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ARTICLE 1. GENERAL PROVISIONS

SECTION 01. PURPOSE

The following regulations shall control the subdivision of land within the corporate limits of the City of Boerne, Texas, and within the extraterritorial jurisdiction thereof, in order to promote the health, safety, morals, or general welfare of the municipality and the safe, orderly, and healthful development of the municipality, as established in the Boerne Master Plan, and the vision, goals, and future development policies in the plan. In implementing the Master Plan, these regulations have the following purposes:

A. Implement the Boerne Master Plan and any other official plan, program or policy developed under the guidance of the Master Plan.

B. Emphasize subdivision review as the initial and principle opportunity to view development projects in their context as a portion of the greater and comprehensive surroundings, and to consider the long-range implications and opportunities.

C. Establish standards for different contexts which support and reinforce different development patterns called for in the Master Plan – specifically Downtown, Regional Centers, Community Centers, Neighborhood Centers, Neighborhood Residential, Low-density Residential, Rural Residential, or special purpose districts.

D. Promote good civic design and arrangement and improve the layout, form, and relationship between buildings, sites, lots, open spaces, and rights-of-way with context-based design solutions.

E. Create a system to plan, design, and evaluate development applications in the appropriate context as segments of the entire community allowing for public and private investments to be coordinated across areas and over time.

F. Prevent premature divisions of land that by its permanence may negatively impact long-term development patterns or that lack appropriate infrastructure, both of which may result in inefficient use of land and resources that would later require excessive expenditures of public funds to correct.

G. Ensure that all development blocks and lots are served by necessary infrastructure services, including utilities, transportation, storm drainage, public safety, and community facilities, but recognize that necessary service levels may differ based on the context, character, and intensity of development.

H. Encourage more efficient development by analyzing adjacencies and identifying on- and off-site opportunities for infrastructure, facility, or site design systems and that operate independent of lot and subdivision boundaries.

SECTION 02. TERRITORIAL LIMITS OF REGULATIONS

The territorial application of this ordinance shall include all land located within the corporate limits of the City and all land lying within the extra-territorial jurisdiction of the City, as from time to time extended, except that Articles 3 through 8 inclusive shall not apply to lands which were included in the City of Boerne’s extra-territorial jurisdiction through petition as provided by Chapter 42, Section .022(b) of the Local Government Code, provided said lands are not within one mile of the boundaries of the City as such boundaries exist at the time of final plat approval.

SECTION 03. APPLICATION OF REGULATIONS
On or after the passage of this ordinance, any person, firm or corporation (subdivider) seeking approval of any plat, plan or replat of any subdivision of land within the City and its legally established extraterritorial jurisdiction shall be required to comply with the requirements of this ordinance before such approval may be granted. Any subdivision construction plans that have not been approved by the City before the passage of this ordinance shall be required to comply with the requirements of this ordinance. No transfer of land in the nature of a subdivision as defined herein shall be exempt from the provisions of this ordinance even though the instrument or document of transfer may describe land so subdivided by metes and bounds.

**SECTION 04. DEFINITIONS**

For the purpose of this ordinance, certain terms and words are hereby defined as follows. Terms not defined herein shall be construed in accordance with the Zoning Ordinance, other City codes and ordinances, or their customary usage and meaning. The word “shall” is mandatory and not permissive. The word “may” is permissive and not mandatory. The words “may not” and “shall not” are both prohibitive. Headings and captions are for reference purposes only, and shall not be used in the interpretation of this ordinance.

**Administratively Complete:** An application that has met all of the associated submission requirements and includes the specific form and content items included in these regulations.

**Alley:** A minor public right-of-way intended to provide the primary means of access to abutting lots, or which is used primarily for vehicular service access to the back or sides of properties otherwise abutting on a street.

**Alley, Commercial:** An alley designed to access the rear or side of non-residential lots or the rear of residential lots with rear entry garages.

**Alley, Residential:** An alley designed to access the rear or side of residential lots without rear entry garages.

**Building Setback Line:** The line within a property defining the minimum horizontal distance between a building and the adjacent street line or lot line.

**City Manager:** The City Manager and/or his/her duly authorized representative.

**Clear Cutting:** The indiscriminate cutting of trees and vegetation.

**Common Open Space:** Open space that has been set aside in a Master Planned Community for use by inhabitants of the community and that is accessible to each subdivision within the Master Planned Community by pedestrian pathways.

**Civic Open Space System:** Parks and outdoor recreation areas, landscaped pedestrian paths (other than required sidewalks along streets), bicycle paths (separate from a street right-of-way), natural or landscaped stream courses, natural or artificial lakes and other water features, greenbelts, and other landscaped public or common areas which are incorporated into the design of a the community and which benefit the community at large rather than being the private domain of individual lot owners.

**Easement, Non-Access:** An easement dedicated to the public prohibiting vehicular traffic on, over or across said easement.

**Easement, Overhang:** An interest in land granted to the City, to the public generally, and/or to a utility corporation, for installing or maintaining overhead utilities over private land. This easement does not grant the right of entry thereon with machinery and vehicles for maintenance.

**Easement, Sidewalk:** An interest in land granted to the public for the installation of and public use of, a sidewalk across or over private land, together with the right to enter thereon with machinery and vehicles necessary for the installation and maintenance of said sidewalk.

**Easement, Utility:** An interest in land granted to the City, to the public generally, and/or to a private utility corporation, for installing or maintaining utilities across, over or under private land, together with the right to enter thereon with machinery and vehicles necessary for the maintenance of said utility.
**Flood Plain:** Any land area susceptible to being inundated by water from the unusual and rapid accumulation or runoff of surface waters from any source.

**Floodway:** The channel of a river or watercourse and portions of the adjacent floodplain as depicted in the current floodway map provided to the City of Boerne by Federal Emergency Management Agency (FEMA), or as determined by an engineering study in areas not depicted in the current floodway map.

**Gross Density:** The total area of the subdivision (including public improvements), divided by the total number of residential dwelling units contained on the plat being submitted for approval.

**Half-Street:** Any portion of a street which does not meet the minimum right-of-way widths required by this ordinance or which is to be widened to full width at some later date.

**Heritage Tree:** A tree that is one half the caliper for that species as listed in the Texas Forest Services [Champion List for species native or naturalized to Texas in the Texas Big Tree Registry](http://txforestservice.tamu.edu); or a Live Oak Tree that has 36 inch or larger caliper.

**Impervious Surface:** The paved surface of any street, alley, sidewalk, driveway or parking area, the roof of any building or structure, and the top surface of any deck or other construction of any character which is so designed or built that rain falling on the surface is carried off that surface without directly penetrating the ground beneath it or designed to infiltrate to other immediately adjacent areas on the site.

**Lot:** An undivided tract or parcel of land having frontage on a public street or an approved open space having direct street access, and which is, or in the future may be, offered for sale, conveyance, transfer, or improvement, which is designated as a distinct and separate tract, and which is identified by a tract number, lot number, or other symbol in a duly approved subdivision plat which has been properly filed of record.

**Lot, Corner:** A lot at the point of intersection of and abutting on two or more intersecting streets, the angle of intersection being not more than 135 degrees.

**Lot, Double Front:** Any lot, not a corner lot, with frontage on two streets which are parallel to each other or within 45 degrees of being parallel to each other.

**Master Planned Communities:** Large tracts of land (100 acres or more) which are anticipated to be developed sequentially in contiguous units.

**Planned Unit Development or PUD:** A development which includes residential clustering or other innovative design features and dedicated community open space, as regulated by Article 4 of this ordinance. A PUD may include a mixture of housing types and mixed land uses planned and developed as an integrated unit, along with common area facilities owned and managed by an association of the property owners in the development.

**Plat, Final:** The map or plan of a subdivision that is submitted to the City staff and the Planning and Zoning Commission for final approval. After approval, the plat is recorded under provisions of Chapter 192 of the Local Government Code.

**Plat, Preliminary:** The first or introductory map or plan of a proposed subdivision that is submitted to the City staff and the Planning and Zoning Commission for initial approval as the basis for development of a final plat.

**Private Street:** A street which is required by the Planning and Community Design Standards, and is not dedicated to the public on a plat.

**PUD plan:** The general plan or map of a planned unit development subdivision that is submitted for a recommendation by the Planning and Zoning Commission and approval by City Council as the basis for development of the preliminary and final plats of a PUD development.

**Resubdivision:** The division of an existing subdivision, together with any change of lot size therein, or with the relocation of any street lines.

**Signature Tree:** A shade tree having a caliper of 24 inches or more, that does not qualify as a Heritage Tree.
Street: A public right-of-way, however designated, other than an alley, which carries vehicular traffic or provides vehicular access to adjacent land, and includes all other adjacent pedestrian amenities, landscape areas or other urban design features. All streets are classified by both a Functional Classification and a Street Design Type as follows:

*Functional Classifications*, describing the streets role in the overall network:

**Regional Thoroughfare:** A limited access arterial street designed to carry a large volume of traffic from one part of the city to another, along a route generally indicated in the city's comprehensive plan.

**Arterial Street:** A street of considerable continuity that provides direct connections to different areas within the City and surrounding areas for large volumes of vehicles. Specific Arterial Streets are further classified into “Major” or “Minor” based upon the City's Official Major Thoroughfare Plan or based upon the function and characteristics in the overall transportation network according to the technical standards of this ordinance.

**Collector Street:** A street of moderate continuity that provides direct access between adjacent neighborhoods or districts for moderate volumes of traffic. Specific Collector Streets are further classified into “Primary” or “Secondary” based upon the City's Official Major Thoroughfare Plan or based upon the function and characteristics in the overall transportation network according to the technical standards of this ordinance.

**Local Street:** A street of limited continuity that provides connections within neighborhoods and districts for low volumes of traffic. Certain Local Streets are further classified as “Minor” based upon the function and characteristics in the overall transportation network according to the technical standards of this ordinance.

**Access Street:** A street of little continuity designed solely for access to lots or the interior of blocks, and not permitting any through traffic. Access Streets are further classified as “Residential” or “Non-residential” based upon the function and characteristics in the overall transportation network according to the technical standards of this ordinance.

*Street Design Types*, describing the specific cross-section design of the street at any one point along the length:

**Rural:** A roadway design for moderate speeds aligned with rough, informal and natural vegetation, appropriate for all rural areas.

**Neighborhood:** A roadway design for moderate or slow speeds and moderate pedestrian and landscape amenities to create a formal transition abutting lot frontages, appropriate for connections in and between all residential areas.

**Avenue:** A roadway design for slow speeds and high pedestrian amenities, appropriate as a “main street” and support streets for mixed-use or commercial centers.

**Standard:** A roadway design for moderate or high speeds, and designed primarily to accommodate vehicle flow

**Subdivider:** Any person or any agent thereof, dividing or proposing to divide land so as to constitute a subdivision as that term is defined herein. In any event, the term “subdivider” shall be restricted to include only the owner, equitable owner or authorized agent of such owner or equitable owner, of land sought to be subdivided.

**Subdivision:** A division of any tract of land situated within the corporate limits, or within the extraterritorial jurisdiction of the City of Boerne, in two or more parts to lay out a subdivision of the tract, including an addition to the municipality, to lay out suburban, building, or other lots, or to lay out streets, alleys, squares, parks, or other parts of the tract intended to be dedicated to public use or for the use of purchasers or owners of lots fronting on or adjacent to the streets, alleys, squares, parks, or other parts. “Subdivision” includes a division of a tract regardless of whether it is made by using a metes and bounds description in a deed of conveyance or in a contract for a deed, by using a contract of sale or other executory contract to convey, or by using any other method. “Subdivision” includes resubdivision, but it does not include a division of land for agricultural purposes into parts greater than five acres where each part has street access and no public improvement is being dedicated.

**Trunk Main:** A water main whose primary purpose is to transport water to the distribution system within a subdivision or a sewer main whose primary purpose is to transport wastewater from the collection system within a subdivision. Trunk mains are not directly connected to individual lots.

**Zoning Ordinance:** City of Boerne Ordinance No. 2005-01, adopted January 25, 2005, or other zoning ordinance currently in effect, and all amendments thereafter adopted.
1.05.001 **Unauthorized Subdivisions.**

It shall be unlawful for any, or the agent of any land owner, to lay out, subdivide, plat or replat any land into lots, blocks and streets within the jurisdictional limits of the City without the approval of the Planning and Zoning Commission in accordance with this ordinance.

1.05.002 **Permits in Unauthorized Subdivisions.**

No building, repair, plumbing or electrical permit shall be issued by the City for any structure on a lot in a subdivision until the final plat of the subdivision has been approved and filed for record and the subdivision has been accepted by the City.

1.05.003 **Public Services in Unauthorized Subdivisions.**

The City shall not repair, maintain, install or provide any streets or public utility services in any subdivision for which a final plat has not been approved and filed for record, or in which the standards contained herein or referred to herein have not been complied with in full.

1.05.004 **Utility Services in Unauthorized Subdivisions.**

The City shall not sell any water, gas, electricity or sewage service within a subdivision for which a final plat has not been approved or filed for record, or in which the standards contained herein or referred to herein have not been complied with in full.

**SECTION 06. PENALTY**

Any person violating this ordinance or any portion thereof shall, upon conviction, be guilty of a misdemeanor and shall be fined $1,000.00, and each day that such violation continues or each occurrence shall be considered a separate offense and punished accordingly.

**SECTION 07. SEVERABILITY CLAUSE**

If any section, subsection, sentence, clause or phrase of this ordinance is for any reason held to be unconstitutional, void or invalid, the validity of the remaining portions of this ordinance shall not be affected thereby, it being the intent of the Council in adopting this ordinance that no portion hereof, or provision or regulation contained herein shall become inoperative or fail by reason of the unconstitutionality or invalidity of any section, subsection, sentence, clause, phrase or provision of this ordinance.

**SECTION 08. REPEAL OF CONFLICTING ORDINANCES**

All ordinances and parts of ordinances in conflict herewith are expressly repealed to the extent of their inconsistency; provided, however, that whenever higher or more restrictive standards are established by the provisions of any other ordinance or regulation than those established by this ordinance, the provisions of such other ordinance or regulation shall govern.
ARTICLE 2. PROCEDURES

Section 01. Pre-Application Conference

Before submitting a preliminary plat, the subdivider shall request a conference with the City Manager and designated City staff. At this conference, the subdivider shall present a preliminary plan for advice on the procedures, specifications and standards required by the City for the subdivision of land. Specific topics of the conference may include:

A. General conformance with the official Master Plan of the City, and any specific area plan prepared under the guidance of that plan;
B. Introductory discussions of applicable standards from these regulations, according to the guidance of the Master Plan;
C. General plans for utilities and other improvements, and correspondence with any City capital improvement plans;
D. Correspondence with existing or proposed zoning where applicable; and
E. The type of application and submittal requirements, specifically whether the subdivider may be eligible for an abbreviated administrative review under Section 05 of this Article.

SECTION 02. PROCEDURES FOR PRELIMINARY PLAT

2.02.001 Submission.

Following a pre-application conference, the subdivider may submit a preliminary plat to the City Manager. In order to be prepared for submission to the Planning and Zoning commission, the subdivider shall deliver the following at least 30 calendar days prior to the date the plat is to be considered by the Commission:

A. Five separate blue or black line copies of the preliminary plat for staff review meeting the requirements of sub-section B, one black and white copy 8.5” by 11” suitable for making overhead copies and a pdf.
B. A preliminary plan that includes all required and desired utilities.
C. Formal application and appropriate filing fee established by the City Council. No action shall be taken by the staff or Commission until the filing fee has been paid. The fee shall not be refunded should the subdivider fail to make formal filing of the preliminary plat as provided in sub-section 2.02.005., or should the plat be disapproved.
D. A Traffic Impact Analysis meeting the requirements of the City’s TIA ordinance.
E. A Transportation Network Plan meeting the requirements of Article 3, Section 3.02.002, and showing the specific location and street Design Type of all proposed Arterial, Collector, Local, and Access streets, lot access points, and typical and dimensioned drawings of cross-sections for each combination of Functional Classification/Design Type for all segments of the plan.
F. Subdivisions 10 acres or larger shall include a written inventory of existing natural features reflective of the Hill Country character, which corresponds the Preliminary Plat and proposed Open Space System Plan. The inventory shall include historical or archeological areas, significant stands of mature trees and special designation of Heritage Trees, areas of habitat for endangered or threatened species of plants and animals, distinctive geological and topographical features, and important scenic view corridors or areas.
G. An Open Space System Plan meeting the requirements of Article 3, Section 3.03, and showing the location, Open Space Types, and proposed area of all public or common open space, including a table of requirements based on the proposed development and typical service areas for each Type.

H. For any application that will be constructed in phases, for any application where only a portion of an original parcel will be developed, or any application that includes more than 20 lots, a conceptual master plan for the entire parcel or subdivision shall be submitted, including general characteristics of the anticipated outcome for the entire development.

I. A tree survey for all property subject to the application that:
   1. Documents the presence of all Signature Trees and Heritage Trees within 100 feet from the outside of the right-of-way for any proposed Collector or Arterial Street in the subdivision; and
   2. Through aerial photography, or other similarly detailed and current means of data collection, documents the presence of all tree massings covering greater than ¼ acre with trees greater than six inch caliper.

   The tree survey shall be used for evaluating proposed street layouts, street designs, and tree preservation provisions.

2.02.002 Form and Content of Plat.

The preliminary plat of a proposed subdivision shall be prepared by a registered public surveyor and bear his/her seal. The plat shall show or be accompanied by the following information:

A. The plat shall be drawn to a scale of one inch to 100 feet or one inch to 50 feet. The preliminary plat shall generally include the entire tract intended to be developed at one time. When more than one sheet is necessary, an index sheet showing the entire subdivision at a scale of one inch to 400 feet shall be attached to the plat.

B. The name of the subdivision, which shall be approved by the City Manager.

C. The names and addresses of owners of record.

D. A location map showing the relation of the subdivision to well known streets in all directions.

E. North point, with north to the top of the sheet if possible, and the bearing of record.

F. Name and location of adjacent subdivisions, watercourses on or adjacent to the proposed subdivision, and the property lines and names of the property owners in all adjoining unsubdivided tracts.

G. The total acreage and total number of lots in the proposed subdivision.

H. The location, right-of-way width, name and description of all existing or recorded streets, alleys, or other transportation features or similar reservations which are within or adjacent to the subdivision, as determined from existing records.

I. The approximate location and right-of-way dimensions for all proposed streets, including Functional Classifications and Design Types based on the proposed Transportation Network Plan.

J. Two-foot contour interval surveys tied to City Control Monuments or USGS Bench Marks. Where conditions exist that make the use of two-foot contours impractical, alternate intervals may be used upon approval of the City Manager.

K. The location of the City limit lines and the outer border of the City’s extraterritorial jurisdiction if either traverse the subdivision or are contiguous to a subdivision boundary.

L. The location of building setback lines demonstrated on each lot, including front, rear and side setback lines, shown by dashed lines.

M. A number to identify each lot and each block, the approximate width and depth of each lot, and a note of the approximate area of the smallest lot, the approximate perimeter of each block, and a note on the
approximate perimeters of the largest and smallest blocks. If the alternative compliance for block sizes permitted by Article 3, Section 3.04 will be use, this shall be specified and the approximate areas where the street connectivity ratios may be different shall be indicated.

N. The centerline of watercourses, creeks and existing drainage structures within and adjacent to the subdivision. Pertinent drainage data and the limits of areas subject to flooding shall be shown, delineating the 25-year and the 100-year flood limits if applicable.

O. A note as to whether any part of the subdivision is located within a drainage basin which is upstream from a City water supply lake, and if so, a map at a convenient scale showing the location of the entire subdivision in relation to the drainage basin.

P. If the subdivision is located within a drainage basin which is upstream from a City water supply lake, calculations showing the maximum allowable area covered by impervious surfaces in the area of the subdivision.

Q. The locations, dimensions and purposes of all recorded and proposed easements.

R. The gross density of the subdivision.

S. The total acreage of open space required by this ordinance.

T. Plat note pertaining to the presence of Heritage Trees located within the property represented by the plat.

U. The location of Heritage Trees on the property represented by the plat.

2.02.003 Notice of Administratively Complete Application.

Within 7 calendar days of submittal of a preliminary plat, the City staff shall notify the applicant if the application is administratively complete. Any deficiencies in the submittal requirements shall be specifically identified in the notice, including the methods to correct the deficiency. Any deficiency shall stay all time requirements of the application process until they have been cured by the subdivider and re-submitted to the City Manager.

2.02.004 Staff Review and Comments.

City staff shall review an administratively complete application for preliminary plat to see that it conforms with all requirements of this ordinance. City staff shall provide written comments on the preliminary plat to both the subdivider and Planning and Zoning Commission within 14 calendar days of submittal of an administratively complete application.

2.02.005 Formal Filing with the Planning and Zoning Commission.

Upon receipt of the review comments by staff, or upon failure of the City to provide written comments or a notice of extension as provided in sub-section 2.02.004., the subdivider may make formal filing to the Planning and Zoning Commission, including any revisions or corrections suggested by staff.

A. The subdivider shall make formal filing for preliminary plat approval in writing to the City Manager no later than 7 calendar days prior to the Planning and Zoning Commission meeting at which the plat is to be considered.

B. The subdivider shall submit twenty (20) copies of the preliminary plat, plus one 8½ x 11 black and white copy suitable for making overheads shall be submitted to the Planning Department by with the formal filing.

2.02.006 Planning and Zoning Commission Review.

The Planning and Zoning Commission shall review the preliminary plat at the scheduled meeting for the following criteria.

A. It conforms to the Master Plan of the City and its current and future streets, alleys, parks, playgrounds and public utility facilities.
ARTICLE 2. PROCEDURES

SECTION 02. PROCEDURES FOR PRELIMINARY PLAT

B. It conforms with any general plans of the municipality or other public entity for extension of roads, streets, and public highways, taking into account access to and extension of sewer and water mains and the instrumentalities of public utilities.

C. It meets all requirements and design standards of this ordinance.

Based on these criteria, the Planning and Zoning Commission shall conditionally approve or disapprove the preliminary plat within 30 days of the formal filing to the Planning and Zoning Commission. Should the preliminary plat as submitted fail to meet the conditions of this ordinance, the Commission shall disapprove the plat and note its disapproval in the minutes of the Commission meeting.

2.02.007 Effect of Approval.

Approval of the preliminary plat shall not constitute final acceptance of the final plat, but is authority to proceed with the preparation of the final plat. If any major changes are required by the Commission, the Commission may require submission of another preliminary plat.

2.02.008 Expiration of Plat Approval.

Approval of the preliminary plat shall lapse one year from the date of initial approval.

SECTION 03. DESIGN AND CONSTRUCTION PLANS

At any time after approval of a preliminary plat and no later than 21 days prior to consideration of a final plat by the Planning and Zoning Commission, a subdivider may prepare the following design and construction documents for review, comment or filing to the City. All items shall be filed with the City Manager prior to submittal of a final plat. Design and construction plans shall include a copy of the final plat which will be submitted for consideration.

3.03.001 Construction Plans.

Three sets of preliminary erosion and construction sequencing plans and specifications for the construction of all utility and subdivision improvements required the subdivision Ordinance, including detailed cost estimates for the construction of all subdivision improvements prepared by designers of the improvements.

2.03.002 Utility and Agency Comments or Approvals.

Letters/memos from all necessary review agencies having jurisdiction over improvements required or desired in the subdivision, including:
A. City of Boerne Public Works;
B. City of Boerne Utilities;
C. Bandera Electric Co-op and/or Pedernales Electric Co-op;
D. Texas Department of Transportation, if any state right-of-way is involved in streets or access points;
E. Cow Creek Ground Water Conservation District;
F. Cable and telephone wire services;
G. Kendall County, if any county right-of-way is involved in streets or access points;
H. any other State or public agency approval with jurisdiction over improvements desired in the subdivision.

2.03.003 Financial Guarantees.

A. Required Guarantee. The subdivider shall submit an irrevocable letter of credit, a cash deposit, certificate of deposit, a savings assignment, or a performance bond, in an amount equal to the estimated cost of the utility and street improvements to be made in the subdivision by the subdivider, including the cost of erosion control during construction. Such bond or other financial guarantee shall be for the faithful performance, installation and completion of such improvements. The required guarantee shall be submitted at least 10 days prior to consideration of the final plat by the Planning and Zoning Commission.

B. Adjustment of Guarantee. As soon as possible after approval of the final plat, but prior to the start of construction, the subdivider shall provide the City Manager an executed copy of the utility and street construction contracts or a notarized statement certifying the final contracts so that the City may substantiate the estimated cost of improvements. The financial guarantee shall be adjusted to reflect the actual construction costs.
C. **Reduction and Expiration of Guarantee.** The financial guarantee may be reduced from time to time as portions of the improvements are completed and accepted. The financial guarantee shall bear an expiration date of one year from the date of final plat approval and shall be retained by the City Manager until all improvements have been completed and accepted by the City.

D. **Payment of Guarantee.** If all improvements have not been completed and accepted by the City 30 days prior to the expiration of the financial guarantee, the City Manager may either present the financial guarantee for immediate payment or allow for a six (6) month extension of the financial guarantee by the subdivider.

**SECTION 04. PROCEDURES FOR FINAL PLAT**

2.04.001 **Procedures for Submission.**

Following approval of a preliminary plat and submission of design and construction plans, the subdivider may submit a final plat to the City Manager. The final plat and accompanying data shall conform to the preliminary plat as conditionally approved by the Commission, incorporating any and all changes, modifications, alterations and corrections required by the Commission. The subdivider shall provide the following a minimum of 21 calendar days prior to the Commission’s consideration of the final plat:

A. Five separate copies of the final plat for staff review meeting the requirements of sub-section 2.04.002.

B. All design and construction documents required by Section 2.03, if not already submitted.

C. Formal application and appropriate filing fee established by the City Council. No action shall be taken by the staff or Commission until the filing fee has been paid. The fee shall not be refunded should the subdivider fail to make formal filing of the final plat as provided in sub-section 2.04.006., or should the plat be disapproved.

D. A drainage study per Article 6, Section 02.

2.04.002 **Form and Content of Plat.**

The final plat shall be drawn in India ink on tracing cloth, nylon or comparable substitute sheets, 18 inches by 24 inches, and to a scale of either one inch to 100 feet or one inch to 50 feet. Where more than one sheet is required, an index sheet of maximum size 18 by 24 inches shall be filed showing the entire subdivision, and all scales shall be uniform. The following information must be shown on or must accompany the plat:

A. Name of the subdivision, north arrow, the name of the land owner or owners, the name of the registered surveyor and/or engineer responsible for the preparation of the plat, scale, location map, total acres in the subdivision, and the location of the subdivision in reference to an original corner of the original survey of which said land is a part.

B. Certificate, signature and seal of the licensed surveyor who surveyed the land (see Exhibit A).

C. Certificate, signature and seal of the engineer, except when the plat does not require engineering considerations (see Exhibit A).

D. A certificate of ownership and dedication to the City of all streets, easements, alleys, parks, playgrounds or other dedicated public uses, signed and acknowledged before a notary public by the owners and by any holders of liens against the land (see Exhibit A).

E. The total number of lots in the proposed subdivision.

F. Certificate of approval to be signed by the Chair and the Secretary of the Commission (see Exhibit A).

G. Certificate for recording the plat in the Kendall County Clerk’s office.

H. The names and property lines of adjoining subdivisions and the property lines and names of property owners in contiguous unsubdivided tracts, including deed of record information.
The name and location of adjacent streets, alleys, easements, watercourses, and other required information, all lines outside of the subdivision boundaries to be dashed.

J. The names of all proposed streets and the locations and right-of-way widths of all proposed streets and alleys.

K. Complete curve data (delta, arc length, radius, tangent, point of curve, point of reverse curve, point of tangent, long chord with bearing) between all lot corner pins.

L. Locations, dimensions, acreage and purposes of any easements or other rights-of-way to be dedicated to public use.

M. Lot and block lines, numbers of all proposed blocks, lot numbers and street addresses on each proposed lot, dimensions for front, rear and side lot lines, the acreage of each lot, and the perimeter length of each block. Where the alternative compliance for block sizes permitted in Article 3, Section 04, a table demonstrating the connectivity ratio for the development, or different portions of the development shall be provided.

N. The right-of-way lines and dimensions, Functional Classification, and Design type of all proposed streets based on the proposed Transportation Network Plan.

O. The building setback lines shown on each lot.

P. Plat notes indicating the location of sidewalks on both sides of all streets (except where sidewalks are not required by this ordinance), and the installation of double swing gates across all utility easements.

Q. If applicable, the boundaries of the 100 year flood plain and floodway.

R. Subdivisions in an area having special flood hazards shall show on the plat:
   1. A flood zone for that area which is subject to inundation by the 100-year flood.
   2. The surface elevation of the 100-year flood at intervals of every 500 lineal feet. This must be based on a certified engineering survey taking into consideration the full development of the watershed.

S. Minimum slab elevations shown on each lot that fall within the 100 year flood plain.

T. If applicable, the limits of any water supply protection zone and plat notes to implement the zone requirements.

U. If applicable, plat notes restricting the percentage of the area of each lot which may be covered by impervious surfaces.

V. Other appropriate plat notes (see Exhibit A).

W. Appropriate easement notes (see Exhibit A).

X. The location of Heritage Trees on the property represented by the plat.

Y. Two corners with state plane coordinates and reference to the horizontal and vertical datum used for surveying.

2.04.003 Notice of Administratively Complete Application.

Within 7 calendar days of submittal of a final plat, the City staff shall notify the applicant if the application is administratively complete. Any deficiencies in the submittal requirements shall be specifically identified in the notice, including the methods to correct the deficiency. Any deficiency shall stay all time requirements of the application process until they have been cured by the subdivider and re-submitted to the City Manager.

2.04.004 Formal Filing with the Planning and Zoning Commission.
Upon receipt of the review comments by staff, or upon failure of the City to provide written comments, the subdivider may make formal filing to the Planning and Zoning Commission, including any revisions or corrections suggested by staff. The formal filing shall contain the following:

A. Twenty (20) copies of the final plat plus one 8½ x 11 black and white copy suitable for making overheads.
B. At least three (3) Mylars of the final plat for recording, plus an original, notarized affidavit showing the taxes have been paid, including copies of the paid tax statement from the Kendall County Appraisal District.
C. A check for recording fees in the amount of $45.00 per page.
D. Two copies of the digital file of the final plat in a format specified by the City Manager, and one copy of the final plat in .pdf format.

2.04.005 Planning and Zoning Commission Review.

The Planning and Zoning Commission shall review the final plat at the scheduled meeting for the following criteria.

A. It conforms to the approved preliminary plat, including any conditions, further studies or other requirements that were stated in the approval.
B. It conforms to the Mater Plan of the City and its current and future streets, alleys, parks, playgrounds and public utility facilities.
C. It conforms with any general plans of the municipality or other public entity for extension of roads, streets, and public highways, taking into account access to and extension of sewer, water, gas and electric mains and the instrumentalities of public utilities.
D. It meets all requirements and design standards of this ordinance.
E. The construction plans and specifications meet all city standards.
F. Financial guarantees have been provided in an acceptable form according to these standards.

Based on these criteria, the Planning and Zoning Commission shall approve or disapprove the preliminary plat within 30 days of the official filing to the Planning and Zoning Commission. Should the final plat as submitted fail to meet the conditions of this ordinance, the Commission shall disapprove the plat and note its disapproval in the minutes of the Commission meeting.

2.04.006 Effect of Approval.

Following the approval of a final plat, the subdivider may proceed with construction of improvements subject to the provisions of Article 8 of this ordinance. No building permits may be issued and no improvements shall be considered accepted by the City except as provided in Article 8.

2.04.007 Filing for Record.

The City shall file the approved final plat for record and provide the subdivider with one reproducible recorded tracing of the final plat within 14 calendar days of the Commission meeting at which the final plat is approved.

SECTION 05. PROCEDURES FOR ADMINISTRATIVE PLAT

2.05.001 Eligibility.

A plat that meets the following criteria may be determined to be an administrative plat and is eligible for an abbreviated administrative review as an alternative to the procedures in Sections 2.02, 2.03, and 2.04:

A. Minor Plats. Minor Plats that meet all of the following requirements
   1. It involves four (4) or fewer lots fronting on an existing public street.
   2. Any subdivision improvements required by these regulations are routine in design and in conformance with all other plans and specifications of the City.
3. The proposed lot sizes and lot configurations will comply with this ordinance and the zoning ordinance, or if not subject to zoning are in conformance with the Master Plan.
4. The subdivision does not necessitate widening of streets or the extension of any municipal utilities, other than the installation of service lines to the individual lots, because either existing mains of adequate capacity are accessible or the subdivision is suitable for on-site water supply and wastewater disposal.

B. Amending Plats. Amending Plats necessary for one or more of the purposes identified in Section 212.016 of the Texas Local Government Code.

2.05.002 Procedures.

The submittal of an application for an administrative plat shall be made to the Director of Planning and Building, after a pre-application conference.

A. Upon a determination of eligibility for an administrative plat, the subdivider shall submit a plat with all information required of preliminary plats in Section 2.02, final plats in Section 2.04, plans, financial guarantees and necessary approvals from outside agencies required in Section 2.03. The Director shall submit the proposed plat to other City departments or agencies for review and comment.

B. Within 21 calendar days after the date of application, an administrative plat shall be returned to the subdivider with written comments. If changes are requested by staff, the application shall not be considered officially filed with the City until such changes are made and the application re-submitted to the City.

C. Upon completion of plat review by City staff and corrections by the subdivider, the applicant shall submit the items listed below within 14 calendar days after receiving staff comments:
1. Three reproducible Mylars of the plat;
2. Original tax certificates and an affidavit stating that no taxes are delinquent against the property; and
3. The appropriate filing fees for final plats as specified by the City Council.
If the items listed above are not submitted within 14 calendar working days after receipt of staff comments, the administrative plat application will be considered null and void.

D. The City Manager or designee may approve an administrative plat provided it meets the eligibility criteria in sub-section A. and all requirements of this ordinance. The City Manager or designee may elect to forward the application to the Planning and Zoning Commission at any time in the review process. The City Manager or designee’s decision on the administrative plat, or inaction by the City Manager or designee may be appealed to the Planning and Zoning Commission for action within thirty (30) days after the date of application and shall be considered in the same manner and procedures as preliminary plat.

SECTION 06. VARIANCES

2.06.001 Commission Power to Grant Variances.

The Planning and Zoning Commission may grant a variance from the requirements of this ordinance when, in the Commission’s judgment, the application of a subdivision standard to a particular property or project meets the required findings in this section.

2.06.002 Findings Required for Variances.

A variance to the standards in the subdivision ordinance may be granted where the Planning and Zoning Commission finds that the following conditions exist:

A. Each subdivision standard for which a variance is requested shall be specifically identified on the preliminary plat application.

B. An inappropriate design may result from strict compliance with these regulations due to unusual topographic or other physical conditions of the land or surrounding area, and these conditions are not typical to other lands in the area.
C. The condition is beyond the control of the subdivider and shall not be due to the convenience or needs of a specific application or development proposal.

D. The requested variance is the minimum deviation from the required standard necessary to allow a more appropriate design.

E. The requested variance shall not alter, negate or negatively impact the ability to meet any specific standard contained in the City of Boerne Zoning Ordinance.

F. The plat shall propose alternative design solutions or standards to the required standards for which a variance is requested, or alternatively demonstrate that the required standard is inapplicable to the specific site, so that the proposed plat equally or better meet all of the following:
   1. The goals and policies of the Master Plan;
   2. The purposes of these regulations; and
   3. The intent of the standards.

G. The variance shall not have an adverse affect on existing adjacent landowners, potential future landowners in and adjacent to the subdivision, existing or potential development within any area of impact of the proposed subdivision.

H. The variance shall not negatively impact efficient development of the land and surrounding areas based on sound planning principles and the goals and policies of the Master Plan.

I. The variance shall not adversely impact the general health, safety and welfare of the public.

2.06.003 Conditions.

In granting approval of a subdivision with a variance, the Planning Commission may prescribe conditions to secure the objectives and interest of the City, and to enforce the purpose and intent of these regulations. In granting a variance, the Commission shall prescribe only conditions that it deems necessary to or desirable in the public interest.

2.06.004 Procedures for Variances.

The subdivider shall submit to the City Manager a written application for each variance which is requested, 14 days prior to the meeting at which the variance is to be considered, along with the appropriate filing fee established by City Council. The Planning and Zoning Commission shall not consider any action on the variance request until this fee has been paid. The findings of the Commission, together with the specific facts upon which such findings are based, shall be incorporated into the minutes of the Commission meeting at which the variance is granted.

SECTION 07. RE-PLATTING

Re-platting of any property previously subdivided or otherwise subject to an approved plat shall be conducted in accordance with the procedures of sections 212.014 and 212.015 of the Texas Local Government Code, and otherwise according to all other standards and procedures of this Ordinance.
ARTICLE 3.  PLANNING AND COMMUNITY DESIGN STANDARDS

SECTION 01.  PLANNING CONTEXT

3.01.001 General Intent.

It is the General Intent of this Article to:

A. Emphasize an integrated planning and design approach towards investment in the core community design elements of subdivisions, and achieve both immediate and long-range needs that support the growth and character of the community.

B. Place all proposed subdivisions of land in a context that relates to its surrounding areas and to the region.

C. Enable street design solutions appropriate to the context, unique character, and anticipated land uses of each proposed division of land.

D. Recognize open space systems, whether public, common, or private, as a determinant of community character, and create a related system of different open space types to be applied in appropriate contexts.

E. Integrate natural systems into the design of common or public open spaces to allow open space to serve multiple aesthetic, recreational, and ecological functions.

F. Create development patterns that are coordinated and efficiently accommodate immediate and planned uses, but that are also more resilient to change and pressures from future growth and development.

G. To facilitate the planning and development of public and community facilities in a timely manner in association with future development of the City and its surroundings.

3.01.002 Planning and Design Elements.

The Planning and Community Design standards require that all subdivisions be considered in a comprehensive manner, integrating different core community design elements within the same subdivision and linking the same core community design elements across many adjacent subdivisions. This Article establishes initial planning and design standards for the following core community design elements that are necessary to develop complete and integrated communities:

A. Transportation Networks and Street Designs: The network and design of streets to support the proposed division of land, including the relationship to existing and planned streets on adjacent property.

B. Open Space Systems: A system of various types of open spaces that determine the community character and meet aesthetic, recreational, and ecological needs for the proposed division of land.

C. Blocks and Lots: The arrangement of the land division within the network of streets and system of open spaces, into an orderly pattern with necessary access and services.

D. Public and Community Facilities: Areas of land that support development by meeting broad public and community needs, and which may be identified and anticipated in other public or community plans.
3.01.003 **Context and Development Patterns.**

Based upon the Boerne Master Plan, these regulations recognize the following distinct planning contexts or “development patterns.” Each development pattern may be the basis for differing planning and design solutions with respect to the core community design elements of subdivisions. Each proposed land division must identify a development pattern under which it shall be evaluated. The Future Land Use / Development Plan Concept Map in the Boerne Master Plan should be used as a guide to the application of the appropriate development patterns and interpretation of the standards in these regulations.

A. Downtown Center
B. Regional Center
C. Community Center
D. Neighborhood Center
E. Neighborhood Residential
F. Low-Density Residential
G. Rural Residential
H. Special Districts

Each development Pattern is further described and characterized in the Master Plan.
SECTION 02. TRANSPORTATION NETWORK AND STREET DESIGNS.

3.02.001 Specific Intent.

The Specific Intent of this Section is to:

A. Prioritize planning street networks and the design of street types as an important and substantial civic asset that establishes permanent patterns and the character of the public realm of the City.

B. Provide for efficient and safe movement and access along all public ways through a variety of modes of transportation, including automobiles, bicycles, pedestrians, and potentially transit.

C. Complement regional transportation systems with local networks that support multiple and alternative routes for daily trips, do not overly burden any single roadway, and include logical connections to existing, planned, or potential future streets.

D. Plan street networks that allow the design of streets to transition along their length to best support anticipated and adjacent land uses and development patterns.

E. Develop balanced street designs for regional and local routes that accommodate all potential users of the street and rights-of-way, so that the interests of a single mode of transportation do not unnecessarily compromise other modes of transportation.

3.02.002 Transportation Network Plan.

All applications shall include a Transportation Network Plan. Applications featuring small parcels shall relate any proposed streets and access points to the surrounding existing transportation network according to these standards.

A. Network Types. The Transportation Network Plan shall demonstrate how the application incorporates into the Boerne Master Plan, the Major Thoroughfare Plan, any specific sub-area transportation plan, and the existing adjacent transportation network by specifying one of the network types identified in Table 3-1.

<table>
<thead>
<tr>
<th>NETWORK TYPE</th>
<th>DESCRIPTION</th>
<th>CONTEXT / DEVELOPMENT PATTERN*</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRID / MODIFIED GRID NETWORK</td>
<td>A highly connected network with a more formal and organized block structure, supporting a more compact and walkable development pattern. Modifications of the grid are permitted to provide radial streets that angle across the grid and create and terminate at focal points or important community destinations; to provided off-sets, shifts, or T-intersections with local streets that preserve connectivity but discourage through traffic; and to allow interruptions or irregularities in the grid to preserve valuable topographic or natural features.</td>
<td>Downtown Center; Regional Center; Community Center; Neighborhood Center; Neighborhood Residential; and Low-Density Residential</td>
<td>Scale = roughly ¼ section (1320' x 1320')</td>
</tr>
</tbody>
</table>
**TABLE 3-1: TRANSPORTATION NETWORK TYPES**

<table>
<thead>
<tr>
<th>NETWORK TYPE</th>
<th>DESCRIPTION</th>
<th>CONTEXT / DEVELOPMENT PATTERN*</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURVILINEAR NETWORK</td>
<td>A moderately connected network with an informal and loose block structure that accommodates irregularly spaced local streets within an Arterial street grid, supporting a predominantly low-density development pattern.</td>
<td>Low-Density Residential</td>
<td><img src="image1.png" alt="Curvilinear Network" /></td>
</tr>
<tr>
<td>ORGANIC NETWORK</td>
<td>A strategically connected network that follows the topography and natural features of the land and features meandering low-volume/low-speed streets, supporting a low-density and rural development pattern.</td>
<td>Rural Residential; Low-Density Residential; and where a Rural Cluster Subdivision is applied.</td>
<td><img src="image2.png" alt="Organic Network" /></td>
</tr>
<tr>
<td>SPECIAL DISTRICT NETWORK</td>
<td>The special district network is based on a plan that is created to support one specific plan for building arrangements and uses, such as a campus or office park. The network primarily considers vehicle traffic flow within the district, and primary access and through traffic is focused on regional thoroughfares and arterial streets. Provisions for non-automobile transportation may need to deviate from the street network in order to provide more meaningful and practical connections.</td>
<td>Regional Center; and Special Districts</td>
<td><img src="image3.png" alt="Special District Network" /></td>
</tr>
</tbody>
</table>

* Per Boerne Master Plan

**B. Transitional Network.** A Transportation Network Plan shall designate all existing and planned streets by both a Functional Classification and a Street Design Type (e.g. Minor Arterial / Avenue signifies a segment of an arterial street with the “Avenue” design type). The Transportation Network Plan shall employ a “transitional” approach to street design, whereby the physical design of the street at any one cross-section (Street Design Type) may vary at different segments of the same street to best support the existing or planned land uses fronting on that segment, while the function of the street (Functional Classification) is based on the consistent role of the street in the entire network, including areas beyond the development site.

**C. Functional Classification.** The Functional Classification of a street refers to the general function in the overall transportation system and does not necessarily dictate the cross section design on any one segment of the street. Functional Classification addresses primarily the continuity of the street and the traffic capacity that it is designed for when considered in context of the entire transportation system. Design speeds may vary along any particular segment of a single Functional Classification, depending on the Design Type that is most appropriate for that section of the street. Table 3-2 indicates the Functional Classifications of streets and the general applicability of each classification within the Transportation Network Plan.
TABLE 3-2: FUNCTIONAL CLASSIFICATION APPLICABILITY

<table>
<thead>
<tr>
<th>REGIONAL THOROUGHFARE</th>
<th>INTENT AND CHARACTERISTICS</th>
<th>APPLICABILITY*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A street of regional continuity that provides access to and from the City for high volumes of traffic over long distances.</td>
<td>Located only on the City’s initiative through its official Thoroughfare Plan, or according to TxDOT under the guidance of the Thoroughfare Plan.</td>
<td></td>
</tr>
<tr>
<td>Volume Range (vehicles/day): &gt; 54,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ARTERIAL **</th>
<th>INTENT AND CHARACTERISTICS</th>
<th>APPLICABILITY*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A street of considerable continuity that provides direct connections to different areas within the City and surrounding areas for large volumes of traffic. Arterial streets are characterized by few interruptions, except at major community destinations, topographical obstacles, or important natural features.</td>
<td>Arterial streets shall be located every ¼ to 1 mile apart, except in rural development patterns; and as may be specified in the City’s official Thoroughfare Plan.</td>
<td></td>
</tr>
<tr>
<td>Volume Range (vehicles/day):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major Arterial: &lt; 54,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor Arterial: &lt; 20,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COLLECTOR</th>
<th>INTENT AND CHARACTERISTICS</th>
<th>APPLICABILITY*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A street of moderate continuity that provides direct access between adjacent neighborhoods or districts for medium volumes of traffic. Collector streets are occasionally interrupted or diverted by neighborhood destinations or natural barriers.</td>
<td>Collector streets shall be located every ¼ to 1/3 mile apart, except in rural development patterns; and as may be specified in the City’s official Thoroughfare Plan.</td>
<td></td>
</tr>
<tr>
<td>Volume Range (vehicles/day):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Collector: 3,000 to 10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Collector: 500 to 3,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOCAL</th>
<th>INTENT AND CHARACTERISTICS</th>
<th>APPLICABILITY*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A street of limited continuity that provides connections within neighborhoods and districts for low volumes of traffic. Local streets are interrupted frequently by intersections with higher order street classifications or by interruptions or off-sets in the street grid (i.e. “T”-intersections). Local streets should still maintain high connectivity to the transportation network, but should be designed to discourage through traffic.</td>
<td>Local streets shall be located to meet the Block and Lot standards in Section 4. Generally Local streets are located every 250’ to 1000’ apart, except in rural development patterns.</td>
<td></td>
</tr>
<tr>
<td>Volume Range (vehicles/day):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local: &lt; 2,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor Local: &lt; 1,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACCESS</th>
<th>INTENT AND CHARACTERISTICS</th>
<th>APPLICABILITY*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A street of little continuity designed solely for access to lots or the interior of blocks, and not permitting any through traffic. Access streets within blocks or parcels allow:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• More discrete service areas for non-residential lots;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• More continuous streetscapes, uninterrupted by vehicle access points to multiple individual lots; and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Access to lots in difficult topography, where a connected street is not possible.</td>
<td>Access streets shall be located as needed to serve vehicle needs and the design goals of specific blocks and lots.</td>
<td></td>
</tr>
<tr>
<td>Volume Range (vehicles/day):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential: &lt; 250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-residential: &lt; 1,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* This Applicability is for general planning purposes. A Transportation Network Plan may propose alternate applicability, provided the intent of this section is equally or better met by the modifications.

** An Arterial Classification shall be a “Major Thoroughfare on the City’s Major Thoroughfare Plan existing at the time of adoption of these regulations, until that plan is updated to use the Functional Classifications specified in this table, and the Design Types in Section D.

D. Street Design Type. Street Design Type refers to the specific design characteristics of the street or “cross-section” at any one point. Many different Street Design Types may be applied over the course of a street with a single Functional Classification to allow streets to transition and best support adjacent or planned land uses and development patterns. The Street Design Types vary to address the array of elements that make streets complete: (1) the finished street width and allocation of this width to travel lanes, parking or alternative modes of travel; (2) the landscape area and the pedestrian area; (3) the necessity for clear utility zones in association with the street network, and block and lot layout; and (4) the building orientation on adjacent sites. Proper arrangement of these elements is necessary to balance and best meet the needs of all users of the right-of-way while supporting immediately adjacent property. Table 3-3 indicates the Street Design Types of streets and the general applicability of each classification within the Transportation Network Plan.
E. **External Connections.** All new streets shall align with any existing or proposed streets on adjacent property, and shall continue and extend arterial, collector, and local streets within the proposed subdivision externally to the parcel boundary as follows:

1. New Arterial and Collector streets shall be provided at the intervals identified in the Applicability section of Table 3-2. All Arterial and Collector streets shall be connected and extended to the boundary of the site.

2. Local street connections shall be provided and extended to the boundary of the site in a manner that all blocks and parcels in the subdivision meet the block standards in Article 3, Section 3.04.
The City may require local streets to stub to the property edge where future development or re-subdivision of adjacent property is anticipated.

3. In addition to all of the above requirements, all Residential development shall have at least one connection to an existing external Arterial or Collector street in the surrounding transportation network, or to a newly proposed Arterial or Collector street connected to the external network for every 50 dwelling units.

F. **Traffic Impact Analysis.** The Transportation Network Plan shall take into consideration the results of any Traffic Impact Analysis required by the City’s TIA ordinance. Impacts that can be mitigated by efficient design of the transportation network and public streets of the proposed subdivision shall be prioritized over off-site mitigation of traffic impacts from the proposed subdivision.

**3.02.003 Street Cross-section Standards.**

All streets in a Transportation Network Plan shall meet one of the following Functional Classification / Design Type combinations and cross section design standards in Table 3-4. The appropriate application of each particular design type shall be based upon the planned land uses immediately abutting the street, the overall function of the Transportation Network Plan, the Major Thoroughfare Plan, and any Traffic Impact Analysis required by the City’s TIA ordinance, all subject to the review and approval of the City Manager. The cross-section of a street shall be determined based on both functional classification and anticipated traffic volume on the roadway. Developers shall submit a traffic analysis that quantifies build out level traffic conditions on proposed roadways, to justify proposed cross-section based on volume ranges contained in Table 3-4 and a capacity analysis. Cross sections with deviations from these standards may be approved by the Planning Commission and Council, subject to the recommendation of the City Manager, and based upon the General and Specific Intent statements of this Article, the context of the proposed subdivision, and sound transportation planning principles.
## Table 3-4: Street Cross-Section Standards

<table>
<thead>
<tr>
<th>Design Type</th>
<th>Local</th>
<th>Collector</th>
<th>Arterial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential (Alley)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial (Alley)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avenue [3]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avenue [3]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parkway / Neighborhood [2]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avenue [3]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Design Type

- **Residential (Alley)**
- **Commercial (Alley)**
- **Rural**
- **Neighborhood**
- **Residential Avenue**
- **Neighborhood Avenue**
- **Secondary**
- **Primary**
- **Parkway / Neighborhood**
- **Arterial**

### Expected Daily Traffic

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>See Bike Facility standards 3.02.003.B</td>
</tr>
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</tr>
</tbody>
</table>
Table 3-4 Notes

[1] The Rural street design type is a special type permitted only for Local or Collector streets in Rural Cluster subdivisions according to Article 4, Section 02, or in the Rural Residential or Low-Density Residential Development Patterns of the Boerne Master Plan.

[2] The Neighborhood street design type is a special type permitted only for residential uses platted with a Grid / Modified Grid Transportation Network Plan per section 3.02.002 of these regulations. It may be applied to the Local or Collector street classifications, or to an Arterial street classification as a "Parkway", according to this table.

[3] The Avenue street design type is a special type permitted only for non-residential uses platted with a Grid / Modified Grid Transportation Network Plan per section 3.02.002, and supporting the Neighborhood, Community or Regional Center Development Patterns in the Boerne Master Plan. It can be applied to Local, Collector or Arterial street classifications, but shall be applied only along those blocks where a pedestrian atmosphere is anticipated and where street designs can transition to slower desired speeds.

[4] Right-of-way minimums are for the widths of typical cross-sections. Proper design of any portion of a street may require greater widths, depending on the context. Where greater Right-of-way widths are designed to provide a greater civic amenity in the right-of-way, this area in addition to the minimum may be counted towards the Civic Open Space requirement of the proposed subdivision per Section 3.02.003.D.

[5] The Yield Lane shall be limited in application according to Section 3.02.003.A.

[6] Sidewalks and Landscape Areas shall be designed and located based on context according to Section 3.02.003.C. Additional landscape / utility easements may be necessary to allow appropriate urban design and still meet the pedestrian and utility accessibility standards

A. Limitation on Yield Lanes. Yield lanes are narrower lanes that accommodate two-way traffic, although at certain sections of the street it may only allow one un-obstructed moving lane. This is most common on streets that allow on-street parking where the presence of parked cars is not continuous on the length of the street or not present at all times of the day. Yield lanes are only appropriate on Access streets or on Local streets supporting only residential uses. Use of these types of lanes shall be limited to the standards in Table 3-5:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20</td>
<td>800'</td>
<td>No specific queuing area required</td>
</tr>
<tr>
<td>20 TO 30</td>
<td>660'</td>
<td>Queuing areas at least every 150 feet</td>
</tr>
<tr>
<td>&gt; 30</td>
<td>440'</td>
<td>Queuing area at least every 200 feet</td>
</tr>
</tbody>
</table>

[1] Dwelling units refers to the total number of dwelling units that have frontage on the particular section of street between two intersecting streets. Any accessory dwelling units permitted are not counted in this number.

[2] Length specifies maximum distance between intersections with other through streets, measured from the centerlines of the intersecting streets.

[3] “Queuing areas” may be any area in the finished street design that allow for the pull-out and stopping of at least one vehicle to allow for on-coming vehicles to pass. Examples include driveway curb-cuts that prohibit parking in the on-street parking lane or other similar designs that prohibit parking, or effectively widen the street to allow 2 cars to pass at all times.

B. Bicycle Facility Standards. Bicycle facilities shall be added to any street designated in an official transportation plan or trail plan of the City as a bicycle route, and should be added at any other location where bicycle transportation is likely. The Bicycle Facility Standards in Table 3-6 shall be used in amending the typical Street Cross-sections in Table 3-4, and added to the minimum right-of-way width.
TABLE 3-6: BICYCLE FACILITIES

<table>
<thead>
<tr>
<th>FACILITY TYPE</th>
<th>DIMENSION</th>
<th>APPLICABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEDICATED BICYCLE LANE</td>
<td>5’ to 6’ minimum, each lane and located immediately adjacent to outermost vehicle lanes and included in the Total Paved Width</td>
<td>Required on identified bike routes with vehicle speeds above 35 mph, unless Off-street Multi-use Trail provided</td>
</tr>
<tr>
<td>SHARED BICYCLE LANE</td>
<td>4’ added to outer most vehicle lane, but no more than 14’ total lane width</td>
<td>Acceptable on identified bike routes with speeds below 35 mph</td>
</tr>
<tr>
<td>COMBINED VEHICLE/</td>
<td>No designated area, as bicycles and vehicles share the same space with low vehicle speeds</td>
<td>Acceptable on any portion of the street with design speeds of 25 mph or less; often associated with streets with yield lanes or where angled parking is allowed.</td>
</tr>
<tr>
<td>BICYCLE LANE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF-STREET MULTI-USE</td>
<td>10’ to 12’ minimum, located adjacent to roadway in the Landscape Area</td>
<td>Preferred on identified bicycle routes with vehicle speeds above 35 mph or where on-street facilities are not appropriate or are impractical. Particularly where Greenways (Article 3, Section 03) are located along the roadway.</td>
</tr>
<tr>
<td>TRAIL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C. Utility Clear Zones, Landscape Area and Pedestrian Facilities. The pedestrian facilities and landscape area of the right-of-way shall be designed to best balance the need for clear utility access and maintenance, for direct pedestrian connections, and for enhanced civic design of the right-of-way. The following are the minimum standards to effectively balance these needs. An additional landscape or utility easement may be necessary on the edge of the right-of-way to allow the most appropriate urban design while meeting these needs.

1. Utility Clear Zones. Utility easements required by Article 3, Section 3.04.005 of the Subdivision Regulations may be located in the right-of-way or within an easement along the lot frontage if designed consistent with Table 3-7. Easement locations in alleys or utility corridors out of the right-of-way may also be acceptable to allow appropriate urban design and application of the Cross-section standards in Table 3-4. However, to allow proper maintenance and function of utilities, the following standards shall apply to Utility Clear Zones, whether in the right-of-way, easement, or in alleys and utility corridors.

<table>
<thead>
<tr>
<th>TREE TYPE</th>
<th>DISTANCE FROM OVERHEAD LINES (&lt; 600 VOLTS)</th>
<th>DISTANCE FROM OVERHEAD LINES (&gt; 600 VOLTS)</th>
<th>DISTANCE FROM UTILITY POLE OR STREET LIGHT</th>
<th>DISTANCE FROM UNDERGROUND LINES (ALL UTILITIES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMALL / ORNAMENTAL</td>
<td>No limit</td>
<td>No limit</td>
<td>10 feet</td>
<td>5 feet</td>
</tr>
<tr>
<td>MEDIUM / ORNAMENTAL OR SHADE</td>
<td>7 feet</td>
<td>20 feet</td>
<td>20 feet</td>
<td>5 feet</td>
</tr>
<tr>
<td>LARGE / SHADE</td>
<td>7 feet</td>
<td>30 feet</td>
<td>30 feet</td>
<td>7 feet</td>
</tr>
</tbody>
</table>

* Distance measured in lateral feet from the center of the line to the center of the tree. Large/Shade Trees are species that reach over 50’ total height at maturity; Medium/Ornamental or Shade Trees are species that reach between 20’ and 50’ total height at maturity; Small/Ornamental trees are species that reach under 20’ total height at maturity.

2. Pedestrian Facilities. Pedestrian facilities required by Table 3-4 shall always be separated from moving traffic lanes of the roadway by a landscape buffer and only located immediately adjacent to the finished street as an expanded pedestrian amenity area where on-street parking will likely be present.
   a. In all cases where sidewalks are provided they shall be at least 5 feet wide to permit two persons to walk side-by-side comfortably.
   b. On any block face below 3.5 dwelling units per acre, sidewalks on only one side may be acceptable, provided the Planning Commission and Council determine that the street is not important to the overall pedestrian network.
   c. On any block face that includes a Green Way and 10’ to 12’ multi-purpose trail, sidewalks are not required.
3. **Landscape Area.** The Landscape Area shall be designed to buffer pedestrians from moving traffic lanes. All planting in the Landscape Area should be coordinated with Utility Clear Zone guidelines in Section 3.02.003.C.1., and any planting in this area may be counted towards a landscape requirement of the zoning regulations. Species should be based on guidance from the Texas Forest Service, Urban Forestry Program, or other similar guidance on species appropriate to South-Central Texas, and the following standards

a. In cases where large shade street trees are planted between the street edge and the sidewalk, the landscape area shall be at least 6’ wide (7’ to 8’ preferred) to avoid the root zone disturbing or heaving the sidewalk when trees reach maturity.

b. In cases where medium or small trees are planted between the street edge and the sidewalk, the landscape area should be at least 5’ wide (6’ to 8’ preferred) to avoid the root zone disturbing or heaving the sidewalk when trees reach maturity.

c. In all cases where a landscape area is provided between the street edge and the sidewalk, low shrubs and/or perennial ground cover shall be planted.

d. In cases where on-street parking is provided and will serve as a buffer between pedestrians and moving vehicles at most times of the day, the landscape area may be designed as an extension of the sidewalk to provide transitional pedestrian amenity area. Ornamental or small street trees may be planted in tree-wells within an expanded pedestrian amenity area. Tree wells shall be large enough to ensure sufficient soil areas for the survival of the tree species and shall generally have at least 30 square feet of impervious area, or otherwise include constructed soil volumes for the roots to access. Tree wells should be spaced at regular intervals, typically every 25’ to 60’. The under canopy of all trees should be sufficient to allow a clear view of all store-fronts along the street.

e. Landscape Areas on Rural street design types, or any other streets where no sidewalks may be required should have expanded landscape areas with more informal, rough, low-maintenance and natural vegetation. These areas may need to incorporate trails or multi-use bicycle/pedestrian facilities in some cases and planting may occur in or along borrow ditches provided all drainage functions may be retained with no additional maintenance.

* **Typical Street Cross-Sections**
  * See Table3-4 and Notes for actual dimensions and assembly of cross-section elements
ARTICLE 3. PLANNING AND COMMUNITY DESIGN STANDARDS

SECTION 02. TRANSPORTATION NETWORK & STREET DESIGNS

Local & Collector Streets (Rural)

Local & Collector Streets (Non Rural)

Arterial Streets (Non Rural)
D. **Civic Open Space Credit.** Where the Landscape Area and pedestrian facilities in the right-of-way in excess of the standards in this Table 3-4, and where these areas are designed to create a greater civic amenity by meeting the Open Space Standards in Article 3, Section 3.03 for Greenways, Courtyards or Plazas, the areas in excess of the minimum right-of-way standards may contribute to the Civic Open Space requirement of the proposed subdivision.

3.02.004 **Intersection Design.**

Intersections shall be designed to balance safe and direct connections for vehicles and pedestrians.

A. **Alignment.**

1. Intersections shall be either aligned directly, or off-set at least 150’.

2. Except for the intersection of two or more Local streets, only intersections of two streets shall be permitted. All intersections shall be as near to 90 degree angles as practical, and shall always be between 80 degrees and 100 degrees.

B. **Curb Radii.** In order to minimize crossing distances for pedestrians and limit high-speed vehicle turning movements, curb radii shall limited to the greatest extent possible considering the appropriate balance of pedestrian and vehicle needs. In general, curb radii at intersections shall be as specified in Table 3-8:
TABLE 3-8: INTERSECTION CURB RADII

<table>
<thead>
<tr>
<th>INTERSECTION TYPE</th>
<th>RADII*</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCAL / LOCAL</td>
<td>15'</td>
</tr>
<tr>
<td>LOCAL / COLLECTOR</td>
<td>15'</td>
</tr>
<tr>
<td>LOCAL / ARTERIAL</td>
<td>20'</td>
</tr>
<tr>
<td>COLLECTOR / COLLECTOR</td>
<td>25'</td>
</tr>
<tr>
<td>COLLECTOR / ARTERIAL</td>
<td>30'</td>
</tr>
<tr>
<td>ARTERIAL / ARTERIAL</td>
<td>30'</td>
</tr>
</tbody>
</table>

* In areas where large vehicles will make frequent turning movements, the Planning and Zoning Commission and Council may require greater turning radii. In areas where slower vehicle speeds are desired or high pedestrian traffic is expected, the Planning and Zoning Commission and Council may require smaller turning radii. The Planning Commission and Council requirement shall be based on the advice of the Public Works Department and upon consideration of all design solutions that effectively balance the interests of all users of the street. Actual centerline turning movements of typical vehicles, lane locations, intersection angles, or other geometric configurations of the specific intersection may be justifications for larger or smaller requirements.

C. Pedestrian Crossings. Intersections of pedestrian facilities with public streets shall have crossings meeting the following standards.

1. Curb ramps meeting TDLR accessibility standards shall provide a direct, non-diverted approach from the sidewalk along the block, into the pedestrian crossing area.

2. Pedestrian crossings of a Collector street classification or higher shall have a crosswalk differentiated from the finished street surface by any combination of textured or colored paving, decorative pavers, paint, or other alternative material subject to approval by the City Manager.

3. The Planning and Zoning Commission or Council may require cross walks at mid-block locations for any block face that exceeds 600 feet.

4. Where pedestrian facilities cross multi-lane streets in high-pedestrian areas, the Planning and Zoning Commission or Council may require curb extensions at the intersection to shorten pedestrian crossings and define on-street parking areas, or center pedestrian refuge islands where applicable.

D. Sight Distances. Proper lines of sight shall be maintained at all intersections. Traffic on lower classification streets shall stop or yield at intersections with equal or higher classification streets. The proper line of sight shall be an unobstructed view from the stopping point to all points three feet above the centerline of the intersected street for a distance based on that streets design speed. Table 3-9 provides the clear distances.
TABLE 3-9: INTERSECTION SIGHT DISTANCES

<table>
<thead>
<tr>
<th>Design Speed of Intersecting Street (MPH)</th>
<th>Intersection Sight Distance (Measured in Feet Along the Centerline of Intersecting Street)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>125</td>
</tr>
<tr>
<td>25</td>
<td>150</td>
</tr>
<tr>
<td>30</td>
<td>200</td>
</tr>
<tr>
<td>35</td>
<td>225</td>
</tr>
<tr>
<td>40</td>
<td>275</td>
</tr>
<tr>
<td>45</td>
<td>325</td>
</tr>
</tbody>
</table>

*Source: American Association of State Highway and Transportation Officials, A Policy of Geometric Design of Highways and Streets (AASHTO 1990)*
SECTION 03. OPEN SPACE SYSTEMS.

3.03.001 Specific Intent.

It is the specific intent of this Section to:

A. Value the design, function, appropriate application, and perceptual impact of different types of open space, rather than solely the quantity of space.
B. Recognize open space, whether public, common, or private, as an important element of the civic infrastructure of the City and the primary determinant of the Hill Country character.
C. Consider the context and multiple functions that open spaces can serve to support development.
D. Develop a greater perceived impact from open space by coordinating the design and location of open spaces among adjacent sites and within a coordinated system, and develop a community-wide Civic Open Space System.
E. Create meaningful connections between people and open space, and increase citizens’ access to a wider variety of quality open spaces to meet recreation and social needs of the community.
F. Relate constructed elements on streets, blocks, and lots, to the open space and create focal points for the community, neighborhood, district, or development site where these systems intersect.
G. Integrate natural systems into the design of common or public open spaces to allow open space to serve multiple aesthetic, recreational, and ecological functions.

3.03.002 Required Open Space.

Minimum required open space shall be provided according to Table 3-10. This space shall be in addition to any setback, landscape requirements, or other site design requirements of any individual lot or site required by the zoning ordinance. No land shall be reserved by the applicant or included in the plat as open space unless the land is of sufficient size and shape and topographically suitable to be of some practical use or service as part of a complete Civic Open Space System to support the development, as determined by the City. The City shall use the description, recommended size, and applicability guidance in Table 3-11: Open Space Design Types and Standards to make this determination. Required open space may be in private, common, or public ownership unless otherwise specified in these regulations.

A. Amount. The amount of open space required shall be based upon the development pattern indicated in the Boerne Master Plan, and as specified in Table 3-10.

<table>
<thead>
<tr>
<th>CONTEXT / DEVELOPMENT PATTERN</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>RURAL RESIDENTIAL</td>
<td>No requirement; EXCEPT that Rural Cluster subdivisions shall meet the open space requirements of Article 4.</td>
</tr>
<tr>
<td>LOW-DENSITY RESIDENTIAL AND NEIGHBORHOOD RESIDENTIAL</td>
<td>20% of the gross area of the development parcel; EXCEPT that Rural Cluster subdivisions shall meet the open space requirements of Article 4.</td>
</tr>
<tr>
<td>CENTERS AND SPECIAL DISTRICTS</td>
<td>250 square feet per dwelling unit; AND 5% of all building footprints and areas of impervious surface dedicated to vehicle access and parking. [*NOTE: any parking lot design, buffer and landscape requirements are in addition to this Civic Open Space System requirement.]</td>
</tr>
</tbody>
</table>

* Per Boerne Master Plan

B. Required Open Space. Those areas identified in the City of Boerne Open Space/Greenbelt Master Plan as well as those areas identified in Section 2.02.001.F shall be part of the required Open Space.

C. Eligibility Exclusions. In calculating the area of open space, the following shall be excluded from the open space:

1. Any parking areas and vehicle access areas necessary to serve the open space, unless an approved porous surface is used.
2. Any required rights-of-way, except that where additional civic amenities are provided in the right-of-way in addition to those specified in the typical street cross-sections of Section 3.02. Elements of the right-of-way where a civic amenity may be increased and counted towards Civic Open Space are designated by "(+)" in Appendix A. For example, where a street is platted with a Neighborhood Parkway Design Type, and a 30-foot median is used instead of the minimum 12-feet, the additional area may count towards the open space requirement.

3. Storm water system facilities required by Article 6, except the following may be considered in the Civic Open Space System:
   a. Areas for natural drainage systems used for storm water facilities may be included in Natural Areas, Greenways, Parks or Greens which meet the Design Type and Standards in Table 3-11;
   b. Areas for detention designed and engineered as a permanent aesthetic and recreation amenity within one of the other open space types, and where the permanent surface water areas do not exceed 25% of the open space area; or
   c. Areas for retention designed and engineered to serve some other primary purpose as one of the open space types specified in this section, and the frequency and duration of standing water does not restrict the areas primary use on a regular basis.

4. Utility easements required by Section 3.04.005., and Articles 5, 6, and 7, except where they are primarily designed as one of the open space types specified in Table 3-11, and the utilities are located under ground and the easement acknowledges the primary design and use of the area as part of the Civic Open Space System.

5. Land lying in the floodway or flood plain may only be included if it is left in a natural state subject to the stands for Natural Areas in Table 3-11, and shall only count towards a maximum of 75% of the open space requirements of Table 3-10.

D. **Exceptions.** The following are exceptions to the open space requirement in Table 3-10.

1. **Small Infill Subdivision.** Any residential subdivision in the City Limits at the date of adoption of this ordinance, and which is less than 10 acres total shall be exempt from the open space requirements of Table 3-10.

2. **Existing Public Open Space Credit:** Any application within the service areas specified in Table 3-11 of any existing public opens space may receive a credit for this open space provided the City determines that it is of a sufficient capacity and design standard to serve the additional proposed development.

3. **Existing Shared Common Open Space Credit:** Any application within the service areas specified in Table 3-11 of any existing common open space may receive a credit for this open space provided documentation is shown granting legal access to the open space and the open space has excess capacity according to the open space requirements in Table 3-10, considering all existing development with legal access to the common open space.

**3.03.003 Design Types and Standards.**

In meeting the requirements for Civic Open Space System, open space shall be designed and located based upon the standards and guidance in Table 3-11:

<table>
<thead>
<tr>
<th>TABLE 3-11: OPEN SPACE DESIGN TYPES AND STANDARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESCRIPTION</strong></td>
</tr>
<tr>
<td>---------------</td>
</tr>
</tbody>
</table>
| **NATURAL AREA** | An undeveloped area that contains significant natural features or habitat worthy of preservation, and which provide environmental, aesthetic, and recreational benefits. Features such as large stands of trees, water elements, or prominent topography characterize Natural Areas. It contains little or no constructed improvements or maintained landscape other than trails to access the Natural Area. | The size of a Natural Area should be based on the site characteristics and potential continuity of similar natural features in the area, along with the potential to connect to adjacent natural areas. | • Rural Residential areas  
• Low-Density Residential areas  
• Any Rural Cluster subdivisions  
• Any other area of natural amenity with regional significance. |
<p>| Service Area: N/A; dependant on area of natural features |</p>
<table>
<thead>
<tr>
<th><strong>TABLE 3-11: OPEN SPACE DESIGN TYPES AND STANDARDS</strong></th>
<th><strong>DESCRIPTION</strong></th>
<th><strong>RECOMMENDED SIZE</strong></th>
<th><strong>APPLICABILITY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GREENWAY</strong></td>
<td>An undeveloped area of continuous linear natural features, often following a stream, floodplain, or road corridor. A Greenway should be usable for recreation and non-motorized transportation through pedestrian multi-use trails. It includes few constructed improvements except for those to enhance travel or recreational use. Greenways should be at least 1 linear mile but sized and located based on opportunity to provide greater significant continuity throughout a development and to areas beyond the development area. Greenways should be at least 30 feet wide at all locations, and wider where natural features warrant. <strong>Service Area:</strong> N/A, dependant on linear features</td>
<td>1 to 5 acres within neighborhoods; Larger for community or regional parks.</td>
<td>• Rural areas  • Alternative (off-street) transportation routes between neighborhoods and centers.  • Along major streets in the network as expanded ROW;  • Used to preserve linear natural features in more densely developed Neighborhoods and Centers.</td>
</tr>
<tr>
<td><strong>PARK</strong></td>
<td>An undeveloped area for unstructured recreation. A Park has a predominantly natural landscape although small portions may be designed and constructed for aesthetic purposes, formal gatherings, and structured recreation purpose.</td>
<td>½ acre to 3 acres</td>
<td>• Low-density Residential  • Neighborhood Residential  • Centers  • Special districts <strong>Service Area:</strong> Neighborhood Parks (1 to 5 acres) = ¼ mile Community Parks (more than 5 acres) = 1 mile</td>
</tr>
<tr>
<td><strong>GREEN</strong></td>
<td>An open space for unstructured recreation or aesthetic landscaping. A Green is bordered by public right-of-ways on at least 3 sides. Front building facades and/or formal edge landscaped elements define any boundaries of the Green not bordered by public rights-of-way. Generally there are few constructed elements except for small gathering places created as a focal point for the Green.</td>
<td>500 square feet to ¼ acre</td>
<td>• Neighborhood Residential  • Centers  • Special districts <strong>Service Area:</strong> within two blocks and no more than 1000 feet.</td>
</tr>
<tr>
<td><strong>PLAZA</strong></td>
<td>An open space for civic purposes and formal gathering. A Plaza is bordered by public right-of-ways on at least 2 sides. Building facades define any boundaries of a Plaza not bordered by public rights of way. A Plaza is largely comprised of constructed of materials to withstand heavy pedestrian traffic and gathering, but contains intermittent lawns, landscape beds, or trees in a formal ornamental pattern.</td>
<td>400 square feet to 5000 square feet</td>
<td>• Centers  • Special districts <strong>Service Area:</strong> within the same block or immediately adjacent block and no more than 600 feet.</td>
</tr>
<tr>
<td><strong>COURTYARD</strong></td>
<td>A small open space accessible to the public streets but generally serving one or a few surrounding buildings. Courtyards are primarily bordered by building facades, but have at least one side fully or partially boarded by a public right-of-way. A Courtyard contains a balance of formal landscape features and constructed materials to withstand heavy pedestrian traffic and gathering.</td>
<td>400 square feet to 3000 square feet</td>
<td>• Low-density Residential  • Neighborhood Residential  • Centers  • Special Districts <strong>Service Area:</strong> within the same block and no more than 300 feet.</td>
</tr>
<tr>
<td><strong>POCKET PARK / GATEWAY</strong></td>
<td>A small open space with pedestrian access used for aesthetic landscaping, small informal gathering and recreation. A Pocket Park / Gateway includes identifying architectural or public art features to establish a sense of entry or arrival. Pocket Parks / Gateways are often designed within or in close association of the right-of-way to emphasize transitions along a corridor, at entrances to a neighborhood or district, or to create a focal point on a block.</td>
<td>400 square feet to 3000 square feet</td>
<td>• Low-density Residential  • Neighborhood Residential  • Centers  • Special Districts <strong>Service Area:</strong> within the same block and no more than 300 feet.</td>
</tr>
</tbody>
</table>
3.03.004 Location Criteria.

The following location criteria shall be used in determining the most appropriate locations and characteristics of land to be designated as required open space within subdivisions of land.

A. Priority should be given to areas that provided the most visible impact.
   1. Formal open space (Greens, Plazas, Courtyards, Pocket Parks/Gateways) should be located at prominent focal points within a subdivision or development site, and included in or designed as an effective extension of the public rights-of-way, or other common areas.
   2. Natural open space (Natural Areas, Greenways, Parks) should be located along prominent ridges, valleys and view corridors.

B. Open space should be located to provide the greatest connectivity of open space systems with adjacent and future development sites.
   1. Formal open space (Greens, Plazas, Courtyards, Pocket Parks/Gateways) should be located according to an overall urban design theme for the area, considering where planned future transportation systems, block patterns, and key building and site entrances will be located for the site and for adjacent areas.
   2. Natural open spaces (Natural Areas, Greenways, Parks) should be located in areas that have the greatest potential for future expansion and connectivity to land areas with similar physical features and ecological characteristics on adjacent sites.

C. Open space shall be located in areas that maximize its functional characteristics.
   1. Formal open space (Greens, Plazas, Courtyards, Pocket Parks/Gateways) shall be centered in areas that will have the greatest population density or development intensity in order to provide the greatest pedestrian accessibility possible.
   2. Natural open spaces (Natural Areas, Greenways, Parks) shall be located in areas where its ecological, aesthetic, and recreational impact will be the greatest.

3.03.005 Ownership and Management.

Required open space shall require specific designation on the final plat, including the ownership and management disposition. Options for ownership and management of preserved area include:

A. Dedication to the City or other public entity subject to acceptance by and at the sole discretion of the City or other public entity.

B. Creation of or dedication to a non-profit entity capable of carrying out the ownership and management.

C. Creation of a Homeowners and/or Leaseholders Association capable of carrying out the ownership and management.

D. Private ownership provided the open space is platted as part of a defined lot in the subdivision, and includes covenants and other restrictions that will maintain the area as private open space.
SECTION 04. BLOCKS AND LOTS.

3.04.001 Specific Intent.

It is the Specific Intent of this Section to:

A. To plan streets that support and result in an orderly system of blocks and lots, with logical connections to existing, planned and potential future streets.

B. To ensure that all blocks, lots, and other land areas have adequate access to streets, pedestrian facilities, open space systems, and utilities necessary to support the proposed and anticipated future development.

C. To create development patterns capable of stimulating more options for modes of travel, by ensuring that all lots and development sites are placed in an interconnected network of streets and blocks.

D. To ensure that all lots front on streets with appropriate Design Types that support the anticipated uses and site designs, and create appropriate transitions between public areas and private spaces.

E. To ensure that vehicle access to lots is provided with appropriate attention to the impact on public streetscapes, and in particular the pedestrian facilities along streetscapes, and that all alternative vehicular lot access strategies are appropriately explored in association with planning the street network.

3.05.002 Block Sizes and Arrangement.

All applications shall propose an orderly system of blocks that result from the proposed Transportation Network Plan in Section 3.02.002

A. Block Sizes. The block size standards are specified in Table 3-12, and shall be based upon the development pattern identified in the Boerne Master Plan.

<table>
<thead>
<tr>
<th>CONTEXT / DEVELOPMENT PATTERN*</th>
<th>BLOCK PERIMETER**</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOWNTOWN, NEIGHBORHOOD CENTERS, AND COMMUNITY CENTERS</td>
<td>1,600 feet maximum perimeter; 500 feet maximum on any one block face; 250 feet minimum on any one block face</td>
</tr>
<tr>
<td>REGIONAL CENTER</td>
<td>2,000 feet maximum; 600 feet maximum on any one block face; 300 feet minimum on any one block face</td>
</tr>
<tr>
<td>NEIGHBORHOOD RESIDENTIAL</td>
<td>2,200 feet maximum; 800 feet maximum on any one block face; 250 feet minimum on any one block face</td>
</tr>
<tr>
<td>LOW-DENSITY RESIDENTIAL</td>
<td>2,600 feet maximum; 1000 feet maximum on any one block face; 300 feet minimum on any one block face; Except no requirement if subdivided according the Rural Cluster Subdivision Standards in Article 4.</td>
</tr>
<tr>
<td>RURAL RESIDENTIAL</td>
<td>No requirement, but see Article 4. for Rural Cluster Subdivision Standards</td>
</tr>
<tr>
<td>SPECIAL DISTRICTS</td>
<td>No requirement; block sizes may be based on an overall development plan provided it supports the Transportation Network Plan for this property and adjacent properties.</td>
</tr>
</tbody>
</table>

* Per Boerne Master Plan

** Standards are based on the perimeter formed by the centerline of the public rights-of-way forming the block. Blocks on the perimeter of the property being subdivided which are formed by the streets, any stub streets, and the subdivision boundary with property that may be subdivided in the future, shall not exceed 60% of the maximum perimeter in Table 3-12.
Exceptions to or Alternative Compliance permitted in sub-sections C. and D. may be used in place of the Standards in Table 3-12 when establishing a Transportation Network Plan. Use of the exceptions or alternative compliance should result in an overall plan that equally or better meets the General Intent of this Article, and the Specific Intent of each Section in this Article.

B. **Arrangement.** Blocks shall be numbered consecutively within the subdivision and/or sections of an overall plat and arranged as follows:
1. All blocks shall be designed to provide two tiers of lots with each fronting on public streets.
2. Double-frontage lots or single-tier blocks with lots backing to any street shall be prohibited, except where blocks back to portions of the Civic Open Space system in Article 3, Section 3.03.
3. Blocks may be irregular in shape if necessary serve important urban design goals, transportation planning goals, or address topographic and natural features, provided they still meet the general street network and connectivity standards.
4. Whenever feasible, each lot should face the front of a similar lot across the street. Transitions between distinct lot types and land uses should occur at the rear of lots internal to the block rather than across the frontage and public streetscape.

C. **Exceptions.** The following exceptions to the Block Size standards in Table 3-12 may be granted by the Planning and Zoning Commission or Council, after consideration of the recommendations of the Planning Department.

1. **Natural Features.** Blocks or parcels abutting or containing important natural features or topographical constraints may be larger provided the proposed street layout preserves important natural features in accordance with the Open Space System standards in Article 3, Section 3.03.

2. **Rural Parcels.** A tract divided into rural lots substantially larger than called for under these regulations may be larger but shall be arranged to permit:
   a. the opening of future streets in compliance with these regulations; and
   b. a logical pattern of re-subdivision with minimal future disruption to buildings and structures that are proposed to be built under the original subdivision.

   The Planning and Zoning Commission or Planning Department may restrict building locations and site elements to permit future re-subdivision in compliance with these regulations, and require a sketch plan of re-subdivision demonstrating potential future division in compliance with all regulations to be submitted with the preliminary plat.

3. **Oversized Parcels.** Where oversized parcels are platted for the Special Districts, internal access streets and drive aisles may be required by operation of applicable zoning and site design standards to mimic the design and connectivity of the public streetscape.

D. **Alternative Compliance.** Parcels proposed for subdivision that are larger than 30 acres may propose an Average Perimeter Block Size as a means of alternative compliance for Block Size standards in Table 3-12. In calculating the average, all parcels and blocks shall be used, including blocks formed by edges along open spaces and connections to the perimeter of the subdivision.
### Table 3-13: Alternative Compliance / Average Perimeter Block Size

<table>
<thead>
<tr>
<th>Category</th>
<th>Average Perimeter Block Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtown, Neighborhood Centers, and Community Centers</td>
<td>1,400’</td>
</tr>
<tr>
<td>Regional Centers</td>
<td>1,600’</td>
</tr>
<tr>
<td>Residential Neighborhood</td>
<td>1,800’</td>
</tr>
<tr>
<td>Low-Density Residential</td>
<td>2,200’</td>
</tr>
</tbody>
</table>

**E. Cul-de-sac and Disconnected Street Limitations.** In any case where a disconnected street may be permitted by the standards, exceptions, or alternative compliance of these regulations, they shall be further limited by the following standards and design requirements:

1. **Cul-de-sacs** shall not exceed more than 600 feet measured from an intersecting and connected street to the end of the circle terminating the cul-de-sac.

![Cul-de-sac Diagram]

2. **Turnaround circles** shall have a radius of 30 feet. Where the frequent use of the turnaround by single unit vehicles is likely, the radius may extend up to 42 feet. In such cases, a center island shall be provided yielding a between 20 to 24 feet of clear travel lanes at all locations on the circle. The right-of-way shall extend 12 feet beyond the perimeter of the circle.

![Turnaround Circle Diagram]

3. The perimeter of the “block” formed by the outside boundaries of all lots fronting on the cul-de-sac, shall not exceed the block sizes established in Table 3-12.

![Block Diagram]

4. Street designs such as “loop streets” or “closes” are preferred as an alternative to cul-de-sacs.
5. The Planning and Zoning Commission or Council may require alternative connections for bicycle or pedestrians at the end of disconnected streets to best meet the Specific Intent of this section, such as pathways at the ends of cul-de-sacs.

3.04.003 Lot Size and Arrangement.

A. Minimum Lot Size – City Limits. All lots in a subdivision within the corporate limits of the City shall meet the minimum standards of the Zoning Ordinance for the zoning district applicable to the land being subdivided. [See Article 5 of Boerne Zoning Ordinance for lot standards of various zoning districts.]

B. Minimum Lot Size – Extraterritorial Jurisdiction. All lots in a subdivision outside the corporate limits of the City, but within the limits of its extraterritorial jurisdiction, shall have a minimum area specified in Table 3-14.

<table>
<thead>
<tr>
<th>Utility Service</th>
<th>Minimum Lot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIVATE WELL AND ON-SITE SEWER</td>
<td>Average lot size of 6 acres*</td>
</tr>
<tr>
<td>COMMUNITY WATER SYSTEM THAT UTILIZES GROUNDWATER UNDER THE JURISDICTION OF THE COW CREEK GROUNDWATER CONSERVATION DISTRICT</td>
<td>Average lot size of 4 acres*</td>
</tr>
<tr>
<td>ANY OTHER WATER SOURCE AND ORGANIZED SEWER SYSTEM</td>
<td>1/2 acre</td>
</tr>
</tbody>
</table>

* Average lot size is calculated by dividing the number acres in the subdivision by the number of lots. These standards shall be interpreted consistent with the Cow Creek Groundwater Conservation District Rules regarding reasonable use and groundwater protection limits.

C. Exceptions – Extraterritorial Jurisdiction. The following are exceptions to the minimum lot standards in the Extraterritorial Jurisdiction:

1. Applications where the land division requires no public improvements and where each proposed parcel has access to existing roads shall have a minimum lot size of 5 acres, provided lots, buildings, and improvements are arranged in a manner that would allow the efficient and coordinated opening of streets should the property be re-subdivided in the futures.

2. Applications for Rural Cluster Subdivisions shall meet the lot requirements of Article 4, Section 4.02. Rural Cluster Subdivisions, and be supported by a Transportation Network Plan, Civic Open Space System, and Block and Lot standards required by that section.
3. Applications pursued under a development agreement for municipal services shall have lot requirements according to a development plan. The development plan shall use lot standards for the most similar zoning district from the City’s zoning ordinance. Plan Developments shall have Transportation Network Plan, Civic Open Space System standards, and Block and Lot standards required by this Article and which meet the Boerne Master Plan goals for Centers and Residential Neighborhoods.

D. **Lot lines.**

1. **Frontage:** All lots shall have a frontage on a public right-of-way.
2. **Side Lot Lines:** All side lot lines shall be at right angles to the right-of-way line. On curved rights-of-way or streets, side lot lines shall be radial to that line.
3. **Rear Lines:** Rear lot lines shall be established at a depth sufficient to permit two-tiers of lots on each block. Double frontage lots or lots that back up to streets shall not be permitted. Lots backing to public rights-of-way shall only be permitted if separated by open space meeting the Civic Open Space System standards in Article 3, Section 3.03.
4. **Orientation:** All lots shall have a general orientation of width to depth between 1:3 and 2:1, with a width that is relatively consistent dimension throughout the lot. “Piano key” and “flag lots” shall not be permitted, unless warranted by an unusual shape of the land or the ownership or property.
5. **Building Lines:** All lots shall have the required building lines specified by the zoning district applicable to the property. For un-zoned parcels outside of corporate limits of the City but within the City’s extraterritorial jurisdiction, building setback lines shall meet the minimum requirements which would be applicable in the least intensive zoning district which would permit the proposed land use if the subdivision were located inside the City's corporate limits, or the building setback lines of a development plan approved in association with a development agreement for municipal services.

3.04.004 **Lot Access.**

A. **Access Width.** Lot access width shall be limited based upon the lot width at the lot frontages subject to the standards in Table 3-15.

<table>
<thead>
<tr>
<th>TABLE 3-15: LOT ACCESS WIDTH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lot Frontage Width</strong></td>
</tr>
<tr>
<td>&lt; 50' RESIDENTIAL</td>
</tr>
<tr>
<td>50' TO 64' RESIDENTIAL</td>
</tr>
<tr>
<td>65 – 120' RESIDENTIAL</td>
</tr>
<tr>
<td>&gt; 120' RESIDENTIAL</td>
</tr>
<tr>
<td>NON-RESIDENTIAL</td>
</tr>
</tbody>
</table>

Maximum width shall be measured along the right-of-way at the lot frontage or at any crossing of pedestrian facilities in the right-of-way, and may allow additional apron approach within the right-of-way to the street edge to permit adequate turning movements. Where maximum access widths limit or prohibit individual lot access points, shared access easements, or rear and mid-block Access Streets or easements shall be used. [See Residential Design Standards / Lot Access in Article 3, Section 06.007 of the Boerne Zoning Ordinance for related lot access types and design standards within the lots.]

B. **Minimum Separation.** Lot access points shall be separated from other access points along a single block face and from the street edge of intersections streets by the dimensions in Table 3-16. (“access separation” / “separation from intersecting street”).
### Table 3-16: Minimum Access Separation**

<table>
<thead>
<tr>
<th>Access Type</th>
<th>Residential*</th>
<th>Non-Residential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Arterial</td>
<td>200' / 240'</td>
<td>300' / 300'</td>
</tr>
<tr>
<td>Minor Arterial</td>
<td>120' / 140'</td>
<td>200' / 200'</td>
</tr>
<tr>
<td>Primary Collector</td>
<td>80' / 100'</td>
<td>150' / 150'</td>
</tr>
<tr>
<td>Secondary Collector</td>
<td>60' / 80'</td>
<td>100' / 100'</td>
</tr>
<tr>
<td>Local</td>
<td>45' / 60'</td>
<td>100' / 100'</td>
</tr>
<tr>
<td>Minor Local</td>
<td>45' / 60'</td>
<td>75' / 75'</td>
</tr>
<tr>
<td>Access</td>
<td>None / 30'</td>
<td>None / 75'</td>
</tr>
</tbody>
</table>

* Minimum separation of residential lot access points may be averaged along a single block face.

** Separation between access points is measured from centerlines; separation from intersecting streets is measured from the center line of the access and the street edge of the intersecting street.

1. Where applicable, driveways shall be aligned directly across from other driveways or street intersections on the opposite side of the street.
2. Where minimum separation distances limit individual lot access points, shared access easements, or rear and mid-block Access Streets or easements shall be used.
3. Where conditions of topography, traffic flow, traffic and pedestrian safety, community appearance or other factors warrant in the judgment of the Planning and Zoning Commission, the Planning and Zoning Commission may establish more restrictive requirements for the number, spacing or location of driveways on the affected lots. Such requirements shall be identified at preliminary plat review and they shall be recorded as vehicular non-access easements and/or in appropriate plat notes on the final plat.
4. Where due to pre-existing lot and street configurations application of these standards would lead to ineffective and inefficient lot access, the City Manager may grant exceptions to the access requirements of Table 3-16 provided:
   a. All alternative access strategies have been exhausted;
   b. The street design and transportation network will not be adversely affected by the exception, and the propose access is generally consistent with the Specific Intent of this Section;
   c. The proposed access is designed to provide the least possible impact on the public streetscape and transportation network; and
   d. The proposed access has been reviewed recommended by the Public Works Director and Planning and Community Development Director.

C. **Pedestrian Crossings.** Where vehicular lot access crosses pedestrian facilities, including any mid-block Access Streets or easements, the continuation of the pedestrian connection shall be maintained at the same...
grade and with the same material as other parts of the sidewalk. Where high-speed or frequent vehicle access is expected the Planning and Zoning Commission may allow vehicle lot access at street grade, provided design details for pedestrian crossings at intersections in Section 3.03.007.C shall be used.

3.04.005 Easements.

A. **Dedication Required.** Where necessary to adequately serve a subdivision with public infrastructure, the subdivider shall dedicate or grant easements for poles, wires, conduits, drainage channels, storm sewers, sanitary sewers, water lines, gas lines, and other infrastructure. Easements shall be at least 10 feet wide on each side of Local and Collector streets. On Arterial streets easements shall be 10’ on one side (gas and water) and 20’ on the other side (electric/cable/telephone) (See Section 3.02.003.C.). Where an easement contains multiple utilities or special circumstances require the City Manager may require wider easements.

B. **Location of Easements.** The easements required under this Section shall be continuous for the entire length of the block. These easements shall parallel as closely as possible the street line frontage of the block. Easements may not straddle but may cross property lines, and they may cross lots other than along lot boundary lines, if in the opinion of the Planning and Zoning Commission such locations are needed. Easements may be located in the right-of-way or in alleys, subject to the appropriate streetscape design standards in Section 3.02.003.C.

C. **Gates Required in Fences.** All fences crossing an easement shall have double swing gates to allow ready access to the easement and provide a minimum open width of 12 feet.

D. **Easements Part of Lot Area.** The easements required under this Section shall be considered a part of the lot area for purposes of the minimum lot size requirements of this ordinance and the Zoning Ordinance.

E. **Overhang Easements.** Where overhead electric utilities are located in easements along common property lines, an overhead easement at least six feet wide may be required by the City Manager on the opposing side of the 15-foot easement strip. In all alleys, overhang easements at least six feet wide must be provided on each side of the alley for electric and telephone lines.

F. **Additional Easements.** Additional easement areas shall be provided to include all public infrastructure appurtenances.
SECTION 05. PUBLIC AND COMMUNITY FACILITIES

3.05.001 Specific Intent.

It is the Specific Intent of this Section to:

A. Anticipate and evaluate the incremental and long-term impact of development on broader public and community facility needs.

B. Identify opportunities to integrate plans for public and community facilities into the planning and design of proposed land divisions.

C. Consider the location of public and community facilities with initial planning considerations for streets, open spaces, blocks, and lots, so that needed facilities are located conveniently in neighborhoods and districts and serve as focal points for the community.

D. Provide the opportunity to negotiate a fair and equitable price for land needed to develop public or community facilities, or alternatively to provide an incentive for land owners to dedicate land for needed facilities where the lack of facilities may otherwise constrain potential future development.

E. Ensure that the most appropriate locations of public and community facilities are identified and considered prior to the premature commitment of these areas to conflicting development patterns.

3.05.002 Dedication of Public Sites.

The Planning and Zoning Commission or Council may request the dedication of land to the City or other government entity with jurisdiction over public and community facilities, for parks, playgrounds, open space, public safety facilities, cultural facilities, or school sites wherever parcels proposed for division include locations identified for such facilities in an official master plan for the jurisdiction. The Planning and Zoning Commission or council shall require that such dedication be in conformance with the Master Plan, or any similar official plan for parks, recreation, public safety, community, or education facilities.

3.05.003 Reservation of Land.

Where the land area shown on such plan for such public sites is not dedicated and serves an impact beyond that caused by the proposed development, the Planning and Zoning Commission or Council may require that the land be reserved for a period of one year to permit such land to be acquired by the appropriate public body.

3.05.004 Credits.

Any land dedicated to the public entity for future public or community facilities for the purposes identified in subsection 3.05.002 may be directly credited towards the applicants open space requirements of Article 3, Section 3.03. In order to receive credit, the site must be acceptable to the public entity.
ARTICLE 4. MASTER PLANNED DEVELOPMENTS/SUBDIVISIONS

SECTION 01. PLANNED UNIT DEVELOPMENTS

4.01.001 Additional Requirements for Preliminary Subdivision Plat.

In addition to the requirements for a preliminary subdivision plat which apply to a conventional subdivision, the preliminary plat of a planned unit development must contain or be accompanied by the following.

A. Clear delineation of the areas which are to be reserved for off-street parking and loading, and the ratios of parking spaces to square feet of floor area for each lot to be developed in a non-residential use, and a clear delineation of the areas which are to be reserved for residential off-street parking and the number of parking spaces to be provided for each dwelling unit.

B. The location, type and height of all proposed fences, screening walls, and other screening devices intended to buffer one land use from another or to buffer the PUD subdivision from adjacent properties.

C. The location and character of all improvements to be made in community open space areas, including a general landscape plan for each area.

D. A draft of the legal instrument establishing the community association, as required by the City of Boerne Zoning Ordinance, Article 5 Zoning Use Regulations, Section 18. Planned Unit Development, Subsection 5. Common Areas and Community Association.

E. A draft multi-year budget for the community association, as required by the City of Boerne Zoning Ordinance, Article 5 Zoning Use Regulations, Section 18. Planned Unit Development, Subsection 5. Common Areas and Community Association.

4.01.002 Additional Requirements for Final Subdivision Plat.

In addition to the requirements for a final subdivision plat which apply to a conventional subdivision, the final plat of a planned unit development subdivision must contain or be accompanied by the following.

A. Clear delineation of the areas which are to be reserved for off-street parking and loading, and the ratios of parking spaces to square feet of floor area for each lot to be developed in a non-residential use, and a clear delineation of the areas which are to be reserved for residential off-street parking and the number of parking spaces to be provided for each dwelling unit.

B. The location, type and height of all proposed fences, screening walls, and other screening devices intended to buffer one land use from another or to buffer the PUD subdivision from adjacent properties.

C. The location and character of all improvements to be made in community open space areas, including a general landscape plan for each area.

D. A legal instrument establishing the community association, approved by the City Attorney, as required by the City of Boerne Zoning Ordinance, Article 5 Zoning Use Regulations, Section 18. Planned Unit Development, Subsection 005. Common Areas and Community Association.

E. A multi-year budget for the community association, approved by the City Manager, as required by the City of Boerne Zoning Ordinance, Article 5 Zoning Use Regulations, Section 18. Planned Unit Development, Subsection 005. Common Areas and Community Association.

F. A bond or other financial guarantee of the full funding of the community association’s reserve fund for repairs.
and maintenance of the common areas and facilities, as required by the City of Boerne Zoning Ordinance, Article 5 Zoning Use Regulations, Section 18. Planned Unit Development, Subsection 005. Common Areas and Community Association.

G. A maintenance agreement between the community association and the City for repair and maintenance of the common areas and facilities which are to dedicated as community open space, as required by the City of Boerne Zoning Ordinance, Article 5 Zoning Use Regulations, Section 18. Planned Unit Development, Subsection 005. Common Areas and Community Association.

SECTION 02. RURAL CLUSTER SUBDIVISIONS.

4.02.001 Specific Intent.

It is the Specific Intent of this section to:

A. Provide context-based design standards particularly appropriate to preserving the rural character of the Hill Country, appropriate to this specific development pattern, in addition to the Planning and Community Design standards for all subdivisions in Article 3.

B. Preserve in perpetuity unique or sensitive natural resources such as groundwater, floodplains, wetlands, streams, steep slopes, woodlands, wildlife habitat or important historic and archaeological sites.

C. Permit clustering of houses and structures on less environmentally sensitive areas of a site, and to reduce the amount of infrastructure, including paved surfaces and utility easements, necessary for residential development.

D. Reduce erosion and sedimentation by minimizing land disturbance and removal of vegetation in residential development.

E. Promote interconnected greenways and corridors throughout the community and with adjacent jurisdictions.

F. To conserve scenic views and reduce perceived density by maximizing contiguous open areas and clustering houses in more compact settlement areas.

4.02.002 Applicability.

A Rural Cluster Subdivision is an alternative to a conventional residential subdivision. These standards apply in addition to or more specifically than the Planning and Community Design Standards in Article 3 to better preserve rural character. It is applicable to Low-density Residential or Rural Residential areas designated in the Boerne Master Plan. In order to ensure the minimum acceptable contiguous area and maximum impact of conserved open space, the Rural Cluster Subdivision standards shall only apply to the minimum parcel size of 25 acres, except parcels that preserve a minimum of 3 acres as Conservation Area and that are the extension of an existing Rural Cluster subdivision are permitted subject to all other standards in this section.

4.02.003 Transportation Network and Street Designs.

A Rural Cluster subdivision shall use the Organic Network specified in Article 3, Section 3.02, except that developed portions of the residential cluster may use a modified grid to more effectively and efficiently serve the housing cluster. The streets and lot layouts shall be designed and located in a manner that maintains and preserves the natural topography, involves the least practical amount of grading, shortens road lengths and lot frontages, and minimizes any other disturbances of land and natural features. All streets shall use the Rural Design Type specified in Article 3, Section 3.02.

4.02.004 Blocks and Lots

A. Block Sizes and Arrangement. There are no maximum block sizes, except that no housing cluster shall contain more than 20 lots or dwelling units without being separated from other housing clusters by at least 200 feet of Conservation Areas meeting the standards in sub-section 4.02.005 However, there shall be at least one connection to an external arterial or collector street, or a newly proposed arterial or collector street for each 50 dwelling units.
ARTICLE 4. MASTER PLANNED SUBDIVISIONS

SECTION 02. RURAL CLUSTER SUBDIVISIONS

B. Lot Size and Arrangement. There shall be no minimum lot size for Rural Cluster Subdivisions. Rural Cluster Subdivisions shall be allowed to vary the lot sizes on the developed parcel in order to fit the same number of units on the developed parcel as would have been allowed on the original parcel under the conventional subdivision standards, or the zoning for the parcel where applicable. The development yield of a parcel shall be based on a housing density determination in sub-section 4.02.004.C.

Lots shall be configured so that buildable portions of each lot are located in the area that causes the least disturbance during construction activity. In addition to the required Natural Areas in sub-section 4.02.005., the largest amount of area possible on each lot shall be kept in or restored to its natural vegetative state.

C. Lot Yield Determination. The maximum number of lots is determined by dividing the area of the tract of land by the minimum lot size specified in the underlying zoning or according to the Planning and Community Design Standards in Article 3 in un-zoned areas. In making this calculation, the following shall not be included in the total area of the parcel:
1. land necessary for right-of-way according to an estimated Transportation Network Plan
2. slopes over 25% of at least 5000 square feet contiguous area;
3. the 100-year floodplain;
4. bodies of open water over 5000 square feet contiguous area; and
5. wetlands that meet the definition of the Army Corps of Engineers pursuant to the Clean Water Act.

D. Minimum Conservation Area. The Rural Cluster Subdivision requires that at least 30% of the site be preserved according to the standards in sub-section 4.02.005. The lots permitted by sub-section 4.02.004.C. may then be arranged in any manner that best meets the intent and standards of this Section. Open spaces such as right-of-way, landscape areas, or active recreation areas developed as amenities for the neighborhood shall not count towards the Conservation Area requirements of this Section.

E. Lot Yield Bonus. Rural Cluster Subdivisions shall be allowed additional lots beyond the lot yield of the original parcel based upon the percent of the original parcel that is preserved from development according to Table 4-1:
**TABLE 4-1: LOT YIELD BONUS**

<table>
<thead>
<tr>
<th>AMOUNT OF CONSERVATION AREA</th>
<th>61% PLUS</th>
<th>60–51%</th>
<th>50–41 %</th>
<th>40–30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOT YIELD BONUS *</td>
<td>70%</td>
<td>40%</td>
<td>25%</td>
<td>0%</td>
</tr>
</tbody>
</table>

* Per-cent more Lots permitted beyond the Lot Yield determination in sub-section 4.02.004.C.

Regardless of the number of lots permitted by this section, all developments proposing a Rural Cluster subdivision in the City of Boerne ETJ shall meet any applicable minimum well spacing requirements of the Cow Creek Underground Water District, and if necessary the TECQ standards for onsite sewage disposal systems.

**4.02.005  Open Space System.**

A.  **Natural Area Criteria.** All Rural Cluster Subdivisions shall have a minimum of 30% of the parcel as Natural Areas, meeting following criteria:

1. All portions of the Natural Area shall have significant natural features or habitats worthy of preservation for environmental, aesthetic and recreation benefits. Areas of the development site that best meet these criteria shall be preserved from development and take priority in determining the best layout for the site.

2. No more than 50% of the Conservation Area shall be land that is undevelopable due to natural features or other physical impracticalities, such as water bodies, steep grades, or wetlands, or due to other local, state, or federal laws or regulations.

3. The Natural Area shall be contiguous, based upon consistent and substantial linkages of natural systems, including links to areas on adjacent sites. While a Rural Cluster Subdivision may involve more than one preserved area, no single contiguous Natural Area shall be less than 5 acres or 15% of the site, whichever is greater.

4. Thin bands of preserved areas shall be avoided to prevent erosion or degradation of the Natural Area through extensive “edge conditions.” Areas less than 100-feet wide shall be excluded from the Natural Area calculations.

5. All lots shall be within 500 feet of the Natural Area as measured by the most direct pedestrian connection or shall directly abut the Natural Area.

6. The Natural Area should be usable and accessible by residents, however trails or other accessories shall be designed and located to avoid fragmenting Natural Areas and to cause the least possible impact on Natural Areas.

7. The Natural Area may be designated for assignment and management by a common ownership association of current and future lot owners or dedicated to the County subject to the County acceptance in its sole discretion. The County may approve the assignment of the preserved area to another public or non-profit entity in its sole discretion.

B.  **Natural Area Guidelines.** The following are considered priorities for Natural Areas and should be included within the Natural Area if present on the site, unless the Applicant demonstrates that this provision would constitute an unusual hardship and be counter to the Intent and Standards of this Section:

1. The 100-year floodplain;

2. Riparian zones of at least 100 feet wide along all perennial and intermittent streams;

3. Slopes above 25% of at least 5000 square feet contiguous area;

4. Wetlands that meet the definition used by the Army Corps of Engineers pursuant to the Clean Water Act;

5. Populations of endangered or threatened species, or habitat for such species;

6. Historic or archaeological sites that are either protected or worthy of protection according to applicable guidelines;

7. Other significant natural features and scenic view sheds such as ridge lines, valleys, peaks and rock outcroppings or other notable topographic features, particularly those that can be seen from public roads.

8. Existing healthy, native forests of at least one acre contiguous area;

9. Any habitat areas containing healthy specimen or heritage trees.

C.  **Legal Restrictions.**
1. **Permanent Conservation.** Designation, dedication of other legal restrictions on future development of the Natural Area in perpetuity shall be filed with the plat for any proposed Rural Cluster Subdivision.

2. **Management Plan.** A detailed ownership and management plan for the Natural Area shall be filed with the plat for any proposed Rural Cluster Subdivision. The plan shall:
   a. identify the owner, entity responsible for maintenance, and long-term funding strategies such as homeowners’ fees or assessments.
   b. demonstrate the financial feasibility of the ownership and maintenance program.
   c. Specify guidelines for how the maintenance of the Conservation Area, and any facilities eligible for location in the Conservation Area will occur.
   d. Include cost estimates for maintenance, including staffing, operation, or insurance costs, if any.
   e. Identify a board and procedures for oversight of and enforcement of the Management Plan.

3. **Ownership and Management.** Options for ownership and management of preserved area include:
   a. Dedication to the City or other public entity subject to acceptance by and at the sole discretion of the City or other public entity.
   b. Creation of or dedication to a non-profit entity capable of carrying out the ownership and management plan.
   c. Creation of a Homeowners and/or Leaseholders Association capable of carrying out the ownership and management plan.
   d. Establishment of an endowment where the principal generates sufficient annual interest to cover the yearly costs of ownership and maintenance of the preserved area.
   e. Dedication to a private or not-for-profit entity such as a land trust or similar conservation-oriented organization with the legal authority and financial capacity to accept such dedications.
   f. Dedication of a conservation easement on the Conservation Area to any of the above entities with a right of enforcement in favor of the City of Boerne stated in the easement.

   Any management organization shall be bona fide and in perpetual existence and the conveyance instrument shall contain an appropriate provision for retransfer in the event the organization becomes unable to carry out its function.

4. **Right of Enforcement.** In the event the party responsible for maintenance of the Natural Area fails to maintain all or any portion in reasonable order and condition according to the Management Plan, the City of Boerne may assume responsibility for its maintenance and may enter the premises and take corrective action, including provision of extended maintenance. The cost of such maintenance may be charged to the Management Entity, or the individual property owners according to their pro-rata share based on the Management Plan. Costs may include administrative costs in taking such actions as well as penalties as provided under these regulations. Such costs shall become a lien on all subdivision properties.

5. **City Review.** The legal restrictions and ownership and management plan shall be subject to review and approval by the City Attorney.
ARTICLE 5. STREET SPECIFICATIONS AND CONSTRUCTION STANDARDS

SECTION 01. GENERAL LAYOUT AND ALIGNMENT OF STREETS

Adequate streets shall be provided by the subdivider, and the arrangement, character, extent, width, grade and location of each shall be as specified in Article 3, Planning and Community Design Standards.

Private streets are prohibited.

SECTION 02. REQUIRED STREET IMPROVEMENTS

5.02.001 General Specifications.

The subdivider shall, at his/her sole cost and expense, provide all necessary street grading, pavement, curbing, gutters, sidewalks and storm sewer drains required to service the subdivision, including the perimeter streets contiguous to the subdivision. All street improvements shall meet the Typical street cross-sections specified in Article 3, Planning and Community Design Standards.

SECTION 03. STREET GEOMETRY STANDARDS

5.03.001 General Requirements.

The design of all streets in a subdivision shall conform to the standards of street geometry in the following table.
TABLE 5-1. STREET GEOMETRY STANDARDS

<table>
<thead>
<tr>
<th>Street Functional Classification</th>
<th>Pavement Crown or Cross Slope</th>
<th>Minimum Grade</th>
<th>Maximum Grade</th>
<th>Centerline Minimum Horizontal Curve Radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Thoroughfare</td>
<td>Min. 2%</td>
<td>0.5%</td>
<td>6%</td>
<td>1,200'</td>
</tr>
<tr>
<td>Arterial</td>
<td>Min. 6&quot; or 2%</td>
<td>0.5%</td>
<td>6%</td>
<td>600'</td>
</tr>
<tr>
<td>Collector</td>
<td>6&quot; or 2%</td>
<td>0.5%</td>
<td>8%</td>
<td>400'</td>
</tr>
<tr>
<td>Local</td>
<td>5° or 2%</td>
<td>0.5%</td>
<td>10%</td>
<td>150'</td>
</tr>
<tr>
<td>Local – Neighborhood (L-NH) or Local – Rural (L-RR)</td>
<td>4&quot;</td>
<td>0.5%</td>
<td>10%</td>
<td>100'</td>
</tr>
<tr>
<td>Residential Alley</td>
<td>7&quot;</td>
<td>0.5%</td>
<td>10%</td>
<td>50’</td>
</tr>
<tr>
<td>Commercial Alley</td>
<td>7&quot;</td>
<td>0.5%</td>
<td>10%</td>
<td>50’</td>
</tr>
</tbody>
</table>

5.03.002 Exceptions to Minimum Radius Requirement.

Exceptions to the minimum centerline horizontal radius requirement in this Section may be granted only by the City Council upon appeal from the Planning and Zoning Commission at preliminary plat approval.

5.03.003 Reverse Curves.

Reverse curves shall be separated by a minimum tangent of 100 feet, except that the Planning and Zoning Commission may waive this requirement for Local streets where the Commission finds that an exception is justified by the topography of the site and by the sight distance, right-of-way width, setbacks and other features of the subdivision design.

5.03.004 Vertical Curvature.

A gradual transition from one roadway grade to another shall be accomplished by means of a vertical parallel curve connecting two intersecting tangents. The minimum length of vertical curve shall be computed from the following formula and table:

\[ L = KA \]

Where: L = the length of vertical curve in feet

K = a constant related to sight distance and geometry of a parabolic curve (see Table 5-2)

A = the algebraic difference in grades in percent.

<table>
<thead>
<tr>
<th>Street Classification</th>
<th>“K” Crest Curves</th>
<th>“K” Sag Curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Thoroughfare</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>Arterial</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>Collector</td>
<td>55</td>
<td>55</td>
</tr>
</tbody>
</table>

SECTION 04. STANDARDS FOR PAVEMENT DESIGNS

Pavements shall be designed using site specific soil and geologic design considerations to assure reasonable durability and economy of maintenance. Proper documentation of the engineering and design techniques, and performance and maintenance data must be shown. Approval of these designs shall be subject to the review of the City Manager.
SECTION 05. MINIMUM PAVEMENT DESIGN STANDARDS

The pavement of all streets and alleys shall meet the minimum specifications in the following table.

<table>
<thead>
<tr>
<th>Table 5-3: Minimum Pavement Design Standards (over compacted subgrade)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street Classification</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>Regional Thoroughfare</td>
</tr>
<tr>
<td>Arterial</td>
</tr>
<tr>
<td>Collector</td>
</tr>
<tr>
<td>Local</td>
</tr>
<tr>
<td>Residential Alley</td>
</tr>
<tr>
<td>Commercial Alley</td>
</tr>
<tr>
<td>Bikeway / Path</td>
</tr>
</tbody>
</table>

5.05.001 Soils Investigation.

The subdivider shall, at his/her own expense, cause to be made a soils investigation by a qualified and independent geotechnical engineer licensed to practice in the State of Texas. The field investigation shall include test borings within the rights-of-way of all proposed streets. The number and locations of such borings shall be subject to the approval of the City Manager. Atterberg limits and moisture contents shall be determined for all significant boring samples. The method used for these determinations shall be the same as that used by the Texas Department of Transportation using their latest Manual of Testing Procedures, 100-E Series test methods. The results of the soils investigation shall be presented to the subdivider and to the City Manager in written report form. Included as a part of the report shall be a graphical or tabular presentation of the boring data giving Atterberg limits and moisture contents, a soil description of the layers of different soils encountered in the profile of the hole, their limits in relation to a fixed surface datum, and such other information as needed to complete the soils investigation for pavement design purposes. Minimum depth of soil profile boring holes shall be 10 feet unless solid rock formations are encountered sooner.

5.05.002 Pavement Design Loads.

Pavement design shall be based on the Texas Department of Transportation tri-axial design standards in the following table.

<table>
<thead>
<tr>
<th>Table 5-4: Minimum Pavement Load Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street Classification</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>Regional Thoroughfare</td>
</tr>
<tr>
<td>Arterial</td>
</tr>
<tr>
<td>Collector</td>
</tr>
<tr>
<td>Local</td>
</tr>
</tbody>
</table>
A written report containing pavement design data and recommendations based on the soils investigation shall be prepared at the subdivider's expense by a qualified geotechnical engineer licensed to practice in the State of Texas, and shall be presented to the subdivider and to the City Manager. The report shall state the load criteria and the soil classifications used. When approved by the City Manager, the geotechnical engineer preparing the report may use the tri-axial classification soils data given in Texas Department of Transportation report number 3-05-71-035, entitled “Tri-axial Classification of the Surface Soils of Texas, as Grouped by Soil Conservation Service Series.”

When using the tri-axial data, the report shall so state. The pavement design shall be subject to the approval of the City Manager and shall be shown on the street construction plans as approved. Where the plasticity index of the subgrade soil on which the street is to be built is in excess of 20, the pavement design shall include sub grade stabilization unless approved otherwise by the City Manager.

When subgrade soils are stabilized the minimum depth of stabilization shall be six inches unless otherwise approved by the City Manager. In the stabilization of swelling clay soils, the stabilizer used shall be hydrated lime. The lime shall be applied to the subgrade soil in slurry form unless otherwise approved by the City Manager. Base material and the stabilized layer, if used, shall extend at least 18 inches behind of the back of the curb.

SECTION 06. CURBS

All streets shall have concrete curbs extending seven and one-half inches above the pavement surface and shall be reinforced with 1- #4 continuous longitudinal reinforcing bar (minimum) centered in the curb section. The minimum total curb height shall be 9 inches. Compacted backfill shall be placed on all of the rights-of-way behind curbs to a minimum elevation equal to the top of the curb. Normal curb exposure shall be required where utility easements intersect streets. Continuously reinforced flush curbs (minimum total depth of 9 inches) may be provided at driveway areas. Flush curbs are required on streets using the Rural Design Type in Article 3.

SECTION 07. SIDEWALKS - TIMING

Construction of the sidewalks on each street is not necessary until construction begins on the first building on that street. However, to avoid undue costs and damage to sidewalks, the subdivider, developer or builder may construct the sidewalk on each lot as it is developed. In no case will a Certificate of Occupancy be issued for a building until the required sidewalks have been constructed. In areas, sites, or other portions of streets where no building will be constructed and sidewalks are required by these regulations, the sidewalks shall be constructed with other required street infrastructure. Sidewalks, including portions within any driveway aprons, shall meet City and TDLR standards.

SECTION 08. DRIVEWAYS

Driveway aprons in the public right-of-way shall be constructed of concrete and according to City and TDLR design standards.

SECTION 09. TRAFFIC CONTROL SIGNS AND STREET SIGNS

All traffic control signs shall be provided and installed by the subdivider and shall conform with the 2006 Texas Manual on Uniform Traffic Control Devices. All street signs shall be provided and installed by the subdivider and meet the City's standard specifications and sign patterns.

SECTION 10. STREET LIGHTING

Street lighting according to the city design standards shall be provided by the subdivider at all intersections, street alignment changes greater than 45 degrees, and at the end of any cul-de-sac or other disconnected street permitted by Article 3.
ARTICLE 6. DRAINAGE AND FLOOD HAZARDS

SECTION 01. GENERAL REQUIREMENTS

6.01.001 Specific Intent.

It is the Specific Intent of this Section to:
A. Preserve and protect sensitive natural areas that serve an ecological function in minimizing flood damage.
B. Create a priority for maintaining natural drainage systems wherever possible, and emphasize the design and arrangement of storm water facilities as community amenities, appropriate to the planning context.
C. Minimize the amount of impervious surfaces directly connected to storm water systems, and reduce the amount of flow, speed of flow and level of contaminants entering both natural and manmade storm water systems.
D. Allow flexibility in site designs and cooperation among adjacent development sites, to allow the most efficient development of sites and encourage individual designs that support a more regional or watershed-based storm water solutions.
E. Integrate high-performance flood protection and storm water systems into the open space system.
F. Encourage creative design solutions that allow areas to perform multiple functions in terms of storm water management, flood protection, open space and recreation, landscape and urban design, or other site development support functions.

6.01.002 Facilities Required.

The subdivider shall provide an adequate storm drainage system to protect each lot throughout the subdivision from flooding. These drainage facilities may consist of a combination of natural features, swales, watercourse improvements, bridges and culverts, enclosed storm sewers and other man-made improvements to carry off stormwater within the subdivision. The drainage system shall use detention ponds, retention ponds and siltation ponds, individually or in concert, to control runoff and to protect downstream properties from any increase in flooding originating from the subdivision. The system shall be integrated with the overall drainage system of the city, and the design of the system must be approved by the City Manager in accordance with the requirements of this ordinance.

6.01.003 Stormwater Management.

Stormwater management facilities shall be provided prior to site construction or clearing, where design is required at the time of platting.

A. Stormwater management shall be designed and constructed to prevent adverse conditions from arising on property adjoining and downstream of the subdivision site. Adverse conditions include increases in peak flows, water surface elevations and flow velocity. The drainage report shall show that mitigation of the impacts of development on the drainage system will be provided as part of the development. Mitigation may include detention, retention, infiltration, channel improvements, and other means acceptable to the City Manager. Stormwater Management facilities shall be designed to reduce post-development peak flow rates of discharge to pre-development rates for the 2, 5, 10, 25, 50 and 100 year storm events at all points of discharge. The drainage report shall also include an evaluation of downstream conditions.

B. Waiver of Stormwater Management requirements in certain circumstances.
The Planning and Zoning Commission, after considering a report from City staff, may waive the Stormwater Management requirements as outlined in Section C.1, Stormwater Management, of Section 1, Article 6, of the City of Boerne Subdivision Ordinance, and approve a subdivision of land that is located within the city limits as depicted on the 1983 Flood Insurance Rate Map, Community Panel No. 480418-0002, effective date of September 30, 1983, and which is seven (7) residential lots or less or fewer than 1.5 acres.

6.01.004 Construction Sequencing and Erosion Controls.

The final construction plans required by Article 8 shall be accompanied by a comprehensive and detailed report and plan for the control of erosion and sedimentation. The report shall include a construction sequencing plan which details the proposed placement, maintenance and removal of temporary erosion controls, the slope stabilization techniques which are to be employed and the restoration measures, including vegetative types, which are to be employed as part of the process of subdivision development. The plan shall list and show the location of temporary erosion controls, show the physical details of the controls, and include a construction sequencing list which will govern the timing of the use of various controls in relation to distinct steps in subdivision construction.

6.01.005 Land Clearing Restrictions.

No clear-cutting or rough-cutting of land shall be permitted unless approved by a construction sequencing and erosion control plan provided in sub-section D., except for the limited clearing and rough-cutting which is necessary for soil testing and surveying as required by this ordinance. No other clearing or rough-cutting shall be permitted except as necessary for construction of temporary erosion and sedimentation controls until these controls are in place and approved by the City Manager. Areas to be cleared for temporary storage of spoil or construction equipment, or for the permanent disposal of fill material or spoils, shall be shown on preliminary plat. The natural vegetation within any water supply protection zone which is required by Section 6 B of this Article shall not be disturbed except for purposes consistent with the ultimate use of the land in that zone.

6.01.006 Enforcement of Erosion Controls and Clearing Restrictions.

If a subdivider does not comply fully with an approved erosion control and construction sequencing plan, or violates the restrictions on land clearance in the preceding subsection, the City Manager shall notify the subdivider in writing that the City may correct the violation and revegetate the disturbed area at the subdivider's expense unless, within 30 days after the date of the notice, the subdivider complies, corrects the violation, provides the required erosion and sedimentation controls and provides continuing maintenance thereof acceptable to the City Manager.

SECTION 02. REQUIRED DRAINAGE STUDY

6.02.001 Drainage Study Contents.

The subdivider shall submit a drainage study with the final construction plans for residential subdivisions, and wherever stormwater flow management facilities shall be regional and dedicated to the public. The required drainage studies in commercial subdivisions where facilities are site-specific and privately maintained may be submitted with building permit construction documents for each lot. The drainage study shall provide the following information, for both existing and fully developed conditions, for the entire watershed drainage area upstream of the lowest point(s) in the subdivision.

A. The entire watershed drainage area(s) depicted on a 7.5 minute series U.S.G.S. map.
B. The drainage area(s) within the subdivision, depicted on a topographic map with two-foot contour intervals.
C. Composite runoff factors.
D. Times of concentration.
E. Related rainfall intensity factors.
F. 25- and 100-year flood flow quantities with the 25- and 100-year flood plain limits for the existing and fully developed watershed shown on the preliminary plat.
G. Preliminary street grades sufficient to determine high points, low points, and direction of runoff flows.
H. Proposed locations of inlets, storm sewers and culverts.

I. Proposed routing of drainage ways.

J. All proposed drainage easements, including width of easement and configuration of channel.

K. The calculations to determine the volume of proposed detention/retention/sedimentation ponds.

The above information shall be supplemented with narrative text describing the watershed and the subdivision, including their general soil conditions, downstream channel conditions, all weather access, and the presence of special flood hazard areas within the subdivision. The study shall be prepared by a professional engineer registered in the State of Texas. The drainage study shall be submitted along with the preliminary plat. The City Manager shall review the submission, verify that all ordinance requirements have been met, and forward his/her recommendations to the Planning and Zoning Commission.

6.02.002 Downstream Drainage Assessment.

A downstream drainage assessment shall extend from the outfall of the subdivision to a point downstream, determined by one of two methods:

- **Zone of Influence** – Point downstream where the discharge from a proposed development no longer has a significant impact upon the receiving stream or storm drainage system

- **Adequate Outfall** – Location of acceptable outfall that does not create adverse flooding or erosion conditions downstream

These methods recognize the fact that a structural control providing detention has a “zone of influence” downstream where its effectiveness can be felt. Beyond this zone of influence the storm water effects of a structural control become relatively small and insignificant compared to the runoff from the total drainage area at that point. Based on studies and master planning results for a large number of sites, a general rule of thumb is that the zone of influence can be considered to be the point where the drainage area controlled by the detention or storage facility comprises 10% of the total drainage area. This is known as the 10% Rule. As an example, if a structural control drains 10 acres, the zone of influence ends at the point where the total drainage area is 100 acres or greater.

The downstream assessment shall include the following steps:

1. Determine the outfall location of the site and the pre- and post-development site conditions.

2. Using a topographic map, determine a preliminary lower limit of the zone of influence using the 10% Rule.

3. Using a hydrologic model determine the pre-development peak flows and velocities at each junction beginning at the development outfall and ending at the next junction beyond the preliminary lower limit of the zone of influence (10% point). Model undeveloped off-site areas as “fully built-out” for both the pre- and post-development analyses. Use the City of Boerne Master Plan to determine future land uses for the model. Evaluate discharges and velocities for the 2-year, 5-year, 10-year, 25-year and 100-year storms. Use storm durations equal to 24-hours and two times the time of concentration calculated for the outfall of the subdivision.

4. Change the land use on the subdivision site to post-development conditions and rerun the model.

5. Compare the pre- and post-development peak discharges and velocities at the downstream end of the model. If the post-developed flows are higher than the pre-developed flows for the same frequency event, or the post-developed velocities are higher than the allowable velocity of the downstream receiving system, extend the model downstream. Repeat steps 3 and 4 until the post-development flows are less than the pre-developed flows, and the post-developed velocities are below the allowable velocity. Allowable velocities are given in Table 6-6 of this article.

6. Add proposed storm water management facilities to the model designed so that the model shows that adverse effects are mitigated. Adverse effects can be shown to be mitigated if flooding is not increased, velocities do not exceed the greater of Table 6-6 allowable maximum velocities or pre-
development velocities, and that the peak flow at the downstream limit of the zone of influence is not increased.

SECTION 03. DRAINAGE EASEMENTS

6.03.001 General Requirements.

Natural waterways and channels should be used wherever practical to carry runoff. Any modifications to existing waterways and channels must be approved by the City Manager. Where a subdivision is traversed by a watercourse, drainageway, natural channel or stream, an easement or right-of-way shall be provided conforming substantially to the 100-year floodway or channel limits of such watercourse, plus additional width to accommodate future needs.

6.03.002 Enclosed Systems.

Storm drainage easements shall be provided for existing and proposed enclosed drainage systems. Easements shall be centered on the systems. The easement width shall be based on the following formula:

\[ W = 5' + 2H + D \]

Where:
- \( W \) is the width of the easement
- \( H \) is the depth of soil cover over the pipe or box structure
- \( D \) is the diameter or width of pipe or box structure

6.03.003 Open Channels.

Storm drainage easements along proposed or existing open channels shall provide sufficient width for the required channel and such additional width as may be required to provide ingress and egress of maintenance equipment; to provide clearance from fences and space for utility poles; to allow maintenance of the channel bank; and to provide adequate slopes necessary along the bank.

The minimum easement width shall be the width of the channel plus 15 feet on one side (20 feet with utilities) and 2 feet on the opposite side unless approved by the City manager. The channel top width is determined by the locations where the channel side slopes intersect with adjacent grade with cross slopes less than 10 percent.

6.03.004 Overflow Drainage.

Storm drainage easements shall be provided for emergency overflow drainage ways of sufficient width to contain within the easement storm water resulting from a 100-year frequency storm less the amount of storm water carried in an enclosed system.

SECTION 04. DRAINAGE SYSTEM DESIGN STANDARDS

6.04.001 General Requirements.

Drainage facilities shall be provided and constructed as specified by the City Manager in accordance with the City Drainage Design Standards and Construction Specifications.


The method of computing runoff shall be the Rational Method for watersheds of 200 acres or less in area and with time of concentration of 60 minutes or less. For watersheds with an area greater than 200 acres or time of concentration greater than 60 minutes, a computer model acceptable to the City Manager shall be prepared. In all cases, wet antecedent conditions shall be assumed.

A. **Rational Method.** The following parameters shall be used for runoff calculations by the Rational Method.

1. The Rational Method shall use the following formula:

\[ Q = CCfIA \]
Where:
\( Q \) = The flow at the discharge of the watershed, cubic feet per second (cfs).
\( C \) = The runoff coefficient, dimensionless, from Table 6-1 or Table 6-2
\( C_f \) = Runoff coefficient adjustment factor from Table 6-3.
\( I \) = Rainfall intensity, inches per hour, from Figure 6-1.
\( A \) = Watershed area, acres.

2. Runoff coefficients may be calculated based on specific land use established by the Zoning Districts according to Table 6-1 below, or

3. A composite runoff coefficient based on the percentages of different types of surfaces in the drainage area according to Table 6-2 below.

4. Runoff coefficients given in Table 6-1 and Table 6-2 are valid for storms up to and including the 10-year storm. Use the adjustment factor in Table 6-3 for other storm frequencies.

### Table 6-1: Rational Method Runoff Coefficients by Zoning District

<table>
<thead>
<tr>
<th>Zoning District</th>
<th>Average Impervious Cover (%)</th>
<th>Slope Up to 2%</th>
<th>Over 2% &amp; Up to 7%</th>
<th>Over 7%</th>
</tr>
</thead>
<tbody>
<tr>
<td>RA Single Family Residential-Agricultural</td>
<td>10</td>
<td>0.31</td>
<td>0.40</td>
<td>0.44</td>
</tr>
<tr>
<td>RL Single Family Residential-Large Lot</td>
<td>20</td>
<td>0.37</td>
<td>0.45</td>
<td>0.49</td>
</tr>
<tr>
<td>RMA Single Family Residential-Manor Lots</td>
<td>25</td>
<td>0.40</td>
<td>0.47</td>
<td>0.51</td>
</tr>
<tr>
<td>RE Single Family Residential – Estate</td>
<td>30</td>
<td>0.42</td>
<td>0.49</td>
<td>0.53</td>
</tr>
<tr>
<td>RE1 Low Density Single Family Residential</td>
<td>35</td>
<td>0.45</td>
<td>0.52</td>
<td>0.55</td>
</tr>
<tr>
<td>R1 Medium Density Single Family Residential</td>
<td>40</td>
<td>0.48</td>
<td>0.54</td>
<td>0.57</td>
</tr>
<tr>
<td>RN1 Neighborhood Residential</td>
<td>45</td>
<td>0.51</td>
<td>0.57</td>
<td>0.59</td>
</tr>
<tr>
<td>R2 Moderate Density Residential</td>
<td>50</td>
<td>0.54</td>
<td>0.59</td>
<td>0.62</td>
</tr>
<tr>
<td>R3 High Density Residential</td>
<td>60</td>
<td>0.60</td>
<td>0.64</td>
<td>0.66</td>
</tr>
<tr>
<td>R-4 Multi-family Residential</td>
<td>65</td>
<td>0.63</td>
<td>0.66</td>
<td>0.68</td>
</tr>
<tr>
<td>RMO Modular Residential</td>
<td>55</td>
<td>0.57</td>
<td>0.61</td>
<td>0.64</td>
</tr>
<tr>
<td>NBO Neighborhood-Business-Office</td>
<td>70</td>
<td>0.66</td>
<td>0.69</td>
<td>0.70</td>
</tr>
<tr>
<td>B1 High Density Residential &amp; Neighborhood Commercial</td>
<td>80</td>
<td>0.71</td>
<td>0.73</td>
<td>0.74</td>
</tr>
<tr>
<td>MU1 Mixed Use Neighborhood Center</td>
<td>75</td>
<td>0.69</td>
<td>0.71</td>
<td>0.72</td>
</tr>
<tr>
<td>B2 Highway Commercial</td>
<td>85</td>
<td>0.74</td>
<td>0.76</td>
<td>0.77</td>
</tr>
<tr>
<td>B2R Highway Commercial (Restricted)</td>
<td>80</td>
<td>0.71</td>
<td>0.73</td>
<td>0.74</td>
</tr>
<tr>
<td>MU2 Mixed Use Community Center</td>
<td>75</td>
<td>0.69</td>
<td>0.71</td>
<td>0.72</td>
</tr>
<tr>
<td>B3 Central Business</td>
<td>92</td>
<td>0.78</td>
<td>0.79</td>
<td>0.80</td>
</tr>
<tr>
<td>RC River Corridor</td>
<td>90</td>
<td>0.77</td>
<td>0.78</td>
<td>0.79</td>
</tr>
<tr>
<td>I Industrial</td>
<td>95</td>
<td>0.80</td>
<td>0.81</td>
<td>0.81</td>
</tr>
<tr>
<td>MHC Manufactured Home Community</td>
<td>55</td>
<td>0.57</td>
<td>0.61</td>
<td>0.64</td>
</tr>
</tbody>
</table>

Note: Average expected impervious cover is indicated, if impervious cover of development will differ because of overlay zoning or other conditions, alternative factors may be used when justified to the satisfaction of the City Manager in the drainage report.

### Table 6-2: Rational Method Runoff Coefficients for Composite Analysis
Character of Surface | C
---|---
**Developed Areas**
Asphaltic | 0.81
Concrete or Roof | 0.83
Planted – Poor Condition (grass cover on less than 50% of the area)
Less than 2% Slope | 0.37
2 - 7% Slope | 0.43
More than 7% Slope | 0.45
Planted – Fair Condition (grass cover on 50% to 75% of the area)
Less than 2% Slope | 0.30
2 - 7% Slope | 0.38
More than 7% Slope | 0.42
Planted – Good Condition (grass cover on more than 75% of the area)
Less than 2% Slope | 0.25
2 - 7% Slope | 0.35
More than 7% Slope | 0.40
**Undeveloped Areas**
Cultivated Land
Less than 2% Slope | 0.36
2 - 7% Slope | 0.41
More than 7% Slope | 0.44
Pasture or Range Land
Less than 2% Slope | 0.30
2 - 7% Slope | 0.38
More than 7% Slope | 0.42
Forest or Wooded Land
Less than 2% Slope | 0.28
2 - 7% Slope | 0.36
More than 7% Slope | 0.41

**TABLE 6-3: RUNOFF COEFFICIENT ADJUSTMENT FACTORS FOR RATIONAL METHOD**

<table>
<thead>
<tr>
<th>Storm Frequency (years)</th>
<th>( C_f )</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>1.1</td>
</tr>
<tr>
<td>50</td>
<td>1.2</td>
</tr>
<tr>
<td>100</td>
<td>1.25</td>
</tr>
</tbody>
</table>

Note: Use \( CC_f = 1.0 \) when \( CC_f > 1.0 \).
Where hydraulic calculations can be performed to calculate the velocity in the drainage system, the calculated velocity shall be used to determine the time of concentration in the drainage system. In other cases use Manning's equation with the roughness coefficients given below to calculate the velocity in the drainage system.

### TABLE 6-4: MANNING’S ROUGHNESS COEFFICIENTS FOR SHEET FLOW AND SHALLOW CONCENTRATED FLOW

<table>
<thead>
<tr>
<th>Manning’s “n”</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.016</td>
<td>Concrete (rough or smoothed finish)</td>
</tr>
<tr>
<td>0.02</td>
<td>Asphalt</td>
</tr>
<tr>
<td>0.1</td>
<td>0-50% vegetated ground cover, remaining bare soil or rock outcrops, minimum brush or tree cover</td>
</tr>
<tr>
<td>0.2</td>
<td>50-90% vegetated ground cover, remaining bare soil or rock outcrops, minimum- medium brush or tree cover</td>
</tr>
<tr>
<td>0.3</td>
<td>100% vegetated ground cover, medium- dense grasses (lawns, grassy fields etc.) medium brush or tree cover</td>
</tr>
<tr>
<td>0.6</td>
<td>100% vegetated ground cover with areas of heavy vegetation (parks, green- belts, riparian areas etc.) dense under- growth with medium to heavy tree growth</td>
</tr>
</tbody>
</table>

Use the total calculated time of concentration as the duration to determine the critical rainfall intensity from Figure 6-1. Use a minimum time of concentration of 5 minutes.
Boerne Rainfall Intensity-Duration-Frequency Curves
(Durations: 5-60 minutes)

Figure 6-1 - Boerne Rainfall IDF Curves (Duration 5-60 Minutes)
B. Computer Models. Computer models shall be prepared using the HEC-HMS software developed by the US Army Corps of Engineers Hydrologic Engineering Center. Parameters for the model shall be determined as described herein. Rainfall and runoff relationships shall be based on the methodology and parameters provided in TR-55 Urban Hydrology for Small Watersheds (TR-55) published by the Natural Resource Conservation Service (NRCS) except as modified herein.

1. Runoff: The TR-55 option in HEC-HMS shall be used for runoff calculations. Curve numbers shall be determined from the values given in TR-55. In addition, impervious cover values shall be estimated from aerial photos for existing conditions. For post-development conditions, the maximum anticipated impervious cover shall be used with the appropriate curve number for the development. An assumption that the initial abstraction is equal to 0.2 times the maximum soil retention per TR-55 shall be used unless calibration data is available to justify other figures to the satisfaction of the City Manager.

2. Rainfall: Values from Table 6-5 shall be used to calculate the rainfall depth-duration-frequency relationships for the model. Rainfall distribution shall be based on the Type II distribution per TR-55.

<p>| TABLE 6-5: BOERNE RAINFALL DEPTHS FOR VARIOUS DURATIONS AND FREQUENCIES. |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|</p>
<table>
<thead>
<tr>
<th>Frequency</th>
<th>2-year (Inches)</th>
<th>5-year (Inches)</th>
<th>10-year (Inches)</th>
<th>25-year (Inches)</th>
<th>50-year (Inches)</th>
<th>100-year (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>0.56</td>
<td>0.73</td>
<td>0.83</td>
<td>0.97</td>
<td>1.09</td>
<td>1.18</td>
</tr>
<tr>
<td>10</td>
<td>0.88</td>
<td>1.14</td>
<td>1.30</td>
<td>1.52</td>
<td>1.71</td>
<td>1.86</td>
</tr>
<tr>
<td>15</td>
<td>1.09</td>
<td>1.41</td>
<td>1.62</td>
<td>1.90</td>
<td>2.13</td>
<td>2.33</td>
</tr>
<tr>
<td>20</td>
<td>1.24</td>
<td>1.62</td>
<td>1.86</td>
<td>2.18</td>
<td>2.45</td>
<td>2.68</td>
</tr>
<tr>
<td>30</td>
<td>1.48</td>
<td>1.93</td>
<td>2.21</td>
<td>2.59</td>
<td>2.92</td>
<td>3.20</td>
</tr>
<tr>
<td>45</td>
<td>1.70</td>
<td>2.24</td>
<td>2.57</td>
<td>3.02</td>
<td>3.41</td>
<td>3.74</td>
</tr>
<tr>
<td>60</td>
<td>1.87</td>
<td>2.47</td>
<td>2.83</td>
<td>3.33</td>
<td>3.76</td>
<td>4.13</td>
</tr>
<tr>
<td>120</td>
<td>2.28</td>
<td>3.04</td>
<td>3.48</td>
<td>4.12</td>
<td>4.66</td>
<td>5.12</td>
</tr>
<tr>
<td>180</td>
<td>2.52</td>
<td>3.39</td>
<td>3.87</td>
<td>4.62</td>
<td>5.22</td>
<td>5.73</td>
</tr>
<tr>
<td>240</td>
<td>2.72</td>
<td>3.64</td>
<td>4.16</td>
<td>4.96</td>
<td>5.64</td>
<td>6.20</td>
</tr>
<tr>
<td>360</td>
<td>2.94</td>
<td>4.02</td>
<td>4.62</td>
<td>5.52</td>
<td>6.24</td>
<td>6.84</td>
</tr>
<tr>
<td>720</td>
<td>3.48</td>
<td>4.80</td>
<td>5.40</td>
<td>6.60</td>
<td>7.44</td>
<td>8.16</td>
</tr>
<tr>
<td>1440</td>
<td>4.08</td>
<td>5.52</td>
<td>6.48</td>
<td>7.68</td>
<td>8.88</td>
<td>9.60</td>
</tr>
</tbody>
</table>

3. Unit hydrograph development shall be based on the Snyder-Clark Synthetic Unit Hydrograph. The following equations and parameters shall be used unless a more precise calibration is provided and approved by the City Manager.

\[ C_L = 0.15 \text{ and } n = 0.34 \text{ in the time to peak equation:} \]

\[ t_p = C_L \left( \frac{L \cdot L_C}{\sqrt{s}} \right)^n \]

Where:
\[ t_p = \text{time to peak (hours)} \]
\[ L = \text{the main stream distance from the outlet to the divide (miles)} \]
\[ L_C = \text{the main stream distance from the outlet to a point opposite the basin centroid (miles)} \]
\[ C_L = \text{basin lag coefficient} \]
\[ s = \text{average watershed slope (ft/ft)} \]
\[ n = \text{basin exponent coefficient} \]

\[ C_p = 0.8 \text{ in the following equation:} \]
\[ q_p = \frac{C_p \times 640 \times A}{t_p} \]

Where:
\( q_p \) = peak discharge of the unit hydrograph (cfs).
\( C_p \) = Snyder’s peaking coefficient.
\( A \) = watershed size (sq. mi.); and
\( t_p \) = basin lag time (hours).

4. For channel routing, use the Muskingum-Cunge method. For reservoirs and other structures, use the actual stage-storage-outflow curves.

5. For watersheds greater than 10 square miles, the effects of storm centering must be taken into account. Consult with city staff prior to completing the model.

6. Watershed delineation for hydrologic models must include at a minimum the subareas delineated in the City of Boerne Watershed Map. In addition, subareas shall be added to the model to effectively isolate the subject development.

6.04.003 Hydraulic Calculations.

Hydraulic calculations shall be based on industry standard methods and as described herein. The purpose of hydraulic calculations shall be to determine the depth, velocity, and width of flow in drainage systems. Small systems may be designed based on normal depth calculations using Manning’s equation. Large systems must be modeled using acceptable computer software. Closed systems must include calculations for inlet capacity, pipe capacity, hydraulic grade line and energy grade line. Flow depths and hydraulic grade lines shall be plotted on construction plans.

A. Open Systems. Open systems include channels, swales, detention ponds and other open forms of drainage conveyance and/or storage.

1. Small systems: Small systems have a maximum normal depth of 3.0 feet and serve a watershed smaller than 100 acres. Normal depth calculations shall be used for design based on the Manning’s equation:

\[ V = \frac{1.486}{n} \left( \frac{R^{2/3}}{S_f} \right)^{1/2} \]

Where:
\( V \) = average flow velocity in feet per second.
\( n \) = Manning’s roughness coefficient.
\( R \) = hydraulic radius = \( \frac{A}{WP} \) in feet.
\( S_f \) = Friction slope in feet per foot, assumed equal to channel slope.
\( A \) = flow area in square feet.
\( WP \) = wetted perimeter in feet.

The average flow velocity and flow area are related to the discharge flow rate as follows:

\[ Q = VA \]

Where \( Q \) = discharge flow rate in cubic feet per second.

2. Large systems: Large systems either have a normal depth greater than 3.0 feet or serve a watershed of 100 acres or more. These systems require that a backwater model be prepared to show the depth of flow and velocity in the system. Natural channels shall be modeled using HEC-RAS computer software developed by the US Army Corps of Engineers Hydrologic Engineering Center. Other channels may also be modeled using HEC-RAS. Uniform cross-section channels may be modeled using the standard step procedure in hand calculations or other software programs acceptable to the City Manager. Both methods shall make use of the Manning’s equation for channel friction losses. For natural channels, Manning’s \( n \) values should be estimated using experienced judgment and information presented in publications such as the Guide for
Selecting Manning’s Roughness Coefficients for Natural Channels and Flood Plains, FHWA-TS-84-204, 1984, FHWA HEC-15, 1988, or Chow, 1959. Some of these values are given in Table 6-6 below. Use the values in Table 6-7 below for artificial channels.

<table>
<thead>
<tr>
<th>Channel Description</th>
<th>Manning’s n</th>
<th>Maximum Permissible Channel Velocity (ft/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MINOR NATURAL STREAMS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fairly regular section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Some grass and weeds; little or no brush</td>
<td>0.030</td>
<td>3 to 6</td>
</tr>
<tr>
<td>2. Dense growth of weeds, depth of flow materially greater than weed height</td>
<td>0.035</td>
<td>3 to 6</td>
</tr>
<tr>
<td>3. Some weeds, light brush on banks</td>
<td>0.035</td>
<td>3 to 6</td>
</tr>
<tr>
<td>4. Some weeds, heavy brush on banks</td>
<td>0.050</td>
<td>3 to 6</td>
</tr>
<tr>
<td>5. Some weeds, dense willows on banks</td>
<td>0.060</td>
<td>3 to 6</td>
</tr>
<tr>
<td>For trees within channels with branches submerged at high stage, increase above values by</td>
<td>0.010</td>
<td></td>
</tr>
<tr>
<td>Irregular section with pools, slight channel meander, increase above values by</td>
<td>0.010</td>
<td></td>
</tr>
<tr>
<td>Floodplain – Pasture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Short grass</td>
<td>0.030</td>
<td>3 to 6</td>
</tr>
<tr>
<td>2. Tall grass</td>
<td>0.035</td>
<td>3 to 6</td>
</tr>
<tr>
<td>Floodplain – Cultivated Areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. No crop</td>
<td>0.030</td>
<td>3 to 6</td>
</tr>
<tr>
<td>2. Mature row crops</td>
<td>0.035</td>
<td>3 to 6</td>
</tr>
<tr>
<td>3. Mature field crops</td>
<td>0.040</td>
<td>3 to 6</td>
</tr>
<tr>
<td>Floodplain – Uncleared</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Heavy weeds scattered brush</td>
<td>0.050</td>
<td>3 to 6</td>
</tr>
<tr>
<td>2. Wooded</td>
<td>0.120</td>
<td>3 to 6</td>
</tr>
<tr>
<td><strong>MAJOR NATURAL STREAMS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roughness coefficient is usually less than for minor streams of similar description on account of less effective resistance offered by irregular banks or vegetation on banks. Values of “n” for larger streams of mostly regular sections, with no boulders or brush</td>
<td>Range from 0.028 to 0.060</td>
<td>3 to 6</td>
</tr>
<tr>
<td><strong>UNLINED VEGETATED CHANNELS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clays (Bermuda Grass)</td>
<td>0.035</td>
<td>5 to 6</td>
</tr>
<tr>
<td>Sandy and Silty Soils (Bermuda Grass)</td>
<td>0.035</td>
<td>3 to 5</td>
</tr>
<tr>
<td><strong>UNLINED NON-VEGETATED CHANNELS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sandy Soils</td>
<td>0.030</td>
<td>1.5 to 2.5</td>
</tr>
<tr>
<td>Silts</td>
<td>0.030</td>
<td>0.7 to 1.5</td>
</tr>
<tr>
<td>Sandy Silts</td>
<td>0.030</td>
<td>2.5 to 3.0</td>
</tr>
<tr>
<td>Clays</td>
<td>0.030</td>
<td>3.0 to 5.0</td>
</tr>
<tr>
<td>Coarse Gravels</td>
<td>0.030</td>
<td>5.0 to 6.0</td>
</tr>
<tr>
<td>Shale</td>
<td>0.030</td>
<td>6.0 to 10.0</td>
</tr>
<tr>
<td>Rock</td>
<td>0.025</td>
<td>15</td>
</tr>
</tbody>
</table>
3. Detention and Retention Ponds: Detention ponds shall be analyzed using commercially available software approved by the City Manager for each of the design storms. The pond may use a combination of culverts, weirs and spillways to control the outflow from the pond. Culverts used as outflow structures must be designed for inlet control. The pond embankment shall include one foot of freeboard above the 100-year maximum depth. A spillway shall be provided to prevent breach of the pond embankment.

B. Closed Systems. Closed systems include underground storm sewers, culverts and any drainage system with the potential for being surcharged. Refer to the Hydraulic Manual published by Texas Department of Transportation, Bridge Division for design procedures, equations, parameters, and other information for design of closed drainage systems except as modified herein. Software programs acceptable to the City Manager that use procedures and equations derived from the Hydraulic Manual may be used. Spreadsheets and other non-commercial software calculations must show each step and be adequately documented for approval by the City Manager.

1. Storm sewer systems shall be designed for gravity flow with no surcharge with flows from the 5-year storm. The Hydraulics shall then be checked for the 100-year storm by plotting the hydraulic grade line and energy grade line for the system. The final system design shall not allow the energy grade line to be higher than the ground and shall maintain the hydraulic grade line below ground by at least one foot at all locations within the storm sewer system. Refer to the Hydraulic Manual for inlet capacities, entrance loss calculations and other factors required to calculate and plot the energy and hydraulic grade lines.

2. Culverts shall be designed in accordance with the procedures and factors in the Hydraulic Manual. Variances from this procedure shall be approved by the City Manager.

6.04.004 Use of streets as Drainage Facilities.

Streets may be used to carry storm water to dedicated drainage facilities. However, streets may not be used as a continuation of or discharge for other drainage facilities such as ponds, channels, or sub-surface facilities without approval of the City Manager. The maximum spread of storm water in street gutters must provide for the
requirements of Table 6-8 below. The depth of flow in streets shall be measured at its deepest point, at the curb in the gutter. Inlets shall be provided to minimize the flow of storm water in streets and alleys. Streets carrying storm water shall have a minimum cross slope of 2% at all times except at transitions from crowned sections to superelevated sections. In transition, the longitudinal slope shall be a minimum of 0.70% whenever the cross slope is less than 2% and the requirements of Table 6-8 must be met. Inlets should be provided on both sides of crowned streets to remove storm water. Thoroughfares, arterials, and collectors shall not allow storm drainage to cross traffic lanes unless approved by the City Manager.

**Table 6-8: Storm Water Carrying Capacity of Streets by Functional Classification**

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>5-Year Criteria</th>
<th>100-Year Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Thoroughfare</td>
<td>Two 12' lanes dry</td>
<td>Maximum 6 IN depth</td>
</tr>
<tr>
<td>Arterial (Undivided)</td>
<td>Two 11' lanes dry</td>
<td>Maximum 6 IN depth</td>
</tr>
<tr>
<td>Arterial (Divided)</td>
<td>One 11' lane dry each direction</td>
<td>Maximum 6 IN depth</td>
</tr>
<tr>
<td>Collector</td>
<td>One 12' lane dry</td>
<td>Contained within ROW</td>
</tr>
<tr>
<td>Local (Non-residential)</td>
<td>One 10' lane dry</td>
<td>Contained within ROW</td>
</tr>
<tr>
<td>Local (Residential)</td>
<td>Max 6 IN depth</td>
<td>Contained within ROW</td>
</tr>
<tr>
<td>Access</td>
<td>Curb full</td>
<td>Contained within ROW</td>
</tr>
</tbody>
</table>

6.04.005 **Storm Sewers.**

Where storm sewers are provided, they shall be designed in accordance with the above criteria in Section 6.04.003.B and the structures provided shall be designed and constructed in accordance with design criteria and assumptions used in the design. A final design report shall provide the calculations and show that the structures and facilities included in the construction plans will function as the calculations describe. Calculations of hydraulic grade shall be shown in the report and the line plotted on the profiles included in the construction plans.

6.04.006. **Capacity of Open Drainage Channels.**

The design of all open drainage channels shall be based on a 100-year storm frequency and must be approved by the City Manager. All open drainage channels shall be designed with at least the minimum freeboard specified in Table 6-9 below.

**Table 6-9: Minimum Drainage Channel Freeboard**

<table>
<thead>
<tr>
<th>Design Depth of Flow</th>
<th>Required Freeboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 feet</td>
<td>0.5 foot</td>
</tr>
<tr>
<td>5 – 10 feet</td>
<td>10% of design depth</td>
</tr>
<tr>
<td>More than 10 feet</td>
<td>1.0 foot</td>
</tr>
</tbody>
</table>

Add extra freeboard whenever design conditions such as channel bends or turns require it.

6.04.007 **Lining of Open Drainage Channels**

Use Table 6-10 below to determine the channel lining used for scour protection and erosion control. The maximum calculated velocity shall be used for design.

**Table 6-10: Velocity Control Requirements**

<table>
<thead>
<tr>
<th>Maximum velocity</th>
<th>Type of Channel Lining Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3 feet per second</td>
<td>Vegetated earth or sod lined</td>
</tr>
<tr>
<td>3 – 5 feet per second</td>
<td>Sod lined</td>
</tr>
<tr>
<td>More than 5 feet per second</td>
<td>Concrete lined</td>
</tr>
</tbody>
</table>

6.04.008 **Design of Concrete Lined Channels.**

All concrete lined channels shall be designed according to the following standards, and their design must be approved by the City Manager.

A. From the top of the concrete lining to the top of the ditch, the side slope shall not be steeper than three horizontal to one vertical, nor shall the slope be less than 12 horizontal to one vertical.

B. For normal conditions, the concrete lining shall be a minimum of four inches thick and reinforced with No. 3 round bars placed not more than 18 inches on centers in both directions. Where the surface, the nature of
ARTICLE 6. DRAINAGE AND FLOOD HAZARDS

SECTION 04. DRAINAGE SYSTEM DESIGN STANDARDS

the ground, height and steepness of slope, or other factors become critical, the design shall be in accordance with the latest structural standards and codes.

C. Maximum side slopes of concrete rip-rap shall be one to one, unless actual soils test data submitted by a soils engineer shows that a steeper special design is allowable. A minimum of 200 pounds per square foot surcharge shall be used.

D. Vertical walls shall not exceed a depth of two feet unless the channel is properly fenced or enclosed.

E. Where conditions warrant, the design of alternative composite sections is encouraged.

6.04.009 Design of Sod-Lined and Earth Channels.

All sod-lined and earth channels shall be designed according to the following standards, and their design must be approved by the City Manager.

A. The side slope shall not be steeper than three horizontal to one vertical.

SECTION 05. FLOOD HAZARDS

6.05.001 General Policy.

All subdivisions shall conform to the "Flood Disaster Protection Act of 1973," Public Law 93-234, and the latest revisions thereof. The Flood Damage Prevention Ordinance as amended and policies as dictated by the Federal Emergency Management Agency shall be adhered to.

6.05.002 Flood Plain Designations and General Restrictions.

Federal flood plains are based on a 100 year frequency discharge, and apply only in those areas where official Federal Emergency Management Agency maps have been prepared, or where 100 year water and surface profile studies are available for the City and its extraterritorial jurisdiction. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted in an area having special flood hazards as defined by Chapter 9, Flood Prevention and Control, Code of Ordinances of the City of Boerne, Texas, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not substantially increase the water surface elevation of the 100-year flood at any point within the City's subdivision jurisdiction.

6.05.003 General Requirements in Flood Plains.

The minimum building slab elevation in the 100 year flood plain shall be one foot above the 100 year flood plain. The limits of the 100-year flood plain and the limits of the floodway shall be shown on the preliminary and final plats as applicable.

6.05.004 Flood Hazards to Water and Wastewater Systems.

New or replacement water supply systems and/or wastewater systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters. On-site waste disposal systems shall be located so as to avoid impairment of them or contamination from them during flooding.

6.05.005 Review of Proposed Subdivision Flood Hazards.

Proposed subdivisions shall be reviewed to assure that:

A. All such proposals are consistent with the need to minimize flood damage;

B. All public utilities and facilities, such as sewer, gas, electrical, and water systems are located, elevated, and constructed to minimize or eliminate flood damage; and

C. Adequate drainage is provided so as to reduce exposure to flood hazards.
### ARTICLE 6. DRAINAGE AND FLOOD HAZARDS

#### SECTION 05. FLOOD HAZARDS

6.05.006 **Access to Subdivisions.**

The Planning and Zoning Commission shall not permit new "island" subdivisions, lots or streets that would be surrounded by the flood waters of the 100-year flood, unless:

A. The area is accessible to high ground by a street elevated above the 100-year flood level; or

B. The evidence presented shows that the surface area and elevation of the "island" is sufficient to sustain the residents safely during a 100-year flood.

#### SECTION 06. PROTECTION OF SURFACE WATER SUPPLIES

6.06.001 **Statement of Purpose.**

The City Council hereby finds and declares that the City's dependence on surface water supplies which are impacted by urban development poses a potentially serious risk to public health, safety and welfare from possible degradation or contamination of these water supplies. Therefore the following regulations are enacted in order to prevent pollution of the public water supply and to ensure the preservation of clean and safe drinking water, while still allowing reasonable development, use and enjoyment of private property. These objectives are to be achieved by emphasizing passive measures to prevent both point and non-point source pollution, supplemented by the use of structural controls where necessary.

6.06.002 **Water Supply Protection Zones.**

There is hereby established a buffer zone, to be known as a "Water Supply Protection Zone," on both sides of every stream, watercourse or drainage channel which drains an area of 100 acres or more into a lake which is used or intended to be used by the City as a surface reservoir for drinking water, including the tributaries of such streams, watercourses and drainage channels which drain areas of 100 acres or more, and on all sides around the shores of any lake which is used or intended to be used by the City as a surface water reservoir. This zone extends perpendicular to the main channel of a stream or watercourse in its natural state or perpendicular to the centerline of an improved stream, watercourse or drainage channel. The width of the zone shall be measured from the center of the main channel of a stream, watercourse or drainage channel under low flow conditions, and from the normal operating high water level of a lake. The outer perimeter of the zone shall be based on the average slope of the first 50 feet at the interior of the zone, according to the following table.

<table>
<thead>
<tr>
<th>Percent Slope</th>
<th>Zone Width (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 2.5%</td>
<td>60</td>
</tr>
<tr>
<td>&gt;2.5 - 5.0%</td>
<td>70</td>
</tr>
<tr>
<td>&gt;5.0 - 7.5%</td>
<td>80</td>
</tr>
<tr>
<td>&gt;7.5 - 10.0%</td>
<td>90</td>
</tr>
<tr>
<td>&gt;10.0%</td>
<td>100</td>
</tr>
</tbody>
</table>

6.06.003 **Restrictions in Water Supply Protection Zones.**

The water supply protection zone shall remain free of all construction activity, development and alterations except for the following:

A. Street crossings as provided by subsection 6.06.004 below;

B. Utilities as provided by subsection 6.06.005 below;

C. Fences that do not obstruct the flow of water;
D. Public and private parks and similar open spaces, in which development is limited to trails and facilities (other than stables and corrals for animals) for hiking, jogging, non-motorized biking, and nature walks; and

E. Water quality or flood control systems with minimum disruption to the natural surface and natural vegetation.

6.06.004 Street Crossings in Water Supply Protection Zones.

Minor streets shall not cross a water supply protection zone. Regional thoroughfares and all types of arterial and collector streets may cross a water supply protection zone only at right angles or as near as practicable to right angles in the judgment of the City Manager. All crossings should use the Rural Design Type specified in Article 3. All streets in the zone shall be designed and constructed with sedimentation and filtration basins sufficient to capture and treat the first one-half inch of rainfall runoff from the roadway. In addition, all regional thoroughfares in the zone shall be designed and constructed with hazardous material traps that will capture, contain and isolate a hazardous material spill in the street right-of-way. These hazardous material traps shall have a minimum volume of 10,000 gallons and they shall contain a self-draining outlet and an emergency cut-off to contain any spilled materials. No bridge structure shall discharge directly from the roadway surface into the zone. All bridges shall be designed to transport stormwater off the bridge structure and into a sedimentation pond or filtration basin, or to provide equivalent water quality protection in the judgment of the City Manager.

6.06.005 Utilities in Water Supply Protection Zones.

All underground utilities, other than sewer mains, shall be located outside the water supply protection zone, except for necessary crossings. Underground utilities crossing the zone shall utilize shared trenches wherever practical in the judgment of the City Manager. Before submitting an application for preliminary plat approval, the subdivider shall consult with the City Manager to evaluate possible alternatives for the location and design of sewer mains in the zone.

6.06.006 Impervious Cover in Zone Drainage Areas.

In order to reduce the potential pollutant and contaminant load which may ultimately be carried by drainage into the City water supply, the maximum percentage of the area which may be covered by impervious surfaces within any subdivision in any drainage basin above a City water supply reservoir shall be limited according to the following table. The limits of a drainage basin shall be determined according to USGS maps and confirmed in the final plat by a survey of the proposed subdivision site. The “percent impervious cover” shall be calculated as the total area of all impervious surfaces within the perimeter of a subdivision, divided by the total area within the perimeter of the subdivision. In a subdivision which is to be developed in more than one land use, the impervious surfaces in streets and alleys shall be counted and assigned as divided equally between the lot areas on both sides of the street or alley according to the frontage of the lot areas in each contrasting land use. A request for a variance from the provisions of this subsection must be accompanied by clear and convincing evidence, at a minimum consisting of engineering documents submitted under the seal of a registered engineer, that the proposed impervious cover in excess of that allowed by this subsection will not cause any degradation in the quality of the runoff originating on the site and draining toward the City water supply lake.

<table>
<thead>
<tr>
<th>TABLE 6-12: MAXIMUM IMPERVIOUS COVER IN WATER SUPPLY DRAINAGE AREAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context – Development Pattern</td>
</tr>
<tr>
<td>Rural Residential</td>
</tr>
<tr>
<td>Low-Density Residential</td>
</tr>
<tr>
<td>Neighborhood Residential</td>
</tr>
<tr>
<td>Centers and Special Districts</td>
</tr>
</tbody>
</table>

See Boerne Zoning Ordinance, Article 4, Section 05.006, for site design techniques to reduce the effective impervious surface.

6.06.007 Stormwater Retention/Detention in Zone Drainage Areas.
All stormwater management facilities in drainage basins above a City water supply reservoir shall be designed to capture and isolate at least the first one-half inch of rainfall runoff. Any subsequent runoff in excess of the design capacity of the basins shall bypass the basins and remain segregated from the contained runoff waters including those waters in a peak shaving basin if required. Input to and release from the basins required by this subsection for water quality protection shall utilize vegetated swales and/or overland flow dispersion measures where possible.
ARTICLE 7. WATER AND SEWERS

SECTION 01. GENERAL REQUIREMENTS FOR WATER SYSTEMS

7.01.001 Service Required.

Each lot within a new subdivision within the corporate limits of the City shall be provided with domestic water service from the City of Boerne Water System. Each lot within a subdivision outside the corporate limits of the City, but within the limits of the City's extraterritorial jurisdiction, shall be provided with domestic water service from a community water system meeting the design requirements of the Texas Commission on Environmental Quality (TCEQ) and approved by the City Manager, except that lots in subdivisions in which all lots have street frontage in excess of 150 feet and total lot area greater than 6 acres may be served by individual private wells with the approval of the Planning and Zoning Commission at preliminary plat approval. The water distribution system required under this section shall include all pumping station production facilities, elevated storage tanks, fire hydrants and other appurtenances required to adequately serve the area being subdivided.

The water system improvements required under this section shall include the extension of existing water mains (including the installation of new fire hydrants) across the entire length (frontage) of all newly established lots adjacent to a public right of way and/or to the perimeter of the subdivision for future extension into undeveloped areas, or for connections to the systems in adjoining developed areas.

7.01.002 Obligations of Subdivider.

Within the perimeter of the subdivision, the subdivider shall install, at his/her own cost and expense, all necessary lift stations, booster pumps, mains and appurtenances, including, but not limited to, valves, manholes and fire hydrants. The subdivider shall provide all water lines necessary to properly serve each lot of the subdivision and to insure that existing and/or new water facilities can supply the required demand for domestic use and for fire protection at the desired pressure. The subdivider shall install all mains and shall extend the service to all lots terminating thereon with a curb stop and meter box. The subdivider shall submit a certificate to the City Manager certifying that the system has been designed in accordance with the requirements of the State Health Department, rules of the Texas Insurance Commission and this ordinance.

SECTION 02. WATER SYSTEM DESIGN STANDARDS

All water production and distribution facilities shall be designed and sized to meet the minimum design standards in the following table.
### Table 7-1: Water System Minimum Design Standards

<table>
<thead>
<tr>
<th>Demand Assumptions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Equivalent</td>
<td>2.7 persons per residential unit</td>
</tr>
<tr>
<td>Average Daily Demand</td>
<td>160 gallons per capita per day</td>
</tr>
</tbody>
</table>
| Peak Daily Demand                   | 2 times average daily demand  
(= 320 gallons per capita per day) |
| Peak Hour Flow Rate                 | 3.5 x average hourly rate  
(= 560 gallons per capita per day) |

<table>
<thead>
<tr>
<th>Supply Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Capacity</td>
<td>Peak Daily Demand</td>
</tr>
<tr>
<td>High Service Pumps</td>
<td>Peak Hour Demand plus fire flow</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Storage Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Storage</td>
<td>One day of storage (160 gallons per capita)</td>
</tr>
</tbody>
</table>
| Elevated Storage                    | Top 20' = 40 gallons per capita  
Top 40' = 4 hours of maximum fire flow + average demand |

**Section 03. Water Mains**

**7.03.001 General Specifications.**

Piping for water mains and connections shall be poly-wrapped ductile iron AWWA C151/C105 or Polyvinyl Chloride (PVC) AWWA C900, with either mechanical or single rubber gasket joints. All pipe and accessories shall be of new materials only.

**7.03.002 Minimum Diameter.**

Water mains smaller than eight inches shall not be permitted, except that water mains less than 600 feet long and located solely in residential areas may be six inches in diameter. No more than one fire hydrant shall be installed on any 6-inch water main.

**7.03.003 Maximum Length.**

In all areas, water mains shall be the shorter of either 3,000 feet or that length which would by fluid friction render the main incapable of producing flows and pressures set out in this ordinance for the type of area to be served.
ARTICLE 7. WATER AND SEwers

SECTION 03. WATER MAINS

7.03.004 Looping Requirements.
In all areas, water mains shall be looped between water mains whose inside diameter is eight inches or larger.

7.03.005 Location.
All water mains shall be located in dedicated streets or fire lanes, or in the community open space in a planned unit development. On streets with curbs and sidewalks, all water mains shall be located in the public right-of-way between the curb and the sidewalk.

7.03.006 Minimum Flow Requirements.
Water mains in principal mercantile and industrial areas shall be sized so that the minimum fire flow from any single fire hydrant shall be not less than 3,000 gallons per minute with 20 psig residual pressure. Water mains in light mercantile areas shall be sized so that the minimum fire flows from any single fire hydrant shall be not less than 1,500 gallons per minute with 20 psig residual pressure. Water mains in residential areas shall be sized so that the minimum fire flow at any single fire hydrant shall not be less than 750 gallons per minute with 20 psig residual pressure and a domestic use of 2 gpm for every lot in the subdivision.

7.03.007 Valve Locations.
The distribution system in mercantile and industrial areas shall be equipped with a sufficient number of valves and the valves shall be so located that no case of accident, breakage or repair to the water distribution system mains will necessitate shutting from service a length of water main greater than either one side of a single block or a maximum of 500 feet. The distribution system in residential areas shall be equipped with a sufficient number of valves and the valves shall be so located that no case of accident, breakage or repair to the water distribution system mains will necessitate shutting from service a length of water main greater than either two sides of a single block or a maximum of 600 feet.

7.03.008 Service Lines.
The minimum sizes of service lines that shall be used are as required in the following table.

<table>
<thead>
<tr>
<th>TABLE 7-2: MINIMUM WATER SERVICE LINE SIZES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Dwelling Units</td>
</tr>
<tr>
<td>----------------------------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3 - 4</td>
</tr>
<tr>
<td>5 - 10</td>
</tr>
<tr>
<td>11 - 50</td>
</tr>
<tr>
<td>51 - 80</td>
</tr>
<tr>
<td>More than 80</td>
</tr>
</tbody>
</table>

SECTION 04. FIRE HYDRANTS

7.04.001 General Requirements.
All fire hydrants shall have a six-foot clear horizontal radius of 360 degrees around the fire hydrant free from obstructions. All fire hydrants shall be located on street corners or side property lines so as to be readily accessible at all times. All fire hydrants shall be equipped with at least a 6 inch valve located on the hydrant lead and the valve and hydrant shall be mechanically anchored to the main.

7.04.002 Maximum Spacing.

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Every building in the City limits shall be within 500 feet of a standard City fire hydrant. In mercantile and industrial areas, hydrants shall be located so that there will be at least one hydrant every 300 feet average as measured along dedicated streets. In light mercantile areas containing apartment houses, hydrants shall be located in dedicated streets or fire lanes behind curbs and be spaced not more than 300 feet hose lay from any building within the district, each distance to be measured down any standard fire hose laid from the fire hydrant to the building. In residential areas, hydrants shall be located so that there will be a fire hydrant every 500 feet average distance as measured along dedicated streets, including dedicated easements and fire lanes in mobile home parks and travel trailer parks.

SECTION 05. SANITARY SEWERS

7.05.001 General Requirements.

Every subdivision shall be provided with a sewage disposal system meeting the design requirements of the Texas Commission on Environmental Quality and approved by the City Manager. Sanitary sewers shall be connected to serve each lot in the subdivision unless the Planning and Zoning Commission determines that such connection would require an unreasonable expenditure of funds when compared with other methods of sewage disposal or unless the subdivision meets the requirements of Section 6 of this Article. Where connection to the sewer system is not to be made immediately, plans shall be prepared for installation of a sewage collection system to serve each lot, and those parts of such system which will lie in the portion of streets intended for vehicular traffic shall be installed before the street is paved. The sewage collection and disposal systems required under this section shall include all lift stations, force mains, treatment facilities and appurtenances required to adequately serve the area being subdivided.

The sewage collection and disposal systems improvements required under this section shall include the extension of sanitary sewer mains to the boundaries of the subdivision as required to provide for the future extension of the systems into adjoining undeveloped areas or for connection to the systems in adjoining developed areas. No variance shall be granted to this section without the provision of permanent utility easements and temporary construction easements for the future extension of said improvements. The easement widths and location shall be determined by the City.

7.05.002 Obligations of Subdivider.

The subdivider shall install all sanitary sewer mains and lines to serve each lot. If the public sewer system is not within 1,200 feet of the subdivision, those portions of the system which lie under paved areas shall be installed and capped off and temporary waste treatment shall be provided in accordance with the requirements of state health officials. The subdivider shall submit a certificate to the City Manager certifying that the sewer system has been approved by the Texas Commission on Environmental Quality.

SECTION 06. SEPTIC SYSTEMS

When specifically authorized by the Planning and Zoning Commission, septic systems may be utilized for wastewater disposal on lots being served by private wells, provided that all lots in the subdivision which utilize private wells and septic systems have a minimum area of 6 acres per single family dwelling/commercial structure and a street frontage of at least 200 feet. Lots in subdivisions being served with water provided by a public or other community water system may utilize individual septic systems provided all lots within the subdivision have a minimum area of 45,000 square feet and a street frontage of at least 150 feet unless the water system is providing water from a source that is outside the jurisdiction of the Cow Creek Underground water District then the standards set forth in Section 3.04.003.B shall be followed. Any method of on-site wastewater disposal other than conventional septic systems shall require the specific approval of the Planning and Zoning Commission on a lot by lot basis. Septic systems shall be installed on each lot concurrent with any development thereon and the design of such system and the method of installation shall conform in all respects to the requirements of the Kendall County Office of Development Management.

SECTION 07. WASTEWATER SYSTEM DESIGN STANDARDS

7.07.001 General Design Standards.

All wastewater collection system improvements shall be designed and sized to meet the minimum design standards in the following table.
TABLE 7-3: WASTEWATER SYSTEM MINIMUM DESIGN STANDARDS

<table>
<thead>
<tr>
<th>Demand Assumptions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Equivalent</td>
<td>3 persons per residential unit</td>
</tr>
<tr>
<td>Average Daily Flow</td>
<td>100 gallons per capita per day</td>
</tr>
<tr>
<td>Peak Daily Flow</td>
<td>3.25 times average daily flow</td>
</tr>
<tr>
<td>Infiltration Factor</td>
<td>500 gallons per gross acre per day</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Average Capacity Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family Residential</td>
<td>300 gallons per lot per day</td>
</tr>
<tr>
<td>Multi-Family Residential</td>
<td>7,500 gallons per acre per day</td>
</tr>
<tr>
<td>Commercial</td>
<td>1,500 gallons per acre per day</td>
</tr>
</tbody>
</table>

All sewers shall be sized to accommodate the maximum peak flow plus infiltration flows which will render the pipe flowing no greater than three-fourths full. Minimum slope shall be according to current Texas Commission on Environmental Quality rules and regulations and sewerage design standards.

7.07.002 **Sewer Location.**

Where the location of the sewer is not clearly defined by dimensions on drawings, the sewer shall not be closer horizontally than 10 feet, or closer vertically than six feet, to a water supply main or service line. Gravity sewer lines passing over water lines shall be constructed for a distance of at least 10 feet on each side of the crossing with cast iron pipe with no joints within three feet of the crossing, or they shall be encased in concrete in accordance with regulations of the Texas Commission on Environmental Quality.

7.07.003 **Materials.**

Sewer lines shall be of PVC plastic, SDR 35/ASTM 3034, or another type pipe as approved in writing by the City Manager.

7.07.004 **Trenching.**

Sewers shall be constructed according to City standard specifications as to trenching, bedding, backfill and compaction.

7.07.005 **Minimum Diameter of Mains.**

Eight inch diameter pipe shall be the minimum acceptable for sewer mains and lines, except that a sewer main less than 600 feet long may be six inches in diameter if located on a cul-de-sac or an existing dead end street within a residential subdivision.

7.07.006 **Manholes.**

Manholes shall be spaced not more than 400 feet apart and shall be constructed in accordance with City standard specifications.

7.07.007 **Lift Stations and Force Mains.**

Lift station capacity shall be no less than 100 gallons per minute per pump. Lift station force mains shall be designed and sized to produce a complete exchange of wastewater every other cycle of the pumps. Force mains and fittings shall be of cast iron or PVC pipe, pressure class. The pipe shall have either mechanical joints or rubber gasket joints as approved by the City Manager. The minimum force main size shall be four inches.

7.07.008 **Minimum Diameter of Service Lines.**

Service lines serving individual lots shall be no smaller than 6 inches in diameter.
ARTICLE 8. UTILITY EXTENSIONS AND GENERAL SUBDIVISION IMPROVEMENTS

SECTION 01. GENERAL REQUIREMENTS

8.01.001 Obligations of Subdivider.

The subdivider shall install at his/her own cost and expense all of the improvements required by this ordinance. The subdivider shall comply with all other provisions of this ordinance prior to acceptance of the subdivision by the City.

8.01.002 Engineer Responsible.

The subdivider shall retain the services of a registered professional engineer, licensed in the State of Texas, whose seal shall be placed on each sheet of the construction plans, and who shall be responsible for the design and supervision of all improvements required in the subdivision.

8.01.003 Construction Plans.

Construction plans shall be submitted upon filing a final plat, as provided in Article 2. Constructions Plans shall be the following requirements.

A. All design professionals shall be required to sign letters to accompany their documents stating that the “The attached documents comply with the requirements of the City of Boerne Subdivision Ordinance”.

B. All design professionals shall include in their plans, the statement “Construction of all facilities to be dedicated to the public shall be performed per the requirements of the City of Boerne Standard Specifications for Public Works Construction, latest edition”.

C. Three complete bound sets of construction plans, specifications and contract documents shall be filed with the City Manager upon filing of a final plat. These plans and specifications shall include the following, all in compliance with the specifications and Design Standards of this ordinance:

1. Street plans, showing roadway cross sections and longitudinal slope for drainage, a full description of the proposed pavement or other street improvement, and its grade and slope.

2. Drainage system plans, sanitary sewer system plans, water system plans, electric plans, natural gas plans, and the overall utility layout, showing the dimensions and specifications of the improvements to be installed, including proposed position on the ground, specifications of materials and construction, profile maps showing both ground surface and flow line, and other pertinent information of similar nature.

3. A final erosion control and construction phasing plan as specified in Article 6, Section 01.003.

4. A copy of the associated final plat.

8.01.004 Installation of Utilities Before Paving.

Unless the subdivider shall have received prior written permission to the contrary from the City Manager, all utilities must be installed prior to the paving of a street or alley or portion thereof.
8.01.005 **Inspection of Improvements.**

The City Manager shall from time to time inspect the construction of all utility facilities and streets in the subdivision during the course of construction to see that they comply with the standards governing them. In this regard, free access to the subdivision shall be accorded the City Manager by the subdivider and the subdivider's agents and employees.

8.01.006 **Final Plans and Acceptance.**

Prior to final acceptance by the City of completed improvements for maintenance, the subdivider shall file with the City Manager or the Kendall County Commissioners Court, whichever is appropriate, the following:

A. Either a two year warranty bond conditioned that the improvements are free from defects in materials and workmanship, or an irrevocable letter of credit, cash deposit, certificate of deposit, or savings assignment, committing funds for the correction and repair of any defects in materials or workmanship. The amount of the financial guarantee shall be in the amount of 10 percent of the contract price for the improvements.

B. Two (2) sets of reproducible tracings of complete record drawings, dated, signed and certified by the engineer in charge, shall be filed with the City for each improvement, showing all features as actually installed, including materials, size, location, depth of elevation, numbers, end of lines, connections, wyes, valves, storm sewer drains, inlets, and any other pertinent items.

C. One (1) electronic file of each plan set in sub-section 8.01.006.B. in AutoCAD.

D. Two certified copies of all improvement costs, itemized as follows:
   1. Streets, alleys, curbs, sidewalks and drainage features.
   2. Water mains, valves, hydrants and services.
   3. Sewer mains, lift stations, force mains, manholes and services.
   4. Electric distribution and services (excluding transformers) not constructed by the City.
   5. Natural gas mains, valves and services not constructed by the City.

E. Prior to acceptance of the subdivision improvements, the subdivider shall provide the City with a release of lien from all subcontractors and contractors verifying that all contractors have been paid and that no liens will be filed on the subdivision. No acceptance shall be given until all verification is made. No applications shall be accepted for building permits or utility connections, and no building permits shall be issued or utility connections made until such time as the entire subdivision is accepted by the City.

**SECTION 02. SURVEY REQUIREMENTS**

8.02.001 **Placement of Lot Markers and Street Monuments.**

Monuments consisting of at least one-half inch iron pipe or at least one-half inch reinforced steel, 24 inches in length, shall be placed at all corners of the block lines, and at the point of intersection of curves and tangents of the subdivision. Lot markers shall be metal, at least 24 inches in length, placed at each corner of each lot, flush with the average ground elevation, or they may be countersunk, if necessary, to avoid being disturbed.

8.02.002 **Elevation Benchmarks.**

At least one benchmark for every 5 acres in a subdivision shall be permanently installed in an approved manner, at the location and the elevation as shown on the plat. Permanent benchmarks shall be five feet long, steel reinforced concrete posts, four inches in diameter, with the top no more than six inches above and no less than two inches below finished grade.

8.02.003 **Lot Markers for Utility Easements.**

There shall be markers placed where a lot line crosses a utility easement with the exception of those blanket utility easements placed around all lots.

**SECTION 03. COSTS OF UTILITY EXTENSIONS**
ARTICLE 8. UTILITY EXTENSIONS AND GENERAL SUBDIVISION IMPROVEMENTS

SECTION 03. COST OF UTILITY EXTENSIONS

8.03.001 Water and Sewer Main Extensions.

The subdivider shall install water and sewer mains from their present locations to the perimeter of the subdivision at his/her own cost and expense, subject to the provisions of this ordinance.

8.03.002 Electric Distribution System and Gas Main Extensions.

The subdivider shall either (a) reimburse the City for the cost of extension of the electrical primary distribution system and/or the natural gas mains from their present locations to the perimeter of the subdivision or (b), with the City Manager's approval, extend the electric distribution system and/or gas mains at the subdivider's own expense.

8.03.003 Electric and Gas Systems within the Subdivision.

The subdivider shall reimburse the City for the cost of installation of the electrical primary distribution system and the natural gas distribution system within the perimeter of the subdivision, including the installation of required street lights and services to any required lift stations, booster pumps, and similar facilities.

The electrical primary distribution system and natural gas distribution system extensions required under this section shall include the extension of the utilities to the boundaries of the subdivision as required by the City to provide for the future extension of the systems into adjoining unsubdivided areas or for connection to the systems in adjoining developed areas.

8.03.004 Lift Stations, Booster Pumps and Related Equipment.

In the event that it is determined that installation of equipment or appurtenances such as lift stations, booster pumps, or similar facilities is necessary in the area between the existing utility mains and the perimeter of a subdivision, the City Council shall, taking all circumstances into consideration, determine who shall bear the cost of such necessary equipment and appurtenances, and in what proportion each party shall be liable.

8.03.005 Waiver of Costs for Industrial Parks and Commercial Developments.

The requirements of subsections 8.03.001 and 8.03.002 of this Section, for the subdivider to install water and sewer mains from their present locations to the perimeter of the subdivision at his/her own cost and expense, and either to reimburse the City for the cost of electrical primary distribution system extensions and natural gas main extensions from their present locations to the perimeter of the subdivision or to extend these systems at his/her own expense, may be waived by the City Council for proposed industrial parks and commercial developments. Such waiver shall be at the discretion of the Council after taking into consideration all the circumstances including, but not limited to, the following:

A. The ratio of the potential tax revenues and utility system revenues from property within the industrial park or commercial development to the costs to the City of extending water, gas and sewer mains and electric primary distribution lines to the proposed industrial park or commercial development.

B. The availability of funds for the extension of such mains and distribution lines.

C. The contribution, if any, by the subdivider for the extension of the mains and distribution lines.

SECTION 04. COST DISTRIBUTION FOR Oversized Facilities

In the event that the Planning and Zoning Commission deems it necessary and prudent to require lift stations, booster pumps, mains, equipment, streets and/or appurtenances which are larger or whose capacities are in excess of those which are usual, customary and necessary to meet the needs and requirements of a particular subdivision, then the Commission may recommend to the City Council and the Council may determine that the City shall pay to the subdivider the difference in cost (including construction and installation) between those lift stations, booster pumps, mains, equipment, streets and/or appurtenances which the City requires the subdivider to install, and the cost of like equipment of the size and/or capacity which would have adequately met and served the needs of the subdivision.

Providing that funds are available, the City may also participate in the extra cost of bridges and/or large drainage structures on regional thoroughfares and Arterial streets shown on the Major Thoroughfare Plan.
SECTION 05. MINIMUM SIZES FOR OVER-SIZING CALCULATIONS

When calculations are made for oversizing requirements, the minimum sizes assumed to be necessary to serve the subdivision itself shall not be less than those in the following table.

<table>
<thead>
<tr>
<th>TABLE 8-1: MINIMUM SIZES FOR OVERSIZING CALCULATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water and Sewer Main</td>
</tr>
<tr>
<td>Sewer Force Main</td>
</tr>
<tr>
<td>Lift Station Capacity</td>
</tr>
<tr>
<td>Residential Street Width</td>
</tr>
<tr>
<td>Non-Residential Street Width</td>
</tr>
</tbody>
</table>

SECTION 06. WATER AND SEWER MAIN REIMBURSEMENTS

8.06.001 Eligibility for Reimbursement.

When a subdivider must extend water and/or sewer mains through previously unserviced and unsubdivided areas of a drainage basin, the City may reimburse the subdivider for that proportional cost of the extension by those subdividers who subdivide property between the original subdivider's subdivision and the point of connection to existing City utilities.

8.06.002 Formula for Reimbursement.

The amount of the reimbursement under this section shall be calculated as follows.

A. Determine the total area to be served by the water and sewer main extensions, including the original subdivision. It shall be the responsibility of the subdivider to provide the City with this information, to be substantiated by City staff.

B. Determine the cost of extension of the trunk mains minus any oversizing costs contributed by the City.

C. Determine the trunk main unit cost per acre by dividing the total adjusted cost #2 by the total acreage #1.

D. The unit cost per acre shall be charged to each subsequent subdivider who may connect to the trunk main, and shall be paid to the subdivider who originally installed the trunk main, or the original subdivider's heirs or assigns.

E. Force mains or interbasin transfers which may connect to the trunk main shall not be included in the reimbursement for trunk main extension.

8.06.003 Forfeiture of Trunk Main Reimbursement.

It shall be the sole responsibility of the subdivider due reimbursement under this section to maintain his/her current address on file with the City Manager. Should a reimbursement be payable and the subdivider cannot be contacted at the address on file in the City Manager's office, the right to a reimbursement under this section shall lapse 24 months after the date of the initial attempt to contact the subdivider and the subdivider shall forfeit all claims to the reimbursement. The City may utilize all forfeited reimbursements for any purpose related to the water and sewer systems as determined by the City Council.
8.06.004  New Subdivider's Contribution for Trunk Main Extension.

When a new subdivider's water and sewer mains are to be connected to trunk mains installed by prior subdividers that meet the requirements of this section, the new subdivider shall deliver to the City Manager, prior to final plat approval, a check for his/her portion of the trunk main based on the formula in Subsection B above. The contribution shall be based on the trunk main unit cost per acre times the number of acres in the subject subdivision. It shall be the new subdivider's responsibility to provide the City staff with evidence of the acreage involved.
Exhibit "A"

Plat Certificates and Notes

Surveyor's Certificate:

STATE OF TEXAS
COUNTY OF KENDALL

I hereby certify that this plat is true and correct and was prepared from an actual survey of the property made on the
ground under my supervision.

________________________________
Registered Public Surveyor

Sworn to and subscribed before me this the _____ day of ______________, ______.

________________________________
Notary Public in and for the
State of Texas,

Engineer's Certificate: An engineer's certificate is required in all cases except when the plat does not require
engineering considerations.

STATE OF TEXAS
COUNTY OF KENDALL

I hereby certify that proper engineering consideration has been given in this plat to the matters of streets, lots and
drainage layout. To the best of my knowledge this plat conforms to all requirements of the Subdivision Ordinance,
except for those variances granted by the Planning and Zoning Commission of the City of Boerne.

________________________________
Registered Professional Engineer

Sworn to and subscribed before me this the _____ day of ______________, ______.

________________________________
Notary Public in and for the
State of Texas,
Owner's Acknowledgment: If the owner authorizes an agent, the owner shall file a notarized letter to that effect.

STATE OF TEXAS
COUNTY OF KENDALL

The owner of land shown on this plat, in person or through a duly authorized agent, dedicates to the use of the public forever all streets, alleys, parks, watercourses, drains, easements and public places thereon shown for the purpose and consideration therein expressed.

______________________________
Owner

______________________________
Duly Authorized Agent

STATE OF TEXAS
COUNTY OF KENDALL

Before me, the undersigned authority on this day personally appeared ________(name) known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he/she executed the same for the purposes and considerations therein expressed and in the capacity therein stated. Given under my hand and seal of office this _____ day of _______________, ______.

______________________________
Notary Public
Kendall County Texas

Approval of the Planning and Zoning Commission:

This plat of ______(name)____ has been submitted to and considered by the Planning and Zoning Commission of the City of Boerne, Texas, and is hereby approved by such Commission.

Dated this _____ day of ________________, ______.

By:______________________________
Chair

By:______________________________
Secretary

County Clerk's certificate of authentication as required by the applicable county.

Easement Notes

All properties designated as easements shall or may be utilized for the following purposes:

DRAINAGE EASEMENT:

Drainage, water diversion, and sanitary control, including without limitation, walls, beds, embankments, spillways, appurtenances, and other engineered devices (the "Drainage System")

Together with the right of ingress and egress over the adjacent land to or from the Easement for the purpose of constructing, reconstructing, inspecting, patrolling, operating, maintaining, repairing, and removing the Drainage System; the right to change the size thereof; the right to relocate along the same general direction of the Drainage System; the right to create and/or dredge a stream course, refill, or dig out such stream course, establish or change stream embankments within the Easement, install storm sewer systems, culverts, water gaps, and protecting rails; the right to remove from the Easement all trees and parts thereof, or other obstructions, which reasonably endanger
or may reasonably interfere with the efficiency of the Drainage System; and the right to place temporary structures for use in constructing or repairing the Drainage System.

With respect to the Drainage System, it is expressly agreed and understood by all parties hereto, that the intention is to improve conditions of sanitation and water drainage control on the Property for the benefit of the Property, adjacent property, and the community, but the City does not guarantee or warrant that such control work will be effective, nor does the City assume any additional liability whatsoever for the effects of flood, standing water, or drainage on or to the Property, or any other property or persons that might be affected by said stream, wash, or gully in its natural state or as changed by the City.

UTILITY EASEMENT:

Utilities, including, without limitation, sewer, water, gas, electricity, telephone, and cable television, with all necessary and/or desirable lines, laterals and/or appurtenances thereto (the "Utilities")

Together with the right of ingress and egress over the adjacent land to or from the Easement for the purpose of constructing, reconstructing, inspecting, patrolling, operating, maintaining, repairing, and removing the Utilities; the right to place new or additional Utilities in the Easement and to change the size thereof; the right to relocate along the same general direction of the Utilities; the right to remove from the Easement all trees and parts thereof, or other obstructions, which reasonably endanger or may reasonably interfere with the efficiency or operation of the Utilities; and the right to place temporary structures for use in constructing or repairing the Utilities.

1. The property owner retains the right to use all or any part of the Easement for any purpose which does not damage, destroy, injure, and/or unreasonably interfere with the use of the Easement. However, the easement shall be kept clear of all structures or other improvements.

2. The City shall make commercially reasonable efforts to ensure that damage to the Property is minimized and the City will at all times, after doing any work in connection with the System, restore the Property to the condition in which the Property was found before such work was undertaken to the extent that such restoration is reasonable in accordance with the City's usual and customary practices.

PLAT NOTES:

FENCE NOTES:

Gates Across Easement: Double swing gates with a minimum clear opening of 12 feet wide shall be installed wherever fences cross Utility and Drainage Easements.

Obstructions of Drainage: Adequate structures shall be provided to allow the unhindered passage of all storm and drainage flows wherever fences cross Drainage Easements.

LANDSCAPE NOTE:

Residential lots in excess of 12,500 square feet shall only irrigate the area that lies within 75 feet of the main residence. Turf grasses shall be limited to Zoysia, Buffalo or Bermuda grasses or other grasses approved by the City Manager or his or her designated representative. (Ord. No. 2004-20) 

SIDEWALK NOTES:

Five-foot wide [Substitute “larger where required] reinforced concrete sidewalks shall be installed adjacent to all street frontage property lines of each lot fronting a street at such time as that lot is developed.

IMPACT FEE ASSESSMENT:

Assessment and collection of the City of Boerne Water and Wastewater Utilities’ capital recovery fees shall be the amount per lot as set forth in City Ordinance No. 2xxx-xx, Section xxxx. [insert current ordinance number and section]

TAX CERTIFICATE:

Tax Certificate Affidavit filed this date in Volume __, Page __, Kendall County Official Records.
Insert Major Thoroughfare Plan