

ORDINANCE NO. 790

AN ORDINANCE OF THE CITY OF MESQUITE, TEXAS, AMENDING ARTICLE IV OF APPENDIX II OF THE CITY CODE OF THE CITY OF MESQUITE, THE SAME BEING THE GENERAL REQUIREMENTS AND DESIGN STANDARDS OF THE 1962 SUBDIVISION ORDINANCE OF SAID CITY BY ADDING TO THE SAID ARTICLE IV HEREIN AMENDED THE FOLLOWING PROVISIONS; TO WIT: G. STORM DRAINAGE, SAID AMENDMENT TO PROVIDE; A STATEMENT OF PURPOSE AND SCOPE; BY PROVIDING STANDARDS FOR THE DESIGN OF STORM DRAINAGE FACILITIES; BY PROVIDING THAT ALL ENGINEERING PLANS SHALL BE PREPARED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF TEXAS; BY PROVIDING FOR THE VERIFICATION OF ANY SUCH DESIGN BY THE DIRECTOR OF PUBLIC WORKS OF THE CITY OF MESQUITE; BY PROVIDING STANDARD PROVISIONS FOR STORM DRAINAGE; BY FIXING RESPONSIBILITY FOR STORM DRAINAGE WITH THE OWNER OR DEVELOPER OF THE SUBDIVISION AND PROVIDING PARTICIPATION BY THE CITY IN THE PAYMENT OF CERTAIN COSTS; BY PROVIDING FOR THE DEDICATION OF STORM SEWER EASEMENTS; BY PROVIDING FOR ASSUMPTION OF RESPONSIBILITY BY THE CITY UPON FINAL ACCEPTANCE; BY PROVIDING FOR CONFLICTS; BY PROVIDING A SEVERABILITY CLAUSE; AND DECLARING AN EMERGENCY.

NOW, THEREFORE, BE IT ORDAINED by the City Council of the City of Mesquite, Texas:

SECTION 1. That Article IV of Appendix II of the City Code of the City Code of the City of Mesquite, Texas, the same being the General Requirements and Design Standards of the 1962 Subdivision Ordinance of said City shall be and the same are hereby, amended by adding to said Article IV, herein amended, the following provisions, to wit:

"G. STORM DRAINAGE"

- A. PURPOSE AND SCOPE: The purpose of policies and design standards set forth herein is to insure adequate provision for storm drainage within the City of Mesquite as development progresses. These policies and standards are intended to protect public health and safety, to prevent property damage due to flooding, to equitably distribute the cost of necessary drainage improvements, and to minimize the maintenance costs of drainage facilities constructed. Any development or improvement of property affecting storm drainage in the City of Mesquite is subject to the provisions stated herein.

B. ENGINEERING DESIGN: Design of all storm drain facilities will be in accordance with the following criteria:

(1.) Design Frequency

<u>Drainage Facility</u>	<u>Storm Frequency</u>
Closed Storm Sewer Systems (At Street Low Point or Sag)	10 yr. 25 yr.
Culverts and Bridges	50 yr.
Open Channels	50 yr.

(2.) Computation of Storm Water Run-off shall be by the "rational method", which is based on the principle that the maximum rate of run-off from a given drainage area for an assumed rainfall intensity occurs when all parts of the area are contributing to the flow at the point of discharge. The formula for calculation of run-off by the "rational method" is:

$Q = CIA$, where

Q = the maximum rate of discharge, expressed in cubic feet per second.

C = the coefficient of run-off, which varies with the topography, land use and moisture content of the soil at the time the run-off producing rainfall occurs. This run-off coefficient shall be based on the ultimate use of the land as recommended in the Comprehensive Plan for the City of Mesquite, and shall be selected from Table 1 of Section 530 of Paving and Drainage Specifications of the City of Mesquite. If the land use within an area calls for a coefficient of run-off greater than that demanded by the ultimate use recommended, the greater "C" shall be used.

I = rainfall intensity, expressed in inches per hour. Intensity shall be determined from applicable curves of Figure 1, of Section 530 of the Paving and Drainage Specifications of

the City of Mesquite, based on a Time of Concentration obtained from the data presented in Table II, of Section 530 of the Paving and Drainage Specifications of the City of Mesquite.

A = the drainage area, expressed in acres, contributing to the run-off at the point in question. Calculation of the drainage area shall be made from a topographic map, a copy of which shall be submitted with the engineering plans for approval.

Computation of run-off shall be based on a fully developed drainage area, or watershed, in accordance with the land use projected in the Comprehensive Plan for the City of Mesquite.

- (3.) The capacity of storm sewers, culverts, bridges, and open channels shall be determined by use of the Manning Formula, and the design of the facility derived accordingly. The Manning Formula is:

$$Q = \frac{1.486 r^{2/3} s^{1/2} A}{n} \text{ where}$$

Q = discharge, expressed in cubic feet per second.

n = roughness coefficient, based on condition and type of conduit lining.

s = slope of hydraulic gradient, expressed in feet of vertical rise per foot of horizontal distance.

r = hydraulic radius (area of flow divided by wetted perimeter)

A = area of flow in conduit, expressed in square feet.

- C. REGISTERED ENGINEER REQUIRED: Engineering Plans for storm drain facilities shall be prepared by a professional engineer, registered in the State of Texas and experienced in civil engineering work.

In any development or improvement of property, the Owner may be required to provide a preliminary drainage study of the total area to be developed. This study shall be submitted to the Director of Public Works prior to approval of the engineering plans for the total development, or any increment thereof.

- D. APPROVAL BY DIRECTOR OF PUBLIC WORKS: The adequacy of any drainage facility design shall be approved by the Director of Public Works, based on the foregoing design criteria.
- E. STANDARD PROVISION FOR STORM DRAINAGE: Provision for storm drainage in the development of property shall conform to the following standards:
- (1.) Storm sewer inlets shall be provided along paved streets at such intervals as necessary to limit the depth of flow in the street to six inches, or the top of curb, during the design storm.
 - (2.) A closed storm sewer system shall be required to accommodate a run-off exceeding the street capacity, up to the design discharge of a sixty inch pipe. Closed storm sewer systems shall be Class III reinforced concrete pipe, unless otherwise approved by the Director of Public Works.
 - (3.) A concrete lined channel shall be required to accommodate run-off exceeding the design capacity of a 60 inch pipe, as provided below:
 - (a.) Channels draining an area with a "CA" factor (coefficient of run-off and drainage area, as used in the "rational formula.") of less than 250 shall be concrete lined to the design depth, plus 1.0 foot freeboard.
 - (b.) Channels draining an area with a "CA" factor of more than 250, but less than 500, may be lined to a depth equal to the depth of flow during a 10-year storm, plus 1.0 foot freeboard.
- The balance of the design discharge shall be contained within an earthen channel section with side slopes no steeper than 3:1. Earthen slopes shall be sodded.

(c.) Channels draining an area with a "CA" factor in excess of 500 may be constructed with a reinforced concrete pilot channel, not less than twelve feet in width, and earthen side slopes no steeper than 3:1. Earthen side slopes shall be sodded.

(4.) In lieu of the improvement of channels draining an area with a "CA" factor in excess of 500, the City may elect to accept the dedication of all land within the 100-year flood plain of the existing drainage channel as a permanent drainage right of way. The area of the 100-year flood plain shall be determined from data presented in the Flood Plain Information Report on South Mesquite Creek prepared by the Corps of Engineers, Fort Worth District, dated June, 1968.

F. RESPONSIBILITY FOR STORM DRAINAGE: The owner of property to be developed shall be responsible for all storm drainage flowing through that property. This responsibility includes that drainage directed to that property by prior development, as well as the drainage naturally flowing through the property by reason of topography. The cost of necessary storm drain facilities shall be distributed to the owner and the City as follows:

(1.) The Owner shall be totally responsible for the installation of any closed storm sewer system consisting of pipe 48 inches in diameter (or smaller), necessary inlets and manholes. The City may share with the owner in the cost of pipe larger in diameter than 48 inches, provided that the benefit to the general public is apparent. City participation shall be limited to a maximum of 50% of that difference between the cost of a 48 inch pipe and the cost of that pipe required, to a diameter of 60 inches.

(2.) The Owner shall be responsible for the total cost of concrete lining a channel having a capacity equal to that of a 60 inch pipe installed on the same hydraulic gradient, plus 50% of the additional cost to provide a design capacity greater than that of a 60 inch pipe. The City shall be responsible for the remaining 50% of the additional cost to provide a design capacity greater than the capacity of a 60 inch pipe. The City shall not participate in the

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cost of channels draining an area with a "CA" factor in excess of 500.

(3.) That the City's participation in the costs above stated shall be dependent upon the availability of funds.

- G. DEDICATION: The owner shall dedicate to the City the required drainage easements for access to the storm drain facility for perpetual maintenance purposes. Determination of minimum access easement required shall be made by the Director of Public Works.
- H. MAINTENANCE RESPONSIBILITY: The City shall, upon final acceptance, assume full responsibility for the maintenance of any drainage facility constructed.

SECTION II. Conflicts

That all provisions of all ordinances in conflict with the provisions hereof shall be, and the same are, hereby specifically repealed. That all ordinances and all provisions of such ordinances including Appendix II of the City Code of the City of Mesquite, the same being the 1962 Subdivision Ordinance of said City, not in conflict with the provisions hereof shall remain in full force and effect.

SECTION III. Severability


That if any section, paragraph, clause, phrase or provision of this ordinance shall be adjudged invalid or held unconstitutional, the same shall not affect the validity of this ordinance as a whole or any part or provision thereof other than the part so decided to be invalid or unconstitutional; nor shall such unconstitutionality or invalidity have any effect on Appendix II of the City Code of the City of Mesquite, the same being the 1962 Subdivision Ordinance of such city.

SECTION IV. Emergency

That the present ordinances of the City of Mesquite are inadequate to provide for adequate storm drainage facilities in the development of subdivisions within such city constitutes an urgency and an emergency in the interest of the public health, safety and welfare, and necessitates that this ordinance become effective immediately from and after its date of passage as the law in such cases permits.


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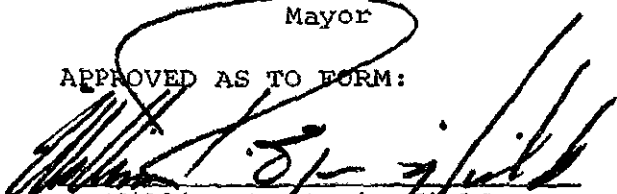
Passed and approved by the City Council of the City of Mesquite,
Texas, on this the 19 day of May,
A.D., 1969.


George Boyce
Mayor

ATTEST:

APPROVED AS TO FORM:


Norma G. McGaughy
City Secretary


William R. Springfield
City Attorney

