CITY OF HENDERSON

SUBDIVISION ORDINANCE

NO. 05-05-10

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SUBDIVISION ORDINANCE

Section 1 - SUBDIVISION REGULATIONS

This Ordinance sets out the procedures and standards for submitting plats, for subdividing property, for the laying out and developing of lots, land and subdivisions within the City limits and extraterritorial jurisdiction of the City of Henderson, Texas and for guiding and assisting developers in the correct procedures to be followed, and to furnish information of standards required.

This Ordinance is also intended to promote the safe, orderly and healthful development of the City by controlling the location, width, design and type of streets, storm sewers, culverts, bridges, utilities and essential services required.

Section 2 - DEFINITIONS

Words not expressly defined herein are to be construed in accordance with customary usage in municipal planning and engineering practice. As used in this Ordinance, the following definitions shall apply:

Addition – One lot, tract or parcel of land lying within the City limits or extraterritorial jurisdiction which is intended for the purpose of development.

Adequate Public Facilities – Facilities determined to be capable of supporting and servicing the physical area and designated intensity of the proposed subdivision as determined by the City Council based upon specific levels of service.

Alley – A public or private service way which provides only a secondary means of public access to property thereon and not intended for general traffic circulation.

Amended Plat – A revised plat correcting errors or making minor changes to the original recorded final plat.

Amenity – An improvement to be dedicated to the public or the common ownership of the lot owners of the subdivision and providing an aesthetic, recreational, or other benefit, other than those prescribed by this ordinance.

Applicant – The owner of land proposed to be subdivided, whether a person, firm, association, corporation, syndicate, trust or any other legal entity who seeks authorization for land to be divided into a subdivision for himself or others, or one who has express written authority to act on behalf of the owner. Consent shall be required from the legal owner of the premises.

Average Density – The average number of dwelling units per acre.

Base Flood - A flood having a one percent chance of being equaled or exceeded in any given year. The based flood shall be determined by the City of Henderson Flood Insurance Rate Map (FIRM) Community Panel Number 480551- 0005B effective date September 27,1991.

Block - A tract of land bounded by streets, or by a combination of streets and public parks, cemeteries, railroad rights-of-way, shorelines of waterways, or boundary lines of municipalities.

Bond – Any form of a surety bond in an amount and form satisfactory to the City.

Building – A combination of materials to form an edifice that is safe and stable, and designed and built for the support, enclosure, shelter or protection of persons, animals, cattle or property of any kind including, but not limited to, permanent or continuous occupancy for use for assembly, business, education, industrial, institutional, mercantile, residential or storage purposes. The term building shall be construed to include the term "structure", and as if followed by the words, "or portion thereof". When subdivided in a manner sufficient to prevent the spread of fire, each portion so subdivided may be deemed a separate building.

Building Official – The Chief Building Inspector, or his designee who is responsible for issuing building permits and charged with the administration and enforcement of the City construction codes.

Building Setback Line – A line, established by the Zoning Ordinance, parallel or approximately parallel to the front lot line at a specific distance therefrom, marking the minimum distance from the front lot line that a building may be erected, except or unless as specifically provided in the Zoning Ordinance.

City Engineer – A person under contract by the City of Henderson who is duly authorized under the provisions of the Texas Engineering Registration Act, as heretofore or hereafter amended, to practice the profession of Engineering.

Collector Street – Street which serves the internal traffic movement within an area of the City, such as a subdivision or commercial area, and connects this area with the arterial street system.

Comprehensive Plan – A plan for development of the City prepared by the City Planning and Zoning Commission and adopted by the Council, and including any part of such plan separately adopted and any amendment to such plan, or parts thereof.

Commission – The Planning & Zoning Commission for the City of Henderson.

Concurrency – Requirement that development applications demonstrate that adequate public facilities are available at prescribed levels of service based upon the impact of full occupancy of development units.

Construction Plan – The maps or drawings accompanying a plat and showing the specific location and design of public improvements to be installed in the subdivision or addition in accordance with the requirements of the Subdivision ordinance as a condition of the approval of the plat.

Contiguous – Lots are contiguous when at least one boundary line of one lot touches a boundary line(s) of another lot.

Conveyance Plat – The portion of the Final Plat which is approved by the City Council and recorded in the County Clerk's office for Rusk County, Texas as determined by the DRB, for large subdivisions the Final Plat may be recorded in sections satisfactory to the City where approval of final development plans is not sought by the developer.

Council – The Henderson City Council

County – Rusk County, Texas.

Cul-de-sac – A local street, one end of which is terminated and consists of an area for turning vehicles around.

Dedication Plat – A plat prepared for the purpose of dedicating land or easements for rights-of-way to the City.

Design Criteria – Standards that set forth specific improvement requirements.

Developer – The person, business, corporation or association responsible for the development of a subdivision, addition, or other properties. In most contexts the terms Developer and Property Owner are used interchangeably in these regulations.

Development – Any man-made change to improved or unimproved real estate including, but not limited to, buildings or other structures, paving, drainage or utilities, but not agricultural activities.

Development Extraction – Any dedication of land or easements for construction of or contribution toward construction of a public improvement required as a condition of plat approval by the City under these regulations.

Development Review Board (DRB) – A board consisting of the Public Services Director, Fire Chief, Community Development Director, City Manager, and a developer (at Council's discretion). Any decisions pertaining to plat approval or waivers of the requirements contained in this Ordinance will be made by all members of this board.

Drainage Way – All land areas needed to allow passage of the Base Flood, including sufficient access above the Base Flood elevation along each side of and parallel to the natural or excavated channel.

ETJ – Extraterritorial jurisdiction, including all lands within one mile from the City limits.

Easement – A right-of-way or parcel of land, specified or set aside for a specific use; normally for access, utilities, and other public or private usage, given by the owner of land to another party, and kept free from buildings or structures.

Engineer – A person duly authorized under the provisions of the Texas Engineering Registration Act, as heretofore or hereafter amended, to practice the profession of Engineering.

Exactions – Requirement of developer to dedicate or pay for all or a portion of land costs for public facilities as a condition of development approval.

Final Plat – The map of a subdivision or addition to be recorded after approval by the City Council and any accompanying material and additional requirements as described in these regulations.

Flood Plain – An area of land subject to inundation by a 100-year frequency flood, as shown on the City flood plain map.

Floodway – The channel of a stream or other watercourse and adjacent land areas that must be reserved in order to discharge the 100-year flood without cumulatively increasing the water surface elevation.

Floodway Easement – An easement within the flood plain as defined herein which includes a channel, plus any adjacent flood plain area that must be kept free of encroachment and obstruction in order that one hundred year frequency flood may be conveyed without increasing the flood elevation at any point on the channel by more than one foot. Streams analyzed in detail in the Federal Flood Insurance Study, its floodways and subsequent letters of map amendment shall be used as criteria.

Frontage – The distance along a property line which is also the right-of-way line of a dedicated street or approved private street.

Frontage Street – Any street to be constructed by the developer or any existing street where development shall take place on both sides.

Improvement Agreement - A contract entered into by the developer and the City by which the developer promises to complete the required public improvements within the subdivision or addition within a specified time period following final plat approval.

Industrial Park – A development of industrial sites, whether located inside or outside the City, which if developed within the City, would be required by the zoning ordinance to be located in a Light Industrial District (I-1) or General Industrial District (I-2).

Local Street – A street whose sole function is to provide access to abutting properties and to other streets from individual properties, and to provide right-of-way beneath it for sewer, water and storm drainage pipes and any other underground City franchised utilities.

Lot – A tract, plot or portion of a subdivision, addition, or other parcel of land intended as a unit for the purpose, whether immediate or future, of transfer of ownership or possession or for a building development.

Lot, Corner – A lot or parcel of land abutting upon two or more streets at their intersection.

Lot Improvement – Any building, structure, place, work of art, or other object situated on a lot.

Lot of Record – A parcel of land having its existence, location, dimensions, and ownership legally recorded or registered, by deed or plat, with the Rusk County Clerk.

Metes and bounds – A description of real property by which property is not described by reference to Lot or Block, shown on a map, but is defined by starting at a known point and describing, in sequence, the lines forming the boundaries of property.

Major Plat – All plats not classified as minor plats, including but not limited to subdivisions of more than four (4) lots, or any plat requiring creation of any new street or extension of Municipal and public facilities.

Minimum Finished Floor Elevation – The mean sea level elevation above which the lowest occupied floor slab, not including garages, of any building shall be built. This elevation shall exceed the maximum surface elevation of the 100-year flood for nearby creeks and channels at that point of reach of said watercourse by at least one foot.

Minor Plat – A subdivision resulting in four or fewer lots and not requiring the creation of any new street or extension of municipal facilities.

Municipal Facility – An improvement owned and maintained by the City.

Off-Site Improvement – Any public improvement located outside the physical boundaries of the subdivision or addition to be platted.

Parcel – A continuous quantity of land in the possession of, owned by, or recorded as the property of, the same person(s).

Pavement Width – The portion of a street available for vehicular traffic. Where curb exists, it is the distance between the face of the curbs on the opposite side of the street.

Perimeter Street – Any existing or planned street that abuts the subdivision or addition to be platted.

Plat – A plan of a subdivision of land creating building lots or tracts and showing all essential dimensions and other information essential to comply with the Subdivision ordinance of the City and subject to approval by the City Council and filed in the plat records of Rusk County.

Platting – The act of preparing for approval and processing, pursuant to these regulations, the plan or map for the subdivision or addition to be filed for record in the County where such subdivision or addition is located and includes a development plat, unless otherwise noted.

Preliminary Plat – The preliminary drawing(s), described in these regulations, indicating the proposed manner or layout of the subdivision or addition to be submitted to the Development Review Board for approval.

Primary Arterial Street – A road intended to move traffic to and from major attractions such as shopping centers, colleges, major industrial employers, and similar traffic generators within the governmental unit.

Private Streets & Alleys – A private vehicular access way shared by and serving two or more lots, which is not dedicated to the public and is not publicly maintained. Private streets and alleys may be established only under the terms of this ordinance. The term private street shall be inclusive of alleys.

Property Owner – Any person(s), firm(s), corporation(s), or any other legal entity having legal title to or sufficient proprietary interest in the land comprising the subdivision or addition, or any representative or agent thereto, who has express written authority to act on behalf of such owner.

Public Facilities – Any buildings or facilities which are owned, leased and primarily used and/or primarily operated by the City including, but not limited to, Transportation Services, Utility Services, Transmission Lines, Metering Facilities, and Recreation Facilities/Services.

Public Improvement – Any drainage way, roadway, parkway, utility, pedestrian way, off-street parking area, lot improvement, open space, or other facility for which the City or other governmental entity will ultimately assume responsibility for maintenance and operation, or which may affect an improvement for which local government responsibility is established.

Public Way – An officially approved, privately maintained drive constructed to City street standards, open to unrestricted and irrevocable public access, serving two or more lots with a minimum of 100 feet of frontage as their primary means of access.

Remainder – The residual land left after platting of a portion of a tract. Platting of a residual may in some instances be required under the provisions of this ordinance.

Replatting – Any change in a map of an unapproved or a recorded plat, except as permitted as an amended plat, that affects any street layout on the map or area reserved or dedicated thereon for public use, or any lot line, or that affects any street layout on the map or area reserved or dedicated thereon for public use, or any lot line, or that affects any map or plan legally recorded prior to adoption of any regulations controlling subdivisions or additions. Replatting includes the combination of lots into a single lot for purposes of development.

Resubdivision – The replatting of a subdivision plat. Any change in an approved or recorded subdivision plat that affects any street layout or area reserved thereon for public use or any lot line, or that affects a map or plan legally recorded prior to adoption of any regulations controlling subdivisions.

Right-of-Way – A strip or parcel of land occupied or intended to be occupied by a street or alley. Where appropriate right-of-way may include other facilities and utilities, such as sidewalks, railroad crossings, electrical, communication, oil or gas, water or sanitary or storm sewer facilities, or for any other special use. The use of right-of-way shall also include parkways and medians outside of pavement. The usage of the term "right-of-way" for land platting purposes shall mean that every right-of-way hereafter established and shown on a final plat is to be separate and distinct from the lots or parcels adjoining such right-of-way and not included within the dimensions or areas of such lots or parcels.

Secondary Arterial Street – Roads intended to collect and distribute traffic in a manner similar to a primary arterial street, except these roads service minor traffic generators such as

commercial areas, hospitals, churches, and offices and are designated to carry traffic from collector streets to the system of primary arterials.

Security – The letter of credit or cash escrow provided by the applicant to secure its promises in the improvement agreement.

Setback – The distance between a building and the property line nearest to the building.

Sidewalk – A paved walk, separated by a street, and intended for the movement of pedestrian traffic.

Sketch Plat – A sketch preparatory to the preliminary plat (or final plat in the case of minor subdivisions) to enable the sub divider to save time and expense in reaching general agreement with the Development Review Board as to the form of the plat and the objectives of these regulations.

Street – Any thoroughfare or public way, other than an alley, more than 25 feet in roadway width, which has been dedicated to the public for public use.

Subdivider – Any person who (1) having an interest in land causes it, directly or indirectly, to be divided into a subdivision or platted as an addition or, who (2) directly or indirectly, sells, leases or develops, or offers to sell, lease, or develop or advertise to sell, lease or develop, any interest, lot, parcel, site, unit, or plat in a subdivision or addition, or, who (3) engages directly through an agent in the business of selling, leasing, developing, or offering sale, lease, or development a subdivision or addition or any interest, lot, parcel site, unit or plat in a subdivision or addition or who (4) is directly or indirectly controlled by, or under direct or indirect common control with any of the foregoing.

T.A.C. – Texas Administrative Code

Temporary Improvement – Improvements built and maintained by an owner during construction of the development of the subdivision or addition and prior to release of the performance bond or improvements required for the short term use of the property.

Tract – A lot. The term "tract" is used interchangeably with the term "lot", particularly in the context of subdivision, where a "tract" is subdivided into several lots, parcels, sites, units, plots, condominiums, tracts or interests.

Utilities Engineer – The City designated engineer with responsibility to review and release plans for water and sewer improvement projects, or his designee.

Variance- A relaxation by the City Council of the dimensional regulations of this Ordinance where such action will not be contrary to the public interest and where, owing to conditions peculiar to the property and not the result of actions or the situation of the applicant, a literal enforcement of this Ordinance would result in unnecessary and undue hardship.

Section 3 – AREA & ACTIVITIES SUBJECT TO SUBDIVISION RULES

A. Except as otherwise provides, these regulations apply to all subdivisions of land, located within both the City limits and within the City's extraterritorial jurisdiction.

B. The following types of subdivision do not require approval by the City. However, the City shall not extend utilities, provide access to public roads or issue building permits for the development of any property which has not received final plat approval, except as otherwise provide in this ordinance.

1. The division of land into two or more parts where all parts are larger than 5 acres, where each part has access, and where no new building or improvements is proposed and no required public improvement is to be dedicated.

2. The creation of a remainder of a tract is caused by the platting of a portion of the tract, provided the remainder is larger than 20 acres.

3. The use of the subject property for agricultural purposes provided that the use does not involve the construction of a building(s) to be used as a residence or for any purpose not directly related to agricultural use of the land or crops or livestock raised thereon.

4. The division of property through inheritance, the probate of an estate, or by a court of law.

C. Except as provided above, no land may be subdivided or platted through the use of any legal description other than with reference to a plat approved by the City Council in accordance with these regulations.

D. No building permit or final inspection shall be issued for any parcel or tract of land inside the City limits until such property has received final plat approval and is in substantial conformity with these subdivision regulations, and no private improvements shall take place or be commenced except in conformity with these regulations.

Section 4 – PLATTING PROCEDURES

A. Applicable Law for Plat Approval.

1. All applications for plat approval, including, final plats, pending on the final approval of this ordinance and which have not lapsed, shall be reviewed under regulations in effect immediately preceding the date of adoption of these regulations.

2. These regulations shall not be construed as abating any action now pending under, or by virtue of, prior existing subdivision regulations, or as

discontinuing, abating, modifying, or altering any penalty accruing or about to accrue, or as affecting the liability of any person, firm, or corporation, or as waiving any right of the City under any section or provision existing at the time of adoption of these regulations, or as vacating or annulling any rights obtained by any person, firm or corporation, by lawful action of the City except as shall be expressly provided for in these regulations.

B. General Procedure.

1. Classification of Subdivisions and Additions – Before any land is platted, the property owner shall apply for and secure approval of the proposed subdivision plat or addition plat in accordance with the following procedures, unless otherwise provided by these regulations. Subdivisions are classified as major or minor, depending on the number of lots proposed and the extent of public improvements required.

   a. Minor subdivisions shall create no more than four lots and not require the creation of a new street or the extension of municipal facilities. Minor subdivisions may be approved for residential and non-residential properties. Minor plat approval requires the submission of a final plat as described under Section 6. Minor plats will be considered and approved by the Development Review Board and City Council.

   b. Major subdivisions involve the creation of new streets, the extension of municipal facilities or the creation of more than four lots. Major subdivisions may be approved for residential and non-residential properties. Plats are considered major subdivisions if they create more than four lots or involve the creation of new streets or the extension of municipal facilities. The procedure for approving a major plat typically requires two steps: preliminary plat approval, and final plat approval.

2. Official Submission Date for Items Requiring Commission and Development Review Board recommendation to the City Council – For the purpose of these regulations, the date on which the application is first filed shall constitute the official submission date for the plat, after which the statutory period required for approval or disapproval of the plat shall commence. In order to comply with State law time requirements for plat review, the date of filing shall be when the application and all required information is received by the City Staff.

3. Approval Criteria – Applications for plat approval shall be evaluated for compliance with these regulations and requirements contained in the Design Guidelines for Subdivisions, which are incorporated herein by reference and attached hereto as Appendix A, and with any other criteria, policies, rules, and plans which are referenced elsewhere in these regulations.

4. Statutory Compliance Procedure – The City Staff shall place the application for major plats on a scheduled meeting of the Commission prior to the expiration of thirty (30) days following the official submission date. The Commission shall make recommendation to the City Council for approval or disapproval of the application at the meeting. If the Commission fails to recommend approval or disapproval of the application within 30 days of the official submission date, the application shall be sent to the City Council for consideration. Unless the Commission unconditionally disapproves the plat application within such period, the City shall continue to process the application for compliance with these regulations. The Commission shall consider the application within 30 days.

5. Application Forms and Procedures – The City Staff may establish procedures, forms and standards with regard to the content, format and number of copies of information constituting an application for a preliminary plat, replat, vacation of plat or final plat.

6. Extraterritorial Jurisdiction – Land in the City's extraterritorial jurisdiction is subject to platting, as provided by State Law. The approval of a plat for land within the extraterritorial jurisdiction does not constitute approval of land use. Properties incorporated subsequent to platting are subject to the City's zoning authority.

Section 5 - Preliminary Plat.

A. Applicability – A preliminary plat is required for all major subdivisions prior to the construction of public improvements, [except as permitted under subsection e.] If a preliminary plat is omitted, a final plat shall be required in conformance to Section 6.

B. Application Procedure and Requirements – On forms approved by the City, the applicant shall file for approval of a preliminary plat. The plat shall be prepared by or under the supervision of a registered public surveyor in the State of Texas and shall bear surveyor's seal, signature and date on each sheet. The payment of all applicable fees shall be required at the time of submission.

1. General Application Requirement – 5 copies of the proposed preliminary plat shall be at a scale of 1" = 100', unless otherwise approved by the (DRB) and shall be in a form substantially as follows:

    a. A title including the name of the subdivision, developer, engineer (or surveyor), name of the survey, the scale, date, a north point and approximate acreage.

    b. The boundary lines of the tract to be subdivided with courses, angles, and distances, the property lines and names of record owners of adjoining undeveloped property, easements, building lines, buildings and lots, physical features including water courses, ravines, bridges,

culverts, drain pipes, sanitary and storm sewers, water mains, and other existing features on the property being developed and on undeveloped properties within two hundred (200) feet of the subject property.

c. Contours based on U.S. Coast and Geodetic Survey mean sea level elevations at intervals, as required by the city engineer, of two (2) to five (5) feet, and approximate flood hazard lines delineating the limits of the flood plain on the unimproved property which have been determined by a registered professional engineer.

d. Location and width of existing streets, street names, width between curbs, if paved, and alleys, within and adjacent to the property.

e. The location, widths and names of all proposed streets, alleys or other public ways, all lots, blocks and all parcels of land to be dedicated for public use.

f. A vicinity map shall be presented prior to submitting the preliminary plat, showing sufficient area to properly locate the proposed subdivision in relation to schools, parks, shopping centers, thoroughfares and highways.

g. Description of subdivision metes and bounds.

h. Location of subdivision with respect to a corner of the survey tract, or an original survey of which it is a part.

i. Construction plans prepared by a Professional Engineer licensed in the State of Texas in accordance with the City of Henderson Guidelines for Subdivisions.

2. Standards for Approval – No preliminary plat shall be approved by the Commission or City Council as applicable, unless the following standards have been met:

a. Provisions for installation and dedication of public improvements have been made.
b. Plat conforms to applicable zoning and other regulations.
c. Plat meets all other requirements of these regulations.

d. Plat conforms generally to the Zoning Ordinance.

3. Approval Procedure – After review of the preliminary plat, the report and recommendations of the Development Review Board concerning the application, the report and recommendation of the City's Engineer on the construction plans if submitted with the preliminary plat, any exhibits submitted at the Planning and Zoning Hearing, the applicant shall be advised of any required changes and/or additions. The Commission shall recommend

approval or disapproval the preliminary plat to the City Council. One copy of the proposed preliminary plat shall be returned to the owner with the date of approval or disapproval and the reasons therefore accompanying the plat. If the Commission disapproves the proposed preliminary plat, the applicant may execute an appeal to the City Council.

a. Effect of Approval – Approval of a preliminary plat also authorizes the property owner, upon fulfillment of all requirements and conditions of approval, to submit an application for final plat approval to the City Council.

b. Lapse of Preliminary Plat Approval – The approval of a preliminary plat shall be effective for a period of one year from the date of approval by the Commission or the Council, at the end of which time the applicant must have submitted and received approval for final plat. If a final plat is not submitted and approved within one year, the preliminary plat approval shall be null and void, and the applicant shall be required to submit a new plat for land study review subject to then existing zoning restriction and subdivision regulations. (See subsection D. concerning extensions and reinstatement of approval.)

C. Amendments to Preliminary Plat

1. At any time following the approval of a preliminary plat, and before the lapse of such approval, a property owner may request an amendment. The rerouting of street, addition or deletion of alleys, or addition or deletion of more than 10% of the approved number of lots shall be considered a major amendment. The adjustment of street and alley alignments, lengths, and paving details; the addition or deletion of lots within 10% of the approved number and the adjustment of lot lines shall be considered minor amendments.
2. The DRB may approve a minor amendment. Refusal to approve shall be referred to the City Council under the terms of Section 4. Major amendments will be considered by the Commission at a public meeting in accordance with the same requirements for the approval of a preliminary plat.
3. Approval – The Commission shall recommend approval or disapproval of any proposed major amendment and may make any modifications in the terms and conditions of preliminary plat approval reasonably related to the proposed amendment.
4. Retaining Previous Approval – If the applicant is unwilling to accept the proposed amendment under the terms and conditions required by the Commission and City Council, the applicant may withdraw the proposed major amendment.

D. Extension and Reinstatement Procedure.

1. Sixty days prior to or following the lapse f approval for a preliminary plat, as provided in these regulations, the property owner may petition the Commission to extend or reinstate the approval. Such petition shall be considered at a public meeting of the Commission.

2. In determining whether to grant such request, the Commission shall take into account the reasons for lapse, the ability of the property owner to comply with any conditions attached to the original approval and the extent to which newly adopted subdivision regulations shall apply to the plat or study. The Commission shall extend or reinstate the plat or study, or deny the request, in which instance the property owner must submit a new application for approval.

3. The Commission may extend or reinstate the approval subject to additional conditions based upon newly enacted regulations or such as are necessary to assure compliance with the original conditions of approval. The Commission may also specify a shorter time for lapse of the extended or reinstated plat or study than is applicable to original approvals.

E. Exceptions. The preceding requirements for the preliminary plat in this Section are waived if the following criteria are met:

1. The subdivision is actually a re-subdivision of lots previously platted and filed in the Official Public Records, Rusk County, Texas; or all proposed lots of the subdivision abut upon an existing street of adequate width such that no additional right-of-way is required; and in either case, no construction of public streets, alleys, storm sewers, sanitary sewers or water mains is required within or for extension to the subdivision and

2. The developer first secures written permission from the (DRB) to waive the preliminary plat and proceed directly to the final plat procedure.

Section 6 - FINAL PLAT

A. Applicability – A final plat shall be required for subdivisions of property and recorded before lots can be sold if a preliminary plat has either been approved or waived pursuant to Section 5.

B. Application for Procedure and Requirements – A final plat for minor subdivisions will be approved by the City Council upon recommendation by the DRB. A final plat for major subdivisions shall require approval by the Commission and City Council. Final plats shall comply with the preliminary plat where applicable. The application shall be accompanied by the following:

1. 5 copies of the proposed final plat bearing all information specified in Section 5 and the following language:

"Notice: Selling a portion of this addition by metes and bounds is a violation of city ordinance and state law and is subject to fines and withholding of utilities and building permits."

2. Formal irrevocable offers of dedication to the public of all streets, local government uses, utilities, parks and easements, in a form approved by the City

Attorney. The plat shall be marked with notation indicating the formal offers of dedication.

3. The improvement agreement and security, if required, in a form satisfactory to the City Engineer and shall include a provision that the property owner shall comply with all the terms of the final plat approval as determined by the City Council.

4. A recording fee in an amount required by the County Clerk.

5. Construction plans.

6. One copy of plat in a digital format approved by the (DRB).

7. Original Tax Certification showing no taxes are delinquent, as required by State Law.

8. A certificate, shown on the plat of ownership and dedication of all streets, alleys easements and public areas, to the public use forever, signed and acknowledged before a Notary Public by the owner of the land and placed on the face of the map.

9. A statement, shown on the plat acknowledging the existence of flood plains on the property, and dedicating a floodway easement.

10. The certificate shown on the plat of the registered public surveyor who surveyed mapped, and monumented the land, which certificate shall be sworn to before a notary public, and shall be placed on the face of the map. Under certain conditions approved by the (DRB), the Developer may be able to monument the land at a later date. No lot shall be sold or building permit shall be issued until monuments are in place.

C. The Engineer's or Surveyor's Statement, the owner's statement, and the Floodway Easement statement shall be in the following format:

ATTACHMENT "A"

ENGINEER'S OR SURVEYOR'S STATEMENT

I,_____, Registered_____(Public Land Surveyor or Professional Engineer) No._____, do hereby certify that this plat was prepared from an actual survey made by _____ (me) or _____ (under my direction and supervision) on the ground during_____ (Month & Year).

GIVEN UNDER MY HAND AND SEAL this the _____day of _____, 2____.

_____
(Signature)

(Seal)

SUBSCRIBED AND SWORN BEFORE ME, a Notary Public, in and for the State of Texas, this the_____ day of_____, 2_____.

_____
Notary Public, State of Texas

(Seal)

OWNER'S STATEMENT

I (we) _____ (owners name and title if applicable) am (are) owner(s) of the tract of land shown hereon and do accept this as its Plan for the subdividing into lots and blocks and do dedicate to the public forever the streets, alleys and easements as shown.

_____ _____
(Signature) (Signature)

SUBSCRIBED AND SWORN BEFORE ME, a Notary Public, in and for the State of Texas, this the ____day of _____, 2_____.

_____
(Signature)

(Seal)

ATTACHMENT "A-1"

FLOODWAY EASEMENT STATEMENT

STATE OF TEXAS

KNOW ALL PERSONS BY THESE PRESENTS:

COUNTY OF RUSK

THAT whereas we _____, are the owners of the above described property and we are familiar with the terrain, elevation, high water level and all physical conditions, in, on and adjacent to said property; and

WHEREAS, said property is subject to flooding high water and inundation due to the terrain, elevation and the fact that a creek(s) traverses or runs adjacent to said property; and

WHEREAS, the property subject to flooding, high water and inundation is marked on the plat and with the "Floodway Easement" line as shown and outlined on the plat.

WHEREFORE, PREMISES CONSIDERED:

We hereby agree that no obstruction to the natural flow of water, including storm waters and overflow water from any creek(s) shall be permitted by filling or by construction of any type of dam, building, bridge, walkway or any other structure within the floodway easement unless designed in accordance with the Storm Drainage Criteria of the City of Henderson. In the event any property owner obstructs the natural flow of the water in any manner, the City of Henderson may summarily remove any of said obstructions upon notification by mail to the owner.

We do hereby declare and dedicate this "Floodway Easement" to be "a covenant running with the land" and that this shall constitute a notice to all parties concerned including our heirs, successors or assigns and any and all purchasers of property within said subdivision.

Minimum finish floor elevation of buildings shall be built at least one (1) foot above the established 100-year flood plain or six (6) inches above the curb whichever is greater.

WITNESS OUR HANDS AT _____, TEXAS, this_____ day of _____, 2_____.

SUBSCRIBED AND SWORN BEFORE ME, a Notary Public, in and for the State of Texas, this the _____day of _____, 2_____.

_____
(Notary Public, State of Texas)

(Seal)

D. Construction Plan Procedure and Requirements –

1. General Application Requirement – Construction plans shall be prepared by or under the supervision of a Professional Engineer registered in the State of Texas. Plans submitted for review by the City shall be dated and bear the responsible Engineer's name, serial number and designation of "Engineer", "Professional Engineer", or "P.E." and an appropriate stamp or statement near the engineer's identification, stating that the documents are for preliminary review and are not intended for construction. Final plans acceptable to the city shall bear the seal and signature of the Engineer and the date signed on all sheets of the plans. A Professional Engineer registered in the State of Texas shall design public works construction in streets, alleys or easements that will be maintained by the city.

2. Construction Plan Review Procedure – Copies of the construction plans and the required number of copies of the plat shall be submitted to the City's Engineer and Public Services Director for final approval. The plans shall contain all necessary information for construction of the project, including screening walls, pollution prevention plan, and other special features. All materials specified shall conform to the Design Guidelines for Subdivisions. Each sheet of the plans shall contain a title block including space for the notation of revisions. This space is to be completed with each revision to the plan sheet and shall clearly note the nature of the revision and the date the revision was made. The City's Engineer will release the plans for construction after approval of the final plat by the City Council and payment of all inspection fees. Upon such release, each Contractor shall maintain one set of plans, stamped with City release, on the project at all times during construction.

3. Failure to Commence Construction – If construction has not commenced within one year after approval of the plans, resubmittal of plans may be required by the City's Engineer or Public Services Director for meeting current Design Guidelines for Subdivisions. "Construction" shall mean installation of City maintained public improvements.

E. Standards for Approval – No final plat shall be approved by the DRB or the Commission or City Council unless the following standards have been met:

1. Plat substantially conforms to the preliminary plat.

2. Plat conforms to applicable zoning and other regulations.

3. Provision has been made for adequate public facilities under the terms of this ordinance

4. Plat meets all other requirements of this ordinance.

F. Approval Procedure – After review of the final plat, the DRB shall place the final plat for consideration on the agenda of a public meeting of the Commission. Minor plats may be approved by the DRB or referred to the City Council. In the event of disapproval, reasons for disapproval shall be stated. One copy of the final subdivision

plat shall be returned to the applicant with the date of approval or disapproval noted on the final plat and, if the final plat is disapproved, the reasons for disapproval accompanying the final plat.

G. Appeals – If the DRB disapproves the final plat for a minor subdivision, the applicant may appeal to the City Council.

H. Letter of Compliance – Upon final approval of a final plat required by these regulations, the City shall issue to the applicant a Letter of Compliance stating that final plat has been approved by the Commission and/or the City Council. For purposes of this section, final approval shall not occur until all conditions of approval have been met.

I. Signing and Recording of Final Plat – It shall be the responsibility of the City Secretary to file the final plat with the County Clerk. Simultaneously with the filing of the final plat, the Public Services Director shall record such other agreements of dedication and legal documents as shall be required to be recorded by the City Secretary. The final plat, bearing all required signatures, shall be recorded after final approval within sixty working days of receipt of the signed originals. One copy of the recorded final plat, with street addresses assigned, will be forwarded to the property owner and others as designated by the Development Review Board.

J. Effect of Approval – Approval of final plat shall certify compliance with the City regulations pertaining to the subdivision of land. An approved and signed final plat shall be filed with the County as a record of the subdivision of land and shall be used to reference lots and interests in property thereon defined for the purpose of conveyance and development as allowed by these regulations.

Section 7 - REPLATTING

A. Replatting of Land

1. Replat Required – Unless otherwise expressly provided for herein, a property owner who proposes to replat any portion of an already approved final plat, other than to amend or vacate the plat, must first obtain approval for the replat under the same standards and by the same procedures prescribed for the platting of land by these regulations.

2. Replatting Without Vacating Preceding Plat – A replat of a final plat or portion of a final plat may be recorded and is controlling over the preceding plat without vacation of that plat if the replat:

   (a) Is signed and acknowledged by only the owners of the property being replatted;
   (b) Does not attempt to amend or remove any covenants or restrictions previously incorporated in the final plat.
   (c) Is approved by the City Council, as applicable.

3. Any replat which adds or deletes lots must include the original lot boundaries.

4. Plats must conform to applicable State law with regard to public notification requirements in Texas Local Government Code Sections 212.014 and 212.015, or successors.

5. Any replat that has an existing subdivision name shall use the same subdivision name along with a subtitle.

Section 8 – AMENDING PLATS

The DRB may, upon petition of the property owner or developer, approve and issue an amending plat which is signed by the applicants only, unless remove period otherwise required to the contrary, and which is for one or more of the purposes amending plats set forth in Texas Local Government Code Section 212.016, or successor, and such approval and issuance shall not require notice, hearing, or approval of other unaffected lot owners.

Section 9 - PLAT VACATION

A. By Property Owner – The property owner of the tract covered by a plat may vacate, upon the approval of the City Council, the plat at any time before any lot in the plat is sold. The plat is vacated when a signed, acknowledged instrument declaring the plat vacated is approved and recorded in the manner prescribed for the original plat.

B. By All Lot Owners – If lots in the plat have been sold, the plat may be vacated on the application of all the owners of lots in the plat with approval obtained in the manner prescribed for the original plat.

C. Criteria – The City Council shall approve the petition for vacation on such terms and conditions as are reasonable to protect public health, safety and welfare. As a condition of vacation of the plat, the City Council may direct the petitioners to prepare a revised final plat in accordance with these regulations.

D. Effect of Action – On the execution and recording of the vacating instrument, the vacated plat shall have no effect. Regardless of the City Council's action on the petition, the property owner or developer will have no right to a refund of any monies, fees or charges paid to the City nor to the return of any property or consideration dedicated or delivered to the City except as may have previously been agreed to by the City Council. Such plat vacation shall be recorded in the office of the Rusk County Clerk by the applicants for such vacation, if any portion of the plat being vacated was so filed.

Section 10 – DEVELOPMENT FEES

A .Preliminary Plat - $50.00 and review cost from City Engineer.

B. Final Plat and Construction Plans - $50.00 each and review cost from City Engineer.

C. Replats, Lot Splits, Minor Plats - $50.00.

D. Construction Inspection Fees – The developer will pay all inspection fees of the project. City inspections will be performed on all public improvements including streets, water, sewer and drainage. 2% of initial estimate of developer construction cost will be paid to the City before construction starts. At the end of the project the developer will furnish the actual cost of the development and the City will furnish the actual cost of inspection fees. Final payment from the developer will be based on these computations. Fees will be paid before the City will accept any improvements.

E. Street Lights – cost of light conduits, traffic signals, pavement structures, installation, etc. are the responsibility of the developer.

F. Street signs – cost of sign post and sinage are the responsibility of the developer.

G. Legal review and document preparation by City Attorney – cost for the City Attorney. Fees will be paid before the City will accept any improvements.

Section 11 – REQUIREMENTS FOR PUBLIC IMPROVEMENTS AND DESIGN

A. General Requirements

1. Plats straddling water system service areas – The City's Engineer may request assurance from that Water System's Attorney that access is legally established along with a Certificate of Convenience and Necessity.

2. Character of the Land – Land that is unsuitable for subdivision or development due to flooding, utility easements or other features which will reasonably be harmful to the safety, health and welfare of the present or future inhabitants of the subdivision or addition and/or welfare of its surrounding areas, shall not subdivided or platted unless adequate methods are formulated by the owner and accepted by the City's Engineer.

3. Adequate Public Facilities Policy – The land proposed for subdivision must be adequately served by the essential facilities and services. Design of improvements shall conform to the Design Guidelines for Subdivisions. These services include street access, water, waste water disposal, and off-site drainage. No plat or replat may be approved unless it conforms to this policy and its standards. This policy may be further defined and supplemented by other City ordinances.

    a. Street Access – All platted lots must have safe and reliable street access for daily use and emergency purposes.

(1). All platted lots must have direct access to an improved public street, private street, or an approved public way, and connected by improved public streets to an improved public thoroughfare.

(2). Except for lots which are provided access from an approved cul-de-sac, all subdivisions must have adequately designed access or approach as approved by the City's Engineer. Where development phasing or constraints of the land prevent the provision of a second, separate means of access, the City may accept a temporary connection, or a median divided street or entry to satisfy this requirement.

(3). All access points/driveways adjoining State Highways must be pre-approved by TXDOT for the planned access points as shown in the plat.

B. Water – All platted lots must be connected to a State approved water system.

1. Except for lots along an approved cul-de-sac, all lots within the City limits and as appropriate in the ETJ must be provided service connections from a looped water main.

2. Water Service must be sufficient to meet the fire flow requirements of the proposed development, except where a suitable alternative means of fire protection is approved by the City Fire Chief.

3. The City may accept development phasing, development restrictions, and/or the construction of improvements to maintain adequate fire protection.

4. Waste Water – All platted lots must be served by an approved means of waste water collection and treatment.

5. On-site wastewater treatment systems will not be permitted, except for the pretreatment of industrial waste, unless approved by the City Engineer.

6. The projected wastewater discharge of a proposed development shall not exceed the capacity of the wastewater treatment and collection system.

7. The City may accept the phasing of development and/or improvements to the systems so as to maintain adequate waste water capacity.

8. Where off-lot sewerage is not required or is not to be provided, on-site sanitary sewer facilities shall conform to Onsite Sanitary Sewage Facility standards. The minimum lot size as well as the septic tank system design and construction shall be in accordance with the appropriate responsible State Agency and as approved by

the designated representative of Rusk County.

C. Drainage – Increased storm water runoff attributable to new development must not exceed the capacity of the downstream drainage system or adversely affect adjoining or downstream property. Where the projected runoff would exceed capacity, the City may accept the phasing of development, the use of control methods such as retention or detention, and/or the construction of off-site drainage improvements as means of mitigation.

D. Subdivision or Addition Name – The proposed name of the subdivision or addition shall not duplicate, or too closely approximate phonetically, the name of any other subdivision or addition in the area covered by these regulations and shall, where possible, correspond to named subdivisions or additions in the immediate vicinity. The DRB shall have final authority to approve the name of the subdivision or addition.

E. Corner and Reference Markers

1. All lot corners shall be located and marked with one half inch reinforcing bar, twenty-four inches in length, and shall be placed flush with the ground or counter sunk, if necessary, in order to avoid being disturbed.
2. Iron rods, one half inch in diameter and twenty-four inches long, shall be placed on all boundary corners, block corners, curve points, and angle points in public rights-of-way.

F. Lot Design and Improvements

1. Lot Arrangement – The lot arrangement shall be such that there will be no foreseeable difficulties, for reasons of topography or other conditions, in securing building permits to build on all lots in compliance with the Zoning Ordinance, Building Code and other applicable ordinances, laws and regulations. Driveway access shall be provided to buildings on the lots from an approved street, alley or public way.

2. Lot Dimensions – Lot dimensions shall comply with the minimum standards of the zoning ordinance. Depth and width of properties reserved or laid out for business, commercial, or industrial purposes shall be adequate to provide for the off street parking, land-scaping, and loading facilities required for the type of use and development contemplated, as established in the Zoning Ordinance.

3. Double Frontage Residential Lots – Double frontage and reversed frontage lots shall be avoided except where necessary to separate residential development from traffic arterials or to overcome specific disadvantages of topography and orientation.

4. Blocks –

a. Blocks shall generally have sufficient width to provide for two tiers of lots of appropriate depths.

b. The lengths, widths, and shapes of blocks shall be such as are appropriate for the locality and the type of development contemplated. In general, blocks shall be approximately one thousand (1,000) feet long, but the length may be varied according to circulation and topography.

5. Non-residential Plats –

a. General – All non-residential plats shall be subject to all the requirements of these regulations, except those that clearly pertain only to residential properties, as well as such additional standards as may be required by the DRB, and shall conform to the proposed land use and standards established in the Comprehensive Plan and Zoning Ordinance. Site plan approval and plat approval may proceed simultaneously at the discretion of the DRB.

b. Design Principles – In addition to these regulations, which are appropriate to all platting, the applicant shall demonstrate to the satisfaction of the DRB that the street, parcel, and block pattern proposed is specifically adapted to the uses anticipated and takes into account other uses in the vicinity. The following principles shall be observed:

(1) Proposed non-residential parcels shall be suitable in area and dimensions to the types of non-residential development anticipated.

(2) Street rights-of-way and pavement shall be adequate to accommodate the type and volume of traffic anticipated to be generated thereupon.

(3) Residential areas shall be protected from potential nuisance from a proposed non-residential plat.

(4) Streets carrying non-residential traffic, especially truck traffic, shall not normally be extended to the boundaries of adjacent existing or future residential areas, except where required by the DRB.

c. Frontage and Access Streets – All non-residential lots established following (effective date of this ordinance) shall meet the following frontage and access criteria:

(1) Frontage – All frontages shall conform to the requirements of the specific zoning district set forth in the Zoning Ordinance.

(2) Access Standards – All non-residential lots shall have access to a public street.

(3) When adjacent to a median divided street, all lots shall have access to a median opening. Direct access should be provided where possible. If direct access is not available, a corner lot shall have indirect access through a shared access easement between it and adjacent properties. All off-corner lots shall have direct access, or indirect access, by platting a minimum of one half of the intersecting drive as a shared access easement.

d. Soil Preservation and Final Grading – Soil Preservation and Final Grading shall be protected to prevent erosion and silt runoff.

e. Debris and Waste – No cut trees, timber, debris, large rock or stones, junk, rubbish or other waste materials of any kind shall be buried in any land, or left or deposited on any lot or street at the time of final acceptance by the City's Engineer, and removal of those items and materials shall be required prior to such acceptance. No items and materials as herein described shall be left or deposited in any area of the subdivision or addition at the time of expiration of any improvement agreement or acceptance of dedication of public improvements, whichever is sooner. However, dirt or topsoil may be stock piled on a property with approval of the City's Engineer.

f. Streets and Thoroughfares

(1.) Adequacy of Streets and Thoroughfares – All streets and alleys shall be designed and platted in conformance with the Design Guidelines for Subdivisions, and other valid development plans approved pursuant to these regulations. Access to all lots must be suitably improved or secured by provisions contained in these regulations.

(2) Design Standards – If the adjacent property is undeveloped and the street must temporarily be a dead-end street the right-of-way shall be extended to the property line.

(3) Where existing alleys are used, alley turnouts shall be provided to new subdivisions.

(4) Cul-de-sacs – For greater convenience to traffic and more effective police and fire protection, permanent dead-end streets should, in general, be prohibited. However, the DRB may require the reservation or dedication of an appropriate easement to accommodate drainage facilities, pedestrian traffic

or utilities. A cul-de-sac turnaround shall be provided at the end of a permanent dead-end street in accordance with Design Guidelines for Subdivisions.

(5) Temporary Dead-End Streets – The City may require the construction of temporary dead-end streets in order to provide for the future connection of subdivisions and to ensure reasonable access and avoid excessive street length.

g. Street and Alley Length –

(1) In general, blocks shall be approximately one thousand (1,000) feet long, but the length may be varied according to circulation and topography. Blocks shall have a minimum width of two hundred (200) feet.

(2) No cul-de-sac unless otherwise authorized by the Commission shall exceed 600 feet in length, which is to be measured from the centerline of the street with which it intersects to the center of the cul-de-sac.

(3) Cul-de-sac lengths longer than those specified in this section shall require approval of the DRB. In reviewing a request, the DRB shall consider the following:

(4) Alternative designs which would reduce streets, cul-de-sacs or alley length;

(5) The effect of over length streets, cul-de-sacs, or alleys on access, congestion and delivery of municipal services; and

(6) Means of mitigation, including but not limited to increased street width, mid-block turnarounds, limitation on the number of lots to be created and served, temporary points of access, and additional fire protection measures.

h. Street Names and Signs –

(1) Street names must be submitted to the DRB for approval. Street names and subdivision names will be referred to the 9-1-1 Authority for verification. Streets that are to be in alignment with existing

streets shall be given the same name. Names shall be sufficiently different in sound and spelling so as not to cause conflict or confusion. The DRB will maintain an index of street names. Street names and subdivision names are fixed at the time of approval of the final plat.

(2) The developer shall provide payment for street name signs for the development. The price of each street name installation shall include cost of the sign assembly, pole, and installation. Payment by the developer will be due prior to approval of the engineering plans by the City's Engineer.

(3) Street name signs shall be installed by the City upon acceptance of the development improvements by the City's Engineer.

i. Street lights- Installation of street lights are subject to approval by the City Engineer and shall be in accordance with the Design Guidelines for Subdivisions. The developer shall be responsible for the cost of such street lighting installation as required. The developer shall install conduit for the street lights and traffic signals in divided thoroughfares as directed by the City Engineer.

j. The pavement structure shall be designed in accordance with the Design Guidelines for Subdivisions in Henderson.

k. Environmental considerations:

Whereas it is an environmental hazard and can cause property damage to increase the turbidity of streams or increase the sedimentation onto private property, it shall be the responsibility of property owners, developers, builders, contactors and others disturbing the natural surface or ground cover, both collectively and separately, to institute such precautions as may be necessary to prohibit erosion, sediment transport, and/or siltation into any storm sewer conveyance system or onto nearby properties. The property owner is required to submit any erosion control plan, which must be designed by the developer's Engineer to the disturbing of the natural surface or ground cover. The developer's Engineer submittal must comply with any State and Federals laws. An erosion control plan should be included with the construction plans for paving, drainage, and utilities, and with site plans submitted for approval for building permits in all zoning districts except single family, multiple family districts where construction is to take place on 1 acre or more. It is unlawful to pollute or obstruct the flow of water in such streams by introducing into said waterways

construction debris, brush, or other cleared materials, excavated material, trash or rubbish.

l. Street Dedications and Reservations

(1). Dedication of Right-of-Way – The developer shall provide all right-of-way for existing or future streets as required or other valid development plans approved by the DRB or City Council as applicable. In the case of perimeter streets, half of the total required right-of-way for such streets shall be provided. However, in some instances more than half shall be required depending on the actual or proposed alignment of the street.

(2). Perimeter Streets – Where an existing half-street is adjacent to a proposed subdivision or addition, the unimproved half of the street shall be dedicated and improved by the developer.

(3). Slope Easements – The dedication of easements, in addition to dedicated rights-of-way.

(4). Street widths – Streets (including sidewalks) which dead-end at power lines, railroad, or similar rights-of-way, and are intended for future extension shall be constructed in the full right-of-way for half the distance across such right-of-way for each side. The minimum paving widths for the various types of streets shall be in accordance with the Design Guidelines for Subdivisions.

m. Improvement, Widening, and Realignment of Existing and Proposed Streets – Where a subdivision or addition borders a substandard street, widening or constructing a street that would require use of some of the land in the subdivision or addition, the applicant shall be required to improve and dedicate those areas for widening or realignment of those streets, as follows:

(1). When a proposed subdivision or addition abuts or will abut both sides of a substandard street or a proposed street, the developer shall be required to improve the substandard street or proposed street so that it will be a standard street, including sidewalks. The minimum street paving width shall be shown in Chart of Street Widths set forth in the Design Guidelines for Subdivisions.

(2). If the proposed subdivision or addition is located along only one side of a substandard street or a proposed street in, the developer shall be required to improve the developer's side of the substandard street or proposed street so that it

will be a standard street. The minimum street paving width shall be shown in the Chart of Street width in this Section. The developer may, however, petition the City to construct the improvements herein after consultation and recommendation from the DRB.

(3). When an arterial street is to be extended through a property to intersect with another arterial street, all lanes shall be constructed for minimum distance of 350 feet from the point of intersection. From that point the pavement width may be decreased abutting the only side of the proposed thoroughfare is to be developed. Then half the roadway will be constructed, including the left turn lane and transition. This provision will not require widening an existing intersection that already provides for through lanes.

Section 12 – PRIVATE STREETS AND ALLEYS

Subdivisions may be developed with private streets and alleys instead of public streets and alleys if the development complies with the requirements of this section and the subdivision has received DRB approval for private street development. The term private shall be inclusive of alleys. Variances to these requirements shall not be permitted.

A. Design and Construction Standards – Private streets shall conform to the same standards regulating the design and construction of public streets. These standards shall include, but are not limited to, the following:

1. Minimum Pavement width of private streets shall be 28 feet measured from face of curb face to curb face.

2. Design Guidelines for Subdivisions shall be complied with; and

3. Street Naming requirements in Section 11 shall be complied with.

B. Streets Excluded – Streets determined to be collector streets by the DRB shall not be used, maintained or constructed as private streets. Also, the DRB may deny the creation of any other private street if, in the DRB's judgment, the private street would negatively affect traffic circulation on public streets or impair access to property either on-site or off-site to the subdivision, impair access to or from public facilities including schools and parks, or delay the response time of emergency vehicles.

C. Property Owners Associations Required – Subdivisions developed with private streets and alleys must have a mandatory property owners association that includes all property owners and their property served by served by private streets. The association shall own and be responsible for the maintenance of the

private streets. The association shall own and be responsible for the maintenance of private streets and appurtenances.

D. Private Street Lot – Private streets and alleys must be constructed within a separate lot owned by the property owners association. This lot must conform to the Design Guidelines for Subdivisions. An easement shall be granted to the City providing unrestricted use of the property for utilities and the maintenance of the same. This right shall extend to all utility providers, including telecable companies, operating within the City. The easement shall also provide the City with the right of access for any purpose related to the exercise of a governmental service or function, but not limited to, fire and police protection, inspection and code enforcement. The easement shall permit the City to remove any vehicle or obstacle within the street lot that impairs emergency access.

E. Construction and Maintenance Cost – The City shall not pay for any portion of the cost of constructing or maintaining a private street.

F. City Utilities – Water facilities placed within the private street and alley shall be installed in conformance with Design Guidelines for Subdivisions. Sewer, water and drainage facilities placed within the private street and alley shall be installed in conformance with the Design Guidelines for Subdivisions. All such facilities shall be dedicated to the City prior to final approval. Street repairs shall be paid by the Property Owners Association after water and sewer repairs are made by the City.

G. Plans and Inspections – Developments proposed with private streets must submit to the City the same plans and engineering information required to construct public streets and utilities. Requirements pertaining to inspection and approval of improvements for private streets shall be the same as for public streets. Fees charged for these services shall also apply. The City will inspect private streets during construction. The City shall periodically inspect private streets and may require necessary repairs to insure emergency access.

H. Street Sign Standards – Signs identifying Private Streets shall conform to the same minimum standards regulating the design and construction of signs identifying Public Streets as approved by the City's Public Services Department. Private Street Signs located at the intersection of a Private Street with a Public Street are subject to approval by the City's Public Services Department. All private traffic signs shall conform to the Texas Manual of Uniform Traffic Control Devices.

Section 13 – RESERVED

Section 14 – DRAINAGE AND UTILITY IMPROVEMENTS

A. Drainage -

1. Design of Facilities – Drainage facility needs caused by the development or use of a piece of property must be identified and provided for in appropriate stages of development. The objectives of drainage planning and facilities are to protect the uses of the platted property and safety of citizens who use the platted property in the future and to prevent development and usage of the platted property from adversely affecting others. Design of storm sewer systems, materials and construction shall be in accordance with the Design Guidelines of Subdivision Improvements. When a project is determined to be in the jurisdictional control of the U.S. Corp of Engineers, in regard to the Federal Clean Water Act or its successor, the City requirements for drainage improvements will be subordinate to the requirements of a Section 404 Permit of the Federal Clean Water Act, or its successor. During the platting process, the flood hazard areas shall be identified and drainage easements dedicated to the public on the final plat. Plans shall be submitted with the plat. The owners and developers of property have the duty to:

   a. Accommodate Upstream and Adjacent Drainage Areas - A culvert or other drainage facility shall in each case be large enough to accommodate potential runoff from ultimate development conditions from its entire upstream drainage area, whether inside, outside, along or adjacent to the subdivisions or addition. The owner's engineer shall initially determine the necessary size of the facility, based on the provisions of the construction standards and specifications assuming conditions of maximum potential watershed development subject to approval by the City's Engineer.

   b. Effect on Downstream Drainage Areas – The owner's engineer shall study the affect of each addition's storm runoff on the existing drainage facilities at a reasonable distance downstream of the addition as determined by the City's Engineer. Where it is determined that existing capacity is not available immediately downstream, the owner's engineer shall design a drainage system, detention facility, or parallel system to mitigate to the deficiency. The City shall deny the plat until construction plans for such mitigation have been approved by the City's Engineer. If oversize improvements are required, then the City may participate in the cost, if recommended by the DRB.

   c. Requirements for Developments in Drainage Areas Less Than One-Half (1/2) Square Mile – Drainage areas having a contributing watershed less than one-half (1/2) square mile shall be provided for in accordance with the Design Guidelines for Subdivisions. Water conveyances shall consist of pipe culverts, box culverts placed underground, improved open channels. An improved open channel is one in which the channel bottom sides are lined with reinforced Portland cement concrete or other

structurally sound material approved by the City's Engineer to a depth that will convey the 100- year frequency flood.

d. Requirements for Developments in Drainage Areas Greater Than One-Half (1/2) Square Mile and Less Than One (1) Square Mile – Drainage areas having a contributing watershed greater than one-half (1/2) square mile and less than one (1) square mile shall be provided for by one of the following methods:

(1). Drainage improvements may be provided for in accordance with the Design Guidelines for Subdivisions. Water conveyances shall consist of pipe culverts; box culverts placed underground or improved open channels. An improved open channel is one in which the channel bottom sides are line with reinforced Portland cement concrete or other structurally sound material approved by the City's Engineer to the depth that will convey the 100-year frequency flood.

(2). When the floodplain is part of an overall Master Plan of the development, the City's Engineer may allow the floodplain to be left in a natural state or greenbelt. The greenbelt shall be required to be dedicated to the City or a Homeowners Association for maintenance. The minimum dedication shall be one hundred feet (100') on each side of the defined floodplain limits. If the dedication is to the City, maintenance by the City shall consist of removal of dead or fallen trees blocking the drainage. In general, the greenbelt area shall be left in a natural state.

e. Requirements for Developments in Drainage Areas Greater Than One (1) Square Mile – Drainage areas having a contributing watershed greater than one (1) square mile shall be provided for by one of the following methods:

(1). The stream may be left in its natural state with minor improvements and no development within its floodplain. Minor improvements include the removal of dead trees, discarded debris and obstructions that would hinder the conveyance of water. The entire floodplain shall be platted and dedicated to the City as a floodway easement and the Home Owners Association for maintenance. The City will maintain the easement in the same condition as provided when the easement is within the City limits. The City Council or DRB may waive the dedication requirement only for the following exceptions:

(a.) Replats which were originally platted prior to the dedication requirements.

(b.) Subdivisions of five (5) lots or less.

(2). The floodplain fringe may be reclaimed for use as long as the floodway is protected and the 100-year flood elevation is not raised more than one (1) foot. This method of development may require erosion control to offset changes in the stream regimen caused by development of the property and drainage improvements. The entire floodway shall be platted and dedicated to the City as a floodway easement. The entire floodway shall be platted as a separate lot and dedicated to the City or Homeowners Association for maintenance. The City will maintain the easement in the same condition as provided when the easement is within the City limits. The City Council DRB may waive this dedication requirement only for the following exceptions:

(a.) Replats which were originally platted prior to the dedication requirements.
(b.) Subdivisions of five (5) lots or less.

(3). The stream may be reconstructed or relocated to accommodate development. The new channel shall be sufficient to convey the 100-year flood. The design will include erosion control such as seeding, sodding, channel lining, or a combination of these. The entire floodway with proper access easements shall be platted and dedicated to the City as a floodway easement. The entire floodway and proper access easement shall be platted as a separate lot and dedicated to the City or Home Owners Association for maintenance. The City will maintain the easement in the same condition as provided when the easement is within the City limits. The City Council / DRB may waive this dedication requirement only for the following exceptions:

(a.) Replats which were originally platted prior to dedication requirements.
(b.) Subdivisions of five (5) lots or less.

2. Detention Facilities – Lakes, detention ponds, and retention ponds may be constructed in all areas, provided the City's Engineer approves them. The City may assume maintenance responsibilities for this type of facility only if title to the facility passes to the City, if approved by the Council; however, easements shall be provided to ensure protection of these areas for maintenance purposes.

3. Alternative Facilities – Other innovative drainage concepts will be considered if approved by the City's Engineer. Any City costs are subject to approval by the City Council.

4. Dedication of Drainage Easements -

Access to Floodway Easements – The Developer must provide sufficient access on each side of and parallel to creeks or drainage ways for maintenance purposes. The access shall be above the base flood elevation and accessible to vehicles and equipment. Access must also be provided at maximum 1,200-foot spacing materials along streets or alleys. The City's Engineer shall determine the location and size of the floodway easement. The width of the access easement shall be 20 feet. Permanent monuments, the type and locations of which are to be determined by the City's Engineer, shall be placed along the boundaries of the maintenance and access easement and private property. This access easement shall be included in the dedication requirements of this section and included in the drainage and floodway easement width.

B. Sewage Facilities

1. Adequate Sewage Facilities – Sanitary Sewer facilities serving the subdivision or addition shall connect with the City's sanitary sewer system. Sewers shall be installed to serve each lot and to grades and sizes according to specifications herein identified or referenced.

2. Design and Construction Requirements – Design of sanitary sewers shall be in accordance with the City's Design Guidelines for Subdivisions and 30 Texas Administrative Code 317, or its successor. Materials and construction shall conform to the Standard Specifications and Standard Construction Details of the City of Henderson. The sanitary sewer system shall conform to the City's sewer studies for the various drainage basins.

3. Sewage Locations – Sanitary sewers shall be located within street or alley rights-of-way unless topography dictates otherwise. When located in easements on private property, access shall be provided to all manholes. A manhole shall be provided at each street or alley crossing. End lines shall be extended to provide access from street or alley right-of-way when possible.

4. Plan Approval. The City Engineer shall be responsible for receiving and approving construction plans for sewage facilities.

C. Water Facilities

1. Adequate Water Facilities – Water systems serving the subdivision or addition shall connect with the City's water supply and distribution system, and shall conform to the City's rules for water supply, treatment and distribution. Water facilities shall be installed to serve adequately

each lot and to grades and sized according to specifications herein contained or referenced.

2. Design and Construction Requirements – Design of water systems shall be in accordance with the Design Guidelines for Subdivisions and 30 Texas Administrative Code 290, Subchapter D, "Rules and Regulations for Public Water Systems", or its successor. Materials and construction shall conform to the Design Guidelines for Subdivisions of the City of Henderson.

3. Fire Hydrants – Fire hydrants and valves shall be required for all subdivisions and additions and shall be located to satisfy the requirements of the Fire Department. Fire hydrants shall be located in accordance with the Design Guidelines for Subdivisions and 30 Texas Administrative Code 290, Subchapter D, "Rules and Regulations for Public Water Systems", or its successor and shall be approved by the applicable fire protection unit. To eliminate future street openings, all underground utilities for fire hydrants, together with the fire hydrants themselves and all other supply improvements, shall be installed before any final paving of a street shown on the subdivision plat. Reflective fire hydrant buttons shall be installed in all streets at a point adjacent to fire hydrants. The buttons shall conform to Water Utilities and Fire Department specifications. At corner locations, buttons shall be installed in both streets.

D. Public and Private Utilities

1. Easements -

   a. The property owner shall be required to furnish all easements and rights-of-way required to serve the development. Where reasonable, utilities should be located within streets or alley rights-of-way. Notwithstanding, the above, developers may offer easements outside of street and alley rights-of-way. All utility facilities existing and proposed throughout the property shall be shown on the preliminary plat.

   b. Easements shall be provided for both municipal and private utilities and must be dedicated on the final plat or replat. Municipal easements for water and sanitary sewer shall be a minimum of twenty feet in width. Storm sewer easements shall be a minimum of twenty feet in width. The utility company must size all municipal easements. Proper coordination shall be established between the property owner and the applicable utility companies for the establishment of utility easements on adjoining properties.

   c. Water, sewer or drainage easements shall not straddle lots unless approved by the DRB and City Engineer.

d. All water and sewer easements shall be submitted in an acceptable form to the City Engineer.

2. Damage – The contractor and owner shall be responsible for repairing all damage to existing public improvements caused during construction of new public improvements in a manner satisfactory to the Public Services Director.

3. Underground Utilities – In new residential subdivisions, all utilities, including electrical distribution and communication, shall be installed underground along streets and alleys, unless otherwise approved by the City's Engineer. Electrical utility service to non-residential properties from overhead distribution lines shall be place underground from the right-of-way to the point of service, unless otherwise approved by the City's Engineer. Developers are encouraged to install all utilities underground on each property in new subdivisions.

E. The Following Design Standards and Specifications Are Incorporated by Reference Into This Ordinance.

1. Design Guidelines for Subdivisions
2. Standard Construction Details
3. Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges, or its successor
4. Storm Drainage Design Standards
5. 30 Texas Administrative Code 285 "On Site Sewage Facilities" or its successor
6. 30 Texas Administrative Code 290, Subchapter D, "Rules and Regulations for Public Water Systems, or its successor
7. 30 Texas Administrative Code 317 "Design Criteria for Sewer Systems", or its successor

Section 15 – CONSTRUCTION & INSPECTION PROCEDURES

A. Pre-Construction Conference – The Public Services Director may require that all contractors participating in the construction meet for a pre-construction conference to discuss the project prior to release of a grading permit and before any filling or removal of vegetation and trees. At this time, the Pollution Control Plan procedures, which must be installed prior to construction beginning to prevent sedimentation discharge into storm sewers, creeks, and the like will be discussed. Conditions Prior to Authorization – Prior to authorizing release of a grading permit, the developer shall satisfy the City that the following conditions have been met:

1. The final plat has been approved by the City Council

2. All required documents have been completed and filed with the City's Engineer.

3. All necessary off-site easements or dedications required for City maintained facilities and not shown on the final plat have been conveyed solely to the City with proper signatures affixed. The original of the documents and filing fees shall be returned to the City Secretary and/or Public Services Department prior to approval and release of the engineering plans.

B. After the pre-construction conference and before construction begins, the following steps must be complied with:

1. All contractors participating in the construction shall be presented with a set of approved plans bearing the stamp of release of the City Engineer and/or Public Services Department. These plans shall remain on the job site at all times.

2. A complete list of the contractors, their representatives on the site, and telephone numbers where a responsible party may be reached at all times must be submitted to the City's Engineer and Public Services Department.

3. All other applicable fees must be paid to the City. The City shall not withhold approval as means of obtaining compensation due under the terms of this ordinance.

C. Security – Whenever the City requires a developer to enter into an Improvement Agreement; it shall require the developer to provide sufficient security, to cover completion of the public improvements. The security shall be in the form of cash escrow or, where authorized by the City, a letter or credit or other security acceptable to the City Council, as security for the promises contained in the improvement agreement. In addition to all other security for completion of those public improvements, the developer shall provide a performance bond from the contractor, with the City as a co-insured. Security shall be in an amount equal to one hundred percent (100%) of the estimated cost of completion of the required public improvements and lot improvements. The form of any surety bond or letter of credit shall be subject to the approval of the City Attorney.

D. Letter of Credit – If the City Council authorizes the developer to post a letter of credit as security for its promises contained in the improvement agreement, the letter of credit shall be irrevocable.

1. Be for a term sufficient to cover the completion, maintenance and warranty periods but in no event less than two (2) years.

2. Require only that the City present the issuer with a sight draft and a certificate signed by an authorized representative of the City certifying to the City's right to draw funds under the letter of credit.

E. A permit is required from the Public Services Department prior to beginning any work in the City regulated by 30 Texas Administrative Code 317 "Design Criteria for Sewer Systems", or its successor.

F. As portions of the public improvements are completed in accordance with the Design Guidelines for Subdivision Improvement and the engineering plans, the developer may make application to the City Manager or his designee, to reduce the amount of the original letter of credit. If the City Manager or his designee, is satisfied that such portion of the improvements has been completed in accordance with City standards provided for herein the Design Guidelines for Subdivisions, the City Manager may (but is not required to) cause the amount of the letter of credit to be reduced by such amount deemed appropriate, so that the remaining amount of the letter of credit adequately insures the completion of the remaining public improvements.

G. Upon the dedication of and acceptance by the City of all required public improvements, the City shall authorize a reduction in the security to 10% of the original amount of the security if the developer is not in breach of the Improvement Agreement. If other than the contractors provide the required security for maintenance and warranty, the City will release the entire amount of the developer's security.

H. Temporary Improvements – The developer shall build and pay for all costs of temporary improvements required by the City's Engineer and shall maintain those temporary improvements for the period specified by the City Council. Prior to Construction of any temporary facility or improvement, the developer shall file with the City a separate Improvement Agreement and escrow or, where authorized, a letter of credit, in an appropriate amount for temporary facilities, which agreement and escrow or letter of credit shall ensure that the temporary facilities will be properly constructed, maintained, and removed.

I. Failure to Complete Improvements – For plats for which no Improvement Agreement has been executed and no security has been posted, if the public improvements are not completed, no building permits shall be issued. In those cases where an Improvement Agreement has been executed and security has been posted and required public improvements have not been installed within the terms of the agreement, the City may:

1. Declare the agreement to be in default and require that all public improvements be installed regardless of the extent of completion of the development at the time the agreement is declared to be in default.

2. Obtain funds under the security and complete the public improvements itself or through a third party.

3. Assign its right to receive funds under the security to any third party, including a subsequent developer of the subdivision or addition for which public improvements were not constructed, in whole or in part, in exchange for the subsequent developer's promise to complete the public improvements on the tract.

4. Exercise any other rights available under the law.

J. Maintenance and Guarantee of Public Improvements – The developer shall maintain all required street, utility, and drainage improvements for a period of one year following the acceptance by the City and shall provide a warranty that all public improvements will be free from defect for a period of one year following such acceptance by the City.

Section 16 - PARTICIPATION AND ESCROW POLICIES

. Developer's Responsibility -

A. The developer shall be responsible for the entire cost of designing and installing all public improvements that primarily serve the subdivision or addition. Facilities required by these regulations shall be considered as primarily serving the subdivision or addition unless otherwise determined by the City.

B. The developer shall also be responsible for its share of the costs of oversized or off-site public improvements needed to assure the adequacy of public facilities and services for the addition or subdivision, subject to participation and escrow policies contained in this article.

C. The developer shall be responsible for extending streets or drainage facilities off-site to its property as required by the City and/or required to ensure adequacy of public facilities.

D. Water and sewer facilities shall be extended by the developer in accordance with City Code of Ordinances Article I, Section 21-2, or its successor.

Section 17 - GATED DEVELOPMENT REGULATIONS

A. Purpose. To set forth a standard set of regulations, which will facilitate sound long range planning and ensure that no threat to the health, safety, and welfare of residents within the gated developments will occur as a result of the utilization of restricted access features installed for added privacy.

B. This section shall not apply to individual property owners who install restricted access devices for individual lots.

C. Required Zones for Gated Developments: Gated Developments are restricted to the following zoning districts:

1. PDD Planned Development Districts
2. R1-R4 Single Family Districts
3. MF1- MF3 Districts

D. System Requirements

1. Each entrance to a gated development shall have a Knox Key Operated Dual Switch (KS-2DPDC), or approved equivalent, which shall meet the following requirements:

   a. Must have switch designated for FIRE and POLICE

   b. Each switch shall allow for emergency override of any electrical devices.
   c. Red in color.
   d. Each box shall be at least 5 inches high, 5 inches wide and 1-1/2 inches deep.
   e. Switches shall be located to be easily accessible and visible to service providers. Locations of switches are subject to approval at the time of the issuance of the first building permit in the Gated Development by all affected City departments.

2. A 24-hour telephone number which can be called by any other utility or service provider to gain access into the development shall be displayed and clearly visible.

3. Provisions for mail carrier access shall be as required by the U.S. Postal Service.

E. Installation and Operation Requirements.

1. Building permits shall be required for installation of restricted access devices.

2. The switches shall have a normal and an emergency position. When installed, the contractor shall wire this switch so that all gates open and remain open for emergency access until the switch is returned to the normal position.

3. A minimum of one set of gates shall be installed so that they either open automatically or are readily manually operable from the approach side in the event of power failure.

4. The operator of any development subject to these regulations shall immediately notify the Henderson Fire Department of any changes.

F. Maintenance.

1. The mechanical components of the restricted access device shall be serviced on a regular basis and maintained in an approved operating condition.

2. The electrical components of the restricted access device shall be maintained in an approved operating condition.

3. A power supply shall be maintained to electronic components of the restricted access devices at all times.

G. Performance test required.

1. A performance test shall be conducted annually by the Fire and Police Departments to verify proper operation of equipment.

2. Upon failure of the performance test, the gates shall be disabled and maintained in the open position until repaired and re-tested.

H. Compliance. All existing gate and restricted access developments subject to these requirements shall be in full compliance with this section by May 1, 2005.

Section 18 – SIMULTANEOUS CONSTRUCTION OF SUBDIVISIONS

Simultaneous construction will be allowed under the following conditions;

A. All proposed roads/streets must have sub-base to required standards of the Design Guidelines for Subdivisions.

B. The roads/streets must be able to hold up any police, fire or emergency vehicle.

C. Curb and gutter must be in place.

D. The Developer shall furnish an irrevocable letter of credit in the amount of unfinished Public improvements.

E. No final inspection of any buildings will be performed or occupancies will take place until all public improvements are completed and approved by the City with an established warranty date.

Section 19 – NON-CONFORMANCE

A. Any request for deviations, hardships, waivers, variances, etc. will be considered by the DRB on a case-by-case basis. The DRB will only consider a request where a unique circumstance exists.

B. Financial hardship alone is not sufficient to show "unique circumstance." Therefore, a request shall not be granted solely because nonconformance is more profitable to the developer.

C. All matters pertaining to the interpretation or enforcement of this ordinance, including the definition of a word as it relates to this ordinance, shall be referred to the DRB for determination.

D. DRB decisions, including granting of request for waiver of strict compliance with these Subdivision Ordinance Rules, may be appealed to the City Council upon written notice by any party.

E. Written notice of appeal shall be filed with the office of the City Secretary not later than twenty-one (21) calendar days from the date of subject decision of the DRB so that the item may be placed on the agenda for the next available City Council meeting as the case may be and the affected parties notified of the appeal.

Appendix A

Design Guidelines

DESIGN GUIDELINES FOR SUBDIVISIONS IN HENDERSON, TEXAS

CHAPTER ONE

GENERAL INFORMATION

I. Purpose:

The purpose of these guidelines is to inform Engineers, Planners and others concerned with subdivision design, of the basic procedures and requirements for construction plans for public facilities in subdivisions. These requirements are for use as guidelines only, and are not to be construed as a waiver by the City of Henderson of the right to require a more stringent or lenient design as conditions warrant.

II. Designs:

All construction plans for subdivision improvements are to be prepared under the direction and supervision of a qualified Texas Registered Professional Engineer and such plans shall bear the seal and signature of that engineer.

III. Construction Plans:

The following chapters outline the detailed requirements for the preparation of the construction plans for water, sanitary sewer, paving and drainage. These various plans may be combined into one complete set, as long as the clarity and usefulness of the drawings is not diminished.

A. Submittal: Five complete sets of construction plans and technical specifications shall be submitted to the Director of Public Services, when the final plat is submitted to the City Manager for Planning and Zoning Commission.

B. Contents: Completed plans shall include the following sheets:

1. Title sheet showing names of subdivision, developer, engineer, Public Service Director, City Engineer, City Manager, City Councilmen, Mayor, date, location map and any other pertinent information. It should also provide a space for signature of approval by the City Engineer and Public Service Director.
2. Final plat as submitted and approved.
3. Overall site plan showing street layout, lots and lot dimensions, curve data, and any other pertinent information necessary for surveying all lots and streets. This may be a modified print of the subdivision final plat.

4. Drainage area map and drainage computation sheet showing contours at a maximum of two foot intervals for the entire drainage basin of all structures planned for the subdivision and flood plains shown on the plat. Proposed final grading plan for site shall be shown either on the drainage area map or on a separate drawing. See Chapter Two Paving and Drainage for further details.

5. Plan profile sheets showing all improvements in accordance with Chapter Two and Three.

6. Detail sheets for special construction shall conform to City of Henderson Standard Details attached hereto.

C. **Approval:** Approval of the construction plans by the City Engineer and the Development Review Board (DRB), are a prerequisite for final plat approval by the City Planning and Zoning Commission.

D. **Approved Construction Plans:** Prior to commencing any construction, prints of the approved subdivision construction plans, stamped as approved by the City Engineer and the Director of Public Services, shall be distributed as set out in Chapters Two and Three.

IV. Inspection:

An inspector for the City of Henderson will inspect all construction of the improvements described herein. No work of any nature, except clearing and roadway excavation, shall begin without authorization of the inspector. The contractor shall cooperate with the inspector in coordinating construction and inspections, and shall notify the inspector so that he may be present to inspect construction. Failure to notify the inspector properly may result in the City of Henderson not accepting that work. The contractor would then be required to remove and reconstruct improvements. The inspector shall not have the authority to approve defective work and his acceptance of improvements will not constitute any waiver of the contractor's responsibility in adhering to the construction plans and specifications, nor the designing engineer's responsibility for the inspection of the construction of his design. In the event of any dispute related to materials furnished or the manner of performing the work or any safety related issue, the City Inspector shall report any such incident to the Director of Public Services who shall have the authority to reject material or suspend work until the matter is resolved.

DESIGN GUIDELINES FOR SUBDIVISIONS
IN
HENDERSON, TEXAS

CHAPTER TWO

PAVING AND DRAINAGE

I: General:

The purpose of these guidelines is to guide the engineer in design and preparation of plans and specifications for the construction of public paving and drainage improvements. All paving and drainage improvements shall be designed and constructed in accordance with standard details of the City of Henderson. Materials and construction methods for paving and drainage work (technical specifications) shall conform to most recent "Texas Department of Transportation, Standard Specifications for Construction of Highways, Streets and Bridges", except where specifically superseded in this publication. Where any questions arise as to the interpretation of the standards of design, the decision of the City Engineer will be final.

II. Roadway Design:

A. Typical Roadway Section for Residential Streets

1. The pavement section shall be either:

a. 8" lime or cement stabilized subgrade (based on soils classification determined by the Design Engineer), 7" flexible base and 2" hot mix asphaltic concrete (HMAC) with concrete curb & gutter or;

b. 8" lime or cement stabilized subgrade (based on soils classification determined by the Design Engineer) and 5-1/2" reinforced concrete pavement with concrete curb & gutter.

2. Lime or cement stabilized subgrade shall be free of vegetation and rocks over 3" in diameter. The subgrade shall be processed to a depth of 8", compacted to 95 percent of ASTM D 698, Method D density at optimum moisture, and shall extend 12" behind the back of each curb. For lime stabilized subgrade, the lime shall be applied at a rate of 36 pounds per square yard and shall be in accordance with TxDOT Specification Item No. 260. For cement stabilized subgrade, 4% cement, based on the dry weight of the subgrade soil, shall be applied. Cement stabilized subgrade shall be in accordance with TxDOT Specification Item No. 275.

3. Flexible base material shall be Texas Department of Transportation Item247, either Type A Grade 2 or Type D (crushed concrete) Grade 2 or better and

shall have a minimum compacted thickness of 7". The material shall be compacted in maximum four- inch lifts to a minimum of 95 percent of ASTM D 1557 Method D density at or near optimum moisture content.

4. Hot mix asphaltic concrete (HMAC) surface material shall be Texas Department of Transportation Item 340, Type D. The mix shall have a minimum of 5% asphalt cement content and the coarse aggregate shall contain at least 50% by weight of crushed pieces having two or more fractured faces. Asphalt shall be compact dense-grade hot mix with not more than 5% to 9% in-place air voids. Asphalt content of the mixture shall not be increased to reduce pavement air voids. Liquid asphalt shall not exceed TxDOT Standards, as applicable at date of application. Minimum thickness of HMAC pavement shall be 2" compacted and installed with a tack coat over a single course seal coat. The seal coat shall be MC-30 in accordance with TXDOT Specification Item No. 300. The seal coat shall be applied at a rate of 0.25 gallons per square yard. All construction methods shall be in accordance with TXDOT Specification Item No. 310. Seal coat shall not be allowed as the wearing course.

5. Concrete used for concrete pavements shall have a 28-day compressive strength of 3,500 PSI. Concrete pavement shall have a minimum thickness of 5-1/2" and shall be Class A in accordance with TxDOT Specification Item No. 421. Joint Sealants and Fillers shall be in accordance with TxDOT Specification Item No. 360. Reinforcing steel shall be #4 bars installed at 18" on-center each way and shall be Grade 60 in accordance with TxDOT Specification Item No. 440. Construction procedures shall be in accordance with Item 360 of the TxDOT Standard Specification for Construction of Highways, Streets and Bridges, Latest Edition.

6. If an alternate pavement section is preferred or if the proposed street is classified other than residential, the proposed pavement section shall be designed by a Texas Registered Professional Engineer in cooperation with a Texas Registered Professional Geotechnical Engineer and submitted to the City Engineer for approval. The alternate design shall be based on testing of representative soil samples taken in the field and a pavement design recommendation resulting from the test data.

B. Roadway Width: Pavement widths shall conform to the requirements of, and shall in no case be less than, the widths shown in the following table.

Street Classification	**Right-of-Way Width**	**Minimum Pavement Width (back to back)**
Residential	50'	32'
Collector/Arterial	60'	36'
Industrial/Commercial	70'	40'

C. **Grades:** Street profile grades shall be set on top of curbs or set on centerline for streets with no curb and gutter. Profile grades shall not be less than 0.5 feet rise or fall in 100 feet. Profile grades shall not be greater than 12.0 feet rise or fall in 100 feet (12%) in local streets, and not greater than 9.0 feet rise or fall in 100 feet (9%) on collector streets, and not greater than 6.0 feet rise or fall in 100 feet (6%) on arterial streets. Grade changes exceeding one percent (1%) shall be made with vertical curves. To satisfy requirements of minimum sight distance, comfort and appearance, use the following criteria for minimum vertical curve length (L) in feet:

L = KA
K = Factor from table below
A = Algebraic difference of grades in percent

Design Speed*	30	35	40	45	50	55	60	65
Minimum K Value:								
Crest Vertical Curve	30	40	60	80	110	150	190	230
Sag Vertical Curve**	40	50	60	70	90	100	120	130

*The City Engineer shall establish the design speed.
**Length of sag vertical curve may be shortened by the City Engineer to reduce siltation.
Top of curb grades shall be set low enough below the adjacent land to facilitate proper drainage from the residential lot to the street. Curb separation shall not exceed crown height except in situations of super elevated curves or divided roadways. Divided roadways shall have a straight cross slope downward from median to outside curb rather than a parabolic crown on each lane. Divided roadways shall not be designed for, unless approved by City Engineer.

D. **Street Alignment:** Street alignment design shall consider not only the best use of the land, but also traffic safety. The maximum degree of horizontal curvature for an arterial shall be 7.0 degrees. The maximum degree of curvature on a collector shall 22.9 degrees (minimum radius shall be 250 feet). The horizontal curvature on commercial or residential streets shall be designed so as to eliminate sharp reverse curves that are hazardous. The minimum tangent length between reverse curves shall be 50 feet. All horizontal curve lengths, degree of curvature, curve super elevations and other elements of traffic safety must be approved by the City Engineer during the approval of subdivisions plans.

E. **Intersections:** All intersections should intersect at an angle of 90 degrees. When not practical, the angle of intersection will not be less than 70 degrees.

When intersecting a street in a horizontal or vertical curve, adequate sight distance must be provided.

Curb returns at intersections on residential streets shall have a radius of 20 feet measured to the back of curb.

At the intersections of collectors and collectors, collectors and arterial, and arterials and arterials, the radius will be 30 feet measured to the back of curb, unless otherwise approved by City Engineer. A larger radius may be required by the City Engineer to accommodate traffic movement.

F. Curb and Gutter: Concrete curb and gutter is required on all streets constructed within the City of Henderson. All curb and gutter will be designed in accordance with City of Henderson "Standard Details".

G. Concrete Headers: Concrete headers shall be installed at the termination of all asphalt pavements, unless otherwise approved by the City Engineer.

H. Concrete Valley Gutters: Where water runoff conditions dictate, the City Engineer may require certain valley gutters crossing streets or intersections within the subdivision to be constructed of reinforced concrete to prevent asphalt pavement deterioration. All concrete valley gutters will be designed in accordance with City of Henderson "Standard Details".

I. Subsurface Drainage: The City Engineer reserves the right to require subsurface underdrain systems as conditions warrant. If required by the City Engineer, the Developer shall provide for the design and construction of such underdrain systems in the construction drawings.

J. Erosion Control: In the construction plans, the design engineer shall include plans for erosion control during construction and permanent erosion control. Developer is required to obtain a SW3P permit and supply a copy to the City of Henderson.

III. Paving Plans:

A. Paving plans shall be prepared in nominal 24"x36" plan profile sheets, or plan sheets with separate profile sheets. Profiles shall have grid increments of less than one inch. Drafting medium, lettering, layout, etc., are all optional except to the extent required herein.

B. The plan shall be drawn to a scale of not more than fifty feet to the inch (1"=50') for new sheets or not more than 20 feet to the inch (1"=20') for the reconstruction of existing streets and shall include but not be limited to the following list:

1. Right of way, easements, and street pavement widths
2. Stationing of proposed street from left to right on sheet and stationing of intersecting streets.
3. Angles and stations of intersections
4. Street names
5. Horizontal curve data

6. Existing topographic features such as utility poles, fire hydrants, culverts, inlets, lakes, watercourses, etc.
7. North arrow
8. Graphic scale
9. Lot lines, lot numbers, subdivision lines and City limit lines
10. Curb radii, and special curb grade points such as end of radius returns and midpoints and top of inlet, etc.
11. Underground utilities located as accurately as possible
12. Location of soil borings
13. Limits if significant cut or fill
14. Directional arrows showing direction of drainage in gutters
15. Crown transition in intersections
16. Special notes
17. Engineer's seal and signature

C. The profile shall be drawn to a scale to match the plan horizontally and not more than five feet to the inch (1"=5') vertically and shall include but not be limited to the following list:

1. Existing ground profiles along the centerline and each right of way line.
2. Proposed top of curb profile line of each curb and existing top of curb line where curb had previously been built.
3. Vertical curve data including the curve length, vertical point of intersection station and elevation, high point or low point station and elevation. Percent grades shall be shown on all tangents.
4. Top of curb grades shall be shown at not more than 50-foot intervals in tangents and 25-foot intervals in vertical curves. The PC, PT and PI shall be shown in profile with station and elevation.
5. Benchmark (National Geodetic Survey Datum, formerly U.S. Coast and Geodetic Survey Datum) description and elevation on each sheet with temporary benchmarks set at intervals of not more than 300 feet.
6. Proposed and/or existing storm sewer, sanitary sewer, water, electrical, gas and telephone lines.

IV. Roadway Construction Testing

A. Submittals: The Developer shall provide, for approval by the City, four copies of submittal data for roadway materials that are proposed to be installed. Information required for approval shall include, but not be limited to, stabilized subgrade, flexible base material, hot mix asphaltic concrete mix design and reinforced concrete mix design. Mix designs shall be performed by an independent certified testing laboratory approved by the City.

B. Testing

Material Testing: The testing of all materials and construction shall be in conformance with the appropriate TxDOT or ASTM specifications at no cost to the City.

During roadway construction, a certified independent testing laboratory recommended by the Developer and approved by the City shall perform the following tests.

Stabilized Subgrade

Testing: Field moisture-density tests shall be taken at the rate of one test for each 1000 square yards of subgrade area or a minimum of three tests. Thickness determinations of subgrade shall be made at random locations.

After the subgrade has been compacted and tested, the entire subgrade shall be proof-rolled with a heavily loaded vehicle. The vehicle shall have a loaded GVW of 50,000 pounds with a single axle weight of at least 18,000 pounds and a tire pressure of 90 psi. Subgrade that is pumping or deforming shall be reworked, replaced or otherwise modified to form a smooth, stable, non-yielding base for subsequent paving courses. The City Inspector shall be notified at least 48 hours before final proof-rolling.

Acceptance: The results of field density tests, thickness and proof-rolling shall be submitted for approval by the City. Provided all tests are acceptable, the subgrade will be approved and the next paving course can be placed.

Flexible Base Course

Testing: At least one sample for each 2000 square yards of base course material placed, with a minimum of two samples, shall be tested to determine gradation and Atterberg limits. Should these tests indicate that the material does not meet specifications, the material shall be removed and replaced. During placement and compaction, Compaction Curves will be required for each material used. Field moisture-density tests shall be taken of each lift of material at random locations at approximate intervals of one test for each 1000 square yards of base. Copies of all haul tickets shall be provided to the City Inspector.

Acceptance: The results of field density tests shall be submitted to and reviewed by the City. Provided all tests are acceptable, the aggregate base course materials, placement, and compaction will be approved and the next paving course can be placed.

Hot Mix Asphaltic Concrete Pavement

Testing: During placement and compaction of hot mix asphaltic concrete pavement, observation shall be on a full-time basis. Haul tickets shall be obtained from the HMAC plant. Haul Tickets shall clearly state the "Type of Mix", the total weight of the mix loaded on the truck and the project name. Thickness determinations shall be made at intervals of approximately 100 feet in each travel lane.

Acceptance: Copies of all haul tickets will be provided to the City Inspector on a daily basis. The City reserves the right to require field measurements of the final pavement thickness.

Portland Cement Concrete

Testing: One test set shall be made for each seventy-five (75) cubic yards of each strength of concrete placed on any one day and not less than one test set for each class of concrete each day it is used. The Public Service Director may elect to reduce the test frequency after establishing a consistent pattern of successful tests. Each test set shall consist of one slump test and four compression test cylinders. All cylinders shall be kept in an secure location and protected from the weather. The four cylinders shall be laboratory cured and tested for adequacy of the design for strength of the concrete in accordance with ASTM Specification C31. Two cylinders shall be tested at 7 days and two at 28 days.

Acceptance: All test results shall be submitted to and approved by the City. Unsatisfactory concrete finish work shall be removed or replaced as directed by the Public Service Director.

V. Drainage Design

The storm drainage system in the proposed subdivision shall conform to the planning policies of the City and the included minimum standards.

A. General Requirements

The streets, inlets, storm sewer pipe and all other drainage structures shall be designed to accommodate a 25 year storm. All lots within the subdivision shall be required to be above the 100 year flood plain.

Provisions shall be made to prohibit the storm discharge from the proposed subdivision from damaging the downstream property. Energy dissipating devices such as concrete or rock riprap, splash basins, baffles and other structures shall be incorporated into design of storm drainage facilities as required to prevent erosion of downstream properties. Where required, the Developer shall obtain drainage easements from downstream property owners.

B. Drainage Computation and Routing

A Drainage Map shall be prepared using the Preliminary Subdivision Plat as a base. This map will show all the drainage involved in the area being subdivided.

Offsite drainage coming into subdivided area may be shown on copies of USGS 7 ½ Minute Topographic Maps and will completely outline drainage areas involved. Any creek or other drainage system studied by the Corps of Engineers or other agency that established flood information with published reports, will show pertinent flood information on drainage map and reference the particular study.

Interior drainage will be shown on Subdivision Plat and will break down areas so that all area junctions may be identified and evaluated. Areas will be identified by number and drainage information will be tabulated on Plan in an orderly manner beginning at the uppermost drainage area.

A tabular form will identify drainage areas with acres drained and accumulated acres drained. Each acreage, and accumulated acreage will shown time of concentration, coefficient of runoff,

rainfall intensity for 25 year and 100 year frequency and runoff in cubic feet per second (cfs) for 25 and 100 year frequency.

A table of street capacities will be shown on Plan to define street sections that are critical for drainage. These sections will be marked on Plan and identified in table. Table will identify and tabulate street section, drainage area number, percent of grade of street, street capacity in cfs required for 25 year and on 100 year frequency, street capacity in cfs provided between tops of curbs for 25 year frequency, and velocity in feet per second (fps) at required 25 year frequency capacity.

Channel flow and ditch sections shall be shown where they occur in or affect the subdivision. Ditch sections will be shown below ditch junctions and just above drainage structures for street crossings. Channel flow data will be shown in tabular form identifying the cross section, the percent of ditch grade, bottom width in feet, runoff flow in cfs for 25 and 100 year frequencies, ditch velocities in fps for 25 and 100 year runoff.

Drainage will be calculated using the Rational Method. Offsite drainage entering area to be subdivided will be considered to be improved.

Storm drains and inlets will be shown on Plans where required showing inlet and proposed pipe sizes. Proposed culverts for ditch drainage under streets will be shown and sized.

Small tracts (approximately 2 acres) and re-subdivision of platted lots will not require Drainage Plans if the Subdivision Plat clearly indicates that no drainage problem exists.

Preliminary Drainage Plan will be submitted and have City approval before any final subdivision plans are submitted for approval.

C. All pipe used in the storm sewer system shall be either (1) high density polyethylene pipe (only allowable in locations outside of load bearing structures) or (2) reinforced concrete pipe conforming to ASTM C-76 unless otherwise approved by the City Engineer. Minimum pipe size shall be 18 inches inside diameter for storm sewer systems to be dedicated to and maintained by the City. All storm sewer pipes shall be placed in a drainage easement except where pipe is carrying storm water runoff solely from one property that likely will not be subdivided or where approved by City Engineer.

D. All inlets shall conform to Texas State Department of Transportation standard details for such structures.

E. Proposed storm sewer systems may be connected into existing systems as long as the proposed combined discharge will not exceed the capacity of the existing system. Additional drainage areas shall not be directed into a watershed from another watershed.

F. Storm sewers should discharge into natural streams or into other storm sewers. No new unimproved channels may be constructed to carry storm water runoff.

G. Reinforced concrete bridges, box culverts, headwalls, wingwalls, piers and bents shall conform to Texas State Department of Transportation standard details for such structures. Headwalls or wingwalls are required on all culverts and on the discharge point of storm sewer pipe.

H. Any development within a designated 100-year floodplain must be approved by the City. To develop property within a designated 100-year floodplain, the developer must submit documentation to the City that proves the development of the lot will not encroach into the 100-year floodway.

I. If channel modifications are to be done to recover land in the floodplain, the Developer must submit required documentation to FEMA describing the proposed modifications that will revise the floodplain. The Developer shall obtain and provide to the City, a Conditional Letter of Map Revision (CLOMR) from FEMA. Upon completion of channel modifications, required documentation shall be submitted to FEMA showing that modifications have been completed and requesting a Letter of Map Revision (LOMR), which actually revises the floodplain maps. A copy of the LOMR shall be provided to the City.

VI. Drainage Plans:

A. Drainage plans shall be prepared on nominal 24"x36" plan profile or plan with separate profile sheets. Profiles shall have grid increments of less than one inch. Drafting medium, lettering, layout, etc., are all optional except to the extent required herein.

B. An overall drainage area contour map with 2-foot contour intervals of the subdivision shall be shown divided into sub-basins for each structure or floodplain. Each sub-basin shall be marked with an identifying number or letter, and the acreage. Run-off computations, curb inlet design computations, and storm sewer design computations shall all be shown in a tabular format in the construction plans.

C. The plan shall be drawn to scale of not more than fifty feet to the inch (1"=50') and shall include but not be limited to the following list:

1. Location of all proposed or existing inlets, pipe, culverts, manholes, headwalls, and wingwalls.
2. Location of all channels and streams to be filled, improved, or used discharge points for the system.
3. Curve data, angle points, or other survey data necessary to install the storm sewer facilities or to locate the facilities and easements after installation.
4. Location of all underground utilities or pipelines, which might conflict with the storm sewer, culvert, or channel.
5. Typical cross sections for improved concrete lined channels.
6. North arrow, graphic scale, subdivision lines, lot lines, easement lines, street names.

7. Proposed street paving width, right of way width, or easement width.
8. Base line (centerline) showing stationing.
9. Special notes.
10. Minimum finished floor elevation for each lot within or adjacent to a 100 year floodplain or drainage easement.

D. The profile shall be drawn to a scale of not more than fifty feet to the inch (1"=50') horizontally and not more than five feet (1"=5') vertically. Drainage profiles shall include but not be limited to the following list:

1. Existing surface profile above centerline of storm sewer pipe, culverts, and existing high bank and flowline profiles for open drainage channels.
2. Proposed drainage structures with flowline (invert) elevation at not more than fifty feet intervals.
3. Proposed top of curb profile.
4. Elevations of pipelines or underground utility crossings.
5. Vertical curve data for flowline including the curve length and the vertical point of intersection station and elevation.
6. Benchmark (National Geodetic Survey Datum, formerly U.S. Coast and Geodetic Survey Datum) description and elevation.
7. Water surface profile for the " one hundred year flood " for open channels within the subdivision and hydraulic grade line for storm sewer pipe.

VII. Construction Plans (Paving and Drainage):

Following approval of final plat and the incorporation of changes required by the City Engineer and DRB, five complete sets of construction drawings shall be submitted to the City Engineer for signature prior to commencing construction.

VIII. "As Built" Drawings:

The developer's engineer shall furnish a hardcopy and reproducible set of construction plans for all completed and accepted improvements to the City.

REFERENCES

Reference for **Table II – A - 2**

1. National Crushed Stone Association's "Flexible Pavement Design Guide for Highways" April 1975
2. National Crushed Stone Association's "Design Guide For Streets Featuring Crushed Stone Bases" June 1975
3. U.S. Army Engineers' Manual TM 5-822-5" 1965

4. U.S. Department of the Navy, Naval Facilities Engineering Command's "Civil Engineering-Pavements" Design Manual 5.4 NAVFAC DM-5.4 October 1979 Revised September 1985.

Reference for **Table II – A – 3**

1. The Asphalt Institute's Manual Series No. 1 (MS-1) "Thickness Design – Full Asphalt Pavement Structures For Highways And Streets" Revised Eighth Edition August 1970 and September 1981.

Reference for **Table II – A – 4**

1. Portland Cement Association's "Design of Concrete Pavement For City Streets" IS184P 1974
2. Portland Cement Association's "Thickness Design For Concrete Highways And Street Pavements" EB 109.01 P 1984
3. U.S. Department of The Navy, Naval Facilities Engineering Command's "Civil Engineering-Pavements" Design Manual 5.4 NAVFAC

DM-5.4 October 1979 Revised September 1985

DESIGN GUIDELINES FOR SUBDIVISIONS IN HENDERSON, TEXAS

CHAPTER THREE

WATER & SANITARY SEWER IMPROVEMENTS

I. General:

All water and sewer lines constructed within the City of Henderson shall be designed and constructed in accordance with the most current guidelines as promulgated by the American Water Works Association, the Environmental Protection Agency, and the State of Texas regulatory agency.

II. Water Line Design:

a. **Location:** Water mains shall be constructed in a dedicated right-of-way or an easement to the City of Henderson, which shall be filed in the public records. When water mains are to be constructed in a dedicated right-of-way, the water line shall be located under the north or west section of the street except where otherwise approved by the Public Services Department.
   i. Minimum cover for 8-inch water pipe shall be 36 inches below finished subgrade.
   ii. Maximum cover for 8-inch water pipe shall be 84 inches.
   iii. Required cover for water lines greater than 8-inch shall meet the approval of the City Engineer.
   iv. Water lines shall be laid higher in elevation than sewer lines and shall not be installed closer than nine feet in all directions to wastewater collection facilities. All separation distances shall be measured from the outside surface of each of the respective pieces. Comply with 30 TAC §290.44(e) through §290.44(f)(3) when water and sewer piping separation requirements cannot be met.

b. **Minimum Size:** The minimum inside diameter size requirement for water lines is 8 inches. Exceptions may be granted in special circumstances such as cul-de-sacs, where the length of the cul-de-sac does not cause the fire flow to be below required flow rates outlined in the International Fire Code, current edition.

c. **Looping:** All lines shall be looped except, where lines will enter a future subdivision. A standard fire hydrant assembly shall be installed at any dead end line. The end of the line shall be plugged and blocked with concrete to prevent line blow-off. Construction of water lines shall extend to the boundaries of the development.

d. **Design Criteria:** The water lines shall be designed to carry at least the minimum required fire flow rate as outlined in the International Fire Code, current edition, while maintaining a minimum of 20 pounds per square inch gauge pressure at any connection. The maximum head loss allowable is 10 feet per thousand feet of pipe. In commercial and industrial areas, the minimum flow shall comply with the International Fire Code, current edition.

e. **Soil Testing:** The soil corrosivity shall be determined in accordance with the procedures outlined in ANSI/AWWA C105/A21.5 "Polyethylene Encasement for Ductile Iron-Pipe for Water and Other Liquids", Appendix A. The earth resistivity and soil analysis shall be performed in line of the proposed water main and to a depth equal to the proposed water line.

Locations of the earth resistivity and soil tests shall be placed along the proposed pipeline to provide a representative view of the existing subsurface conditions. A point accumulation of 10 or greater indicates corrosive soil conditions and pipeline corrosion protection shall be required.

Corrosive soil conditions in isolated areas of development shall require polyethylene encasement. Corrosive soil conditions in the general overall development may require the Developer's Engineer to recommend alternate materials for construction of water pipelines, subject to the approval of the Public Services Department. Tests results shall be correlated with the Public Services Department.

f. **Fire Hydrant Assemblies:** The number of fire hydrants, as well as, fire hydrant spacing and location shall comply with the International Fire Code, current edition. Variances to fire hydrant requirements are referenced in Appendix C subject to the approval of the Fire Department.

g. **Materials for Water Lines:** Allowable materials for water lines are Ductile Iron Pipe and PVC water pipe series C-900. For all non-metallic pipe installations, a metallic locator wire shall be installed above the pipe for detection purposes. The locator wire shall be terminated at valves as shown on the Standard Details.

h. Valves:

i. Each branch line shall be valved.
ii. Main lines shall be valved at every intersection.
iii. The maximum distance between valves shall be 1000 feet.
iv. Each valve, in a non-street location, shall be marked with a permanent steel valve marker.

i. House Connections:

i. A 1-inch copper tubing service shall be installed at a point three feet behind the curb at each lot.

ii. A single service line that will service two houses requires a 1 ½-inch copper tubing service installed at a point three fee behind the curb at the property line of the two houses.
iii. Each service line shall be permanently marked with a "W" on the curb where the service line crosses the curb.
iv. A single service shall include a curb stop located in a standard size rectangular plastic meter box.
v. A double service shall require the two services to be located in separate meter boxes.

j. Plans and Specifications for Water Lines:
i. Preliminary Plan:
a. The developer shall submit with the preliminary plat, a plan showing the proposed location and sizes of water lines, prepared, signed, and sealed by a Registered Professional Engineer. The plan shall include location of lots, minimum finished floor elevations, streets, water lines, sewer lines, valves, and fire hydrants along with the design calculations for the size of the lines.
b. There shall be one copy of the preliminary plan showing the coverage of the area by fire hydrants. For residential areas, this preliminary plan shall have a circle scribed around each fire hydrant 500 foot radius. For commercial areas this preliminary plan shall have a circle scribed around each fire hydrant 300 foot radius.
c. The preliminary plan will be on a scale of not more than one hundred feet to the inch (1"=100').
ii. Construction plans:
a. The developer shall submit with the final plat , the proposed plans, specifications, and contract documents complete, prepared, signed and sealed by a Registered Professional Engineer. The Public Services Department and the City Engineer will review for approval the plans and specifications. After the review the developer shall include into the plans and specifications any additions or corrections required.
b. The construction plans may be submitted by the City of Henderson to the responsible State regulatory agency for their review, following staff review. Generally, construction shall not begin until that approval has been received.
c. The construction plans consists of 3 elements (Plan Section, Profile Section, and the "As Built" Plans). These elements are described in paragraphs 1 through 3 below. The construction plans shall include a location map showing location of proposed water lines, valves, and fire hydrants. The map may be on the same scale as the preliminary plan. The construction plans shall include plan and profile sheets showing the location of all water lines, valves, and fire hydrants.
1. **Plan Section**: The plan shall be prepared on 24" x 36" plan profile sheets or plan sheets with separate profile sheets. The plan section of the plan and profile shall show the streets and

side streets, easements, lot lines, culverts, driveways (where possible), sewer lines, water lines, telephone lines, gas lines, power lines, poles, and TV. cable lines. The plan shall also indicate where house service lines are to be installed. The plan shall show all valves, fire hydrants and any branch line connections, and concrete blocking. The plan shall be drawn to scale of not more than fifty feet to the inch (1"=50').

2. **Profile Section**: The profile shall be drawn to a scale of not more than fifty feet to the inch (1"=50') horizontally and not more than five feet to the inch (1"=5') vertically. The profile section shall show the grade of the water lines, the existing ground line, and the proposed ground line where it is different from the existing. All Bench Mark and profile elevations shall be tied to the National Geodetic Survey Datum (formerly the U. S. Coastal & Geodetic Survey Datum). Assumed datum will not be allowed. The profile shall show all storm sewers and sanitary sewers crossing the construction alignment of the proposed water line. The grades for water lines 12 inches diameter and larger shall be set and staked in the ground for construction by the developer's engineer and the contractor shall lay them as close as possible to the proposed grades. Grade stakes for water lines smaller than 12 inch diameter are not required, however, the engineer may include grades in the profile at his option. Water lines shall not be laid to a grade less than 0.2 percent. A 1 inch corporation cock shall be installed at each low spot and each high spot in the water line on the lines smaller than 12 inches. There shall be a temporary 1 inch copper tubing and 1 inch meter stop installed at each of these cocks for blowing off air and for testing the lines. After testing, these lines shall be removed. A 6 inch diameter blow off line is required at each low spot of lines 12 inches and larger and an adequately sized combination vacuum breaker, air release valve is required at each high point in lines 12 inches and larger. The construction plans shall also include a sheet showing standard valve, fire hydrant, and other pipe laying details. Each sheet must be reviewed, approved, signed, and sealed by a Registered Professional Engineer licensed to practice in Texas.
3. **"As Built" Plans**: The developer's engineer shall prepare a set of "As Built" plans based on the construction plans. The "As Built" plans shall show the correct alignment and grade of lines as installed. All valves shall be located on the ground tied to at least two permanent land marks, i.e., fire hydrants, power poles, property lines, etc. The landmarks shall be shown on the plan and the dimension from landmarks shall be shown. The landmarks shall be at least 90 degrees apart. The City Construction Inspector will assist the Engineer in procurement of information needed to develop the "As Built" plans. The developer shall

provide the Public Services Department one hard copy set of plans and one set in digital format within (30) thirty days of written final acceptance of the improvements.

k. Testing and Disinfection

All water lines shall be tested and disinfected prior to final acceptance by the City Engineer.

Testing

A hydrostatic test shall be performed in accordance with AWWA C600 on all new water lines. Upon completion and approval of the disinfecting of the lines, necessary valves shall be opened to allow system pressure to be exerted on the newly constructed lines. Care shall be exercised to remove all entrapped air from the lines by draining the entire segment being tested. This can be accomplished by opening the relief valves, fire hydrants or bleed valves located at the highest elevations along the lines. Once all air has been removed from the lines and the valves closed, the working line pressure shall be measured with a gauge applied to a fitting at or near the lowest elevation along the line. All valves required to isolate the segment being tested shall then be closed. With the test segment isolated, the test segment pressure shall be increased, by means of an external pump and potable water supply. Leakage shall not exceed 11.65 gallons per inch of pipe diameter per mile of pipe per 24 hours when tested at 1½ times the working pressure or **150 psi**, whichever is greater.

Any line segment being tested that fails to meet the allowable pressure loss or leakage requirements established herein and by the AWWA C600 Specification shall be rejected. Any rejected segment shall be repaired, redisinfected and retested. The City's Inspector shall be present during any and all tests.

Disinfection

New water lines shall be disinfected in accordance with AWWA C651. Proposed disinfection methods shall be submitted to the City Engineer for approval. If in the opinion of the Engineer, any segments of the lines are not properly disinfected, the lines shall be properly disinfect to the satisfaction of the Engineer. All new mains shall be thoroughly disinfected, flushed and sampled before being placed in service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure, which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of complete water line will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer.

The environment to which the chlorinated water is to be discharged shall be inspected. If there is any question that the chlorinated discharge will cause damage to the environment, then a reducing agent shall be applied to the water to be wasted to neutralize thoroughly the chlorine residual remaining in the water.

Where necessary, federal, state, and local regulatory agencies should be contacted to determine special provisions for the disposal of heavily chlorinated water.

III. Sanitary Sewer Improvements:

a. **Location:** Sanitary Sewer mains shall be constructed in a dedicated right-of-way or an easement to the City of Henderson, which shall be filed in the public records. Sanitary sewer mains shall be installed under the south or east section of the street except where otherwise approved by the Public Services Department.

A legal description of any off-site easement required for outfall, interceptor, approach or lateral lines to be constructed in conjunction with said project shall be furnished with the final plans and specifications for sanitary sewer mains. Legal descriptions shall be prepared by a Registered Public Land Surveyor.

(1) Sewers shall be laid in a straight alignment with uniform grade between manholes.
(2) The minimum cover for sewer lines shall be five feet. Minimum clearance below established flow lines of creeks and drainage ways shall be as approved by the City Engineer.
(3) Sewer lines shall be at a lower elevation than any water lines and shall not be installed closer than 9 feet in all directions to water facilities. All separation distances shall be measured from the outside surface of each of the respective pieces. Comply with 30 TAC §290.44(e) through §290.44(f)(3) when water and sewer piping separation requirements cannot be met.
(4) Sanitary sewer lines installed 14 feet deep or more shall meet the required embedment of ASTM requirements for the proposed pipe material.

b. **Minimum Size:** The minimum inside diameter size requirement for gravity sanitary sewer lines is 6 inches.

c. **Grade and Velocity:** Size and minimum grade requirements are shown in the table of 30 TAC §317.2 (c) (2) and (c) (3). The minimum velocity in a sewer line is 2 feet per second, and maximum allowable velocity is 15 feet per second. Where velocities greater than 10 feet per second are attained, special provision shall be made to protect against erosion by velocity, and displacement by shock as noted in the requirements of 30 TAC §317.2 (c) (3).

d. **Design Criteria:**

i. **Design Flows:** In residential development, gravity sewers shall be designed to carry an average daily flow of 140 gallons per capita per day based on 3.3 persons per single family unit. The line shall be designed to

carry a peak flow of 4.0 times the average daily flow for 6-inch lines, and 2.5 times the average daily flow for lines 8 inches and larger. For developments other than residential, the developer's engineer shall use the recommended design flows as promulgated by the State of Texas regulatory agency unless the City of Henderson has data to required greater design flows.

ii. **Lift Stations and Pressure Lines:** In general, the City of Henderson will not permit the construction of lift stations and pressure lines, unless it is impracticable to connect to a gravity system. If a lift station is required, complete design, including site work, an all weather access, etc. shall be included in the plans and specifications. The lift station shall be designed in compliance with current state and federal requirements and shall have either dual electrical supply or a stand-by generator. The minimum lift station capacity shall be 100 gallons per minute and shall have at least two pumps. The minimum size for a pressure line shall be 4-inches.

e. **Soil Testing:** The soil corrosivity shall be determined in accordance with the procedures outlined in ANSI/AWWA C105/A21.5 "Polyethylene Encasement for Ductile Iron-Pipe for Water and Other Liquids". The earth resistivity and soil analysis shall be performed in line of the proposed sewer main at points of crossing water lines, and to a depth equal to the proposed sewer line, to provide a representative view of existing subsurface conditions. A point accumulation of 10 or greater indicates corrosive soil conditions and pipeline corrosion protection shall be required. Test results shall be correlated with Public Services Department.

f. **Allowable Materials:**

i. All gravity sewer lines 6 to 12 inches in diameter size shall be DR26 PVC or Ductile Iron. If directed by the City, a metallic locator wire shall be installed above non-metallic pipe between manholes for detection purposes. The locator wire shall be terminated inside the manholes with a minimum of 3' of coiled wire, taped and securely hung in an out-of-the-way location. The locator wire shall be brought into the manhole through a small hole drilled in the cone section a maximum of 1' below the ring and cover. The hole shall be sealed to prevent infiltration.

ii. Creek crossings, shallow lines, and lines laid in areas with higher water table shall be constructed with ductile iron pipe, and shall be encased in concrete where unsuitable soil conditions necessitate encasement.

g. **Manholes:** Manholes shall be pre-cast concrete or cast in place concrete and coated in cold-tar epoxy.

i. Manholes shall be placed at points of changes in alignment, grade, or size of sewer. Manholes shall also be placed at all street intersections, at intersections of sewers, and the end of all sewer lines that will be extended at a later date.

ii. Manhole spacing shall be a maximum of 500 feet for sewer lines of 6 inch to 12-inch in size.
iii. The minimum inside diameter of a manhole shall be 4 feet.
iv. Whenever a manhole is located in the 100-year flood plain, the manhole shall extend to an elevation above the flood plain or as approved by the Public Services Department.
v. Manholes shall not be located where surface water can drain into them. Areas subject to frequent flooding will require special consideration that meets the approval of the Public Services Director.

h. **Cleanouts:** Cleanouts may be used in lieu of manholes at the end of sewers, which are not to be extended in the future.

i. **House Connections:**

i. A minimum 4-inch diameter PVC service line shall be installed to the property line of each lot.
ii. Each service line shall have a "Y" fitting installed in the branch line.
iii. Each service line shall be permanently marked with a "S" on the curb where the service line crosses the curb. For locating the end of the service line, the sewer service line shall have a joint of pipe protruding the ground surface to a height of at least 3 feet.
iv. The depth of the service line shall be at least 4 feet deep at the curb and shall be deep enough to allow a 1 feet per 100 feet drop in the service line from the back of the lot or lowest point in the lot to the property line, plus an adequate depth for the house plumbing. The end of the service shall be capped.

j. Plans and Specifications for Sewer Lines:
i. Preliminary Plan:
a. The developer shall submit with the preliminary plat, a plan showing the proposed location and sizes of sewer lines, prepared, signed, and sealed by a Registered Professional Engineer. The plan shall include location of lots, minimum finished floor elevations, streets, water lines, sewer lines, clean outs, and manholes, along with the design calculations for the size of the lines.
b. The preliminary plan will be on a scale of not more than one hundred feet to the inch (1"=100').
ii. Construction plans:
a. The developer shall submit with the final plat , the proposed plans, specifications, and contract documents complete, prepared, signed and sealed by a Registered Professional Engineer. The Public Services Department and the City Engineer will review for approval the plans and specifications. After the review the developer shall include into the plans and specifications any additions or corrections required.

b. The construction plans may be submitted by the City of Henderson to the responsible State regulatory agency for their review, following staff review. Generally, construction shall not begin until that approval has been received.

c. The construction plans consists of 3 elements (Plan Section, Profile Section, and the "As Built" Plans). These elements are described in paragraphs 1 through 3 below. The construction plans shall include a location map showing location of proposed sewer lines, manholes, cleanouts, and water lines. The map may be on the same scale as the preliminary plan. The construction plans shall include plan and profile sheets showing the location of all sewer lines and manholes.

1. **Plan Section**: The plan shall be prepared on 24" x 36" plan profile sheets or plan sheets with separate profile sheets. The plan section of the plan and profile shall show the streets and side streets, easements, lot lines, culverts, driveways (where possible), sewer lines, water lines, telephone lines, gas lines, power lines, poles, and TV cable lines. The plan shall also indicate where house service lines are to be installed. The plan shall show all manholes, cleanouts, ductile iron pipe, and branch line connections, and concrete encasement. The plan shall be drawn to scale of not more than fifty feet to the inch (1"=50').
2. **Profile Section**: The profile shall be drawn to a scale of not more than fifty feet to the inch (1"=50') horizontally and not more than five feet to the inch (1"=5') vertically. The profile section shall show the grade of the sewer lines, the existing ground line, and the proposed ground line where it is different from the existing. All Bench Mark and profile elevations shall be tied to the National Geodetic Survey Datum (formerly the U. S. Coastal & Geodetic Survey Datum). Assumed datum will not be allowed. The profile shall show all storm sewers and water lines crossing the construction alignment of the proposed sewer line. The grades for sewer lines shall be set and staked in the ground for construction by the developer's engineer and the contractor shall lay them as close as possible to the proposed grades. Grade stakes and grade lines are required for all sewer lines. The construction plans shall also include a sheet showing standard manholes, cleanouts, and other pipe laying details. Each sheet must be reviewed, approved, signed, and sealed by a Registered Professional Engineer licensed to practice in Texas.
3. **"As Built" Plans**: The developer's engineer shall prepare a set of "As Built" plans based on the construction plans. The "As Built" plans shall show the location of all manholes, cleanouts, and service connections, and the correct alignment and grade of lines as installed. All manholes and cleanouts shall be located on the ground tied to at least two permanent land marks, i.e., fire hydrants, power poles, property lines, etc. The landmarks shall

be shown on the plan and the dimension from landmarks shall be shown. The landmarks shall be at least 90 degrees apart. The City Construction Inspector will assist the Engineer in procurement of information needed to develop the "As Built" plans. The developer shall provide the Public Services Department one set of plans in digital format within (30) thirty days of written final acceptance of the improvement.

k. Sanitary Sewer Pipe and Manhole Testing

All sanitary sewer lines and manholes shall be tested in the presence of the City Inspector.

Preparation

Prior to performing any test, a sewer cleaning ball shall be passed through the lines from manhole to manhole to assure that the line is free from defects and debris. Precleaning by high velocity jet or other methods may be necessary.

Tests may be performed prior to installation of the service connections but with the wyes in place. All ends and open fittings shall be plugged to resist the test pressure.

Sanitary Sewer Pipe:

An exfiltration test on all sanitary sewer lines shall be performed in accordance with one of the following procedures:

1. Air Test: This test shall conform to the procedure described in ASTM C-828, ASTM C-924 or other appropriate procedures. For safety reasons, air testing of sections of pipe shall be limited to lines less than 36-inch average inside diameter. Lines 36-inch average inside diameter and larger may be air tested at each joint. The maximum time allowable for the pressure to drop from 3.5 pounds per square inch gauge to 2.5 pounds per square inch gauge during a joint test, regardless of pipe size, shall be 20 seconds. For sections of pipe less than 36-inch average inside diameter, the maximum time allowable for the pressure to drop from 3.5 pounds per square inch gauge to 2.5 pounds per square inch gauge shall be computed by the following equation:

$T = 0.0850\ (D)\ (K)/(Q)$ where T = time for pressure to drop 1.0 pounds per square inch gauge in seconds.

K = 0.000419DL, but not less than 1.0

D = average inside diameter in inches

L = length of line of same pipe size in feet

Q = rate of loss, assume 00.0015 ft^3/min/sq ft internal surface

Minimum testing time for each pipe diameter are outlined below:

Pipe Diameter (inches)	Minimum Time (seconds)	Length for Minimum Time (feet)	Time for Longer Length (seconds)
6	340	398	0.855 (L)
8	454	298	1.520 (L)
10	567	239	2.374 (L)
12	680	199	3.419 (L)
15	850	159	5.342 (L)
18	1020	133	7.693 (L)
21	1190	114	10.471 (L)
24	1360	100	13.676 (L)
27	1530	88	17.309 (L)
30	1700	80	21.369 (L)
33	1870	72	25.856 (L)

2. Water Test: Water testing shall be performed from manhole to manhole. The downstream manhole of the section being tested shall be plugged and the line filled with water at the upstream manhole. The level of water in the upstream manhole shall be at least 2 feet deep and shall never exceed 25 feet higher than the flowline in the downstream manhole. After a reasonable time for air escaping and stabilization, the level of water in the upstream manhole shall be recorded. The test shall run for a minimum of two hours. At the end of the test period, the water level shall be recorded and the water leakage calculated. The allowable leakage rate shall not exceed 50 gallon/inch of diameter/mile/day (0.0004 gallon/inch of diameter/foot/hour).

Any sanitary sewer line not meeting this allowable leakage is presumed to have failed.

Manholes

Manholes shall be tested for leakage separately and independently of the wastewater lines either by hydrostatic exfiltration testing or by vacuum testing.

Hydrostatic Exfiltration Testing shall be performed by sealing all wastewater lines coming into the manhole with an internal pipe plug, the manhole shall then be filled with water and maintained full for at least one hour. For concrete manholes, a wetting period of 24 hours may be used prior to testing in order to allow saturation of the concrete.

Manholes shall be tested as follows:

1. For precast concrete manholes with tongue and groove joints, the maximum leakage for hydrostatic testing shall be 0.025 gallons per foot diameter per foot of manhole depth per hour.

2. For manholes designated as watertight (fiberglass or precast concrete manholes with rubber gaskets), the maximum leakage for hydrostatic testing shall be zero (0.000) gallons per foot diameter per foot of manhole depth per hour. If a manhole fails the hydrostatic exfiltration test, the manhole must be made water tight and retested.

Vacuum testing shall be performed by plugging all pipes entering the manhole, taking care to securely place the plug from being drawn into the manhole. The test head shall be placed and the seal inflated in accordance with the manufacturer's recommendations. A vacuum pump of ten (10) inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to nine (9) inches. Following are minimum allowable test times for manhole acceptance at the specified vacuum drop:

DEPTH (FEET)	TIME (SECONDS)		
	48" diameter	60" diameter	72" diameter
4	10	13	16
8	20	26	33
12	30	39	49
16	40	52	67
20	50	65	81
24	59	78	97
Add for 2 ft. more depth:	5	6.66	8

Note: These numbers have been taken from ASTM C 1244-93.

If the manhole fails the initial test, repairs and adjustments necessary due to extenuating circumstances (i.e. pipe joint, liner, plug sealing) should be made. Retesting shall proceed until a satisfactory test is obtained.

Deflection Test

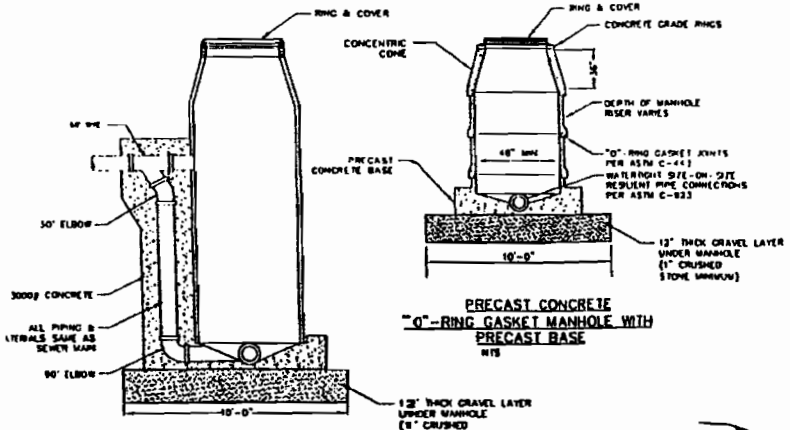
A deflection test shall be performed on all flexible or semi-rigid pipe in conformance with Texas Commission on Environmental Quality (TCEQ) Chapter 317 - Design Criteria for Sewerage Systems. The test shall be conducted after the final backfill has been in place at least 30 days. No pipe shall exceed a deflection of 5%. A rigid mandrel with an outside diameter equal to 95% of the inside diameter of the pipe shall be used to measure deflection. The test shall be performed without mechanical pulling devices. If a pipe should fail to pass the deflection test, the problem shall be corrected and a second test shall be conducted after the final backfill has been in place an additional 30 days.

The rigid mandrel shall be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed. The mandrel shall have nine or more "runners" or "legs" as long as the total number of legs is an odd number. The barrel section of the mandrel shall have a length of at least 75% of the inside

diameter of the pipe. A proving ring shall be provided and used for each size mandrel in use. The Developer shall submit his proposed pipe mandrels to the City for concurrence prior to testing the line.

Standards I - III

from Design Guidelines



TYPICAL DROP MANHOLE DETAIL
NTS

PRECAST CONCRETE "O"-RING GASKET MANHOLE WITH PRECAST BASE
NTS

MANHOLE NOTES:

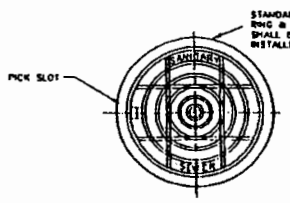
1 TYPICAL FOR ALL MANHOLE INSTALLATIONS, BREAK OUT TOP HALF OF PIPE AFTER INVERT IS POURED.

2 MANHOLES SHALL BE ACCESSIBLE BY PORTABLE LADDER ONLY.

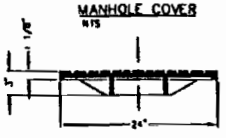
3 PRECAST MANHOLE RISER SHALL BE THE SAME DIAMETER AS THE PRECAST CONCRETE BASE SECTION - NO REDUCING SECTIONS WILL BE ALLOWED

4 LOCATOR WIRE SHALL BE INSTALLED ABOVE THE PIPE BETWEEN MANHOLES FOR ALL NON-METALLIC PIPE INSTALLATIONS. THE LOCATOR WIRE SHALL TERMINATE INSIDE THE MANHOLE WITH A MINIMUM OF 3' OF COILED WIRE, TAPED AND SECURELY HUNG IN AN OUT-OF-THE-WAY LOCATION. WIRE SHALL BE BROUGHT INTO MANHOLE THRU A HOLE DRILLED IN THE CONE SECTION A MAXIMUM OF 1' BELOW RING AND COVER.

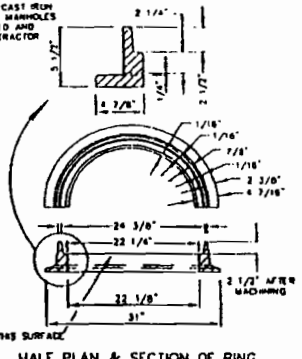
5 ALL MANHOLES SHALL BE COATED WITH COLD TAR EPOXY.



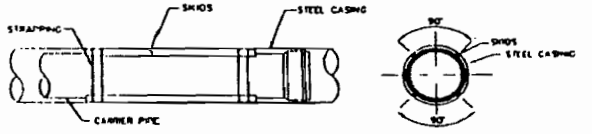
MANHOLE COVER
NTS



SECTION OF COVER
NTS



HALF PLAN & SECTION OF RING
NTS

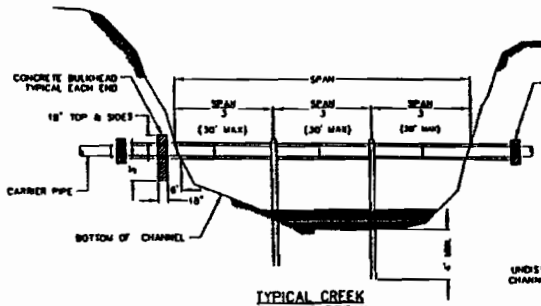


TYPICAL STEEL ENCASEMENT DETAIL
NTS

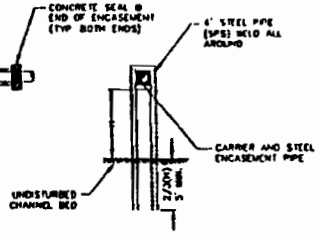
NOTES

1 PROVIDE CASING SPACERS/INSULATORS AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

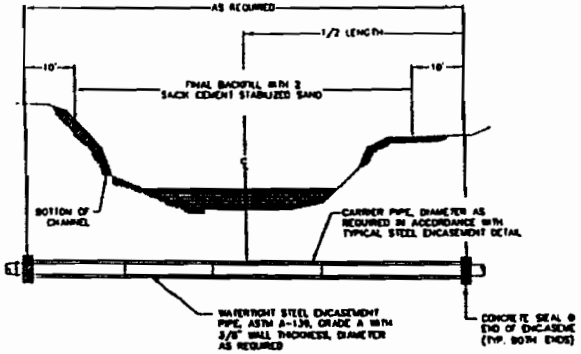
2 PROVIDE MANUFACTURED COVERS AND PLUGS FOR EACH END OF CASING TO SEAL AROUND CARRIER PIPE.



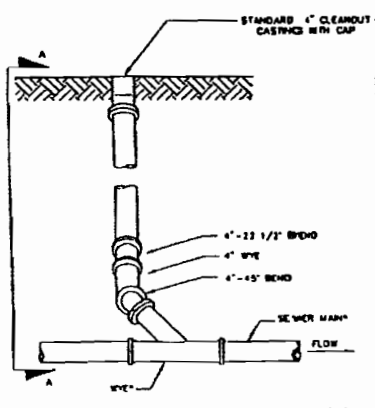
TYPICAL CREEK CROSSING DETAIL
(WASTEWATER ONLY)
NTS

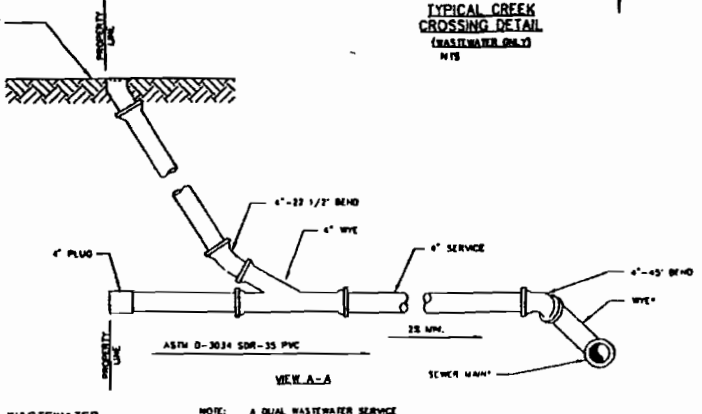


TYPICAL CREEK CROSSING PIPE SUPPORT DETAIL
NTS



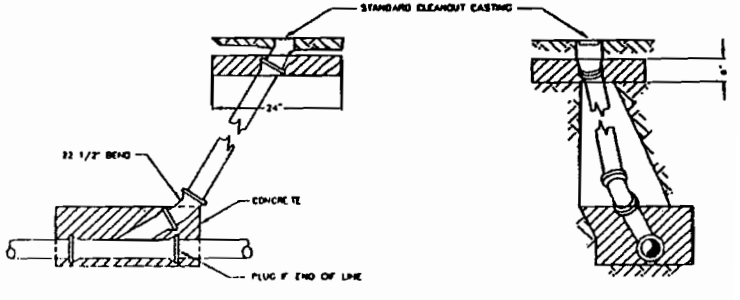
TYPICAL CREEK CROSSING
(WATER OR WASTEWATER)
NTS



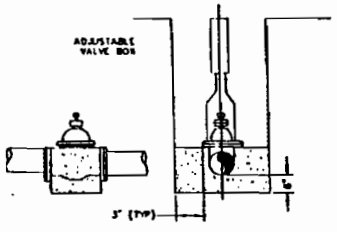


TYPICAL WASTEWATER SERVICE DETAIL
NTS

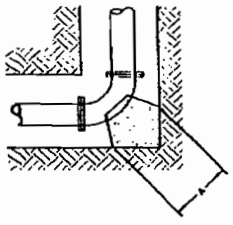
NOTE: A DUAL WASTEWATER SERVICE REQUIRES 6" SERVICE PIPE



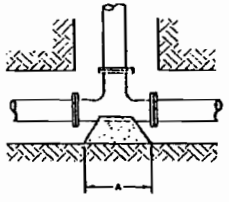
CLEANOUT DETAIL
NTS



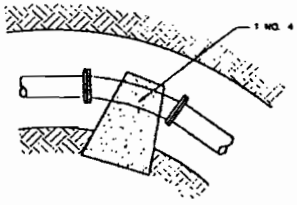
BLOCKING DETAILS FOR VALVES
NTS



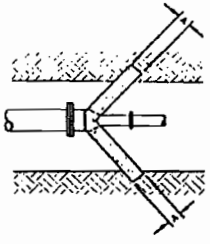
HORIZONTAL BENDS
NTS



TEES
NTS



VERTICAL BENDS
NTS



REDUCERS
NTS

PIPE SIZE	TEES		BENDS								PIPE SIZE	REDUCERS	
			90°		45°		22 1/2°		VERTICAL				
	A	B*	A	B*	A	B*	A	B*	A	B*		A	B*
2 1/2" TO 4"	21"	12"	24"	15"	18"	12"	12"	9"	12"	18"	4"-3"	12"	12"
6"	24"	21"	30"	24"	24"	18"	18"	12"	18"	18"	8"-6"	18"	12"
8"	39"	24"	48"	30"	30"	24"	24"	18"	24"	24"	8"-8"	18"	18"
10"	48"	30"	54"	36"	45"	24"	36"	21"	30"	24"	10"-8"	24"	18"

B = VERTICAL OR DEPTH DIMENSIONS PERPENDICULAR TO DIMENSION "A"

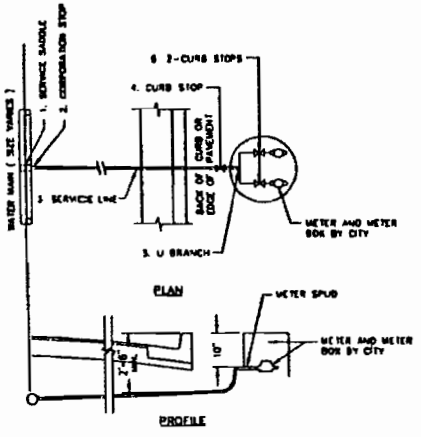
THRUST BLOCK

NOTE:
MECHANICAL JOINT RESTRAINTS SHALL BE USED AT ALL FITTINGS.

TYPICAL WATER SERVICE # NOTES:

1. 1 1/2" CC DOUBLE STRAP SERVICE SADDLE STAINLESS STEEL STRAP AND NUTS MODEL 317 SMITH BLAIR OR EQUAL (SMITH BLAIR, MUELLER OR JMC)
2. 1 1/2" COMP X CTS CORPORATION STOP (FORD FB800-4Q OR MUELLER 15000
3. NUMEX POLY PE3408 ASTM 2239 (SDR7 OR SDR9) OR WOLVERINE SOFT K COPPER
4. 1 1/2" COMP X FIPT CURB STOP FORD B41444 W O OR MUELLER B110203
5. 3/4"X3/4"X1 1/2" MPT U BRANCH FORD B48-43-7 S OR MUELLER B15368
6. 2- 3/4" CURB STOPS (FIPT X FIPT) FORD B11232W OR MUELLER B10203

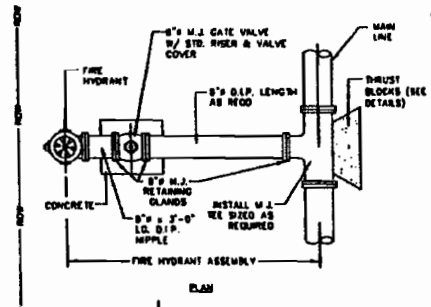
METER COUPLINGS FORD BC88-33-25 OR MUELLER B15530

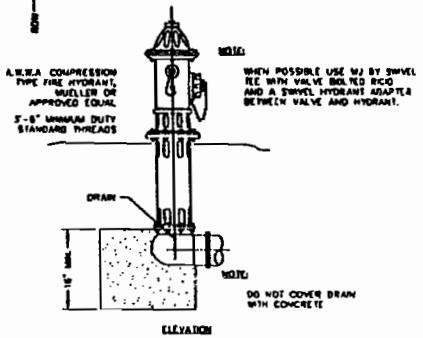


TYPICAL WATER SERVICE
NTS

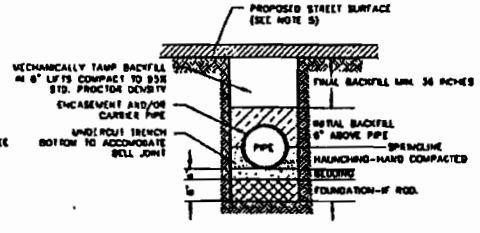
NOTES:

DEVELOPER SHALL INSTALL WATER SERVICE LINE FROM MAIN TO CURBSTOP AS SHOWN. METERS AND METER BOXES SHALL BE INSTALLED BY THE CITY NO PRIME TAPS ARE ALLOWED ON ANY WATER MAIN.





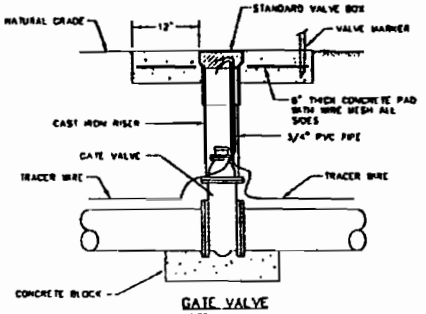
TYPICAL FIRE HYDRANT ASSEMBLY
NTS



WATER, WASTEWATER AND STORM SEWER PIPE INSTALLATION DETAIL
NTS

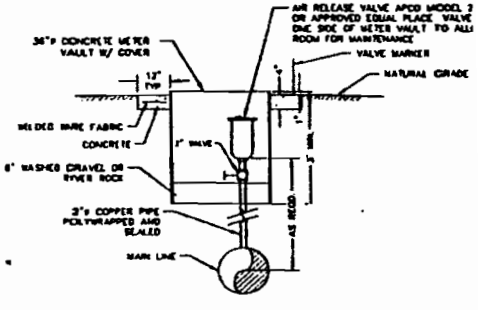
NOTES:

1. WHEN RUNNING WATER IS ENCOUNTERED IN TRENCH, CONTRACTOR SHALL USE CLASS I EMBEDMENT MATERIAL (CRUSHED STONE) FOR THE BEDDING & HAUNCHING.
2. WHEN AN UNSTABLE TRENCH BOTTOM IS ENCOUNTERED, CONTRACTOR SHALL OVER EXCAVATE TRENCH AND PLACE 9" OF CLASS I MATERIAL FOR FOUNDATION.
3. WHEN CLAYEY SOILS ARE ENCOUNTERED IN BOTTOM OF TRENCH, CONTRACTOR SHALL USE CLASS III EMBEDMENT MATERIAL (SAND) FOR BEDDING, HAUNCHING AND INITIAL BACKFILL.
4. PVC SANITARY SEWER LINES INSTALLED 14 FEET DEEP OR MORE SHALL MEET THE REQUIRED EMBEDMENT OF ASTM REQUIREMENTS FOR THE PROPOSED PIPE MATERIAL.
5. IN LOCATIONS NOT UNDER PAVEMENT, CONTRACTOR SHALL INSTALL 6" MOUND FOR SETTLEMENT OVER PIPE TRENCH.



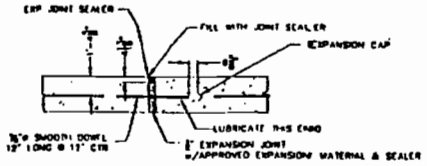
GATE VALVE
NTS

NOTE:
TYPICAL GATE VALVE INCLUDES STD. RISER AND VALVE COVER

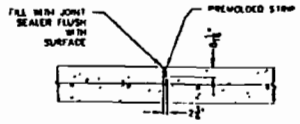


TYPICAL AIR RELEASE VALVE
NTS

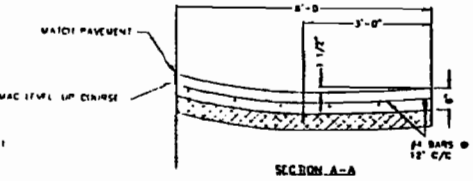
Drawn by: C. STEWART 03/01/2005	Project title: HEND/SUBDIVISION ORDINANCE		CITY OF HENDERSON, TEXAS SUBDIVISION ORDINANCE	STANDARD DETAILS II
Checked by:	Drawing name: Standard Details II.dwg			



TYPE "A" EXPANSION JOINT
NTS (90' CENTERS)

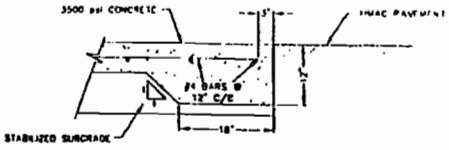


TYPE "C" SAWED JOINT
NTS (15' CENTERS)

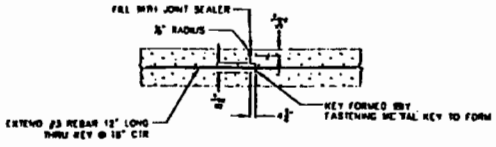


SECTION A-A

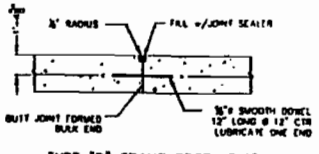
NOTE:
CONTRACTOR TO PROVIDE POSITIVE DRAINAGE ACROSS VALLEY GUTTER



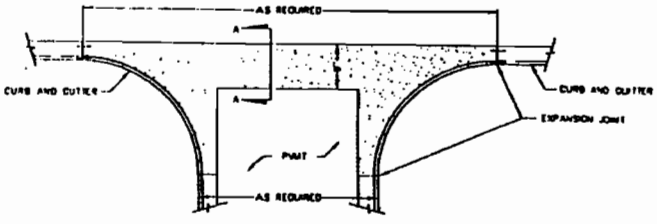
CONCRETE HEADER
NTS



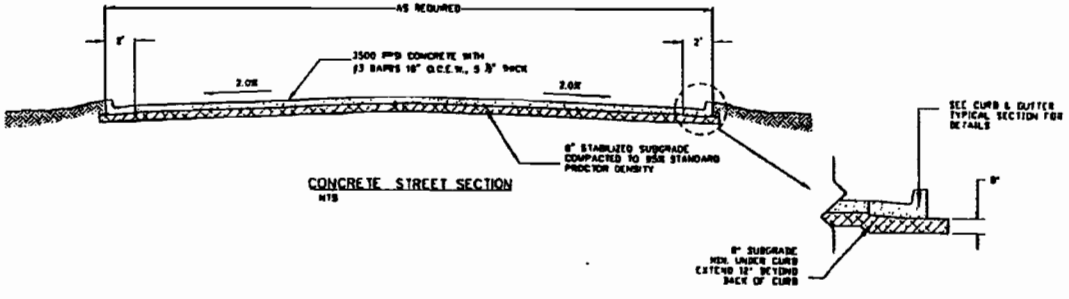
TYPE "B" LONGITUDINAL JOINT
NTS



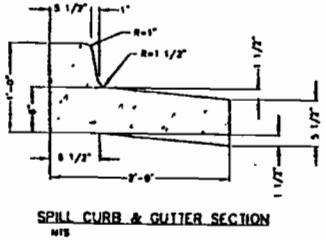
TYPE "D" TRANSVERSE JOINT
NTS (END OF DAYS WORK)



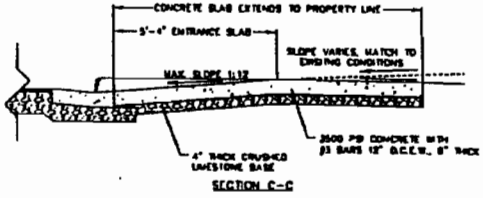
TYPICAL VALLEY GUTTER AT INTERSECTION
NTS



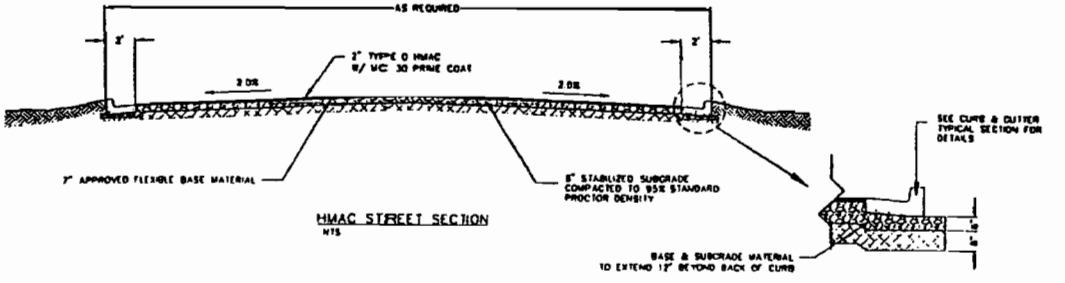
CONCRETE STREET SECTION
NTS



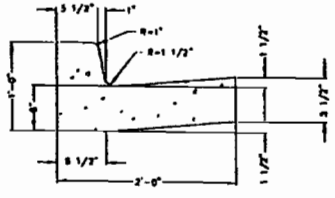
SPILL CURB & GUTTER SECTION
NTS



SECTION C-C

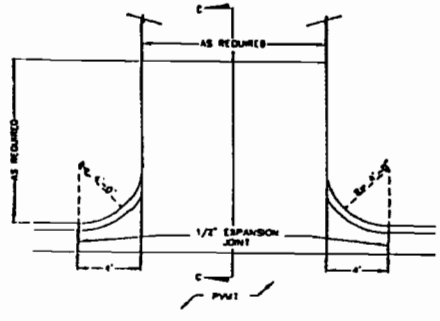


HMAC STREET SECTION
NTS



TYPICAL CURB & GUTTER SECTION
NTS

NOTES:
1. EXPANSION MATERIAL AND DOWELS REQUIRED AT ALL DRIVEWAY RETURNS AND VALLEY GUTTERS AT STREET INTERSECTIONS.
2. INSTALL EXPANSION JOINTS AT 30' INTERVALS AND TROWEL JOINTS AT 10' INTERVALS.



TYPICAL DRIVEWAY RETURN

				CITY OF HENDERSON, TEXAS SUBDIVISION ORDINANCE	STANDARD DETAILS III

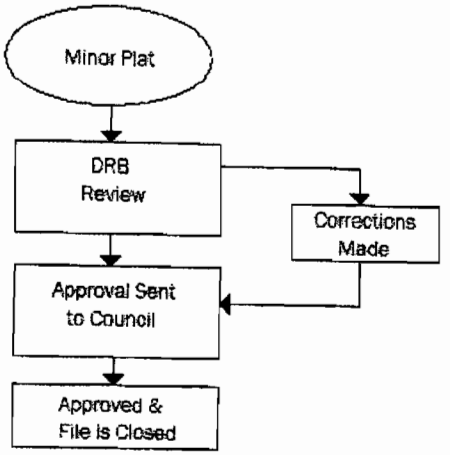
Appendix B

Subdivision Process Flowchart

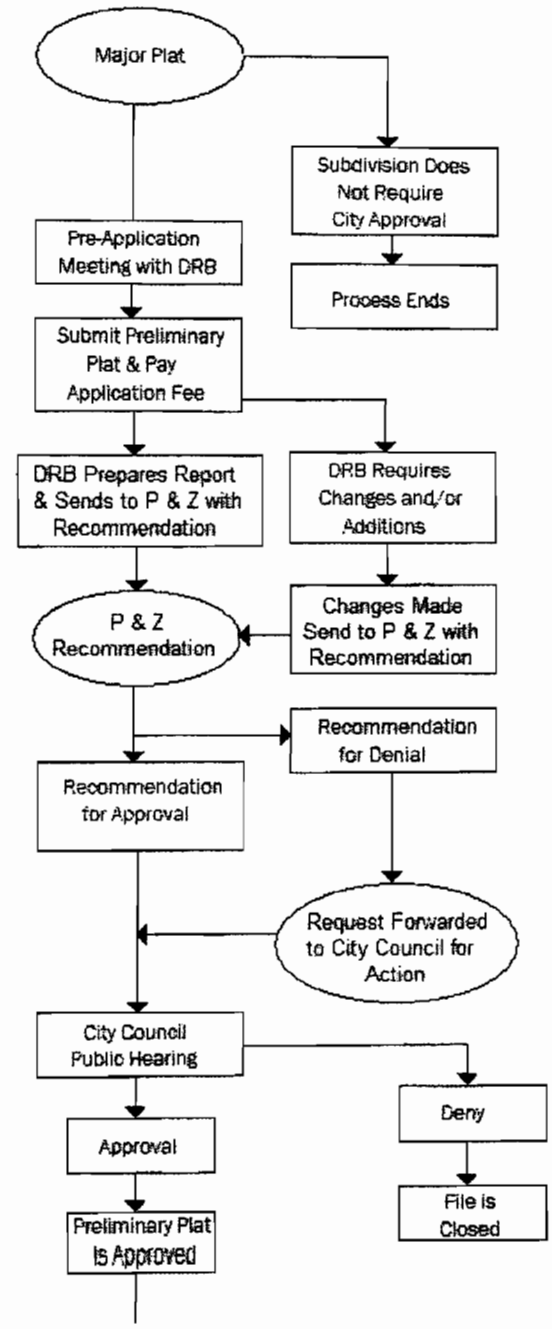
* If there is any conflict between the provisions of this subdivision ordinance and the herein after flow chart, the provisions of the subdivision ordinance shall supercede the flow charts.

Appendix B1

Minor Plat



Appendix B2
Major Plat



continue to p2 of Appendix B2

continue from page 1 of Appendix B2