

- MATERIALS LIST**
- 1-MJ ANCHOR TEE ("D" x 6")
  - 1-6" MJ GATE VALVE
  - 1-6" VALVE BOX
  - 6" DICL SJ PIPE (LENGTH VARIABLE)
  - 1-FIRE HYDRANT
  - CONCRETE BLOCKING (AS NEEDED)

**PEA GRAVEL ##**

**GRADATION REQUIREMENT**

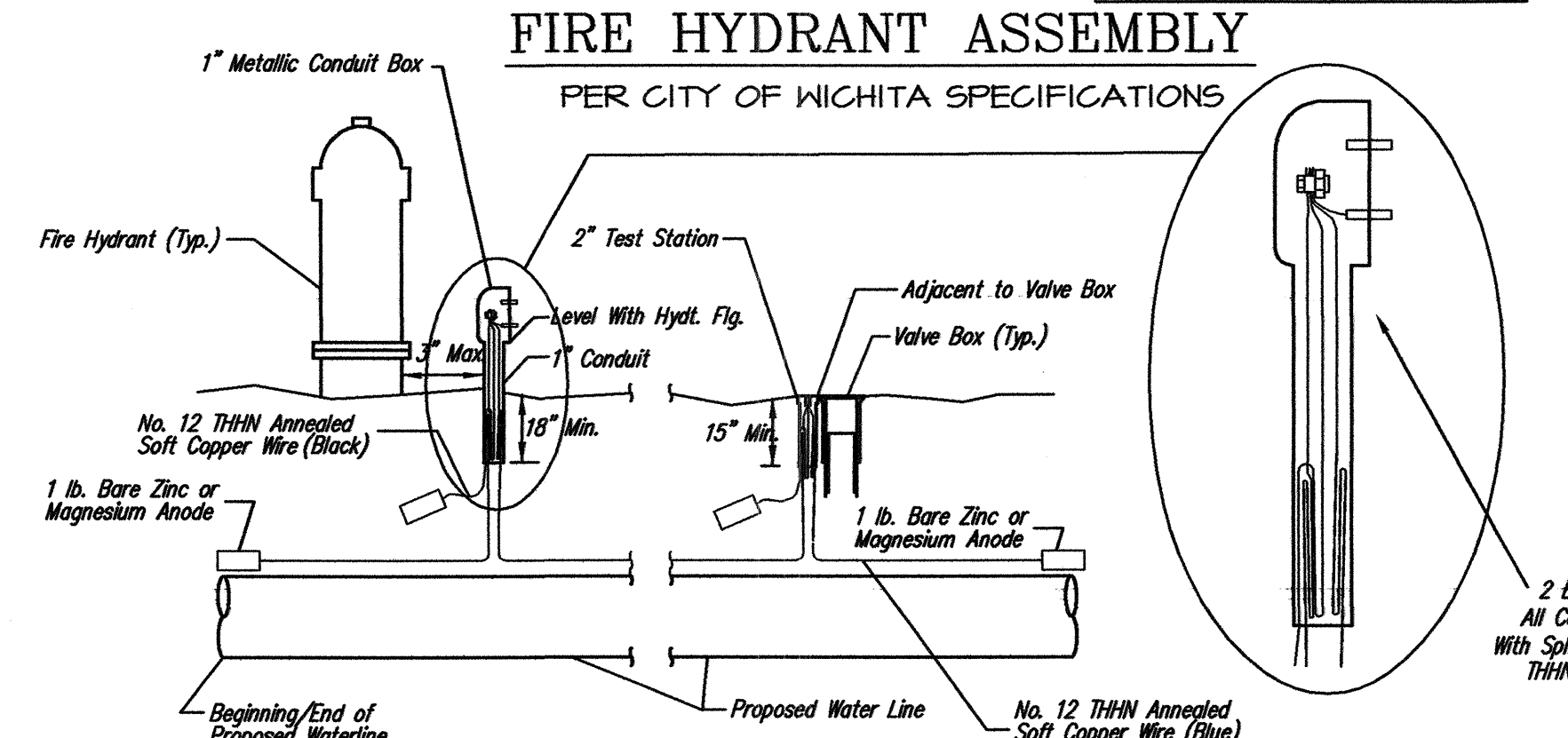
SIEVE SIZE	% RETAINED
3/4"	0 - 5
1/2"	5 - 35
3/8"	40 - 85
# 4	95 - 100
# 8	97 - 100

\*\* CAUTION! WEEP HOLES TO BE KEPT CLEAR DURING CONSTRUCTION AND BACKFILL. CONCRETE FOR THRUST BLOCKING SHALL NOT OBSTRUCT WEEP HOLES.

# CONCRETE THRUST BLOCKING SHALL BE KEPT CLEAR OF BOLTS, NUTS, AND MJ ACCESSORIES.

\* IF HYDRANT BURY IS IN EXCESS OF 5', CONTRACTOR SHALL USE STANDARD 5' HYDRANT BURY AND HYDRANT BARREL EXTENSIONS AS NECESSARY.

## MINIMUM 1 CU. FT. PER WEEP HOLE



**TRACER WIRE**

Conductive type pipe locator/tracer wire shall be installed to locate all waterline pipe regardless of pipe material. The wire shall extend the entire length of the proposed pipe. The wire shall be taped to the waterline and pulled with the pipe. Split-bolt connectors shall be used at splice locations. Electrical tape shall cover all splices so no bare wire is exposed. Test stations shall be installed adjacent to all fire hydrants along the waterline and at blowoffs or valves near the ends of the waterlines. Any exceptions to the location of test stations shall be approved by the engineer. At each test station, the tracer wire shall be connected to a 1 lb. Zinc or magnesium anode. Anodes shall also be attached to the tracer wire at both the beginning and the end of the proposed waterline. A typical layout of the tracer wire and test station is provided in the above figure.

**WIRE**

The tracer wire shall be Blue No. 12 THHN annealed soft copper wire with thermal plastic insulation. The insulation shall be heat, oil, and gasoline resistant as manufactured by Temple Electric or approved equal. To allow for grade adjustment, a minimum of 12" of excess wire shall be coiled at the bottom of the test station for all wires. The insulation sheathing shall be removed such that 1" bare copper wire is exposed at all points of connection. Contractor shall attach wire being installed with proposed water main to any tracer wire installed with adjacent waterline projects.

**TEST STATIONS**

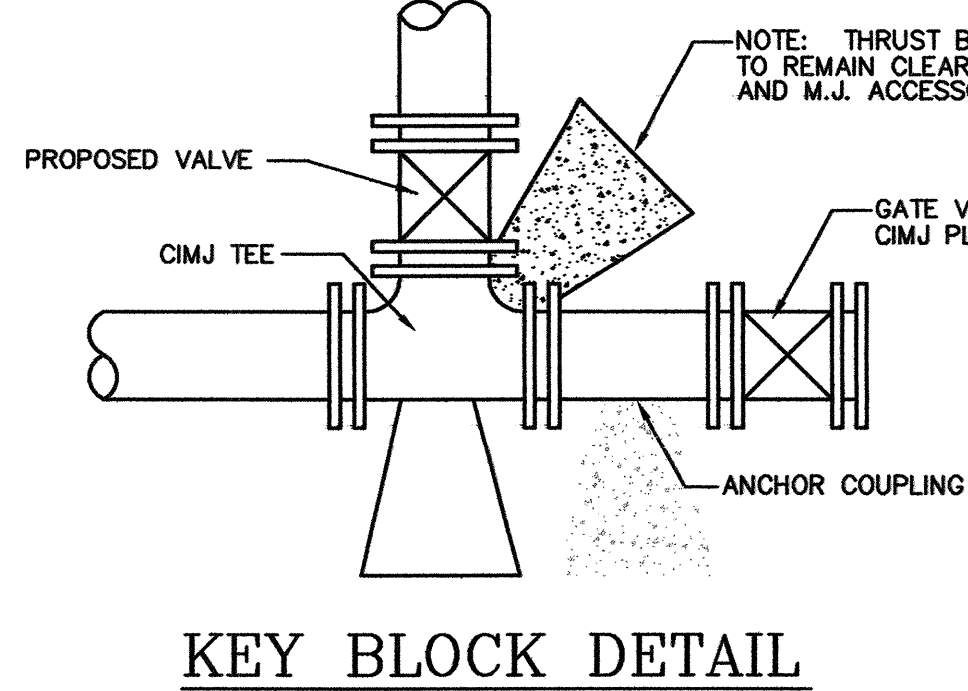
The test station for fire hydrant applications shall be a 1 inch galvanized conduit style test station as manufactured by AQRA Industries with a removable solid cover having two leads extending from the face or approved equal. The test station for valve applications shall be 2 inch flush style test station T2PS3B as manufactured by HANDLEY Industries or approved equal. The conduit style shall be attached to a 1 inch rigid galvanized conduit with a minimum length of 36" and plastic end bushing. The flush style shall have the word "WATER" stamped or molded into the lid. All test stations shall be manufactured using molded blue tops or sufficiently coated with blue enamel paint. The tracer wire and the anode wire shall be installed to allow 10 inches of wire within the test station. In concrete environments such as sidewalks or in the downtown area the contractor shall use the flush style test station. The location of all test stations shall be approved by the engineer, recorded, and shown in the as-built drawings.

**ANODES**

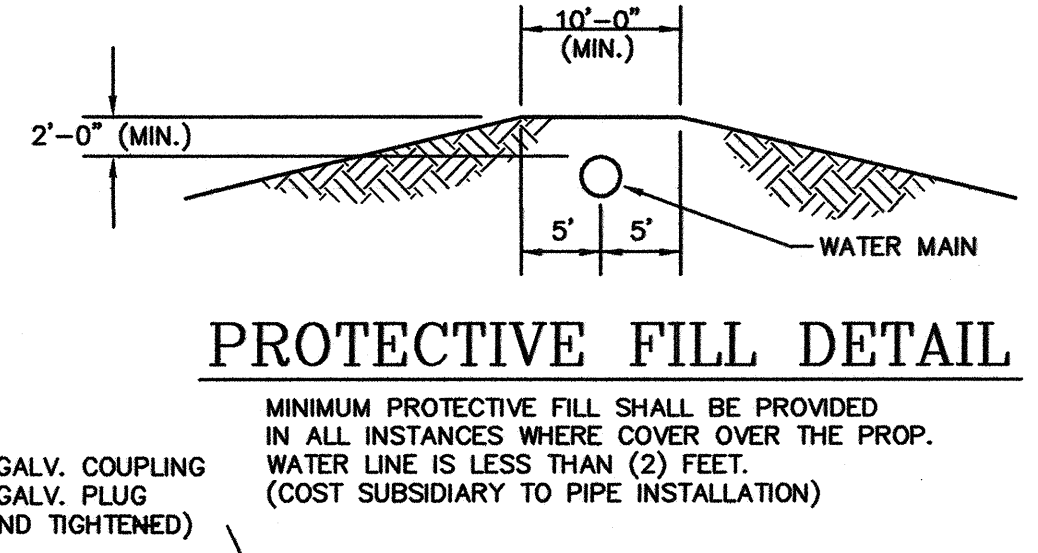
The anodes shall be 1 lb. bare zinc or magnesium. The anodes shall be buried at the same elevation as the waterline at each test station. The anodes shall be connected to Black No. 12 THHN annealed soft copper wire which shall be extended to the test station.

**TRACER WIRE DETAIL**

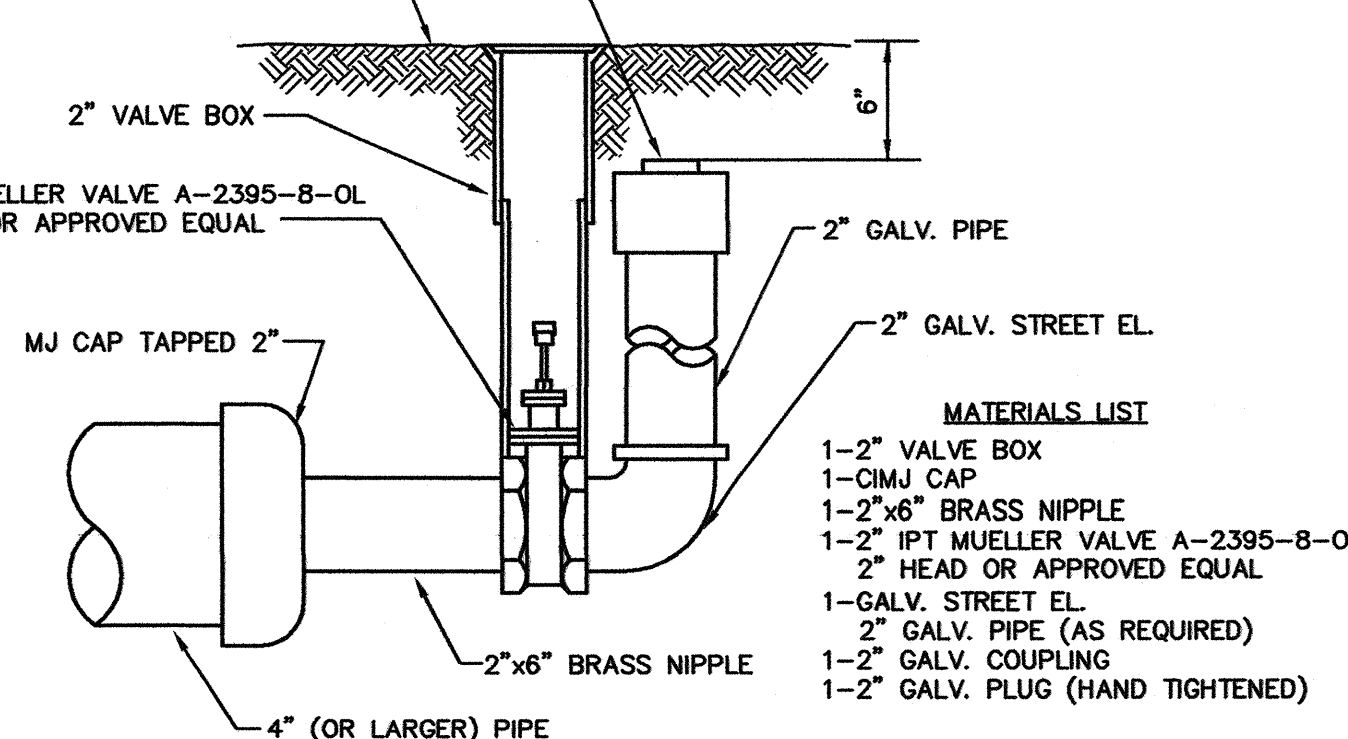
COST IS SUBSIDIARY TO PIPE INSTALLATION



**KEY BLOCK DETAIL**



**PROTECTIVE FILL DETAIL**



**2" BLOWOFF ASSEMBLY**

**FIRE HYDRANTS REQUIRED**

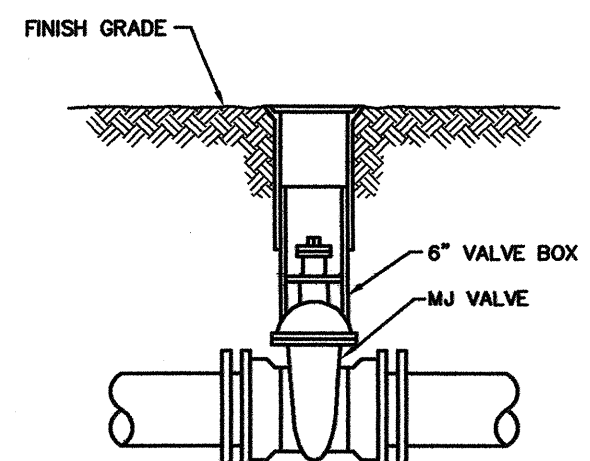
STATION	BURY LINE ELEVATION	TOP OF PIPE ELEVATION	FIRE HYDRANT BURY REQUIRED*

REV: 8-14-01, MCG



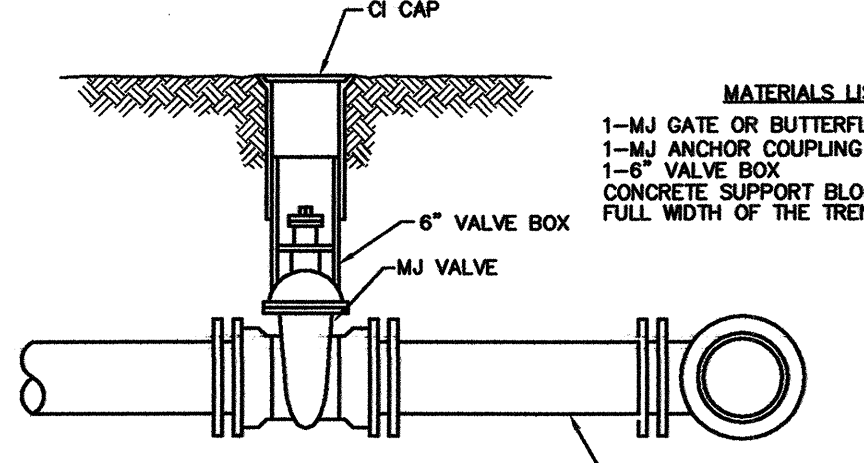
**STANDARD WATER ASSEMBLY DETAILS**

CITY ENGINEER		DATE	
JAMES L. ARMOUR, P.E., L.S.		MM/YY	
PROJECT NUMBER	DCA NUMBER	DESIGN	DRAWN
XXX-XXXXX	XXXXXX	ABC	DEF
CITY ENGINEER'S OFFICE		SHEET	
CITY HALL - SEVENTH FLOOR		X OF X	
452 NORTH MAIN STREET			
WICHITA, KANSAS 67202-1620			
(316) 268-4501			
(316) 268-4114 FAX			



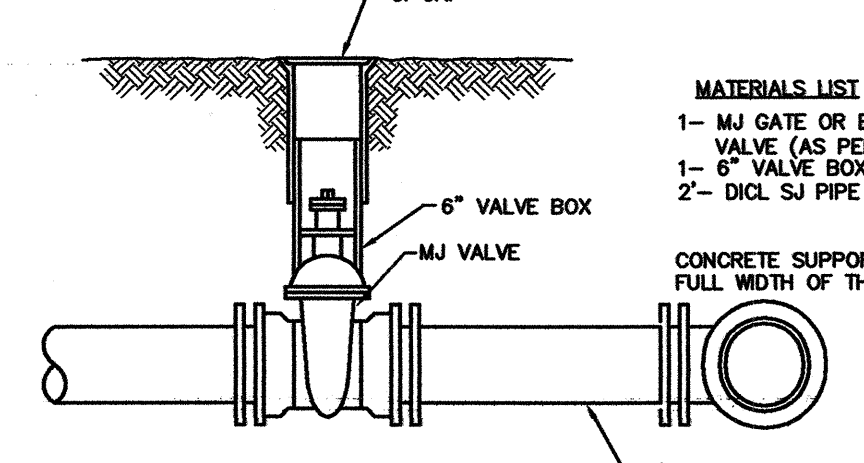
**LINE VALVE ASSEMBLY**

- MATERIALS LIST**
- 1-MJ GATE OR BUTTERFLY VALVE (AS PER PLAN)
  - 1-6" VALVE BOX
  - CONCRETE SUPPORT BLOCK SHALL BE FULL WIDTH OF THE TRENCH



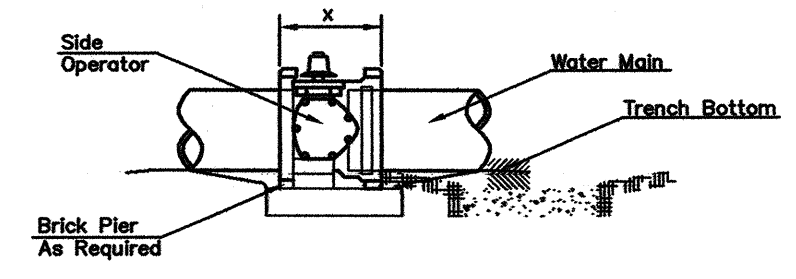
**ANCHORED VALVE ASSEMBLY**

- MATERIALS LIST**
- 1-MJ GATE OR BUTTERFLY VALVE (AS PER PLAN)
  - 1-MJ ANCHOR COUPLING (1/2" OR SMALLER)
  - 1-6" VALVE BOX
  - CONCRETE SUPPORT BLOCK SHALL BE FULL WIDTH OF THE TRENCH



**VALVE ASSEMBLY**

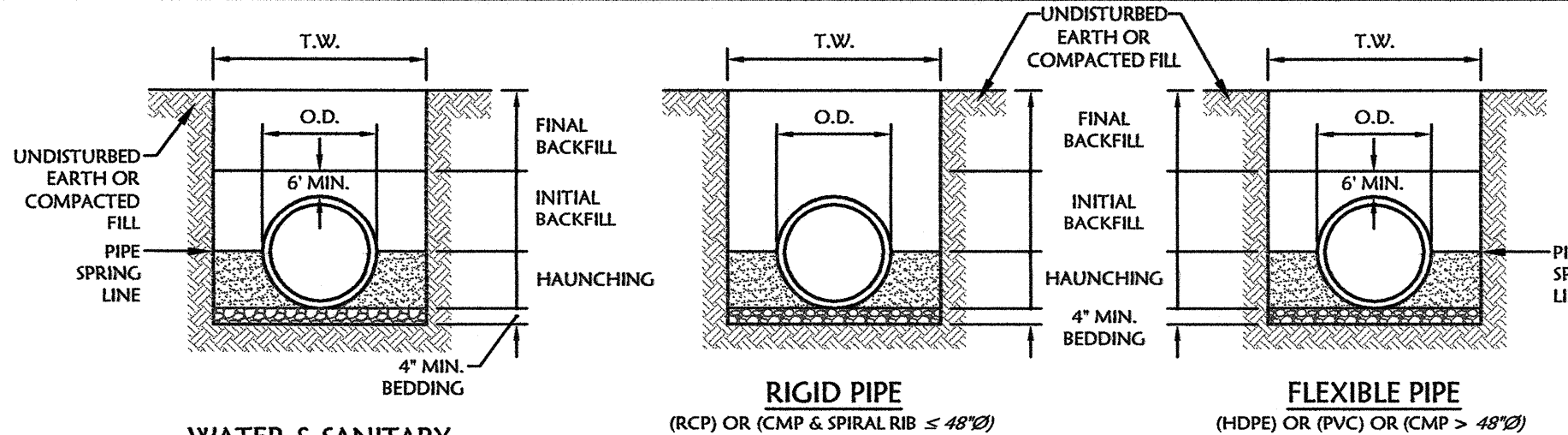
- MATERIALS LIST**
- 1-MJ GATE OR BUTTERFLY VALVE (AS PER PLAN)
  - 1-6" VALVE BOX
  - 2" DICL SJ PIPE
  - CONCRETE SUPPORT BLOCK SHALL BE FULL WIDTH OF THE TRENCH



**CONCRETE SUPPORT BLOCKING FOR BUTTERFLY VALVE INSTALLATION**

- NOTES**
- This detail covers Butterfly Valve installation, inclusive, regardless of type of pipe or joint used. Larger lines to be detailed on plans.
  - 6" Valve Box and Cover required per City of Wichita Std. Specifications.
  - Conc. Support Block to be full width of trench.

- GENERAL NOTES**
- BEDDING SHALL BE DUMPED CLASS A WORKED BY HAND, OR CLASS B COMPACTED TO 80% STANDARD PROCTOR. LOCAL CODES PERMITTING WITH GEOTECHNICAL ENGINEER AND OWNER APPROVAL, NATIVE SOILS MAY BE USED FOR BEDDING PROVIDED IT MEETS THE EMBEDMENT AND BACKFILL MATERIALS IN TABLE 1 EXCLUDING CLASS I/A.
  - HAUNCHING SHALL BE WORKED AROUND THE PIPE BY HAND TO ELIMINATE VOIDS AND SHALL BE CLASS I/A, OR CLASS B OR CLASS B COMPACTED TO 90% STANDARD PROCTOR. FINE GRAVEL SHALL NOT BE USED AS HAUNCHING MATERIAL. CLASS B MATERIAL SHALL BE ALLOWED FOR RIGID PIPE COMPACTED TO 90% STANDARD PROCTOR.
  - INITIAL BACKFILL SHALL BE CLASS I/A WORKED BY HAND, OR CLASS B OR CLASS B COMPACTED TO 90% STANDARD PROCTOR, OR CLASS B COMPACTED TO 90% STANDARD PROCTOR. CLASS I/A MATERIAL SHALL BE USED FOR FIDUCIAL PIPE WHEN THE HEIGHTS DIFFER.
  - FINAL BACKFILL SHALL BE CLASS A WORKED BY HAND, OR CLASS B OR CLASS B COMPACTED TO 90% STANDARD PROCTOR, OR CLASS B COMPACTED TO 90% STANDARD PROCTOR.
  - FINAL BACKFILL NOT UNDER PAVED AREAS CAN BE CLASS I/A COMPACTED TO 90% STANDARD PROCTOR.
  - ALL MATERIALS ARE CLASSIFIED IN ACCORDANCE WITH ASTM D 2922. (SEE TABLE 1)
  - ALL MATERIALS SHALL BE INSTALLED IN MAXIMUM 6" LIFT LIFTS IN ACCORDANCE WITH ASTM D 1586. CLASS I/A AND I/A MATERIALS SHALL BE COMPACTED NEAR OPTIMUM MOISTURE CONTENT.
  - FILL SALVAGED FROM EXCAVATION SHALL BE FREE OF DEBRIS, ORGANICS AND ROCKS LARGER THAN 2".
  - ALL TRENCH EXCAVATIONS SHALL BE BORED, SHORED, SHIFTED, BRACED, OR OTHERWISE SUPPORTED IN COMPLIANCE WITH OSHA REGULATIONS AND LOCAL ORDINANCES.
  - DEBRIS ENGINEER SHALL DEMARK ON THE PLANS WHERE WATER UTILITY RIGHTS ARE TO BE REQUIRED.
  - REPLACE WET OR UNDRYABLE SOILS NECESSARY TO PROVIDE A SUBGRADE AS DIRECTED BY GEOTECHNICAL ENGINEER OR OWNER.
  - WHERE GROUND WATER IS PRESENT CLASS I/A MATERIAL SHALL BE WRAPPED WITH A NON-WOVEN GEO-TEXTILE INCLUDING BEDDING MATERIAL BETWEEN 4" & 4" THICK.
  - CONTRACTOR SHALL REFER TO GEOTECHNICAL REPORT FOR SOIL TYPE AND CLASSIFICATION FOR THIS PROJECT.
  - CONTRACTOR SHALL REFER TO THE LATEST EDITION OF ASTM STANDARD PRACTICE TO CONSTRUCTION.



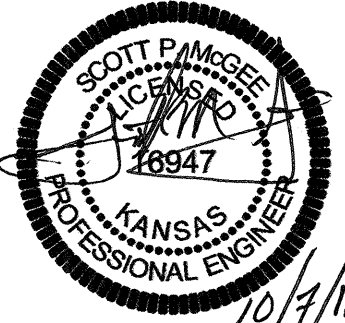
**TRENCH AND BEDDING DETAIL**

NOTE: MINIMUM TRENCH WIDTH (T.W.) SHALL BE THE GREATER OF (1.25 O.D. + 12") OR (O.D. + 16")

**TABLE 1: CLASSES OF EMBEDMENT AND BACKFILL MATERIALS**

ASTM D 2922 MATERIAL CLASS	ASTM D 2487 SOIL GROUP	MATERIAL TYPE	% PASSING 1 1/2" S.I.	% PASSING NO. 4	% PASSING NO. 200	ATTERBERG LIMITS LL	PI
IA	NDNE	MANUFACTURED OPEN GRADED AGGREGATES	100%	<10%	<5%	<5%	NON PLASTIC
IB	NDNE	MANUFACTURED OPEN GRADED AGGREGATES	100%	<50%	<5%	<5%	NON PLASTIC
II	GW	COARSE-GRAINED SOILS CLEAN	100%	<50% OF "COARSE FRACTION"	<5%	<5%	NON PLASTIC
	GP			>50% OF "COARSE FRACTION"			
	SW			<50% OF "COARSE FRACTION"			
	SP			>50% OF "COARSE FRACTION"			
III	GM	COARSE-GRAINED SOILS W/ FINES	100%	12% TO 30%	12% TO 30%	<50	<7 OR >"A" LINE
	GC						>4 OR <"A" LINE
	SM						>7 OR >"A" LINE
	SC						<4 OR <"A" LINE
	ML						>7 OR >"A" LINE
IV/A	CL	FINE-GRAINED SOILS	100%	100%	>50%	<50	>7 OR >"A" LINE

DATE	DESCRIPTION	BY	RCS
10/05/11	REV PER CITY COMMENTS		



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Civil Engineering Inc.  
Bentonville • Kansas City

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KANSAS CITY  
10801 MASTIN BLVD., STE. 400, OVERLAND PARK, KS 66210

STATUS	DATE	BY
PRELIMINARY:		
PLAN CHECKED:		
AS-BUILT:		
JOB NO:	08-0844	

**PW-3**