C	N
Interior decorating, design shop	P	P	P	P	P
Jewelry sales and repair	P	P	P	P	P
Kennel- Dogs & Pets	N	C	C	N	N
Laundry pickup station only	P	P	P	C	C
Laundry plant	C	P	C	N	N
Laundry, self service	P	P	P	C	C
Liquor sales, off premises only	P	P	P	C	C
Loan office	P	P	P	P	P

Locksmith, key shop	P	P	P	P	C
Manicure / Nail Care	P	P	P	P	P
Massage Parlor (Therapeutic)	C	P	P	C	C
Meat market/Produce market	P	P	P	C	C
Medical (hospital supply) rental	P	P	P	N	N
Metal or Scrap Salvage	N	C	N	N	N
Mini-storage rental units	N	N	N	N	N
Mobile home sales and service	N	C	N	N	N
Mobile Eating Carts ¹	C	C	C	C	C
Mobile Commercial Sales/booths/tents ¹	C	C	C	C	N
Monument sales	P	P	C	N	N
Motion picture theaters	P	P	C	C	N
Moving, storage, carting, express haul	C	P	N	N	N
Newspaper/magazine retail store	P	P	P	P	P
Newspaper office, print shop	P	P	C	N	N
Novelties/gifts/tobacco/ candy	P	P	P	P	P
Outdoor Group Vendor Sales/Flea Mkt	N	C	C	N	N
Offices, professional, including doctors dentists, lawyers, realtors, engineers, architects, etc (w/3 or fewer top-level professionals)	P	P	P	P	P
Offices, professional, including doctors dentists, lawyers, realtors, engineers, architects, etc (w/4 or more top-level professionals)	C	P	C	C	C
Offices, other	P	P	P	P	C
Office equipment, sales	P	P	C	C	N
Office equipment, repair	P	P	C	N	N
Office supplies, sales	P	P	C	C	C
Paint and wallpaper store	P	P	C	C	N
Pawn shop	P	P	C	C	N
Pest control	N	P	C	N	N
Pet shop	P	P	P	C	C
Places of public assembly	C	C	C	C	N
Plumbing/Mech. sales and service	P	P	C	N	N
Recycling and reclamation	N	P	C	N	N
Recreation or amusement center	P	P	C	C	C
Rental, tools and equipment (inside)	P	P	C	N	N
Rental, tools and equipment (outside)	N	P	C	N	N
Recreational Vehicle Park	N	C	C	N	N
Retail, General <5000 sq. ft	P	P	P	P	C
Retail, General >5000 sq. ft	C	P	C	C	N
Retail Shopping Center/Big Box ²	N	P	C	N	N
School, commercial or trade	C	P	C	N	N
School, nursery or day care	C	P	P	P	P
Shoe sales and repair	P	P	P	P	C
Sign, business	C	P	C	N	N
Single Family Residential ^R	C	N	P	P	P

Specialty food shops (meat, produce)	P	P	P	P	P
Sporting goods sales	P	P	P	P	C
Studio, photo, musical	P	P	P	P	C
Swimming pool, commercial	N	P	C	C	C
Swimming pool sales and supply	C	P	N	N	N
Tanning Salons	C	P	P	P	P
Tattoo Parlors/Body Piercing	C	P	C	C	N
Telephone, mail order sales	C	P	P	C	N
Towing or Impound	N	C	N	N	N
Travel agency	P	P	P	P	P
Trucking Offices	N	P	C	N	N
Truck (commercial), construction equipment sales/parts/service	N	P	N	N	N
Thrift/Variety store < 5000 sq. ft	P	P	P	P	C
Thrift/Variety Store > 5000 sq. ft	C	P	P	C	N
Veterinarian clinics	C	P	P	C	C
Warehousing, inside storage only	C	P	N	N	N
Wineries/Breweries ³	C	P	P	C	N
Wholesale establishment	P	P	C	N	N

- 1) All Mobile eating carts, sales tents, stands, that are not permanent in nature shall have the written approval of the property owner who's land they will be placed on prior to requesting approval from the planning commission. Mobile businesses must contain and hold any wastewater, trash, or other waste product produced by that mobile business and dispose of them in a safe, legal, and sanitary manner. See Section 4.5.4.5
- 2) Retail Shopping Centers are those commercial buildings that include multiple business units including multiple addresses and occupancies, within one building or within one complex of buildings or Big Box Stores containing 40,000 square feet or greater.
- 3) Part of the City is currently DRY and nothing in the USE section of this ordinance shall conflict with state law for the location of any business that requires specific state approval.

*All Mobile eating carts, sales tents, stands, that are not permanent in nature shall have the written approval of the property owner who's land they will be placed on prior to requesting approval from the planning commission. Mobile businesses must contain and hold any wastewater, trash, or other waste product produced by that mobile business and dispose of them in a safe, legal, and sanitary manner. See Section 4.5.4.5

4.5.4.2 Commercial Accessory Structures See SECTION 4.7.2 of this code

4.5.4.3 Commercial and Mixed Use Area Requirements (N/A = requirement not applicable)

MIXED USE ZONES					
Title	Neighborhood Mixed Use	Neighborhood Corridor	Mixed Use B-1	Central Business District	Mixed Use B-2
Abbreviation	NH-M	NH-C	MU-B1	CBD	MU-B2
Maximum Density					
Single Family detached	10 units/acre	No new single-family residential subdivisions permitted. Only one residence per existing lot may be placed. No min lot area	No new single-family residential subdivisions permitted. Only one residence per existing lot may be placed. No min lot area	No new single-family residential subdivisions permitted. Only one residence per existing lot may be placed. No min Lot area.	No new single-family residential subdivisions permitted. Only one residence per existing lot may be placed. No min lot area
Single Family	maximum of	maximum of	maximum of	maximum of	maximum of
Single Family Zero Lot Line	15 units/acre	NA	15 units/acre	NA	15 units/acre
Two Family	10 units/acre	NA	NA	NA	NA
Three Family	16 units/acre	16 units/acre	NA	NA	NA
Four Family	18 units/acre	18 units/acre	NA	NA	NA
Multi Family	18 units/acre	18 units/acre	18 units/acre	No Max	18 units/acre
Mixed Use Development	up to 24 units/acre **	up to 24 units/acre **	up to 24 units/acre **	No Max	up to 24 units/acre**
Non Residential Lot Area (SF)	Min. Lot Size 5000 SF	Min. Lot Size 5000 SF	Min. Lot Size 5000 SF	No Min. Lot Size	Min. Lot Size 7500 SF

Setbacks SF detached					
Front (existing lots)	Build to zone: 10'-25'	Build to zone: 10'-25'	20'	Build to zone: 0'-15' *	20'
Front (new subdivision developments)	Build to zone: 10'-20'	Build to zone: 10'-20'	20'	Build to zone: 0'-15' *	20'
Side (min)	5	5	5'	5	5'
Side (street)	Build to zone: 10'-25'	Build to zone: 10'-25'	20'	Build to zone: 0'-15' *	20'
Side (street-new subdivision developments)	Build to zone: 10'-20'	Build to zone: 10'-20'	20'	Build to zone: 0'-15' *	20'
Rear	5'	5'	5'	0	5'
Setbacks SF attached					
Front	Build to zone: 10'-20'	Build to zone: 10'-20'	25'	Build to zone: 0'-15' *	25'
Interior unit side	0	0	0	0	0
Exterior unit side	5'	5'	25'	Build to zone: 0'-15'	25'
Side (street)	Build to zone: 10'-20'	Build to zone: 10'-20'	15'	0*	25'
Rear	10'	10'	10'	0*	10'
Setbacks SF Zero Lot Line					
Front	Build to zone: 10'-20'	NA	25'	Build to zone: 0'-15' *	25'
Side	2'/10'	NA	2'/10'	2'/10' *	2'/10'
Side (spacing)	10	NA	10	10	10
Side (street)	Build to zone: 10'-20'	NA	25'	Build to zone: 0'-15' *	25'
Rear	10'	NA	10'	0	10'

Setbacks Two family and MF					
Front	25'	25'	25'	Build to zone: 0'-15' *	25'
Side (each, min)	10'	10'	10'	0	10'
Side (street)	25'	25'	25'	Build to zone: 0'-15' *	25'
Rear (from property l	10'	10'	10'	0	10'
Min Lot Width Non-Residential	NA	NA	NA	NA	NA
Maximum height					
Fire department approval required for R3 over 60'	3 stories	3 stories	60'	3 Stories	60'

CBD - zero lot line construction and infill encouraged.

7/ When the lot adjoins a residential use, there shall be a minimum of thirty (30) feet of side yard with visual screening. Rear yard setbacks and screening may also be required as determined necessary by the Planning Commission. Noise attenuation barriers may also be required for uses generating noise and/or vibrations readily detectable at the property boundaries.

8/ Automotive service stations, new and used car lots and farm equipment sales and service, shall have a minimum lot area of 7,000 (seven thousand) square feet with a frontage of not less than one hundred (100) feet. Two frontages of not less than one hundred (100) feet shall be required when such stations, new or used car lots, and farm equipment sales and service, are located at street intersections.

4.6.3 Maximum permissible lot coverage
With the exception of CBD, no commercial development shall exceed 80% lot coverage with buildings, paving, or hardscape components.

4.5.4.4. ADDITIONAL COMMERCIAL DISTRICT REQUIREMENTS

A. Any lighting shall be placed and positioned to reflect away from adjacent residential districts. No excessive or unusual noise, odor or vibration shall be emitted so that it constitutes a nuisance which substantially exceeds the general level of noise, odor or vibration emitted by uses adjacent to or immediately surrounding the site. Such comparison shall be made at the property boundary of

the site.

- B. All waste, trash and garbage receptacles and pickup shall be oriented away from the street side of the property and be adequately screened by a sight-proof fence.

C. Screening & display criteria

1. Minimum height of screening barrier shall be six (6') feet.
2. Automobile, truck, tractor, boat, mobile home or motorcycle sales areas shall not be required to screen fully assembled merchandise ready for sale.
3. No permanent open display shall be permitted on sidewalks or public rights-of-way.
4. Storage space for automobile service stations when storing rental trucks or trailers may not exceed five thousand (5,000) square feet and must be paved and screening requirements met.

D. Drainage & Site Improvements

All commercial developments where installation of drainage structures and driveways entering or exiting on public streets, extensions of public utilities or dedications of right-of-way and improvements is anticipated shall be considered a large scale development, and plans shall be prepared and stamped by an Arkansas Registered Professional Engineer. Contour maps of the site and adjacent properties shall be submitted for review by the Planning Commission. The applicant's engineer shall make all reasonable investigations related to storm water velocities and design the improvements accordingly.

- E. Setbacks for Displays - There shall be a setback of twenty feet (20') for permanent open displays of any kind.
- F. Sidewalks Required – Anytime there is new commercial construction, a commercial structure is added to, or there is commercial alterations other than general maintenance, that affect the outside of a commercial building, sidewalks will be required along adjacent streets if there are not adequate sidewalks already in place.

4.5.4.5 Mobile Eating Carts

- A. Purpose. This section's purpose is to create a process that allows mobile eating carts to locate for a limited time on public and private property. "Mobile Eating Carts" are defined as either a self-propelled or towed vehicle equipped with facilities for preparation, cooking and/or dispensing food and drink.
- B. Regulation of Mobile Eating Carts will fall into three tiers:
 - a. Short-Term operations are those lasting 96 or fewer consecutive hours;
 - b. Intermediate –Term operations are those lasting longer than 96 consecutive hours, but fewer than 90 consecutive days; and

- c. Long-Term operations are those lasting longer than 90 consecutive days. Long-Term operations shall be treated as any permanent business occupation and are not eligible for the reduced regulation of this Section 4.6.8.
 - d. Non-profit entities and existing businesses holding City of Prairie Grove business licenses are exempt from the annual permit fees in this Section.
- C. Short-Term Permit for Parallel Parking Spaces. Mobile Eating Carts may apply for a permit at City Hall through the planning office once, then must meet the following requirements
 - a. The Planning Office shall consider the location, duration and space requirements of the request and determine if it meets the requirements of this Section (4.6.8) and determine that the location of the use does not detrimentally affect traffic flow, visibility or safety.
 - b. The applicant has paid an annual permit fee of \$400.00. or a three day permit of \$100.00
 - c. The applicant must meet the following requirements:
 - i. The Mobile Eating Cart shall fit entirely within two (2) marked parallel on-street parking spaces.
 - ii. The applicant must provide a valid copy of a county health department permit.
 - iii. The applicant agrees to and has responsibility to dispose of all wastes in accordance with all applicable laws. Mobile Eating Carts are not permitted to dispose of their trash in public trash receptacles.
 - iv. The applicant agrees to move to a different location after a 48-hour time period. This time period includes onsite set-up and break-down time. The applicant agrees to move at least 325 feet away or out of sight/view of their previous location once their initial 48-hour time period has elapsed.
 - v. The applicant agrees not to locate within 200 feet of the front door of any existing permanent restaurant without prior written consent of such restaurant.
 - vi. The applicant agrees to only vend towards the sidewalk side of the street and to keep the sidewalk unobstructed to allow for free flow of pedestrian movement along the street.
 - vii. The applicant agrees to locate on public property such that they will not cause an unsafe traffic or pedestrian situation; or on private property only after securing permission of the legal owner of the property.
 - viii. The applicant agrees not to set up in any handicap parking space or reserved parking space.
 - ix. Mobile Eating Carts are prohibited from parking in public parking lots unless they can do so without blocking existing drive lanes, exits or entrances into said parking lots.
 - x. The City reserves the right to limit Mobile Eating Carts from utilizing public parking spaces during special events such as parades, City events, etc.
- D. Short-Term Permit on Private Property. Mobile Eating Carts may be approved administratively by the Planning Office for a limited time permit to locate on private property after meeting the following conditions.

- a. The applicant has paid an annual permit fee of \$100.00, unless they also hold a public permit.
 - b. The applicant has the responsibility to dispose of all wastes in accordance with all applicable laws. Mobile Eating Carts are not permitted to dispose of their trash in public trash receptacles.
 - c. The applicant has agreed to move to a different property after a 96-hour time period. This time period includes any onsite set-up or break-down time.
 - d. The property is zoned to allow for food and beverage vending and the location meets all applicable zoning requirements of the underlying zoning district. The property owner for each location must provide a written statement giving the Mobile Eating Cart operator permission to operate on the property. A site plan shall be provided by the applicant or property owner for each proposed site upon which the Mobile Eating Cart would like to temporarily locate. The operator shall keep these records up to date with the Planning Office.
 - e. The applicant agrees to locate on private property such that they will not cause an unsafe traffic or pedestrian situation.
- E. Intermediate-Term Permit on Private Property. Mobile Eating Carts may be approved for an Intermediate-Term Permit to locate on private property after meeting the following conditions.
- a. The applicant has paid an annual permit fee of \$400.00, unless they also hold a public permit.
 - b. The applicant has the responsibility to dispose of all wastes in accordance with all applicable laws. Mobile Eating Carts are not permitted to dispose of their trash in public trash receptacles.
 - c. The applicant has agreed to move to a different property after a 90-day time period. This time period includes any onsite set-up or break-down time.
 - d. The property is zoned to allow for food and beverage vending and the location meets all applicable zoning requirements of the underlying zoning district. The property owner for each location must provide a written statement giving the Mobile Eating Cart operator permission to operate on the property. A site plan shall be provided by the applicant or property owner for each proposed site upon which the Mobile Eating Cart would like to temporarily locate. The operator shall keep these records up to date with the Planning Office.
 - e. The applicant agrees to locate on private property such that they will not cause an unsafe traffic or pedestrian situation.
 - f. The applicant must obtain conditional use approval from the Planning Commission prior to setting up the Mobile Eating Cart.

SECTION 4.5.5 Manufacturing Zone Regulations

4.5.5.1 M Manufacturing Zone

<u>Manufacturing Uses</u>	<u>M1</u>	<u>M2</u>
Major Manufacturing, Processing, Packaging (1)	P	N
Light Manufacturing < 16,000 square Feet (2)	P	P

Commercial Digital Asset Mining	P	p
Printing, Lithographing, Publishing	P	P
Manufacturing Accessory Buildings/Storage	P	P
Major Wholesale, Distribution, Warehousing, Shipping (3)	P	N
Light Wholesale, Warehousing < 16,000 square Feet (3)	P	P
Lumber and Building Supply Warehouses/Yards (4)	P	P
Freight/Truck Terminals (5)	P	N
Machine Shops (6)	P	P
Commercial Storage Units/unconditioned	P	P
Commercial Storage Units/Temperature Controlled	P	P
Utility Warehouses and operations Centers	P	P

1/ Manufacturing, compounding, processing, packaging, and/or assembling of products which by the nature of the operation, do not produce noise, dust, odor, or vibration detrimental or dangerous to the health, safety, or general welfare of the community.

2/ Light Industrial/Manufacturing Zone

Minor assembly, installation, packaging and warehousing that does not involve major mechanical manufacturing, chemical use or compounding, food processing or major packaging operations; and that do not produce noise, dust, odor or vibration detrimental or dangerous to the health, safety or general welfare of adjacent properties. Facilities in M-2 zones are limited to no more than 16,000 square feet and outdoor storage is prohibited.

3/ Distribution and Warehousing is planning space, usually a large commercial building for handling, shipping, transport, and storage of goods. Therefore, warehousing refers to all the processes involved in the storage and handling of goods in such a planned space.

4/ Refers to Large Lumber Storage, supply, and Sales Warehouses greater than 12,000 square feet where material is bulk stored in outdoor yards and facilities on acre or greater.

5/ A Freight or Truck Terminal is one that involves the parking, servicing, Logistical scheduling of Transport type trucks or a connecting facility where carriers transfer shipments and rearrange trucks, in order to route them in the correct direction. Commonly these facilities have loading docks where trucks enter and leave following unloading or loading.

- 6/ A machine shop is one that uses mechanical presses, drills, cutting tools, and other metal working equipment to repair, manufacture, repurpose, modify, or replace mechanical parts and equipment.

4.5.5.2 Conditional Uses Permitted M Zone

1. Scrap yards as specifically defined in local ordinances may be permitted in this zone if in compliance with the following conditions:
 - a. Every effort shall be made to operate all functions of the business in a clean and orderly manner.
 - b. All scrap yards must be completely enclosed to all adjoining roadways and adjacent uses with a fence, visual screening or wall that is of sufficient height and density to hide the contents for the yard from public view. The owner shall remain responsible for the upkeep and repair of such facilities so long as the use continues.
 - c. Driveways to ensure unobstructed access to the yard shall be maintained.
 - d. Fire safety standards of the State of Arkansas Fire Prevention Code shall be met.
2. Mixed use developments including significant components of manufacturing or warehousing and distribution combined with professional, technical and sales functions may be permitted within the M district, subject to reasonable conditions regarding compatibility, screening, ingress and egress with neighboring uses.
3. There are no conditional uses permitted in the M-2 zone

4.5.5.3 Area and Bulk Regulations

	Light Industrial /		
Title	Manufacturing	Manufacturing	Agricultural
Abbreviation	M1	M	A-1
Maximum Density			
Single Family detached	No new single-family residential subdivisions permitted. Only one residence per existing lot may be placed. No min lot area	No new single-family residential subdivisions permitted. Only one residence per existing lot may be placed. No min lot area.	1 unit/acre
Single Family attached (townhome on indiv. lots)	NA	NA	NA
Single Family Zero Lot Line	NA	NA	NA
Two Family	NA	NA	NA
Three Family	NA	NA	NA
Four Family	NA	NA	NA
Multi Family	NA	NA	NA
Mixed Use Development	NA	NA	NA
Non Residential Lot Area (SF)	Min. Lot Size 1 acre	Min. Lot Size 5 acres	Min. Lot Size 1 acre

Setbacks SF detached			
Front (existing lots)	20'	20'	35'
Front (new subdivision developments)	20'	20'	35'
Side (min)	5'	5'	15'
Side (street)	25'	25'	25'
Side (street-new subdivision developments)	25'	25'	25'
Rear	10'	10'	10'
Setbacks SF attached			
Front	NA	NA	NA
Interior unit side	NA	NA	NA
Exterior unit side	NA	NA	NA
Side (street)	NA	NA	NA
Rear	NA	NA	NA
Setbacks SF Zero Lot Line			
Front	NA	NA	NA
Side	NA	NA	NA
Side (spacing)	NA	NA	NA
Side (street)	NA	NA	NA
Rear	NA	NA	NA

Setbacks Two family and MF			
Front	NA	NA	NA
Side (each, min)	NA	NA	NA
Side (street)	NA	NA	NA
Rear (from property line)	NA	NA	NA
Min Lot Width Non-Residential	200'	250'	NA
Maximum height			
Fire department approval required for R3 over 60'	NA	NA	60'
Accessory Structure Setbacks	5' from property line 10' from other structures	5' from property line 10' from other structures	5' from property line 10' from other structures
Accessory Structure Max Height	2 Stories	2 Stories	2 Stories

SECTION 4.6 HOME OCCUPATIONS

OCCUPATIONS PERMITTED IN RESIDENTIAL STRUCTURES UTILIZED FOR RESIDENTIAL PURPOSES IN RESIDENTIAL DISTRICT – SEE DEFINITION SECTION 4.3

4.6.1 An occupation may be carried on in a residential structure in a residential use area only if such occupation meets all of the following conditions:

- 4.6.1.1 Does not involve the use of commercial vehicles.
- 4.6.1.2 Does not require the use of more than two (2) rooms otherwise normally considered as living space.
- 4.6.1.3 No alterations to the residential structure solely to accommodate the Home Occupation shall be allowed
- 4.6.1.4 Does not have a sign in excess of six (6) square feet to denote the business, occupation, or profession (and such sign must be attached to the structure). No illuminated signs shall be allowed.
- 4.6.1.5 Does not involve the display of goods and services or on-site sales of goods or merchandise.
- 4.6.1.6 Only one additional employee, not living in the residence, shall be allowed
- 4.6.1.7 No more than two customers at a time shall be allowed
- 4.6.1.8 Off-Street Parking, in addition to any require34d for normal residential use, shall be provided as follows:
 - One additional space for customers (if applicable)
 - One additional space for employee not living in residence (if applicable)
- 4.6.1.9 The Home Occupations shall not create a nuisance to surrounding residents and neighbors including, without limitation, excessive odor, dust, smoke, vibration, noise, light, heat, glare, electrical disruption, or similar disturbances.
- 4.6.1.10 The Home Occupation may not be sited in a garage IF such garage is required to provide off-site parking that is required elsewhere in the zoning regulations.
- 4.6.1.11 Regardless of any other requirement's, such Home Occupation must comply with all Fire, Building, Mechanical, and Safety Codes applicable within the State of Arkansas and City of Prairie Grove.

4.6.2 Business License Required. Any person operating a home occupation in the City of Prairie Grove is subject to the same business licensing requirements as a commercially zoned business. By acquiring a business license in the City, the applicant is certifying they meet the regulations as listed in 4.

SECTION 4.7 ACCESSORY STRUCTURES and ACCESSORY DWELLING UNITS

4.7.1 Accessory Structures & Uses in Residential Zones shall be subject to the applicable use conditions set forth in the zoning district within which they fall and to the following general conditions:

- (1) No part of an accessory structure may extend beyond the front face of the primary structure.
- (2) Accessory structures greater than one hundred and sixty (160) square feet shall be located at least ten (10) feet from any existing dwelling or dwelling under construction. This separation shall be a minimum of eight feet (8') for smaller structures.
- (3) Accessory structures shall not infringe on any easement or right-of-way, except as allowed in subsection (6) below.
- (4) If on a corner lot, shall not project in front of the front building line required on any adjacent lot, nor closer than thirty feet (30') from the street line from which vehicular access is gained.
- (5) No portable buildings exceeding a hundred and sixty square feet (160) square feet are allowed.
- (6) A portable structure may be placed within a utility easement or established setback line, however the property owner agrees to move any such structure at their expense to allow utility easement access; and ensures the building will not cause any adverse effect on neighboring properties
- (7) Residential accessory structures shall be compatible with and harmonize with the general character of the buildings in the district. Truck trailers, metal storage containers, or other types of containers that are not buildings will not be considered accessory structures and will not be considered compatible in residential or mixed use zones, except for temporary storage when in no case shall the use exceed six (6) months.
- (8) Accessory dwelling units ("ADU") shall meet all requirements applicable to the zoning classification, the above requirements applicable to all accessory structures, and the following:
 - (A) The total coverage of all buildings and structures on any lot shall not exceed 50% of the total square footage of the lot itself.
 - (B) The ADU shall be constructed to meet all current building and fire codes.
 - (C) Portable buildings may not be used as an ADU. ADUs must be permanent structures.
 - (D) The ADU may not exceed 75% of the gross floor area of the primary dwelling unit or 1,000 square feet, whichever is less.

4.7.2 Accessory Structures and Uses in Commercial Zones shall be subject to the applicable use conditions set forth in the zoning district within which they fall and to the following general conditions:

- (1) Accessory buildings are allowed when there is a need for additional space outside of the main commercial occupancy for general merchandise, storage of materials or equipment or similar equipment or products.
- (2) Accessory buildings shall be compatible with and harmonize with the general character of the buildings in the district.
- (3) Truck trailers, metal storage containers, or other types of containers that are not buildings will not be considered accessory structures and will not be considered compatible in commercial zones, except when in no case shall the use exceed six (6) months.
- (4) Accessory structures shall meet the same building setback as other buildings in the zoning class they are located in, and shall be at least 10' from any other existing building on the lot.
- (5) No accessory building shall be constructed in a way to allow runoff, rainfall, seepage, or any other detrimental conditions to negatively affect adjoining properties.

SECTION 4.8 ADDITIONAL DISTRICT REGULATIONS

4.8.1 DAY CARE AND RESIDENTIAL CHILD CARE

Requirements applying to Child Care Centers are as follows:

4.8.1.1 Child Care in residential zones fall under the guidelines of the City's Home Occupation guidelines in Section 4.6

4.8.1.2 All Child Care Centers shall be located on a lot large enough to meet City codes and state requirements, and all portions of said lot used for outdoor play space shall be fenced in a manner to protect children from leaving the facility, protect children from outside threats, protect neighboring and adjoining properties from noise or other nuisances.

4.8.1.3 Child Care Centers shall meet all City, County and State Health Department requirements as to safety, design, facilities, equipment, and other features. The facility shall be operated in a manner that will not adversely affect other properties and uses in the area.

4.8.1.4 Child Care Centers shall provide one paved parking space for each employee at the center at any one time, plus two additional paved parking spaces.

4.8.1.5 Child Care Centers shall provide one off-street parking space for the loading and unloading of children

4.8.2 Modular and Manufactured Homes

Manufactured homes, no more than ten years old, meeting the provisions set forth in the definitions herein shall be treated as any other housing product subject to the following siting criteria and zoning allowances. Units shall be configured to conform to the general or predominant orientation, size, outward appearance, exterior siding materials, and roof pitch consistent with the residential neighborhood characteristics. All manufactured homes shall meet the current requirements of the Arkansas Manufactured Home Commission and the U.S. Department of Housing and Urban Development and all other applicable requirements of this Zoning Ordinance.

Existing Mobile homes, shall be considered non-conforming uses within the City limits.

Modular Homes will be allowed in any residential district but shall conform with all traditional characteristics of built on site homes including foundations, siding, roofing materials, and meet all applicable state and City building codes and requirements.

4.8.2.1 Special Provisions for Mobile and Manufactured Homes

The person or persons seeking to establish or locate a manufactured home, as defined herein, on an A-1 or R-2 lot, shall apply for a conditional use permit which must be approved by the planning commission before permitting the placement of the structure. In a R-3 zone, manufactured homes are allowed and may be permitted as a residential structure.

Issuance of a permit for location and occupancy of a mobile home shall be subject to the following conditions, and violation of the conditions, and violation of the conditions shall nullify the permit.

- a The mobile home will be used only as a residence;
- b The mobile home must be placed on an enclosed foundation of masonry, or permanent material (no metal, plastic, or semi-permanent skirting materials) and the wheels removed;
- c The mobile home must be connected to sanitary sewer and water service in a manner approved by the City;
- d Off-street parking must be provided for the mobile home in accordance with the requirements pertaining to parking requirements listed in the code.
- e Further, the mobile home shall comply with all setback requirements of the applicable zone where the structure will be located in.

4.8.2.2 Mobile home parks

Mobile Home Parks are no longer considered conforming uses within the City of Prairie Grove. Existing mobile home parks shall be allowed to continue under the non-conforming use provisions set forth herein.

4.8.3 RV Parks

RV parks are commercial facilities designed for parking two or more RVs on a temporary basis. RV parks are a conditional use allowed in MUB-1 and MUB-2 zoning districts. The following requirements are the minimum requirements of any RV park. The Planning Commission may require additional requirements for conditional approval on a case-by-case basis.

- a RVs may remain parked in any one RV park for no more than 6 months in any 12-month period.
- b The RV park must provide sanitary facilities for RVs parked at the facility; either through direct sewer connections or by providing a central dumping station.
- c All electrical connections provided to RVs must meet all requirements of the National Electrical Code and Chapter 11.04 of the Prairie Grove Municipal Code.
- d All driveways and parking pads shall be paved. Picnic and tent pads may be graveled or grass.
- e The addition of any skirting, anchoring, staking or other indicia of permanency to an RV is prohibited.
- f All adjacent property owners must be notified prior to applying for a conditional use permit.

4.8.4 AUTO REPAIR, SALVAGE YARDS, AND VEHICLE IMPOUND YARDS

All operations shall conform with the applicable zoning requirements for the business type listed in the USE section of this code: No person in charge of or in control of an automobile/motor vehicle repair shop or an automobile/motor vehicle towing/impound service; whether as owner, lessee, tenant, occupant or otherwise, shall allow any partially dismantled, non-operable, or wrecked automobile/motor vehicle to be stored on the premises longer than 10 days, unless said motor vehicle is stored in an enclosed building or is stored behind a 8-foot fence constructed of such material that the vehicle is not readily visible by motorists or pedestrians. A six-foot view-obstructing fence must be constructed out of materials manufactured for the construction of fences and may not be constructed out of salvaged sheet iron, or other recycled or reused products not intended for use as a fence. Any partially dismantled, non-operable, or wrecked automobile/motor vehicle shall not be located in the front 1/3 of any property or within 25 feet of any street right-of-way. Any stored, dismantled, wrecked, salvaged, or non-operable vehicle shall have all hazardous fluids and materials removed, and those fluids or materials shall be discarded, stored, or recycled by legal or environmentally accepted means and practices. The operation of any facility where the storage of wrecked or disabled cars are kept shall meet all federal or state requirements as well as any local permits.

SECTION 4.9 WIRELESS COMMUNICATION TOWERS, CELLULAR FACILITIES, AND EQUIPMENT

4.9.1 GENERAL PROVISIONS

4.9.1.1 PURPOSE AND LEGISLATIVE INTENT.

(A) The City recognizes that wireless communication facilities, and the location of them, are regulated by federal law, and this ordinance is not intended to conflict with federal law in any way. This ordinance has been adopted so that the location and installation of wireless communication facilities can be located and installed in a manner that best protects the health, welfare and safety of the citizens of Prairie Grove, and seeks to regulate the location and installation only to the extent permitted by federal wireless facilities law.

(B) It is also specifically noted that the City has reviewed publicly owned property in Prairie Grove, specifically property owned by the City and has noted that in many instances the location and institutional and public uses of that property make location of wireless facilities appropriate. This ordinance seeks to recognize this fact by encouraging the location of such facilities on City owned property wherever appropriate.

4.9.1.2 DEFINITIONS.

For the purpose of this chapter and where not inconsistent with the context of a particular section, the defined terms, phrases, words, abbreviations, and their derivations shall have the meaning given in this section. When not inconsistent with the context, words in the present tense include the future tense, words used in the plural number include words in the singular number and words in the singular number include the plural number. The word “shall” is always mandatory and not merely directory.

ACCESSORY FACILITY OR STRUCTURE. An accessory facility or structure serving or being used in conjunction with wireless facilities and located on the same property or lot as the wireless facilities including but not limited to, utility or transmission equipment, storage sheds or cabinets. Accessory Facilities includes, but is not limited to, any electric meter, concealment, telecommunications demarcation box, ground-based enclosures, back-up power systems, grounding equipment, power transfer switch, cut-off switch and vertical cable runs for the connection of power and other services.

APPLICANT. Any wireless service provider submitting an application for a wireless facilities permit for wireless facilities.

APPLICATION. All necessary and appropriate documentation that an applicant submits in order to receive a wireless facilities permit for wireless facilities.

ANTENNA. A system of electrical conductors that transmit or receive electromagnetic waves or radio frequency or other wireless signals.

BUILDING CODE. The most recently adopted or amended building code of the City of Prairie Grove.

CITY. The City of Prairie Grove as a municipality, its citizenry and the City of Prairie Grove by and through its planning commission and/or governing body.

CO-LOCATION. The use of an existing tower or other structure to support one or more antennae to provide wireless services.

COMPLETED APPLICATION. An application that contains all the submittals, information and/or data required under this chapter and necessary to enable an informed decision to be made with respect to an application.

FAA. The Federal Aviation Administration, or its duly designated and authorized successor agency.

FCC. The Federal Communications Commission, or its duly designated and authorized successor agency.

GOVERNING BODY. The governing body of the City of Prairie Grove.

GUYED TOWER. A telecommunication tower that is supported, in whole or in part, by guy wires and ground anchors.

HEIGHT. When referring to a tower or structure, the distance measured from the grade level to the highest point on the tower or structure, even if the highest point is an antenna or lightning protection device. A substantial amount of fill may not be added to the site in order to purposefully circumvent the height restrictions for towers within.

LATTICE TOWER. A tapered structure broad at the base and narrower at the top consisting of cross-members and diagonal bracing and without guyed support.

MODIFICATION or **MODIFY.** The addition, removal or change of any of the physical and visually discernable components or aspects of a wireless facility, such as antennas, cabling, equipment shelters, fencing, utility feeds, changing the color or materials of any visually discernable components, vehicular access, parking and/or equipment. Adding a new wireless carrier or service provider to a wireless facilities tower or wireless facilities site as a co-location is a **MODIFICATION**.

MONOPOLE TOWER. A telecommunication tower consisting of a single pole or spire self-supported by a permanent foundation, constructed without guy wires and ground anchors.

PANEL ANTENNA. An inconspicuous, relatively flat, square or rectangular antenna designed to be affixed to the wall of a building or structure in order to receive and transmit signals from a telecommunication device.

PERSON. Any individual, corporation, estate, trust, partnership, joint stock company, association of two or more persons having a joint common interest, or any other entity.

PERSONAL WIRELESS SERVICES (PWS) or **PERSONAL COMMUNICATIONS SERVICE (PCS).** These terms shall have the same meaning as defined and used in the 1996 Wireless facilities Act.

PLANNING COMMISSION. The Planning Commission of the City of Prairie Grove.

SMALL CELL TELECOMMUNICATIONS FACILITY ("SMALL CELL"). A facility, excluding a satellite television dish antenna, established for the purpose of providing wireless voice, data and/or image transmission within a designated service area. A small cell telecommunications facility must not be staffed, and consists of one or more antennas attached to a Support Structure. An antenna or wireless antenna base station, which provides wireless voice, data

and/or image transmission within a designated service area as part of a small cell telecommunications facility, and may not be larger than a maximum height of three (3) feet and a maximum width of two (2) feet.

A small cell telecommunications antenna may be installed on existing rooftops, structures or support structures where permitted. A small cell telecommunications facility also consists of related equipment, which may be located within a building, an equipment cabinet outside a building, an equipment cabinet on a rooftop when in a commercial zone or attached to a commercial structure, or when in a residential zone, attached to a residential structure or rooftop, or an equipment room within a building. Such related equipment shall have a maximum square footage of ten (10) square feet and a maximum height of two (2) feet or facilities comprised of such higher limits as the FCC has excluded from review pursuant to 54 U.S.C. §306108. Accessory Facilities may be located outside the primary equipment, and if so located, are not to be included in the calculation of equipment volume.

The placement of all antennas and equipment must comply with all applicable safety standards, including but not limited to, not exceeding the OSHA standards for RF exposure.

STATE. The State of Arkansas.

STEALTH OR STEALTH TECHNOLOGY. Technology or practice intended to minimize aesthetic and visual impacts on the land, property, buildings, and other equipment adjacent to, surrounding, and in generally the same area as the requested location of such wireless facilities towers and equipment, which shall mean using the least visually and physically intrusive tower and/or equipment that is not technologically or commercially impracticable under the facts and circumstances.

STEALTH FACILITY. Any stealth telecommunication tower or equipment that is designed using stealth technology to blend into the surrounding environment. Examples of stealth facilities include, but are not limited to, architecturally screened roof-mounted antennas, antennas integrated into architectural elements, and telecommunication and/or personal wireless services towers designed to look like flag poles, different varieties of trees, tree towers and power poles, which shall mean using the least visually and physically intrusive tower and/or equipment that is not technologically or commercially impracticable under the facts and circumstances

SUBSTANTIAL CHANGE/ MODIFICATION

Substantially change means

- 1) the mounting or installation of the proposed antenna on the existing wireless facility would increase the existing height of the existing wireless facility by more than (10%) ten percent, or by the height of one additional antenna array with separation from the nearest existing antenna not to exceed (20') twenty feet, whichever is greater, except that the mounting of the proposed antenna may exceed such size limits if necessary to avoid interference with existing wireless communications equipment;
- 2) the mounting of the proposed antenna would involve adding an appurtenance to the body of the existing wireless facility that would protrude from the edge of the existing wireless facility more than (20') twenty feet, or more than the width of the existing wireless facility at the level of the appurtenance, whichever is greater or
- 3) expansion of the boundaries of the leased or owned property surrounding the existing wireless facility by more than (10%) ten percent in area.

Ordinary repair and/or maintenance (which includes the replacement or upgrade of components with substantially similar components), without any material addition, removal or other material modification of any visible components or aspects of a wireless facility, shall not be considered a substantial modification for purposes of this chapter.

TEMPORARY. Temporary in relation to all aspects and components of this chapter; something intended to, or that does, exist for fewer than 90 days.

TOWER. Any structure designed primarily to support one or more antennae.

WIRELESS FACILITIES. This term means the structure, facility or location designed, or intended to be used as, or used to support antennas or other wireless facilities transmitting or receiving devices, including without limit, towers of all types and kinds and structures, including, but not limited to buildings, church steeples, silos, water towers, signs or other structures that can be used as a support structure for antennas or their functional equivalent, and all related facilities and equipment such as cabling, equipment shelters and other structures associated with the site. It is a structure and facility intended for transmitting and/or receiving radio, television, cellular, SMR, paging, 911, personal communications services (PCS), commercial satellite services, microwave services and any commercial wireless telecommunication service not licensed by the FCC.

WIRELESS FACILITIES PERMIT. The official document or permit by which an applicant is allowed to file for a building permit to construct and use wireless facilities as granted or issued by the City.

WIRELESS FACILITIES STRUCTURE. A structure used in the provision of services described in the definition of **WIRELESS FACILITIES**.

4.9.1.3 OVERALL POLICY, GOALS, AND INTENT.

In order to ensure that the placement, construction, and material modification of wireless facilities are conducted with due regard for the City's health, safety, public welfare, environmental features, the nature and character of the City and neighborhoods and other aspects of the quality of life specifically listed elsewhere in this chapter, the City hereby adopts an overall policy with respect to a wireless facilities permit for wireless facilities for the express purpose of achieving the following goals:

- (A) Provision of adequate wireless services throughout the City to provide the citizens, businesses, healthcare facilities, schools, and other institutions with the coverage and capacity needed,
- (B) Requiring a wireless facilities permit (in adherence with federal laws as interpreted by the FCC) for any new, co-location or substantial modification of a wireless facility.
- (C) Implementing an application process for person(s) seeking a wireless facility permit.
- (D) Establishing a policy for examining an application for and issuing a wireless facilities permit that is both fair and consistent.
- (E) Promoting and encouraging, wherever possible, the sharing and/or co-location of wireless facilities among service providers.
- (F) Promoting and encouraging, wherever possible, the placement, height and quantity of wireless facilities in such a manner, including but not limited to:
 - i. Requiring the use of stealth or camouflaged wireless facilities technology to minimize aesthetic and visual impacts on the land, property, buildings, and other facilities adjacent to, surrounding, and in generally the same area as the requested location of such wireless facilities, which shall mean using the least visually and physically intrusive facility that is not technologically impracticable under the facts and circumstances.

- ii. Requiring the screening of the tower base and accessory ground equipment.
- iii. Requiring attractive screening, vegetation and landscaping where appropriate.
- iv. Minimization of noise and light.
- v. Creation of an environment where multiple carriers can be placed on each tower and needless over-proliferation of towers throughout the City is avoided.
- vi. Requiring appropriate environmental compliance.

4.9.1.4 PERIODIC REGULATORY REVIEW.

- (A) The City may at any time conduct a review and examination of this entire ordinance.
- (B) If after such a periodic review and examination of this ordinance, the City determines that one or more provisions of this ordinance should be amended, repealed, revised, clarified, or deleted, then the City may take whatever measures are necessary in accordance with applicable law in order to accomplish the same. It is noted that where warranted, and in the best interests of the City, the City may repeal this entire ordinance at any time.
- (C) Notwithstanding the provisions of divisions (A) and (B) of this section, the City may at any time and in any manner (to the extent permitted by federal and state law), amend, add, repeal, and/or delete one or more provisions of this ordinance.

4.9.1.5 PERMIT REQUIRED.

- (A) Placement of New Wireless Facilities or Communication Towers
 - i. All New Communication or Wireless Facility Towers shall be required to first apply for and obtain a Conditional Use Permit from the City prior to applying for a wireless facilities or communications tower permit.
 - ii. If a Conditional Use Permit to allow a new tower is approved by the City, no person shall be permitted to site, place, build, construct, or substantially modify a wireless facility after the effective date of this ordinance without having first completed the wireless facilities application and permit process and obtain the approval and wireless facilities permit from the City.
 - iii. Notwithstanding anything to the contrary in this section, no wireless facilities permit shall be required for those facilities listed in 4.9.1.6.
- (B) No person shall perform any construction of or on a wireless facility without having first obtained a building permit for such construction. In order to obtain a building permit for a wireless facility, the applicant must complete the wireless facilities permit process in addition to the building permit application.
- (C) No person shall use a wireless facility for which a wireless facilities permit is required without the final inspection and approval of the wireless facility showing that the construction of the facility meets all requirements and conditions of the wireless facilities permit, and that all applicable building codes and related building requirements have been met.
- (D) An applicant for or holder of a wireless facilities permit shall obtain, at its own expense, all permits and licenses required by applicable law, rule, regulation or code, and must maintain the same, in full force and effect, for as long as required by the City, the Federal Communications Commission or other governmental agencies having jurisdiction over the wireless facility.
- (E) Repair and maintenance of a wireless facility shall not require a wireless facilities permit.

4.9.1.6 EXEMPTIONS.

The following shall be exempt from this chapter:

- (A) The City's fire and police departments or other public service facilities.
- (B) Over-the-air reception devices including the reception antennas for direct broadcast satellites and other customer-end antennas that receive and transmit fixed wireless signals that are primarily used for reception.
- (C) Facilities that are no more than thirty (30) feet in height that are used exclusively for private, non-commercial radio and television reception and private citizen's bands, and other similar non-commercial wireless facilities unless otherwise subject to applicable zoning and building code requirements.
- (D) Improvements to an existing facility that does not constitute a substantial modification as defined herein.
- (E) Small Cell Facilities as defined in 7.76.01. Small Cell Facilities shall comply with the requirements of Section 7.76.15.

4.9.1.7 APPLICATION.

- (A) All applicants for a wireless facilities permit shall comply with the requirements set forth in this ordinance. Applications for wireless facilities shall be submitted to the City which, shall at its discretion obtain the services of engineers, consultants or governmental agencies or officials to review, analyze, evaluate and make their evaluations and recommendations to City Staff and to the commission.
- (B) The City may reject applications not meeting the requirements stated herein or which are incomplete (within the federally mandated timeframe). An application will be considered complete when the applicant has provided all submittals required by this section, including but not limited to all required data, reports, attachments, certifications, and authorizations.
- (C) Any and all written representations made by the applicant to the City during the application process, and oral representations made on the record during a hearing before the Prairie Grove Planning Commission or other public meeting, shall be deemed a part of the application and may be relied upon in good faith by the City and the members of its commission.
- (D) An application for a wireless facilities permit shall be signed on behalf of the applicant by the person or persons preparing the same and with knowledge of the contents and representations made therein and attesting to the truth and completeness of the information.
- (E) The applicant shall provide written and notarized documentation to verify it has the right to proceed as proposed on the site and to employ such easements and/or other property interests to access the site as may be necessary for repair and maintenance of the facility. Such documentation may consist of an executed warranty deed or other conveyances clearly depicting the site and all easements for utilities, and ingress and egress.
- (F) The applicant shall include a statement in writing:
 - i. That the applicant's proposed wireless facilities shall be maintained in a safe manner, and in compliance with all conditions of the wireless facilities permit, without exception, as well as all applicable building codes and ordinances, including any and all applicable City, state and federal laws, rules, and regulations;

- ii. That the construction of the applicant's wireless facilities is legally permissible.

(G) That all engineering certifications shall bear the signature and seal of a professional engineer licensed in the State of Arkansas.

(H) **Wireless Communications**

The following general requirements shall apply to all new wireless communications facilities.

- i. Noise requirements. Equipment used in connection with a tower or antenna array shall not generate noise that can be heard beyond the site. This prohibition does not apply to air conditioning units no noisier than ordinary residential units or generators used in emergency situations where regular power supply for a facility is temporarily interrupted; provided that any permanently installed generator shall be equipped with a functional muffler and any onsite fuel storage meet all applicable building codes.
- ii. Compliance with federal regulations. Applicant shall comply with all applicable federal regulations. Proof of compliance shall be provided before the issuance of the facility building permit, or after the facility's construction.
- iii. *Lighting and signage.* Wireless communications facilities shall be lighted only if required by the Federal Aviation Administration (FAA). Security lighting or motion-activated lighting may be used around the base of a tower and within the wireless communication facility, provided that the lighting is shielded in such a way that no light is directed towards adjacent properties or rights-of-way.
- iv. Signs shall be limited to those needed to identify the property and the owner and warn of any danger. No signs, symbols, identifying emblems, flags, or banners shall be allowed on towers.
- v. No new wireless communication facilities shall be allowed in the view shed of the Prairie Grove Battlefield State Park.

(I) **New towers.** New wireless communications towers shall meet the following requirements:

- i. *Type of towers allowed.* New towers shall be limited to monopole type structures (with internal antennas) or other stealth/camouflaged type tower structures.
- ii. *Tower or antenna height limitations.* Towers or tower structures are permitted to a maximum height of 150 feet.
- iii. *Safety zone.* The minimum distance from the base of any tower to any residential dwelling unit shall be the tower height plus fifty percent (50%) or the zoning/subdivision required setback, whichever is greater, unless all persons owning said residence or the land on which said residences are located sign a consent for the construction of said tower. This setback is considered a "safety zone." In the event that an existing structure (i.e. existing water tower, building or pole) is proposed as a mount for a wireless communication facility, a safety zone shall not be required
- iv. *Camouflaging or stealth technology for new towers.* If the applicant demonstrates that it is not feasible to locate on an existing structure, towers shall be designed to be camouflaged including, but not limited to, use of compatible building materials and colors, screening, landscaping, and placement within trees, and other structures that may screen or partially screen the view of the tower from adjacent properties or rights-of-way.

- v. *Color of towers.* To the extent that any tower or antenna extends above the height of the vegetation immediately surrounding it, they shall be a neutral color, painted or unpainted, unless the FAA requires otherwise.
- vi. *Information required to process new tower Conditional Use Permit requests.*
 - a) Provide a map of the approximate geographic area that your project will serve;
 - b) All new tower applications shall include a letter of intent to locate from at least one carrier.
 - c) Provide a map showing the approximate location of all other existing communication towers within the area and a written explanation as to why co-location is not possible on an existing tower structure. Describe your efforts to co-locate your facility on one of the poles or towers that currently exists, or is under construction. The applicant should demonstrate a good faith effort to co-locate with other carriers. This paragraph does not apply to applicants who desire to construct a tower for the primary purpose of attracting other persons to collocate on the tower.
 - d) If the proposed tower is being constructed to provide service for a particular communications carrier, please provide a map that shows other adjacent existing or adjacent planned facilities that will be used by the wireless communication service provider who is making the application;
 - e) Provide a scaled site plan containing information showing the property boundaries, proposed tower lease area (if applicable), proposed tower, existing land use, surrounding land uses and zoning, access road(s) location and surface material, existing and proposed structures and topography. The plan shall indicate any existing significant trees or vegetation, proposed landscaping, fencing, parking areas, location of any signage and specifications on proposed lighting of the facility. The proposed surface material of the ingress/egress shall be considered in regard to compatibility with the surroundings.
 - f) Provide a letter stating why the proposed site was chosen.
 - (1) Please submit a written statement describing how your proposed site and plan meet the City of Prairie Grove's "Statement of Goals and Intent" (As listed in Section 3(f) of this ordinance)
 - (2) Each Goal should be addressed individually and in detail.
 - (3) The document should also include: visual aspects, setbacks, and proximity of single-family residences;
 - (4) Describe how you will accommodate other antenna arrays that could co-locate on your facility. Describe how this accommodation will impact both your pole or tower, and your ground mounted facilities. Provide documentation of your provider's willingness (if applicable) to accommodate other providers who may be able to co-locate on your facility.
- vii. *Optional balloon test and crane test photographs.* If the Planning Commission or City Staff find it necessary, the proposed tower shall be photographed from four locations taken 90° apart and (three

hundred) 300 feet from the center of the tower (or wherever the tower can be seen best if three hundred, 300 feet from the center of the tower the view is obstructed, etc.). The proposed tower shall be superimposed on the photographs. A balloon or crane test may be performed to illustrate the height of the tower and photographed from the same four locations. The four locations shall be approved by the Planning Administrator (or other City designee).

- viii. *Sight line representation.* A sight line representation shall be drawn from four points 90° apart and 100 feet from the proposed tower. Each sight line shall be depicted in section, drawn at one-inch equals (forty) 40 feet. The sections shall show all intervening trees and buildings.

(J)
granted

Review and Construction Requirements for new Communication Towers if Conditional Use Permit is

i. *Structural integrity and inspections of towers.*

- a) If a conditional use permit for the tower is approved, the applicant shall provide a complete set of plans for the proposed tower and a site plan of the property or proposed lease area.

(1) Tower Plans:

- (a) Engineer Stamped Plans for the proposed Tower and an accompanying structural analysis
- (b) Engineer stamped plans for the proposed tower foundation based on the local geotechnical information gathered for the specific site.
- (c) A statement that the tower meets or exceeds design criteria for federal requirements regarding the construction of the tower.

(2) Site Plan

- (a) Name & address of owner, applicant & surveyor.
- (b) Date, scale (1"-100' preferred), and north arrow.
- (c) Vicinity map covering a minimum of one mile with a scale and north arrow indicating surrounding roads, municipal limit lines, growth area boundaries, state lines & county lines as applicable
- (d) Legal description of the property on which the tower is to be placed, with dimensions and angles sufficient to locate all lines. Property shall be located by Section, Township and Range, and tied to the nearest defined and referenced Section or Quarter Section Corner.
- (e) The precise location and dimensions of the proposed tower or existing tower as it is to be modified.
- (f) The location and identification of existing roads or access ways within and to the property (including proposed access easements).

- (g) The location and size of existing access and/or utility easements on or adjoining the property, or a note there are none.
 - (h) The location of flood areas on the property or a note indicating there are none.
 - (i) The location of USGS documented perennial and intermittent watercourses on or adjoining the property or a note indicating there are none.
 - (j) The area set aside to accommodate future outbuildings and/or equipment pads to be placed on the property in the future in connection with the tower
 - (k) The location of all personal residences within the height of the tower (plus ten percent- 10%) from the perimeter of the base of the tower.
 - (l) The names of the owners of such residences and copies of their signed consent to the placement of the proposed tower (if applicable).
 - (m) The existing topography on the property, as per existing U.S. Geological Services survey maps or other more current source
 - (n) A note describing any plat and deed restrictions, or a note indicating there are none.
- (3) If a wireless communication facility fails to comply with the requirements and criteria above and within this code and constitutes a danger to persons or property, then upon written notice being provided to the owner of the tower, the owner shall have 90 days to bring such tower into compliance with such requirements and criteria. If the owner fails to bring such tower into compliance within 90 days, the City may terminate the owner's conditional use permit and/or cause the removal of such tower (at the owner's expense). In no instance shall this process prevent the City from taking whatever action to protect the public from imminent harm. Including but not limited to immediate removal of a tower.
- (4) By making application hereunder, the applicant agrees to regularly maintain and keep in a reasonably safe and workmanlike manner all towers, antenna arrays, fences and outbuildings owned by applicant that are located in the City. The applicant further agrees to conduct inspections of all such facilities not less frequently than every 12 months. The applicant agrees that said inspections shall be conducted by one or more designated persons holding a combination of education and experience so that they are reasonably capable of identifying functional problems with the facilities.
- b) Security fencing and anti-climbing device. Using security fencing, towers and equipment shall be enclosed by opaque fencing not less than eight feet in height. The fencing material shall be wood or other opaque fencing material. The tower shall also be equipped with an appropriate anti-climbing device. The facility shall place signs indicating "No Trespassing," "High Voltage," or other pertinent information on the outside of the fence, unless it is decided that the goals of this ordinance would be better served by waiving these provisions in a particular instance. Barbed wire fencing or razor wire shall be discouraged.

- c) *Vegetative screening recommendations.* It is recommended that wireless communications facilities shall be surrounded by buffers of dense tree growth and understory vegetation in all directions to create an effective year-round visual buffer. Trees and vegetation may be existing on the subject property, installed as part of the proposed facility, or a combination of both. The need for screening shall be evaluated during the Conditional Use Permit process. If additional vegetative screening is determined to be necessary, the Planning Commission will consider adding a condition of approval that takes into account the following:
- (1) Vegetative screening should be designed to visually screen the area by using groups of clustered vegetation to achieve a screen natural in appearance. The screened area may exclude access and utility easements.
 - (2) The screened area should include a mixture of evergreen and deciduous vegetation types of varying heights. Depending on the setting and existing vegetation on or near the tower property or leased area, a landscape easement adjacent to the site/leased area may be required. If a landscape easement is needed, it must be at least a minimum of 15' in width.
 - (3) In order to effectively screen the tower site, for every 25 linear feet of perimeter of the leased area, property line (or defined property used for the tower site), the following landscaping is recommended to be installed:
 - (a) One (1) large tree
 - (b) Two (2) understory trees
 - (c) Five (5) large shrubs
 - (4) If there is existing vegetation onsite or within close proximity that currently provides screening for the site, then the Planning Administrator may determine that lesser amounts of additional landscaping may be needed. Offsite landscape easements may be required to assure the existing vegetation persists.
 - (5) A landscape plan depicting varieties, size (upon planting), and proposed placement of all landscape materials shall be submitted with the Wireless Facilities application or the Conditional Use Permit application if necessary. All proposed or existing easements should also be shown (utility, access, rights of way, and landscape easements, etc.).
 - (6) Irrigation shall not be required, but the owners shall be required to care for the planted vegetation and replace any vegetation that does not survive.
- d) *Setbacks from property lines.* Wireless communication facilities shall meet current setbacks as required by zoning.

ii. ***Co-location.***

The Planning Commission, following an administrative review without the requirement of an issuance of conditional use permit, may approve the following antenna installation (if said application is in compliance with all applicable requirements).

- a) *Locating on existing structures.* Installation of an antenna or antenna array on an existing structure other than a tower (such as a building, light pole, electric transmission tower, water

tank, or other free-standing non-residential structure) provided the antenna or antenna array and its support are not more than 20 feet in height.

- b) *Locating on existing towers.* Additional antennas may be placed or upgraded upon any tower so long as such additional antenna would not violate any requirements of the conditional use permit or other provisions of the original approval. For the purpose of co-location, the applicant must submit information from a licensed professional engineer certifying the capacity of the tower for additional providers and a letter of intent from the applicant indicating their intent to share space.

Existing antennas may be replaced by updated antennas or equipment, however, a statement regarding the loading of the replacement equipment shall be submitted and the applicant shall certify that the loading of the proposed equipment shall be less than or equal to the existing equipment. If no certification can be made, then a structural analysis for the tower and the proposed equipment shall be required.

iii. *Other requirements.*

- a) *Wireless communications facilities placed on top of buildings.* When a wireless communications facility extends above the roof height of a building on which it is mounted, every effort shall be made to conceal the facility within or behind existing architectural features to limit its visibility from public ways. Stealth (RF Transparent) screening visually appropriate to the specific site should be explored as an effective compatibility tool.
- b) *Wireless communications facilities placed on sides of buildings.* Antennas which are side-mounted on buildings shall be painted, constructed of, or have a stealth covering made up of materials to match the color of the building material directly behind them.
- c) *Expiration.* Once the CUP is approved, the applicant shall have one year to submit an application for a wireless facilities construction permit.

Except when due to circumstances beyond an applicant's reasonable control, all approved applications for a wireless facilities permit shall be constructed within 1 year of receiving building permit, or both CUP and building permit shall be deemed void and new applications must be submitted.

4.9.1.8 APPLICATION REVIEW COSTS.

(A) The City may hire any engineer and/or consultant necessary to assist the City in reviewing and evaluating applications, and for inspecting construction and/or modification of wireless facilities

(B) For new towers, the CUP application fee shall be a non-refundable review fee of \$2,000.00 (two thousand dollars) at the time the application is accepted. In the event that engineering review fees exceed \$2,000.00, the owners and/or developers shall reimburse the City of Prairie Grove for all additional expenses incurred throughout the CUP review process.

(C) For co-location or new antennae applications, the application fee shall be a non-refundable review fee of \$300.00 (three hundred dollars) at the time the application is accepted. In the event that engineering review fees exceed \$300.00, the owners and/or developers shall reimburse the City of Prairie Grove for all additional expenses incurred throughout the review process.

(D) For administrative wireless facility applications for a new tower (following the approval of a CUP to allow a new towers), the application fee shall be a non-refundable review fee of \$500.00 (five hundred dollars) at the time the application is accepted. In the event that engineering review fees exceed \$500.00, the owners and/or developers shall reimburse the City of Prairie Grove for all additional expenses incurred throughout the review process.

4.9.1.9 PUBLIC HEARING AND NOTICE REQUIREMENTS.

Notification of public hearings for conditional use permits shall occur as follows:

(A) *Public Hearing Required.* A public hearing shall be held by the Planning Commission for consideration of a conditional use permit.

(B) *Notice of Public Hearing.* The applicant shall provide the following notice:

- i. *Who Gets Notice.* Notice of the proposed conditional use permit shall be given to all adjacent landowner, and all property owners within a distance equal to 300% of the total height of the proposed tower.
- ii. *Methods of Notice.* Notice shall be provided by the following methods, as required by this chapter:
- iii. *Written Notice.* Written notice shall be provided at least fifteen (15) days prior to Planning Commission. Proof of notice shall be provided as required by the Prairie Grove Zoning Regulations.
- iv. *Posted Notice.* The City shall post notice at least fifteen (15) days prior to the Planning Commission meeting. Proof of notice shall be provided as required by this chapter.

4.9.1.10 ACTION ON APPLICATION.

(A) The Planning Commission will undertake a review of a completed application in a timely fashion, compliant with federal regulations, consistent with its responsibilities, and shall act within a reasonable period of time given the relative complexity of the application and the circumstances, with due regard for the public's interest and need to be involved, and the applicant's desire for a timely resolution. When an application is complete, including the submission of all reports and other submittals required hereunder and same has been reviewed by the City's engineer and/or consultant, the Planning Commission shall act on the proposed permit within parameters compliant with federal regulations.

(B) After formally considering the application, the Planning Commission may approve, approve with conditions, or deny a wireless facilities permit, based on the applicant's compliance with the requirements of this ordinance. Its decision shall be in writing and shall be supported by substantial evidence contained in a written record and statements made by the applicant at public hearings and meetings of the Planning Commission.

(C) If the Planning Commission approves the wireless facilities permit and construction of facilities, then the applicant shall be notified of such approval in writing, and the wireless facilities permit shall be issued within five (5) calendar days of the Planning Commission's action.

(D) If the Planning Commission denies the wireless facilities permit, then the applicant shall be notified of such denial in writing within five (5) calendar days of the Planning Commission's action. Such written notice shall enumerate, with particularity, the specific deficiencies, omissions, and/or instances of noncompliance with the requirements of this ordinance.

(E) If the Planning Commission denies a wireless facilities permit, and the grounds for such denial concern matters that may be cured within a reasonable time, the applicant may amend, supplement, or re-submit its application within sixty (60) days of the Planning Commission's denial, and such amendment(s), supplement(s), or re-submission shall be evaluated as part of the applicant's original application. All additional costs associated with the City's engineer and /or consultant shall be borne by the applicant.

4.9.1.11 REVOCATION OF PERMIT.

A wireless facilities permit may, following a hearing upon due prior notice to the holder of the permit, be revoked, canceled, or terminated for a violation of the conditions and provisions of the wireless facilities permit. The CUP granted for the tower or facility, may, following a hearing upon due prior notice to the holder of the permit, be revoked, cancelled, or terminated for a material violation of this ordinance and the failure to cure the violation as provided in Section 15 hereinafter.

4.9.2 HEIGHT OF TOWERS; COMPLIANCE WITH CODES AND REGULATIONS.

4.9.2.1 Maximum Height

Towers within the city limits of Prairie Grove shall not exceed 150' in height.

4.9.2.2 Compliance with Codes

All wireless facilities shall be constructed, operated, maintained, repaired, provided for removal of, modified or restored in strict compliance with all current applicable technical, safety and safety-related codes adopted by the city, state, or United States, including but not limited to the most currently adopted editions of the ANSI Code, National Electrical Safety Code and the International Building Code, as well as accepted and responsible workmanlike industry practices and recommended practices of the National Association of Tower Erectors. The codes referred to are codes that include, but are not limited to, construction, building, electrical, fire, safety, health, and land use codes. In the event of a conflict between or among any of the preceding, the more stringent rule shall apply.

4.9.2.3 Utilities Underground where feasible

All utilities at a wireless facilities site shall be installed underground, to the extent practicable, and in compliance with all laws, ordinances, rules and regulations of the City.

4.9.2.4 Ingress/Egress and Parking Required

All wireless facilities sites shall include an access road, turn around space and parking, adequate to assure emergency and service access. Maximum use of existing roads, whether public or private, shall be made to the extent practicable. Road construction shall at all times minimize ground disturbance and the cutting of vegetation. Road grades shall closely follow natural contours to assure minimal visual disturbance and reduce soil erosion in more remote areas of property zoned Agriculture. The construction of asphalt driveways and parking for facilities in industrial and commercial, and residential zones shall be in compliance with City building requirements.

4.9.2.5 Requirements for Application

The following items must be provided to the City:

- i. A copy of the FCC license applicable for the intended use of the wireless facilities.
- ii. A copy of the structural analysis or structural design report for the proposed wireless facility.

- iii. A copy of the City of Prairie Grove business license.
- iv. The applicant shall provide written documentation of FAA and FCC compliance as part of the Building/ Construction Permit application.

4.9.3 SIGNAGE.

4.9.3.1 Each wireless facility shall display a sign no larger than four square feet, containing the site identification number and emergency phone number(s) of the permit holder or other person (s) operating the facility. The sign shall be on the equipment shelter or cabinet of the applicant and be visible from the access point of the site and must identify the equipment owner of the shelter or cabinet. The signs shall not be lighted, unless applicable law, rule or regulation requires lighting. No other signage, including advertising, shall be permitted.

4.9.3.2 The applicant or future owner of the site shall update the site identification number and emergency phone number of the wireless facility as displayed on the required sign within 60 calendar days of any sale, assignment, or transfer.

4.9.4 SMALL CELL REQUIREMENTS

4.10.3.1 All new small cell individual or network applications requesting the installation of new support structures shall be approved via the Conditional Use Permit process only.

4.9.4.2 The primary goals of regulation of small cell infrastructure by the City shall be as follows:

- a. Health, safety and welfare of Citizens;
- b. Minimization of visual clutter;
- c. Minimization of the number of traditional communication towers; and
- d. Provision of good wireless service to all citizens and organizations throughout the City.

4.9.4.3 All small cell installations (and any corresponding equipment) shall be installed only with the use of stealth concealment techniques. The stealth concealment systems available allow for a variety of concealment methods including, but not limited to the following, for location on newly proposed structures:

- a. Smart poles (able to accommodate either single or multiple carriers);
 - a. Smart poles with streetlights;
 - b. Flag poles.
 - c. For location on existing pole structures:
 - d. Stealth pole toppers (completely encased antennas to match the existing poles);
 - e. Stealth base cabinet enclosures (completely encases base cabinet equipment to match existing poles).
 - f. For locations on existing building structures:
 - g. New steeple, extension to existing steeple and replacement steeple concealment structures;
 - h. Chimney concealment structures;
 - i. Chimney pot concealment structures;
 - j. Rooftop façade extension concealment;
 - k. Rooftop Cupola Concealment;
 - l. Rooftop screen concealment
 - m. Rooftop pod concealment systems;
 - n. Building Side grid concealment structures;
 - o. Rooftop or wall mounted lantern concealment structures.

4.9.4.4 Preference for co-location on existing structures

- a. In order to reduce visual clutter and the addition of vertical elements to the townscape, the applicant must attempt to co-locate the antennas and ancillary equipment on or within existing structures, poles, etc.
 - i. All stealth proposals shall visually match existing structures, poles, or infrastructure on which the antennas and/or ancillary equipment shall be mounted.
 - ii. All stealth proposals shall completely enclose, cover or otherwise disguise all elements of the proposed system.
- b. Administrative approval of co-located facilities and facilities located on existing structures is subject to the construction approval process laid out in Section 4.95. The Planning Administrator, following an Administrative Review, may approve the following facility installations:
 - i. Locating on Existing Structures. Installation of facilities on an existing structure (such as a building, light pole, electric transmission tower, water tank, or other free-standing, non-residential structure) provided that the facilities do not extend any higher than five (5) feet above the existing structure. The Planning Administrator may grant an additional variance, not to exceed ten (10) feet in height above the existing structure, when such additional height is necessary for improved functionality or safety.
- c. If no existing poles or structures are present, or are limited in nature, then the addition of new stealth poles or other stealth structures may be considered.

4.10.3.3 Requirements in the Central Business District

- a. All small cell facilities mounted on buildings in the CBD shall not be visible from the sidewalks and streets.
- b. All small cell facilities mounted on City streetlights in the CBD shall be identical.
- c. All small cell facilities mounted on other pole structures in the CBD shall be designed to mimic the historic character of the surrounding structures.

4.10.3.4 Conditional Use Permit Proposal/Application Details

- a. The applicant shall submit the following items with their proposal, in order to comply with the Conditional Use Permit requirements for small cell facilities, which are in addition to the requirements for all Conditional Use Permits in the City.
 - i. A completed Conditional Use Permit application for a small cell network.
 - ii. The appropriate review fee.
 - iii. A detailed diagram of the entire proposed small cell network for which the applicant is applying.
 - iv. Written statement detailing how the applicant has met the City's stated goals for small cell infrastructure in 7.76.15(B), as well as the Conditional Use Permit requirements for the City.
- b. The applicant should clearly depict within their proposal which antenna, equipment and other components are proposed to be located on existing structure; and which antenna, equipment and other components are proposed to be located on newly proposed structures.
- c. All small cell proposals should be submitted by the applicant for review and conditional approval as an entire network package.
 - i. The submittal package shall consist of the entire network of proposed antennas and related equipment (equipment cabinets, additional electrical service or communications cables) proposed to be installed.
 - ii. The submittal shall depict the proposed location and height of each antenna and equipment cabinet (or similar) and the stealth device used for each. The deployment of stealth techniques shall be uniform throughout the deployment or tailored to be uniform to or match particular existing structures.

4.10.3.5 Construction Approval Process

- a. If the proposed small cell application Conditional Use Permit application is conditionally approved, then the following items shall be submitted for administrative review and final construction permit approval (within 12 months of Conditional Use Permit approval):

- i. A completed application for construction of a small cell network;
 - ii. An updated submittal package as detailed in 7.76.15(E)(b) & (c). This updated package should address any conditions of the Conditional Use Permit.
 - iii. If offsite easements or agreements are needed for the placement of any antenna, cabling or ancillary equipment, copies of all easements and/or agreements shall be submitted (financial lease or agreement information may be omitted);
 - iv. Loading information for all new and proposed antennas, ancillary equipment and stealth equipment to be attached to both new and existing structures;
 - v. Detailed stealth concealment proposals for all new antennas and ancillary equipment;
 - vi. All necessary building permit application and associated fees as deemed necessary by the City.
- b. If the proposed small cell application consists only of installations proposed on existing structures or facilities as defined in 7.76.15(D)(b), then the following items shall be submitted for administrative review and final construction permit approval.
 - i. A completed application for construction of a small cell network;
 - ii. An updated submittal package as detailed in 7.76.15(E)(b) & (c);
 - iii. If offsite easements or attachment agreements are needed for the placement of any antenna, cabling or ancillary equipment, copies of all easements and/or agreement shall be submitted (financial lease or agreement information may be omitted);
 - iv. Loading information for all new and proposed antennas, ancillary equipment and stealth equipment to be attached to existing structures;
 - v. Detailed stealth concealment proposals for all new antennas and ancillary equipment;
 - vi. All necessary building permit application and associated fees as deemed necessary by the City.

4.9.5 ENFORCEMENT

4.9.5.1 PERFORMANCE SECURITY, DEFAULT, and REMOVAL.

(A) If a wireless communication facility fails to comply with the requirements and criteria in this ordinance and constitutes a danger to persons or property, then upon written notice being provided to the owner of the tower, the owner shall have 90 (ninety) days to bring such tower into compliance with such requirements and criteria. If the owner fails to bring such tower into compliance within 90 (ninety) days, the City may terminate the owner's conditional use permit and/or cause the removal of such tower (at the owner's expense). In no instance shall this process prevent the City from taking immediate action to protect the public from imminent harm, which includes but is not limited to, immediate removal of a tower.

(B) By making application hereunder, the applicant agrees to regularly maintain and keep in a reasonably safe and workmanlike manner all towers, antenna arrays, fences and outbuildings owned by applicant that are located in the City. The applicant further agrees to conduct inspections of all such facilities not less frequently than every 12 (twelve) months. The applicant agrees that said inspections shall be conducted by one or more designated persons holding a combination of education and experience so that they are reasonably capable of identifying functional problems with the facilities.

4.9.5.2 INSPECTION.

(A) In order to verify that the holder of a wireless facilities permit, and any and all lessees and/or licensees of wireless facilities, construct, maintain and operate such facilities in accordance with this ordinance and all state and federal rules and regulations, the wireless facilities permit issued for such facility, and all technical, safety, fire, building, and zoning codes, laws, ordinances and regulations and other applicable requirements, the City may inspect all facets of the permit holder's, lessee's or licensee's placement, construction, modification and maintenance of such facilities, including, but not limited to, towers, antennas and buildings or other structures constructed or located on the permitted site.

4.9.5.3 COMPLIANCE WITH FEDERAL AND STATE REGULATIONS.

(A) Any holder of such a wireless facilities permit shall adhere to, and comply with, all applicable rules, regulations, standards, and provisions of any state or federal agency, including, but not limited to, the FAA and the FCC. Specifically included in this requirement are any rules and regulations regarding height, lighting, security, electrical and RF emission standards.

(B) To the extent that applicable rules, regulations, standards, and provisions of any state or federal agency, including but not limited to, the FAA and the FCC, and specifically including any rules and regulations regarding height, lighting, and security are changed and/or are modified during the duration of a wireless facilities permit, then the holder of such a wireless facilities permit shall conform the permitted wireless facilities to the applicable changed and/or modified rule, regulation, standard, or provision within a maximum of six (6) months of the effective date of the applicable changed and/or modified rule, regulation, standard, or provision, or sooner as may be required by the issuing entity.

(C) A final determination by a state or federal agency with jurisdiction that a rule or regulation has been violated shall be grounds to revoke a wireless facilities permit.

4.9.5.4 APPEALS.

(A) All decisions by the Planning Commission regarding this ordinance must be appealed to a court of competent jurisdiction.

4.9.5.5 PENALTIES.

(A) In addition to other remedies available in this ordinance, the City may impose against the holder of a wireless facilities permit the penalties as set forth below.

(B) A failure to obtain a permit when required or a violation of any wireless facilities permit issued pursuant to this ordinance is hereby declared to be an offense, punishable by a fine not exceeding \$500 (five hundred dollars) per occurrence upon conviction. Each week's continued violation shall constitute a separate additional violation.

(C) Notwithstanding anything in this section, the holder of a wireless facilities permit may not use the payment of fines to evade or avoid compliance with this ordinance or any section of this ordinance. An attempt to do so shall subject the holder of the wireless facilities permit to termination and revocation of its wireless facilities permit. The City may also seek injunctive relief to prevent the continued violation of this ordinance, without limiting other remedies available to the City.

SECTION 4.10 PARKING and DRIVEWAY REQUIREMENTS

4.10.1 Required off-street parking In all districts, except CBD, in connection with every industrial, business, institutional, recreational, residential, or other use, there shall be provided at the time any building or structure is erected, enlarged or increased in capacity, or any open use is established or enlarged, off-street parking spaces conforming to the requirement set forth herein. The number of off-street parking spaces required for each use is set forth in this code. Separate off-street parking space shall be provided for each use located on a lot but may be combined if used jointly provided the sum total of parking space requirements for all uses is provided.

Parking Requirements - Residential						
ZONING	TYPE	Garage May Count AS	Required # of Spaces Total	% Compact	% Handicap	Allowed (within 300')
R1, R1.5 <2500 sq. ft	Single Family	1	3	0	n/a	n/a
R1,R1.5 >2500 ft		1	4	0	n/a	n/a
PUDR	Single Family < 2500 sq./ft	1	3		n/a	n/a
PUDR	Single Family >2500 sq. ft	1	4		n/a	n/a
PUDR	Multi Family	Same Requirements as R-3				
R-2	Res. 2-4 Plex	1/unit	3		n/a	n/a
	Res. 2-4 Plex one bedroom units	1/unit	2		n/a	n/a
R-3	MF 5-20 Units	n/a	3	10%	1	25%
	21-50 units	n/a	2.5	20%	1 per 25	25%
	MF > all over 50 units	n/a	2	20%	1 per 25	25%
	one Bedroom Units	n/a	2	20%	1 add per 25	25%
Mixed Use Single Family	Single Family Homes	Same as R-1, R1.5				
Mixed Use MF	Multi Family	Sames as R-2, R-3				
	Rooming House		1.25/ Resident room	20% greater >10 rooms	1 per 25	25%

Parking - Business/Commercial/Public

ZONING	TYPE	Required # of Spaces Total	% Compact	% Handicap	Off-Site Allowed (within 300')
CBD Central Business District	All Allowed	n/a unless req	n/a	n/a	n/a
B-1, B-2	Restaraunts Eat In	1/100 sq foot	20% if > 10	1 minimum and 1/25	10%
B-1, B-2	Restaraunts Drive In	1 additional space for each 8 service stalls	20% if > 10	1 minimum and 1/25	0%
B-1, B-2	Retail 10,000 sq ft and less	1/200 sq/ft of retail space	20% if > 10	1 minimum and 1/25	10%
B-1, B-2	Additional Retail > 10,000	95%	20% if > 10	1 minimum and 1/25	10%
B-1, B-2	Additioanl Retail > 20,000	90%	20% if > 10	1 minimum and 1/25	10%
B-1, B-2	Additional Retail > 30,000	85%	20% if > 10	1 minimum and 1/25	10%
B-1, B-2	Additional Retail > 40,000	80%	20% if > 10	1 minimum and 1/25	10%
B-1, B-2	Large Floor Retail Such as Furniture or Appliance Stores	1/1000 sq. ft of retail floor space	20% if > 10	1 minimum and 1/25	10%
B-1, B-2	Auto Repair Passenger Vehicles	4 parking space per service bay	20% if > 10	1 minimum and 1/25	10%
B-1, B-2	Equipment and Truck Repair	1/ parking space per 500 sq. ft	20% if > 10	1 minimum and 1/25	10%

Business/Commercial/Public Continued					
ZONING	TYPE	Required # of Spaces Total	% Compact	% Handicap	Off-Site Allowed (within 300')
B-1, B-2	Vehicle Sales	1/200 sq ft of sales office	20% if greater than 10	1 per 25	0%
B-1, B-2	Office up to 10,000 sq. ft	1/300 sq ft of office space	20% if greater than 10	1 per 25	0%
B-1, B-2	Office 10,001 - 20,000	95%	greater than 10	1 per 25	20%
B-1, B-2	Office 20,001 - 30,000	90%	greater than 10	1 per 25	20%
B-1, B-2	Office 30001 - 40,000	85%	greater than 10	1 per 25	20%
B-1, B-2	Office 40,000 or greater	80%	greater than 10	1 per 25	20%
B-1, B-2, CE	Funeral Home	1 space per 40 sq. foot of chapel space	20% if greater than 10	1 per 25	25%
B-1, B-2, CE	Theatre	1 space per 3 seats	greater than 10	1 per 25	0%
B-1, B-2, CE	Recreation Facility	1 parking space per 2 persons of designed occupancy	20% if greater than 10	1 per 25	0%
B-1, B-2, CE	Nursing Home	1 space per patient room	20% if greater than 10	1 per 25	10%, staff only
B-1, B-2, CE	Hospitals	1 space per patient space	20% if greater than 10	1 per 25	10%, staff only
B-1, B-2, CE	Clinics	1/150 sq./ft	greater than 10	1 per 25	10%, staff only
B-1, B-2, CE	Hotel/Motel				10%
B-1, B-2, CE	Hotel with conference, or meeting facilities	additional .25 spaces per person capacity of meeting space.	20% if greater than 10	1 per 25	25%
B-1, B-2, CE	Bowling Alley	4/lane	greater than 10	1 per 25	0%

Industrial/Manufacturing

ZONING	TYPE	Required # of Spaces Total	% Compact	% Handicap	Off-Site Allowed (within 300')
M Zones	Industrial Manufacturing	1 space per 200 sq ft	20% if greater than 10	1 per 25	20%
M Zones	Industrial Warehousing under 10,000 sq foot	1 space per 750 sq ft	20% if greater than 10	1 per 25	20%
M Zones	Industrial Warehousing 10,001 - 40,000 sq ft	1 space per 1500 square feet over 10,000	20% if greater than 10	1 per 25	20%
M Zones	Industrial Warehousing over 40,000 sq fot	1 space per 2000 sq ft over 40,000	20% if greater than 10	1 per 25	20%
M Zones	Storage Facilities	minimum 2 spacs with add. Space per 1000 square foot of office space	0%	1 per 25	0%

Miscellaneous and Public Parking Requirements

Other Uses/Public, Churches, Schools, etc

ZONING	TYPE	Required # of Spaces Total	% Compact	% Handicap	Off-Site Allowed (within 300')
All	Churches	1/40 sq/ft of Sanctuary or Auditorium area	20%	1 per 25	30%
All	Nursery, daycare	1 per 5 children	20%	1 per 25	0%
All	Elementary	1.5 spaces per classroom plus 2.5' feet of driveway stack space for pick ups and drop offs, per student capacity	20%	1 per 25	0%
All	Middle School	1.5 spaces per classroom plus 2.5' feet of driveway stack space for pick ups and drop offs, per student capacity	20%	1 per 25	0%
All	Jr. High	1.5 spaces per classroom plus 1.5' feet of driveway stack space for pick ups and drop offs, per student capacity	20%	1 per 25	0%
All	Sr. High/no Gym	6 spaces per classroom plus 1' foot of driveway stack space for pick ups and drop offs	20%	1 per 25	10%
All	Sr. High With Gym Added	space as needed to provide .5 spaces per person capacity of the gym.	20%	1 per 25	10%

Government and Public Facilities

Zoning	TYPE	Required #Spaces Total	% Compact	% Handicap	Off-Site Allowed (within 300')
All applicable zones	Pools, Public or Commercial	25% of Pool occupancy	20%	1 per 25	0%
All applicable zones	Parks and Playgrounds	Min. of 10, TBD by facilities and amenities provided	20%	1 per 25	0%
All applicable zones	Government Admin and Offices	1/200 square foot of office space	20%	1 per 25	0%
All applicable zones	Infrastructure and Maint Facilities w/offices	1 per office + 4 public spaces + enough parking for all trucks and equipment on site	20%	1 per 25	0%
All applicable zones	Infrastructure and Maint Facilities without/offices	4 public spaces + enough parking for all trucks and equipment on site	20%	1 per 25	0%
All applicable zones	Libraries	1 per 200 sq. ft.	20%	1 per 25	0%

4.10.2 Location of off-street parking

4.10.2.1 All parking spaces provided pursuant to this article shall be on the same lot with the building or within three hundred (300) feet thereof. The distance to any parking area as herein required shall be measured between the nearest point of the off-street parking facility and the nearest point of the building said parking area or facility is to serve. Off-site parking shall not exceed twenty-five (25) percent of the total number of spaces required by this article. The Board of Adjustment may authorize variance from this limitation for cause, which shall be an identifiable hardship. All off-site parking shall be noted on the official zoning map so as to assure maintenance of the requirement. When detached parking facilities or satellite parking lots are provided, they shall be located on property which is zoned to allow the principal use which this parking will serve or they must be approved by the Board of Adjustment. Parcels of land used as access to or from parking and/or loading areas for any land use shall conform to this requirement.

4.10.2.2 Minimum distance and setbacks

- a. Except for permitted entrance and/or exit drives, every off-street parking area shall be set back from the street right-of-way line a minimum of five (5) feet.
- b. No off-street parking area, exclusive of access drives, shall be located within three (3) feet of any other property.
- c. Minimum stall and access aisle width

a		b	curb	d	e	f	l
Parking angle	Type	Stall width	Stall to curb	Aisle width	Curb length per car	Center-to-center width of 2 row bin with access road between curb-to-curb/overlap c-c	
30°	Standard	9'	17.3'	11.0'	18.0'	45.6'	37.8'
	Compact	8'	14.9'	11.0'	16.0'	40.8'	33.9'
45°	Standard	9'	19.8'	13.0'	12.7'	52.6'	46.2'
	Compact	8'	17.0'	13.0'	11.3'	47.0'	41.3'
60°	Standard	9'	21.0'	18.0'	10.4'	60.0'	55.5'
	Compact	8'	17.9'	16.0'	9.2'	53.8'	49.8'
90°	Standard	9'	19.0'	24.0'	9.0'	62.0'	
	Compact	8'	16.0'	22.0'	8.0'		

All other consideration shall conform to acceptable published architectural/engineering standards, as approved by the Planning and Community Development Division Director.

4.10.3 Handicap Parking Requirements; all parking requirements must meet ADA

4.10.4 Off Street Loading Requirements

In addition to all other requirements, on the same premises with every

building, structure or part thereof hereafter erected, established or enlarged and occupied

4.10.5 Use of right-of-way

No portion of any public street right-of-way shall be considered as fulfilling or partially fulfilling the off-street parking requirements of this article.

No parking "bays" shall be allowed, except for residential service on residential streets. All commercial off-street parking areas and all residential off-street parking lots abutting streets shall be arranged so that ingress and egress is by forward motion of the vehicle. For the purpose of parking in the rear yard, any public dedicated alley may be used in computing the maneuvering area. (Ord. No. 05-14, Sec. 8.)

4.10.6 Surfacing

All entrance/exit drives, access drives and parking and loading area shall be graded and drained so as to dispose of all surface water accumulated thereon and shall be surfaced with a durable and dustless surface of at least an asphaltic concrete hot mix surface course. All storage areas shall be graded and drained and shall have a dustless surface of at least a single bituminous surface seal (chip seal), asphalt, concrete, or other durable dustless surfaces to be approved by the planning commission up submittal of the Large Scale Development Plan. (Ord. No. 05-14, Sec. 9.)

4.10.7 Entrance/exit drives All vehicular entrance and/or exit drives for all non-residential use, and for all residential use for five (5) or more automobiles shall meet the following requirements (All distances are to the face of the curb

- A. Minimum width of drive for two-way traffic: Twenty-four (24) feet.
- B. Minimum width of drive for one-way traffic: Fifteen (15) feet.
- C. Minimum width for drive through service lane: Nine (9) feet, with appropriate stacking lanes to avoid conflicts with internal traffic flow.
- D. Maximum width of drive: Forty (40) feet.
- E. Minimum radius to the face of the curb: Twenty-five (25) feet.
- F. Minimum distance between drives on adjoining properties: Fifty (50) feet.
- G. Minimum distance between drives on single tract: One hundred fifty (150) feet.
- H. Minimum distance of drive from the project curb line at the street intersection:
 - 1. Local street: Forty (40) feet,
 - 2. Collector street: Sixty (60) feet;
 - 3. Arterial street: One hundred twenty (120) feet. (Ord. No. 05-14, Sec. 10.)

4.10.8 Lighting Adequate lighting shall be provided if the parking facilities are used at night. This lighting shall be installed and maintained in a manner not to shine, reflect or cause glare into abutting premises or roads and highways. (Ord. No. 05-14, Sec. 11.)

4.10.9 Reduction of parking area No automobile off-street parking facility shall be reduced in area or encroached upon by buildings, vehicle storage or any other use where such reduction or encroachment will reduce the area below that required. (Ord. No. 05-14, Sec. 12.)

4.10.10 Expansions When a building or structure erected prior to June 16, 2005, shall have and will undergo any increase in number of gross floor area, dwelling units, or change in use unit designation the existing facility and all additional facilities shall be brought into compliance for parking as a condition for obtaining a certificate of occupancy and business license. (Ord. No. 05-14, Sec. 13.)

for manufacturing, storage, warehouse, goods, display, department store, wholesale, market, hotel, laundry, dry cleaning or other uses involving the receipt of distribution by vehicles of materials or merchandise, there shall be provided and maintained adequate space for standing, loading and unloading in order to avoid undue interference with public use of the street or alley.

Such space, unless otherwise adequately provided for, shall include a twelve (12) foot by thirty (30) foot loading space and fourteen (14) foot height clearance for every twenty thousand (20,000) square feet or fraction thereof in excess of five thousand (5,000) square feet of floor and land area used for the above-mentioned purposes. (Ord. No. 05-14, Sec. 7.)

4.10.11 Connectivity When a commercial or business occupancy borders or is adjacent to another commercial or business occupancy, connectivity between the two-parking lot and access drives is required. Any request for a deviation from this requirement shall be submitted as a variance with the Large Scale Development Plan and should be based on inherent hardships associated with the lot, such as but not limited to, major infrastructure, drainageways, or natural areas that may exist at the time of development. A driveway to the property line is required as part of the large scale development approval that allow patrons access to adjacent commercial areas without having to enter and exit traffic unnecessarily.

4.10.12 Shared Driveways Whenever possible adjacent businesses are encouraged to share access driveways, to be located along lot lines. The required minimum width for a driveway shall be split between the two properties. If a business plans for a shared driveway but the adjacent property is still not developed, whoever builds first is responsible to construct the entire driveway and shall seek confirmation and concurrence in writing from the adjoining property owner. Where access is limited along Highway 62, businesses shall provide easements along the highway frontage for future access to any tract or lot that may be landlocked due to the limitations of ARDOTS established access points along the highway.

SECTION 4.11 SIGN REQUIREMENTS

14.11.1 Billboards and Signs

Traffic signs that are installed by the State Highway Department, the County Road Department, City of Prairie Grove, and the City Street Department may be erected in the right-of-way of a public street and do not apply to this ordinance. All other signs are prohibited on public right-of-way without written permission by the State, County or City, whichever is applicable.

14.11.2 Commercial Signs

All signs shall comply with the visibility at intersections provisions set forth in Section 4.14 of this Ordinance.

14.11.3 Billboards

Billboards are freestanding, off-site commercial signs greater than 32 sq. feet in size. Unless further restricted elsewhere in the code, billboards are limited to four separate signs (two in each direction) of no more than 192 square feet each mounted on a separate structure.

1. Billboards are prohibited unless specifically permitted by this Ordinance.
2. Billboards are permitted along U.S. Highway 62 (Heritage Parkway) from the Eastern City Limits to State Highway 170; and from the Western City Limits to the Muddy Fork of the Illinois River.
3. Billboards must be spaced a minimum of 1,300 linear feet from any other billboard on either side of the highway.
4. Billboards are only allowed in commercially zoned districts.

4.11.4 Definitions

Abandoned signs: A sign which no longer correctly advertises a bona fide business, lessor, owner, product or activity.

Address Sign is an item that would otherwise be a sign under this ordinance. but is used solely to identify the address of the location where it is located. Address signs are not considered a "sign" under this Ordinance and are exempt from regulation.

Billboard is a freestanding, off-site commercial sign, greater than 32 square feet in size. Unless further restricted elsewhere, billboards are limited to four separate signs (two in each direction) of no more than 192 square feet each mounted on a single structure.

Banners. Any sign printed or displayed upon cloth or other flexible material, with or without frames.

Bulletin Board. Any sign erected by a charitable, educational or religious institution or a public body, which is erected upon the same property as said institution, for purposes of announcing events which are held on the premises.

Display surface area. The net geometric area enclosed by the display surface of the sign including the outer extremities of all letters, characters and delineation's; provided, however, "display surface area" shall not include the structural supports for free standing signs; provided further, that only one face of a double-faced sign as defined shall be considered in determining the display surface area.

Free standing sign. A sign which is attached to or a part of a completely self-supporting structure. The supporting structure shall be set firmly in or below the ground surface and shall not be attached to any building or any other structure whether portable or stationary.

Illuminated sign. Any sign which has characters, letters, figures, designs or outline illuminated by electric lights or illuminous tubes as a part of the sign proper.

Incidental sign: Signs primarily for identification such as parking signs, informational signs, or instructional signs.

Joint identification sign. A sign which serves as common or collective identification for a group of persons or businesses operating on the same lot, building, structure, shopping center, or office complex. The sign may include one sign identifying the group or individual signs located on one mount.

Mansard roof. Any roof that has an angle greater than 45 degrees and which derives part of its support from the building wall and is attached to a low slope roof and which extends along the length of the building.

Monument signs: A sign mounted to a permanent ground base of masonry, concrete, wood, stone, or similar materials and not affixed to posts as its primary mounting apparatus.

Non-conforming sign. Any sign existing at the effective date of the adoption of this chapter which could not be build under the terms of this chapter.

Portable sign: Signs manufactured for portable or mobile use which are not permanently affixed to the ground, posts, or a building.

Projecting sign. Any sign that shall be affixed at an angle or perpendicular to the wall of any building in such a manner to read perpendicular or at an angle to the wall on which it is mounted.

Real estate sign. Temporary sign placed upon property for the purpose of advertising to the public the sale or lease of said property.

Sign. Every device, frame, letter figure, character, mark, plane, point, design, picture, stroke, stripe, trademark, or reading matter, which is used or intended to be used to attract attention or convey information when the same is placed out of doors in view of the general public. A single sign shall be considered a single display surface or display device containing elements organized, related, or composed to form a unit. Where there is no common element and signs are displayed randomly, *it shall be considered one unit.*

Surface Mounted sign (wall sign): A sign painted on or affixed directly to the surface of a wall or building and not extending vertically from the building.

Temporary Sign *is a sign that is advertising a special or one-time event and is not meant to be permanently erected.*

4.11.5 **Visibility Requirements:** At no time shall any sign be placed in such a manner as to constitute a vision Impairment or distraction for cars and traffic either on abutting streets, roads, or highways, or for cars pulling in or out of the occupation where the sign is placed or within parking areas, driveways, or deliverer lanes on the premises. See also, section 4.14 of this code regarding visibility.

4.11.6 : **Placement of signs in an A District:**

1. Two signs, not exceeding 64 square feet, are allowed per tax parcel.
2. Signs may not be lit in agricultural areas

4.11.7: Placement of signs in a R District:

1. One sign, not exceeding 8 square feet, is allowed per tax parcel.
2. On unimproved lots at the entrance to a platted subdivision, the sign shall not exceed 32 square feet.
3. Signs may not be lit in residential areas

4.11.8: Placement of signs in a B, MU or M Districts: The following requirements shall apply to all signs placed in a B (business), MU (Mixed Use) or M (manufacturing) District

A. Freestanding signs:

1. Display area not to exceed 60 sq/ft. , provided that the surface may be increased by 4 sq. ft. for each foot the sign is set back beyond 5' of said ROW. The maximum sign surface shall never exceed 150 sq. ft.
2. Shall set back a minimum of 5' from the street ROW.
3. Shall be set back a minimum of 25' from the boundary of any R or A district.
4. signs may be illuminated but only by if the light source points at the sign, or is internal, and does not shine out in the direction of the public.
5. Fluctuating, flashing, beacons or animated illumination is prohibited.

B. Joint identification signs:

Where more than one freestanding business sign is placed on a single mount, where more than one business share occupy a building or share parking, an allowance of an additional 15 sq. ft. per occupancy will be allowed but not to exceed 45 sq. ft. of total allowable additional square footage for the surface display area..

C. Projecting signs:

1. Projecting signs shall not be more than 3/4 of the distance of the sidewalk in front of a business, or within two feet of a street ROW. No projecting sign shall project more than 8' from the surface of the building.
2. Projecting signs must be located on the vertical surface of the building and no higher than the eve or rafter line and no lower than 8' from the ground line.
3. Shall not exceed 30 sq. ft. in surface area.

D. Wall signs:

1. May not project in excess of 18" from the surface of the building with the exception of mansard type roofs which can allow at least one edge to be flush so long as the sign is perpendicular to the ground. .
2. Wall signs are limited to one identification sign, per business, per street exposure of the building. Up to two additional secondary signs may be used per street exposure as long as the maximum display surface area is not exceeded.

3. The total of all wall signs shall not exceed 200 sq. ft. on any one wall surface or 20% of the total wall surface. \
4. Illuminated or flashing sign requirements are the same as those for free standing signs.

E. Monument Signs

1. Monument Signs shall not exceed 8 feet in height nor have greater than 60 square feet of surface area.
2. Must be mounted in a manner as not to create a hazard for vehicular movement or traffic on premises or off and cannot restrict the line of sight at intersections within parking lots, at entrances to public roads, or for the delivery of goods.
3. Illuminated or flashing sign requirements are the same as for free standing signs.

F. Portable Signs

1. One portable sign may be allowed for any single commercial occupancy by conditional use approval only.
2. Illuminated or flashing sign requirements are the same as those for free standing signs.

G. Bulletin Boards

Bulletin Boards can be placed on commercial buildings for informational or community use, but may not be used as a substitution to enhance on premise advertising or identification.

H. Abandoned Signs:

Abandoned signs shall be removed, if they remain after 12 months of non-use in a commercial occupancy.

I. Off-site Commercial Signs:

All commercial signs installed after the adoption of this ordinance shall be allowed only on or within three hundred (300) feet of the property line of the business, service or facility being advertised on the sign, except in the case of billboards. All signs shall comply with the visibility at intersections provisions set forth in Section 4.11.5 and 4.14 of this Code.

Any off-site sign of no more than 32 square feet, either directing persons or traffic to a specific location, or signs advertising commercial establishments that are not located on the premises of the business must first be approved by conditional approval of the Prairie Grove Board of Sign Appeals. Any sign located an off-site location shall require written agreement between the person or entity placing the sign and the owner of the property where the sign will be located.

4.11.9 Exemptions: The following signs and types of signs shall be exempt from the requirements of this ordinance:

1. Window signs in business and manufacturing districts are exempt.
2. A single sign, not exceeding 50 square feet, is allowed at the primary entrance to any subdivision. Additional signs, not exceeding 10 square feet, are allowed at any secondary entrance to any subdivision.
3. Traffic signs placed by governmental entities directing traffic and providing travel information.

4. During the period of time 60 days prior to and 7 days following an election taking place within the city limits of Prairie Grove, all sign restrictions governing the number and total size of signs shall be exempt. The requirements of 14.16.02 concerning visibility shall always be in force.
5. If a property is currently for sale or lease, additional signs may be allowed as follows:
 - a. In an R District, two additional signs, each not exceeding 9 square feet may be allowed.
 - b. In an A, B or M District, two additional signs, each not exceeding 60 square feet may be allowed.
6. Incidental signs: Signs placed for identification purposes above restrooms, phones, fuel pumps, parking signs, directional signs, and other areas are permitted, and shall not count toward total surface areas of other sign requirements. A signage plan shall be submitted to the planning office prior to placement.
7. Banners for advertising community events, special events, or nonprofit identification are permitted by approval of the City planning office. Special event banners must be taken down within 48 hours of an advertised event and not placed more than 30 days prior to an event. Commercial banners may be placed at commercial locations, however only one may be permitted at a single business location and must be approved by conditional approval by the Prairie Grove Board of Sign appeals. At no time shall commercial banners be allowed on public property or within public right of ways.

4.11.10: Sign Permit and Plan submittals:

1. Any permanent sign erected in a commercial or manufacturing zone shall require a one-time permit of \$25.00.
2. Prior to construction or erection of any such sign, a plan submittal shall be made to the Planning Office to determine compliance with this Ordinance.
3. Any permit issued for a sign shall expire 180 days after issuance if the permitted sign is not erected.
4. If a permitted sign is later removed for longer than six months, the permit for that sign shall expire.
5. Permits for temporary signs shall have no charge.

4.11.11: Variances or Appeals: The board of adjustment shall serve in the capacity of the board of sign appeals by the planning office. All variances will require the posting of public notice at the site of the proposed sign, at least 10 days prior to the public hearing. A \$25.00 fee is required for a request for variance under this ordinance.

SECTION 4.12 LANDSCAPE REQUIREMENTS

4.12.1 STATEMENT OF PURPOSE

The requirements set forth herein are enacted to: promote the health, safety and general

welfare of the citizens of Prairie Grove; enhance the attractiveness of the City by establishing standards for landscaping of new developments or additions in certain zones; protect native and specimen trees from unnecessary removal and from damage during construction; prevent unnecessary grading of land during construction; provide for tree, plant, and other natural vegetation material replacement; provide visual screening and sound buffers; screen incompatible land uses; improve air quality; slow or prevent storm water runoff; enhance appearance of parking lots; provide option of establishing parks within developments; provide enhanced habitat for wildlife; and ensure compliance with these standards in new developments and renovations.

4.12.2 JURISDICTION

The jurisdiction of this ordinance shall include all land within the city limits of Prairie Grove, Arkansas, any land added to the city limits, and/or planning district, for whatever reason, after the adoption of this ordinance. The Planning Commission and Planning Staff of the City of Prairie Grove shall review all landscape plans as part of the development process.

4.12.3 APPLICABILITY

- A. The requirements of this ordinance shall apply in full, after the date that this ordinance is adopted, to:
 - (1) Zoning Districts for which a building permit is required by the City of Prairie Grove for new construction or addition to existing structure: Thoroughfare Commercial (TC), Central Business District (CBD); and Multi-Family Residential Zone (R-3), and Manufacturing (LM&HM). Mixed use zones, such as Mixed Use Commercial (MUC), Residential Mixed Use (RMU), shall be included for all areas that are designated as commercial or multi-family (>4 units) that are developed as part of those plans.
 - (2) New parking lots or expansion of existing parking lots in any zone, which will increase parking spaces to sixty (60) or more spaces, or to parking lots with fewer than sixty (60) spaces, when the Planning Commission deems necessary for improved control and safety of pedestrians and motorists.
 - (3) Any conversion of an existing, pervious, parking lot or driveway to an impervious parking lot or driveway, in any area zoned General Commercial (B-1), Quiet Business (B-2), Residential (R-2), Residential (R-3), Multi-Family Residential (R-2), Office (O-1), Office (O-2) and Manufacturing (M).
- B. In Central Business District (CBD) zones the requirements of this ordinance shall apply to any development where the building setbacks to the property lines are adequate to meet the landscape requirements set forth.

- C. Residential Zoning Districts; R-1, R-1.5, and R-1.75 are exempt from the mandatory requirements of this ordinance however single-family developments are encouraged to plant a minimum of two (2) trees and four (4) shrubs, of any size, in the front yard of any single-family development. Any builder meeting the requirements of this voluntary requirement shall receive an incentive credit from the city of \$25.00 that can be utilized on their next building permit.

4.12.4 LANDSCAPE SITE PLAN REQUIREMENTS

Nine copies of the Landscape Plan shall be submitted with the Site Plan to the City of Prairie Grove for review and plan approval with the building permit application. For projects that are subject to Large Scale Development Approval, the plan shall be presented by a licensed architect, engineer, or landscape architect, with the LSD plans at the time of Planning Commission Review.

- (1) Total square footage of proposed landscape area.
- (2) Development project title with names and contact information of project planner, developer, owner, landscape architect or landscaper; scale, date, legend, North Arrow, and general vicinity map indicating existing land uses abutting all boundaries of the proposed development.
- (3) Street Frontage Buffer, Perimeter Buffer of sides and back with landscaping area marked with legend symbols for proposed landscaping, right of way, and easements. See 11.48.06 and 11.48.07 for specific requirements.
- (4) Proposed Parking Lot Buffer landscaping, as required in 11.48.08, marked with legend symbols, including number of parking spaces; location of ingress, egress, and access roadways; location of pedestrian walkways.
- (5) Landscaping areas immediately adjacent to front of building(s). See 11.48.09 - LANDSCAPING REQUIREMENTS ADJACENT TO BUILDINGS.
- (6) Location and general species of existing trees with a DBH of six (6) inches or greater and all Specimen Trees, located within street buffer planting area(s), required side and rear buffers, parking lot, areas, and other open areas. Trees that developer will preserve and trees developer requests to remove shall be clearly indicated.
- (7) Description of barrier protection that shall be used around preserved vegetation during construction. See 11.48.05 - GENERAL PROVISIONS, D. 3.
- (8) Plant list including plants, trees, ornamental grasses, and shrubs with common name and botanical name, cultivar or variety (including distinctive features such as flower

color), size of container or tree caliper. See 11.48.12 for suggested landscape materials suitable for the Northwest Arkansas Planting Zone 6b.

- (9) Planting and installation details for shrubs and trees to ensure conformance with all required standards of this ordinance.
- (10) Location, description and size of other proposed or existing landscape improvements such as sidewalks, walls, fences, screens, earth berms; storm water collection facilities such as rain gardens and detention ponds; sculptures, statues, fountains, street furniture, outdoor lighting, courtyards, or other paved areas.
- (11) Location of existing and proposed physical features such as easements, streets, utilities, buildings, signs, and waterways.
- (12) Location of trash/refuse bin(s), service bays, loading areas or docks, outdoor storage areas, mechanical equipment, walk-in coolers, and description of proposed required screening. See 11.48.05 General Provisions, M., N. O. and P.
- (13) Type of irrigation system(s). Include details such as spray, drip, or other type of irrigation (such as well water), controller, backflow device, pressure reducer, waterline, and meter locations. Irrigation is mandatory in all B-1, B-2, M, O-1, O-2 districts and in any R-3 District where the multi-family development is or will exceed 12 units.
- (14) These landscaping requirements are perpetual. Should landscaping features die, become storm damaged, be removed, etc., the property owner shall be responsible for replacing the landscaping features to bring the property into compliance with the requirements of this Chapter.
- (15) "Sight-Triangle" at entryways clearly marked and proposed landscaping shown. See 11.48.05 General Provisions, K. Sight-Triangle Requirements at Entryways.
- (16) Parking and/or storage location of any service vehicles, portable machinery and equipment, large tools, construction equipment, food cooking devices, or other business-related equipment, and type of required screening that will shield them from public view.

4.12.5 GENERAL PROVISIONS

- A. Permits for building, paving, utilities, or construction shall not be issued until a Landscape Site Plan including all required information is approved by the Planning Commission and/or planning office. The Landscape Site Plan must be submitted with the Site Plan if required to have an Large Scale Development plan approval, or at the time of applying for a building

permit if not required to get LSD approval.

- B. All landscaping design plans shall be designed with public safety in mind. Landscaping shall not interfere with motorist or pedestrian visibility and safety.
- C. Landscaping shall not interfere with the general function, safety, or accessibility of any gas, electric, water, sewer, telephone, television cable, or other utility easement; fire hydrant, traffic sign, or traffic signal.
- D. Preservation of existing vegetation:
 - (1) Retain and incorporate as is practical, substantial stands of healthy, disease free vegetation and environmentally sensitive or significant natural areas such as woodlands, prairie, and wetlands, into the development site. This does not include invasive plants or plants that are potentially dangerous or harmful to humans or wildlife. (for example, honey locust, kudzu, poison ivy, or sumac.
 - (2) Credit for preservation of trees with a six inch (6") diameter or larger, or Specimen Trees, may result in reduction of number of required new trees and/or shrubs, after review and approval of developer's tree preservation proposal by Planning Commission.
 - (3) Preserved trees and other preserved vegetation shall be shown on Landscape Plan. Before construction work begins, trees shall be protected by installation of chain-link fencing or some other type of protection barriers at drip-line of tree to prevent of tree root compaction in the critical root zone during building construction. Protections may be removed as necessary for final job completion. Other preserved vegetation shall be clearly marked with colored tape and flags.
 - (4) Grading and removal of soil shall not occur within the drip line of canopy of tree(s) .to be preserved.
 - (5) Any type of construction debris or chemicals shall not be placed within twenty-five feet (25') of preserved trees.
- E. Trees, shrubs, and plants used in the landscape design shall be:
 - (1) Appropriate to the soil, sunlight, and soil-moisture conditions in which they are planted thus resulting in low maintenance, high-quality design, with limited water requirements. Vegetation native to the area is encouraged.
 - (2) High-quality, nursery-grown stock of healthy condition that meets the American

Association of Nurserymen standards as specified by the American National Standards Institute in ANSI Z60.1- 1986, or as may be amended in the future.

- (3) Planted in a manner that ensures availability of sufficient soil and water immediately after planting, and with sufficient nutrients, weed barrier, irrigation system, and mulching, to sustain healthy growth.
- (4) Be planted in protected areas where vehicular traffic shall not compact the soil in trees' root- spread area. A minimum of 25 square feet of permeable ground surface area per tree is recommended.
- (5) Trees, shrubs and other vegetation, at planting, shall meet the following specifications:

Vegetation Type	Minimum Diameter (when measured at height of 4.5 feet above ground level)	Minimum Height at Planting
Shade trees	2.5"	Variable (8' - 10')
Ornamental trees	1.5"	Variable (6' - 8')
Evergreen trees	---	Minimum of 6'
	Container Size	
Shrubs	3 gallon	2'-3' feet depending on variety
Ornamental grasses (perennial)	1gallon	Variable

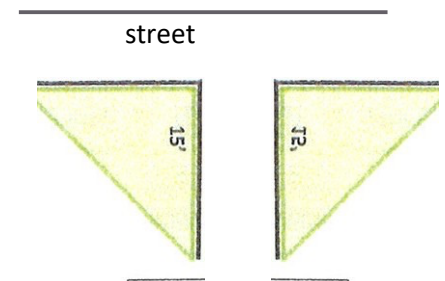
- (6) Where it is impossible or impractical to plant trees, developer may request approval from Planning Commission to substitute 3-gallon-size shrubs in a ratio of ten shrubs per one required shade tree.
- (7) Only non-invasive vegetation shall be planted. (See 11.48.12 for list of banned trees, shrubs, and other invasive vegetation.)

F. Groundcover Requirements in specified landscape design areas:

- (1) Living plant material. Grass or evergreen groundcover plants shall make up a minimum of 50% of the groundcover for landscaped areas. However, a larger percentage of evergreen groundcover is encouraged.
- (2) Mulch.
 - (a) Commercially sold hardwood mulch shall be placed in all areas where there

- is no grass or evergreen groundcover.
- (b) Artificially colored mulch may not be used unless appealed to and approved by the Planning Commission.
 - (c) The minimum depth of the wood mulch shall be three (3) inches.
 - (d) Owner shall be responsible for replacing or supplementing mulch annually to maintain a 3" depth.
- (3) Prohibited groundcover. Gravel base material white chat, lava rock, asphalt, concrete, brick pavers, cement pavers, or other specific paver varieties, aggregate pavement material or other pavement material shall not be used, unless approved by appeal to the planning commission. Invasive plants and invasive groundcover (listed in 11.48.12) shall not be used.
- (4) Brick pavers, cement pavers, or other specific paver varieties shall not be used as groundcover but they may be used to create walkways.
- G. Massing, clustering, or grouping of required vegetative plant materials adds visual interest and is encouraged. Maximum distance between massed groups is twenty-five feet (25'). Groupings must be integrated into a planting bed or in a curbed area for easier maintenance and tidier appearance.
- H. Planting in rain gardens or other innovative ways to control ground run-off is encouraged. The planning commission may make allowances on plant types and number if landscaping includes these types of plantings.
- I. Any development subject to the requirements for submitting Large Scale Development Plans shall include plans for installing irrigation devices in all areas required to have landscaping.
- J. Required landscape areas shall not include artificial trees, shrubs, plants, or any synthetic carpeting designed to mimic grass unless specifically approved by the Planning Commission.
- K. Street and highway rights-of-way shall be restored and maintained with turf grass or other vegetative ground cover.
- L. Sight-Triangle requirements for business entryway:
Sight-Triangle shall measure fifteen (15) feet along the entryway and fifteen (15) feet along the Public Street or Highway.

Vegetation planted within sight-triangle shall be a maximum height of 30" - 36" at maturity. Trees may be included if limbs are pruned up to provide clear view of traffic for pedestrians and motorists.



M. Detention Pond and Water Quality Pond Landscaping:

- (1) Perimeter of pond shall be landscaped with low, dense vegetation that hinders or prevents access into the detention pond area by small children, while maintaining a clear view of pond.
- (2) Pond landscaping shall be maintained to prevent clogged drains.

N. Trash/Refuse/Garbage Storage Areas Screening:

- (1) Shall be located behind the building unless Planning Commission approves another location.
- (2) Shall be located a minimum of fifty (50) feet from any Residential or Multi-Family zoned property.
- (3) Shall be screened five feet (5') high on all sides by walls constructed of materials matching the primary building, masonry or by wood fencing, and shall have a secure access gate.
- (4) Shall be landscaped with some type of vegetation planted in front of sides seen from street, highway, or adjacent residential dwellings. Vegetative screening shall be equally effective in all seasons of the year.
- (5) All types of chain-link fence screening and plain, unembellished concrete block walls shall be prohibited.
- (6) Shall be located on a reinforced concrete slab a minimum of six inches thick and sloped to drain.

O. Mechanical equipment screening.

- (1) All roof, ground, and wall-mounted mechanical equipment such as air handling equipment, compressors, ductwork, transformers and elevator equipment located within 150 feet of a street or highway right-of-way, residential housing, or public park areas, shall be screened from view or positioned so that they are not highly visible.
- (2) Wall- or ground-mounted equipment shall be screened by any combination of: vegetative screening, brick, stone, reinforced concrete, stucco, or other similar masonry materials; or other materials that match the primary building and allow proper ventilation and service access.

P. Loading dock screening when located adjacent to all Residential, Business, Office, or

Manufacturing zoning districts, or can be viewed from a street or highway:

- (1) Shall be located at the side {toward the back of structure) or rear of building.
- (2) Shall not be located closer than 25 feet to any residential zone, unless loading dock area is wholly enclosed within a building.
- (3) Shall be screened on all visible sides either by a wall with exterior finish similar to primary structure, or with vegetative screening that will be a minimum of seven feet {7') at maturity, and dense enough such as evergreens to completely conceal the loading facility .

Q. Walk-in Cooler Screening:

- (1) Shall be structurally integrated into the primary structure by screening walls with exterior finish similar to primary structure.
- (2) Vegetative screening with minimum height at maturity of seven feet (7') shall be planted in front of screening walls that are visible from residential areas and roadways.
- (3) Alternative, innovative screening combinations may be considered and approved by the Planning Commission.

R. Protection of Public Safety and Welfare.

Whenever deemed necessary to protect the aesthetic value of property being developed, or adjoining or nearby properties, and to otherwise promote public health, safety or welfare, the Planning Commission shall specify additional conditions.

4.12.6 STREET FRONTAGE BUFFER LANDSCAPING IN B-1, B-2, R-2, R-3, O-1, O-2 ZONES

A. Purpose. To enhance the overall appearance of the City of Prairie Grove; to provide a landscaped transition from the public right-of-way to private property buildings and parking lots; to provide a visual buffer from projecting headlights that might interfere with the vision of passing motorists and pedestrians; to improve the appearance of parking lots located adjacent to a public right-of-way, and to encourage preservation of existing trees and other existing vegetation.

B. General Provisions.

- (1) With approval of Planning Commission, several Street Frontage Buffer options may be combined to meet the particular site constraints of the development.

- (2) Existing native trees of 6" DBH or larger, or Specimen Trees, shall be preserved anywhere within the street frontage buffer area unless preservation creates traffic hazards or interferes with required utilities. If existing native trees can be shown to be less than desirable due to shape, form, damage, or a species not preferred the planning commission can grant approval to remove them.
- (3) Preserved existing trees of 6" DBH or larger, or Specimen Trees, shall be substituted one preserved tree for two new trees in meeting the street frontage buffer tree requirements.
- (4) A corner lot with two street/highway rights-of-way must be planted using the Street Frontage Buffer options. The remaining side and rear shall use the Landscaped Perimeter landscape requirements.
- (5) Within each fifteen feet (15') depth and twenty-five linear feet (25') of street frontage, the required minimum number of trees and shrubs may be spaced separately, or grouped for most attractive appearance.
- (6) All landscaped areas shall be integrated into a curbed planting bed to ease maintenance and must utilize weed barrier and vegetative groundcover and wood mulch applied according to the standards in 11.48.05, F. Gravel and other banned groundcover shall not be used.
- (7) Vegetation planted within five feet (5') of the right-of-way shall have maximum height of 30" - 36" at maturity. At entryways all Sight-Triangle Requirements shall apply. See 11.48.05 General Provisions, K. Sight-Triangle Requirements for business entryway.
- (8) Designated parking and loading areas shall be used exclusively for the parking and loading of vehicles and shall not be used for the sale, lease, display, repair, or storage of vehicles, trailers, boats, campers, mobile homes, merchandise, earth-moving equipment, farm equipment, cooking equipment, or other business-related items.
- (9) Where greater depth than 15-foot (15') minimum is used, number of required vegetative items shall be increased by two (2) per each five foot (5') increase in depth. Developer may choose from any combination of shade trees, ornamental trees, conifer trees, and/or shrubs for each additional five foot (5') buffer depth. With greater depth, adjustments to planting location requirements may be made upon review and approval of the Planning Commission.
- (10) Chain link fencing and any other type of wire fencing shall not be allowed.

C. Fifteen foot (15') Street Frontage Buffer Minimum Landscaping Requirements per twenty-five linear feet (25'):

- (1) One shade tree with 2.5" diameter at 4.5 feet above the ground, or one ornamental

tree with 1.5" diameter at 4.5 feet above ground, or one Conifer (evergreen) tree a minimum of six (6') feet tall at planting.

- (2) Perennial ornamental grasses, perennial plants and other vegetation may be added at landscaper's discretion.
- (3) Mulch.

4.12.7 LANDSCAPED PERIMETER BUFFER IN BUSINESS (B-1)(B-2), MULTI-FAMILY-1 (R-3), OFFICE (O-1)(O-2), AND MANUFACTURING (M) ZONING DISTRICTS

A. Purpose. Perimeter landscaping, a peripheral planting strip along the side and rear lot lines that separates land uses /or properties, prevents two adjacent commercial lots from becoming one large expanse of pavement; provides an aesthetically attractive separation between properties in densely developed areas; and protects residential dwellings by providing noise abatement, preventing glare from headlights and property lighting, and providing privacy; and enhances the general appearance of all properties.

B. General Requirements.

- (1) The Landscaping Plan for all proposed development shall show perimeter landscaping, in addition to landscaped street frontage buffer and interior parking lot landscaping that is required.
- (2) Preservation of existing trees or other native vegetation is strongly encouraged and will count toward total number of required trees.
- (3) Minimum Width. A ten (10) foot landscaped perimeter buffer is required along the side lot lines of a development. Exception: in R-3 Zones where two units or less are being constructed the buffer may be reduced to the width of the required setback, five (5') feet.
- (4) Required extension of side perimeter buffer shall extend from street frontage back to front edge of building unless property is adjacent to residential housing in which case the perimeter buffer shall extend the length of the property. See 11.48.07. E. below for specific requirements.
- (5) No back perimeter buffer is required unless adjacent to residential housing. See 11.48.07. E. below for specific requirements.

C. Landscaped Perimeter Buffer Minimum Requirements - per twenty-five (25') linear feet

- (1) One (1) shade tree - 2.5" diameter (minimum) @ 4.5 feet above the ground

OR One (1) ornamental tree - 1.5" diameter (minimum) @ 4.5 feet above the ground
OR one Conifer (evergreen) tree a minimum of six (6') feet tall at planting.

- (2) Groundcover. New plantings in perimeter areas shall be mulched. Preserved existing vegetation does not require mulch. (See 11.48.05 General Provisions, F. Groundcover Requirements.)
- (3) Massing/Grouping of Plantings. Massing, clustering, or grouping of alternating plant materials with a combination of trees and shrubs provides visual interest and is encouraged. The maximum distance between massed groups is twenty-five (25) feet.

D. Vehicular access. The perimeter landscaping requirement does not preclude the need for vehicular access to be provided between adjacent lots and allowance may be made as necessary upon approval of Planning Commission.

E. Special Side and Rear Perimeter Screening Requirements for Business, Multi-Family, and Manufacturing Development Adjacent To Residential or Multi-Family Housing.

Developer shall provide complete screening by means of a physical barrier and landscaping.

- (1) The effective height of the physical barrier shall be a minimum of six feet (6') in height. Such a barrier shall consist of wood or masonry fencing, walls, and/or berms, and shall include required landscaping plant material.
- (2) Vegetation placed as a buffer between residential development shall include sight and noise buffering. Where a fence is placed as a screen in areas bordering residential development, a vegetative barrier shall also be installed to provide noise abatement. It shall consist of as many trees and shrubs as necessary, and of suitable size and density to provide 60% coverage of the physical barrier within two years of planting.
- (3) Tree preservation. Existing shade trees with DBH of six inches (6") or greater and/or Specimen Trees may be included as part of the vegetative screening requirement in a ratio of one (1) preserved tree to two (2) new trees.

This is covered in the zoning ordinance 4.6.2. The language in that section needs some modification to prevent conflict with this ordinance.

4.12.8 PARKING LOT LANDSCAPING IN Business (B-1), (B-2), MULTI-FAMILY (R-2), (R-3), OFFICE (O-1), (O-2), AND MANUFACTURING (M) ZONING DISTRICTS

A. Purpose. To improve the appearance of parking lot and entire property with attractive landscaping; to create a safe parking area for pedestrians and motorists; where feasible, to preserve existing trees, or plant new trees to provide shade; to provide buffer from headlight glare and noise between adjacent properties, and to ensure privacy of residents living adjacent to parking areas.

B. Applicability. Parking lot landscaping requirements shall apply to any development or addition requiring a building permit from the City of Prairie Grove in BUSINESS (B-1)(B-2), MULTI-FAMILY-1 (R-2), (R-2), Office (O-1)(O-2), and Manufacturing (M) Zoning Districts.

C. General Provisions.

- (1) Landscaping shall not block motorist or pedestrian view.
- (2) The landscape design of parking areas may vary based on the qualities and layout restrictions of the property to be developed.
- (3) Landscaping may be added to the inaccessible, unusable corners of parking lots. Existing trees may be preserved in these areas.
- (4) Minimum size of shade trees and ornamental trees at planting shall be:
Shade tree: 2.5" diameter @ 4.5 feet above ground
Ornamental tree: 1.5" diameter @ 4.5 feet above ground
- (5) Parking islands shall be incorporated into new parking lots or expanded existing parking lots in any zone in which there will be sixty (60) spaces, or more, or in parking lots with fewer than sixty (60) spaces, when the Planning Commission deems them necessary for improved control and safety of pedestrians and motorists.
- (6) Each island shall be landscaped with a minimum of one hardy shade tree or ornamental tree, or low-maintenance shrubs unless waived by Planning Commission due to safety purposes.
- (7) Mulch, turf grass and/or evergreen groundcover shall be used in each island.
- (8) When Planning Commission waives tree/shrub requirement due to safety considerations, parking island shall be landscaped with turf grass, low ornamental grass, groundcover, mulch, or a combination of these.

D. Special Screening Standards for Parking Lot Adjacent To Residential and Multi-Family Housing Zones.

Development adjacent to all residential zones, shall meet increased landscaping standards to minimize noise and light glare and to ensure privacy. The location and construction of such screening shall be approved by the Planning Commission.

- (1) Physical barrier to provide full screening shall be a minimum of six feet (6') in height and may consist of wood or masonry fencing, rock or brick walls, berms, or a combination of these methods.
- (2) Plant material shall be placed in front of the barrier to provide noise abatement and increase aesthetic quality of parking lot.
- (3) Trees and shrubs planted shall provide 60% coverage of the physical barrier within two (2) years.
- (4) At least one-half of the trees and shrubs shall be of an evergreen type that maintain leaves year round.
- (5) Tree preservation. Existing healthy shade or specimen trees with DBH of six inches (6") or greater shall be included as a portion of the landscape screening.

4.12.9 LANDSCAPING REQUIREMENTS ADJACENT TO BUILDINGS

- A. Purpose.** To enhance the overall appearance of the front of building(s) within a development.
- B. Landscaping Requirements.** Plant shrubs, perennial ornamental grasses, perennial plants, or other vegetation in curbed planting beds immediately adjacent to building or buildings, spanning a minimum of one-third of building(s) frontage. Additional plantings on sides of building(s) are at discretion of builder or owner.

4.12.10 VARIANCE PROCEDURES

When the strict interpretation of the regulations herein needs to be changed or altered for the purpose of visibility, public safety, protection of utilities, location of parking, sidewalks, or driveways, location of any mechanical or service equipment, protection of drainage ways or storm drain installations, or for any other physical feature that requires deviation from these regulations, modification or changes must be approved in the submitted plan as a variance.

- A. Planning Commission shall review plans including any deviations, alterations, changes that do not strictly conform to the plan.
- B. Any deviations or variances requested shall be noted on the plan submitted and an explanation of why the change is being made.
- C. The planning commission shall have the authority to approve or deny a plan.

4.12.11 PERFORMANCE BOND, LANDSCAPING INSTALLATION, MAINTENANCE, AND REPLACEMENT OF LANDSCAPING MATERIALS

Standards have been established for installation of all plant materials within the city. These requirements must be followed in order to receive approval of the site work and final occupancy or approval of the development. The Planning Commission or a representative of the City has the authority to deny the issuance of a final occupancy permit until landscaping is installed according to the requirements of this ordinance and satisfaction of the site inspector. All planting and landscaping requirements shall follow the developed land in perpetuity.

- A. Installation.** All landscaping shall be installed in accordance with standards and requirements of this ordinance. Permits for building, paving, utilities or construction shall not be issued until a Landscape Site Plan including all required information is submitted and approved by the Planning Commission. The Landscape Site Plan must be submitted with the Site Plan.
- B. Delays in planting.** When construction has been completed but it would be impractical to plant trees, shrubs, or turf grass or other landscaping material due to weather conditions, upon approval of the City, developer shall be given additional time to complete all required landscaping; further, a temporary occupancy permit may be issued by the building inspector. The developer or builder must make every effort to finish the project within the time frame for completion that both parties have agreed to.
- C. Enforcement.**
 - (1) Final occupancy permits and/or final plats will be withheld for those who fail to complete landscaping requirements.
 - (2) Landscaping elements are required to be maintained perpetually. In the event that landscaping elements die, are damaged, removed, or otherwise no longer exist, the City may notify the property owner of the deficiency and require the owner to repair or replace the elements to bring the property into compliance.
 - (3) In the event that 10% or more of any required elements die, are removed, or otherwise no longer exist; and the property owner has failed to remedy the situation after having received written notice, via certified mail, the property owner shall be guilty of a violation and subject to criminal penalties.
 - (4) Persons found guilty of violations of this Chapter, shall be required to bring their property into compliance and pay a minimum fine of \$100.00, or \$10.00 per day of violation for each day the property remains non-compliant.

4.12.11 SUGGESTED LANDSCAPING MATERIALS - SHRUBS AND TREES, EVERGREEN AND DECIDUOUS & INSECT-PRONE OR INVASIVE TREES, SHRUBS, PLANTS; & BANNED LANDSCAPE MATERIALS

PLANT:	BOTANICAL NAME:	SIZE:	FLOWER:	LEAF:	TEXTURE:	FORM:
Evergreen Shrubs:						
Abelia	Abelia X grandiflora 'Edward Goucher'	5'H X 6'W	Pink	GR/PP		Rounded
Aucuba	Aucuba japonica	6'H 5'W		GR/YW	Bold	Rounded
Azalea	Azalea japonica 'Mother's Day'	4'H X 5'W	Rose			Rounded
Greenmound Boxwood	Buxus sempervirens 'Green Mound'	3'H X 3'W			Fine	Rounded
Wintergem Boxwood	Buxus microphylla 'Wintergem'	4'H X 5'W			Fine	Rounded
Wintergreen Boxwood	Buxus sinica 'Insulari5'	4'H X 5'W			Fine	Rounded
Cherry Laurel	Prunus laurocerasus 'Otto Luyken'	4'H X 7'W	White			Rounded
Dwarf Burford Holly	Ilex cornuta 'Dwarf Burford'	6'H X 6'W			Bold	Rounded
Helleri Holly	Ilex crenata 'Helleri'	3'H X 4'W			Fine	Rounded
Nellie Stevens Holly	Ilex X 'Nellie R. Stevens'	15'H X 10'W	Red Berry			Rounded
Sky Pencil Holly	Ilex crenata 'Sky Pencil'	10'H X 3'W			Fine	Upright
Bordeaux Yaupon Holly	Ilex vomitoria 'Condeaux'	2'H X 5'W			Fine	Rounded
Dwarf Yaupon Holly	Ilex vomitoria 'Nana'	8'H X 5'W			Fine	Rounded
Winterberry Holly	Ilex verticillata 'Red Sprite'	5'H X 5'W	Red Berry			
Creeping Juniper	Juniperus horizontalis "Blue Rug"	1'H X 6'W		BL	Fine	Flat
Creeping Juniper	'Plumosa compacta'	1'H X 6'W		PP	Fine	
Creeping Juniper	'Blue Star'	1'H X 6'W		BL	Fine	Flat
Creeping Juniper	'Blue Chip'	1'H X 6'W		BL	Fine	Flat
Gold Pfitzer Juniper	Juniperus chinensis 'Pfitzeriana aurea'	4'H X 6'W		GR/YW	Fine	
Loropetalum	Loropetalum chinense 'Purple Diamond'	4'H X 5'W	Fuschia	PP		Rounded
Mugo Pine	Pinus mugo 'Compacta'	3'H X 4'W			Fine	
Dwarf Nandina	Nandina domestica 'Firepower'	2'H X 3'W		GR/RD	Fine	Rounded
Nandina (Compact)	Nandina domestica 'Compacta'	5'H X 3'W	Red Berry	GR/PP	Fine	Rounded
Dwarf Alberta Spruce	Picea glauca 'Conica'	8'H X 5'W			Fine	Pyramidal
Leatherleaf Viburnum	Viburnum rhytidophyllum	10'H X 10'W	White	GR/PP	Bold	Rounded
Red Yucca	Hesperaloe parviflora	6'H X 4'W	Salmon		Fine	Spike
Varigated Yucca	Yucca filamentosa 'Color Guard'	4'H X 4'W	White	GR/YW	Fine	Spikey

PLANT:	BOTANICAL NAME:	SIZE:	FLOWER:	LEAF:	TEXTURE:	FORM:
Deciduous Shrubs:						
Dwarf Burning Bush	Euonymus alatus compactus	8'H X 10'W		GR/RD	Medium	Rounded
Butterfly Bush	Buddleia davidii nanhoesis 'Monum'	5'H X 5'W	Purple		Medium	
Cranberry Cotoneaster	Cotoneaster apiculatus	3'H X 7'W	White	GR/RD	Fine	Flat
American Cranberry	Viburnum trilobum 'Bailey's Compact'	6'H X 6'W	White	GR/RD	Fine	
Dwarf Crape myrtle	Lagerstroemia indica 'Maned'	4'H X 4'W	Red		Medium	
Dynamite Crape myrtle	Lagerstroemia indica 'Whit II'	20'H X 15'W	Red		Medium	Upright
Weeping Crape myrtle	Lagerstroemia indica X faueri 'Acoma'	7'H X 7'W	White			
Red-Dosier Dogwood	Camus sericia 'Kelsey'	2.5'H X 2.5'W	Red Stem	GR/RD	Medium	Rounded
Black Lace Elderberry	Sambucus nigra 'Eva'	8'H X 8'W	Pink	PP	Fine	
Dwarf Forsythia	Forsythia 'Arnold Dwarf'	3'H X 7'W	Yellow		Medium	Rounded
Dwarf Oakleaf Hydrangea	Hydrangia quercifolia 'Sikes Dwarf'	4'H X 4'W	White	GR/PP	Bold	Rounded
Dwarf Lilac	Syringa meyeri 'Palibin'	5'H X 7'W	Purple		Medium	Upright
Japanese Maple	Acer palmatum dissectum 'Red Dragon'	5'H X 5'W		RD	Fine	Upright
Ninebark	Physocarpus opulifolius 'Monl o'	10'H X 10'W	Pink	GR/PP	Bold	
Flowering Quince	Chaenomeles japonica	4'H X 5'W	Salmon		Medium	
Carpet Rose	Rosa X 'Noare'	2.5'H X 2.5'W	Red		Medium	Flat
Shrub Rose	Rosa X 'Radrazz'	4'H X 4'W	Red		Medium	Rounded
Rose of Sharon	Hibiscus syriacus	8'H X 6'W	Purple	YW	Bold	Upright
Anthony Waterer Spirea	Spiraea X bumalda 'Anthony Waterer'	5'H X 5'W	Pink		Medium	Rounded
Vanhoutte's Spirea	Spiraea X vanhouttei	8'H X 12'W	White		Fine	Rounded
Doublefile Viburnum	Viburnum plicatum tomen. 'Mariesii'	12'H X 15'W	White	GR/PP	Bold	Upright
Winter Jasmine	Jasminum nudiflorum	4'H X 7'W	Yellow		Fine	Weeping
Perennial Grasses:						
Blue Dune Lyme Grass	Elymus arenarius 'Blue Dune'	3'H	Blue	BL		Spikey
Little Bunny Grass	Pennisetum alopecuroides 'Little Bunny'	1'H X 'W	White		Fine	Upright
Mexican Feather Grass	Nassella tenuissima	2'H X 2.5'W	Yellow	YW	Fine	Soft
Feather Reed Grass	Calamagrostis X acutiflora 'Karl Foerster'	6'H X 2'W	Yellow			Spikey
Dwarf Fountain Grass	Pennisetum alopecuroides 'Hameln'	3'H X 2'W	White		Fine	Upright

PLANT:	BOTANICAL NAME:	SIZE:	FLOWER:	LEAF:	TEXTURE:	FORM:
Perennial Grasses: con't						
Golden Liriope	Liriope spicata 'Silver Dragon'	1'H X 1.5'W	Purple	GR/YW		Weeping
Dwarf Maiden Grass	Miscanthus sinensis 'Little Kitten'	3'H X 1.5'W	White		Fine	Upright
Maiden Grass	Miscanthus sinensis 'Gracillimus'	8'H X 5'W	White		Fine	Upright
Dwf var. Maiden Grass	Miscanthus sinensis 'Dixieland'	3'H X 4'W	White		Fine	Upright
Mondo Grass	Ophiopogon japonicas 'Nanus'	5'H	Black		Fine	Short
Monkey Grass	Liriope muscari 'Big Blue'	1.5'H X 1.5'W	Purple			Weeping
Muhley Grass	Muhlenbergia lindheimeri 'Lenca'	2'H X 4'W	Pink		Fine	Spikey
Dwarf Pampas Grass	Cortaderia selloana 'Pumila'	10'H X 6'W	White			Spikey
Perennials:						
Black Knight Canna	Canna X generalis 'Black Knight'	6'H X 2'W	Red	GR/PP	Bold	Upright
Purple Coneflower	Echinacea purpurea 'Magnus'	3'H X 2'W	Salmon			Upright
Moonbeam Coreopsis	Coreopsis verticillata 'Moonbeam'	1.5'H X 2'W	Yellow		Fine	Loose
Daffidil	Narcissus X 'Ice Follies'		White			
Shasta Daisy	Chrysanthemum X superbum		White			
Gaura	Gaura lindheimeri 'Geyser Pink'	3'H X 3'W	Salmon		Fine	Loose
Hardy Hibiscus	Hibiscus X 'Fireball'	5'H X 3'W	Red			
Iris	Iris spp.	3'H X 2'W	Purple		Fine	Upright
Lambs Ear	Stachy byzantina 'Silver Carpet'	1'H X 3'W		SV	Bold	Spreading
Stella Lily	Hemerocallis X 'Stella de Oro'	2'H X 2'W	Orange			
Penstemon	Penstemon 'Black Towers'	30"H X 30"W	Salmon	GR/PP		Upright
Husker Red Penstemon	Penstemon digitalis 'Husker Red'	3'H X 'W	White	PP		Upright
Creeping Phlox	Phlox subulata 'Emerald Blue'	6"H X 3'W	Blue		Fine	Flat
Garden Phlox	Phlox paniculata 'Red Riding Hood'	3'H X 2'W	Red			Upright
Joe Pye Weed	Eupatorium spp.	40"H X 3'W	Blue	BL	Bold	Spikey
Dwarf Russian Sage	Perovskia atriplicifolia 'Little Spire'	2'H X 2'W	Purple	SV	Fine	Loose
Autumn Joy Sedum	Sedum X 'Autumn Joy'	24"H X 24"W	Salmon	GR/RD	Bold	Rounded
Speedwell	Veronica spicata 'Blue Carpet'		Purple			
Black Eyed Susan	Rudbeckia fulgida var. sullivantii 'Goldsturm'	2'H X 18"W	Gold			Upright

PLANT:	BOTANICAL NAME:	SIZE:	FLOWER:	LEAF:	TEXTURE:	FORM:
Evergreen Trees:						
Altas Blue Cedar	Cedrus atlantica	40'H X 25'W		BL	Fine	Pyramidal
Foster Holly	Ilex X attenuata 'Fosteri #2'	25'H X 12'W	Red Berry		Fine	Pyramidal
American Holly	Ilex opaca		Red Berry			Pyramidal
Moonglow Juniper	Juniperus scopulorum 'Moonglow'	20'H X 8'W			Fine	Pyramidal
Skyrocket Juniper	Juniperus scopulorum 'Skyrocket'	15'H X 2'W			Fine	Pyramidal
Spartan Juniper	Juniperus chinensis 'Spartan'	15'H X 5'W			Fine	Pyramidal
Southern Magnolia	Magnolia grandiflora 'Bracken's Brown Beauty'	50'H X 30'W	White	BR	Bold	Pyramidal
Austrian Pine	Pinus nigra	60'H X 25'W			Fine	Pyramidal
Japanese Black Pine	Pinus thunbergii	80'H X 40'W			Fine	Pyramidal
Loblolly Pine	Pinus taeda	90'H X 50'W			Fine	
White Pine	Pinus strobus	65'H X 25'W			Fine	Pyramidal
Colorado Blue Spruce	Picea pungens	65'H X 25'W		BL	Fine	Pyramidal
Columnar Norway Spruce	Picea abies 'Cupressina'	30'H X 6'W			Fine	Pyramidal
Deciduous Trees:						
River Birch	Betula nigra 'Cully'	20'H X 20'W				
Red Buckeye	Aesculus pavia	15' H X 5'W	Red			
Chaste Tree	Vitex agnus-castus	25'H X 25'W	Purple		Fine	
Kwanzan Cherry	Prunus serrulata 'Kwanzan'	25'H X 20'W	Pink	GR/RD		Rounded
Yoshino Cherry	Prunus X yedoensis 'Akebono'	25'H X 25'W	Pink	GR/RD		Rounded
Prairiefire Crabapple	Malus X 'Prairifire'	20'H X 20'W	Rose	PP		Rounded
Dwarf Bald Cypress	Taxodium distichum 'Skyward'	20'H X 6'W			Fine	Pyramidal
Carnelian Cherry	Cornus mas 'Golden Glory'	20'H X 20'W	Yellow	GR/RD		Rounded
Flowering Dogwood	Cornus florida 'Cloud Nine'	25'H X 25'W	White	GR/RD		Rounded
Red Flowering Dogwood	Cornus florida 'Cherokee Chief'	25'H X 25'W	Red	GR/RD		Rounded
Kousa Dogwood	Cornus kousa	20'H X 20'W	White	GR/RD		
Allee Elm	Ulmus parvifolia 'Elmer II'	50'H X 30'W				Rounded
Homestead Elm	Ulmus 'Homestead'	60'H X 35'W				Rounded
Lacebark Elm	Ulmus parvifolia	50'H X 30'W				Rounded
Chinese Fringe Tree	Chionanthus retusus	20'H X 25'W	White	GR/RD		

PLANT:	BOTANICAL NAME:	SIZE:	FLOWER:	LEAF:	TEXTURE:	FORM:
Deciduous Trees: con't						
Ginkgo (male only)	Ginkgo biloba	50'H X 30'W		GR/YW	Fine	Pyramidal
Thornless Honeylocust	Gleditsia triacanthos inermis 'Suncole'	35'H X 30'W	White		Fine	
Hornbeam	Carpinus betulus 'Fastigiata'	45'H X 35'W		GR/YW		
Horse Chestnut	Aesculus X arnoldiana 'Autumn Splendor'	25'H X 25'W	Red	GR/RD		
Littleleaf Linden	Tilia cordata 'Sashazum'	50'H X 40'W				
Saucer Magnolia	Magnolia X 'Ann'	15'H X 12'W	Purple		Bold	Rounded
Norway Maple	Acer plantanoides 'Crimson King'	35'H X 25'W		GR/RD		Rounded
Red Maple	Acer rubrum 'October Glory'	50'H X 40'W		GR/RD		Rounded
Sugar Maple	Acer saccharum 'Green Mountain'	40'H X 25'W		GR/RD		Rounded
Amur Maple	Acer ginnala	20'H X 15'W		GR/RD		Rounded
Bloodgood Jap. Maple	Acer palmatum 'Bloodgood'	20'H X 15'W		RD		Rounded
Burr Oak	Quercus macrocarpa	80'H X 80'W				
Scarlet Oak	Quercus coccinea	75'H X 50'W		GR/RD		
Sawtooth Oak	Quercus acutissima	45'H X 40'W			Bold	
White Oak	Quercus alba	100'H X 60'W				
Red Oak	Quercus rubra	80'H X 40'W				
Willow Oak	Quercus phellos	60'H X 40'W			Fine	
Shumard Oak	Quercus shumardii	60'H X 50'W		GR/RD	Bold	
Water Oak	Quercus nigra	80'H X 60'W		GR/RD		
Cleveland Select Pear	Pyrus calleryana 'Cleveland Select'	35'H X 15'W	White	GR/RD		Pyramidal
Pistachio	Pistacia chinensis	35'H X 35'W		GR/RD		
Purpleleaf Plum	Prunus cerasifera 'Thundercloud'	20'H X 20'W	Pink	PP		Rounded
Golden Raintree	Koelreuteria paniculata	30'H X 35'W	Yellow			
Eastern Redbud	Cercis canadensis	30'H X 35'W	Purple		Bold	
Pansy Redbud	Cercis canadensis 'Forest Pansy'	20'H X 25'W	Purple	PP	Bold	
Serviceberry	Amelanchier X grandiflora 'Autumn Brilliance'	25'H X 25'W	White	GR/RD		
Smoke Tree	Cotinus coggyria 'Royal Purple'	15'H X 12'W	Pink	PP		Rounded
Japanese Snowbell	Styrax japonicus	30'H X 30'W	White	GR/RD		
Seedless Sweetgum	Liquidambar styraciflua 'Ward'	50'H X 30'W		GR/RD		Pyramidal

Tupelo	Nyssa Sylvatica	SO'H X 30'W		GR/RD		
PLANT:	BOTANICAL NAME:	ISSUES:				
Banned Trees:						
Bradford Pear	Pyrus calleryana 'Bradford'	(Easily storm damaged. Use Cleveland Select instead)				
Gingko (female only)	Gingko biloba	(Odorous Fruit-use male)				
Mimosa	Albizia julibrissin	(Invasive)				
Pin Oak	Quercus palustris	(Weeping Limbs Pose Hazard-use other Oak species)				
Paper Birch	Betula papyrifera	(Not Hardy-use River Birch)				
Silver Maple	Acer saccharinum	(Fast growing Easily storm damaged. Use Red Maple)				
Sweetgum	Uiquidambar styraciflua	(Fruit Poses hazard-use fruitless cultivar)				
Tree of Heaven	Ailanthus altissima	(Invasive)				
Willow species	Salix spp.	(Fast growing Easily storm damaged.				
Honey Locust	Robinia pseudoacacia	Thorns-use improved cultivar or thornless Black Locust				
Banned Shrubs:						
Amur Privet	Ugustrum amurense	(Invasive-use Boxwood or Japanese Holly)				
Autumn Olive	Eleagnus umbellata	(Invasive)				
Chinaberry	Melia azedarach	(Invasive/Poisonous)				
Chinese Holly	Ilex cornuta	(Thorns-use thornless cultivar)				
Photinia	Photina serratifolia	{Susceptable to Fungus}				
Chinese Privet	Ligustrum sinense	{Invasive}				
Chinese Tallow Tree	Sapium sebiferum	{Invasive/Poisonous}				
Common Privet	Ugustrum vulgare	(Invasive-use Boxwood or Japanese Holly)				
Glossy Privet	Ugustrum lucidum	(Invasive-use Boxwood or Japanese Holly)				
Other Banned Plants:						
Amur Honeysuckle	Lonicera maackii	{Invasive}				
Bamboo	Bambuseae	{Invasive}				
Castorbean	Ricinus communis	(Poisonous)				
English Ivy	Hedera helix	(Invasive-use Vinca)				
Japanese Honeysuckle	Lonicera japonica	{Invasive-use sterile variety or Purple Honeysuckle}				
Lespedeza	Imperatica cylindrical	{Invasive}				
Moonflower	Datura inoxia	{Poisonous}				

Morning Glory	Ipomoea	(Invasive)
Multiflora Rose	Rosa multiflora	(Invasive/Thorns-use Shrub or Carpet Rose)
PLANT:	BOTANICAL NAME:	ISSUES:
Other Banned Plants: con't		
Scottish Thistle	Onopordum acanthium	(Invasive/Thorns)
Any plant listed as invasive or noxious by the USDA for Arkansas		

SECTION 4.13 FENCE AND WALL REQUIREMENTS

4.13.1 Applicability

(A) The requirements of this Chapter shall apply to the following conditions in all zoning districts, except as exempted in (B) Exemptions, below:

(1) New Construction – Construction of a new fence or wall.

(2) Extension – Extension of an existing fence or wall.

(3) Replacement

(a) Replacement of an existing fence or wall that is a different size, at a different location or of a different material (e.g. a chain link fence being replaced by a wood privacy fence); or

(b) Replacement of any portion of the linear length of an existing fence.

(B) Exemptions – This Chapter shall not apply to:

(1) The A-1 Agricultural zoning district

(2) Replacement of less than 50% of the linear length of any straight run of fence, except that the portion being replaced shall not:

(a) impede visibility at the sight triangle of any street intersection, driveway or alley;

(b) impede a natural drainage way;

(c) be located in a drainage easement, utility easement, or right-of-way;

(d) encroach neighboring property lines.

(C) Permit Required – A fence permit shall be obtained prior to beginning construction and replacement of all applicable fences and walls.

(1) Application – to obtain a fence permit, a completed application form and a plot plan (site plan) must be submitted to the Building Inspection Office. The plan shall show:

(a) Location of all property lines;

(b) Location of all existing structures;

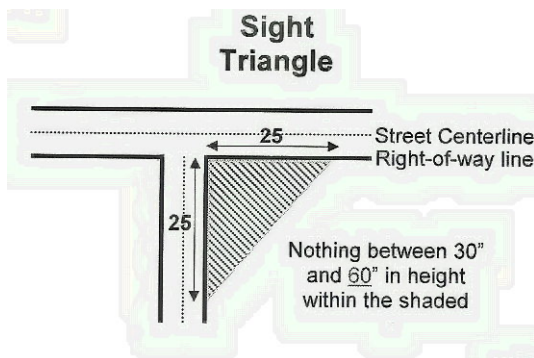
- (c) Location of existing or proposed pools or spas;
 - (d) Location of existing fencing on or adjacent to the property that is to remain in place;
 - (e) Portions of existing fence that will be replaced;
 - (f) Location of new fencing; and,
 - (g) A note indicating the height of the proposed fence and the type of fence construction (e.g. wood privacy, wrought iron, chain link, etc.).
- (2) Review and Approval – Once all the required information is submitted, it will be reviewed by the Building Inspection Office for compliance. If the application is approved, the applicant shall pay the permit fee and the fence permit will be issued.
- (3) Compliance – All fences or walls must be installed in compliance with the fence regulations and with the information shown on the approved plan and fence permit application form.
- (4) Inspection Required – The applicant shall contact Building Inspections to request a final inspection upon completion of the fence. If the Building Inspector determines that the fence is constructed in accordance with the ordinance requirements and the approved fence permit, a Certificate of Compliance will be issued. If the fence does not pass the inspection, the Building Inspector shall prepare an inspection report detailing the deficiencies.

(D) Fence Location

- (1) Private Property – All fences and walls shall be located on private property and shall be built with the consent of the property owner. The fence installer and/or property owner shall be responsible to correctly locate property boundaries. Fences and walls shall not encroach neighboring property lines. If the location of the property line is uncertain or in question, the City can require proof in the form of a surveyed line to determine compliance.
- (2) Front Yards – Sight restricting fences are prohibited in front yards; defined as the area bounded by a straight line across the front surface of the building (not including protruding windows, porches or decks) closest to the street, extending to both property boundaries, thence along the property boundaries to the edge of the street; unless such fence or wall is 36" or less in height. A non-sight restricting fence (e.g. chain link) that does not

restrict visibility or line of sight may be no more than 48" high when located in a front yard.

- (2) Street-facing yards – Sight restricting fences in a yard fronting a public street or alley, other than a front yard, are prohibited within eight feet (8') of the edge of the street or alley (pavement or gravel) right of way line or must be 36" or less in height, or 48" in height if constructed of a material that is non-sight restricting (e.g. chain link).
- (3) Rear and side yards – a fence or wall may be located in the rear or side yard, but shall be in compliance with other requirement of this Chapter.
- (4) Adjacent to right-of-way – Fences and walls adjacent to public streets or alleys must be placed no closer than five feet (5') to the edge of the right-of-way.
- (5) Sight Triangle – Sight restricting fences or walls constructed near public street or alley intersections, shall be prohibited within the "sight triangle" as shown below, in order to provide a reasonable degree of visibility for traffic safety reasons. Any fence or wall deemed to restrict visibility for traffic safety is prohibited.



(6) Easements

- (a) Utility Easements – walls used as fences and footings for retaining walls are prohibited in a utility easement. Construction of all other fences in utility easements is permitted, but the fence installer and/or property owner assumes some risk by so doing. The fence or wall located in certain utility easements must have a gate installed on each end, the width of the easement, or some other type of removable section, independent of the rest of the fence structure, and approved by the city which would allow the easement to be accessed without removing additional fence.
- (b) Drainage Easements – fences and walls are prohibited within any platted drainage easement. Fences and

walls located adjacent to a platted drainage easement shall not impede the normal flow of storm water.

(E) Design Standards – the following design standards shall apply to any new fence or replacement of any fence or wall where the length of the replacement exceeds 50% of the length of any straight run of fence.

(1) Height – Maximum height shall be eight feet (8') above average grade.

(2) Finished Surface – Finished surface shall face outward from the property. Posts and support beams shall be inside the finished surface or designed to be an integral part of the finished surface unless fence is shared by two neighboring and adjoining properties and an agreement exists as to which side will remain finished.

(3) Gates – All fence segments abutting a public street or alley, shall provide one gate opening per lot to allow access to the area between the fence and the street pavement for maintenance and mowing. In addition, any areas such as utility or drainage easements that may be cut off from access due to the construction of the fence shall also be provided with a gated opening. An exception may be granted if the City receives a letter from a home owners association that this area is maintained by the association and not by individual homeowners.

(4) Fence Types

(a) Razor Wire – Razor Wire is prohibited in the City

(b) Barbed Wire – Barbed wire is prohibited in all residential zones, other than A-1, Agricultural zones. Barbed wire shall not be placed within five feet (5') of a public sidewalk nor within four feet (4') of a public street or alley right-of-way if there is no sidewalk.

(c) Electric Fences – Electric fences are prohibited except in areas zones A-1 Agricultural. Underground electric pet containment fences are allowed.

(d) Sheet metal, scrap wood, plywood, and other materials not normally manufactured for the purpose of construction of fences are prohibited.

(F) Pools and Spas – Outdoor pools, spas and hot tubs shall be protected by an enclosure designed to restrict access by children. If a fence is intended to serve as the required enclosure, it shall meet the following requirements in addition to those that apply to a fence or wall.

(1) Height – The minimum height of the fence enclosure shall be at least 48 inches. The maximum clearance

between the bottom of the fence and the ground shall be 2 inches.

- (2) Gates – Gates in the enclosing fence shall swing away from the pool/spa area and be designed to be self-closing and self-latching. If the latch or latch-release hardware is on the outside of the fence, it shall be at least 54 inches above the ground. If the latch hardware is on the inside of the fence, it must be at least 3 inches below the top of the fence and there shall not be any openings more than ½ inch in width within 18 inches of the latch. Gates more than five feet (5') in width and designed for equipment access to the fenced area are not required to be self-closing or self-latching provided they are locked at all times except when needed for access.
- (3) Design – The fence shall be designed so that there are no opening large enough to allow the passage of a 4 inch diameter sphere and so that no “ladder effect” is created on the outside. If a chain link fence material is used, the maximum size of the openings (i.e. the distance between parallel wires) shall not exceed 1-1/4 inches.

4.13.2 VARIANCES

The Prairie Grove Planning Commission/Board of Adjustments shall serve to hear any requests for variances from the provisions listed herein. Variances can be considered, when the strict interpretation of the code interferes with specific hardships such as utilities, drainage, historic structures or features (including trees), or when a slight variation is needed to accommodate specific conditions that create a hardship to the owner and will not negatively impact adjoining properties or residents.

SECTION 4.14 VISIBILITY AT INTERSECTIONS

4.14.1 Views Not Obstructed At Corners

On any corner lot on which a front yard is required by these regulations, no wall, fence, or other structures shall be erected and no hedge, tree, shrub, or other growth shall be maintained in such required yard space between the intersecting lot (property) lines and a line joining points on such lines fifteen (15) feet from their intersection, so as to cause danger to traffic by obstructing the view. This article shall not be interpreted to apply where the front yard level is at such height as to be above the line of sight of a driver in a motor vehicle. In addition, sight restricting fencing, walls, or other structures which would impair the normal view of neighboring properties, motorists, or pedestrians are prohibited in front yards as defined by this ordinance.

4.14.2 Foliage Higher than Six Feet Not Affected

This provision shall not apply to trees whose foliage is above but not below a line of sight six (6) feet above the crown of the street.

4.14.3 Thirty Days Notice Required

The provision of this article shall apply to all affected property within the limits of the City of Prairie Grove within thirty (30) days after the date of notification by the enforcement officer to the property owner, lessee, or tenant.

4.14.4 City May Remove Obstructions and Bill Owner

The City may remove, thirty (3) days after notification, any obstruction to vision by hedge, tree, shrub, or other growth. The costs of such actions shall be paid by the owner of the subject property. If payment is not made within the 30 day notification period the City may place a tax lien in the property in accordance with the State Statutes. Costs of legal and administrative efforts shall be included in said lien.

SECTION 4.15 NON-CONFORMING USES AND STRUCTURES

4.15.1 Definitions

- 4.15.1.1 Nonconforming: That which does not meet the requirements of the use district in which it is located at the time of the effective date of these regulations.
- 4.15.1.2 Nonconforming Use of Land: That which does not conform to the permitted uses of the district in which it is located and which does not utilize a principal or permanent structure.
- 4.15.1.3 Nonconforming Use of Structure: That which does not conform to the permitted uses of structure of the district in which it is located and that which has a nonconforming use as the principal use of the structure.

4.15.2 A Nonconforming Use of Land

- 4.15.2.1 Shall not be changed unless changed to a conforming use.
- 4.15.2.2 Which shall cease for a continuous period of more than ninety (90) days shall be deemed permanently abandoned, and any uses thereafter established shall be in conformity with these regulations.
- 4.15.2.3 Nonconforming uses of land are not allowed to increase size, become larger, expand to a greater area than was occupied when they became a nonconforming use
- 4.14.2.4 In all use districts may be continued until deemed permanently abandoned.

4.15.3 A Nonconforming Use of a Structure

- 4.15.3.1 May be continued and is subject to such regulations as to the maintenance of premises and conditions of operation as may be required for the protection of adjacent property as approved by the Board of Adjustment.
- 4.15.3.2 Which shall cease for a continuous period of more than ninety (90) days shall be deemed permanently abandoned, and any uses thereafter established shall be in conformity with these regulations.
- 4.15.3.3 May be extended to any portion of a structure arranged or designed for such nonconforming use at the time of passage of these regulations.
- 4.15.3.4 May be changed to a similar use, the similarity of said use shall be determined by the Board of Adjustment, if no structural changes are necessary.
- 4.15.3.5 Once changed to a conforming use cannot be changed to a nonconforming use.

4.15.4 A Nonconforming Structure

4.15.4.1 Located on a residential uses district may be remodeled, rebuilt or added to if the remodeling, rebuilding, or addition conforms to the area requirements of the residential use district for single-family structures of these regulations and has the approval of the Board of Adjustment.

4.15.4.2 A residential structure, which exists as a non-conforming structure, may be repaired or rebuilt as a residential structure whenever the damage or destruction of the structure is the result of an involuntary catastrophic event. This provision shall not apply whenever the structure is abandoned; or when the damage or destruction is voluntary or willful on the part of the building owner.

SECTION 4.16 CONDITIONAL USES

4.16.1 Purpose

In addition to the required Building Permit and Certificate of Occupancy and Compliance and such other permits as may be required, a Conditional Use Permit is required for certain land uses listed in the tables, or permitted uses allowed only by issuance of a conditional use permit.

4.16.2 Application

Application shall be made by the property owner, or a certified agent thereof, to the City Planning Commission on a form provided by the City Clerk. The applicant shall submit sufficient maps, drawings and documents necessary for the Planning Commission to determine conformance with all the provisions of this Ordinance.

In considering an application for a Conditional Use Permit, the Planning Commission shall give due regard to the nature and condition of all adjacent uses and structures. The Planning Commission may deny an application for a Conditional Use Permit, or, in granting such a permit, may impose such requirements and conditions with respect to location, design, construction, maintenance, and operations as it may deem necessary for the protection of adjacent properties and the public interest.

4.16.3 Hearing and Notice Requirements

Upon receipt of an application for a Conditional Use Permit, the City shall schedule a public hearing on said application. Notice of the public hearing shall be posted on the City's website a minimum of 7 days prior to the date of the hearing. The public notice shall give the particular location of the property and the type of use for which the Permit is requested.

4.16.4 Conditions of Conditional Use

The Planning Commission shall issue the Conditional Use Permit provided it finds the following:

- 1) The proposed structure or use conforms to the requirements and intent of this Ordinance and the Land Development Plan.
- 2) Approval is based on the compatibility of the proposed use with adjacent properties and their existing use.
- 3) Any additional conditions stipulated by the Planning Commission as deemed necessary in the public interest have been met, and
- 4) Such use will not, under the circumstances of the particular case, constitute a nuisance or be detrimental to the public welfare of the City.

- 5) A conditional use is valid only for the development its proposed for and additionally shall expire after 18 months if no development occurs.

4.16.5 Lapse of Conditional Use Permit and Reasons for Termination and Appeals

In the case where any of the specific terms and conditions of a Conditional Use Permit are violated, ignored or otherwise not observed the City Inspector or other designated representative has the obligation and authority to revoke said permit. A ten (10) days written notice shall be addressed to the applicant indicating the nature of the non-compliance and the applicants right to file an official appeal to the Board of Zoning Adjustment

If no appeal is filed within the ten day period, and the non-compliance has not been corrected the permit shall be revoked. Revocation of a Conditional Use Permit for any use shall immediately constitute revocation of the applicants right to conduct business, occupy, rent or otherwise use the subject property for the purpose originally permitted. The subject property shall revert to its use status prior to the issuance of the conditional use permit.

4.16.5 Violation and Penalties

Violation of the terms and conditions set forth in a conditional use permit and the continued unlawful use of a facility after revocation has been accomplished in accordance with Section 14.13.5 above, shall constitute a violation of the Zoning Ordinance and subject to the penalty clause provisions set forth in Section 1.32.01 of the Prairie Grove Municipal Code (PGMC).

SECTION 4.17 LARGE SCALE DEVELOPMENT REGULATIONS AND DESIGN REQUIREMENTS

Any commercial, multi-family, industrial, office, institutional, or recreational development that is proposed shall apply for a Large Scale Development Permit, unless it qualifies as a Small Addition as defined below. All projects other than residential single family, or a singular duplex/triplex/four plex project are subject to the requirements of the Large Scale Development application and approval requirements.

A **Small Addition** is a project that is adding to a pre-existing facility that adds no more than 25% to the existing footprint and is less than 1500 square feet. Small Additions must adhere to all other requirements of this Development Code.

4.17.1 APPROVAL PROCEDURES FOR LARGE-SCALE DEVELOPMENT PLANS

A. Plan submission.

The developer shall submit large-scale development plans to the planning authority office for distribution to the affected agencies along with a review fee of \$750.00. The planning authority office will determine the number of plans required for distribution and agencies notified will include, but not be limited to, the planning commission, inspection division, fire department, police department, water and sewer department, street department, telephone company, electric company, gas company, television cable company, school board, airport manager and the state highway and transportation department.

B. Submission data.

The large scale development plan shall include the following data:

Checklist/Requirements for Large Scale Developments

1. Boundary and legal description on submitted plat of survey.

2. Scale 1" = 100' or larger
3. Contours showing critical topography
4. Water courses, stream, ponds, or drainage ditches
5. Structures, existing and proposed
6. Existing roads, alleyways, Right of ways
7. Proposed drives, roads, alleys, or access lanes
8. Storm drainage proposal
9. Landscaping and green space
10. Parking areas, number of spaces, loading areas, handicap provisions
11. Sidewalks
12. Utilities & easements
13. Adjacent property owners
14. Engineered drainage calculations & recommendations
15. Location of signs and lighting
16. Design Review

(a) Receipt for filing fee paid to the city.

(b) A copy of the large scale development plan submittal checklist (1 – 15) with all items checked or status noted is required with all submissions.

(c) Drawings to scale not smaller than one inch equals 100 feet indicating all required information. Ten copies must be submitted according to the TAC review schedule provided by the planning authority.

(d) Owner name and address and building usage for verification with zoning requirements.

(e) An architect's or engineer's stamp is required on the drawings in accordance with State law.

(f) An Arkansas State Contractor's License is required, in accordance with State law.

(g) Storm drainage design must meet minimum drainage requirements as determined by a licensed professional engineer and reviewed by the City and/or the City's engineer. Drainage design shall result in no additional run-off than existing at time of development or a determination by an engineer that any additional run-off will not impact any downstream properties or land. Drainage improvements must be indicated on the plans and a drainage report will accompany plans. An engineer's certified calculations must be provided for all improvements. Improvements must be completed and certified by the engineer of record or prior to issuance of a certificate of occupancy.

(h) Developments within a flood plain or flood way must provide flood plain data certified by an engineer or architect and must meet all FEMA requirements for new construction in flood plains or flood ways.

(i) Where applicable, verify impact of development with the airport zoning and hazard map. Notification of the FAA may be necessary prior to construction.

(j) Provide a signature list on the drawing for approvals. Included should be the planning commission, city water and sewer department, fire department, police department, airport manager, street department, state highway department, gas company, electric power company, phone company, TV cable service and the building inspection division.

(k) Address of property. Obtain or verify address with the building inspection division. Address must be indicated on the building before a certificate of occupancy will be issued.

(l) Legal description of property. Exact dimensions must be indicated. Attach survey when possible.

(m) Vicinity map indicating major streets and landmarks.

(n) Zoning classification of the subject property and each adjacent property.

(o) Indicate the location of all existing and proposed buildings. Provide dimensions for all buildings and dimensions from the building roof overhangs to property lines and to adjacent buildings.

(p) For residential buildings, provide the number of units and the number of bedrooms per unit.

(q) For buildings other than residential, provide the gross floor area, and if multiple-use, the floor area devoted to each type of use.

(r) Indicate the location, dimensions and arrangements of parking areas and loading areas. Indicate traffic flow patterns.

(s) Indicate the number of parking spaces required and the number provided. Handicap spaces provided must meet local, state and ADA requirements.

- (t) Indicate the location from property lines, width and distance between curb cuts for any drive entrances.
- (u) Indicate the location from property lines and R.O.W. lines, sizes and heights of any existing or proposed signage. A supplemental permit is required for any signage.
- (v) Indicate the location of existing and proposed utility lines, septic fields and utility easements, including fire hydrants.
- (w) Indicate the location and type of trash removal service. Screening is required for any trash dumpster locations.
- (x) Indicate the locations of new sidewalks as required by this chapter. Sidewalks must be installed or cash bond posted prior to issuance of the certificate of property. In addition to Public Sidewalks, sidewalks are required to provide access to all pedestrian areas including parking, building entrances, and service areas.
- (y) Indicate the location of all nonresidential trailers to be used on or for a project. Trailers must be removed within five days of issuance of the certificate of occupancy or at the expiration of the trailer permit provided by the planning commission.
- (z) Indicate all other site improvements, if any.
- (aa) Provide plans indicating proposed landscaping and site grading. Indicate the type, number and location for all plants. Landscaping and green space provisions are required to meet the provisions of this chapter. Landscaping must be installed or cash bond posted and a two-year guarantee provided on all plant materials prior to issuance of the certificate of occupancy.
- (bb) Existing trees that will remain after development and will not be endangered by the development may qualify as part of the landscape requirements. Qualification must be verified with the planning authority office. Removal of trees not directly affected by construction or development shall be approved during the Large Scale Development Review.
- (cc) Indicate the location of landscape buffer zones, screening fences or screening walls, where required. Requirement should be verified with the planning authority of the City.
- (dd) Developer may be required to upgrade existing city streets bordering the property. Street improvements must meet city standards and additional right-of-way, if required, must be dedicated according to the city street master plan. Street improvements and R.O.W. dedication must be completed or cash bond posted prior to issuance of the certificate of occupancy. Required street improvements may be based on anticipated additional traffic generated by the development, traffic safety concerns, pedestrian safety, and visibility.
- (ee) New construction, drives and curb cuts on state and federal highways will require written approval of the state highway and transportation department. Copies of the approval must be provided to the planning authority office with the LSDP submission.
- (ff) Three sets of building plans shall be submitted to the building inspection division two weeks prior to a request for building permit.
- (gg) The large-scale development plan approval letter issued by the planning authority must be signed by the owner and a copy submitted to the building inspection division prior to issuance of a building permit.
- (hh) All commercial developments that include plumbing and all public food service establishments require the review and approval of the state health department. The approval letter from that department is required prior to issuance of a building permit.
- (ii) large scale development plans are valid for one year after approval by the planning commission.
- (jj) During submittal of plans applicant (or their engineer) shall determine if they are subject to Storm water run-off permits or requirements as established by ADEQ. Developments required by ADEQ to develop plans for storm water management must show proof of those permits prior to issuance of a permit for construction.
- (kk) When a commercial or business occupancy borders or is adjacent to another commercial or business occupancy, connectivity between the two parking lot and access drives is required. A driveway to the property line is required as part of the large scale development approval that allow patrons access to adjacent commercial areas without having to enter and exit traffic unnecessarily. Where commercial or business occupancy or development occurs along highway 62 or other restricted access highways or roads, a right of way for future connectivity may be required parallel and along said highway or roadway to ensure future access to those properties that may not have direct access to that highway or roadway.

Submission fees.

To initiate planning authority office services, a large-scale development plan submission will require a fee payment of \$500.00 payable to the city at the time the plan is submitted to the planning authority office.

C. Approval.

- (a) Within 30 days of receipt of a large scale development plan by the planning authority, such office shall refer the plan to the planning commission. When the plan is referred to the planning commission, the planning authority shall give the appropriate notice to the developer and shall schedule the plan for hearing before the planning commission at its next regular meeting. If disapproved or approved with conditions, the reasons for disapproval or the conditions of approvals shall be put in writing and provided to the developer. Failure of the planning authority to take action within 15 days, unless the developer agrees in writing to an extension of time, shall result in automatic approval of the development plan.
- (b) The approval of a large-scale development plan shall be effective for one year from the date of approval by the planning commission unless a building permit is obtained and construction has commenced. Unless such action on the part of the owner or developer has taken place, the large-scale development expires unless prior to expiration of the original approval, the developer or owner applies for an extension to the planning commission. Said extension may not exceed six months.
- (c) The planning authority office shall determine whether the submitted plan complies with the requirements for submission in this article. Upon a determination that the requirements for submission have been complied with, the planning authority office shall accept the plan for consideration.
- (d) The planning authority office may refuse to accept a large scale development plan for any of the following reasons:
- (1) The development plan is not submitted in accordance with the requirements of this article; or
 - (2) The development plan is of insufficient scale to depict detail of the proposed development; or
 - (3) The proposed development would violate a city ordinance, a state or federal law; or
 - (4) The developer refuses to dedicate the street right-of-way, utility easements or drainage easements which may be required; or
 - (5) The proposed development would create or compound a dangerous traffic condition. For the purpose of this section, a "dangerous traffic condition" shall be construed to mean a traffic condition in which the risk of accidents involving motor vehicles is significant due to factors such as, but not limited to, high traffic volume, topography, or the nature of the traffic pattern; or
 - (6) City water and sewer services are not readily available or are not sufficient to provide adequate service to the property within the large scale development and the developer has made no provision for extending such service to the development; or
 - (7) Negative impact of the development on existing services, including utilities, streets, drainage systems or other municipal services, when taking into account density, scale of proposed development, the comprehensive growth plan, the master street plan, location and other qualities of the development.

4.17.2 DESIGN REQUIREMENTS

4.17.2.1 Parking Placement; All Parking shall be landscaped as defined in section 4.12 of this ordinance.

4.17.2.2 Commercial Design; In B-2 zones front building facades, and those that face public streets and roadways shall have elements of architectural detail other than plain metal, plain block masonry, or plain concrete. Facades may use a mix of materials, varying paint colors, and architectural elements to achieve compliance with the design requirements.

4.17.2.3 MULTI Family (more than four units) Design

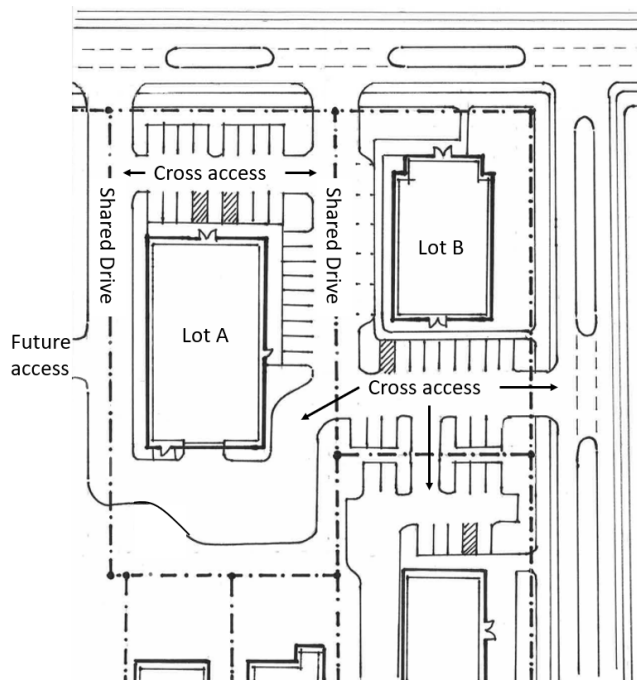
- (a) Multi-family uses (more than four units).
- i. Parking is to be primarily interior to the development with the building façade along the street, unless the parking lots are screened from view by additional landscape buffering.
 - ii. If a primary street is required for connectivity, parking may be placed along this street, but must be clearly defined by landscaped curb bump outs between buildings, or every ten (10) parking spaces.
 - iii. Shared drives and cross access between properties shall be required to adjacent developed and undeveloped properties.
 - iv. Access easements shall be shown on the site plan to provide cross access to adjacent properties.

- v. The location of this cross access shall be approved by the Planning Commission.
- 4.8.1.5 Pedestrian circulation.

Access Required

Access and Shared Drives

- ❖ Cross Access is required for commercial developments.
- ❖ Access must be in the form of a Legal Access Easement and shown on the Large-Scale Development Plans.
- ❖ Access must be planned for adjacent properties that are undeveloped or under-developed.



- (a) Clearly defined pedestrian walkways or paths shall be provided from parking areas to primary building entrances.
- (b) Design walkways and parking lots so that pedestrians do not have to cross parking aisles and landscape islands to reach building entries.
- (c) All internal walkways shall be distinguished from driving surfaces through the use of

durable, low maintenance surface materials such as pavers, bricks, or scored concrete to enhance pedestrian safety and comfort, as well as the attractiveness of the walkways.

- i. Painted crosswalks shall not be considered sufficient definition of the pedestrian path from the driving surface.

4.8.1.6 Amenities: multi-family uses.

- (1) All multi-family developments with over 40 units shall provide at least one of the following amenities:
 - vi. Pool - sized appropriately. To be approved by the Planning Commission;
 - vii. Club house;
 - viii. Private park with at least one piece of children's playground equipment, park benches, and landscaping sized appropriately. To be approved by the Planning Commission;
 - ix. Splash pad park;
 - x. Dog park with appropriate facilities;
 - xi. Sports facility. Can included pickleball court, volleyball court, basketball court, tennis court, soccer field, disk golf course, or other facility approved by the Planning Commission;
 - xii. Hiking or biking trails; and/or
 - xiii. An alternative amenity approved by the Planning Commission.
- (2) All multi-family developments with over 100 units shall provide at least two amenities. All multi-family developments with over 200 units shall provide at least three amenities. For every 150 units over 200, an additional amenity shall be required.
- (3) These amenities shall be as centrally located as possible and accessible by internal walkways.
- (4) All amenities shall be maintained by the apartment complex manager.

4.18 OVERLAY DISTRICT REQUIREMENTS

4.18.1 Historic Overlay District Created. Map designates the area covered by special requirements to enhance and protect the history and historic preservation of the Battlefield State Park.

4.18.1.1 All signs within the Historic Overlay District shall not exceed twenty feet (20') in height.

4.18.1.2 All buildings and other structures within the Historic Overlay District shall not exceed two stories or thirty-five feet (35') in height.

4.18.1.3 All outdoor lighting shall be designed, installed, directed or shielded to shine light away from the Prairie Grove Battlefield State Park.

4.18.1.4 All landscaping, medians, road frontage, green space and buffers shall be appropriately landscaped with plantings consisting of native plants or shrubs whenever possible.

4.18.1.5 Map

4.18.2 CBD Design Overlay District. The CBD zoning District shall have special requirements to protect, preserve, and encourage historic preservation and by designating certain building designs and materials within the CBD zoning District.

4.18.2.1 All Buildings and other structures within the Historic Overlay District (CBD zone) shall not exceed two stories or thirty five feet (35') in height.

4.18.2.2 All buildings and other structures shall use exterior façade materials that invoke the historical nature of the CBD and may use native stone, brick, stucco/plaster, or stamped metal reproductions of historic store fronts found in other historic buildings in the CBD only. Prohibited façade materials shall include, but are not limited to: vinyl or aluminum siding, wood siding, concrete siding, metal clad buildings, pvc components or elements, unfinished pressure treated lumber, wood fiber or strand board, high gloss metal, reflective glass or corrugated products.

4.18.2.3 Exterior architectural elements shall be in keeping with other historic buildings in the CBD and design should reflect similar styles and elements as can be found throughout the CBD.

4.18.2.4 Compliance with CBD overlay requirements will be made by City planning and building staff. In the case of a dispute over proposed overlay district requirements, the Prairie Grove Planning Commission shall make a final determination.

SECTION 4.19 AMENDMENTS TO ZONING MAP AND REGULATIONS

4.19.1 GENERAL

This code may be amended by changing the text, the Official Zoning Map, or both in accordance with the procedures prescribed herein. The zoning regulations shall be amended in conformance with the requirements of Act 186 of the 1957 State General Assembly and all subsequent amendments to that act.

4.19.2 Amendments to the text

The City Council may suggest that the Planning Commission amend the text of this Zoning Ordinance or the Planning Commission itself may desire to initiate an amendment. Should the Planning Commission, after study, request a change

in the text, it shall conduct a public hearing on the proposed textual amendment. Following the public hearing, such recommendation shall be submitted to the City Council for adoption.

4.19.3 Requests for amendments to district boundaries

The following may initiate a request to amend this Code:

- A. A member or members of the City Council.
- B. A member or members of the Planning Commission.
- C. The owner(s) of a property or the owner(s) appointed agent.

welfare, or morals of the citizens of the City. An amendment may be made by ordinance with approval of the majority of the City Council.

4.19.4 Amendments initiated by the Planning Commission

Amendments initiated by the Planning Commission may be made by the following procedures.

- A. The Planning Commission may consider amendments or additions to the Zoning Code.
- B. The Planning Commission will hold a public hearing to consider amendments to the Zoning Code.
- C. Notice of such hearing shall be published at least one time not less than fifteen (15) calendar days prior to the date of the public hearing in a newspaper of general circulation in the City of Lincoln.
- D. Changes in zoning classifications or the zoning map initiated by the Planning Commission shall be considered comprehensive changes and notice to individual property owners shall not be made unless by Planning Commission decision. The Planning Commission shall make a map and/or documents indicating the proposed changes available in City Hall for review by interested citizens and property owners at least 15 calendar days prior to the public hearing at which the changes will be considered.
- E. Following the public hearing, the proposed amendments may be recommended as presented, or in modified form, by a majority of the entire Planning Commission.
- F. Following its adoption of the amendments of the UDC or adopted plans, the commission shall certify adopted plans or recommended ordinances and regulations to the City Council for its adoption.

4.19.5 Amendments initiated by the City Council

Amendments by the City Council may be made in the following manner.

- A. The City Council may refer a request for amendment to the Planning Commission to be considered in accordance with the procedures outlined in Section 4.12.4, below.
- B. The City Council may amend this Code in accordance with the provisions of § 14-56-423 of the Arkansas Code, annotated when an emergency exists which threatens the health, safety

4.19.6 Amendments Initiated by Property Owners

Amendments by property owners may be made in the following manner.

A. An application and petition for amendment shall be filed at the main desk in City Hall.

B. The application for a Zoning Map Amendment shall contain the following information:

- (1) Name and address of applicant.
- (2) A Notarized Statement or other proof that the applicant is the owner or the authorized agent of the owner of the property for which the Zoning Map Amendment is proposed. If a buyer is requesting rezoning as part of a purchase agreement or contract, a notarized statement or co-application shall be required from the owner/seller.
- (3) Address and legal description of property.
- (4) Written statement with a description of the current zoning, and the proposed zoning.
- (5) A map of the subject property, delineating:
 - (a) the dimensions of property;
 - (b) approximate location of buildings with appropriate dimensions;
 - (c) land uses of adjacent properties.
 - (d) A vicinity map of sufficient clarity to allow location of the property for which a re-zoning request is located.
- (6) The application shall be accompanied by the prescribed fee.
- (7) Proof of Certified notices from all adjoining and adjacent property owners that include the time and date of the public hearing to be delivered no less than 7 days prior to the hearing date, but the Planning Commission.

C. Required notices

Before a proposed revision in the boundary of a zoning district may be recommended by the Planning Commission to the City Council, it must be the subject of a public hearing. Notice of the public hearing on the rezoning petition shall be published in a newspaper of general circulation in the City at least one (1) time, a minimum of seven (7) days prior to the hearing. Additionally, the owner/petitioner shall submit to the Planning Commission prior to the public hearing evidence that he has contacted in written form the owner or owners of each separate parcel of land that is adjacent to, or located directly across the street from said lot indicating to each affected owner the content of his rezoning petition as required above in 4.19.B.7. For this purpose, the owner/petitioner shall present a plat map showing the location of affected properties together with the owner of record and written acknowledgement from each owner of receipt of proper notification. Finally, the administrative official shall place a sign or signs in conspicuous places on the site of property proposed for rezoning indicating the date and place of the public hearing on the rezoning proposal, said signs to be placed on-site not fewer than seven (7) days prior to the date of the hearing. The City will furnish the required signs.

4.19.7 Hearing and Approval

If all procedural requirements above are satisfied, the Planning Commission and the City Council shall proceed in the following manner:

- A. The Planning Commission shall conduct the public hearing on the proposed amendment to the Ordinance and/or Official Zoning Map.
- B. Following the public hearing, the proposed amendment or change of district boundary may be approved as presented or in modified form by a majority vote of the Planning Commission with recommendation for adoption by the City Council, or with reasons for such recommendations stated in writing.
- C. If the Planning Commission disapproves a proposed amendment or rezoning petition, the reason for such disapproval shall be given in writing to the petitioner within thirty (30) days from the date of the hearing.
- D. Following disapproval of a proposed amendment by the Planning Commission, the petitioner may appeal such disapproval to the City Council, provided that the petitioner states specifically in writing to the City Clerk why he considers the Planning Commission's findings and decisions are in error. Such appeal to the City Council shall be filed within fifteen (15) days after receipt in writing of the Planning Commission's denial.
- E. The City Council, by a majority vote, may, by ordinance, adopt the recommended amendment submitted by the Planning Commission or may return the proposed amendment to the Planning Commission for further study and recommendation.
- F. If the City Council does not concur with the recommendation of the Planning Commission, either as first submitted or as submitted after re-study, the City Council may, by majority vote, amend this Ordinance by granting the request for amendment in full or in modified form.

4.19.8 Rezoning Requests Limited

No application for change of zoning for a given property may be resubmitted within twelve (12) months from the date of action by the Commission or legislative body, whichever is later, unless the Commission finds that a substantial reason exists for waiving this limitation. There is nothing within this limitation to keep the owner from seeking a separate or different zoning classification other than the one denied at the time of the hearing. Nothing in this 12 month limitation prevents a property owner from filing for an different request than the request that was denied.

SECTION 4.20 BOARD OF ADJUSTMENTS AND VARIANCES

4.20.1 MEMBERS

A Board of Adjustment is hereby established and members are required to be residents of the City of Prairie Grove. The board of adjustment shall be appointed by the Mayor and may consist of the appointees to the Planning Commission based on the discretion of the Mayor.

4.20.2 MEETINGS AND HEARINGS

A notice shall be posted on the City's website a minimum of 7 days prior to a meeting of the board. The Board must have the presence of the majority of members, a quorum, to conduct business. The concurring vote of all members present shall be necessary to approve, disapprove, reverse, or make a determination on behalf of the board. The Board shall keep minutes of its proceedings which shall be filed by the Secretary of the Board in the office of the City Clerk and shall be public record. Minutes shall include time, date and place of meetings. Minutes shall include names of members present, pertinent facts of each agenda item considered, names of those appearing on behalf of an agenda item, a record of vote by name, and any reasons or citation of ordinance or authority for making the decision.

4.20.3 POWERS AND DUTIES

The Board shall hear appeals (from an administrative decision of the enforcement officer who shall be designated by the City Council) concerning interpretation of the zoning regulations and shall decide whether such interpretation was in error or not or if a hardship exists that if applied strictly would place undo burden on the property owner. The board shall consider variances when requested from the strict enforcement of various regulations within the code

4.20.4 Variances

When a property owner can show that a strict application of the terms of these regulations relating to construction or alteration of buildings or structures will impose upon him practical difficulties or particular hardship, the Board may grant variances from the

regulations if the variance will not be materially detrimental to the public welfare or injurious to the property or improvement in the district in which the property is located. Variances may be granted in the following instance only.

Where, by reason of exceptional narrowness, shallowness, depth, or shape of a specific piece of property of record on the date of the passage of these regulations; or where, by reason of exceptional topographic or physiographic conditions, or other extraordinary or exceptional situation or condition of a specific piece of property, the strict application of any provisions of these regulations would result in peculiar and exceptional practical difficulties and particular hardship upon the owner of such property so as to constitute virtual confiscation of such property as distinguished from mere inconvenience to such owner, provided such relief can be granted without a substantial detriment to the public good and without substantially impairing the general purpose and intent of the comprehensive plan as established by restrictions and provisions contained in these regulations.

4.20.5 APPEAL FROM BOARD DETERMINATIONS

Appeal from a negative decision of the Board of Adjustment, shall be in front of the City Council within thirty (30) days from the decision of the Board.

4.20.6 PROCEDURES FOR VARIANCE APPLICATIONS, APPROVALS, AND DENIALS

An application submitted at least 21 days before a scheduled hearing as well as fees paid in accordance with section 2.2.2 of this code are required. The cognizant official will then place the request on the agenda of the Board of adjustment and they can approve, deny, or request changes to the request for approval.

ARTICLE V SUBDIVISION REGULATIONS

SECTION 5.1 GENERAL

5.1.1 Title

These regulations shall officially be known, cited, and referred to as the Development Code, Article V subdivision regulation of the City of Prairie Grove, Arkansas.

5.1.2 Policies & Jurisdiction

The policies underlying the provisions of this article are set forth in the following sections.

- A. The territorial jurisdiction under these regulations will include all that area designated on the official planning area map as adopted by the City Planning Commission and the City Council. Said jurisdiction shall include all lands within the corporate limits of the City and such areas beyond the corporate boundaries as are designated on the map..
- B. It is declared to be the policy of the City of Prairie Grove hereinafter referred to as “the City” to consider the subdivision of land and the subsequent development of the subdivided plat assubject to the control of the municipality pursuant to the General Plan of the City for the orderly, planned, efficient, and economical development of the community. The term “adopted plans” shall specifically include the General Plan consisting of a Land Use Plan and the Master Street Plan.
- C. Land to be subdivided shall be of such character that it can be used safely for building purposes without danger to health or peril from fire, flood, or other menace, and land shall not be subdivided until adequate public facilities and improvements exist and proper provision has been made for drainage, water, sewerage, and capital improvements such asschools, parks, recreational facilities, transportation facilities, and improvements.
- D. The existing and proposed public improvements shall conform to and be properly related tothe provisions and standards contained in the building code, zoning code, General Plan, Official Zoning Map, and other regulations and laws of the City.
- E. Except in cases where the Fire Chief has discretionary authority, or the City has adoptedmore stringent regulations. The Arkansas Fire

Prevention Code shall supersede any regulations contained herein.

- F. Land that has been subdivided prior to the effective date of these regulations should, whenever possible, be brought within the scope of these regulations.

5.1.3 Purposes

- A. The purpose of these regulations is to control the development of land within the planning jurisdiction of the City of Prairie Grove, Arkansas. Development of land includes, but is not limited to, the provision of access to lots and parcels, the extension or provision of utilities, the subdividing of land into lots and blocks, and the parceling of land for non-agricultural purposes resulting in the need for access and utilities.
- B. To protect and provide for the public health, safety, and general welfare of the City; by guiding future growth and development, in accordance with City Plans, regulations, and adopted ordinances.
- C. To provide for adequate, public safety and planning for drainage, flooding, and other dangers.
- D. These regulations are intended to guide the future development of land in and around the City of Prairie Grove and to promote the health, safety, and general welfare of its citizens. These regulations are also intended to assist in safeguarding owners, lessees, and tenants as to the proper location of property lines, buildings, and setback lines and easements.
- E. To provide the most beneficial relationship between the uses of land and buildings and the connectivity of transportation and streets, movement and circulation of traffic, provisions for parking, to avoid congestion in the streets and highways and the pedestrian traffic movements appropriate to the various uses of land and buildings, and to provide for the proper location and width of streets and building lines;
- F. To establish reasonable standards of design and procedures for subdivisions and re-subdivisions in order to further the orderly layout and use of land, and to ensure proper legal descriptions and documenting of subdivided land;
- G. To ensure that public facilities and services are available concurrent with development and will have a sufficient capacity to serve the proposed subdivision and that the community will be required to bear no more than its fair share of the cost of providing the facilities and services through requiring the Developer to pay fees, furnish land, or establish the mitigation measures to ensure that the development

provides its fair share of capital facilities needs generated by the development;

5.1.4 Authority

This Land Subdivision and Development Code is promulgated in accordance with the authority cited in Arkansas Code Annotated § 14-56-401 through § 14-56-426.

5.1.5 ENFORCEMENT

After effective date of these regulations: no plat shall be accepted by the County Recorder for record unless approved by the Planning Commission.

5.1.5.1 No utility (publicly or privately owned) shall extend its facilities to service an area unless one of the following applies:

5.1.5.2 The extension is to an area where a subdivision plat of record existed prior to the effective date of these regulations.

5.1.5.3 The extension is to an are where a plat of record has been approved by the Planning Committee.

5.1.5.4 Installation of City owned utilities is required before the plat can receive approval for filing for record. Other public privately owned utilities that shall serve a subdivision shall be required to sign off on a plat and have a plan in place to install said utilities. In this event, the Planning Commission will grant the utilities permission to extend facilities in accordance with specified plans.

5.1.5.5 The extension of utilities is along a public way, easement, or right of way in existence and use at the time of the effective date of these regulations. All extension of utilities that will be transferred to the City upon final approval SHALL be approved by the Public Works Director, BEFORE work can begin following a preliminary plat approval and SHALL be accepted by the Public Works Director before a final plat approval is granted.

5.1.5.6 PENALTY. Any person, joint stock company, or corporation selling or offering for sale ant lot or block within the planning area jurisdiction of the City Planning Commission of Prairie Grove, Arkansas, that has not been duly filed in the office of the County Recorder in conformance with these regulations shall not be permitted to sell, transfer, or convey any part or parts of lots of said subdivision, and shall be guilty of a misdemeanor, and on conviction thereof shall be fined not less that fifty dollars (\$50.00) nor more than two hundred dollars (\$200.00). Each day that a violation exists shall constitute a separate offense. The Planning Commission, City Council, and/or duly appointed City Staff shall have authority to enjoin in all proposed sales until all regulations are complied with.

5.1.6 Definitions

The following terms shall have, throughout this text, the meaning given herein:

Alley. A minor public way providing service access to the back or side of properties abutting also on other streets.

Back to Back Lots: A platted lot that backs up to another platted lot that has its own street frontage on a different street or road right of way.

Building Setback Lines. A line parallel to the right-of-way line, in front of which no structure above grade may be built.

Buffer(s): An area of land that is required to be undisturbed, open, often as green space, to act as a physical separation between properties that have different types of land use.

Contour Line A line which indicates a specific elevation along said line, identified by feet about sea level, that can be in uniform intervals of elevation across the map.

County Judge. The County Judge of Washington County, Arkansas.

County Recorder. The County Recorder of Washington County, Arkansas.

Cul-de-sac. A short street with one end open for traffic and the other end terminated by a vehicular turn-around. The maximum length allowed for new cul-de-sacs is 660 linear feet from the connecting street corner to the start of the turn around.

Dead End Street A street with only one point of egress or ingress and one that does not allow through traffic.

Dedication Improvements, right of way, utilities, or land offered to the City and Accepted for public Use

Easement. A grant by a property owner of the use, for a specific purpose or purposes, of land by the general public, a corporation or a certain person or persons.

Flood Plain. Areas designated by the Federal Emergency Management Agency as prone to periodic flooding, as per the officially adopted Flood Insurance Rate Map.

Floodway. Areas designated as floodway on the officially adopted Flood Insurance Rate Map. Floodway cannot be obstructed by development activities.

Improvements. Any betterment of the existing conditions of the land such as streets, drainage improvements, sidewalks, extension of utilities, etc.

Informal Plat/Minor Subdivision: A Subdivision, containing 6 lots or less, with less than two acres disturbed, which do not require any improvements, additional roadways, or installation of utilities can be submitted as final plats without the requirement for preliminary or concept submittals.

Lot. A portion of a subdivision, or any parcel of land intended as a unit of transfer of ownership

or for development.

Lot Corner is a lot that has street facing sides on the front and side of the property.

Lot-split. A subdivision which involves the dividing or re-dividing of a lot or lots, which does not involve the dedicating, or vacating of any street, right of ways, utility easements, or other public dedications. For the purpose of this ordinance, a lot split shall be a division of land into no more than two lots, both of which shall conform with the minimum requirements of the zoning district that they are located in and may be approved administratively by City Planning Staff.

Lot Line Adjustment When land is transferred from one parcel to another, subtracting from one parcel and adding to another, and both tracts meet all minimum requirements of the development code, the transfer shall be considered a Lot Line Adjustment and can be submitted to City Planning Staff for administrative review and approval.

Master Street Plan. The Master Street Plan consists of a written text and supporting map(s) that sets forth the minimum standards for street design and construction and indicate the functional classification of existing and proposed roadways within the City of Prairie Grove's Planning Area Jurisdiction.

Off Site Improvements to infrastructure, streets, utilities, drainageways, flood control, etc., that are needed and required for the development of property, which are not physically located on the property that is being developed.

Open Space means non-developed land, green space such as parks, recreation areas, natural areas, which may be publicly or privately owned, but are designated or reserved for such use.

Phased Developments. Any subdivision proposed to be developed in stages or phases over a period of more than nine (9) months.

Plat. A map or chart containing information necessary to transfer, locate, and survey all property indicated therein.

Planning Commission. The City Planning Commission of Prairie Grove, Arkansas.

Protective Covenants property restrictions established and filed by the subdivider or developer of property. Covenants are often filed and attached to land documents as a agreement between all land owners within a specific development or subdivision. These covenants can be legally enforced by terms listed in the covenants, but are not enforceable by the City.

Setback Line means a line or lines generally parallel to the property line(s) intended to restrict the placement of permanent structures. Setback lines are generally established by the zoning regulations of the district the property lies in.

Street. A dedicated public right-of-way which provides vehicular and pedestrian access to adjacent properties. Sidewalks, drainage structures, curbs and gutters, signage and striping as per the Arkansas State Highway & Transportation Department's Standard Specifications for Highway Construction are all considered a part of the street.

Street Standards The Minimum Standard Specifications for Streets adopted by the City of Prairie Grove.

Subdivider. Any person, partnership, company, or corporation desiring to create a subdivision or lot-split as defined in these regulations.

Subdivision. A division of a lots, tracts or parcels of land into more than two lots or anytime the dedication of streets, right of ways, or utility easements is required, or any other division of land for the purpose of transfer of ownership or development that includes the extension of utilities, dedication of easements or rights-of-way, whether immediate or future, including all changes in street or lot lines; provided, however, that where no new streets or easements of access are involved, the following shall not be included in this definition and may be processed as an informal plat, or also known as a minor subdivision, or as a lot split under Section 5.7: The following are not considered a formal subdivision:

The combination or recombination of portions of previously platted lots where the total number of lots is not increased and the original lot areas are not decreased below minimum lot size or density as prescribed by the Prairie Grove Zoning Regulations;

The division of land into parcels of five acres or more, where no more than 4 lots are created and ingress and egress is maintained without the need or requirement for a publicly dedicated street.

The division of land into two parcels shall be considered a lot split, if both lots comply with underlying development standards including minimum zoning requirements, and no new streets, utilities, public right of ways, or public easements are required for the lot.

The subdivision or re-subdivision of land where more than two and less than 6 lots are created, and where public water supply, sewers and improved streets are available, and the resultant lots comply with the requirements of the zoning ordinance shall be referred to as an informal subdivision, and may be processed as a final plat skipping other subdivision requirements. .

Lot-Splits or Lot Line Adjustments as described in Article 8.

Technical Review Committee. A group of individuals appointed by the Mayor to conduct technical evaluations of proposed subdivision developments. The Committee shall be chaired by the Water and Sewer Superintendent and may include representation from the Police Department, the Fire Department and such other parties as deemed appropriate by the Mayor. Temporary ad-hoc appointments for special projects are allowed. Review actions may be conducted in open meetings, or may be carried out through routing slips. The County Road Supervisor or his designee shall be included for any projects falling outside the corporate limits of the City of Prairie Grove. The body shall serve in an advisory capacity to the Planning Commission.

Townhouses. Attached single-family dwelling units, from two units but not exceeding eight units, which can be either single-story or multistory in height; which are physically attached one to another by common or adjoining walls on not more than two sides; which have individual heating, air-conditioning, electrical and plumbing systems; which are located on individually platted lots; which are or may be individually owned or may be rented.

Vacated. An official action to void previous plats and/or consolidate lots into larger parcels.

Variance. Special dispensations, compromises or variations to the rules to accommodate special physical conditions and characteristics unique to the subject property. Historic or archeological resources, hardwood tree preservation, physical property configurations, or other factors truly unique to a site are grounds for the consideration of a variance from the regulations of this ordinance. Economic hardship of the owner or developer is **not** a unique characteristic of a site and shall not be the basis for variances.

Waiver. A dispensing with a requirement for the performance of any provisions applicable to subdivisions or large-scale developments upon request to the planning commission with adequate grounds for such relief.

Wetlands. Land that regularly experiences seasonal periods of saturation and for extended periods of time (greater than two weeks per year). Sources of saturation may be from surface water courses, perched water tables (excessive ground water) or natural springs.

Zero lot line dwellings. Detached single-family dwelling units which are located on individually platted lots without a side yard requirement on one side, or a minimum lot line requirement. Prairie Grove currently requires a minimum of 2' from structure to lot line and considers this to be zero lot line.

5.1.7 Application

These regulations and development standards shall apply to the following forms of land subdivision.

- A. All subdivisions of land or platting of a tract, lot, or parcel of land into two or more tracts, lots, sites, or parcels.
- B. The replating of any parcel or tract of land which results in the addition or subtraction of land changing or altering the footprint, property configuration, and legal description, but not increasing the number of total parcels or tracts. This shall be referred to as a lot line or tract adjustment.
- C. The dedication or vacation of any right of way, street or alley through any tract of land.
- D. The construction of any street or public utility through any tract of land within the Corporate Limits of the City as stated herein.
- E. A development for all commercial, industrial, institutional, and multifamily residential uses.
- F. Additions to all commercial, industrial, institutional, and multi-family developments when applicable.

5.1.8 Exempted Developments

Certain properties remain exempted from the requirements of this Article of the Development Code

if they meet the following requirement:

- A. The Administrative Official may exempt a minor purchase of a portion of an adjoining parcel where the size of the land being acquired is smaller in area than the minimum lot for the appropriate zoning, and where the tract being subtracted from remains in compliance with existing minimum lot size for said zoning, where no utilities or septic systems are affected, and where it can be determined that the purposes of the Land Development and Subdivision Code are not being subverted.

5.1.9 Re-subdivision of Land

Re-subdivision of land may be accomplished as follows.

- A. Any change in an approved or recorded plat other than lot splits or re-combinations shall be considered a re-subdivision and subject to approval by the City. For re-subdivision, the same rules, regulations, and procedures applicable to subdivision shall apply.
- B. Whenever a parcel of land is subdivided and the subdivision plat shows one or more lots containing more than one acre of land and there are indications that such lots may eventually be subdivided into smaller building sites, the City may require that such parcel of land allow for the future opening of streets, the extension of adjacent streets, or the need for any additional utility right of ways or easements to serve additional lots. Easements providing for the future opening and extension of such streets or utility easements may be made a requirement before plat approval is given.

5.1.10 Waiver of Conditions

Where the Planning Commission finds the extraordinary hardships or practical difficulties may result from strict compliance with these regulations and/or the purposes of these regulations may be served to a greater extent by an alternative proposal, it may approve variances, exceptions and waiver of conditions to these regulations so that substantial justice may be done and the public interest secured, provided that the variance, exception, or waiver conditions shall not have the effect of nullifying the intent and purpose of these regulations; and further provided the Planning Commission shall not approve variances, exceptions, and waiver of conditions unless it shall make findings based upon the evidence presented to it in each specific case that:

- A. The granting of the variance, exception, or waiver of conditions will not be detrimental to the public safety, health, or welfare or injurious to other property;
- B. The conditions upon which the requests are based are unique to the property for which the relief is sought and are not applicable generally to other property;
- C. Because of the particular physical surroundings, shape, or topographical conditions of the specific property involved, a particular hardship to the owner would result, as distinguished from a mere inconvenience, if the strict letter of these regulations is carried out;
- D. The relief sought will not in any manner vary the provisions of the Zoning Code, or General Plan, except that those documents may be amended in the manner prescribed by law.
- E. That in addition to the conditions listed above, there would be no public benefit served by a strict

application of the pertinent regulations.

5.1.11 Procedures for Waivers or Variances for Subdivisions

A petition for a variance, exception, or waiver of conditions shall be submitted in writing by the applicant at the time when the preliminary plat or large-scale development is filed for the consideration of the Planning Commission. The petition shall state fully the grounds for the application and all of the facts relied upon by the petitioner.

Waivers/Variances shall only be considered when a developer is seeking minor variations of lot layout, lot size, or any specific requirements of development as listed in the development code. The developer shall only request a variance when site characteristics or conditions present a hardship that would prevent the developer or City from achieving a quality development or when there is a trade-off in lot dimensions or size that might make consideration of slight variations attractive to the City.

Applicants for waivers /variances shall submit request in writing specifying what requirements they are seeking relief from and the reasons why. The burden of proof in demonstrating a hardship shall fall on the applicant.

A fee, specified in section 2.2.2, is required to be submitted with the request

The Planning Commission Shall review the request and either recommend or not recommend the variance/waiver to the City Council, withing 45 days of its submittal.

In the Planning Commission recommends approval of the request, it shall be heard at the next regularly scheduled City Council meeting. The planning Commission shall submit a written finding to the City Council enumerating the reasons they recommend the variance. The City Council may grant or deny the request; or send it back to the planning commission for further consideration.

If the planning commission recommends denial of the request, the applicant may appeal that denial to the City Council by filing a written request for an appeal and the payment of a fifty (\$50.00) fee for the appeal.

5.1.12 Waivers-Findings

Such findings of the Planning Commission and City Council, together with the specific facts upon which such findings are based, shall be incorporated into the official minutes of the Planning Commission meeting and City Council Meeting at which such waiver was recommend and when it was granted. Waivers may be granted only when in harmony with the general purpose and intent of this Section so that the public health, safety or welfare may besecured, and substantial justice done. Pecuniary or monetary hardship to the Developer, standing alone, shall not be deemed to constitute undue hardship.

5.1.13 Variance Alternatives and Variance Fund

When considering a variance/waiver request, the City Council may grant an outright approval of the request or they may as an alternative decide that certain improvements may not be necessary at the time the development is constructed but may be needed in the future as a result of the development. If the City Council determines that improvements are

necessary but may be deferred, then the following shall apply:

The developer shall be required to deposit into a special variance/waiver account a sum in an amount to be determined by the City's engineering consultant and public works department, equal to the current estimated cost of installing the deferred improvement(s).

The funds established from this deposit, shall be deposited into a dedicated escrow fund and shall be used exclusively by the City, in its sole discretion to pay for future installation of the specific improvement for which the funds were deposited.

5.1.14 Enforcement, Violations, and Penalties

See Section 3.3

5.1.15 Vacation or modification of Plats

Vacation or modification of existing plats may be carried out according to the following regulations.

- A. Any plats or any part of any plat may be vacated or modified by the owner or owners of the premises, at any time before the sale of any lot therein, by a written instrument, to which a copy of such plat shall be attached, declaring the same to be vacated.
- B. Such an instrument shall be approved by the Planning Commission in like manner as plats of subdivisions. The City Council may reject any such instrument, which abridges or destroys any public rights in any of its public uses, improvements, streets or alleys. Any plat vacated or modified shall be in compliance at the time of any zoning or development requirements that are in place at the time.
- C. Such an instrument shall be executed, acknowledged, or approved, and recorded or filed, in like manner as plats of subdivisions; and being duly recorded or filed shall operate to destroy the force and effect of the recording of the plat so vacated, and to divest all public rights in the streets, alleys, and public grounds, and all dedications laid out or described in such plat.
- D. When lots have been sold, the plat may be vacated in the manner herein provided by all the owners of lots in such plat joining in the execution of such writing. The Planning Commission shall take into consideration phased developments and the impact of protective covenants which may be part of those combined subdivisions.

5.2 PROCEDURAL REQUIREMENTS.

5.2.1 Types of Applications

- A. Formal Subdivision
- B. Informal or Minor Subdivision
- C. Replat

- D. Lot Split or Lot line Adjustment
- E. Administrative Lot Split or Lot Line Adjustment

5.2.2 Formal Subdivisions, APPLICATION, LETTER OF INTENT, FEES, AND SKETCH/CONCEPT PLAT SUBMITTAL

Whenever a subdivider desires to create a subdivision as defined in these regulations, before he begins the development, he shall first file a letter of intent with the Planning Commission indicating the type of development intended and a general description of the land to be developed. All applicants are advised to refrain from extensive engineering design efforts until the sketch plan has been approved, thereby avoiding costly re-design. The concept or sketch plat shall include the number and approximate placement and location of lots, indicating the approximate number, location of any streets or access lanes, and a general scope of the use and development on adjacent and neighboring tracts. (See Development Check List Appendix A)

Phased development. If the subdivider desires to develop only a portion of a parcel of contiguous land under his/her ownership, option or other form of control, the Planning Commission shall require sketch plat approval for the entire plat to ensure that the purposes and intent of these regulations are complied with. Preliminary and Final plat approval is required for the portion of the plat to be developed.

The subdivider shall also present, with the letter of intent, five (5) copies of a sketch plan based on general knowledge of the property in order that the Planning Commission may check it for general conformance to plans and regulations. One copy of the sketch plan shall be retained by the Planning Commission. A second copy shall be forwarded to the City Council for information purposes. Any subdivider proposing phased development of a tract of land shall be considered as proposing a phased development. Regardless of the time frame proposed, the concept and general layout for all portions of phased developments shall be presented in the Sketch Plan.

If the developer proposes the dedication of park lands in new development in lieu of paying park development fees pursuant to Section 5.8.8, the proposed area of dedication shall be included in the sketch. Donated land shall be suitable for parks or have a unique character making it useful for recreational use by residents as determined by the Planning Commission and City Council. Donated land shall be required in ½-acre increments per each additional 10 acres of land in the development (e.g. 54 acre development shall require 2 ½ acres of park land).

5.2.2.1 Minimum requirements for sketch/concept plat

Minimum requirements for the submittal of a sketch or concept plat shall include:

- a. Proposed Lot Layout, size and shape; identification of all streets, including points of ingress and egress, alleyways, topographic lines, major connections to utilities, and any significant improvement or features that impact or relate to surrounding neighborhoods and developments and patterns of traffic or living.
- b. Vicinity map, on a scale of 1" = 2000' that highlights the proposed development as well as the surrounding land and neighborhoods.
- c. Completed written application that includes owner, developer, engineer, and a summary of the development including proposed acreage, proposed developed acreage, and proposed green space acreage, as well as acreage dedicated to other public needs such as streets and sidewalks.

Additional information shall include any limiting features that include flood plain, historic or cultural areas, environmentally sensitive areas, or buffers. A description of total buildout population and proposed additional traffic generation on connecting streets and roadways shall be included with application.

d. Proposed dedication of Park land required per this section and also in section 5....., or desire to pay cash in lieu of park land dedication. Any final determination of acceptance of park donation or cash in lieu of shall be made by the Planning Commission at the hearing to review the sketch plan. The planning commission may determine the park land donation does not meet the overall long term needs of the City in regard to park location or function and may require cash donation instead. See SECTION 5.4.7 for additional information.

e. Legal Description of proposed Subdivision

5.2.2.1 Fees Required for Sketch/Concept Plat Submittal

A fee, as specified in section 2.2.2 shall be required of all applicants submitting a sketch plan for review and action by the Planning Commission. Any subdivider who chooses to pay a fee in lieu of donating land for park use, or if said land is not suitable for park use, shall pay a fee of \$250.00 per lot in the subdivision.

5.2.3 Formal Subdivisions; PRELIMINARY PLAT SUBMITTAL, Application, Fees, Requirements

5.2.3.1 FEE REQUIRED FOR PRELIMINARY PLATS

- (a) On application for the preliminary plat, the subdivider shall pay a fee, as specified in section 2.2.2. Payment is due upon application for a preliminary plat.
- (b) The City may contract with independent engineers to conduct plat reviews, water and/or sewer capacity studies, street and drainage criteria and analysis, or any other technical recommendations, which may be needed to determine the impact of the development, in the sole discretion of the City. The development fees in subsection (a) above shall cover the costs of the initial review. However, the developer shall be responsible for paying any additional costs in excess of the initial review, that are incurred reviewing deficiencies, corrections, amendments or changes to plans. These studies will be used to determine if onsite as well as offsite improvements are required to meet necessary capacity requirements and standards of the City.

5.2.3.2 APPLICATION FOR PRELIMINARY PLAT: An application is required to apply for subdivision approval in the City. Applications and all required additional documents must be submitted a minimum of 21 days, unless otherwise stated, before the date of the meeting that the request will be heard.

A completed application with required signatures.

- A. The application must be signed by the owner of the property (supported by a deed of record), and any person representing the owner or Developer before the Commission.
- B. If the applicant is an authorized agent, a notarized letter from each property owner must be provided indicating that the agent is authorized to act on his/her behalf.

- C. All Development Check List Requirements listed in Appendix A of this coded included
- D. Payment of fees as outlined in section 5.2.3.1
- E. Review by Technical Review Committee
- F. Within 7 days of the hearing, all adjacent property owners to the proposed development shall be notified in writing of the public hearing along with a proposed layout of the subdivision. Proof of notification shall be provided the City prior to the hearing date and time.

5.2.3.3 TECHNICAL REVIEW COMMITTEE

The technical review committee shall be comprised of members from the following: representative(s) of the planning staff, police, fire, public works, and any other private or public utility effected by the development that is proposed. The technical review committee shall review prepared preliminary plats prior to the public hearing by the planning commission.

5.2.3.4 PRELIMINARY PLAT APPROVAL

When the subdivider applies for and meets the application, design and layout requirements, the information shall be submitted with the preliminary plat and along with supporting documents to the planning commission and shall be scheduled at the next scheduled meeting. Verification of compliance with any conditions or requirements set forth by the Technical Review Committee shall be included at the meeting. The Planning Commission, after careful review, shall recommend preliminary plat approval or state the reasons for rejection and forward the application to the City Council for action. When a plat is approved by the Planning Commission the Preliminary plat will be submitted to the City Council at the next regularly scheduled City Council Meeting. **Approval by the City Council** shall permit the subdivider to proceed with the installation or required improvements and preparation of the final plat. (See Development Check List APPENDIX A) Approval of a preliminary plat is not approval of specific requirements for design, capacity, or location of water and sewer utilities. In addition, specific design and engineering of streets, drainage and other public works facilities must also be approved by the public works director. Only after the Director of Public Works and any other applicable state or federal agencies that are necessary for signing off on specific design and construction elements have given their approvals may the developer begin construction.

5.2.3.5 EXPIRATION OF PRELIMINARY PLAT APPROVAL

Preliminary plat approval shall expire twelve (12) months from date of approval by the City Council, provided that there is no performance with respect to installation of the required improvements on the part of the subdivider. At the end of a 12-month period after approval by the City Council, a developer can request from the planning commission an extension of the plat approval of 6 months.

5.2.4 Formal Subdivisions; FINAL PLAT SUBMITTAL, Application, Fees, Requirements

5.2.4.1 FEE REQUIRED FOR FINAL PLATS On application for Final Plat approval, the subdivider shall pay a fee as specified in section 2.2.2.

5.2.4.2 APPLICATION FOR FINAL PLAT: An application is required to apply for subdivision approval in the City. Applications and all required additional documents must be submitted a minimum of 21 days before the date of the meeting that the request will be heard.

A completed application with required signatures.

- a. The application must be signed by the owner of the property (supported by a deed of record), and any person representing the owner or Developer before the Commission.
- b. If the applicant is an authorized agent, a notarized letter from each property owner must be provided indicating that the agent is authorized to act on his/her behalf.
- c. All Development Check List Requirements listed in 5.2.5 included
- d. Payment of fees as outlined in section 5.2.4.1
- e. Submittal of prepared plats including signature blocks as outlined in section 5.2.7 and 5.2.8
- f. Payment of all Park Fees in Lieu of dedication if applicable, as outlined in section 5.5.8 shall be paid for consideration of the final plat.
- g. Sidewalk bonding, a cash bond equal to the value of the proposed sidewalks is required (Section 5.5.4) .
- h. Performance bonds, equal to 50% of the value of the installed infrastructure is required.

5.2.5 INFORMAL PLATS/MINOR SUBDIVISIONS The division of land greater than two lots, and less than six lots, located on two acres or less of disturbed land, which does not require any improvements, additional roadways, or installation of utilities can be submitted to the planning commission as final plats without the requirement for preliminary or concept submittals.

5.2.6 SUBMITTAL CHECKLIST

SEE APPENDIX A

5.2.7 NUMBER OF PRINTS

The subdivider shall furnish City Staff, two (2) copies of any preliminary documents such as sketch plats. The subdivider shall provide five (5) full size prints of the preliminary plat and one electronic file in a format approved by City staff, with all of the preliminary plats, surveys, utility records, drainage studies, and any accompanying documents. The developer shall provide five (5) full size prints of the final plat and one electronic file in a format approved by City staff, with all of the final plats, surveys, As-built utility records, As-built drainage, and any accompanying documents. A copy

of the final plat shall be filed with signature approvals, with the Washington County Circuit Clerks Office.

5.2.8 SIGNATURE BLOCKS REQUIRED

The subdivider shall include the following signature blocks on all final plat documents and is responsible for getting approved signatures and filing the plats with the County circuit clerk. A fully executed signed copy of the plat shall be provided to the City as well as four (4) additional full size copies.

City

This Plat was accepted by the City of Prairie Grove City Council and will serve as the plat of record and cannot be altered, changed, or modified unless steps are taken to vacate or modify the plat as spelled out in the City’s development code. The City’s acceptance of this plat includes the acceptance and dedication of all streets, sidewalks, water and sewer infrastructure, right of ways, park dedications and City improvements as listed on the plat, on _____, 20____.

Planning Commission

This Plat was approved for final approval by the Prairie Grove Planning Commission on _____, 20____.

Commission Chair _____ Date: _____

Mayor _____ Date: _____

Streets and Drainage and Sidewalks

The City of Prairie Grove accepts construction of the Streets, and Drainage structures installed on behalf of the City of Prairie Grove Public Works Department, acknowledging that the owner has provided the required bonds for future installation, or bonds for performance and maintenance as required.

Public Works Director _____

Date: _____

Water & Sewer

Water and Sewer Lines were constructed according to the submitted plans and specification and are accepted acknowledging that the owner has submitted the required bonds for performance and maintenance as required.

Public Works Director (or owner) _____

Date: _____

Utility Certification and Easements

_____ Telephone

_____ Date: _____

_____ Natural Gas

_____ Date: _____

Electric

_____ Electric

_____ Date _____

- Add other utilities as applicable, Cable, Internet, and include ANY utility that will be servicing the development.

Surveyor

I certify that the plan shown and described herein is a true and correct survey and that the monuments have been placed as shown hereon in accordance with the City of Prairie Grove Subdivision regulations and requirements.

_____ Date: _____

Covenants

Covenants and Restrictions related to this plat were signed by the owners on _____, 20__

And Filed by the County Clerk on _____ 20__.

5.2.8 SCALE

The preliminary plat and final plat shall be prepared at a scale of not less than one inch (1") equals one hundred feet (100'). An atlas of sheets of the plat may be prepared at the plat size at scale of one inch (1") equals one hundred feet (100') is too large for filing with the County Recorder.

5.2.9 RIGHT OF PLANNING COMMISSION TO REQUIRE SURVEYS

The Planning Commission may have a survey made of the boundary of the subdivision to determine if the description is correct. In the event there is an error in the description, the subdivider shall pay for the survey and correct the boundary description to the satisfaction of the Planning Commission.

5.2.10 NOTIFICATION OF ADJOINING LAND OWNERS.

Prior to submitting the preliminary plat to the Planning Commission, the developer shall notify any and all land owners that adjoin the proposed development, any and all land owners that adjoin any off-site improvement constructed to benefit the development, and any and all land owners that adjoin any property adversely effected by offsite drainage from the proposed development, by certified mail, return receipt requested and must verify that notice has been sent. The notice must be sent no more than 30 days prior nor less than 10 days prior to the public hearing scheduled to review the preliminary plat. The notice shall contain, at a minimum, the following information: the principal owners and developers of the development, the location and a brief description of the proposed development and the date, time and location of the scheduled public hearing.

5.3 RE-PLATTING OF SUBDIVISIONS

If the developer or owner(s) of record wishes to change the characteristics of an approved subdivision, either by re-configuring lots, splitting lots, or by combining lots they shall be responsible for presenting a new plat and survey of the portion of the subdivision to be changed to the planning commission who will review the plat for conformance with existing zoning and planning regulations. Re-plats must be submitted no less than 14 days prior to Commission action. If the plat conforms to existing regulations and if it presents no specific harm to the characteristics of the neighborhood or subdivision as a whole the commission may approve the changes by affirmative vote of the majority of the quorum present and recommend the action to the City Council for final approval. If the replat of lots results in an increase to the total number of lots in a completed subdivision, the developer or owner shall provide engineering and documentation showing how the additional lots will be serviced with utilities, sewer taps, water meters, and other infrastructure necessary to accommodate the new platted lots.

5.3.1 NOTICE REQUIRED

Notice shall be given to every lot owner in the subdivision of the proposed replatting, no more than 30 days prior to the planning commission hearing and no less than 10 days prior.

5.4 BLOCKS, LOTS, SETBACK, EASEMENTS

5.4.1 BLOCKS

5.4.1.1 Width. Blocks shall be wide enough to provide two (2) tiers of lots of minimum depth, except where fronting on a major street, where the development abuts other properties, or were prevented by topographic conditions or the size of the property, in which case the Planning Commission may approve a single tier of lots.

5.4.1.2 Length. The use of rectangular blocks longer than wide is encouraged in the interest of economy to the developer and to the City in future maintenance of streets and public utilities, but blocks shall be limited to 640 feet without a cross street. Blocks exceeding 640' due to topographic features, or other conditions outside of the developer's control, shall be submitted as a waiver to the conditions of the ordinance.

5.4.2 LOTS

5.4.2.1 The shape of the lots shall not be required to conform to any stipulated pattern, but insofar as practical, side lot lines should be at right angles to straight street lines and radial to curved street lines.

5.4.2.2 The size of lots in areas of the City served by a public sanitary sewer, platted for residential, commercial, or industrial use shall not contain less area nor have less width than specified for such lots in the Zoning Ordinance of the City. Lots within the corporate boundaries not served by public sanitary sewer shall meet the minimum standards of an A-1 zone regardless of zoning classification and be a minimum of 1 acre. Although it is recognized the City has no zoning authority outside its corporate limits, for the purpose of establishing minimum lot sizes within the City's established planning area, outside those corporate limits, the provisions for minimum lots size and for building setbacks shall be the same as for property zoned A-1 (Agricultural), but not less than 1 acre. The exception shall be to properties served by sanitary sewer and then the minimum standards shall be the same as stipulated for R-1 in those planning areas outside the City.

5.4.2.3 Lots not served by public sanitary sewer shall not be less than the established minimums established in 5.7.2, but shall also be in accordance with standards established by the Arkansas Dept. of Health, whichever is greater.

5.4.3 BUILDING SETBACK LINES

5.4.3.1 Front and side yard building setback lines shall not be less than the minimum requirements for the applicable land use category as set forth in the Zoning Ordinance of the City of Prairie Grove current at that time.

5.4.3.2 Corner lots for residential use may be required to have extra width to permit appropriate location of the structure to conform with the zoning ordinance yard requirements, in respect to both streets. Maintaining visibility at intersections shall be the guiding principal in such cases. Provisions set forth in section 5.5.6 related to turn lanes shall be included in the calculations for corner lots.

5.4.4 UTILITY EASEMENTS

Except where alleys are permitted for the purpose, the Planning Commission will require easements of appropriate width, for poles, conduits, storm and sanitary sewers, gas, and water lines, along each side of the common rear lot lines and alongside lot lines where necessary, or if in the opinion of the Planning Commission it is necessary, easements may be required of the same or greater width across lots where it is necessary for the extension of existing or proposed utilities.

5.4.5 TOPOGRAPHIC AND NATURAL FEATURES

The Planning Commission requires submittal of a topographic map showing a minimum of five-foot contours with all subdivision applications. The map shall indicate such natural features as flood plains, wetlands, springs, drainage ways, ponds, levees and dams.

5.5 INFRASTRUCTURE REQUIREMENTS

5.5.1 WATER Where public water is available within a reasonable distance of the subdivision, (2000 feet) each lot in the subdivision shall be provided water in accordance with the standards established by the City of Prairie Grove. The Planning Commission, with advice from the Technical Review Committee, shall from time to time make determinations as to what constitutes "reasonable distance".

5.5.1.1 All provisions shall comply with the minimum water specifications and guidelines as in ARTICLE X of this development code. Although the minimum size of water or sewer lines in the City limits shall be 8" in diameter but the City may require larger lines as determined by approved engineering studies. All construction shall meet the approval of the City, the water utility, the Arkansas Dept. of Health, and any other State or Federal agency which claims a vested interest.

5.4.1.2 Where public water is not available, the water supply shall be provided in accordance with the standards established by the Arkansas State Board of Health.

5.5.1.3 Fire protection shall be provided where water lines will support such improvements. Fire Hydrants shall be placed at average intervals between 500' - 600' inside corporate limits and 1000' - 1200' for developments within the City's planning jurisdiction but outside its corporate limits. Where water flow will not meet the requirements for fire protection or fire flow of the proposed use, the Fire Department Shall approve alternate proposals for fire

flow for the development or may prohibit subsequent development in these areas.

- 5.5.1.4 Water Easements, when newly designed and installed, shall primarily be placed in easements located at the front of lots, and parallel to roadways, with accessible fire hydrants, valves, and meter locations from the public right of ways. Water easements shall be designated for the sole use of water lines and appurtenances, and shall not be available for use by other utilities.

5.5.2 SANITARY SEWER When a subdivision is located within a reasonable distance of public sanitary sewers, and topography permits or mechanical pumping permits the connection thereto, each lot in the subdivision shall be served by a sanitary sewer in accordance with standards established by the City of Prairie Grove. The Planning Commission, with advice from the Technical Review Committee, shall from time to time make determinations as to what constitutes "reasonable distance".

5.5.2.1 Sewer Easements, when newly designed and installed, shall primarily be placed in easements located at the front of lots, and parallel to roadways, with accessible manholes, pump stations, and other appurtenances from the public right of ways. Sewer easements shall be designated for the sole use and installation of sewer facilities.

5.5.2.2 All provisions shall comply with the minimum water specifications and guidelines as listed in Article X of this development code. When the subdivision cannot be served by sanitary sewers, the disposal of sewage shall be provided in accordance with standards established by the Arkansas State Board of Health.

5.5.3 DRAINAGE Special engineering studies are required for all commercial developments affecting ½ acres or more, with the exception of single family, duplex, or triplex home construction on previously approved or developed lots. Each street shall be connected with public storm water runoff systems designed by a Registered Professional Engineer. At no time shall post development flows exceed pre-development flows unless downstream drainage has the demonstrated capacity to handle the additional flows. The applicant and their engineer are responsible for submitting information and plans that ensure that the storm water runoff generated from the proposed development does not negatively impact downstream water quality or increase storm water flow to adjacent properties. Energy dissipation devices, sediment traps, storm water retention areas and other "Best Management Practices" shall be employed during site development, and all applicable EPA permits will be acquired prior to starting excavation. All permanent drainage improvements will be installed according to the engineers plans and specifications and based on his approved recommendations. Developments that are planned on existing waterways and major drains must be planned with off-site design considerations. Engineering data shall be provided to assure the City of optimum utilization of the storm drainage outlet system without inducing damages downstream.

5.5.4 SIDEWALKS Sidewalks are required on both sides of the street for all subdivisions, as well as all street facing sides of lots even if they are side or rear facing, and shall be

required for all re-plats, large scale developments, and commercial developments. Sidewalks in all new residential subdivisions shall be of a standard design requirement as determined by the master street plan and public works director, and shall be a minimum of 4' wide, with a minimum of a 4' grass medium strip between the curb and sidewalk. Where sidewalks are constructed along arterial roads, collector roads, adjacent to schools, and in commercial or manufacturing zones, sidewalks shall be a minimum width of 6' in width, with the additional requirement that the planning commission can require more stringent requirements. Wherever adjoining or connecting development is without sidewalks and lacks adequate rights of way for development of same, the planning commission may recommend and the council may determine that no sidewalks are to be installed or that alternative pedestrian ways such as bike lanes on streets, paths along rear lot lines, or other appropriate measures be provided as a condition of preliminary plat approval.

Sidewalks requirements apply for all new street right of ways in residential developments and for all construction along any existing abutting streets, or anywhere there are no sidewalks currently constructed. Sidewalks are required on both sides along major arterial and collector roadways. Wherever adjoining or connecting development is without sidewalks and lacks adequate rights of way for development of same, the Planning Commission may recommend and the City Council may determine that no sidewalks are to be installed or that alternative pedestrian ways such as bike lanes on streets, paths along rear lot lines or other appropriate measures be provided as a condition of preliminary plat approval.

Where a developer does not choose to build sidewalks before full development occurs, a cash bond equal to the value of the sidewalks shall be posted with the city. The bond will be reimbursed on a regular schedule based on the amount of sidewalk that has been completed.

5.5.5 STREETS Streets shall be improved by the subdivider with a dust free hard surface as defined and established by the master street plan and street specifications as outlined in ARTICLE VII and ARTICLE VIII of the development code. Street classifications shall be approved by the planning commission at the time of concept plat review and upon approval of the City Council of the City of Prairie Grove. Streets outside corporate limits but within planning area jurisdiction shall conform with standards established by Washington County. The future extension of roads as outlined in the Master Street Plan, shall be included in the planning and layout of any development where these future road extensions are recommended. Exact location and layout shall be determined by the planning commission and approved by the City Council as part of the preliminary plat approval process. Roads which are extensions of City Streets or roads that appear on the City Master Street improvement map, shall conform with either County Standards or City Standards, whichever is the higher standard. Developments abutting State Highways shall comply with AHTD Standards.

5.5.6 PRIVATE DRIVES

Private drives and easements for ingress and egress, shall not serve more than two property owners. A private drive or easement shall be a minimum of thirty feet in width.

The Planning Commission may, at its discretion, may require up to an additional thirty-foot width for the extension or future extension of permanent street right of way or utility easements. Lots served by a private driveway or easement shall utilize that drive or easement as affront setback for consideration of those lots. A lot facing a private drive or easement shall require fifteen-foot side setback where they abut the rear yard of a street facing lot. Where private drives are utilized, they shall be developed in accordance with paving requirements established in SECTION 4.10.6 of the development code. Where private drives located in easements, crossing another property, the easement for ingress and egress shall constitute the right for the user of the easement to maintain and improve the driveway in a manner that would provide for paving or other surfacing as allowed in Section 4.10 .

Where a private drive or easement is shared by more than one property owner, a written memorandum of understanding or agreement providing for the upkeep and maintenance of their private drive or easement before the Planning Commission approves the private drive or easement.

5.5.6.1 Variances allowed: Where lots are to be owned and maintained by family members as defined as spouses, mothers, fathers, brothers, sisters, sons, daughters, step siblings, step-parents, son in laws, daughter in laws, or legal dependents, the property owner may request a variance to be heard by the Prairie Grove Planning Commission to allow more than two lots accessed from a private drive or easement. The total number of lots shall not exceed 4 users, through the granting of such a variance.

5.5.7 STREET LIGHTING

Street Lighting, the equivalent of 100wt HPS lights, will be provided in all residential subdivisions with more than 3 lots provided. Lighting shall be placed at all corners or intersections and at a minimum of 300' intervals in between. Easements shall be added alongside lot lines to service street lighting when the electrical easements shall run along the back of lots.

5.5.8 PARKS and RECREATION The City Planning Commission may require, when in its judgment the development is of such size and/or intensity of use, the dedication of parks, open space, or recreational areas that would enhance the function and general desirability of the area.

All new development shall require a park development fee be paid in the amount of \$500.00 per lot incorporated into the final plat. The fee shall be paid prior to the City finalizing signatures on the final plat. If the developer has land that the city council and planning commission deem is suitable for park development, and also deem it is located in an area where additional park land is needed; then the city council can make the determination to allow a developer to donate a minimum of 1 acre per each 20 acres of land in the development for parks and recreation in lieu of paying the fees. At no time shall donated land be less than one acre and the dedication of land can be calculated in ½ acre increments for the purpose of determining minimum donation requirements.

5.6 OFFSITE IMPROVEMENTS

Where developments impact neighboring properties, streets, easements, or right of way; offsite improvements may be required to improve drainage, streets, utilities, sidewalks, or any other

infrastructure as deemed impacted, in order to protect those adjacent properties and uses. Increased drainage flow, increased vehicular traffic, increased pedestrian traffic, or excessive demand on City utilities may require the developer to install or participate in necessary off-site improvements to mitigate potential problems. This can include dedicating additional right of way for road or sidewalk improvements, constructing larger utility lines to ensure adequate performance and fire flow, sidewalks where existing right of ways do not include them, and increased drainage structures and devices to protect downstream properties.

When a proposed land development has direct access to or fronts on an existing substandard street, the developer shall be responsible for the following:

(1) In all cases, for the entire length of the proposed land development, the developer shall dedicate a minimum of 25 feet of right-of-way measured from the centerline of the existing street. The right-of-way shall be determined by the master street plan. For unusual alignment or terrain conditions, the planning commission and/or city council may require a greater width of right-of-way dedication. The required width of right-of-way dedication shall be determined during the preliminary plat review and approval stage.

When the proposed development is of a size and magnitude to show cause for additional street development, such access street shall have standard right-of-way easements and road construction that comply with appropriate city standards.

When a proposed land development has direct access to or fronts on an existing substandard street, the developer shall be responsible for the following:

(1) In all cases, for the entire length of the proposed land development, the developer shall dedicate a minimum of 25 feet of right-of-way measured from the centerline of the existing street. The right-of-way shall be determined by the master street plan. For unusual alignment or terrain conditions, the planning commission and/or city council may require a greater width of right-of-way dedication. The required width of right-of-way dedication shall be determined during the preliminary plat review and approval stage.

When the proposed development is of a size and magnitude to show cause for additional street development, such access street shall have standard right-of-way easements and road construction that comply with appropriate city standards.

(2) If an off-site substandard street serves a proposed development the developer shall be responsible for the entire cost of improving the off-site section of street to the current city standards. The upgrading of said off-site section of street shall be included as a part of the development plan.

(3) The street improvement cost shall include, but not be limited to, the costs of right-of-way clearing, roadway excavation and embankment, bridges, pipe and box culverts, roadway shaping, drainage blankets, base, paving, utility adjustments, and miscellaneous items. The developer's proportionate share of the street improvement costs shall be 50 percent when the development abuts one side of the street and 100 percent when the development abuts both sides of the street.

(4) The type of street improvements shall be based on the city master street plan and design standards. The developer's proportionate share of the cost of improving the street shall be determined by the director of transportation and planning.

(5) Depending on the road classification, surface type, surface width and condition, traffic, terrain, alignment, drainage and budget, one of the following types of improvements shall be made:

a. Patching and hot mix overlay within existing right-of-way with some possible drainage and alignment work.

b. Reconstruction involving right-of-way clearing, drainage structures, shaping roadway, drainage blankets, base, paving and miscellaneous items. The paving shall consist of asphalt hot mix surface course.

(6) The required off-site improvements and the developer's proportionate share of the cost shall be determined at the preliminary plat review and approval stage.

(7) Any monies paid into the city street fund may be used by the city for any purpose determined to be in the public interest of the city. The city may use the funds to improve said street, improve other streets, or for maintenance of city streets.

(8) Any proposed development fronting an existing road right of way that does not include sidewalks meeting City standards shall be responsible for improving or constructing sidewalks adjacent to and abutting the development.

(9) The City can contract with independent engineers to conduct water and/or sewer capacity studies, street and drainage improvement estimates, or any other technical recommendations which may be needed to determine off site costs, at the expense of the developer. These studies will be used to determine if offsite improvements are required to meet necessary capacity requirements of the subdivision and to prepare an estimate of their approximate costs.

5.7 REQUIREMENTS FOR FINAL PLAT APPROVAL

5.7.1 PROOF OF INSTALLATION OF IMPROVEMENTS OR BONDS REQUIRED

The Planning Commission shall require the following of the developer for final plat approval:

- a. The Planning Commission requires that all required public improvements be installed and operational prior to final plat approval. Evidence of the installation of all required improvements in the form of a certificate containing the signature of the appropriate City official as to compliance shall be required. The Mayor shall designate the official or officials who shall be responsible for certifying the required installation of improvements, streets, sidewalks, water and sewer lines, water and sewer infrastructure, drainage infrastructure, monuments, property markers, and other infrastructure required by the planning requirements as approved in the preliminary plat. The mayor or his designee may from time to time determine that minor improvements or repairs, not completed at the time of final plat approval, may be covered with a cash deposit or with a letter of assurance. In no instance shall work that is considered permanent, such as utilities, streets, or drainage be considered under this provision.
- b. The City may allow a cash bond in the amount of the estimated cost of sidewalk installation that will be refundable to the developer once those sidewalks are completed. The cash bond will be placed into the City's Sidewalk Escrow account and be reimbursed to the developer once evidence is produced that sidewalks are completed. Developers can seek partial reimbursement quarterly, to be determined by the total length of sidewalk completed at the time they request reimbursement.
- c. In the case of infrastructure not intended to be owned by the City, but required by the requirements of this ordinance, the City may allow Presentation to the City of contracts, warranties, assignment of collateral and other measures satisfactory to the Planning Commission guaranteeing complete installation of

improvements such as street lights and other utility infrastructure, not controlled or owned by the City.

5.7.2 ADDITIONAL REQUIREMENTS

All final plats shall include:

- a. The preparation of an official plat, or map, suitable for reproduction and filing, containing data required by Article 4, Subdivision Plat Requirements.
- b. Evidence of compliance with installation requirements in Article 6, Improvements.
- c. Maintenance or Warranty Bond. Once the public facilities have been constructed, the dedications made and City has inspected and approved the public facilities, the applicant shall provide the City with a warranty bond of an amount at least 50 percent of the cost of all public facilities meeting all the requirements of this section to ensure the successful operation of the public facilities, for a period of two years after such final inspection and approval.
- d. Homeowners Association Required - A homeowners' association or similar organization must be created if the development or PUD includes any common open space, alleyways, common facilities, common utilities, or common landscaping or signage. The applicant shall submit all required homeowner association documents to the planning staff at the time of the first final plat of development, including the following: 1. Ownership and membership requirements. 2. Articles of incorporation and bylaws. 3. Time at which the developer turns the association over to the homeowners. 4. Specific listing of items owned in common including such items as roads, recreation facilities, parking, common open space grounds, and utilities. 5. Management plans for items owned in common.
- e. A copy of any protective covenants adopted by the developer for the City's record. The city will file the covenants for record only and will not be responsible for enforcement or ensuring compliance.

5.8 PROCEDURAL REQUIREMENTS FOR LOT- SPLIT, LOT-LINE ADJUSTMENT AND LOT CONSOLIDATION

5.8.1 Definition of Lot Splits, Lot Line Adjustments, and Lot Consolidation

- a. Lot Splits: Where an existing platted lot is divided resulting in the creation of one new parcel, the split shall be considered a lot split.
- b. Lot Line Adjustment: Whenever a lot line is changed, resulting in the change of dimensions and area of the adjoining lots, the resulting change in lot line shall be considered a lot line adjustment. The change may result in no change of total area of the adjoining lots, or may result in the increase or decrease in area of the lots affected by the changed lot line.
- c. Lot Consolidation: When two platted lots, which are separate parcels, are joined together to create one new larger lot, it shall be considered a lot consolidation. Lot consolidations for lots that are back-to-back, where each lot has its own street frontage are not eligible for lot consolidation. Lots may only be consolidated on side-by-side lots.

5.8.2 APPROVAL of Lot Splits or Lot Line Adjustments by Administrative approval

Whenever a subdivider or property owner desires to create a lot-split, lot-line adjustment or lot consolidation ("lot adjustment") he shall present the Lot Split/Adjustment Plat to the City Building Official or other designated City Staff in order that said person may determine conformance to requirements set forth in these regulations for Lot Split/Adjustment Plats. Lots may only be consolidated when they are "side by side". If a proposed lot split or lot line adjustment results in all newly defined or created lots meeting the minimum requirements of the City Development code for size, dimensions, and access. Administrative approval shall include approval by staff appointed by the Mayor to make such approvals. The director of Public Works shall also sign off on the approval based on the availability of water and sewer to any newly created lots or adjusted lots. The action will be recorded by City Staff and forwarded to the Planning Commission and City Council, and other interested government units or agencies for information only.

5.8.3 APPROVAL of Lot Splits or Lot Line Adjustments by the Planning Commission

Whenever a subdivider or property owner desires to create a lot split, lot line adjustment, or lot consolidation, and the resulting lots do not strictly comply with all requirements as listed in the development code, for size, dimensions, or access, the proposal may be submitted to the planning commission with a variance request if there are mitigating hardships that might not allow the strict interpretation of the code to be applied to the resulting lots.

5.8.4 LOT SPLIT/ADJUSTMENTS REQUIREMENTS

Information to be shown on the Plat shall include the following:

- a. Name of subdivision or parcel of land of which lot (s) is (are) a part if applicable.
- b. A survey, boundary and written legal description of the property in the proposed lot adjustment. Each newly created or adjusted Lot shall be defined in the legal description as well as the description of the parent tract(s) they originated from.
- c. Names and addresses of the owner (s) and subdivider (s).
- d. Location, name, and dimensions of all existing streets, alleys, and utility easements bordering on or abutting the proposed lot adjustment.
- e. Date, scale, and N arrow indicating direction
- f. Location of water courses, structures, existing septic tanks and fields, and other physical features relating thereto.
- g. Dimensions in feet and hundredth parts thereof and bearing of all lines not parallel or perpendicular to lines of known bearing for all lots.
- h. Building setback lines
- i. All set pins & Monuments
- j. If a proposed lot split or lot line adjustment is proposed to be connected to a septic system due to the unavailability of sewer service to the affected lots, the newly created lot shall be tested and approved by the Health Department for said septic system, prior to approval by the City. A copy of the approved permit shall be part of the application.

5.8.5 Requirements for Final Lot Split, Lot Line Adjustment, or Lot Consolidation

An official plat, suitable for reproduction and filing, containing data required in section 5.7.4 Lot Adjustment Plat Requirements, shall be submitted to the City Staff before final lot adjustment plat approval. City Staff shall provide an approval stamp as well as signature and date of approval and the plat shall be filed by the owner or their representative and a stamped copy returned to the City for filing.

5.8.6 Exempt Lot Splits

For the purposes of this Section, 5.7.6, an Exempt Lot-Split subject to administrative review is defined as:

` (a) the division of a lot, located within the planning area, but outside the city limits, in existence on January 1, 2012 into no more than four separate parcels each a minimum of 5 acres in size; or

(b) A family lot split, where the resulting lots meet the minimum size requirements for the applicable zoning district; where no more than four lots are created from any lot in existence on January 1, 2012; and where no extension of public utilities, public streets or public rights-of-ways are needed. Only one lot may be transferred to any one family member. Family member means parents, siblings, children, or grand-children; or

(c) A deed correction where the changes are needed to correct legal errors; or

(d) Court ordered splits; or

(e) Lot splits for cemetery purposes

(f) a lot-line adjustment that results in no additional parcel, and where each final lot meets the minimum size requirements for the applicable zoning district.

5.8.6.1 Procedures for approval of exempt lot splits

Where a lot split is determined by City staff to be exempt from the procedures laid forth in section 5.7, staff shall administratively approve the plat and stamp it as approved and ready for filing by the owner or his representative.

5.9 VARIANCES

The Planning Commission may recommend variances to specific requirements of this ordinance to applicants requesting minor variations to site layout, or area requirements and improvement requirements **only** when unique site conditions and characteristics create a hardship that prevents the developer and the City from achieving a quality development and avoiding adverse environmental impacts or traffic congestion/circulation problems. Section 5.1.6 definitions, provides examples of the types of considerations that would justify a variance. Variances should be exceptions and should be minimal variations to the requirements specified in the development code, and should only be approved when a hardship is present that would not allow the regulations in place to be enforced. **PG Ord. 2021-22**

5.9.1 PROCEDURES FOR VARIANCE REQUESTS

A subdivision applicant may request a variance from specific sections of this ordinance by filing a written request with justification for the action. Hardship must be demonstrated by presentation of physical conditions unique to the subject site. The burden of proof shall remain with the applicant.

5.9.1.1 A fee in the amount of fifty dollars (\$50.00) is required for consideration of all variance requests, unless the variance is requested as part of an existing approval process such as preliminary plat approval.

5.9.1.2 The Planning Commission shall ~~approve or deny the~~ recommend approval or denial of a request within forty five (45) days of its submittal to the City.

5.9.1.3 If the Planning Commission recommends approval of the request, it shall be heard at the next City Council Meeting. The planning commission shall submit a written finding to the City Council enumerating the reasons they recommend the variance. The City Council may grant or deny the request; or send it back to the planning commission for further consideration. **Approved with 2021-22**

5.9.1.4 If the Planning Commission recommends denial of the request, the applicant may appeal that denial to the City Council by filing a written request for an appeal and the payment of a fifty dollar (\$50.00) for the appeal. **Approved with 2021-22**

5.9.2 VARIANCE ALTERNATIVES AND VARIANCE FUND

When considering a variance request, the City Council may grant an outright variance or waiver of a specific requirement; or they may decide that certain improvements are not necessary to be installed at this time, but may need to be installed at a later date. If the City Council determines that improvements are necessary but may be deferred, then the following shall apply: **Approved with 2021-22**

5.9.2.1 The developer shall be required to deposit into a special variance account a sum in an amount to be determined by the City's engineering consultant equal to the current estimated cost of installing the deferred improvement. **Approved with 2021-22**

5.9.2.2 The funds from section 5.8.2.1 shall be deposited into a dedicated variance fund and shall be used exclusively by the City, in its discretion, to pay for the future installation of the specific deferred improvements for which funds were deposited. **Approved with 2021-22**

5.10 Planned Unit Developments

5.10.1: Purpose and General Description

The purpose of the Planned Unit Development regulations is to encourage and allow more creative and imaginative design within developments than is possible under district zoning regulations. Planned Unit Developments are intended to allow substantial flexibility in planning and designing a proposal and to encourage the use of vacant, in-fill parcels in the built-up portion of the City. This flexibility often results in relief from rigid compliance with conventional zoning requirements for lot size, setbacks, and lot dimensions. Ideally, this flexibility will result in better planning that can incorporate neighborhood designs that create better planning, better amenities, provisions for community green spaces, unique living spaces, and desirable livability within a development. The developer gains relief from standard requirements and the governing body gains design approval over design and building elements that would normally not be subject to review, control, or approval. A PUD should promote the inclusion of open space in developments.

In concept, the Planned Unit Development (PUD) is a combination of zoning designation and a Development Plan. The Development Plan may consist of a subdivision plat, or a site plan, or a combination of both.

The approval process is designed to encourage innovation by the developer in allowing submittal of engineered plans, known as a Final Development Plan, after approval of a Zoning Plan to rezone the property.

Development must follow the approved Final Development Plan exactly. Failure in this respect can result in revocation of the PUD. Although design innovation is encouraged, and flexibility is allowed, the PUD may not be used simply as a method of avoiding zoning regulations.

5.10.2: Objectives

Through proper planning and design, each Planned Unit Development, herein referred to as a PUD should include features which further, and are in compliance with the following objectives:

1. Proposes design, architectural, and features not included in traditional developments or developments types already included in these regulations.
2. To allow for the design of developments that are architecturally and environmentally innovative, and that achieve better utilization of land than is possible through strict application of standard zoning and subdivision controls.
3. To allow for options for more affordable housing by increased housing density, but with design standards that can ensure community character and design are maintained.
4. To encourage land development that, to the greatest extent possible, preserves natural vegetation, respects natural topographic and geologic conditions, and refrains from adversely affecting flooding, soil, drainage, and other natural ecologic conditions.
5. To combine and coordinate architectural styles, building forms, and structural/visual relationships within a neighborhood that unifies community development, while allowing mixed uses in an innovative and functionally efficient manner.
6. To encourage the use and development of public open areas and recreation space, green areas, and visually pleasing land development techniques.
7. Encourage where possible, low impact development techniques.
8. To protect environmentally sensitive areas.
9. To encourage historical preservation, landmarks, and natural features which are deemed important to the community.

5.10.3: Standards for PUD's

1. Site and ownership: A PUD must be under single ownership and/or a unified control that requires compliance with the approved plan. The approval of a PUD can NOT be transferred with the transfer of property without the approval of the Prairie Grove Planning Commission.

2. Compatibility: The uses permitted in a PUD must be of a type and so located as to exercise no detrimental influence upon surrounding land uses currently in existence at the time the development is approved.
3. Density: PUD's shall be zoned PUDR or PUDC, and shall generally be compatible with adjacent land and zoning in the area. The net density of the PUD does not have to precisely correspond with adjacent zones, but should remain sensitive to the overall character of the land use plan and adjacent development and remain true to the density guidelines of said districts so as not to be detrimental to traffic flow, utility capacity, or drainage.
4. Setbacks and spacing between buildings in residential districts.
 - a. Side setbacks shall be placed on lots to allow a minimum of 10' between buildings, and not less than 2' setback between structures and lot lines for residential structures.
 - b. Front setbacks shall require a minimum of 15' from the street ROW line to the building line.
 - c. Rear setbacks shall not be less than 10'.

5.10.4 PUD Minimum Size and Use Criteria

PUD applications shall meet the following criteria before they will be considered for review and approval.

PUDs may be residential, commercial, industrial or mixed-use in nature.

The minimum size for PUDs which incorporate single-family residential uses shall be one-half (1/2) acres.

The minimum size for PUDs which incorporate non-single family residential, mixed uses, commercial or industrial uses shall be one (1) acre.

5.10.5: Procedures for PUD's

The unique character of PUD's requires the administrative processing be handled as a conditional use in each zoning district. The review and approval process can require conditions be placed on the development that are outside the requirements of the underlying zoning district. Requirements can include but are not limited to special requirements for green space preservation, preservation of unique land features, preservation of archeologically significant areas, special areas, special use areas for pedestrian travel, bike lanes, and special trails, park dedication, and preservation of public spaces. Plan submittals shall follow the requirements of Article 3.0; through 3.9, of the subdivision regulations. A three step approval process is required for PUD's and shall include the information required in Article 3.0 as well as additional information as listed below.

1. Letter of intent and sketch plan (concept plat submittal) procedure. The intent is to allow for discussion of area compatibility, determination of scope, and to seek general acceptance by neighboring properties and land users.
 - a. Concept plat must include the following minimum requirements; General layout including information detailing overall density, proposed green space preservation, proposed land uses, proposed design specifics, and ownership information.
 - b. Must be submitted to the planning office, a minimum of 14 days prior to planning commission hearing.
2. Preliminary plats shall require development specifics, including the overall design, utility provisions, easements, drainage requirements, drainage plan, street plans, and any other proposed improvements.
 - a. Detailed information shall include proposed overall density, proposed green space preservation areas, proposed land uses, proposed design specifics, and ownership information.
 - b. All preliminary plats must be submitted to the planning office, no less than 14 days prior to hearing date.
3. Final plats shall be required once all required improvements are completed as specified in Article 3.0 of the Subdivision regulations.

5.10.6 PUD Development Standards

- 1) *Uses Permitted*: Permitted uses within a PUD shall conform to the permitted uses within similar zoning districts adjoining or in the vicinity of where the PUD is being proposed or shall be consistent with the general character of the land use classification of the subject property in the city's Comprehensive Plan or other applicable Land Use Plan.
- 2) *Development Density*: All plans shall clearly depict the proposed density by land use category.
- 3) *Setbacks*: Building setbacks will be designed in such a manner that they:
 - A. Create a harmonious grouping of buildings;
 - B. Allow all maintenance of streets and utilities;
 - C. Do not restrict the provision of emergency or public services.
- 4) *Lot Size and Area Requirements*: No minimum lot sizes are established. Housing and development can be clustered or otherwise concentrated or arranged in planned locations on the site to take advantage of natural features and topography. The following restrictions apply:
 - A. Residential Density: Residential densities shall be determined on the basis of the following considerations:
 - (i) The densities of surrounding development;
 - (ii) The densities allowed under the current zoning;
 - (iii) The urban development goals and other policies of the city's Comprehensive Plan or other applicable Land Use Plan.
 - (iv) The topography and character of the natural environment;
 - (v) The impact of a given density on the specific site and adjacent properties.
- 5) *Residential Design*: Design standards for Single Family Residential developments that exceed the allowable density in R- 1.5 shall apply as follows:
 - A. Each dwelling unit shall be required to have 100% of the first floor for any side of the structure facing a public right-of-way to the eaves, be 100% of the materials listed below; the second story shall be 70% of the materials listed below: Note- this list below should not be considered exhaustive, and other materials may be considered for review upon request of the applicant on a case-by-case basis:
 - (i) Brick
 - (ii) Architectural or split concrete blocks to the exclusion of the following types: precision concrete blocks/concrete masonry units (CMU), and smooth faced concrete blocks.
 - (iii) Stucco
 - (iv) Cement-based board or similar masonry product
 - (v) Wood
 - (vi) Synthetic or natural stone.

(vii) Advanced Composite Polymeric Siding or similar (Rigid Vinyl Siding)

(viii) Alternative materials may be proposed for approval by Planning Staff unless the material is specifically prohibited in this section.

(a) Material sample board is required to be submitted when proposing any alternative materials.

(b) Physical samples of the proposed materials and colors (generally provided by architect upon request).

(c) The Planning Staff have the authority to deny any alternative materials if they are found to be in conflict with the intent of this code.

B. (iii) Prohibited materials: No Masonite, asphaltic exterior wall or roof material, aluminum, or 'pre-engineered' metal buildings, corrugated metal, and ribbed metal paneling which includes, and but is not limited to "PBR-Panel" and "R-Panel" metal siding (other than approved architectural metal or composites), non- textured concrete block (ground-faced is allowed), vinyl or other similar materials shall constitute a portion of any building except trim.

(i) Trim is defined as an ornamental design feature, that when removed does not significantly alter the appearance of the building. This commonly consists of moldings, cornices, parapet, frieze, sills, lintels, stringcourse, quoining, and ledgment.

C. Seventy percent (70%) of the lots shall be rear loaded access via private alleyway. Alleys shall not be accepted by the city for maintenance. Alleys shall be required to be paved and meet minimum standards:

(i) Minimum access easement width: 20 feet

(ii) Minimum traffic lanes: Two (2)

(iii) Minimum traffic lane width: Eight (8) feet

(iv) Minimum Pavement width (no curb and gutter required): Sixteen (16) feet.

(v) Design Speed: 15mph

6) Usable Open Space Reservation:

- a. Usable Open Space shall include land not used by buildings, accessory structures, yards, streets, or drainage (excluding "Active detention ponds" as described below),
- b. A minimum of 20% of the total site shall be dedicated for useable Open Space, and shall be maintained as common usable open space for the purpose of providing parks, recreational facilities, ways for pedestrian movement and circulation, and conserving visually pleasing elements of the environment.
- c. Private common useable open space shall be open to tenants and customers within the PUD. Access by the general public is desired. Common useable open space or park areas dedicated to the City shall be open to the public and maintained by the City.
- d. The required usable open space may include:

- (i) Wetlands and water bodies, including the normal water surface area of visible and accessible retention ponds or other bodies of water up to 25% of the required open space area. A visible and accessible waterbody may be fenced with non-opaque, decorative fencing with regular access gates with childproofing features;
 - (ii) Active detention ponds that include landscaping and recreational trails or other equipment/facilities beneficial to the community;
 - (iii) Vegetated / landscaped area, excluding required parking lot landscaping requirements;
 - (iv) Pedestrian paths, trails, sidewalks (exclusive of those required by ordinance) and covered walkways;
 - (v) Public plazas and hard surfaced recreation areas; and,
 - (vi) Public pools, tennis courts, basketball courts, baseball fields, soccer fields, or similar outdoor recreation facilities.
- e. Common Usable Open Spaces – Future Phase Construction: If common usable open space and common space improvements required for a development are planned for construction in future phases, a performance bond shall be required. Prior to the sale of any lot, site, home or other structure, a bond of sufficient surety determined by the Administrative Official shall be posted with the City for completion of said common usable open space improvements. The amount of the bond shall reflect 150 percent of the Administrative Official's estimate for completing the required improvements. The Zoning Plan shall clearly depict the amount of land to be used and maintained as permanent common usable open space.
- f. Landscaping and buffer areas shall be provided to enhance the visual and aesthetic appeal of the PUD development. The provided landscaping shall be consistent with other applicable landscaping regulations within this Code.
- 7) *Dedication:* At the discretion of the City, open space and park areas shall be dedicated to the City for public parks and recreational facilities provided City approves the nature and location of such lands and accepts the dedicated areas. The City shall be responsible for the operation and maintenance of these lands and properties once accepted for dedication. All open space and park areas not dedicated to the City shall be maintained by the Homeowner's Association or other appropriate entity.
- a. Nothing in this Code shall be construed as assigning or assuming any responsibility or liability on the part of the City of Prairie Grove, for maintenance of any landscaping, private open areas, parks, or recreational facilities. A hold harmless clause shall be incorporated in the covenants conveying with the land to this effect.
 - b. It shall be provided further, however, certain land areas to the City for public parks and recreational facilities, and the City approves the nature and location of such lands, and accepts the dedicated areas, the City shall be responsible for the operation and maintenance of these lands and properties.
- 8) *Bills of Assurance, Covenants, Trusts, and Homeowner Associations:* The developer shall create such legal entities as appropriate, when there are two or more owners, to undertake and be responsible for the ownership, operation, construction, and maintenance of private roads, parking areas, common usable open space, community facilities, recreation areas, buildings, lighting, security measures, and similar common elements. All legal instruments setting forth a plan or manner of permanent care and maintenance of such open space, recreational areas, and common owned facilities shall be approved by the City Attorney as

to legal form and effect, and by the Planning Commission as to the suitability for the proposed use of the common owned facilities.

If the common owned facilities are deeded to a homeowner association or improvement district, the developer shall file with the approved Final Development Plan a declaration of covenants and restrictions in the bill of assurance. The following is required:

- A. The homeowner association shall be legally established before building permits are granted.
 - B. Membership and fees shall be mandatory for each property buyer and successive buyer.
 - C. The open space restrictions shall be permanent.
 - D. The association shall be responsible for the maintenance of all common owned facilities covered by the agreement and for all liability, taxes, and other assessments.
 - E. Homeowners shall pay their pro-rata share of the initial cost; the maintenance assessment levied by the association must be stipulated as a potential lien on the property.
 - F. The association shall be able to adjust the assessment to meet changed needs.
- 9) *Private Street Conversion:* Private streets that are requested to be converted to public ownership shall be required to be improved to city standards prior to dedication to the City. The owners will bear full expense of reconstruction or any other action necessary to make the streets fully conform to the requirements applicable to public streets, prior to dedication and acceptance. The owner shall not be compensated for any street dedicated to public use. Any private street conversion shall be subject to the maintenance bond requirements.
- 10) *Land Subdivision:* In the construction and installation of all subdivision improvements in the PUD, said improvements shall conform to all requirements and standards as set forth in the Prairie Grove code.

CITY OF PRAIRIE GROVE, ARKANSAS

DRAINAGE CRITERIA MANUAL

_____, 2023

ORDINANCE NO. _____

AN ORDINANCE ADOPTING THE DRAINAGE CRITERIA MANUAL

**BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF PRAIRIE GROVE,
ARKANSAS:**

Section 1. That the City Council hereby adopts by reference the Drainage Criteria Manual, prepared for the City of Prairie Grove and adopted by this Ordinance of the City of Prairie Grove, and as may be amended

from time to time. All technical procedures and design standards contained therein shall have the same force and effect as if printed word for word herein.

Section 2. The City Council hereby determines that stormwater management, drainage and erosion control plans, and drainage criteria are necessary because of the rapid growth and development of Prairie Grove, and accordingly, unless the aforesaid provisions are put into effect immediately, the public health, safety, and welfare of the people of Prairie Grove will be adversely affected. Therefore, an emergency is hereby declared to exist and this ordinance; being necessary for the public health, safety, and welfare; shall be in full force and effect from and after its passage and approval.

PASSED AND APPROVED this _____ day of _____, 2020.

APPROVED:

By: _____
Mayor, David Faulk

ATTEST:

By: _____
Christine Kelly, City Clerk

(seal)

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SECTION I – SUBMITTAL PROCEDURES

1.1 DEFINITIONS

Unless specifically defined below, words or phrases shall be interpreted so as to give them the meaning they have in common usage and consistent with the words and phrases used in the Subdivision Regulations and stormwater management programs (e.g., Federal Emergency Management Agency [FEMA], Arkansas Department of Environmental Quality [ADEQ], and Arkansas Department of Transportation [ArDOT]) and to give this Drainage Criteria Manual its most effective application, words used in the singular shall include the plural, and the plural the singular; words used in the present tense shall include the future tense. The word “shall” mean mandatory and not discretionary; the word “may” is permissive.

ABRASION – Wear or scour by hydraulic traffic.

ABSORPTION – The assimilation or taking up of water by soil.

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

AGGRADATION – General and progressive raising of the streambed by deposition of sediment.

ArDOT – Arkansas Department of Transportation.

ALLUVIAL – Referring to deposits of silts, sands, gravels, and similar detritus material, which have been transported by running water.

ANTECEDENT MOISTURE – The degree of wetness of the soil at the beginning of a runoff period; frequently expressed as an index determined by summation of weighted daily rainfalls for a period preceding the runoff in question.

BACKWATER – The rise in water surface measured at a specified location upstream from the constriction causing the increased height.

BASE FLOOD – The flood or tide having a one (1) percent chance of being exceeded in any given year (commonly known as a 100 – year flood).

BED LOAD – Sediment that moves by rolling, sliding, or skipping along the bed and is essentially in contact with the streambed.

BRAIDED STREAM – A stream in which flow is divided at normal stage by small islands. This type of stream has the aspect of a single large channel within which there are subordinate channels.

BOUYANCY – The power of supporting a floating body, including the tendency to float an empty pipe (by exterior hydraulic pressure).

CAPILLARY RISE – The height above a free water elevation to which water will rise by capillary action.

CAPILLARY SUCTION – Capillary force that pulls or draws water against the force of gravity in dry soils.

CAISSON – Watertight box or cylinder used in excavating for foundations or tunnel pits – to hold out water so concreting or other construction can be carried on.

CITY – The City of Prairie Grove, Arkansas, and its employees expressly authorized by the Mayor to accomplish the specified task.

CITY ENGINEER – The registered professional engineer designated as the “City Engineer” by the City Council of the City of Prairie Grove, Arkansas; whether a staff employee of the City, or a consulting civil engineer.

COFFERDAM – A barrier built in the water so as to form an enclosure from which the water is pumped to permit free access to the areas within.

COMPOSITE HYDROGRAPH – A plot of mean daily discharges for a number of years of record on a single year time base for the purpose of showing the occurrence of high and low flows.

CONDUIT – A pipe of other opening, buried or above ground for conveying hydraulic traffic, pipelines, cables, or other utilities.

CONFLUENCE – A junction of streams.

CONTRACTION – The reduction in cross sectional area of flow.

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

CONTROL – A section or reach of an open conduit or stream channel that maintains a stable relationship between stage and discharge.

CONVEYANCE – A measure of the water carrying capacity of a stream or channel.

CRITICAL FLOW – That flow in open channels at which the energy content of the fluid is at a minimum. Also, that flow which has a Froude number of one (1).

CULVERT – A conduit for conveying water through an embankment.

CURRENT METER – An instrument for measuring the velocity of a current. It is usually operated by a wheel equipped with vanes or cups, which is rotated by the action of the impinging current. An indicating or recording device is provided to indicate the speed of rotation that is correlated with the velocity of the current.

DEBRIS – Any material including floating woody materials and other trash, suspended sediment, or bed load, moved by a flowing stream.

DEFLECTION – Change in shape or decrease in diameter of a conduit, produced without fracture of the material.

DEGRADATION – General and progressive lowering of the longitudinal profile of a channel by erosion.

DESIGN FLOOD – The peak discharge, volume if appropriate, stage or wave crest elevation of the flood associated with the probability of exceedance selected for the design of a roadway encroachment. By definition, the roadway will not be inundated from the stage of the design flood.

DETENTION – The slowing, dampening, or attenuation of flows either entering the storm sewer system or surface drainage by temporarily holding the water on a surface area, in a storage basin, or within the storm sewer.

DETENTION BASIN POND – An open excavation of depression in the ground surface used for temporary storage of storm water prior to release downstream.

DETENTION TANK – A tank used to temporarily store storm water underground. Inlet and outlet flow controls are usually provided, and tank can be perforated to exfiltrate water into soil during the detention time.

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.

DEVELOPMENT – Any improvements to a parcel of land other than the construction of a single-family dwelling or a duplex.

DIAPHRAGM – A metal collar at right angles to a drainpipe for the purpose of retarding seepage or the burrowing of rodents.

DIKE – An embankment to confine or control water, especially one built along the banks of a river to prevent overflow of lowlands or to deflect water away from a bank. Also called a Levee.

DIKE, FINGER – Relatively short embankments constructed normal to a large embankment, such as an approach fill to a bridge. Their purpose is to impede flow and direct it away from the major embankment.

DIKE, SPUR – Relatively short embankments constructed at the upstream side of a bridge end for the purpose of aligning flow with the waterway opening and to move scour away from the bridge abutment.

DIKE, TOE – Embankments constructed to prevent lateral flow from scouring the corner of the downstream side of an abutment embankment. Sometimes referred to as training dikes.

DIKE, TRAINING – Embankments constructed to provide a transition from the natural stream channel or floodplain, both to and from a constricting bridge crossing.

DRAWDOWN – The difference in elevation between the water surface elevation at a constriction in a stream or conduit and the elevation that would exist if the constriction were absent. Drawdown also occurs at changes from mild to steep channel slopes and at weirs or vertical spillways.

DYNAMIC EQUILIBRIUM – That delicate balance of the many factors that must occur in a stream reach so that the channel is neither aggrading nor degrading.

ENCROACHMENT – Extending beyond the original, or customary limits, such as by occupancy of the river and/or floodplain by earth fill embankment. An action within the limits of the base floodplain.

ENERGY GRADE LINE – The line that represents the total energy gradient along the channel. It is established by adding together the potential energy expressed as the water surface elevation referenced to a datum and the kinetic energy (usually expressed as velocity head) at points along the flowing water.

ENERGY HEAD – The elevation of the hydraulic gradient at any section, plus the velocity head.

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

EQUALIZER – A culvert placed where there is no channel but where it is desirable to have standing water at equal elevations on both side of a fill.

FLOOD FREQUENCY – Also referred to as exceedance interval, recurrence interval or return period; the average time interval between actual occurrences of hydrological event of a given or greater magnitude; the percent chance of occurrence is the reciprocal of flood frequency, e.g., a two (2) percent flood is the reciprocal statement of a 50-year flood.

FLOODPLAIN – The total area subject to inundation by the 100-year (1%) flood (also known as the Base Flood).

FLOODWAY – That portion of the floodplain, which is effective in carrying flow, within which this carrying capacity must be preserved and where the flood hazard is generally highest, i.e., where water depths and velocities are the greatest. It is that area which provides for the discharge of the base flood so the cumulative increase in water surface elevation is no more than one (1) foot.

FLOODPROOF – To design and construct individual buildings, facilities, and their sites to protect against structural failure, to keep water out or to reduce the effects of water entry.

FLOW, CRITICAL – That flow in open channels at which the energy content of the fluid is at a minimum. Also, that flow which has a Froude number of one (1).

FLOW, SUBCRITICAL – In this state, gravity forces are dominant, so that the flow has a low velocity and is often described as tranquil and streaming. Also, that flow which has a Froude number of less than one (1).

FLOW REGIME – The system or order characteristic of stream flow with respect to velocity, depth, and specific gravity.

FLUME – An open channel or conduit of metal, concrete, or wood, on a prepared grade, trestle, or bridge.

FREEBOARD – The vertical clearance of the lowest structural member of the bridge superstructure above the water surface elevation of the overtopping flood; the vertical distance between the level of the water surface usually corresponding to the design flow and a point of interest such as a levee top or specific location on the roadway grade.

FREE OUTLET – (as pertaining to critical flow) – Exists when the backwater does not diminish the discharge of a conduit.

FRENCH DRAIN – An underground passageway for water through interstices among stones placed loosely in a trench.

FROUDE NUMBER – A dimensionless expression of the ratio of inertia forces to gravity forces, used as an index to characterize the type of flow in a hydraulic structure in which gravity is the force producing motion and inertia is the resisting force. It is equal to a characteristic flow velocity (mean, surface, or maximum) of the system divided by the square root of the product of a characteristic dimension (as diameter or depth) and the gravity constant (acceleration due to gravity) all expressed in consistent units. $F_r = V/(gy)^{0.5}$

GAGING STATION – A location on a stream where measurements of stage or discharge are customarily made. The location includes a reach of channel through which the flow is uniform, a control downstream from this reach and usually a small building to house the recording instruments.

GRADUALLY VARIED FLOW – In this type of flow, changes in depth and velocity take place slowly over large distances, resistance to flow dominates and acceleration forces are neglected.

GROUNDWATER – Subsurface water occupying the saturation zone, from which wells and springs are fed. In a strict sense the term applies only to water below the water table.

GROUNDWATER RECHARGE – Water descending to the zone of saturation from the atmosphere which gravitates to the zone of saturation under natural conditions, or which is added to the zone of saturation by infiltration of storm water using subsurface disposal systems as defined herein.

GROUNDWATER TABLE – (or level) – Upper surface of the zone of saturation in permeable rock or soil. (When the upper surface is confined by impermeable rock, the water table is absent.)

HEAD – The energy, either kinetic or potential, possessed by each unit weight of a liquid expressed as the vertical height through which a unit weight would have to fall to release the average energy possessed.

HYDRAULIC RADIUS – The cross-sectional area of a stream of water divided by the length of that part of its periphery in contact with its containing conduits; the ratio of area to wetted perimeter.

HYDROGRAPH – A graph of stage or discharge versus time.

IMPERVIOUS – Not allowing, or allowing only with great difficulty, the movement of water; impermeable. Completely resisting entrance of fluids.

IMPROVED OPEN CHANNEL – An open channel which has been hydraulically designed and constructed to convey runoff in an orderly and efficient manner according to sound engineering practices. An improved open channel shall be paved (concrete lined), unless specifically approved otherwise by the City.

INFILTRATION – The passage of water through the soil surface into the ground. Normally used interchangeably with the word percolation.

INLET TIME – The time required for storm water runoff to flow from the most remote point of a drainage area to the point where it enters a drain or culvert.

INUNDATE – To cover or fill as with a flood.

INVERT – That part of a pipe or storm sewer below the spring line – generally the lowest point of the internal cross section.

MEANDER – In connection with streams, a winding channel usually in an erodible, alluvial valley. A reverse of S-shaped curve or series of curves formed by erosion of the concave bank, especially at the downstream end, characterized by curved flow and alternating shoals and bank erosion. Meandering is a stage in migratory movement of the channel as a whole down the valley.

NATURAL AND BENEFICIAL FLOODPLAIN VALUES – Include but are not limited to fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge.

NAVD 88 – The North American Vertical Datum of 1988, a standard for measuring elevations referenced to sea level. Differs from NGVD 29.

NGVD 29 – The National Geodetic Vertical Datum of 1929, a standard for measuring elevations referenced to sea level. Differs from NAVD 88.

NONUNIFORM FLOW – A flow in which the velocities vary from point to point along the stream or conduit, due to variations in cross section, slope, etc.

NORMAL WATER SURFACE (NATURAL WATER SURFACE) – The free surface associated with flow in natural streams.

OPEN CHANNEL – Any conveyance in which water flows with a free surface.

OUTFALL (or outlet) – In hydraulics, the discharge end of drains and sewers.

OVERTOPPING FLOOD – The flood described by the probability of exceedance and water surface elevation at which flow occurs over the roadway, over the watershed divide, or through structure(s) provided for emergency relief.

PERIPHERY – Circumference or perimeter of a circle, ellipse, pipe arch, or other closed curvilinear figure.

PERMEABILITY – The property of a material that permits appreciable movement of water through it when it is saturated, and movement is actuated by hydrostatic pressure of the magnitude normally encountered in natural subsurface water.

PERVIOUS SOIL – Soil containing voids through which water will move under ordinary hydrostatic pressure.

PONDING – Refers to water backed up in a channel or ditch as a result of a culvert of inadequate capacity or design to permit the water to flow unrestricted.

PRACTICABLE – Capable of being done within reasonable natural, social, or economic constraints.

PRESERVE – To avoid modification to the functions of the natural floodplain environment or to maintain it as closely as practicable in its natural state.

RAINFALL INTENSITY – Amount of rainfall occurring in a unit of time, converted to its equivalent in inches per hour at the same rate.

RAPIDLY VARIED FLOW – In this type of flow, changes in depth and velocity take place over short distances, acceleration forces dominate, and energy loss due to friction is minor.

REACH – A length of stream channel.

RECHARGE – Addition of water to the zone of saturation from precipitation or infiltration.

RECHARGE BASIN – A basin excavated in the earth to receive the discharge from streams or storm drains for the purpose of replenishing groundwater supply.

REGIME – The system or order characteristic of a stream; its behavior with respect to velocity and volume, form of and changes in channel, capacity to transport sediment, amount of material supplied for transportation, etc.

REGULATORY FLOODWAY – The floodplain area that is reserved in an open manner by Federal, State, or local requirements, i.e., unconfined or unobstructed either horizontally or vertically, to provide for the discharge of the base flood so that the cumulative increase in water surface elevation is no more than a designated amount (not to exceed one (1) foot as established by the Federal Emergency Management Agency [FEMA] for administering the National Flood Insurance Program).

RESTORE – To reestablish a setting or environment in which the functions of the natural and beneficial floodplain values adversely impacted by the development or improvements can again operate.

RETENTION – The prevention of runoff from entering the storm sewer system by storing it on a surface area or in a storage basin.

RETENTION BASIN POND – A man-made depression or impoundment to retain surface runoff waters.

RISK – The consequences associated with the probability of flooding attributed to an encroachment. It shall include the potential for property loss and hazard to life during the service life of the street.

RISK ANALYSIS – An economic comparison of design alternatives using expected total costs (construction costs plus risk costs) to determine the alternative with the least total expected cost to the public. It shall include probable flood-related costs during the service life of the facility for street operations, maintenance, and repair for street aggravated flood damage to other property, and for additional or interrupted street travel.

ROUGHNESS COEFFICIENT – A factor in the Kutter, Manning, and other flow formulas representing the effect of channel (or conduit) roughness upon energy losses in the flowing water.

RUNOFF – That part of the precipitation that runs off the surface of a drainage area and reaches a stream or other body of water or a storm drain or storm sewer.

SCOUR – The result of erosive action of running water, primarily in streams, excavating and carrying away material from the bed and banks.

SCOUR, GENERAL – The removal of material from the bed and banks across all or most of the width of a channel, as a result of a flow contraction that causes increased velocities and bed shear stress. Also known as **CONTRACTION SCOUR**.

SCOUR, NATURAL – Removal of material from the channel bed or banks that occurs in streams with the migration of bed forms, shifting of the thalweg and at bends and natural contractions.

SEDIMENT – Fragmentary material that originates from weathering of rocks and is transported by, suspended in, or deposited by water.

SEDIMENTATION BASIN – A basin or tank in which storm water containing settleable solids is retained to remove by gravity a part of the suspended matter.

SIGNIFICANT ENCROACHMENT – A street encroachment and any direct support of likely base floodplain development that would involve one or more of the following construction or flood related impacts:

1. A significant potential for interruption or termination of a transportation facility that is needed for emergency vehicles or provides a community's only evacuation route.
2. A significant risk. or,
3. A significant adverse impact on natural and beneficial floodplain values.

SIPHON – (inverted) – A conduit or culvert with a U or V shaped grade line to permit it to pass under an intersecting roadway, stream, or other obstruction.

SPECIFIC ENERGY – The energy contained in a stream of water, expressed in terms of head, referred to the bed of a stream. It is equal to the mean depth of water plus the velocity head of the mean velocity.

SPILLWAY – A low-level passage serving a dam or reservoir through which surplus water may be discharged, usually an open ditch around the end of a dam, or a gateway or a pipe in a dam. An outlet pipe, flume, or channel serving to discharge water from a ditch, ditch check, gutter, or embankment protector.

SPRING BOX – An enclosure constructed to protect a flow of water emerging from the ground.

STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (SSHC) – The Arkansas Department of Transportation (ArDOT) latest edition, unless specifically noted otherwise.

STAGE – The elevation of a water surface above a datum of reference.

STEADYFLOW – A flow in which the flow rate or quantity of fluid passing a given point per unit of time remains constant.

STORAGE BASIN – A basin excavated in the earth for detention or retention of water for future flow.

SUBCRITICAL FLOW – Flow with a Froude number less than one (1). In this state the role played by gravity forces is more pronounced, so the flow has a low velocity and is often described as tranquil and streaming.

SUPERCritical FLOW – Flow with a Froude number greater than one (1). In this state, the inertia forces become dominant, so the flow has a high velocity and is usually described as rapid, shooting, and torrential.

SUPPORT BASE FLOODPLAIN DEVELOPMENT – To encourage, allow, serve, or otherwise facilitate additional base floodplain development. Direct support results from an encroachment, while indirect support results from an action out of the base floodplain.

SURFACE STORAGE – Storm water that is contained in surface depressions or basins.

SURFACE WATER – Water appearing on the surface in a diffused state, with no permanent source of supply or regular course for considerable time; as distinguished from water appearing in water courses, lakes, or ponds.

SWALE – A slight depression in the ground surface where water collects.

SYNTHETIC HYDROGRAPH – A graph developed for the ungagged drainage area, based on known physical characteristics of the watershed basin.

TIME OF CONCENTRATION – Time required for storm water runoff to arrive at the point of concentration (usually in inlet to the storm drain) from the most remote point of the drainage area.

TAILWATER – The water surface just downstream from a structure.

UNIFORM FLOW – Flow in which the velocities are the same in both magnitude and direction from point to point along the stream or conduit, all stream lines being parallel.

UNSTEADY FLOW – A flow in which the velocity changes with respect to both space and time.

UNIT HYDROGRAPH – A hydrograph of a direct runoff resulting from one (1) inch of effective rainfall generated uniformly over the watershed area during a specified period of time, or duration.

WATER COURSE – A natural or artificial channel in which a flow of water occurs, either continuously or intermittently. Natural watercourses may be either on the surface or underground.

WATERSHED – Region or area contributing to the supply of a stream or lake; drainage area, drainage basin, or catchment area.

WETTED PERIMETER – The length of the wetted contact between the water and the containing conduit (measured along a plane at right angles to the conduit.)

ZERO INCREASE IN DISCHARGE – A storm sewer management concept that suggests no increase in runoff as a result of new development. Any increased flow generated by the development would be taken care of by subsurface disposal (infiltration).

1.2 GENERAL

The stormwater Management and Drainage Plans and Specifications shall be prepared by the Engineer of Record, who is a licensed professional engineer of the State of Arkansas. No building permits or subdivision approvals shall be issued until and unless the Stormwater Management and Drainage Plans have been approved by the City. Review and approval of the Plan by the City is not intended to modify or replace the Developer's or Contractor's responsibility to submit and satisfy the Arkansas Department of Environmental Quality NPDES general permit requirements for stormwater discharges associated with construction activity. In order to minimize review time by the City, one (1) set of reports, letters, and plans and specifications for the proposed improvements will be submitted.

1.2.1 CONCEPTUAL STORMWATER MANAGEMENT AND DRAINAGE PLAN

A conceptual Stormwater Management and Drainage Plan review with the City Engineer is suggested before platting, replats, lot-splits, building permits, and/or development improvements begin for the purpose of overall general drainage concept review.

1.2.2 PRELIMINARY STORMWATER MANAGEMENT AND DRAINAGE PLAN

A preliminary Stormwater Management and Drainage Plan and accompanying information as described in the Drainage Criteria Manual shall be submitted at the time of the preliminary plat, replat, lot-split, building permit, and/or development improvements are submitted. If needed, a review meeting will be scheduled by the City with representatives of the Developer, including the Engineer, to review the overall concepts included in the preliminary Stormwater Management and Drainage Plan. The purpose of this review shall be to jointly agree upon an overall stormwater management concept for the purposed development and to review criteria and design parameters that shall apply to the final design and of permanent stormwater management practices of the project.

1.2.3 FINAL STORMWATER MANAGEMENT AND DRAINAGE PLAN

Following the preliminary Stormwater Management and Drainage Plan review, the final Stormwater Management and Drainage Plan shall be prepared for each phase of the proposed project as each phase is developed. The final plan shall constitute a refinement of the concepts approved in the preliminary Stormwater Management and Drainage Plan, with preparation and submittal of detailed information as required in the Drainage Criteria Manual. This plan shall be submitted at the time construction drawings are submitted for approval.

On combination roadway-drainage projects, it is not the intent that completely separate storm drainage plans be prepared. Where the required details of the proposed storm drainage system can adequately be shown on the roadway plans without sacrificing clarity, the roadway plans will be sufficient. If a combined project submittal is made for review of only roadway or only storm drainage aspects of the project, this fact shall be clearly indicated in large, bold lettering on the Title Sheet.

1.3 DRAINAGE REPORT

A Preliminary Drainage Report shall be required at the time of the Preliminary Plat submittal and may be required for a replat, lot split, large-scale development, or building and/or development improvements. One (1) copy of the drainage report, letters, and plans shall be submitted and contain at a minimum the following information:

1. The general drainage patterns within the site, along with the location of all streams, springs, wetlands, and other drainage features,

2. A drainage area map will be provided that illustrates the offsite areas and drainage ways that contribute stormwater flows to the site. The drainage area map will be at a scale of one (1) inch equals 100 feet (1" = 100') or one (1) inch equals 200 feet (1" = 200'),
3. The location and nature of each drainage way downstream that will receive flows from the site,
4. A general schematic and preliminary design concept of the proposed improvements in sufficient detail to show proposed underground and overland flows, channels, and storm sewer piping (or proposed absence thereof),
5. The preliminary calculated pre-development and post-development flows and runoff for the 2, 10, 25, 50, and 100-year storm events. Include the preliminary calculations for (a) the flow entering the site, (b) the flow generated on the site, and (c) the total flow leaving the site,
6. If detention is proposed, then the preliminary report shall contain sufficient general drainage design to determine the basins, sub-basins, and requirements to route the runoff through the detention pond(s). Further, the detention pond design shall be a "final" design in sufficient detail to establish a final size, depth, location, and detail requirements to justify or prove the application of detention. If detention is not proposed, then supporting calculations and documentation of downstream conditions must be provided,
7. A written summary describing items 1 through 6 above.

Either the City Staff or the Planning Commission may request a more detailed drainage study prior to the Preliminary Plat approval.

A Final Drainage Report will be included with the drawings described below. One (1) copy of the final drainage report and letters shall be submitted and will include documentation and calculations supporting the installation of the proposed improvement(s), as outlined in the Drainage Report checklist included at the end of this section. It is permissible to combine the preceding items when legibility and readability are maintained.

If hydrologic and hydraulic studies reveal that the proposed development would cause increased frequency of flooding, depth of inundation of structures, or inundation of unprotected structures not previously subject to inundation, then the construction permit application shall be denied unless one (1) or more of the following mitigation measures are approved by the City: (1) onsite storage, (2) offsite storage, or (3) improve the drainage system.

If it is determined that offsite drainage improvements are required, then cost sharing will be subject to City Council approval.

1.4 PLANS AND SPECIFICATIONS

Plans and Specifications for storm drainage plans are to be signed by a licensed professional engineer registered in the State of Arkansas (the Engineer of Record). Because all plans, specifications, and calculations are retained by the City for use as permanent records, neatness, clarity, and completeness are very important, and lack of these qualities will be considered sufficient basis for submittal rejection.

Plan sheet size will be 24" by 36" with all sheets in each set of plans the same size. Larger sheets may be used with approval by the City on a case-by-case basis. Plan drawings will be prepared with a maximum horizontal scale of 1" = 50'. Profile drawings for storm sewers should be drawn to a suggested horizontal scale of 1" = 20', with a maximum scale of 1" = 50' and a vertical exaggeration of 10 to 1. Drainage ditch profile should be drawn

at the suggested horizontal scale of 1" = 20', with a maximum scale of 1" = 50' and a vertical exaggeration of 10 to 1. Special cases may warrant use of larger or smaller scale drawings for increased clarity or conciseness of the plans and may be used with prior permission of the City.

Each sheet in a set of Plans shall contain a sheet number, the total number of sheets in the Plans, proper project identification, and the date. Revised sheets submitted must contain a revision block with identifying notations and dates for revisions. Each sheet shall bear the signature and seal of the Engineer of Record, along with any appropriate Certificate of Authorization seal for the engineering company.

Four (4) sets of plans and specifications for the proposed improvements will be submitted in the following format during the platting process, where pertinent, and shall include: (1) Title Sheet, (2) General Layout Sheet, (3) Right-of-Way Sheet, (4) Plan and Profile Sheet(s), and (5) Standard and Special Detail Sheets. Drainage area maps and drainage calculations shall be included in the Drainage Report.

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.

1.3.1 TITLE SHEET

Title sheet shall include:

1. The designation of the project, which includes the nature of the project, legal description, the name or title, city, and state,
2. Engineer's project number,
3. Index of sheets,
4. Location maps showing project location in relation to streets, railroads, and physical features. The location map shall have a north arrow and appropriate scale,
5. A project control benchmark identified as to the location and elevation. 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 ties to permanent monuments approved by the City,
6. The name, address, and telephone number of the owner of the project and the name, address, and telephone number of the engineer preparing the plans.

1.3.2 GENERAL LAYOUT SHEET

The General Layout Sheet shall include:

1. North arrow and scale,
2. Legend of symbols that will apply to all sheets,
3. Name of development, if applicable, and all street name and an accurate tie to at least one monumented quarter section corner. Un-Platted tracts should have an accurate tie to at least one-quarter section corner,

4. Boundary line or project area,
5. Location and description of existing major drainage facilities within or adjacent to the project area,
6. Location of major proposed drainage facilities,
7. Name, location, and size of each utility within or adjacent to the project area,
8. "One-Call" (811) number will be noted on the plans,
9. If more than one General Layout Sheet is required, a match line shall be used to show continuation of coverage from one sheet to the next sheet.

1.3.3 OTHER REQUIREMENTS

1. Proposed grading, drainage, paving, and building and profiles of the streets and storm drainage systems and appurtenances.
2. Elevations on profiles or sections or as indicated on Plans shall be based on the North American Vertical Datum of 1988 (NAVD 88). At least one (1) permanent benchmark within each project shall be noted on the first drawing of each project, and their location and elevation shall be clearly defined.
3. Top of curb elevations will be noted at every inlet or drainage structure along the street. Top of inlet or structure elevations will be on all structures not adjacent to the curb.
4. The top of each page shall be either north or east. The stationing of street plans and profiles shall be from left to right and downstream to upstream in the case of channel improvement/construction projects, unless otherwise approved by the City Staff.
5. Each project shall show at least 50 feet of topography on each side of the proposed improvement. At least 100 feet of topography shall be shown in areas of channel flow at the property boundary. All existing topography and any proposed changes, including existing utilities, telephone installations, etc. shall be shown on the plans and profiles. Existing topography shall be shown by dashed line contours. Proposed topography shall be shown by solid line contours.
6. Revisions to drawings shall be indicated above the title block in a revision block and shall show the nature of the revision and the date made.
7. Existing and proposed features shall be clearly distinguishable on the plans. All existing utilities, telephone installations, sanitary and storm sewers, pavements, curbs, inlets, culverts, etc., shall be shown by broken lines or by screened printing. Proposed facilities shall be shown by solid lines. Land, lot, and property lines by distinguishable line type. Easements shall also be shown.
8. Lot lines and dimensions shall be shown where applicable.

9. The water surface elevation (WSE) resulting from a 100-year storm for all overland flow, including flow in the streets, parking lots, swales, and between lots shall be calculated and shown on the construction drawings.
10. Minimum floor elevation shall be shown a minimum of two (2) feet above the 100-year flood elevation on each lot when located in a designated FEMA floodplain and in areas where flooding is known to occur. Minimum floor elevations for other areas shall be a minimum of one (1) foot above the calculated 100-year WSE of open channels, swales, and overland flow.
11. It shall be understood that the requirements outlined in these standards are only minimum requirements and shall only be applied when conditions, design criteria, and materials conform to the City Specifications. When unusual subsoil or drainage conditions are suspected, an investigation should be made, and a special design prepared in line with good engineering practice.

DRAINAGE REPORT CHECKLIST
CITY OF PRAIRIE GROVE, ARKANSAS
REVISION NO. _____
DATE: _____

- _____ 1. PROJECT TITLE AND DATE
- _____ 2. PROJECT LOCATION – Include Street address and vicinity map.

- _____ 3. PROJECT DESCRIPTION – Brief description of the proposed project.
- _____ 4. PROJECT OWNER, ADDRESS, AND TELEPHONE NUMBER of the owner and developer, and proof of ownership for the property to be permitted.
- _____ 5. SITE AREA TOPOGRAPHIC MAP to the nearest 0.1 acre, showing the location and elevation of benchmarks, including at least one (1) benchmark for each control structure.
- _____ 6. DRAINAGE AREA MAP of the project vicinity, covering the project area and the total lands that contributes runoff. An aerial photograph, if available, is preferred.
- _____ 7. LAND USE MAP showing both current and proposed conditions for the drainage area that contributes runoff.
- _____ 8. SOILS AND VEGETATION MAP displaying the most recent U.S. Soil Conservation Service information and encompassing both the project area and the drainage area that contributes runoff.
- _____ 9. UPSTREAM AND DOWNSTREAM DRAINAGE – Brief description of the drainage path from the proposed site shown on a one (1) inch = 200 feet minimum scale, two (2) foot contour topographic map.
- _____ 10. AREA DRAINAGE PROBLEMS – Description of any known onsite or downstream drainage/flooding problems.
- _____ 11. SITE DRAINAGE – Description of site drainage for proposed project – including exhibit depicting different drainage areas and flow patterns (existing and proposed).
- _____ 12. SUMMARY OF RUNOFF – A table with the 2, 10, 25, 50, and 100-year storm flow comparisons for existing and proposed conditions and detention volumes required if applicable – also describe method used for determining stormwater runoff flows. The summary must include (a) the flows entering the site, (b) the pre-development flows on the site, (c) the post-development flows generated on the site, and (d) the total flows leaving the site.
- _____ 13. DESIGN STORM DESIGNATED BY Q 2-. 10-, 25-, 50-, and/or 100-year and design flow rate for each culvert, inlet design, open channel, or other drainage structures. Design storm designations shall be summarized by tables.
- _____ 14. OPEN CHANNEL FLOW DESIGN – Include computations for normal depth and velocity (use Figure 9.2 or equal).
- _____ 15. PAVEMENT DRAINAGE DESIGN – Include width of spread for design flow (use Figures 6.1 through 6.5, and Figure 7.12 or equal).
- _____ 16. CULVERT DESIGN – Include all computations and check for inlet/outlet control (use Table 4.3 or equal).
- _____ 17. RUNOFF COMPUTATION (use ArDOT Table 5-6).
- _____ 18. STORM SEWER INLET DESIGN – Include all computations (use Figure 7.12 or equal) and a drainage map showing the area contributing runoff to each inlet.

_____ 19. STORM SEWER DESIGN – Include all computations (use Table 8.1 and 8.2 or equal).

_____ 20. 100-YEAR WATER SURFACE ELEVATION (WSE) COMPUTATION – The water surface elevation (WSE) resulting from the 100-Year storm for all overland flow, including flow in the streets, parking lots, swales, and between lots shall be calculated and shown on the construction drawings. Minimum floor elevation shall be shown a minimum two (2) feet above the 100-year flood elevation on each lot when located in a designated floodplain and in areas where flooding is known to occur. Minimum floor elevations for other areas shall be a minimum one (1) foot above the calculated 100-year WSE of open channels, swales, or overland flow.

_____ 21. STORMWATER DETENTION DESIGN – Include the following computations and backup/support data:

SUMMARY OF RUNOFF – A table with 2, 10, 25, 50, and 100-year storm flow comparisons for existing and proposed conditions and detention volumes required if applicable – also describe method used for determining stormwater runoff flows. The summary must include (a) the flows entering the site, (b) the pre-development flows on the site, (c) the post-development flows generated on the site, and (d) the total flows leaving the site.

_____ 22. RECOMMENDATIONS/SUMMARY – Description of any drainage improvements to be made to the site – also, the following backup/support data:

_____ a. Runoff coefficient/CN computations (existing and proposed conditions).

_____ b. Complete runoff computations for the 2, 10, 25, 50, and 100-year storms (existing and proposed conditions).

_____ c. Detention required based on runoff computations.

_____ 1. Detention basin size requirement computations (using and approved method).

_____ 2. Release structure design computations (include release rate computations for the 2, 10, 25, 50, and 100-year storms).

_____ 3. Stage-Storage and Stage-Discharge curves for the detention facility.

_____ 23. ARKANSAS REGISTERED ENGINEER SEAL – Name, address, and telephone number on letter certifying drainage improvements are constructed to the City of Prairie Grove Standards and Ordinances.

_____ 24. WRITTEN SUMMARY OF THE IMPROVEMENTS including a summary of the offsite areas, onsite areas, condition of the downstream receiving areas, existing problems, increase flows, proposed improvements, detention or lack of detention, and final conclusions.

_____ 25. ADD THE FOLLOWING PARAGRAPH TO THE DRAINAGE LETTER:

“I, _____, Registered Professional Engineer No. _____ in the State of Arkansas, hereby certify that the drainage studies, reports, calculations, designs, and specifications

contained in this report have been prepared in accordance with the requirements of the City of Prairie Grove. Further, I hereby acknowledge that the review of the drainage studies, reports, calculations, designs, and specifications by the City of Prairie Grove, its consultants, or its representatives cannot and does not relieve me from my professional responsibility or liability.”

Signed & Sealed by Professional Engineer

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SECTION 2 – DETERMINATION OF STORM RUNOFF

2.1 GENERAL

Continuous records over many years on the amounts and rates of runoff from the City's streams would provide the best source of data on which to base the design of storm drainage and flood protection systems. Unfortunately, stream flow records or adequate history are not available for the City's drainage ways. Experience based prediction of the probable frequencies and amounts of runoff are not available as a standard practice in determining stormwater runoff and flood flows.

The accepted practice, therefore, is to relate runoffs to rainfall events, events with a lengthy period of record. The correlation of the rainfall events to runoff amounts is a widely accepted practice. Direct correlation provides a means for predicting the rates and amounts of runoff expected from the City's watersheds at various recurrence intervals since runoff events are directly based on known frequency of occurrence for various rainfall events.

Stormwater runoff shall be computed on the total drainage basin assuming full development of the area in accordance with the Land Use Plan at the time of development, except that the least intense zoning allowed for this purpose is R-1. Both runoff factors and time of concentration shall be calculated on a "fully developed" basis.

2.2 CITY OF PRAIRIE GROVE DRAINAGE METHODS

There are numerous methods of rainfall computations on which the design of storm drainage and flood control systems are based. Three (3) widely used methods include: The Rational Method, the Soil Conservation Service Technical Release – 55 (SCS TR-55), and the use of the Corps of Engineers HEC-HMS computer program or a similar approved method. One of these three methods should be the basis of all drainage analysis in the City of Prairie Grove. However, the City may approve other engineering methods of analysis for calculation of stormwater runoff when they are shown to be comparable to the required methods. The area limits and/or ranges for the analysis methods are:

- | | |
|--------------------|-----------------------|
| 1. Rational Method | Less than 100 acres |
| 2. SCS TR-55 | Less than 2,000 acres |
| 3. HEC-HMS | Greater than 60 acres |

Criteria for the preceding three methods are specified in the following sections:

2.3 RATIONAL METHOD

The Rational Method is probably the most frequently used rainfall-runoff method in urban hydrology in the United States. The Rational Method formula is expressed as:

$$Q = C (I) (A)$$

“Q” is defined as the peak rate of runoff in cubic feet per second. Actually, Q is in units of acre-inches per hour, but calculated results differ from cubic feet per second by less than one (1) percent. Since the difference is so small, the “Q” value calculated by the equation is universally taken as cubic feet per second or “CFS”.

“C” is the dimensionless coefficient of runoff represented in the ratio of the amount of runoff to the amount of rainfall.

“I” is the average intensity of rainfall in inches per hour for a second period of time equal to the critical time of full contribution of the drainage area under consideration. This critical time for full contribution is commonly referred to as “time of consideration.”

“A” is the area in acres that contributes to runoff at the point of design or the point under consideration.

Basic assumptions associated with use of the Rational Method are as follows:

1. The computed peak rate of runoff to the design point is the function of the average rainfall rate during the time of concentration to that point.
2. The time of concentration is the critical value in determining the design rainfall intensity and is equal to the time required for water to flow from the hydraulically most distant point in the watershed to the point of design.
3. The ratio of runoff to rainfall (“C”) is uniform during the entire duration of the storm event.
4. The rate of rainfall or rainfall intensity (“I”) is uniform for the entire duration of the storm event and is uniformly distributed over the entire watershed area.

2.3.1 RUNOFF COEFFICIENT (“C”)

The proportion of the total rainfall that runs off depends on the relative porosity or imperviousness of the ground surface, the surface slope, and the ponding character of the surface. Impervious surfaces, such as asphalt pavements and roofs of buildings, will be subject to nearly 90 percent runoff, regardless of the slope, after the surfaces have become thoroughly wet. Onsite inspections and aerial photographs are valuable in estimating the nature of the surfaces within the drainage area.

2.3.2 SOIL

The runoff coefficient “C” in the Rational Method formula is also dependent on the character of the soil. The type and condition of the soil determines its ability to absorb precipitation. The rate at which a soil absorbs precipitation generally decreases if the rainfall continues for an extended period of time. The soil absorption or infiltration rate is also influenced by the presence of soil moisture before a rain (antecedent condition), the rainfall intensity, the proximity of the groundwater table, the degree of soil compaction, the porosity of the subsoil, vegetation, ground slopes, and surface depressions.

2.3.3 SELECTION OF RUNOFF COEFFICIENTS

It should be noted that the runoff coefficient “C” is the variable of the Rational Method that is least susceptible to precise determination. Proper selection requires judgement and experience on the part of the Engineer, and its use

in the formula implies a fixed ratio for any given drainage area, which in reality is not the case. A reasonable coefficient must be chosen to represent the integrated effects of infiltration, detention storage, evaporation, retention, flow routing, and interception; all of which affect the time distribution and peak rate of runoff. However, to standardize City Design Computations, Table 2.1 represents standard runoff coefficient values by land use and composite analysis. The values for respective land uses shall govern for all drainage analysis and design projects using the Rational Method.

2.3.4 RAINFALL INTENSITY (“I”)

Rainfall intensity is the design rainfall rate in inches per hour for a particular drainage basin or sub-basin. The rainfall intensity is selected on the basis of the design rainfall duration and frequency of occurrence. The design duration is equal to the time of concentration for a drainage area under consideration. Once the time of consideration is known, the design intensity of rainfall may be determined from the rainfall intensity chart (see Table 2.2). The frequency of occurrence is a statistical variable that may be established by the City Standards or chosen by the Engineer as a design parameter.

2.3.5 DRAINAGE AREA (“A”)

The drainage area or the area from which runoff is to be estimated is measured in acres when using the Rational Method. Drainage areas should be calculated using planimetric-topographic maps, supplemented by field surveys where topographic data has changed or where the contour interval is too great to distinguish the exact direction of overland flows.

2.3.6 TIME OF CONCENTRATION (t_c)

The time of concentration used in the Rational Method is a measure of the time of travel required for runoff from the most remote part of the drainage area to reach the design point or the point under consideration.

For non-urban areas, the time of concentration consists of an overland flow time (t_I) plus the time of travel in a combined form, such as a small swale, channel, or drainage way. For urban areas, the time of concentration consists of an inlet time or overland flow time (t_I) plus the time of travel (t_T) in the storm sewer, paved gutter, roadside drainage ditch, or drainage channel. Time of travel (t_T) can be estimated from the hydraulic properties of the storm sewer, gutter, swale, ditch, or drainage way. Overland flow time, on the other hand, will vary with surface slope, surface cover, and distance of surface flow. Thus, the time of concentration can be calculated for both urban and non-urban areas:

$$t_c = t_I + t_T$$

In which:

t_c	=	time of concentration (minutes)
t_I	=	initial, inlet, or overland flow time (minutes)
t_T (minutes)	=	travel time in the ditch, channel, gutter, storm sewer, etc.

The engineer may use either the kinematic wave equation or the FAA equation for the initial time of concentration.

A limitation on the time of concentration is usually placed on the calculations for the sub-basins in the water shed. Typical ranges for the t_c are 5 to 30 minutes. For paved areas the minimum shall be 5 minutes. For overland flow areas the minimum shall be 10 minutes subject to individual design conditions. The minimum recommended for the first residential basin is 10 minutes; and 5 minutes for the first industrial/commercial basin. The size of the basin may require adjustment until the minimum time is achieved.

If a watershed or basin involves a design time of concentration in excess of 30 minutes then the applicability of the Rational Method must be checked.

2.3.6.1 NON-URBANIZED WATERSHED

The initial or overland flow time (t_I) in non-urbanized watersheds may be calculated using Figure 2.1 or the following equation:

$$t_I = 1.8 (1.1 - C) (L^{0.5}) / (S^{0.333}) \quad (\text{Equation 2.2})$$

Where

t_I	=	initial or overland flow time (minutes)
C	=	runoff coefficient
L	=	length of overland flow, (feet, 300-foot maximum)
S	=	average basin slope (percent)

Equation 2.2 is considered generally adequate for distances up to 300 feet. For longer basin lengths, the runoff will combine, and the sheet flow assumption is no longer valid. The time of concentration would then be overland flow in combination with the travel time (t_T), which is calculated using the hydraulic properties of the swale, ditch, or channel. The travel time (t_T) can be estimated with the help of Figure 2.2 and the following equation:

$$t_T = L / 60V \quad (\text{Equation 2.3})$$

The time of concentration is then the sum of the initial flow time (t_I) and the travel time (t_T).

A limitation on the time of concentration is placed on the calculation for the first sub-watershed in the calculation sequence. As the calculation proceeds downstream and additional sub-watersheds are added, the limitation no longer applies. The minimum t_c recommended for the non-urban watersheds is 5 minutes.

The process of calculating the time of concentration in a non-urbanized basin is illustrated in the following example:

Example No. 1: Time of Concentration in Non-Urban Watershed

Given: A 15-acre non-urbanized rangeland watershed. Watershed has a length of 560 feet and an average slope of 1.0 percent. Uppermost 300 feet of watershed has an average land slope of 2.0 percent.

Required: Time of Concentration

Solution:

Step 1: First find the runoff coefficient for clay type soil grassland.

From Table 2.1

$$C = \underline{0.50}$$

Step 2: Find the initial (overland) flow time for the uppermost 300 feet of the watershed. From Figure 2.1 or Equation 2.2, t_I for the 300-foot sub-watershed length, slope, and C value is:

$$t_I = 1.8 (1.1 - 0.50) (300^{0.5}) / (2.0^{0.333})$$

$$t_I = \underline{15 \text{ minutes}}$$

Step 3: Find the travel time for the remaining 260 feet of the watershed length. From Figure 2.2, the average travel velocity for the given watershed, slope, and “Short Grass Pasture” curve is:

$$V = \underline{0.7 \text{ ft/sec.}}$$

The travel time is calculated using this velocity and 260 feet of travel length.

$$t_T = L/60 * V = 260 \text{ ft.} / (60 \text{ sec/min}) (0.7 \text{ ft/sec})$$

$$t_T = \underline{6 \text{ minutes}}$$

Step 4: Combine $t_I + t_T$

$$t_C = 15 + 6 = \underline{21 \text{ minutes}}$$

2.3.6.2 URBANIZED WATERSHED

Overland flow in urbanized basins can occur from the back of the lot to the street, in parking lots, in greenbelt areas, or within park areas. It can be calculated using the procedure described in Section 2.3.6.1 and Equation 2.2, except the travel time t_T to the first design point or inlet is estimated using the “Paved Area (Sheet Flow) & Shallow Gutter Flow” line in Figure 2.2. For subsequent design points, the time of concentration is calculated by accumulating the travel times in downstream drainage way reaches.

A limitation on the time of concentration is placed on the calculation for the first sub-watershed in the calculation sequence. As the calculation proceeds downstream and additional sub-watersheds are added, the limitation no longer applies. The maximum t_C recommended for the first residential watershed is 10 minutes (plus or minus

0.5 minutes) and 5 minutes for the first industrial/commercial watershed. The size of the watershed may require adjustment until the maximum t_c is achieved.

Example No. 2: Time of Concentration in Urbanized Watershed

Given: A 100-acre single-family residential development. The first sub-basin has a total length of 300 feet. The upper overland flow portion is from the back of a lot and is 100 feet in length at an average slope of 2.0 percent. The overland flow is mostly over grass and a short driveway, which have a composite runoff coefficient of 0.50. The lower 200 feet of the first watershed has an average slope of 1.0 percent.

Required: Time of concentration at the first storm sewer inlet located 300 feet from the top of the first watershed

Solution:

Step 1: Find the initial (overland) flow time for the uppermost 100 feet at 2.0 percent slope. From Figure 2.1 or Equation 2.2.

$$t_I = 1.8 (1.1 - 0.50) (100^{0.5}) / (2.0^{0.333})$$

$$t_I = \underline{8.6 \text{ minutes}}$$

Step 2: Using “Paved Area (Sheet Flow) & Shallow Gutter Flow” curve on Figure 2.2, find the average flow velocity for the remaining 200 feet at 1.0 percent slope:

$$V = \underline{2.0 \text{ ft/sec}}$$

Step 3: Calculate the travel time t_T using the velocity found in Step 2 and Equation 2.3:

$$t_T = L/60 * V = 200 \text{ feet} / (60 \text{ sec/min}) (2.0 \text{ ft/sec})$$

$$t_T = \underline{1.7 \text{ minutes}}$$

Step 4: Calculate the time of concentration to the first inlet using Equation 2.1:

$$t_C = t_I + t_T$$

$$t_C = 8.6 + 1.7 = \underline{10.3 \text{ minutes}}$$

Step 5: Continue the time of concentration calculations in the downstream direction. The flow calculated at each design point is used to calculate the flow velocity in the downstream pipe, gutter, swale, or channel. This velocity is then used to calculate the time of travel to the next downstream design point.

The individual travel times are accumulated in a downstream direction to calculate the time of concentration at each successive downstream design point.

2.3.7 CHANNEL FLOW

The velocity in an open channel or a storm sewer not flowing full can be determined by using Manning’s Equation. Channel velocities can also be determined by using backwater profiles. Usually, average flow velocity is determined assuming a bank-full condition.

2.3.8 APPLICATION OF THE RATIONAL METHOD

The first step in applying the Rational Method is to define the boundaries of the entire relevant sub-watershed's tributary to the points of interest. A field check and possible field survey should be made for each watershed. At this stage of planning, the possibility for the diversion of runoff should be checked, since the major storm watershed basin does not always coincide with the minor storm watershed. This is often the case in urban areas. For instance, at some street intersection the low flow will stay next to a curb and follow the lowest grade. But when a large flow occurs, the water will be deep enough so that part of the runoff will overflow the street crown and drain into a new watershed.

2.3.9 MAJOR STORM ANALYSIS

When analyzing the major runoff occurring on an area that has a storm sewer system sized for the initial storm, care must be used when applying the Rational Method. Normal application of the Rational Method assumes that the storm sewer collects all the runoff. For the initial storm design, the time of concentration is dependent upon the flow time in the sewer. However, during the major storm runoff, the sewers will probably be at capacity and would not carry the additional runoff flowing to the inlets. This additional water would then flow overland past the inlets, generally at a lower velocity than the flow in the storm sewers.

If a separate time of concentration analysis is made for the pipe flow and surface flow, a time lag between the surface flow peak and the pipe flow peak will occur. This lag, in effect, will allow the pipe to carry a larger portion of the major storm runoff than would be predicted using the initial storm time of concentration. The basis for this increased benefit is that the excess water from one inlet will flow to the next inlet, using the overland route. If that inlet is also at capacity, the water will often continue on until capacity is available in the inlet and storm sewer system.

2.4 SOIL CONSERVATION SERVICE METHOD, TABULAR TR-55

2.4.1 GENERAL

The Soil Conservation Service tabular method is a synthetic hydrograph method developed specifically for use in urbanized and urbanizing areas. This method is similar to the Rational Method in that runoff is directly related to rainfall amounts through use of runoff curve numbers (RCNs) (See Tables 2.3a, 2.3b, and 2.3c for urban, cultivated agricultural, and other agricultural areas, respectfully). The basic equation used with the tabular method is also very similar to the one used for the Rational Method:

$$q = (DRO) \times (DA) \times (HDO)$$

q = Hydrograph coordinate discharge in CFS

DRO = Direct runoff amount in inches

DA = Drainage area in square miles

HDO = Hydrograph distribution ordinate in CSM/inch

CSM/inch = Cubic feet per second per square mile per inch of runoff

Hydrograph coordinates are computed from the hydrograph distribution data in the TR-55 Manual. A coordinate value is computed for each time shown in the distribution data. The calculated "q" results, when plotted against the corresponding times, constitute the runoff hydrograph.

The tabular method is useful in analyzing watersheds involving several sub-areas with complex runoff patterns. The method is most useful in analyzing changes in runoff volume due to development and in evaluating runoff control measures. The SCS tabular method as described here shall be used in all cases where watershed problems involving two or more interacting sub-areas. The SCS tabular method is a suggested method to be used in evaluating the runoff effects of urbanization and the evaluation/design of runoff control measures.

2.4.2 METHOD FUNDAMENTALS

The SCS has completed extensive research in the runoff potential from native soils under specific conditions or pre-wetting and rainfall events. This research has also extended to correlation of native soil types and land uses in assessing runoff potential. Runoff curve number or RCN values have been developed that approximate the runoff potential from various types of development with respect to native soils. These RCN values are similar to runoff coefficient values used in the Rational Method in that they can be used to estimate the amount of rainfall that will actually result in runoff. The amount of runoff that will occur for a given RCN value is a function of the design rainfall and is termed direct runoff amount (DRO). The RCN values differ from runoff coefficients in that:

1. Their development encompasses a wide range of land uses.
2. Runoff potentials from native soil types are taken into account.
3. The amount of runoff that will occur is the function of both the RCN value and the design rainfall.

Design rainfalls used with a tabular method are 24-hour rainfall amounts taken from the U.S. Weather Bureau data. The data include reoccurrence intervals or frequencies of occurrence of 10, 25, 50, and 100 years.

Hydrograph distribution ordinates used in the tabular method were developed by computer analysis of many watersheds of various sizes and configurations. The distribution data published in Technical Release No. 55 were developed specifically by computing hydrographs for a 1-square-mile drainage area for a range of times of concentration and routing of the hydrographs through stream reaches with a range of travel times.

One advantage of using the empirically based hydrograph distributions over simpler methods is that the channel storage and overland flow storage effects are taken into account. This feature is particularly useful in the cases involving larger, more complex watersheds.

The biggest advantage of the tabular method over simpler methods is that the runoff effects of different development patterns (both in land use and in drainage facilities) can be easily measured. The effects of a wide variety of runoff control measures can also be measured since the methods work result is in hydrograph form. These features are extremely valuable in watershed management efforts since differences in flow magnitudes are often more important in design decisions than are determinations of precise peak flow values for given conditions. Also, volumetric effects of runoff can be considered with hydrograph methods.

2.4.3 LIMITATIONS ON TABULAR METHOD USE

The tabular method should not be used when large changes in RCN values occur among watershed sub-areas and when runoff volumes are less than about 1-1/2 inches for RCN values less than 60.

The tabular method should not be used for watersheds that have several sub-areas with times of concentration below 6 minutes. In these cases, sub-areas should be combined of at least 6 minutes (0.10 hours) for the combined areas.

2.4.4 TABULAR METHOD USE

2.4.4.1 DETERMINATION OF RUNOFF CURVE NUMBER (RCN)

The RCN determines the amount of runoff that will occur with the given rainfall. Soil types and land use are used to determine the runoff potential.

Calculation of the RCN values for watershed or sub-area proceeds in the same fashion as the calculation of weighted runoff coefficients used in the Rational Method. Area calculations are completed for each land use type within the study area. Table 2.3 lists RCNs for various land uses. A more complete table listing RCN values for specific soil types and land coverage can be found in the TR-55 Manual. These values are used along with the area calculations to arrive at a weighted RCN for the watershed or sub-area under consideration. Table 2.5 is a worksheet that is useful in tabulating weighted RCNs for watersheds and watershed sub-areas. Areas can be measured either in acres or square miles. Weighted RCN values should be rounded to the nearest whole number.

2.4.4.2 DESIGN STORM DATA

The tabular method is based on 24-hour rainfall amounts for various design recurrence intervals of frequency of occurrence. These rainfall amounts are taken from the U.S. Weather Bureau Technical Paper No. 40 for the Prairie Grove area and are shown in Table 2.2.

2.4.4.3 DIRECT RUNOFF AMOUNTS FROM DESIGN STORM (DRO VALUES)

Table 2.4 is a generalized table of direct runoff amounts for given rainfalls and RCNs. This table can be used to interpolate runoff amounts (DRO values) from any combination of RCN between 60 and 98 and rainfall amounts between 1 and 12 inches.

2.4.4.4 MODERN APPROVED COMPUTERIZATION

Modern approved computerization of this design method by experienced engineers is encouraged.

2.5 HEC-HMS COMPUTER MODEL

2.5.1 GENERAL

A unit hydrograph method must be used for watersheds over 200 acres, which is the upper limit for the Rational Method. HEC-HMS (Snyder or SCS method) is suitable for these and smaller watersheds (60 acres suggested minimum).

The HES-HMS computer program is a hydrologic simulation model developed by the U.S. Army Corps of Engineers Hydrologic Engineering Center. HEC-HMS is the successor to the Corps well known HEC-1 modeling program. HEC-HMS has numerous options for determining and routing runoff hydrographs and is well documented. A user manual is available online, along with a technical reference manual.

The following description of features is taken from the Hydrologic Modeling System HEC-HMS Technical Reference Manual:

“For precipitation-runoff-routing simulation, HEC-HMS provides the following components:

- Precipitation-specification options which can describe and observed (historical) precipitation event, a frequency-based hypothetical precipitation event, or an event that represents the upper limit of precipitation possible at a given location.
- Loss models which can estimate the volume of runoff, given the precipitation and properties of the watershed.
- Direct runoff models that can account for overland flow, storage and energy losses as water runs off a watershed and into the stream channels.
- Hydrologic routing models that account for storage and energy flux as water moves through stream channels.
- Models of naturally occurring confluences and bifurcations.
- Models of water-control measures, including diversions and storage facilities.

These models are similar to those included in HEC-1. In addition to these, HEC-HMS includes:

- A distributed runoff model for used with distributed precipitation data, such as the data available from weather radar.
- A continuous soil-moisture-accounting model used to simulate the long-term response of a watershed to wetting and drying.

HEC-HMS also includes:

- An automatic calibration package that can estimate certain model parameters and initial conditions, given observations of hydrometeorological conditions.
- Links to a database management system that permits data storage, retrieval, and connectivity with other analysis tools available from HEC and other sources.”

For additional information, consult the HEC website at <https://www.hec.usace.army.mil/software/hec-hms/>

2.6 STORMWATER RUNOFF ANALYSIS SOFTWARE

The City of Prairie Grove will allow the use of the following software or acceptable equal for the estimating stormwater runoff:

2.6.1 TR-55

A computerized version of TR-55 is available for download directly from the U.S. Natural Resources Conservation Service (formerly the Soil Conservation Service). A user manual is also available. For more information, refer to the NRCS TR-55 download page at <https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/?cid=stelprdb1042901>

2.6.2 QUICK TR-55

Quick TR-55 is ideal for modeling a general hydrology and runoff from site development. In addition to SCS TR-55 Methods, the program can compute hydrographs using the Rational Method, Modified Rational, Santa Barbara, and DeKalb Procedures.

2.6.3 HEC-HMS

HEC-HMS generates hydrographs from rainfall or snowmelt, adds or diverts them, then routes through reaches and reservoirs. HEC-HMS models’ multiple streams and reservoir networks, and has dam failure simulation capabilities. It handles level-pool routing for reservoirs and detention ponds, and routes through stream reaches using Kinematic Wave, Muskingum, Muskingum-Cunge, Modified Puls, and other methods. HEC-HMS

supports multiple methods for computing infiltration and abstraction losses, and computes unit hydrographs using the Clark method, Snyder method, and SCS dimensionless hydrographs. HEC-HMS is available for download directly from the Corps of Engineers. For more information, refer to the HEC-HMS page at <https://www.hec.usace.army.mil/software/hec-hms/>

TABLE 2.1

Slope	Land Use	Soil Classification			
		Sand or Sandy Loam Soils (Pervious)		High Clay Soils (Impervious)	
		Min.	Max.	Min.	Max.
Flat (0 to 1%)	Cultivated	0.25	0.35	0.30	0.40
	Woodlands	0.15	0.20	0.10	0.15
	Pasture	0.20	0.25	0.30	0.40
	Residential	0.50	0.60	0.50	0.60
	Commercial/Industrial	0.60	0.90	0.60	0.90
	Paved	0.90	0.90	0.90	0.90
Rolling (1 to 3.5%)	Cultivated	0.45	0.65	0.50	0.70
	Woodlands	0.15	0.20	0.18	0.25
	Pasture	0.30	0.40	0.35	0.45
	Residential	0.50	0.60	0.50	0.60
	Commercial/Industrial	0.60	0.90	0.60	0.90
	Paved	0.90	0.90	0.90	0.90
Hilly (3.5 to 5.5%)	Cultivated	0.60	0.75	0.70	0.85
	Woodlands	0.20	0.25	0.25	0.30
	Pasture	0.35	0.45	0.45	0.55
	Residential	0.50	0.60	0.50	0.60
	Commercial/Industrial	0.60	0.90	0.60	0.90
	Paved	0.90	0.90	0.90	0.90
Mountainous (Over 5.5%)	Woodlands			0.70	0.80
	Bare			0.80	0.90
Grassed ROW Slopes		0.70	0.70	0.70	0.70

NOTE: The maximum value for High Clay Soils shall be used unless approved by City Staff

DURATION MINUTES	2 YEARS	5 YEARS	10 YEARS	25 YEARS	50 YEARS	100 YEARS
5	5.54	6.58	7.34	8.46	9.35	10.2
6	5.35	6.34	7.07	8.15	9.00	9.85
7	5.10	6.09	6.80	7.80	8.68	9.50
8	4.92	5.85	6.54	7.52	8.34	9.14
9	4.72	5.64	6.30	7.29	8.06	8.80
10	4.58	5.45	6.08	7.06	7.78	8.55
11	4.41	5.28	5.88	6.78	7.50	8.25
12	4.27	5.10	5.70	6.55	7.25	7.92
13	4.12	4.92	5.50	6.32	7.00	7.70
14	4.00	4.78	5.34	6.15	6.81	7.45
15	3.88	4.65	5.18	6.00	6.61	7.24
16	3.78	4.54	5.04	5.84	6.45	7.05
17	3.67	4.38	4.91	5.69	6.30	6.90
18	3.55	4.29	4.80	5.55	6.15	6.73
19	3.47	4.17	4.70	5.43	6.00	6.55
20	3.38	4.06	4.59	5.32	5.88	6.43
21	3.29	3.98	4.49	5.20	5.76	6.30
22	3.20	3.89	4.39	5.10	5.65	6.27
23	3.13	3.80	4.30	4.98	5.52	6.08
24	3.05	3.73	4.20	4.89	5.43	5.93
25	2.99	3.66	4.12	4.80	5.32	5.85
26	2.93	3.58	4.06	4.72	5.24	5.75
27	2.87	3.50	3.96	4.62	5.13	5.65
28	2.80	3.44	3.90	4.54	5.05	5.55
29	2.73	3.37	3.83	4.47	4.97	5.46
30	2.69	3.30	3.76	4.40	4.90	5.38
31	2.62	3.24	3.70	4.31	4.80	5.30
32	2.58	3.19	3.64	4.25	4.74	5.20
33	2.52	3.12	3.57	4.18	4.67	5.12
34	2.48	3.07	3.51	4.11	4.60	5.04
35	2.42	3.02	3.46	4.06	4.51	4.98
36	2.40	2.97	3.40	3.99	4.45	4.90
37	2.37	2.92	3.33	3.92	4.50	4.83
38	2.30	2.89	3.28	3.87	4.33	4.78
39	2.28	2.82	3.24	3.81	4.28	4.70
40	2.23	2.79	3.18	3.76	4.20	4.62
41	2.20	2.75	3.13	3.70	4.15	4.58
42	2.16	2.70	3.10	3.65	4.10	4.50
43	2.12	2.67	3.07	3.60	4.05	4.43
44	2.10	2.63	3.01	3.56	3.97	4.40
45	2.07	2.60	2.97	3.51	3.92	4.33
46	2.04	2.55	2.94	3.46	3.87	4.28
47	2.00	2.52	2.90	3.42	3.82	4.22
48	1.98	2.49	2.86	3.37	3.78	4.18
49	1.97	2.47	2.82	3.33	3.72	4.12
50	1.96	2.42	2.79	3.29	3.69	4.08
51	1.90	2.40	2.74	3.25	3.63	4.03
52	1.88	2.36	2.71	3.20	3.60	3.98
53	1.87	2.33	2.69	3.17	3.55	3.92
54	1.86	2.31	2.65	3.14	3.50	3.88
55	1.82	2.29	2.62	3.10	3.46	3.83
56	1.80	2.26	2.59	3.06	3.44	3.80
57	1.79	2.23	2.56	3.02	3.39	3.75
58	1.76	2.21	2.54	2.98	3.35	3.70
59	1.74	2.19	2.50	2.96	3.30	3.67
60	1.73	2.17	2.48	2.90	3.26	3.62
120	1.12	1.41	1.61	1.86	2.09	2.32
180	0.79	1.04	1.20	1.37	1.53	1.72
6 hr	0.48	0.62	0.73	0.84	0.93	1.03
12 hr	0.29	0.37	0.44	0.50	0.56	0.62
24 hr	0.17	0.22	0.25	0.29	0.33	0.36
Source:	5 - 60 min. NOAA HYDRO - 35					
	60 - 120 min. interpolated					

Table 2-3a. - Runoff Curve Numbers for Urban Areas^a

Cover Description				Curve Numbers for Hydrologic Soil Group			
Cover Type and Hydrologic Condition			Average Percent Impervious Area ^b	A	B	C	D
Fully developed urban areas (vegetation established)							
Open space (lawns, parks, golf courses, cemeteries, etc.) ^c							
Poor Condition (grass cover < 50%)				68	79	86	89
Fair Condition (grass cover 50% to 75%)				49	69	79	84
Good Condition (grass cover > 75%)				39	61	74	80
Impervious areas:							
Paved parking lots, roofs, driveways, etc. (excluding ROW)				98	98	98	98
Streets and roads:							
Paved; curbs and storm sewers (excluding ROW)				98	98	98	98
Paved; open ditches (including ROW)				83	89	92	93
Gravel (including ROW)				76	85	89	91
Dirt (including ROW)				72	82	87	89
Western desert urban areas:							
Natural desert landscaping (pervious areas only) ^d				63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1 to 2 inch sand or gravel mulch and basin borders)				96	96	96	96
Urban districts:							
Commercial and business			85	89	92	94	95
Industrial			72	81	88	91	93
Residential districts by average lot size:							
1/8 acre or less (town houses)			65	77	85	90	92
1/4 acre			38	61	75	83	87
1/3 acre			30	57	72	81	86
1/2 acre			25	54	70	80	85
1 acre			20	51	68	79	84
2 acres			12	46	65	77	82
Developing urban areas							
Newly graded areas (pervious areas only, no vegetation) ^e				77	86	91	94
Idle lands (CNs are determined using cover types similar to those in Table 2-2c).							
* Average runoff condition and I _a = 0.2S							

^a Average runoff condition and $I_a = 0.2S$

^b The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

^c CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space

^d Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

^e Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded

Table 2-3b. - Runoff Curve Numbers for Cultivated Agricultural Lands^a

Cover Description			Curve Numbers for Hydrologic Soil Group			
Cover Type	Treatment ^b	Hydrologic Condition ^c	A	B	C	D
Fallow	Bare Soil	--	77	86	91	94
	Crop Residue Cover (CR)	Poor	76	85	90	93
Row Crops		Good	74	83	88	90
		Poor	72	81	88	91
	Straight Row (SR)	Good	67	78	85	89
		Poor	71	80	87	90
	SR + CR	Good	64	75	82	85
		Poor	70	79	84	88
	Contoured ©	Good	65	75	82	86
		Poor	69	78	83	87
	C + CR	Good	64	74	81	85
		Poor	66	74	80	82
	Contoured and Terraced (C&T)	Good	62	71	78	81
		Poor	65	73	79	81
Small Grain	SR	Good	61	70	77	80
		Poor	65	76	84	88
	SR + CR	Good	63	75	83	87
		Poor	64	75	83	86
	C	Good	60	72	80	84
		Poor	63	74	82	85
	C + CR	Good	61	73	81	84
		Poor	62	73	81	84
	C&T	Good	60	72	80	83
		Poor	61	72	79	82
	C&T + CR	Good	59	70	78	81
		Poor	60	71	78	81
Close-seeded or broadcast legumes or rotation meadow	SR	Good	58	69	77	80
		Poor	66	77	85	89
	C	Good	58	72	81	85
		Poor	64	75	83	85
	C&T	Good	55	69	78	83
		Poor	63	73	80	83
		Good	51	67	76	80
		Poor				

^a Average runoff condition, and $I_a = 0.2S$ ^b Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.^c Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good $\geq 20\%$), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 210-VI-TR-55, Second Ed., June 1986

Table 2.3c - Runoff Curve Numbers for Other Agricultural Lands^a

Cover Description		Curve Numbers for Hydrologic Soil Group			
Cover Type	Hydrologic Condition	A	B	C	D
Pasture, grassland, or range - continuous forage for grazing ^b	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow - Continuous grass, protected from grazing and generally mowed for hay	--	30	58	71	78
Brush - Brush-weed-grass mixture with major element ^c	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 ^d	48	65	73
Woods - Grass combination (orchard or tree farm) ^e	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods ^f	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 ^d	55	70	77
Farmsteads - Buildings, lanes, driveways, and surrounding lots	--	59	74	82	86

^a Average runoff condition, and $I_a = 0.2S$.

^b *Poor*: <50% ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: >75% ground cover and lightly or only occasionally grazed.

^c *Poor*: <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

^d Actual curve number is less than 30; use CN = 30 for runoff computations

^e CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

^f *Poor*: Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

(210-VI-TR-55. Second Ed., June 1986)

SCS DIRECT RUNOFF VALUES - TABLE 2.4

Rainfall (Inches)	Runoff Curve Number (RCN)							
	60	65	70	75	80	85	90	
1.0	0.00	0.00	0.00	0.03	0.08	0.17	0.32	0.5
1.2	0.00	0.00	0.03	0.07	0.15	0.28	0.46	0.7
1.4	0.00	0.02	0.06	0.13	0.24	0.39	0.61	0.9
1.6	0.01	0.05	0.11	0.20	0.34	0.52	0.76	1.1
1.8	0.03	0.09	0.17	0.29	0.44	0.65	0.93	1.2
2.0	0.06	0.14	0.24	0.38	0.56	0.80	1.09	1.4
2.5	0.17	0.30	0.46	0.65	0.89	1.18	1.53	1.9
3.0	0.33	0.51	0.72	0.96	1.25	1.59	1.98	2.4
4.0	0.76	1.03	1.33	1.67	2.04	2.46	2.92	3.4
5.0	1.30	1.65	2.04	2.45	2.89	3.37	3.88	4.4
6.0	1.92	2.35	2.80	3.28	3.78	4.31	4.85	5.4
7.0	2.60	3.10	3.62	4.15	4.69	5.26	5.82	6.4
8.0	3.33	3.90	4.47	5.04	5.62	6.22	6.81	7.4
9.0	4.10	4.72	5.34	5.95	6.57	7.19	7.79	8.4
10.0	4.90	5.57	6.23	6.88	7.52	8.16	8.78	9.4
11.0	5.72	6.44	7.13	7.82	8.48	9.14	9.77	10.3
12.0	6.56	7.32	8.05	8.76	9.45	10.12	10.76	11.3

To obtain runoff depths for RCN's and other rainfall amounts not shown in this Table use arithmetic interpolation.

DIRECT RUNOFF VALUES BY RCN'S AND RAINFALL AMOUNT

Source: U.S. Soil Conservation Service Technical Release No. 55

RUNOFF CURVE NUMBER WORKSHEET Table 2.5

Sub-Basin

LAND USE	RCN	ACRES	RCN X ACRES
TOTALS:			

WEIGHTED RCN = Total (RCN x Acres) / Total Acres =

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SECTION 3 – FLOW IN STORM DRAINS AND DRAINAGE APPURTENANCES

3.1 GENERAL

A general description of storm drainage systems and quantities of storm runoff is contained in this section and Section II of this manual. It is the purpose of this section to consider the significance of the hydraulic elements of the storm drainage system.

Hydraulically, storm drainage systems are conduits (open or closed) in which unsteady and non-uniform free flow exists. Storm drains accordingly are designed for open-channel flow to satisfy as well as possible the requirements for unsteady and non-uniform flow. Steady flow conditions may or may not be uniform.

The construction standards for culverts and bridges shall be in strict accordance with the latest published ArDOT standards, or as amended by the City of Prairie Grove ordinances.

All storm sewers shall be designed on the total drainage basin assuming full development of the area in accordance with the land use plan designated at the time of development, except that the least intense zoning allowed for this purpose is R-1. Both runoff factors and time of concentration shall be calculated on a “fully developed” basis.

The City reserves the right to require improvements, provision of drainage easements, and the provision of agreements beyond the boundaries of the development to facilitate flow of water through the development, and to avoid possibility of lawsuits based on damage from changing runoff in the addition, and also to provide continuous improvements of the overall drainage system. The developers, to include corporate entities, shall be responsible at their expense for making off-site improvements necessary to correct drainage or flooding problems created by their development.

If it is determined that off-site drainage improvements are required, then the cost sharing may be considered with approval by the Prairie Grove City Council. If the City is unable to or unwilling to contribute its share of the off-site costs, the developer shall have the option of (a) building the off-site improvements at their own expense, (b) providing detention to match downstream capacities, or (c) delaying the project until the City of Prairie Grove is able to share in the offsite costs. Detention must be approved by the City of Prairie Grove.

3.2 STORM SEWER DESIGN REQUIREMENTS

A formal Drainage Report shall be required for each subdivision and large-scale development. A preliminary report will be required at the time of the Preliminary Plat submittal as outlined in Section 1, Submittal Procedures.

3.2.1 MINOR AND MAJOR DRAINAGE SYSTEMS

All urbanized watersheds are considered to have two drainage systems. The first is commonly referred to as a Minor Drainage System and the other is the Major Drainage System.

The Minor Drainage System is designed to convey runoff from frequent minor rainfall events up to a predetermined design recurrence interval. Runoff from these rainfall events is typically conveyed in the curb and gutter (subject to the limitations defined in this manual), roadside ditches, storm sewers, small channels and swales, or other minor conveyance systems.

The Major Drainage System is designed to convey runoff from rainfall events up to the 100-year recurrence interval. The purpose of the Major Drainage System is to minimize flood impact to

health and life, damage to structures, and interruption of emergency traffic and services. Major storm runoff is typically conveyed through the urban street system (subject the limitations defined in this manual), open drainage channels, large conduits, and other conveyance facilities.

Both the minor and major drainage systems typically utilize the urban street system for conveyance of storm water runoff. If a storm event generates runoff in excess of the capacity of the minor drainage system (i.e., curb and gutter, storm sewers, etc.), then the major system conveys the overflow. In an urban environment the street would typically convey the excess runoff as a channel. All subdivisions will include the planning, design, and implementation of the minor and major drainage systems.

3.2.2 DRAINAGE CHANNELS

3.2.2.1 PRIMARY DRAINAGE CHANNELS

All primary drainage channels lying within or immediately adjacent to the development shall meet the following conditions:

1. All land below the 100-year maximum flood elevation shall be dedicated to the city as a permanent drainage easement, for the purpose of providing drainage.
2. The existing channel lying within or immediately adjacent to the development shall be cleaned to provide for the free flow of water, and the channel shall be straightened, widened, and modified to the extent required to prevent overflow beyond the limits of the dedicated drainage area (i.e., to contain the 100-year flow). This type of construction is subject to constraints imposed by the U.S. Army Corps of Engineers, and appropriate permitting for the construction shall be the responsibility of the Developer.
3. Paving of primary drainage channels is not required.
4. Site improvements shall provide for the grading of all building sites and streets to an elevation where all building sites will not be subject to overflow, and in a manner that will provide for the rapid runoff of all rainfall.
5. Whenever channel improvement is carried out, sodding, back sloping, cribbing, and other bank protection shall be designed and constructed to control erosion for all the anticipated conditions of flow for the segment of channel involved.
6. Open drainage channel shall not be constructed in a street easement or right-of-way. Existing roadside ditches shall be enclosed in closed conduits as part of the development requirements.
7. Culverts, bridges, and other drainage structures shall be constructed in accordance with the City's Minimum Street Standards at all locations where drainage channels intersect with continuous street or alleys.

3.2.2.2 SECONDARY DRAINAGE CHANNELS AND SURFACE DRAINAGE

Surface drainage and all secondary channels within, or adjacent to the development shall meet the following conditions:

1. Secondary drainage channels, which have a primary function of collecting surface water from adjacent properties or interception and diverting side hill drainage, shall be provided with an improved open channel (see definitions).
2. Secondary drainage channels which have a primary function of transporting water through the block or collecting water from cross channels and which have a drainage area of less than ten acres shall be improved with closed storm sewers; and where the secondary

drainage channel has a drainage area of greater than ten (10) acres an improved open channel (see definitions) or closed storm sewer shall be provided, as approved by the City Staff.

3. A drainage channel shall not be located in a street easement unless it is placed in a closed storm sewer, or unless a paved street surface is located on both sides of a paved drainage channel to give access to abutting properties.
4. Site grading shall be carried out in such a manner that surface water from each lot will flow without diversion to a storm sewer, improved channel, or paved street.

3.3 REQUIREMENTS RELATIVE TO IMPROVEMENTS

3.3.1 BRIDGES AND CULVERTS

When bridges are provided where continuous streets or alleys cross watercourses, they shall be designed to accommodate the design storm by providing one (1) foot of freeboard, measured from the low chord to the design storm water surface.

When culverts are provided where continuous streets or alleys cross watercourses, they shall be designed to accommodate the design storm by providing one (1) foot of freeboard, measured from the top of the road/curb to the design storm water surface.

Additionally, the following requirements shall be met, A 50-year frequency storm without overtopping on principal and minor arterial roads and streets, 25-year frequency storm without overtopping for minor arterials and collectors, and a 10-year frequency storm without overtopping for all other streets.

Roadway Classification	Design Storm
Arterial	50-year (two percent)
Collector	25-year (four percent)
Local	10-year (ten percent)

The structure shall be designed in accordance with current Arkansas Department of Transportation specification materials and to carry a minimum HS-20 loading in any case.

3.3.2 CLOSED STORM SEWER

Closed storm sewers for all conditions other than required in Section 3.3.1 shall be designed to accommodate a design storm, based on the drainage area involved. Closed storm sewers shall be:

- Reinforced concrete box culverts for minimum HS-20 loadings.
- Reinforced concrete pipe; ASTM Class III with a minimum of one (1) foot cover.
- Reinforced concrete pipe; ASTM Class IV when less than one (1) foot cover.

- Corrugated metal pipe of the required gage with a minimum of two (2) feet of cover (Corrugated metal pipe is not allowed under public or private streets or roads)
- Other as approved by the City of Prairie Grove Staff on a case-by-case basis

Where closed storm sewers cross between lots to continue into other facilities, a swale or approved equal shall be constructed to provide the combined capacity of the 100-year peak flow. When storm sewers are not designed for the 100-year peak flow and are not within a public street, a drainage easement shall be provided that prohibits structures from blocking the flow. The easement shall be sized to pass the 100-year flow. The 100-year water surface elevation shall be plotted on the design drawings.

3.3.3 MINIMUM GRADES

Storm drains should operate with velocities of flow sufficient to prevent excessive deposition of solid material; otherwise, objectionable clogging may result. The controlling velocity is near the bottom of conduits and considerably less than the mean velocity. Storm drains shall be designed to have a minimum velocity flowing full of 2.5 feet per second (fps). Table 3.1 indicates the grades for both concrete pipe ($n = 0.013$) and for corrugated metal pipe ($n = 0.024$) to produce a velocity of 2.5 fps, which is considered the lower limit of scouring velocity. Grades for closed storm sewers and open paved channels shall be designed so that the velocity shall not be less than 2.5 fps nor exceed 20 fps. All other structures such as junction boxes or inlets shall be in accordance with ArDOT standard drawings.

Closed storm sewers extending to farthest downstream point of development shall consider velocity and discharge energy dissipators to prevent erosion and scouring along downstream properties.

3.3.4 EARTHEN CHANNELS (a.k.a. OPEN DITCHES)

Open earthen channels may be approved where needed to convey runoff. Such channels shall be designed on a 50-year storm. In all cases for channels, the Design Engineer shall calculate the 100-year flow and show elevations relating to the 100-year flow on the official plat of the development.

Channels shall have a gradient to keep the velocity within 1.5 to 5.0 fps. Sod shall be required to the 25-year storm depth unless approved by the City Staff. Side slopes shall have a minimum slope ratio of 3:1 unless approved by the City Staff. See Table 3.2 for permissible velocities for swales, open channels, and ditches with uniform stands of various well-maintained grass covers. Floodplains are areas of land adjacent to an open sodded ditch (not in closed storm sewers) that may flood during a 100-year rain. Floodways and floodplains shall be indicated on drainage improvement plans and final plots.

Earthen channels are only permitted where specifically authorized by the City. In all other cases, channels shall be open paved channels as defined below.

3.3.5 OPEN PAVED CHANNELS

Open paved channels may be approved where needed to intercept runoff. Such channels shall be designed on a 50-year storm. In all cases for open channels, the Design Engineer shall calculate the 100-year flow and show elevations relating to the 100-year flow on the official plat of the development.

Such channels may be of different shapes according to existing conditions. The channel shall be of concrete with a minimum 6-inch thickness paved to the 25-year storm depth. Thickness of concrete and amount of reinforcing steel shall depend upon conditions at site and size of channel.

3.4 FULL OR PART-TIME FLOW IN STORM DRAINS

It is important to recognize that storm drain hydraulics are not the same as culvert hydraulics. See Section 4 for a detailed discussion of culvert hydraulics.

3.4.1 GENERAL

Closed storm sewers or open channels shall be designed so that their capacity will not be less than that computed using Manning's Equation. All storm drains shall be designed by the application of the continuity equation and Manning's Equation, either through the appropriate charts and nomographs, or by direct solutions of the equations as follow:

$$Q = AV \text{ (continuity equation) and} \quad (3.1)$$

$$Q = \frac{1.49}{n} AR^{2/3} S_o^{1/2} \quad \text{(Manning's Equation)} \quad (3.2)$$

Q = Capacity = discharge in cfs

A = Cross-sectional area in conduit or channel in square feet

P = Wetted perimeter (feet)

R = Hydraulic radius = A/P

S_o = Slope of pipe (feet per foot)

n = Coefficient of roughness of pipe (Manning's coefficient)

V = Velocity in pipe (fps)

There are several general rules to be observed when designing storm sewers. When followed, they will tend to alleviate or eliminate the common mistakes made in storm sewer design. These rules are as follows:

1. Select pipe size and slope so that the velocity of flow will increase progressively, or at least will not appreciably decrease at inlets, bends, or other changes in geometry or configuration. An 18-inch pipe diameter is the minimum acceptable pipe diameter for maintenance purposes. Where used, arch pipe sizes shall be hydraulically equivalent to the round pipe size.
2. Do not discharge the contents of a larger pipe into a smaller one, even though the capacity of the smaller pipe may be greater due to steeper slope, unless phased construction is approved by the City.
3. Conduits are to be checked at the time of their design with reference to critical slope. If the slope of the line is greater than critical slope, the unit will likely be operating under entrance

- control instead of the originally assumed normal flow. Conduit slopes should be kept below critical slope if possible. This also removes the possibility of a hydraulic jump within the line.
4. All pipes under streets shall be reinforced concrete pipe unless an alternative material is specifically approved in writing by the City. Pipe not under streets may be corrugated metal or spiral metal pipe, or other materials approved by the City, if sufficient cover is provided.

3.4.2 ROUGHNESS COEFFICIENT

Roughness coefficients for storm drains are shown on Table 3.3

3.4.3 MINOR HEAD LOSSES AT STRUCTURES

The following total energy head losses at structures shall be determined for inlets, manholes, wye branches or bends, and other junctions in the design of closed conduit. See figures 3.1 and 3.2 for details of each case. Minimum head loss used at any structure shall be 0.10 foot, unless otherwise approved.

The basic equation for most cases, where there is both upstream and downstream velocity, takes the form as set forth below with the various values of the coefficient of K_j shown in Tables 3.4, 3.5, 3.6, and 3.7.

$$h_j = \frac{K_j(V_2^2 - V_1^2)}{2g} \quad (3.3)$$

h_j = Junction or structure head loss in feet.

V_1 = Velocity in upstream pipe in fps

V_2 = Velocity in downstream pipe in fps

K_j = Junction or structure coefficient of loss.

In the case where the initial velocity is negligible, the equation for head loss becomes:

$$h_j = \frac{K_j V_2^2}{2g} \quad (3.4)$$

The values of the coefficient “K” for determining the loss of head due to obstructions in pipe are shown in Table 3.7, and the coefficients are used in the following equation to calculate the head loss at the obstruction:

$$h_j = \frac{K_j V_2^2}{2g}$$

The values of the coefficient “ K_j ” for determining the loss of head due to sudden enlargements and sudden contractions in pipes are shown in Tables 3.4, 3.5, and 3.6, and the coefficients are used in the following equation to calculate the head loss at the change in cross section:

$$h_j = \frac{K_j V^2}{2g}$$

Design and Construction of Urban Stormwater Management Systems prepared by the American Society of Civil Engineers Manuals and Reports of Engineering Practice No. 77 may also be used as a reference to calculate minor losses associated with transitions, beads, and junctions.

3.4.4 JUNCTION BOX LOCATIONS

Junction box ports will be required whenever there is a change in size, direction, elevation, grade, or where there is a junction of two or more sewers. An inlet or junction box shall be required at the upstream end of the storm sewer. The maximum spacing between inlets or junction boxes shall be 400 feet. The required structure size shall be as follows:

STRUCTURE SIZE	
Sewer Diameter	Manhole Size
18" to 36"	4'
42" to 48"	5'
54" to 60"	6'
Larger than 60"	To be approved by the City

Larger structure diameters may be required when storm sewer alignments are not straight through or when more than one line goes through the manhole.

3.4.5 PIPE FLOW CHARTS

Figure 3.3 represents relative velocity, area, and discharge velocity in circular pipes for any depth of flow. Pipe-flow nomographs for determining flow properties of circular pipe, elliptical pipe, and pipe arches are illustrated on Figures 3.4 through 3.12. Nomographs are based upon a value of “n” of 0.024 for corrugated metal and 0.012 for concrete. The charts are self-explanatory, and their use is demonstrated by the example in Figure 3.4.

Pipe-flow nomographs for various sizes of pipes and channels are included for reference on Figures 3.14 through 3.41.

For values of “n” other than 0.012, the value of Q should be modified by using the formula below:

$$Q_c = \frac{Q_n (0.012)}{n_c} \quad (3.5)$$

Q_c = Flow based upon n_c

n_c = Value of “n” other than 0.012

Q_n = Flow from nomograph based on $n = 0.012$

This formula is used in two ways. If $n_c = 0.015$ and Q_c is unknown, use the known properties to find Q_n from the nomograph, and then use the formula to convert Q_n to the required Q_c . If Q_c is one of the known properties, you must use the formula to convert Q_c (based on n_c) to Q_n (based on $n = 0.012$) first, and then use Q_n and the other known properties to find the unknown value on the nomograph.

Example 1

Given: Slope = 0.005; depth of flow (d) = 1.8 feet; diameter (D) = 36 inches; $n = 0.018$

Find: Discharge (Q)

First determine $\frac{d}{D} = \frac{1.8 \text{ feet}}{3 \text{ feet}} = 0.6$. Then enter Figure 3.4 to read $Q_n = 34$ cfs. Using the formula $Q_c = 34 \left(\frac{0.012}{0.018} \right) = \underline{22.7 \text{ cfs}}$ (answer).

Example 2

Give: Slope = 0.005; diameter (D) = 36 inches; discharge (Q_c) = 22.7 cfs; $n = 0.018$

Find: Velocity of flow (fps)

First convert Q_c to Q_n so that nomograph can be used. Using the formula $Q_n = 22.7 \left(\frac{0.018}{0.012} \right) = 34$ cfs, enter Figure 3.4 to determine $\frac{d}{D} = 0.6$. Now enter Figure 3.6 to determine $\underline{V = 7.5 \text{ fps}}$ (answer).

3.5 UTILITIES

In the design of a storm drainage system, the Engineer is frequently confronted with the problem of grade conflict between the proposed storm drain and existing utilities, such as water, gas, and sanitary sewer lines.

When conflicts arise between a proposed drainage system and utility system, the owner of the utility system shall be contacted and made aware of the conflict. Any adjustments necessary to the drainage system of the utility can then be determined.

Due to the difficulty and expense to the public with regard to hand cleaning, clearing, and other channel maintenance, the following channel requirements are specified to expedite small equipment cleaning and access to drainage easements and channels:

- Manholes are not allowed in drainage channels.
- Access easements shall be required every 600 feet.
- Utility crossings above the channel flowline shall not be allowed unless approved in writing by the City.
- Utilities shall not be located beneath a concrete channel bottom except at crossings or be accepted and approved in writing by the City.
- Where allowed by the City, utilities may be located beneath earthen channels. Such utilities shall have a minimum cover of 3 feet.

Table 3.1		
Minimum Slope Required to Produce Scouring Velocity		
Pipe Size	Concrete Pipe	Corrugated Metal
(Inches)	Slope ft./ft.	Pipe ft./ft.
18	0.0018	0.0060
21	0.0015	0.0049
24	0.0013	0.0041
27	0.0011	0.0035
30	0.0009	0.0031
36	0.0007	0.0024
42	0.0006	0.0020
48	0.0005	0.0016
54	0.0004	0.0014
60	0.0004	0.0012
66	0.0004	0.0011
72	0.0003	0.0010
78	0.0003	0.0009
84	0.0003	0.0008
96	0.0002	0.0007

Table 3.2
PERMISSIBLE VELOCITIES FOR CHANNELS LINED WITH GRASS

COVER	SLOPE RANGE (PERCENT)	PERMISSIBLE VELOCITY, fps	
		EROSION-RESISTANT SOILS	EASILY ERODED SOILS
Bermuda Grass	0 - 5	8	6
	5 - 10	7	5
	> 10	6	4
Buffalo Grass, Kentucky bluegrass, smooth brome, blue grama	0 - 5	7	5
	5 - 10	6	4
	> 10	5	3
Grass Mixture	0 - 5	5	4
	5 - 10	4	3
Do not use on slopes steeper than 10%			
Lespedeza Sericea, weeping love grass, ischaemum (yellow bluestem), alfalfa, crabgrass	0 - 5	3.5	2.5
	Use on slopes steeper than 3% is not recommended		
Annuals - used on mild slopes or as temporary protection until permanent covers are established. Common lespedeza, Sudan grass	0 - 5	3.5	2.4
	Use on slopes steeper than 3% is not recommended		
REMARKS:	The values apply to average, uniform stands of each type of cover. Use velocities exceeding 5 fps only where good covers and proper maintenance can be obtained.		

Source: ArDOT

Table 3.3 – Page 1 of 2

HYDRAULIC DATA FOR PIPE

MATERIAL	N-VALUE
(A) CONCRETE	
Pre-Cast	0.110 to 0.013
Cast-In-Place	
Steel Forms	0.012 to 0.013
Wood Forms	0.013 to 0.015
(B) PLASTIC	
Corrugated Polyethylene	0.024 to 0.026
Corrugated Polyethylene (Smooth Interior)	0.010 to 0.012
Polyvinyl Chloride (Smooth Interior)	0.009 to 0.011
(C) METAL	sheet 2 of 2

TABLE 3.3 - PAGE 2 OF 2 (C) - CORRUGATED METAL PIPE												
PIPE TYPE	PAVEMENT CONDITIONS	ANNULAR CORRUGATIONS			HELICAL CORRUGATIONS (N-VALUE)							
		DIAMETER	CORRUGATIONS	N-VALUE								
CORRUGATED PIPE					CORRUGATION SIZE							
					(1-1/2 X 1/4)				(2-2/3 X 1/2)			
					PIPE DIAMETER							
					8-INCH	10-INCH	12-INCH	18-INCH	24-INCH	36-INCH	48-INCH	60-INCH
	UNPAVED	ALL	(2-2/3 X 1/2)	0.024	0.012	0.014	0.011	0.013	0.016	0.018	0.020	0.022
	25% PAVED	ALL	(2-2/3 X 1/2)	0.021					0.014	0.017	0.020	0.022
	FULLY PAVED	ALL	(2-2/3 X 1/2)	0.012					0.012	0.012	0.012	0.022
CORRUGATED PIPE					CORRUGATION SIZE - (3 X 1)							
					PIPE DIAMETER							
					48-INCH	54-INCH	60-INCH	66-INCH	72-INCH	78-INCH	> 78-INCH	
					0.023	0.023	0.024	0.025	0.026	0.027	0.027	
	UNPAVED	ALL	(3 X 1)	0.027	0.020	0.020	0.021	0.022	0.022	0.023	0.023	
	25% PAVED	ALL	(3 X 1)	0.023	0.012	0.012	0.012	0.012	0.012	0.012	0.012	
	FULLY PAVED	ALL	(3 X 1)	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	
CORRUGATED PIPE					CORRUGATION SIZE - (5 X 1)							
					PIPE DIAMETER							
					54-INCH	60-INCH	66-INCH	72-INCH	> 72-INCH			
					0.022	0.023	0.024	0.025	0.026			
	UNPAVED	ALL	(5 X 1)	0.027	0.019	0.020	0.021	0.022	0.022			
	25% PAVED	ALL	(5 X 1)	0.023	0.012	0.012	0.012	0.012	0.012			
	FULLY PAVED	ALL	(5 X 1)	0.012	0.012	0.012	0.012	0.012	0.012			
STRUCTURAL PLATE PIPE	UNPAVED	5-FT	(6 X 2)	0.033								
	-	7-FT	(6 X 2)	0.032								
	-	10-FT	(6 X 2)	0.030								
	-	15-FT	(6 X 2)	0.028								
	25% PAVED	5-FT	(6 X 2)	0.028								
	-	7-FT	(6 X 2)	0.027								
	-	10-FT	(6 X 2)	0.026								
	-	15-FT	(6 X 2)	0.024								
TYPE 1-R SPIRAL RIB	N/A				CORRUGATION SIZE - (3/4 X 3/4 X 7-1/2)							
					ALL DIAMETERS							
					N-VALUE = 0.012							

TABLE 3.4 VALUES OF K ₂ FOR DETERMINING LOSS OF HEAD DUE TO SUDDEN ENLARGEMENT IN PIPES, FROM THE FORMULA $H_2 = K_2(V_1^2/2G)$ (AISI 1985) d ₂ /d ₁ = ratio of larger pipe to smaller pipe V ₁ = velocity in smaller pipe													
d ₂ /d ₁	Velocity (V ₁) in feet per second												
	2	3	4	5	6	7	8	10	12	15	20	30	40
1.2	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.08
1.4	0.26	0.26	0.25	0.24	0.24	0.24	0.24	0.23	0.23	0.22	0.22	0.21	0.20
1.6	0.40	0.39	0.38	0.37	0.37	0.36	0.36	0.35	0.35	0.34	0.33	0.32	0.32
1.8	0.51	0.49	0.48	0.47	0.47	0.46	0.46	0.45	0.44	0.43	0.42	0.41	0.40
2.0	0.60	0.58	0.56	0.55	0.55	0.54	0.53	0.52	0.52	0.51	0.50	0.48	0.47
2.5	0.74	0.72	0.70	0.69	0.68	0.67	0.66	0.65	0.64	0.63	0.62	0.60	0.58
3.0	0.83	0.80	0.78	0.77	0.76	0.75	0.74	0.73	0.72	0.70	0.69	0.67	0.65
4.0	0.92	0.89	0.87	0.85	0.84	0.83	0.82	0.80	0.79	0.78	0.76	0.74	0.72
5.0	0.96	0.93	0.91	0.89	0.88	0.87	0.86	0.84	0.83	0.82	0.80	0.77	0.75
10.0	1.00	0.99	0.96	0.95	0.93	0.92	0.91	0.89	0.88	0.86	0.84	0.82	0.80
∞	1.00	1.00	0.98	0.96	0.95	0.94	0.93	0.91	0.90	0.88	0.86	0.83	0.81

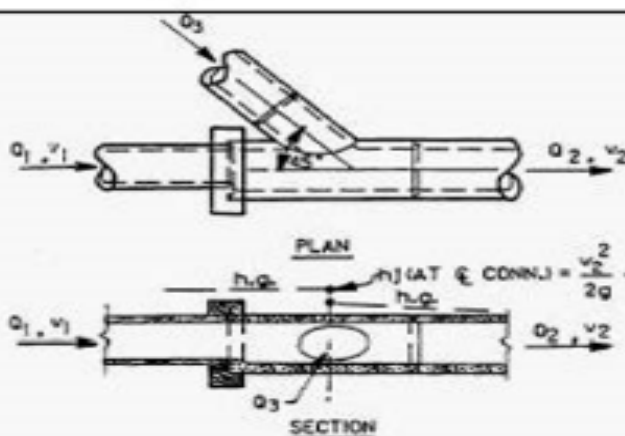
TABLE 3.5 - Values for K_2 for Determining Loss of Head Due to Gradual Enlargement in Pipes from the Formula $H_2 = K_2 (V_1^2/2g)$ (AISI 1985)														
d_2/d_1 = ratio of diameter of larger pipe to diameter of smaller pipe. Angle of cone is twice the angle between the axis of the cone and its side.														
d_2/d_1	Angle of Cone													
	2°	4°	6°	8°	10°	15°	20°	25°	30°	35°	40°	45°	50°	60°
1.1	0.01	0.01	0.01	0.02	0.03	0.05	0.10	0.13	0.16	0.18	0.19	0.20	0.21	0.23
1.2	0.02	0.02	0.02	0.03	0.04	0.09	0.16	0.21	0.25	0.29	0.31	0.33	0.35	0.37
1.4	0.02	0.03	0.03	0.04	0.06	0.12	0.23	0.30	0.36	0.41	0.44	0.47	0.50	0.53
1.6	0.03	0.03	0.04	0.05	0.07	0.14	0.26	0.35	0.42	0.47	0.51	0.54	0.57	0.61
1.8	0.03	0.04	0.04	0.05	0.07	0.15	0.28	0.37	0.44	0.50	0.54	0.58	0.61	0.65
2.0	0.03	0.04	0.04	0.05	0.08	0.16	0.29	0.38	0.46	0.52	0.56	0.60	0.63	0.68
2.5	0.03	0.04	0.04	0.05	0.08	0.16	0.30	0.39	0.48	0.54	0.58	0.62	0.65	0.70
3.0	0.03	0.04	0.04	0.05	0.08	0.16	0.31	0.40	0.48	0.55	0.59	0.63	0.66	0.71
∞	0.03	0.04	0.05	0.06	0.08	0.16	0.31	0.40	0.49	0.56	0.60	0.64	0.67	0.72

TABLE 3.6 - Values for K_3 for Determining Loss of Head Due to Gradual Enlargement in Pipes from the Formula $H_3 = K_3 (V_1^2/2g)$ (AISI 1985)														
d_2/d_1 = Ratio of larger to smaller diameter V_2 = Velocity in smaller pipe														
d_2/d_1	Velocity (V_2) in feet per second													
	2	3	4	5	6	7	8	10	12	15	20	30	40	
1.1	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.06	
1.2	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.10	0.11	
1.4	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.19	0.20	
1.6	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.25	0.25	0.25	0.24	
1.8	0.34	0.34	0.34	0.34	0.34	0.34	0.33	0.33	0.32	0.32	0.31	0.29	0.27	
2.0	0.38	0.38	0.37	0.37	0.37	0.37	0.36	0.36	0.35	0.34	0.33	0.31	0.29	
2.2	0.40	0.40	0.40	0.39	0.39	0.39	0.39	0.38	0.37	0.37	0.35	0.33	0.30	
2.5	0.42	0.42	0.42	0.41	0.41	0.41	0.40	0.40	0.39	0.38	0.37	0.34	0.31	
3.0	0.44	0.44	0.44	0.43	0.43	0.43	0.42	0.42	0.41	0.40	0.39	0.36	0.33	
4.0	0.47	0.46	0.46	0.46	0.45	0.45	0.45	0.44	0.43	0.42	0.41	0.37	0.34	
5.0	0.48	0.48	0.47	0.47	0.47	0.46	0.46	0.45	0.45	0.44	0.42	0.38	0.35	
10.0	0.49	0.48	0.48	0.48	0.48	0.47	0.47	0.46	0.46	0.45	0.43	0.40	0.36	
∞	0.49	0.49	0.48	0.48	0.48	0.47	0.47	0.47	0.46	0.45	0.44	0.41	0.38	

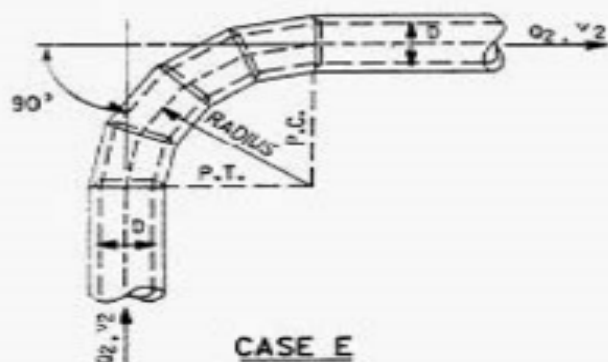
TABLE 3.7

HEAD LOSS COEFFICIENT DUE TO OBSTRUCTIONS

A ^a	K _J	A	K _J
1.05	0.10	3.00	15.00
1.10	0.21	4.00	27.30
1.20	0.50	5.00	42.00
1.40	1.15	6.00	57.00
1.60	2.40	7.00	72.50
1.80	4.00	8.00	88.00
2.00	5.55	9.00	104.00
2.20	7.05	10.00	121.00
2.50	9.70		
A ^a = Ratio of area of pipe to opening at obstruction			



CASE C
45° WYE CONNECTION
OR CUT-IN



CASE E
CONDUIT ON 90° CURVES

NOTE: HEAD LOSS APPLIED AT P.C. FOR LENGTH OF CURVE

RADIUS = DIA. OF PIPE $h_L = 0.05 \frac{v_2^2}{2g}$

RADIUS = (2-6) DIA. OF PIPE $h_L = 0.25 \frac{v_2^2}{2g}$

RADIUS = (8-20) DIA. OF PIPE $h_L = 0.40 \frac{v_2^2}{2g}$

RADIUS = GREATER THAN 20 DIA. OF PIPE $h_L = 0$

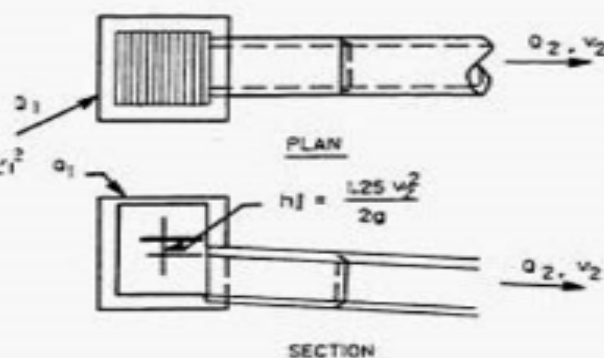
WHEN CURVES OTHER THAN 90° ARE USED, APPLY THE FOLLOWING FACTORS TO 90° CURVES.

60° CURVES 85%

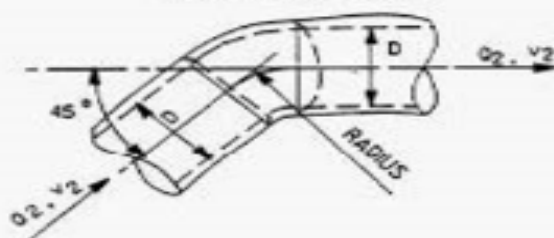
45° CURVES 70%

22½° CURVES 40%

Source: City of Austin, *Drainage Criteria Manual*, Department of Public Works, Austin, Texas, January 1977.



CASE D
INLET OR MANHOLE AT
BEGINNING OF LINE



CASE F
BENDS WHERE RADIUS IS
EQUAL TO DIAMETER OF PIPE

NOTE: HEAD LOSS APPLIED AT BEGINNING OF BEND

90° BEND $h_L = 0.50 \frac{v_2^2}{2g}$

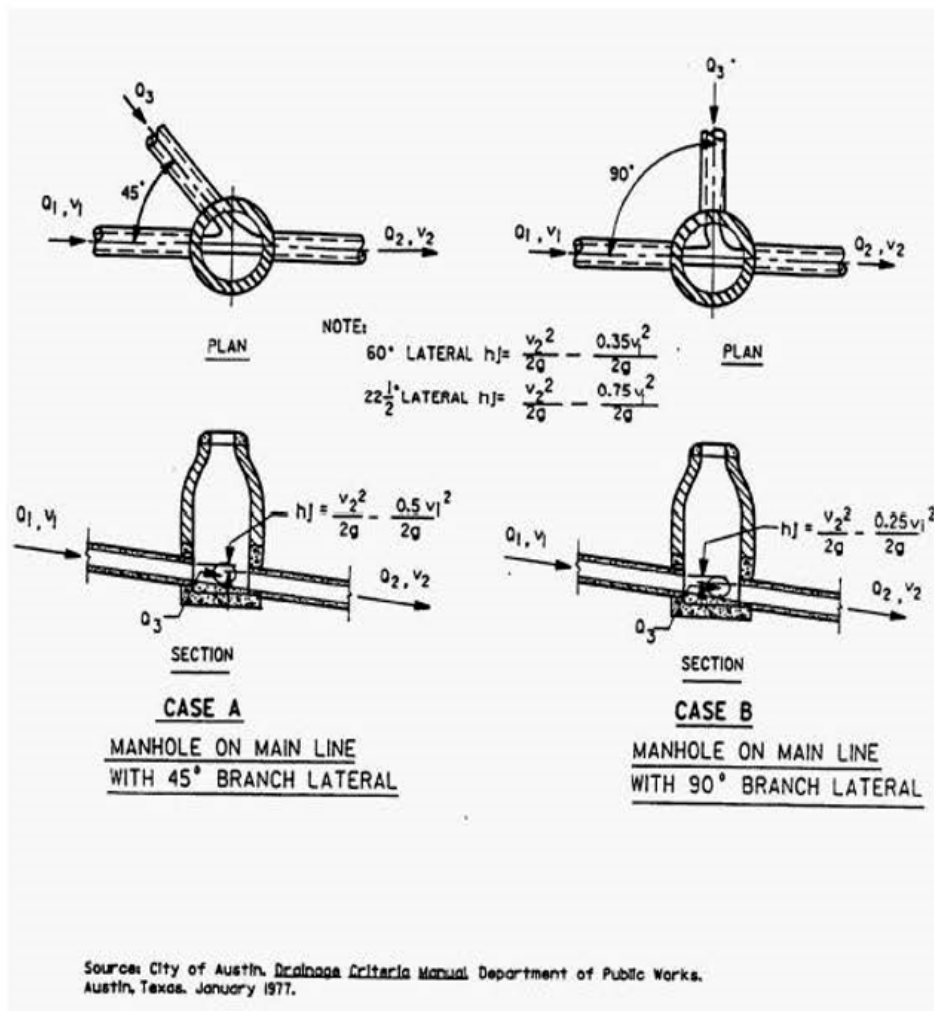
60° BEND $h_L = 0.43 \frac{v_2^2}{2g}$

45° BEND $h_L = 0.35 \frac{v_2^2}{2g}$

22½° BEND $h_L = 0.20 \frac{v_2^2}{2g}$

Minor Head Losses Due to Turbulence at Structures

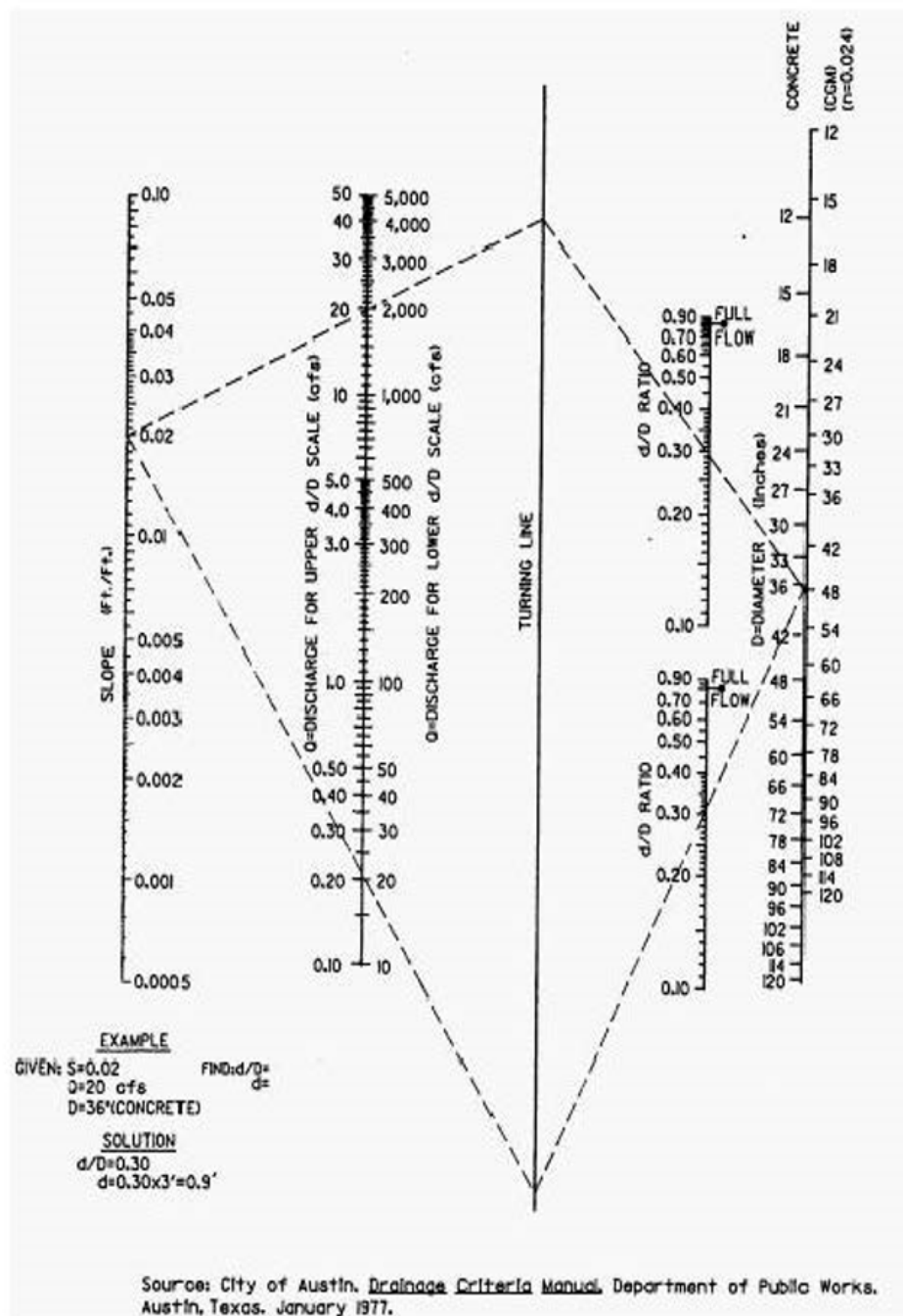
Figure 3.1



Minor Head Losses Due to Turbulence at Structures

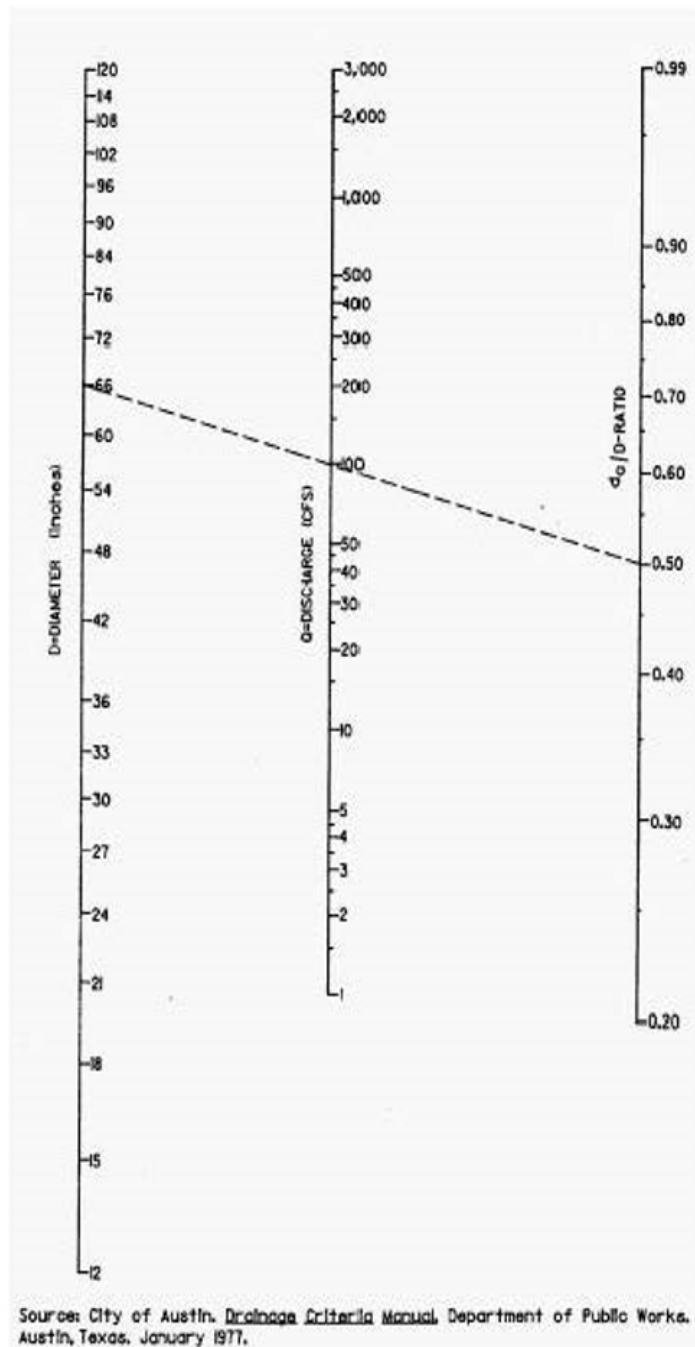
Figure 3.2

RELATIVE VELOCITY, AREA, AND DISCHARGE IN A CIRCULAR PIPE FOR ANY DEPTH OF FLOW



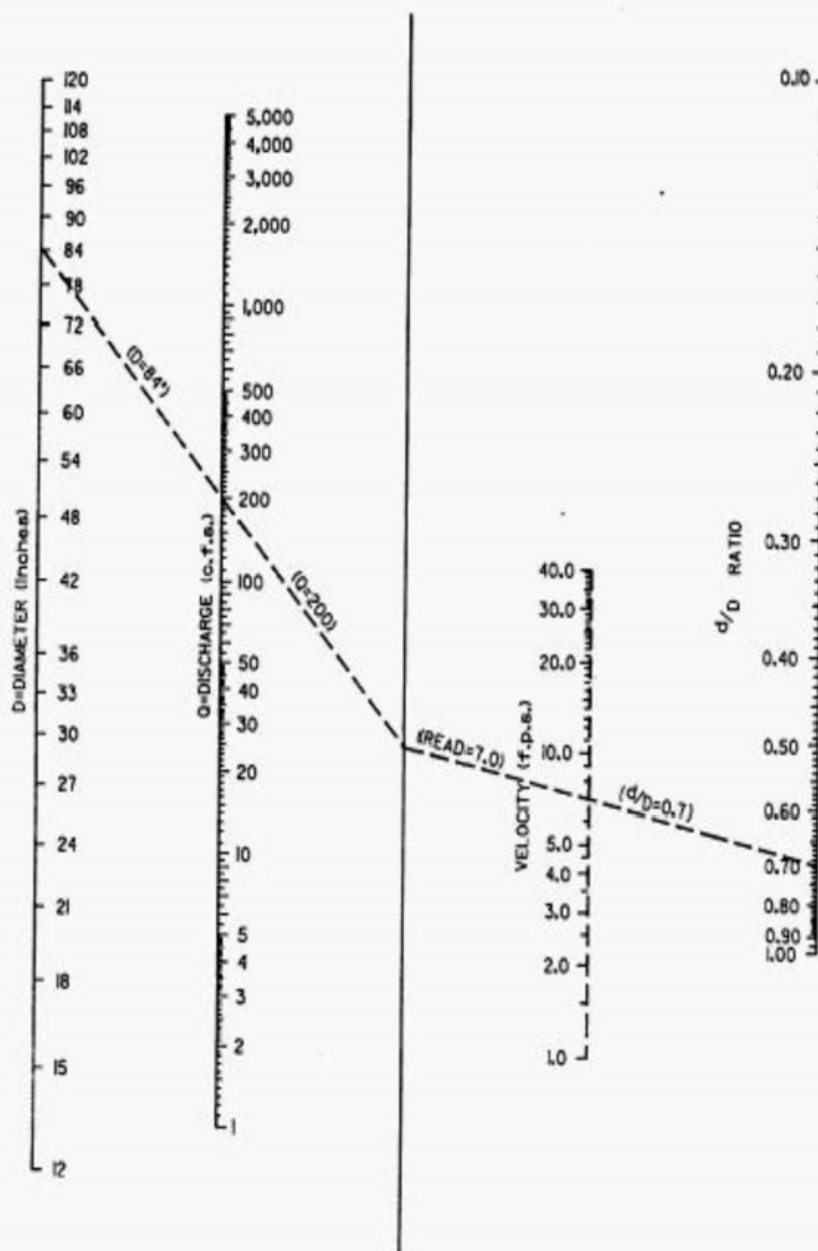
Uniform Flow for Pipe Culverts

Figure 3.3



Critical Depth of Flow for Circular Conduits

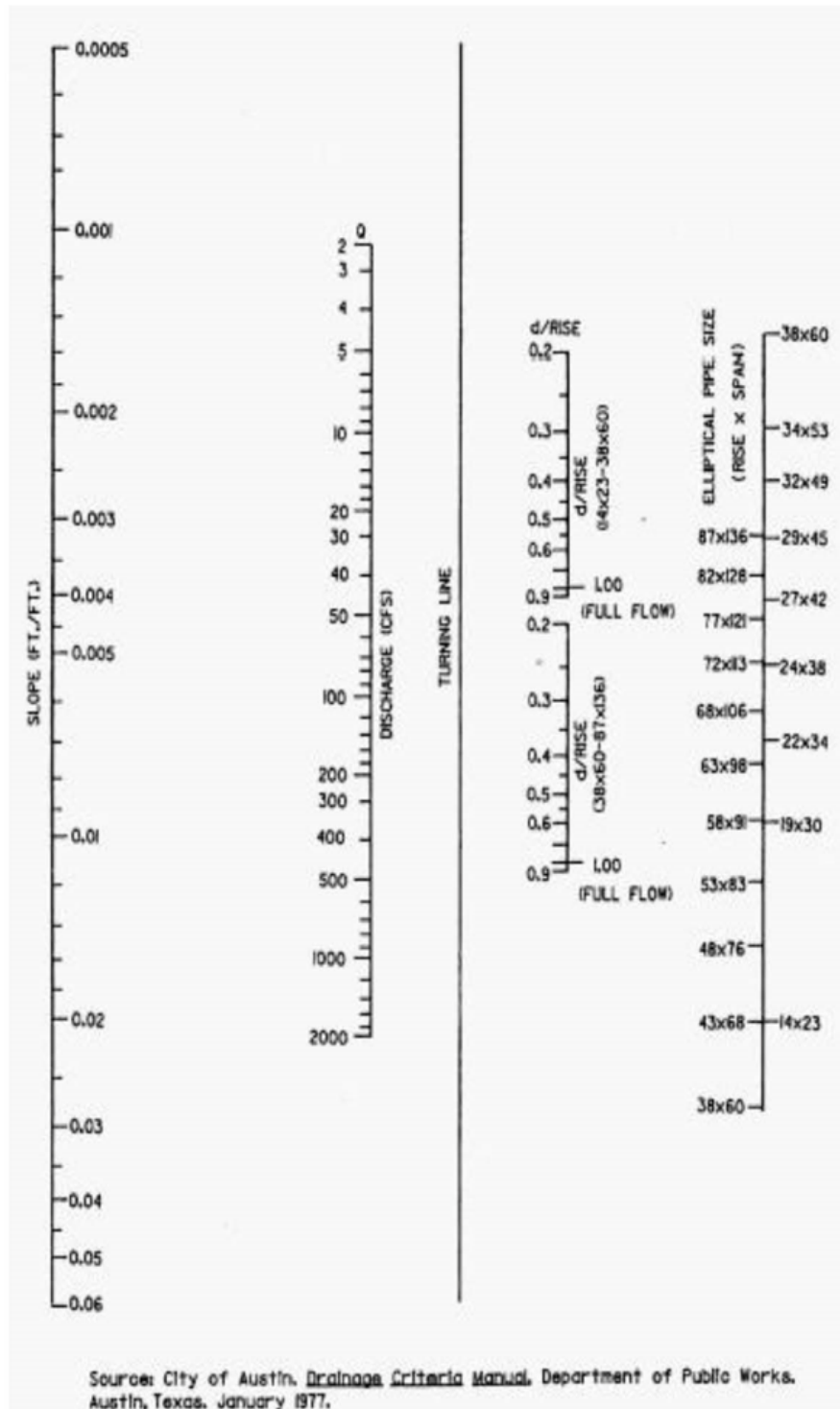
Figure 3.4



Source: City of Austin, Drainage Criteria Manual, Department of Public Works, Austin, Texas, January 1977.

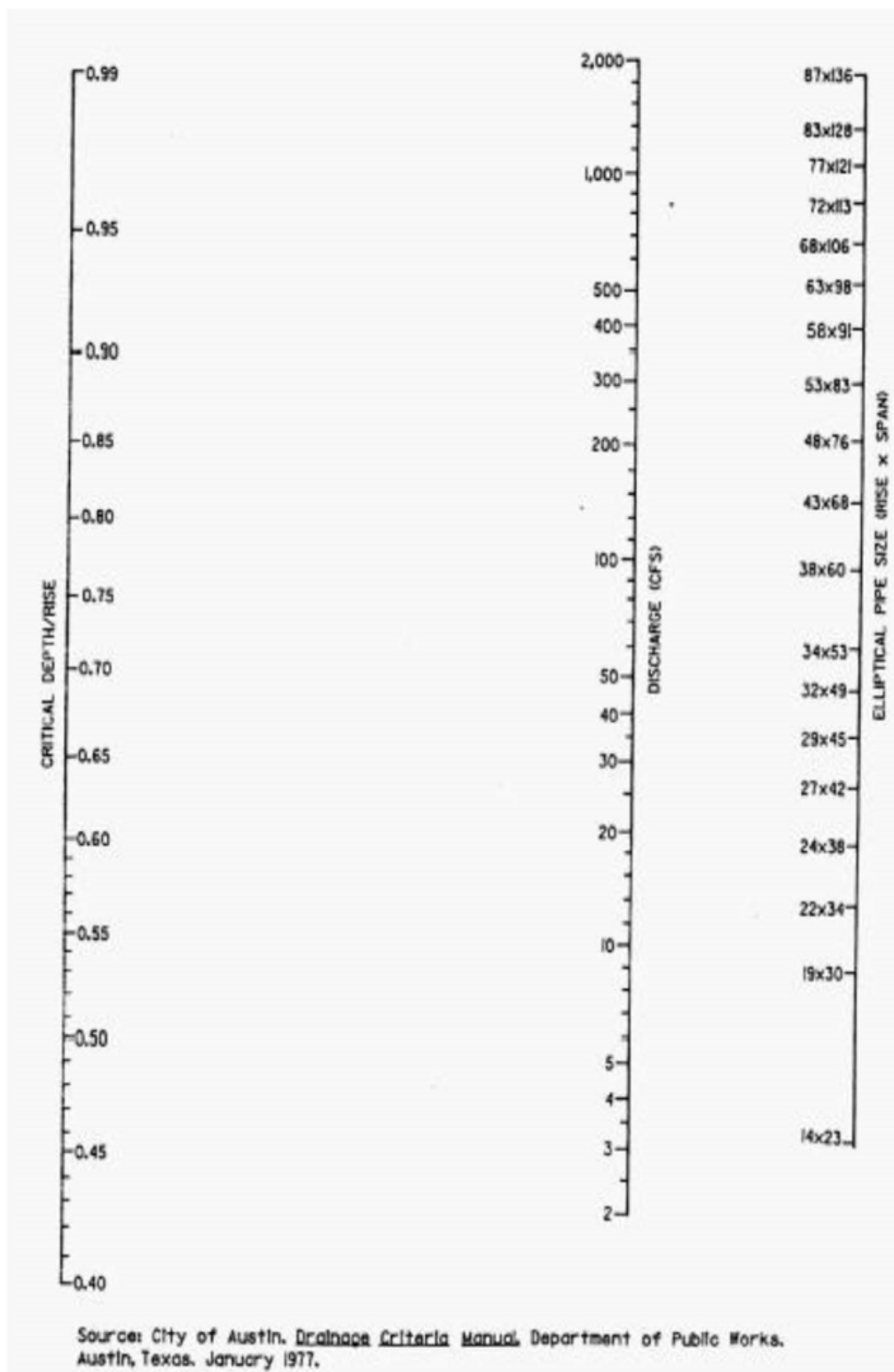
Velocity in Pipe Conduits

Figure 3.5

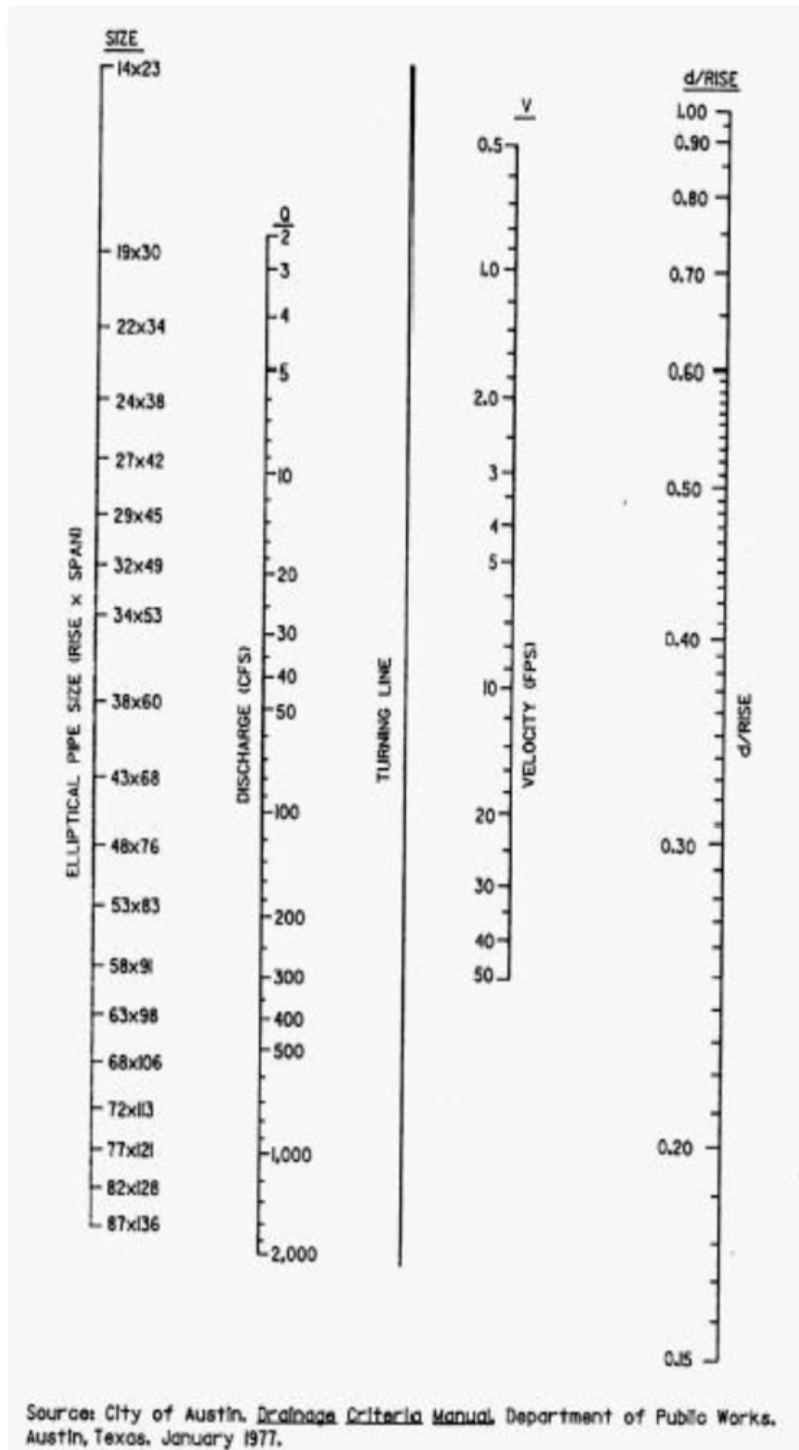


Uniform Flow for Concrete Elliptical Pipe

Figure 3.6

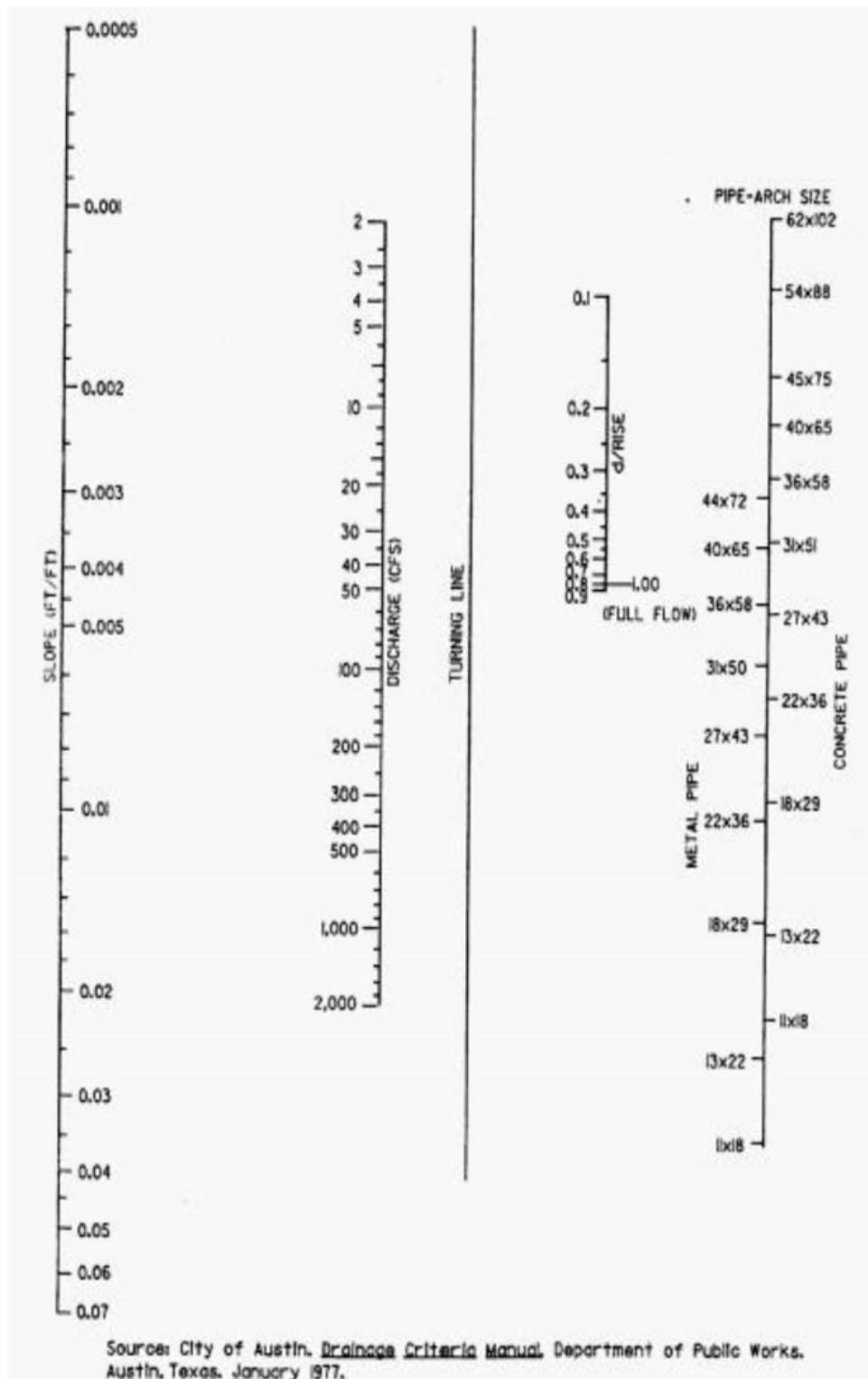


Critical Depth for Elliptical Pipe

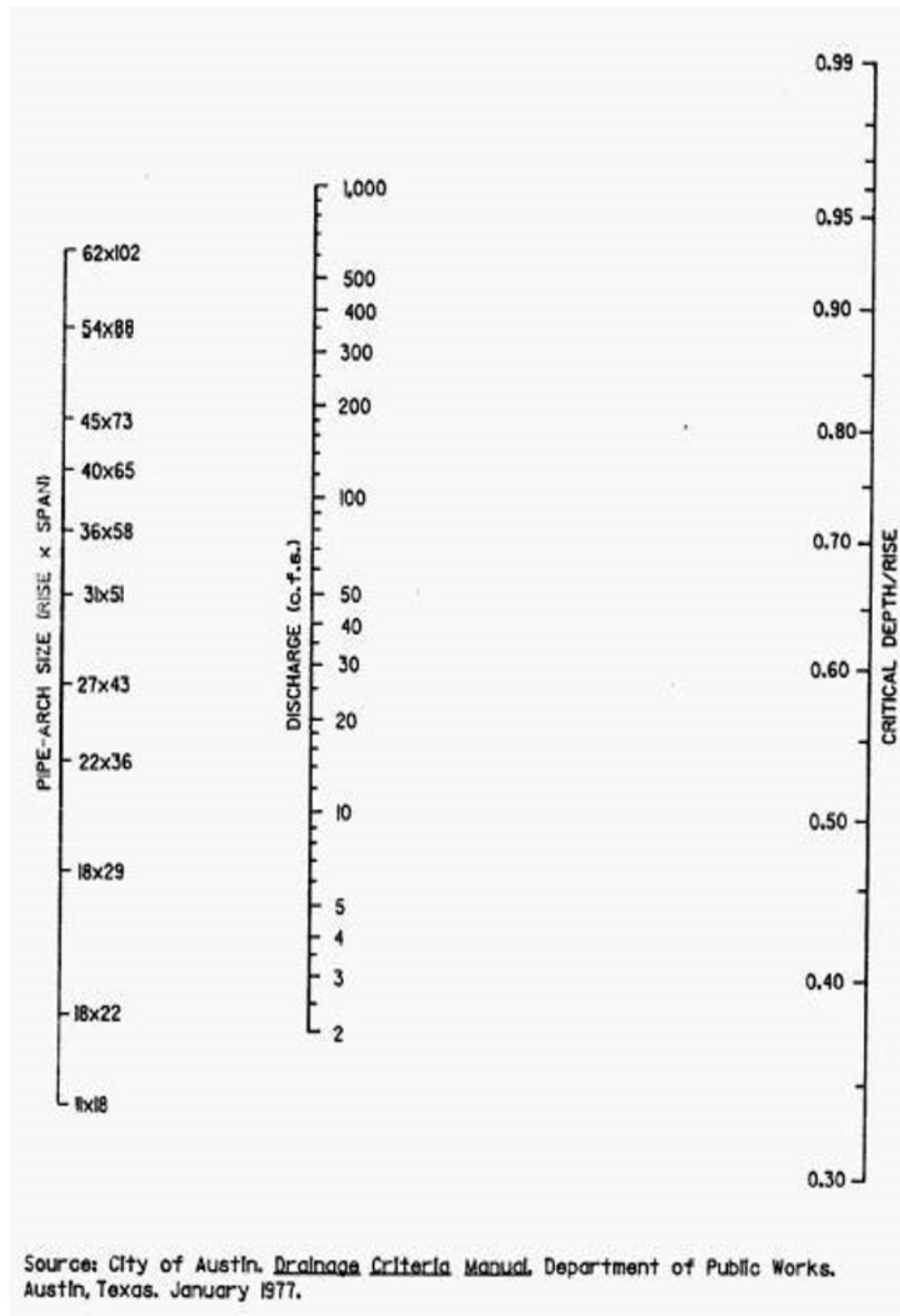


Velocity in Elliptical Pipe

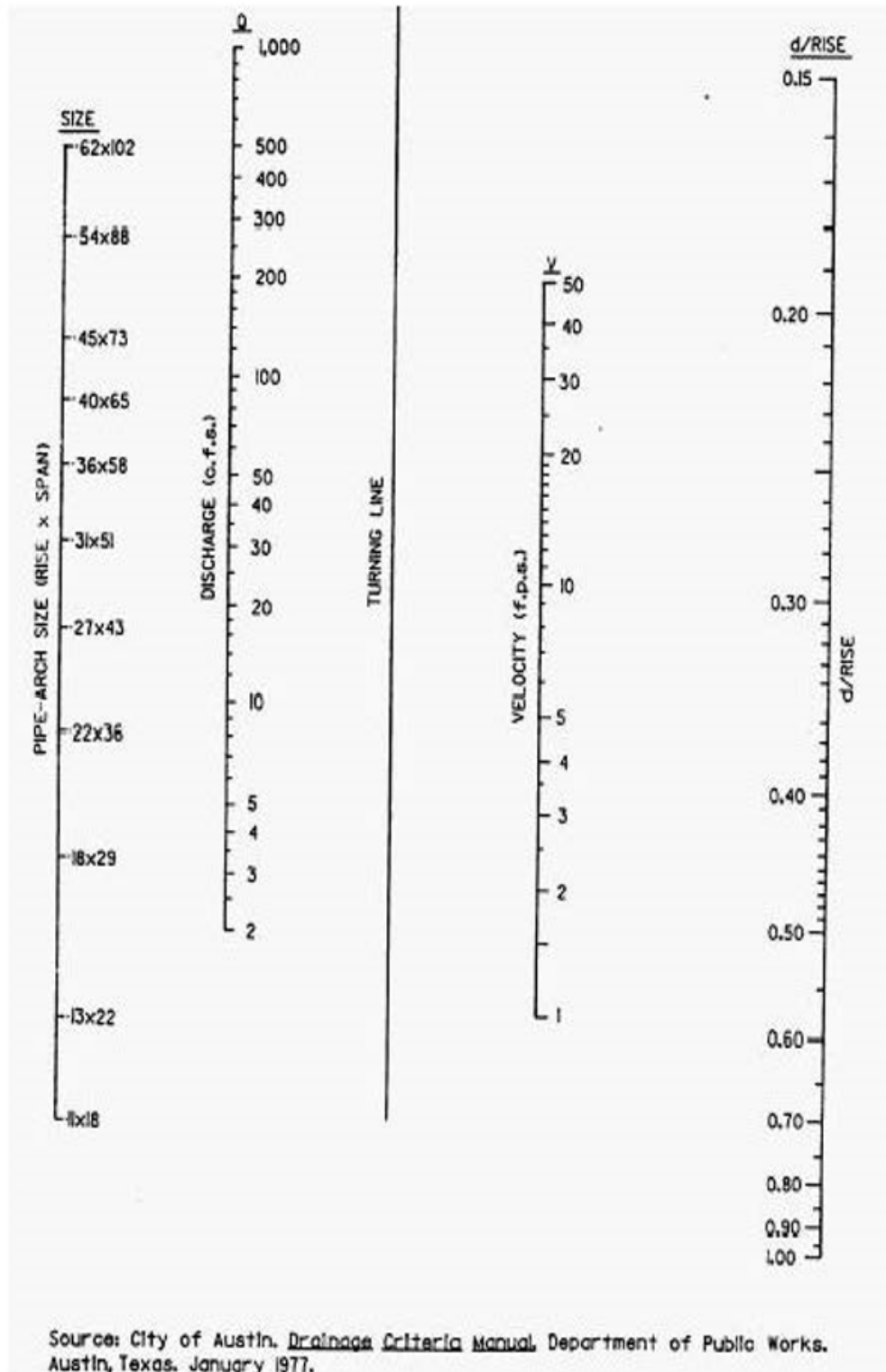
Figure 3.8



Uniform Flow for Pipe Arch



Depth of Flow for Pipe-Arch



Source: City of Austin, Drainage Criteria Manual, Department of Public Works, Austin, Texas, January 1977.

Velocity in Pipe-Arch

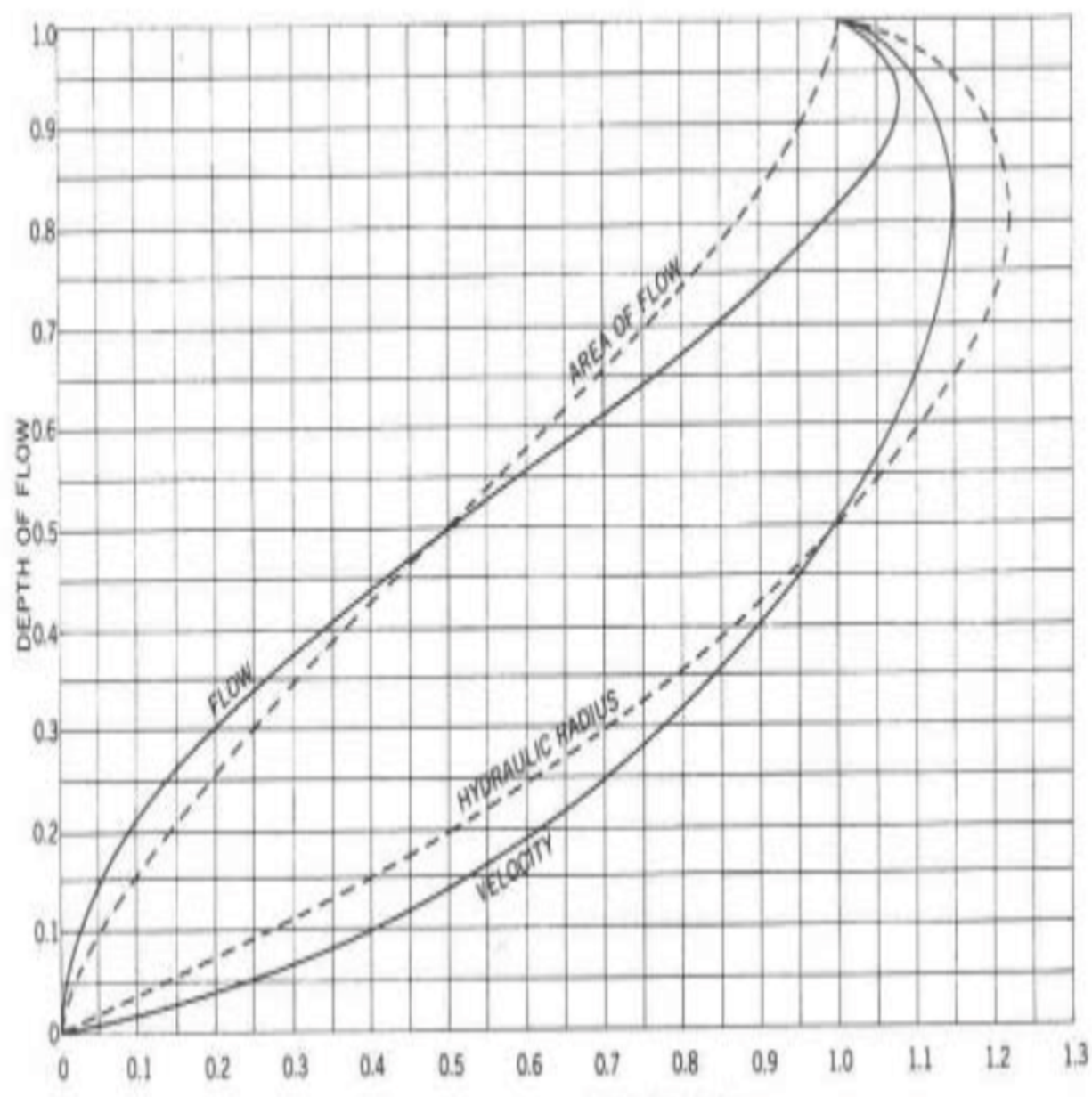


FIGURE 3.12

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SECTION 4 – CULVERT HYDRAULICS

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- 4.5 Culvert Discharge Velocities
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SECTION 4 – CULVERT HYDRAULICS

4.1 GENERAL

The function of a drainage culvert is to pass the design storm flow under a roadway or railroad without causing excessive backwater and without creating excessive downstream velocities. The designer shall keep energy losses and discharge velocities within reasonable limits when selecting a structure.

Culvert flow may be separated into two major types of flow, inlet, or outlet control. Under inlet control, the cross-sectional area of the barrel, the shape of the inlet, and the amount of ponding (headwater) at the inlet are primary design considerations. Outlet control is dependent upon the depth of water in the outlet channel (tailwater), the slope of the barrel, type of culvert material, and the length of the barrel.

4.2 INLET CONTROL

The size of a culvert operating with inlet control is determined by the size and shape of the inlet and the depth of ponding allowable (headwater) between the flowline elevation of a culvert and the elevation of a finished grade surface or surrounding buildings and facilities. See Figure 4.1. Factors not affecting inlet control design are the barrel roughness, slope, and length and depth of the tailwater.

The headwater (HW) depth for a culvert of a given diameter or height (D) where a discharge is given can be determined by obtaining the HW/D value from the Hydraulic Engineering Circular #5, FHWA. Maximum headwater depth shall be one (1) foot lower than the top of road/curb or as approved in writing by the City Staff. The elevation of adjacent facilities (i.e., buildings, etc.) must be reviewed for flooding.

4.3 OUTLET CONTROL

A culvert will operate under outlet control when the depth of the tailwater, the length, the slope, or the roughness of the culvert barrel act as the control on the quantity of water able to pass through a given culvert. See Figure 4.1. Energy head required for a culvert to operate under outlet control consists of velocity head (H_v), entrance loss (H_e), and friction loss (H_f). This head energy (H) is obtained from the Hydraulic Engineering Circular #5, FHWA, and the entrance loss coefficients from Table 4.1. The headwater depth (HW) at the culvert entrance is calculated by means of the following formula:

$$HW_o = H + - LS_o \quad (4.1)$$

Where: H = Energy head

L = Length of culvert (ft.)

S_o = Slope of barrel (feet per foot)

h_o = (d_c + D)/2 or TW, whichever is greater

d_c = Critical depth of flow in the barrel. Critical depth may be determined by using the Hydraulic Engineering Circular #5, FHWA

D = Height of pipe or box

TW = Tailwater depth

The maximum desirable headwater depth for culverts operating under outlet control shall be the same as described in Section 4.3.

See Section 4.8 for detailed types of culvert flow and Section 4.9 for examples of culvert sizing computations.

4.4 HEADWALLS AND END WALLS

4.4.1 GENERAL

The normal functions of properly designed headwalls and end walls are to anchor the culvert, to prevent movement due to lateral pressures, to control erosion and scour resulting from excessive velocities and turbulence, and to prevent adjacent soil from sloughing into the waterway opening. Headwalls shall be constructed of reinforced concrete and may either be straight parallel headwalls, flared headwalls, or warped headwalls with or without aprons, as may be required by site conditions. Multi-barrel culvert crossings or roadways at an angle of 15° or greater shall be accompanied by adequate inlet and outlet control sections.

4.4.2 CONDITIONS AT ENTRANCE

It is important to recognize that the operational characteristics of a culvert may be completely changed by the shape or condition at the inlet or entrance. Design of culverts involves consideration of energy losses that occur at the entrance. The entrance head losses may be determined by the following equation:

$$h_c = (K_c(V_2^2 - V_1^2))/2g \quad (4.2)$$

h_c = Entrance head loss (feet)

K_c = Entrance loss coefficient as shown in Table 4.1

V_2 = Velocity of flow in culvert

V_1 = Velocity of approach (fps)

4.4.3 SELECTION OF HEADWALL OR END WALL

In general, the following guidelines should be used in the selection of the type of headwalls or end walls:

No Headwall or End Wall:

- Approach velocities are low (below 6 fps)
- Backwater pools may be permitted.
- Approach channel is undefined.
- Ample right-of-way or easement is available.
- Downstream channel protection is not required.

Parallel Headwall and End Wall:

- Approach velocities are low (below six (6) feet per second)
- Backwater pools are permitted.

Flared Headwall and End Wall:

- Channel is well defined.
- Approach velocities are between six (6) and ten (10) fps.
- Medium amounts of debris exist.

The wings of flared walls should be located with respect to the direction of the approaching flow instead of the culvert axis.

Warped Headwall and End Wall:

- Channel is well defined and concrete lined.
- Approach velocities are between eight (8) and twenty (20) fps.
- Medium amounts of debris exist.
-

These headwalls are effective with drop down aprons to accelerate flow through the culvert and are effective for transitioning flow from closed conduit flow to open channel flow. This type of headwall should be used only where the drainage structure is large, and right-of-way or easement is limited.

4.5 CULVERT DISCHARGE VELOCITIES

The velocity of discharge from culverts should be limited as shown in Table 4.2. Consideration must be given to the effect of high velocities, eddies, or other turbulence on the natural channel, downstream property, and roadway embankment.

Energy dissipators will be required at channel drops when the unit discharge exceeds 35 cfs and at culvert outlets when the discharge velocity exceeds those recommended in Table 4.2 for a given downstream channel condition.

4.5.1 ENERGY DISSIPATORS

Energy dissipators are used to dissipate excessive kinetic energy in flowing water that could promote erosion. An effective energy dissipator must be able to retard the flow of fast-moving water without damage to the structure or to the channel below the structure.

Impact-type energy dissipators direct the water into an obstruction that diverts the flow in many directions and in this manner dissipates the energy in the flow. Baffled outlets and baffled aprons are to impact-type energy dissipators.

Other energy dissipators use the hydraulic jump to dissipate energy. In this type of structure, water flowing at a higher than critical velocity is forced into a hydraulic jump and energy is dissipated in the resulting turbulence. Stilling basins are an example of this type of dissipator, where energy is diffused as flow plunges into a pool of water.

Generally, the impact-type of energy dissipator is considered to be more efficient than the hydraulic jump-type. Also, the impact-type energy dissipator results in smaller and more economical structures.

The design of energy dissipators is based on the empirical data resulting from a comprehensive series of model structure studies by the U.S. Bureau of Reclamation, as detailed in its book Hydraulic Design of Stilling Basins and Energy Dissipators. Four (4) impact-type energy dissipators are briefly explained here and illustrated on Figures 4.2 through 4.6.

4.5.1.1 SHORT STILLING BASIN (USBR TYPE III)

The most effective way to shorten a stilling basin is to modify the jump by the addition of appurtenances in the basin. However, the appurtenances should be self-cleaning or non-clogging. The recommended design for Type III stilling basin is shown in Figure 4.2. The chute blocks at the upstream end of a basin tend to corrugate the jet, lifting a portion of it from the floor to create a greater number of energy dissipating eddies. These eddies result in a shorter length of jump than would be possible without them and tend to stabilize the jump. The baffle piers act as an impact dissipation device, and the end sill is for scour control. The end sill has little or no effect on the jump. The only purpose of the end sill in a stilling basin is to direct the remaining bottom currents upward and away from the channel bed.

This type of basin is recommended at the outlet of a sloping channel drop when there is adequate tailwater. For insufficient tailwater, USBR Type IX is recommended.

4.5.1.2 BAFFLED APRON STILLING BASIN (USBR TYPE IX)

Baffled aprons are used to dissipate the energy in the flow at a drop. They require no initial tailwater to be effective, although channel bed scour is not as deep and is less extensive when the tailwater forms a pool into which the flow discharges. The chutes are constructed on an excavated slope, 2:1 or flatter, extending to below the channel bottom. Backfill is placed over one or more rows of baffles to restore the original streambed elevation. When scour or downstream channel degradation occurs, successive rows of baffle piers are exposed to prevent excessive acceleration of the flow entering the channel. If degradation does not occur, the scour creates a stilling pool at the downstream end of the chute, stabilizing the scour pattern. The simplified hydraulic design of the baffled apron is shown on Figure 4.3.

This type of basin is recommended for a channel drop where insufficient tailwater prevents the use of a Type III stilling basin. The basin can also be used for channel drops when adequate tailwater is available.

4.5.1.3 IMPACT STILLING BASIN (USBR TYPE VI)

This stilling basin is an impact-type energy dissipator, contained in a relatively small box-like structure, and requiring little or no tailwater for successful performance. The general arrangement of the basin for various discharges is shown on Figure 4.4. This type of basin is subjected to large dynamic forces and turbulence that must be considered in the structural design. The structure should be made sufficiently stable to resist sliding against the impact load on the baffle wall and must resist the severe vibrations. Riprap should also be provided along the bottom and sides adjacent to the structure to avoid the tendency for scour of the outlet channel downstream from the end sill when shallow tailwater exists. This type of stilling basin is very effective at the outlet of storm drains or culverts where there is little or no tailwater.

4.5.1.4 SHORT STILLING BASIN (SAF TYPE)

The St. Anthony Falls (SAF) stilling basin is a generalized design that uses a hydraulic jump to dissipate energy, as illustrated on Figure 4.6. The design is based on model studies conducted by the Soil Conservation Service at the St. Anthony Falls Hydraulic Laboratory of the University of Minnesota.

The SAF basin is similar to the USBR Type III basin in that chute blocks, baffle blocks, and an end sill is used to reduce the basin size. It is recommended for use at small structures where $F_r = 1.7$ to 17, as measured at the dissipator entrance. The reduction in basin length achieved through the use of appurtenances is about 80 percent of the free hydraulic jump length.

The comparison between the USBR Type III basin and the SAF basin shows that under certain conditions, the SAF basin may be more economical or fit the terrain better. The designer is encouraged to check both designs before selecting one. The design procedure is described in “Hydraulic Design of Energy Dissipators for Culverts and Channels,” HEC-14, U.S. DOT, FHWA, December 1975.

4.6 CULVERT TYPES AND SIZES

The only permissible types of culverts under all public roadways and streets are reinforced concrete box, round, or elliptical concrete pipe or pipe arch.

The minimum size of pipe for all culverts shall be 18 inches or the equivalent sized elliptical pipe or arch pipe. Box culverts may be constructed in sizes equal to or larger than 4 feet by 3 foot (width versus height). Box culverts smaller than 4 feet by 3 foot in any dimension must be approved by the City prior to construction.

Reinforced concrete pipe is to be used under roadways, unless approved in advance by the City. Such approval shall be considered on a case-by-case basis.

Flared, precast concrete, and metal pipe aprons may be used in lieu of headwalls to improve the hydraulic capabilities of the culverts. The material of the flared end section shall match the pipe material.

4.7 FILL HEIGHTS AND BEDDING

The minimum cover over any reinforced concrete culvert shall be twelve (12) inches to the top of subgrade. All other types of culverts shall have a minimum cover of 24 inches to the top of subgrade. Minimum cover less than these values shall be fully justified in writing and approved by the City Staff prior to proceeding with final plans. Maximum fill heights shall be according to the manufacturer’s specifications. Box culverts shall be structurally designed to accommodate earth and live load to be imposed upon the culvert. Refer to the Arkansas Department of Transportation Standard Drawings – R.C. Box Culverts – “X” Series. When installed within public right-of-way or easements, all culverts shall be capable of withstanding minimum HS20 loading.

Where culverts under railroad facilities are necessary, the designer shall obtain permits from the affected railroad.

4.8 TYPES OF CULVERT FLOW

Type I Flowing Part Full with Outlet Control and Tailwater Depth Below Critical Depth

(Figure 4.7)

Type II Flowing Part Full with Outlet Control and Tailwater Depth Above Critical Depth
(Figure 4.8)

Type III Flowing Part Full with Inlet Control
(Figure 4.9)

Type IVA Flowing Full with Submerged Outlet
(Figure 4.10)

Type IVB Flowing Full with Partially Submerged Outlet
(Figure 4.11)

4.9 CULVERT DESIGN PROCEDURE

STEP 1 – SELECTING CULVERT SIZE

The computations involved in selecting the smallest feasible barrel that can be used without exceeding the design headwater elevation are summarized in the tabulation sheet titled “Culvert Computations,” Table 4.3

INITIAL DATA:

Enter initial data and complete the required information for first approximation. The square feet of opening for the initial trial size may be estimated by the ratio of design discharge divided by 100.

TAILWATER:

The tailwater depth is influenced by conditions downstream of the culvert outlet. If the culvert outlet is located near the inlet of a downstream culvert, then the headwater elevation of the downstream culvert may define the tailwater depth for the upstream culvert. If the culvert outlet is operating in a free outfall condition (e.g., waterfall), then the tailwater is taken as 0.0.

If the culvert discharges into an open channel, then tailwater conditions should be determined by either backwater conditions, normal depth (sub-critical flow), or critical depth (supercritical flow). Figures 4.12, 4.13, and 9.1 provide a graphic solution for normal depth flow that may be calculated by Manning’s Equation:

$$Q = (1.486AR^{2/3}S^{1/2})/n$$

In any case, the tailwater depth is defined as the depth of water measured from the flow line of the culvert (invert) at the outlet, to the water surface elevation at the outlet.

Enter tailwater depth in Column 8 and applicable stream data in upper left-hand portion of Culvert Computation Form.

STEP 2 – PERFORM OUTLET CONTROL CALCULATIONS

These calculations are performed before inlet control calculations in order to select the smallest feasible barrel that can be used without the required headwater elevation in outlet control exceeding the allowable headwater elevation.

Figures 4.14 through 4.20 illustrate nomograph solutions for outlet control of various types and materials of storm sewer culverts.

- Column 1: Enter the span times height dimensions (or diameter of pipe) of culvert.
- Column 2: Enter the type of structure and design of entrance.
- Column 3: Enter the design discharge or quotient of design discharge divided by the applicable denominator.
- Column 4: Enter the Entrance Loss Coefficient from Table 4.1.
- Column 5: Enter the head from the applicable outlet control nomograph; in the example problem use Figure 4.16.
- Column 6: Enter the critical depth from appropriate nomograph; in the example problem use Figure 4.27. Critical depth cannot exceed height of culvert opening.
- Column 7: For tailwater elevations less than the top of the culvert at the outlet, hydraulic grade line is found by solving for h_o using the following equation:

$$h_o = (d_c + D) / 2$$

Where: h_o = Vertical distance in feet from culvert invert at outlet to the hydraulic grade line in feet.

d_c = Critical depth in feet

D = Height of culvert opening in feet

- Column 8: Enter the tailwater elevation from initial data shown at top of form. Refer to tailwater comments under STEP 1 for additional guidelines.
- Column 9: Enter the product of culvert length times the slope.
- Column 10: Headwater elevation required for culvert to pass flow in outlet control (HW_o) is computed by the following equation:

$$HW_o = H + h_o - LS$$

Note: Use TW elevation in lieu of h_o where $TW > h_o$

Additional trials may be required. Space for additional trials is provided on the Culvert Computations Form.

STEP 3 – PERFORM INLET CONTROL CALCULATIONS FOR CONVENTIONAL AND BEVELED EDGE CULVERT:

After the minimum barrel size has been determined under STEP 2, the next procedure is similar to that used in FHWA's Hydraulic Engineering Circular Number 5, "Hydraulic Charts for the Selection of Highway Culverts."

Figures 4.21 through 4.26 illustrate nomograph solutions for inlet control conditions of various types and materials of storm sewer culverts.

The computations involved in computing inlet headwater elevation are summarized in the tabulation sheet used in STEP 2, titled, "Culvert Computations," Table 4.4.

Column 11: Enter ratio of headwater to height of structure from Figure 4.22

Column 12: HW is derived by multiplying Column 11 by the height (or diameter) of the culvert.

Column 13: Enter greater of two headwaters (Column 10 or 12)

Column 14: Inlet control governs, outlet velocity equals Q/A , where A is defined by the cross-sectional area of normal depth of flow in the culvert barrel at "S". Figures 4.12, 4.13, 3.7, and 3.14 to 3.26, 3.4, 3.28, to 3.41, Sections III and IV, provide a graphic solution for estimating normal depth of flow and velocity. Manning's Equation may also be used:

$$V = (1.486R^{2/3}S^{1/2})/n$$

If outlet control governs, outlet velocity equals Q/A , where A is the cross-sectional area of flow in the culvert barrel at the outlet.

Column 15: Figures shown in this column are believed to be self-explanatory.

IMPROVED INLETS:

See Arkansas Department of Transportation Manual for improved inlet or side tapered inlet design and broken back culvert design.

4.10 FHWA CULVERT ANALYSIS SOFTWARE

Computerized analysis by experienced engineer is encouraged. In addition to the analysis previously described, the City will allow the analysis of trapezoidal and circular channels, and pipe and box culvert analysis using the FHWA Culvert Analysis (HY8) or similar approved software.

4.10.1 FHWA CULVERT ANALYSIS (HY8)

FHWA Culvert Analysis (HY8) software was developed by Pennsylvania State University in cooperation with the Bridge Division (HNG-31). The HY8 software is sponsored by the Rural Technical Assistance Program (RTAP) of the National Highway Institute under Project 18B administered by the Pennsylvania Department of Transportation.

The HY8 software automates the design methods described in HDS5, Hydraulic Design of Highway Culverts, FHWA-IP-85-15. HDS5 is available from the Government Printing Office, Washington DC 20402. The HY8 computer program may be downloaded directly from the

Table 4.1 - HYDRAULIC DATA FOR CULVERTS					
(D) CULVERT ENTRANCE LOSSES					
STRUCTURE AND ENTRANCE TYPE					COEFFICIENT K_c
Pipe, Concrete					
	Projecting from fill, socket end (groove end)				0.2
	Projecting from fill, square cut end				0.5
	Headwall or headwall and wingwalls				
		Socket end of pipe (groove-end)			0.2
		Square-edge			0.5
		Rounded (radius = 1/2D)			0.2
	Metered to conform to fill slopes				0.7
	End-Section conforming to fill slope				0.5
	Beveled edges, 33.7° or 45° bevels				0.2
	Side or Slope-tapered inlet				0.2
Pipe, or Pipe-Arch, Corrugated Metal					
	Projecting from fill (no headwall)				0.9
	Headwall or headwall and wing walls square-edge				0.5
	Metered to conform to fill slope, paved or unpaved slope				0.7
	End-Section conforming to fill slope				0.5
	Beveled edges, 33.7° or 45° bevels				0.2
	Side or Slope-tapered inlet				0.2
Box, Reinforced Concrete					
	Headwall parallel to embankment (no wingwalls)				
		Square-edge on three edges			0.5
		Rounded on three edges to radius of 1/2 barrel			
		dimension, or beveled edges on three sides			0.2
	Wingwalls at 30° to 75° to barrel				
		Square-edge at crown			0.4
		Crown edge rounded to radius 1/2 barrel			
		dimension, or beveled top edge			0.2
	Wingwalls at 10° to 25° to barrel				
		Square-edged at crown			0.5
	Wingwalls parallel (extension of sides)				
		Square-edged at crown			0.7
	Side or slope-tapered inlet				0.2
	*Note:	"End-section conforming to fill slope," made of either metal or concrete,			
		are the sections commonly available from manufacturers. From limited			
		hydraulic tests they are equivalent in operation to a headwall in both			
		inlet and outlet control. Some end sections, incorporating a closed taper			
		in their design have a superior hydraulic performance.			

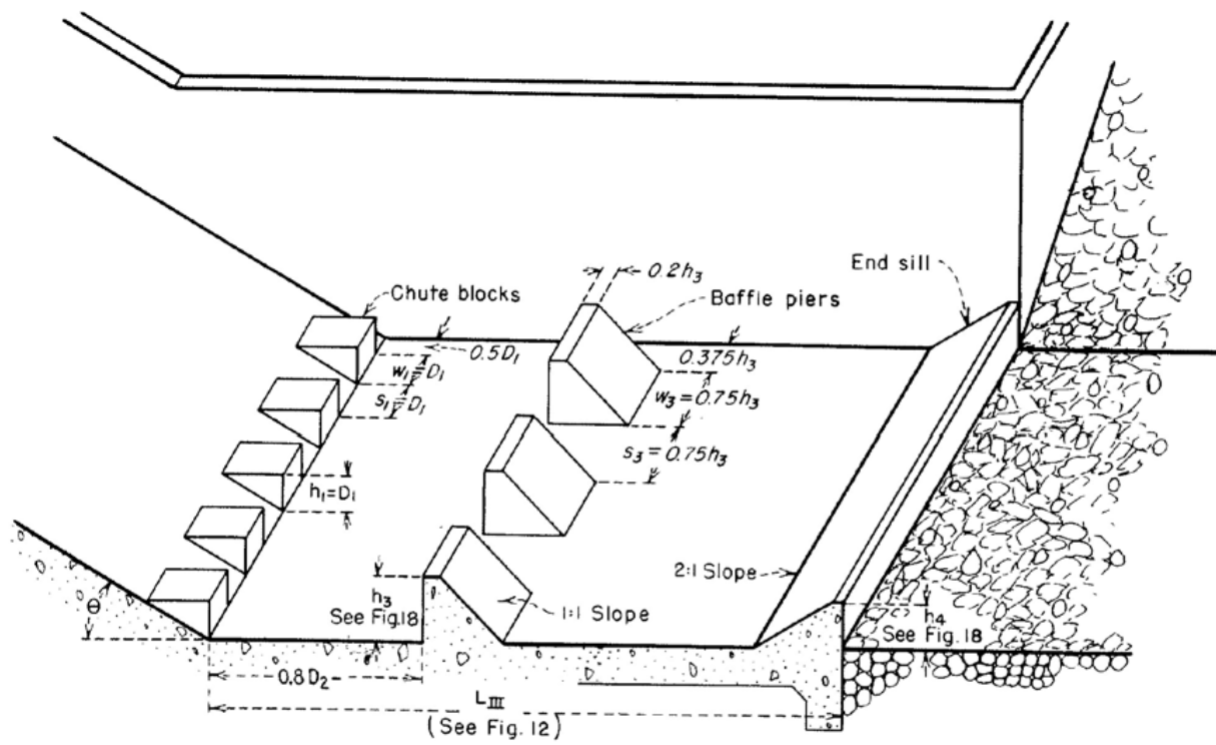
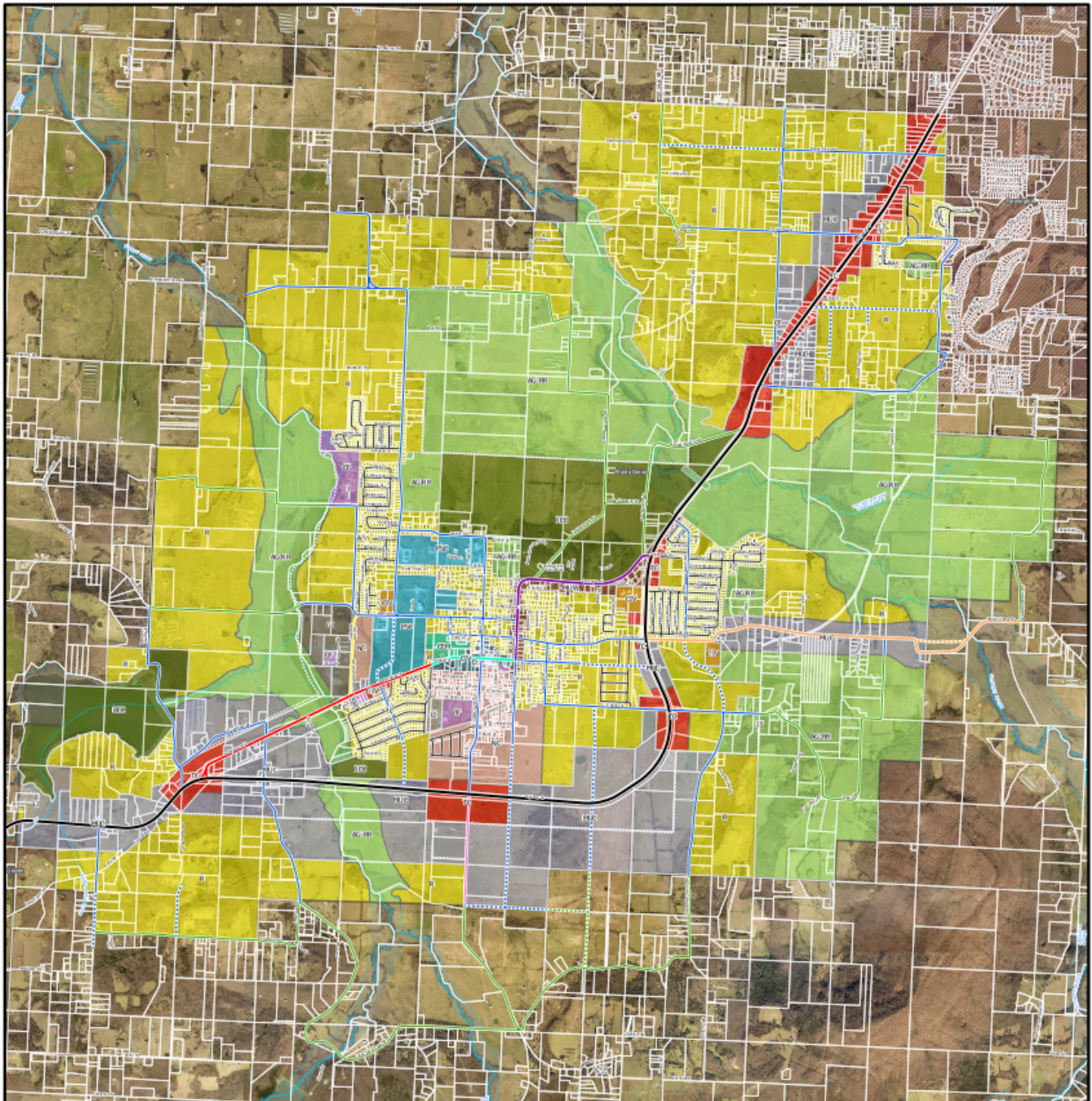


Figure 4.2
USBR Type III Stilling Basin

ARTICLE VII MASTER STREET PLAN and LRP



Comprehensive Plan

Map Date: February, 2023
City of Prairie Grove

- Stream / Creek
- Parcels
- City of Prairie Grove
- City of Farmington
- Planning Areas
- Floodplain
- 1% Annual Chance Flood Hazard
- Regulatory Floodway



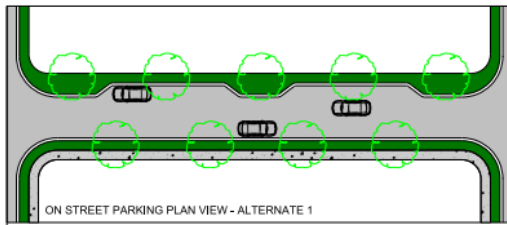
FUTURE LAND USE CLASSIFICATIONS

- Agricultural / Rural Residential (AG-RR)
- Cemetery (CEM)
- City Facility (CF)
- City Space (CM)
- Downtown (D)
- General Industrial (GI)
- Light Industrial (LI)
- Mixed Use Commercial (MJC)
- Neighborhood Core (NC)
- Public School (PSC)
- Recreational / Open Space (REC)
- Residential (R)
- Thoroughfare Commercial (TC)
- Walkable Mixed Use (MUW)

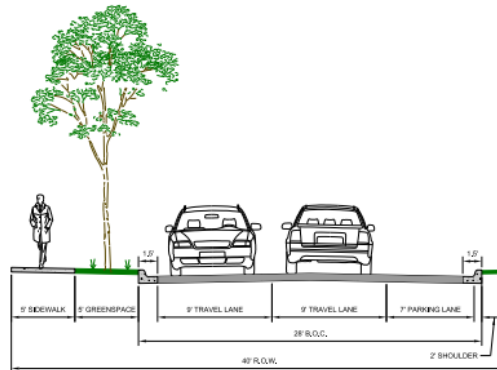
MASTER STREET PLAN CLASSIFICATIONS

- Hwy. 62 Major Arterial
- West Buchanan Minor Arterial
- Douglas-Rittman Minor Arterial
- Downtown Minor Arterial
- Illinois Chapel Minor Arterial
- Illinois Chapel Minor Arterial - Proposed
- Collector
- Collector - Proposed
- Mock Street Collector
- Industrial Collector
- Rural Collector
- Rural Collector - Proposed
- Local Subdivision Street
- Local Street

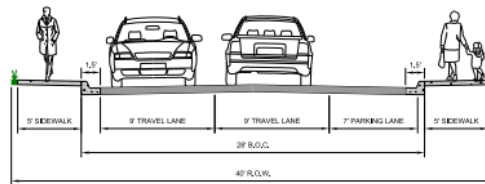
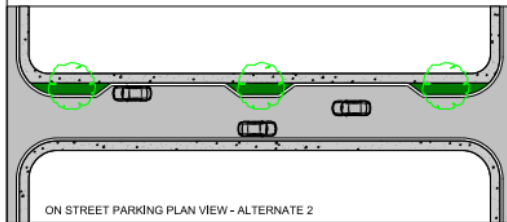
MSP Appendix A – Street Sections



LOCAL STREET



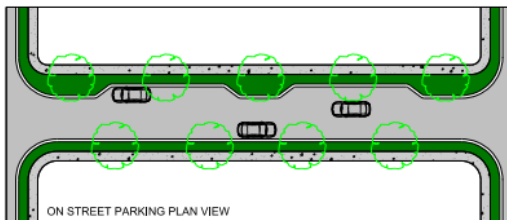
ALTERNATE 1



ALTERNATE 2

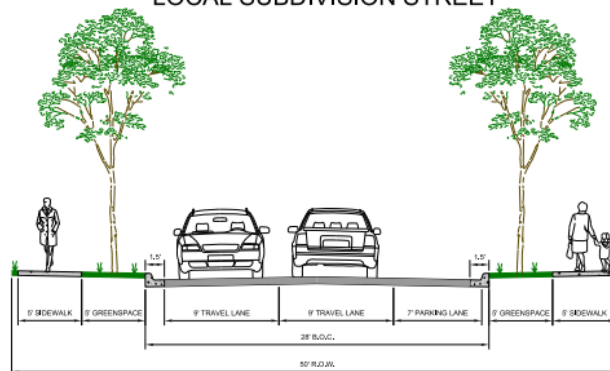
CITY OF PRAIRIE GROVE
PRAIRIE GROVE, ARKANSAS
ROADWAY TYPICAL SECTIONS

LOCAL STREET



NOTE:
ON-STREET PARKING SHALL BE
LOCATED ON ONE SIDE OF THE
STREET. OTHER SIDE OF
STREET SHALL BE SIGNED AS
"NO PARKING".

LOCAL SUBDIVISION STREET

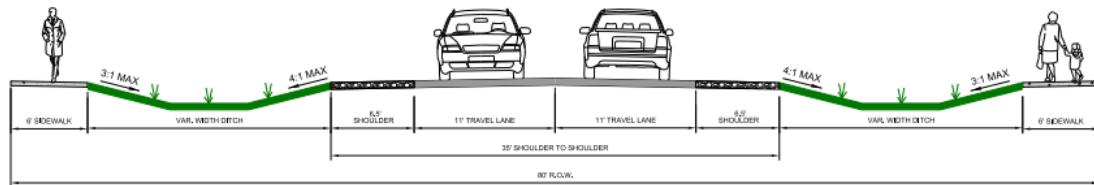


CITY OF PRAIRIE GROVE
PRAIRIE GROVE, ARKANSAS
ROADWAY TYPICAL SECTIONS

LOCAL SUBDIVISION STREET



RURAL COLLECTOR

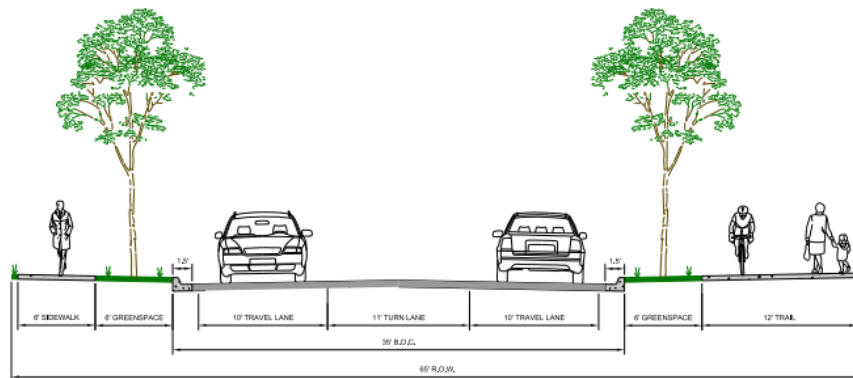


CITY OF PRAIRIE GROVE
PRAIRIE GROVE, ARKANSAS
ROADWAY TYPICAL SECTIONS

COLLECTOR STREETS



COLLECTOR (TRAIL)

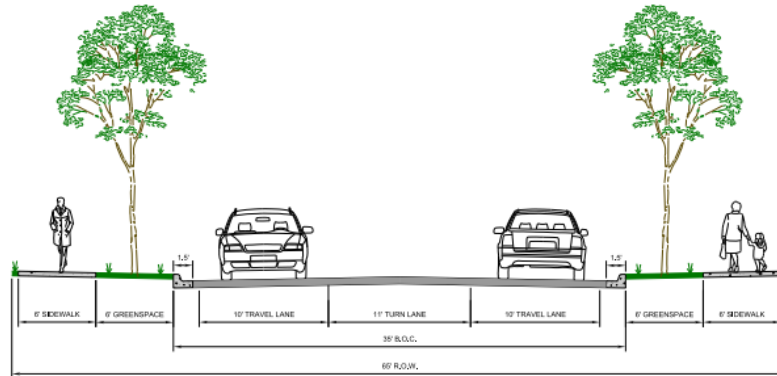


CITY OF PRAIRIE GROVE
PRAIRIE GROVE, ARKANSAS
ROADWAY TYPICAL SECTIONS

COLLECTOR STREETS



COLLECTOR (NO TRAIL)

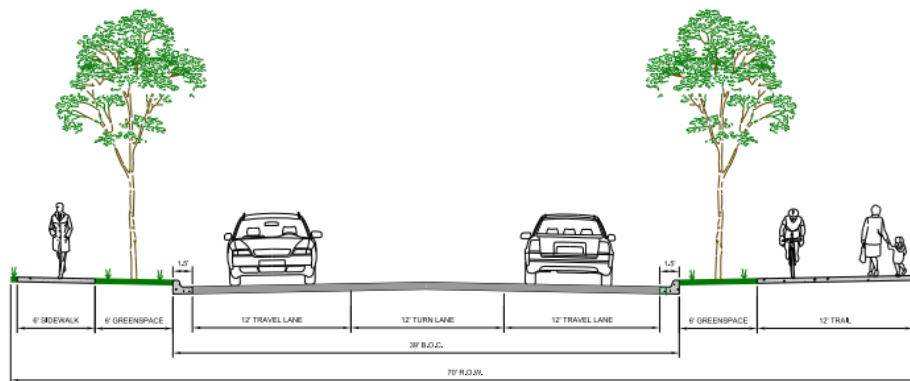


CITY OF PRAIRIE GROVE
PRAIRIE GROVE, ARKANSAS
ROADWAY TYPICAL SECTIONS

COLLECTOR STREETS



INDUSTRIAL COLLECTOR

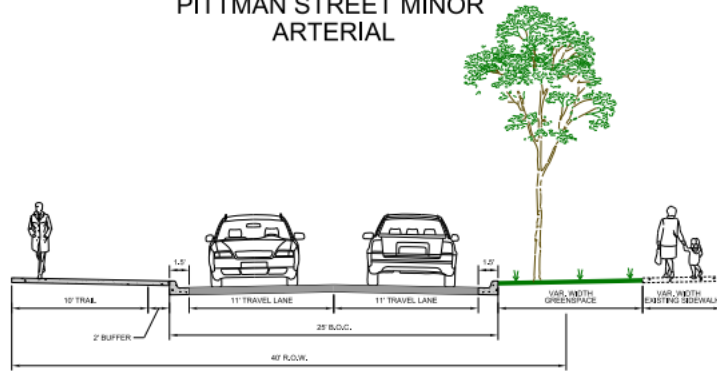


CITY OF PRAIRIE GROVE
PRAIRIE GROVE, ARKANSAS
ROADWAY TYPICAL SECTIONS

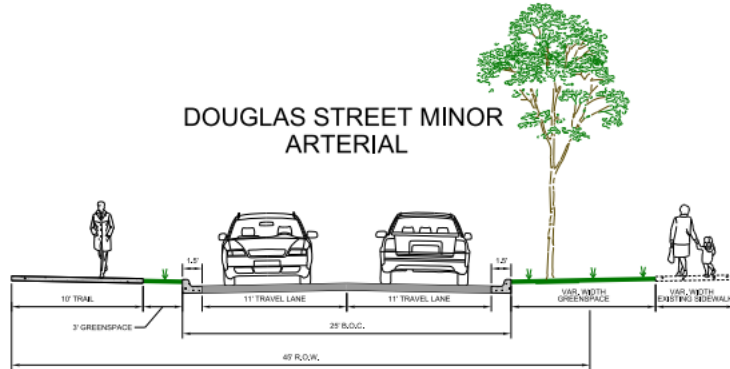
COLLECTOR STREETS



PITTMAN STREET MINOR ARTERIAL



DOUGLAS STREET MINOR ARTERIAL

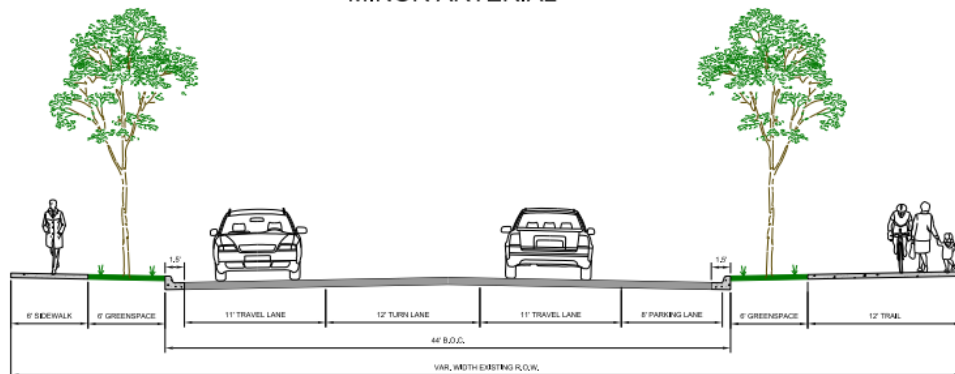


CITY OF PRAIRIE GROVE
PRAIRIE GROVE, ARKANSAS
ROADWAY TYPICAL SECTIONS

ARTERIAL STREETS



WEST BUCHANAN STREET MINOR ARTERIAL

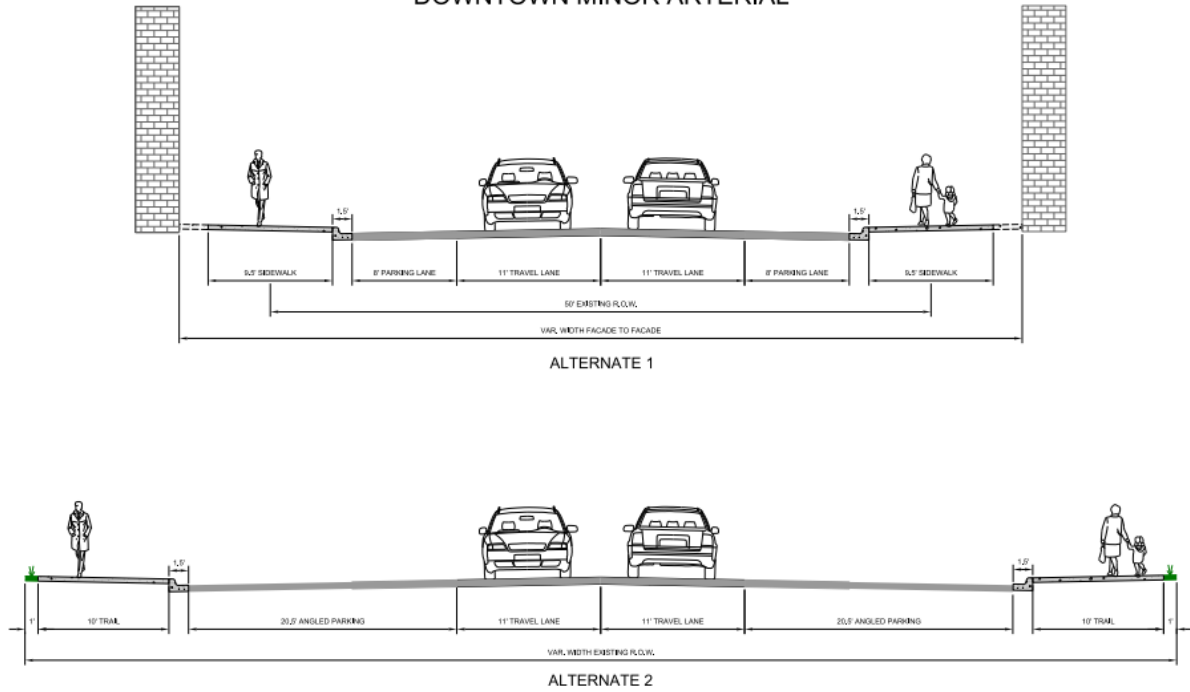


CITY OF PRAIRIE GROVE
PRAIRIE GROVE, ARKANSAS
ROADWAY TYPICAL SECTIONS

ARTERIAL STREETS



DOWNTOWN MINOR ARTERIAL

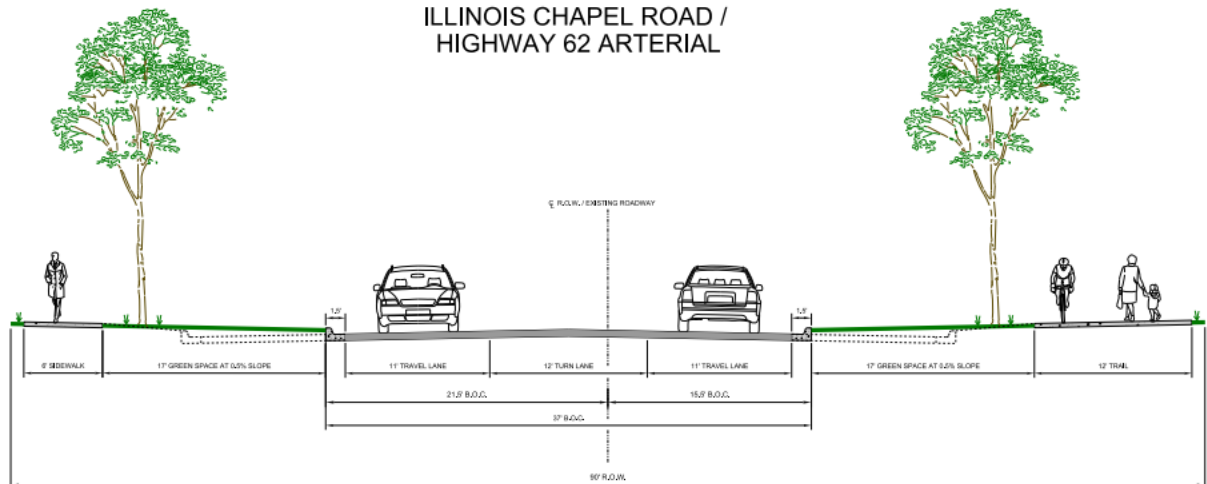


CITY OF PRAIRIE GROVE
PRAIRIE GROVE, ARKANSAS
ROADWAY TYPICAL SECTIONS

ARTERIAL STREETS



ILLINOIS CHAPEL ROAD / HIGHWAY 62 ARTERIAL



CITY OF PRAIRIE GROVE
PRAIRIE GROVE, ARKANSAS
ROADWAY TYPICAL SECTIONS

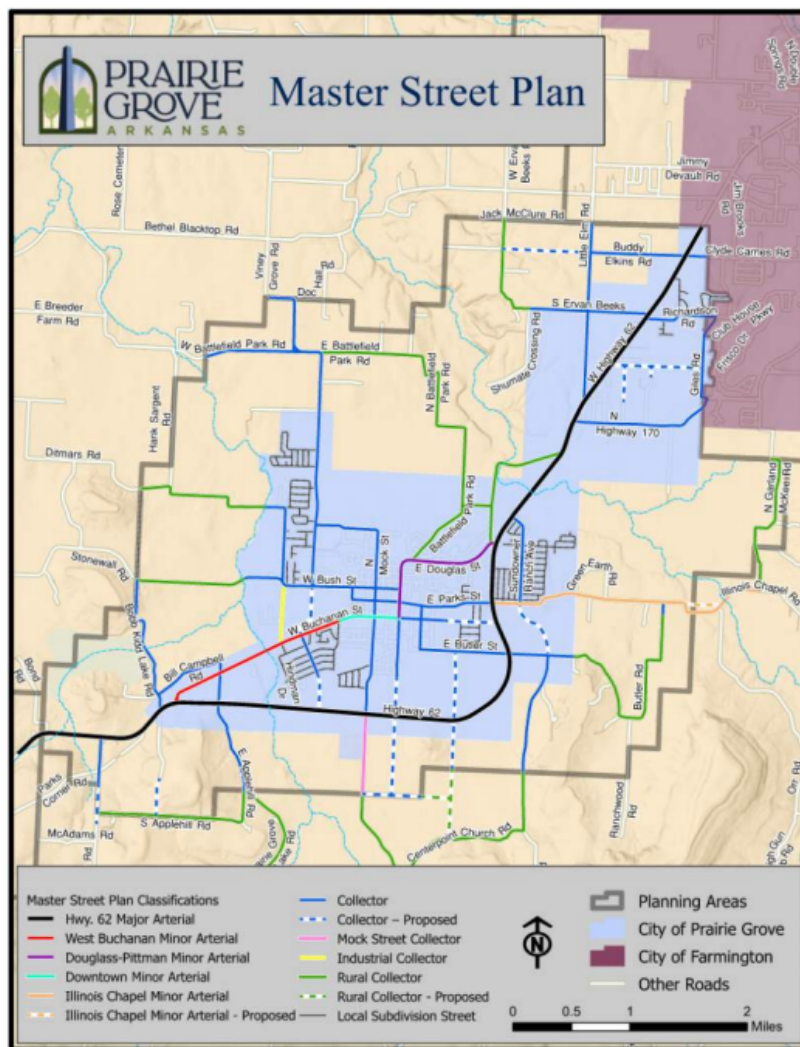
ARTERIAL STREETS



MASTER STREET PLAN – Vision Plan Appendix B

Prairie Grove Vision Plan: Future Land Use and Master Street Plans

5.2 Master Street Plan



Master Street Plan Map

An important element of the Vision Plan is transportation planning. The primary planning document that facilitates the City's transportation planning is the Master Street Plan (MSP), which contains Typical Sections for each of the different types of street classifications identified.

The City has an existing network of City and State roadways. With growth and time, changes are needed to assure the roadway system is efficient, strong, and connected to increase economic opportunities within the city. The MSP accomplishes that by identifying key areas needed for future extensions and other roadway improvements. These improvements will help relieve congestion and plan for efficient growth and improvement of the roadway system over time.

The MSP map shows the existing street network, as well as the approximate location of future street connections and improvements. Flexibility in the exact alignments is allowed based on

constraints and practicalities, but the connections indicated are important and will be required as development occurs. The MSP includes all elements within the Right of Way, where vehicular, bicycle and pedestrian transportation modes are considered together.

Street Classification System

The street classification system is a hierarchical breakdown of how roadways function now and how they are planned to function in the future. This Master Street Plan (MSP) provides for three types of function classifications: Arterials, collectors, and local streets. A street function classification system should represent a well-planned network operating like a circulatory system.

Arterials – Arterials provide for increased mobility by moving traffic. Arterials are typically designed around permitting unimpeded traffic flow and are not primarily designed to provide high property access. This Master Street Plan provides for both 'Major' and 'Minor' Arterials. US 62, including the bypass is considered the Major Arterial in Prairie Grove. Drive spacing requirements and access limitations are common to Major Arterial streets. Alternatively, E. Douglass, N. Pittman, and the portions of Buchanan St. comprising Hwy 62 Business are classified as Minor Arterials, and their corresponding MSP cross sections are more sensitive to the character and feel of those areas—especially through historic Prairie Grove. These arterials pivot back to focus on pedestrian accessibility and preservation of local economic vitality through parallel parking lanes and wide sidewalks on the Downtown Minor Arterial, as labeled on the Master Street Plan.

Collector – Collector streets connect the arterial roadway network to the local streets and accommodate access to adjoining land. They are designed to balance adjacent land access standards with providing sufficient traffic flow to permit greater mobility within the city. This MSP provides for both Collectors as well as Rural and Industrial Collectors to best serve those region specific areas. In general, Collectors within the City include a central turning lane with sidewalks and pedestrian side paths or trails on either side. Examples of collector streets are W. Bush St, N. Mock St, and Bobb Kidd Lake Rd. 'Rural' Collectors provide a similar role but allow for more rural road forms with open swales and ditches—primarily outside of the current city limits and into the planning area. Examples of 'rural' collector streets are Battlefield Park Rd, S. Applehill Rd, and Butler Rd.

Local - Local streets are intended to connect traffic with collectors and ultimately to the arterial roadway network. They have the lowest capacity and thus are not intended to carry large traffic loads. Local streets are designed for low speeds, and to provide ready access to adjoining land.

Note: While the MSP proposes the construction of numerous roads, it is intended that many of these road projects be built and constructed as property is developed. In this way, existing residents and the taxpayers will not bear all of the burdens of the cost for these road projects. Rather, those costs will be borne by the developers/developments that create the necessity for the new roads. However, circumstances may arise where it is advantageous for the city to be proactive in widening or constructing roads to meet the needs of the community and help direct growth in an orderly manner.

Typical Cross Sections

Street classifications described above each have a corresponding cross section. Each of these cross sections shall govern the construction of street and bicycle/pedestrian facilities by the City of Prairie Grove as well as through the private development community. Moreover, these cross sections will work in concert with the City's standard street specifications that further dictate the remaining aspects of roadway design and construction. Street classifications contained in the MSP correspond to the street cross sections shown in this document. These cross sections prescribe and standardize how each new street should be constructed. Furthermore, the cross sections contained herein dictate the standards for how the existing street network should be improved. Typical Cross Sections are shown in 'Appendix A' of this document.



(under development)

ARTICLE VIII STREET REGULATIONS

Article IX Excavation and Fill Regulations

9.1

- PURPOSE:
 - The purpose of this code is to safeguard life, limb, property, and public welfare by regulating excavations and grading on private and publicly owned land and property.
- SCOPE
 - This code sets forth rules and regulations to control excavation, grading, earthwork, construction, including fills and embankments, establishes the administrative procedure for issuance of permits and provides for approval of plans and inspection of excavation and grading construction.
- PERMIT EXCEPTIONS
 - No person shall do any excavation or grading without first having obtained a permit from the City Building and Code Enforcement Department, unless the following exemptions are met.
 - Excavations or grading in an isolated self-contained area of one-half acre or less where there is no danger apparent to private or public property and will not change established drainage patterns.
 - An excavation below finished ground, such as for footings, basements, retaining walls, or other structural excavations that are covered under a valid building or fence permit. This shall not exempt any fill that is the result of excavation nor exempt any excavation having an unsupported height greater than 4 feet after completion of the structure.
 - Cemetery graves
 - Refuse disposal sites controlled by other regulations
 - Excavations for wells, tunnels, or utilities
 - Mining, quarrying, excavating, processing, stockpiling of rock, sand, gravel, aggregate, where otherwise established by lawful practices and regulations. Provided further that all such activities shall meet all local, state, and federal guidelines and laws in existence.
 - Exploratory excavations under the direction of soil engineers, geologists, or scientists.
 - An excavation which (a) is less than 2 feet in depth, or (b) which does not create a cut slope greater than 5 feet in height and steeper than one and one-half horizontal to vertical.
 - Earth Work performed under an approved building permit, relevant to the construction of the building only.
 - Utility cuts performed by or on behalf of a public utility.
 - Work performed as part of an approved subdivision development according to the subdivision regulations as may now or hereafter be enacted by the board of directors.
 - Street and drainage work performed within a public right-of-way by or on behalf of a public agency
 - This requirement of the Code may be waived by the Mayor or his designee in time of natural disasters or other such emergencies.
- HAZARDS
 - Whenever any existing excavation or embankment or fill on private property has become a hazard to life, limb, or endangers property, or adversely affects the safety, use, stability, or drainage of a public way or drainage channel, the owner of the property upon which the excavation or fill is located, or other person or agent in control of said property, upon receipt of notice in writing from the City

- Building and Code Enforcement Department, shall within the period specified therein repair or eliminate such excavation or embankment so as to eliminate the hazard and be in conformance with the requirements of the Code.
- WORK SITE REQUIREMENTS
 - Provisions shall be made to adequately control dust. Provisions shall be made to adequately control and keep streets clean and free of debris, soil, and mud caused by hauling or excavation activities. Public Streets shall be cleaned immediately.
 - VARIANCES
 - If an applicant alleges that extraordinary hardships or practical difficulties may result from strict compliance with these regulations, or the purpose of these regulations, and proposes alternative measures or proposals, the City Building and Code Enforcement office shall review said alternative plans and forward a recommendation to the Board of Adjustments. The request shall include:
 - Conditions upon which the request for variance is based that are unique to the property because of its particular physical surroundings, shape, or topographical conditions.
 - Assurances that the granting of a variance will not be detrimental to public safety, health, or welfare of, or injurious to, other property.
 - PENALTY
 - The penalty for violation of this code shall, upon conviction, be such fines and penalties as established by the general penalty clause, section 1.32 PGM.

9.2

- DEFINITIONS

The following words, terms, phrases, abbreviations, or acronyms, when used in this Code, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning.

Approval by city, submitted for approval or similar terms shall refer solely to the action of the city in reviewing an excavation and grading plan submitted by a developer for the purpose of determining whether the proposal conforms with the requirements of this Code. Such review and approval shall not be construed to indicate that the city has engineered the project, has independently examined or reviewed the engineering design of the project, that the city has thoroughly inspected construction, that purchasers or users should rely on the city's action as indicating the project is properly designed or constructed, nor to indicate any other level of review, inspection or supervision in excess or in addition to review of the project to determine that it meets the minimum requirements of this Code. All acts of approval shall be accomplished only by the employees of the city expressly authorized by the board of directors or city manager to accomplish such tasks of approval. Further, in approving the proposed project as meeting the minimum requirements of this Code, the city shall rely on the statements and representations made in the request for application, design, plans and specifications.

As-graded is the surface conditions extent on completion of grading.

ASTM means American Society for Testing and Materials.

Bedrock is in-place solid rock

Bench is a relatively level stop excavated into earth material on which fill is to be placed.

Board of adjustments and appeals. Any reference to a board of adjustments and appeals shall mean such appeals board as may now or hereafter exist and be designated by the board of directors to serve in that capacity for the purposes of this code.

Borrow is earth material acquired from an off-site location for use in grading on a site.

Certification shall mean a written engineering or geological opinion concerning the progress and completion of the work.

City: The words "the City" or "this City" shall be construed as if the words "of Prairie Grove" follow it and shall extend to and include its several officers, agents and employees.

Civil engineer shall mean a professional engineer registered in the state to practice in the field of civil works.

Compaction is the densification of a fill by mechanical means.

Comprehensive plan means the officially adopted guide to the orderly, coordinated development of the community, i.e., the City of Hot Springs, Arkansas, Comprehensive Plan.

County means Washington County, Arkansas.

County judge means the chief executive officer of Washington County, Arkansas.

Clearing means the removal of natural vegetation including trees, bushes, vines, weeds, grass, etc.

Cut means the excavation or removal of earth material resulting in a surface elevation lower than the existing or original surface.

Developer means any person, firm, partnership, corporation, utility or other entity planning, constructing, altering, or reconstructing any excavation or grading work within or pertaining to any property within the city limits.

Disturbed area means surface areas that the natural vegetation has been destroyed or the surface elevation has been changed due to cutting or filling activities.

Earth material is any rock, natural soil or fill and/or any combination thereof.

Easement means authorization by a property owner for the use by another, and for a specified purpose, of any designated part of his property.

Engineer means a professional engineer registered to practice in the State of Arkansas.

Engineer project means the professional engineer retained by the developer to design a specific excavation or grading work project.

Engineering geologist shall mean a geologist experienced and knowledgeable in engineering geology.

Erosion is the wearing away of the ground surface as a result of the movement of wind, water and/or ice.

Excavation is the mechanical removal of earth material.

Existing grade is the grade prior to grading.

Fill means the placement of earth material resulting in a surface elevation higher than the existing or original surface.

Finish grade is the final grade of the site which conforms to the approved plan.

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al rise (+) or fall (-) of a segment divided by the horizontal length of the segment, expressed in percentage terms.

Grading is any excavating or filling or combination thereof.

Highway means a street or roadway which is part of the state highway system which is maintained and/or proposed by the Arkansas Department of Transportation.

Off-site means any property not located within the bounds of the property on which excavation or grading work is performed.

Paved area means all areas which are or proposed to be surfaced with gravel, asphalt, concrete, or similar surface treatment material.

Public street system means the total sum of the public streets including local, minor collectors, major collectors, arterials and highways. The public street system shall include all streets whether by dedication (platted) or prescriptive use and whether or not accepted for maintenance by the city or county.

Re-vegetation means the planting or seeding of areas for the purpose of establishing adequate vegetation to prevent erosion of earth material or migration of sediment.

Right-of-way means a parcel or strip of land dedicated or deeded to the public or belonging to the public, and accepted by proper authority, by prescriptive rights for use as a street, walkway, railroad, utility or other public use.

Rough grade is the stage at which the grad approximately conforms to the approved plan.

Site is any lot or parcel of land or contiguous combination thereof, under the same ownership, where grading is performed or permitted.

Slope is an inclined ground surface, the inclination of which is expressed as a ratio of horizontal distance to vertical distance.

Stabilization means the securing of soil or earth material in such a manner that it cannot be moved or relocated by natural means such as gravity, water flow or wind.

Street means a right-of-way used or intended for use by vehicular traffic and either dedicated for public use or used by prescriptive right whether or not accepted for maintenance by the city or county.

Terrace is a relatively level step constructed in the face of a graded slope surface for drainage and maintenance purposes.

Utility means any part of a group of units which provides service to the public, specifically including; electrical power, telephone service, gas supply, television cable service, water and sanitary sewer

Utility company means the owner of any utility facility which holds a valid franchise to operate such utility within the area of an excavation or grading work project.

Vegetation means any natural or planted growth including trees, grass, vines, b u s h , weeds, shrubs, etc.

9.3

- PERMITS REQUIRED
 - Except as otherwise exempted in this Code, no person shall do any excavations or grading without first obtaining a permit from the City Building and Code Enforcement. A separate permit shall be required for each site, and may cover both excavation and fill.
- APPLICATION
 - To obtain a permit the applicant shall submit a Prairie Grove Grading and Erosion Control Application to the Prairie Grove Building and Code Enforcement office. Every application will include name, address, contact person or representing firm, contractor, map or plat of proposed area, total acreage, and such additional information as requested in the application form.
- PLANS AND SPECIFICATIONS- ENGINEERED GRADING PROJECTS
 - Each application for an excavation and grading permit shall be accompanied by a set of plans and specifications prepared by an Arkansas Licensed Engineer or Landscape Architect if:
 - Disturbed Site exceeds one acre
 - The excavation or grading could alter storm drainage discharge locations or characteristics of storm water run-off; or
 - The maximum vertical cut or fill will exceed four (4') feet within ten feet (10') horizontal distance from the property line; or
 - City building or code enforcement staff determines that the extent of the proposed excavation or grading work could create a significant impact to the public or adjacent properties.
 - Plans shall include:
 - Elevation contours showing existing and proposed elevations
 - Details of all surface and subsurface drainage ditches, devices, walls, dams, or other protective devices.
 - Location of all buildings or permanent structures
 - Identification of undisturbed land
 - Location of natural features, such as drainage ways, ditches, rock outcroppings, ponds, creeks, etc.
 - Location of known utilities
 - Identification of all proposed drainage devices
 - Soil and Geology Reports Building development project.
 - Any application for an engineered grading project upon which a building(s) is proposed to be located following

completion of the grading and excavation shall also be accompanied by the following reports:

- A soil engineering report, including data regarding the nature, distribution and strength of existing soils, conclusions and recommendations for grading procedures and design criteria for corrective measures when necessary, and opinions and recommendations covering the adequacy of sites to be developed by the proposed grading. Recommendations included in the report and approved by the city engineer shall be incorporated in the grading plans or specifications.
- Engineering geology report that includes adequate evaluations of the geology of the city including conclusions and recommendations for the proposed development and grading.
- ISSUANCE OF PERMITS
 - The City shall issue a permit upon approval of the submitted plans and specifications. If the work authorized is not started within 6 months from the date of the permit, the permit shall become null and void.
- FEES
 - Fees required: For projects less than 2 acres, a fee of \$50.00 for non-engineered projects (no plans required) and \$100.00 for engineered projects, shall be paid at the time of issuance is required. For projects over 2 acres, add \$15 per acre up to 10 acres, for a maximum cost of \$250.00.

9.4

- CUTS, FILLS, EROSION CONTROL, SLOPES
 - Earthen Slopes; Excavation and embankments shall be restrained
 - Boundaries of the work must be maintained at least 5' from any public right of way or proposed right of way
 - Adequate drainage from embankments and excavations must control and prevent instability caused by material saturation.
 - Erosion caused by surface water flowing over unprotected slopes must be prevented. Adequate slope protection shall be provided on all earthen slopes governed by this code using grass, ground cover, stone rip-rap, cement, asphalt, or some other approved measure.

- Slopes of cut surfaces shall be no steeper than is safe for the intended use. Cut slopes shall have a grade no steeper than 2:1, horizontal to vertical.
- Retaining structures or walls shall be provided with weep holes to prevent damage and shall be adequately spaced to prevent overturning pressures greater than 35 pounds per cubic inch. Permanent retaining structures shall maintain a safety factor of at least 2 against overturning.
- Any retaining wall greater than 4' high shall be designed by a registered professional engineer and shall be field inspected by the design engineer.
- All proposed rock cuts and any cut slopes resulting in a vertical height of 10 feet or greater shall require a geotechnical investigation and a formal report submitted by a registered professional engineer qualified to make such investigations.
- Safety railings and other safety devices may be required on retaining walls 2.5 feet or higher. This determination will be made by the building and code enforcement department and be based on the likelihood of potential pedestrian or public access.
- Earth materials which have no more than minor amounts of organic substances and have no rock or similar irreducible materials with maximum dimensions greater than 8 inches, unless designed by a registered professional engineer designs the fill and approved by the city.
- Compaction of fills shall be a minimum of 90% of maximum density as determined by ASTM standards for the moisture-density relations of soils. Field density shall be determined in accordance with ASTM standards.
- The slope of all fill surfaces shall be no steeper than 15% (6.67 horizontal to 1 vertical) unless they are keyed into steps in the existing grade and stabilized by mechanical compaction.

○ EROSION AND SEDIMENTATION CONTROL.

- Permanent improvements. Permanent improvements such as streets, storm sewers, curbs, gutters and other features for control of runoff shall be scheduled coincidental to removing vegetative cover from the area so that large areas are not left exposed beyond the capacity of the temporary control measures.
- Top soil. Top soil may be stockpiled and protected for later use on areas requiring landscaping. If top soil or other soil is to be stockpiled for more than 30 days, it shall be temporarily covered.
- Existing vegetation. Existing vegetation shall be protected in all undisturbed areas as shown on the plans.
- Re-vegetation. Re-vegetation shall be required within three months after completion cutting or filling disturbed areas. Re-vegetation shall be required to meet the following performance standards:

- 0 to 10% grade: Re-vegetation shall be a minimum of seeding and mulching. Said seeding shall provide complete and uniform coverage that minimizes erosion and run-off in no more than two growing seasons.
 - 10% to 15% grade: Re-vegetation shall be a minimum of hydro-seeding with mulch and fertilizer, staked sod and/or ground cover. Said planting shall provide complete and uniform coverage in no more than two growing seasons.
 - 15% to 25% grade: The slope shall be covered with landscape fabric and planted with ground cover.
 - More than 25% grade: Any finish grade over 25% shall be stabilized with retaining walls, cribbing, terraces, landscape fabric, vegetation, or riprap. If riprap is used the slope's stability and erodibility must be equivalent to or better than its pre-development state.
- Plant/Water. Plant materials may need to be watered or irrigated. Where irrigation or regular watering is not available, only native or acclimated plant species shall be used. If the soil cannot properly sustain vegetation, it must be appropriately amended. If re-vegetation is not established after one year, the city engineer shall require that it be redone in part or in total.
 - Plant/Terrace/Benches: Plant materials shall be planted along terrace benches. Said plantings shall be spaced as necessary to thoroughly stabilize the terrace bench. The remainder of the terraced slope shall be re-vegetated and stabilized according to § 15-9-1.70 (d) above.
 - Permanent erosion control. Permanent erosion control measures shall be constructed or installed within thirty (30) days of completion of cutting or filling. Temporary erosion control measures shall be used to correct conditions that develop during construction that were unforeseen during the design stage, that are needed prior to installation of permanent erosion control features, or that are needed temporarily to control erosion that develops during normal construction projects, but are not associated with permanent control features on the project.

○ Slopes;

- The faces of cut and fill slopes shall be prepared and maintained to control against erosion. This control may consist of effective planting. The protection for the slope shall be installed as soon as practicable and prior to calling for final approval. Where cut slopes are not subject to erosion due to the erosion-resistant character of the materials, such protection may be omitted.

9.5

- Inspections

- The city shall be notified of any field changes prior to commencing with the work involved if earth slopes, retaining structures or storm drainage is affected.

All grading operations for which a permit is required shall be subject to inspection by the city staff. Special inspection of grading, operations and special testing shall be performed in accordance with the engineered grading requirements hereinafter.

Non-engineered grading requirements.

- Projects for which plans and specifications are not required (non-engineered grading projects) shall be inspected by the city.
- Engineered grading requirements.
- For engineered grading, it shall be the responsibility of the civil engineer who prepares the approved grading plan to incorporate all recommendations from the soil engineering and engineering geology reports into the grading plan. He shall also be responsible for the professional inspection and certification of the grading within his area of technical specialty. This responsibility shall include, but need not be limited to, inspection and certification as to the establishment of line, grade and drainage of the development area. The civil engineer shall act as the coordinating agent in the event the need arises for liaison between the other professionals, the contractor and the city engineer. The civil engineer shall also be responsible for the preparation of revised plans and the submission of as-graded grading plans upon completion of the work.
- Soil engineering and engineering geology reports shall be required as specified in Article III. During grading all necessary reports, compaction data and soil engineering and engineering geology recommendations shall be submitted to the civil engineer and the city engineer by the soil engineer and the engineering geologist.
- The soil engineer's area of responsibility shall include, but need not be limited to, the professional inspection and certification

concerning the preparation of ground to receive fills, testing for required compaction, stability of all finish slopes and the design of buttress fills, where required, incorporating data supplied by the engineering geologist.

- The engineering geologist's area of responsibility shall include, but need not be limited to, professional inspection and certification of the adequacy of natural ground for receiving fills and the stability of cut slopes with respect to geological matters, and the need for sub-drains or other ground water drainage devices. He shall report his findings to the soil engineer and the civil engineer for engineering analysis.
- The city shall inspect the project at various stages of the work requiring certification and at any more frequent intervals necessary to determine that adequate control is being exercised by the professional consultants.

9.6

- **COMPLETION REQUIREMENTS**

- Any engineered grading project, exceeding one acre of disturbance, shall provide as-built plans to the City upon completion that include original surface/ground elevations, as graded elevations, lot drainage patterns, and all surface and sub-surface drainage structures, swales, ditches, and easements.

Notification of Completion required. Upon completion the City shall be notified by the owner or his representative that all work is completed as shown on the as-built plans

**Article X – Water and Sewer Specifications and
Requirements**

CITY OF PRAIRIE GROVE

WATER MINIMUM DESIGN STANDARDS

August 2022

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1. SCOPE AND AUTHORITY

This document identifies the City of Prairie Grove's minimum design requirements for public water infrastructure as defined by the State of Arkansas and the City of Prairie Grove Municipal Code. While this document details the minimum design requirements for any improvements to the City of Prairie Grove's public water infrastructure, it does not relieve the design engineer from providing sound professional judgement. All design documents shall conform to accepted engineering and surveying standards and safeguard the life, health, property, and welfare of the public as identified in *Article 20 – Ethics and Rules of Professional Conduct* from the Arkansas Board of Licensure for Professional Engineers and Professional Surveyors. The following referenced sections give authority to the City of Prairie Grove to construct, maintain, and operate a water system along with associated ability to provide design and construction standards.

1.1 – A.C.A. § 14-234-203 – Authority of Municipalities

Municipalities are authorized to purchase or construct a waterworks system or any integral part thereof and to purchase and hold title to, lease, or rent in connection therewith any land, lake, watercourse, or water supply either inside or outside the limits of the municipality or inside or outside the limits of the county in which the municipality is located.

1.2 – A.C.A. § 20-7-109 – Authority to Regulate Public Health

Power is conferred on the State Board of Health to make all necessary and reasonable rules of a general nature for the protection of the public health and safety; the general amelioration of the sanitary and hygienic conditions within the state; the suppression and prevention of infectious, contagious, and communicable diseases; the proper enforcement of quarantine, isolation, and control of such diseases; and the proper control of chemical exposures that may result in adverse health effects to the public.

1.3 – Arkansas State Board of Health – Rules Pertaining to General Sanitation (ADH-GS Section XII)

In the event that water or wastewater infrastructure improvements (hereinafter "infrastructure"), including those within an improvement district, are proposed to be constructed within the adopted territorial jurisdiction of a municipality under A.C.A. 14-56-413 or its designated utility service area, said municipality shall be provided notice of such a proposal prior to the commencement of any work, assessment, or indebtedness associated with same. No infrastructure shall be connected to or serviced by a municipal utility unless and until same is expressly granted by the municipality, subject to the municipality's connection and/or extension policy, if any. Any infrastructure improvements, including those within an improvement district, proposed to be constructed within the adopted territorial jurisdiction of a municipality under A.C.A. 14-56-413 or its designated utility service area, regardless of whether same is to be connected to or serviced by a municipal utility, must be built according to the standard utility construction specifications, if existing, of that municipality and in compliance with the piping sizes required by the municipal utility. The municipal utility shall be granted access during all phases of construction in order to inspect and verify substantial compliance with their construction standards, specifications, and pipe size requirements during and following construction of the infrastructure improvements.

1.4 – City of Prairie Grove Approving Ordinance

Ordinance 2024-06 approved May 6, 2024.

Note: All designs shall conform to the most stringent requirement of any adopted code, ordinance, or standard from other governing agencies.

2. GENERAL DESIGN REQUIREMENTS AND PLANNING

2.1 – Licensure Requirements

All designs, plans, and specifications submitted to the City for approval for the construction of public utility improvements as required herein shall be prepared under the direction of a professional engineer, licensed in the State of Arkansas, and shall meet the minimum standards specified. (A.C.A. 17-30)

2.2 – Basis of Design Requirements

The required water facilities shall be of sufficient size to serve the entire project area in which the water facilities are to be constructed with consideration for future expansion beyond the area being developed. The basis of design report shall contain supporting design information for the proposed water facilities to be constructed, a drawing detailing the size, boundaries, and zoning of the initial development. All drawings should contain appropriate locational elements such as north arrow, scale, section lines, street names, etc.

Computations should be presented in a tabular form for each segment of the system. Commentary shall be provided that details how design flows and peaking factors were developed. A summary of the design criteria that shall be submitted with the basis of design is detailed below. Additional items may be requested at the time of review.

Design Criteria:

1. Pipe segment identification detailed on a plan view exhibit
2. Inside pipe diameter and material of each segment
3. Average daily demand
4. Maximum daily demand, peaking factor used, and velocity
5. Maximum hourly demand, peaking factor used, and velocity
6. Fire flow calculations
7. Design flow and velocity at each segment

2.3 – Design Period

In general, the water improvements shall be designed for the estimated ultimate tributary population. Consideration shall also be given to the maximum anticipated demand of uses such as institutions, industrial parks, and fire flows.

2.4 – Design Factors

In determining the required capacities of water mains, the following factors shall be considered:

1. Determine the Average Daily Demand (Q_{avg})
2. Determine the Maximum Daily Demand ($Q_{max(day)}$)
3. Determine the Maximum Hourly Demand ($Q_{max(hour)}$)
4. Determine the required fire flow (Q_{fire})
5. Select an appropriate design flow based on previous determinations (Q_{design})
6. Evaluate and design the piping system using the design flow so that design pressures and velocities are within acceptable limits.

2.5 – Design Flow Requirements

2.5.1 – Design Flow Definitions and Equations

Water distribution systems shall be designed based on *Design Flow*. The distribution system must be designed to maintain a minimum pressure of 20 psi

at all points in the system under all conditions of *Design Flow*. (AWWA M31) (AFPC 2012 B102.1)

Design Flow (Q_{design}) – The greater of either the *Maximum Hourly Demand* or the *Maximum Daily Demand* plus the fire flow required. Fire flow requirements can be found in **Section 2.5.6 – Fire Flows**.

Average Daily Demand (Q_{avg}) – The average of the total amount of water used each day during a one-year period. (Units: Gallons per Day)

Maximum Daily Demand ($Q_{max(day)}$) – The maximum total amount of water used during any 24-hour period during a three-year period. This number should consider and exclude any unusual and excessive uses of water. *Maximum Daily Demand* shall be two and a half (2.5) times average daily usage per capita for residential development calculations. Commercial and industrial developments must be developed based on calculated usage rates based on actual developments.

$$\text{Eq. 2.5.1(a): } Q_{max(day)} = (2.5 \times Q_{avg})$$

(Units: Gallons per Day)

Maximum Hourly Demand ($Q_{max(hour)}$) – The maximum amount of water used in any single hour of any day during the design period. This is typically expressed in gallons per day by multiplying the actual peak hour use by 24 to obtain gallons per day. *Maximum Hourly Demand* shall be the Average Daily Demand multiplied by a peaking factor of seven (7) when used for residential calculations that are based on per capita usage.

$$\text{Eq. 2.5.1(b): } Q_{max(hour)} = 7.0 \times Q_{avg}$$

(Units: Gallons per Day)

2.5.2 – Forecasting

Forecasting future water demands for a given area is a difficult task. Many references vary on what the average daily residential demand per capita is. Some references show demands as low as 56.6 gallons per day per capita while others claim as high as 130 gallons per day per capita with an average indoor use of 58.6 gallons per day and an estimated additional 50 gallons per day for those using irrigation or other outside water uses. These studies vary widely due to variances in indoor uses, outdoor uses, and climate. (AWWA-REU)

Specific development information is preferred when available to create a more accurate forecast and help reduce the risk of creating an oversized or undersized system. If specific development criteria is unavailable, forecasting must be based on the worst case scenario based on zoning classifications of the planning area. See **Section 2.5.3 – Zoning Classifications**, **Section 2.5.4 – Residential Design Flow**, and **Section 2.5.5 – Industrial and Commercial Design Flow** for additional information.

2.5.3 – Zoning Classifications

Table 2.5.3 - Zoning Information for Forecasting Purposes				
Zoning District		Minimum Lot Area		Maximum Dwelling Units/Acre
Category	Description	(ft²)	(Acres)	
A	Low Density Residential & Agricultural	40,000	0.91	1.09
R-1	Low-Medium Density Residential	10,000	0.22	4.54
R-1.5	Medium Density Residential	8,000	0.18	5.55
R-1.75	Medium-High	6,500	0.14	7.14
R-2	Single Family	5,000	0.11	9.09
R-2	2-Plex	4,500	0.10	10
R-2	3-Plex	4,000	0.09	11.11
R-2	4-Plex	3,500	0.08	12.5
R-3	Less Than 5 Dwellings	3,500	0.08	12.5
R-3	Greater Than 5 Dwellings	3,000	0.06	16.66
R-3	Greater Than 4 (Adjoining R-1 or R-1.75)	20,000	0.45	2.22

**Referenced from City of Prairie Grove Municipal Code*

2.5.4 – Residential Design Flow

Residential zone water requirements shall be designed based on the proposed development. When specific data is not available, residential water distribution systems shall use an Average Daily Demand of 100 gallons per day per capita.

Single-family homes shall be assumed to have an average of 3.5 people per household. Apartments and other multifamily residences shall be assumed to have an average of 1.7 people per one bedroom unit, 2.2 people per two bedroom unit, and 4 people per three bedroom unit.

If specific development information is unavailable, the design engineer shall assume that all single family homes shall have three bedrooms, multi-family shall have two bedrooms. See **Section 2.5.3 – Zoning Classifications** to determine the number of dwelling units per acre based on zoning.

All water lines located in residential zones must also be designed for a minimum instantaneous flow of 20 gallons per minute per residence without exceeding maximum flow velocity as detailed in **Section 2.5.8 – Velocities**.

2.5.5 – Commercial and Industrial Design Flow

Commercial and industrial zone water requirements shall be individually designed based on the proposed development. The *Design Flow* shall be no less than 120,000 gallons per day per acre (approximately 16,042 ft³/acre) plus the fire flow requirement. Fire flow requirements can be found in **Section 2.5.6 – Fire Flows (Q_{fire})**.

2.5.6 – Fire Flows (Q_{fire})

Water lines must be designed to meet the following fire flow requirements unless modified by the Fire Marshal. The Fire Marshal is authorized to increase or decrease the following fire flow requirements as detailed in Section B103 AFPC Vol. I. (See **Section 7 – Fire Protection Requirements, Hydrants, and Appurtenances** for additional firefighting requirements.)

Residential Areas

In residential areas with single family and duplex housing, single water lines must be designed to furnish a minimum fire flow of 1000 gpm with a residual pressure of 20 psi must be maintained during all *Design Flow* for one hour. (AWWA M31) (AFPC 2012 B102.1)

Single family homes or duplexes that are 3600 ft² or larger may require greater fire flow demands and durations. (AFPC 2012 B105.1)

Multi-Family Housing Developments

Multi-family housing units greater than duplex (ex. Triplex, quadplex, Apartment Complex) must have a minimum fire flow of 1500 gpm with a minimum duration of two hours. Greater fire flow requirements and durations may be warranted as detailed on *Table B105.1 of AFPC Vol. I*. A residual pressure of 20 psi must be maintained during *Design Flow*.

Commercial, Industrial, and Other Non-Residential Developments

All non-residential buildings must meet the minimum *Fire Flow* of 1500 gpm with a minimum duration of two hours. Greater *Fire Flow* requirements may be warranted as detailed on *Table B105.1 of AFPC Vol. I*. A residual pressure of 20 psi must be maintained during *Design Flow*.

2.5.7 – Design Pressures

The distribution system must be designed to maintain a minimum residual pressure of 20 psi at all points in the system under all conditions of *Design Flow*. (ADH-APWS XIV-B) (AWWA M31) (AFPC 2012 B102.1) *Design Flow* requirements can be found in **Section 2.5 – Design Flow Requirements**. The normal working pressure in the distribution system shall be no less than 35 psi with a preferred range of 60 psi to 80 psi at *Maximum Hourly Demand ($Q_{max(hour)}$)*. (TSSW – 8.2.1)

2.5.8 – Velocities

Water distribution lines shall be sized so that under *Design Flow* conditions, the velocities shall not exceed 14 fps (*DIPRA-CML*). *Maximum Hourly Demand* ($Q_{max(hour)}$) flow velocity shall not exceed 9 fps.

Water transmission lines, as defined in **Section 3.7.3 – Transmission Lines**, shall be sized so that maximum velocity shall not be greater than 5 fps under *Design Flow*. All velocities shall be calculated with the Hazen-Williams equation. The roughness coefficients to be used for design with the Hazen-Williams equation can be found below in **Table 2.5.8 – Hazen-Williams Coefficient Values**.

(Table 2.5.8) Hazen-Williams Coefficient Values	
Material Type	Roughness Coefficient
	"C"
Concrete ¹	140
Ductile Iron ²	140
PVC ³	150
Steel ⁴	140

**Note: Values applicable for pipes 48" and less*

¹ AWWA-M09 - Chapter 3, ² *DIRPA-CML*,

³ *PVC - Section 9.3.1*, ⁴ AWWA-M11 - Chapter 3

2.5.9 – Available Water Supply

If the City of Prairie Grove determines that the *Design Flow* exceeds the available water supply to a development site, the City of Prairie Grove may request changes or decline to approve the proposed development.

3. DETAILS OF DESIGN

3.1 – Materials

All materials including pipe, fittings, valves, fire hydrants and other appurtenances shall conform to the latest revision of the City of Prairie Grove Standard Specifications and Arkansas Department of Health.

3.2 – Tracer Wire

All water lines must have tracer wire installed to meet the requirements of the State of Arkansas. (A.C.A. 14-271-111)

All tracer wire must terminate in a tracer wire box. Tracer wire boxes shall be located on design plans at intervals not exceeding 500 feet. Design plans shall show a tracer wire box to be located within five feet of every fire hydrant. If any additional tracer wire boxes are needed due to interval spacing requirements, tracer wire boxes shall be located near other water line appurtenances such as valve boxes. If no water line appurtenances are nearby, tracer wire boxes shall be located near street intersections or other easily accessible areas.

3.3 – Integrity of Water Distribution Network

Pipes shall have sufficient structural strength and shall be properly supported and reinforced where necessary to guard against structural failures and resulting sanitary hazards. (ADH-APWS XIV)

Pipe shall be selected based on the following considerations:

1. Internal Pressures (design pressure, working pressure)
2. Surge Pressure
3. Material Yield Strength
4. Trench Load
5. Deflection
6. Casting Allowance
7. Vacuum
8. Geotechnical and Environmental Conditions

(Additional Depth requirements are discussed in **Section 3.9 – Alignment and Profile**)

3.4 – Geotechnical Considerations

3.4.1 – Corrosive Soil Environments

Protection from corrosive soil environments must be considered when proposed water line is to be located in areas found to have corrosive soils. Water line protective wraps and coatings must be designed in accordance with City of Prairie Grove Standard Specifications and the latest revisions of the applicable AWWA standards. Ductile iron pipe, fittings, and valves shall be encapsulated with polyethylene. Corrosion surveys shall be performed in accordance with the latest requirements from *AWWA M11*, *AWWA M41*, or *DIPRA-DDM*. The City of Prairie Grove may require additional protection or testing during review.

Regardless of soil type, all ductile iron pipe shall be encased in polyethylene wrapping. Appropriate measures should be taken to protect the valves, bolts, nuts, and other appurtenances against corrosion. These items shall be encapsulated with polyethylene wrapping unless approved otherwise. (*AWWA M44*) (*DIPRA-CCPE*)

3.4.2 – Geotextile Encapsulation

All water lines located within the 100-year flood plain or areas with significant groundwater flow must be designed so that the entire pipe zone will be enveloped by a non-woven geotextile (filter fabric) to prevent soil migration. Filter fabric encapsulation of pipe zone shall be considered by the engineer for all transmission lines for all locations.

3.4.3 – Permeation (Petroleum Product & Organic Solvents)

Documented research has shown that pipe materials (such as polyethylene and polyvinyl chloride) and elastomers, such as those used in jointing gaskets and packing glands, are subject to permeation by low-molecular-weight organic solvents or petroleum products. If a water facility must be installed in such a contaminated area or an area subject to contamination, the design engineer must consult with the material manufacturer regarding permeation and provide the manufacturer's recommendation to the City of Prairie Grove for review. (*AWWA C111*)

The Arkansas Department of Health has stated that PVC pipe should not be installed where soils are or will be exposed to solvents, gasoline, petroleum products, etc. (*ADH-PVC*)

Consideration must be given to the type of gaskets being used in areas that are or will be exposed to similar soil contaminations. This consideration must be given to all gaskets regardless of pipe type.

3.5 – Restrained Joints and Thrust Blocking

Restrained joints or thrust blocking must be provided as necessary to prevent movement of pipe or appurtenances in response to thrust. All thrust restraint system calculations shall be provided by design engineer during review. Thrust restraint calculations shall conform to the latest AWWA recommendation. Restrained joints are preferred and shall be used when practical. Thrust blocking will be allowed in other circumstances.

Thrust restraint is required at the follow locations:

- Changes direction (i.e. bends, elbows, and crosses)
- Changes size (i.e. reducers)
- Dead ends
- Valves and hydrants

The type and size of thrust restraint depends on the following:

- Maximum system operating pressure
- Pipe size
- Appurtenance size
- Type of fitting or appurtenance
- Water line profile (horizontal or vertical bends)
- Soil strength

3.6 – Water Line Encasement

3.6.1 – Encasement Details

Casings shall have a minimum of 36 inches cover from the top of the casing to the bottom of the ditch line or native ground, or 42 inches below the top of the roadway subgrade, whichever gives the greater cover.

Casings shall, as a minimum, extend six feet beyond the flow line of parallel ditches, toe of slope, or back of curb as applicable for the roadway section. Bores shall be paid for per unit foot of bore with the water line inside encasement being paid for separately.

Casings must be designed to accommodate approved spacers and joint restraint. The casing diameter shall be a minimum of two times the diameter of the carrier pipe unless otherwise approved in writing by the City of Prairie Grove.

Casings may be required to be placed deeper based on permitting requirements from other agencies or as engineering judgement may require. Casings must be designed and installed in accordance with the latest revision of the City of Prairie Grove Standard Specifications and City of Prairie Grove Standard Drawings. Casing Spacers will be required and spaced in accordance to the pipe manufacture's recommendations.

All water lines that have been bored must be encased. Exceptions may be given for directional drilling in certain circumstances by the City of Prairie Grove. Water line encasement requirement may be removed with approval from the City of Prairie Grove. Roadway crossings shall be perpendicular unless otherwise approved in writing by the City of Prairie Grove.

3.6.2 – Locations Requiring Encasement

Water Lines must be bored and encased in the following locations:

1. Railroad crossings in accordance with approved railroad permit.
2. Stream crossings. Boring requirement may be waived based on approved permits.
3. ArDOT maintained roadways in accordance with approved ArDOT permit.
4. All public roadway crossings.

Exception to Public Roadway Crossings:

- a. Encasement and boring requirement may be waived by and at the discretion of the City if the water line is located under streets maintained by the City.
5. Service Line Crossings (See **Section 6 – Water Services** for additional details)
6. Areas of Possible Cross Connection (See **Section 4 – Protection of Water Supplies** for additional details)

3.7 – Water Line Sizes

3.7.1 – Minimum Water Line Size

Distribution piping must be sized to meet *Design Flow*. No public water line shall be less than 8 inches in diameter except for the following cases:

1. 6-inch water lines may be allowed for looped connections where future development and fire flow requirements are able to be satisfied without exceeding velocities detailed in **Section 2.5.8 – Velocities** during *Design Flow*.
2. 4-inch dead-end water lines may be allowed where no future extension of the line is possible, and the water lines will not be required to carry fire flows. *Design Flow* for 4-inch water lines must include domestic and irrigation demands for all tracts being served by 4-inch water lines and must meet the instantaneous service flow requirement detailed in **Section 2.5.4 – Residential Design Flow**. All residential units must maintain a minimum pressure as detailed in **Section 2.5.7 – Design Pressures**. In addition to the previous requirements, all properties being served by 4-inch water lines must be within the required radius of a fire hydrant on a main of adequate size. See **Section 3.8.2 – Dead End Lines** for additional information on dead end lines.

3.7.2 – Line Size for Fire Flow

The minimum size of water line to provide fire protection and serve fire hydrants is 6-inches in diameter. (TSSW – Sec. 8.2.2) Larger water lines may be necessary to achieve required fire flow and maintain the minimum residual pressure specified in **Section 2.5.6 – Fire Flows** and not exceed max velocities as specified in **Section 2.5.8 –Velocities**.

3.7.3 – Transmission Lines

All water lines greater than 12 inches are considered transmission lines. No service taps will be allowed on transmission lines without written approval from the City of Prairie Grove. Service taps are highly discouraged in order to help maintain the integrity of water transmission lines.

3.8 – System Design

3.8.1 – Layout

Consideration should be given to future needs. The water system should be designed to serve not only the current project area but also shall be compatible with an overall master plan as determined by the City of Prairie Grove. Water lines shall be extended across property frontages to allow for future development when future development is possible as determined by the City of Prairie Grove. Any deviation from these requirements due to unusual circumstances must be approved by the City. Water systems must be designed wherever possible in a gridiron configuration to assure adequate continuous supplies and promote circulation. Dead-end lines must be avoided wherever possible. Development must allow for future development and expansion of water system.

3.8.2 – Dead-End Lines

Dead-end lines must be avoided when possible, in order to increase reliability of service and reduce issues related to water quality. Dead end mains must be equipped with a means to provide adequate flushing as detailed in the latest revision of the City of Prairie Grove Standard Specifications. See **Section 5.3 – Water Line Flushing Devices** for additional details. Any dead-end segments with a length greater than two feet, including pipe or valve, shall be equipped with a flushing device located at the end of the segment that is capable of flushing the segment at a velocity of 3.0 fps.

3.8.3 – Flushing & Disinfection of Water Lines

All public water lines must be designed in such a way to allow all segments of the proposed system to be disinfected and flushed in a manner outlined in the latest revision of AWWA C651. (ADH-APWS XIV) All injection and flushing and sampling points must be detailed on the plan set.

3.9 – Alignment and Profile

3.9.1 – Alignments

Water lines must be designed in such a way to minimize the amount of bends in an alignment as practical. All horizontal alignment changes must be accomplished by the use of fittings, pipe joint deflections, or approved longitudinal bending. See **Section 3.10 – Joint Deflection and Longitudinal Bending** for additional details. When possible, water lines alignment shall not be designed to run longitudinally under a road.

3.9.2 – Profiles

Water lines must be designed for a minimum cover of 30 inches. Water lines must not be located more than 6 feet below finished grade without written approval from the City of Prairie Grove. While water line profiles will naturally follow the normal contours of the finish grade, water lines must be designed in such a way to minimize the number of high points. All vertical alignment changes must be accomplished by the use of fittings, pipe joint deflections, or approved longitudinal bending. See **Section 3.10 – Joint Deflection and Longitudinal Bending** for additional details.

3.10 – Joint Deflection and Longitudinal Bending

3.10.1 – Joint Deflections (Joint Offset)

The maximum joint deflection angle used for design purposes must be 80% of the designed maximum deflection angle as detailed in the latest AWWA standards or manufacturer specifications, whichever is less. Ductile iron pipe push-on joint deflections are detailed in AWWA C600 and typically range from 3° to 5° for push on type joints. PVC deflections are detailed in AWWA Manual M23 and found in manufacturer's specifications and typically range from 1/3° to 5°. Other joint types may have differing joint deflection allowances. A copy of the document used to determine deflection angles may be requested during review.

3.10.2 – Longitudinal Bending

Longitudinal bending of pipe will not be allowed with the following exception:

1. 4-inch PVC water lines used in cul-de-sacs shall have no less than a 100 foot radius using a combination of joint deflection and longitudinal bending. Longitudinal bending must be approved in writing from the City of Prairie Grove.

4. PROTECTION OF WATER SUPPLIES

4.1 – Cross Connections

Every precaution must be taken against the possibility of sewage contamination of the water in the distribution system. Water mains and sanitary sewers must be constructed as far apart as practicable, and must be separated by undisturbed and compacted earth. (ADH-APWS XIV)

There must be no physical connection between any water supply system and any storm or sanitary sewer system, or any appurtenance, thereto which would permit the passage of polluted water into the potable supply. (ADH-APWS XVI)

All backflow prevention designs must conform to the minimum requirements as required by the City of Prairie Grove and from the Arkansas Department of Health.

Fire hydrant drains shall not be connected to or located within 10 feet of sanitary sewers, storm sewers, or storm drains. (TSSW – 8.4.4)

4.2 – Horizontal Separation From Sanitary Sewers

A minimum horizontal distance of ten feet should be maintained between water lines and sewer lines or other sources of contamination. Water lines and sewers must not be laid in the same trench except on the written approval of the Arkansas Department of Health and the City of Prairie Grove. (ADH-APWS XIV)

4.3 – Crossing and Vertical Separation From Sanitary Sewers

Water mains necessarily in close proximity to sewers must be placed so that the bottom of the water line will be at least 18 inches above the top of the sewer line at its highest point. If this distance must unavoidably be reduced, the water line or the sewer line must be encased in watertight pipe with sealed watertight ends extending at least ten feet either side of the crossing. Any joint in the encasement pipe is to be mechanically restrained. The encasement pipe may be vented to the surface if carrying water or sewer under pressure. Where a water line must unavoidably pass beneath the sewer line, at least 18 inches of separation must be maintained between the outside of the two pipes in addition to the preceding encasement requirement. Exceptions to this must be approved in writing by the Arkansas Department of Health and the City of Prairie Grove. (ADH-APWS XIV)

4.5 – Separation From Other Utilities

A minimum horizontal distance of three feet must be maintained between water lines and other underground utilities of a non-sanitary nature (gas, electric, etc.). Exceptions to this must be approved in writing by the Arkansas Department of Health and Human Services and the City of Prairie Grove. (ADH-APWS XIV)

A minimum vertical distance of 18 inches must be maintained between water lines and other underground utilities of a non-sanitary nature.

Any utility that may cause a sanitary hazard will be required to follow the same guidelines set forth for sanitary sewers in **Section 4.2 – Horizontal Separations From Sanitary Sewers** and **4.3 – Crossing and Vertical Separations From Sanitary Sewers**.

5. VALVES AND OTHER APPURTENANCES

5.1 – Valves

A sufficient number of valves must be provided on water mains to minimize inconvenience and sanitary hazards during repairs. Valves should be located at not more than 500 foot intervals in commercial and industrial zones and at not more than one block or 800 foot intervals in other districts. Where systems serve widely scattered customers and where future development is not expected, the valve spacing may be greater with written permission of the City of Prairie Grove. At no point should valve spacing exceed one mile. (TSSW – 8.3)

Generally, valves should be placed near roadway intersections to allow for easy access. An adequate number of valves must also be located at crosses and tees to allow for proper isolation. Additional valves may be required during City of Prairie Grove review. When possible valves shall not be located within roadways. Water line profiles shall be designed in such a way that valves may be able to be installed in a plumb orientation.

A valve box or vault shall be provided for each valve installed. The valve box or vault shall be designed so that surface loading will not be transmitted to the valve, valve actuator, or water line. Unless otherwise required, the valve box or vault shall be of proper height to allow these components to be flush with the final grade or roadway.

5.2 – Air Valves

Pockets of air are difficult to detect within the distribution system and can reduce the overall system efficiency while also potentially contributing to water hammer problems, pipe breaks, system noise, and pipe corrosion and can cause erratic operation of control valves, meters, and equipment. Studies have shown that small pockets of air within a system can cause or intensify pressure surges. (AWWA M51)

5.2.1 – Air Pocket Scouring Within Pipelines

The velocity of the flow of water past a pocket of air may be sufficient to scour air from the pipeline. The AWWA M51 (Second Edition) – Table 1-1 has been reference below for convenience. Air valves may be eliminated from design if it can be shown that normal flows will meet or exceed the air pocket scouring velocity as detail in the reference **Table 5.2.1 – Velocities Required to Scour Air and Wastewater Gases from Pipelines**

Table 5.2.1 - Velocities Required To Scour Air and Wastewater Gases From Pipelines					
Pipe Size \ Slope	Negative slopes				
	0° (0%)	2.9° (5%)	14° (25%)	45° (50%)	90° Vertical
4"	2.7 ft/sec	2.9 ft/sec	3.1 ft/sec	3.4 ft/sec	3.5 ft/sec
8"	3.8 ft/sec	4.1 ft/sec	4.4 ft/sec	4.8 ft/sec	5.0 ft/sec
12"	4.7 ft/sec	5.0 ft/sec	5.4 ft/sec	5.9 ft/sec	6.1 ft/sec
24"	6.6 ft/sec	7.1 ft/sec	7.6 ft/sec	8.3 ft/sec	8.6 ft/sec
36"	8.1 ft/sec	8.7 ft/sec	9.3 ft/sec	10.2 ft/sec	10.6 ft/sec

Source: AWWA M51 (Second Edition)

5.2.2 – Location of Air Valves

The proper location of air-release, air/vacuum, and combination air valves is as important as the proper sizing of the air valve. An improper location can render the valve ineffective.

Air valves shall be installed at the following locations in accordance with *AWWA M51 (Second Edition)*:

- *High Points* – Combination air valves should be considered at system high points to provide venting while the system is being filled, during normal operation of the system, and for air inflow to provide vacuum protection while the pipe is draining. A high point is defined by the higher end of any pipe segment that slopes upward toward the hydraulic gradient or runs horizontal to it, followed immediately by a down sloping segment.
- *Mainline Valves* – Air/vacuum valves or combination air valves should be considered on the downstream side of mainline valves to facilitate draining of the system or a segment of the system from its isolating valve to the draining valve. An air-release valve should be considered on the pressurized side of a mainline valve to facilitate venting of air during the initial filling or testing of a pipeline segment.
- *Increased Downslope* – A combination air valve should be considered at abrupt increases in downslope.
- *Decreased Upslope* – An air/vacuum valve or a combination air valve should be considered at abrupt decreases in upslope.
- *Long Ascents* – An air/vacuum valve or combination air valve should be considered at intervals of $\frac{1}{4}$ mile to $\frac{1}{2}$ mile along ascending sections.
- *Long Descents* – An air-release valve or combination air valve should be considered at intervals of $\frac{1}{4}$ a mile to $\frac{1}{2}$ mile along descending sections.
- *Horizontal Runs* – Combination air valves should be considered at the beginning and end of long horizontal sections, and air-release valves or combination air valves should be considered at intervals of $\frac{1}{4}$ mile to $\frac{1}{2}$ mile along horizontal sections of pipe. It is difficult to evacuate air and wastewater gases from a long horizontal piping system at low-flow velocities.
- *Transient Locations* – Other locations may be identified by a transient analysis mathematical model of the distribution system such as identifying the anticipated location of potential column separations. Air valves used to mitigate the effects of column separation should be equipped with slow-closing devices, or vacuum breakers equipped with air-release valves should be considered.
- *Flowmeters* – Air release valves should be considered upstream of flowmeters to mitigate measurement inaccuracies caused by entrapped air.

- *Deep-Well and Vertical Turbine Pumps* – Air/vacuum or combination air valves should be considered on the discharge side of deep-well and vertical turbine pumps to exhaust the air and wastewater gases in the pump column during pump startup and to allow air back into the line after pump shutdown. Air valves mounted on these types of pumps may require slow-closing devices or throttling devices owing to the violent changes in flow rate during pump cycling. Air-release valves can also be considered for use with time-delayed, power-actuated check valves to release the air and wastewater gases in the pump column slowly under full pump pressure.

5.3 – Water Line Flushing Devices

Flushing devices should be sized to provide flows which will produce a velocity of at least 3 feet per second in the water main being flushed (*AWWA C651*). A blow off hydrant as detailed in the City of Prairie Grove Standard Specifications shall be used on water lines smaller than 6 inches. A fire hydrant shall be used on lines 6-inch to 12-inch. Appropriate sized “Goose Neck” blow off assemblies must be used on water lines greater than 12-inches. The flow from any water line flushing activities must not be allowed to enter any sanitary sewer.

5.4 – Flooding

Air valves, vacuum valves, relief valves, and blow off devices must be located in areas accessible and not subject to damage in the 100-year return storm (*TSSW 8.6*). Exceptions to this requirement must be approved by the City of Prairie Grove in writing. Where practical, fire hydrants and water line valves shall be placed at locations above the 100-year return storm elevation.

6. WATER SERVICES

6.1 – Water Services Connection Limitations

Each building structure must have separate water service from the point of the utility source and in no case be interconnected with the plumbing system of another privately owned property. (APC 603.2.3)

A minimum of 24 inches of clearance must be maintained between water line taps. All sub-metered properties must comply with the *ADH - Policy on Regulatory Compliance for a Sub-metered Property (August 2008)*.

6.2 – Service Lines Sizes

The smallest service line that will be installed from the water main line to the meter box will be 3/4-inch. 1-inch service line are acceptable when serving two properties.

6.3 – Service Lines Installation

All service lines under roadways must be installed in a conduit. Single 3/4-inch and 1-inch water service lines must be installed in a 2-inch diameter conduit. Two 3/4-inch and 1-inch water service lines may be installed in a 4-inch diameter conduit. All 4-inch conduits that are installed with the intention of serving two separate properties shall be installed at the lot line separating the two properties that are to be served. In industrial and commercial areas, the method of serving each lot will be determined on an individual basis. Each lot must have the ability to receive water service. Service taps shall not be located under a roadway without approval from the City of Prairie Grove.

6.4 – Meter Boxes and Vaults

Water services that are 1-inch and 2-inch shall use meter boxes that are specified in the City of Prairie Grove Standard Specifications. Water services that are greater than 2 inches must be installed in a meter vault. Location and size of any bypass loops or instrumentation should be accounted for when sizing a water meter vault. Bypass loops may be allowed with written approval from the City of Prairie Grove. All bypass loops must be metered.

7. FIRE PROTECTION REQUIREMENTS, HYDRANTS, AND APPURTENANCES

7.1 – General Requirements

The City of Prairie Grove has adopted the 2012 edition of the Arkansas Fire Prevention Code (AFPC) Volumes I, II, & III with Ordinance Number 2018-01, Section 2. More specifically the City has adopted the Arkansas Fire Prevention Code along with the state adopted appendices included. Portions of the Code may be further revised by the State of Arkansas or amended by the City by approved ordinance as detailed in the Ordinance approving the Code. .

7.2 – Fire Hydrant Locations

Fire hydrants should be provided at each street intersection, at intermediate points between intersections, and within 400 feet of dead-end streets. Generally, fire hydrants must not exceed a spacing of 400 feet between hydrants. A 600-foot spacing may be authorized if building(s) within the increased spacing are equipped with approved automatic sprinkler system(s). (*AFPC Vol. I - 507.5.1*)

Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1000 feet to provide for transportation hazards. (*AFPC Vol. I Table C105.1 Note C*)

Fire hydrant drains shall not be connector or located within 10 feet of sanitary sewers, storm sewers, or storm drains. (*TSSW – 8.4.4*) Final determination and approval of fire hydrant locations will reside with the Fire Marshal.

7.3 – Hydrant Types

All hydrants must conform to the latest revision of the City of Prairie Grove Standard Specifications.

7.4 – Hydrant Connections

Hydrants must be connected to the water main with a ductile iron pipe (fire hydrant lead line) of not less than 6 inches in diameter. A gate valve must be installed on all lines connecting the hydrants to the water main. Fire hydrant lead lines longer than 25 feet must have a second gate valve (watch valve) in accordance with the Standard Drawings.

7.5 – Obstruction and Physical Protection of Fire Hydrants and Appurtenances

Unobstructed access to fire hydrants shall be maintained at all times. The fire department shall not be deterred or hindered from gaining immediate access to fire protection equipment or fire hydrants.

A 3-foot clear space shall be maintained around the circumference of fire hydrants. Where fire hydrants are subject to impact by a motor vehicle, guard post or other approved means shall comply with Section 312 of AFPC Vol I. (*AFPC Vol I. 507.5.4 - 6*)

7.6 – Private Fire Services

Private fire services shall be designed and constructed to the same standards as public fire services. In addition, private fire services are subject to all testing and maintenance requirements as detailed in the latest City ordinances, Arkansas Fire Prevention Code, and any other requirements of governmental authority. (*AFPC Vol 1. 507.5.3*)

8. EASEMENTS

8.1 – Easements for Water Lines and Appurtenances

All water lines not located in a public right-of-way shall be located in a water easement with a width no less than 15 feet wide or a width 2.5 times the depth of the line, whichever is greater. Greater widths may be required due to the size of line or to accommodate appurtenances. Any exceptions must be approved by the City of Prairie Grove in writing. Easements that run parallel to a property line must not straddle said property line but instead be located wholly on one property. When practical, water or utility easements must be provided on the frontage of any property abutting the street right-of-way.

Where alleys are not provided, adequate easements shall be provided where necessary for use by utilities. Utility easements shall be separated from drainage easements except for necessary crossings.

All water and sewer easements shall be of such dimensions as to provide access for the construction, and maintenance of the facilities within the easements and according to the applicable design standard.

All easements acquired, developed through platting, or used by the project shall have easement type and dimensions detailed on plan set. The recorded book and page or recorded plat location shall be detailed on record plan set.

8.2 – Easements and Landscaping

Landscaping that is located within any easement containing a water or sanitary sewer line must be installed in accordance with the current City of Prairie Grove landscaping policies.

No trees may be planted within ten lateral feet of any water line, sewer line, transmission line. No trees other than those listed below in the utility friendly tree list may be planted within utility easements when the tree location is greater than ten feet from edge of any water line, sewer line, or transmission line.

Trees that are not listed may be approved by written notice from the City of Prairie Grove. The utility department reserves the right to trim or remove any obstructions within the spaces detailed above. Replacement of any trees or shrubs removed during normal maintenance operations that are located within a utility easement or right of way will be at the owner's expense.

Table 8.2.1

Utility Friendly Tree List	
1. Crab Apple (<i>Malus spp.</i>)	8. Trident Maple (<i>Acer buergerianum</i>)
2. Crepe Myrtle (<i>Lagerstroemia indica</i>)	9. Japanese Maple (<i>Acer palmatum</i>)
3. Dogwood (<i>Cornus florida</i>)	10. Service Berry (<i>Amelanchier Canadensis</i>)
4. Redbud (<i>Cercis canadensis</i>)	11. Japanese Flowering Cherry (<i>Prunus serrulata</i>)
5. Camellia (<i>Camellia japonica</i>)	12. Foster Holly (<i>Ilex x attenuate</i>)
6. Yaupon Holly (<i>Ilex x vomitoria</i>)	13. Dogwood (<i>Camus Florida</i> or <i>Camus kousa</i>)
7. White Fringetree (<i>Chionanthus virginicus</i>)	14. Desert Willow (<i>Chi/opsis linearis</i>)

9. PRIVATE DEVELOPMENTS

The following design criteria were created to detail how public utilities will interact with private developments such as private residential neighborhoods, multifamily complexes, and other private developments requiring multiple public water and sewer service connections on private

property. The City of Prairie Grove reserves the right to individually review new developments and specify requirements that protect the integrity and operation of the public infrastructure as required beyond the scope of this document.

The following requirements shall be met for all developments, regardless of whether the utilities are public or private beyond the property line:

9.1 – General Requirements for Private Developments

1. All water taps to a public main must be performed by city personnel or designated representative.
2. All domestic and irrigation water connections to a public water main will be metered.
3. Water lines and sub-meters downstream of any public meter(s) shall be privately owned and maintained.
4. Sewer connections to public main shall be minimized. The number of sewer connections to public mains shall be justified by demonstration of slope calculations and engineering drawings.
5. All water and sewer utilities will be designed and constructed to current utility department standards.
6. Any water meters that services a fire hydrant, fire suppression system, or equivalent must have a fire rated meter installed.
7. Irrigation and fire lines shall comply with all requirements within the City of Prairie Grove requirements, including the Cross Connection Control Program.
8. All other applicable AWWA Standards, City requirements, and State requirements must be met.

9.2 - Private Utilities with Private Access

1. All meters and sanitary sewer clean-outs shall be located at a point immediately outside of the private access area and within a utility easement or public Right-of-Way (ROW).
2. If an irrigation line, fire line, or fire hydrant are to be connected to a private domestic water line, a backflow prevention device shall be installed immediately beyond the public easement or ROW, in accordance with the City of Prairie Grove Cross Connection Control Program.
3. If two water service lines are required, both water service taps shall have separate meters and backflow prevention devices in accordance with the City of Prairie Grove Cross Connection Control Program.
4. Fire Hydrant locations must be designed and installed in accordance with the City of Prairie Grove minimum design standards and standard specifications.
5. Fire Hydrants shall be privately owned and maintained. All private fire hydrants must have an approved permit from the City of Prairie Grove, in accordance with the City of Prairie Grove Cross Connection Control Program.

9.3 - Public Utilities with Private Access

1. The City of Prairie Grove Utility Department must be able to access public facilities at all times (i.e. a gate code).
2. Access easement for private roadway must meet requirements set forth in Section 27-504 of the City of Prairie Grove Municipal code.
3. Access easement shall have one access point connecting to a public ROW that shall be a minimum of 12 ft. wide to allow for heavy equipment access.

4. Sewer easements width shall be at least 2.5 feet for every 1 foot of pipe depth. A minimum of 15 foot width with the sewer line centered within the easement. Additional easement width may be required.
5. Water easements shall be a minimum of 15 foot width with the water line centered within the easement. Additional easement width may be required.
6. Water and Sewer Easements shall be exclusive.
7. All crossings under private roadway shall be considered private.
8. Fire Hydrants shall be public.
9. Fire Hydrants shall follow City spacing specifications.
10. Irrigation lines and fire lines shall have separate taps on the public main, and shall not be connected to domestic water service lines and must comply with the City of Prairie Grove Cross Connection Control Program.
11. No permanent structures will be allowed within the water, sanitary sewer, or access easements.

10. PLANS & SPECIFICATIONS

10.1 – Plan Specifications

All designs, plan and specifications submitted to the City for approval for the construction of public utility infrastructures (water and sewer) shall be prepared by a registered professional engineer, licensed in the State of Arkansas. All design and construction techniques shall conform to the City of Prairie Grove's Standard Specifications. Any changes or special details will need to be specifically approved by the City of Prairie Grove.

10.2 – Plan Set Requirements

All plan sets that propose work in connection with the water or sewer infrastructure shall have the following items detailed:

- A. All easements acquired, developed through platting, or existing easements that are used by the project shall have easement type and dimensions detailed on plan set.
- B. Water lines and sewer lines shall be shown in both in a plan view and a profile view. Material, size, elevations (flow line, existing grade, and finished grade), slopes of each pipe segment, and any appurtenances shall be shown in their proper views. All elevations shall be based upon USGS datum with location of benchmark given.
- C. All coordinates used on plans and specifications shall be based on the Arkansas State Plane (Arkansas North, Units: Feet) coordinate system. All plan sets shall detail the coordinate system used.
- D. All connections, bends, junctions, and manholes shall be coordinately located on the plan set.
- E. A project location sheet shall be provided which details the project location in relation to streets, subdivisions, governing boundary lines, any major geographical features such as streams or bodies of water, and the 100-year flood plain elevation line.
- F. Information such as geotechnical data, environmental data, information on other utilities, or special construction requirements may be required in addition to the previous requirements.

10.3 – Record Drawing Requirements

All public water and sewer improvements shall not be accepted by the City of Prairie Grove until record drawings have been received and approved by the City of Prairie Grove. Record drawings shall contain updated information for the item detailed in **Section 10.2 – Plan Set Requirements** based on actual results of construction. All easements acquired, developed through platting, or existing easements used by the project shall have easement type, dimensions, and the recorded book and page or recorded plat location detailed on plan set. Record plan set shall not be sealed by an engineer.

11. REFERENCED CODES AND STANDARDS

1. A.C.A. – Arkansas Code Annotated

- a. A.C.A. § 14-56-413 – *Territorial Jurisdiction*
- b. A.C.A. § 14-234 – *Waterworks and Water Supply*
- c. A.C.A. § 14-271-111 (a) (2) – *Underground Facilities Damage Prevention*
- d. A.C.A. § 14-234-105 – *Alteration Despite Zoning Regulations*
- e. A.C.A. § 17-30 – *Engineers*
- f. A.C.A. § 20-7-109 – *Authority to Regulate Public Health (Board of Health)*

2. ADH – Arkansas Department of Health

- a. ADH-APWS – *Arkansas State Board of Health – Rules and Regulations Pertaining to Public Water Systems (02/24/2014)*
- b. ADH-GS – *Arkansas State Board of Health – Rules Pertaining To General Sanitation*
- c. ADH-PVC – *Arkansas Department of Health – Policy Statement: PVC Pipe (AWWA C900 or ASTM D2241) for Use in Public Water Systems (October 2008)*
- d. ADH-SMP – *Arkansas Department of Health – Policy on Regulatory Compliance for a Sub-metered Property (August 2008)*

3. AFPC - Arkansas Fire Prevention Code Volumes 1-3 – (2012 Edition)

- a. Adopted Volumes 1, II, & III
- b. Adopted All State Adopted Appendices

4. APC – Arkansas Plumbing Code - (2006)

- a. Section 603.2.3 – *Individual Water*

5. AWWA – American Water Works Association

- a. C111 – *Rubber Gasket Joints for Ductile-Iron Pressure Pipe and Fittings*
- b. C600 – *Installation of Ductile-Iron Mains and Their Appurtenances*
- c. C651 – *Disinfecting Water Mains*
- d. M09 – *Concrete Pressure Pipe (3rd Edition)*
- e. M11 – *Steel Pipe – A Guide for Design and Installation (5th Edition)*
- f. M23 – *PVC Pipe – Design and Installation (2nd Edition)*
- g. M31 – *Distribution System Requirements for Fire Protection (4th Edition)*
- h. M41 – *Ductile-Iron Pipe and Fittings (3rd Edition)*
- i. M44 – *Distribution Valves: Selection, Installation, Testing, and Maintenance (3rd Edition)*
- j. M51 – *Air Valves: Air-Release, Air/Vacuum & Combination (2nd Edition)*
- k. M68 – *Water Quality in Distribution Systems (1st Edition)*

6. **CPG – City of Prairie Grove Municipal Code of Ordinances**
 - a. Ordinance Number: 2018-001, Section 2 – Volumes I,II, & III and Appendices of the Arkansas Fire Prevention Code
7. **DIPRA – Ductile Iron Pipe Research Association**
 - a. DIPRA-CML - *Cement-Mortar Linings for Ductile Iron Pipe* (March 2017)
 - b. DIPRA-DDM – *Design Decision Model (DIPRA & Corpro)* (May 2018)
 - c. DIPRA-CCPE – *Corrosion Control Polyethylene Encasement* (January 2017)
8. **PVC – PVC Pipe Association – Hand Book of PVC Pipe Design and Construction (5th Edition)**
 - a. Section 9.4 – *Flow*
9. **TSSW – Recommended Standards for Water Works (2012 Edition)**
(Also known as **Ten States Standards – Water**)
 - a. *Section 8.2 – System Design*

Checklist for Water Lines and Appurtances

Submittal Checklist For Water Infrastructure (Revised 07/25/2022)

BASIS OF DESIGN & GENERAL REQUIREMENTS

Yes	No	N/A	
☐	☐	☐	Drawing detailing the proposed water service area boundary, acreage, zoning, and location details
☐	☐	☐	Drawing detailing pipe segments names, diameter and materials
☐	☐	☐	Report includes selected the design period
☐	☐	☐	Estimated tributary population detailed with justification
☐	☐	☐	Estimated fire flow requirement
☐	☐	☐	Design flows at specific points along the proposed water system
☐	☐	☐	Calculations in a tabular and easy to follow presentation
☐	☐	☐	Maximum velocity for each segment during design flows
☐	☐	☐	Pressure at design flows

DETAILS OF DESIGN ALIGNMENTS AND PROFILES

Yes	No	N/A	
☐	☐	☐	All materials detailed to conform to City of Prairie Grove Specifications
☐	☐	☐	Tracer wire boxes have been detailed at appropriate locations and distances on the plan set
☐	☐	☐	Corrosive soil environments have been considered and properly accounted for in the design
☐	☐	☐	Geotextile encapsulation added where required
☐	☐	☐	Special considerations have been given to areas where petroleum products or organic solvents may be present
☐	☐	☐	All thrust restraint calculations have been provided
☐	☐	☐	All water or sewer lines have been encased at appropriate locations
☐	☐	☐	All water lines sizes have been appropriately designed
☐	☐	☐	Water system design avoids dead ends where possible
☐	☐	☐	Water line(s) have been designed to allow for easy flushing and disinfection of lines
☐	☐	☐	Water line bends have been limited where possible

Yes	No	N/A	
☐	☐	☐	All changes in pipe direction are accomplished with fittings or joint deflections. Longitudinal bending is allowed only for 4-inch lines in cul-de-sacs
☐	☐	☐	No water line is deeper than 6 feet of finished grade without approval

PROTECTION OF WATER SUPPLIES

Yes	No	N/A	
☐	☐	☐	There is no physical connection between water or sewer systems
☐	☐	☐	All backflow prevention requirements have been met
☐	☐	☐	Water and sewer lines have proper horizontal separation
☐	☐	☐	Water and sewer lines have proper vertical separation
☐	☐	☐	Water and storm lines have proper separation
☐	☐	☐	Water and utility lines have proper separation

VALVES AND OTHER APPURTENANCES

Yes	No	N/A	
☐	☐	☐	A sufficient number of valves must be provided on water mains to minimize inconvenience and sanitary hazards during repairs

☐	☐	☐	Valves not located at more than 500 foot intervals in commercial and industrial zones
☐	☐	☐	Valves not located at more than 800 foot intervals in non-commercial and non-industrial zones
☐	☐	☐	Valves have been located near street intersections where possible
☐	☐	☐	Valve box or vault has been specified for each valve
☐	☐	☐	Air valves have been located at proper points on the proposed water line
☐	☐	☐	Water line flushing devices or fire hydrants have been properly located and sized to produce a velocity of 3 fps when used for scouring
☐	☐	☐	All air valves and blow off devices located above 100-year flood elevation
☐	☐	☐	All other water line appurtenances are located above the 100-year flood elevation when practical

WATER SERVICES

Yes No N/A

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| ☐ | ☐ | ☐ | Each building that is privately owned has separate water service |
| ☐ | ☐ | ☐ | No unmetered bypass loops |
| ☐ | ☐ | ☐ | Proper size conduits used for roadway crossings |

FIRE PROTECTION

Yes No N/A

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| ☐ | ☐ | ☐ | Fire hydrant locations meet spacing requirements |
| ☐ | ☐ | ☐ | Fire hydrants meet all clearance requirements |
| ☐ | ☐ | ☐ | All fire service lines are designed to the public water line standards |

EASEMENTS

Yes No N/A

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| ☐ | ☐ | ☐ | All water lines and appurtenances are located in easements or ROW |
| ☐ | ☐ | ☐ | All lines are centered within easement when possible |
| ☐ | ☐ | ☐ | All water lines deeper than 6 feet have easement width or equivalent ROW coverage equal to 2.5 times the depth of line |
| ☐ | ☐ | ☐ | Landscaping is in accordance to the minimum design standards |
| ☐ | ☐ | ☐ | All easements have type and dimensions detailed. Existing easements being utilized have the recorded documentation notated (i.e. book & page) |

PRIVATE DEVELOPMENTS

Yes No N/A

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| ☐ | ☐ | ☐ | All public water lines and appurtenances located in private developments are designed in accordance with the minimum design standards |
|--------------------------|--------------------------|--------------------------|---|

PLANS AND SPECIFICATIONS

Yes No N/A

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| ☐ | ☐ | ☐ | All plans, specifications, and reports (including Basis of Design) have been prepared and sealed by a professional engineer |
| ☐ | ☐ | ☐ | All plans and specifications meet requirements set forth in the minimum design standards or have approved exceptions |
| ☐ | ☐ | ☐ | All plans and specifications conform to the City of Prairie Grove Standard Specifications or have approved exceptions |
| ☐ | ☐ | ☐ | All referenced utility (water and sewer) easements shall be notated with the recorded book and page number or the recorded plat number |
| ☐ | ☐ | ☐ | Plan set includes a project lo |

SEWER STANDARDS

Submittal Checklist
For
Gravity Sanitary Sewers
(Revised 07/25/2022)

BASIS OF DESIGN & GENERAL REQUIREMENTS

Yes	No	N/A	
☐	☐	☐	Drawing that details sanitary sewer ultimate tributary area boundary
☐	☐	☐	Drawing that details the zoning classification(s) of tributary area noting acreage
☐	☐	☐	Report includes the design period and forecasting calculations
☐	☐	☐	Estimated tributary population detailed with justification
☐	☐	☐	Design flows to be received by receiving system
☐	☐	☐	Calculations in a tabular and easy to follow presentation
☐	☐	☐	Minimum velocity for each segment between manholes
☐	☐	☐	Maximum velocity for each segment between manholes
☐	☐	☐	Design flow at each manhole

ALIGNMENTS AND PROFILE

Yes	No	N/A	
☐	☐	☐	All pipe alignments are straight between manholes unless otherwise approved by the City of Prairie Grove
☐	☐	☐	Any curvilinear pipe that has been used has been specifically approved
☐	☐	☐	New sewer alignments do not run longitudinally under roads without approval
☐	☐	☐	All sewer lines have at least 24" of cover.
☐	☐	☐	Sewer lines with less than 30" of cover have special conditions for pipe support.
☐	☐	☐	Sewer lines can receive flow from all services by gravity flow
☐	☐	☐	All sewer lines deeper than 6-feet below finished grade include additional easement widths

☐ ☐ ☐ All sewer lines deeper than 15-feet deep include additional calculations?

☐ ☐ ☐ Sewer exceeding 20% slope has an anchorage system.

DETAILS OF DESIGN

Yes	No	N/A	
☐	☐	☐	Sewer system has been designed to allow for future development
☐	☐	☐	Sewer lines have been extended to adjacent property lines to allow for future development
☐	☐	☐	All sewer lines are 8 inches in diameter or greater
☐	☐	☐	All changes of pipe size occur at manholes
☐	☐	☐	All materials selected conform to Utility Department Standards
☐	☐	☐	Tracer wire boxes have been detailed at appropriate locations and distances on the plan set
☐	☐	☐	Corrosive soil environments have been considered in the design
☐	☐	☐	Geotextile encapsulation added where required
☐	☐	☐	Superimposed loads have been considered in the design
☐	☐	☐	Buoyancy of sewers has been accounted for in the design
☐	☐	☐	Special considerations have been given to areas where petroleum products or organic solvents may be present
☐	☐	☐	All sewer lines have been encased at appropriate locations

SANITARY SEWER PROXIMITY TO OTHER FEATURES

Yes	No	N/A	
☐	☐	☐	There is no proposed connection between sanitary sewer and any potable water line shown on the plan set.
☐	☐	☐	Sewer lines have appropriate separations from water lines
☐	☐	☐	Sewer lines that cross streams or are in close proximity have been designed in accordance with the minimum design standards

MANHOLES

Yes	No	N/A	
☐	☐	☐	Manholes are located at all changes in grade, changes in pipe sizes, or alignment
☐	☐	☐	Distance between manholes does not exceed max spacing requirements
☐	☐	☐	Drop manholes are used where the flow line elevation of an incoming sewer line is 24 inches or more above the manhole invert

-
- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| ☐ | ☐ | ☐ | Manholes in areas subject to water inundation have been raised or designed with appropriate manhole covers |
| ☐ | ☐ | ☐ | No sanitary sewer lines terminate with clean outs |
-

SANITARY SEWER SERVICES

Yes	No	N/A	
☐	☐	☐	All sanitary sewer services greater than four inches are connecting at manholes
☐	☐	☐	All new service lines have a cleanout at property or easement line
☐	☐	☐	All service lines located in easements or ROW meet the slopes detailed in the minimum design standards

EASEMENTS

Yes	No	N/A	
☐	☐	☐	All sanitary sewer line & appurtenances are located in easements or ROW
☐	☐	☐	All sewer lines are centered within easements when possible
☐	☐	☐	All sanitary sewer lines deeper than 6 feet have easement width or equivalent ROW coverage equal to 2.5 times the depth of line
☐	☐	☐	Landscaping is in accordance to the minimum design standards
☐	☐	☐	All easements have been recorded at the courthouse or shown on recorded plat

PRIVATE DEVELOPMENTS

Yes	No	N/A	
☐	☐	☐	All public sanitary sewer lines and appurtenances located in private developments are designed in accordance with the minimum design standards

PLANS AND SPECIFICATIONS

Yes	No	N/A	
☐	☐	☐	All plans, specifications, and reports (including Basis of Design) have been prepared and sealed by a professional engineer
☐	☐	☐	All plans and specifications meet requirements set forth in the minimum design standards or have approved exceptions
☐	☐	☐	All plans and specifications conform to the City of Prairie Grove Standard Specifications or have approved exceptions

-
- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| ☐ | ☐ | ☐ | All existing utility (water and sewer) easements shall be notated with the |
| | | | recorded book and page number or the recorded plat number. |
| ☐ | ☐ | ☐ | Plan set includes a project location map. |
-

APPENDIX D.

Washington County
Assessor's Office
Washington, Assessor



Date Created: 2/25/2025
Created By: anonymous

1 inch = 1830 feet

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