








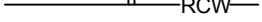




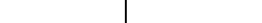





Reclaimed Water Construction Details




	RECLAIMED WATER MAIN, PROPOSED
	RECLAIMED WATER MAIN, EXISTING
	PLUG END
	CAP
	BLOW-OFF ASSEMBLY
	GATE VALVE & BOX
	BUTTERFLY VALVE
	PLUG VALVE
	SWING CHECK VALVE
	AIR RELEASE VALVE
	REDUCER FITTING
	PRESSURE REGULATOR
	FITTING
	DUAL SERVICE RECLAIMED WATER METER
	GANG RECLAIMED WATER METER ASSEMBLY
	ELECTRIC TRANSFORMER
	RECLAIMED WATER METER ASSEMBLY

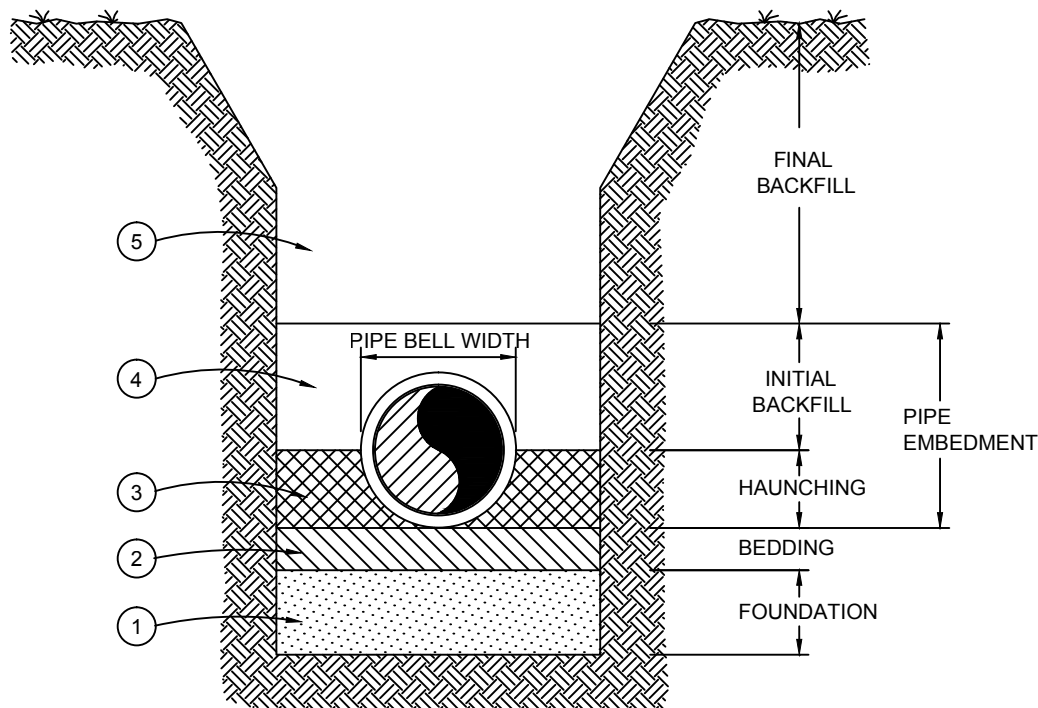
<p>Revision Date: 2/9/2012</p>		<p>Gainesville Regional Utilities Reclaimed Water Construction Details</p> <p style="text-align: center;">SYMBOLS</p>
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PIPE SIZE (IN)	PRESSURE CLASS (PSI)	NOMINAL THICKNESS (IN)
4	350	0.25
6	350	0.25
8	350	0.25
10	350	0.26
12	350	0.28
14	250	0.28
	300	0.30
	350	0.31
16	250	0.30
	300	0.32
	350	0.34
18	250	0.31
	300	0.34
	350	0.36
20	250	0.33
	300	0.36
	350	0.38
24	200	0.33
	250	0.37
	300	0.40
	350	0.43

NOTES:

1. THESE PIPES ARE ADEQUATE FOR THE RATED WORKING PRESSURE PLUS A SURGE ALLOWANCE OF 100 PSI. FIGURE INCLUDES 2.0 SAFETY FACTOR TIMES THE SUM OF WORKING PRESSURE AND 100 PSI SURGE ALLOWANCE OF D.I.P.
2. AN ALLOWANCE FOR SINGLE H-20 TRUCK WITH 1.5 IMPACT FACTOR IS INCLUDED FOR ALL SIZES AND ALL DEPTHS OF COVER.
3. MINIMUM ALLOWABLE DEPTH OF COVER IS 3 FEET.
4. MAXIMUM ALLOWABLE DEPTH OF COVER IS 6 FEET.

Revision Date: 2/24/2012		Gainesville Regional Utilities Reclaimed Water Construction Details GENERAL DATA - DUCTILE IRON PIPE
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NOTES:

1. A FOUNDATION MAY BE REQUIRED IN VERY POOR SOIL (CLASS IV & V MATERIAL) CONDITIONS. FIELD DETERMINATION WILL BE PROVIDED BY GRU INSPECTOR. TYPICAL FOUNDATION THICKNESS SHALL BE 12", BUT MAY VARY ACCORDING TO NATURAL MATERIAL.
2. BEDDING IS REQUIRED PRIMARILY TO BRING THE TRENCH BOTTOM UP TO GRADE. BEDDING MATERIALS SHALL PROVIDE A UNIFORM AND ADEQUATE LONGITUDINAL SUPPORT UNDER THE PIPE. IN DRY SOIL CONDITIONS CLASS II OR CLASS III MATERIAL SHALL BE HAND PLACED 4" TO 6", LIGHTLY COMPACTED, UNIFORM AND NOT FINER THAN THE FOUNDATION MATERIAL. IN WET SOIL CONDITIONS CLASS I, CLASS II OR CLASS III SHALL BE HAND PLACED, 4" TO 6", UNIFORM AND NOT FINER THAN THE FOUNDATION MATERIAL. WHEN UTILIZING CLASS I MATERIAL, SUFFICIENT AMOUNTS OF CLASS II OR CLASS III MATERIAL SHALL BE ADDED TO FILL ALL VOIDS CREATED BY THE CLASS I MATERIAL.
3. HAUNCHING MATERIAL SHALL BE HAND PLACED TO THE SPRINGLINE OF THE PIPE. CLASS II OR CLASS III MATERIAL SHALL BE CONSOLIDATED UNDER THE PIPE AND HAND TAMPED TO PROVIDE ADEQUATE SIDE SUPPORT.
4. INITIAL BACKFILL MATERIAL SHALL BE CLASS II OR CLASS III. IT SHALL BE HAND PLACED TO 12", ABOVE THE TOP OF THE PIPE. THE SOIL SHALL BE CONSOLIDATED BY HAND TAMPING OR WALKING THE SOIL IN PLACE.
5. FINAL BACKFILL MATERIAL MAY BE MACHINE PLACED. THE MATERIAL SHALL BE CLASS II OR CLASS III MATERIAL. CLASS IV MATERIAL MAY BE INSTALLED OUTSIDE OF THE ROADWAY. FINAL BACKFILL UNDER ROADWAYS MAY REQUIRE SPECIAL COMPACTION AND DENSITY TESTS. REFER TO CITY, COUNTY, OR FDOT STANDARDS, AS APPLICABLE.

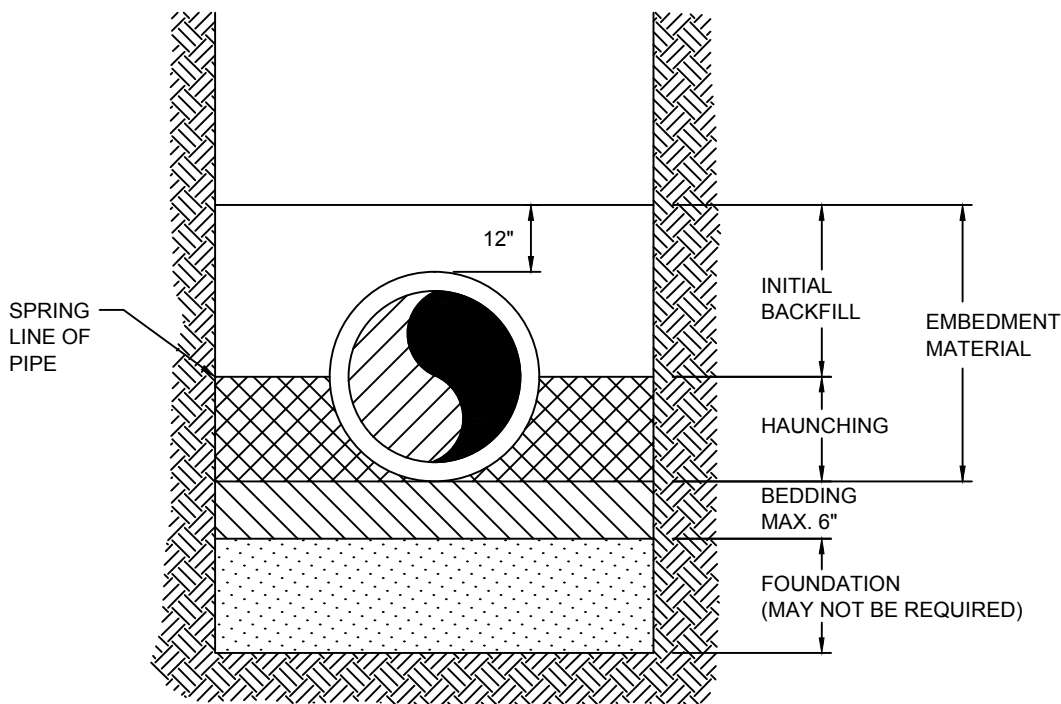
Revision Date:
2/20/08



Gainesville Regional Utilities
Reclaimed Water Construction Details

BACKFILLING REQUIREMENTS

PIPE ZONE TERMINOLOGY



EMBEDMENT MATERIALS

- CLASS I: ANGULAR, $\frac{1}{4}$ " TO $1\frac{1}{2}$ ", GRADED STONE, INCLUDING A NUMBER OF FILL MATERIALS THAT HAVE REGIONAL SIGNIFICANCE SUCH AS CORAL, SLAG, CINDERS, CRUSHED STONE AND CRUSHED SHELLS.
- CLASS II: COARSE SANDS AND GRAVELS WITH MAXIMUM PARTICLE SIZE OF $1\frac{1}{8}$ " INCLUDING VARIOUS GRADED SANDS AND GRAVELS CONTAINING SMALL PERCENTAGES OF FINES, GENERALLY GRANULAR AND NON-COHESIVE, EITHER WET OR DRY. AASHTO SOIL TYPES A-1 AND A-2 ARE INCLUDED IN THIS CLASS.
- CLASS III: FINE SAND AND CLAYEY GRAVELS, INCLUDING FINE SANDS, SAND-CLAY MIXTURES AND GRAVEL-CLAY MIXTURES. AASHTO SOIL TYPES A-3 AND A-4 ARE INCLUDED IN THIS CLASS.
- CLASS IV: SILT, SILTY CLAYS, AND CLAYS, INCLUDING INORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY AND LIQUID LIMITS. AASHTO SOIL TYPES A-5, A-6, A-7 AND A-8 ARE INCLUDED IN THIS CLASS. THESE MATERIALS ARE NOT TO BE USED FOR BEDDING, HAUNCHING OR INITIAL BACKFILL.
- CLASS V: THIS CLASS INCLUDES THE ORGANIC SOILS, AS WELL AS SOILS CONTAINING FROZEN EARTH, DEBRIS, ROCKS LARGER THAN $1\frac{1}{2}$ " IN DIAMETER AND OTHER FOREIGN MATERIALS. THESE MATERIALS ARE NOT TO BE USED FOR BEDDING, HAUNCHING OR INITIAL BACKFILL.

Revision Date:
2/20/08

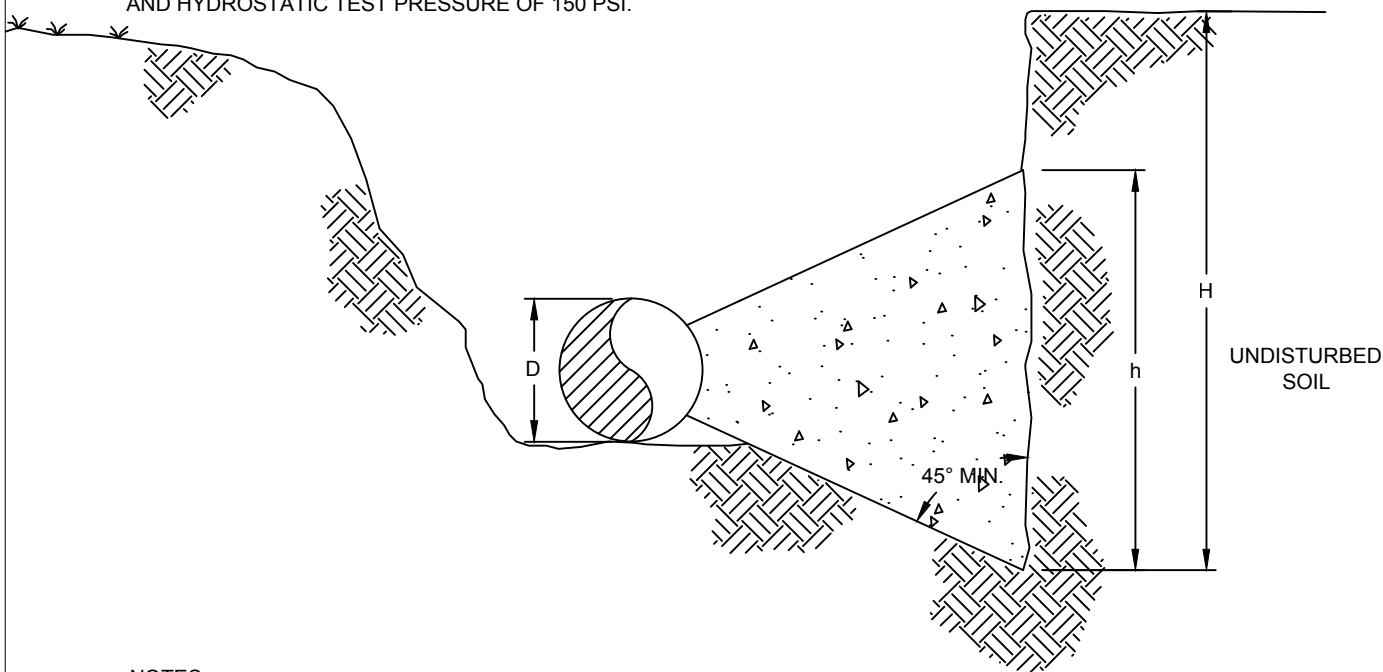


Gainesville Regional Utilities
Reclaimed Water Construction Details

SOIL CLASSIFICATION

NOMINAL PIPE DIAMETER (INCHES)	BEARING AREA REQUIRED (SQ. FT.)				
	DEAD ENDS	11-1/4° BEND	22-1/2° BEND	45° BEND	90° BEND
4	1	1	1	1	2
6	2	1	1	2	3
8	4	1	2	3	5
10	5	1	2	4	7
12	7	2	3	6	10
14	9	2	4	7	13
16	12	3	5	10	17
18	14	3	6	11	20
20	19	4	8	14	26
24	27	6	11	21	37
30	41	8	16	31	57
36	58	12	23	45	82

NOTE: 1. TABLE CALCULATED FOR A SOIL BEARING CAPACITY OF 3000 POUNDS PER SQUARE FOOT AND HYDROSTATIC TEST PRESSURE OF 150 PSI.



NOTES:

1. THE BLOCK HEIGHT (h) SHOULD BE EQUAL TO OR LESS THAN HALF THE DEPTH OF BURY (H). DO NOT ALLOW (h) TO BE LESS THAN (D) THE DIAMETER OF THE PIPE.
2. BEARING AREA = w x h, WHERE (w) IS THE WIDTH OF THE REACTION BLOCK AGAINST UNDISTURBED SOIL. DETERMINE THE BEARING AREA FROM THE TABLE ABOVE AND DIVIDE BY (h), E.G. FOR A 10" PIPE WITH A 45° BEND, THE REQ'D THRUST BLOCK AREA WOULD BE 4 SQ. FT. (FROM TABLE ABOVE). IF H = 4 FT., THEN h MUST BE BETWEEN 10 IN. (PIPE DIA.) AND 2 FT. (1/2 H). ASSUME h = 2 FT., THEN:
w = BEARING AREA / h = 4 SQ. FT. / 2 FT. = 2 FT.


Revision Date: 2/20/08		Gainesville Regional Utilities Reclaimed Water Construction Details THRUST BLOCK DESIGN - BEARING AREA
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TABLE I

NOMINAL PIPE DIAMETER (IN.)	FORCE = THRUST IN POUNDS AT 150 P.S.I.				
	DEAD ENDS	11-1/4° BEND	22-1/2° BEND	45° BEND	90° BEND
4"	2715	533	1059	2078	3840
6"	5609	1100	2189	4293	7932
8"	9648	1892	3764	7385	13644
10"	14516	2846 *	5663	11110	20528
12"	20528	4025	8009	15711	29030
14"	27428	5376	10700	20993	38789
16"	35669	6992	13914	27300	50442
18"	41798	8782	16305	31992	59111
20"	54965	10775	21441	42071	77732
24"	78419	15372	30591	60021	110900
30"	120638	23648	47061	92336	170691
36"	172814	33875	67414	132266	244394

IN COMPUTING THE THRUST FORCE TO BE RESISTED BY FORCE BLOCKING THE FORMULA
 $F = 2PA \sin(0/2)$ SHALL BE USED FOR DIFFERENT TYPES OF BENDS AND $F = PA$ FOR DEAD
 END PIPE.

* EXAMPLE: WITH 10" DIA. D.I.P. (11.1" O.D.) & 11-1/4" BEND.
 $F = 2 \times 150 \text{ P.S.I.} \times (\pi \times (11.1/2) \times \sin(11.25/2)) = 2846 \text{ LBS.}$

- NOTE: 1. THE SOIL BEARING CAPACITY VALUE MOST COMMONLY USED IN GRU SERVICE AREA
 3,000 LB./SQ. FT.
2. THE O.D. OF THE PIPE IS USED IN DETERMINING THE AREA BECAUSE THE PRESSURE
 IS DISTRIBUTED TO THE GASKET FOR MECHANICAL AND SLIP JOINTS.
3. MULTIPLY TABLE I BY 0.67 TO DETERMINE THE THRUST AT 100 PSI.


Revision Date: 2/20/08		Gainesville Regional Utilities Reclaimed Water Construction Details THRUST BLOCK DESIGN - THRUST FORCE
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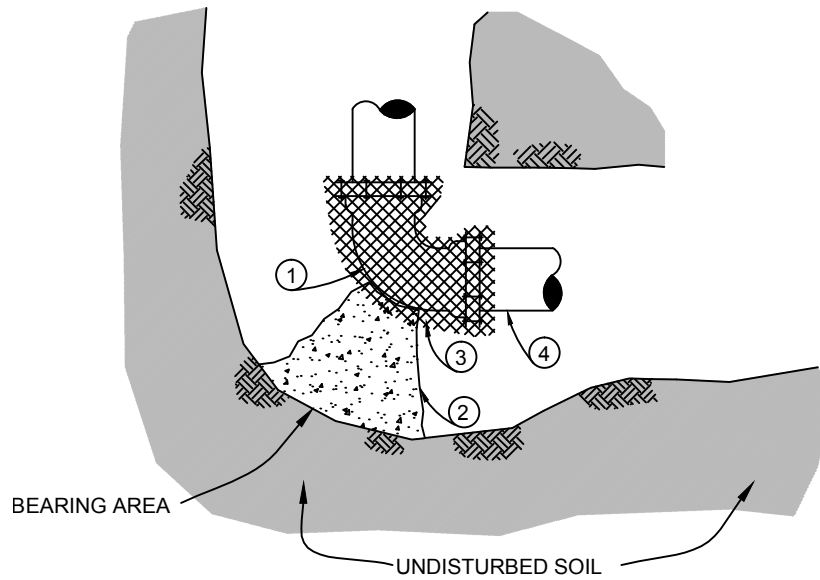
TABLE I

BEARING CAPACITIES OF UNDISTURBED SOIL			
SAFE RANGE IN POUNDS PER SQ. FT.		UNDISTURBED SOIL TYPE	
50,000	TO	200,000	LODGE ROCK, GRANITE, TRAP ROCK & SIMILAR
50,000	TO	60,000	ROCK - EQUAL TO GOOD MASONARY
30,000	TO	40,000	ROCK - EQUAL TO BEST BRICK
10,000	TO	20,000	ROCK - EQUAL TO POOR BRICK
8,000	TO	12,000	CLAY - ALWAYS DRY
4,000	TO	8,000	CLAY - MODERATELY DRY
2,000	TO	4,000	CLAY - SOFT
8,000	TO	10,000	HARDPAN, CEMENTED SAND & GRAVEL
8,000	TO	12,000	SAND - COMPACTED FIRM
4,000	TO	8,000	SAND - CLEAN, DRY, MEDIUM, COMPACT
2,000	TO	4,000	SAND - FINE LOOSE
1,000	TO	2,000	QUICK SAND, ALLUVIAL SOIL

NOTES:

1. THE SOIL BEARING CAPACITY VALUE MOST COMMONLY USED IN GRU SERVICE AREA IS 3,000 LB./SQ. FT.
2. THE O.D. OF THE PIPE IS USED IN DETERMINING THE AREA BECAUSE THE PRESSURE IS DISTRIBUTED TO THE GASKET FOR MECHANICAL AND SLIP JOINTS.


Revision Date: 2/20/08		Gainesville Regional Utilities Reclaimed Water Construction Details
THRUST BLOCK DESIGN - SOIL BEARING CAPACITY		

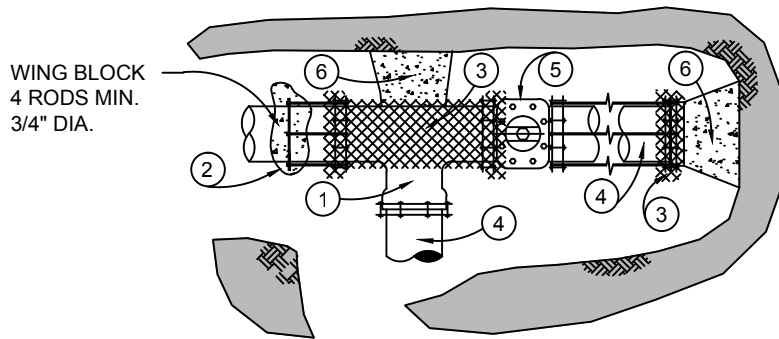


MATERIALS	
ITEM	DESCRIPTION
1	90°, 45°, 22-1/2°, 11-1/4° BEND D.I. MJ
2	CONCRETE 2500 PSI MIN. (FDOT CLASS I)
3	VISQUEEN or FELT 8 MILS THICKNESS (MIN.) or 15 lb (MIN.)
4	PIPE D.I. or PVC

NOTES:

1. SEE RCW-2.2 DATA FOR THE BEARING AREA FOR THE CONCRETE REACTION BLOCK.
2. A NON-POROUS MATERIAL SHALL BE PLACED AROUND THE ENTIRE FITTING TO PROTECT THE BOLTS FROM THE CONCRETE.
3. LOCATING WIRE REQUIRED ON ALL PVC RECLAIMED WATER MAINS.

Revision Date: 2/20/08		Gainesville Regional Utilities Reclaimed Water Construction Details THRUST BLOCK BEND
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MATERIALS

ITEM	DESCRIPTION	
1	TEE	D.I., M.J.
2	CONCRETE	2500 PSI
3	VISQUEEN or FELT	8 MILS THICKNESS (MIN.) or 15 lb (MIN.)
4	PIPE	D.I. or PVC (DR-18)
5	VALVE BOX	
6	CONCRETE THRUST BLOCK	2500 PSI

NOTES:

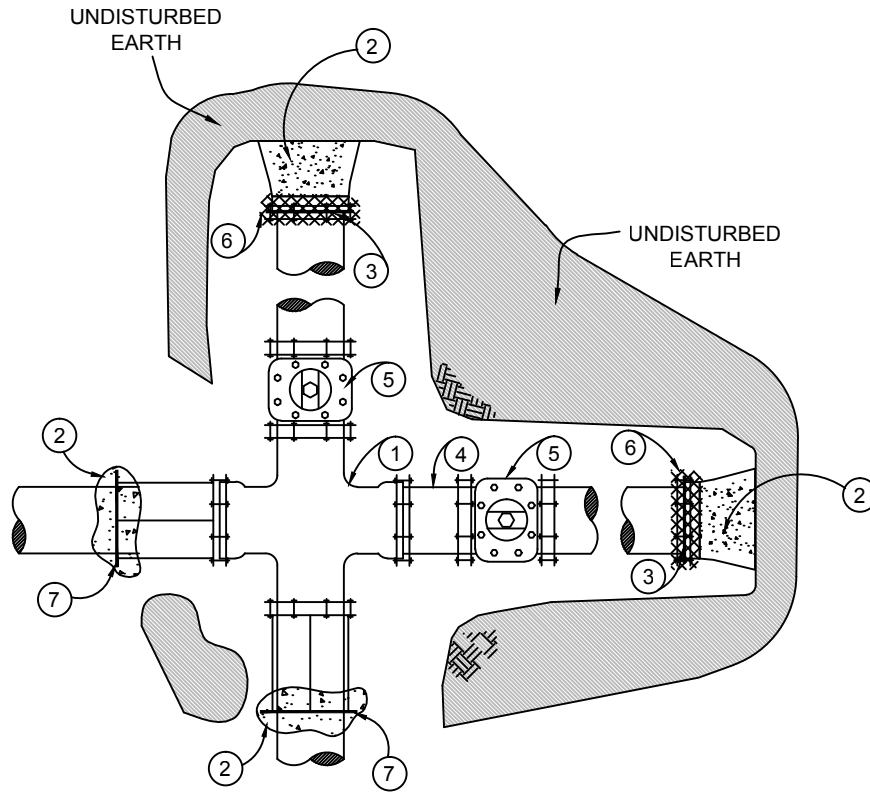
- SEE RCW-2.2 FOR BEARING AREA REQUIRED.
- A NONPOROUS MATERIAL 8 MILS (MIN.) VISQUEEN OR 15 lb (MIN.) FELT SHOULD BE PLACED BETWEEN THE CONCRETE AND ENTIRE FITTINGS.

Revision Date:
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Gainesville Regional Utilities
Reclaimed Water Construction Details

THRUST BLOCK - TEE



M A T E R I A L S

ITEM	DESCRIPTION
1	CROSS D.I., M.J.
2	CONCRETE 2500 PSI
3	CAP M.J., E.B.A.A. MEGALUG
4	PIPE D.I. or PVC (DR-18)
5	VALVE GATE, M.J.
6	VISQUEEN or FELT 8 MILS THICKNESS (MIN.) or 15 lb (MIN.)
7	WING BLOCK W/ 4 RODS (MIN.) - 3/4" DIA.

NOTES:

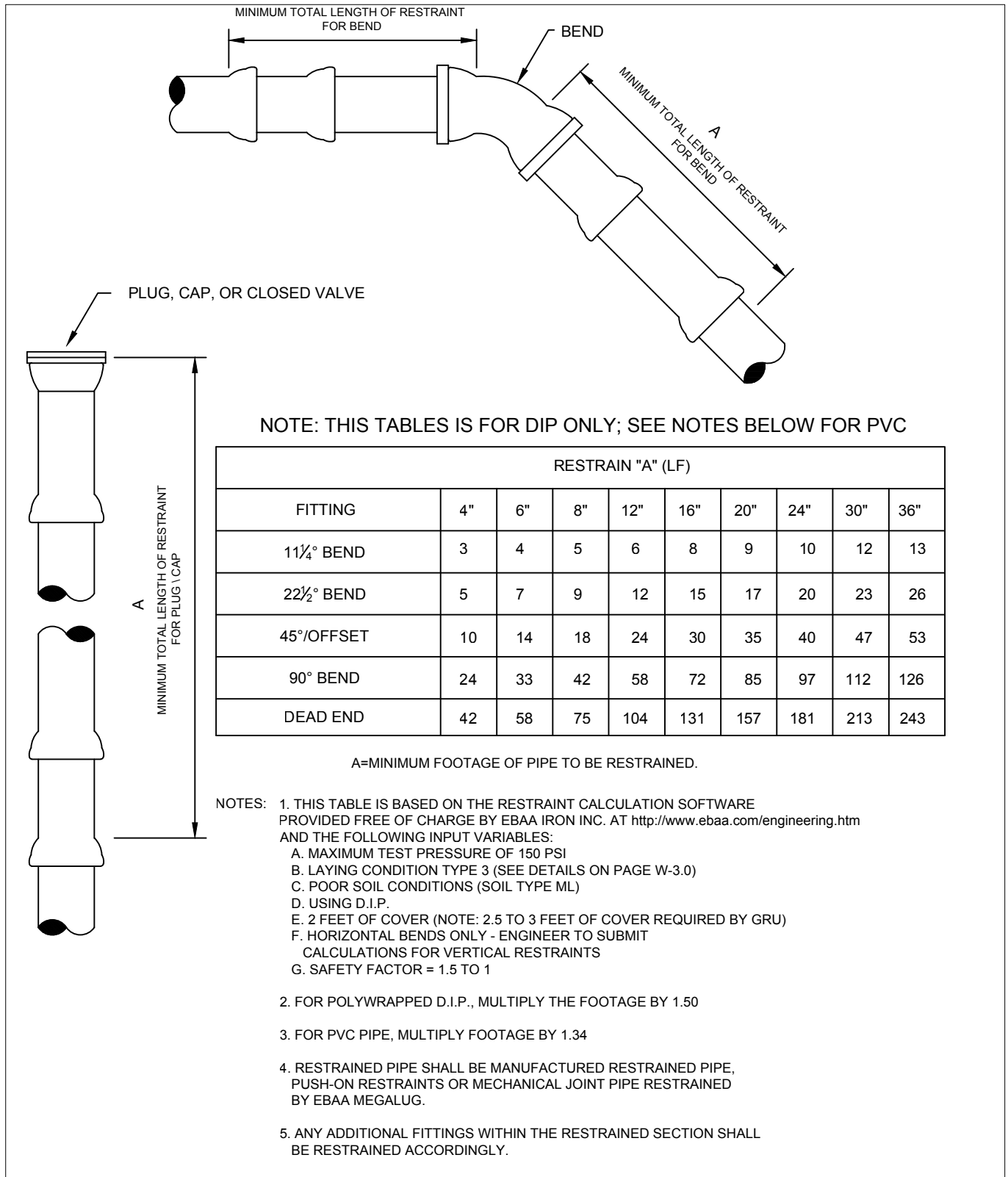
1. SEE RCW-2.2 FOR BEARING AREA REQUIRED.
2. A NONPOROUS MATERIAL 8 MILS (MIN.) VISQUEEN OR 15 lb (MIN.) FELT SHOULD BE PLACED BETWEEN THE CONCRETE AND THE ENTIRE FITTING.

Revision Date:
2/20/08



Gainesville Regional Utilities
Reclaimed Water Construction Details

THRUST BLOCK - CROSSES



Revision Date: 9/8/08		Gainesville Regional Utilities Reclaimed Water Construction Details RESTRAINED JOINT STANDARD FOR BENDS, PLUGS, AND CAPS
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NOTE: THESE TABLES ARE FOR PVC PIPE ONLY; SEE W-2.8 OR W-2.9 FOR DIP.

RESTRAIN "A" (LF)									
FITTING	4"	6"	8"	12"	16"	20"	24"	30"	36"
11¼° BEND	4	6	7	8	11	12	14	16	18
22½° BEND	7	10	12	16	20	23	27	31	35
45°/OFFSET	14	19	24	33	41	47	54	63	71
90° BEND	33	45	57	78	97	114	130	150	169
DEAD END	57	78	101	140	176	211	243	286	326

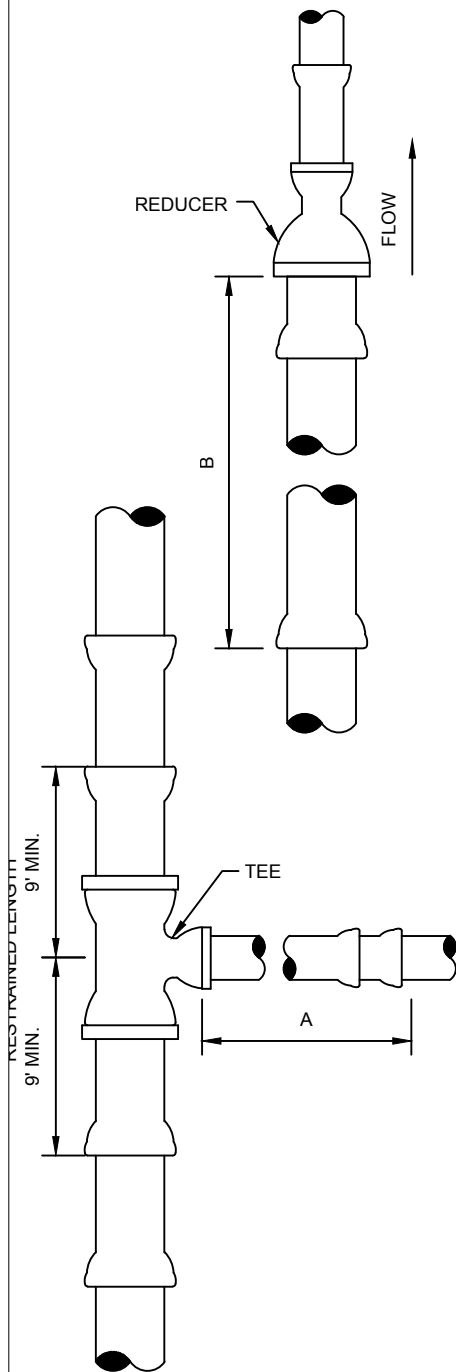
FITTING SIZE	RESTRAIN (LF)	
	TEE "A"	REDUCER "B"
4x4	28	*
6x4	14	40
6x6	50	*
8x4	A.T.	72
8x6	38	43
8x8	73	*
12x4	A.T.	121
12x6	15	102
12x8	50	75
12x12	110	*
16x6	A.T.	149
16x8	28	129
16x12	89	75
16x16	146	*
20x6	A.T.	189
20x8	11	174
20x12	69	133
20x16	125	74
20x20	180	*
24x6	A.T.	225
24x8	A.T.	213
24x12	50	180
24x16	104	133
24x20	157	72
24x24	211	*

FITTING SIZE	RESTRAIN (LF)	
	TEE "A"	REDUCER "B"
30x6	A.T.	272
30x8	A.T.	263
30x12	27	238
30x16	77	201
30x20	126	156
30x24	179	101
30x30	254	*
36x6	A.T.	315
36x8	A.T.	307
36x12	10	287
36x16	54	259
36x20	100	223
36x24	146	179
36x30	217	100
36x36	292	*

A.T.=RESTRAINT REQUIRED AT TEE ONLY.
*-NOT APPLICABLE

Revision Date: 8/22/2016		Gainesville Regional Utilities Reclaimed Water Construction Details PVC RESTRAINED JOINT STANDARD FOR BENDS, PLUGS, AND CAPS
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NOTE: THESE TABLES ARE FOR DIP ONLY; SEE NOTES BELOW FOR PVC




FITTING SIZE	RESTRAIN (LF)	
	TEE "A"	REDUCER "B"
4x4	21	*
6x4	10	30
6x6	37	*
8x4	A.T.	54
8x6	28	32
8x8	54	*
12x4	A.T.	90
12x6	11	76
12x8	37	55
12x12	82	*
16x6	A.T.	111
16x8	21	96
16x12	66	56
16x16	109	*
20x6	A.T.	141
20x8	8	130
20x12	51	99
20x16	93	55
20x20	134	*
24x6	A.T.	168
24x8	A.T.	159
24x12	37	134
24x16	77	99
24x20	117	54
24x24	157	*

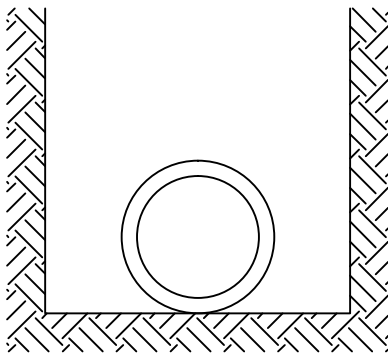
FITTING SIZE	RESTRAIN (LF)	
	TEE "A"	REDUCER "B"
30x6	A.T.	203
30x8	A.T.	196
30x12	20	177
30x16	57	150
30x20	94	116
30x24	132	75
30x30	189	*
36x6	A.T.	235
36x8	A.T.	229
36x12	7	214
36x16	40	193
36x20	74	166
36x24	109	133
36x30	162	74
36x36	218	*

A.T.=RESTRAINT REQUIRED AT TEE ONLY.
*-NOT APPLICABLE

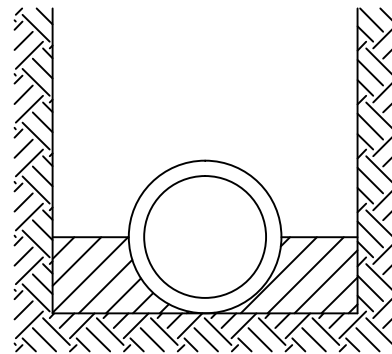
NOTES:

- THIS TABLE IS BASED ON THE RESTRAINT LENGTH CALCULATOR SOFTWARE PROVIDED FREE OF CHARGE BY EBAA IRON INC. AT <http://www.ebaa.com/engineering.htm> AND THE FOLLOWING INPUT VARIABLES:
 A. MAXIMUM TEST PRESSURE OF 150 PSI
 B. LAYING CONDITION TYPE 3 (SEE DETAILS ON PAGE W-3.0)
 C. POOR SOIL CONDITIONS (SOIL TYPE ML)
 D. USING D.I.P.
 E. 2 FEET OF COVER (NOTE: 2.5 TO 3 FEET OF COVER REQUIRED BY GRU)
 F. HORIZONTAL BENDS ONLY - ENGINEER TO SUBMIT CALCULATIONS FOR VERTICAL RESTRAINTS
 G. SAFETY FACTOR = 1.5 TO 1
- FOR POLYWRAPPED D.I.P., MULTIPLY THE FOOTAGE BY 1.50
- FOR PVC PIPE, MULTIPLY FOOTAGE BY 1.34
- RESTRAINED PIPE SHALL BE MANUFACTURED RESTRAINED PIPE, PUSH-ON RESTRAINTS OR MECHANICAL JOINT PIPE RESTRAINED BY EBAA MEGALUG.
- ANY ADDITIONAL FITTINGS WITHIN THE RESTRAINED SECTION SHALL BE RESTRAINED ACCORDINGLY.
- IF EITHER (OR BOTH) RUNS OF A TEE HAVE A VALVE, THEN THE OTHER RUN AND THE BRANCH OF THE TEE SHALL BE TREATED AS AN ELL, AND RESTRAINED ACCORDING TO THE TABLE ON DETAIL W-2.8.

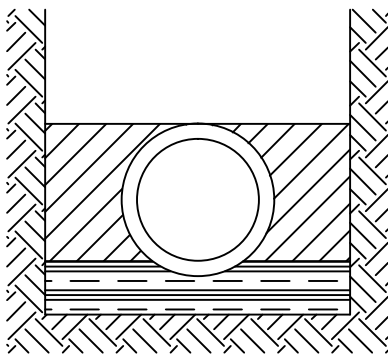
Revision Date: 4/17/09		Gainesville Regional Utilities Reclaimed Water Construction Details RESTRAINED JOINT STANDARD FOR TEES AND REDUCERS
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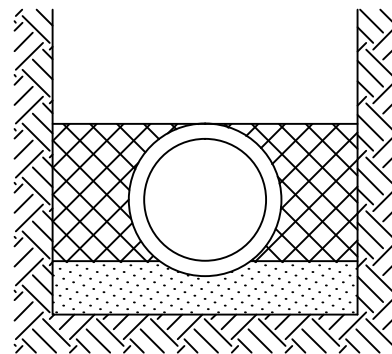
TYPE 1*
FLAT-BOTTOM TRENCH. ** LOOSE
BACKFILL.



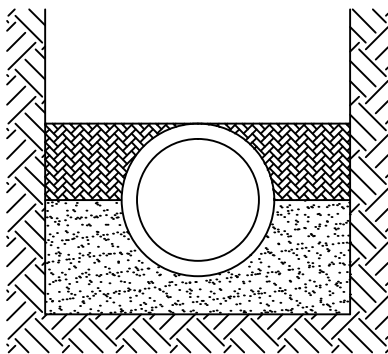
TYPE 2
FLAT-BOTTOM TRENCH. ** BACKFILL
LIGHTLY CONSOLIDATED TO
CENTERLINE OF PIPE.



TYPE 3
PIPE BEDDED IN 4-INCH MINIMUM
LOOSE SOIL. *** BACKFILL LIGHTLY
CONSOLIDATED TO TOP OF PIPE.



TYPE 4
PIPE BEDDED IN SAND, GRAVEL, OR
CRUSHED STONE TO DEPTH OF 1/8
PIPE DIAMETER, 4-INCH MINIMUM.
BACKFILL COMPACTED TO TOP OF
PIPE (APPROXIMATELY 80% STANDARD
PROCTOR, AASHTO T-99).



TYPE 5
PIPE BEDDED TO ITS CENTERLINE IN
COMPACTED GRANULAR MATERIAL, 4-INCH
MINIMUM UNDER PIPE. COMPACTED GRANULAR
OR SELECT MATERIAL *** TO TOP OF PIPE
(APPROXIMATELY 90% STANDARD PROCTOR,
AASHTO T-99).

NOTES

CONSIDERATION OF THE PIPE-ZONE EMBEDMENT CONDITIONS INCLUDED IN THIS FIGURE MAY BE INFLUENCED BY FACTORS OTHER THAN PIPE STRENGTH. FOR ADDITIONAL INFORMATION ON PIPE BEDDING AND BACKFILL, SEE ANSI/AWWA C600.

*FOR NOMINAL PIPE SIZES 14-INCH AND LARGER,
**FLAT BOTTOM IS DEFINED AS UNDISTURBED EARTH
CONSIDERATION SHOULD BE GIVEN TO THE USE OF
LAYING CONDITIONS OTHER THAN TYPE 1.

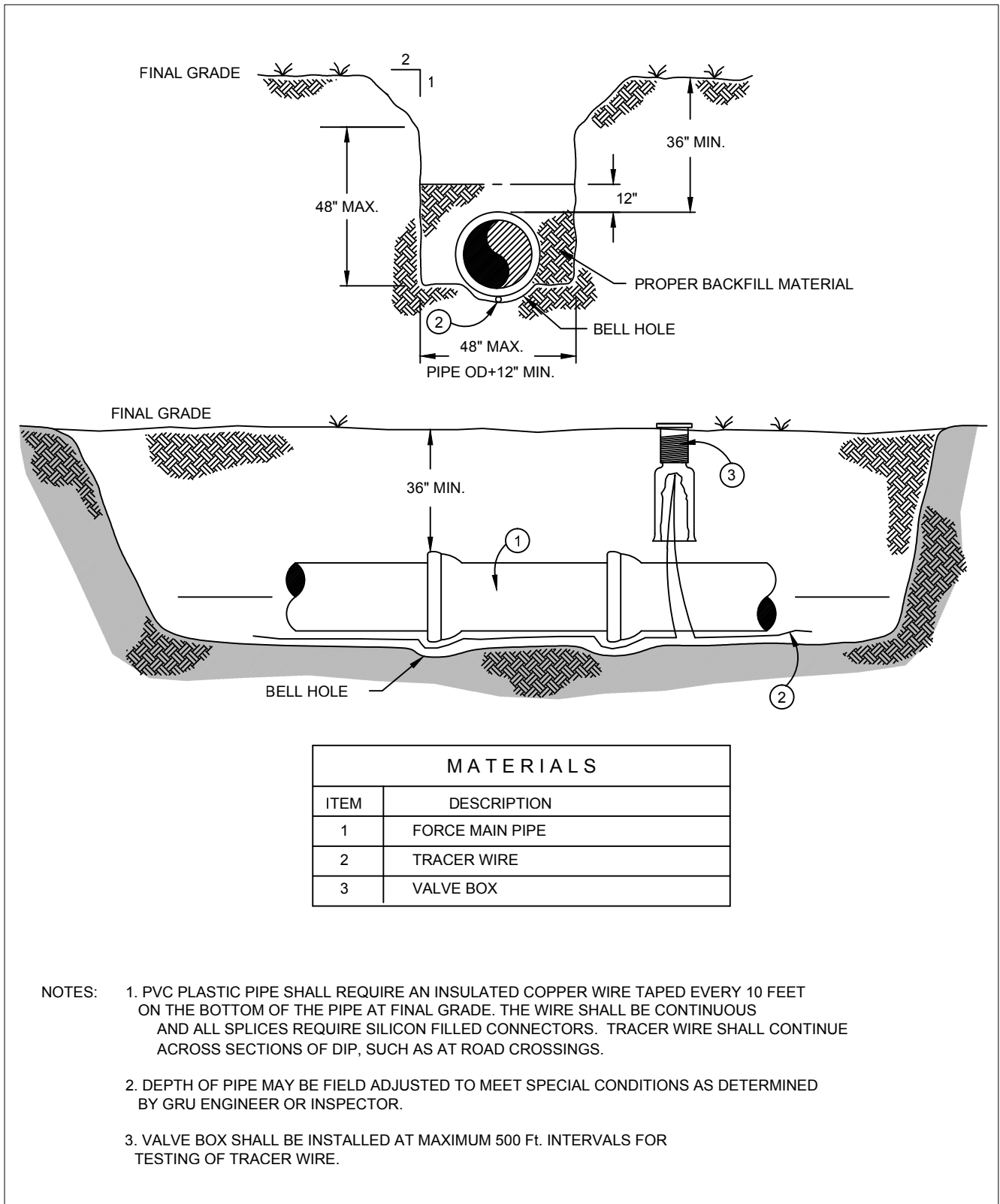
***"LOOSE SOIL" OR "SELECT MATERIAL" IS DEFINED AS "NATIVE SOIL EXCAVATED FROM THE TRENCH, FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH".


Revision Date:
2/20/08

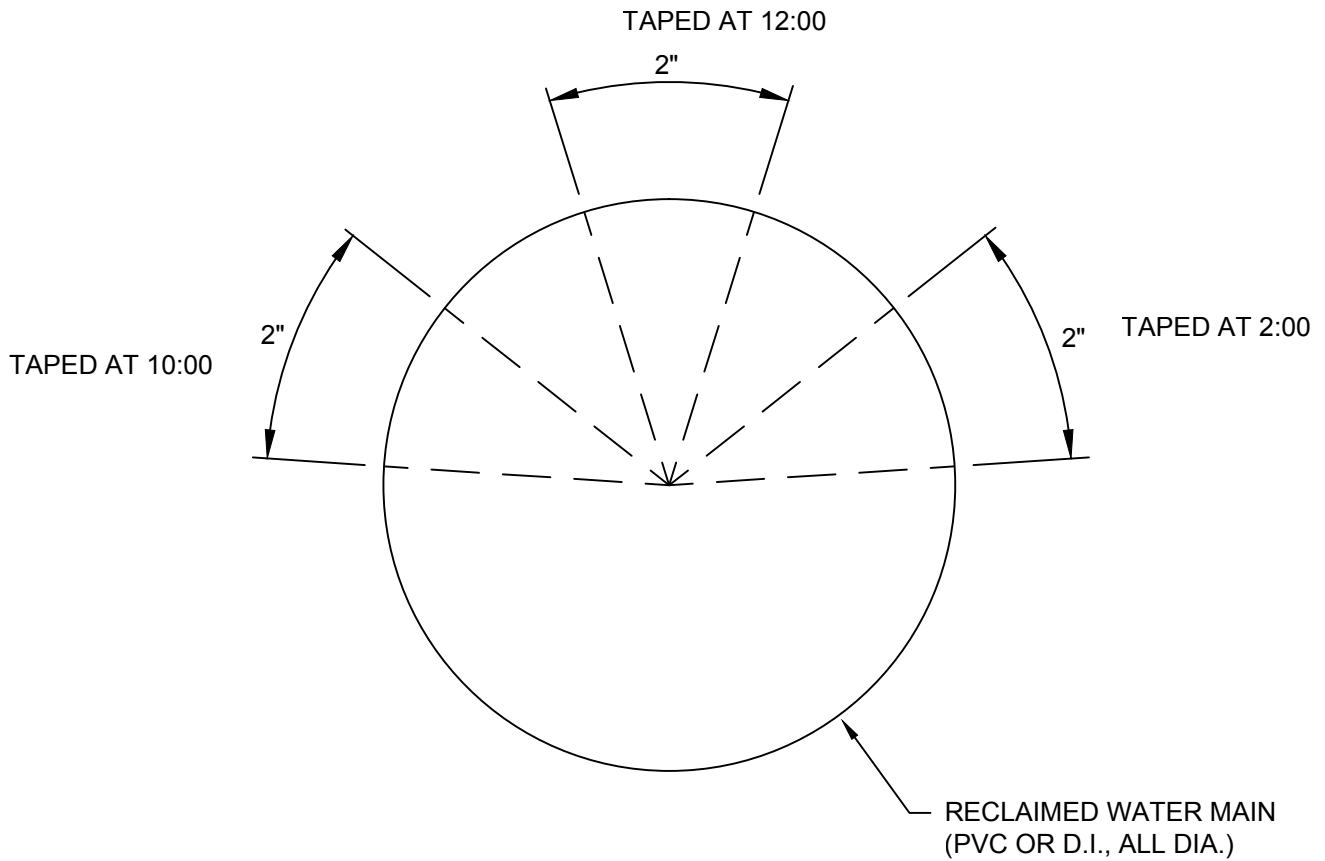


Gainesville Regional Utilities
Reclaimed Water Construction Details

PIPE LAYING CONDITIONS



Revision Date: 2/20/08		Gainesville Regional Utilities Reclaimed Water Construction Details RECLAIMED WATER MAIN CONSTRUCTION
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NOTES:

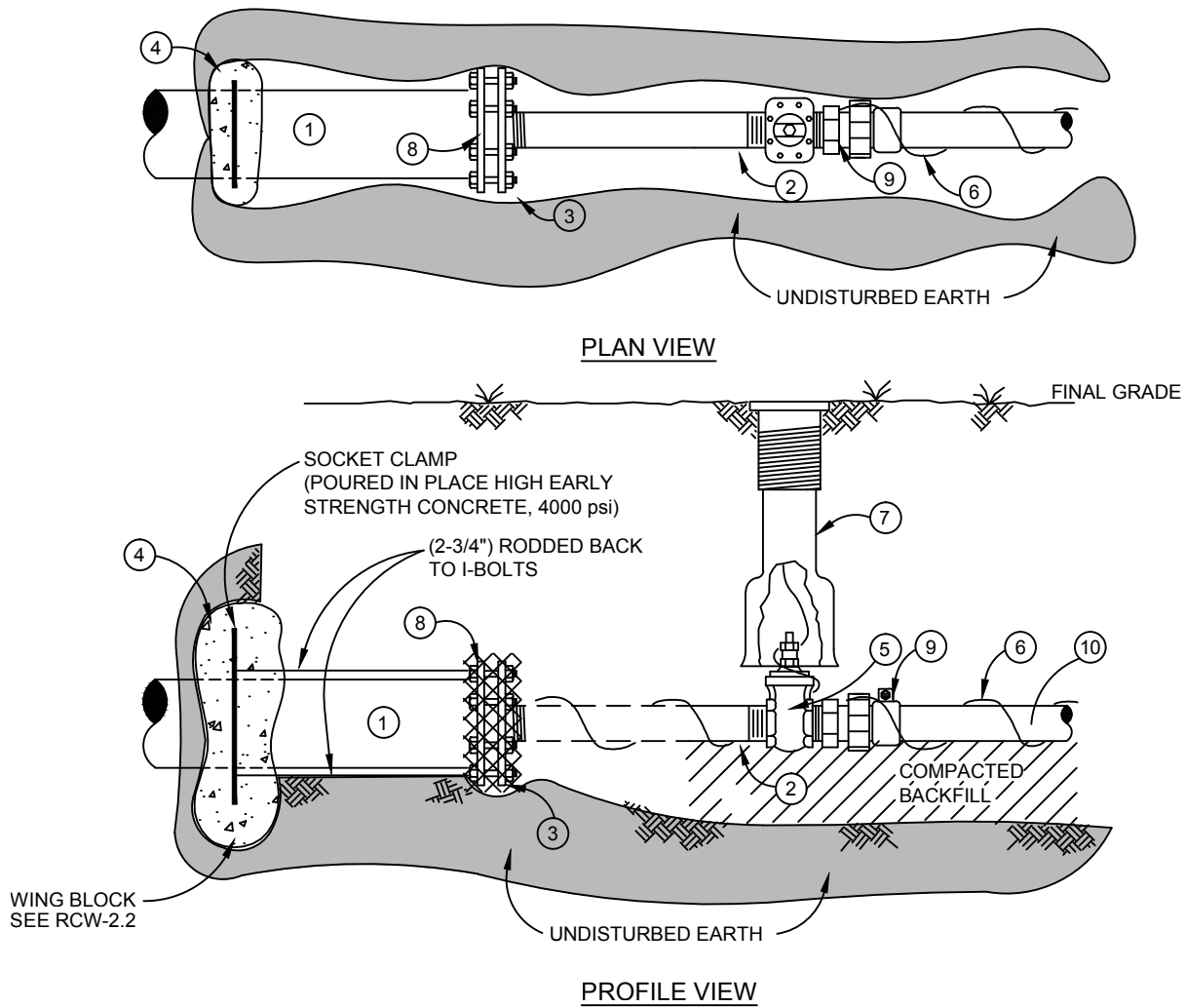
1. PVC PIPE SHALL BE PANATONE PURPLE AND LABELED "RECLAIMED WATER."
2. ALL OTHER PIPE MATERIAL SHALL BE IDENTIFIED WITH PURPLE PAINT OR AN ADHESIVE-BACKED TAPE FOR DI PIPE 12" DIA. AND LARGER.
3. THERE SHALL BE A MINIMUM OF THREE COLORED STRIPES OR TAPES ALONG THE PIPE (LOCATED AT 10:00, 12:00, AND 2:00) EACH A MINIMUM OF 2 INCHES WIDE.
4. THERE SHALL BE AN INSULATED PURPLE #10 AWG COPPER WIRE INSTALLED WITH PVC PIPES, NO EXCEPTIONS.

Revision Date:
2/20/08



Gainesville Regional Utilities
Reclaimed Water Construction Details

RECLAIMED WATER MAIN PIPE IDENTIFICATION



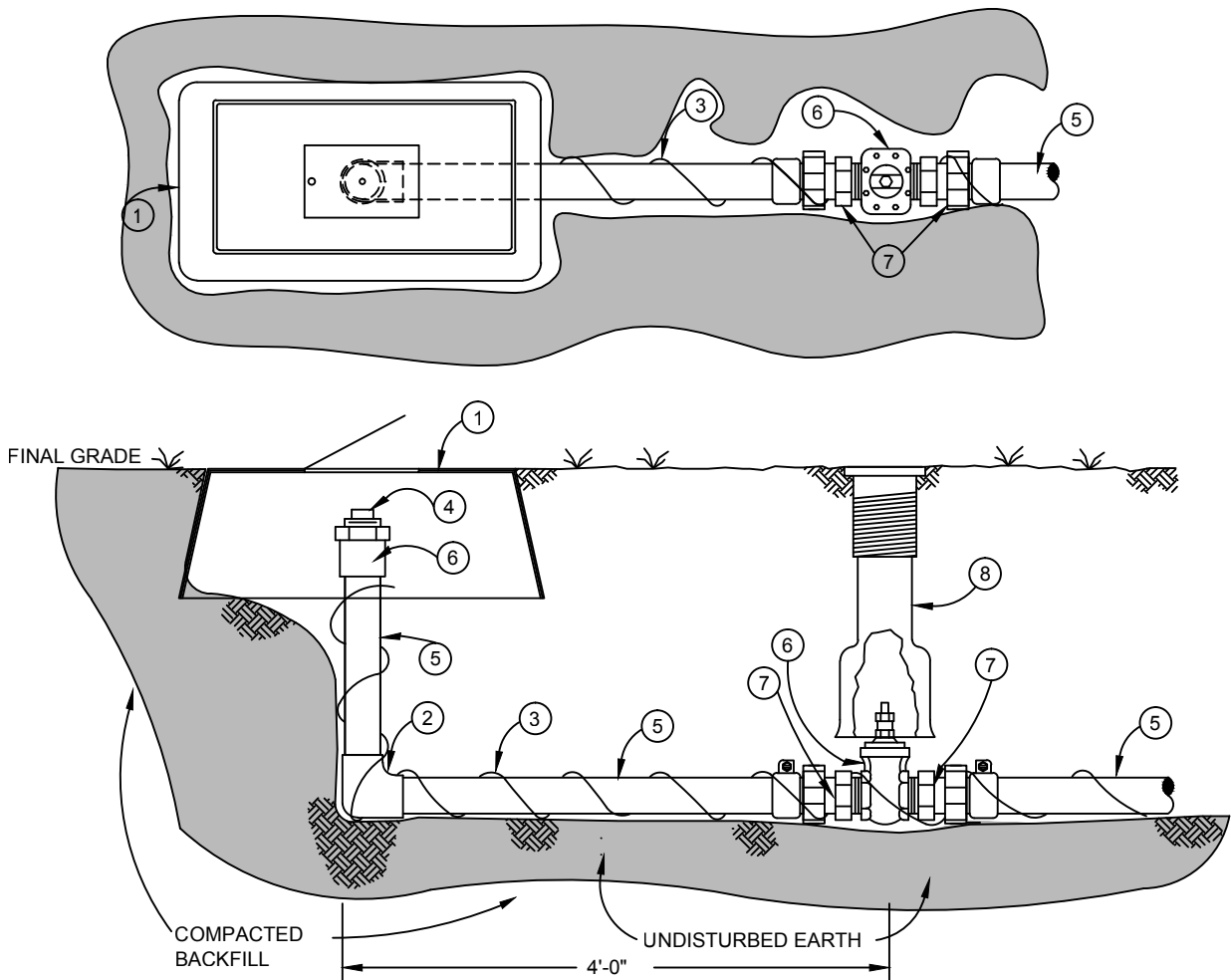
MATERIALS

ITEM	DESCRIPTION	
1	4", 6", 8", 12"	PIPE, D.I. OR PVC (DR-18)
2	2" x 6" L	BRASS NIPPLE INTO VALVE
3	2" (TAP)	CAP D.I. (THREADED)
4		CONCRETE THRUST BLOCK (4000 psi)
5	2"	GATE VALVE, SQUARE NUT, RESILIENT WEDGE
6		WIRE, COPPER, INSULATED PURPLE, #10 AWG
7		BOX, VALVE
8		EBAA MEGA LUG
9		MIP x PVC COMPRESSION COUPLING FORD CATALOG # 87-77 OR APPROVED EQUAL
10	2"	PVC PIPE (SCH 80)

Revision Date:
2/20/08



Gainesville Regional Utilities
Reclaimed Water Construction Details
**RECLAIMED WATER MAINS
REDUCTION OF LINE SIZE**



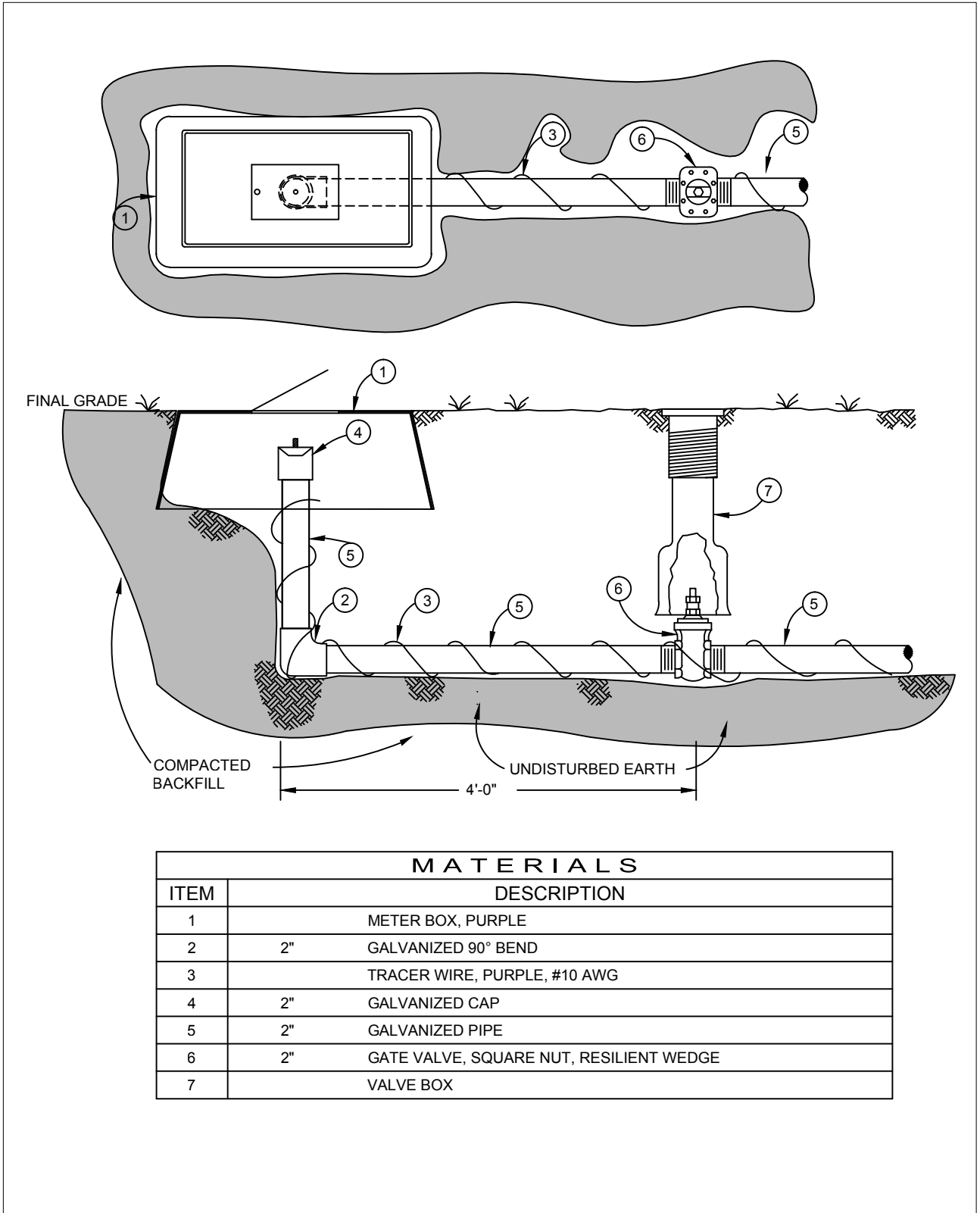
MATERIALS	
ITEM	DESCRIPTION
1	METER BOX
2	2" PVC 90° BEND
3	TRACER WIRE, COPPER, BLUE INSULATED #10 AWG
4	2" GALVANIZED PLUG
5	2" PVC PIPE
6	2" GATE VALVE, SQUARE NUT, RESILIENT WEDGE
7	MIP x PVC COMPRESSION COUPLING FORD CATALOG # 87-77 OR APPROVED EQUAL
8	VALVE BOX, C1

Revision Date:
2/20/08



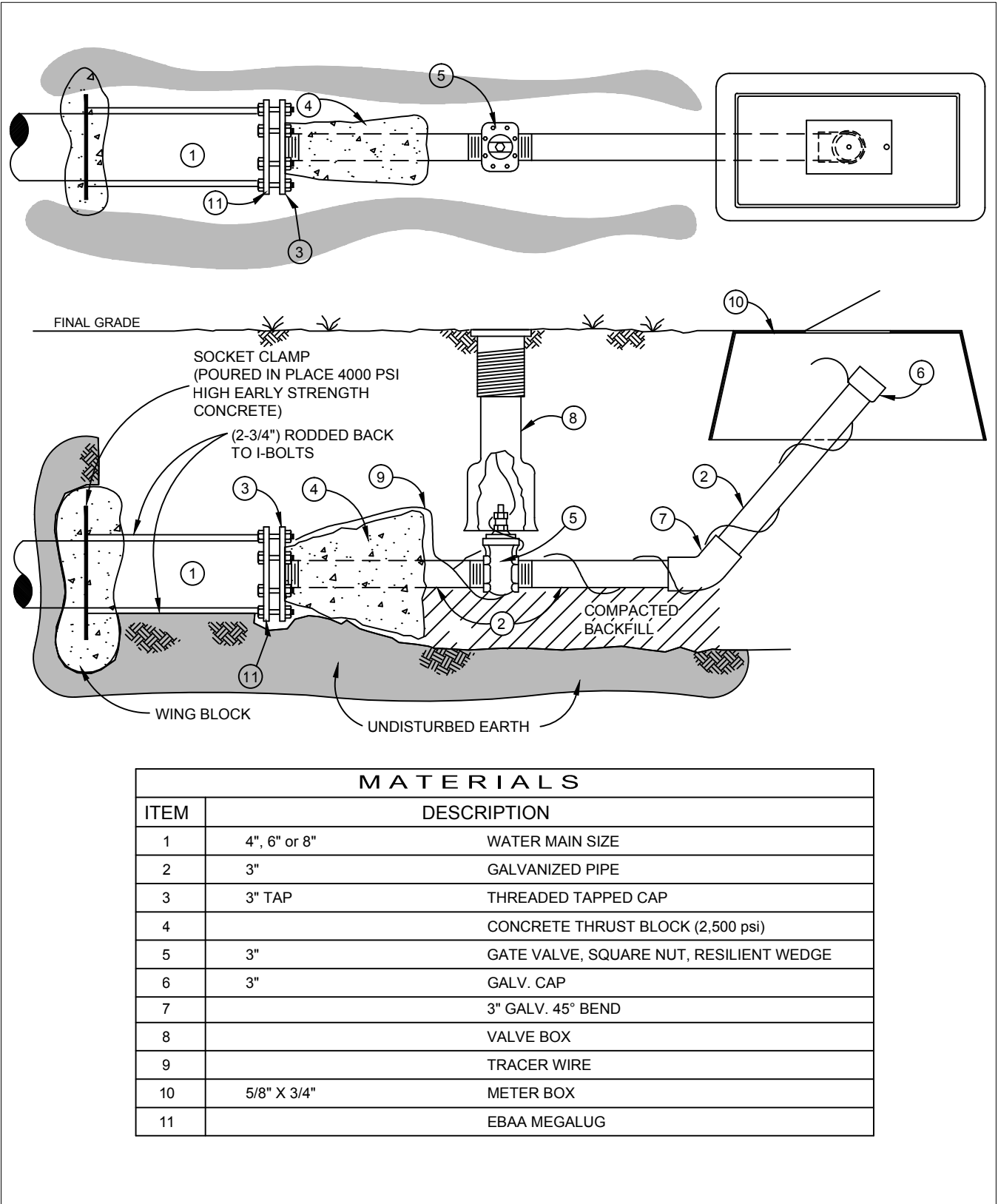
Gainesville Regional Utilities
Reclaimed Water Construction Details

2" PVC BLOW-OFF ASSEMBLY

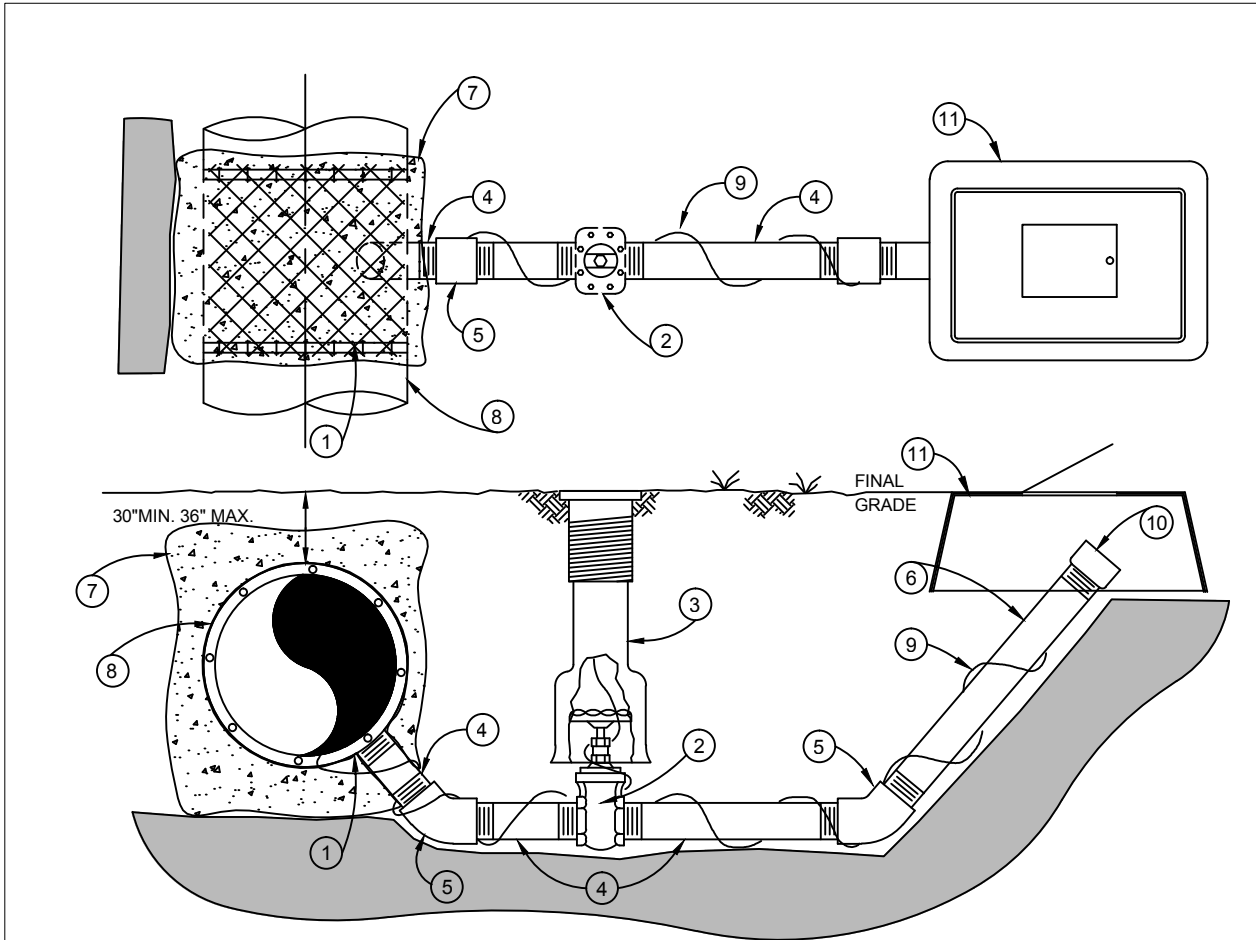


MATERIALS	
ITEM	DESCRIPTION
1	METER BOX, PURPLE
2	2" GALVANIZED 90° BEND
3	TRACER WIRE, PURPLE, #10 AWG
4	2" GALVANIZED CAP
5	2" GALVANIZED PIPE
6	2" GATE VALVE, SQUARE NUT, RESILIENT WEDGE
7	VALVE BOX

Revision Date: 2/20/08		Gainesville Regional Utilities Reclaimed Water Construction Details 2" GALVANIZED PIPE BLOW-OFF ASSEMBLY
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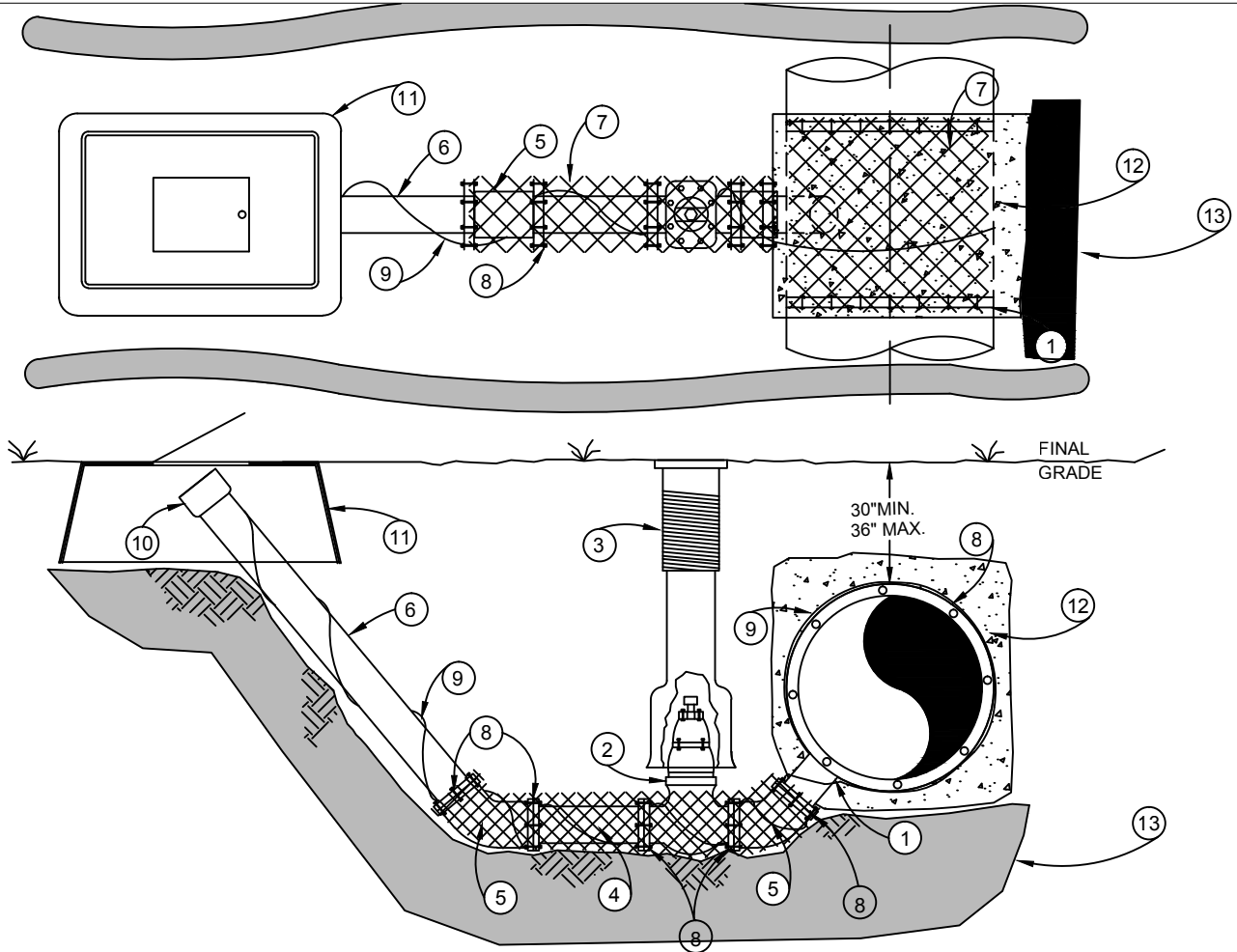


<p>Revision Date: 2/20/08</p>		<p>Gainesville Regional Utilities Reclaimed Water Construction Details</p>
<p>3" BLOW-OFF ASSEMBLY FOR 4", 6" 8" RCWM</p>		



MATERIALS		
ITEM	DESCRIPTION	
1	4", 6" or 8" X 3"	MJ TAPPED TEE OR TAPPING SADDLE (W/ EBAA MEGALUG RESTRAINT)
2	3"	VALVE, GATE, SQUARE NUT, RESILIENT WEDGE
3		VALVE BOX
4	3" X 6" L	BRASS NIPPLE
5	3" X 45°	BEND, GALV. (or 4-3" X 90° SWING JOINT)
6	3" X VARIES	PIPE, GALV.
7		CONCRETE, THRUST BLOCK (2500 psi)
8		VISQUEEN 8" MILS THICKNESS (MIN.) or FELT 15 lb (MIN.)
9		TRACER WIRE, PURPLE, #10 AWG
10	3"	GALV. CAP
11	5/8" X 3/4"	WATER METER BOX

Revision Date: 2/20/08		Gainesville Regional Utilities Reclaimed Water Construction Details 3" BLOW-OFF ASSEMBLY, PERPENDICULAR TO MAIN
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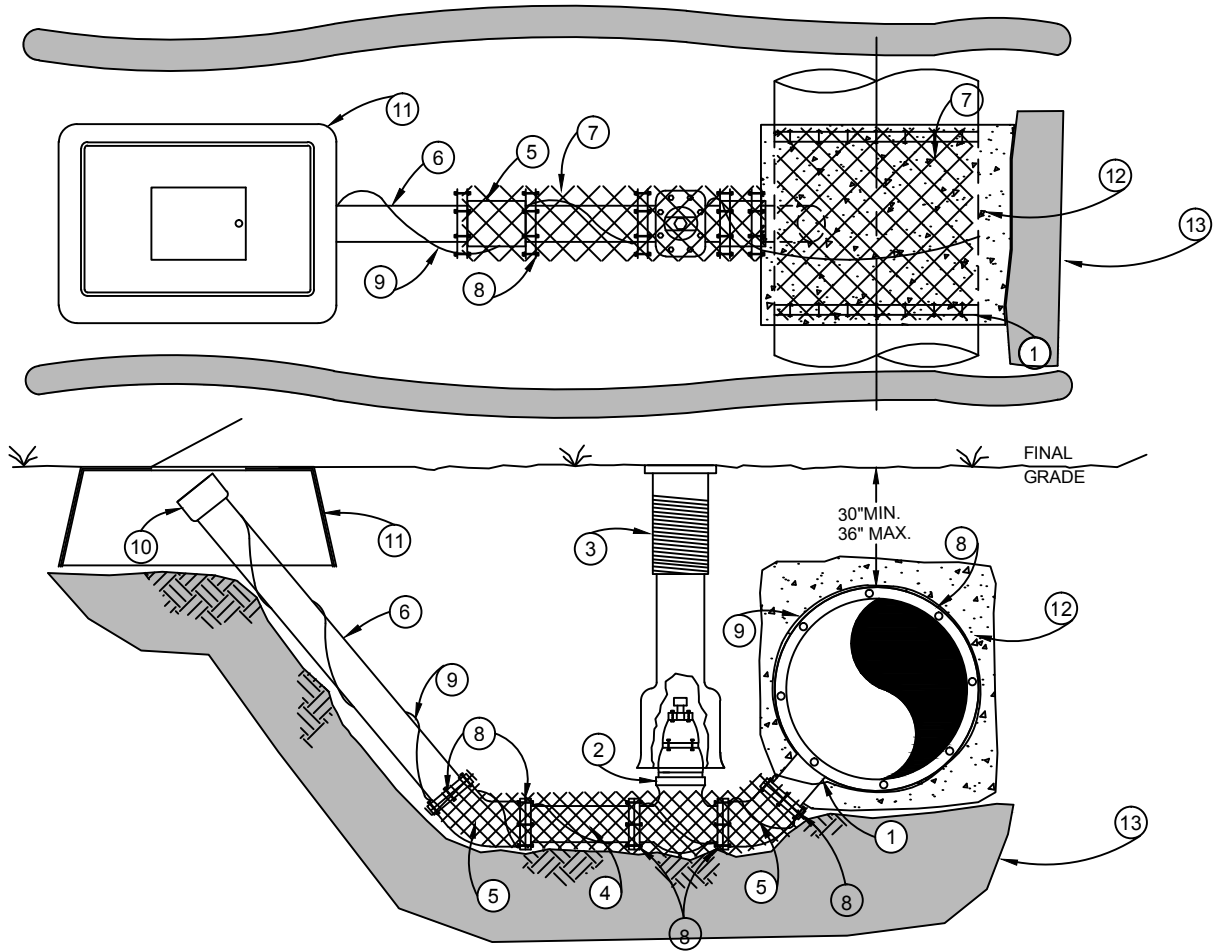
MATERIALS
DESCRIPTION

ITEM	DESCRIPTION	
1	12", 16", 20", 24" X 6"	MJ ANCHORING TEE
2	6"	VALVE, GATE, MJ, RESILIENT WEDGE
3		VALVE BOX
4	6" X 16" or 72" (PER FIELD CONDITIONS)	ANCHORING COUPLING, MJ x MJ
5	6" X 45°	BEND, MJ x MJ
6	6" X VARIES	PIPE, D.I.P.
7	VISQUEEN	8 MILS THICKNESS (MIN.) or FELT 15 lb (MIN.)
8		EBAA MEGA LUG
9		TRACER WIRE
10	6"	CAP, C.I., MJ, EBAA MEGALUG
11	5/8" x 3/4"	RECLAIMED WATER METER BOX
12		CONCRETE, THRUST BLOCK (2500 psi)
13		UNDISTURBED EARTH

Revision Date:
2/20/08



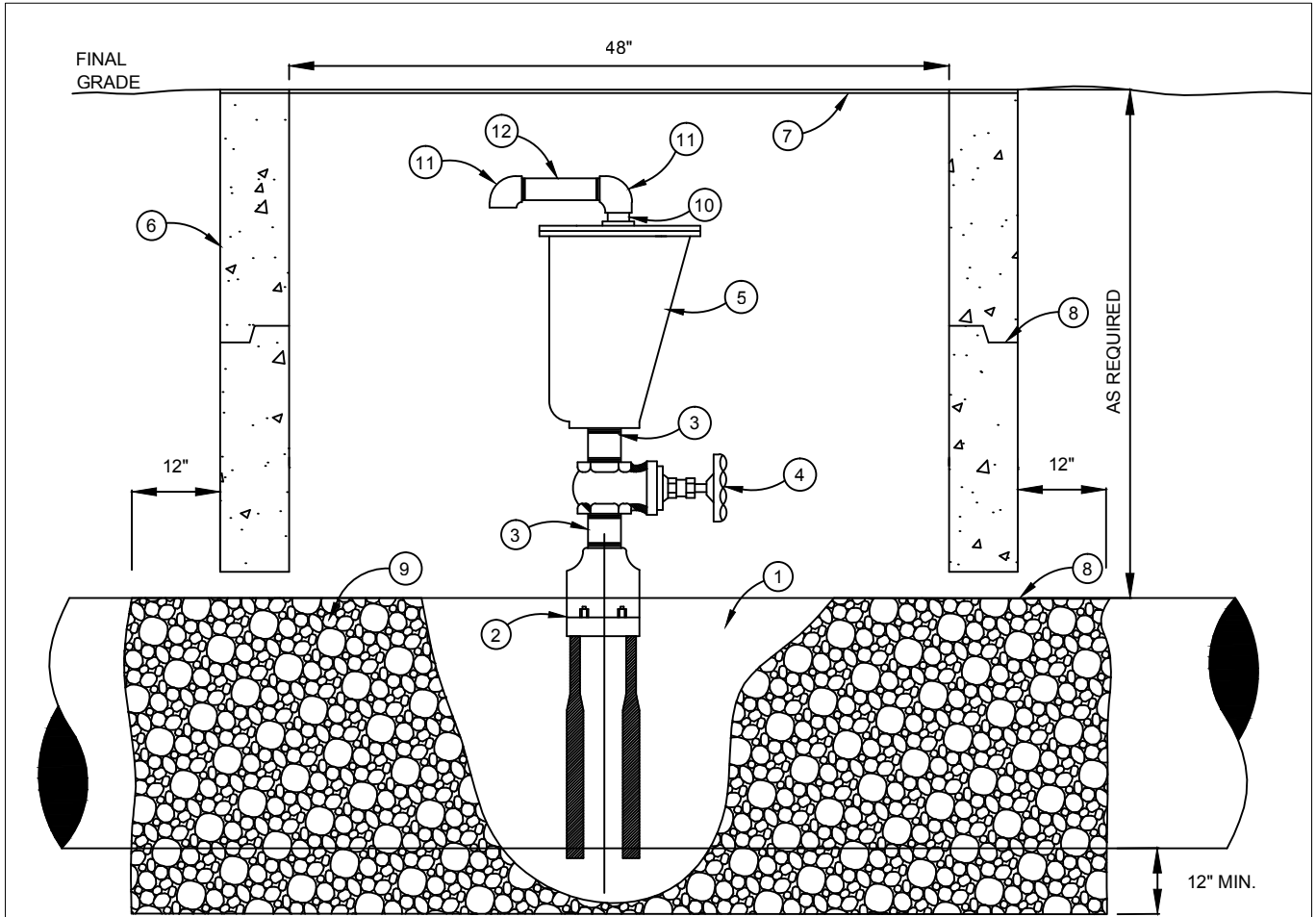
Gainesville Regional Utilities
Reclaimed Water Construction Details
6" BLOW-OFF ASSEMBLY



MATERIALS

ITEM	DESCRIPTION	
1	30", 36" x 8"	MJ ANCHORING TEE (UP TO 30") OR TEE (36")
2	8"	VALVE, GATE, MJ, RESILIENT WEDGE
3		VALVE BOX
4	8" x 16" or 72" (PER FIELD CONDITIONS)	ANCHORING COUPLING, MJ x MJ
5	8" x 45°	BEND, MJ x MJ
6	8" x VARIES	PIPE, D.I.P.
7	VISQUEEN	8 MILS THICKNESS (MIN.) or FELT 15 lb (MIN.)
8		EBAA MEGA LUG
9		TRACER WIRE, PURPLE, #10 AWG
10	6"	CAP, D.I., MJ, EBAA MEGALUG
11	5/8" x 3/4"	RECLAIMED WATER METER BOX
12		CONCRETE, THRUST BLOCK (2500 psi)
13		UNDISTURBED EARTH

Revision Date: 2/20/08		Gainesville Regional Utilities Reclaimed Water Construction Details 8" BLOW-OFF ASSEMBLY
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MATERIALS		
ITEM	DESCRIPTION	
1	6"-36"	RECLAIMED WATER MAIN
2	2" (TAP)	SERVICE SADDLE 2" NPT *
3	2" x 4"	BRASS NIPPLE OUTLET *
4	2"	BRASS GATE VALVE HANDWHEEL *
5		AIR RELEASE VALVE
6	4' x 4'	CONCRETE VAULT (DO NOT BEAR ON PIPE)
7	4' x 4'	GALVANIZED STEEL PLATE
8		MANHOLE JOINT SEALANT
9		GRAVEL (No. 57 STONE)
10	3/4"	GSP NIPPLE
11	3/4"	90° ELBOW (G. STL)
12	3/4"	GSP W/ THREADED ENDS

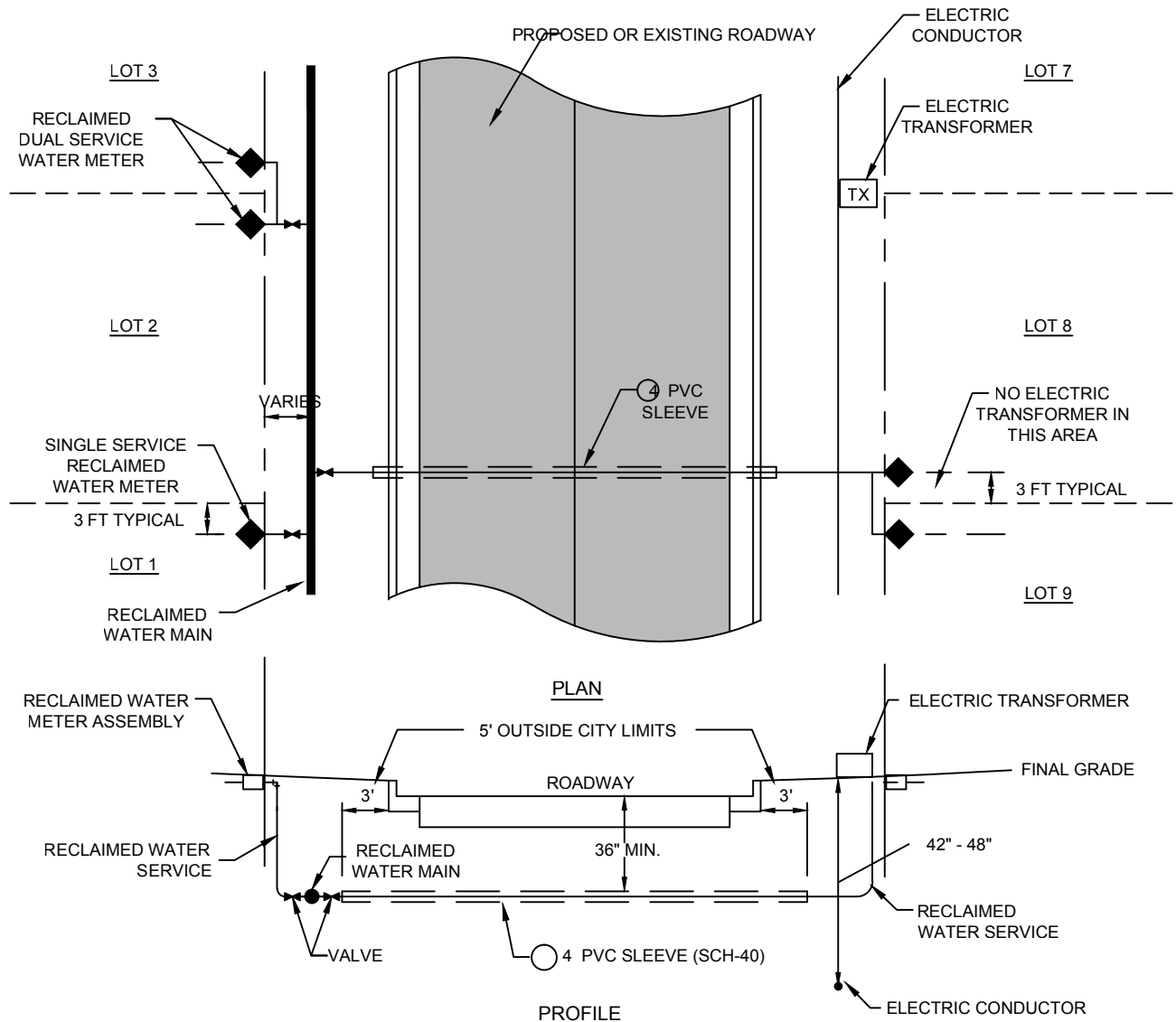
* 30" AND 36" RECLAIMED WATERMAIN REQUIRES A 3" AIR RELEASE VALVE.

Revision Date:
2/20/08



Gainesville Regional Utilities
Reclaimed Water Construction Details

AIR RELEASE VALVE CONSTRUCTION



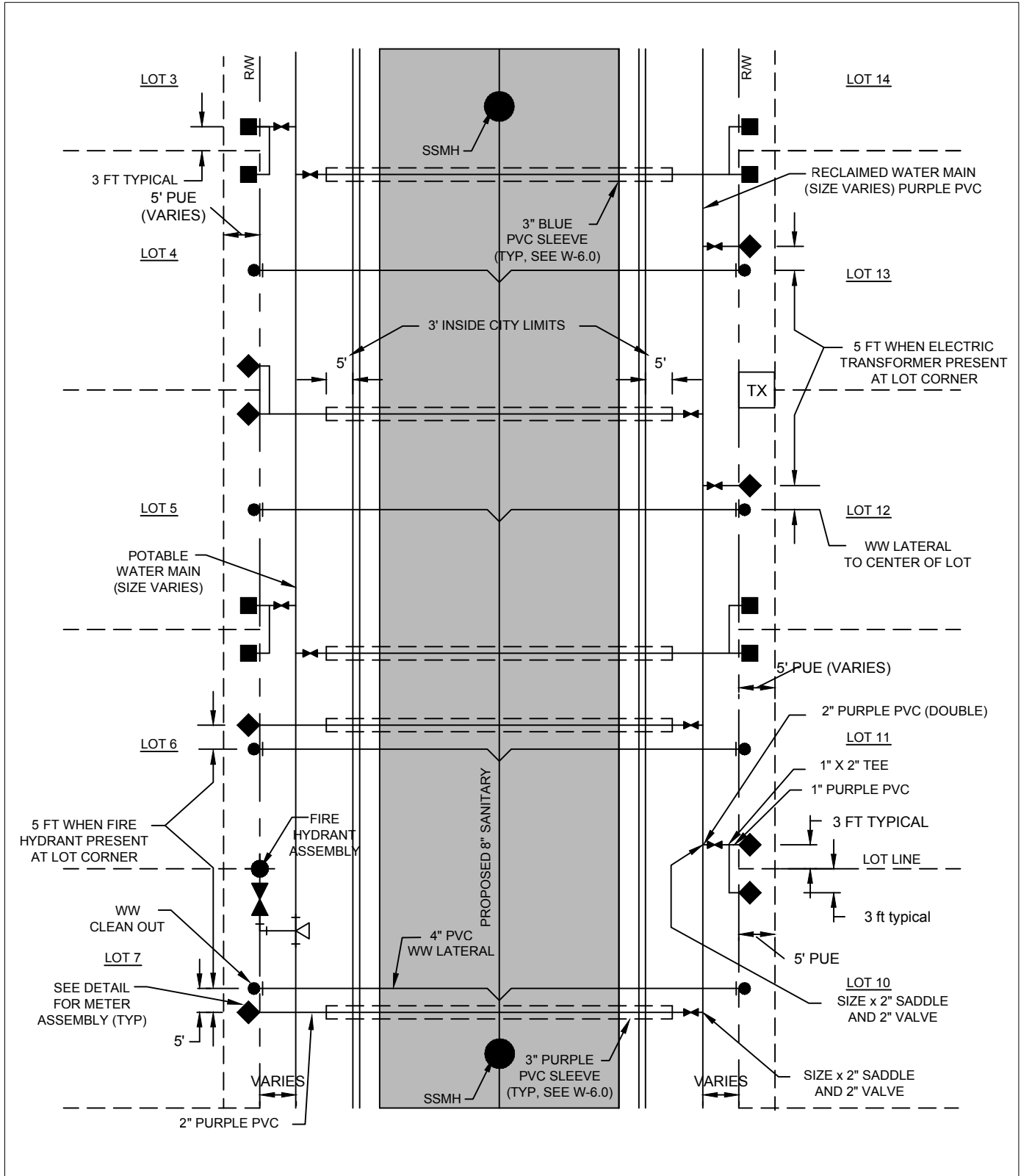
- NOTES:
1. RECLAIMED WATER METER SERVICE SHALL BE LOCATED TO AVOID CONFLICT WITH LOCATIONS OF ELECTRIC TRANSFORMERS AND FIRE HYDRANTS.
 2. ELECTRIC CONDUCTORS MAY BE ON EITHER SIDE OF THE ROADWAY. TRANSFORMERS SHOULD BE ON THE SAME SIDE AS RECLAIMED WATER MAIN.
 3. RECLAIMED WATER METER YOKE ASSEMBLY AND METER BOX SHALL BE INSTALLED BY CONTRACTOR.
 4. PVC SLEEVE TO BE 3" SCHEDULE 40 PURPLE PVC SOLVENT WELD.


Revision Date:
2/20/08

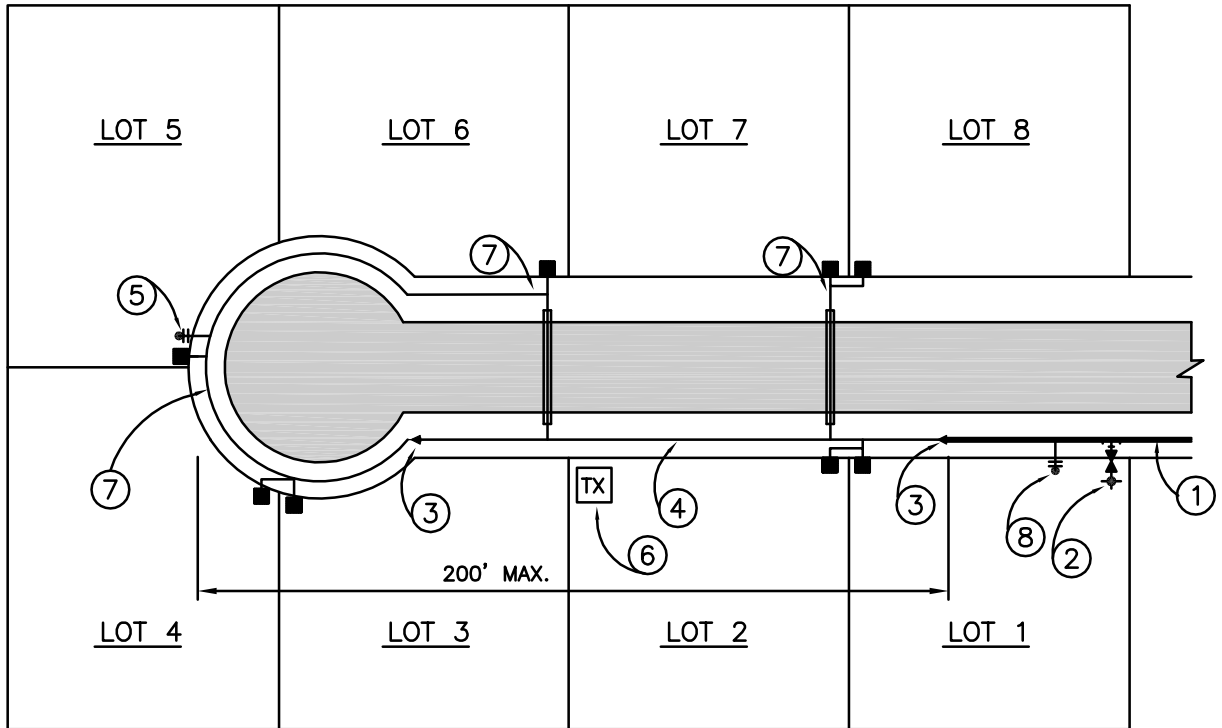


Gainesville Regional Utilities
Reclaimed Water Construction Details


SINGLE & DUAL RECLAIMED WATER SERVICE

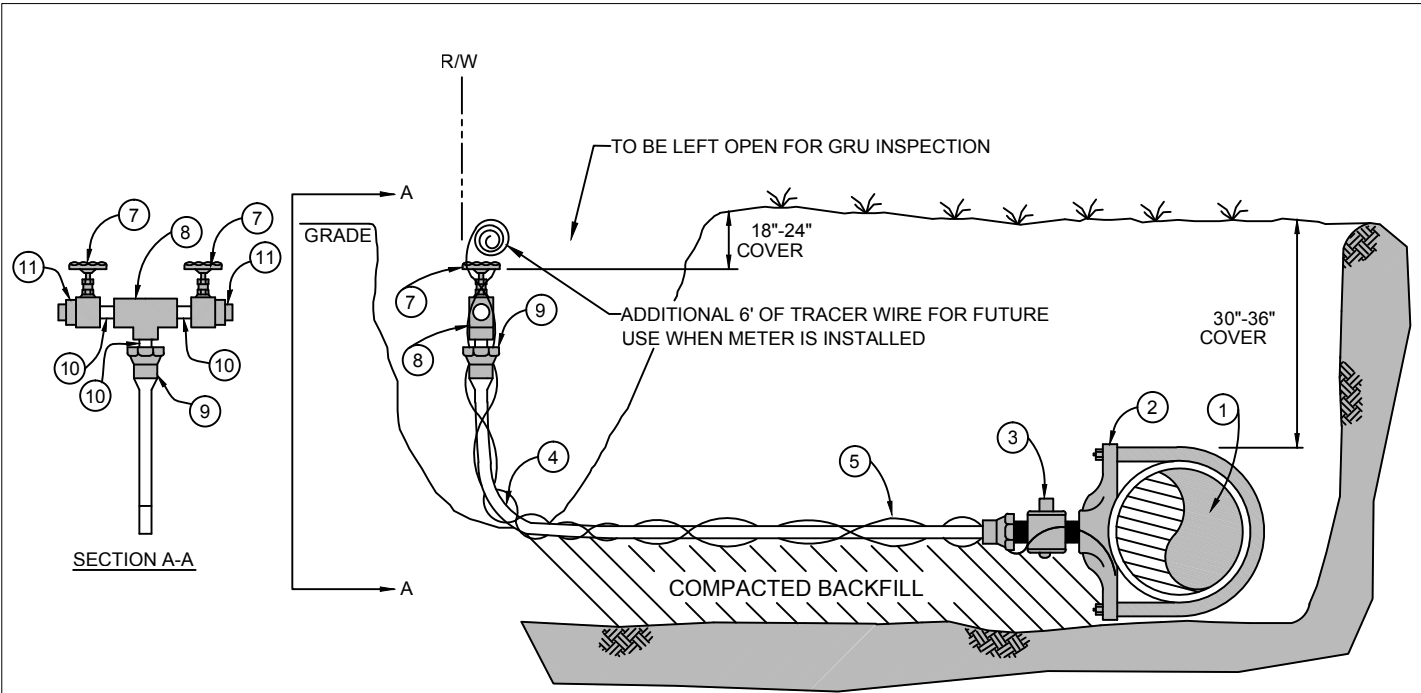


<p>Revision Date: 2/20/08</p>		<p>Gainesville Regional Utilities Reclaimed Water Construction Details</p>
<p>WATER, WASTEWATER, AND RECLAIMED WATER FACILITY ALLOCATION IN RESIDENTIAL DEVELOPMENT</p>		




M A T E R I A L S	
ITEM	DESCRIPTION
1	RECLAIMED WATER MAIN (MIN. 6")
2	FIRE HYDRANT
3	REDUCER FITTING
4	4" RECLAIMED WATER MAIN
5	2" B.O. & S.P.
6	ELECTRIC TRANSFORMER
7	2" PURPLE PVC RECLAIMED WATER SERVICE
8	3" BLOW-OFF AND SAMPLE POINT

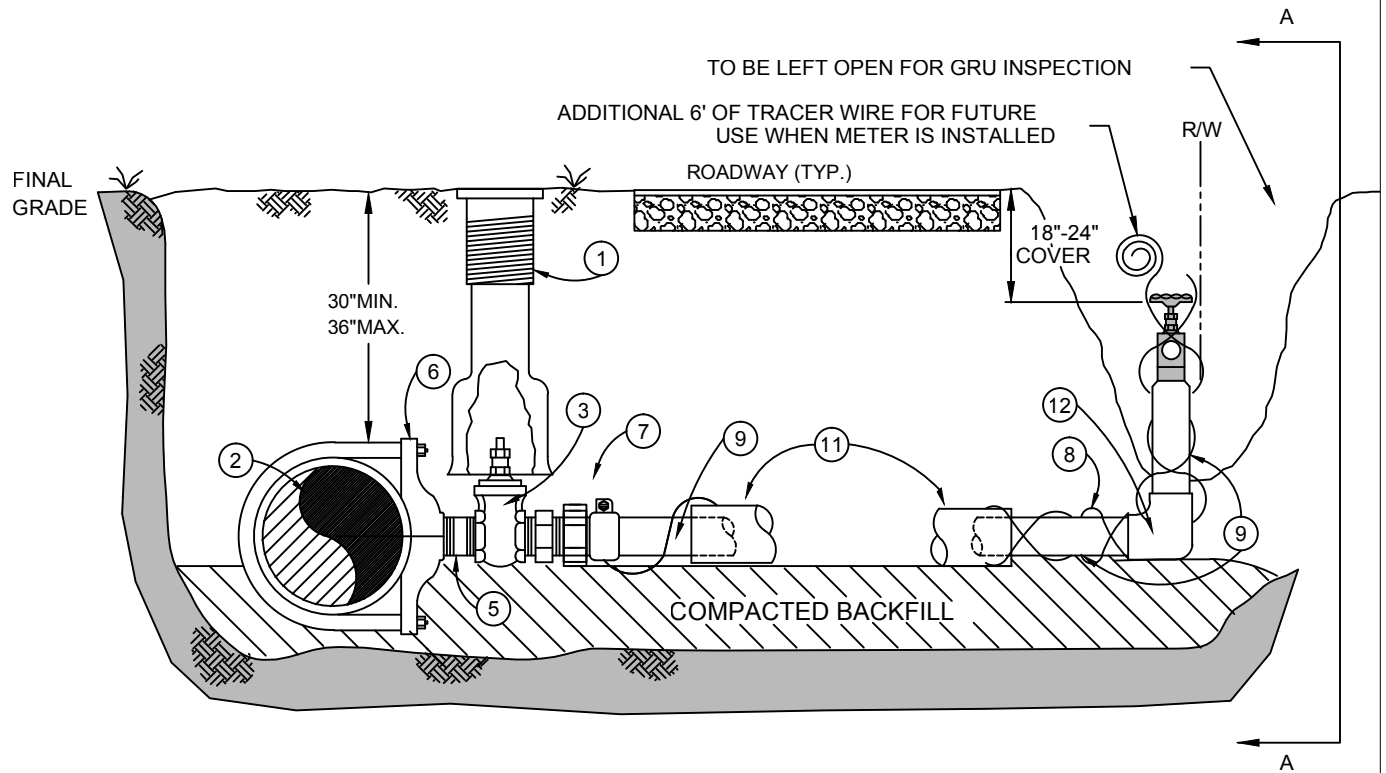
Revision Date: 3/12/2012		Gainesville Regional Utilities Reclaimed Water Construction Details DEAD END RECLAIMED WATER MAIN CONSTRUCTION
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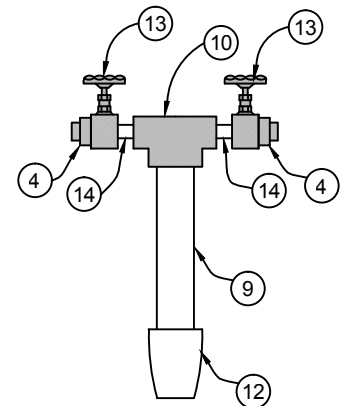
MATERIALS		
ITEM	DESCRIPTION	
1	4", 6", 8", 12"	WATER MAIN
2	4", 6", 8", 12"	SERVICE SADDLE W/1" CC (TAPERED THREADS)
3	1"	CORPORATION VALVE
4	1"	POLYETHYLENE TUBING OR SCH 40 PVC (SOLVENT WELD)
5	1"	TRACER WIRE, BLUE, # 10 AWG
6	1"	COMPRESSION x MPT
7	1"	BRASS GATE VALVE WITH HAND WHEEL
8	1"	PVC TEE, SOLVENT WELD
9	1"x1"	PE (COMPRESSION) X PVC (SOLVENT WELD) ADAPTER
10	1"x2"	SCH 80/40 PVC NIPPLE, SOLVENT WELD X NPT
11	1"	BRASS PLUG

- NOTES:**
1. ALL FITTINGS FOR POLYETHYLENE TUBING ARE COMPRESSION TYPE.
 2. TRACER WIRE SHALL BE SPIRALED AROUND THE TUBING, TAPED EVERY TEN FEET AND CONNECTED TO THE MAIN LINE TRACER WIRE USING SILICONE FILLED CONNECTORS.
 3. 1" GATE VALVE PROVIDED TO BE TEMPORARY UNTIL WATER METER ASSEMBLY IS INSTALLED.
 4. SEE W-8.0 FOR WATER METER ASSEMBLY INSTALLATION.

Revision Date: 2/20/08		Gainesville Regional Utilities Reclaimed Water Construction Details POLYETHYLENE TUBING RECLAIMED WATER SERVICE MAIN SIDE
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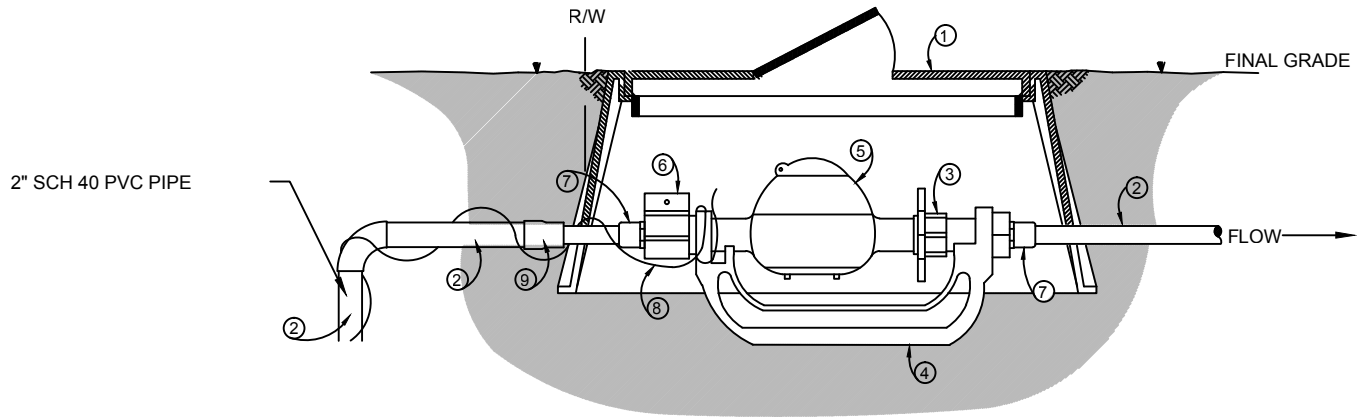
MATERIALS	
ITEM	DESCRIPTION
1	VALVE BOX
2	4", 6", 8", 12" WATER MAIN
3	2" GATE VALVE, SQUARE NUT, RESILIENT WEDGE
4	1" BRASS PLUG
5	2" x 2.5" LONG BRASS NIPPLE
6	4", 6", 8" OR 12" x 2" SERVICE SADDLE
7	MIP x PVC COMPRESSION COUPLING FORD CATALOG # 87-77 OR APPROVED EQUAL
8	TRACER WIRE, BLUE, # 10 AWG
9	2" SCH 40 PVC WATER SERVICE MIN.
10	2"x1"x1" PVC TEE, SOLVENT WELD
11	3" PVC CASING, SCH 40
12	2" PVC 90° ELBOW
13	1" BRASS GATE VALVE (2) WITH HAND WHEEL
14	1"x2" SCH 80/40 PVC NIPPLE, SOLVENT WELD X NPT



SECTION A-A

NOTE: SEE W-8.0 FOR WATER METER ASSEMBLY INSTALLATION.


Revision Date: 2/20/08		Gainesville Regional Utilities Reclaimed Water Construction Details SOLVENT WELD PVC RECLAIMED WATER SERVICE ROADWAY CROSSING
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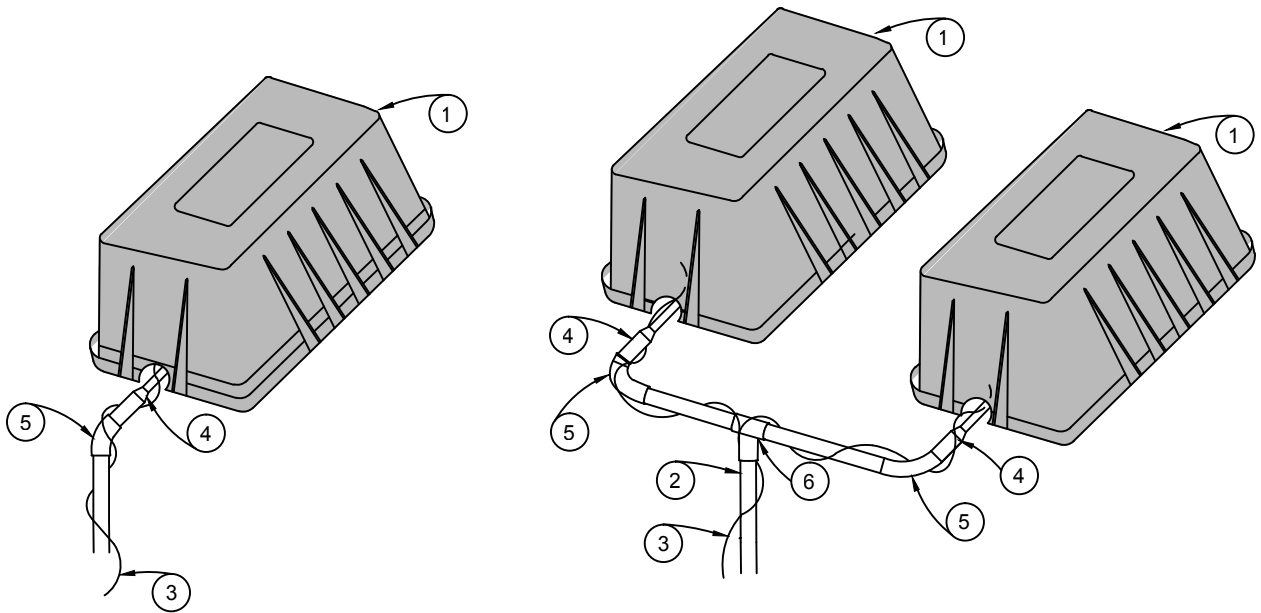


MATERIALS	
ITEM	DESCRIPTION
1	METER BOX (PANTONE PURPLE)
2	SCH 40 PVC PIPE
3	YOKE EXPANSION (BY GRU)
4	YOKE BAR (BY CONTRACTOR)
5	RECLAIMED WATER METER - 5/8" x 3/4" (BY GRU)
6	LOCKING CURB STOP (BY CONTRACTOR)
7	PVC MALE ADAPTER
8	TRACER WIRE, PURPLE, # 10 AWG
9	2" x 3/4" OR 1" PVC REDUCER

NOTE:

1. CONTRACTOR TO BE RESPONSIBLE FOR 1 YR. WARRANTY PERIOD FOR INSTALLATION OF RECLAIMED WATER METER BOX AND FITTINGS, EXCLUDING ITEMS PROVIDED BY GRU.
2. GRU PERSONEL TO BACKFILL UPON COMPLETION OF INSPECTION.

<p>Revision Date: 2/20/08</p>		<p>Gainesville Regional Utilities Reclaimed Water Construction Details RECLAIMED WATER METER ASSEMBLY: 5/8" x 3/4" & 1"</p>
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SINGLE SERVICE


DUAL SERVICE

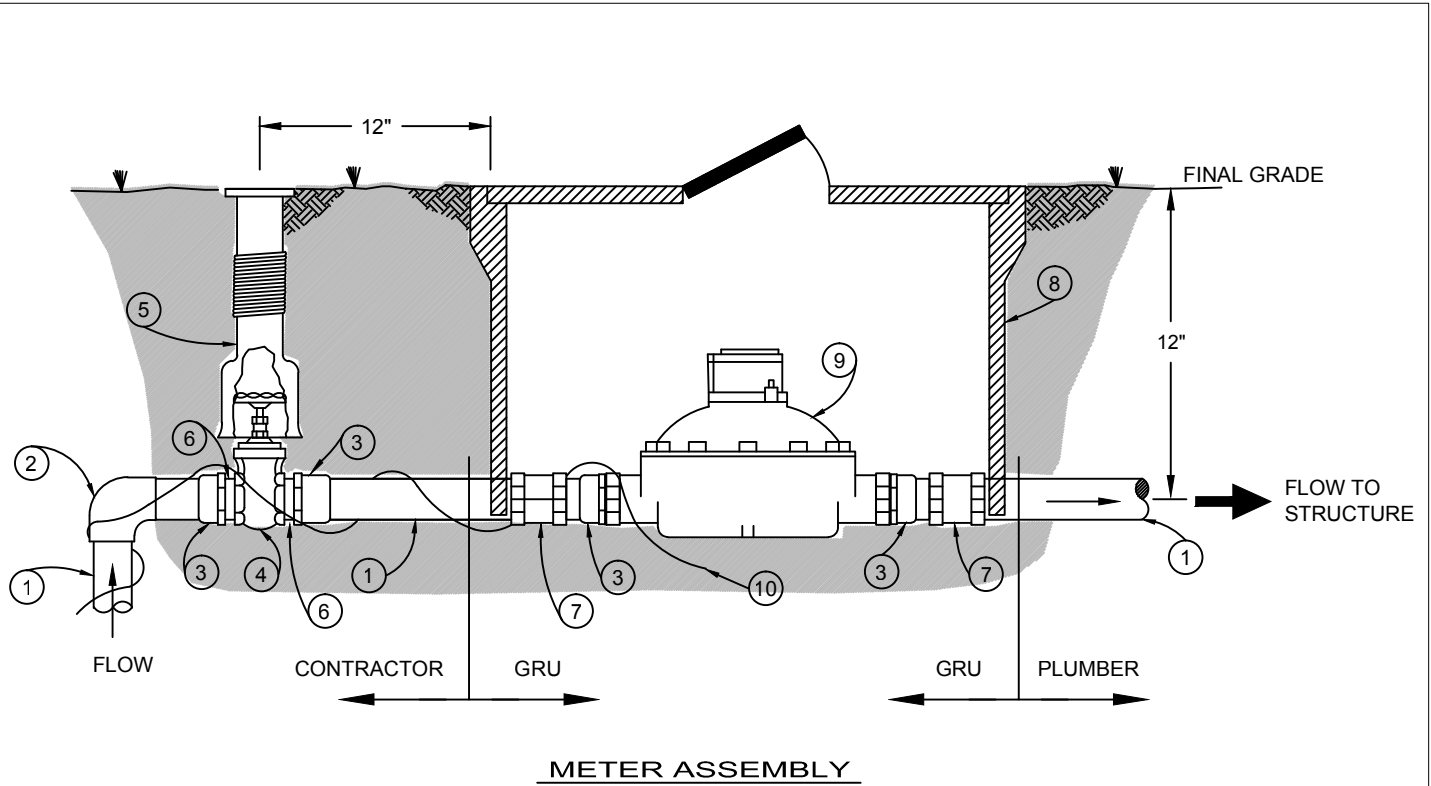
M A T E R I A L S

ITEM	DESCRIPTION
1	METER BOX (PANTONE PURPLE)
2	2" PVC PIPE, PURPLE
3	TRACER WIRE, PURPLE, #10 AWG
4	1" x 3/4" PVC REDUCER
5	1" 90° BEND
6	1" X 1" X 2" PVC TEE

NOTES:


1. GAINESVILLE REGIONAL UTILITIES WILL INSTALL RECLAIMED WATER METERS.
2. CONTRACTOR IS RESPONSIBLE FOR 1 YEAR WARRANTY PERIOD OF INSTALLATION OF RECLAIMED WATERMETER BOX AND FITTINGS, EXCLUDING ITEMS PROVIDED BY GRU.

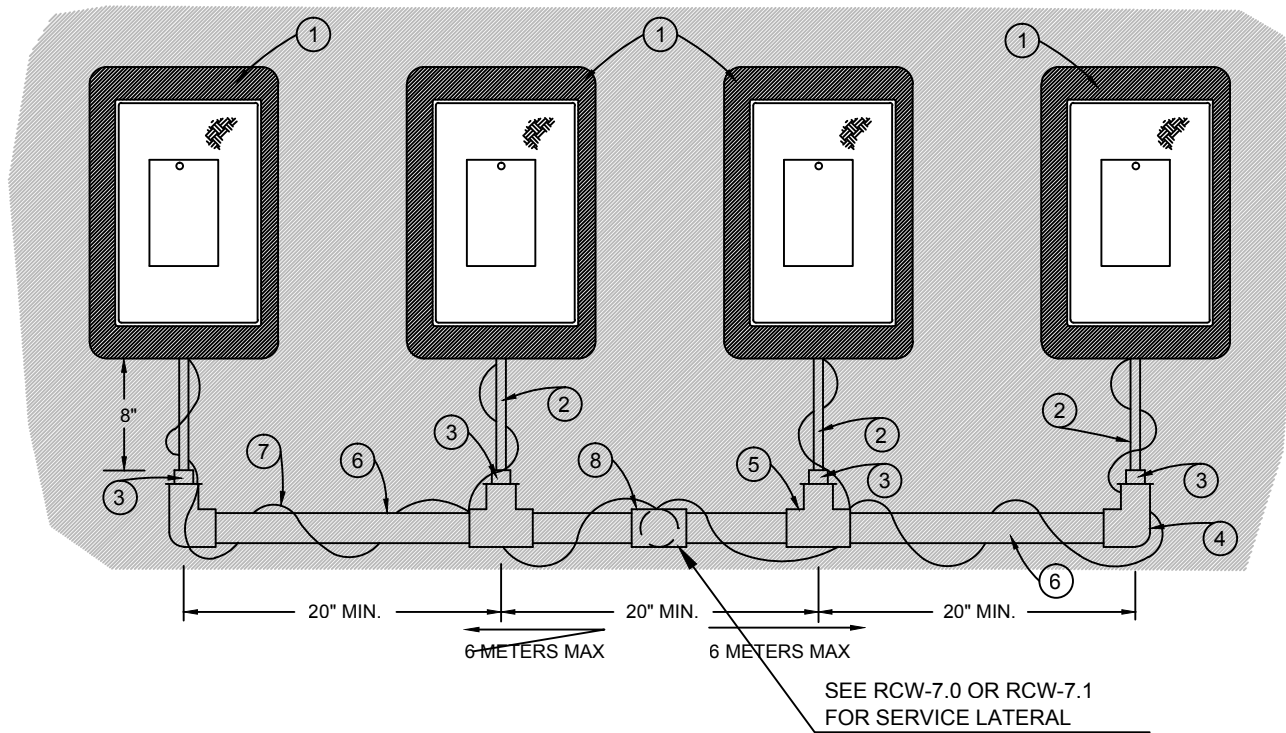
Revision Date: 2/20/08		Gainesville Regional Utilities Reclaimed Water Construction Details SINGLE & DUAL RECLAIMED WATER METER ASSEMBLY CONSTRUCTION
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M A T E R I A L S	
ITEM	DESCRIPTION
1	2" SCH 40 PVC PIPE
2	SCH 40 PVC 90 DEG ELBOW
3	2" SCH 80 PVC FEMALE ADAPTER, OR 2" x 1-1/2" REDUCER
4	1-1/2", 2" BRASS GATE VALVE
5	VALVE BOX
6	BRASS NIPPLE
7	2" SCH 40 PVC COUPLING, COMPRESSION
8	METER BOX, PRECAST CONC.
9	1-1/2", 2" RECLAIMED WATER METER
10	TRACER WIRE, PURPLE, #10 AWG

NOTE:
1. GAINESVILLE REGIONAL UTILITIES WILL INSTALL RECLAIMED WATER METER ASSEMBLY WHICH DOES NOT INCLUDE RECLAIMED WATER METER BOX.

<p>Revision Date: 2/20/08</p>		<p>Gainesville Regional Utilities Reclaimed Water Construction Details RECLAIMED WATER METER ASSEMBLY: 1 1/2" & 2" & 3"</p>
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MATERIALS	
ITEM	DESCRIPTION
1	WATER METER BOX AND ASSEMBLY
2	3/4" PVC PIPE
3	1-1/2" X 3/4" PVC REDUCING BUSHING
4	2" X 1-1/2" PVC ELBOW
5	2" X 1-1/2" PVC TEE
6	2" PVC PIPE
7	TRACER WIRE, PURPLE, #10 AWG
8	2" PVC TEE (AND 4" X 2" REDUCER, IF NEEDED)

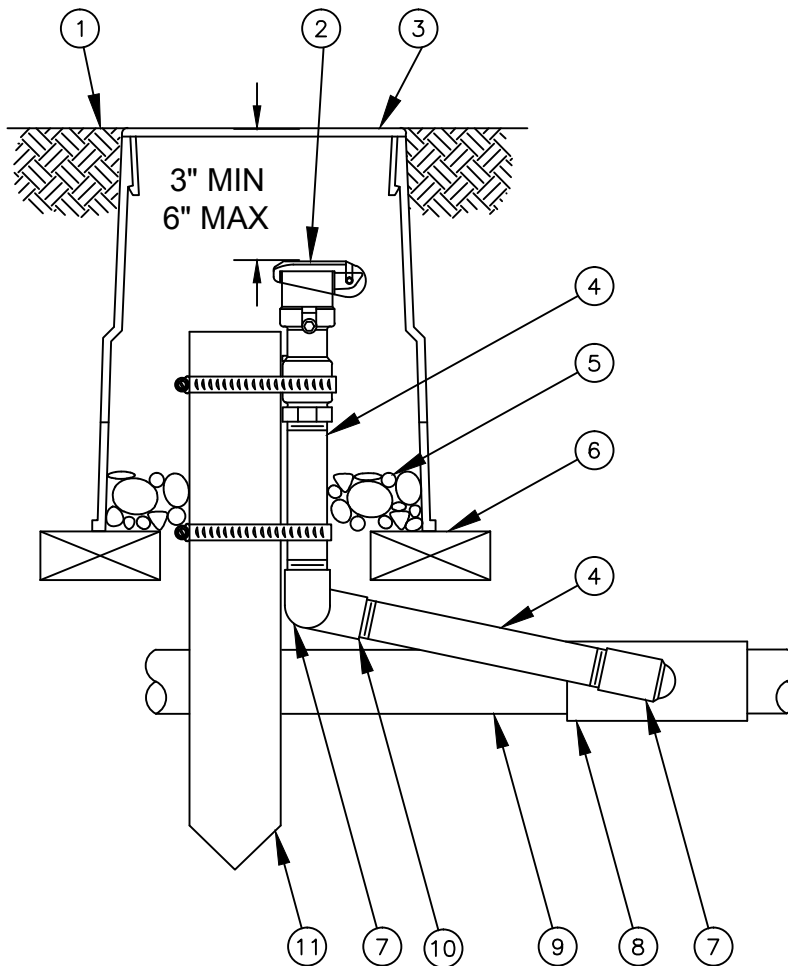
NOTES:

1. MULTIPLE GANG METER ASSEMBLY SHALL BE A MAXIMUM OF (12) TWELVE METERS.
2. GAINESVILLE REGIONAL UTILITIES WILL INSTALL RECLAIMED WATER METERS UNLESS OTHERWISE SPECIFIED ON THE APPROVED DRAWINGS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF THE METER BOX AND METER YOKE ASSEMBLY. SEE RECLAIMED WATER METER ASSEMBLY DETAIL RCW-8.0.

Revision Date:
2/20/08



Gainesville Regional Utilities
Reclaimed Water Construction Details
MULTIPLE GANG METER ASSEMBLY



M A T E R I A L S

ITEM	DESCRIPTION
1	FINISH GRADE/TOP OF MULCH
2	QUICK-COUPLING VALVE: RAIN BIRD MODEL 33DNP
3	VALVE BOX WITH COVER: RAIN BIRD VB-6RND
4	PVC SCH 80 NIPPLE (LENGTH AS REQUIRED)
5	3-INCH MINIMUM DEPTH OF 3/4-INCH WASHED GRAVEL
6	BRICK (1 OF 2)
7	PVC SCH 40 STREET ELL
8	PVC SCH 40 TEE OR ELL
9	PVC MAINLINE PIPE
10	PVC SCH 40 ELL
11	2" x 2" REDWOOD STAKE WITH STAINLESS STEEL GEAR CLAMPS OR EQUIVALENT SUPPORT SYSTEM

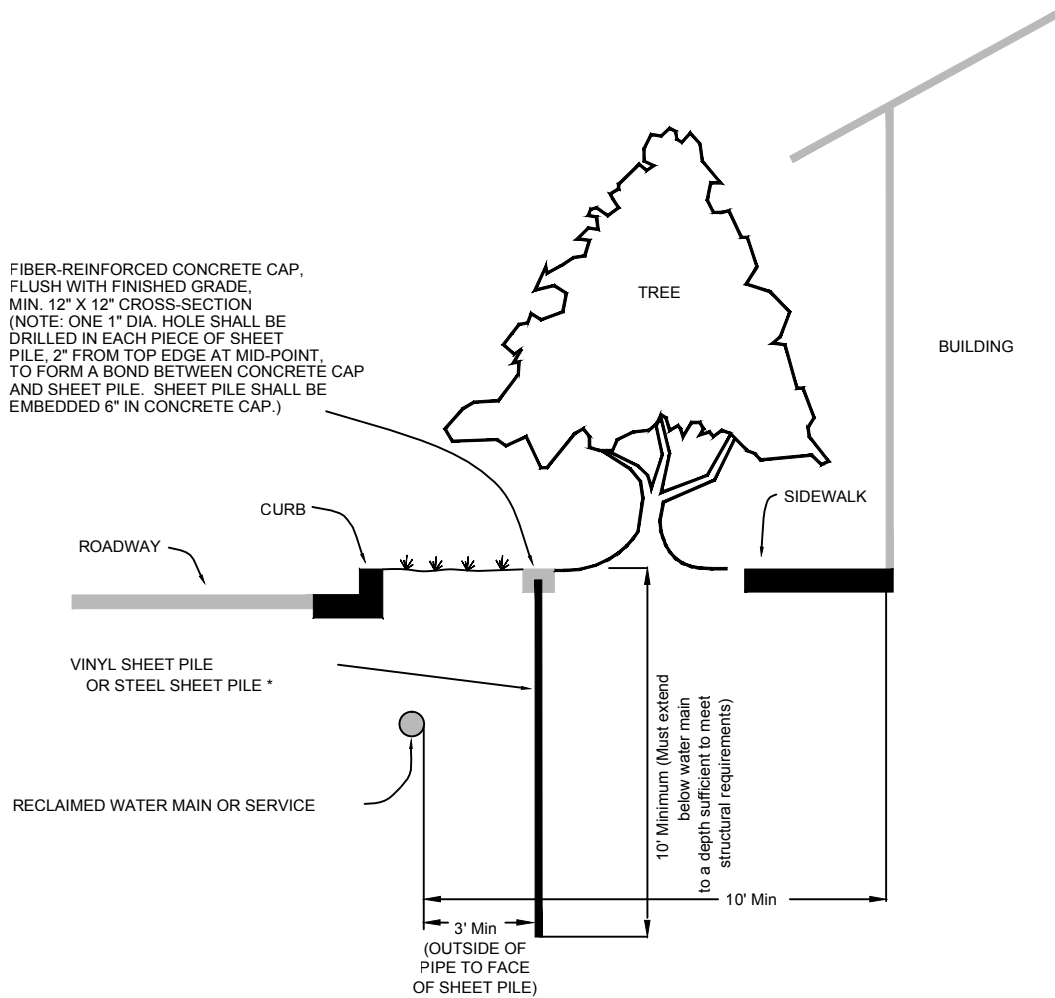
NOTE: REQUIRES RAINBIRD 2049 KEY TO OPEN LOCKING COVER

Revision Date:
2/20/08



Gainesville Regional Utilities
Reclaimed Water Construction Details
**LOCKING QUICK-COUPLING VALVE
RECLAIMED WATER**

TREE - RECLAIMED WATER SEPARATION




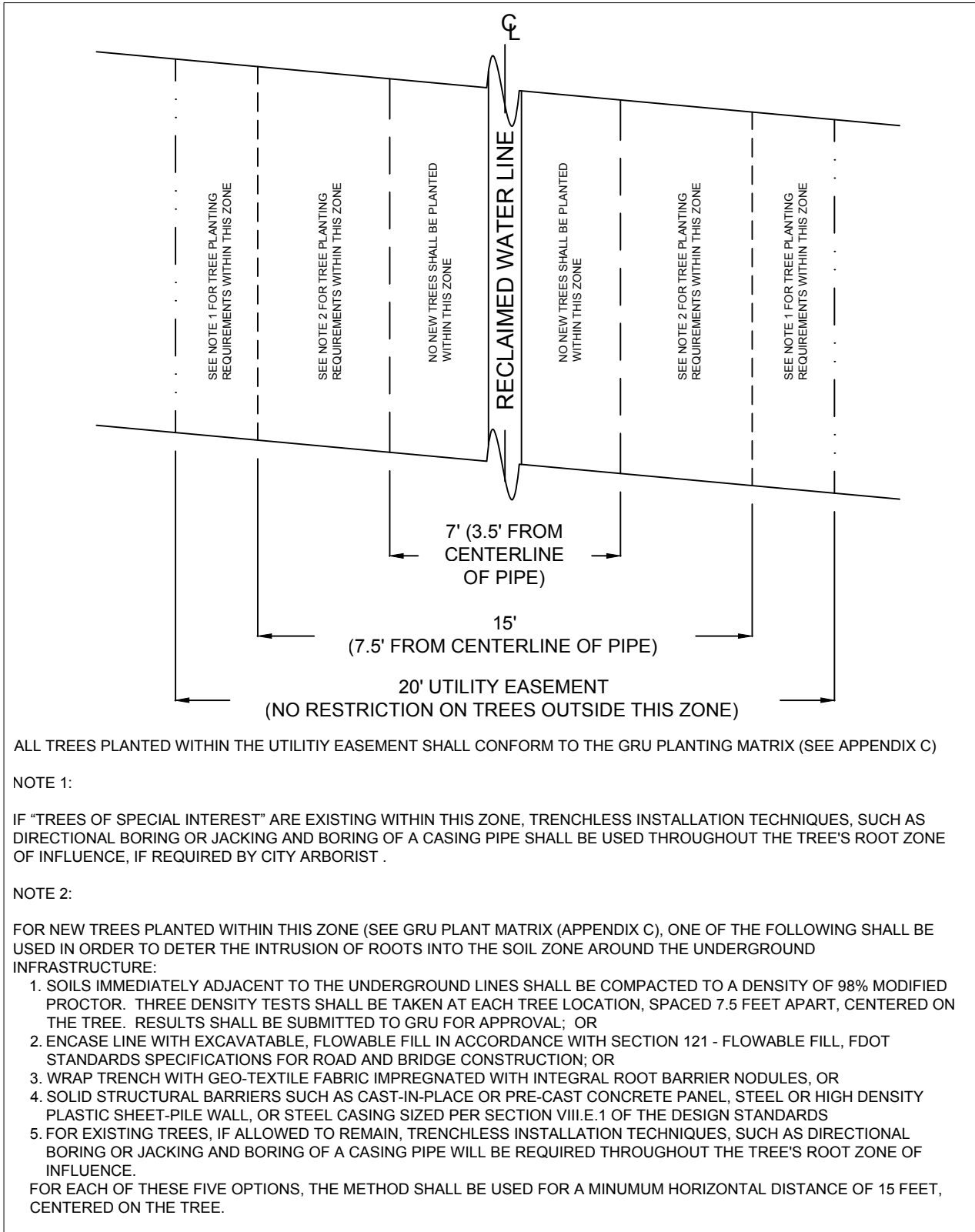
SHEET PILE


ALTERNATIVE PIPE PROTECTION FOR SEPARATIONS LESS THAN 7.5 FEET FROM TREES.

ALL DISTURBED EARTH OR NEW BACKFILL SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR (ASTM D 1557)

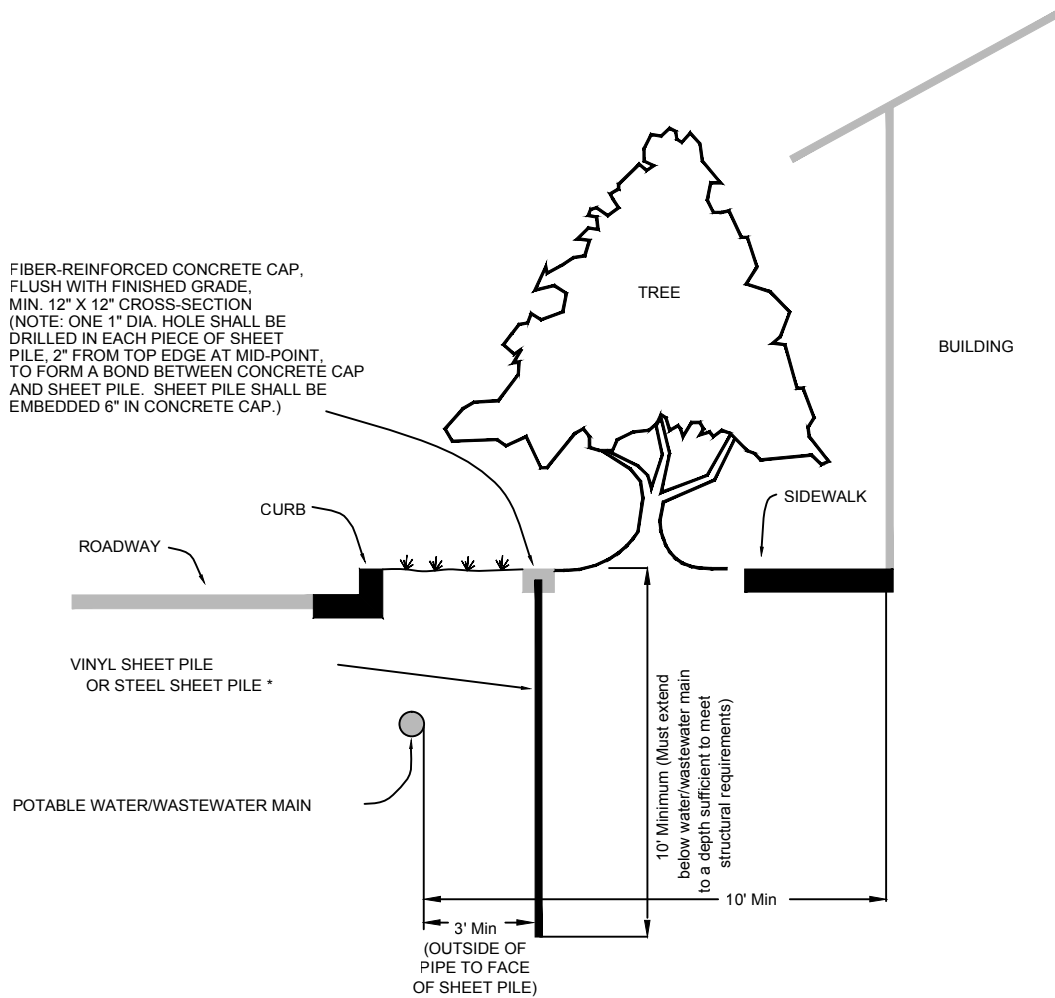
*Sheet pile joints to be filled with 50 year silicone caulk prior to placement. (If installation is open trench)

Revision Date:		Gainesville Regional Utilities
7/14/09		Reclaimed Water Construction Details
		SHEETPILE DETAIL



Revision Date: 8/31/09		Gainesville Regional Utilities Reclaimed Water Construction Details
TREE SEPARATION FROM RECLAIMED WATER MAINS AND SERVICES (IN CITY LIMITS)		

TREE - WATER/WASTEWATER MAIN SEPARATION




SHEET PILE

ALTERNATIVE PIPE PROTECTION FOR SEPARATIONS LESS THAN 10 FEET FOR SMALL AND MEDIUM TREES, AND 15 FEET FOR BIG (LIVE OAK) TREES

ALL DISTURBED EARTH OR NEW BACKFILL SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR (ASTM D 1557)

*Sheet pile joints to be filled with 50 year silicone caulk prior to placement. (If installation is open trench)

Revision Date:		Gainesville Regional Utilities
2/20/08		Reclaimed Water Construction Details
		SHEETPILE DETAIL