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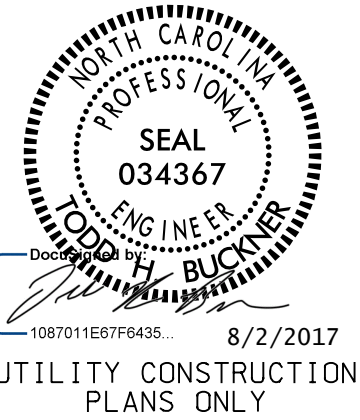
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PROJECT TYPICAL DETAILS

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PROJECT REFERENCE NO. U-5935 SHEET NO. UC-3C

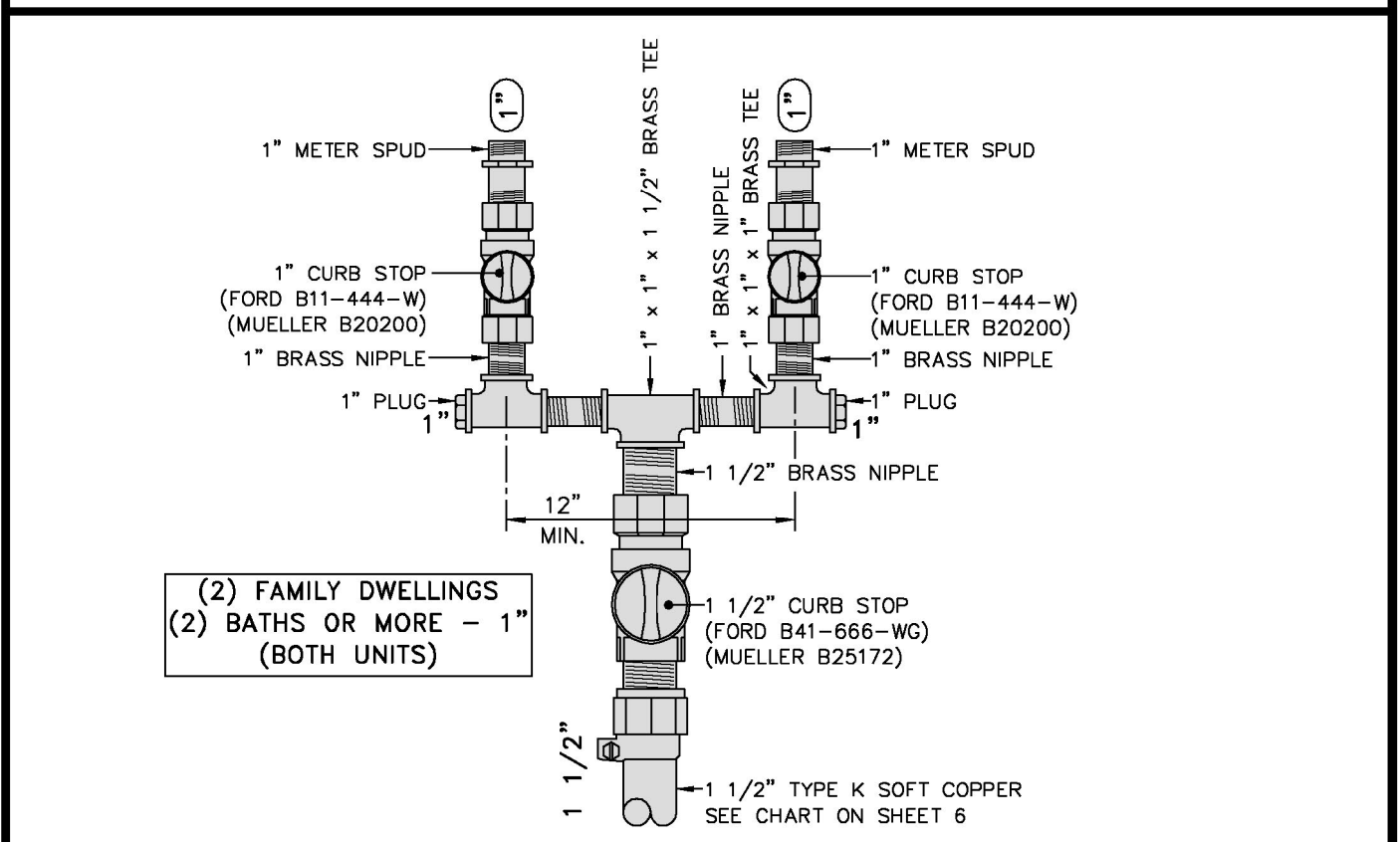
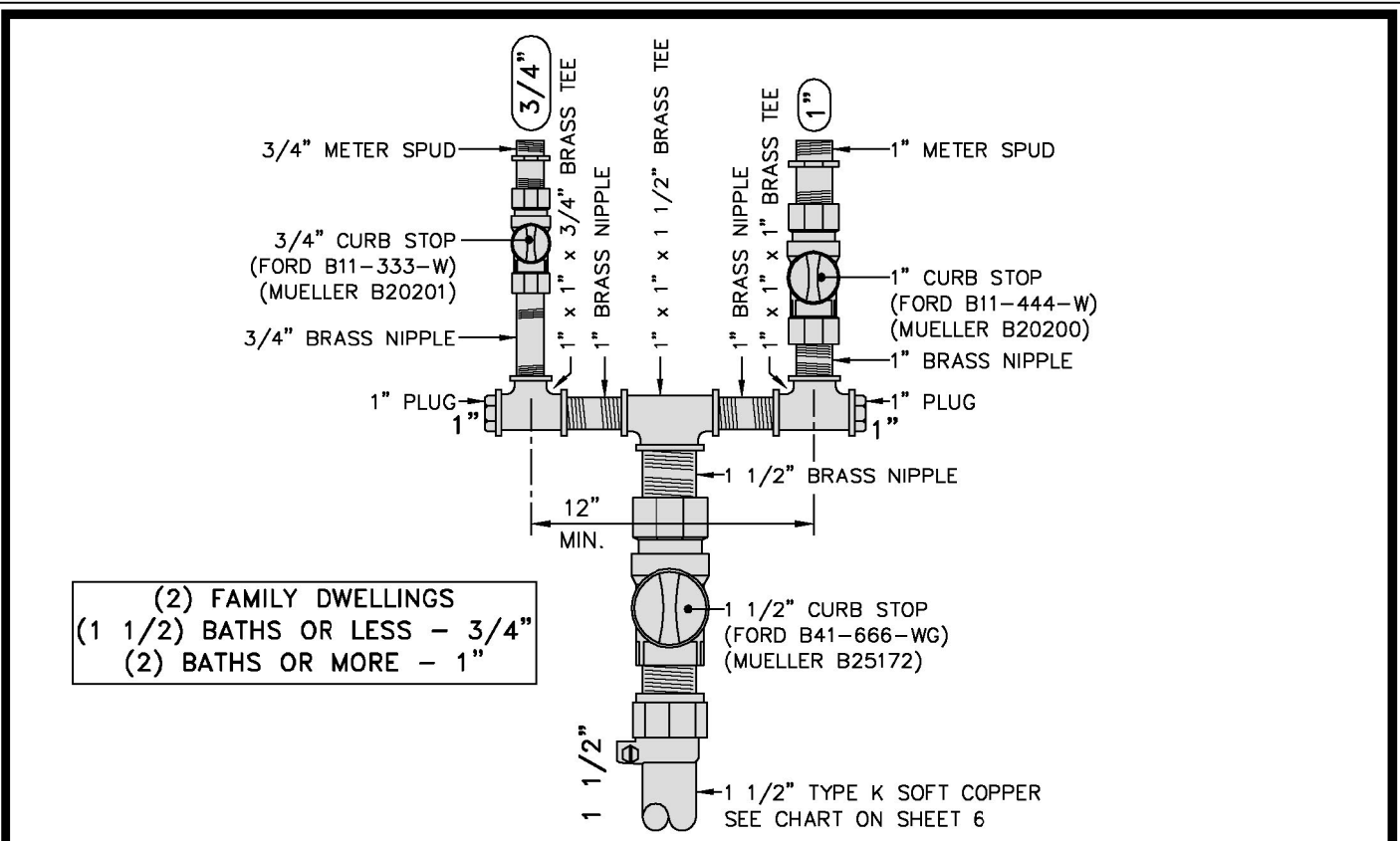


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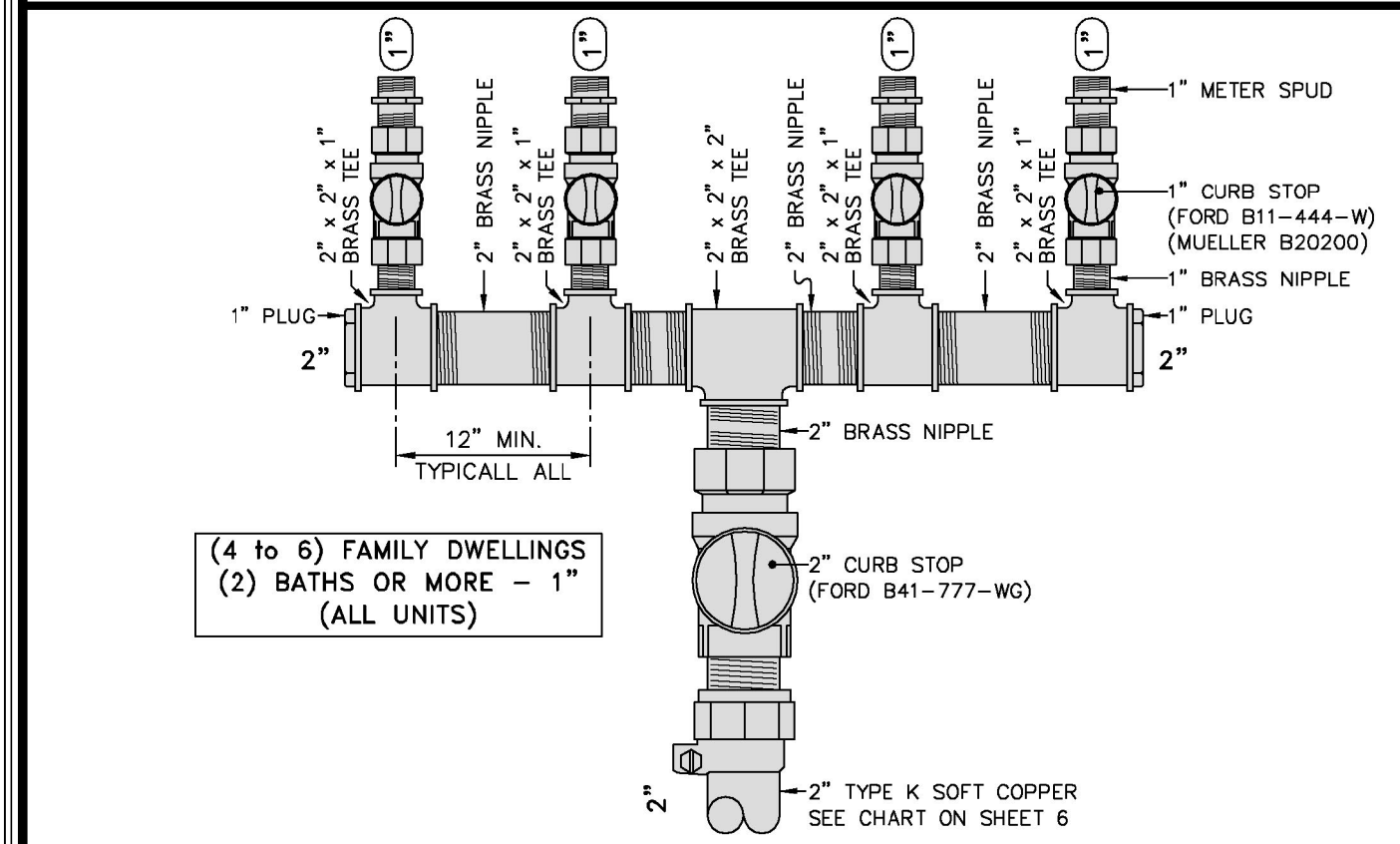
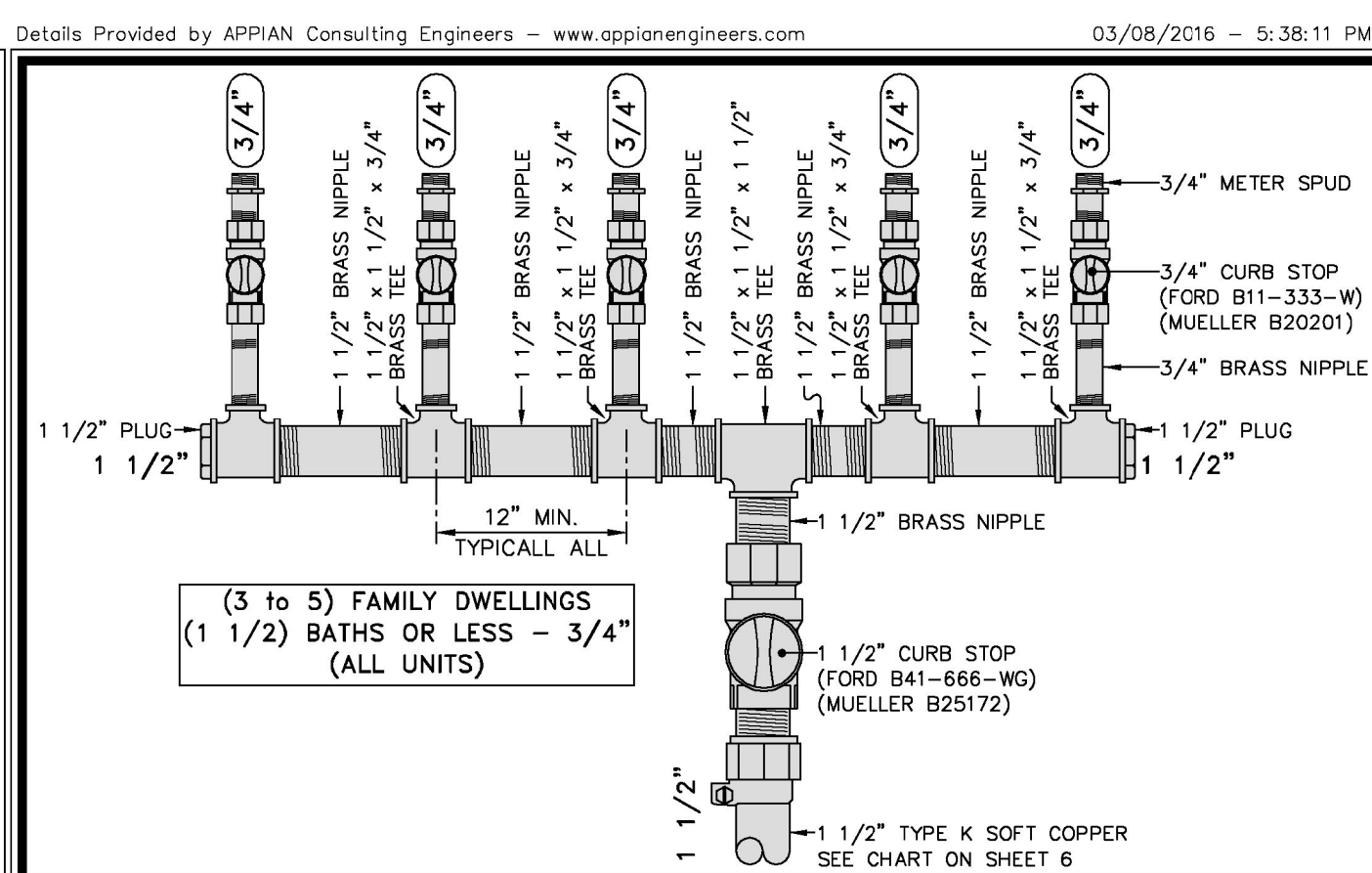
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UTILITY CONSTRUCTION
PLANS ONLY

UTILITY CONSTRUCTION

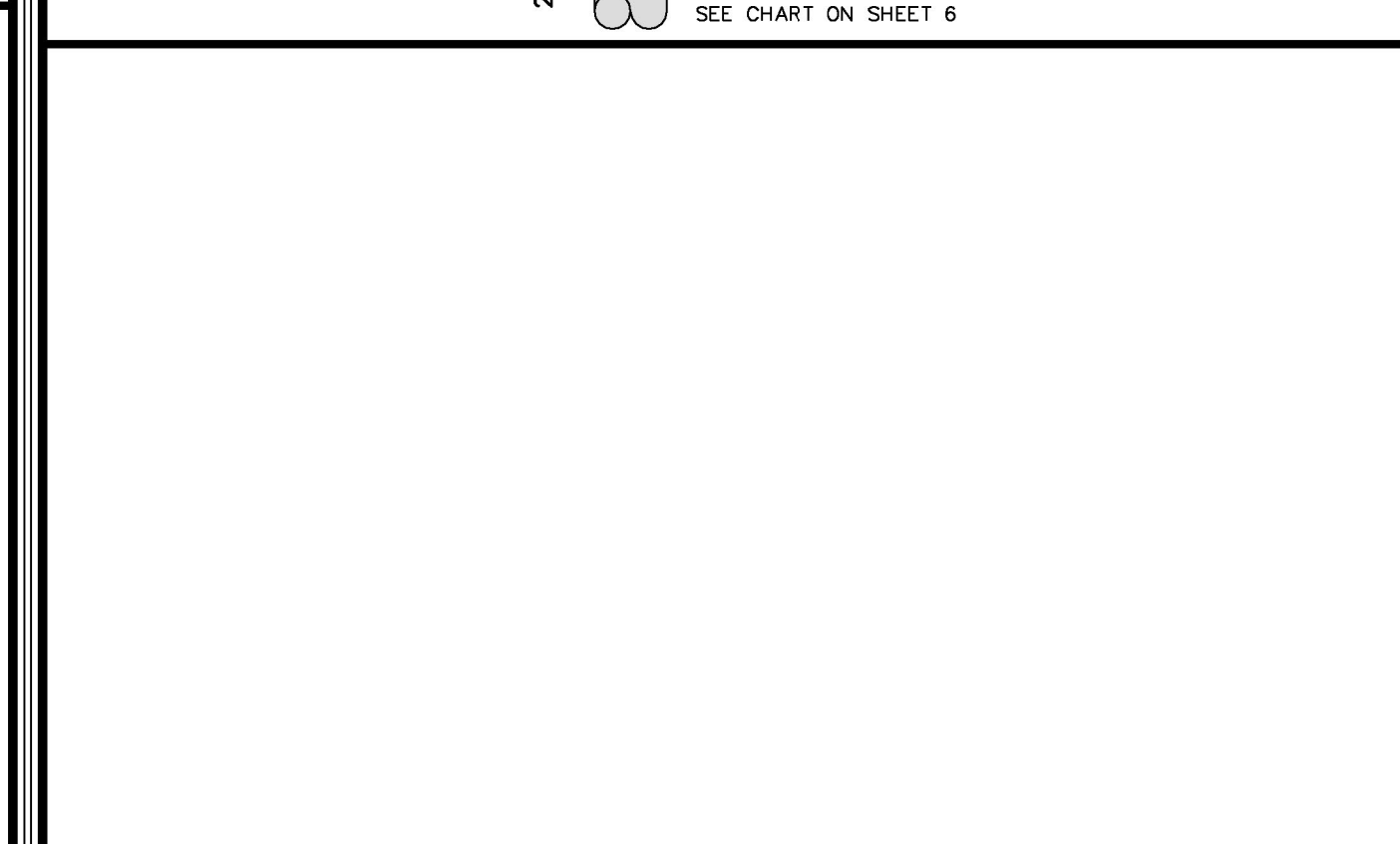
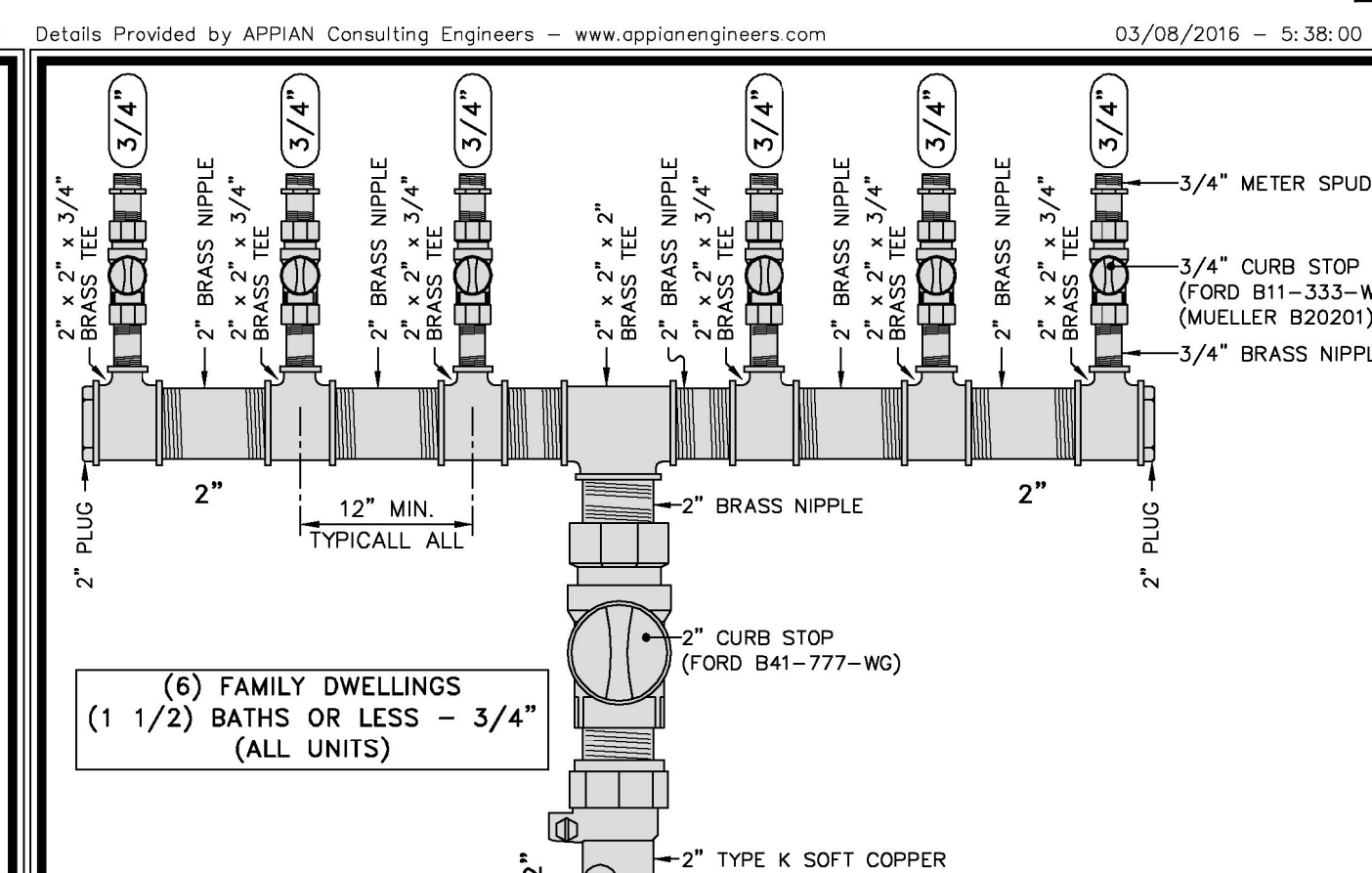
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REVISION DATE: March, 2016
SHEET # 3 of 6



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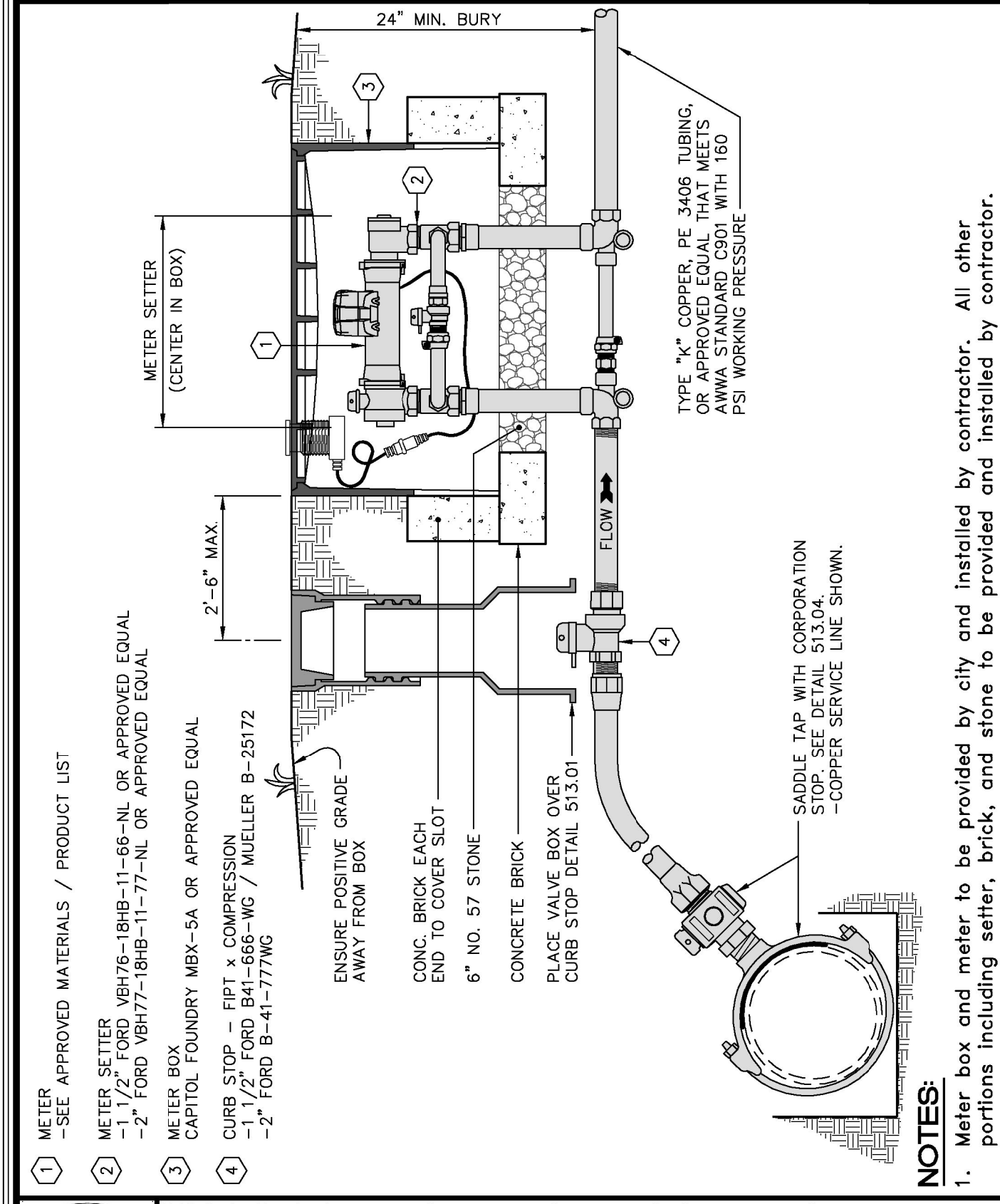
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# Of Residential Units	QTY. EACH TYPE	# of Size Curb Stops	Service & Tap Size
(1) Single Family	SINGLE FAMILY	1"	1"
# Of Residential Units	(2) 2 BATHS OR MORE	(2) 1"	1 1/2"
	(1) 2 BATHS OR MORE	(1) 1"	1 1/2"
	(1) 1 1/2 BATHS OR LESS	(1) 3/4"	1"
	(2) 1 1/2 BATHS OR LESS	(2) 3/4"	1"
# Of Residential Units	(3) 2 BATHS OR MORE	(3) 1"	1 1/2"
	(2) 2 BATHS OR MORE	(2) 1"	1 1/2"
	(1) 2 BATHS OR MORE	(1) 1"	1 1/2"
	(2) 1 1/2 BATHS OR LESS	(2) 3/4"	1 1/2"
	(3) 1 1/2 BATHS OR LESS	(3) 3/4"	1 1/2"
# Of Residential Units	(4) 2 BATHS OR MORE	(4) 1"	2"
	(3) 2 BATHS OR MORE	(3) 1"	2"
	(1) 1 1/2 BATHS OR LESS	(1) 3/4"	1 1/2"
	(2) 2 BATHS OR MORE	(2) 1"	1 1/2"
# Of Residential Units	(5) 2 BATHS OR MORE	(5) 1"	2"
	(4) 2 BATHS OR MORE	(4) 1"	2"
	(1) 1 1/2 BATHS OR LESS	(1) 3/4"	2"
	(2) 1 1/2 BATHS OR LESS	(2) 3/4"	2"
	(3) 2 BATHS OR MORE	(3) 1"	2"
# Of Residential Units	(6) 2 BATHS OR MORE	(6) 1"	2"
	(5) 2 BATHS OR MORE	(5) 1"	2"
	(1) 1 1/2 BATHS OR LESS	(1) 3/4"	2"
	(4) 2 BATHS OR MORE	(4) 1"	2"
	(2) 1 1/2 BATHS OR LESS	(2) 3/4"	2"
	(3) 2 BATHS OR MORE	(3) 1"	2"

NOTES:
1 1/2 Baths Or Less per Residential Unit = 3/4" Curb Stop
2 Baths Or More per Residential Unit = 1" Curb Stop

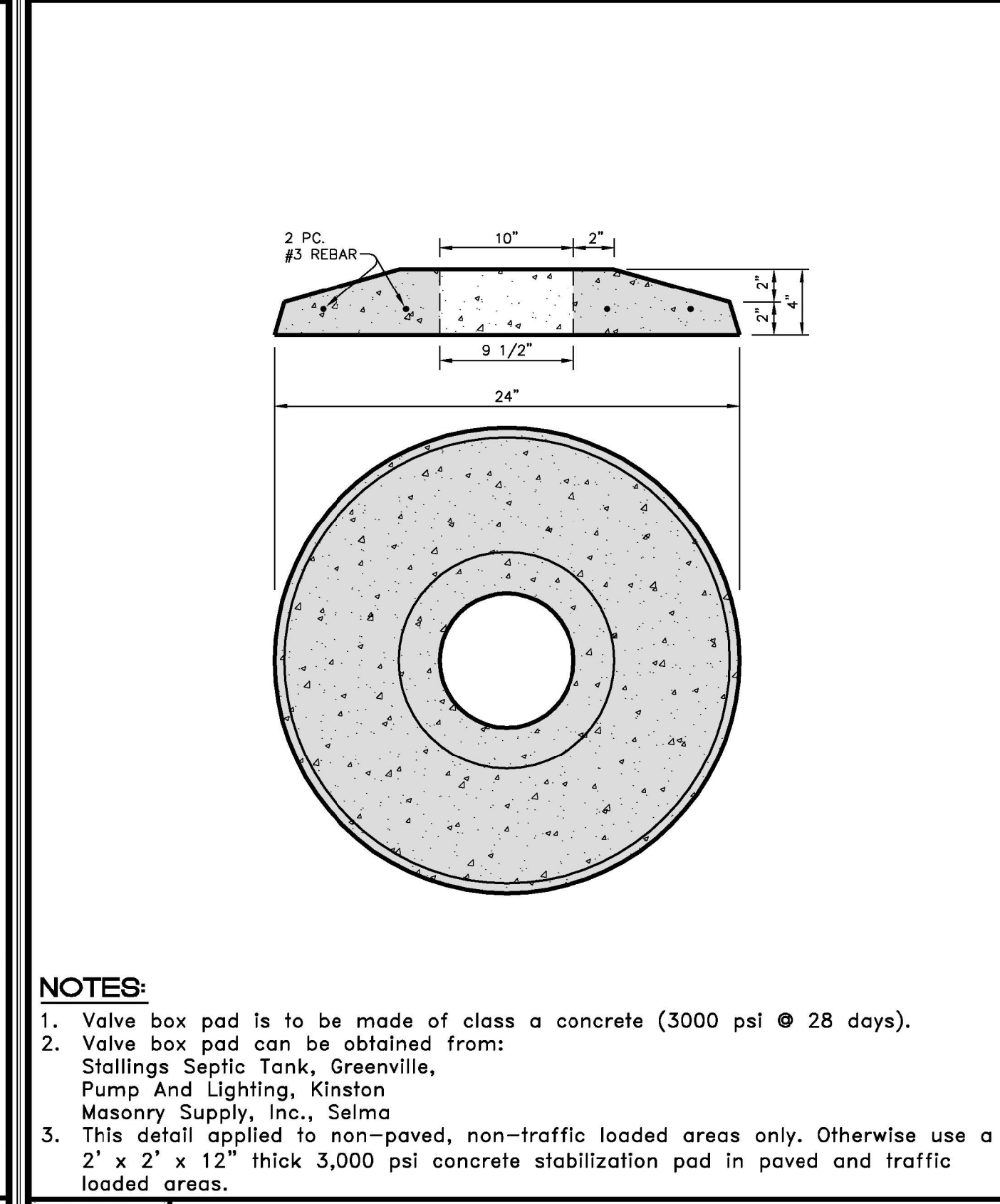
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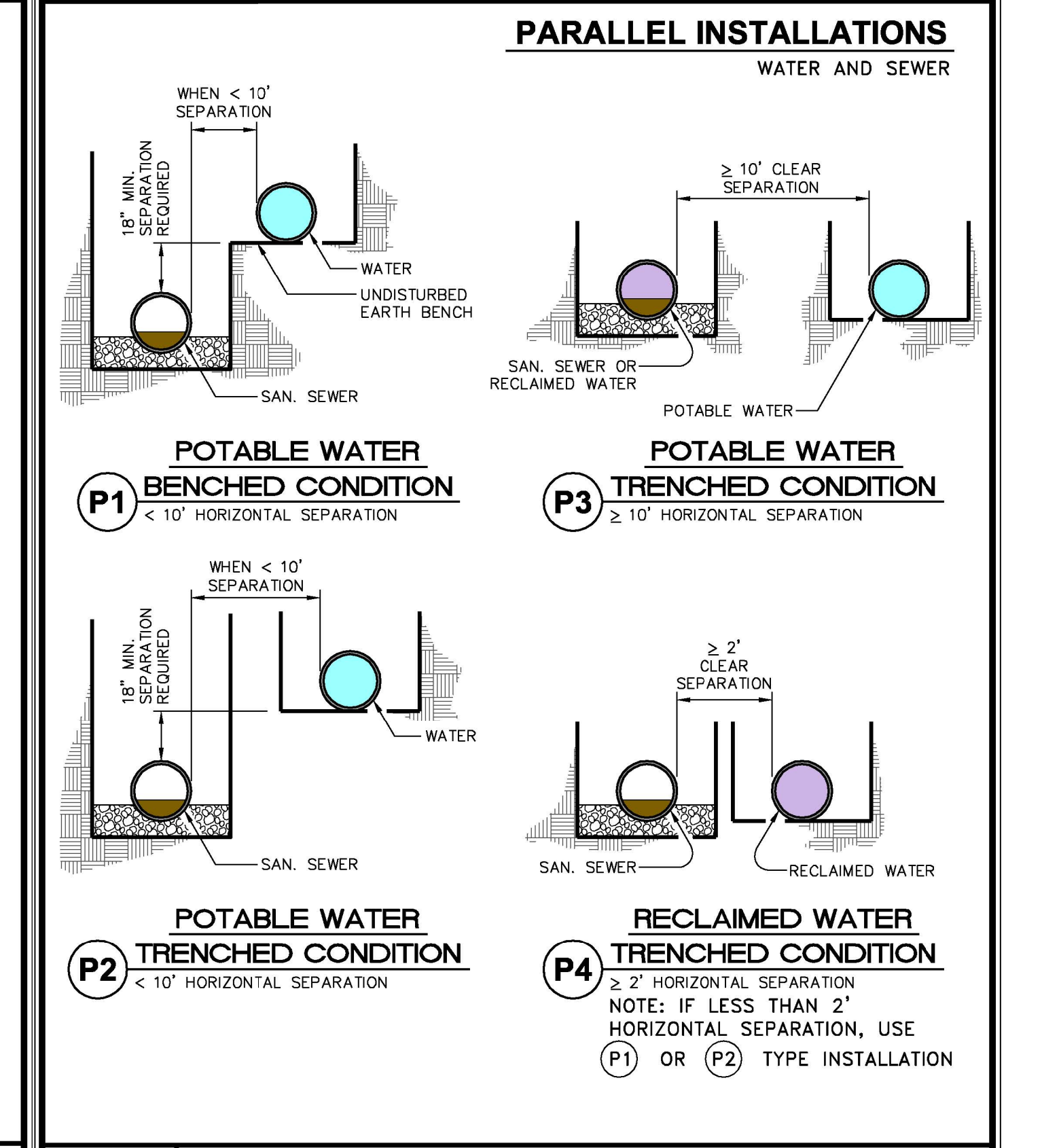
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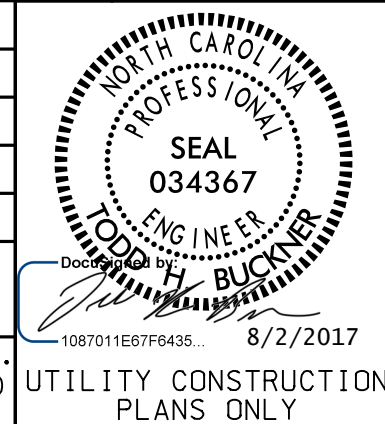
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REVISION DATE: June, 2010
SHEET # 1 of 5

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PROJECT REFERENCE NO. U-5935 SHEET NO. UC-3D



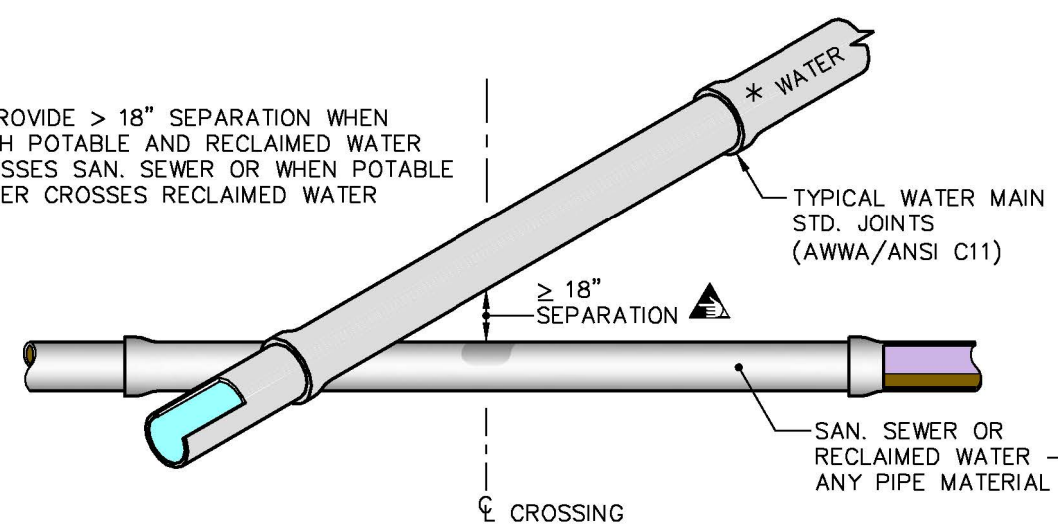
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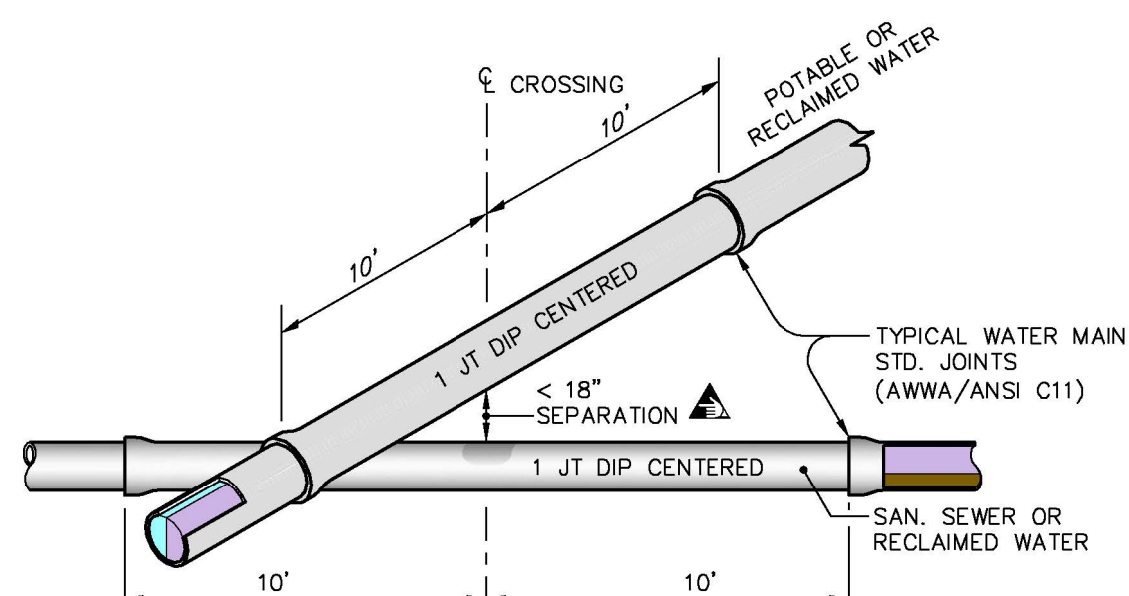
UTILITY CONSTRUCTION

PERPENDICULAR CROSSING WATER AND SEWER

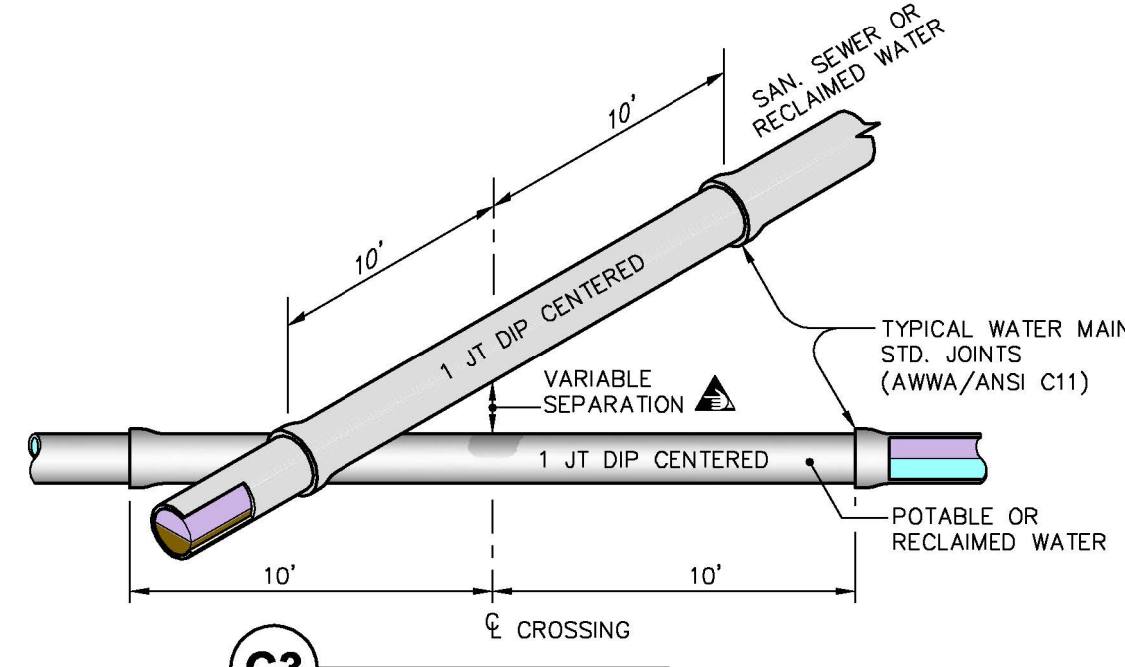
* PROVIDE > 18" SEPARATION WHEN BOTH POTABLE AND RECLAIMED WATER CROSSES SAN. SEWER OR WHEN POTABLE WATER CROSSES RECLAIMED WATER



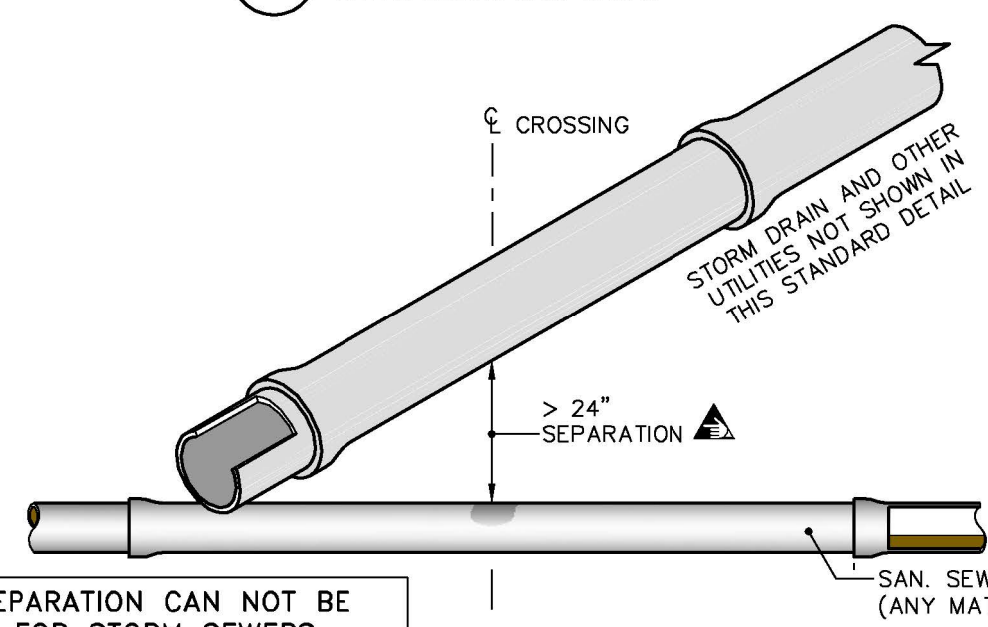
C1 PREFERRED CONDITION
POTABLE OR RECLAIMED WATER ABOVE SAN. SEWER WITH ≥ 18" SEPARATION



C2 PREFERRED CONDITION
POTABLE OR RECLAIMED WATER ABOVE SAN. SEWER WITH < 18" SEPARATION

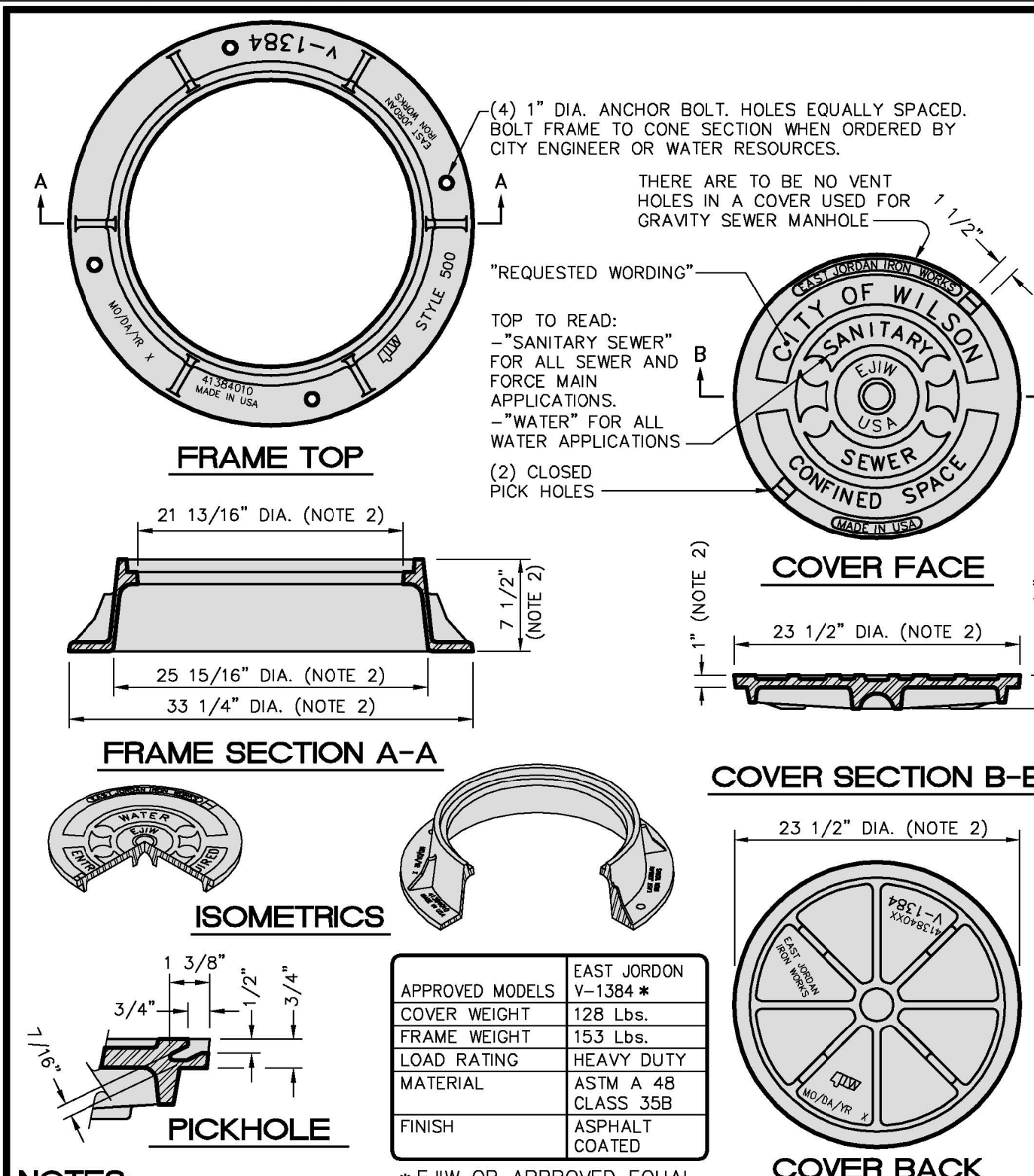


C3 PREFERRED CONDITION
WATER BELOW SAN. SEWER



IF 24" SEPARATION CAN NOT BE ACHIEVED FOR STORM SEWERS, ENGINEERING SOLUTIONS SUCH AS DUCTILE IRON PIPE (SEWER) OR STRUCTURAL BRIDGING TO PREVENT CRUSHING THE UNDERLYING SEWER PIPE ARE ALLOWED.

C4 PREFERRED CONDITION
STORM DRAIN ABOVE SAN SEWER WITH ≥ 24" SEPARATION



NOTES:
1. Frame & Cover weight may not deviate by more than -5.0%.
2. Iron casting to comply with AASHTO M306.
3. See detail 633.03 for storm drainage cover design.

APPROVED MODELS	EAST JORDON V-1384 *
COVER WEIGHT	128 Lbs.
FRAME WEIGHT	153 Lbs.
LOAD RATING	HEAVY DUTY
MATERIAL	ASTM A 48 CLASS 35B
FINISH	ASPHALT COATED

*EJW OR APPROVED EQUAL

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MINIMUM SEPARATION OF UTILITIES AND OTHER FEATURES

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MINIMUM SEPARATION OF UTILITIES AND OTHER FEATURES

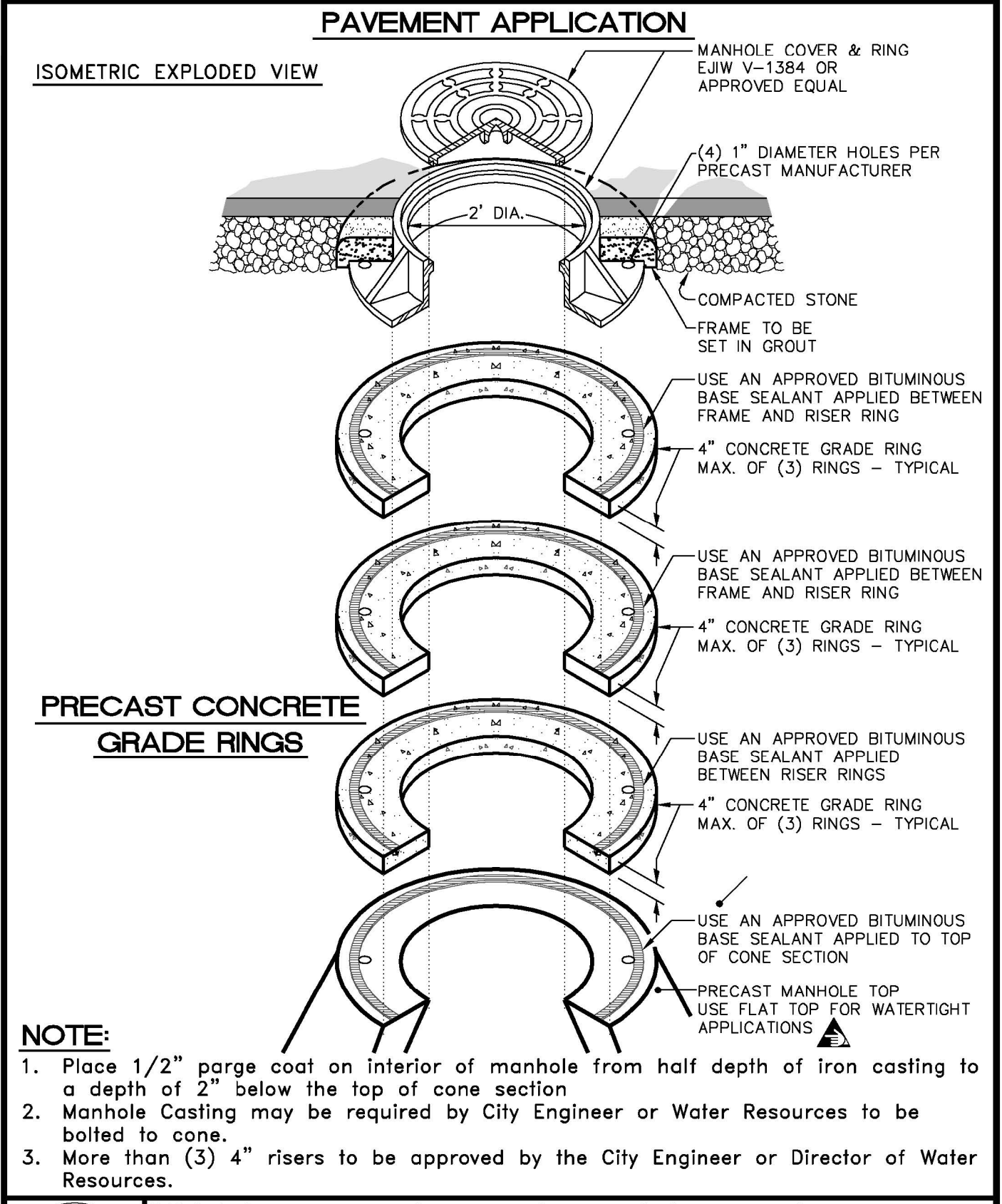
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REVISION DATE: June, 2010
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STANDARD MANHOLE FRAME AND COVER



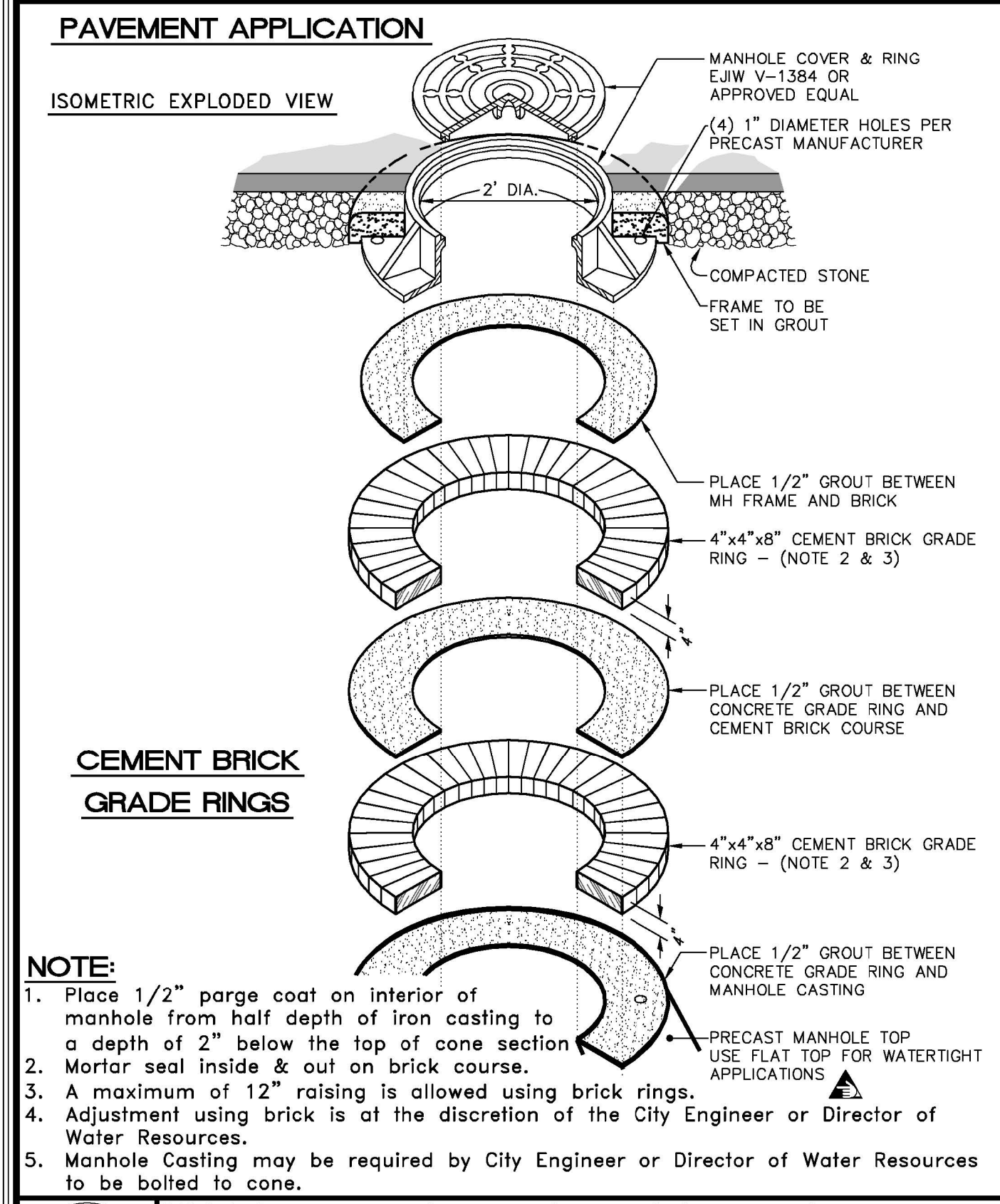
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STANDARD MANHOLE RING AND COVER GRADE ADJUSTMENT



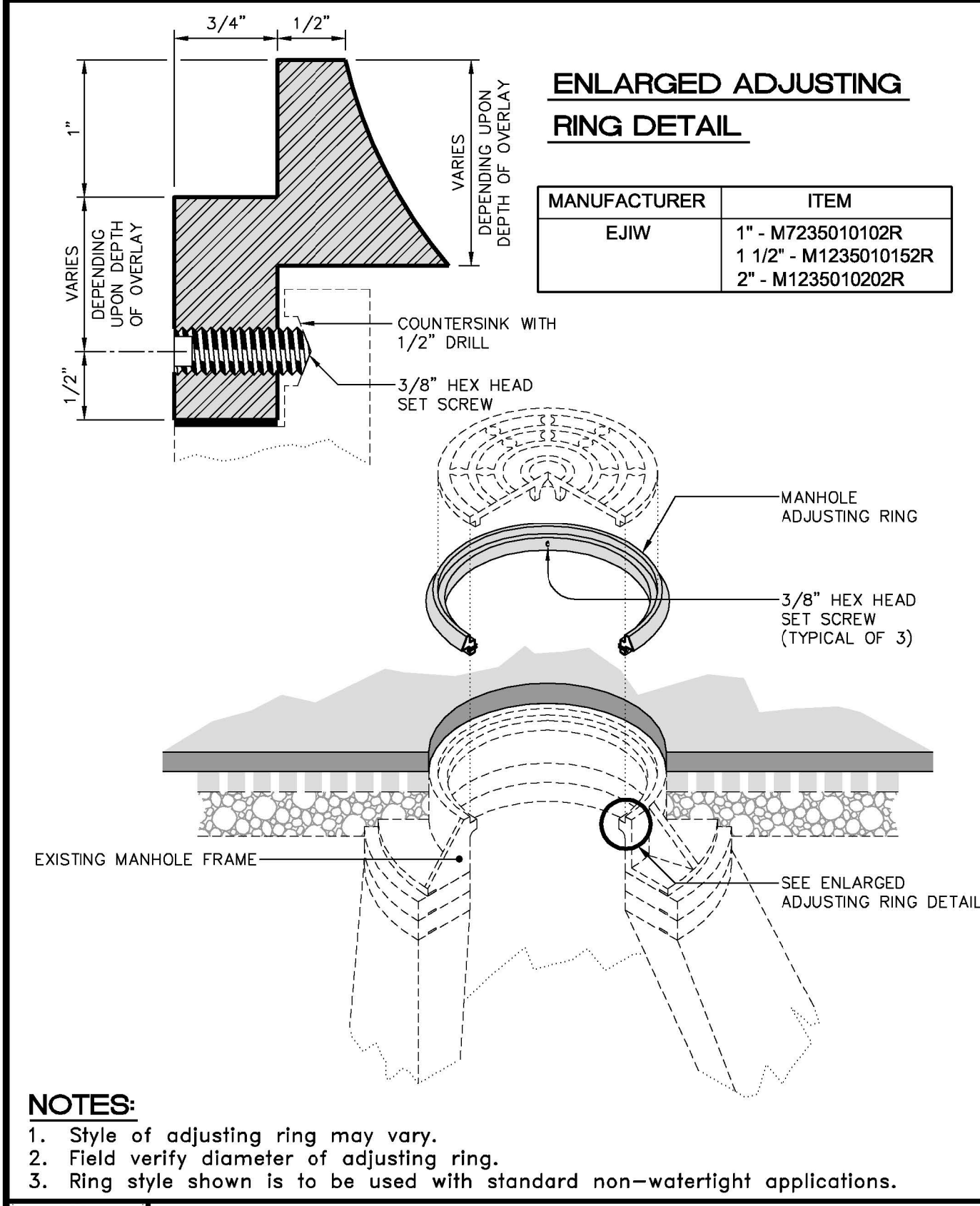
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STANDARD MANHOLE RING AND COVER GRADE ADJUSTMENT



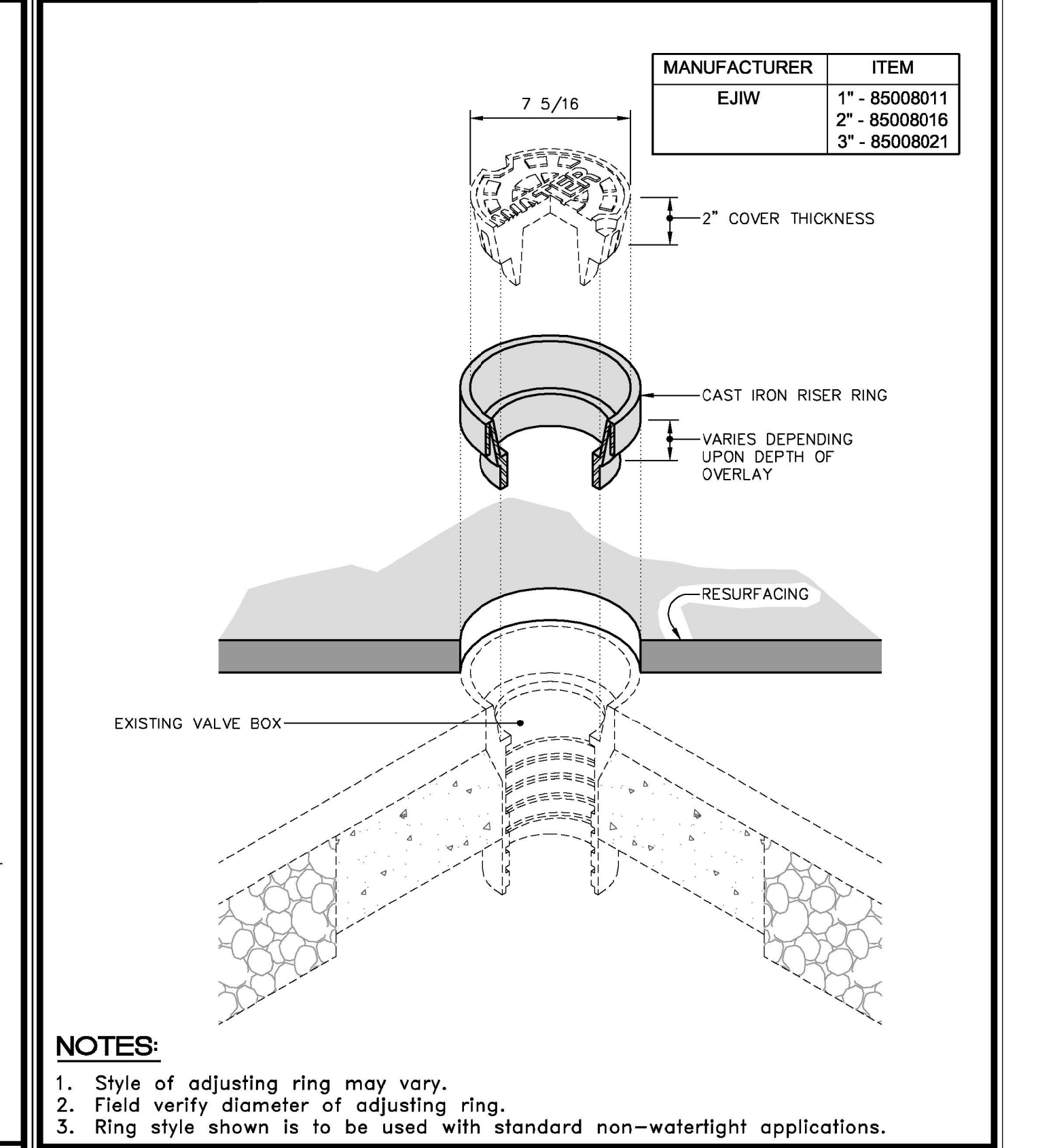
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MANHOLE ADJUSTING RING (RESURFACING APPLICATIONS ONLY)



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VALVE BOX ADJUSTING RING (RESURFACING APPLICATIONS ONLY)

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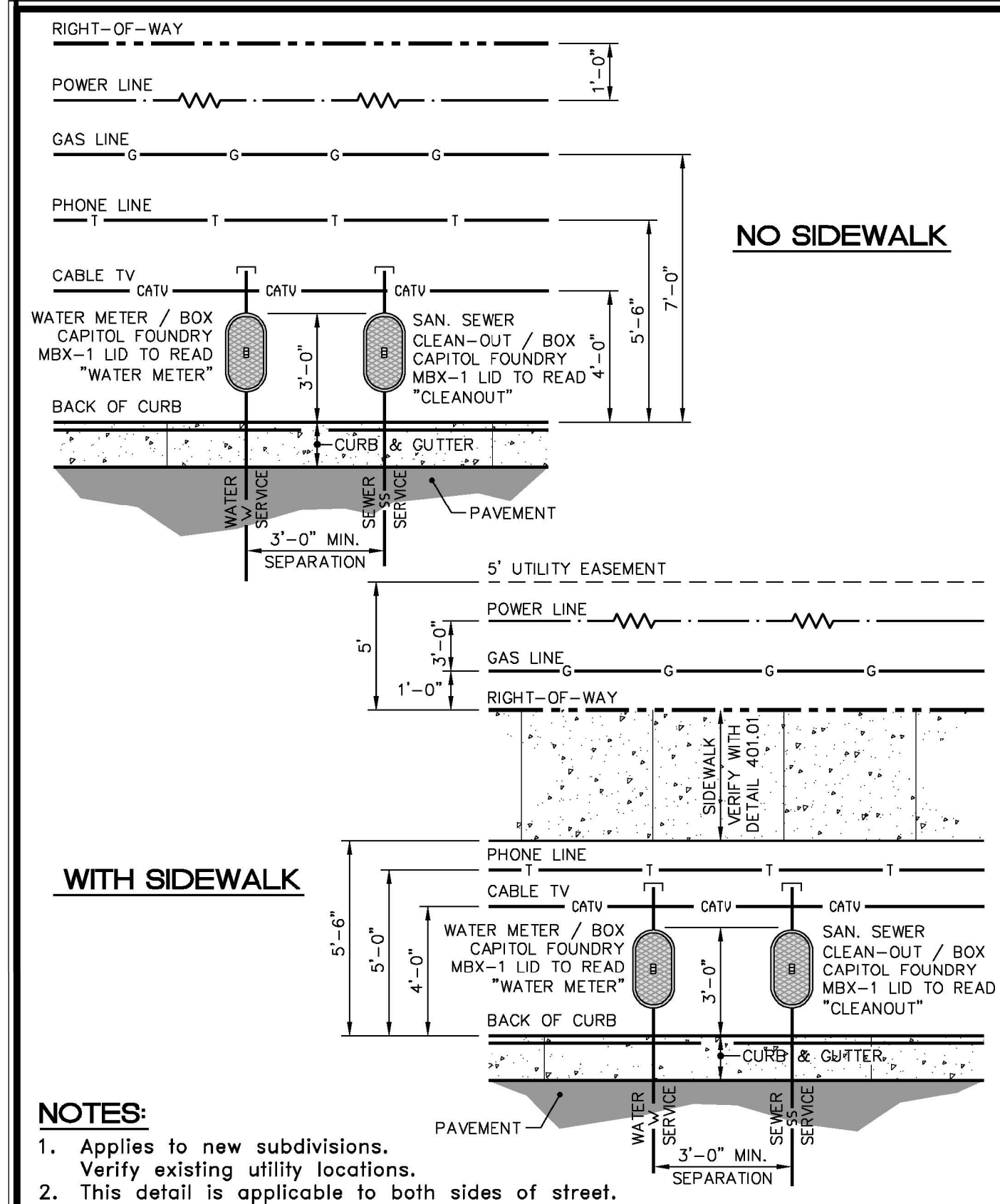
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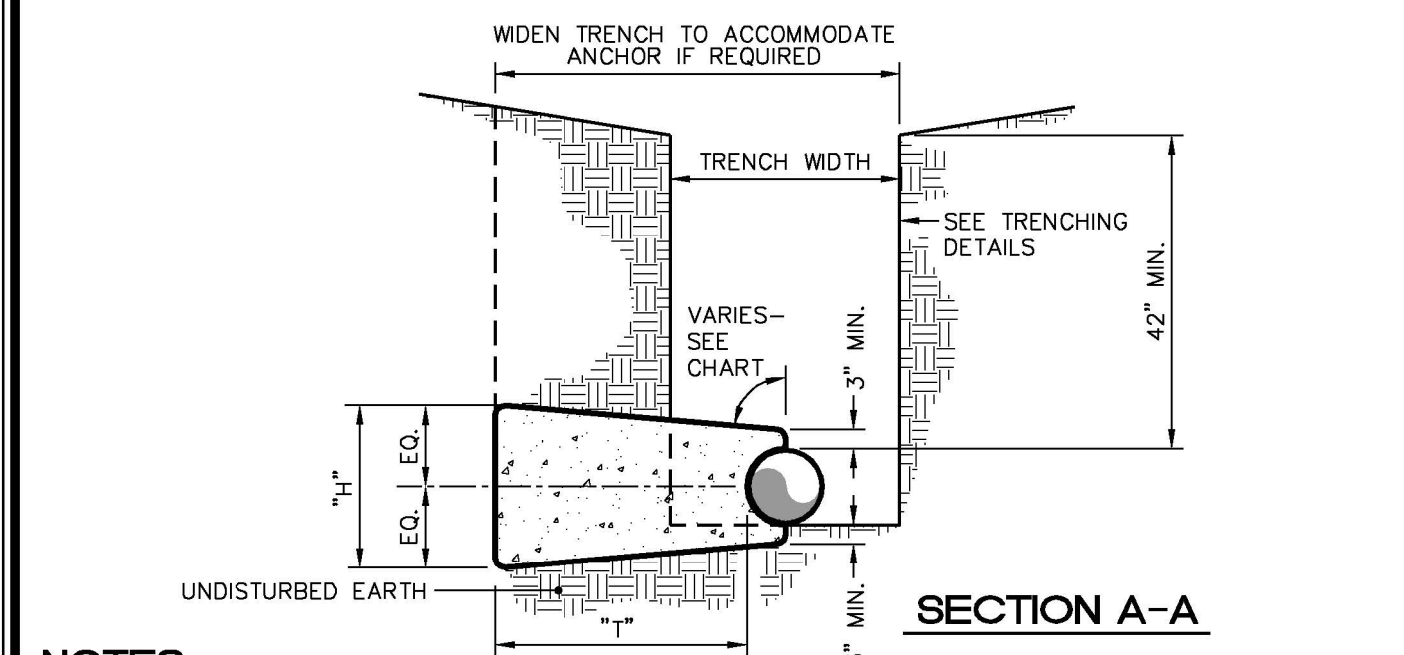
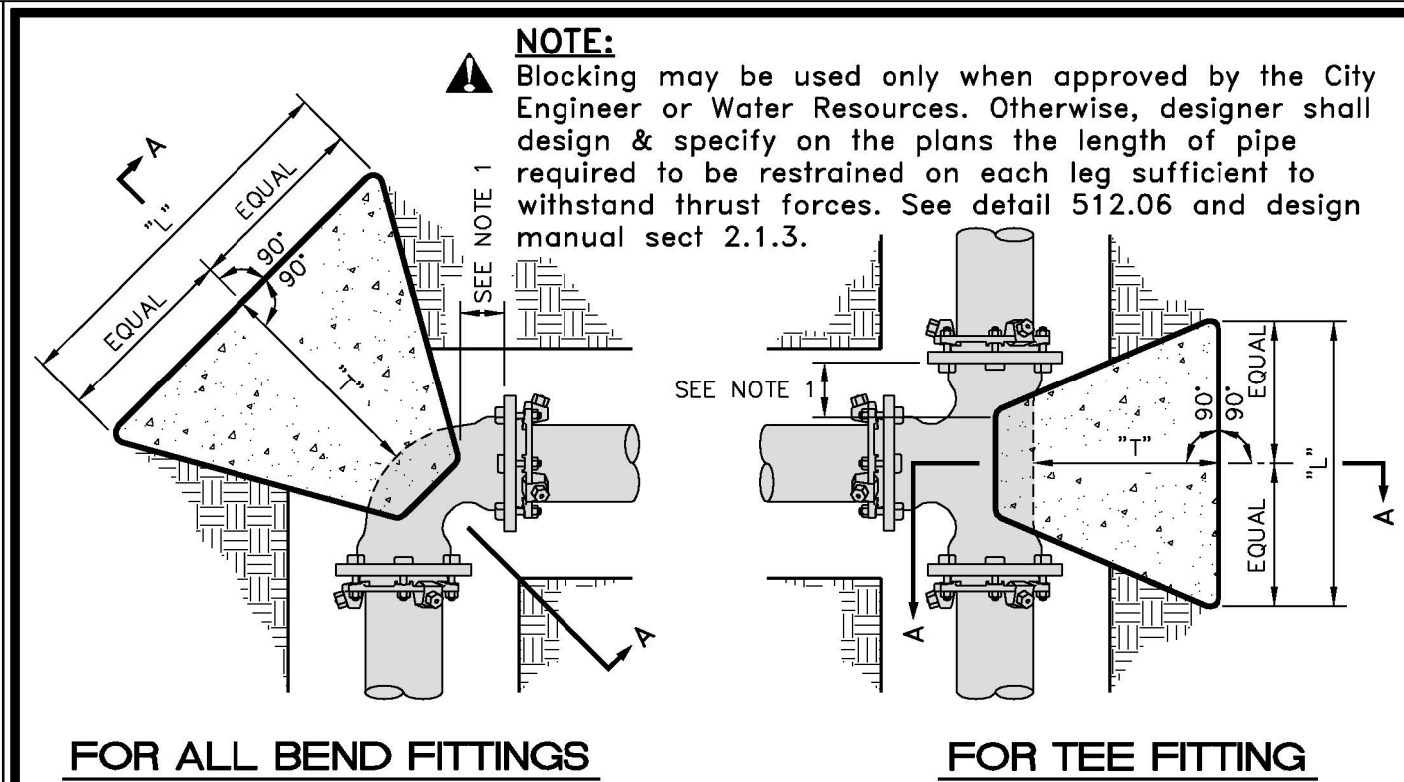
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8/4/2017
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



- NOTES:**
- Applies to new subdivisions. Verify existing utility locations.
 - This detail is applicable to both sides of street.



- NOTES:**
- Concrete blocking is to be formed to ensure accessibility to fittings and poured against undisturbed earth.
 - Fittings are to be completely wrapped with plastic, prior to pouring concrete.
 - Concrete to be minimum 3,000 psi, @ 28 days.
 - When Sackrete is to be used, it shall be properly mixed per manufacturer specifications.

TEST PRESSURE = 150 P.S.I.

PIPE SIZE	TYPE FITTING	DIMENSIONS (Ft.)			VOLUME CONCRETE CU. YD.
		"L"	"H"	"T"	
<4 INCHES	11 1/4"	---	---	---	---
	22 1/2"	1.00	1.00	1.50	0.06
	45"	1.00	1.00	1.50	0.06
	90"	1.00	1.00	2.50	0.09
4 INCHES	11 1/4"	1.00	1.00	2.50	0.09
	22 1/2"	1.00	1.00	2.50	0.09
	45"	1.00	1.00	2.50	0.09
	90"	1.50	1.50	2.50	0.15
6 INCHES	11 1/4"	1.50	1.50	2.50	0.15
	22 1/2"	1.50	1.50	2.50	0.15
	45"	1.50	1.50	2.50	0.15
	90"	2.00	2.00	3.00	0.28
8 INCHES	11 1/4"	2.00	2.00	2.50	0.23
	22 1/2"	2.00	2.00	2.50	0.23
	45"	2.00	2.00	2.75	0.25
	90"	3.00	2.00	3.00	0.39
12 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	2.00	2.00	3.00	0.28
	45"	3.00	2.50	3.00	0.47
	90"	4.50	3.00	3.50	0.94
16 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	3.00	2.00	3.00	0.39
	45"	4.00	3.00	3.50	0.84
	90"	6.50	3.50	3.50	1.54
24 INCHES	11 1/4"	3.00	2.50	3.00	0.59
	22 1/2"	4.50	3.00	3.50	1.17
	45"	6.75	4.00	3.50	2.30
	90"	8.00	6.00	3.50	4.05
30 INCHES	11 1/4"	3.00	2.50	3.00	0.59
	22 1/2"	4.50	3.00	3.50	1.17
	45"	6.75	4.00	3.50	2.30
	90"	8.00	6.00	3.50	4.05

- CHART NOTES:**
- If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
 - Blocking sizes shown in these tables assume the following:
 - Blocking is constructed in residual soils as shown in detail
 - Soil bearing pressure = 2000 psf
 - Velocity of flow = 15 fps
 - This detail not applicable to reducing bends.
 - Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

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TYPICAL RESIDENTIAL UTILITY LOCATIONS

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BLOCKING DETAIL for HORIZONTAL BENDS AND TEE

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SHEET # 1 of 2

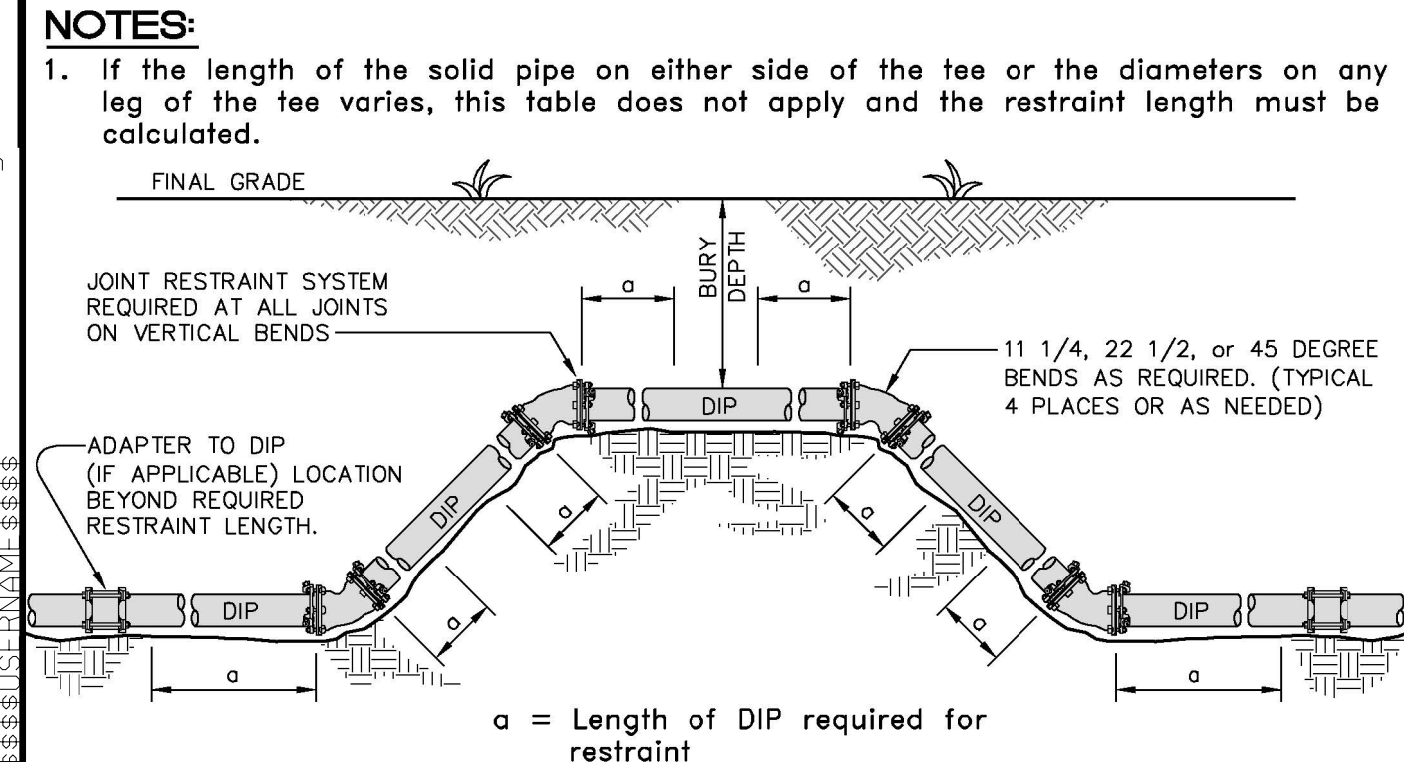
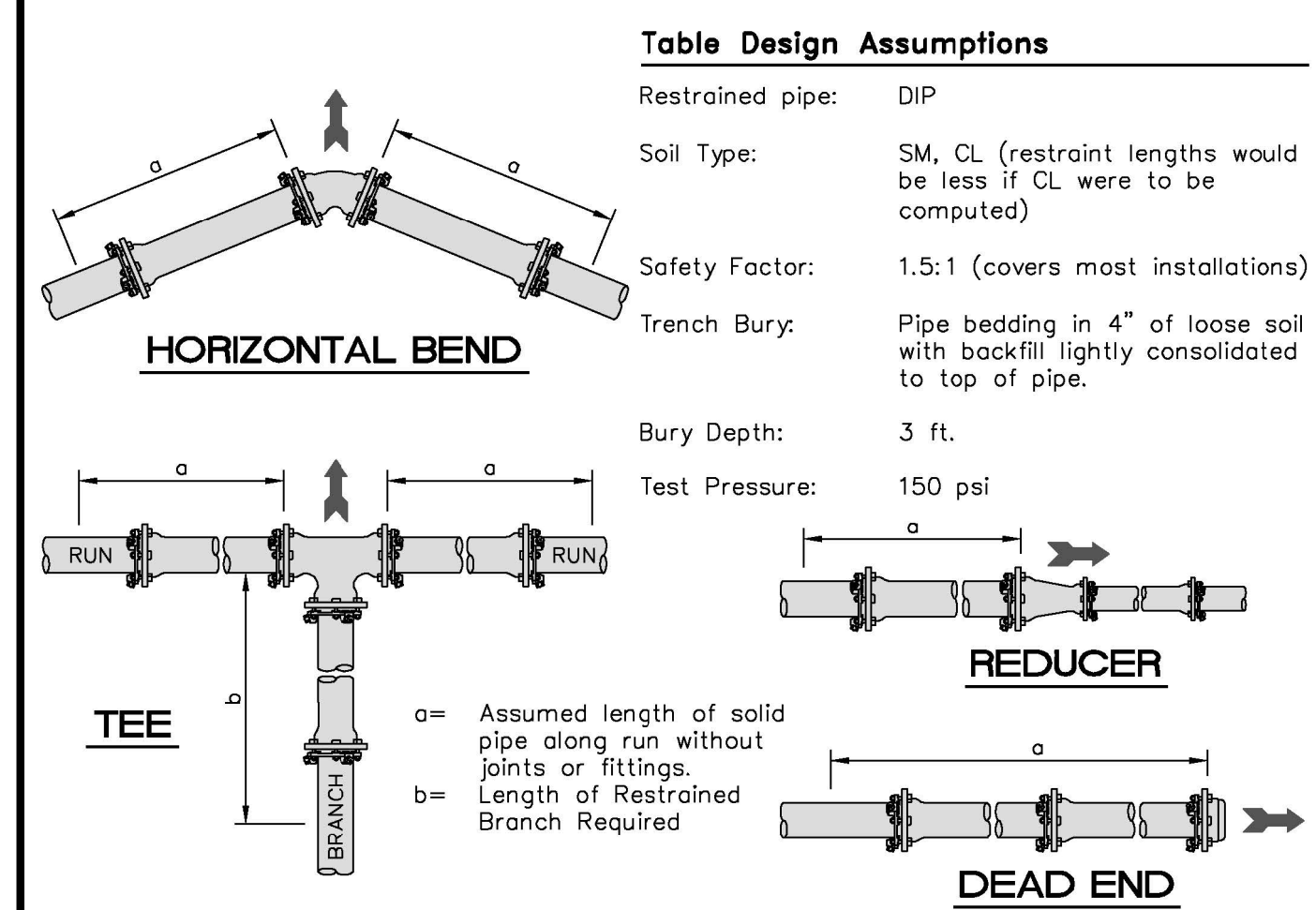
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BLOCKING DETAIL for HORIZONTAL BENDS AND TEE

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SHEET # 2 of 2

Restraint Length Chart (for Fittings)

Nominal Size	Tee		Horizontal Bend		Vertical Bend		Reducer	Dead End/Valve
	a	b (branch)	a	a (Top Bend)	a (Bottom Bend)	a		
6"	31'	28'	4'	45'	45'	6'	63'	
8"	5'	10'	5'	19'	19'	8'	82'	
12"	65'	1'	33'	83'	7'	13'	27'	64'
								48'
								11'
								84'
								116'



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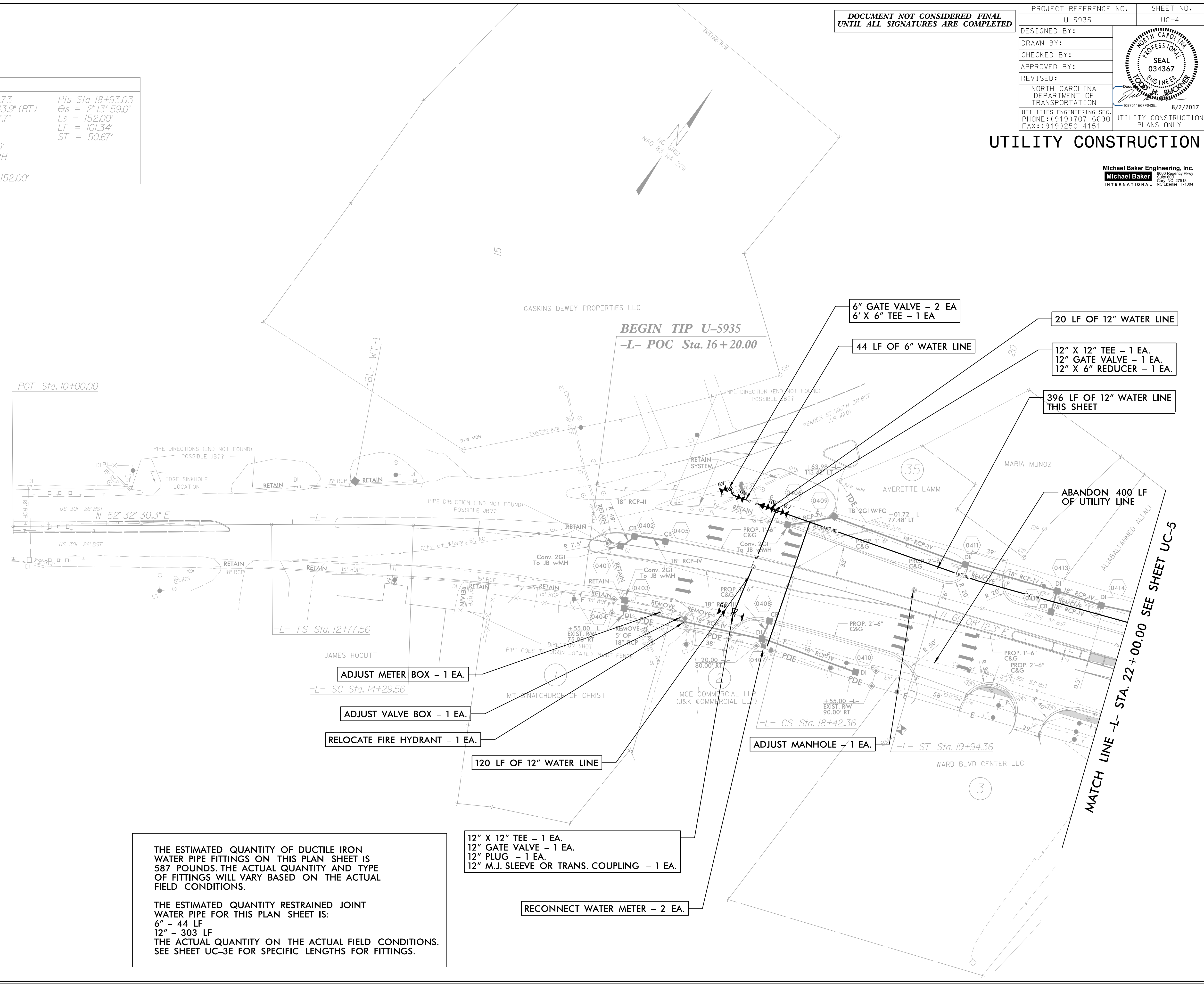
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UTILITY CONSTRUCTION

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 Cary, NC 27518
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-L-		
Pls Sta 13+78.91 θs = 2°13'59.0" Ls = 152.00' LT = 101.34' ST = 50.67'	Pls Sta 16+36.73 Δ = 12°07'43.9" (RT) D = 2°56'17.7" L = 412.79' T = 207.17' R = 1,950.00' Ds = 50 MPH SE = 0.04 RUNOFF = 152.00'	Pls Sta 18+93.03 θs = 2°13'59.0" Ls = 152.00' LT = 101.34' ST = 50.67'



ADJUST METER BOX - 1 EA.

ADJUST VALVE BOX - 1 EA.

RELOCATE FIRE HYDRANT - 1 EA.

120 LF OF 12" WATER LINE

ADJUST MANHOLE - 1 EA.

12" X 12" TEE - 1 EA.
12" GATE VALVE - 1 EA.
12" PLUG - 1 EA.
12" M.J. SLEEVE OR TRANS. COUPLING - 1 EA.

RECONNECT WATER METER - 2 EA.

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 587 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON THE ACTUAL FIELD CONDITIONS.

THE ESTIMATED QUANTITY RESTRAINED JOINT WATER PIPE FOR THIS PLAN SHEET IS:
 6" - 44 LF
 12" - 303 LF
 THE ACTUAL QUANTITY ON THE ACTUAL FIELD CONDITIONS. SEE SHEET UC-3E FOR SPECIFIC LENGTHS FOR FITTINGS.

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USER: todd.buckner

MATCH LINE -L- STA. 22+00.00 SEE SHEET UC-5