

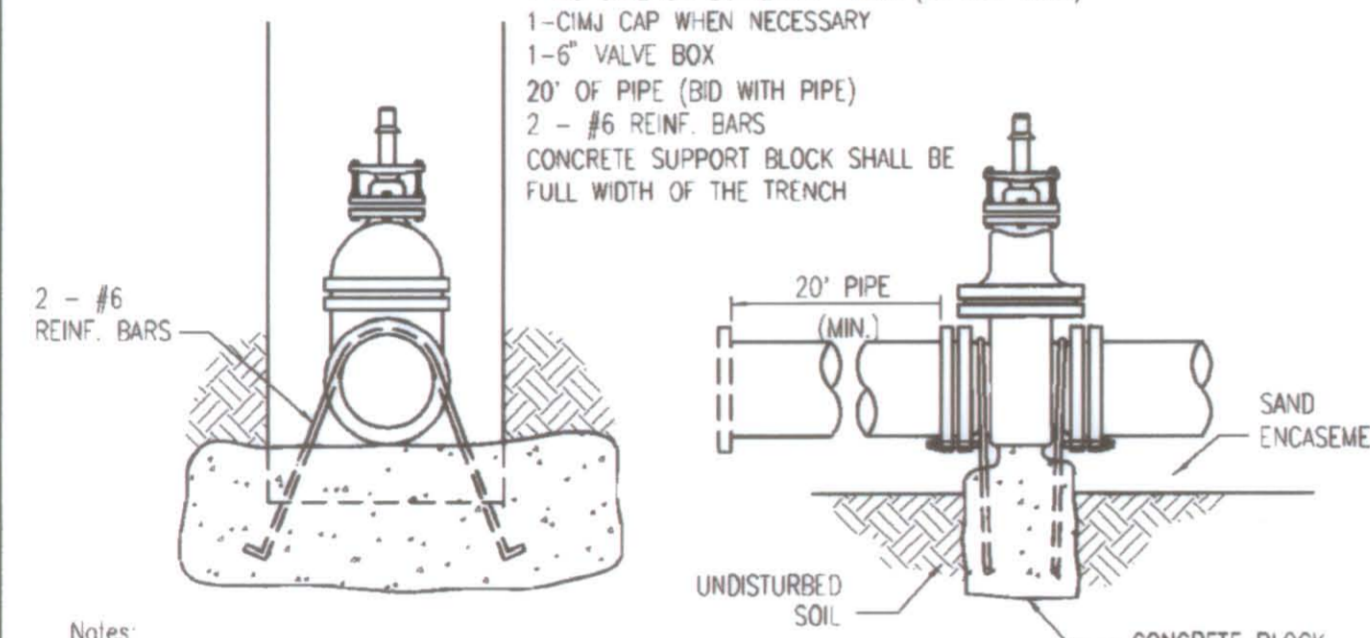
- MATERIALS**
- 1 - MJ Anchor Tee (6" x 6")
  - 1 - 6" MJ Gate Valve
  - 1 - 6" Valve Box
  - 1 - 6" DI CL SJ Pipe
  - 1 - Fire Hydrant
  - Concrete Blocking (As required)

**FIRE HYDRANTS REQUIRED**

LINE NO.	STATION	BURY LINE ELEVATION	TOP OF PIPE ELEVATION	FIRE HYDRANT BURY REQUIRED
1	13+61.50	1311.5	1306.34	6.0'
1	63+75.01	1335.9	1330.74	6.0'
1	98+96.15	1361.7	1356.54	6.0'
1	121+64.75	1362.6	1356.27	7.0'

\* THE CONTRACTOR SHALL USE STANDARD 4.5' OR 5' FIRE HYDRANT WITH HYDRANT BARREL EXTENSIONS AS REQUIRED.

- MATERIALS LIST**
- 1 - MJ GATE OR BUTTERFLY VALVE (AS PER PLAN)
  - 1 - CIMJ CAP WHEN NECESSARY
  - 1 - 6" VALVE BOX
  - 20' OF PIPE (BID WITH PIPE)
  - 2 - #6 REINF. BARS
  - CONCRETE SUPPORT BLOCK SHALL BE FULL WIDTH OF THE TRENCH

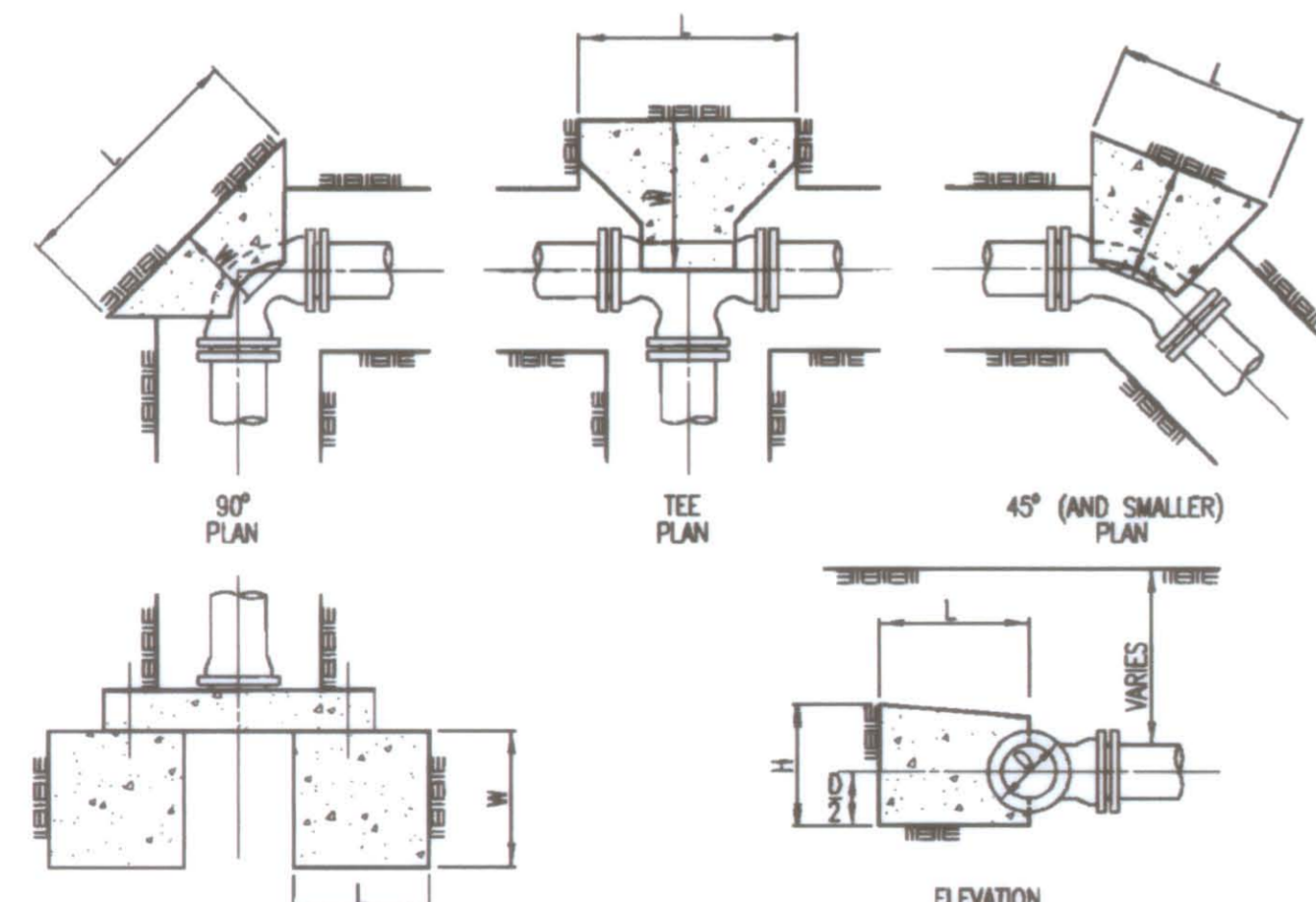


- Notes:**
- Concrete Block of Valve to have sufficient bearing in undisturbed soil to prevent thrust movement as shown in table at right. Field Engineer to determine thrust loading of undisturbed soil and final size of thrust block.
  - The thrust block shall be constructed such that bolts, nuts, and other MJ accessories are kept clear of concrete.
  - All valves at dead ends and at other locations as called out on the plans shall be blocked as shown here.

**THRUST AT VALVES**

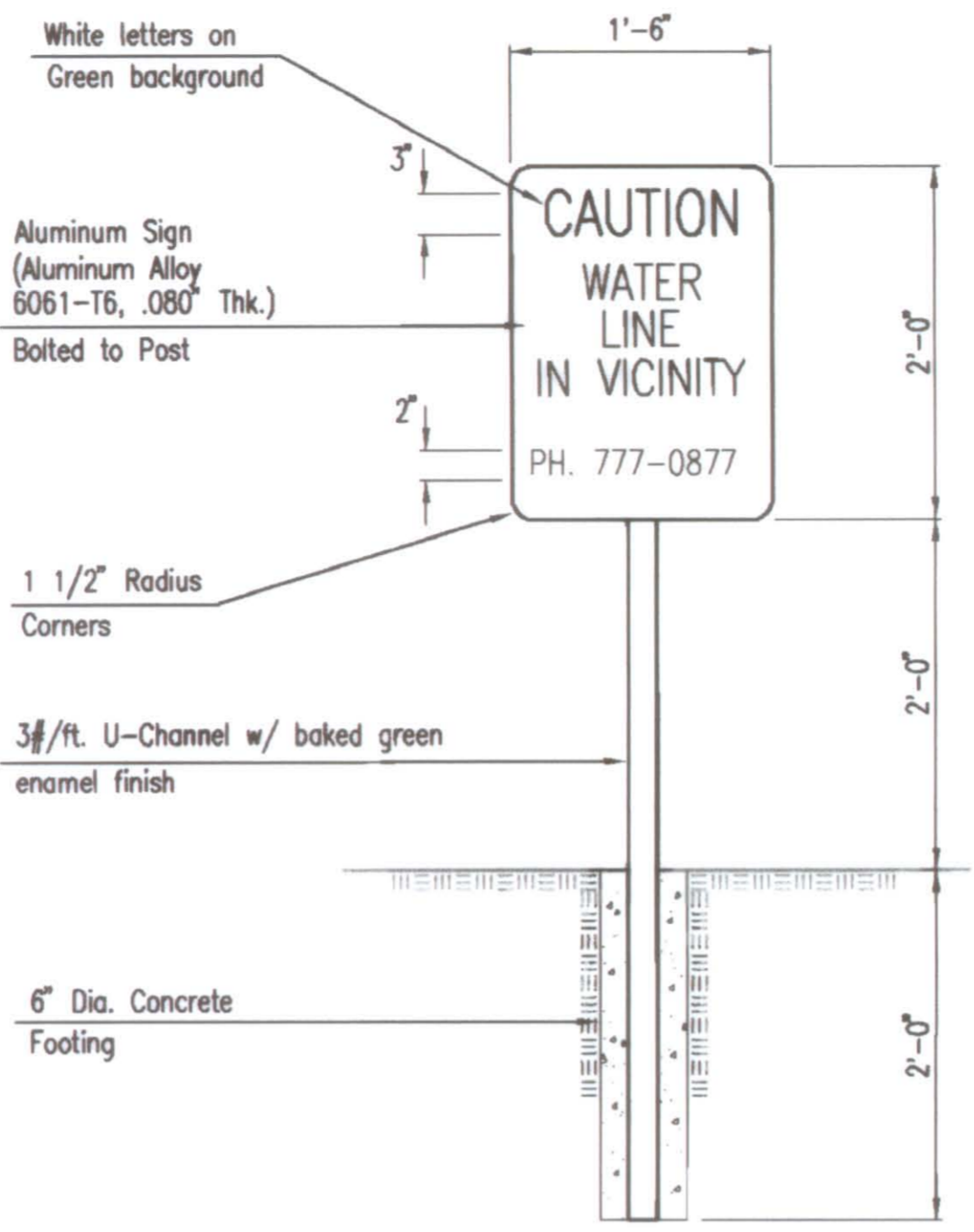
VALVE	THRUST AT 150 #/in <sup>2</sup>
4"	1809 lbs.
6"	4245 lbs.
8"	7540 lbs.
12"	16965 lbs.

**ANCHORED VALVE ASSEMBLY, SPECIAL**

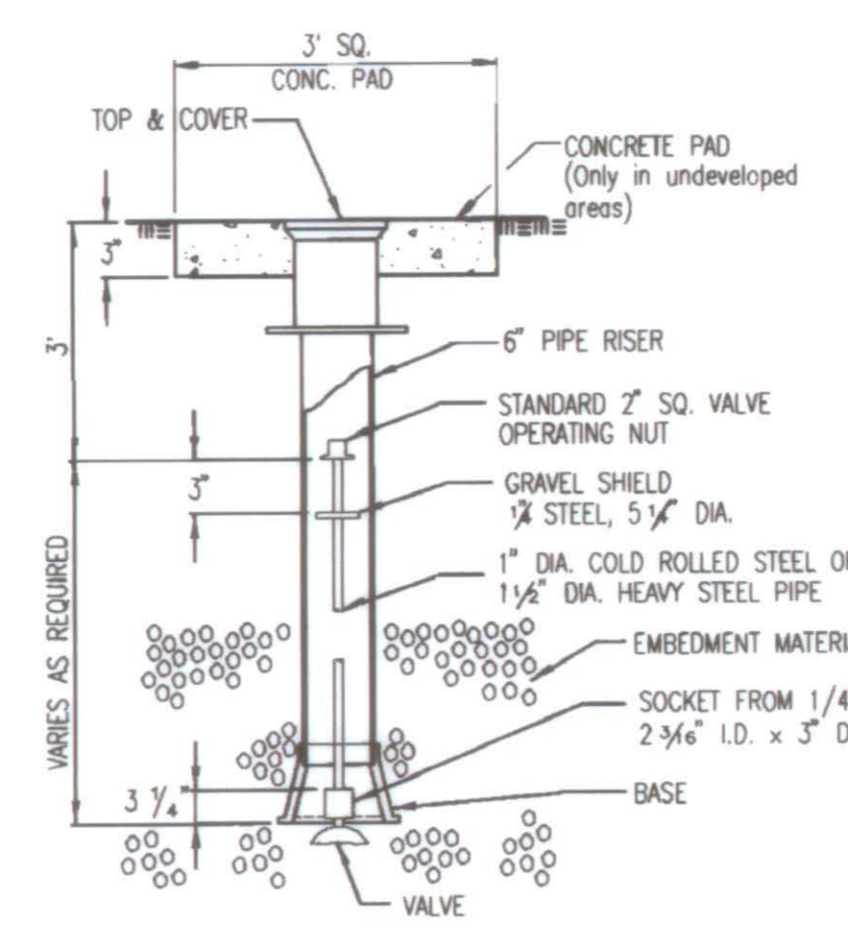


**THRUST BLOCK SCHEDULE**

LINE SIZE	FITTINGS & ANGLE	DIM. L	DIM. W	DIM. H
12"	Tee	4'-0"	4'-0"	4'-0"
12"	Dead End	4'-0"	4'-0"	4'-0"
8"	Tee	3'-0"	2'-0"	2'-6"
8"	Dead End	3'-0"	2'-0"	2'-6"
6"	Tee	2'-0"	1'-6"	2'-0"
6"	Dead End	2'-0"	1'-6"	2'-0"

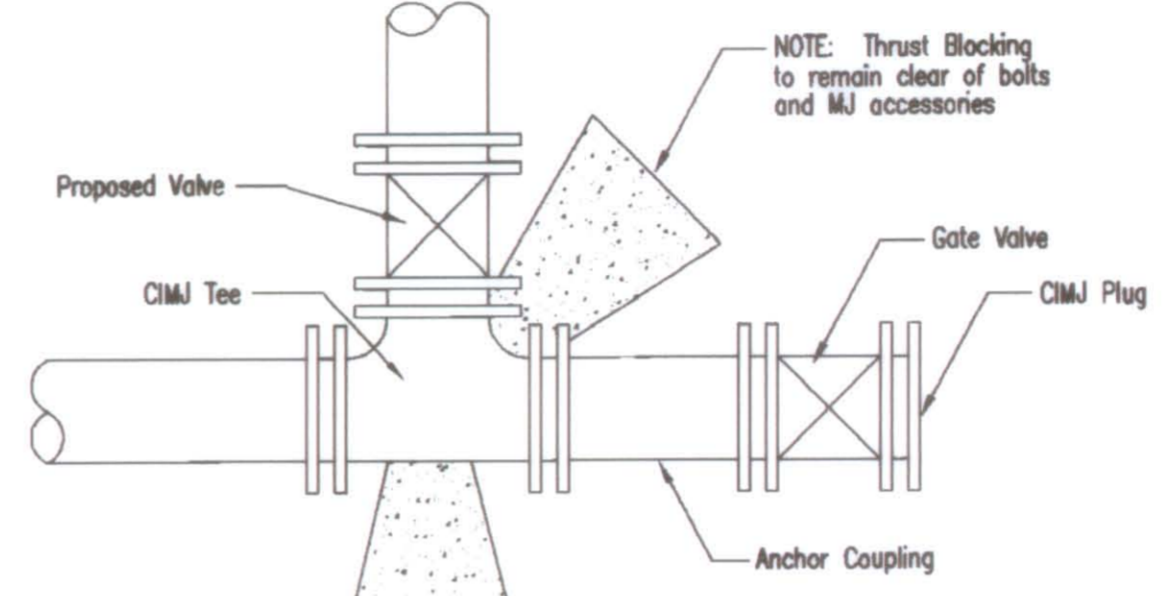


**WATER MAIN WARNING SIGN DETAIL**  
(2 REQUIRED)

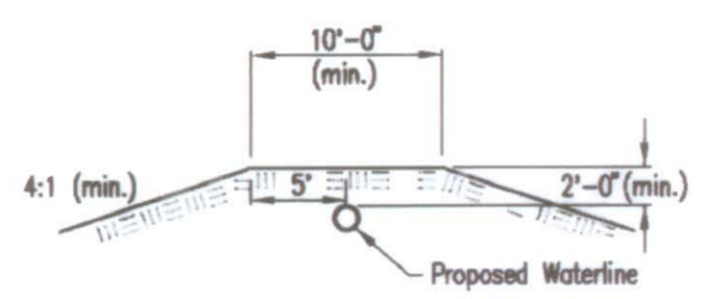


**VALVE BOX DETAIL**

NOTE: ONE VALVE STEM REQUIRED FOR EACH BURIED VALVE

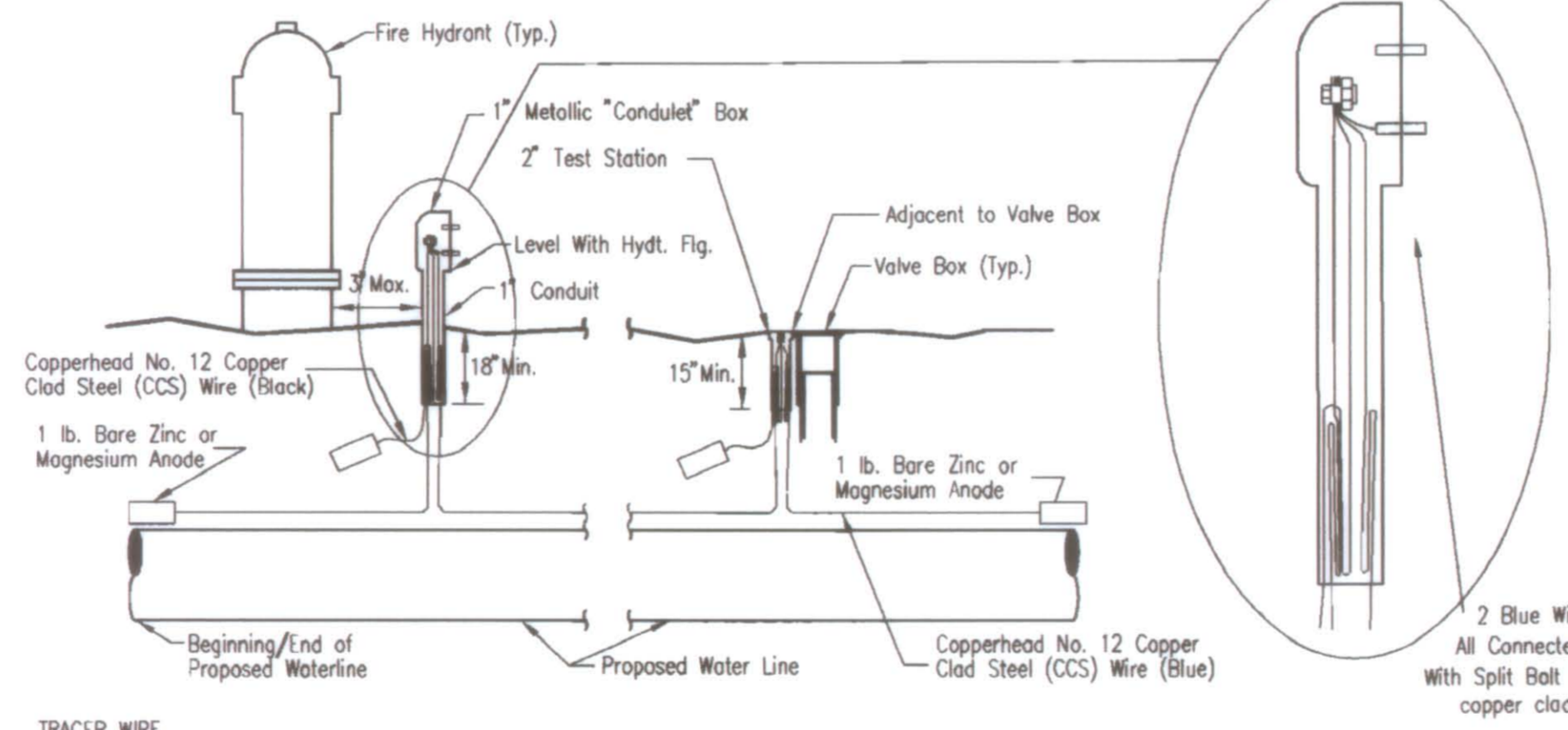


**KEY BLOCK DETAIL**



**PROTECTIVE FILL DETAIL**

Minimum protective fill shall be provided in all instances where cover over the proposed waterline is less than two (2) feet. (Cost subsidiary to pipe installation).



**TRACER WIRE**

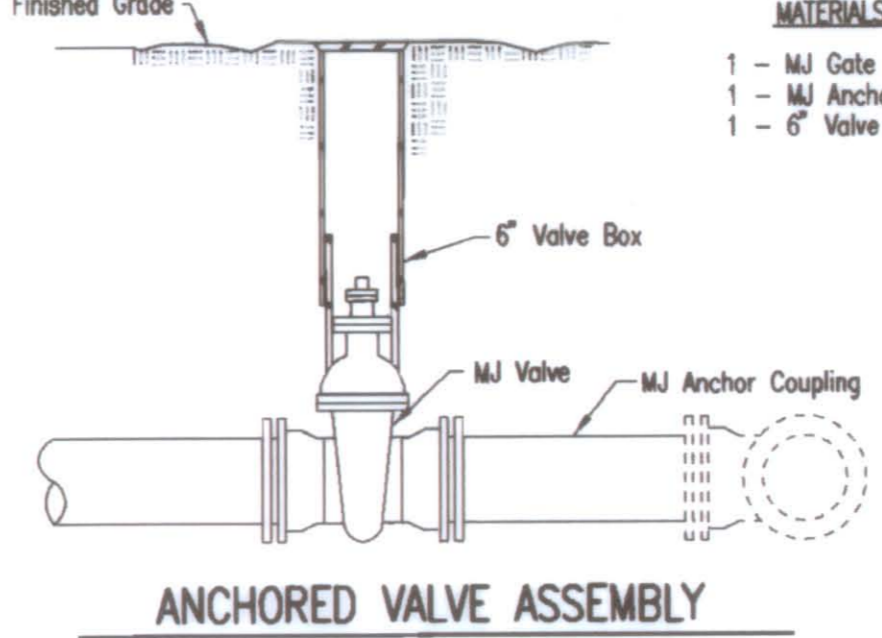
Conductive type pipe locator/tracer wire shall be installed to locate Polyvinyl Chloride (PVC) or any nonmetallic waterline pipes. The wire shall extend the entire length of the proposed pipe. The wire shall be taped to the waterline and pulled with the pipe. Split-bolt connectors shall be used at splice 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.

The tracer wire shall be Blue No. 12 copper clad steel wire with HDPE jacket. 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 "condulet" style test station as manufactured by AGRA Industries or approved equal with a removal 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 12PS3B as manufactured by HANDLEY Industries or approved equal. The "condulet" style test station 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.

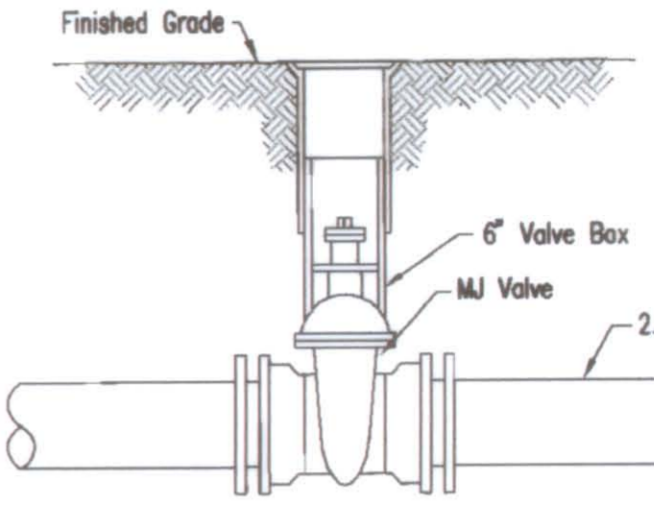
**ANODES**  
The anodes shall be 1 lb. bare zinc or magnesium. The anodes shall be buried at the same elevation as the waterline at each test station. The anodes shall be connected to Black No. 12 copper clad steel (CCS) wire which shall be extended to the test station.

**TRACER WIRE DETAIL**  
Cost is Subsidiary to Pipe Installation



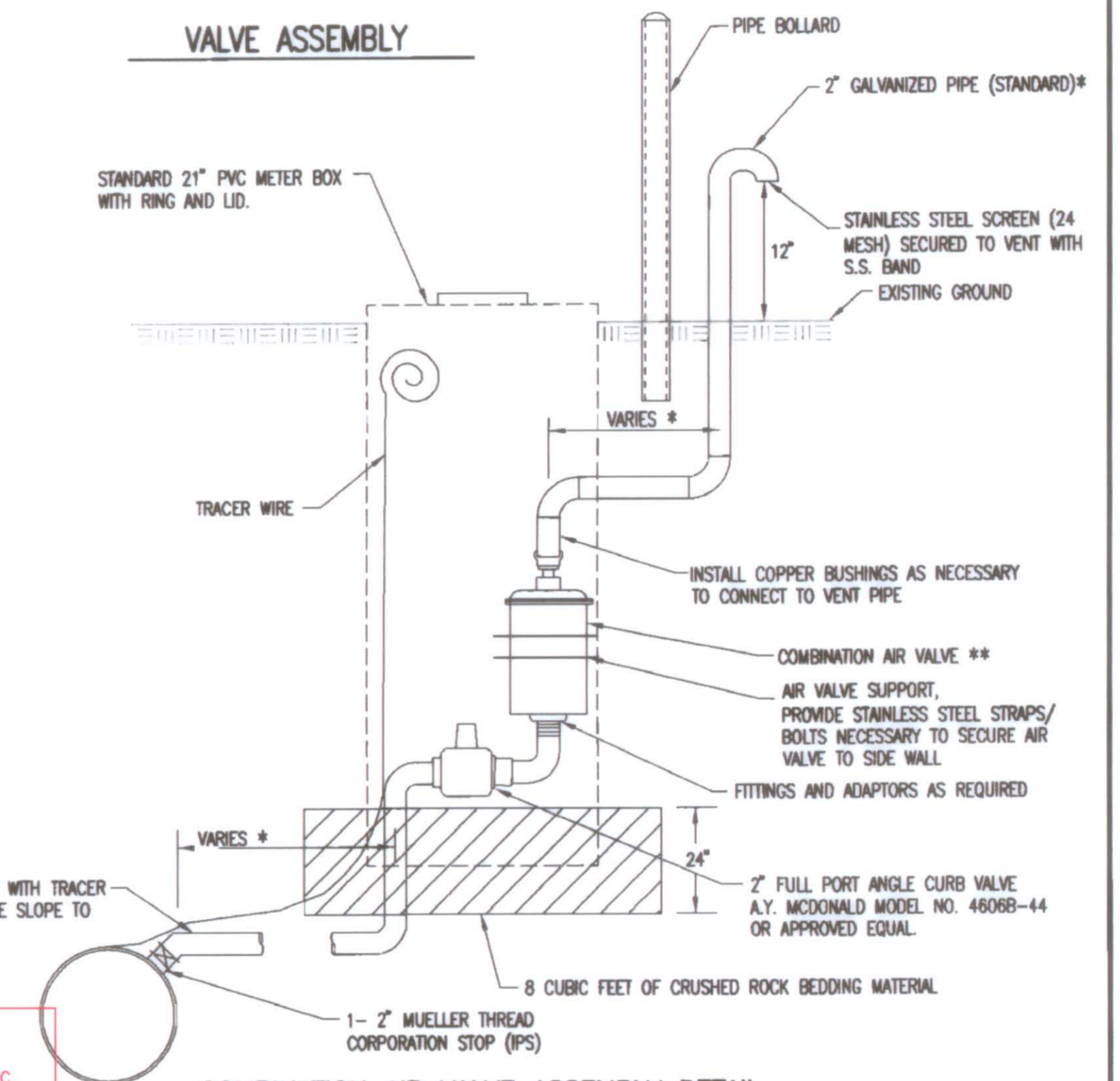
**ANCHORED VALVE ASSEMBLY**

- MATERIALS LIST**
- 1 - MJ Gate Valve
  - 1 - MJ Anchor Coupling
  - 1 - 6" Valve Box



**LINE VALVE ASSEMBLY**

- MATERIALS LIST**
- 1 - MJ Gate Valve
  - 1 - 6" Valve Box
  - 2 - Couplings
  - 2 - Short pcs (DI CL SJ Pipe)
  - Concrete support block shall be full width of the trench



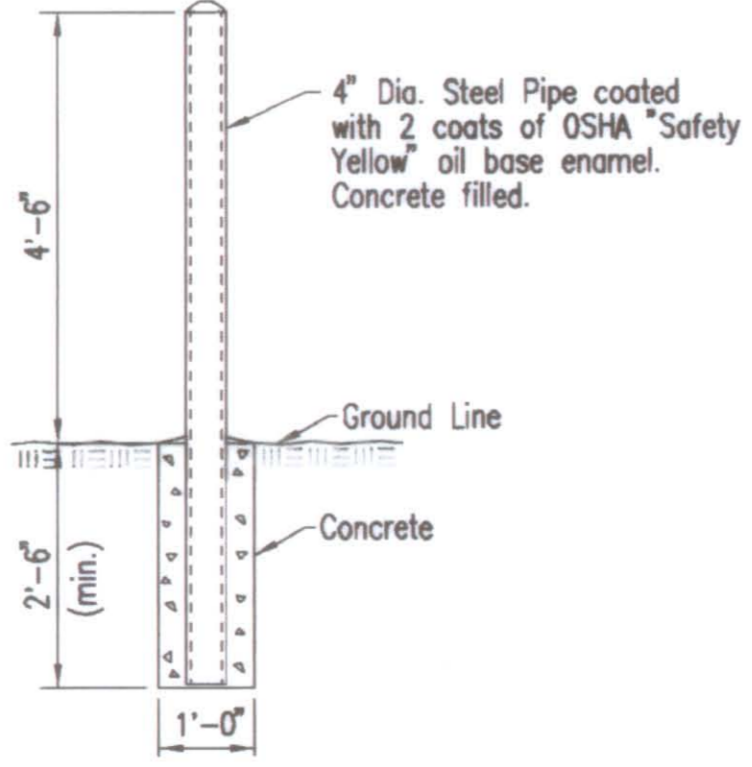
**COMBINATION AIR VALVE ASSEMBLY DETAIL**

\* CONTRACTOR SHALL INSTALL VENT PIPE AT LOCATIONS AS APPROVED BY THE FIELD ENGINEER. VENT PIPES SHALL BE INSTALLED NEAR EXISTING ITEMS (POWER POLES/SIGNS/VALVE BOXES/FENCES). SEE PLANS FOR APPROXIMATE LOCATIONS.

\*\* AIR VALVES SHALL BE 2" A.R.L. D-040 COMBINATION AIR VALVE WITH BRASS ASTM B124 NPT THREADED BASE OR APPROVED EQUAL (HEIGHT=10")

COMBINATION AIR VALVE ASSEMBLY SHALL BE FIELD LOCATED AT THE HIGH POINTS OF THE WATERLINE, WITH THE ACTUAL LOCATIONS APPROVED BY THE FIELD ENGINEER. TOP OF AIR VALVE SHALL BE INSTALLED BELOW FROSTLINE (28" BELOW GRADE.)

**RECORD DRAWINGS**  
CONTRACTOR: Nowak Construction Company Inc.  
INSPECTOR: Charles Daniels, Professional Engineering Consultants, P.A.  
.pdf by: CD 6/15/11  
Inspectors Initials Date



**PIPE BOLLARD DETAIL**

Professional Engineer Seal for Michael D. Kober, License No. 13944, State of Kansas.

**SEDGWICK COUNTY RURAL WATER DISTRICT NO. 3 WATERLINE IMPROVEMENTS**

**WATERLINE DETAILS**

55TH STREET SOUTH - K15 TO ROCK ROAD

**PEC** PROFESSIONAL ENGINEERING CONSULTANTS, P.A.  
303 SOUTH TOPEKA WICHITA, KS 67202  
316-262-2691 www.pec1.com

Designed by MDK, JDG Job No. 35-10335-4597  
Drawn by CSL, RFT Date APRIL 2011 SH. 4 of 21