

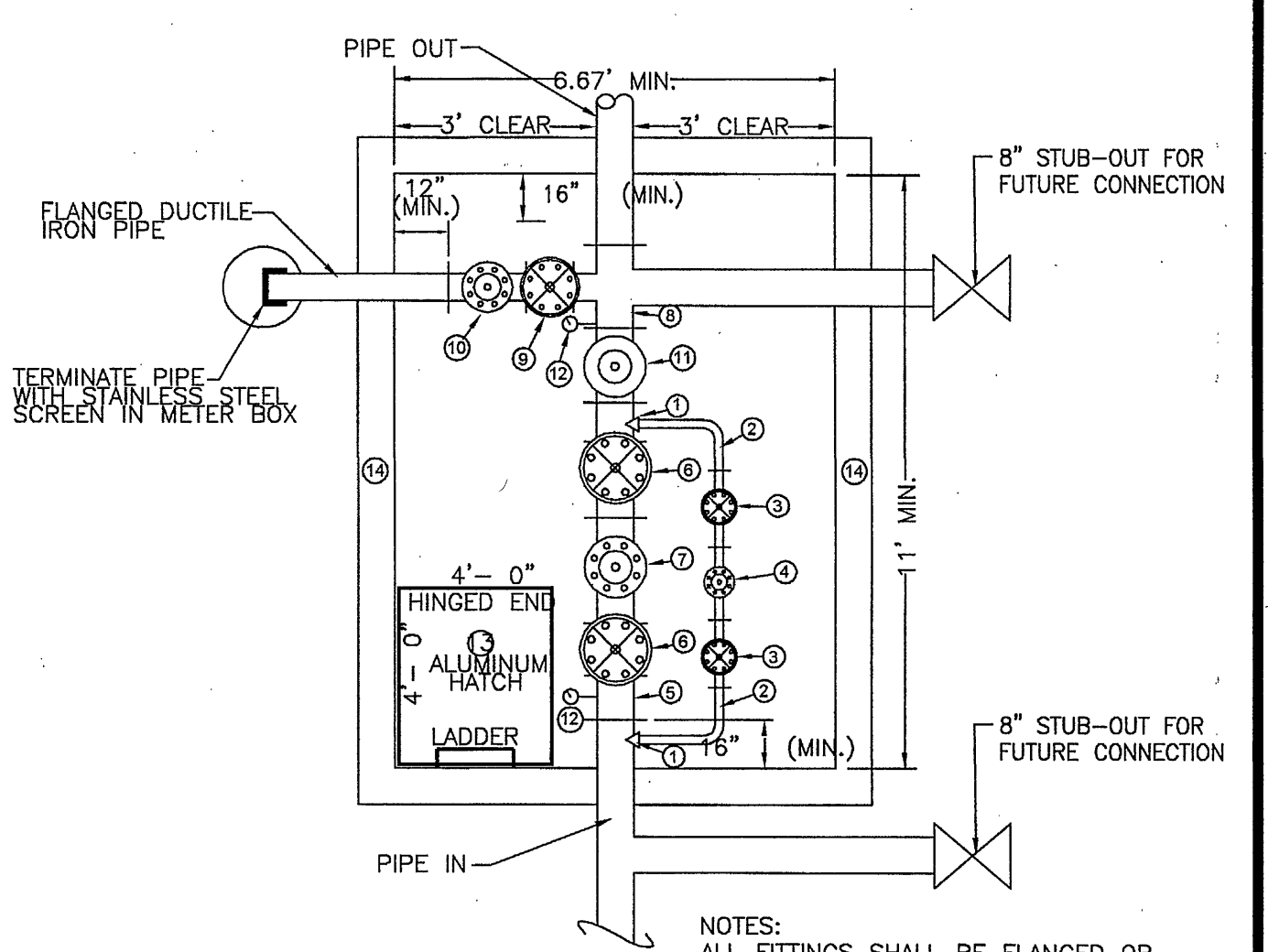
- NOTES:
- FOR VERT. BEND DOWN IN EXCESS OF 11 1/4" BEND, ANCHORAGE SHALL BE DESIGNED BY ENGINEER.
  - FOR VERT. BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ. BEND.
  - GLANDS & BOLTS SHALL BE PROTECTED FROM CONC. BY PLASTIC SHEETING WHEN POURING THRUST BLOCKS.
  - ALL THRUST BLOCK & SUPPORT CONC. SHALL BE 3000 PSI READY MIX CONC.
  - THRUST BLOCKS WITH "B" DIMENSION GREATER THAN 30" SHALL HAVE THE RESTRAINED PIPE INSTALLED WITH A MINIMUM OF 4" OF COVER.
  - IF UNDER 100 PSI WORKING PRESSURE, RESTRAINT JOINTS MUST BE USED. IF EQUAL OR GREATER THAN 100 PSI WORKING PRESSURE, BOTH BLOCK AND RESTRAINT JOINTS ARE REQUIRED.

PRESSURE = 200 psi  
BEARING = 2000 psf  
FACTOR OF SAFETY = 1.5

PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE	PLUG
4"	8"	8"	8"	8"	8"	8"
6"	12"	12"	12"	12"	12"	12"
8"	18"	18"	18"	18"	18"	18"
10"	24"	24"	24"	24"	24"	24"
12"	30"	30"	30"	30"	30"	30"
14"	36"	36"	36"	36"	36"	36"
16"	42"	42"	42"	42"	42"	42"
18"	48"	48"	48"	48"	48"	48"
20"	54"	54"	54"	54"	54"	54"
22"	60"	60"	60"	60"	60"	60"
24"	66"	66"	66"	66"	66"	66"
26"	72"	72"	72"	72"	72"	72"
28"	78"	78"	78"	78"	78"	78"
30"	84"	84"	84"	84"	84"	84"

WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS

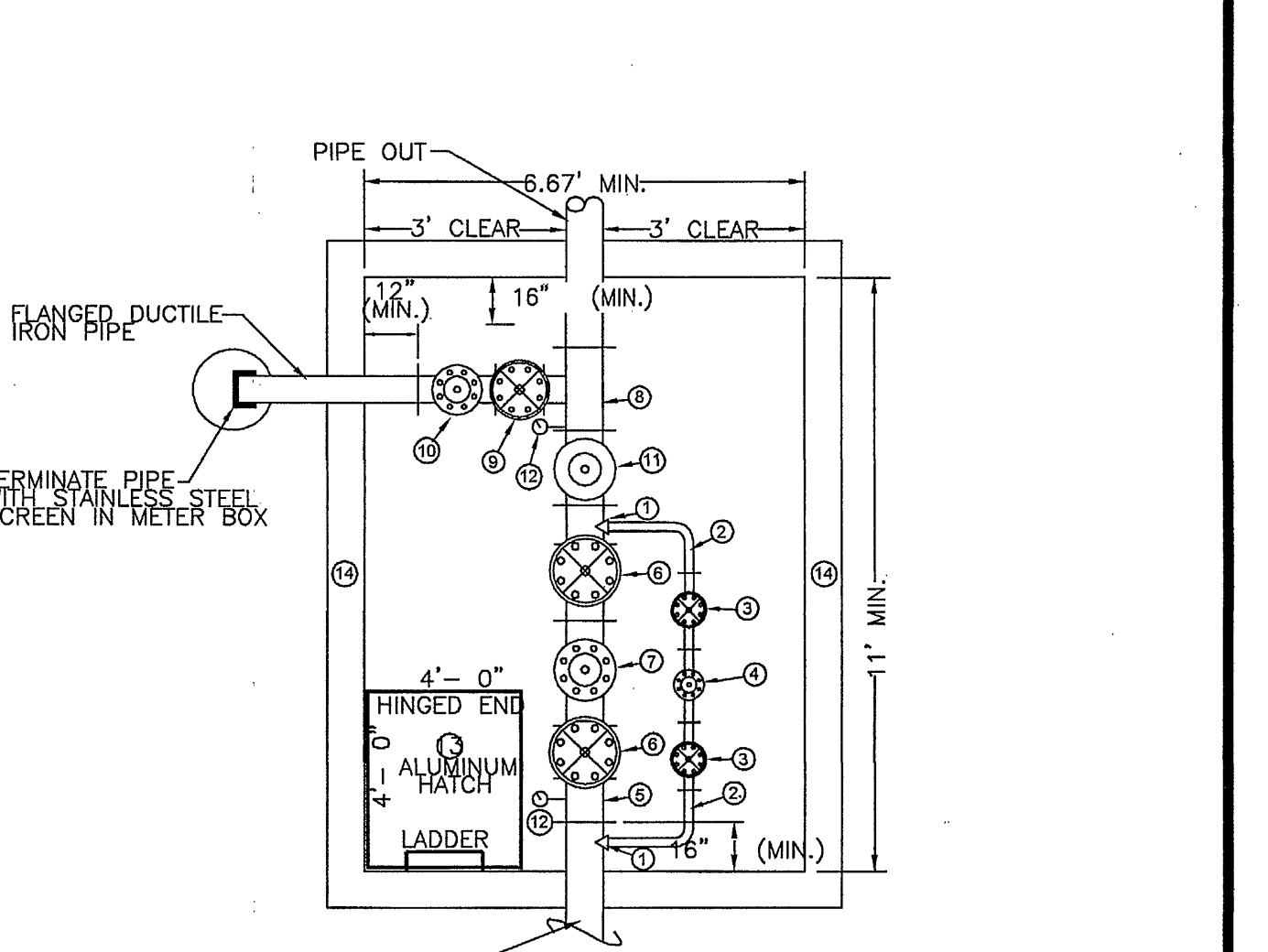
REVISION DATE	THRUST BLOCK CONSTRUCTION	W-19
07/01/04		
03/01/08		



- NOTES:
- ALL FITTINGS SHALL BE FLANGED OR COMPRESSION TYPE
  - CORPORATION STOP
  - 2" LOW-FLOW BYPASS LINE TYPE "K" COPPER
  - 2" NPT GATE VALVE
  - 1 1/2" FLANGED RATE OF FLOW/PRESSURE REGULATING VALVE (CLA-VAL MODEL 49-01) SET AT A WORKING PRESSURE OF 72 psi & 100 GPM
  - FLANGE x MECH. JOINT ADAPTOR (SEE NOTE BELOW)
  - FLANGE x FLANGE MAIN LINE GATE VALVE
  - FLANGE x FLANGE 6" MAIN LINE PRESSURE REGULATING VALVE (CLA-VAL MODEL 690-01) SET AT A WORKING PRESSURE OF 23 psi & 100 GPM
  - FLANGE x FLANGE MAIN LINE REDUCING TEE
  - FLANGE x FLANGE GATE VALVE, ONE SIZE LESS THAN MAIN LINE
  - FLANGE x FLANGE 4" PRESSURE RELIEF VALVE (CLA-VAL MODEL 650-01) SET AT A WORKING PRESSURE OF 77 psi
  - MAIN LINE "TURBO" TYPE WATER METER
  - LIQUID FILLED PRESSURE GAUGE
  - BILCO MODEL J-3AL OR APPROVED EQUAL
  - PRE-CAST REINFORCED CONCRETE VAULT W/ 6" MIN. WALLS, TOP, AND BOTTOM

WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS

REVISION DATE	MAIN LINE PRESSURE REDUCING VALVE ASSEMBLY (PRV STATION NO. 1)	W-14 (MODIFIED)
07/01/04		



- NOTES:
- ALL FITTINGS SHALL BE FLANGED OR COMPRESSION TYPE
  - CORPORATION STOP
  - 2" LOW-FLOW BYPASS LINE TYPE "K" COPPER
  - 2" NPT GATE VALVE
  - 1 1/2" FLANGED RATE OF FLOW/PRESSURE REGULATING VALVE (CLA-VAL MODEL 49-01) SET AT A WORKING PRESSURE OF 23 psi & 100 GPM
  - FLANGE x MECH. JOINT ADAPTOR (SEE NOTE BELOW)
  - FLANGE x FLANGE MAIN LINE GATE VALVE
  - FLANGE x FLANGE 6" MAIN LINE PRESSURE REGULATING VALVE (CLA-VAL MODEL 690-01) SET AT A WORKING PRESSURE OF 20 psi & 100 GPM
  - FLANGE x FLANGE MAIN LINE REDUCING TEE
  - FLANGE x FLANGE GATE VALVE, ONE SIZE LESS THAN MAIN LINE
  - FLANGE x FLANGE 4" PRESSURE RELIEF VALVE (CLA-VAL MODEL 650-01) SET AT A WORKING PRESSURE OF 28 psi & 100 GPM
  - MAIN LINE "TURBO" TYPE WATER METER
  - LIQUID FILLED PRESSURE GAUGE
  - BILCO MODEL J-3AL OR APPROVED EQUAL
  - PRE-CAST REINFORCED CONCRETE VAULT W/ 6" MIN. WALLS, TOP, AND BOTTOM

WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS

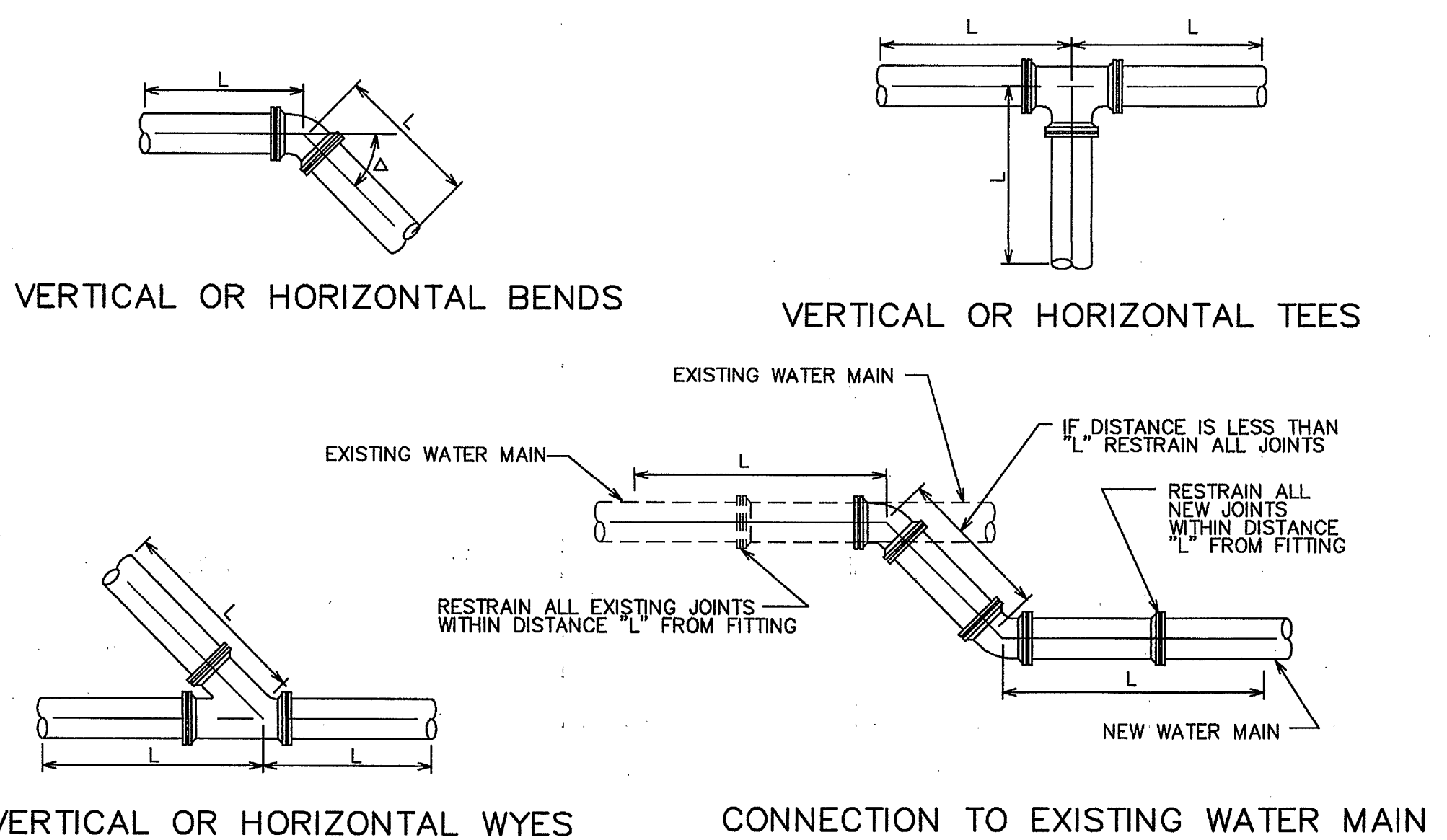
REVISION DATE	MAIN LINE PRESSURE REDUCING VALVE ASSEMBLY (PRV STATION NO. 2)	W-14 (MODIFIED)
07/01/04		

PIPE SIZE	PIPE MAT'L	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	VALVE / PLUG	REDUCER	VERT. (NOTE 2)	VERT. 45°	VERT. 22 1/2°	VERT. 11 1/4°
6"	D.I.	28'	12'	6'	3'	38'	34'	20'	23'	11'	5'
8"	D.I.	37'	15'	7'	4'	51'	47'	21'	30'	15'	7'
10"	D.I.	46'	19'	9'	4'	61'	57'	20'	37'	18'	9'
12"	D.I.	53'	22'	11'	5'	73'	69'	38'	43'	21'	10'
6"	PVC	30'	12'	6'	3'	56'	38'	29'	35'	17'	8'
8"	PVC	40'	16'	8'	4'	74'	56'	31'	46'	22'	11'
10"	PVC	47'	20'	9'	5'	89'	82'	30'	56'	27'	13'
12"	PVC	56'	23'	11'	6'	106'	88'	36'	66'	32'	16'

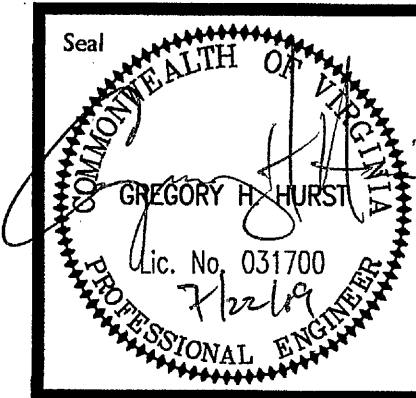
- FACTOR OF SAFETY = 1.5
- ALL JOINTS SHALL BE RESTRAINED ON BOTH SIDES OF THE FITTING FOR THE LENGTH SHOWN UNLESS OTHERWISE INDICATED.
  - REDUCER IS ONE SIZE SMALLER THAN PIPE LISTED. RESTRAINED LENGTH IS UPSTREAM ON THE LARGE SIDE OF THE REDUCER.
  - IF UNDER 100 PSI WORKING PRESSURE, RESTRAINT JOINT(S) ARE TO BE USED. IF EQUAL TO OR OVER 100 PSI WORKING PRESSURE, BOTH THRUST BLOCK AND RESTRAINT JOINTS SHALL BE USED.

WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS

REVISION DATE	THRUST RESTRAINT OF PIPE JOINTS DESIGN LENGTHS	W-20
07/01/04		
03/01/08		



TYPICAL DETAILS - MECHANICAL JOINT RESTRAINING DEVICES  
NOT TO SCALE



STATE ROUTE 616 WATER LINE EXTENSION  
FOR THE  
FRANKLIN COUNTY BOARD OF SUPERVISORS  
AND  
WESTERN VIRGINIA WATER AUTHORITY  
TYPICAL DETAILS - RESTRAINING DEVICES  
& PRV STATIONS

No.	Date	Reviewed	Final
07/02/09	07/22/09		

Designed	Drawn	Checked	Date	File No.
			JULY 2009	WATER LINE PLANS

Project No.  
9343-02



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Sheet No.