

RESOLUTION NO. 41-66RESOLUTION OF THE CITY COUNCIL OF THE
CITY OF MESQUITE, TEXAS

WHEREAS, the City Council of the City of Mesquite passed Resolution No. 2-62 on January 15, 1962, adopting certain specifications for the construction of water and sewer lines and appurtenances and structures thereto; and

WHEREAS, it is necessary to amend such specifications:

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MESQUITE, TEXAS:

SECTION 1. That the specifications for the construction of water and sewer lines and appurtenances and structures thereto heretofore adopted by Resolution No. 2-62 on January 15, 1962 be, and the same are hereby amended by changing said specifications so as to hereafter read in accordance with the language contained in Appendix A attached hereto and made a part hereof for all purposes the same as if copied in full herein.

SECTION 2. That this Resolution shall take effect immediately from and after its passage.

DULY PASSED by the City Council of the City of Mesquite, Texas, on the 21 day of December, 1964.

B. W. Cress
Mayor

DULY RECORDED:
James W. McHenry
City Secretary

APPROVED AS TO FORM:

B. Robert Baker
Attorney

APPENDIX A

called for in the Proposal. Where no separate classification is provided, the price bid shall be on the basis of unclassified trenching, and the CONTRACTOR shall satisfy himself as to the material and conditions to be encountered.

"Unclassified" excavation will include all materials and conditions encountered in the excavation.

"Rock" excavation will include all masses which cannot be removed without blasting or the use of a power hammer and all detached rocks or boulders measuring more than two (2') feet in their largest exposed face that are fastened in the trench due to their size and hard underlying strata of sedimentary rock in its natural bedding.

101-3 Construction Methods: Trenches shall be excavated by a trenching machine, backhoe or drag-line, except in locations where hand trenching is required. The banks of trenches shall be vertical, to a point one (1') foot above the top of the pipe.

Trenches will be excavated to the lines and grades laid out by the ENGINEER or as shown on the plans. No change in locations of the lines are contemplated, but should any changes be made in the lines not materially altering the amount or character of the trenching to be done, the CONTRACTOR shall proceed with the changed alignment at the unit bid price. In case any change involves greater construction difficulties than the original alignment, the CITY and the ENGINEER will agree with the CONTRACTOR for extra compensation therefor, prior to the construction of the changed line or lines.

The width of the trench shall be six (6") inches minimum and eight (8") inches maximum on each side of the pipe bell.

Trenches for water pipe shall be of such depth so as to provide the cover specified in the paragraph entitled "cover" in the Water Pipe and Appurtenances Section, and to provide for furnishing and installing six (6") inches thickness of granular material under the pipe.

The excavation shall not advance more than three hundred (300') feet ahead of the completed backfilled line. Pipe shall be laid in all trench that has been opened at the end of each day's work, unless the CONTRACTOR secures written permission to do otherwise from the ENGINEER.

If the bottom of the trench becomes an unstable foundation for the pipe through the neglect of the CONTRACTOR to adequately

a manner as to prevent any serious interruption of traffic upon the roadway or sidewalks. The cost thereof shall be borne by the CONTRACTOR.

101-14 Protection of Unfinished Work: Before leaving work for the night, during a storm, or at other times, care must be taken to protect and securely close the unfinished end of the pipe. Any earth or other materials that may find entrance into the pipe through any such open or unplugged end of the pipe must be removed at the CONTRACTOR'S expense.

101-15 Lights and Guards: The CONTRACTOR must provide and maintain adequate detours around the work under construction. The CONTRACTOR must provide lights, warning signs, and watchmen to try to provide for the safety of the public.

101-16 Backfill: Excavation shall be backfilled only with approved materials. The placing of backfill material shall not begin until approval has been given by the ENGINEER and shall be done immediately when so ordered by the ENGINEER.

If, on account of some special condition, backfill compaction by flushing, flooding, or ponding and jetting with water may float or otherwise damage the structure, this method shall be used only upon the written permission and authority of the ENGINEER and shall be performed according to and under his personal supervision.

Backfilling shall be brought up to an elevation slightly above the original ground level to allow for subsequent settlement. The top surface or slopes of all backfill shall be neatly graded off in a workmanlike manner, and where selected top soil, sod, or other material is removed and piled separately, such material shall be carefully replaced in a manner satisfactory to the ENGINEER.

101-17 Backfill Material: Backfilling shall be done with granular material and good sound earth. Broken concrete, rocks, bituminous pavement, or other lumpy material shall not be used in the backfill except as the lumps are small and their dispersal in the backfill is made in the upper section in a manner satisfactory to the ENGINEER. Materials of a perishable, spongy, or otherwise improper nature shall not be used in backfilling. Granular backfill material will be used for the initial backfill operation to a point six (6") inches above the top of the pipe on cast iron water lines and to the top of the pipe on vitrified clay tile sewer lines. On reinforced concrete steel cylinder water mains the granular material shall be at least twelve (12") inches over the top of the pipe. Gravel cushion and/or granular backfill material will not be required when concrete encasement is specified or used around the pipe. No backfill shall be made until it is authorized by the ENGINEER. All debris shall be removed. Sheeting, shoring and brac-

ing shall be pulled and removed during the progress of the back-filling in a manner satisfactory to the ENGINEER.

101-18 Concrete Encasement: Concrete encasement shall be composed of a free flowing material consisting of small stone, pea gravel, limestone chat, or pit run sand and gravel and shall always consist of at least 60 per cent sand. The material shall all pass a 3/4" screen and be free from sticks, lumps, stones, and organic matter. The material shall be mixed with Portland Cement in the proportions of 1 part cement to 12 parts of the above described granular material, by volume measurement. Concrete encasement shall be poured either wet or dry as may be directed by the ENGINEER.

When concrete encasement backfill material is specified or ordered by the ENGINEER to be poured DRY, the CONTRACTOR shall place this material on each side of the pipe for the full width of the trench using shovels to cut the material back under the pipe and shall be tamped to a height of 12" above the pipe to receive final backfill. Care must be exercised not to dislocate or disturb the grade or alignment of the pipe. If ordered by the ENGINEER to be poured WET, caution and care must be used not to float the pipe out of place. In the event pipes are floated out of proper position they shall be removed and relaid at the expense of the CONTRACTOR.

101-19 Gravel Cushion or Backfill: On water line construction, when, in the opinion of the ENGINEER, the subgrade material encountered at grade is soft, spongy, and unsuitable, it shall be removed to such a depth that the replacement thereof with firmly tamped gravel or crushed stone will provide an unyielding, stable foundation. The gravel used in cushion or backfill shall be pit run gravel or crushed stone and shall be free from silt, loam, or vegetable matter and shall be of a gradation suitable to the ENGINEER.

Gravel cushion or backfill will be paid for at the contract unit price per cubic yard in place and shall be the total compensation for furnishing all labor, materials, tools, and equipment for performing this particular phase of work.

On water line construction the ditch shall be cut at least six (6") inches below the bottom of the grade established for the pipe and the pipe shall be laid on a six (6") inch bed of granular material. The ditch around the pipe shall be backfilled with granular material providing a minimum of six (6") inches thickness of granular material all around the pipe.

Subgrades that have been allowed to become unstable by neglect of the CONTRACTOR, by improper drainage or lack of drainage, and when in the opinion of the ENGINEER the condition was caused by the neglect or fault of the CONTRACTOR, the ENGINEER shall order the CONTRACTOR to remove the unstable subgrade and replace the same with gravel at the expense of the CONTRACTOR, and no extra compensation will be allowed.

In construction of all sanitary sewer lines the trench shall be excavated to a depth three (3") inches below the grade of the outside of the pipe and the trench filled with washed gravel, 1/4" to 1-1/2" in size; screened gravel that is retained on 3/8" mesh, but passing 1-3/4" mesh, pit run aggregate consisting of hard, durable, uncoated pebbles or stone particles mixed with sand, free from clay lumps, shale, salt or alkali, well graded from coarse to fine with 55% retained on 1/4" screen; or pea gravel that is retained on 1/8" mesh, but passing 5/8" mesh. The pipe shall be laid to grade, joints made and allowed to set, before the initial backfilling operation.

101-20 Initial Backfill: After pipe has been laid and the joints have hardened to such an extent that they will not be damaged by the backfilling operation, the pipe line shall be backfilled as follows:

A. On sanitary sewer lines and mains the CONTRACTOR shall backfill the pipeline using granular backfill material around the pipe to a level with the top of the barrel of the pipe. Granular backfill material is defined as a free flowing material like sand, or mixed sand and pea gravel, free from lumps, large stone, clay and organic material. When wet, the material shall not form mud or muck.

B. On cast iron water lines granular material shall be brought up backfilling equally on each side of the pipe to provide a minimum of six (6") inches of granular material all around the pipe, including around the bells, and to a height of six (6") inches over the top of the pipe at the highest point. This backfill shall be carefully done so as not to displace the pipe from its original position.

C. On installations using concrete cylinder pipe, initial backfill will be placed as described in Article 106-10.4.

In summation, initial backfill will be composed of one or more of the following in the manner described above.

1. On cast iron water lines minimum of six (6") inches depth of granular material under water line around cast iron pipe and minimum of six (6") inches over the top of the cast iron pipe. This granular material to provide a minimum of six (6") inches of granular material all around the cast iron pipe.
2. Granular backfill material poured into place to the top of sanitary sewer line.
3. 2,500 pound concrete poured and rodded into place 3" over top of pipe as shown on the plans as concrete encasement.
4. Gravel cushion: (Required for all sanitary sewer lines and mains).

101-21 Final Backfill: The final backfilling operation shall be any one of the following for any of the methods used in the initial backfill procedure:

1. The remainder of the backfill material may be placed in uniformly compacted layers not exceeding one (1') foot in loose depth and hand or mechanically tamped in a manner approved by the ENGINEER.
2. The backfill material may be placed loosely in the trench, rounded up over the trench slightly above the original ground elevation without tamping, and the trench jetted with water until all settlement has ceased; the jets to be placed not over six (6') feet apart on alternate sides of the trench. Care must be taken not to disturb the pipe by this jetting operation.
3. The backfill material may be deposited in water in ponds. Ponds not exceeding three (3') feet in depth shall be created in the trench by means of earth cross dams and the backfill material shall be cast into the ponds in a manner satisfactory to the ENGINEER. This method will be continued until the backfill is brought to within one and one-half (1½') feet of the surface of the original ground. The remainder of the fill will be made with loose earth rounded up over the trench in a neat manner and left in a condition acceptable to the ENGINEER.
4. Where an existing asphalt or concrete street surface has been cut, the following procedure is to be used in

gutter by driving a steel rod under the curb and gutter to bore a small hole and then pushing the copper service pipe through the hole. When placing water or sewer services after the curb and gutter is in place, the CONTRACTOR shall not excavate an open ditch closer than six (6") inches to the curb and gutter section either from the front or back. If sewer services are to be placed under the curb and gutter after it is already in place, the sewer services shall be placed in a hole bored or tunnelled under the curb and gutter section. Before any water services or sewer services are placed under the curb and gutter section the City's Inspector shall inspect the curb and gutter and mark all broken places. After the water and sewer services are in place the curb and gutter shall be inspected again and all broken curb and gutter marked. All curb and gutter broken by the CONTRACTOR shall be replaced by him at his own expense. This section applies to separate curb and gutter type of streets only.

101-23 Measurement: Trench excavation for sewers for unclassified excavation will not be paid for directly, but will be included in the price bid per foot for the various sizes of sewer lines and mains as bid in the proposal.

Rock excavation shall be measured by the cubic yard. Width of rock excavation removed from trenches shall be considered as the same nominal width of the trench not being cut in rock.

Trench excavation for water mains will not be paid for directly but will be included in the price bid per linear foot for the various sizes of water pipe.

Concrete encasement will be measured by the cubic yard in place computed on the basis of the table shown on the City of Mesquite Standard sheet for encasement and embedments.

Gravel cushion and granular backfill will be measured by the cubic yard computed on the basis of the table shown on the City of Mesquite Standard sheet for embedment and encasement, except that granular material used in backfilling cuts across existing pavement will be paid for as the actual cubic yardage in place in the cut area across the paved surface.

Six (6") inch 2500 pound concrete pavement and one and one-half (1½") inches hot mix asphaltic concrete will be measured by the square yard in place. The maximum width of pavement replacement payment will be as follows for the size pipe shown as installed:

PIPE SIZE	WIDTH FOR PAVEMENT REPLACEMENT PAYMENT
2" & 4"	46"
6"	51"
8"	54"
10"	56"
12"	58"
16" and above	Pipe O.D. + 42"

101-12

SECTION NO. 106

WATER PIPE AND APPURTENANCES

106-1 General: The material and labor required under this item shall constitute the construction of the water distribution system, or extensions to the existing system, as shown on the plans. Included are mains, laterals, valves, valve boxes, and appurtenances unless specifically covered by a separate item in the specifications or in the Special Provisions. All surplus excavation shall be disposed of by the CONTRACTOR at approved locations. The top twelve inches of backfill shall be suitable topsoil. Where the work is across maintained lawns, the CONTRACTOR shall save, protect, care for, and replace the lawn grass. The CONTRACTOR will furnish water for protecting and caring for the lawn grass and shall furnish all necessary piping and connections and labor.

In making connections to existing mains or the removal of existing water lines, the CONTRACTOR shall make every effort to remove pipe, valves, valve boxes, fittings, etc., without damage to the same and unless required for reinstallation shall clean and deliver same to the material yard of the CITY. All salvaged material remains the property of the CITY, and such material which is destroyed or damaged in its removal by the CONTRACTOR due to his negligence shall be replaced by the CONTRACTOR with new material of equal or better quality at his expense.

106-2 Design Pressures: Pipe and fittings for water lines shall be designed to withstand internal working pressures of one hundred fifty (150) pounds per square inch unless otherwise noted on the plans.

106-3 Cast Iron Pipe and Fittings:

106-3.1 Bell and Spigot; "Tyton, Bell-tite, Fastite"; and Mechanical Joint Types: Cast iron pipe shall comply in all respects with Federal Specification WW-P-421b, Types I, II, or III, except for wall thickness and weight of barrel as described in the following paragraph. The joints shall be pig lead for Type I pipe, "Tyton", "Bell-tite", or "Fastite" for Type II pipe, and Mechanical for Type III pipe. No joints other than new pig lead shall be permitted with Type I pipe.

Cast iron pressure pipe shall be Class 200, minimum design thickness Class 21, shall be new, manufactured within the Continental Limits of the United States of America, and shall be approved by the Underwriter's Laboratories, Inc., and acceptable to the Texas State Fire Insurance Commission for use in water distribution systems without penalty.

Pipe shall conform to Federal Specification WW-P-421b, A.S.A. Specifications A21.6 or A21.8, and shall be designed for five feet of cover, trench condition B, per A.S.A. Specification A21.1, with physical properties of 21,000 p.s.i. tensile strength and 45,000 p.s.i. modulus of rupture.

Fittings shall conform to A.S.A Specification A21.10 Short Body Fittings with Mechanical Joint per A.S.A Spec. A21.11 complete with Cast Iron Glands, "Cor-Ten" Bolts and Nuts, and Plain Rubber Gaskets.

106-3.2 Flanged Cast Iron Pipe and Fittings: All flanged end, flange and bell, and flange and spigot pipe and fittings shall be A.S.A. or Federal Specifications as outlined above and shall have American Standard Class 125 flanges. Bolts, bolt circles, heads, and nuts shall be standard as to quantity of material. Gaskets shall be made from the best quality insertion rubber 1/16 inch thick. Flanged fittings shall be American Standard Class 125, except where noted on the plans. Bolts and nuts for flanged joints installed buried underground shall be insulated with nylon sleeves and washers.

106-3.3 Cast Iron Fittings: All fittings and specials for cast iron pipe shall be cast iron, conforming with American Water Works Association Specifications, Class "D", or with American Standards Association Specifications for working pressures of not less than 150 pounds per square inch. All fittings shall be cement lined according to A.S.A. 21.4.

106-3.4 Lining and Coating: All cast iron pipe and cast iron fittings shall have an inside cement mortar lining conforming with American Standards Association Specification for cement lining for cast iron pipe and fittings (A21.4-1953) or conforming with manufacturer's Standard Specification for seal-coating "Enameline" lining, or an approved equal. It is intended that "Enameline" or approved equal shall conform with A.S.A. 21.4 except for the thickness of the lining which shall be one-half (1/2) thickness as specified in A.S.A. 21.4; the outside coating shall conform with the standard practice of the manufacturer.

106-3.5 Two (2") Inch Cast Iron Pipe: Two (2") inch cast iron pipe shall be mechanical

106-11.2 Clearance from Other Pipes: Water pipes shall be laid so far as possible, six (6) feet above the elevation of nearby sewers at crossover points and at least nine (9) feet laterally from sanitary sewers. Where this requirement for vertical clearance cannot be met because of physical conditions, the water mains shall be placed so that no water pipe joints will exist within nine (9) feet of the crossover point.

106-12 Service Connections:

106-12.1 General: Water service connections shall be made by tapping the mains at specific points as designated by the ENGINEER. Service taps shall be made after the mains have been laid and tested. The work shall be done by experienced workmen with suitable tapping machine and tools.

The copper service pipe shall be connected to the corporation cock at the main and laid in the trench from one side to the other every ten (10') feet to give ample space for expansion and contraction of the pipe. The copper service shall have a cover of twenty-four (24") inches except where the service ends. At this point the service pipe shall be a minimum of eighteen (18") inches under the top of the curb or a minimum of six (6") inches under the bottom of the curb and gutter section. Excessive bending of the pipe which will injure or reduce the cross sectional area of the pipe will not be permitted. The length of the water service line shall extend from the main to a point three and one-half (3½') feet back of the street curb. The water service shall be installed at the center of the front of the lot, and in new subdivisions the Developer's Engineer shall stake all lots prior to start of construction. The Developer's Engineer in new subdivisions shall stake the center of the lot for the Contractor and the Inspector and the Contractor shall daily before backfilling services measure and tie down the services and the Contractor shall give these ties to the Developer's Engineer. The end of the service line shall be bent up towards the surface of the ground and a Mueller H-14250 angle stop affixed to it.

106-12.2 Materials: The Service pipe shall normally be 3/4 inch type "K" soft copper pipe, and shall conform to A.S.T.M. Class "A" Specifications and U. S. Government Specification WW-T-799 as well as A.W.W.A. Specification 7S-CR.

Corporation cocks shall be Mueller No. H-15000 with straight coupling nut or approved equal and the contractor shall furnish and install a nylon insulating bushing at the corporation cock.

Angle stops shall be Mueller H-14250 or equivalent.

Water meter boxes where required shall be of concrete construction with cast iron locking type lid, Brooks Products Inc., plate No. 36 H.L.D. meter box for 3/4" water meter or equal, except that the outside depth shall be a minimum of fifteen (15") inches, the minimum weight of body shall be eighty (80) pounds and the minimum weight of the cover and lid shall be twenty-one (21) pounds or approved equal. Water meter boxes will be furnished by the Contractor for new subdivisions in accordance with the City of Mesquite Subdivision Ordinance.

Water meters where required of sizes 5/8" through 1" shall be Rockwell Manufacturing Company No. W 811, sizes 1 1/4" and 2" shall be Rockwell Manufacturing Company Type 16 and sizes larger than 2" shall be of the compound type as manufactured by Rockwell, Badger or Hersey.

106-13 Connection to Existing Water Mains: Where indicated on the plans and/or hereinafter specified, the CONTRACTOR shall connect the new main with existing mains or lines. The CONTRACTOR shall furnish all labor, materials, equipment, and services required for the locating and uncovering of the existing line, the making of cuts in the existing line, the removal, relocation, and lowering of existing lines as required, dewatering of the trench, connecting of the existing line into the new main and any and all appurtenant work required for a complete connection. Relocated mains or lines shall be laid so that all valves so relocated or installed shall be set vertically.

Only such connections to existing mains as are necessary to load, test, and sterilize mains under construction with water from City mains will be permitted prior to the sterilization of new mains. All other connections to existing mains from a new main being constructed shall be made only after the new main has been adequately and satisfactorily sterilized and the ENGINEER or his inspector has authorized the connections to be made. CONTRACTORS will be required to plug and block lines, crosses, tees, or other fittings installed in the new main to permit testing and sterilization prior to the making of connections. Such plugs and blocking shall be adequate to withstand

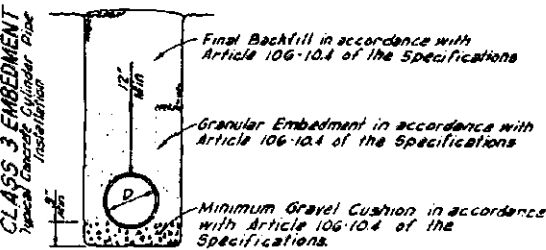
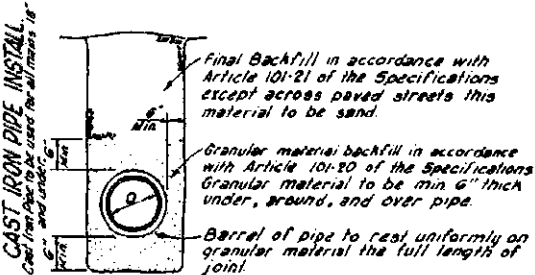
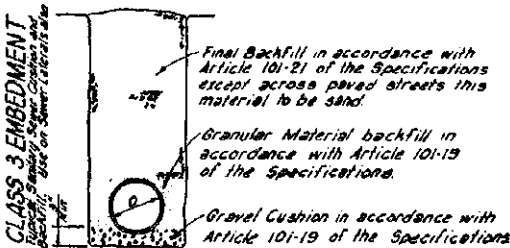
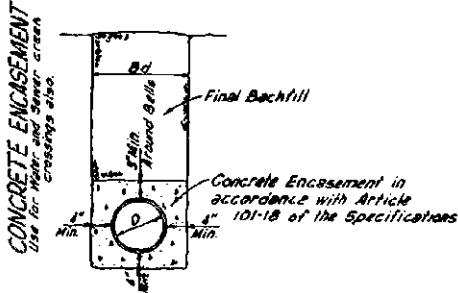
DRAWING NO. 6

Tables of quantities of material in cubic yards per 100 linear feet for embedment or encasement for Sanitary Sewer Construction

KIND of PIPE	Class 3 Embedment		Concrete Encasement		Pipe Size in ft.
	Gravel	Granular Material	BD in Inches	Concrete	
Sewer	2.24	3.15	24	9.4	6
Sewer	2.34	3.47	24	10.5	8
Sewer	2.43	3.98	24	12.8	10
Sewer	2.52	4.01	25	12.1	12
Sewer	3.16	5.49	29	15.4	15
Sewer	3.82	7.07	33	19.1	18
Sewer	4.65	8.93	36	21.2	21
Sewer	5.67	10.85	42	23.2	24
Sewer	7.23	12.71	45	30.9	27
Sewer	6.79	15.18	48	23.7	30
Sewer	8.02	20.56	52	30.4	36

for Water Line Construction

KIND of PIPE	Class 3 Embedment		Concrete Encasement		Pipe Size in ft.
	Gravel	Granular Material	BD in Inches	Concrete	
C.I. Water	-	6.8	24	9.4	4
C.I. Water	-	8.3	24	9.4	6
C.I. Water	-	9.7	24	10.5	8
C.I. Water	-	11.2	24	10.8	10
C.I. Water	-	12.8	24	12.1	12
C.I. Water	-	14.5	27	14.3	14
C.I. Water	-	16.2	30	16.0	16
C.I. Water	-	17.8	32	17.5	18
R.C.S.C. Water	3.8	14.9	32	14.9	18
R.C.S.C. Water	4.4	20.1	36	18.0	20
R.C.S.C. Water	5.5	25.2	42	23.1	24
R.C.S.C. Water	6.1	27.8	46	26.7	27
R.C.S.C. Water	6.4	28.4	46	26.5	30
R.C.S.C. Water	7.5	34.1	52	32.5	33
R.C.S.C. Water	7.6	33.4	52	31.5	36
R.C.S.C. Water	9.7	45.5	62	44.1	39
R.C.S.C. Water	10.0	46.3	63	45.1	42
R.C.S.C. Water	12.5	60.0	70	59.0	48

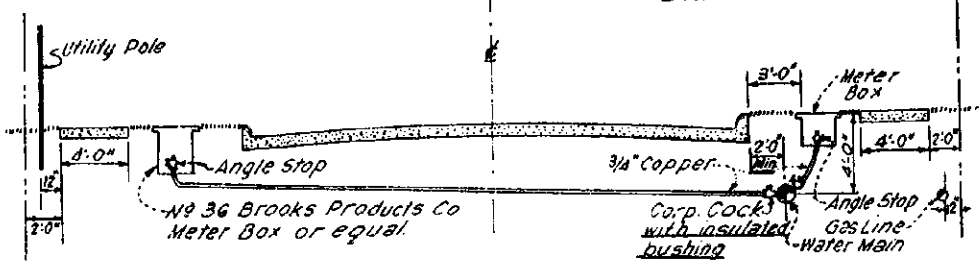


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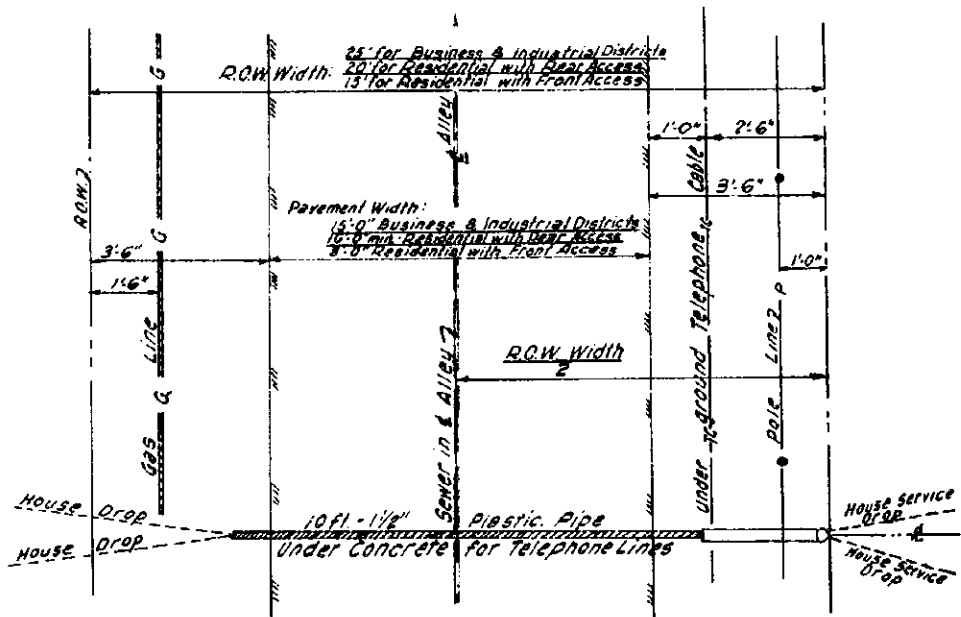
To provide for sand encasement of water mains.

CITY OF MESQUITE
STANDARDS FOR CONSTRUCTION
WATER & SEWER MAIN BACKFILL & EMBEDMENT

WATER & SEWER
DRAWING NO. 7



TYPICAL WATER SERVICE IN STREET

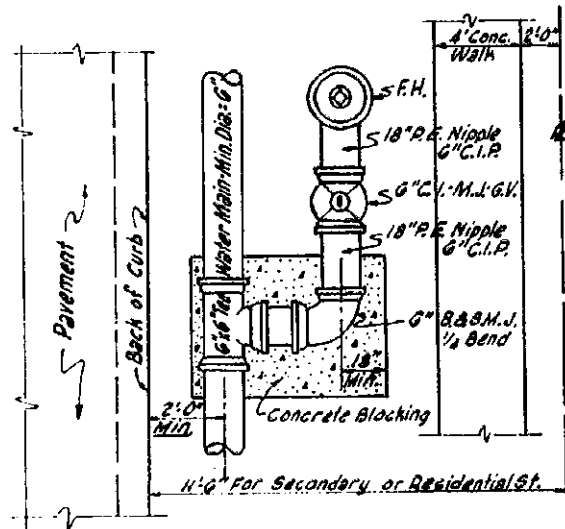
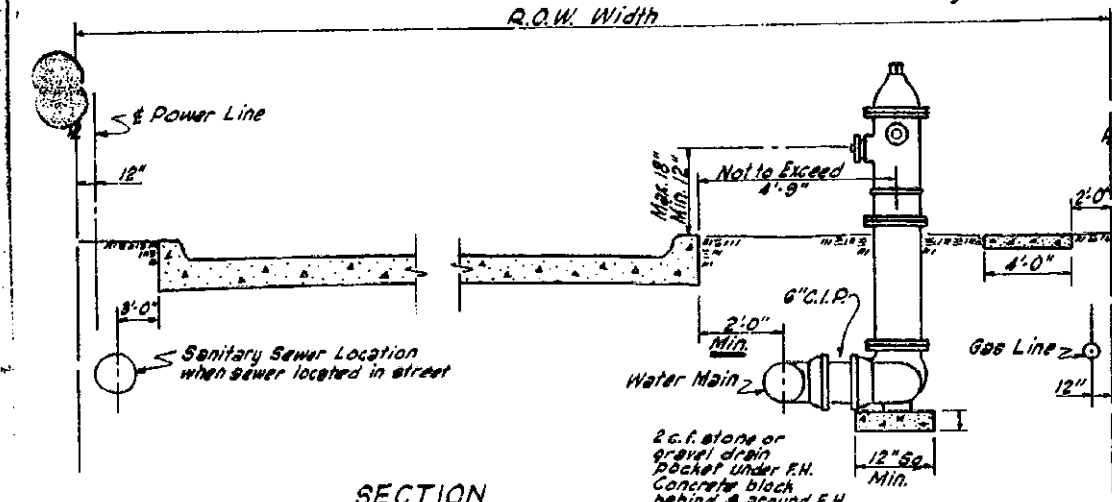


PLAN - LOCATION OF UTILITIES IN ALLEYS

CITY OF MESQUITE
STANDARDS FOR CONSTRUCTION
LOCATION OF UNDERGROUND UTILITIES

Revised - October 1964

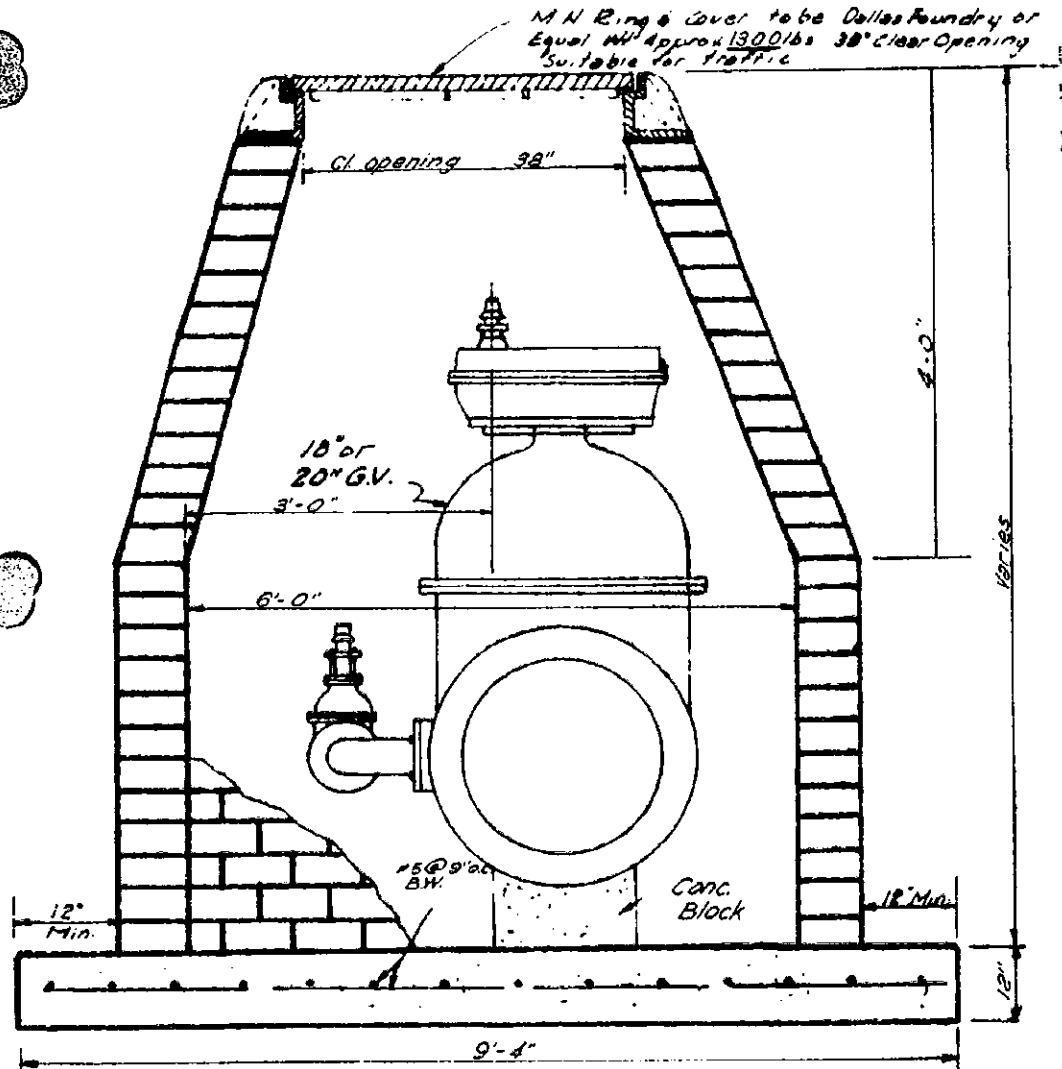
Drawing No. 8



PLAN
CITY OF MESQUITE
STANDARDS FOR CONSTRUCTION
TYPICAL FIRE HYDRANT INSTALLATION

Revised - October 1964

DRAWING NO. 11.



18" & 20" GATE VALVE MANHOLES

CITY OF MESQUITE
STANDARDS FOR CONSTRUCTION

Revised: October 1964