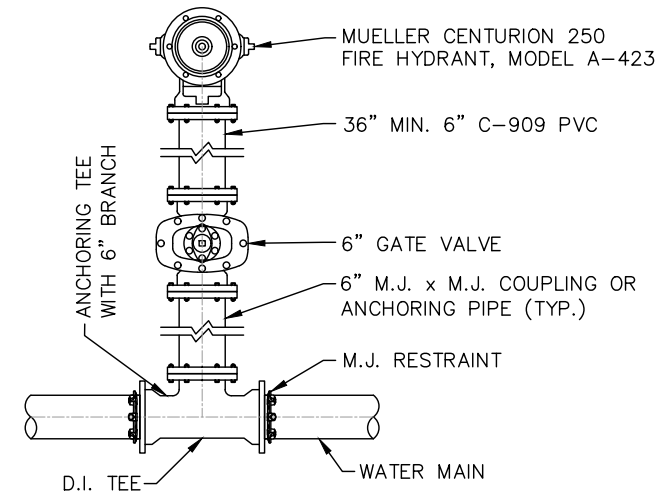
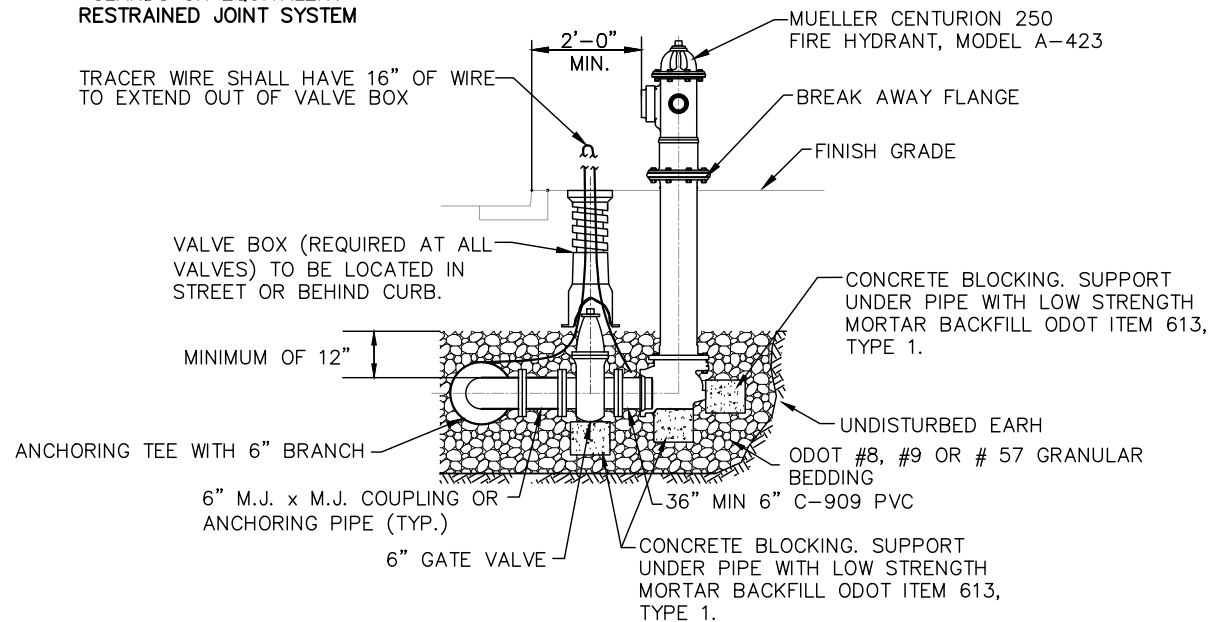


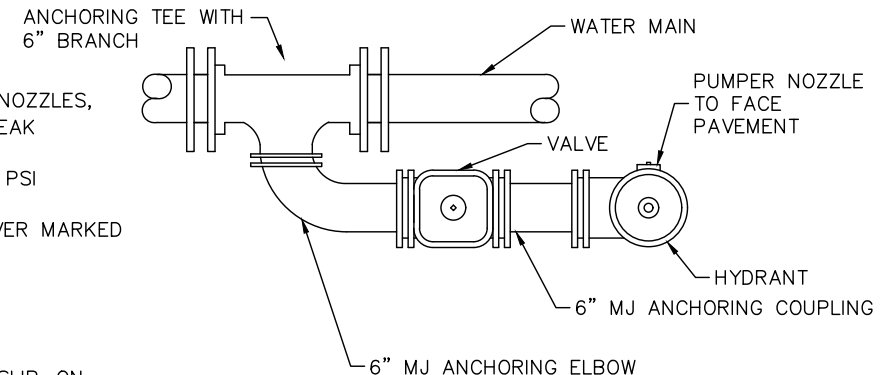
**M.J. FITTINGS WITH RETAINER
GLANDS OR EQUIVALENT
RESTRAINED JOINT SYSTEM**



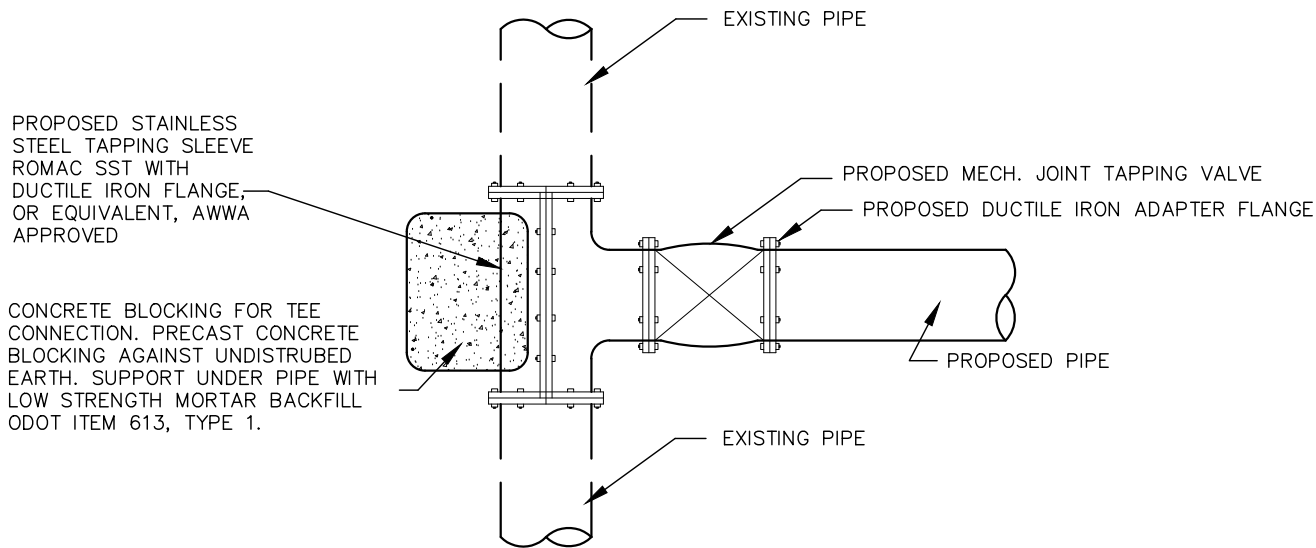
BASIC TEE DETAIL PLAN

NOTES

- A. FIRE HYDRANTS SHALL BE MUELLER CENTURION, A-423, MECHANICAL JOINT, WITH (2) 2-1/2" HOSE NOZZLES, (1) 5 1/4" PUMPER NOZZLE, NATIONAL STANDARDS THREADS CONFORMING TO AWWA CCW TO OPEN, BREAK FLANGES 3" ABOVE GRADE.
- B. GATE VALVES SHALL BE AWWA C-509, RESILIENT WEDGE, NONRISING STEM, MECHANICAL JOINT, 150 PSI WORKING PRESSURE, CCW TO OPEN WITH ARROW INDICATING OPEN DIRECTION, MUELLER OR EQUIVALENT.
- C. VALVE BOXES SHALL BE 3-PIECE CAST IRON 6" DIAMETER NOMINAL, ADJUSTABLE SCREW TYPE, COVER MARKED "WATER", DOMESTIC MADE ONLY.
- D. ALL FITTINGS TO BE RESTRAINED.
- E. ALL FITTINGS TO BE AWWA C-153 DUCTILE IRON, COMPACT.
- F. ALL VALVES AND HYDRANTS SHALL OPEN LEFT BY TURNING IN A COUNTERCLOCKWISE DIRECTION.
- G. CONTRACTOR TO FACE HYDRANT AS REQUIRED BY THE VILLAGE.
- H. WATER MAIN SHALL BE AWWA C151 DUCTILE IRON PIPE CLASS 350 OR C909 DR 18 CL 150, WITH SLIP-ON JOINTS WITH RUBBER GASKETS AND MEGALUG RESTRAINS OR EQUIVALENT.
- I. THE LAYING OF PIPE ON EXISTING DIRT WITH THE BELLS CUT OUT, SHALL NOT BE PERMITTED.
- J. THE OPEN ENDS OF ALL PIPES AND SPECIAL CASTINGS SHALL BE PLUGGED OR OTHERWISE CLOSED WITH A WATERTIGHT PLUG TO THE APPROVAL OF THE VILLAGE BEFORE LEAVING THE WORK FOR THE NIGHT.
- K. ALL FIRE HYDRANTS SHALL BE BEDDED IN NATURAL #8, #9 OR #57 GRANULAR BEDDING, NO LIMESTONE IS PERMITTED.
- L. FIRE HYDRANT BREAK FLANGE SHALL BE NO LESS THAN 3" AND NO MORE THAN 6" ABOVE THE EXISTING GROUND ELEVATION. CONTRACTOR TO VERIFY THE NECESSARY FIRE HYDRANT BURY DEPTH.



**SPECIAL MECHANICAL JOINT
HYDRANT TEE DETAIL PLAN**



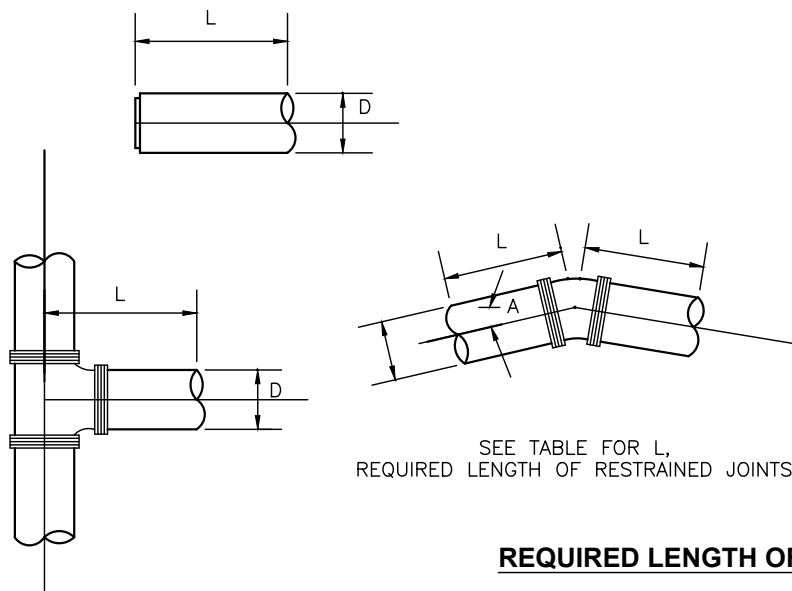
TAPPING SLEEVE AND VALVE DETAIL

NOTES

A. BELL JOINT RESTRAINTS – FOR PVC, USE EBAA IRON SERIES 1500 OR EQUIVALENT. FOR DIP, USE FIELD LOCK BY U.S. PIPE OR APPROVED EQUIVALENT.

B. MECHANICAL JOINT RESTRAINTS – EBAA IRON MEGALUG RETAINER GLAND OR EQUIVALENT.

C. CONTRACTOR TO USE RESTRAINED JOINTS UNLESS THRUST BLOCKING IS PREAPPROVED FOR SPECIAL CONDITIONS BY THE VILLAGE PRIOR TO THE BEGINNING OF CONSTRUCTION.



SEE TABLE FOR L,
REQUIRED LENGTH OF RESTRAINED JOINTS

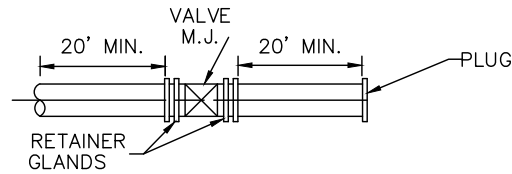
REQUIRED LENGTH OF RESTRAINED JOINTS IN FEET									
D-DIAMETER OF PIPE									
A ~ DEGREE OF DEFLECTION		4"	6"	8"	10"	12"	16"	20"	24"
	11 1/4°	*	*	*	*	*	5	5	6
	22 1/2°	*	2	3	5	6	8	10	12
	45°	4	8	12	14	20	30	36	45
	90°	12	26	38	48	66	98	125	145
	TEE	12	26	38	48	66	98	125	145
	END	12	26	38	48	66	98	125	145

*REQUIRED RESTRAINED JOINT AT FITTING AND ONE BELL JOINT FROM FITTING MINIMUM.

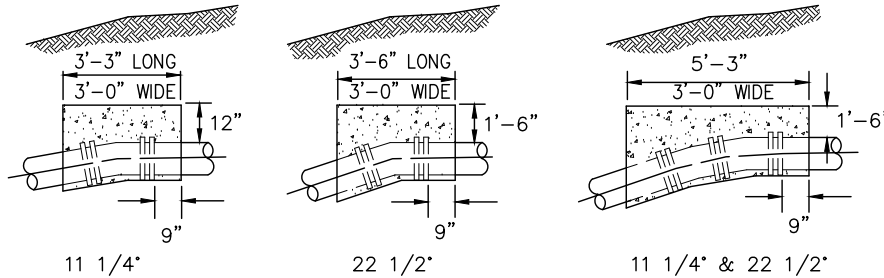
REQUIRED LENGTH OF RESTRAINED JOINTS FOR WATER MAINS

DESIGN PARAMETERS

LAYING CONDITIONS – TYPE 5
SOIL DESIGNATION – SILT
DEPTH OF COVER – 4'
DESIGN PRESSURE – 80 PSI
SAFETY FACTOR – 1.50
POLYWRAPPED PIPE
IF WORST CONDITIONS EXIST,
ADDITIONAL RESTRAINTS WILL BE
NECESSARY.

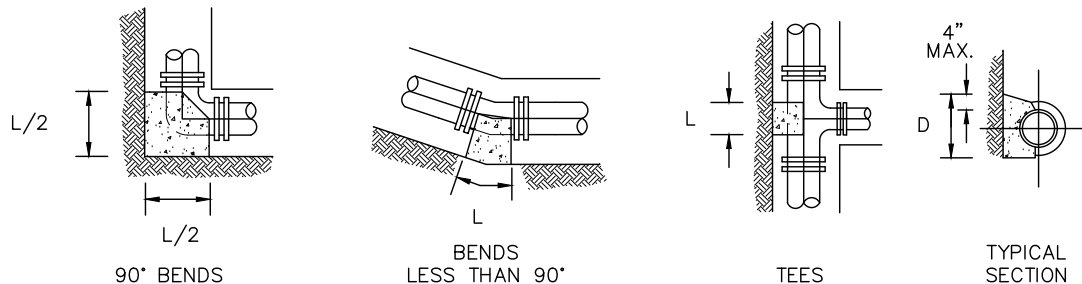


DETAIL - END OF WATER LINE



CONCRETE BLOCKING FOR VERTICAL BENDS

SIZE OF OPENING	BENDS							
	DEGREE OF BEND							
	11 1/4°		22 1/2°		45°		90°	
	L	D	L	D	L	D	L	D
3", 4", 6"	8"	6"	10"	6"	20"	6"	36"	6"
8"	9"	8"	14"	8"	24"	9"	50"	8"
12"	14"	12"	22"	12"	30"	16"	60"	15"
16"	18"	16"	24"	18"	33"	16"	70"	22"



CONCRETE BLOCKING FOR HORIZONTAL BENDS

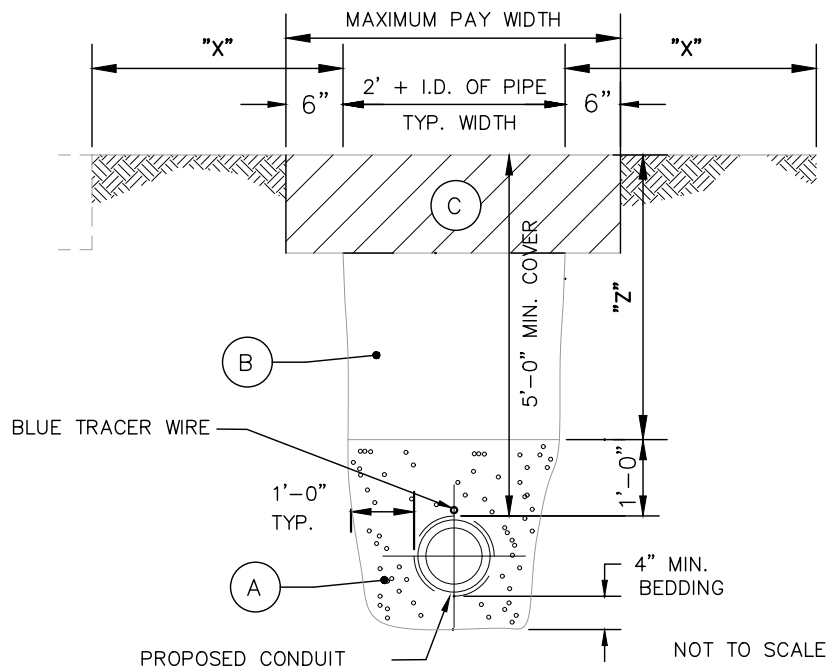
RUN	TEES							
	BRANCH							
	3", 4", 6"		22 1/2°		45°		90°	
	L	D	L	D	L	D	L	D
3", 4", 6"	16"	6"						
8"	14"	8"	18"	12"				
12"	9"	12"	18"	12"	24"	18"		
16"	8"	16"	14"	16"	28"	16"	30"	26"

NOTES

A. CARE SHALL BE TAKEN TO KEEP CONCRETE AWAY FROM MECHANICAL JOINTS BY PLACING VISQUEEN OR OTHER APPROVED MATERIAL OVER PIPE BEFORE PLACING OF CONCRETE.

B. CONCRETE FOR BLOCKING VALVES AND FITTINGS SHALL CONFORM TO SECTION ODOT 499 CLASS C.

C. CONTRACTOR SHALL USE THE THRUST BLOCKS AS SHOWN ONLY IF PREAPPROVED FOR SPECIAL CONDITION BY THE VILLAGE PRIOR TO BEGINNING CONSTRUCTION.



TRENCH DETAIL

"X" = DISTANCE FROM EDGE OF TRENCH TO EDGE OF CLOSEST PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS.

"Z" = DISTANCE FROM TOP OF BEDDING TO FINISH SURFACE.

TRENCH DETAIL NOTES

A. STRUCTURAL BEDDING SHALL BE WASHED NATURAL GRAVEL—NO LIMESTONE, ODOT 703.11 TYPE 3 (#57, #9 OR #8), OR OTHER APPROVED EQUIVALENT. THIS BEDDING SHALL BE USED FOR ALL WATER MAIN, SERVICES, FIRE HYDRANTS, AND APPURTENANCES APPLICABLE TO THE WATER SYSTEM.

B. ALL TRENCHES WHERE "X" IS GREATER THAN "Z" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS CAN BE COMPACTED EXISTING NATIVE MATERIAL IN 12" MAXIMUM LIFTS OR AS APPROVED BY THE VILLAGE. NO MATERIAL SHALL BE USED FOR BACK FILLING THAT CONTAINS STONE, ROCKS, ETC., GREATER THAN 4" DIAMETER.

ALL TRENCHES WHERE "Z" IS GREATER THAN "X" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS SHALL BE COMPACTED WITH STRUCTURAL BACKFILL MATERIAL ODOT 703.11 TYPE 1 (#304, #411) OR ODOT 703.05 (MANUFACTURED SAND) UNTIL THE TOP OF THE COMPACTED STRUCTURAL BACKFILL, PLACED IN 12" MAXIMUM LIFTS AND VIBRATED OR AS APPROVED BY THE VILLAGE IS HIGH ENOUGH WHERE "X" IS GREATER THAN "Z".

C. OFF-PAVEMENT AREAS SHALL BE PROVIDED WITH A MINIMUM OF 6" OF TOPSOIL OVER THE COMPACTED MATERIAL AND THEN SEEDED AND MULCHED PER ODOT ITEM 659.

IN-PAVEMENT AREAS SHALL FOLLOW TYPICAL PAVEMENT RESTORATION DETAILS SHOWN ON PAGE 300-19.

D. THE OPEN ENDS OF ALL PIPES SHALL BE PLUGGED TO THE APPROVAL OF THE VILLAGE BEFORE LEAVING THE WORK FOR THE NIGHT.

E. TRACER WIRE SHALL BE 12 GA. COPPER CLAD, BLUE IN COLOR. ANY SPLICES IN TRACER WIRE SHALL BE MADE WITH A 3M DIRECT BURY SPLICE KIT, DBR/Y-6 OR A VILLAGE APPROVED EQUAL.

F. 2" BLUE DETECTABLE TRACER TAPE SHALL BE PLACED IN THE TRENCH 24" ABOVE THE TOP OF THE PIPE DURING BACKFILL PROCESS.

MATERIAL SPECIFICATIONS

A. WATER MAIN SHALL BE C-909 DR 18 CL 150 SLIP-ON JOINTS WITH RUBBER GASKETS. TRACER WIRE SHALL BE INSTALLED ON ALL PIPE REGARDLESS OF MATERIAL.

B. BELL JOINT RESTRAINTS – FOR PVC, USE EBAA IRON SERIES 1500 OR EQUIVALENT. FOR DIP, USE FIELD LOCK BY US PIPE OR APPROVED EQUIVALENT.

C. MECHANICAL JOINT RESTRAINTS – EBAA IRON MEGALUG RETAINER GLAND OR EQUIVALENT.

D. FIRE HYDRANTS – MUELLER CENTURION, A-423, MECHANICAL JOINT, WITH (2) 2 1/2" HOSE NOZZLES, (1) 5 1/4" PUMPER NOZZLE NATIONAL STANDARDS THREADS CONFORMING TO AWWA, CCW TO OPEN, BREAK FLANGES 3" ABOVE GRADE.

E. GATE VALVES – AWWA C-509, RESILIENT WEDGE, NON-RISING STEM, MECHANICAL JOINT, 150 PSI WORKING PRESSURE, CCW TO OPEN, WITH ARROW INDICATING OPEN DIRECTION.

F. VALVE BOXES – 3-PIECE CAST IRON 6" DIAMETER NOMINAL, ADJUSTABLE SCREW TYPE, COVER MARKED "WATER", DOMESTIC MADE ONLY.

G. SERVICE LINE – MINIMUM 1" WATER SERVICE SHALL BE SDR-9 HDPE CTS(200 PSI), BLUE IN COLOR. STAINLESS STEEL INSERTS ARE REQUIRED FOR ALL COMPRESSION FITTINGS.

H. CURB STOP – BRASS CONFORMING TO AWWA C-800.

I. CURB BOXES – 2 1/2" SCREW TYPE, BUFFALO STYLE CAST IRON LID WITH PENTAGON HEAD PLUG EM2-45-67. J. SERVICE CONNECTIONS WILL NOT BE MADE WITHOUT THE INSTALLATION OF A METER.

K. TRACER WIRE – TRACER WIRE SHALL BE LAID WITH ALL WATER MAIN, FIRE HYDRANT BRANCHES AND WATER SERVICES DIRECTLY WITH THE PIPE. TRACER WIRE SHALL BE EXTENDED TO THE SURFACE AT EACH VALVE BOX WITH MINIMUM OF 16" OF ADDITIONAL WIRE EXTENDING BEYOND THE TOP OF THE VALVE BOX.

L. DETECTABLE TRACER TAPE – 2" WIDE DETECTABLE TRACER TAPE SHALL BE LAID APPROXIMATELY 24" ABOVE WATER MAINS AND FIRE HYDRANT BRANCHES DURING THE BACKFILL PROCESS. THE DETECTABLE TRACER TAPE SHALL BLUE IN COLOR.

HYDROSTATIC TEST

A. AFTER THE PIPE HAS BEEN LAID AND BACKFILLED, ALL NEWLY LAID PIPE OR VALVED SECTION, SHALL BE SUBJECTED TO HYDROSTATIC PRESSURE AND LEAKAGE TEST. ALL WATER MAINS MUST BE HYDROSTATICALLY TESTED (AWWA C-600). THE TESTS MUST BE PERFORMED IN THE PRESENCE OF A REPRESENTATIVE OF THE VILLAGE OF VERSAILLES. THE LEAKAGE TEST PRESSURE SHALL BE NOT LESS THAN 150 PSI. THE DURATION OF THE LEAKAGE TEST SHALL NOT BE LESS THAN 2 HOURS. HYDROSTATIC PRESSURE SHALL BE APPLIED BY MEANS OF A PUMP TAKING WATER FROM AN AUXILIARY SUPPLY. ALL PIPING MUST BE PROPERLY FILLED AND FLUSHED TO DISPEL ALL AIR BEFORE THE TEST IS MADE USING POTABLE WATER.

B. LEAKAGE IS DEFINED AS THE QUANTITY OF WATER TO BE SUPPLIED INTO THE NEWLY LAID PIPE, OR ANY VALVED SECTION THEREOF, NECESSARY TO MAINTAIN THE SPECIFIED LEAKAGE TEST PRESSURE AFTER THE PIPE HAS BEEN FILLED WITH WATER AND THE AIR EXPELLED.

C. NO PIPE INSTALLATION WILL BE ACCEPTED IF THE LEAKAGE EXCEEDS THE LEAKAGE DETERMINED BY THE FOLLOWING FORMULA:

$$Q = \frac{L \cdot D \cdot \sqrt{P}}{148,000}$$

WHERE: Q = QUANTITY OF MAKEUP WATER (GAL./HR.)
L = LENGTH OF PIPE SECTION BEING TESTED (FT.)
D = PIPE DIAMETER (IN.)
P = TEST PRESSURE (PSI, GAUGE)

THE FOLLOWING TABLE REPRESENTS THE ALLOWABLE LEAKAGE IN GALLONS PER HOUR.

D. DURING THE HYDROSTATIC TEST, A THOROUGH EXAMINATION OF ALL PIPING, FITTINGS, VALVES, HYDRANTS, ETC. SHALL BE PERFORMED. LEAKING JOINTS SHALL BE TIGHTENED AND CRACKED OR OTHERWISE DEFECTIVE MATERIAL SHALL BE REMOVED AND REPLACED AND THE TEST SHALL BE REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED.

AVG. TEST
PRESSURE
(PSI) BAR

ALLOWABLE LEAKAGE PER 1000 FT. (305M) OF PIPELINE (GPH+)

	NOMINAL PIPE DIAMETER– INCHES															
	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	54
450(31)	0.43	0.57	0.86	1.15	1.43	1.72	2.01	2.29	2.58	2.87	3.44	4.30	5.16	6.02	6.88	7.74
400(28)	0.41	0.54	0.81	1.08	1.35	1.62	1.89	2.16	2.43	2.70	3.24	4.05	4.86	5.68	6.49	7.30
350(24)	0.38	0.51	0.76	1.01	1.26	1.52	1.77	2.02	2.28	2.53	3.03	3.79	4.55	5.31	6.07	6.83
300(21)	0.35	0.47	0.70	0.94	1.17	1.40	1.64	1.87	2.11	2.34	2.81	3.51	4.21	4.92	5.62	6.32
275(19)	0.34	0.45	0.67	0.90	1.12	1.34	1.57	1.79	2.02	2.24	2.69	3.36	4.03	4.71	5.38	6.05
250(17)	0.32	0.43	0.64	0.85	1.07	1.28	1.50	1.71	1.92	2.14	2.56	3.21	3.85	4.49	5.13	5.77
225(16)	0.30	0.41	0.61	0.81	1.01	1.22	1.42	1.62	1.82	2.03	2.43	3.04	3.65	4.26	4.86	5.47
200(14)	0.29	0.38	0.57	0.76	0.96	1.15	1.34	1.53	1.72	1.91	2.29	2.87	3.44	4.01	4.59	5.16
175(12)	0.27	0.36	0.54	0.72	0.89	1.07	1.25	1.43	1.61	1.79	2.15	2.68	3.22	3.75	4.29	4.83
150(10)	0.25	0.33	0.50	0.66	0.83	0.99	1.16	1.32	1.49	1.66	1.99	2.48	2.98	3.48	3.97	4.47
125	0.23	0.30	0.45	0.60	0.76	0.91	1.06	1.21	1.36	1.51	1.81	2.27	2.72	3.17	3.63	4.08
100	0.20	0.27	0.41	0.54	0.68	0.81	0.95	1.08	1.22	1.35	1.62	2.03	2.43	2.84	3.24	3.65

DISINFECTION

A. AFTER SATISFACTORY HYDROSTATIC TESTING, THE COMPLETED WATER WORK SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C-651.

B. MAINTAIN PIPES FREE OF DIRT AND FOREIGN MATTER DURING CONSTRUCTION BY DEWATERING TRENCH AND SEALING OPEN PIPE BARRELS. SWAB EACH LENGTH OF PIPE AS IT IS INSTALLED. UPON COMPLETION OF MAIN, ISOLATE MAIN SEGMENTS AND FLUSH PIPE AT 2 FPS VELOCITY.

C. STERILIZE MAIN IN ACCORDANCE WITH AWWA C-651. INJECT 3% TO 5% HYPOCHLORITE SOLUTION TO PROVIDE 50 TO 60 MG PER LITER CONCENTRATION IN MAIN. CHLORINE MAY BE PLACED IN EACH SECTION OF PIPE AT THE TIME OF INSTALLATION. SAMPLE WATER AT EACH HYDRANT OR IF NO HYDRANT IS AVAILABLE, AT A TAP IN THE PROPOSED LINE. ANALYZE SAMPLE USING D.P.D. REAGENT TO VERIFY FREE CHLORINE CONCENTRATION. MAINTAIN CONCENTRATION IN MAIN FOR 24 HOURS. SAMPLE HYDRANTS AT COMPLETION OF STERILIZATION VERIFYING MINIMUM CHLORINE RESIDUAL OF 20 MG PER LITER.

D. FLUSH CHLORINE SOLUTION TO WASTE INTO SANITARY SEWER AT A CONTROLLED RATE, NOT TO EXCEED 25 GPM. IF CHLORINE RESIDUAL DROPS IN 10 MG PER LITER, FLUSH MAIN AT 2 FPS AND REPEAT STERILIZATION PROCEDURE.

E. WATER SAMPLES – PERFORM BACTERIOLOGICAL TEST PER AWWA C-651. SAMPLE MAIN AT A TAP IN THE PROPOSED LINE. DELIVER SAMPLE TO STATE CERTIFIED LABORATORY. DELIVER COPIES OF LABORATORY REPORT TO THE VILLAGE IN THE EVENT OF DETECTION OF COLIFORM ORGANISM, REPEAT FLUSHINGS, STERILIZATION, AND SAMPLING OF MAINS UNTIL 2 CONSECUTIVE ACCEPTABLE TEST RESULTS ARE ACHIEVED. THIS IS TO BE PERFORMED PRIOR TO TRANSFER OF SERVICE.

NOTES

A. NO WORK SHALL BE APPROVED OR ACCEPTED BY THE VILLAGE UNLESS 2 WORKING DAYS NOTICE OF COMMENCING WORK IS GIVEN TO THE VILLAGE.

B. ALL TEMPORARY PAVEMENT AND SIDEWALK SHALL BE MAINTAINED BY THE CONTRACTOR OR THE DEVELOPER AT HIS OWN EXPENSE IN A SUITABLE AND SAFE CONDITION FOR TRAFFIC UNTIL PERMANENT REPLACEMENT IS MADE OR THE PROJECT IS FINALLY ACCEPTED BY THE VILLAGE.

C. THE MINIMUM LENGTH OF PIPE NIPPLES SHALL BE 18".

D. ALL CUSTOMERS SHALL MEET BACKFLOW PREVENTION REQUIREMENTS AS PER STATE OF OHIO AND EPA REGULATIONS.

E. ALL WATERLINE CONSTRUCTION SHALL FOLLOW THE VILLAGE STANDARDS, OHIO DEPARTMENT OF TRANSPORTATION ITEM 638, AND AWWA STANDARDS WHICHEVER IS MORE RESTRICTIVE AS DETERMINE BY THE VILLAGE.

F. ALL SERVICE BRASS SHALL BE LOW LEAD BRASS AND COMPLY WITH AWWA C-800. COMPONENTS IN CONTACT WITH POTABLE WATER WILL ALSO COMPLY WITH LATEST REQUIREMENTS OF THE FEDERAL SAFE DRINKING WATER ACT.

PIPE

A. ALL PIPE FITTINGS SHALL BE DUCTILE IRON AND COMPLY WITH AWWA C-153.

B.	WATER MAIN MINIMUM SIZE UNLESS OTHERWISE APPROVED	
	SINGLE AND TWO FAMILY	
	MULTI-FAMILY	8"
	COMMERCIAL	10"
	INDUSTRIAL	12"
IF THE WATER MAIN IS NOT LOOPED OR THE WATER MAIN LENGTH IN THE TOTAL DEVELOPMENT IS GREATER THAN 600', THE MINIMUM WATER MAIN SIZE SHALL BE 8".		

C. DEADENDS NOT PERMITTED IF AT ALL POSSIBLE.

EXCAVATION AND PIPE LAYING

A. THE OPEN ENDS OF ALL PIPES SHALL BE PLUGGED OR OTHERWISE CLOSED WITH A WATERTIGHT PLUG TO THE APPROVAL OF THE VILLAGE BEFORE LEAVING THE WORK FOR THE NIGHT AND AT OTHER TIMES OF INTERRUPTION OF THE WORK.

FITTINGS, VALVES AND HYDRANTS

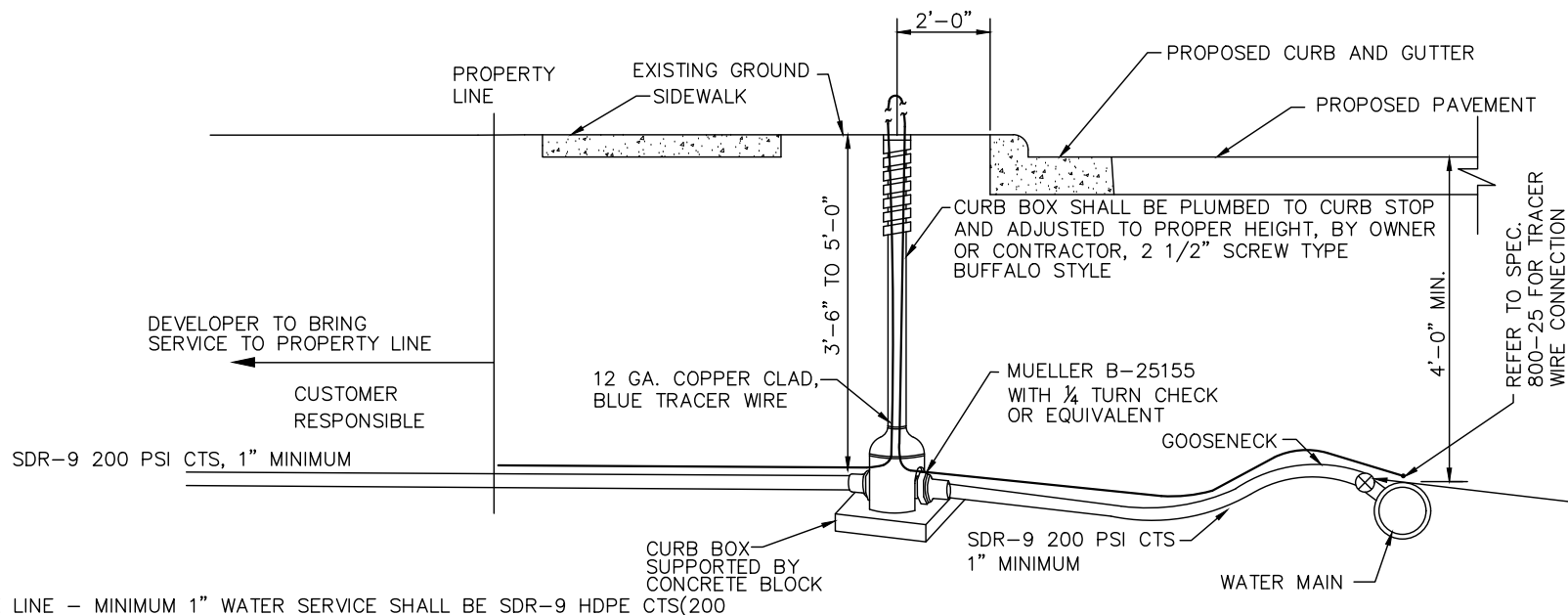
A. FITTINGS OR SPECIALS IN SIZES 2" THROUGH 48" SHALL CONFORM TO ALL REQUIREMENTS OF ANSI A-21.10 (AWWA C-153). FITTINGS AND SPECIALS 12" AND SMALLER SHALL BE CLASS 250. LARGER FITTINGS AND SPECIALS SHALL BE CLASS 150. FITTINGS AND SPECIALS SHALL HAVE MECHANICAL JOINTS AND SHALL BE DUCTILE IRON.

B.	MAXIMUM SPACING UNLESS OTHERWISE APPROVED		
		HYDRANTS	VALVES
	SINGLE & TWO FAMILY RESIDENTIAL	500'	800'
	INDUSTRIAL, COMMERCIAL & MULTI-FAMILY	300'	500'

C. ALL TEE'S AND CROSSES SHALL BE VALVED IN EACH DIRECTION UNLESS OTHERWISE APPROVED.

UTILITY STAKING

A. OFFSETS EVERY 25' ON CURVES. OFFSETS EVERY 100' ON STRAIGHT SECTIONS. FLOW LINE OF WATER MAIN (CUT) MARKED EVERY 100' AND OFFSETS SHALL BE CLEARLY MARKED.

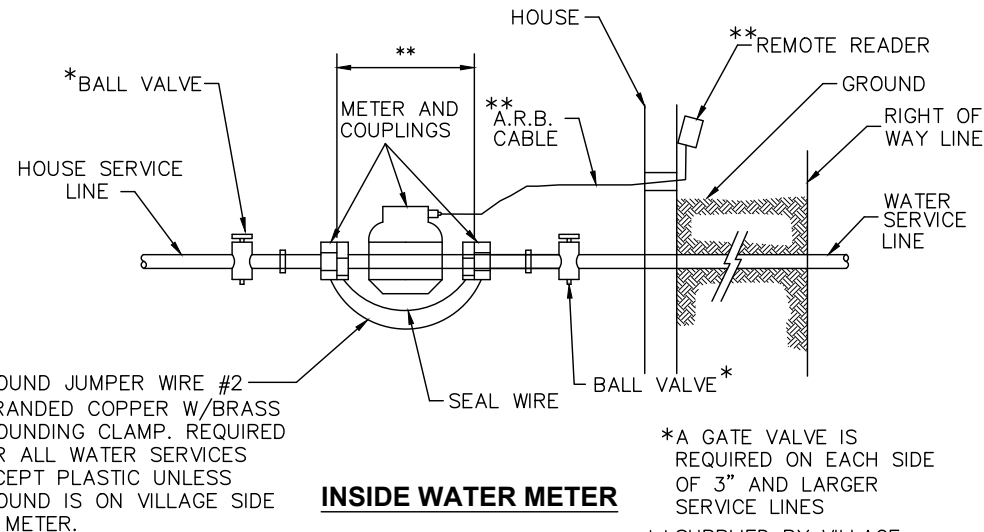


CORPORATION STOP SHALL BE MUELLER B25008, OR EQUIVALENT. CORPORATION STOP SHALL BE TAPPED INTO MAIN AT 45°. TAP TO BE MADE UNDER PRESSURE WITH ACCEPTABLE TAPPING MACHINE. IF PVC WATER MAIN, STAINLESS STEEL SADDLE SHALL BE ROMAC 101N, OR EQUIVALENT, FOR 1 1/2" TAPS, AND ROMAC 202N, OR EQUIVALENT, FOR 2" AND LARGER TAPS

WATER MAIN SERVICE CONNECTION

NOTES

- SERVICE LINE - MINIMUM 1" WATER SERVICE SHALL BE SDR-9 HDPE (PSI), BLUE IN COLOR. STAINLESS STEEL INSERTS ARE REQUIRED FOR ALL COMPRESSION FITTINGS.
- WATER SERVICE SHALL BE A MINIMUM OF 10' MEASURED HORIZONTALLY FROM THE SEWER SERVICE AND SHALL BE A MINIMUM OF 18" ABOVE THE CROWN OF THE SANITARY SEWER MAIN WHERE THE WATER SERVICE CROSSES THE SEWER MAIN. WATER SERVICE MAY BE LAID ON BENCH IN THE SEWER LATERAL TRENCH IF CROWN IS A LEAST 18" BELOW INVERT OF WATER SERVICE, AND THE MINIMUM DISTANCE BETWEEN THE WATER SERVICE AND THE SEWER LATERAL IS 5'-0".
- INSIDE METER SETTER PROVIDED WITH TAP FEE OR METER PIT PROVIDED WITH HIGHER TAP FEE. INSIDE SETTER CUSTOMER IS RESPONSIBLE FOR METER FREEZE UP. CUSTOMER INSTALLS METER AND REMOTE WIRE TO OUTSIDE.
- THE CURB BOX TO BE PLACED BETWEEN THE CURB AND PROPERTY LINE. METER PIT SHALL BE PLACED BEHIND PROPERTY LINE.
- CURB BOX MAY BE PLACED BETWEEN SIDEWALK AND PROPERTY LINE.
- TRACER WIRE MUST BE INSTALLED ON ALL WATER SERVICES, REGARDLESS OF SERVICE LINE MATERIAL
- STAINLESS STEEL INSERTS MUST BE USED WITH COMPRESSION FITTINGS ON SDR 9 PIPE.
- ALL SERVICE BRASS SHALL BE LOW LEAD BRASS AND COMPLY WITH AWWA C-800. COMPONENTS IN CONTACT WITH POTABLE WATER WILL ALSO COMPLY WITH LATEST REQUIREMENTS OF THE FEDERAL SAFE DRINKING WATER ACT.



INSIDE WATER METER

WATER MAIN SERVICE CONNECTION

NOTES

A. OUTSIDE METER PITS ARE DISCOURAGED, METER PIT INSTALLATION SHALL OCCUR ONLY WITH THE VILLAGE'S PERMISSION. THIS INSTALLATION SHALL NOT BE ALLOWED UNLESS IN THE JUDGMENT OF THE VILLAGE, THIS IS THE ONLY PRACTICAL METHOD TO SERVICE THE ACCOUNT.

B. CONCRETE METER PIT, OTHERS MUST BE APPROVED PRIOR TO INSTALLATION.

C. METER PIT AND CURB STOP TO BE LOCATED AS DIRECTED BY THE VILLAGE.

D. METER PIT AND METER PROVIDED BY VILLAGE AND PAID FOR THROUGH TAPPING FEE.

E. UNSATISFACTORY INSTALLATION WILL RESULT IN WATER NOT BEING TURNED ON.

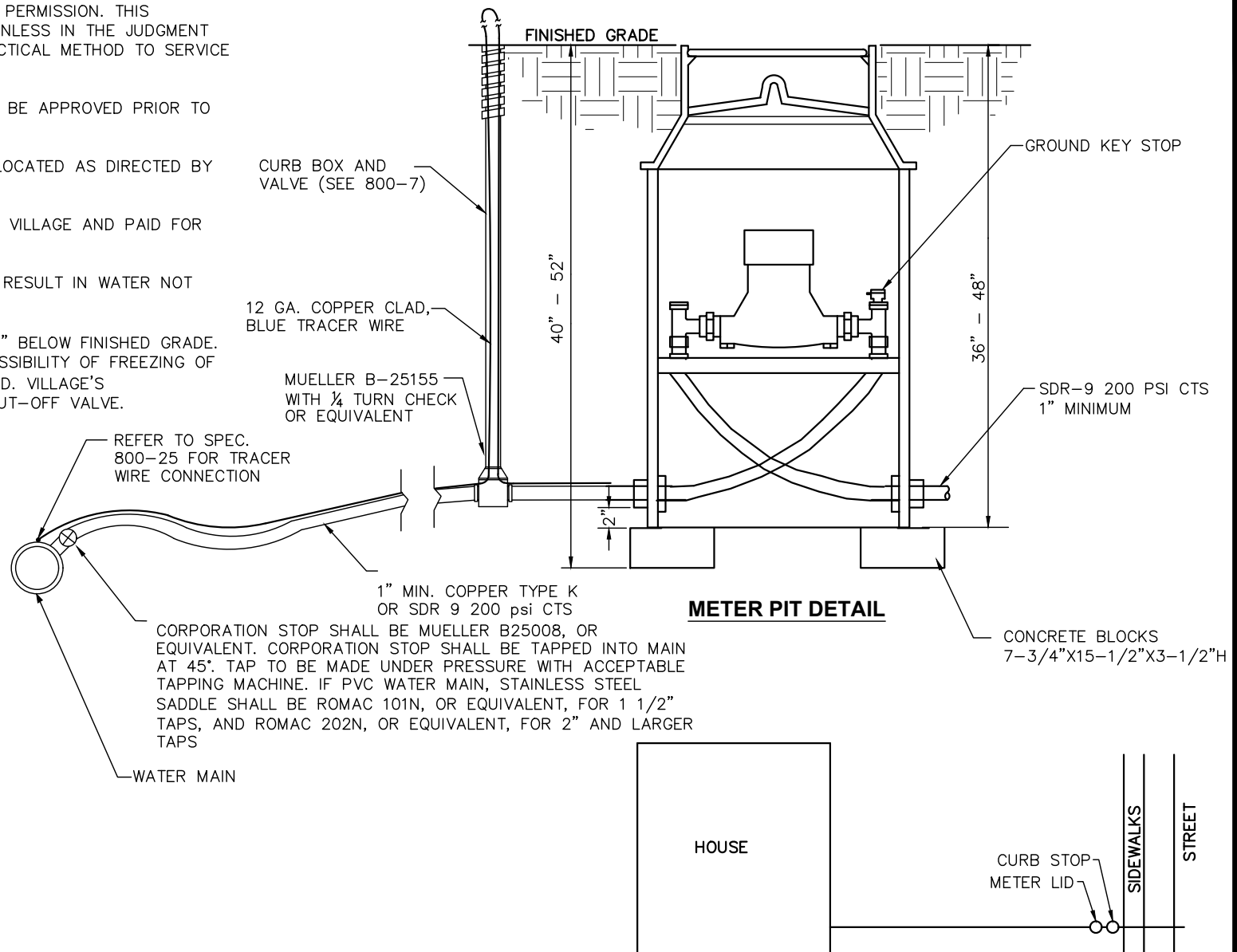
F. METER PIT LID MUST BE FLUSH OR 1" BELOW FINISHED GRADE. IF FRAME OF METER LID IS SHOWING, POSSIBILITY OF FREEZING OF METERS AND SERVICE LINES IS INCREASED. VILLAGE'S RESPONSIBILITY STOPS AT THE FIRST SHUT-OFF VALVE.

G. STAINLESS STEEL INSERTS MUST BE USED WITH COMPRESSION FITTINGS ON SDR 9 PIPE.

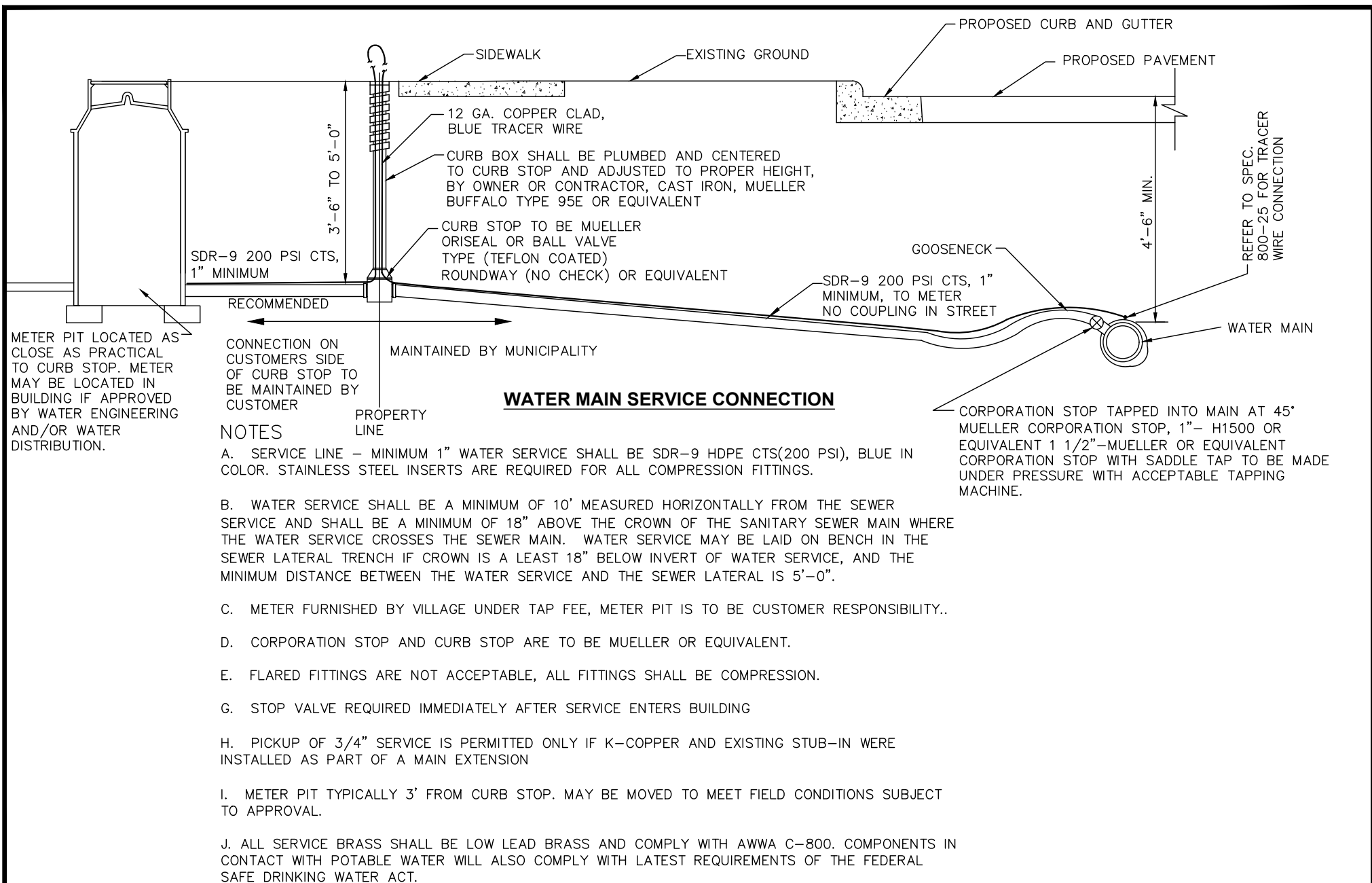
H. TRACER WIRE MUST BE INSTALLED ON ALL PIPE EXCEPT FOR COPPER.

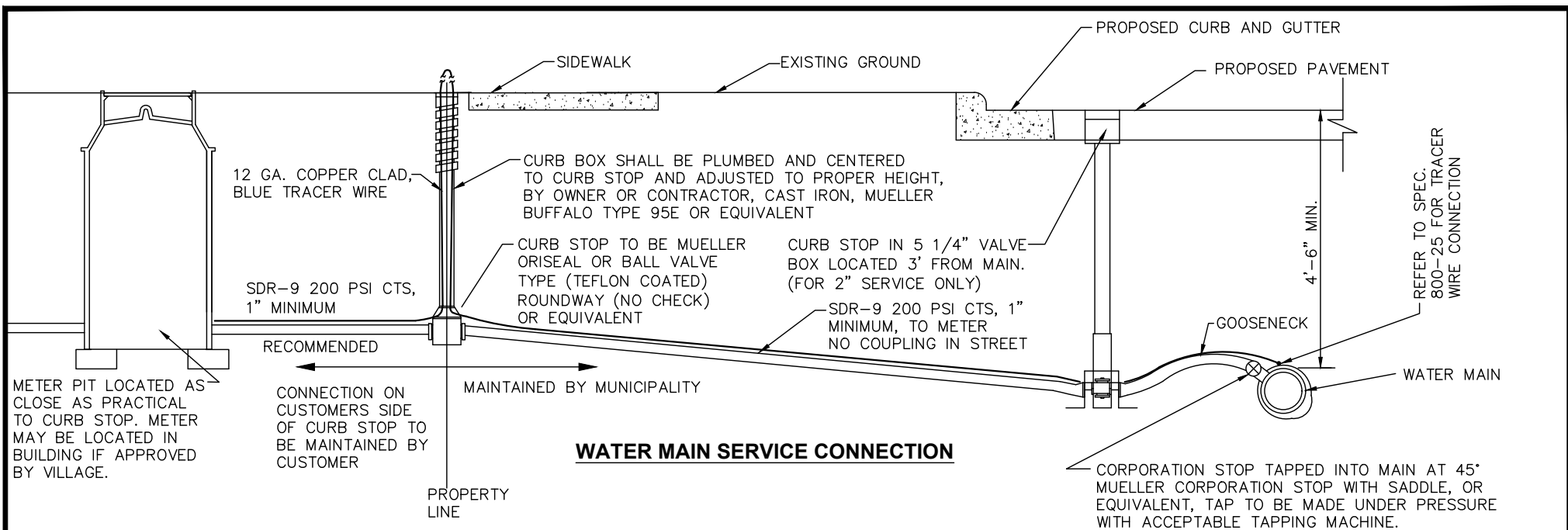
I. SERVICE LINE — MINIMUM 1" WATER SERVICE SHALL BE SDR-9 HDPE CTS(200 PSI), BLUE IN COLOR. STAINLESS STEEL INSERTS ARE REQUIRED FOR ALL COMPRESSION FITTINGS.

J. ALL SERVICE BRASS SHALL BE LOW LEAD BRASS AND COMPLY WITH AWWA C-800. COMPONENTS IN CONTACT WITH POTABLE WATER WILL ALSO COMPLY WITH LATEST REQUIREMENTS OF THE FEDERAL SAFE DRINKING WATER ACT.



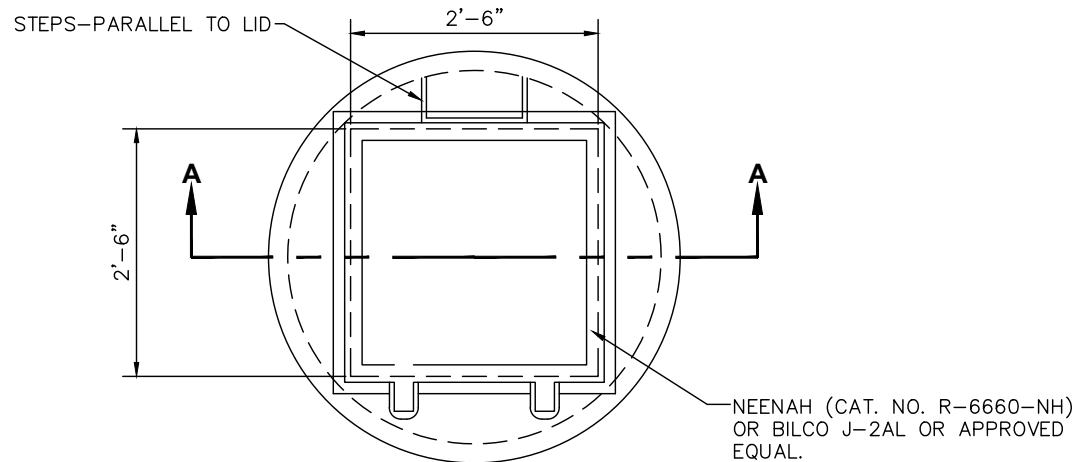
METER PIT INSTALLATION





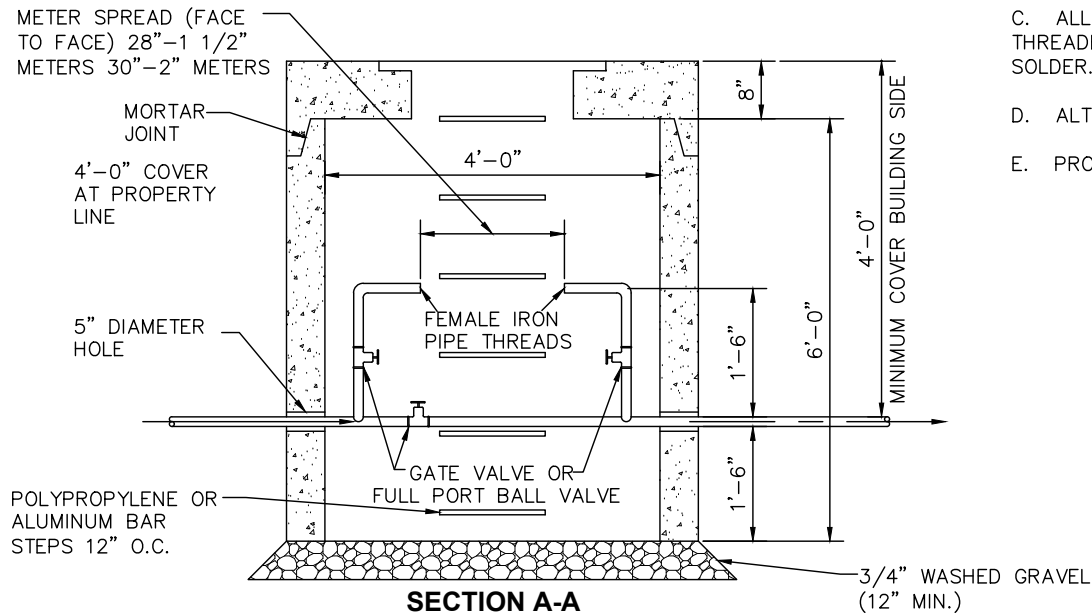
NOTES

- A. SERVICE LINE – MINIMUM 1" WATER SERVICE SHALL BE SDR-9 HDPE CTS(200 PSI), BLUE IN COLOR. STAINLESS STEEL INSERTS ARE REQUIRED FOR ALL COMPRESSION FITTINGS.
- B. WATER SERVICE SHALL BE A MINIMUM OF 10' MEASURED HORIZONTALLY FROM THE SEWER SERVICE AND SHALL BE A MINIMUM OF 18" ABOVE THE CROWN OF THE SANITARY SEWER MAIN WHERE THE WATER SERVICE CROSSES THE SEWER MAIN. WATER SERVICE MAY BE LAID ON BENCH IN THE SEWER LATERAL TRENCH IF CROWN IS A LEAST 18" BELOW INVERT OF WATER SERVICE, AND THE MINIMUM DISTANCE BETWEEN THE WATER SERVICE AND THE SEWER LATERAL IS 5'-0".
- C. METER PIT AND METER FURNISHED BY MUNICIPALITY UNDER METER SET FEE.
- D. CORPORATION STOP AND CURB STOP ARE TO BE MUELLER OR EQUIVALENT.
- E. FLARED FITTINGS ARE NOT ACCEPTABLE, ALL FITTINGS SHALL BE COMPRESSION.
- G. STOP VALVE REQUIRED IMMEDIATELY AFTER SERVICE ENTERS BUILDING
- H. 1" SERVICE SHALL BE INSTALLED WHERE BUILDINGS ARE MORE THAN 120' FROM WATERMAIN OR WHERE REQUIRED BY PLANS.
- I. ALL SERVICE BRASS SHALL BE LOW LEAD BRASS AND COMPLY WITH AWWA C-800. COMPONENTS IN CONTACT WITH POTABLE WATER WILL ALSO COMPLY WITH LATEST REQUIREMENTS OF THE FEDERAL SAFE DRINKING WATER ACT.

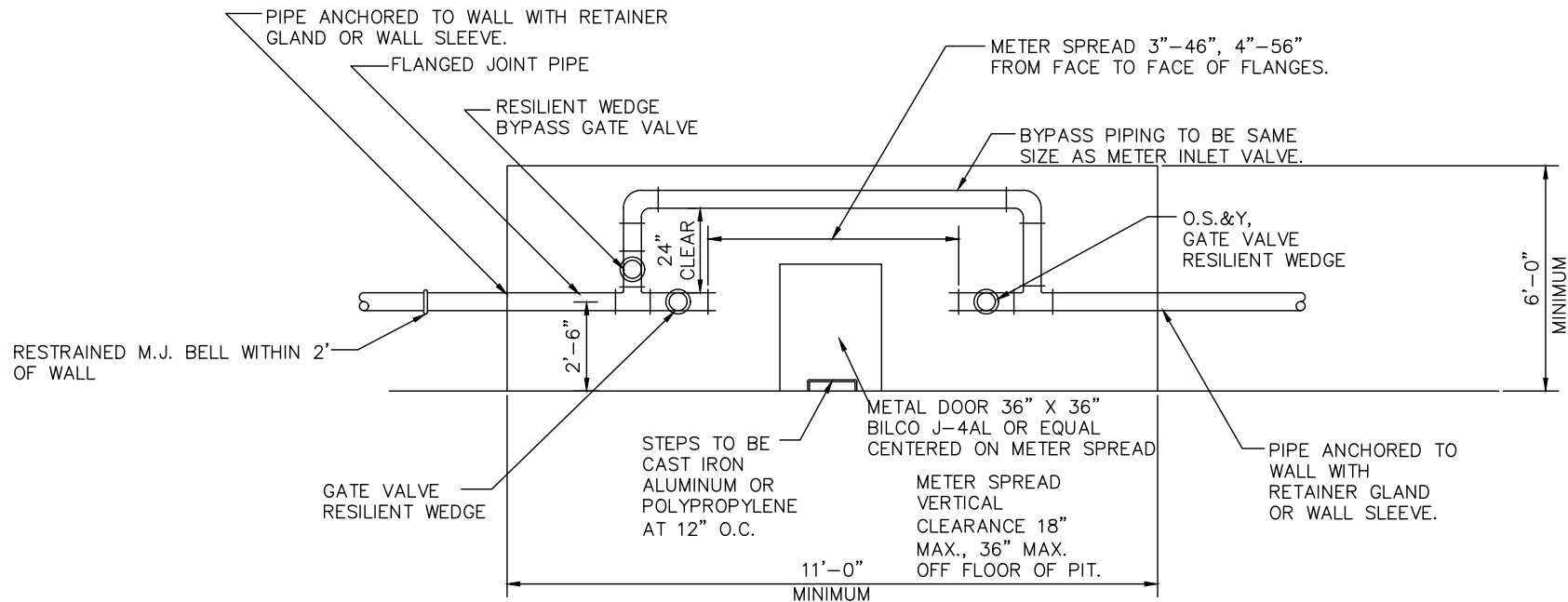


NOTES

- A. ONE METER PER PIT UNLESS WAIVED BY THE VILLAGE.
- B. BYPASS ON METER MANDATORY FOR COMMERCIAL ACCOUNTS BYPASS VALVE TO BE LOCKABLE.
- C. ALL PIPE K-COPPER OR BRASS TO METER JOINTS IN PIT TO BE THREADED, FLARED, SILVER, SOLDERED OR SOLDERED WITH LEAD FREE SOLDER.
- D. ALTERNATE DESIGNS MAY BE SUBMITTED FOR APPROVAL.
- E. PROVIDE SPREADER FOR PROPER ALIGNMENT OF SPREAD.

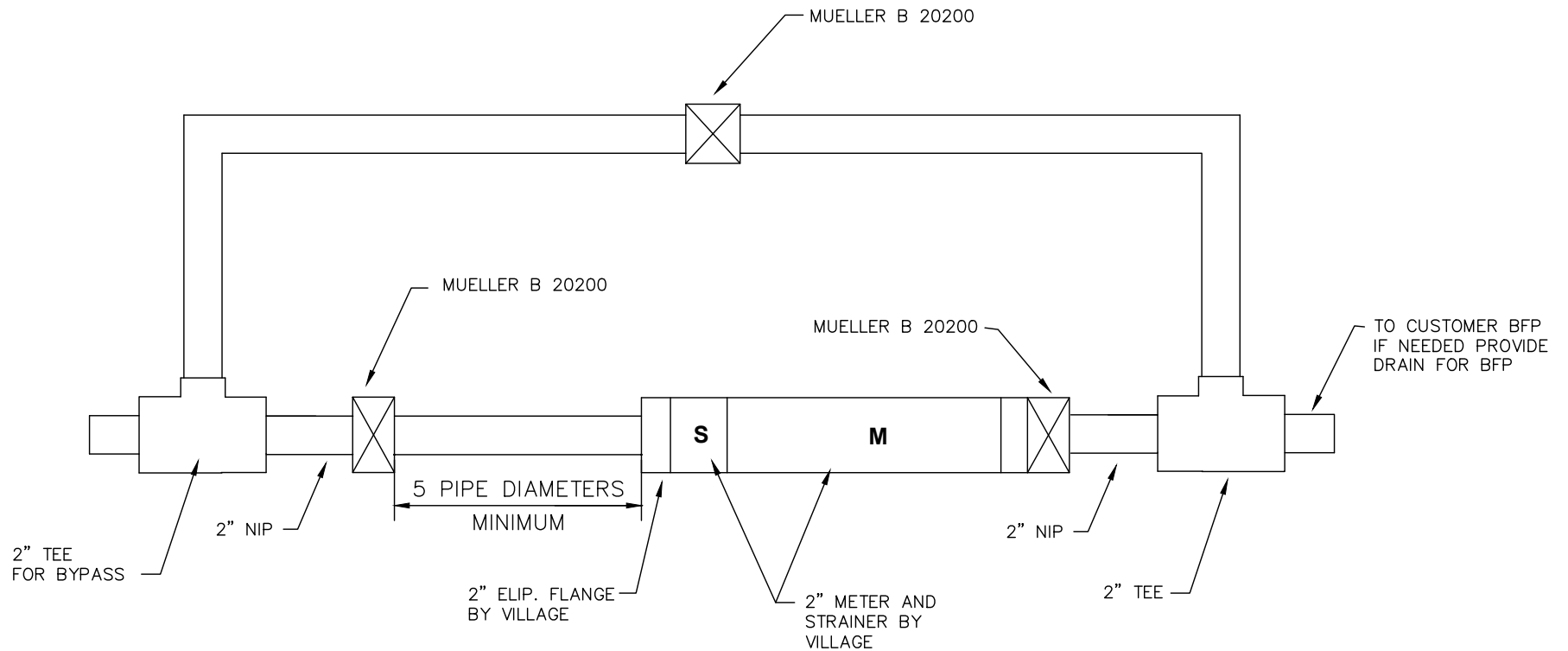


1 1/2" AND 2" WATER METER PIT (FOR OFF ROAD USE ONLY)



NOTES:

- A. DIMENSIONS SHOWN ARE INSIDE MEASUREMENTS OF PIT.
- B. ALL PIPE SHALL BE CL53 DUCTILE WITH FLANGED ENDS.
(COPPER & BRASS MAY BE ACCEPTABLE. SUBMIT FOR APPROVAL)
- C. ALL VALVES SHALL BE FLANGED END, HANDWHEEL OPERATED, AND OS&Y GATE VALVES, RESILIENT WEDGE.
- D. PIT SHALL HAVE AN INSIDE HEIGHT OF 6' MINIMUM, FROM TOP OF GRAVEL.
- E. WALLS TO BE FORMED CONCRETE.
- F. PIT TO BE DESIGNED BY REGISTERED ENGINEER OR ARCHITECT AND APPROVED BY THE VILLAGE.
- G. 12" MINIMUM 3/4" WASHED GRAVEL IN BOTTOM OF PIT OR CONCRETE SLAB WITH SUMP HOLE.
- H. PIPING AND METER SHALL BE SUPPORTED
- I. ALTERNATE DESIGNS MAY BE SUBMITTED FOR APPROVAL. SUBMIT COMBINATION PIT INSTALLATIONS FOR APPROVAL CLEARANCES.

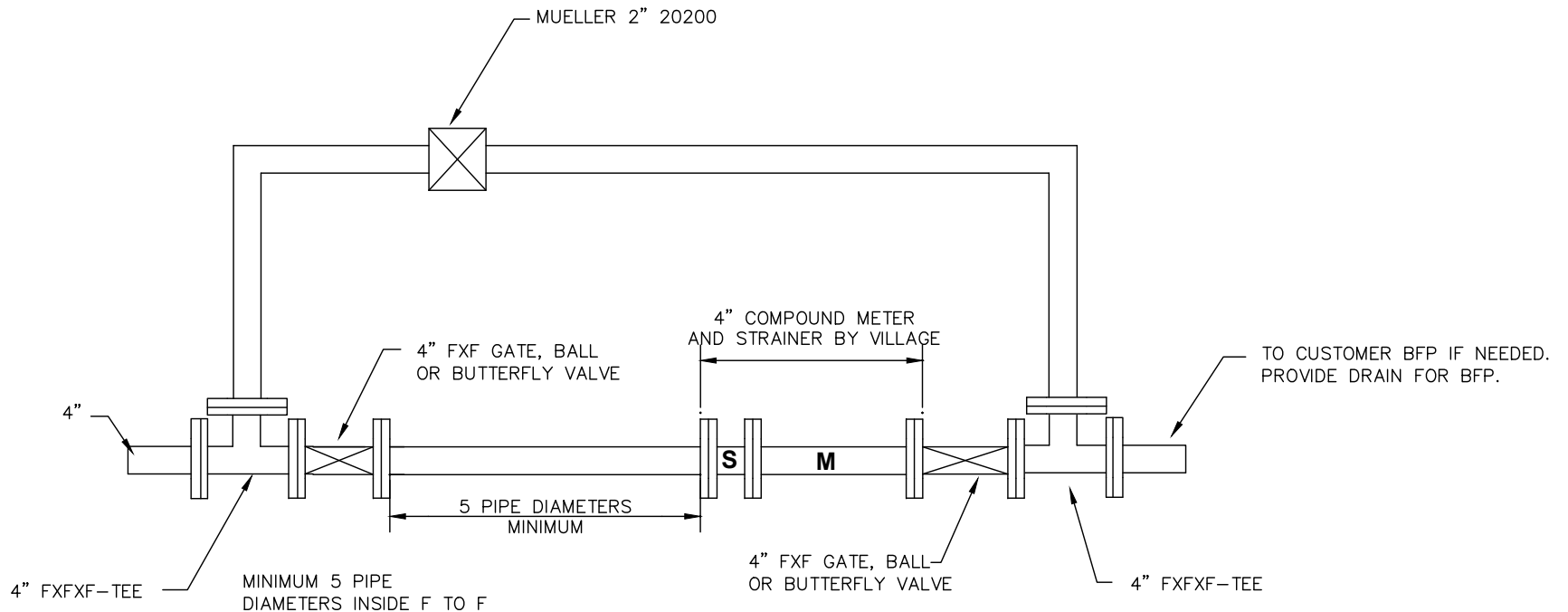


NOTES

- A. CENTERLINE OF METER TO BE NO MORE THAN 36" FROM THE FLOOR.
- B. METER MUST BE MOUNTED HORIZONTALLY.
- C. USE STAINLESS STEEL OR BRASS NUTS AND BOLTS.
- D. METER BYPASS ASSEMBLY AND METER SETTING TO BE CONSTRUCTED OF PVC SCH. 80, BRASS OR COPPER. NO FEMALE PVC THREADS PERMITTED.
- E. ALL PIPING TO BE THOROUGHLY SUPPORTED.
- F. THE VILLAGE IS NOT RESPONSIBLE FOR MAINTENANCE OF INSIDE PLUMBING.

- G. PROVIDE APPROVED BACKFLOW PREVENTER REGISTERED WITH THE VILLAGE AND THE COUNTY.
- H. PROVIDE TWO OR THREE CONDUCTOR WIRE TO OUTSIDE OF BUILDING NEAR ELECTRIC METER 18-22 GAUGE WIRE.
- I. BYPASS VALVE SHALL BE LOCKABLE.

2" COMPOUND METER WITH BYPASS



NOTES

- A. CENTERLINE OF METER TO BE NO MORE THAN 36" FROM THE FLOOR.
- B. METER MUST BE MOUNTED HORIZONTALLY.
- C. FULL FACE FLANGE GASKETS AND STAINLESS STEEL OR BRASS NUTS AND BOLTS TO BE USED.
- D. METER BYPASS ASSEMBLY AND METER SETTING TO BE CONSTRUCTED OF PVC SCH. 80, BRASS OR COPPER. NO FEMALE PVC THREADS PERMITTED.
- E. ALL PIPING TO BE THOROUGHLY SUPPORTED.
- F. THE VILLAGE IS NOT RESPONSIBLE FOR MAINTENANCE OF INSIDE PLUMBING.

- G. PROVIDE APPROVED BACKFLOW PREVENTER REGISTERED WITH THE VILLAGE AND THE COUNTY.
- H. PROVIDE 2 OR 3 CONDUCTOR WIRE TO OUTSIDE OF BUILDING NEAR ELECTRIC METER 18-22 GAUGE WIRE.
- I. BYPASS VALVE SHALL BE LOCKABLE.

4" COMPOUND METER WITH BYPASS

NOTES

A. FOR 4" AND GREATER SERVICES

B. PIPING SHALL BE D.I.P. CLASS 53 TO RIGID FLANGE. FROM RIGID FLANGE THROUGH METER VALVES AND BYPASS TO BE DUCTILE, COPPER OR BRASS.

C. FOR 1 1/2" AND 2" SERVICES: WATER DEPARTMENT RECOMMENDS THE USE OF COPPER PIPING

D. FULL PORT BALL VALVES IN LIEU OF VALVES MAY BE INSTALLED FOR 1 1/2" AND 2" METERS MUST BE LOCKABLE.

E. BYPASS MANDATORY FOR ALL METERS. BYPASS VALVE TO BE LOCKABLE.

F. DUAL INSTALLATION FOR BACKFLOW PREVENTION DEVICES IS OPTIONAL FOR 1 1/2" - 2" METERS.

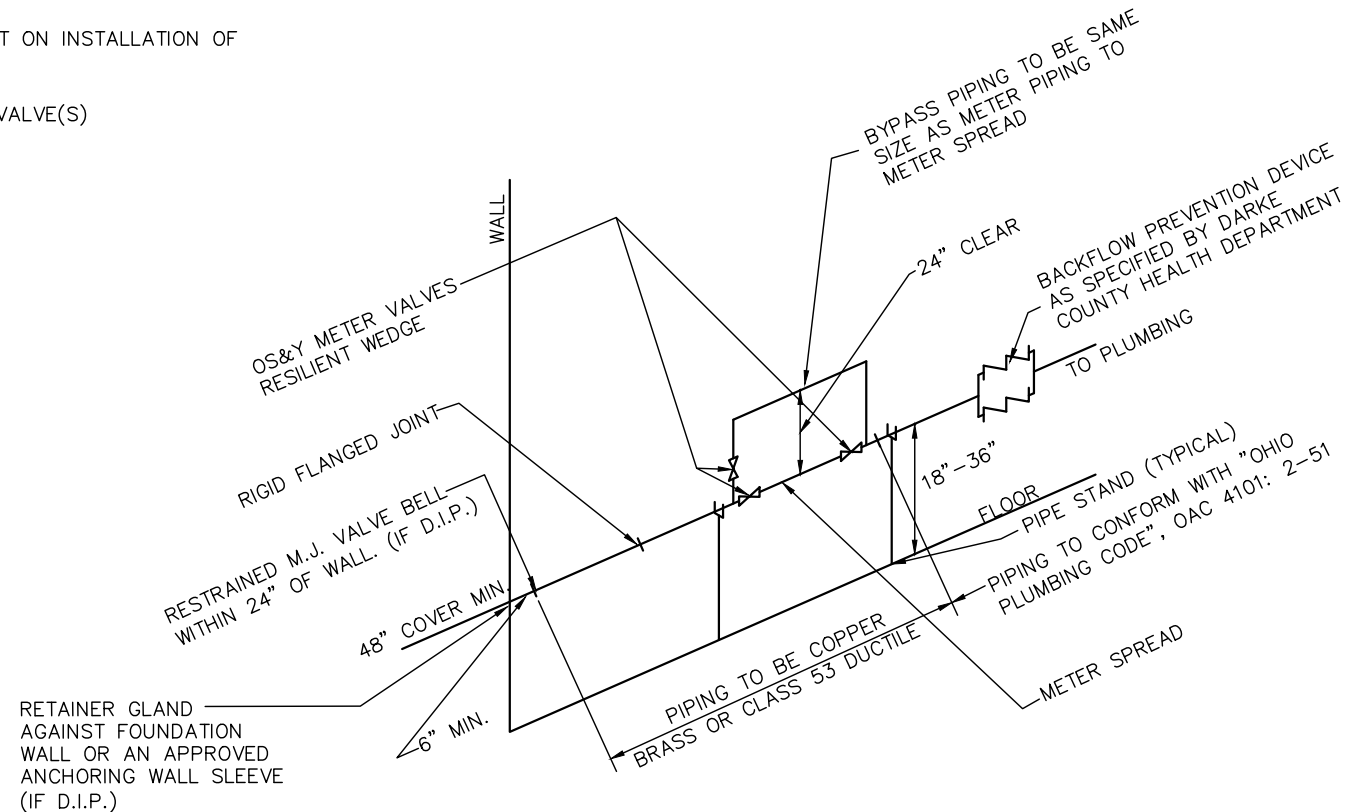
G. ALTERNATE DESIGNS MAY BE SUBMITTED TO THE VILLAGE FOR APPROVAL.

H. PROVIDE SPREADER DEVICE FOR PROPER ALIGNMENT ON INSTALLATION OF METER SPREAD.

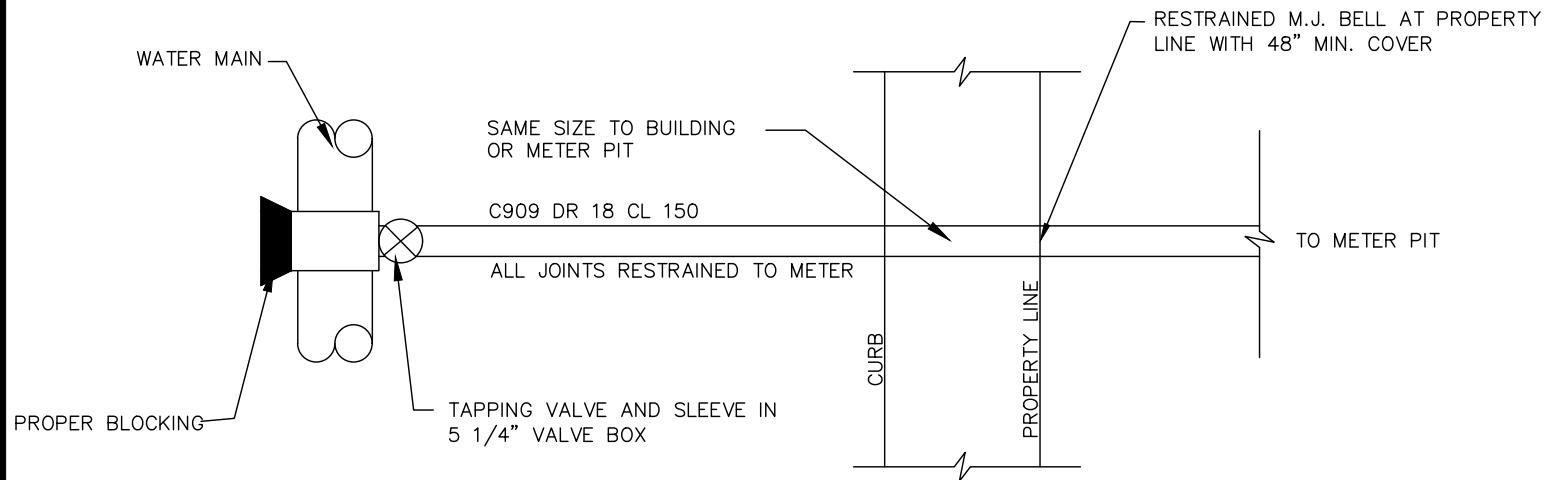
I. NO FLANGE ADAPTERS BEFORE INITIAL SHUT-OFF VALVE(S)

METER SPREAD (FACE TO FACE)

1 1/2"	28"	F.I.P.
2"	30"	FLANGED
3"	46"	FLANGED
4"	56"	FLANGED
5"	60"	FLANGED
8" AND LARGER TO BE REVIEWED BY THE VILLAGE (F.I.P.— FEMALE IRON PIPE THREAD)		



TYPICAL LARGER METER LAYOUT IN BUILDING

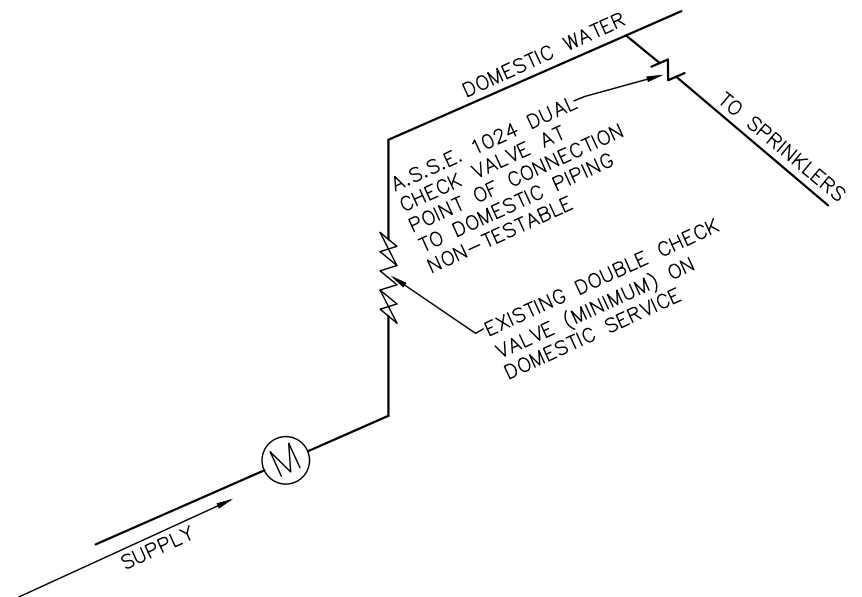
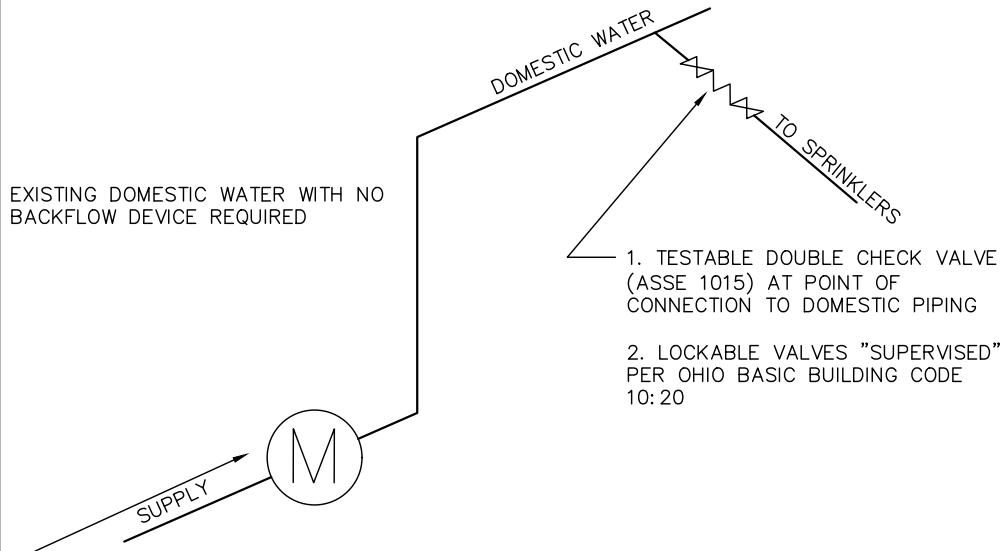


SERVICE TEES ARE PERMITTED IF:

- A. SHOWN ON AN APPROVED SET OF CONSTRUCTION PLANS.
- B. 4" MINIMUM BRANCH AND SERVICE LINE WITH GATE VALVE WITHIN 3' OF MAIN.

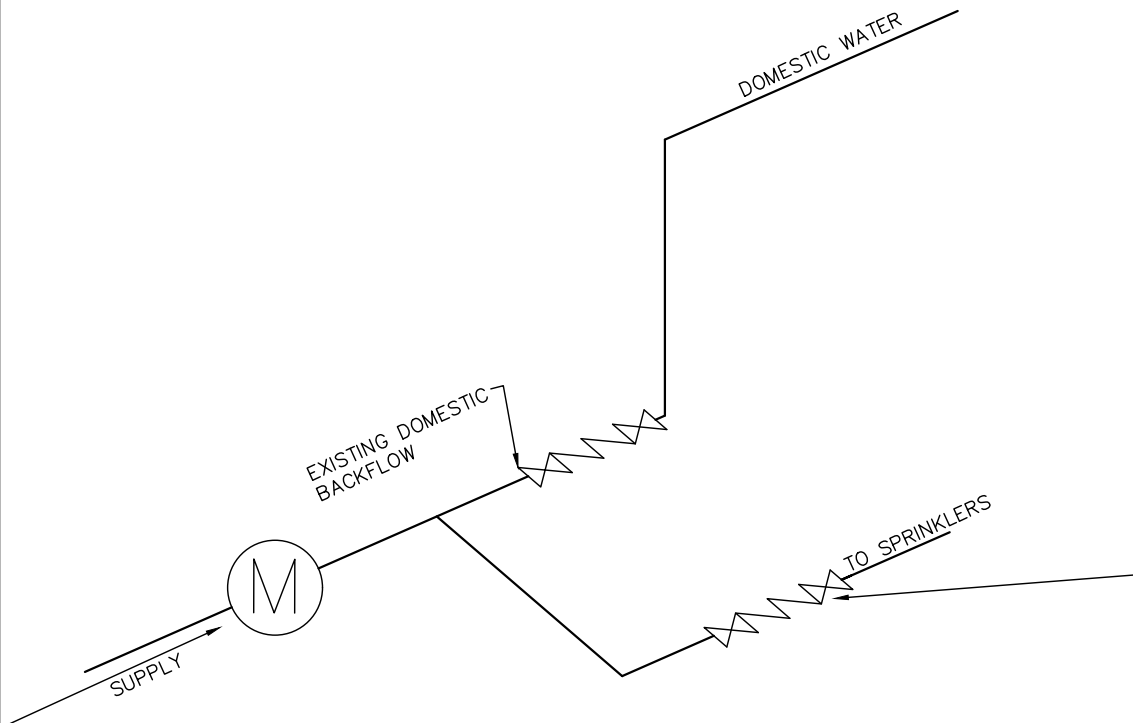
NOTE:

- A. IF NO CLEARANCE BETWEEN BUILDING AND PROPERTY LINE, METER MAY BE LOCATED IN BUILDING IF APPROVED BY THE VILLAGE.

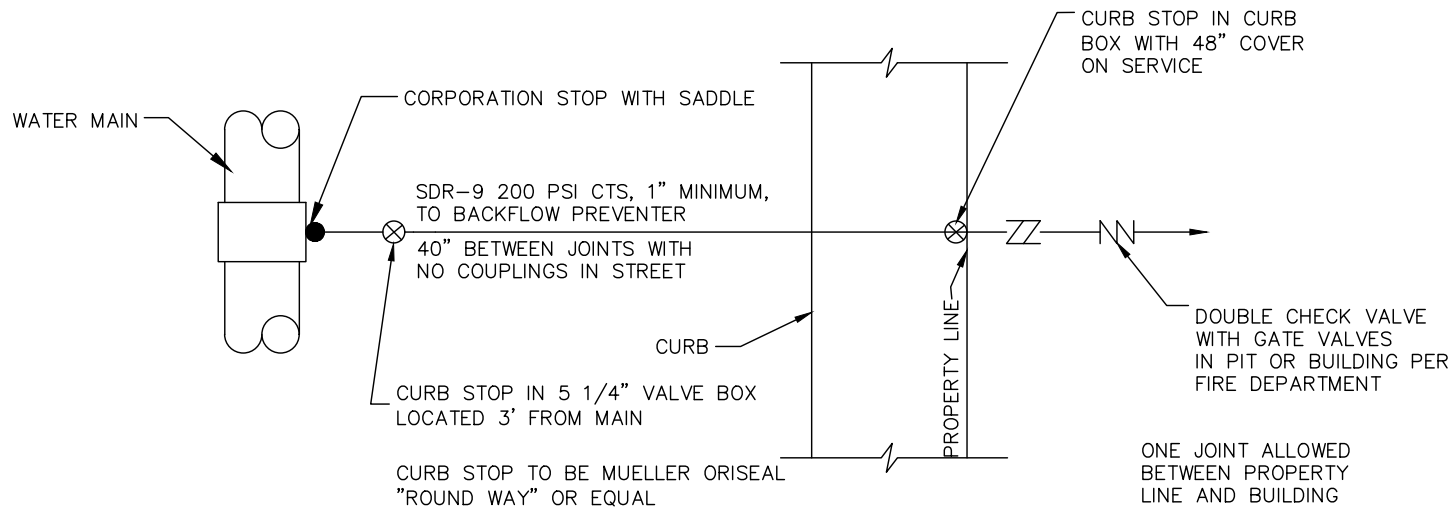


NOTE:

A. ADDITION OF BACKFLOW DEVICE ONTO EXISTING FIRE SUPPRESSION SYSTEM WILL AFFECT ORIGINAL FLOW CALCULATION



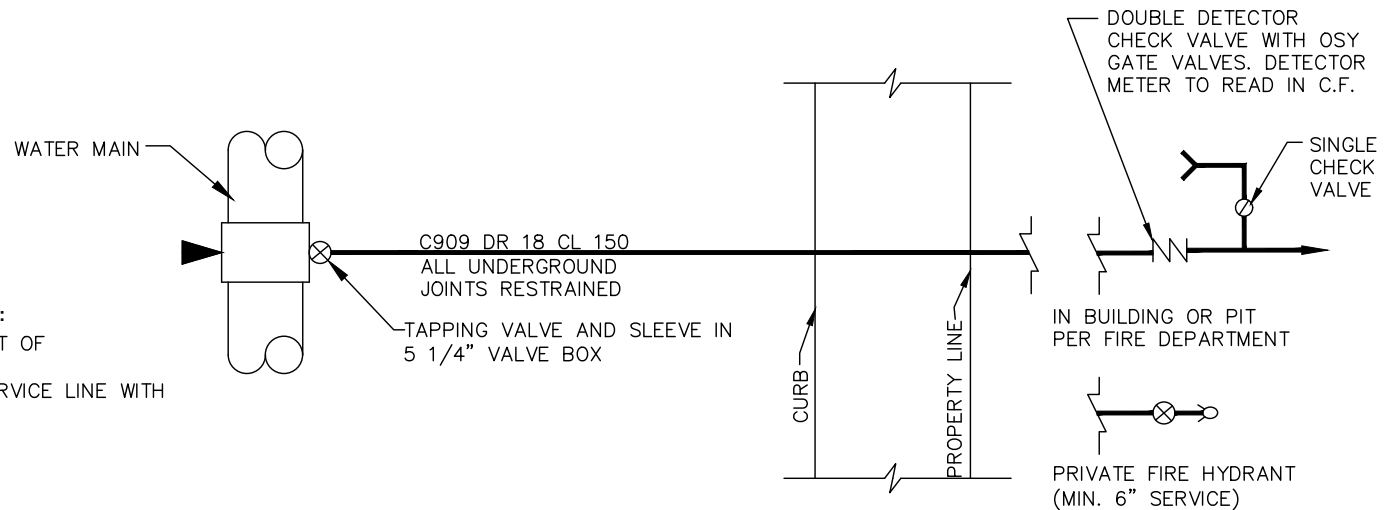
LIMITED AREA SPRINKLER SYSTEM DETAIL



2" FIRE LINE SERVICE (METER REQUIRED)

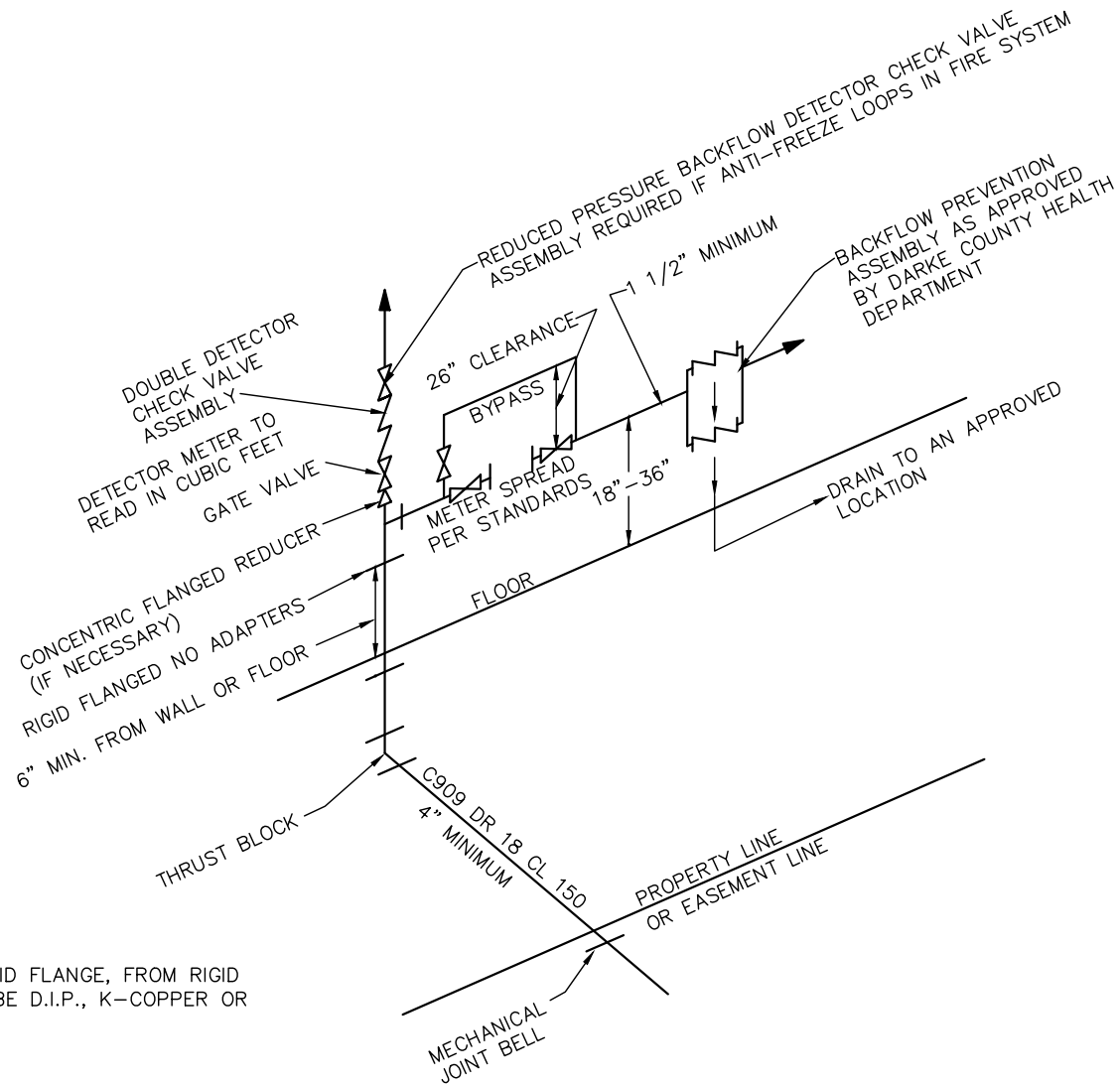
SERVICE TEES ARE PERMITTED IF :

1. SHOWN ON AN APPROVED SET OF CONSTRUCTION DRAWINGS.
2. 4" MINIMUM BRANCH AND SERVICE LINE WITH GATE VALVE WITHIN 3' OF MAIN.



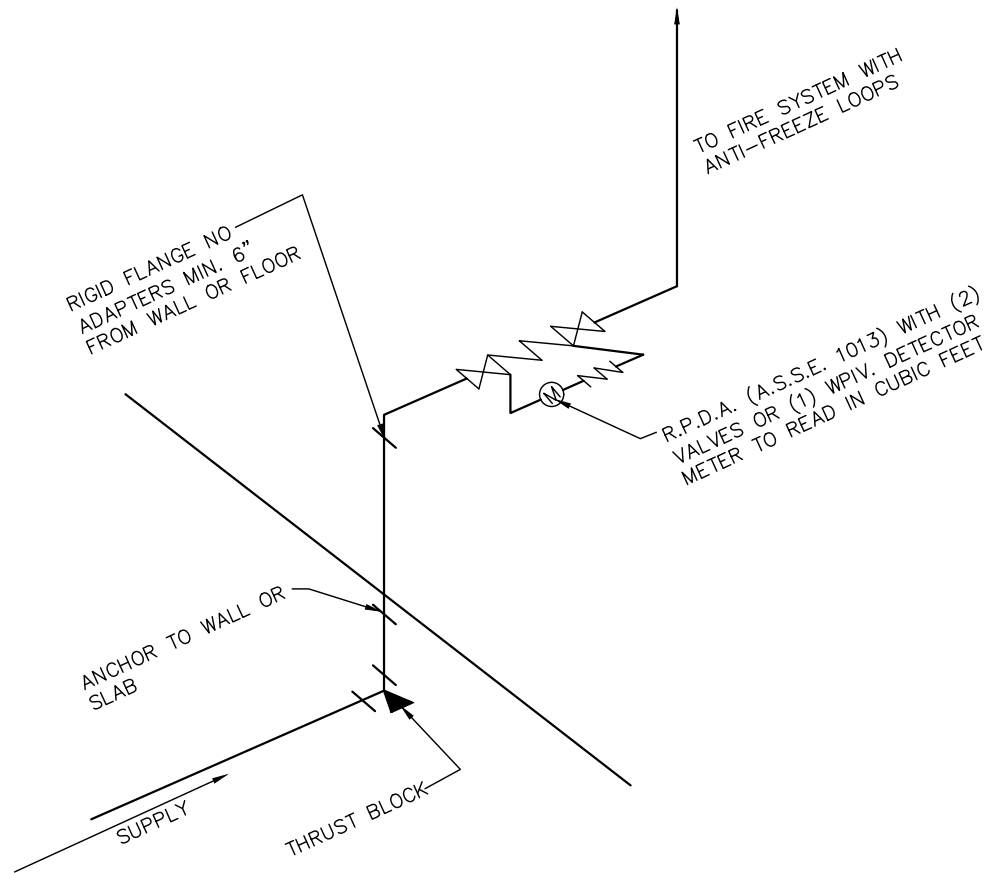
4" AND LARGER FIRE LINE SERVICE (METER REQUIRED)

WALL/POST INDICATOR VALVES SHALL BE ADDED ON PREMISES AT FIRE DEPARTMENT REQUEST



NOTES

- A. ALL UNDERGROUND JOINTS MUST BE RESTRAINED.
- B. INSIDE PIPING SHALL BE D.I.P. CLASS 53 TO RIGID FLANGE, FROM RIGID FLANGE THROUGH METER VALVES AND BYPASS, TO BE D.I.P., K-COPPER OR BRASS.
- C. MINIMUM 1 1/2" WATER METER.
- D. ALTERNATE DESIGN MAY BE SUBMITTED TO VILLAGE FOR APPROVAL.
- E. COMBINATION SERVICE NOT PERMITTED INSIDE BUILDING IF THE DOMESTIC METER IS MORE THAT 75 FEET FROM THE PROPERTY/EASEMENT LINE.

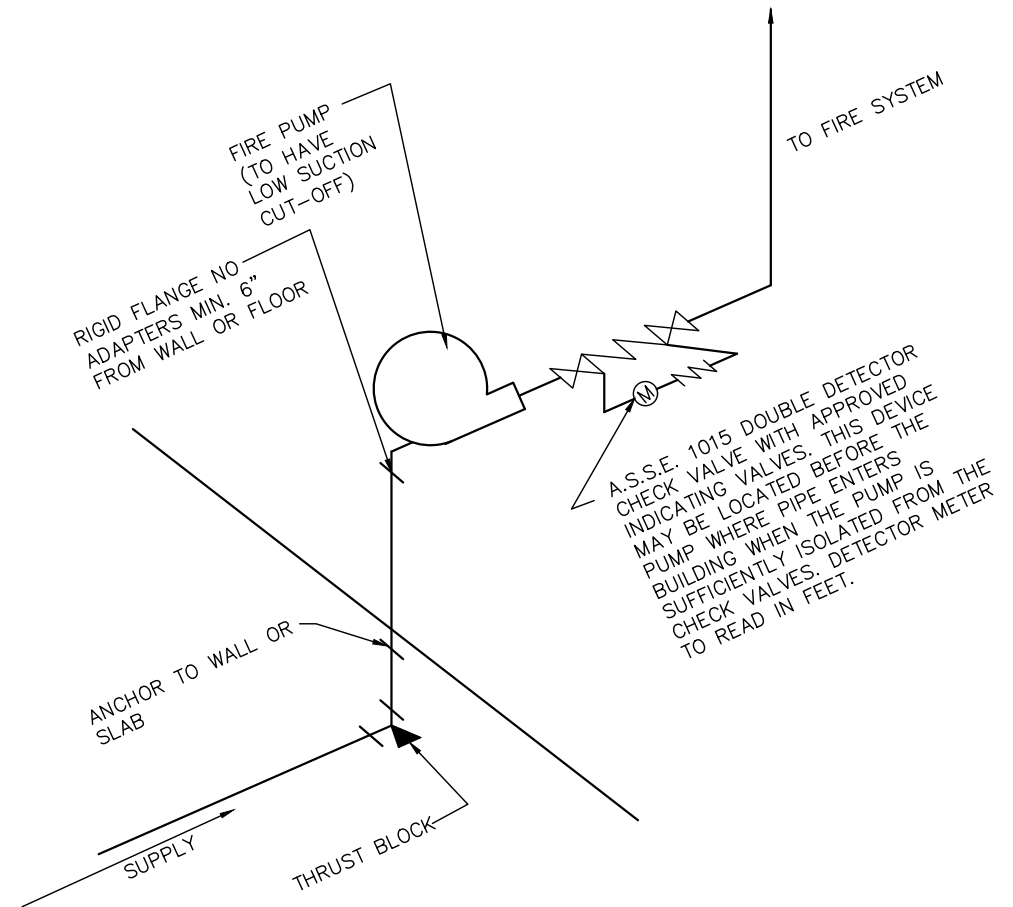
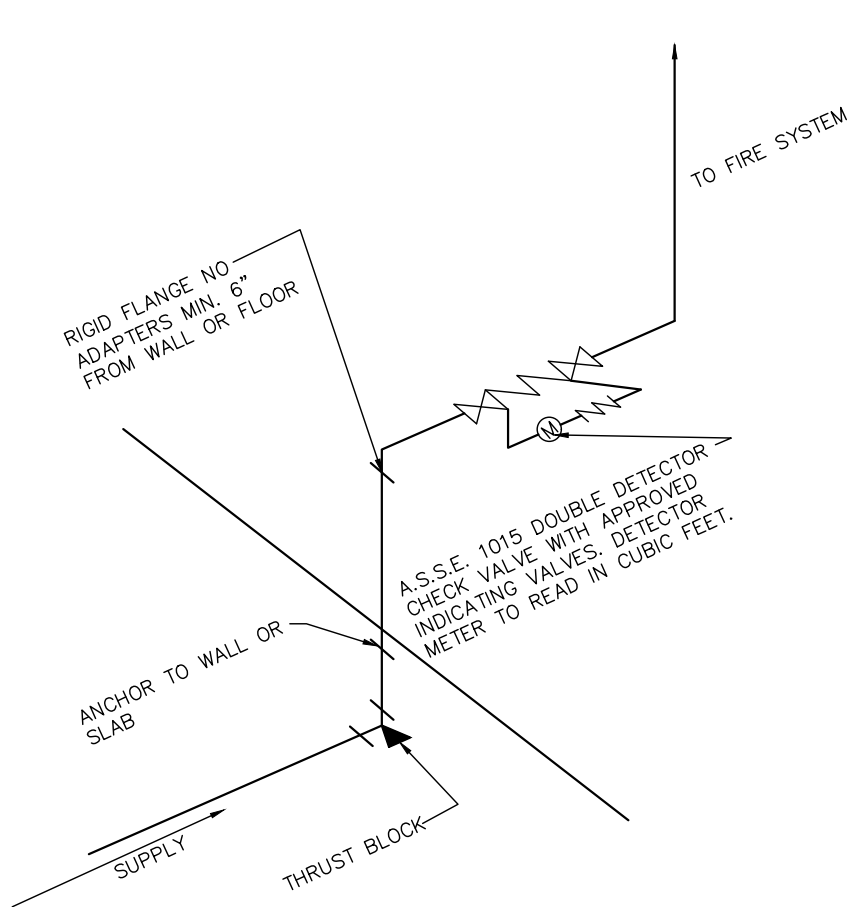


NOTE:

A. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE DELIVERED FOR INSTALLATION COMPLETELY ASSEMBLED BY THE ORIGINAL MANUFACTURER WITH ALL COMPONENTS AS APPROVED

B. ADDITION OF BACKFLOW DEVICE ONTO EXISTING FIRE SUPPRESSION SYSTEMS WILL AFFECT ORIGINAL FLOW CALCULATIONS

C. CLASS 53 DUCTILE IRON TO VALVE. ALL JOINTS RESTRAINED



NOTE:
 A. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE DELIVERED FOR INSTALLATION COMPLETELY ASSEMBLED BY THE ORIGINAL MANUFACTURER WITH ALL COMPONENTS AS APPROVED
 B. CLASS 53 DUCTILE IRON TO VALVE. ALL JOINTS RESTRAINED

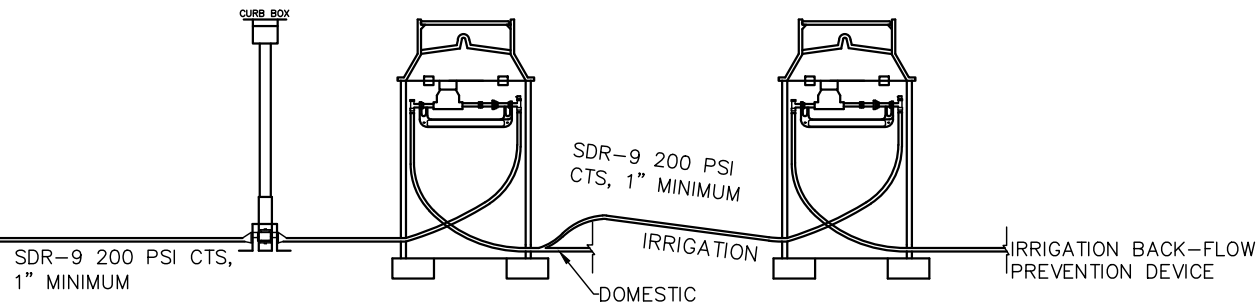
NOTES

- A. SEE "STANDARDS FOR TAPS, SERVICES AND METERS" FOR TYPICAL NOTES
- B. BACKFLOW PREVENTION DEVICE REQUIRED—CONTACT WATER ENGINEERING FOR APPROVED DEVICE.
- C. PROVIDE APPROVED DRAIN FOR IRRIGATION SYSTEM
- D. ALTERNATE DESIGNS MUST BE SUBMITTED FOR APPROVAL.
- E. TOP OF PIT LID TO BE INSTALLED AT FINISHED GRADE.
- F. THE CURB BOX MUST BE BROUGHT UP TO FINISH GRADE
- G. NO OUTLETS ARE ALLOWED BETWEEN METER AND THE BACKFLOW PREVENTER OR HOSE BIBB VACUUM BREAKER WITH THE EXCEPTION OF ONE SCREW PLUG—IN TAR WINTERIZING/DRAINAGE PURPOSES.
- H. THE UNDERGROUND WATER SERVICE SHALL BE SDR-9 HDPE CTS(200 PSI) UP TO THE BACKFLOW PREVENTER OR HOSE BIBB VACUUM BREAKER.
- I. IN CASE OF ADD-ON CONSTRUCTION (WITH AN EXISTING DOMESTIC METER AND SERVICE) LEAD FREE SOLDERED JOINTS WILL BE ACCEPTED AT THE TAKE-OFF TEE ONLY
- J. THE INSTALLATION SHALL BE INSPECTED BY THE VILLAGE.

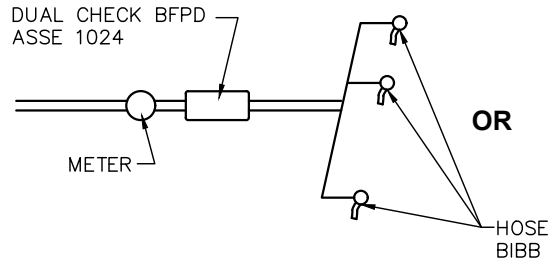
INSTRUCTIONS FOR THE INSTALLATION OF IRRIGATION METERS AND BACKFLOW PREVENTERS FOR IRRIGATION

1. MAKE DRAWING OF THE PROPOSED IRRIGATION SYSTEM. THIS DRAWING MUST BE APPROVED BY VILLAGE AND DARKE COUNTY HEALTH DEPARTMENT.
2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE VILLAGE "STANDARDS FOR TAPS, SERVICES AND METERS".
3. GET THE NECESSARY PERMITS.

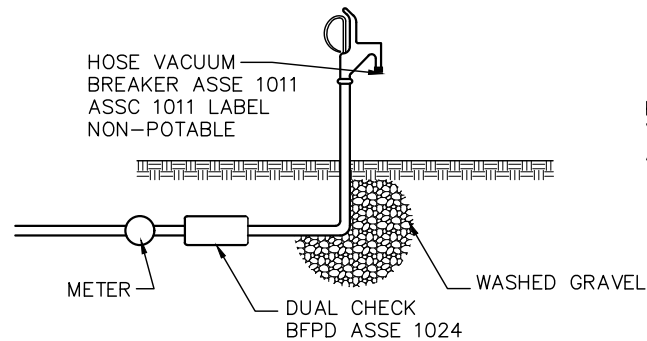
A) TAPPING FEE VERSAILLES
4. GET FORMS AT DARKE COUNTY HEALTH DEPARTMENT FOR EACH BACKFLOW PREVENTER TO BE INSTALLED, PRIOR TO DOING THE WORK.
5. AFTER THE BACKFLOW PREVENTERS HAVE BEEN INSTALLED PLEASE FILL OUT THE FORMS COMPLETELY WITH THE OWNER/LESSE'S NAME, ADDRESS (WHERE THE BACKFLOW PREVENTER WAS INSTALLED), LOCATION OF THE BACKFLOW PREVENTER, SIZE, MAKE, MODEL, AND SERIAL NUMBER OF THE BACKFLOW PREVENTER. PLEASE RETURN THE COMPLETED FORMS TO THE VILLAGE AND THE DARKE COUNTY HEALTH DEPARTMENT.
6. CONTACT BOTH VILLAGE AND THE DARKE COUNTY HEALTH DEPARTMENT AFTER THE WORK HAS BEEN COMPLETED. BACKFLOW PREVENTERS HAVE TO BE INSPECTED BY BOTH VILLAGE AND THE DARKE COUNTY HEALTH DEPARTMENT



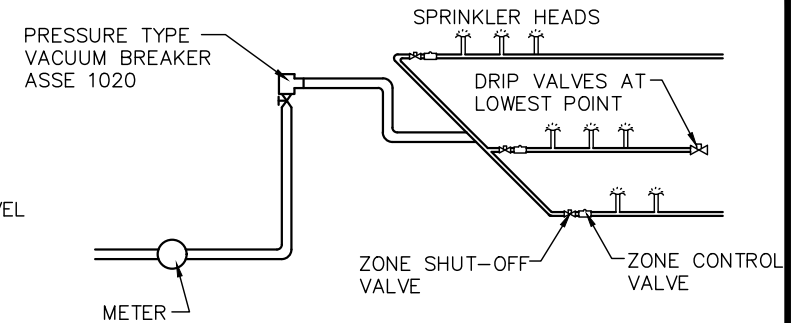
HOSE BIBB



YARD HYDRANT



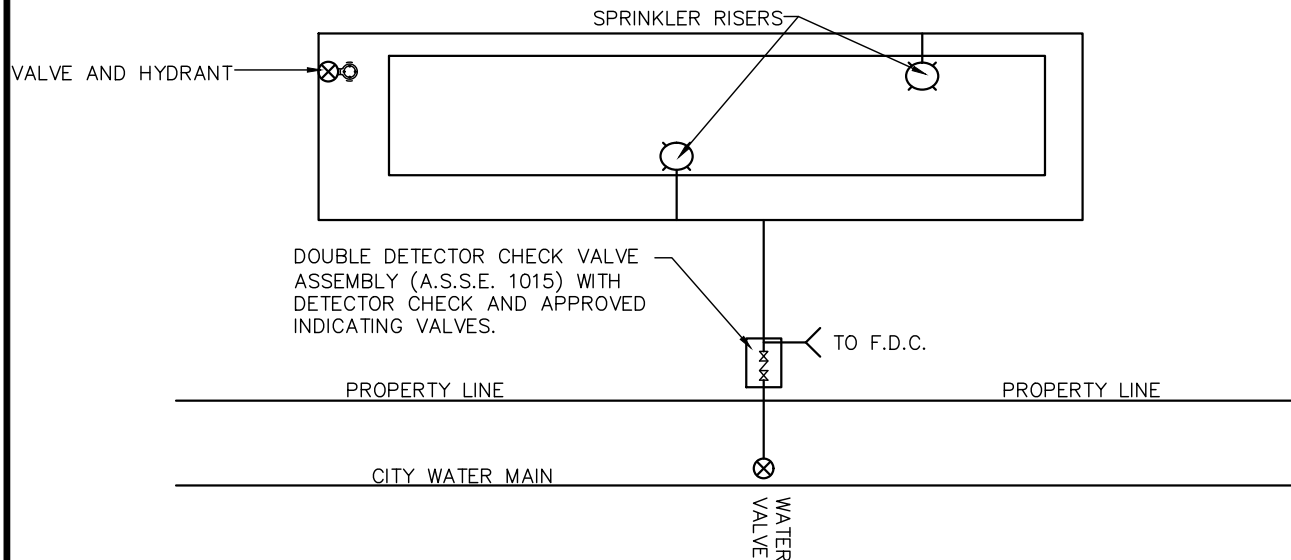
SPRINKLER SYSTEM



CONDITIONS

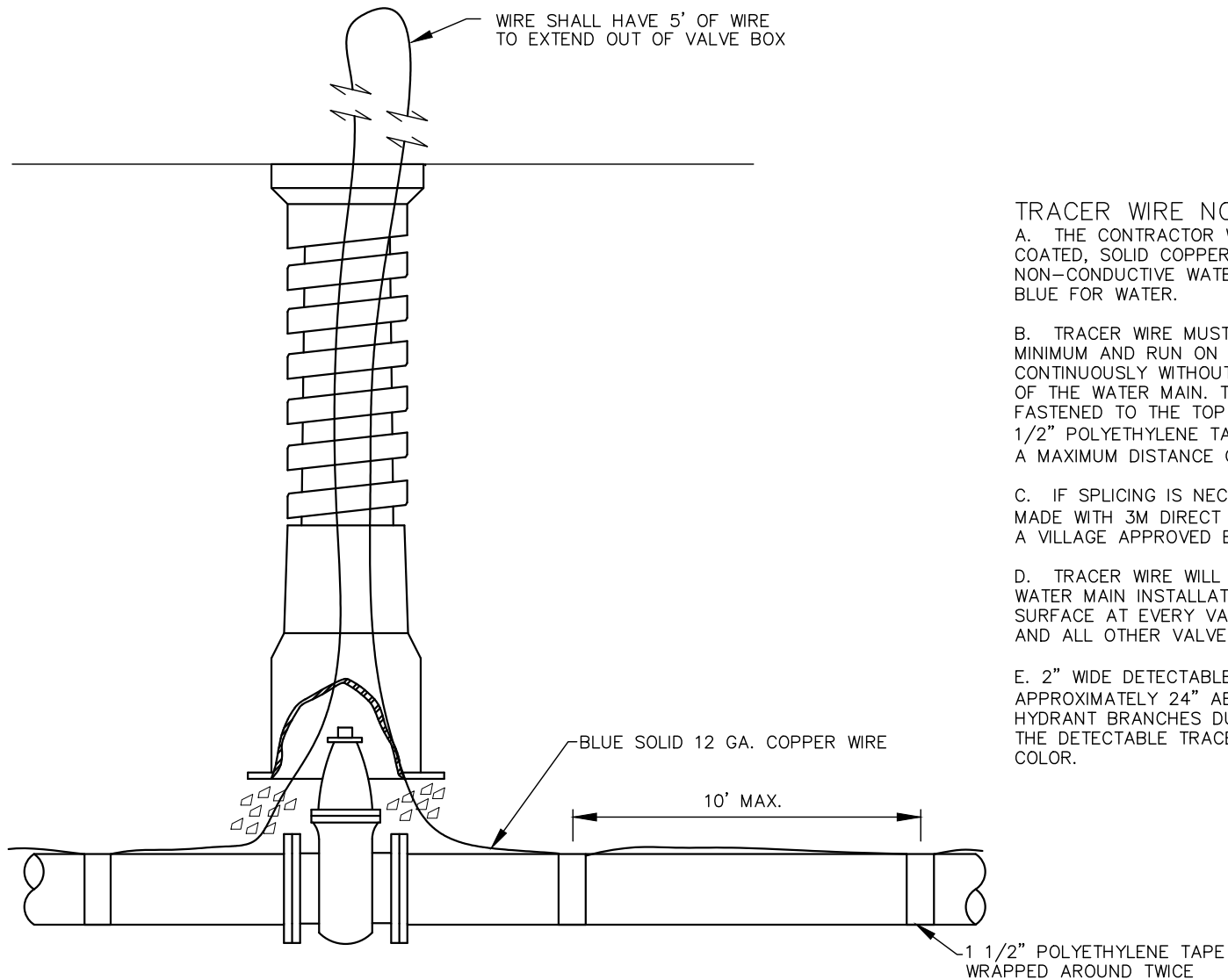
- A. SHUT-OFF VALVES ARE ALLOWED DOWNSTREAM OF THE BFPD
- B. THE PRESSURE TYPE VACUUM BREAKER MUST BE A MINIMUM OF 12" ABOVE THE HIGHEST SPRINKLER HEAD.

YARD MAIN SYSTEM ARRANGEMENT



NOTES

- A. A DRAWING OF EACH PROPOSED IRRIGATION SYSTEM MUST BE APPROVED BY THE VILLAGE AND DARKE COUNTY HEALTH DEPARTMENT PRIOR TO CONSTRUCTION.
- B. IF IRRIGATION SYSTEM IS NONE OF THE ABOVE, USE A REDUCED PRESSURE BACKFLOW PREVENTER, (ASSE 1013), AFTER THE WATER METER.



TRACER WIRE NOTES

- A. THE CONTRACTOR WILL FURNISH AND INSTALL A COATED, SOLID COPPER TRACER WIRE ON ALL NON-CONDUCTIVE WATER LINES. WIRE COLOR WILL BE BLUE FOR WATER.
- B. TRACER WIRE MUST BE BLUE SOLID 12 GAUGE MINIMUM AND RUN ON TOP OF THE WATER MAIN CONTINUOUSLY WITHOUT SPLICES FOR THE FULL LENGTH OF THE WATER MAIN. THE TRACER WIRE SHALL BE FASTENED TO THE TOP OF THE WATER LINE WITH 1 1/2" POLYETHYLENE TAPE WRAPPED AROUND TWICE AT A MAXIMUM DISTANCE OF 10'.
- C. IF SPLICING IS NECESSARY, ALL SPLICING SHALL BE MADE WITH 3M DIRECT BURY SPLICE KIT, DBR/Y-6 OR A VILLAGE APPROVED EQUAL.
- D. TRACER WIRE WILL BE INSTALLED ON ALL NEW PVC WATER MAIN INSTALLATIONS AND WILL COME TO THE SURFACE AT EVERY VALVE BOX FOR A FIRE HYDRANT AND ALL OTHER VALVE BOXES FOR TERMINATION.
- E. 2" WIDE DETECTABLE TRACER TAPE SHALL BE LAID APPROXIMATELY 24" ABOVE WATER MAINS AND FIRE HYDRANT BRANCHES DURING THE BACKFILL PROCESS. THE DETECTABLE TRACER TAPE SHALL BE BLUE IN COLOR.