

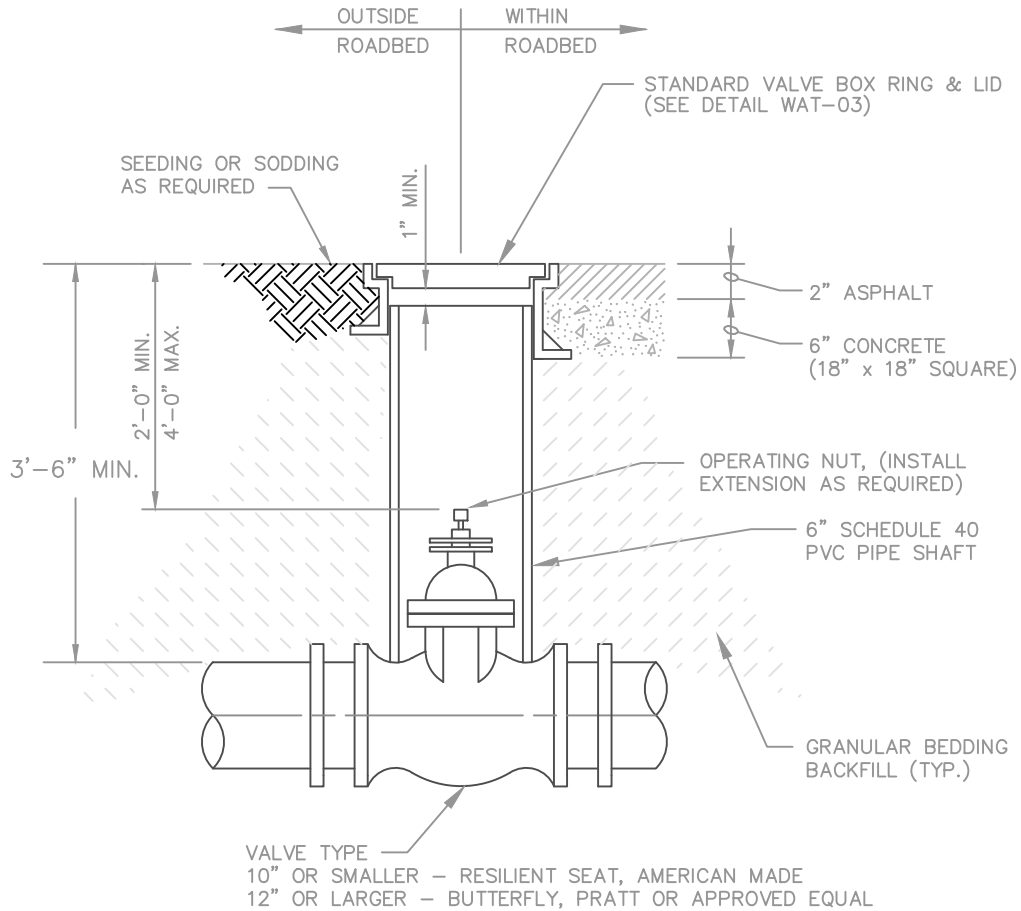
FIRE HYDRANT DETAIL

- NOTES:
1. FIRE HYDRANT AND VALVE ASSEMBLY SHALL BE CLEAR OF SIDEWALK PLACEMENT.
 2. NO FIRE HYDRANT SHALL BE LOCATED IN THE RIGHT OF WAY WITHIN THE INTERSECTION CURB RADIUS PLUS 10 FEET BEYOND THE INTERSECTION CURB RADIUS..
 3. FROM THE TEE TO THE FIRE HYDRANT, ALL PIPING AND FITTINGS SHALL BE CLASS 52 DUCTILE IRON PIPE.
 4. ALL VALVES, HORIZONTAL, AND VERTICAL (UP TO THE GRADE LINE) DUCTILE IRON PIPE SHALL BE POLY WRAPPED.
 5. FIRE HYDRANT SHALL BE PAINTED RED IN COLOR BY THE MANUFACTURER.
 6. DIRECTION TO OPEN HYDRANT SHALL BE COUNTERCLOCKWISE AND MARKED AS SUCH.
 7. NO ALL-THREAD RESTRAINT ALLOWED.



STANDARD DETAILS FIRE HYDRANT ASSEMBLY

REVISIONS				DRAWN BY:	DATE:
NO.	DATE	BY	REMARKS	SPJ	2-12-93
1	01/14	BM	GENERAL UPDATE	DETAIL NO.: WAT-01	SCALE: NO SCALE
2	04/18	TSD	GENERAL UPDATE	APPROVED BY:	



VALVE BOX DETAIL

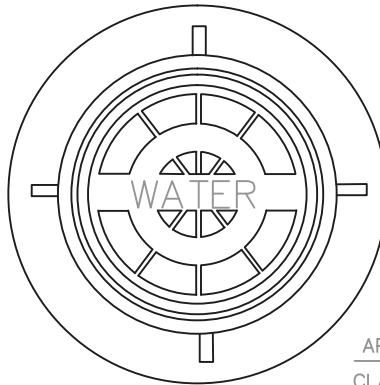
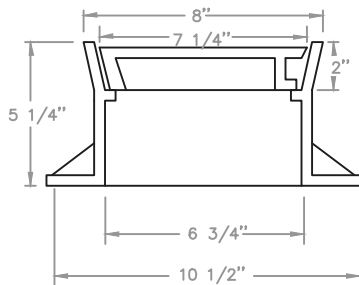
- NOTES: 1. ALL VALVES SHALL BE POLY WRAPPED.
 2. WITHIN LAWN AREAS ALL VALVE STACKS SHALL BE ADJUSTED TO BE FLUSH WITH THE FINISH YARD GRADE BEFORE CERTIFICATE OF OCCUPANCY CAN BE GRANTED.



STANDARD DETAILS

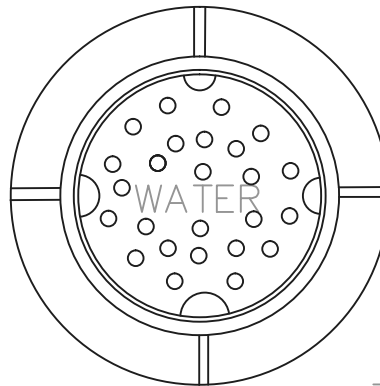
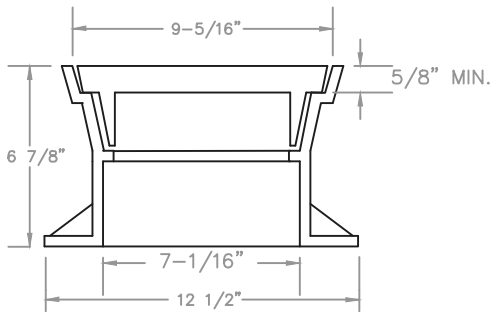
VALVE BOX DETAIL

REVISIONS				DRAWN BY:	DATE:
NO.	DATE	BY	REMARKS	SPJ	2-12-93
1	11/98	JFH	GENERAL UPDATE	DETAIL NO.: WAT-02	SCALE: NO SCALE
2	04/18	TSD	GENERAL UPDATE	APPROVED BY:	



APPROVED RING AND LID
 CLAY & BAILEY 2194
 GCI V 0675

YARD MODEL



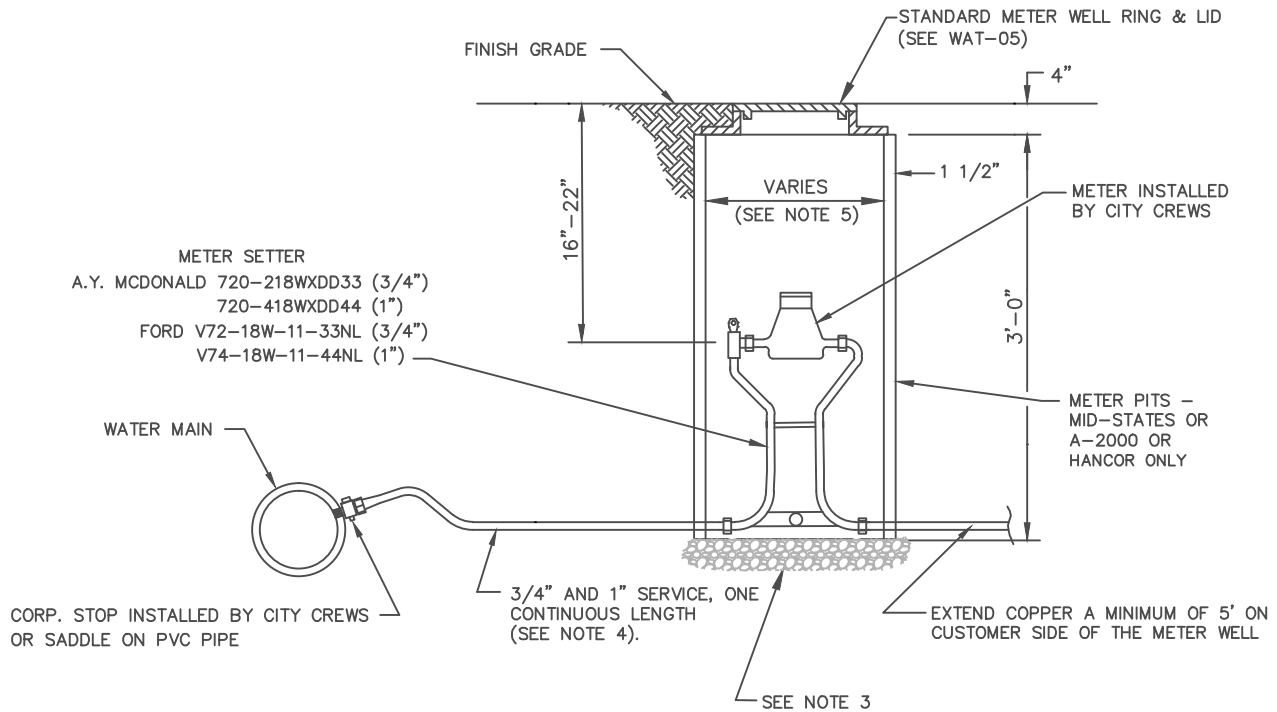
APPROVED RING AND LID
 CLAY & BAILEY 2196
 GCI V 0706

PAVEMENT MODEL



STANDARD DETAILS
 VALVE BOX RING AND LID


REVISIONS				DRAWN BY; BKL	DATE 6-14-00
NO.	DATE	BY	REMARKS	DETAIL NO.: WAT-03	SCALE: NO SCALE
				APPROVED BY:	

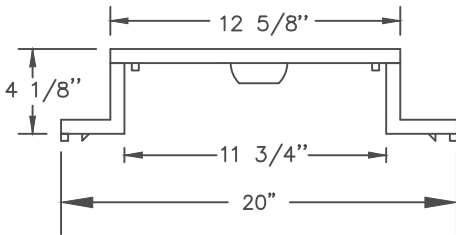
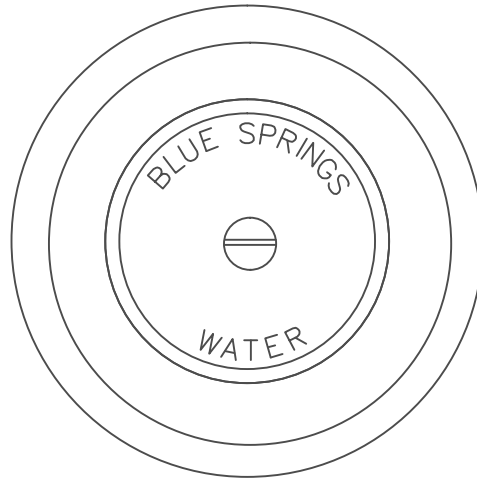


SECTION VIEW

NOTES:

1. METER WELL TO BE SET PLUMB.
2. METER WELLS ARE NOT ALLOWED TO BE LOCATED WITHIN DRIVEWAYS, SIDEWALKS, WALKWAYS, OR SHARED USE PATHS.
3. METER WELL TO BE SET ON 4" OF CLEAN GRAVEL BEDDING.
4. SERVICE LINE TO BE TYPE "K" COPPER.
5. FOR SINGLE 1" SERVICE USE 24" DIAMETER WELL, FOR SINGLE 3/4" SERVICE USE 18" DIAMETER WELL. SHARED METER WELLS ARE NOT PREFERRED, BUT IF NEEDED A 24" DIAMETER WELL SHALL BE THE MINIMUM SIZE FOR 2, 3/4" METERS, AND A 36" DIAMETER WELL FOR 2, 1" METERS OR 3, 3/4" METERS, OR A CUSTOM METER VAULT MAY BE USED WITH PRIOR APPROVAL FROM THE PUBLIC WORKS DIRECTOR.
6. THE METER PIT WILL BE LOCATED WITHIN 3' OF THE RIGHT OF WAY LINE, ON THE PRIVATE PROPERTY SIDE.
7. ALL EXTENSIONS FOR RING AND LID ADJUSTMENTS SHALL BE MID-STATES METER WELL ADJUSTING RINGS OR APPROVED EQUAL.
8. THE MAXIMUM A METER LID CAN BE ADJUSTED IS 12". IF ADDITIONAL ADJUSTMENT IS NEEDED THE METER WELL SHALL BE RESET. THE METER SHALL MEET DEPTH TOLERANCES SHOWN ON SECTION VIEW.
9. ALL WATER SERVICE LINE OUTSIDE OF THE METER WELL SHALL HAVE A MINIMUM OF 36" OF COVER.

				STANDARD DETAILS	
				3/4" & 1" SERVICE METER WELL	
REVISIONS				DRAWN BY: SPJ	DATE: 2-12-93
NO.	DATE	BY	REMARKS	DETAIL NO.: WAT-04	SCALE: NO SCALE
1	04/06	CAY	GENERAL UPDATE	APPROVED BY:	
2	04/18	TSD	GENERAL UPDATE		



APPROVED RING AND LID

CLAY & BAILEY 2210
 GCI W 1175
 EJ 8425A1

ADAPTER TABLE

METER WELL DIA.	CLAY & BAILEY	GCI
24"	2424	MBA1176
36"	2436	MBA1178

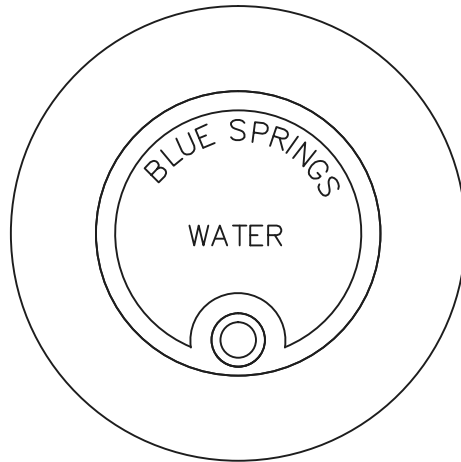
METER WELL RING & LID



STANDARD DETAILS

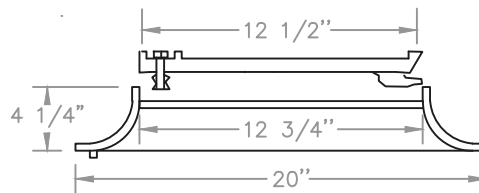
METER WELL RING AND LID

REVISIONS				DRAWN BY: BKL	DATE: 6-14-00
NO.	DATE	BY	REMARKS	DETAIL NO.: WAT-05	SCALE: NO SCALE
1	01/14	BM	GENERAL UPDATE	APPROVED BY:	
2	04/18	TSD	GENERAL UPDATE		



APPROVED RING AND LID

CLAY & BAILEY	2350
NEENAH	R-1914-B
FORD	C-32
GCI	MBA 1154



* NOT TO BE USED UNLESS SPECIFIED BY CITY

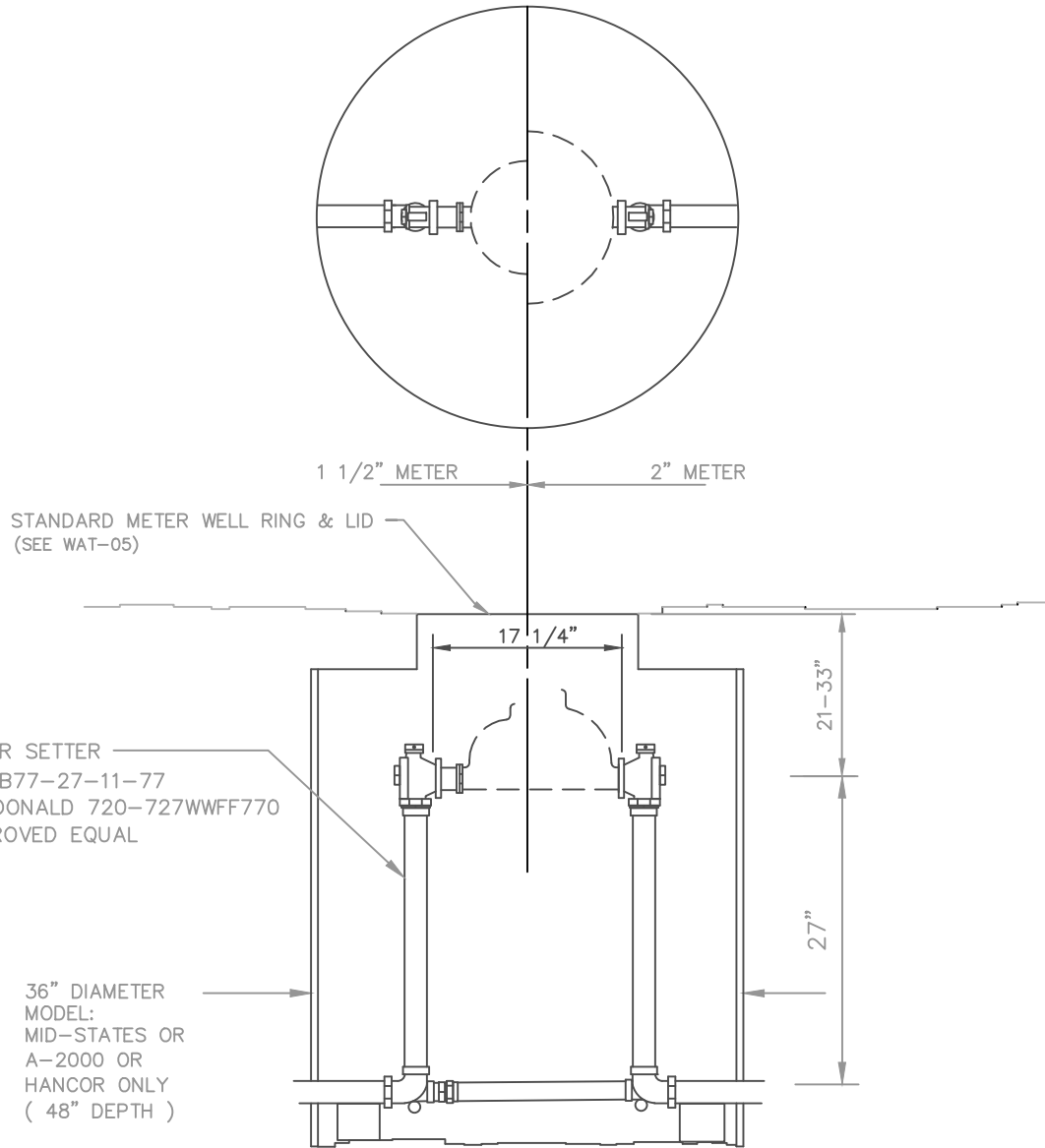
LOCKING METER WELL RING AND LID



STANDARD DETAILS

LOCKING METER WELL RING AND LID

REVISIONS				DRAWN BY:	DATE:
NO.	DATE	BY	REMARKS	BKL	6-14-00
				DETAIL NO.:	SCALE:
				WAT-06	NO SCALE
				APPROVED BY:	



1-1/2" & 2" SERVICE METER

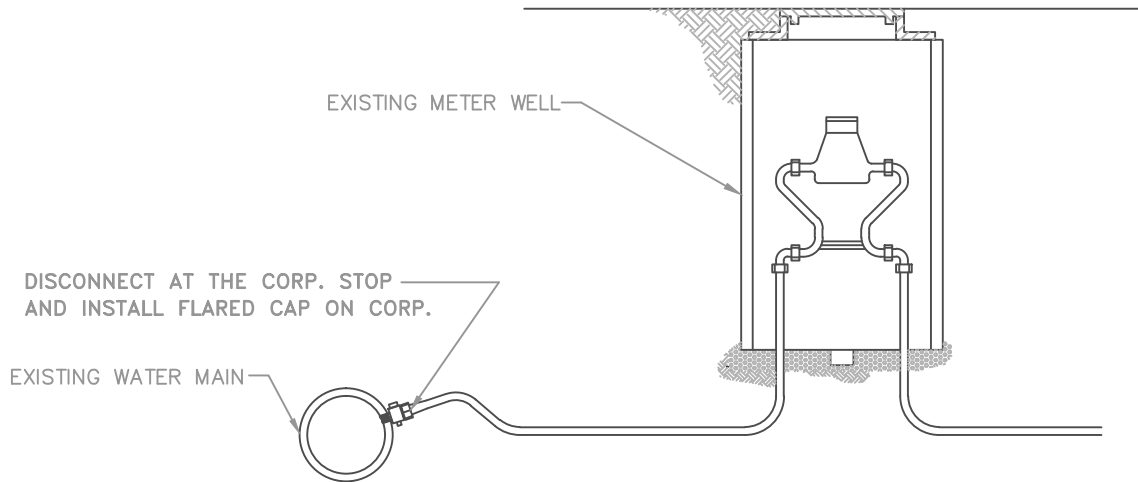
- NOTES: 1. WHEN A TAP LARGER THAN 1" IS REQUIRED, THE PROPERTY OWNER IS RESPONSIBLE FOR CONTRACTING WITH AND PAYING FOR A QUALIFIED PLUMBER TO PERFORM THE TAP.
2. METER SETTER WITH LOCKABLE BYPASS ALLOWED ONLY WITH PRIOR APPROVAL OF THE DIRECTOR OF PUBLIC WORKS. FOR LOCKABLE BYPASS METER SETTER USE A.Y. MCDONALD 720-B727WWFF775 OR APPROVED EQUAL.



STANDARD DETAILS

1-1/2" & 2" SERVICE METER

REVISIONS				DRAWN BY: JOS	DATE: 2-12-93
NO.	DATE	BY	REMARKS	DETAIL NO.: WAT-07	SCALE: NO SCALE
1	12/05	CAY	GENERAL UPDATE	APPROVED BY:	
2	04/18	TSD	GENERAL UPDATE		



SERVICE METER WELL DISCONNECTION DETAIL

- NOTES: 1. BLUE SPRINGS PUBLIC WORKS (816)228-0195 MUST BE CONTACTED TO PULL METER PRIOR TO DEMOLITION.
 2. WHEN SERVICE METER IS TO BE RE-USED, THE SERVICE LINE SHALL BE CUT AND CAPPED ON THE CUSTOMER SIDE 5' FROM THE METER WELL.



STANDARD DETAILS

DISCONNECTION DETAIL

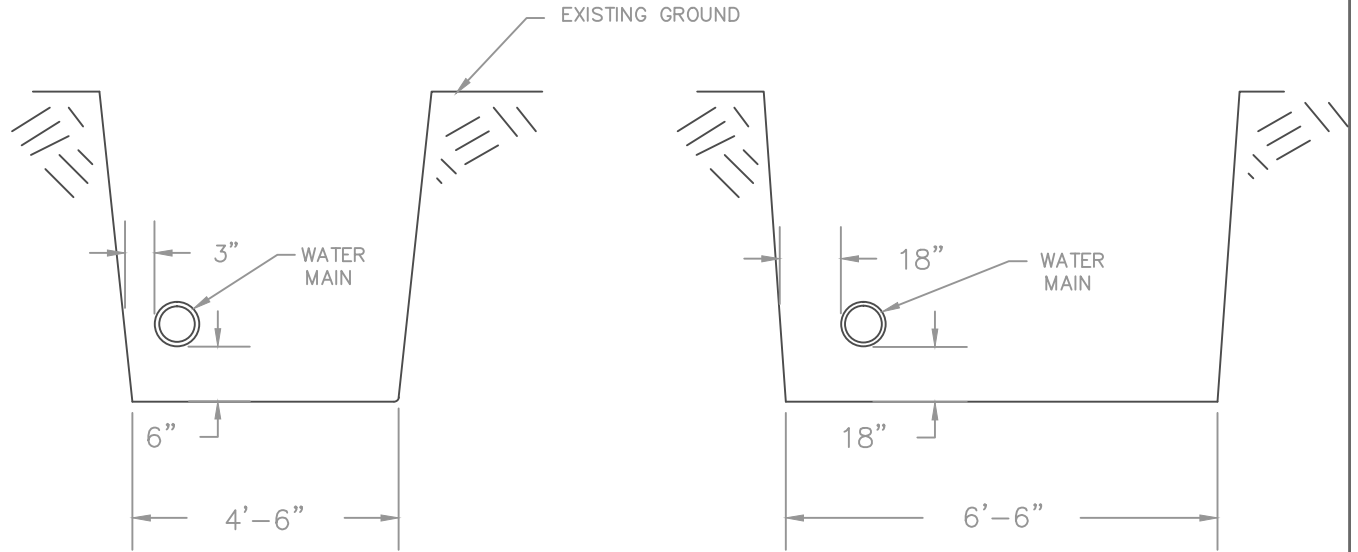
REVISIONS				DRAWN BY: SPJ	DATE: 12-17-93
NO.	DATE	BY	REMARKS	DETAIL NO.: WAT-08	SCALE: NO SCALE
1	04/06	CAY	GENERAL UPDATE	APPROVED BY:	

CORPORATION TAPS

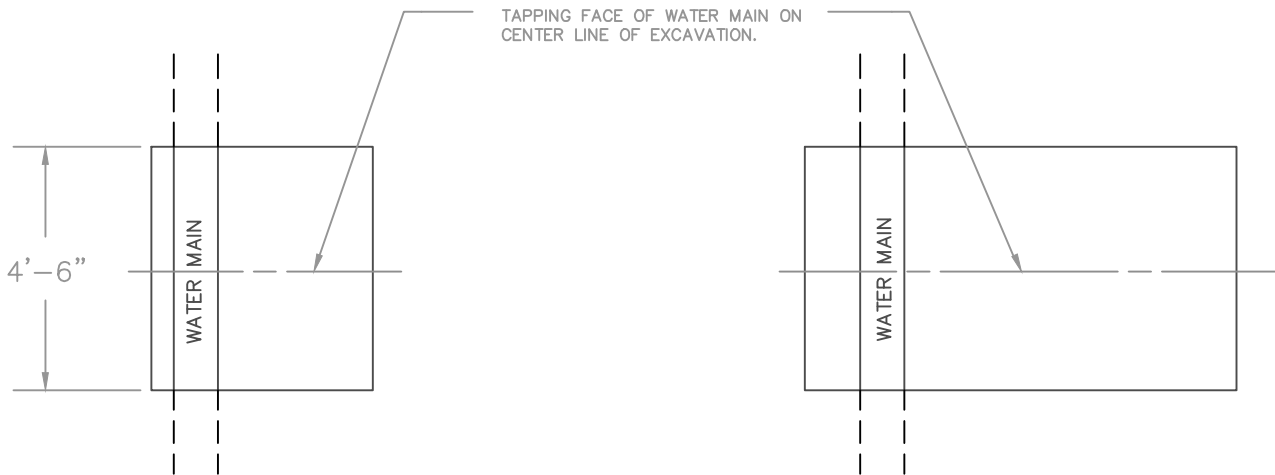
NOTE: A CORPORATION TAP SHALL NOT BE CLOSER THAN 18" TO A BELL FITTING OR ANOTHER TAP.

TAPPING VALVES

NOTE: TAPS SHALL NOT BE LESS THAN 3' FROM SPIGOT END & 18" FROM BELL OF PIPE.



SECTION VIEWS



PLAN VIEWS

- NOTES: 1. EXCAVATIONS EXCEEDING 5' IN DEPTH MUST BE SHORED.
 2. ALL MATERIAL FOR SERVICE MUST BE INSTALLED PRIOR TO TAP BEING MADE.
 3. ON PLASTIC WATER MAINS, PROTECT THE INTEGRITY OF THE TRACER WIRE.



STANDARD DETAILS
 EXCAVATION DETAILS

REVISIONS				DRAWN BY: JOS	DATE: 1-22-93
NO.	DATE	BY	REMARKS	DETAIL NO.: WAT-09	SCALE: NO SCALE
1	11/98	JFH	GENERAL UPDATE	APPROVED BY:	
2	04/18	TSD	GENERAL UPDATE		



STANDARD DETAILS

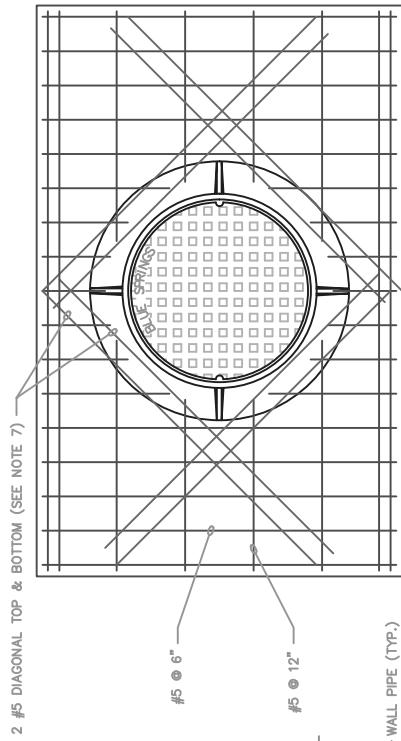
2"–6" SINGLE METERING PIT

REVISIONS

NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE
2	04/18	TSD	GENERAL UPDATE

DRAWN BY:	SPJ	DATE:	1–22–93
DETAIL NO.:	WAT–10	SCALE:	NO SCALE

APPROVED BY:



TOP SLAB

* VARIES BY MANUFACTURER

METER SIZE	L	W	A	B	C	D	E	F	G	H	J	K	M
2"	122	48	9	7	8	4.5	39	30	*	*	18	11	19
3"	150	72	11	8	12	4.5	52	42	*	*	24	23	26
4"	171	72	13	9	12	4.5	52	42	*	*	24	21	28
6"	202	72	16	10.5	9	8	61	51	*	*	24	20	29

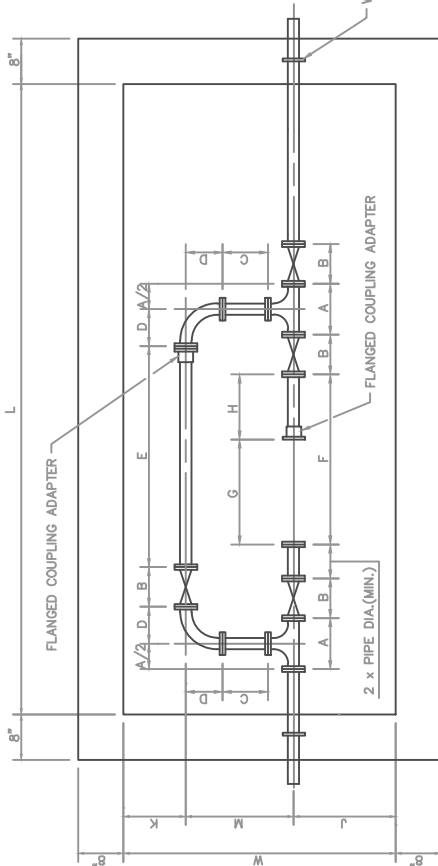
NOMINAL DIMENSIONS FOR SINGLE METER PITS

ALL DIMENSIONS ARE IN INCHES

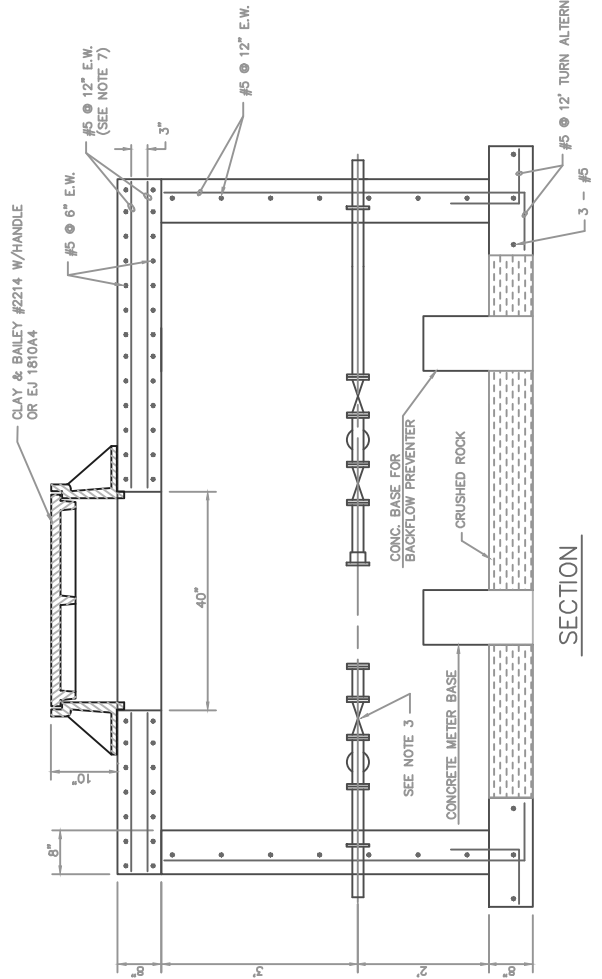
NOTES:

- POUR FOOTING ON FIRM UNDISTURBED EARTH.
- ALL PIPING IN METER PIT SHALL BE D.I.P. OR C.I.P.
- VALVES SHALL BE GATE TYPE; BYPASS VALVE SHALL BE O.S. & Y.
- WALLS TO BE DOUBLE FORMED.
- ALL RE-BARS TO HAVE 3/4" COVER.
- CONCRETE SHALL BE MCIB MIX #WA585–3/4–2–0.410.
- TOP LAYER OF SLAB REINFORCEMENT MAY BE ELIMINATED IN CURBED NON-TRAFFIC AREAS.
- 3" OR GREATER SIZE METER SHALL HAVE AN UPSTREAM STRAINER.
- WHEN A TAP LARGER THAN 1" IS REQUIRED, THE PROPERTY OWNER IS RESPONSIBLE FOR CONTRACTING AND PAYING FOR A QUALIFIED PLUMBER TO PERFORM THE TAP.

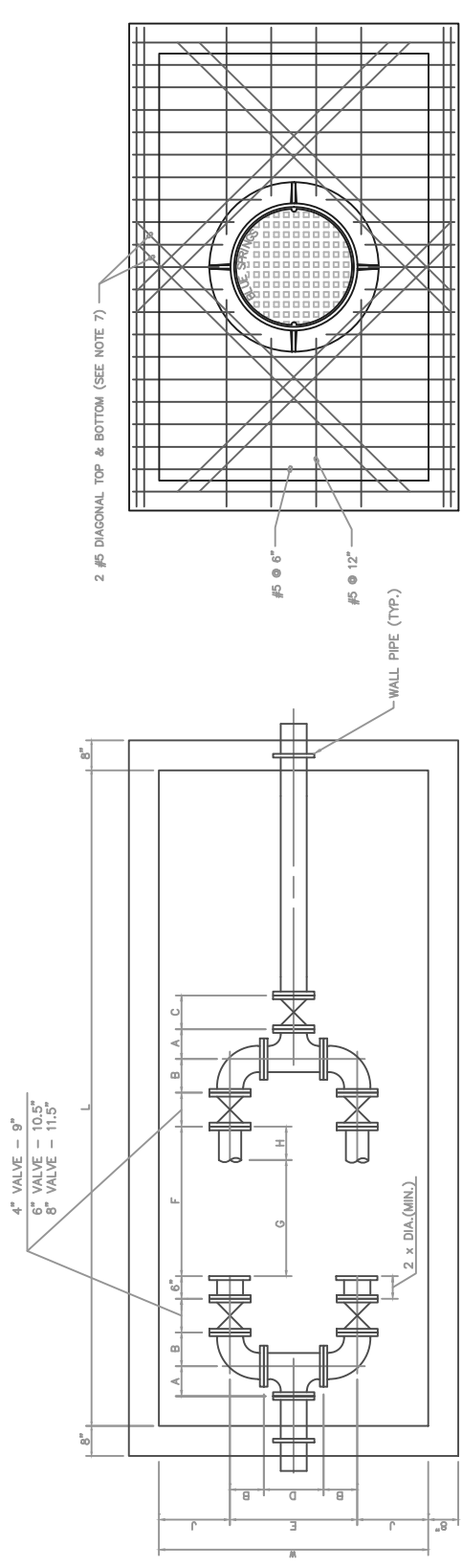
METERING PIT & SETTING W/BYPASS FOR SINGLE 2" THRU 6" METERS



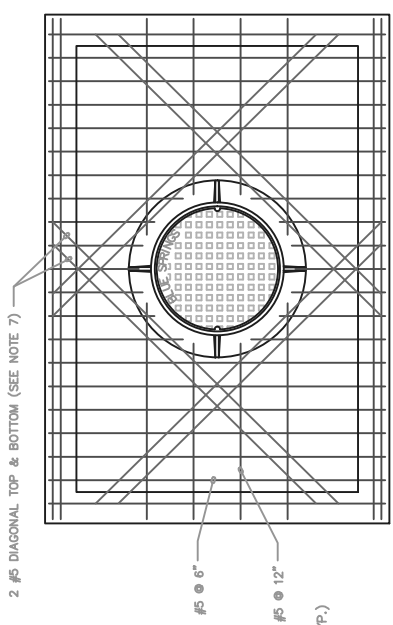
PLAN



SECTION



PLAN



TOP SLAB

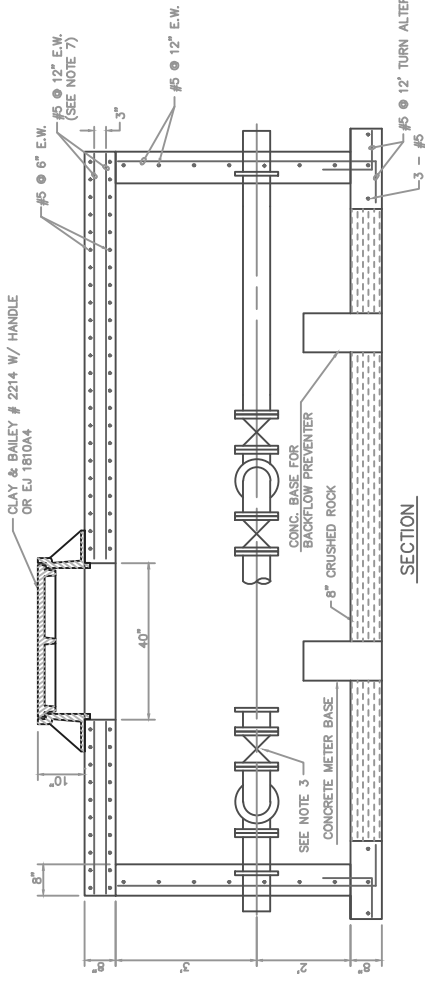
* VARIES BY MANUFACTURER

INLET & METER OUTLET SIZE	L	W	A	B	C	D	E	F	G	H	J
6"	183	72	8	8	9	16	34	42	*	*	9
8"	216	84	9	12	11	18	41	48	*	*	21

NOMINAL DIMENSIONS FOR DOUBLE METER PITS
ALL DIMENSIONS ARE IN INCHES

NOTES:

1. POUR FOOTING ON FIRM UNDISTURBED EARTH.
2. ALL PIPING IN METER PIT SHALL BE D.I.P. OR C.I.P.
3. VALVES SHALL BE GATE TYPE; BYPASS VALVE SHALL BE O.S. & Y.
4. WALLS TO BE DOUBLE FORMED.
5. ALL RE-BARS TO HAVE 3/4" COVER.
6. CONCRETE SHALL BE MCIB MIX #WA585-3/4-2-0.410.
7. TOP LAYER OF SLAB REINFORCEMENT MAY BE ELIMINATED IN CURBED NON-TRAFFIC AREAS.
8. 3" OR GREATER SIZE METER SHALL HAVE AN UPSTREAM STRAINER.
9. WHEN A TAP LARGER THAN 1" IS REQUIRED, THE PROPERTY OWNER IS RESPONSIBLE FOR CONTRACTING AND PAYING FOR A QUALIFIED PLUMBER TO PERFORM THE TAP.



SECTION

METERING PIT & SETTING W/BYPASS
FOR DOUBLE 2" THRU 6" METERS

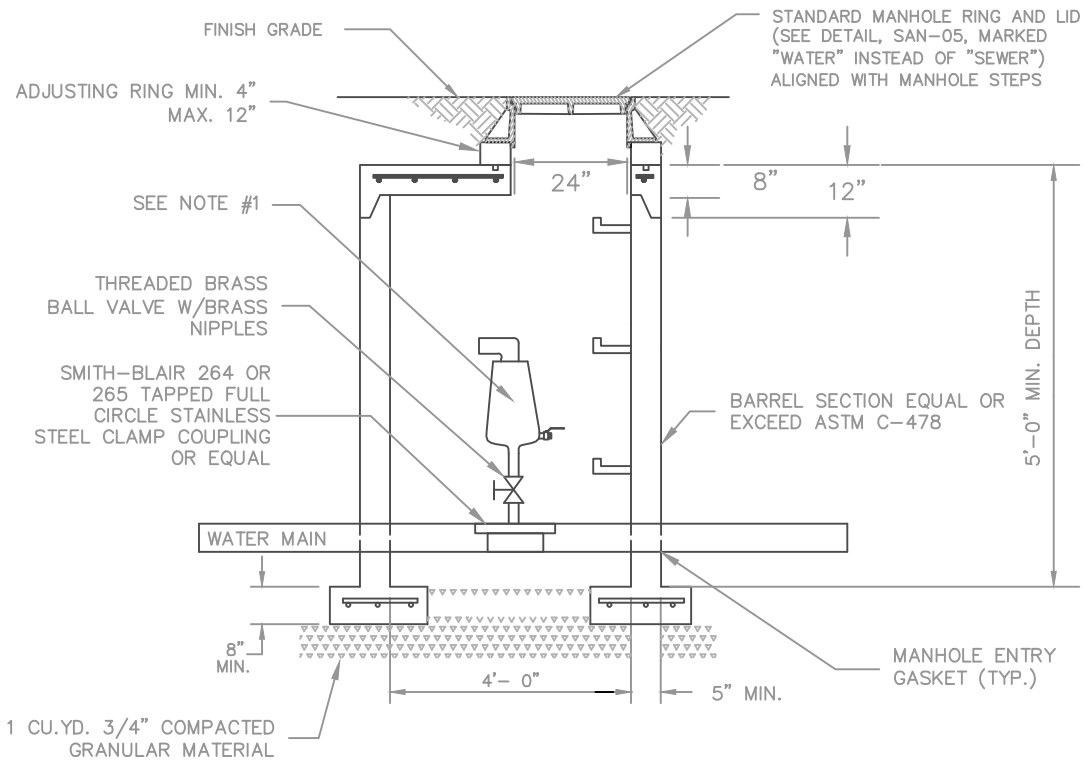


STANDARD DETAILS

2"-6" DOUBLE METERING PIT

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE
2	04/18	TSD	GENERAL UPDATE

DRAWN BY: SPJ	DATE: 1-22-93
DETAIL NO.: WAT-11	SCALE: NO SCALE
APPROVED BY:	



- NOTES: 1. COMBINATION AIR & VACUUM VALVE ASSEMBLY – A.R.I. D-015 OR APPROVED EQUAL. ASSEMBLY MUST BE APPROPRIATELY SIZED BY THE ENGINEER FOR THE APPLICATION.
2. VAULT SHALL BE STANDARD PRECAST SHALLOW TYPE MANHOLE, SEE SAN-03. CONSHIELD OR CONTINT IS NOT REQUIRED FOR WATER VAULTS.
3. TAP SIZE DETERMINED BY THE MANUFACTURER BASED ON THE APPLICATION.
4. MANHOLE ADJUSTING RINGS SHALL BE CONCRETE FOR PAVEMENT APPLICATIONS. FOR NON PAVEMENT APPLICATIONS USE LADTECH HDPE OR APPROVED EQUAL.

WATER COMBINATION AIR/VACUUM VALVE ASSEMBLY



STANDARD DETAILS

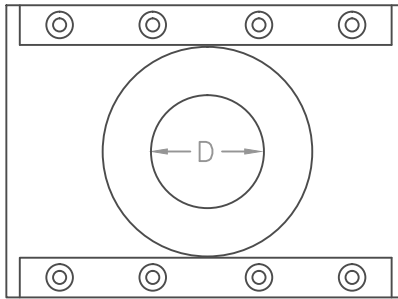
AIR & VACUUM VALVE ASSEMBLY

REVISIONS				DRAWN BY:	PWC	DATE:	09/30/98
NO.	DATE	BY	REMARKS	DETAIL NO.:	WAT-12	SCALE:	NO SCALE
1	04/06	CAY	GENERAL UPDATE	APPROVED BY:			
2	01/14	BM	GENERAL UPDATE				

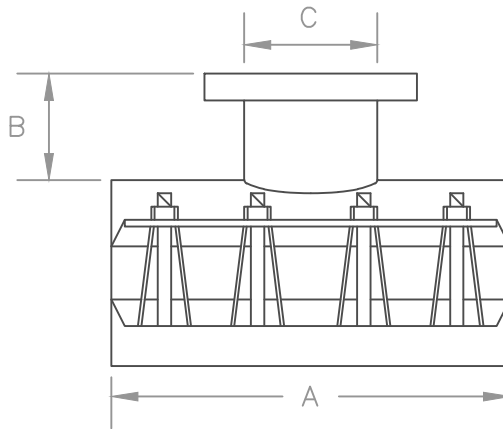
SMITH-BLAIR TAPPING SLEEVES
662 & 663 OR EQUAL

FLANGE SIZE	STANDARD				SIZE ON SIZE		NUMBER OF BOLTS
	A	B	C	D	C	D	
4"	15"	5"	5-1/16"	4-11/16"	NONE	NONE	8
6"	15"	5"	7-1/16"	6-11/16"	7-1/16"	6.00	8
8"	20"	5"	9-1/16"	8-11/16"	9-1/16"	8.00	10

* AVAILABLE IN 6" - 12" NOMINAL PIPE SIZES.



PLAN VIEW



ELEVATION VIEW



STANDARD DETAILS

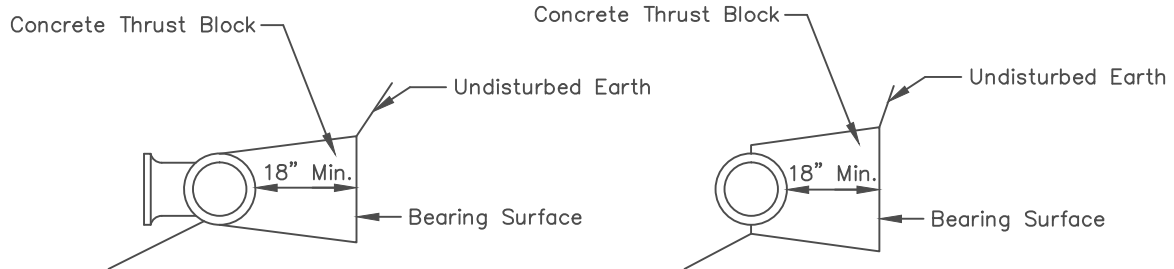
STAINLESS STEEL TAPPING SLEEVES

REVISIONS				DRAWN BY: JOS	DATE: 2-12-93
NO.	DATE	BY	REMARKS	DETAIL NO.: WAT-13	SCALE: NO SCALE
				APPROVED BY:	

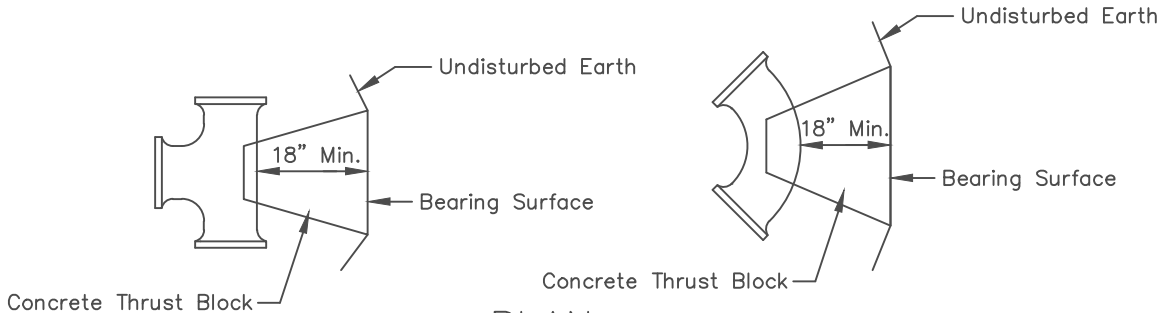
HORIZONTAL CONCRETE THRUST BLOCKING

Working Pressure	150	psi
Surge Allowance	100	psi
Design Pressure	250	psi
Soil Bearing Capacity	2,000	psf
Safety Factor	1.0	
Minimum Bearing Area	4.0	sf
Maximum Bearing Area	50.0	sf

Nom. Dia (inches)	180° Tee, Plug	90° Bend	45° Bend	22.5° Bend	11.25° Bend
6	4.0	5.0	4.0	4.0	4.0
8	6.5	9.0	5.0	4.0	4.0
10	10.0	14.0	7.5	4.0	4.0
12	14.5	20.0	11.0	5.5	4.0
14	19.5	27.5	15.0	7.5	4.0
16	25.5	35.5	19.5	10.0	5.0
18	32.0	45.0	24.5	12.5	6.5
20	39.5	55.5	30.5	15.5	8.0
24	56.5	80.0	43.5	22.5	11.5



PROFILE



PLAN

THRUST BLOCK DETAIL

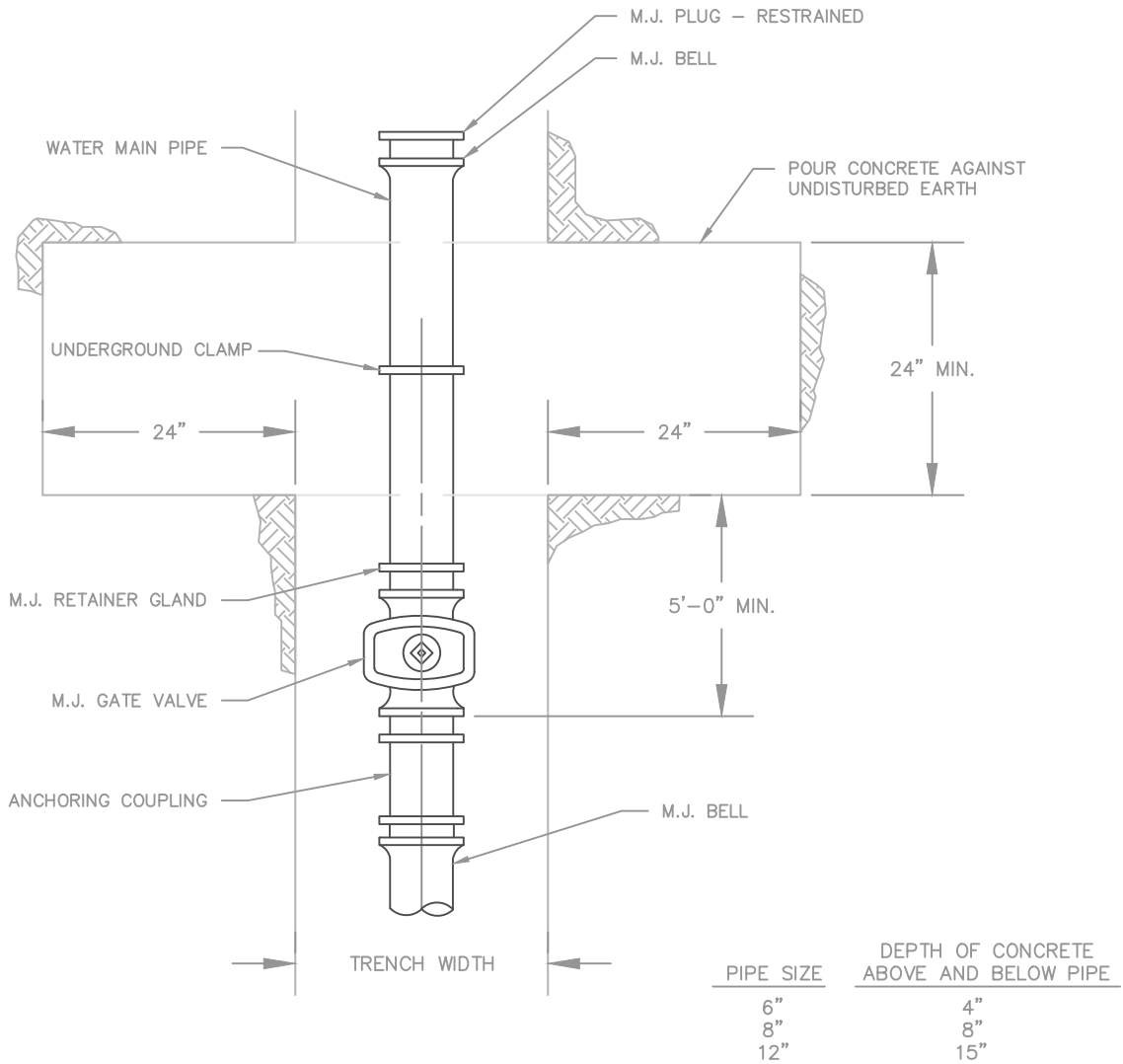
- Notes: 1. All bearing surface areas shown in chart are minimums.
 2. All mechanical joint fittings shall be restrained joints and have concrete thrust blocks installed for restraint.
 3. If any of the conditions of the Standard Detail cannot be met, sealed Engineered design blocking is required.
 4. All ductile iron pipe and fittings shall be poly wrapped.



STANDARD DETAILS

THRUST BLOCKS

REVISIONS				DRAWN BY: SPJ	DATE: 2-12-93
NO.	DATE	BY	REMARKS	DETAIL NO.: WAT-14	SCALE: NO SCALE
1	01/14	BM	GENERAL UPDATE	APPROVED BY:	
2	04/18	TSD	GENERAL UPDATE		



NOTE: PIPE TO BE STRADDLED SHALL BE POLY WRAPPED CLASS 52 DUCTILE IRON PIPE EXTENDING 18" BEYOND CONCRETE STRADDLE BLOCK IN EACH DIRECTION.

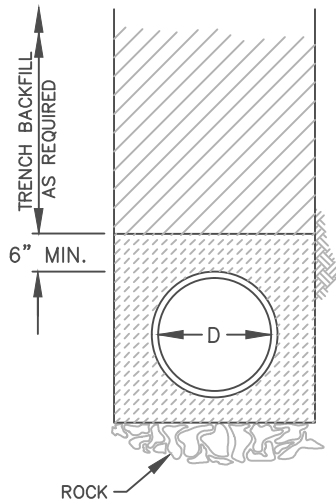
STRADDLE BLOCK DETAIL



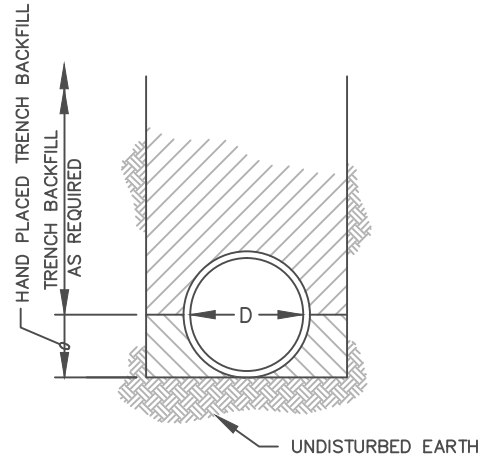
STANDARD DETAILS

STRADDLE BLOCK




REVISIONS				DRAWN BY: SPJ	DATE: 2-12-93
NO.	DATE	BY	REMARKS	DETAIL NO.: WAT-15	SCALE: NO SCALE
1	04/18	TSD	GENERAL UPDATE	APPROVED BY:	



WATERLINE PIPE EMBEDMENT (IN ROCK)



WATERLINE PIPE EMBEDMENT (IN SOIL)

LEGEND	
D	NOMINAL PIPE DIAMETER
	TRENCH BACKFILL
	TAMPED GRANULAR BACKFILL (KDOT AB-3)
	GRANULAR BEDDING

MINIMUM PIPE CLEARANCES (IN)		
D	PIPE SIDE CLEARANCE ² (SOIL/ROCK)	PIPE BOTTOM CLEARANCE (SOIL/ROCK)
0"–18"	6/6	0/6
21"–30"	8/9	0/9

WATERLINE BEDDING MATERIAL GRADATION (% PASSING)		
SIEVE SIZE	TYPE 1 (1/2")	TYPE 2 (BUCKSHOT)
3/4"	95–100	
3/8"	40–60	100
1/4"		
NO. 4		60–80
NO. 8	0–5	0–15
NO. 50		
NO. 200		0

- NOTES: 1. GRANULAR BEDDING SHALL MEET THE GRADATION REQUIREMENTS OF THE TABLE ABOVE. MATERIAL TO BE PLACED IN NOT MORE THAN 6" LAYERS AND COMPACTED BY SLICING WITH A SHOVEL OR VIBRATING.
2. TAMPED GRANULAR BACKFILL (KDOT AB-3) THIS MATERIAL SHALL BE USED FOR ALL EXISTING AND PROPOSED STREET CROSSINGS.
3. TRENCH BACKFILL SHALL BE FINELY DIVIDED MATERIAL FREE FROM DEBRIS AND STONES, COMPACTED TO 95% MAXIMUM DENSITY.

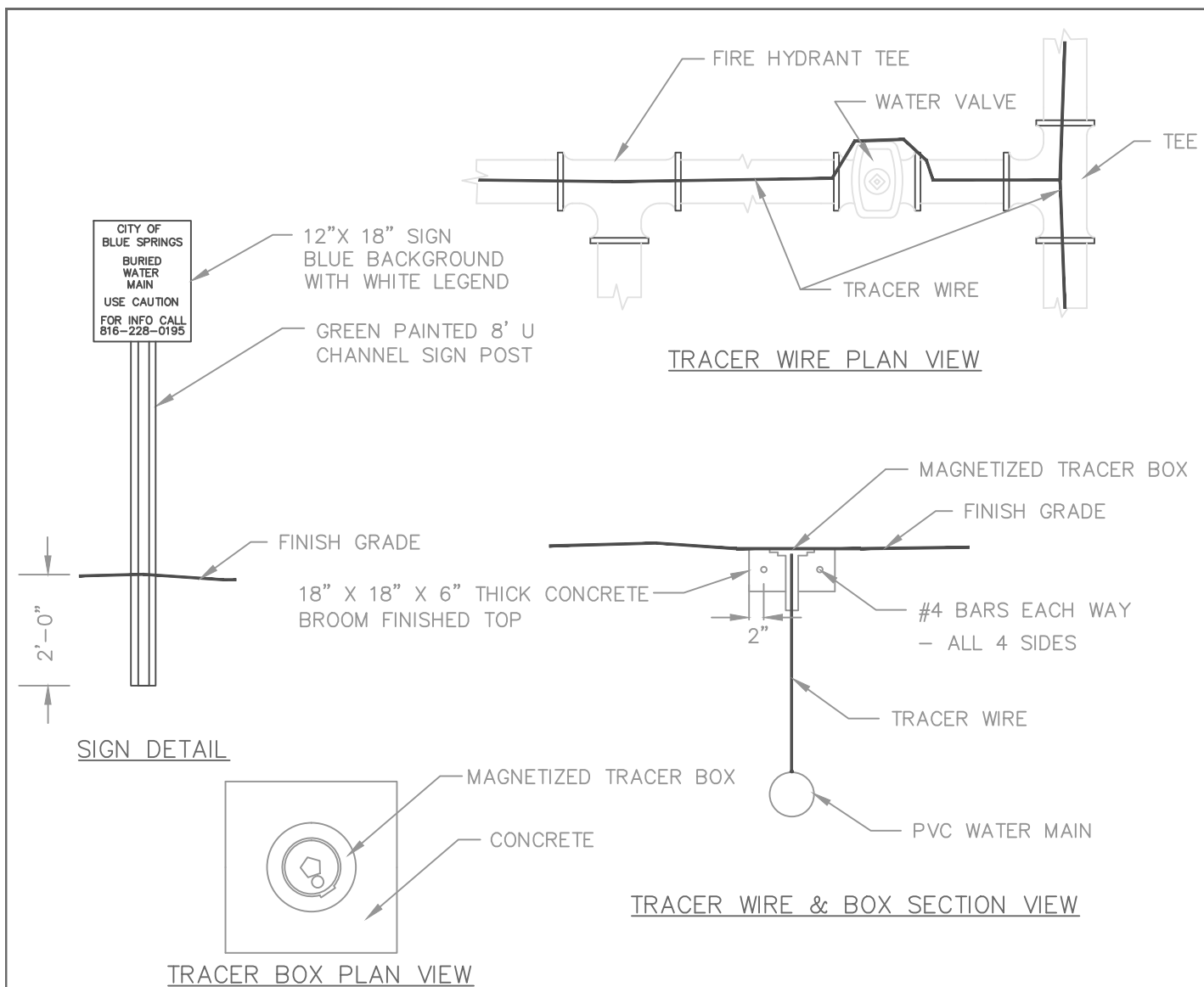
WATERLINE EMBEDMENT DETAILS



STANDARD DETAILS

WATERLINE EMBEDMENT

REVISIONS				DRAWN BY: SPJ	DATE: 8-12-92
NO.	DATE	BY	REMARKS	DETAIL NO.: WAT-16	SCALE: NO SCALE
1	01/14	BM	GENERAL UPDATE	APPROVED BY:	
2	04/18	TSD	GENERAL UPDATE		



PVC WATER MAIN TRACER WIRE

- NOTES:
1. TRACER WIRE INSTALLATION IS REQUIRED ON ALL PVC WATER MAINS.
 2. TRACER WIRE SHALL RUN CONTINUOUSLY ABOVE THE PVC WATER MAIN. WIRE SHALL BE COPPERHEAD REINFORCED TRACER WIRE, #12 AWG, WITH APWA BLUE COLORED INSULATION OR APPROVED EQUAL. TRACER WIRE CAN BE SPLICED WITH COPPERHEAD SNAKEBITE TWIST LOCK LSC CONNECTORS.
 3. COPPERHEAD SNAKEPIT MAGNETIZED TRACER BOXES SHALL BE USED OR APPROVED EQUAL. TRACER BOX SHALL BE COLOR CODED APWA BLUE.
 4. WHERE FIRE HYDRANTS ARE LOCATED MORE THAN 600' APART, THERE SHALL BE A SIGN AND A TRACER BOX INSTALLED AT THE BEGINNING, END, TEE, AND ANY 90° CHANGE OF DIRECTION OF PVC WATER MAIN INSTALLATION AND A MAXIMUM OF EVERY 500' IN BETWEEN. ADDITIONALLY A SIGN SHALL BE INSTALLED WITHIN 2' OF EVERY TRACER BOX INDICATING THE PRESENCE OF A WATER MAIN.
 5. WHERE FIRE HYDRANTS ARE LOCATED 600' OR LESS APART, THERE SHALL BE A TRACER BOX INSTALLED AT THE BEGINNING, END, TEE, AND A 90° CHANGE OF DIRECTION OF PVC WATER MAIN INSTALLATION AND ABOVE EVERY FIRE HYDRANT TEE.
 6. TRACER BOX SHALL BE MOUNTED FLUSH WITH THE FINISH GRADE, DIRECTLY OVER THE WATER MAIN FITTING.
 7. TRACER WIRE SHALL BE TAPED TO THE TOP OF THE WATER MAIN WITH PLASTIC TAPE EVERY 10'. WHEN TRACER WIRE ENCOUNTERS A VALVE, WIRE SHALL MOVE TO THE SIDE AND NOT BE LOCATED WITHIN THE VALVE BOX AREA.



STANDARD DETAILS

PVC WATER MAIN TRACER WIRE

REVISIONS				DRAWN BY:	PWC	DATE:	03/17/14
NO.	DATE	BY	REMARKS	DETAIL NO.:	WAT-17	SCALE:	NO SCALE
1	04/18	TSD	GENERAL UPDATE	APPROVED BY:			