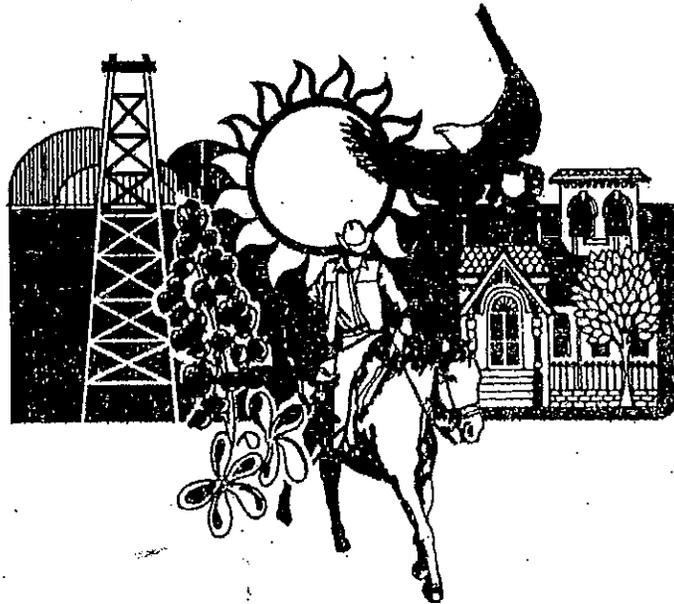


CITY OF BRENHAM DESIGN AND CONSTRUCTION STANDARDS



June 1996

FINAL DRAFT

TABLE OF CONTENTS

<u>Chapter</u>	<u>Title</u>	<u>Page</u>
1.	Introduction	1-1
	• General Provisions	1-1
	• Authority	1-1
	• Purpose	1-1
	• Scope of the Standards	1-1
	• Application of the Standards	1-1
	• Effective Date	1-2
2.	Subdivision Standards	2-1
	• General Provisions	2-1
	• Comprehensive Plan	2-1
	• Zoning	2-1
	• Platting	2-1
	• Planning, Design and Construction	2-1
3.	Public Easement Standards	3-1
	• Utility Easements	3-1
	• Drainage/Floodway Easements	3-2
	• Flood Plain Restriction	3-2
	• Emergency Access Easements	3-3
4.	Construction Planning Standards	4-1
	• General	4-1
	• Design Criteria	4-1
	• Professional Preparation	4-1
	• Approvals	4-1
	• Silt and Erosion Control	4-1
	• Other Permits	4-2
	• Environmental Clearance	4-2
5.	Water System Standards	5-1
	• General Provisions	5-1
	• Design Criteria	5-1
	• Individual Water Service Connections	5-2
	• Alternative Potable Water Facilities	5-2

<u>Chapter</u>	<u>Title</u>	<u>Page</u>
6.	Wastewater System Standards	6-1
	• General Provisions	6-1
	• Design Criteria	6-1
	• Individual Sewer Service Connections	6-2
	• Alternative Sewage Treatment Facilities	6-3
7.	Natural Gas System Standards	7-1
	• General Provisions	7-1
	• Design Criteria	7-1
	• Individual Natural Gas Service Connections	7-1
	• Liquid Propane or Alternative Natural Gas Facilities	7-2
8.	Electrical System Standards	8-1
	• General Information	8-1
	• Types of Service	8-4
	• Service Installations	8-5
	• Standards of Construction	8-5
	• Metering, Meter Loops and and Service Drops	8-12
	• Customer's Wiring and Utilization Equipment	8-14
	• Transformer Vaults	8-15
9.	Street System Standards	9-1
	• General Principles of Street System Layout	9-1
	• Street Access	9-2
	• Location of Public Streets	9-4
	• Intersection of Public Streets	9-4
	• Off-Set Streets	9-7
	• Sidewalks	9-7
	• Half-Streets	9-7
	• Reserve Access Strips	9-7
	• Alleys	9-7
	• Cul-de-Sac and Dead-End Public Streets	9-7
	• Private Streets	9-8
	• Street Names	9-10
	• Geometric Criteria	9-11
	• Construction Standards and Specifications	9-11
	• Street Structural Thickness Design	9-17
	• Street Lighting Standards	9-21

<u>Chapter</u>	<u>Title</u>	<u>Page</u>
10.	Off-Street Parking and Driveway Standards	10-1
	• Off-Street Parking	10-1
	• Driveway Design Standards	10-3
	• Refuse Container Pads	10-14
11.	Storm Drainage Standards	11-1
	• General Provisions	11-1
	• Design Criteria	11-3
	• Minimum Design Standards	11-8
12.	Buffer Zones, Park and Open Space	12-1
	• Buffer Standards	12-1
	• Parks and Recreation Areas	12-2
13.	Construction Safety Standards	13-1
	• General Provisions	13-1
	• Transportation Safety	13-1
	• Excavation and Trench Safety	13-1
	• Protection of Life and Property	13-1
	• Insurance	13-1
14.	Definitions	14-1

Tables

9-1	Functional Design Capacity of Streets	9-1
9-2	Street Rights-of-Way	9-3
9-3	Geometric Design Criteria for Public Streets	9-12
9-4	Street Design by Equivalent Axle Loads (20-Year Design Life)	9-18
9-5	Street Lighting Intensity	9-21
10-1	Maximum Driveways Per Lot	10-7
10-2	Minimum Curb Return Radii (in Feet)	10-9
11-1	Average Velocities of Runoff	11-4
11-2	Design Storm Frequency	11-6
11-3	Coefficient of Roughness	11-7
11-4	Culvert Discharge - Velocity Limitations	11-8
12-1	Land Use Intensity Standards	12-5
12-2	Bufferyard Requirements	12-5

	<u>Title</u>	<u>Page</u>
<u>Figures</u>		
9-1	Site Triangle	9-6
9-2	Arterial Streets	9-13
9-3	Collector Streets	9-14
9-4	Local Streets	9-15
9-5	Local Street (Residential) Low Density Rural	9-16
10-1	Parking Lot Dimensions	10-2
10-2	Residential (Low Volume) Driveway Criteria	10-5
10-3	Entrance and Exit Dimensions for High Volume Driveways	10-6
10-4	High Volume Driveway Spacing Criteria	10-8
10-5	Design Criteria for Limited Movement Driveway	10-10
10-6	Sight Distances for Driveway Design	10-12
10-7	Driveway Locations at Expressway Ramps	10-13
10-8	Refuse Container Pads	10-15
11-1	The Rational Formula	11-5
11-2	Time of Concentration	11-7

CHAPTER 1. INTRODUCTION

101. GENERAL PROVISIONS

The City of Brenham Design and Construction Standards outline specific requirements for the improvement, development and subdivision of land in the City of Brenham corporate limits and extra territorial jurisdiction. This document is intended to be used jointly with the City of Brenham, Texas Comprehensive Plan 2005, the City of Brenham Standard Details, Standard Specifications, Subdivision Ordinance, Zoning Ordinance and other applicable Federal, State and local regulations.

102. AUTHORITY

This document has been prepared pursuant to authority vested in the City of Brenham as outlined in [City Attorney insert].

103. PURPOSE

The purpose of these standards is to achieve uniformity and consistency in the development and subdivision of property in the City of Brenham corporate limits and extra territorial jurisdiction, to achieve a common standard in the improvement of City infrastructure systems, to provide for and promote growth in accordance with comprehensive planning goals and objectives, to further define requirements of the subdivision ordinance, to assure compliance with applicable Federal, State and local regulations and to serve the citizens in providing for their safety, health and welfare.

104. SCOPE OF THE STANDARDS

These standards are intended to cover all activities related to the improvement, development and subdivision of land in the City of Brenham corporate limits and extra territorial jurisdiction. This document outlines specific planning, engineering, construction and policy provisions which are requisite to these activities.

105. APPLICATION OF THE STANDARDS

Any party desiring to improve, develop or subdivide land in the City of Brenham corporate limits or extra territorial jurisdiction shall incorporate the requirements of these standards into the planning, engineering and construction of their particular project. As previously noted, other pertinent regulations and criteria,

including the City of Brenham Standard Details and Standard Specifications, must be utilized in combination with this document. Questions concerning the contents of these standards or other requirements concerning meaning or applicability shall be directed to the City Engineer.

106. EFFECTIVE DATE

The effective date of these standards is [insert date].

CHAPTER 2. SUBDIVISION STANDARDS

201. GENERAL PROVISIONS

Any party desiring to subdivide property shall comply with the City of Brenham Subdivision Ordinance. All aspects of these standards shall be construed to provide additional information that is relevant and requisite to the subdivision process.

202. COMPREHENSIVE PLAN

The subdivision of property shall comply with applicable requirements of the City of Brenham, Texas Comprehensive Plan 2005. Particular attention shall be directed to those portions of the Plan pertaining to the thoroughfare system and utility system infrastructure. Additionally, the Plan provides valuable information concerning community demographics, goals and directions for growth.

203. ZONING

The subdivision of property shall comply with the City of Brenham Zoning Ordinance. For land not properly zoned for the intended subdivision use, re-zoning of the property shall be obtained prior to the initiation of planning, engineering and construction.

204. PLATTING

Platting for subdivisions shall comply with the requirements and format outlined in the Subdivision Ordinance. All material submittals and time lines required by the ordinance shall be satisfied to insure a timely and responsive action by the City.

205. PLANNING, DESIGN AND CONSTRUCTION

All subdivisions shall be planned, designed and constructed in accordance with the Subdivision Ordinance, City of Brenham Standard Details, Standard Specifications and requirements of this document. Improvements not meeting these criteria will not be accepted by the City as part of its infrastructure system.

CHAPTER 3. PUBLIC EASEMENT STANDARDS

301. UTILITY EASEMENTS

301.1 Easement Criteria

Easements shall be provided as required by the Subdivision Ordinance. The location and placement of easements shall be coordinated with the City of Brenham.

301.2 Utility Easement Restrictions

The following statement of restrictions shall be placed on the plat whenever easements are dedicated for public use:

PUBLIC EASEMENTS

All public easements denoted on this plat are hereby dedicated to the use of the public. Any public utility, including the City of Brenham, shall have the right at all times of ingress and egress to and from and upon said easements for the purpose of construction, reconstruction, inspection, patrolling, maintaining and adding to or removing all or parts of its respective system without the necessity at any time of procuring the permission of the property owner. Any public utility including the City of Brenham shall have the right to move and keep moved all or part of any building, fences, trees, shrubs, other growths or improvements that in any way endanger or interfere with the construction, maintenance or efficiency of its respective systems on any of the easements shown on this plat. Neither the City of Brenham or any public utility shall be responsible for replacing or reimbursing the property owner due to removal or relocation of any obstructions in the public easements.

301.3 Utilities

All new utilities shall be placed and constructed within designated easements or street rights-of-way.

301.4 Requirements

No structure, foundation, slab or other pertinent improvement shall be placed within any dedicated public easement without written permission from the City.

302. DRAINAGE/FLOODWAY EASEMENTS

Drainage easements shall be provided along all natural and man-made drainage channels and floodways which drain two (2) or more lots or tracts of land according to the following criteria:

a. Natural Drainage Channels

Storm drainage easements shall be provided along existing or proposed open channels with sufficient width for the water course to handle the flow from the applicable frequency storm plus a minimum of twenty (20) feet on each side beyond top of bank, for ingress and egress of maintenance equipment, for clearance from fences, for maintenance of the channel bank, and for adequate slopes necessary along the bank.

b. Enclosed Drainage Systems

Put this in utility code 20
Where enclosed drainage systems are provided that are not within or adjacent to a public street, storm drainage easements of fifteen-foot (15') minimum width shall be provided. Easements shall be centered on the system. If necessary, the larger easements shall be provided. Easements shall be wide enough to encompass the system plus provide ingress and egress for future maintenance operations. +GATES

c. See also Chapter 11, Storm Drainage Standards.

303. FLOOD PLAIN RESTRICTION

a. Flood plain restrictions shall be provided where necessary along natural drainageways and lakes. Flood plain restriction shall encompass the area between the dedicated channel (see Section 302) and the water surface elevation resulting from a one hundred-year (100 yr.) design frequency storm. The area encompassing the dedicated channel and the Flood Plain Restriction shall be referred to as the 100-Year Flood Plain. The width of the floodplain shall be substantiated by a drainage study, drainage calculations or other criteria submitted to and approved by the City.

b. Within the one hundred-year (100 yr.) flood plain, storm drainage easements should be provided (see Section 302) that contain storm water resulting from the one hundred-year (100 yr.) frequency storm less the amount of storm water carried in the enclosed system, if any. The width of the easements shall be substantiated by a drainage study, drainage calculations or other criteria submitted to and approved by the City.

- c. The following restrictions shall be placed in the dedication instrument:

FLOOD PLAIN RESTRICTION

No construction, without the written prior approval of the City of Brenham shall be allowed within a flood plain, and then only after detailed engineering plans and studies show that no flooding and no obstruction to the natural flow of water will result. If construction is permitted, all finished floor elevations shall be a minimum of one-foot (1') above the one hundred-year (100 yr.) flood elevation. *10/12*

The existing creeks, lakes, reservoirs or drainage channels, not within a public easement, traversing along or across portions of this subdivision, shall remain as an open channel at all times and shall be maintained by the individual owners of the lot or lots that are traversed by or adjacent to the drainage courses along or across said lots. The City of Brenham shall not be responsible for the maintenance and operation of said private drainageways or for the control of erosion. Each property owner shall keep the natural drainage channels traversing or adjacent to the property clean and free of debris, silt or any substance which would result in unsanitary conditions. The City shall have the right of ingress and egress for the purpose of inspection and supervision of maintenance work by the property owner and to alleviate any undesirable conditions that may occur. If the natural drainage channels are subject to storm water overflow and natural bank erosion, the City of Brenham shall not be liable for damages of any nature resulting from the occurrence of these natural phenomena, nor resulting from a failure of any structure(s) within the natural drainage channels. The natural drainage channel crossing each lot is shown by the flood plain easement line as shown on the plat.

- d. See also, Chapter 11, Storm Drainage Standards.

304. EMERGENCY ACCESS EASEMENTS

Emergency access (fire lane) easements shall be provided as required by the City. These easements shall have a minimum width of twenty-eight feet (28') and a minimum height clearance of fourteen feet (14'). Any emergency access easement shall either connect at each end to a dedicated public street or be provided with a turnaround having a minimum diameter of eighty feet (80') with an additional distance of ten feet (10') on all sides clear of

permanent structures. The driving surface within emergency access easements shall be designed and constructed according to standards established for local public streets. All structures shall be located within one hundred fifty feet (150') of a dedicated and improved emergency access easement or public street.

DEFINE

CHAPTER 4. CONSTRUCTION PLANNING STANDARDS

401. GENERAL

Prior to the construction of any facilities related to the improvement, development or subdivision of land, construction plans and specifications showing sufficient detail shall be submitted to the City and appropriate reviewing agencies for approval. No construction activities shall commence prior to approval.

402. DESIGN CRITERIA

The design criteria to be utilized in the preparation of detailed plans and specifications are those outlined by this document, the City of Brenham Subdivision Ordinance, Zoning Ordinance, Standard Details, Standard Specifications and other applicable Federal, State and local regulations. Other considerations shall include the application of generally accepted engineering standards of practice where specific criteria are not mandated.

403. PROFESSIONAL PREPARATION

All plans and specifications shall be prepared under the direction of a Registered Professional Engineer licensed to practice in the State of Texas. All plans, specifications and studies shall bear the seal, signature and date of preparation by the engineer. Subdivision and survey plats shall be prepared by a Registered Professional Land Surveyor licensed to practice in the State of Texas and bear that individual's seal, signature and date.

404. APPROVALS

All plans and specifications prepared for review shall receive approval from the City and applicable State and Federal agencies. Water and wastewater plans and specifications shall receive approval from the Texas Natural Resource Conservation Commission. Other agency approvals shall be obtained as individual projects may dictate.

405. SILT AND EROSION CONTROL

All projects subject to the National Pollutant Discharge Elimination System (NPDES) shall be properly engineered and permitted in accordance with applicable regulations. Provisions to mitigate erosion and control silt problems shall be included in the

detailed plans and/or specifications whether or not a NPDES permit is required.

406. OTHER PERMITS

Prior to construction, all required permits shall be obtained from the Texas Department of Transportation, Texas Natural Resource Conservation Commission, Environmental Protection Agency, Corps of Engineers, Washington County, railroad companies, pipeline companies and other affected authorities.

407. ENVIRONMENTAL CLEARANCE

On all projects requiring environmental clearance, the necessary documentation, including assessment or impact statement shall be completed and approved prior to commencement of construction.

CHAPTER 5. WATER SYSTEM STANDARDS

501. GENERAL PROVISIONS

All water supply, distribution, pumping and storage improvements shall be designed and constructed in accordance with this chapter, the City's Standard Details, Standard Specifications and the Texas Natural Resource Conservation Commission regulations.

502. DESIGN CRITERIA

502.1 Minimum Size, Looped

All water mains shall be a minimum of six inches (6") in size. All water mains shall be looped, except in the case of dead-ends where provision shall be made for future extension.

502.2 Provision for Future Extensions

All water lines shall be extended, where necessary, to the borders of the development for future extensions of the distribution system. The City may participate in the cost of oversizing lines required to serve land areas or improvements beyond the development.

502.3 Fire Hydrants

Fire hydrants shall be installed as part of the water distribution system. In residential areas, fire hydrants, shall be served by a main line of six inches (6") or larger and shall be located at a distance of no greater than five hundred feet (500') on a clear path to each residence. In commercial and industrial areas, main lines shall be eight inches (8") or larger, and fire hydrants shall be located at a distance of no greater than three hundred feet (300') on a clear path to each structure.

502.4 Valves

Valves shall be installed at the intersections of all water mains. In-line valves shall be installed at approximately one thousand-foot (1,000') intervals.

502.5 Depth of Cover

The depth of cover of water mains shall be forty-two inches (42") below finished grade.

502.6 Air Relief Valves

Air release valves and/or air vacuum relief valves shall be installed at critical water line profile summits.

502.7 Flush Valves

Blow-offs or flushing valves shall be installed at critical water line profile low points and dead-ends.

502.8 Public Easement Required

All public water facilities shall be placed in public easements as described in Chapter 3, Easement Standards.

503. INDIVIDUAL WATER SERVICE CONNECTIONS

Service connections shall be installed and marked by stake (water "taps") for each unit (dwelling or commercial/industrial) in the development intended for individual ownership at the time of construction of new water improvements. If individual utility connections for apartments are desired, service connections shall be installed for each apartment at the time of construction of new water improvements. Such service connections shall be the appropriate size to serve the intended use of the property, as approved by the City, and shall extend from the public water main to the lot property line or utility easement line, as the case may be. All corporation stops, service piping, curb stops, meter boxes and vaults and any other material required for the connection shall be included in the service connection installation.

504. ALTERNATIVE POTABLE WATER FACILITIES

Alternative potable water facilities shall consist of individual lot water wells or a common water well with a distribution system to provide service to each lot.

504.1 Variance Required

A variance from the requirement to provide water facilities may be granted by the City at the time of preliminary plat approval if it is determined that the municipal water system cannot be feasibly made available to the area of development. The City shall be provided with sufficient technical data (topography, water demand, existing water systems, etc.) and construction cost figures to demonstrate the proposed development's need for an alternative to public water facilities. A separate water treatment/distribution system or on-site, individual facilities shall not be designed or constructed unless such separate facilities are more beneficial to the City than constructing an adequate system extended from and connected to the existing municipal system.

504.2 Approval of Water System

The City shall not approve the final plat until the water system plans and water wells are approved by the Texas Natural Resource Conservation Commission.

504.3 Construction to City Standards

All water lines shall be placed in public rights-of-way or easements and designed/constructed to City standards.

504.4 Dedication of Public Utility Easements

If the City approves an alternative water facilities installation, utility easements shall be dedicated for the future installation of municipal water system improvements. Such easements shall comply with the criteria of Chapter 3 of this document.

CHAPTER 6. WASTEWATER SYSTEM STANDARDS

601. GENERAL PROVISIONS

Sanitary sewer improvements shall be designed and constructed in accordance with this chapter, the City's Standard Details, Standard Specifications and the Texas Natural Resource Conservation Commission regulations.

602. DESIGN CRITERIA

602.1 Minimum Size

No public sewer line shall be less than six inches (6") to the inside diameter.

602.2 Future Extensions

All sewers shall be designed to serve both the subject property and the full sewershed area tributary to the sewer system. Where necessary, sewer lines shall be extended to the borders of the development to allow for future extensions of the collection system. The City may participate in the cost of any oversizing of lines required to serve land areas or improvements beyond the development.

602.3 Manholes

Manholes shall be installed at all intersections of other sewers six inches (6") in diameter or larger and at intermediate spacings along the line. The maximum spacing shall be in accordance with Texas Natural Resource Conservation Commission "Design Criteria for Sewerage Systems." Manholes shall be installed at all changes in grade or direction.

602.4 Alignment

Sewers shall be designed with straight alignment. If horizontal curvatures must be used, the smallest radius shall not exceed that recommended by the pipe manufacturer; provided, however, that any radius shall not be less than one hundred feet (100').

602.5 Hydraulic Slopes

All sewers shall be designed with hydraulic slopes sufficient to give mean velocities, when flowing full or half full, of not less than two feet (2') per second on Kutter's or Manning's formulas using a minimum "n" value of 0.013. Minimum grades shall be those

outlined by the Texas Natural Resource Conservation Commission "Design Criteria for Sewerage Systems."

602.6 Surface Water and Non-Domestic Waste Prohibited

No connection shall be made to any sanitary sewerage system within the city that permits the entrance of surface water or waste of other than domestic sewage characteristics without the specific authorization by the City.

602.7 Backfill

All lines, including all service laterals, shall be installed and backfilled below proposed paved areas to City specifications prior to compaction of subgrade and placement of the paving.

602.8 Lift Stations

Lift stations or separate treatment facilities shall not be designed or constructed unless such lift stations or separate facilities are more beneficial to the City than constructing an adequate outfall or approach sewer from the existing system. In determining benefit, the City shall consider power cost for operation, land costs and all other costs of lift stations based on a ten-year (10 yr.) life.

602.9 Public Easements

All public sanitary sewer facilities shall be placed in public easements as described in Chapter 3, Easement Standards.

603. INDIVIDUAL SEWER SERVICE CONNECTIONS

Service connections (sewer "taps") shall be appropriately sized, installed and marked by stake for each building in a development at the time of construction of sewer improvements.

603.1 Duplex and Multi-Family Dwelling Units

Individual sanitary sewer service connections shall be installed for each dwelling unit in duplex or two-family buildings. Buildings containing more than two (2) dwelling units may provide a common sewerage collection system from the building.

603.2 Standards

Each service connection shall serve only one (1) building (no "sharing" of service connections). The individual service connections shall be a minimum of four inches (4") inside diameter and may extend to a common building sewer system or individually to the public sewer. A manhole connection to the public sewer is

required for all service connections greater than four inches (4") inside diameter.

604. ALTERNATIVE SEWAGE TREATMENT FACILITIES

Alternative sanitary sewage treatment systems shall consist of individual on-site sewage treatment systems or a common treatment and collection system to provide service to each lot. The Texas Natural Resource Conservation Commission shall approve the plans for a separate sanitary sewage system prior to the final plat approval by the City. Nothing in this chapter shall be construed as permission to install an on-site sewage treatment system (including septic tanks) on an individual lot.

604.1 Variance Required

A variance from the requirement to provide a public sewage system may be granted by the City at the time of preliminary plat approval if it is determined that the municipal sewage system cannot be feasibly made available to the area of development. The City shall be provided with sufficient technical data (topography, soils, existing sewer system and construction costs) to demonstrate the proposed development's need for an alternative to the public sanitary sewage treatment facilities. Alternative sewage treatment systems shall not be designed or constructed unless such facilities are more beneficial to the City than constructing an adequate system extended from and connected to the existing municipal system.

604.2 Approval by Texas Natural Resource Conservation Commission

The City shall not approve a final plat until an engineered sewage disposal plan has been approved by the Texas Natural Resource Conservation Commission.

604.3 Dedication of Utility Easements

If the City approves on-site sewage treatment installations, utility easements shall be dedicated for the future installation of a municipal sewage system. Such easements shall comply with criteria of Chapter 3 of this document.

CHAPTER 7. NATURAL GAS SYSTEM STANDARDS

701. GENERAL PROVISIONS

All natural gas distribution system improvements shall be designed and constructed in accordance with this chapter, the City's Standard Details, Standard Specifications, the City of Brenham Operation and Maintenance Manual, the Railroad Commission of Texas (RRC) and the United States Department of Transportation (DOT).

702. DESIGN CRITERIA

702.1 Minimum Size, Looped

All natural gas main lines shall be a minimum of two inches (2") in diameter. All natural gas main lines shall be looped, except in the case of dead-ends where provision shall be made for future extension.

702.2 Provision for Future Extensions

All natural gas main lines shall be extended through the development to the farthest borders of the development for future extensions of the distribution system. The City may participate in the cost of oversizing lines required to serve land areas or improvements beyond the development.

702.3 Valves

Sectionalizing valves shall be installed in main natural gas lines as required by the City Gas System Manager.

702.4 Depth of Cover

The desirable minimum depth of cover for natural gas mains shall be forty-two inches (42") from finished grade or proposed finished grade. In no case shall the cover be less than thirty inches (30").

702.5 Public Easement Required

All public gas facilities shall be placed in public easements as described in Chapter 3, Public Easement Standards.

703. INDIVIDUAL NATURAL GAS SERVICE CONNECTIONS

Service connections shall be installed (service tap) for each unit (dwelling or commercial/industrial) in the development intended for

individual ownership at the time of construction of new natural gas improvements. If individual utility connections for apartments are desired, service connections shall be installed for each apartment at the time of construction of new natural gas system improvements. Such service connections shall be the appropriate size to serve the intended use of the property, as approved by the City Gas System Manager, and shall extend from the public natural gas line to the lot property line or utility easement line, as the case may be. All tapping saddles, stops, service piping, tracer wire, and any other material required for the connection shall be included in the service connection installation.

704. LIQUID PROPANE OR ALTERNATIVE NATURAL GAS FACILITIES

Liquid propane or sources of natural gas other than from the City shall not be allowed without first obtaining a variance from the City.

704.1 Variance Required

A variance from the requirement to provide natural gas facilities may be granted by the City at the time of preliminary plat approvals if it is determined that the City's natural gas system cannot be feasibly made available to the area of development. The City shall be provided with sufficient technical data (gas demand, proximity to existing system, etc.) and construction cost figures to demonstrate the proposed developments' need for an alternative to the City's natural gas service. Alternative systems shall not be designed or constructed unless such separate facilities are more beneficial to the City than constructing an adequate system extending from and connected to the existing City system.

704.2 Dedication of Public Utility Easements

If the City approves alternate gas facilities installation, utility easements shall be dedicated for the future installation of City gas system improvements. Such easements shall comply with the criteria of Chapter 3, Public Easement Standards.

CHAPTER 8. ELECTRICAL SYSTEM STANDARDS

801. GENERAL INFORMATION

- a. The City reserves the right to make such other rules, regulations, policies and provisions as may be necessary for the preservation, protection and economical administration of its services.
- b. Except when specifically provided for in a contract or rate schedule in effect between City and customer, customer shall not use service supplied by City as supplementary, standby or breakdown service.

801.1 Application for Service

- a. An application is a request for service and does not in itself obligate the City to serve the customer.
- b. Each applicant must confirm the availability of the specific type of service required with City personnel
- c. Each applicant must ensure that all permits, plat approvals, and other regulatory requirements are fulfilled.
- d. Each applicant must complete and sign the following forms provided by the City:
 - (1) Application for Electric Service
 - (2) Contract for Utilities Service
 - (3) Other Contracts, as appropriate

801.2 Refusal of Service

For the customer's safety the City may decline to serve an applicant for the following reasons:

- a. If the applicant's installation or equipment is known to be hazardous or of such character that satisfactory service cannot be provided.
- b. If applicant's installation or equipment does not comply with the following applicable safety codes or standards:
 - (1) The National Electrical Code (NEC)
 - (2) National Electrical Safety Code (NESC)

- (3) All State and City requirements that are in force at the time installation is completed.

801.3 Service Connections Made by Employees

- a. Only duly authorized employees of the City are allowed to connect or disconnect service to or from the customer's facilities.
- b. When the City connects electric service, the customer shall be present to provide access to his building.

801.4 Responsibility for Customer's Installation

- a. In no case does the supplying of Service by the City indicate that the City assumes any responsibilities as to the customer's wiring or its safe condition or adequacy.
- b. The customer shall be responsible for insuring that all fixtures, equipment and devices are properly connected and controlled within the structure receiving service.
- c. The customer is solely responsible for any accidents, fires, or failures resulting from the condition and use of his wiring installation or equipment.
- d. If customer's equipment causes voltage fluctuations or reduces, interferes with or degrades service to other customer's equipment or operations; the customer shall pay the total cost of the notification, alterations or improvements.
- e. The customer shall not extend or connect an installation to lines across or under at street, alley or other public or private space in order to obtain service for or from adjacent property through one (1) meter, even though such other property or premises are owned or controlled by customer.
- f. Customer should check carefully to see that phase connections and are correct when first starting motors and to see that three-phase motors are not "single phasing".

801.5 Discontinuance of Service

a. Customer's Request

A customer may request service to be discontinued at any time unless there is a provision to the contrary in the service contract or applicable rate schedule.

b. Dangerous Conditions

Service may be disconnected without notice upon discovery of conditions dangerous to life or property. Service shall not be restored for as long as the condition dangerous to life or property exists. Once the cause for disconnection has been removed, service shall be reconnected after the standard disconnection and reconnection service charges along with any other appropriate charges are paid.

c. Tampering

Service may be disconnected without notice for tampering with or bypassing the City's meters or equipment.

d. Misrepresentation

The City may discontinue service without notice upon the discovery that the customer has made a misrepresentation to the City regarding the use of service or has in any manner fraudulently entered into the service contract.

e. Non-compliance

Service may be discontinued by the City, after proper notice, for violation of the City's rules, regulations or policies pertaining to the use of service in any manner which interferes with the service of others or for the operation of non-standard equipment, if a reasonable attempt has been made to notify the customer and the customer is provided with a reasonable opportunity to remedy the situation.

801.6 Right of Access to Customer's Premises

The City shall have the right of access to the customer's premises for any purpose reasonably connected with furnishing of service to its customers.

801.7 Easements

- a. Permanent easements shall include the right to install, inspect, maintain, remove and replace all poles, towers, fixtures, structured, conductors, devices, wires and cables and other pipes, conduits and other equipment required in the proper construction and maintenance of the facilities.
- b. Easements shall also include the right to trim and remove trees and vegetation as necessary to insure the proper and adequate operation of the facilities.
- c. Easements shall also include the right to read, repair and remove meters.

- d. Easements shall also include not only service to the applicant, but shall also include any required and necessary extensions across applicant's property to adjoining property.
- e. Easements shall remain in effect until released by appropriate action by the City.

801.8 Removal of Facilities

Upon discontinuance of service, the City may, without liability for injury or damage, dismantle and remove all facilities installed for the purpose of supplying service to the customer, and shall be under no further obligations to serve the customer at that point of delivery.

802. TYPES OF SERVICE

802.1 Electric Service

- a. Electric service shall be defined as the availability of electric power and energy, irrespective of whether any electric power and/or energy is actually used.
- b. The City does not guarantee, but with the cooperation of the customer, will endeavor to furnish a continuous supply of electric power and energy and to maintain voltage and frequency within reasonable limits. The City shall not be liable for any damages which the customer may sustain by reason of the failure of the supply or variation in service characteristics or phase reversal, nor shall the City be liable for any damages that may result from the use of electrical appliances or from the City's property on the customer's premises.

802.2 Availability

- a. Electric service will be considered available if the point of delivery is located immediately adjacent to the City's distribution facilities, and if said facilities are of suitable phase, voltage and capacity to adequately deliver service as requested.
- b. Before purchasing or installing equipment and/or facilities, the customer should secure information in writing from the City as to the type of service available at the location to be served.
- c. When service is requested at a location where the City does not have facilities available, or the facilities that are available, are not adequate or suitable for the service requested, the City will establish service only in accordance with its extension policy relating to the type of service.

802.3 Type of Service Available

The City will provide single phase, 60 hertz, 120/240 volt service to residential customers and single or three phase, 60 hertz service to nonresidential customers at the following voltages:

120/240 Volt Single Phase
120/208 Volt Three Phase
120/240 Volt Three Phase
240/480 Volt Three Phase
277/480 Volt Three Phase
7,200/12,470 Volt Three Phase*

*Special provisions must be made.

803. SERVICE INSTALLATIONS

All service lines, meters, fixtures, devices or other equipment which are installed by the City upon the customer's premises for the purpose of delivering service to the customer remain the property of the City and may be repaired, replaced or removed by the City at any time.

804. STANDARDS OF CONSTRUCTION

804.1 General

- a. All construction shall be in compliance with the National Electric Safety Code and the National Electric Code or local ordinances and state requirements if they are more restrictive.
- b. The type and character of construction and the capacity required for service shall be determined by the City or by other individuals as designated by the City.
- c. The originating point of the line extension and the route to be followed in the construction of an extension shall be determined by the City with the objective of providing the best service possible. The origin need not necessarily be at the point on the existing system nearest to the applicant's premises, nor the route selected the shortest distance between origin and delivery point.
- d. Should the customer require a route other than the route selected by the City, and if the alternate route is acceptable to the City, then the customer shall pay, in advance, the estimated cost above the cost which would have been incurred under the original routing.

- e. Should customer require a character or capacity of construction other than the type proposed and normally furnished by the City, and if the character or capacity of construction is acceptable to the City, then customer shall pay any additional costs above that which would have been incurred by the City.

804.2 Overhead Services

a. Primary

- (1) CBU is capable of supplying primary service directly to the customer through CBU metering equipment. Requests for such service must have the approval of the Utility Director; available voltages include:

7.2/12.47 KV, 4 wire, grounded Y

- (2) Primary underground service in the overhead distribution areas will be supplied, where in the judgement of CBU, the size or service requirements of the load make such installation necessary or desirable.
- (3) Meter loops or risers, whether for overhead or underground primary or secondary service, shall not be installed on the same pole with transformers, overcurrent relays or reclosures, voltage regulators or any other major distribution device.

b. Transformers

- (1) CBU shall furnish and install all system transformers with standard conditions of installation as follows:

- (a) The largest pole mounted transformer shall be 167 KVA.
- (b) The largest pole mounted transformer bank shall be three (3) at 167 KVA.
- (c) Maximum capacity at service voltage shall be as follows:

240/120 Volt	1 PH, 3 Wire	167 KVA
240/120 Volt	3 PH, 4 Wire	400 KVA (Total)
208/120 Volt	3 PH, 4 Wire	300 KVA
480Y/277 Volt	3 PH, 4 Wire	300 KVA-2,500 KVA
480 Volt	3 PH, 3 Wire	300 KVA-2,500 KVA
12,470/7,200 Volt*	3 PH, 4 Wire	2,500 KVA and Up

* Since special service is required for loads of this size, CBU Engineering shall determine special characteristics of the final service.

- (2) The customer shall provide permanent access, suitable for heavy equipment required for installation and service, to any ground mounted transformer bank.

c. Secondary

Meter loops or risers, whether for overhead or underground primary or secondary service, shall not be installed on the same pole with transformers, overcurrent relays or reclosures, voltage regulators or any other major distribution device.

d. Secondary Clearances

- (1) The point of attachment of a service drop to a building or other structure shall be high enough to provide the following clearances:

<u>Type of Terrain</u>	<u>Minimum Clearance</u>
Sidewalks	10 Feet
Residential Driveways	18 Feet
Commercial Driveways and Parking Lots	18 Feet
Public Streets, Roads, Highways and Alleys	22 Feet
Railroads	27 Feet

- (2) The point of attachment should not be higher than thirty (30) feet unless it is required to obtain the required clearance.
- (3) CBU poles, wires, towers, structures and other facilities are provided for the purpose of supplying electric service. The location near, or attachment to, such poles, wires, towers or structures of any radio or television equipment or wires ropes, signs or banners or anything of any nature not necessary to the supplying of electric service by CBU, may be dangerous to life and property and is therefore prohibited. CBU reserves the right to remove all such hazards to its service without notice.
- (4) The customer may be charged for setting an extra service pole on their property required to clear obstructions, however, where a service pole must be set to provide proper clearance over streets or obstructions on public property, CBU will assume complete responsibility for furnishing and installing the pole.

804.3 Underground Services

a. Primary

Meter loops, or risers, whether for overhead or underground primary or secondary service, shall not be installed on the same pole with transformers, overcurrent relays or reclosures, voltage regulators or any other major distribution device.

b. Transformers

- (1) CBU shall furnish and install all system transformers with standard conditions of installation as follows:
- (2) The largest pad mounted 1 PH, 120/240 volt secondary transformer shall be 167 KVA.
- (3) Maximum capacity at service voltage shall be as follows:

240/120 Volt	1 PH, 3 Wire	167 KVA
240/120 Volt	3 PH, 4 Wire	400 KVA (Total)
208/120 Volt	3 PH, 4 Wire	300 KVA
480Y/277 Volt	3 PH, 4 Wire	300 KVA-2,500 KVA
480 Volt	3 PH, 3 Wire	300 KVA-2,500 KVA
12,470/7,200 Volt*	3 PH, 4 Wire	2,500 KVA and Up

* Since special service is required for loads of this size, CBU Engineering shall determine special characteristics of the final service, including all costs and customer charges.

- (4) Pad mounted three-phase transformers are available for installation in voltage and capacity ranges indicated above, up to 2,500 KVA.

Note: All residential pad mounted transformers will cost the difference between pole mount transformers, as per CBU Electrical Extension Policy.

c. Secondary

- (1) Secondary underground service in overhead distribution areas presents many problems not found with overhead connections; therefore, it is particularly important for customers in overhead distribution areas contemplating the use of secondary underground service to obtain a service outlet location and specifications for the installation if approved by CBU.
- (2) Meter loops or risers, whether for overhead or underground primary or secondary service, shall not be

installed on the same pole with transformers, overcurrent relays or reclosures, voltage regulators, or any other major distribution device.

d. Concrete Encasement

As required by Standard Details and Standard Specifications.

e. Underground Electric Line Services

- (1) It will be the responsibility of the property owner, land developer, subdivider, architect and/or contractor to furnish and install, at their expense, conduit which meets all specifications of the NEC in accordance with the CBU specifications. CBU shall provide and install all wire and cable at a cost to the customer.
- (2) The customer must furnish and install, at his expense, a lead line of minimum 1,000# test, whose length is at least as long as the conduit run. The lead line will remain the property of the customer at the conclusion of it's use by the CBU linemen.
- (3) Unless otherwise approved by appropriate CBU personnel, all wiring for primary and secondary line services shall be run in a single trench when possible.
- (4) All conduit laid in dirt which contains a primary line extension shall be buried in a forty-six-inch (46") deep trench maintaining a minimum covered depth of thirty-eight inches (38").
- (5) All conduit laid in dirt which contains a secondary line extension shall be buried with a minimum covered depth of twenty-four inches (24").
- (6) All conduit laid in rock which contains a primary line extension shall be encased in two inches (2") of concrete and buried at a covered depth of twenty-four inches (24").
- (7) All conduit laid in rock which contains a secondary line extension shall be buried at a covered depth of twenty-four inches (24").
- (8) All conduit laid under streets, driveways, parking lots or any other areas subject to vehicular traffic or passing under any permanent structure will require concrete encasement.
- (9) At the discretion of CBU personnel, concrete encasement may be required for any conduit at any depth carrying a primary and/or secondary line extension to ensure the

longevity and integrity of the circuit and the safety of customers and personnel. Concrete encasement so required shall be colored red and furnished and installed by the customer at his own expense.

- (10) All concrete encasement must meet CBU specifications.
- (11) Plastic identification tape, red in color and with black lettering reading, "CAUTION: BURIED ELECTRIC CABLE BELOW," shall be placed in the cable trench at a depth of twelve to eighteen inches (12"-18") below the finished ground grade. This tape is to be supplied by the contractor.
- (12) The customer shall furnish and install at his own expense, and according to CBU specifications, all concrete pads for all pad mounted transformers and/or primary pull boxes which may be required.
- (13) Transformers and primary pull boxes for permanent underground electric service shall be furnished and installed by CBU, as per the CBU Electrical Extension Policy.
- (14) All meter troughs and secondary pedestals for permanent underground electric service shall be obtained and installed by the contractor.
- (15) In any circumstance where CBU is to provide the customer with overhead electric service, the customer may elect the alternative of an underground electric service as per the CBU Electrical Extension Policy.
- (16) City of Brenham Utilities' underground conduit standards specify that all required conduit shall be of an appropriate size required by the NEC for existing conditions, with minimum guidelines as follows:

PRIMARY 1 PH	Minimum Diameter - 2"
PRIMARY 3 PH	Minimum Diameter - 3" (For wire up to 1/0 only)
SECONDARY 1 PH	Minimum Diameter - 3"
SECONDARY 3 PH	Minimum Diameter - 4"
- (17) Charges for permanent underground electric line service as per the CBU Extension Policy.
- (18) All customers must furnish and install, at their expense, all appropriate conduit, lead lines, pads, and concrete encasement.

- (19) Any wire size that may be required of CBU above a specific size of 4/0 will be charged at prevailing wire costs that may exist at the time of installation.

f. Fault Currents and Protection

- (1) CBU recommends the use of ground fault branch circuit protection on all installations. Ground fault interrupters or sensors shall be installed as per requirements as set forth in the NEC, latest edition. Customers shall consult with CBU Engineering Department on neutral grounding points so that improper grounding does not disable the ground fault interrupting equipment.
- (2) Customer is advised that fault current availability in excess of 10,000 amps is possible at some locations within the distribution system. Coordination with CBU Engineering Department should be done during project design phase.
- (3) All motors need protective devices to safeguard the motors the wiring, and the equipment they operate from damage, that might be caused by overloading, short circuits, single phasing, large fluctuations in voltage and the like.

* CBU's power system is designed to provide high speed reclosing of its protective devices following power interruptions resulting from lightening or other causes. In most instances, these power interruptions will be of extremely short duration [less than one (1) second]. CBU recommends that under voltage motor protection be equipped with time delay devices to permit motors to ride through these short duration interruptions.

* It is recommended that overcurrent protective devices be provided in each phase to afford some motor-running protection of three-phase, three-wire motors against "single phasing" unless complete protection for single-phase operation is provided such as a relay which will detect a "single-phasing" condition.

g. Grounding

- (1) To assume maximum safety, it is necessary that the customer provide an adequate and permanent ground connection attached to a driven ground rod to the neutral terminal of the meter socket.
- (2) For all service entrance conductors the ground neutral conductor shall be electrically continuous from the

weather head through the meter loop. The grounded conductor shall be positively identified by the use of white tape or any other suitable method,

- (3) All service grounding, from the ground rod to the meter socket, shall be copper and shall be, as a minimum, of No. 6 or equivalent.

h. Main Interrupting Device

- (1) Customers requiring service at voltages of 2,400 volts and above must provide at the point of delivery a City approved disconnecting means and proper overload and short-circuit protection.
- (2) Refer to the City Engineer for main interrupting device requirements for voltages less than 2,400 volts.

805. METERING, METER LOOPS AND SERVICE DROPS

805.1 General

- a. Customer shall be responsible for furnishing and correctly installing all equipment on riser pole for meter loops, including trough, meter sockets, riser conduit and fittings, weatherhead and sufficient approved conductors of three feet zero inches (3'-0") minimum excess length out of the weatherhead.
- b. CBU reserves the right to inspect the meter loop from the socket to the weatherhead to insure acceptable wiring and termination practices (see Article 220 and 230, NEC).
- c. Meter loops or risers whether for overhead or underground primary or secondary service, shall not be installed on the same pole with transformers, overcurrent relays or reclosures, voltage regulators or any other major distribution device.
- d. Standard permanent riser poles for meter loop services shall be nominally thirty feet (30') in height from grade, except where certain clearance conditions exist, with the meter socket at six feet (6') in height from grade with a minimum conduit riser length to the weatherhead at fifteen feet (15').
- e. Customer shall furnish bare or insulated wire in his service entrance as a bond between his equipment ground and CBU's common neutral system. This conductor shall be appropriately sized per NEC, but in no case should it be less than No. 6 copper.
- f. A solid point of attachment for supporting the service drop on the building shall be provided by the customer.

- g. Poles will not be installed to offset an incomplete inside wiring job or because of failure of the contractor to locate service outlet and point of attachment at the nearest point and proper height and clearance as designated or approved by CBU's Engineering Department.
- h. The maximum length of the service drop which CBU will install will be governed by the amount and type of load to be served. Allowable voltage drop and mechanical factors, determined by the size and number of wires of a service drop. Impose limits on its length. In those cases where proper clearances from ground, trees and other obstructions can be obtained, but the distance from CBU's pole to the customer's point of attachment is more than one hundred feet (100'), a service pole at the customer's expense will be used.
- i. Service drops must be free of contact with trees. The customer must either provide CBU permission to trim all trees necessary to obtain the proper clearances; or the customer must trim all trees required to provide the necessary clearance.
- j. Under no circumstances will CBU attach its service drop to an intermediate structure installed by the customer between CBU's distribution lines and the customer's service outlet.
- k. CBU reserves the right to locate metering at either the primary or secondary side of the transformer, depending upon conditions of service.
- l. Meter mounting devices shall be installed so that the disc of the meter, when installed, will be exactly level.
- m. Where more than one (1) meter is installed but not exceed six (6) meters, as on duplex apartments, or apartment houses, the meters are to be grounded at a point accessible at all times to customers and CBU employees. Each meter socket shall be clearly and permanently marked by the person installing it to show the apartment and/or address to be served by the meter. It shall be the responsibility of the customer or his contractor to insure the accuracy of the markings with respect to the apartment and/or address.

805.2 Location of Meters and Metering Equipment

- a. All service meters installed on the customer's premises shall be either at a point where the service enters the building or at a point adjacent to the front or rear property line so as to be accessible at all times for inspection, reading and testing.
- b. If existing meter is located in a place considered inaccessible by the City, the City may require the customer to have the meter relocated to a position considered accessible by the City. The costs of such a meter relocation may be the responsibility of the customer. If a customer fails to relocate a meter within thirty (30) days after receiving written notice from the City, the City shall have the right to discontinue the respective service.

805.3 Temporary Service Standards

- a. CBU recommends the use of ground fault breakers.
- b. All temporary meter locations for small commercial and residences shall be placed close to the permanent meter location so that the CBU crews can use the service wire for temporary and permanent service.
- c. When disconnecting CBU Service wire from a temporary meter loop, CBU will not cut any of the original thirty-six-inch (36") length of conductor.

806. CUSTOMER'S WIRING AND UTILIZATION EQUIPMENT

- a. In addition to the requirements set forth herein, the customer's facilities for receiving service shall comply with all regulations contained within or referred to by the Electric Policy, City of Brenham, Texas prior to the connection of the electrical service, and the customer's facilities shall be in compliance with the more stringent provision of the Code of Ordinances, the National Electric Safety Code, the National Electric Code, or the Laws of the State of Texas governing such service.
- b. If the City requires that a customer install and own transformer capacity, or if the City approves a request from the customer for the customer to install and own transformer capacity, then the City shall develop a capacity credit which recognizes the reduction of investment, operation and maintenance costs to the City. The capacity credit shall be solely responsible for all costs associated with owning, operating or maintaining the transformer.

807. TRANSFORMER VAULTS

When it is necessary to install a transformer vault on the customer's premises, the City reserves the right to require the customer to furnish and maintain said vault at the customer's expense in accordance with the City's standards.

CHAPTER 9. STREET SYSTEM STANDARDS

901. GENERAL PRINCIPLES OF STREET SYSTEM LAYOUT

Streets shall be located and aligned to conform to the Comprehensive Plan of the City. Streets shall be designated and designed according to their expected traffic capacity and function. Streets shall also be designed and constructed to achieve conformance with requirements of the City of Brenham Subdivision Ordinance.

901.1 Classification of Street System

The roadways within the City are classified according to the type of service and the expected traffic capacity to be provided. Each roadway classification has its own general design criteria and primary function. These functional classifications are used in Section 901.2 in describing the City of Brenham Thoroughfare Plan and standards for construction, design and right-of-way dedication (refer to Section 901.4). Table 9-1, Functional Design Capacity of Streets, provides a summary of street volume operating ranges by street classification.

STREET CLASSIFICATION	OPERATING VOLUME RANGE (VOLUME/DAY)
Freeway	30,000-
Principal Arterial	10,000-30,000
Minor Arterial	7,000-20,000
Major Collector	5,000-10,000
Minor Collector	2,000-5,000
Local (Residential)	500-1,000
Local (Commercial/Industrial)	500-2,000

901.2 Thoroughfare Plan

The City of Brenham Thoroughfare Plan and any amendments thereto, adopted by the City Council as a part of the City of Brenham Comprehensive Plan 2005, is hereby made a part of this document. The map is the basis for all decisions regarding classification, reservation or dedication of rights-of-way which may be required in other sections of this document.

901.3 Construction and Design Standards

All roads, sidewalks, parking lots or other required paving shall conform to this document, Standard Details and Standard Specifications of the City.

901.4 Dedication of Street Rights-of-Way

- a. The dedication and/or reservation for acquisition of pedestrian and/or vehicular rights-of-way shall be required of owners or developers of properties. This is necessary and desirable to lessen or control the impact upon the transportation system created by development.
- b. Street right-of-way widths shall meet the requirements established in Table 9-2. Minimum required right-of-way shall be determined by the functional classification of the road as shown on the City of Brenham Thoroughfare Plan.
- c. Required road right-of-way shall be either dedicated by plat or deed to the City or the anticipated right-of-way area shall be reserved for future acquisition. If reserved for future acquisition, no physical improvements such as buildings, parking lots, landscaping or storm water retention facilities shall be allowed within the area so reserved. All setbacks shall be calculated from the anticipated right-of-way line.

902. STREET ACCESS

902.1 Direct Public Access

All public streets shall have direct access to another public street.

902.2 Primary Access

Primary access to large subdivisions, commercial tracts and industrial tracts shall be provided from public streets designed to carry fairly high traffic loads such as arterials and collectors. Residential tracts shall be protected from the adverse effects of through traffic by locating lots facing local streets.

TABLE 9-2
STREET RIGHTS-OF-WAY

STREET CLASSIFICATION	TRAVEL LANES	PARKING LANES	MINIMUM ROW WIDTH (IN FEET)	MINIMUM PAVEMENT WIDTH (IN FEET)*
ARTERIAL Principal Minor	5 5	2 0	110 80	85 61
COLLECTOR Major Minor	2 2	2 2	70 60	41 39
LOCAL Local (Residential) Local (Commercial/ Industrial) ⁽¹⁾ Alternative Local Residential ⁽²⁾	2 2 2	1 1 0	60 60 60	31 37 24
PRIVATE Private Streets/ Emergency Access Easement	2	0	28	28
<p>(1) With City approval, reduced pavement width may be used if "No Parking" signs are furnished and installed in accordance with City Standards. In no case, shall pavement width be less than twenty-eight feet (28'), b-b, and increased driveway and intersection radii may be required for truck turning movements.</p> <p>(2) Alternative construction standards, as established in Section 914.2 and Figure 9-5 may be used where the conditions shown in Section 914 exist.</p> <p>*Back of curb to back of curb or edge to edge.</p>				

Radius Report

Local = 14'
 Collector = 25'
 Alternative = 40' NO TRUCKS
 60' w/ TRUCKS

902.3 Points of Access

A street system shall be provided within the development with at least one (1) point of access to a public street adjacent to the development; provided, however, that developments containing one hundred and fifty (150) dwelling units or more shall provide at least two (2) points of access to adjacent public streets.

903. LOCATION OF PUBLIC STREETS

- a. A design for the system of streets shall be submitted within a tract. Certain streets should be planned to carry large volumes of through traffic (arterials, collectors) while other streets (locals) should be laid out to provide access within a development. Arterial and collector streets, if located within a residential subdivision, should follow the continuity of City streets leading to or from the tract and should provide for extensions into adjacent tracts. The City shall approve the final location of all public streets.
- b. Local streets shall be designed to service only the development in which they are contained. Local streets shall
- (1) create building lots of desirable elevation, size, shape and orientation;
 - (2) discourage through traffic;
 - (3) insure access by firemen, police and other emergency services to all areas of the tract and
 - (4) insure vision clearance.

904. INTERSECTION OF PUBLIC STREETS

904.1 General

The number of intersections shall be kept to a minimum consistent with traffic needs. The number of streets permitted to converge at a single intersection shall be minimized. Intersecting streets shall be designed so that they intersect at right angles with variations not to exceed ten degrees (10°). If jogs are necessary, the streets shall be connected by means of diagonal curve or line; that is, the street shall be curved as it approaches the intersection, in order to effect a nearly right-angle alignment to the greatest extent possible. Intersections shall be staggered or offset only if the distance between street centerlines is at least one hundred and twenty-five feet (125').

*Relative
Relative
Not specified*

904.2 Local to Collector/Arterial Intersections

Local streets intersecting a collector or arterial street shall have a tangent section of centerline at least fifty (50) feet in length measured from the right-of-way line of the higher traffic volume street; however, no such tangent is required if the minor street curve has a centerline radius greater than four hundred (400) feet with the center located in the higher traffic volume street right-of-way line.

904.3 Sight Triangle

- 2/10/02
Take for meeting
1/10/02*
- a. In order to provide a clear view of intersecting streets to the motorist, there shall be a triangular area of clear vision formed by two (2) intersecting streets. The size of the triangular area is based on street classification.
 - b. On any portion of a lot that lies within the triangular area shown in Figure 9-1, nothing shall be erected, placed, planted or allowed to grow in such a manner as to materially impede vision between a height of three feet (3') and eight feet (8') above the grade at the two (2) street centerlines.
 - c. The triangular area shall be formed by a point on each proposed street right-of-way line located 75, 110 or 150 feet from the intersection of the street right-of-way lines, as indicated in Figure 9-1, and connected to the intersection point of the twenty-five-foot (25') setback lines.

904.4 Location of Intersections

a. Arterial Streets

The maximum distance between streets (centerline to centerline measurement) intersecting arterial streets shall be 1,600 feet; the minimum distance shall be 800 feet.

b. Collector Streets

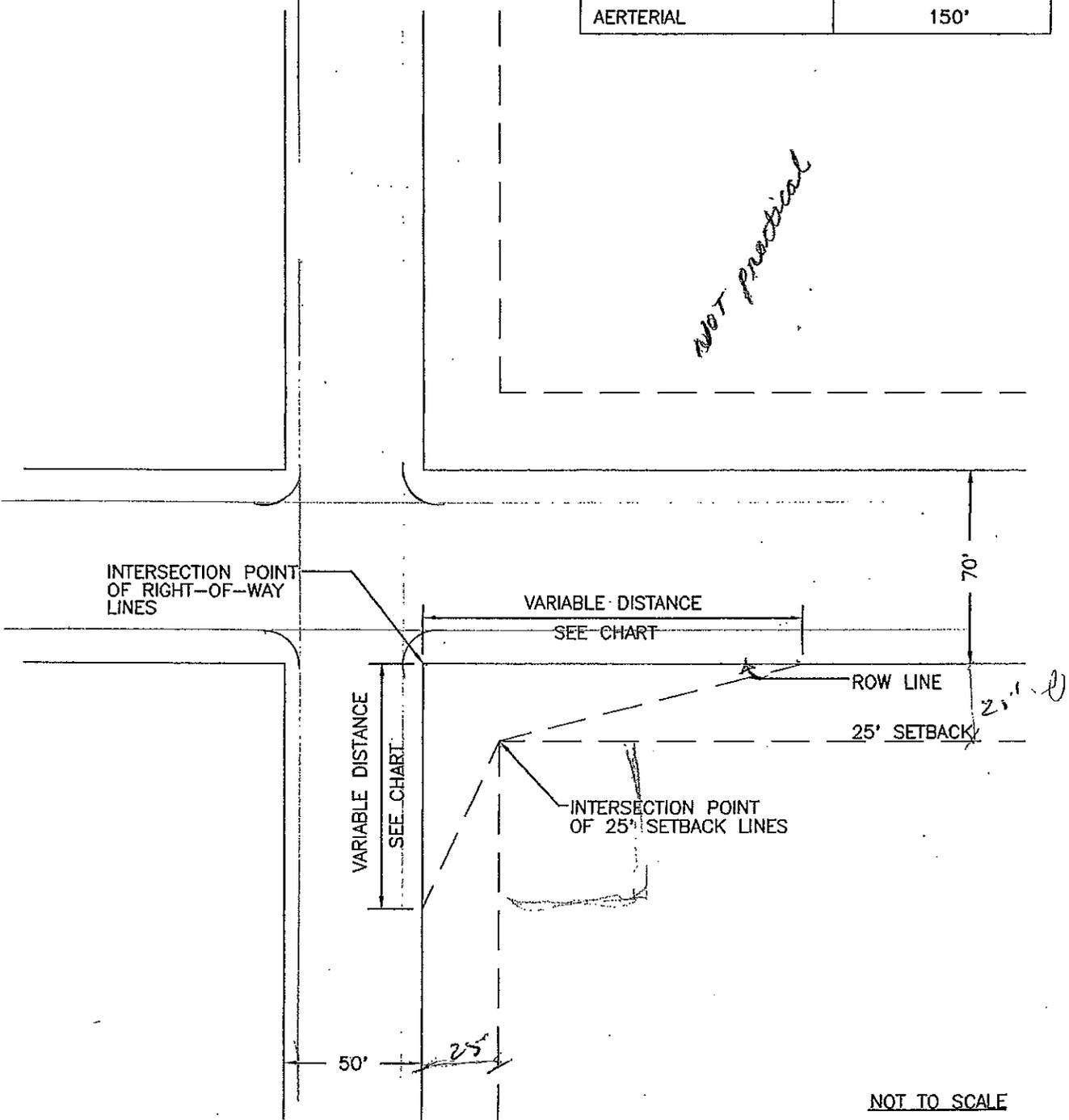
The maximum distance between streets (centerline to centerline measurements) intersecting collector streets shall be 1,600 feet; the minimum distance shall be 800 feet.

c. Local Streets

The maximum distance between streets (centerline to centerline measurement) intersecting local streets shall be 1,200 feet; the minimum desirable distance shall be 600 feet.

ROAD CLASSIFICATION	DISTANCE FROM RIGHT-OF-WAY INTERSECTION
LOCAL	75'
COLLECTOR	110'
AERTERIAL	150'

NOT practical



NOT TO SCALE

SITE TRIANGLE
FIGURE 9-1

905. OFF-SET STREETS

Where it is necessary to create staggered or off-set streets, the minimum distance shall be one hundred twenty-five feet (125') (centerline to centerline measurement).

906. SIDEWALKS

On local streets, the property owners shall install sidewalks on their respective lot frontages. On arterial and collector streets, the sidewalks shall be installed at the line of street construction by the developer or subdivider.

907. HALF-STREETS

Half-streets are prohibited. Full street improvements shall be constructed for any development.

908. RESERVE ACCESS STRIPS

Strips of land at the end or alongside offered or existing streets shall not be reserved for ownership for the purpose of controlling access to property unless the reserve access strip is dedicated to the public under conditions approved by the City.

909. ALLEYS

Public alleys shall be prohibited. If secondary access is provided, private alleys shall be constructed to meet or exceed private street standards contained herein.

910. CUL-DE-SAC AND DEAD-END PUBLIC STREETS

910.1 General Standards

The cul-de-sac streets shall be designed to prohibit future extensions by arranging lots around the turnaround. A circular turnaround conforming to City standards for all cul-de-sac and dead-end public streets shall be constructed. The cul-de-sac turnaround shall have a right-of-way radius of fifty feet (50') for single-family and two-family use and sixty feet (60') for other uses.

The dead-end street shall not be designed or constructed unless it is intended to connect with a future street on adjacent land. The temporary turnarounds shall be constructed within the standard right-of-way at the end of any dead-end street. In a commercial/industrial development, however, construction of a temporary turnaround may be waived if adequate alternatives are available for vehicles to turn around.

910.2 Length

The length of cul-de-sac and dead end streets is the distance from the right-of-way line of the intersecting street along the centerline of the cul-de-sac or dead-end street to the center of the circular turnaround. The maximum length for cul-de-sacs shall be six hundred feet (600'), except in conditions of unusual topography or in rural areas in the extra territorial jurisdiction where the maximum shall be eight hundred feet (800').

911. PRIVATE STREETS

The private streets shall be designed and constructed in accordance with this section. Private streets shall be designated by plat and in accordance with the City of Brenham Subdivision Ordinance.

911.1 Layout

The private streets shall be designed to:

- a. Provide adequate vehicular access to all buildings and facilities within the boundaries of the development;
- b. Provide adequate interior traffic circulation and access to all buildings by fire fighting personnel and equipment;
- c. Allow for the smooth flow of vehicular traffic, avoiding such traffic hazards as closely off-set intersections; and
- d. Provide direct access to the existing public street system adjacent to the trace boundaries.

911.2 Intersections of Private Streets With Public Streets

Private streets shall not be direct (straight line) projections of any public street. The private street shall offset a minimum distance of one hundred and twenty-five feet (125') center line to center line from right angles with variations not to exceed ten degrees (10°). Right angle intersections of private streets shall have twenty-foot (20') radii from the pavement edge at all corners. Acute angle intersections shall have twenty-five-foot (25') radii for the pavement edge at the acute corner on both public and private streets. The portion of a private street within a public

street right-of-way, shall be designed and constructed in accordance with City driveway standards.

911.3 Access

A street system shall be provided within the development with at least one (1) point of access to a public street adjacent to the development; provided, however, that developments containing one hundred and fifty (150) dwelling units or more shall provide at least two (2) points of access to adjacent public streets. Private streets shall serve only the land within each development. Private streets shall not be extended into adjacent tracts under a different ownership or a different property owners association.

911.4 Maintenance

Maintenance of private streets and private street signs shall be the responsibility of property owners within the development. The property owners shall be legally bound together by deed restriction, contract, property owners association, corporation or other organization that has one of its purposes the continued care and maintenance of all commonly owned property within the development, including the private streets and private street signs.

911.5 Design and Construction Standards

a. Design

Private streets shall be designed according to the geometric and construction standards established for local public streets.

b. Pavement Width

The minimum unobstructed width of any private street shall not be less than twenty-four feet (24'). If parking is proposed along with private street, the street shall be widened to accommodate such parking.

c. Private Street Easement Width

Private streets shall be located within private access easements of sufficient size to accommodate the private streets and related construction and maintenance activities.

d. Cul-de-Sac and Dead Ends

Cul-de-sac and dead end private streets shall be terminated by a circular turnaround.

e. Construction

Private streets shall be constructed according to the standards for pavement and base for local streets as contained herein.

911.6 Street Lighting

Adequate lighting shall be provided along all private streets so spaced and equipped with luminaires at such mounting heights as will provide the average levels of illumination as defined herein.

912. STREET NAMES

Public streets shall be named in conformance with the following considerations:

- a. Names of new streets, not extensions of existing streets, shall not duplicate any existing street name in the City or County.
- b. If a new street is a direct or logical extension of an existing street, the existing street name shall be used.
- c. Street name suffixes such as place, court, circle and loop shall be designated on streets that are cul-de-sac or loop streets. Suffixes such as boulevard, parkway, expressway and drive shall be confined to designated arterial or collector streets. Suffixes such as highway or freeway shall be used only on designated highways or freeways falling under the jurisdiction of the Texas Department of Transportation.
- d. Street name prefixes such as North, South, East and West may be used to clarify the general location of the street; however, such prefixes shall be consistent with the existing and established street naming and address numbering system of the general area in which the street is located.
- e. Alphabetical and numerical street names shall not be designated on any development plan unless the street is a direct extension of an existing street with that name.
- f. Street names shall fit in with the names of existing streets in the area, and should, if possible, be named in a manner to provide direction to the general public (i.e., Park Street, Church Street).
- g. Streets should not be named as a memorial to or in honoraria of a person either living or deceased unless the person being so honored has, in the opinion of the City Council, made significant contributions to the betterment of the City, State

or Nation. Streets, once named, may not be renamed without a 3/4 majority of the City Council.

h. Coordination will the local 911 plan.

912.2 Private Street Names

a. Private street names shall conform to the same standards applicable to public street names and the following additional criteria:

(1) Signs shall be provided for all private streets; the signs shall conform in size, height and material to City standards.

(2) Private streets shall be designated as lanes and suffix "PRIVATE" shall be an integral part of any street sign [example: ROSE LANE (PRIVATE)].

(3) The background color for any private street sign shall be blue.

b. No private street name shall be changed without approval of the City.

c. No private street sign shall be installed without the approval of the City.

d. Private street signs not established in conformance with the provisions of this section and installed within the right-of-way of any public street may be removed from the public street right-of-way without notice.

913. GEOMETRIC CRITERIA

Public streets shall be designed according to the minimum geometric criteria established in Table 9-3 and cross-sections shown in Figures 9-2 through 9-5.

914. CONSTRUCTION STANDARDS AND SPECIFICATIONS

All public streets shall be constructed in accordance with the City's Standard Details and Standard Specifications.

914.1 Non-Curb and Gutter Alternative for Local Residential Streets

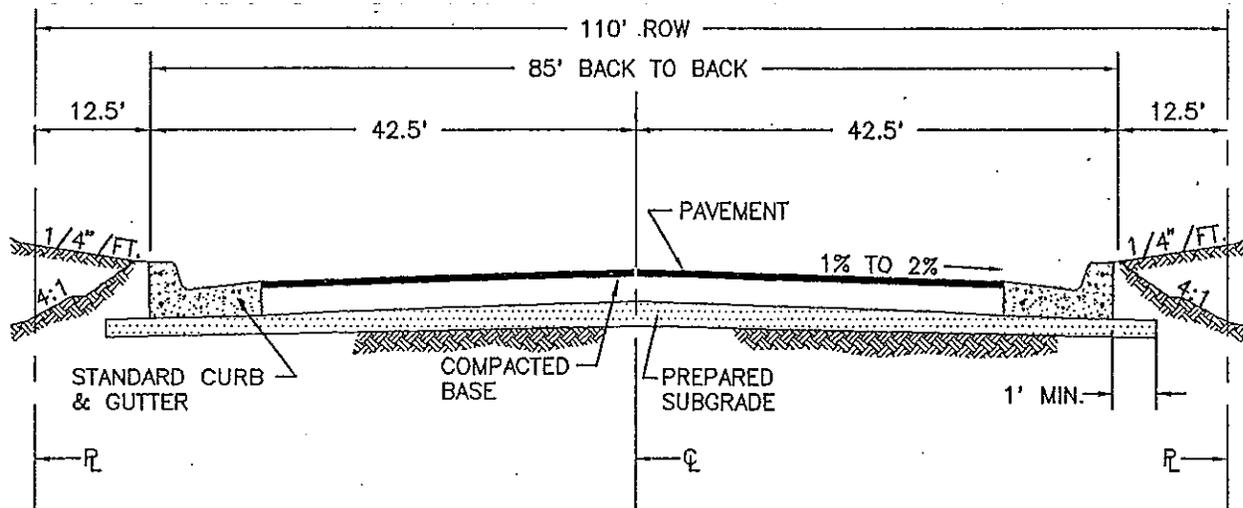
Non-curbed and guttered paved streets may be provided in residential subdivisions as defined in the City of Brenham Subdivision Ordinance.

**TABLE 9-3
GEOMETRIC DESIGN CRITERIA FOR PUBLIC STREETS**

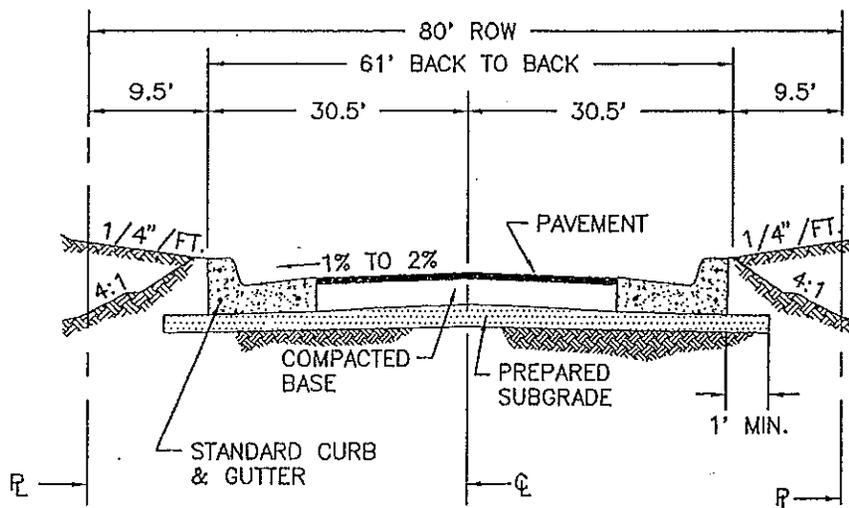
STANDARD CATEGORY	STREET CLASSIFICATION		
	ARTERIAL	COLLECTOR	LOCAL
Maximum Grade (in %)	6 ⁽¹⁾	8 ⁽¹⁾	10
Minimum Grade (in %)	0.3	0.3	0.3
Minimum Center Line Curve Radius (in Feet)	1,000	800	300
Minimum Length of Vertical Curves (in Feet) ⁽²⁾	300	100	100
Minimum Sight Distance (in Feet)	400	250	250
Minimum Tangent Length Between Curves (in Feet)	300	200	100
Curb Return Radii (in Feet) ⁽³⁾	30	25	20

- (1) Where existing topography makes conformance to these grades impractical consideration may be given to allowing an additional two percent (2%) increase in grade for a distance of five hundred feet (500') or less.
- (2) Arterial- or fifty (50) times the algebraic difference in grades; **whichever is greater**. Collector or local - or twenty (20) times the algebraic difference in grades; **whichever is greater**.
- (3) Acute angle intersections shall have twenty-five-foot (25') radii.
- (4) Alternative designs using superelevation and other generally accepted transportation methods to reduce radii will be considered by the City on a case-by-case basis.

See Figures 9-2 through 9-5 for additional details.



110 FOOT R.O.W.
 FIVE 12 FT. TRAVEL LANES
 TWO 12 FT. PARKING LANES
PRINCIPAL ARTERIAL STREET

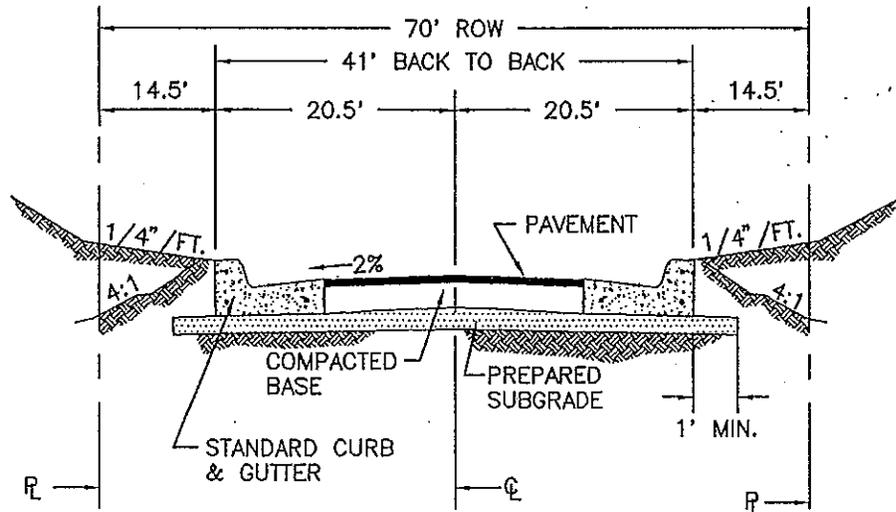


EIGHTY FOOT R.O.W.
 FIVE 12 FT. TRAVEL LANES
 NO PARKING LANES
MINOR ARTERIAL STREET

NOT TO SCALE

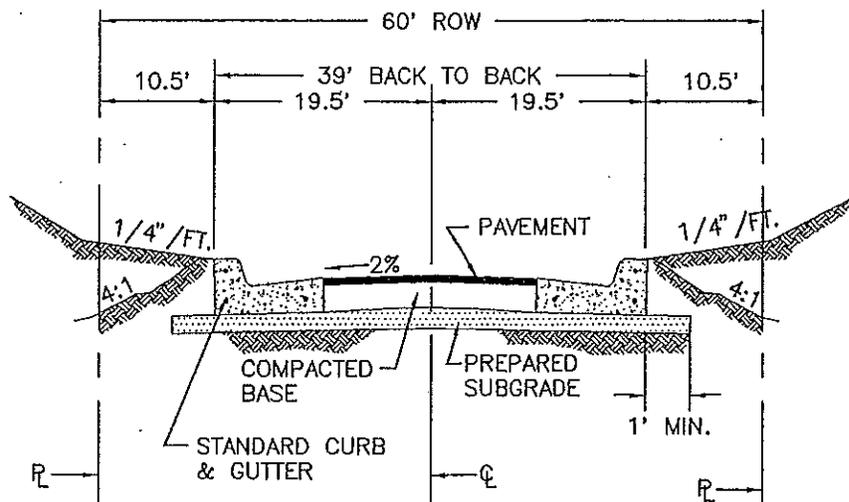
ARTERIAL STREETS

FIGURE 9-2



SEVENTY FOOT R.O.W.
 TWO 12 FT. TRAVEL LANES (WITH PROVISION FOR FUTURE
 TURNING LANE IF ONE PARKING LANE IS DELETED)
 TWO 8 FT. PARKING LANES

MAJOR COLLECTOR STREET

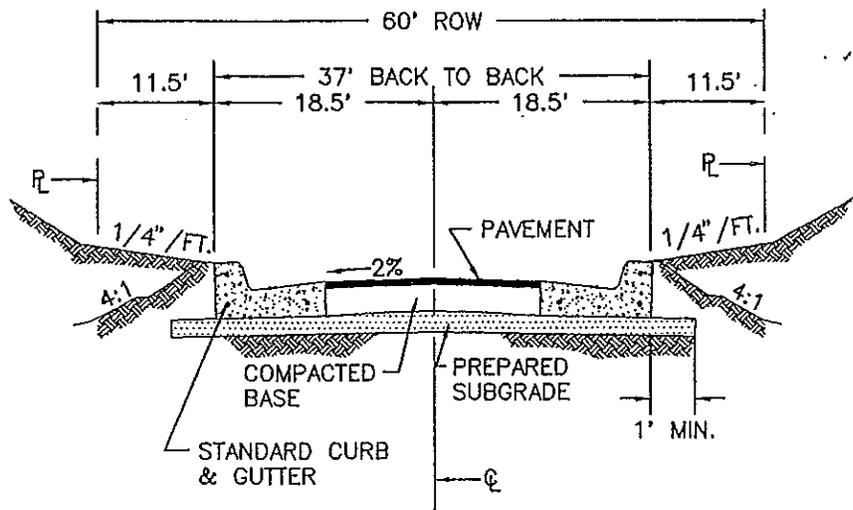


SIXTY FOOT R.O.W.
 TWO 11 FT. TRAVEL LANES
 TWO 8 FT. PARKING LANES
MINOR COLLECTOR STREET

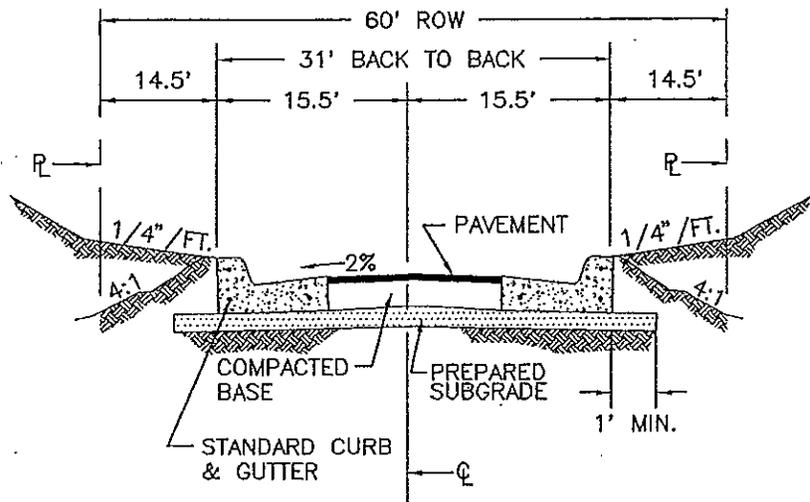
NOT TO SCALE

COLLECTOR STREETS

FIGURE 9-3



SIXTY FOOT R.O.W.
 TWO 12 FT. TRAVEL LANES
 ONE 12 FT. PARKING LANES
LOCAL STREET (COMMERCIAL/INDUSTRIAL)

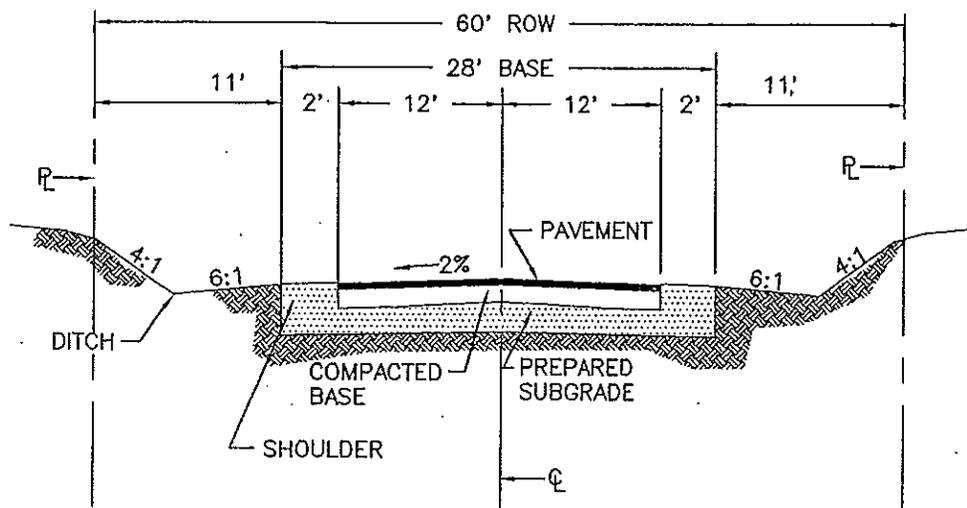


FIFTY-FIVE FOOT R.O.W.
 TWO 11 FT. TRAVEL LANES
 ONE 8 FT. PARKING LANE
LOCAL STREET (RESIDENTIAL)

NOT TO SCALE

LOCAL STREETS

FIGURE 9-4



SIXTY FOOT R.O.W.
 RURAL-NO CURB & GUTTER
 TWO 12 FT. TRAVEL LANES
 NO PARKING ON ROADWAY

NOT TO SCALE

LOCAL STREET(RESIDENTIAL)
LOW DENSITY RURAL

FIGURE 9-5

914.2 Pavement With Alternatives for Local Commercial Streets

With City approval, local commercial streets may be constructed with reduced pavement width if "No Parking" signs are furnished and installed in accordance with City standards. Pavement width may be reduced to a minimum of twenty-eight feet (28'), back of curb to back of curb; provided, however, that increased driveway and intersection radii may be required for truck turning movements.

914.3 Pavement Alternative for Low Density, Rural Subdivisions

Residential subdivisions located in the extra-territorial jurisdiction (ETJ) of the City may provide streets constructed according to the low density residential street standards contained in Figure 9-5.

915. STREET STRUCTURAL THICKNESS DESIGN

915.1 Engineered Design of Street Structural Section

- a. Except as provided by Section 915.2, a registered engineer shall design the street structural sections (structural thickness) in accordance with:
 - (1) American Association of State Highway & Transportation Officials (AASHTO), Flexible-Pavement Design Method;
 - (2) Asphalt Institute Design Method;
 - (3) Portland Cement Association, Rigid Pavement Design Method or
 - (4) Any other design methods not specifically mentioned in this manual may be used, with prior approval of the City.
- b. The street structural section design shall be based on the total number and weight (plus configuration) of the axles expected to go over the street section during a design life of twenty (20) years. The concept of "Equivalent Axle Loadings" shall be used to express the total number and mixture of loadings that will occur during the street section's expected life. If a roadway is proposed, it will be designated as an arterial, collector or local and the street structural section design shall be based on the loadings shown in Table 9-4: Street Design by Equivalent Axle Loads.

TABLE 9-4 STREET DESIGN BY EQUIVALENT AXLE LOADS (20-YEAR DESIGN LIFE)	
STREET CLASSIFICATION	AXLE LOADS EQUIVALENT TO 18,000 LBS.
Principal Arterial	5,000,000
Minor Arterial	5,000,000
Major Collector	5,000,000
Minor Collector	400,000
Local (Commercial/Industrial)	400,000
Local (Residential)	9,000

915.2 Standard Structural Section Design for Paved Local Streets

In lieu of a designed street structural section, local street pavement sections (see also 915.1 and 915.3) may be designed as follows:

- a. One and one-half inch (1.5") hot mix asphaltic concrete (H.M.A.C.), six-inch (6") flexible base, six-inch (6") stabilized subgrade, where necessary (see Section 915.3);
- b. Six-inch (6") H.M.A.C., six-inch (6") stabilized subgrade, where necessary (see Section 915.3);
- c. Six-inch (6") reinforced Portland Cement concrete [with two-inch (2") sand cushion permitted], six-inch stabilized subgrade, where necessary (see Section 915.3).

915.3 Soils Testing and Subgrade Stabilization

- a. A soil test report for each 1,000 square yards of paved surface proposed or for each type of soil encountered in the subgrade shall be submitted to the City.
- b. The following data as part of the soil test report shall be submitted to the City:
 - (1) Soil classification;
 - (2) Optimum moisture/density (Modified Proctor, ASTM D-1557);
 - (3) Atterberg Liquid Limits and Plasticity Index (P.I.);

- (4) Stabilization requirements for subgrade soil (percent lime for clay or percent cement for sandy soils), if street structural section is to be designed by an engineer;
 - (5) All tests shall be performed by a certified testing laboratory.
- c. All subgrade soils with a P.I. of seventeen (17) or more shall be stabilized.
- (1) If the standard structural section design for paved local streets is used, five percent (5%) lime by weight may be used, otherwise,
 - (2) A certified testing laboratory shall conduct lime (or other approved material) series test to determine the percent of stabilizing agent necessary to lower the P.I. below seventeen (17).
- d. Native soils with a P.I. of less than seventeen (17) may be used as subgrade material as long as they can meet the City's compaction requirements (see Section 915.4.a.). A stabilizing agent (lime, cement, etc.) may be added as recommended by soils analysis, to such low P.I. soil to aid in compaction.
- e. Subgrade soils evaluation shall generally apply to the top six inches (6") of soil measured down from the proposed subgrade surface.

915.4 Other Basic Criteria

- a. All subgrade and individual layers of base and paving materials shall be compacted to ninety-five percent (95%) relative density, Modified Proctor Test (ASTM D-1557).
- b. The total design thickness of the street structural section shall be rounded up to the nearest whole inch.
- c. The total thickness of an asphaltic concrete pavement may be divided into different grades of material. Unless otherwise approved by the City, Type "D" Hot Mix Asphaltic Concrete (H.M.A.C.) per Item 340 Texas Department of Transportation Standard Specifications, shall be used for a surface course.
- d. Asphaltic concrete pavement shall be laid in lifts of no more than three (3) or less than 1-1/2 inches each, unless otherwise approved by the City.
- e. The area shall be completely cleared and grubbed within the street right-of-way prior to construction of any street improvements.

- f. The design requirements set forth in this chapter are minimum design standards. The City reserves the right to require additional precautions or treatments consistent with sound engineering practice to provide for conditions not specifically covered herein.
- g. Any other design methods not specifically mentioned in this document may be used with prior approval by the City.

915.5 Construction Quality Control and Material Testing

Construction quality control and material testing shall be performed and the results shall be provided to the City to verify acceptability of specific work.

- a. All tests and retests shall be by an approved commercial testing laboratory. All related costs shall be borne by the developer.
- b. Copies of all materials test reports shall be submitted to the City.
- c. Subgrade shall be tested a minimum of every five hundred feet (500') for density. Base courses shall be tested a minimum of every five hundred feet (500') for density and depth. Proctor curves will be required for each specific material type.
- d. Hot mix shall be tested a minimum of every five hundred feet (500') for density and depth. The job mix formula shall be designed in accordance with Texas Department of Transportation standards.
- e. Surface course thickness shall be tested by the coring method.
- f. Concrete shall be tested for compressive strength at seven (7) and twenty-eight (28) days. One (1) set of cylinders [three (3)] shall be tested for each 1,000 square yards of pavement. Structures shall be tested on the basis of one (1) set (3) per one hundred (100) cubic yards.
- g. Concrete pavement shall be tested by coring a minimum of every 1,000 feet for thickness. A minimum of three (3) tests is required.

916. STREET LIGHTING STANDARDS

916.1 Location

Street lights shall be installed at all street intersections, at the end of all cul-de-sac or dead end streets, and at all significant changes in direction of the roadway. All street lights shall be installed in accordance to Table 9-5.

TABLE 9-5 STREET LIGHTING INTENSITY	
STREET CLASSIFICATION	LIGHTING INTENSITY IN FOOT CANDLES (FC)
Arterial	2.0
Collector	1.2
Local Commercial	1.2
Local Residential	0.3
Private Street	0.3

916.2 Installation

Street lights shall be mast arm mounted to the light pole. If the electrical system for the development is installed underground, the electrical service to the street lights shall also be underground. If the electrical system for the development is overhead wires with power poles located along the rear lot lines, the electrical service to the street lights shall be underground. If the power poles are located adjacent to the street, the electrical service to the street lights may be overhead and the street light mast arms may be mounted on the power poles provided that the required lighting intensity is maintained.

916.3 Engineered Plans and Approvals

Plans for street light locations and intensities shall be submitted for approval by the City.

916.4 Ownership and Maintenance

All street lights installed according to this policy shall be and shall remain the property of the City.

CHAPTER 10. OFF-STREET PARKING AND DRIVEWAY STANDARDS

1001. OFF-STREET PARKING

1001.1 Minimum Number of Parking Spaces

Off-street parking spaces shall be provided in accordance with the standards outlined in the City of Brenham Zoning Ordinance.

1001.2 Parking Lots

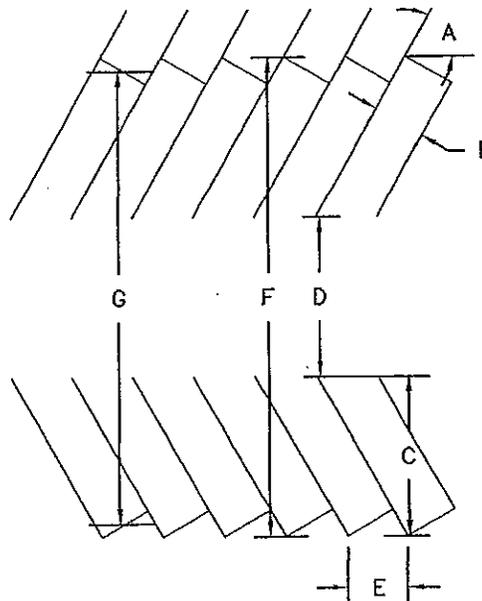
- a. All parking lots, parking spaces, maneuvering aisles, loading areas and driveways shall be paved with an all-weather surface. Such all-weather surface shall consist, at a minimum of six inches (6") of approved crushed rock base material on compacted or undisturbed subgrade. If such parking lots, spaces, aisles and loading areas are to be paved with asphalt or concrete, the base of such paving shall be the same as, or the approved equivalent to, the all-weather surfacing required above.
- b. Location, size and number of handicapped parking spaces shall conform to the latest building codes, state and federal laws.
- c. If a development requires ten (10) or more parking spaces, up to ten percent (10%) of those spaces may be designed for "compact cars." Effective stall dimension shall be a minimum of 7.5 feet by 15 feet and each space shall be signed "COMPACT CARS ONLY."
- d. All other parking spaces and lots shall meet the standards provided in Figure 10-1.
- e. All parking spaces whether in a lot consisting of an all-weather surface or a paved surface shall be clearly delineated and designated by means of painted stripes, wheel stops, signs or other approved methods.
- f. Parking lots and loading areas shall be designed to allow all vehicle maneuvers such as backing, parking and turning the vehicle, to take place on the lot.

1001.3 Off-Street Loading Requirements

- a. Any use that receives or distributes materials or merchandise by vehicle shall provide off-street loading space in accordance with the requirements detailed below.

A	B	C	D		E	F	G
			a	b			
0°	8.0'	8.0'	12.0'	24.0'	23.0'	28.0'	---
30°	9.0'	17.3'	12.0'	---	18.0'	45.6'	37.5'
45°	9.0'	19.6'	13.0'	---	12.7'	52.5'	46.5'
60°	9.0'	21.0'	18.0'	---	10.4'	60.0'	65.5'
90°	9.0'	19.0'	24.0'	24.0'	9.0'	62.0'	---

- A PARK ANGLE
- B STALL WIDTH
- C 19' STALL TO CURB
- D AISLE WIDTH
 - (a) ONE WAY TRAFFIC
 - (b) TWO WAY TRAFFIC
- E CURB LENGTH PER CAR
- F CENTER TO CENTER WIDTH (CURB TO CURB MODULE)
- G CENTER TO CENTER WIDTH MODULE (ASSUMING FRONT BUMPER OVERHANG)



NOT TO SCALE

PARKING LOT DIMENSIONS

FIGURE 10-1

- (1) Industrial uses shall provide one (1) loading space for 10,000 square feet of floor area.
 - (2) Business uses shall provide one (1) loading space for each 15,000 square feet of floor area.
- b. The following rules shall be applied in computing the number of off-street loading spaces required:
- (1) Floor area shall mean the gross floor area of the use.
 - (2) Fractional spaces shall be rounded to the next higher whole space.
- c. The required off-street loading spaces shall be located on the same lot as the building or use served.
- d. A loading space shall contain a minimum of 420 square feet and shall be approximately twelve feet (12') in width and thirty-five feet (35') in depth. All loading spaces, maneuvering aisles and driveways shall be paved with an all-weather surface.

1002. DRIVEWAY DESIGN STANDARDS

Driveway or other facilities for access to lots shall be designed, constructed, upgraded, reconstructed or repaired according to the standards of this section. Driveways shall be permitted only upon streets where full street improvements exist and are maintained as a public street by the City; provided, however, that low volume (residential) driveways may be permitted on public lanes, alleys or other accepted public access facilities in existence prior to adoption of this document.

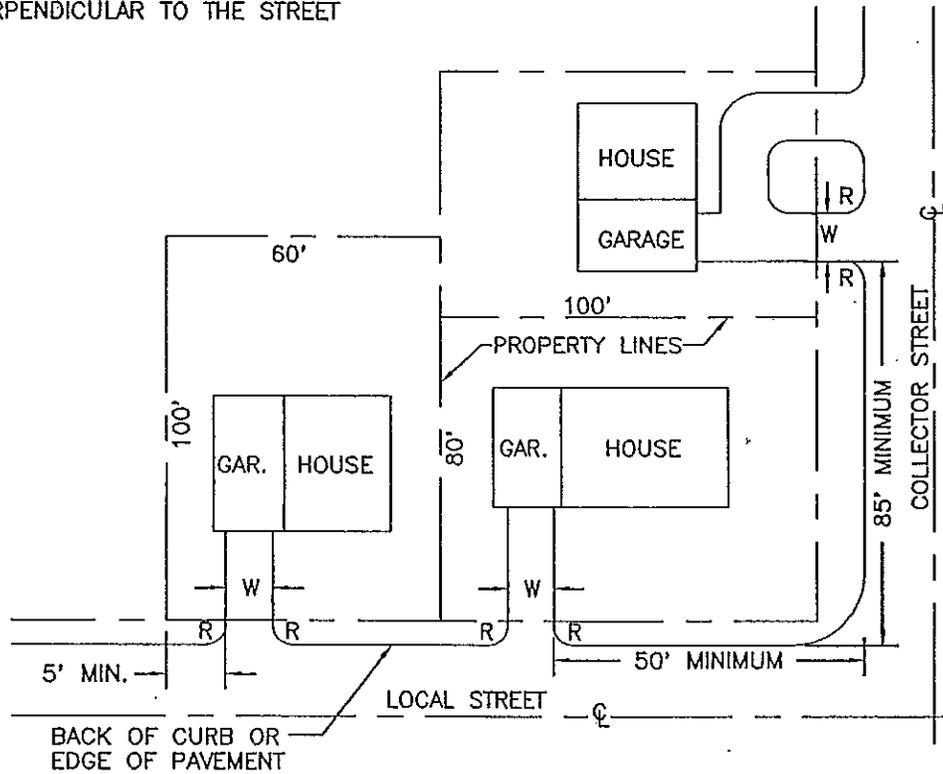
1002.1 Location and Construction of Driveways

The location of driveways is based on a number of factors, including the location of individual property lines and available street frontage, requirements of internal site design, number of vehicles to be accommodated and traffic safety. As a general rule, the farther from an intersection a driveway can be located, the less it will affect the through traffic and the less delay it will cause to vehicles using the driveway.

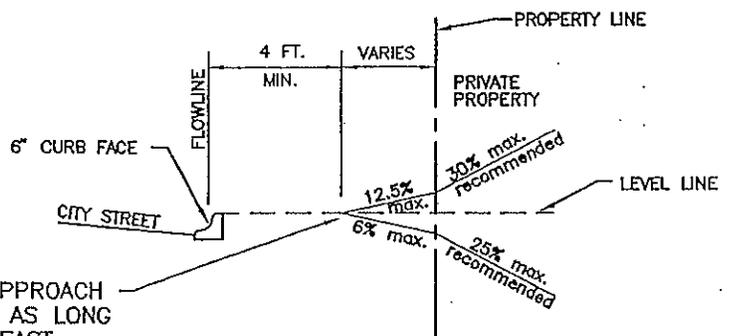
- a. High volume driveway approaches shall be located entirely within the frontage of the lot and not less than ten feet (10') from any side property line; provided, however, joint driveway approaches may be permitted where a permanent joint access is provided by the respective property owners either through platting or a mutual access easement (see 1002.1.g.). Low volume (residential) driveway approaches shall be located entirely within the lot dimensions and not less than five feet (5') from any side or rear property line.
- b. Location of other driveways shall be considered on the opposite side of the street when locating a proposed driveway. Where possible, driveways on both sides of the street shall be aligned in order to minimize adverse effects on through traffic and to optimize efficiencies of the driveway. Driveways directly opposite each other shall be given preference over staggered driveways. Where it is not possible to place driveways directly opposite each other, a driveway shall be placed so that adequate left turn storage capacity is provided in advance of each driveway in order to avoid the overlap of left turn movements.
- c. Driveway approaches shall be constructed so as not to interfere with pedestrian crosswalks.
- d. Driveways shall be constructed a minimum of three feet (3') from any obstruction such as a street light or utility pole, fire hydrant, traffic signal controller, telephone junction box, etc.
- e. Low volume driveways (single-family residential) shall be constructed to conform to the criteria shown in Figure 10-2.
- f. High volume driveways shall be constructed to conform to the criteria shown in Figure 10-3.
- g. When the owner or owners of two (2) adjacent lots agree to permanently combine access points, the City shall grant an incentive bonus. The total lot width normally required will be reduced by fifteen percent (15%) for each lot. In addition, where the agreement also includes a permanent mutual parking agreement, the required number of parking spaces may be reduced by fifteen percent (15%) for each development.
- h. The maximum number of driveways per lot, based on the street classification and lot width shall be as shown in Table 10-1.

NOTE:

THAT PORTION OF THE DRIVEWAY APPROACH WITHIN THE PUBLIC RIGHT-OF-WAY SHALL HAVE ITS CENTERLINE PERPENDICULAR TO THE STREET CENTERLINE.



ST TYPE	R FT	W - FT	
		MIN	MAX
WITH CURB	5	12	30
NON-CURBED	5	12	30



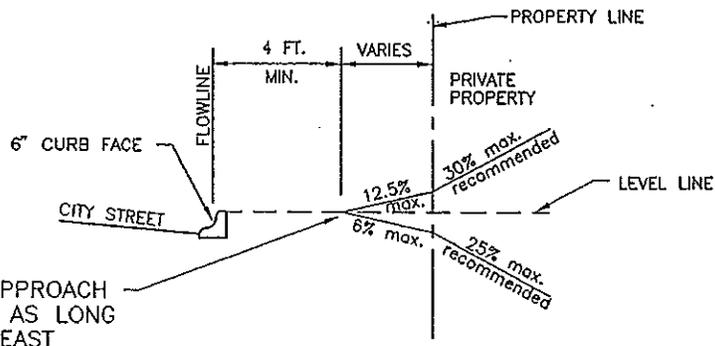
NOTE: A PARABOLIC APPROACH PROFILE MAY BE USED AS LONG AS THIS POINT IS AT LEAST LEVEL WITH THE TOP OF CURB.

ASCENT/DESCENT STANDARDS

**RESIDENTIAL (LOW VOLUME)
DRIVEWAY CRITERIA**

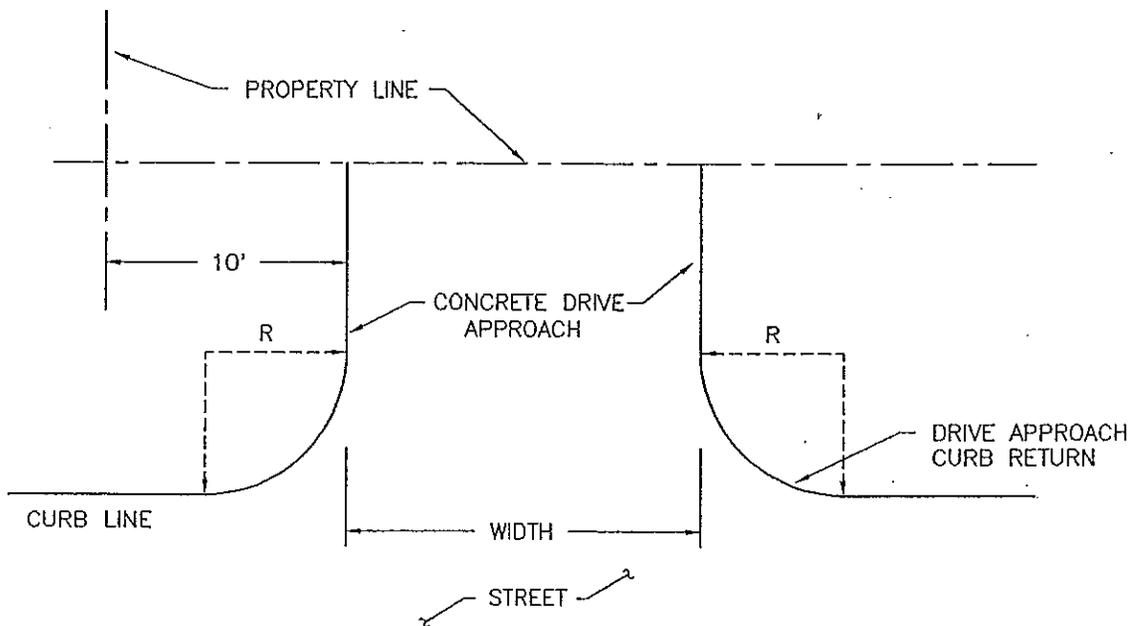
NOT TO SCALE

FIGURE 10-2



NOTE: A PARABOLIC APPROACH PROFILE MAY BE USED AS LONG AS THIS POINT IS AT LEAST LEVEL WITH THE TOP OF CURB.

ASCENT/DESCENT STANDARDS



DRIVE TYPE	MINIMUM WIDTH	MINIMUM RADIUS, R
ONE-WAY ENTRANCE	20 FEET	SEE TABLE ¹⁰⁻² 13-3
ONE-WAY EXIT	20 FEET	SEE TABLE ¹⁰⁻² 13-3
TWO-WAY ENTRANCE/EXIT	20 FEET	SEE TABLE ¹⁰⁻² 13-3

NOTE: MAXIMUM WIDTH FOR ALL TYPES IS 40 FEET.

NOT TO SCALE

ENTRANCE AND EXIT DIMENSIONS
FOR HIGH VOLUME DRIVEWAYS

FIGURE 10-3

TABLE 10-1 MAXIMUM DRIVEWAYS PER LOT		
STREET TYPE	LOT WIDTH	PERMITTED DRIVEWAYS
Local	< 100'	1
	101-200'	2
	Over 200'	1 per additional 100'
Collector	< 100'	1
	100-250'	2
	Over 250'	1 per additional 200'
Arterial	< 100'	1
	100-300'	2
	Over 300'	1 per additional 300'

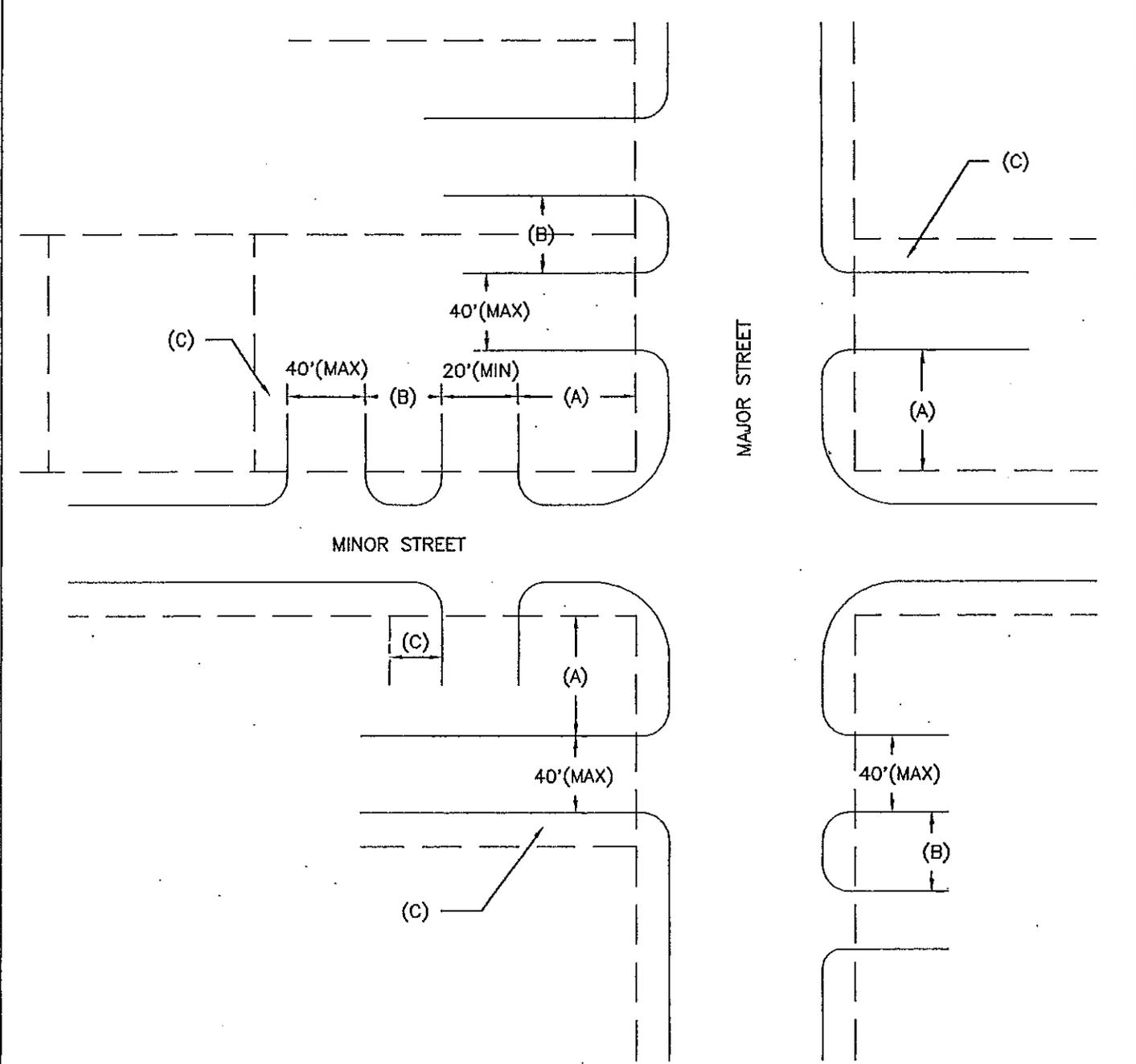
1002.2 Driveway Spacing for High Volume Driveways

High volume driveways shall be designed and constructed according to the spacing standards shown in Figure 10-4.

1002.3 Driveway Design

Driveway design will depend on the land use, the volume, the character of both through traffic and driveway traffic and the speed of traffic on the through street. Dependent upon these factors, the critical design elements include radii of curb returns, driveway throat width and the angle between the driveway centerline and the edge of the roadway.

- a. Driveway entrances shall be designed to be able to accommodate all vehicle types having occasion to enter the lot, including delivery vehicles.
- b. Driveways shall be designed with curb return radii according to the type of driveway and the classification of the street as provided in Table 10-2.



MINIMUM SEPARATION (FT)			
	ARTERIAL	COLLECTOR	LOCAL
A	65	55	35
B	20	20	20
C	10	10	10

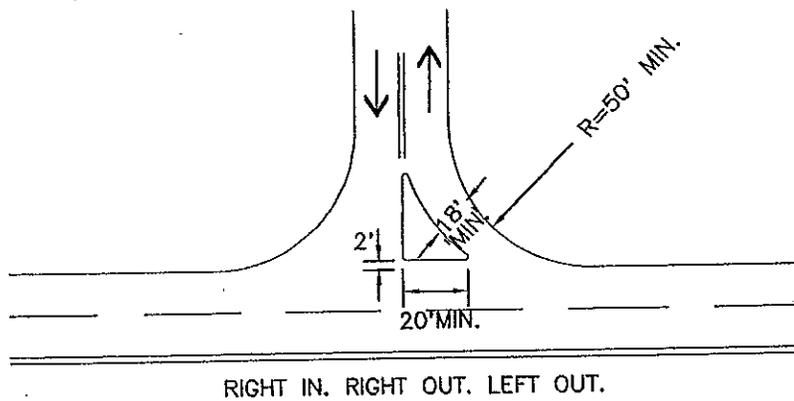
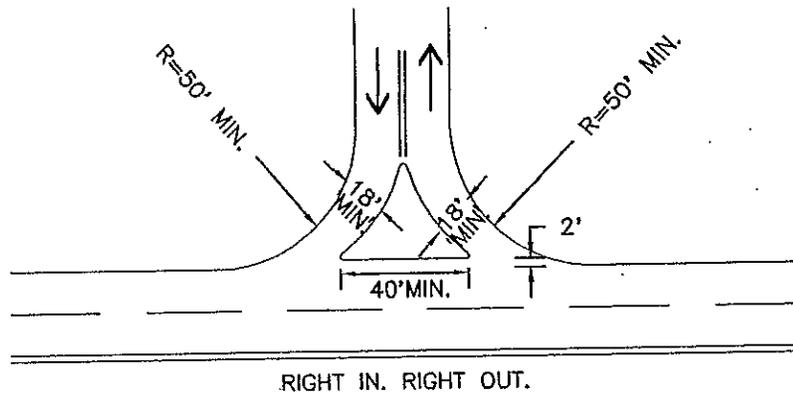
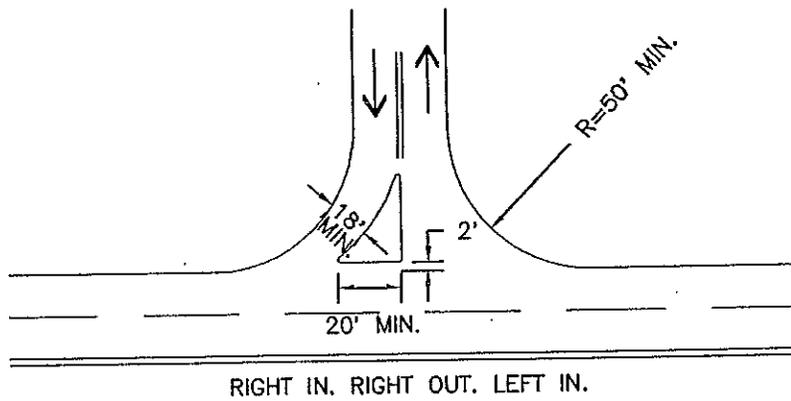
NOT TO SCALE

HIGH VOLUME DRIVEWAY SPACING CRITERIA

FIGURE 10-4

TABLE 10-2 MINIMUM CURB RETURN RADII (IN FEET)		
STREET CLASSIFICATION	LOW VOLUME DRIVEWAY	HIGH VOLUME DRIVEWAY
Local	5	10
Collector	5	10
Arterial	10	20

- c. Tapered or channelized deceleration lanes for vehicles turning right into high volume or intersection type driveways may be required on arterial streets. Where such lanes are necessary, additional right-of-way may also be required.
- d. The use of one-way driveways, supported by an appropriate internal circulation system, is encouraged so that entrances and exits can be separate driveways. This will promote smoother traffic flow into and out of the driveways and reduce traffic congestion in through lanes on the street.
- e. In some cases, where necessary for the safe and efficient movement of traffic, the City may require that special design techniques be employed to restrict or limit turning movements into or out of a driveway before the driveway can be approved. Such restrictions do not affect the number and location of access points as specified elsewhere. Figure 10-5 gives approved minimum design criteria for limited movement driveways. Deceleration lanes may also be required to be incorporated into the design.
- f. Driveway design standards for sites that include fuel pumps parallel to the adjacent street are necessary due to the special access needs that characterize such developments. Sites shall be designed for fuel pumps according to the following standards:
- (1) The minimum corner clearance shall be a distance of thirty-five feet (35') measured from the point of intersecting right-of-way lines to the point of tangency of the curb return radii leading to the driveway approach. The point of tangency of the curblines corner radius and that of the curb return radius of the driveway approach shall not be compounded.
 - (2) The minimum spacing between driveway approaches within the same property lines shall be twenty-five feet (25') of tangent curb length.



NOT TO SCALE

**DESIGN CRITERIA FOR LIMITED
MOVEMENT DRIVEWAY**

FIGURE 10-5

- (3) A minimum distance between the fuel pump, island and the right-of-way or property line shall be twenty-five feet (25').

1002.4 Restrictive Provisions

Access to public streets will not be provided where the conditions described below restrict or compromise the safety and efficiency of the access.

a. Backing Maneuvers

Access points shall not be approved for parking or loading areas that require backing maneuvers in a public street right-of-way except for single-family or duplex residential uses on local streets.

b. Sight Distance Requirements

The minimum sight distance shall be provided at all access points as shown in Figure 10-6.

c. Signalized Intersections

Access drives within the area of intersection of public streets where traffic signals are installed, or are anticipated to be installed in the future, will not be permitted.

d. Provision of Access

If a lot has frontage on more than one (1) street, access will be permitted only on those street frontages where standards can be met. If a lot cannot be served by any access point meeting these standards, access point(s) shall be designated by the City based on traffic safety, operational needs and conformance to as much of the requirements of these guidelines as possible.

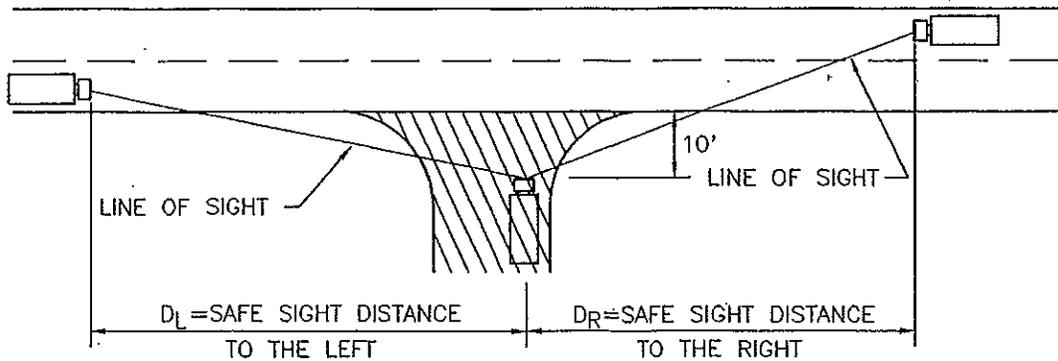
- e. Driveway approaches shall not be constructed or used for the standing or parking of vehicles.

f. Driveway restrictions along expressway ramps:

- (1) If a driveway provides access to and from expressway frontage roads, it shall not intersect the frontage road at any point along the curbline of the frontage road, or along the edge of the pavement within 250 feet downstream from an exit ramp measured in the direction of traffic flow on the frontage road, Figure 10-7. This distance is measured from a line perpendicular to the right curbline of the frontage road, drawn through the point of

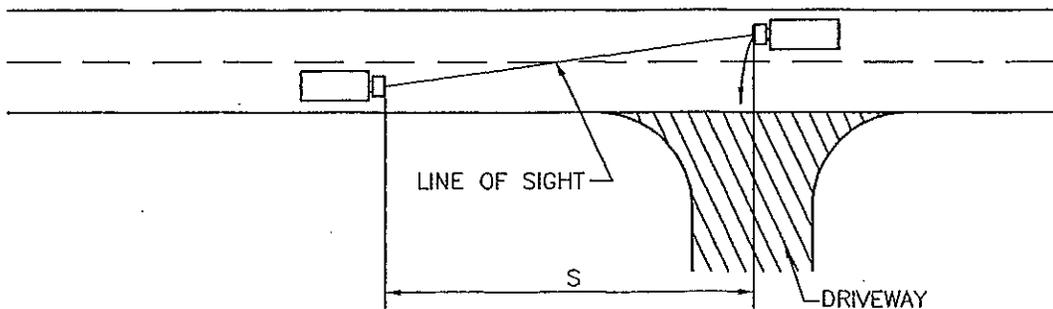
SIGHT DISTANCES AT ENTRANCES

	D = DISTANCE ALONG MAJOR ROAD FROM DRIVEWAY TO ALLOW VEHICLE TO ENTER SAFELY (FEET)															
	30 MPH				40 MPH				50 MPH				60 MPH			
	2 LANE		4 or 6 LANES		2 LANE		4 or 6 LANES		2 LANE		4 or 6 LANES		2 LANE		4 or 6 LANES	
	D _L	D _R	D _L	D _R	D _L	D _R	D _L	D _R	D _L	D _R	D _L	D _R	D _L	D _R	D _L	D _R
PASSENGER CARS	350	260	220	260	530	440	360	440	740	700	620	700	950	1050	950	1050
TRUCK	500	400	400	400	850	850	850	850	1600	1600	1600	1600	2500	2500	2500	2500



LEFT TURN SIGHT DISTANCE AT ENTRANCES

	S = DISTANCE ALONG MAJOR ROUGE FOR VEHICLE TO SAFELY TURN LEFT ONTO DRIVEWAY (FEET).											
	30 MPH			40 MPH			50 MPH			60 MPH		
	2 LANES	4 LANES	6 LANES	2 LANES	4 LANES	6 LANES	2 LANES	4 LANES	6 LANES	2 LANES	4 LANES	6 LANES
PASSENGER CARS	230	250	270	370	390	420	520	550	580	700	740	780
TRUCK	400	440	480	570	620	670	810	880	9550	1000	1100	1200

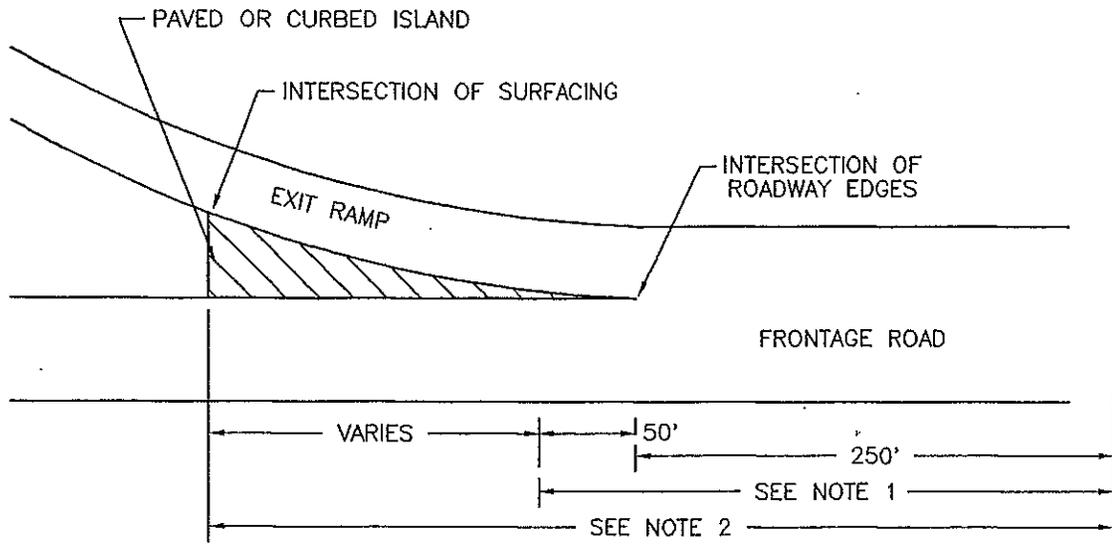


NOT TO SCALE

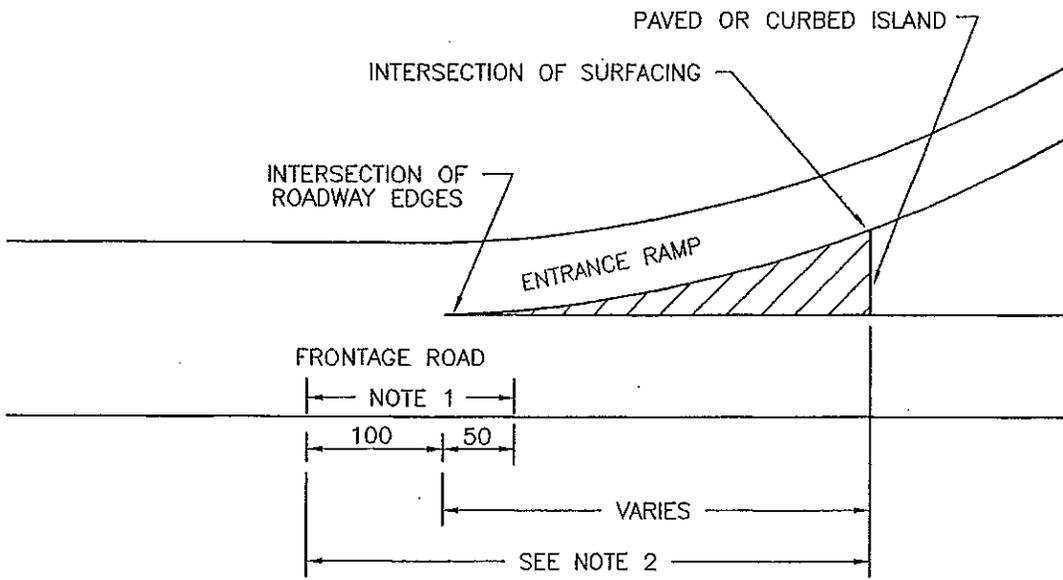
SIGHT DISTANCES FOR DRIVEWAY DESIGN

FIGURE 10-6

EXIT RAMP/FRONTAGE ROAD JUNCTION



ENTRANCE RAMP/FRONTAGE ROAD JUNCTION



NOTE 1: NO DRIVEWAYS IN THIS AREA
 NOTE 2: NO DRIVEWAYS IN THIS AREA WHEN ISLAND IS PRESENT

NOT TO SCALE

DRIVEWAY LOCATIONS AT EXPRESSWAY RAMPS

FIGURE 10-7

intersection of the right curblin of an exit ramp and left curblin of the frontage road, and located to minimize danger by the crossing, weaving and merging of traffic.

- (2) If a driveway provides access to and from expressway frontage roads, it shall not intersect the frontage road at any point along the curblin of the frontage road, or along the edge of pavement if there is no curblin, within fifty feet (50') upstream of an entrance ramp, Figure 10-7. This distance is measured on the frontage road upstream from a line perpendicular to the right curblin of the frontage road upstream from a line perpendicular to the right curblin of the frontage road, drawn through the point of intersection of the right curblin of an entry ramp and the left curblin of the frontage road, and be located to minimize danger created by the crossing, weaving and merging of traffic.

1002.5 Driveway Construction

- a. The portion of the driveway approach within the street right-of-way shall be paved with concrete or asphalt as follows:

- (1) Commercial, Multi-Family or Industrial: All pavement shall be concrete.
- (2) Residential: All driveway pavement abutting curb and gutter streets shall be concrete.

All driveway pavement abutting on non-curb and guttered streets may be concrete or asphalt.

- b. Property owners developing multi-family, commercial or industrial driveways located on non-curbed and guttered streets are responsible for all culvert installations.

1002.6 Abandoned Driveway Approaches

Whenever the use of any driveway approach is abandoned and not used for ingress and/or egress to the property abutting, it shall be the duty of the property owner of such abutting property to restore the curb according to the City's specifications.

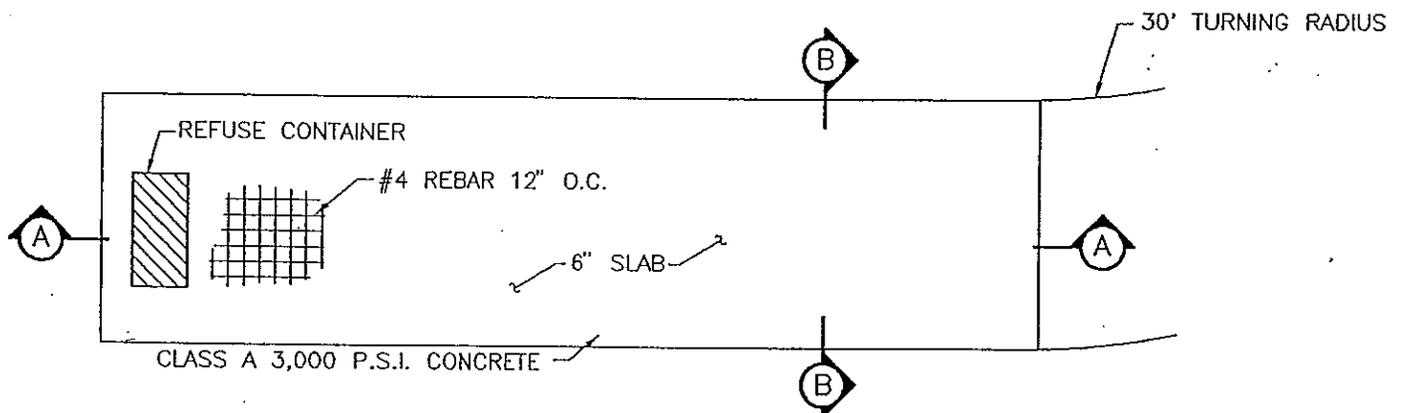
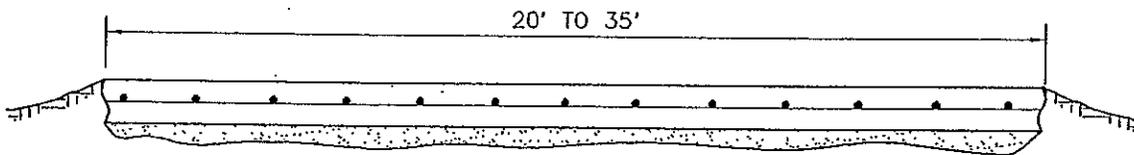
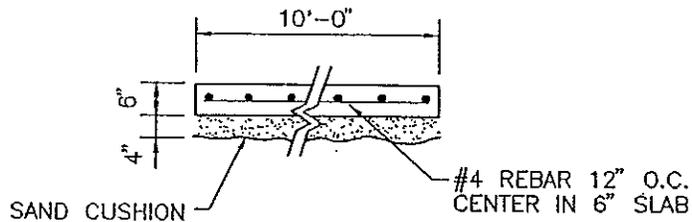
1003. REFUSE CONTAINER PADS

Refuse container pads, where necessary, shall be installed according to the standards contained in Figure 10-8.

REQUIREMENTS FOR CONTAINER LOCATION AND PADS

SHOW PAD AND LOCATION FOR DUMPSTER CONTAINERS ON ALL PLANS FOR BUSINESSES, COMMERCIAL BUILDINGS, SERVICE STATIONS, APARTMENTS, ETC..

1. OVERHEAD CLEARANCE OF 20 FEET REQUIRED.
 - a. NO OVERHEAD ELECTRICAL WIRES, OVERHANGS, OR EAVES.
2. A MINIMUM 50 FOOT STRAIGHT APPROACH TO THE CONTAINER SHALL BE PROVIDED.
3. MINIMUM 10 FEET CLEAR SPACE EACH SIDE OF CONTAINER.
4. ADEQUATE TURN-AROUND OR BACKING AREA.
5. CONTAINER PAD AND CONTAINER CAN NOT BLOCK ROAD, STREET RIGHT-OF-WAY, DRAINAGE DITCHES, TRAFFIC OR SIGHT TRIANGLE.
6. AREAS IN FRONT AND ALONG THE SIDE OF CONTAINERS SHALL BE MARKED AS "NO PARKING ZONE" OR "TOW AWAY ZONE."
7. THE COLLECTION VEHICLE WEIGHS 64,000 LBS. THE DRIVEWAYS SHOULD BE CONSTRUCTED WITH THIS LOAD IN MIND. THE CITY IS NOT RESPONSIBLE FOR DAMAGE TO PRIVATE PARKING LOTS OR DRIVEWAYS.
8. DUMPSTER SHOULD BE LOCATED AT THE REAR OF THE BUILDING.



NOT TO SCALE

REFUSE CONTAINER PADS

FIGURE 10-8

CHAPTER 11. STORM DRAINAGE STANDARDS

1101. GENERAL PROVISIONS

Drainage facilities shall be designed and constructed in accordance with this chapter and the City's Standard Details and Standard Specifications. The following design criteria are the City's minimum methods and standards. Other hydrologic and hydraulic design methods may be used to satisfy drainage requirements with prior approval of the City.

1101.1 Upstream Conditions

All drainage facilities shall be designed based on potential and fully developed upstream conditions. A minimum run-off coefficient of 0.75 shall be used for all undeveloped upstream property.

1101.2 Downstream Conditions

Downstream water surface elevations shall be determined for a one hundred-year (100 yr.) design frequency storm in order to define the downstream flood hazards created by the proposed development.

1101.3 Protection of Downstream Properties

Downstream drainage improvements or a retention system shall be designed and constructed to protect downstream properties from any increase in storm water run-off level.

1101.4 Discharge Points

All drainage improvements shall be terminated at a discharge point approved by the City. Such discharge point, or outlet, shall be designed and constructed to prevent damage to or overflowing into adjacent property. The City may require creek improvement, channel lining, energy dissipaters or other improvements for such outlet to prevent erosion or increase the flow capacity.

1101.5 Public Streets as Drainage Facilities

- a. Maximum spread of water to be allowed in local streets at five-year design flow shall allow for one (1) clear lane of traffic [twelve feet (12') wide].
- b. Maximum spread of water in collector streets at ten-year (10 yr.) design flow shall allow for one (1) clear lane of traffic each way [twelve feet (12') wide each].

- c. Maximum spread of water in arterial streets at ten-year (10 yr.) design flow shall allow for two (2) clear lanes of traffic [twenty-four feet (24') wide].

1101.6 Drainage Channels and Structures

- a. An underground storm drain on curb and gutter streets shall be installed beginning at the point where the calculated storm water runoff is of such a quantity that it exceeds the height specified above (see also Table 11-2). The storm drain system from this point shall be constructed to an approved outlet.
- b. For non-curb and gutter streets open channel (channel or ditch) methods may be used to dispose of storm water runoff of such a quantity that it exceeds the height specified above. Such channels may be in dedicated drainage easements outside the standard street right-of-way upon City approval of the location and alignment of such easements. Alternatively, the street right-of-way may be widened to accommodate an open channel of greater capacity than the standard street/ditch section (refer to Figures 9-2 to 9-6).
- c. If the channel is located in a widened street right-of-way, the City shall approve the right-of-way width and channel configuration.
- d. All channels shall be designed and constructed to terminate at an approved outlet.

1101.7 Habitable Structures

Adequate means for storm water run-off in excess of the streets' "design storm" capacity [i.e., five, ten-year (5, 10 yr.) storm] shall be provided to flow around habitable structures.

- a. If adjacent topography rises away from the street, a grading/drainage plan shall be provided which shows that all building sites can provide a finished floor elevation:
 - (1) at least one foot (1') above the top of the curb using the highest point along the portion of such curb fronting the building site, or
 - (2) at least one foot (1') above the top of ditch elevation, using the highest point along the portion of such ditch fronting the building site.
- b. If adjacent topography falls away from the street, a grading/drainage plan shall be provided which shows that all building sites can provide a finished floor elevation at least one foot (1') above the ground elevation along all sides of the building site.

- c. All streets shall be designed and constructed to minimize any fill required to bring building pads into compliance with this document.
- d. Alternate methods of building protection of those above may be accepted by the City upon submittal of detailed, engineered plans.

1101.8 Drainage System Criteria

If an underground drainage system is required, and a sixty-inch (60") or smaller pipe will handle the design flow, pipe shall be used. If a sixty-inch (60") pipe is not adequate, concrete pipe or natural and/or a lined open drainage channel is an option. If pipe is selected, the maximum allowable velocity shall be twelve (12) fps in the pipe. Lining materials, if used, shall be approved by the City.

1101.9 Line of Flow

Water courses shall be allowed to follow their natural lines of flow; provided, however, that rechanneling or rerouting of water courses may be allowed where approved by the City and where the point at which the water course enters the lot and the point at which it leaves the lot are not changed.

1101.10 Bridges and Box Culverts

Bridges or box culverts shall be designed and constructed at all street crossings over all drainage ways and flood ways in accordance with Table 11-2.

1101.11 Valley Gutters

Concrete valley gutters shall be provided if the gutter flow must be carried across intersections of curbed streets.

1101.12 Public Easements Required

All public drainage facilities shall be placed in public easements as described in Chapter 3, Public Easement Standards.

1102. DESIGN CRITERIA

1102.1 Basis for Discharge

Drainage improvements shall be designed for watersheds less than one thousand (1,000) acres based on flood discharges determined from the Rational Formula. The Rational Formula for calculating storm flows is shown in Figure 11-1.

error here

Description of Water Course	Velocity of Run-Off in fps for Slope in %			
	0% to 3%	4% to 7%	8% to 11%	Over 12%
Overland Surface Drainage	5	10	15	18
Channels	Determine V by Manning's Formula			
Storm Sewers	Determine V by Manning's Formula			

For street or gutter flow, the velocity shall be based on the grade of the street. In the absence of detailed calculation by Manning's Formula for the specific street section, the average velocities shown in Table 11-1 may be used.

% SLOPE OF GUTTER	ASSUMED VELOCITY (FT./SEC.)
0.5%	1.5
1.0%	2.2
2.0%	3.1
3.0%	3.8
4.0%	4.3
5.0%	4.9
6.0%	5.3
8.0%	6.1
10.0%	6.9

**FIGURE 11-1
THE RATIONAL FORMULA**

$$Q = CIA,$$

where:

- Q = The maximum storm flow rate at a given point. (in cubic feet per second).
- C = A run-off coefficient which varies with the topography, land use and moisture content of the soil at the time. The run-off coefficient shall be based on the ultimate use of the land. The run-off coefficient can be selected from the major use classification shown below.

Shopping Centers	0.95
Business Areas	0.80
Industrial Areas	0.70
Residential Areas	
(1) less than 2 lots/acre	0.40
(2) greater than 2 lots/acre but less than 4 lots/acre	0.50
(3) greater than 4 lots/acre but less than 8 lots/acre	0.60
(4) greater than 8 lots/acre	0.75
Apartments	0.75
Park and Open Space	0.30

- I = The average intensity of rainfall in inches per hour for a period equal to the time of concentration of flow from the farthest point of the drainage area to the point under consideration.

$$I = \frac{b}{(t + d)^e}$$

where d = 8.2 and

	<u>5-Year</u>	<u>10-Year</u>	<u>25-Year</u>	<u>50-Year</u>
b =	75	79	87	94
e =	0.784	0.759	0.747	0.740

t = Time of concentration in minutes.

- A = The drainage area, in acres, tributary to the point under design calculated from the drainage map of the area. This drainage map shall be submitted with any drainage plans submitted for consideration by the City.

Using the average velocities in Table 11-1, the time of concentration shall be calculated by the formula shown in Figure 11-2 or by other recognized methods such as the Texas Department of Transportation formulas unless more data is shown on the plans for calculating time of concentration.

1102.3 Storm Frequency

Design storm frequencies for storm drainage improvements are shown in Table 11-2.

TABLE 11-2 DESIGN STORM FREQUENCY		
TYPE OF FACILITY	DESCRIPTION OF AREA TO BE DRAINED	MINIMUM DESIGN FREQUENCY (YEARS)
Streets and Storm Sewers or Side Ditches, Combined*	Residential, Commercial and Industrial	Local - 5 Collector - 10 Arterial - 10
Culverts, Bridges, Channels and Creeks	Any Type of Area Less Than 1,000 Acres	25
Culverts, Bridges, Channels and Creeks	Any Type of Area Greater Than 1,000 Acres	100
*If in a storm drain, an inlet is located at a low point so that flow in excess of the storm drain capacity would be directed onto private property, and such overflow could cause damage or serious inconvenience in the opinion of the City, the design frequency shall be twenty-five (25) years.		

1102.4 Underground Drainage Facility Design

The underground drainage facility (storm drain) capacity shall be calculated by Manning's Formula as follows:

$$Q = \frac{1.486}{n} AR^{2/3} S^{1/2}, \text{ where:}$$

- Q = The discharge in cubic feet per second.
- A = The cross-sectional area of flow in square feet.
- R = The hydraulic radius in feet equals area/wetted perimeter.
- S = The slope of the hydraulic gradient in feet per foot.
- n = The coefficient of roughness.

The elevation of the hydraulic gradient of the storm sewer shall be a minimum of 1.0 feet below the elevation of the adjacent street gutter. Storm water pipe shall be sized so that the average velocity in the pipe will not exceed twelve (12) feet per second.

**FIGURE 11-2
TIME OF CONCENTRATION**

$$T = \frac{D}{V \times 60} \text{ where:}$$

- T = Time of concentration in minutes for use in Figure 10-2. The minimum time of concentration shall be ten (10) minutes.
D = Distance in feet from point of concentration to the hydraulically most distant part of the drainage basin under construction.
V = Velocity in feet per second from Section 1102.2 or velocity calculated by an engineer for streets and/or storm sewers.

TABLE 11-3 COEFFICIENT OF ROUGHNESS		
OPEN CHANNELS	MAXIMUM PERMISSIBLE VELOCITY IN FEET/SECOND	COEFFICIENT* "n"
Paved		
Concrete	8	0.011 to 0.020
Asphalt	8	0.013 to 0.017
Rubble or Riprap	8	0.017 to 0.030
Earth		
Bare, Sandy Silt, Weathered	2.0	0.020
Silt Clay or Soft Shale	3.5	0.020
Clay	6.0	0.020
Soft Sandstone	8.0	0.020
Clean Gravelly Soil	6.0	0.030 to 0.150
Turf		
-Shallow Flow	6.0	0.06 to 0.08
Depth of Flow Over 1 Foot	6.0	0.04 to 0.06
*Will vary with straightness of alignment, smoothness of bed and side slopes, and whether channel has light vegetation or is choked with weeds and brush.		

1102.5 Open Channel Design

Open channel facilities shall be designed and constructed based on frequencies shown in Table 11-2 and calculated by Manning's Formula with roughness coefficients and velocities as shown in Table 11-3. Side slopes of channels shall be no steeper than 3:1 in earth and 1:1 when lined with concrete.

1102.6 Culvert Design

Enclosed culverts shall be installed if a creek or ditch crosses proposed roadway improvements. The quantity of flow to be carried by the culvert shall be determined by the Rational Formula. The size of the culvert required shall be the larger size, checking both inlet and outlet flow control.

Design of culverts shall include the determination of upstream and downstream backwater conditions, velocities and flooding conditions. Culverts with discharge velocities that exceed those provided in Table 11-4 shall not be designed or installed.

All culverts shall be provided with safety end treatments or other appropriate termination structures.

1103. MINIMUM DESIGN STANDARDS

The design requirements set forth in this chapter are minimum design standards. The City reserves the right to require additional precautions or treatments consistent with sound engineering practice to provide for conditions not specifically covered in this chapter.

TABLE 11-4 CULVERT DISCHARGE - VELOCITY LIMITATIONS	
CULVERT DISCHARGING ON TO	MAXIMUM ALLOWABLE VELOCITY (fps)
Earth	6
Sod Earth	8
Paved or Riprap Apron	8
Shale	8
Rock	8

CHAPTER 12. BUFFER ZONES, PARK AND OPEN SPACE

1201. BUFFER STANDARDS

A buffer is a specified land area together with the planting and landscaping required on the land. A buffer may also contain a barrier, such as a berm or a fence, where such additional screening is necessary to achieve the desired level of buffering between various activities.

1201.1 Purpose

Requirements are set for this section for the provision of buffers between certain land uses. The requirement of a buffer is designed to reduce nuisances between adjacent land uses or between a land use and a public road by separation of land uses through a required buffer. Such nuisances may include dirt, litter, noise, lights, signs, unsightly buildings or parking areas. Buffers provide spacing to reduce potentially adverse impacts of noise, odor or danger from fires or explosions.

1201.2 General Standards

a. Location and Design

Buffers shall be located on the outer perimeter of a lot or parcel, extending to the lot or parcel boundary line. Buffers shall not be located on any existing, dedicated or reserved public or private street or right-of-way or easements.

b. Use of Buffers

A buffer may be used for some forms of passive recreation; it may contain pedestrian, bike or equestrian trails, provided that:

- (1) No plant material is eliminated.
- (2) The total width of the buffer is maintained.
- (3) All other regulations of the document are met.

With written permission of the City and full compliance with standards of Chapter 11, a required buffer may include a storm water retention area. In no event, however, shall the following uses be allowed in buffers; play fields, stables, swimming pools, tennis courts or similar active recreation uses.

c. Ownership of Buffers

Buffers shall remain in the ownership of the original owner (and assigns) of a lot or development. Buffers may be subjected to deed restrictions and subsequently be freely conveyed. They may be transferred to any consenting grantees, such as adjoining landowners, or an open-space or conservation group, provided that any such conveyance adequately guarantees the protection of the buffer for the purposes of this document.

d. Maintenance

The owner of a bufferyard provided in compliance with this document shall provide adequate maintenance of the bufferyard to ensure survival of the plantings. In the event that any of the plantings do not survive, they shall be replaced.

1201.3 Bufferyard Standards

Bufferyards shall be provided between two (2) conflicting land use classes according to the requirements of the Zoning Ordinance.

1202. PARKS AND RECREATION AREAS

1202.1 Dedication

Residential lots shall have dedicated land for park uses at locations designated in the comprehensive plan or otherwise where such dedications are approved by the City at a rate of one (1) acre per one hundred (100) dwelling units or ten percent (10%) of the total development (as shown on the preliminary plat) whichever is less up to a maximum of six (6) acres dedicated to the City for public park and recreational purposes. A maximum of fifty percent (50%) of the dedicated area may be dedicated as open space. The area may be dedicated in stages if the development contains two (2) or more phases. The area shall be marked on the final plat as DEDICATED FOR PARK AND RECREATION AREA PURPOSES.

1202.2 Money in Lieu of Land

a. Variance Required

A variance from the requirement to provide parkland may be granted by the City at the time of preliminary plat approval if the dedication of park land, as required in Section 1202.1 is determined to work an undue hardship on the development or the tract size is inadequate for park and/or recreational purposes and a park site is available within one-half (1/2) mile of the development. Where a variance is granted, a cash payment in lieu of land dedication shall be deposited with the City, prior to final plat approval. A sum of money equal to

the current assessed value of the land in the development according to the Washington County Appraisal District based on the pro-rated amount of land required in Section 1202.1 shall be deposited with the City.

b. Neighborhood Park and Recreation Improvement Fund

Such deposit shall be placed in a Neighborhood Park and Recreation Improvement Fund established by the City. The deposit shall be used by the City for improvement and/or acquisition of a neighborhood park, playground or recreation area. Such deposit shall be used by the City for facilities that will be actually available to and benefit the persons in said development.

1202.3 Quality of Park Site

With concurrence of the City, extensive improvements to recreational facilities may be made or provided as desired. Land for recreation purposes of a character and location suitable for use as a playground, play field or for other recreation purposes shall be dedicated. The recreation site shall be relatively level and dry with a total frontage on one (1) or more streets of at least two hundred feet (200') in depth and no other dimension of the site shall be less than one hundred feet (100') in depth. With the City's permission, the tract may be located at a suitable place on the periphery of the development, so a more usable tract will result when additional park land is obtained when adjacent land is developed.

1202.4 Credit for Private Parks and Recreational Areas

If private open space for park and recreational purposes is provided and such space is to be privately owned and maintained by the future residents of the development, such areas shall be credited against the requirement of dedication for park and recreational land provided that the following standards are met:

- a. That yards, court areas, setbacks and other open spaces required in developments are not included in the computation of such private open spaces.
- b. That the private ownership and maintenance of the open space is adequately provided for by written agreement.
- c. That the use of the private open space is restricted for park and recreational purposes by recorded covenants which run with the land in favor of the future owners of the property within the development.

CHAPTER 13. CONSTRUCTION SAFETY STANDARDS

1301. GENERAL PROVISIONS

The construction of facilities to improve, develop or subdivide land shall be conducted in a safe manner to protect human life and property.

1302. TRANSPORTATION SAFETY

All projects undertaken on or near public rights-of-way shall be controlled in accordance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD). Traffic control plans and measures, including but not limited to, signing, marking, barricading, flagging, detouring and closure shall all be conducted in accordance with TMUTCD criteria.

1303. EXCAVATION AND TRENCH SAFETY

In projects where mass excavation or trenching is required, provisions to comply with Occupational Safety Health Administration (OSHA) shall be specifically addressed during construction. Contractors shall comply with specific OSHA regulations set forth in 29 CFR, Part 1926.

1304. PROTECTION OF LIFE AND PROPERTY

Construction activities shall progress in a manner which places the highest priority on the protection of human life and property. Work shall be conducted in a manner which complies with OSHA standards and other applicable Federal, State and local regulations.

1305. INSURANCE

Companies that construct facilities to improve, develop or subdivide property shall provide written proof of insurance coverage for no less than the statutory amounts required by law.

CHAPTER 14. DEFINITIONS

Accessory Building - A building or structure customarily incidental and subordinate to the principal structure and located on the same lot as the principal building.

Agriculture - Any land or building used for pasturage, floriculture, dairying, horticulture, forestry and livestock or poultry husbandry.

Alley - A legally established private access easement affording a secondary means of vehicular access to abutting property and not intended for general traffic circulation.

Alterations - Any change, addition or modification in construction or type of occupancy; any change in the structural members of a building, such as walls or partitions, columns, beams or girders; or any change which may be referred to herein as "altered" or "reconstructed."

Apartment - A dwelling unit in a "multiple-family dwelling" as defined herein.

Appeal - Means, for the purpose of flood hazard regulation, a request for a review of the Flood Plain Administrator's interpretation of any provision of this document or a request for a variance.

Area of Shallow Flooding - Means a designated AO, AH or VO zone on a community's Flood Insurance Rate Map (FIRM) with a one percent (1%) chance or greater annual chance of flooding to an average depth of one to three feet (1-3') where a clearly defined channel does not exist, where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

Area of Special Flood Hazard - Is the land in the floodplain within a community subject to a one percent (1%) or greater chance of flooding in any given year. The area may be designated as Zone A on the Flood Hazard Boundary Map (FHBM). After detailed rate making has been completed in preparation for publication of the FIRM, Zone A usually is refined into Zones A, AE, AH, AO, A1-99, VO, V1-30, VE or V.

Base Flood - The flood having a one percent (1%) chance of being equaled or exceeded in any given year.

Berm - A man-made, formed, earth mound of definite height and width used for obscuring purposes; the intent of which is to provide a transition between uses of differing intensity.

Block - A tract or parcel of land designated as such on a subdivision plat surrounded by streets or other physical obstructions.

Boundary Sewer Line - A sewer line installed in a street bounding a development or faced on only one (1) side by a development, which can also serve property not included in the development on the opposite side of the street.

Boundary Water Line - A water line, installed in a street bounding a development or faced on only one (1) side by a development, which can also serve property not included in the development on the opposite side of the street.

Buffer Yard - A strip of land, including any specified type and amount of planting or structures which may be required to protect one type of land from another, or minimize or eliminate conflicts between them.

Building - See definition in Building Code.

Building Height - The vertical distance measured from the established grade to the highest point of the roof surface for flat roofs; to the deck line of mansard roofs; and to the average height between eaves and ridge for gable, hip and gambrel roofs. Where a building is located on a sloping terrain, the height may be measured from the average ground level of the grade at the building wall.

Building Line - A line parallel to the front lot line. A minimum building line is the same as the minimum required front setback line.

Building, Principal - A building in which is conducted the main or principal use of the lot on which said building is located.

CBU - City of Brenham Utilities.

Certificate of Compliance - A certificate issued by the City to a party or parties intending to initiate any work or change any use of property in the City.

Church - A building wherein persons regularly assemble for religious worship and which is maintained and controlled by a religious body organized to sustain public worship, together with all accessory buildings and uses customarily associated with such primary purpose.

City - The City of Brenham, Texas.

City Commission - The City Commission of the City of Brenham, Texas.

Club - An organization or persons for special purposes or for the promulgation of sports, arts, science, literature, politics or similar activities, but not operated for profit and open only to member and not the general public.

Commercial Building - Any building other than a single-family residence.

Condominium - See unified development.

Connected Load - A customer's connected load is the sum of the continuously rated capacities, or in the absence of such rated capacities, the maximum demand determined by test where necessary, of all energy consuming devices on his premises, expressed in kilowatts.

Critical Feature - Means an integral and readily identifiable part of a flood protection system, without which the flood protection provided by the entire system would be compromised.

Customer - Any person, partnership, corporation, governmental agency, cooperative or other entity receiving electric service.

Demand - The load at the receiving terminals averaged over a specific interval of time expressed in kilowatts or kilovolt-amperes.

Demand Charge - The charge of the metered kilowatt demand as computed in accordance with the appropriate rate schedule.

Density - The average number of dwelling units per acre for the entire development, including streets.

Development - Means any man-made change in improved and unimproved real estate, including, but not limited to, mining, dredging, filling, grading, paving, excavation or drilling operations.

Developer - Any person who improves or subdivides a tract of land or improves or takes any action preparatory to the erection, improvement or movement of any building or structure on a tract of land.

District - An area of land for which there are uniform regulations governing the use of buildings and premises, density of development, yard requirements and height regulations.

Dwelling, Multiple-Family - A building used or designed as a residence for three (3) or more families living together independently of each other.

Dwelling, Single-Family - A detached building, designed for or occupied exclusively by one (1) family.

Dwelling, Two-Family - A detached building, designed for or occupied by two (2) families living independently of each other.

Dwelling Unit - One (1) or more rooms with bathroom and principal kitchen facilities designed as a self-contained unit for occupancy by one (1) family for living, cooking and sleeping purposes.

Elevated Building - Means a non-basement building (i) built, in the case of a building in Zones A1-30, AE, A, A99, AO, AH, B, C, X and D, to have the top of the elevated floor, or in the case of a building in Zones V1-390, VE or V, to have the bottom of the lowest horizontal structure member of the elevated floor elevated above the ground level by means of pilings, columns (posts and piers), or shear walls parallel to the floor of the water and (ii) adequately anchored so as not to impair the structural integrity of the building during a flood of up to the magnitude of the base flood. In the case of Zones A1-30, AE, A, A99, AO, AH, B, C, X, D, "elevated building" also includes a building elevated by means of fill or solid foundation perimeter walls with openings sufficient to facilitate the unimpeded movement of flood waters. In the case of Zones V1-30, VE or V, "elevated building" also includes a building otherwise meeting the definition of "elevated building," even though the lower area is enclosed by means of breakaway walls if the breakaway walls meet the standards of Section 60.3(e)(5) of the National Flood Insurance Program regulations.

Energy Charge - The charge for kilowatt-hours used during the billing period as computed in accordance with appropriate rate schedule.

Erected - The word "erected" includes built, constructed, reconstructed, moved upon or any physical operations on the premises required for the building. Excavations, fill, drainage and the like, shall be considered a part of erection.

Excavation - Any breaking of ground, except common household gardening, general farming and ground care.

Existing Construction - Means, for the purpose of flood hazard regulation and for the purposes of determining flood insurance rates, structures for which the "start of construction" commenced before the effective date of the FIRM or before January 1, 1975, for FIRMs effective before that date. "Existing construction" may also be referred to as "existing structures."

Family - An individual, or two (2) or more persons related by blood, marriage, or adoption, or parents along with their direct lineal descendants, and adopted or foster children (including domestic employees) or a group not to exceed two (2) persons not related by blood or marriage, occupying a premises and living as a single housekeeping unit with single cooking facilities. Every additional group of two (2) or less persons living in such

housekeeping unit shall be considered a separate family. Said definition shall not apply in instances of group care centers or licensed residential facilities.

Filling - The depositing or dumping of any matter into or onto the ground except common household gardening and general maintenance.

Flag Lot - A lot which has minimum frontage on a public street, which is reached via a private drive or lane whose width some distance back from the street right-of-way, meets all ordinance requirements.

Flood or Flooding - Means a general and temporary condition of partial or complete inundation of normally dry land areas from:

- (1) The overflow of inland or tidal waters.
- (2) The unusual and rapid accumulation or run-off of surface waters from any source.

Flood Insurance Rate Map (FIRM) - Means an official map of a community, on which the Federal Emergency Management Agency has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

Flood Insurance Study - Is the official report provided by the Federal Emergency Management Agency. The report contains flood profiles, water surface elevation of the base flood, as well as the Flood Boundary-Floodway Map.

Floodplain or Flood-Prone Area - Means any land area susceptible to being inundated by water from any source (see definition of flooding).

Floodproofing - Any combination of structural and nonstructural additions, changes or adjustments to structures that reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

Flood Protection System - Means those physical structural works for which funds have been authorized, appropriated and expended and which have been constructed specifically to modify flooding in order to reduce the extent of the areas within a community subject to "special flood hazard" and the extent of the depths of associated flooding. Such a system typically includes hurricane tidal barriers, dams, reservoirs, levees or dikes. These specialized flood modifying works are those constructed in conformance with sound engineering standards.

Floodway (Regulatory Floodway) - Means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively

increasing the water surface elevation more than a designated height.

Functionally Dependent Use - Means for the purpose of flood hazard regulation, a use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.

Grade - A ground elevation established for the purpose of controlling the number of stories and the height of any structure. The building grade shall be determined by the level of the ground adjacent to the walls of any structure if the finished grade is level. If the ground is not level, the grade shall be determined by averaging the elevation of the ground for each face of the structure.

Habitable Floor - Means for the purpose of flood hazard regulation, any floor usable for the following purposes; which includes working, sleeping, eating, cooking or recreation, or a combination thereof. A floor used for storage purposes only is not a "habitable floor."

Half-Street - A vehicular access-way created if only a portion of the required right-of-way width or pavement width is dedicated and/or constructed.

Highest Adjacent Grade - Means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

Horsepower (HP) - The unit of mechanical power representing the rate of consumption of power an equivalent to 1,000 watts.

Improvement - Any physical structure or system, including building, drainage work, water system, sewer system, sidewalks, streets or utility system.

Industrial - A business, plant or enterprise for production of goods, merchandise or machines.

Kilovolt-ampere (KVA) - The unit of electric power representing the rate of consumption equivalent to one (1) kilowatt at one hundred percent (100%) power factor.

Kilowatt (KW) - The unit of electric power, representing the rate of consumption equivalent to one (1) kilowatt at one hundred percent (100%) power factor.

Kilowatt-hour (KWH) - The consumption of energy equivalent to the use of one (1) kilowatt for one (1) hour.

Lease - A contract by which one owning such property grants to another the right to possess, use and enjoy it for a specified period of time in exchange for the periodic payment of a stipulated price.

Levee - Means a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control or divert the flow of water so as to provide protection from temporary flooding.

Levee System - Means a flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices.

Lot - An undivided tract or parcel of land having frontage on a public street and which is, or in the future may be offered for sale, conveyance, transfer or improvement.

Lot Depth - The distance on a horizontal plane between the midpoint of the front lot line and the midpoint of the rear lot line.

Lot Lines - The lines bounding a lot as defined herein:

- (1) **Lot Line, Front** - In the case of an interior lot, a line separating the lot from the street; as in the case of a corner lot, a line separating the narrowest street frontage of the lot from the street, except in those cases where the deed restrictions specifies another line as the front lot line; provided, however, that the front lot line of a non-residential lot shall be that side adjacent to the highest volume street.
- (2) **Lot Line, Rear** - A lot line opposite and most distant from the front lot line.
- (3) **Lot Line, Side** - Any lot line not a front line or rear lot line.

Lot of Record - A lot which is (1) part of a platted subdivision, the plat of which is recorded in the office of the County Clerk; (2) a parcel or lot described by metes and bounds, the deed of which has been recorded in the office of the County Clerk prior to March 1, 1982 or (3) a lot which is part of an approved Boundary Line Adjustment, the plat of which is filed with the City.

Lot Width - The distance on a horizontal plane between the midpoint of the side lot lines.

Lowest Floor - Means for the purpose of flood hazard regulation, the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirement of Section 60.3 of the National Flood Insurance Program regulations.

Manufactured Home - Means a structure transportable in one (1) or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For flood plain management purposes the term "manufactured home" also includes park trailers, travel trailers and other similar vehicles placed on a site for greater than 190 consecutive days. For insurance purposes the term "manufactured home" does not include park trailers, travel trailers and other similar vehicles.

Marquee - A roof-like structure of a permanent nature projecting from the wall of a building.

Mean Sea Level - Means, for purposes of the National Flood Insurance Program, the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which base flood elevations shown on a community's Flood Insurance Rate Map are referenced.

Meter - An instrument, or instruments, together with auxiliary equipment for measuring the electric power and energy supplied to a customer.

Meter Loop - The opening in and extension of the customer's service entrance conductors provided for installation of the City's meter.

Mobile Home - A movable or portable dwelling structure which is constructed to be towed on its own chassis, is capable of being connected to public utilities, and is designed for year-round living as a single-family dwelling unit without the necessity for a permanent foundation. The term "mobile home" shall not include pick-up campers, travel trailers, motor homes, converted buses, tent trailers or other transportable structures designed for temporary use.

Mobile Home Park - A mobile home park is a parcel of land under single ownership on which two (2) or more mobile homes are occupied as residences. Any mobile home facility where two (2) or more units are intended for long-term residential use [beyond ninety (90) days] is considered a mobile home park for purposes of applying development standards.

Month - The period between two (2) successive monthly meter readings taken as nearly as practicable, on the same equivalent day of each calendar month.

National Electric Code - The current edition of the National Electrical Code (ANSI/NFPA-70) as published by the National Fire Protection Association.

National Electrical Safety Code - The current edition of the National Electrical Safety Code (ANSI C2) as issued by the Secretariat (IEEE) of the ANSI C2 Committee.

New Construction - Means for flood plain management purposes, structures for which the "start of construction" commenced on or after the effective date of a flood plain management regulation adopted by a community.

Nonconforming Building (Nonconforming Structure) - A building or structure (or portion thereof) lawfully existing at the time of adoption of this document or subsequent amendment thereto, that does not conform to the provisions of this document relative to height, bulk, area, placement or yards for the district in which it is located.

Nonconforming Use - The use of a building or structure or of a parcel of tract or land, lawfully existing at the time of adoption of this document or subsequent amendment thereto, that does not conform to the regulations of the district in which it is situated.

Nonprecision Instrument Runway - Means a runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in nonprecision instrument approach procedure has been approved or planned, and for which no precision approach facilities are planned or indicated on an FAA planning document or military service's military airport planning document.

Owner - Any owner, authorized agent or contractor who constructs, enlarges, alters, repairs, moves or changes the occupancy of a building or structure.

Owner's Front Footage - The pro rata amount of the cost of a water or sewer line extension that is not reimbursable to the person requesting the extension.

Pavement Width - The portion of the surface of the street available for vehicular traffic; if curbed, it is that portion of street between back of curb and back of curb.

Person - An individual, firm, partnership, corporation, company, association, joint stock association or governmental entity. It

includes a trustee, receiver, assignee or similar representative of any of them.

Planned Unit Development (PUD) - See unified development.

Point of Delivery - The point where the electric energy first leaves the line or apparatus owned by the City and enters the line or apparatus owned by the customer, unless otherwise specified in the Customer's Agreement for Service. This is not necessarily the point of location of the City's meter.

Power Factor - The ratio of the kilowatts to the kilovolt-amperes.

Principal Use - The main use to which the premises are devoted and the principal use for which the premises exist.

Private Street - A vehicular access way under private ownership and maintenance providing access to building units in the interior of a lot.

Pro Rata - Is the charge per front foot of abutting land to be paid by the lot owner or owner of a development to aid in defraying the cost of supplying sewer service or water service to his lot or site.

- (1) **Single Pro Rata** - The charge based on the front footage of abutting land on only one side of the street or easement.
- (2) **Double Pro Rata** - The charge based on the front footage of abutting land on both sides of the street or easement.

Public Street - A public right-of-way, however designated, dedicated or acquired, that provides vehicular access to adjacent private or public properties.

Public Utility - Any person, firm or corporation, municipal department, board or commission duly authorized to furnish and furnishing under federal, state or municipal regulations to the public; gas, steam, electricity, sewage disposal, communication, telephone, telegraph, transportation or water.

Record Drawings - Plans prepared by a registered professional engineer.

Recreational Vehicle (RV) - A camp car, motor home, pick up coach, travel trailer, tent trailer or other portable structure, with or without motive power, designed and used for human habitation for recreational occupancy.

Recreational Vehicle (RV) Park - An area set aside and offered by any person for the parking and accommodation of two (2) or more recreational vehicles.

Reserve - A tract of land created within a subdivision plat that is not divided into lots or proposed for development at the time of platting.

Residential - A tract of land designed for or used exclusively to contain a dwelling unit or units. A "primary residential area" shall mean a street or streets in which a majority of the total front footage is used for residential purposes.

Right-of-Way - A street, alley or other thoroughfare or easement permanently established for passage of persons, vehicles or the location of utilities. The right-of-way is delineated by legally established lines or boundaries.

Service Drop - The overhead service conductors extending from the City's Overhead Distribution System to the customer's service entrance conductors at the point of delivery.

Service Entrance Conductors - The wires or bus bars provided by the customer extending from the customer's service equipment to the terminals of the service drop or service lateral.

Service Lateral - The underground service conductors between the street and/or easement main, including any risers at a pole or from transformers, and the first point of connection to the service entrance conductors in a terminal box or meter.

Service Outlet - The outside terminal portion of the customer's installation to which the City's service drop is connected.

Setback - The minimum unoccupied distance between the lot line and the principal and accessory buildings, as required herein.

Setback, Front - The minimum unoccupied distance, extending the full lot width, between the principal and accessory buildings and the front lot line.

Setback, Rear - The minimum required unoccupied distance, extending the full lot width, between the principal and accessory buildings and the lot line opposite the front lot line.

Setback, Side - The minimum required unoccupied distance, extending from the front setback to the rear setback, between the principal and accessory buildings and the side lot line.

Sign - Any device including words, numerals, figures, designs, pictures or trademarks painted upon or otherwise affixed to a

building, wall, board or any structure, so as to inform or attract attention.

Site Plan - A plan showing all salient features of a proposed development, so that it may be evaluated in order to determine whether it meets the provisions of this document.

Start of Construction - For flood plain management purposes [other than for new construction or substantial improvements under the Coastal Barrier Resources Act (Public Law 97-348)], shall include substantial improvement and means that the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement was within one hundred and eighty (180) days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of the slab, or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include excavation for basement, footings, piers or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or part of the main structures.

Street: Arterial - Roads of regional importance or the main roads of a community. Direct access is primarily limited to significant land uses.

Street: Collector - Provides access to nonresidential land uses and connects residential streets to the system's arterial streets.

Street: Local - Provides access to adjacent land. Characterized by a small service and low speeds.

Structure - For flood plain management purposes, means a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home.

Subdivision Plat - A map or drawing of a proposed subdivision prepared in a manner suitable for recording in the County records and containing accurate and detailed engineering and survey data, dimensions, dedicatory statements and certificates.

Substantial Improvement - Means, for flood plain management purposes any repair, reconstruction or improvement of a structure, the cost of which equals or exceeds fifty percent (50%) of the market value of the structure either (1) before the improvement or repair is started or (2) if the structure has been damaged and is being restored, before the damage occurred. For the purpose of this definition "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor or other structural part of the building commences, whether or not that

temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or part of the main structures.

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Type of Service - The characteristics of electrical service described in terms of frequency, phase, nominal system voltage and number of wires.

Unified Development - The separate ownership of single units or apartments in a multiple unit structure or structures with common elements. (See Tex. Rev. Civ. Stat. Art. 1301a)

Variance - Is a grant of relief to a person from the requirements of this document when specific enforcement would result in unnecessary hardship. A variance, therefore, permits construction or development in a manner otherwise prohibited by this document. (For flood plain management purposes, see

Section 60.6 of the National Flood Insurance Program regulations for full requirements.)

Violation - Means, for flood plain management purposes, the failure of a structure or other development to be fully compliant with the community's flood plain management regulations. A structure or other development without the elevation certificate, other certifications or other evidence of compliance required in Sections 60.3(b)(5), (c)(4), (c)(10), (d)(3), (e)(2), (e)(4) or (e)(5) is presumed to be in violation until such time as that documentation is provided.

Watercourse - A definite channel of a stream in which water flows within a defined bed and banks, originating from a definite source or sources. (The water may flow continuously or intermittently, and if the latter, with some degree of regularity, depending on the characteristics of the sources.)

Water Surface Elevation - Means the height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929 (or other datum, where specified, of floods of various magnitudes and frequencies in the flood plains of coastal or riverine areas).