

PART II. - SPECIFICATIONS AND DESIGN STANDARDS TO CITY OF HEWITT, TEXAS—SUBDIVISION ORDINANCE FOR PUBLIC WORKS CONSTRUCTION [TEXT]

- [A. - General.](#)
- [B. - Streets.](#)
- [C. - Stormwater drainage system.](#)
- [D. - Water systems.](#)
- [E. - Sanitary sewer system.](#)
- [F. - Additional test.](#)
- [G. - Vertical and horizontal control.](#)
- [H. - Street signs.](#)
- [I. - Monuments and iron pins.](#)

A. - General.

All subdivision construction shall comply with the specifications and design standards as outlined hereinafter. Construction plans and specifications which are required to be submitted to the city building official under Part I Section 9 of the subdivision ordinance at least 25 days prior to the meeting of the commission at which final plat is to be considered shall include, but not necessarily be limited to, the following:

1. *Certification.* All construction plans shall be prepared by a registered professional engineer, registered in the State of Texas, and each plan sheet shall bear the engineer's certification and seal.
2. *North arrow.* All construction plans shall include a north arrow, scale or scales, and date.
3. *Construction detail plan.* The construction detail plan sheet or sheets shall be a composite of all details of construction, such as, detail of proposed inlet boxes, manholes, cleanouts, sewer and water service lines, street cross sections, curb and gutter sizes, fire hydrant details, valve box details, head walls, or any other details necessary to show intent of construction.
4. *Drainage.* A plan of the proposed storm sewer system. Adequate storm water drainage facilities shall be designed and installed as set forth in the City of Waco Storm Drainage Design Manual for all curb and gutter, inlet and storm sewer hydraulics. All culverts, bridges and channels shall be designed in accordance with the TXDOT Hydraulic Design Manual. The city engineer will be supplied with a copy of all required drainage area maps and computation sheets. For design standards, see part IV.
5. *Plan-profile sheets.* The plan-profile sheets shall show the finished plan of all proposed utilities, stormwater drainage facilities and street construction. The profiles shall indicate the existing natural ground; proposed flow lines of sanitary sewers, storm sewers, channels; and top of curb.

(Ord. No. 2006-10-16-2, § 15, 10-16-06)

PART II - CODE OF ORDINANCES

APPENDIX B - SUBDIVISIONS

PART II. - SPECIFICATIONS AND DESIGN STANDARDS TO CITY OF HEWITT, TEXAS—SUBDIVISION ORDINANCE FOR PUBLIC WORKS CONSTRUCTION [TEXT]

B. - Streets.

1. *Street design standards.*

a. At each street intersection the curb and gutter shall be rounded with a radius "R" measured to the face of curb, varying with the interior angle as specified in the following table:

TABLE OF CURB RETURNS

Interior Angle in Degrees	Intersection of 2 Minor or Collector Streets	Intersection of Collector or Minor Street and Arterial Streets	Intersection of Arterial Streets
	<i>-R-in Feet</i>	<i>-R-in Feet</i>	<i>-R-in Feet</i>
150—145	15	25	25
145—140	15	25	28
140—135	15	25	30
135—80	15	25	35
85—75	20	30	50
75—65	25	35	80
65—55	30	40	90
55—45	35	45	110
45—00	35	45	150

b. At each street intersection the property line shall be rounded with a curve of radius "R," varying with the interior angle as specified in the following table:

TABLE OF PROPERTY LINE INTERSECTION RETURNS

Interior Angle in Degrees	R Intersection of Minor or Collector Streets (feet)	R Intersection of Arterial Streets (feet)
150—145	5	15
145—140	5	18
140—135	5	20
135—125	5	25
125—85	5	25
85—75	10	40
75—65	15	70
65—55	20	80
55—45	25	100
45—00	25	140

c. No street grade shall be less than 0.30 percent (0.3 ft. vertical per 100 feet horizontal).

d. Horizontal curves shall not be less than the following:

PART II - CODE OF ORDINANCES
APPENDIX B - SUBDIVISIONS

PART II. - SPECIFICATIONS AND DESIGN STANDARDS TO CITY OF HEWITT, TEXAS—SUBDIVISION ORDINANCE FOR
PUBLIC WORKS CONSTRUCTION [TEXT]

Street Type	Centerline Radius
Arterial	700 feet
Collector	400 feet
Minor	100 feet

e. Street cross sections shall be in accordance with the details shown on figure I-A.

f. Concrete monolithic curb and gutter shall be constructed in accordance with the details shown in the City of Hewitt Specifications and Design Standards.g. Parkways shall have a maximum slope of 4:1 (four feet horizontal to one foot vertical) toward the street.

h. A minimum of one benchmark per subdivision shall be established on an iron rod one-half inch in diameter and four feet long embedded in concrete six inches in diameter and four feet long at a location shown on the construction plans. The elevation of all benchmarks shall be established with reference to the North American Vertical Datum of 1988 (NAVD88) and shown on the construction plans.

i. Subgrade, base and surfaces other than those shown on figure I-A shall be considered by the city engineer, upon presentation by the subdivider's engineer of design data substantiating that the subgrade, base and surface will sustain a 4,250 pound wheel load on minor and collector streets, and a 12,000 pound wheel load on arterial streets, in accordance with the Modified Texas Triaxial Design Method and related testing procedures, subject to the approval of the city engineer.

j. Driveway turnouts shall be constructed in accordance with the details shown on figure I-D and figure I-E.

2. *Street construction specifications.* The most current version of the Texas Department of Transportation Standard Specifications For Construction And Maintenance Of Highways, Streets And Bridges shall be adopted for general use to control construction of streets. When the term "the engineer" is used in the Texas Department of Transportation Standard Specifications For Construction And Maintenance Of Highways, Streets And Bridges, it shall be interpreted to mean the city engineer or his/her authorized representative.

a. *Testing and preparation of subgrade.* Soil samples shall be taken on the top 12 inches of the existing subgrade material and standard plasticity index (PI) values determined from the samples by an independent testing laboratory. The soils test shall be taken at a maximum interval of 600 feet, or if soil conditions warrant, more often as directed by the city. In the event that the soil test show that the PI is 20 or greater in the top 12 inches of the existing subgrade material, test shall be taken of the existing material to a depth of four feet.

If the PI of that material is 20 or greater, the city may require the use of reinforced concrete pavement through the section of deep, high PI soil. Concrete pavement shall have a thickness of eight inches, reinforced with #4 bars on 18 inch centers, each way. The exact details for concrete expansion and contraction joints shall be approved by the city engineer. As an alternative to the concrete pavement, the city will consider replacement of the high PI soil to a minimum depth of four feet with material having a PI of 12, or less, for a minimum width of four feet back of the back of curb. The city will also consider other alternatives as

PART II - CODE OF ORDINANCES

APPENDIX B - SUBDIVISIONS

PART II. - SPECIFICATIONS AND DESIGN STANDARDS TO CITY OF HEWITT, TEXAS—SUBDIVISION ORDINANCE FOR PUBLIC WORKS CONSTRUCTION [TEXT]

proposed by the subdivider's engineer; however, the city engineer has the final authority for approval or disapproval.

In the event that the results of the plasticity index test show that the PI is 20 or higher only in the top 12 inches, a minimum of the top eight inches of the subgrade will be stabilized with lime until the PI value is reduced to 12 or below for a minimum distance of 24 inches back of the back of curb.

All lime stabilization material and procedure shall be in general conformity with the most current edition of the Texas Department of Transportation Standard Specifications For Construction And Maintenance Of Highways, Streets And Bridges. All test results shall be provided to the building official prior to submission of the construction plans. All costs are to be the responsibility of the subdivider.

b. *Concrete curb and gutter.* Concrete for curb and gutter shall have a minimum compressive strength of 3,000 pounds per square inch at 28 days. The curb and gutter shall be continuously reinforced as shown in the City of Hewitt Specifications and Design Standards. All honeycombs shall be cement grout plastered prior to backfilling. All concrete construction shall be cured a minimum of seven days and backfilled prior to placing the abutting street base material. Curb and gutter shall have a brush or float finish so as not to be left with a slick or glossy finish.

c. *Base materials.* The specifications for base material proposed for use on the streets within a subdivision shall include detailed gradation requirements and additive requirements based upon presentation by the subdivider's engineer, to the city engineer, data substantiating that the base material specified, when used in conjunction with the subgrade material and surface, will sustain a 4,250 pound wheel load on minor and collector streets, and a 12,000 pound wheel load on arterial streets, in accordance with Modified Texas Triaxial Design Method and related testing procedures, subject to the approval of the city engineer. No base material can be applied until all utilities are in place. All base materials shall be compacted full depth to a density of 95 percent as determined by the ASTM D689 procedure. The subdivider's engineer shall provide the city engineer with a certification from an independent testing firm that the compaction required has been achieved. Asphaltic concrete surface material shall not be placed on base material that fails to meet the compaction requirements.

1. *Standard base.* Cement stabilized gravel base, meeting the requirements of these specifications, shall be the standard base material for street construction within the city and shall be used for all new street construction.

2. *Cement stabilized base.* Cement stabilized base shall be designed and constructed in general conformity with TXDOT Specifications for Cement Stabilized Base.

d. *Hot-mix, hot-laid, asphaltic concrete surface.* Hot-mix, hot-laid, asphaltic concrete surfaces shall be designed and constructed in general conformity with Texas Department of Transportation Standard Specifications For Construction And Maintenance Of Highways, Streets And Bridges. for Hot Mix Asphaltic Concrete Pavement (class A) type "D" (Crushed Stone); all asphaltic concrete shall have a density of not less than 95 percent of the laboratory compacted density. The subdivider shall provide the city engineer with a certification from an independent testing firm that the compaction required has been achieved.

(Ord. No. 2006-10-16-2, § 16, 10-16-06)

C. - Stormwater drainage system.

1. *Stormwater drainage system design standards.*

- a. *Curb inlets.* Curb inlets shall have a minimum opening of four feet.
- b. *Storm sewer and culvert pipe.* Storm sewer and culvert pipe shall be precast reinforced concrete pipe and shall conform to ASTM designation: C76-Class 3. The minimum size pipe allowed shall be 15-inch diameter.
- c. *Concrete.* All concrete used in connection with drainage facilities shall have a minimum compressive strength of 3,000 pounds per square inch at 28 days.
- d. *Channels.* Unlined channels shall have maximum side slopes of one foot vertical to four feet horizontal (4:1).

2. *Stormwater drainage system construction specifications.* The applicable sections of the Texas Department of Transportation Standard Specifications For Construction And Maintenance Of Highways, Streets And Bridges shall be adopted for general use to control construction of stormwater drainage facilities. When the term "the engineer" is used in the TXDOT standard specifications, it shall be interpreted to mean the city engineer or his/her authorized representative.

- a. *Cover and backfill.* All stormwater drainage system facilities placed within the limits of street subgrades shall have a minimum cover, below subgrade, of 1.5 feet and shall be backfilled with uniformly graded gravel compacted in six-inch layers to 95 percent density using ASTM D689 procedure.

D. - Water systems.

All water systems shall be designed and constructed in accordance with the specifications herein outlined and in general conformity with the Texas Commission on Environmental Quality Rules and Regulations for Public Water Systems.

1. *Design standards.*

- a. *[Fire hydrants.]* Fire hydrants shall be located a maximum of 250 feet apart in an industrial or commercial area. In a residential area, fire hydrants shall be no more than 500 feet apart. Fire hydrants shall be located at street intersections unless otherwise approved by the City. Fire hydrant spacing measurements shall be made along the curb or along the edge of the pavement.

b. *Distribution system pipe sizes.*

1. Water mains serving two or more meters shall be a minimum eight-inch pipe
2. Water lines serving buildings in commercial and industrial districts shall not be less than 12 inches, unless the water line is to be located along I.H. 35, then the line shall not be less than 16 inches.

PART II - CODE OF ORDINANCES

APPENDIX B - SUBDIVISIONS

PART II. - SPECIFICATIONS AND DESIGN STANDARDS TO CITY OF HEWITT, TEXAS—SUBDIVISION ORDINANCE FOR PUBLIC WORKS CONSTRUCTION [TEXT]

c. *Valves.* The water distribution system will be equipped with sufficient gate valves to facilitate repairs without undue loss of service within the system. Valves placed within paved street areas shall be equipped with adjustable height cast iron valve boxes. Riser stacks, not in street, should be enclosed by a concrete valve box and testing station, as shown in the Specifications and Design Standards.

1. Cul-de-sacs shall have a standard fire hydrant for flushing at the end of the water main.

2. *Construction specifications.*

a. *Cover and backfill.* All water distribution system facilities placed within the limits of street subgrades shall have a minimum cover, below subgrade, of 1.5 feet and shall be backfilled with uniformly graded gravel compacted in six-inch layers to 95 percent ASTM D689 density. Water lines placed outside of street subgrades shall have a minimum cover of three feet below finished surfaces and shall be backfilled with soil compacted to 95 percent ASTM D689 density. Bedding placed around the pipe shall be in accordance with the pipe manufacturer's recommendations.

b. *Pipe materials.* All pipe and fittings used within the water distribution system shall be classified as AWWA C-900 D-18 with integral bell and gasket and have a minimum working pressure of 150 pounds per square inch. Pipe and fittings shall be jointed in accordance with the pipe manufacturer's recommendations. All PVC water lines shall be installed with a locator wire and tape. All fittings and valves shall have restrained joints and concrete thrust blocking.

c. *Fire hydrants.* A standard three-way fire hydrant, which must be approved by the city, shall have a minimum of five-inch valve opening shall be connected to 12-inch or larger mains in commercial and industrial districts and eight-inch or larger mains in residential districts. Fire hydrants shall be connected to the main by use of a mechanical joint anchoring tee, a mechanical joint resilient wedge gate valve, and a mechanical joint anchoring coupling. Where the hydrant leader is too long to use anchoring fittings, ductile iron pipe with locking glands may be used; hydrants shall be placed on a precast or pre-poured concrete block at least 14 inches square and four inches thick. Concrete shall not be poured with the hydrant in place. Pea gravel shall be used to cover the foot of the hydrant with a minimum cover of 18 inches by 18 inches by 18 inches. Hydrants must be equipped with the National Standard hose threads.

d. *Water meter boxes.* All water meters shall be placed in city approved type water meter box.

e. *Pressure test.* Prior to final preparation of street subgrades all water distribution systems shall be subjected to and pass a hydrostatic pressure as referenced in on page W17 of the Specifications and Design Standards or meeting the requirements given in TCEQ's Rules and Regulations for Public Water Systems; use the most stringent of the two. The City shall be notified of the time the test is to be made and his/her authorized representative shall be present during the test. If the water distribution system fails to withstand the test, the necessary corrections shall be made and the system retested.

PART II - CODE OF ORDINANCES

APPENDIX B - SUBDIVISIONS

PART II. - SPECIFICATIONS AND DESIGN STANDARDS TO CITY OF HEWITT, TEXAS—SUBDIVISION ORDINANCE FOR PUBLIC WORKS CONSTRUCTION [TEXT]

f. *Disinfection.* Each unit of the completed water distribution system shall be disinfected in accordance with the Texas Commission on Environmental Quality (TCEQ) Rules and Regulations for Public Water Systems. The subdivider shall provide the City with a copy of the bacteriological test data from a TCEQ approved laboratory indicating that the completed distribution system has been tested and disinfected.

g. *Service connections.* All services shall be one continuous run of copper with no fitting until curb stop for single service or WYE for bullhead services.

(Ord. No. 2006-10-16-2, § 17, 10-16-06)

E. - Sanitary sewer system.

All sanitary sewer systems shall be designed and constructed in accordance with the specifications herein outlined and in general conformity with TCEQ Design Criteria for Domestic Wastewater Systems requirements.

1. *Design standards.*

a. *[Connection to system; septic tanks.]* All lots within a subdivision shall be served by a sanitary sewer system where it is feasible to connect to the existing or proposed city sanitary sewer system. Where it is not feasible to connect to the existing or proposed city sanitary sewer system, as determined by the city engineer and planning commission, lots may be served by individual septic tanks meeting the City's requirements.

b. *Collection system pipe sizes.* Sanitary sewage collection system mains shall be a minimum of eight inches inside diameter. Service laterals to serve one house shall be a minimum of four inches inside diameter. Service laterals shall extend from the main to the property line.

c. *Manholes.* Sanitary sewer manholes shall be placed no further apart than 450 feet and at points of change in alignment, grade, size of main, where sewer main intersections occur and at the end of all sewer lines. Manholes located in undeveloped areas shall be marked with a sign, as approved by the City.

d. *Sanitary sewer lift stations.* Sanitary sewer lift stations, where required to properly serve a new development or a subdivision, shall be designed and constructed to meet the requirements of TCEQ Design Criteria for Domestic Wastewater Systems by the subdivider at no cost to the city, and must be approved by the city engineer.

e. *Protection from surface water inflow.* The tops of all manholes in locations other than streets shall be located one foot above the calculated 25-year frequency surface water elevation or, with the approval of the city engineer, provided with bolt down, sealing type covers. It shall be the subdivider's engineers responsibly to calculate the 25-year frequency surface water elevation and display effected areas on sanitary sewer utility plans.

2. *Construction specifications.*

a. *Pipe materials.* Gravity sanitary sewer pipe shall be ASTM-D3034, with minimum wall thickness of SDR-26, PVC pipe. HDPE pipe may be allowed, if approved by the city engineer, on a case by case basis.

1. Rigid pipe shall be cement lined ductile iron.

PART II - CODE OF ORDINANCES

APPENDIX B - SUBDIVISIONS

PART II. - SPECIFICATIONS AND DESIGN STANDARDS TO CITY OF HEWITT, TEXAS—SUBDIVISION ORDINANCE FOR PUBLIC WORKS CONSTRUCTION [TEXT]

2. Flexible pipe shall conform to ASTM-D3034, with a minimum wall thickness of SDR-26, PVC sewer pipe.

a. Joints for PVC pipe shall have compression gasket joints conforming to ASTM specifications F-477 and D-3212.

b. Fittings and accessories shall be manufactured and furnished by the pipe supplier; shall conform to the material and performance requirements of the pipe; and shall have joint configurations identical to that of the pipe.

c. The maximum pipe deflection allowed after backfilling shall be five percent of the inside diameter.

d. Field cutting of PVC shall be in strict conformance with manufacturer's recommendations.

e. Bedding of PVC shall be in strict conformance with manufacturer's recommendations.

b. *Cover and backfill.* All sewage collection system facilities placed within the limits of street subgrades shall have a minimum cover, below subgrade, of 1.5 feet and shall be backfilled with uniformly graded gravel compacted in six-inch layers to 95 percent ASTM D689 density. Sewer lines placed outside of street subgrades shall have a minimum cover of three feet below finished surfaces, and shall be backfilled with soil compacted to 95 percent ASTM D689 density.

c. *[Testing.]* Prior to final preparation of street subgrades and after backfilling, all sanitary sewer collection systems shall be tested in accordance with the following: (Reference drawing WW21 of the Specifications and Design Standards.)

1. Collection System Pipe – Air Testing – All collection system pipe shall be tested by air testing meeting the requirements of TCEQ. Any line failing the air test shall be repaired, or replaced, and retested until the line passes the test.

2. Manholes – Vacuum Testing – Each manhole shall be tested using the vacuum testing procedure meeting the requirements of TCEQ. Any manhole failing the vacuum test shall be repaired, or replaced, and retested until the manhole passes the test. d. *Flexible sewer pipe deflection test.* After backfilling, and prior to testing, all flexible sewer pipe shall be tested for deflection with a solid plug with a diameter of 95 percent of the pipe diameter with no deflection. Any pipe line or portion of line that will not allow easy passage of the test plug will be replaced and retested.

(Ord. No. 2006-10-16-2, § 18, 10-16-06)

F. - Additional test.

In instances where quality of any material, or construction, is in question, where it is deemed necessary by the city engineer that tests, in addition to those herein specified, be made prior to, during or at the time of completion of construction, same shall be furnished by the subdivider at their expense upon written request by the city engineer. Such test shall be performed by a commercial testing laboratory and shall be in accordance with common engineering practice. Prior to design of streets, standard procedure shall be to conduct all the necessary soil testing to design the streets in accordance with the Modified Texas Triaxial Design Method. In the event that soils of a type not tested are encountered, additional testing and design will be required by the city engineer, to be paid for by the subdivider.

G. - Vertical and horizontal control.

All subdivision construction shall be constructed to the lines and elevations shown on the construction plans approved by the city engineer. Vertical and horizontal control of construction shall be accomplished by use of offset type cut or fill stakes, said stakes shall be set at a maximum spacing of 50 feet, and shall be set at a maximum spacing of 25 feet within the limits of vertical or horizontal curves. The horizontal offset and vertical cut or fill to the facility being constructed from the stakes shall be marked on the stake or shown on a sheet which shall be available for inspection by the city engineer at all times during construction.

H. - Street signs.

1. The subdivider shall pay the City to furnish and erect at least one street sign at each street intersection within the subdivision, plus any necessary traffic signs.

2. City may require subdivider to erect traffic signs. Said traffic signs shall be erected per the standards in the most recent version of the Texas Manual of Uniform Traffic Control Devices.

(Ord. No. 2006-10-16-2, § 20, 10-16-06)

I. - Monuments and iron pins.

1. Monuments shall be set at each block corner of the subdivision. Monuments shall be made of an iron rod, one-half inch in diameter and three feet long, embedded flush in concrete, six inches in diameter extending from the final finished ground surface to a minimum depth of 18 inches.

2. Iron pins no less than one-half inch in diameter and 18 inches long shall be set embedded flush in concrete at the final finished ground surface at all angle points and at the beginning and end of curves.

3. Iron pins no less than one-half inch in diameter and 18 inches long shall be set flush with the final finished ground surface at every lot corner.

4. Monuments and iron pins shall be set immediately after completion of utility and street construction, or as the city engineer may require.

5. The location of all monuments and iron pins shall be shown on the final plat and on the street construction plans.

(Ord. No. 2006-10-16-2, § 21, 10-16-06)