

FACTORS OF SAFETY = 1.5											
PIPE SIZE	PIPE MAT'L	90° BEND	45° BEND	22.5° BEND	11.25° BEND	VALVE (PUSH)	TEE (PUSH)	REDUCER (PUSH)	45° VERT.	22.5° VERT.	11.25° VERT.
6"	D.I.	26'	21'	8'	3'	50'	26'	26'	21'	10'	5'
8"	D.I.	36'	21'	8'	4'	65'	41'	27'	27'	13'	7'
10"	D.I.	43'	21'	8'	5'	77'	53'	28'	32'	16'	8'
12"	D.I.	51'	21'	10'	5'	91'	67'	37'	38'	18'	9'
6"	PVC	29'	21'	8'	3'	78'	26'	40'	32'	16'	8'
8"	PVC	37'	21'	8'	4'	102'	49'	43'	42'	21'	10'
10"	PVC	44'	21'	8'	5'	122'	68'	41'	51'	25'	12'
12"	PVC	51'	21'	11'	6'	143'	89'	42'	60'	29'	15'

- ALL JOINTS SHALL BE RESTRAINED ON BOTH SIDES OF THE FITTING AND DOCUMENTED BY THE INSPECTOR FOR THE LENGTH SHOWN UNLESS OTHERWISE INDICATED.
- RESTRAINED LENGTH SHOWN REFERS TO ANY DESIGNED OR POTENTIAL LINE STOP, INCLUDING ALL GATE VALVES.
- RESTRAINED LENGTH SHOWN REFERS TO THE BRANCH LINE ONLY. THE CONTINUOUS PIPE LENGTH OF THE MAIN RUN SHALL BE A MINIMUM OF 10' ON EACH SIDE OF THE TEE.
- RESTRAINED LENGTH SHOWN IS BASED ON REDUCING PIPE DIAMETER TO ONE SIZE SMALLER THAN PIPE LISTED (ANY OTHER DIAMETER REDUCTION WILL REQUIRE ADDITIONAL CALCULATIONS BEFORE INSTALLATION). RESTRAINED LENGTH SHOWN IS UPSTREAM ON THE LARGE SIDE OF THE REDUCER.
- 12" AND SMALLER DIAMETER: IF UNDER 100 PSI WORKING PRESSURE, RESTRAINED JOINT(S) ARE TO BE USED. IF EQUAL TO OR OVER 100 PSI WORKING PRESSURE, BOTH THRUST BLOCK(S) AND RESTRAINED JOINT(S) SHALL BE USED (UNLESS OTHERWISE APPROVED BY THE PARTICIPATING UTILITY).
- LARGER THAN 12" DIAMETER: IF UNDER 100 PSI WORKING PRESSURE, RESTRAINED JOINT(S) ARE TO BE USED. IF EQUAL TO OR OVER 100 PSI WORKING PRESSURE, BOTH THRUST BLOCK(S) AND RESTRAINED JOINT(S) SHALL BE USED (UNLESS OTHERWISE APPROVED BY THE PARTICIPATING UTILITY).
- FOR RESTRAINED JOINT PIPING REQUIREMENTS AT FITTING R.J., PVC AND R.J. DIP MAY BE USED INTERCHANGEABLY WITH APPROVAL FROM PARTICIPATING UTILITY. CONTRACTOR MUST PLAN ACCORDINGLY FOR THE DIFFERENCE IN PVC AND DIP BELL AND SPIGOT DIMENSIONS.

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

MINIMUM THRUST RESTRAINT
OF PIPE JOINTS
DESIGN LENGTHS

02/10/15 W-19

INSTALLATION OF DUCTILE IRON WATER MAINS					
TABLE 3 AWWA C900.05					
Maximum Joint Deflection Full Length of Pipe - Push on Type Joint					
Nominal Pipe Size (inches)	Deflection Angle - θ (degrees)	Joint Length 18-Foot	Joint Length 20-Foot	Joint Length 18-Foot	Joint Length 20-Foot
3"	5°	10	21	205	230
4"	5°	10	21	205	230
6"	5°	10	21	205	230
8"	5°	10	21	205	230
10"	5°	10	21	205	230
12"	5°	10	21	205	230
14"	3°	11	12	340	380
16"	3°	11	12	340	380
18"	3°	11	12	340	380
20"	3°	11	12	340	380
24"	3°	11	12	340	380
30"	3°	11	12	340	380

* SEE FIGURE 4.
For 4-inch and larger push-on joints, maximum deflection angle may be larger than shown above. Consult the manufacturer.

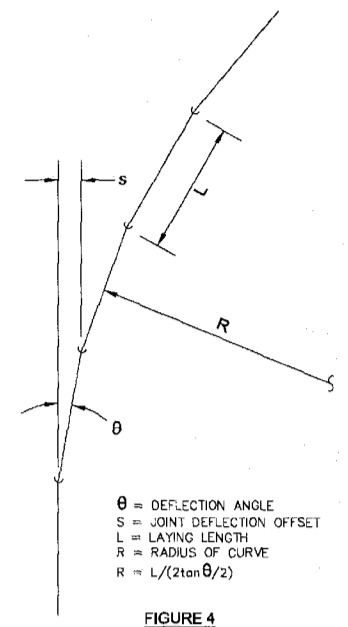
INSTALLATION OF DUCTILE IRON WATER MAINS					
TABLE 4 AWWA C900.05					
Maximum Joint Deflection Full Length of Pipe - Mechanical Joint Pipe					
Nominal Pipe Size (inches)	Deflection Angle - θ (degrees)	Joint Length 18-Foot	Joint Length 20-Foot	Joint Length 18-Foot	Joint Length 20-Foot
3"	8°-18°	31	35	125	140
4"	8°-18°	31	35	125	140
6"	7°-07°	27	30	145	160
8"	5°-21°	20	22	195	220
10"	5°-21°	20	22	195	220
12"	5°-21°	20	22	195	220
14"	3°-35°	13.5	15	285	320
16"	3°-35°	13.5	15	285	320
18"	3°-00°	11	12	340	380
20"	3°-00°	11	12	340	380
24"	2°-25°	9	10	450	500

* SEE FIGURE 4.

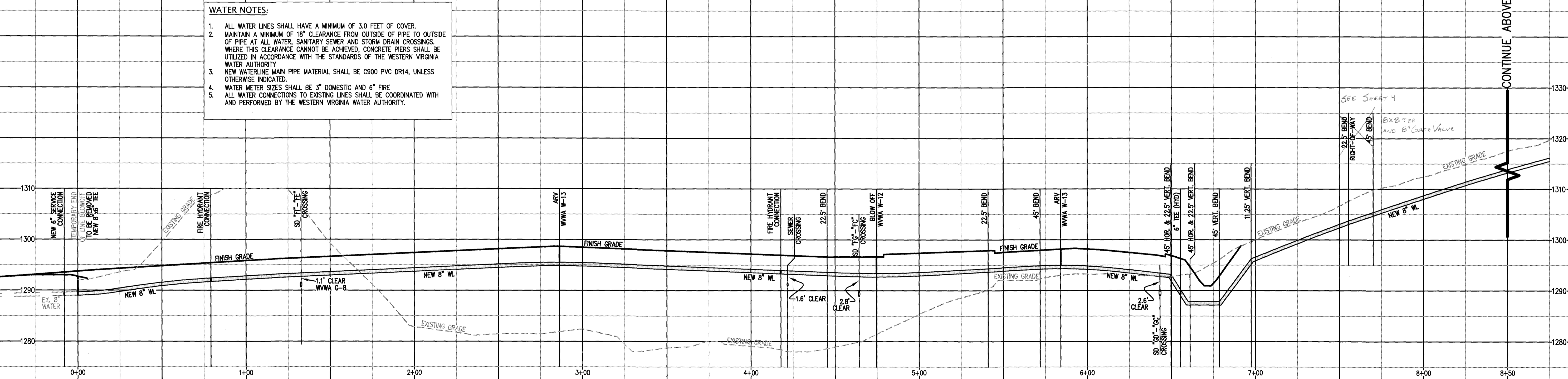
WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

DUCTILE IRON PIPE
DEFLECTION ALLOWANCE TABLES

01/01/14 W-22



WATERLINE PROFILE



WATER NOTES:

- ALL WATER LINES SHALL HAVE A MINIMUM OF 3.0 FEET OF COVER.
- MAINTAIN A MINIMUM OF 18" CLEARANCE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE AT ALL WATER, SANITARY SEWER AND STORM DRAIN CROSSINGS. WHERE THIS CLEARANCE CANNOT BE ACHIEVED, CONCRETE PIERS SHALL BE UTILIZED IN ACCORDANCE WITH THE STANDARDS OF THE WESTERN VIRGINIA WATER AUTHORITY.
- NEW WATERLINE MAIN PIPE MATERIAL SHALL BE C900 PVC DR14, UNLESS OTHERWISE INDICATED.
- WATER METER SIZES SHALL BE 3" DOMESTIC AND 6" FIRE.
- ALL WATER CONNECTIONS TO EXISTING LINES SHALL BE COORDINATED WITH AND PERFORMED BY THE WESTERN VIRGINIA WATER AUTHORITY.

WATERLINE PROFILE



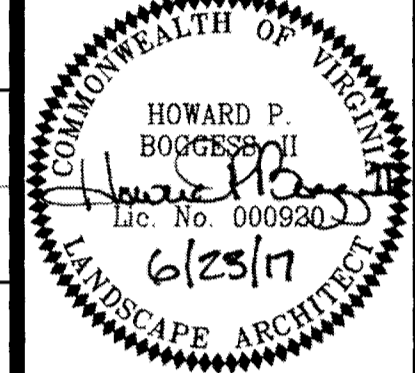
COMPREHENSIVE DEVELOPMENT PLAN
FOR
PHEASANT RIDGE ASSISTED LIVING
PREPARED FOR
SMITH/PACKETT MED-COM, L.L.C.
SITUATED AT 4414 PHEASANT RIDGE ROAD, SW
CITY OF ROANOKE, VIRGINIA

REVISIONS		DESCRIPTION	
NO.	DATE	DESCRIPTION	
1			
2			
3			
4			
5			

DATE: June 23, 2017
SCALE: 1" = 30' (H); 1" = 10' (V)
COMMISSION NO: 16-218
SHEET 12 OF 19

City of Roanoke
Planning, Building, & Development
COMPREHENSIVE DEVELOPMENT PLAN
APPROVED
by Adrian Gilbert 08/17/2017

WATERLINE
PROFILE



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