

## TYPICAL CONFLICT DETAIL

USE MEGALUGS AT ALL PIPE JOINTS



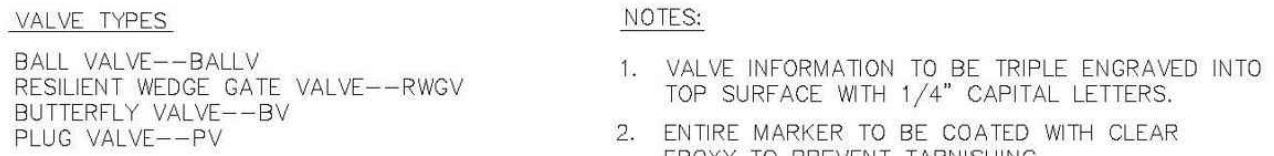
\*\*USE 2-3/4" S.S. TIE RODS WHEN DISTANCE BETWEEN MAIN AND HYDRANT < 10'. TIE RODS WILL BE USED W/RESTRAINED JOINTS OR USE MEGALUGS AT ALL PIPE JOINTS

HYDRANTS INSTALLED ON EXISTING WATER MAINS MUST USE A MUELLER  
MJ DI TAPPING SLEEVE, H-615 OR APPROVED EQUAL.

HYDRANTS CONNECTED TO NEW MAINS SHALL BE CONNECTED USING A HYDRANT TEE.

ALL POMPANO BEACH HYDRANTS SHALL BE PAINTED RED.

## TYPICAL FIRE HYDRANT ASSEMBLY



# UNDERGROUND VALVE IDENTIFICATION MARKER

CROSS WITH PLUG

90° BEND

TEE/WYE

DEAD END

REDUCER

45° BEND & SMALLER

RESTRAINED PLUG

GENERAL NOTES:

- VALUES IN TABLE ARE BASED ON 3' OF COVER, 100 PSI INTERNAL PRESSURE, FOR FORCE MAINS, 150 PSI REUSE WATER LINES, ANSI/AWWA C605 & C150/A21.50 LAYING CONDITION 3, ASTM D2487 SAND-SILT SP SOIL TYPE, AND SAFETY FACTOR OF 2.0. RESTRAINED LENGTHS WERE COMPUTED PER DIPRA "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" AND "PVC PIPE THRUST RESTRAINT DESIGN HANDBOOK," EBAA IRON, INC.
- CONFIRM THE EXACT LENGTH OF RESTRAINING REQUIRED FOR REDUCERS, PIPE ENCASED IN POLYETHYLENE AND ENDOUGHING RESTRAINED LENGTHS WITH THE DESIGN ENGINEER.
- THE CONTRACTOR IS RESPONSIBLE FOR PROPER INSTALLATION OF THE RESTRAINED JOINTS TO PREVENT MOVEMENT OF THE PIPE & FITTINGS.
- IN THE EVENT OF A CONFLICT BETWEEN RESTRAINED LENGTHS SHOWN ON THE TABLE AND RESTRAINED LENGTHS SHOWN ON THE DRAWINGS, THE LONGEST RESTRAINED LENGTH SHALL BE USED.

## RESTRAINED JOINT INFORMATION

PVC HORIZONTAL BENDS AND VERTICAL UP BENDS						
PIPE SIZE (IN.)		RESTRAINED JOINT LENGTH L (MINIMUM DISTANCE IN FEET FROM FITTING – EACH WAY)				CROSS WITH PLUG DEAD END TEE/WYE
		BENDS				
		90°	45°	22.5°	11.25°	
6		26	11	6	3	53
8		33	14	7	4	68
12		46	19	10	5	96

PVC VERTICAL DOWN BEND						
PIPE SIZE (IN.)		RESTRAINED JOINT LENGTH L (MINIMUM DISTANCE IN FEET FROM FITTING – EACH WAY)				
		BENDS				
		90°	45°	22.5°	11.25°	
6		26	11	6	3	
8		33	14	7	4	
12		46	19	10	5	

DIP HORIZONTAL BENDS AND VERTICAL UP BENDS						
PIPE SIZE (IN.)		RESTRAINED JOINT LENGTH L (MINIMUM DISTANCE IN FEET FROM FITTING – EACH WAY)				CROSS WITH PLUG DEAD END TEE/WYE
		BENDS				
		90°	45°	22.5°	11.25°	
12"		68	28	14	7	144
24"		119	49	24	12	258

### RESTRAINED JOINT INFORMATION

The diagram illustrates a cross-section of a utility pipe installed below ground level. The ground surface is indicated by a horizontal line with diagonal hatching on both sides, labeled "GROUND LEVEL". Below this, a horizontal pipe is labeled "TYPICAL UTILITY PIPE". Two circular "MARKER BALLS" are shown on top of the pipe. The distance between the marker balls is labeled "40' MAX.". The vertical distance from the ground level to the top of the pipe is labeled "24\" (\* ) MAX.". The vertical distance from the ground level to the bottom of the pipe is labeled "36\" MIN.". The vertical distance from the bottom of the pipe to the top of the first marker ball is labeled "4\" MIN.". A note to the right of the diagram states: "\* SEE NOTE (2)".

**GENERAL NOTES:**

- ALL UTILITY PIPE SHALL BE INSTALLED WITH 4"Ø MARKING BALLS PLACED EVERY 40' AND AT EVERY FITTING. IDENTICAL AND WARNING PURPOSES, BURIED ABOVE THE PIPE AT A MAXIMUM DEPTH OF 24 INCHES OR AS APPROVED BY THE OWNER, IT SHALL BE COLOR CODED AND WORDED AS FOLLOWS:
  - COLOR: BLUE PER 62-555.320(21)(b)(3) F.A.C.
  - LETTERING: WATER
  - FREQUENCY OF MARKER BALLS SHALL BE 145.7 Khz.
  - THE MARKER BALLS CAN BE BURIED IN ANY ORIENTATION.

THE MARKER BALLS SHALL BE DETECTABLE BY STANDARD METAL DETECTION EQUIPMENT AND SHALL BE MANUFACTURED BY TEMPO OR 3M LOCATOR SYSTEM OR EQUIVALENT (FREQUENCY 145.7 Khz )

- FOR LARGE DIAMETER PIPE INSTALLED AT DEPTHS BELOW 4'-0" MARKER BALLS SHALL BE PLACED AT A MAXIMUM DEPTH OF 4'-0" BELOW GRADE \*

## WATER PIPE IDENTIFICATION

# AAC

The diagram illustrates the installation of a utility pipe. It shows a cross-section of the ground with a horizontal line representing the ground level. Below this, a utility pipe is shown. The depth of the pipe is indicated as 36" MIN. UNLESS OTHERWISE NOTED ON THE PLANS. A vertical dimension line shows a 24" MAX. depth from the ground level to the top of the pipe. Marker balls are shown as small circles on the pipe, with a dimension line indicating they are 40' MAX. apart. The pipe is labeled 'TYPICAL UTILITY PIPE' at two points. A 'DEAD END' is also indicated at the right end of the pipe. A 'GROUND LEVEL' label with an arrow points to the top line. A 'MARKER BALLS' label with an arrow points to one of the circles. A '36" MIN. UNLESS OTHERWISE NOTED ON THE PLANS' label with an arrow points to the depth dimension. A '24" MAX.' label with an arrow points to the depth dimension. A '40' MAX.' label with an arrow points to the distance between marker balls. A 'DEAD END' label with an arrow points to the right end of the pipe. The pipe is shown with a cross-section of a manhole or access point in the middle.

GENERAL NOTES:

1. ALL NONMETALLIC PIPE SHALL BE INSTALLED WITH 12 THHN SOLID COPPER TRACING WIRE.
2. THE MARKER BALLS MUST BE INSTALLED DIRECTLY ABOVE THE PIPE.
3. MARKER BALLS SHALL BE INSTALLED AT 40' O.C.
4. BALL COLOR CODING:  
POTABLE WATER SYSTEM: BLUE PER 62-555.320(21)(b)(3) F.A.C.

## UTILITY PIPE AND MARKER BALLS LOCATION

SEAL

FR # 6986

SHEET NO.

C-11