

CONCRETE CL. 3000 THRUST BLOCKING SIZE TO WITHSTAND PRESSURE. SEE STANDARD PLAN 3-9

WATER MAIN

SEE STANDARD PLAN 3-7

6" MIX/MFL TEE FOR NEW, OR TAPPING SLEEVE & TAPPING VALVE FOR EXIST. WATER MAINS

6" FLX/MJ RESILIENT WEDGE GATE VALVE

RESTRAINED JOINT PIPE OR 3/4" STEEL SHACKLE ROD (2 PLACES) (18' MAX. LENGTH) TAR COAT OR ZINC PLATED. RESTRAINED MECHANICAL JOINT PIPE TO BE USED FOR ALL RUNS OVER 18 FEET.

REMOVE CHAINS AND RINGS

MIN. 3' UNLESS PRE-APPROVED BY THE ENGINEER

SEE NOTE (1)

CONC. AROUND FIRE HYDRANT (SEE NOTE (4))

3-6" MIN.

SEE STANDARD PLAN 3-7

6" D.I., CL. 52 LENGTH AS REQ'D

EXPANSION JOINT PER STANDARD PLAN 6-33

18"x18"x6" CONC. BLOCK

GRAVEL FOR DRAINS 1/2 CUBIC YARD MIN.

NOTES:

(1) SEE SECTION 3.6.F FOR FIRE HYDRANT TYPE.

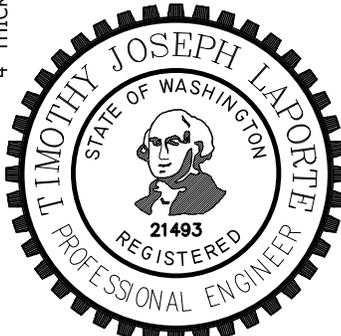
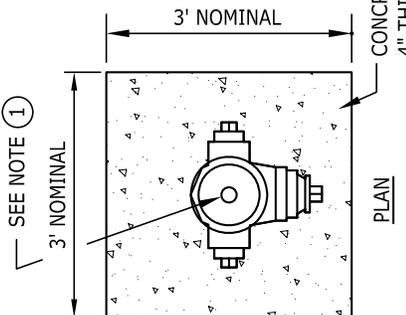
(2) PAINT HYDRANTS WITH TWO (2) COATS OF FARWEST WONDERGLOW QUICKSET HI-PERFORMANCE ENAMEL. PUBLIC HYDRANTS ARE WHITE #1100 SERIES AND PRIVATE HYDRANTS ARE YELLOW #X3472.

(3) ALL FIRE HYDRANTS SHALL BE LOCATED BEHIND SIDEWALK OR AS SHOWN ON PLANS. THE PORT CAP SHALL NOT BE OVER THE SIDEWALK.

(4) PROVIDE EXPANSION JOINT MATERIAL PER STANDARD PLAN 6-35 AROUND HYDRANT WHERE ADJACENT TO CONCRETE. PROVIDE NOMINAL 3 FT. SQUARE CONC. PAD IN ALL AREAS.

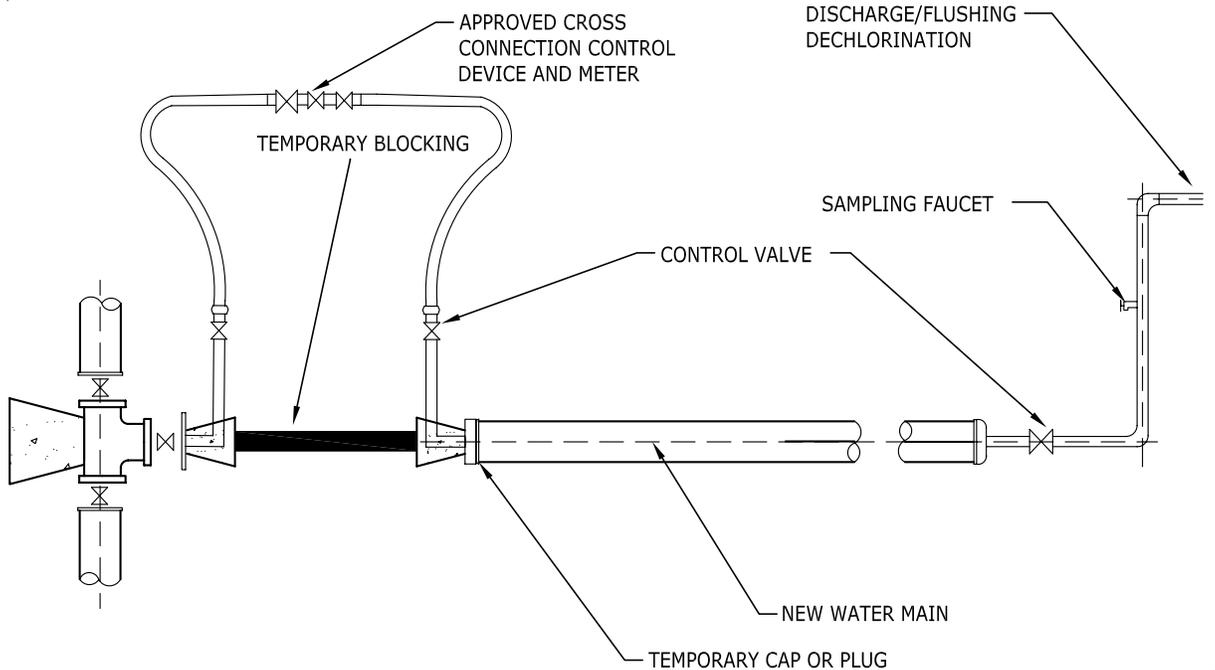
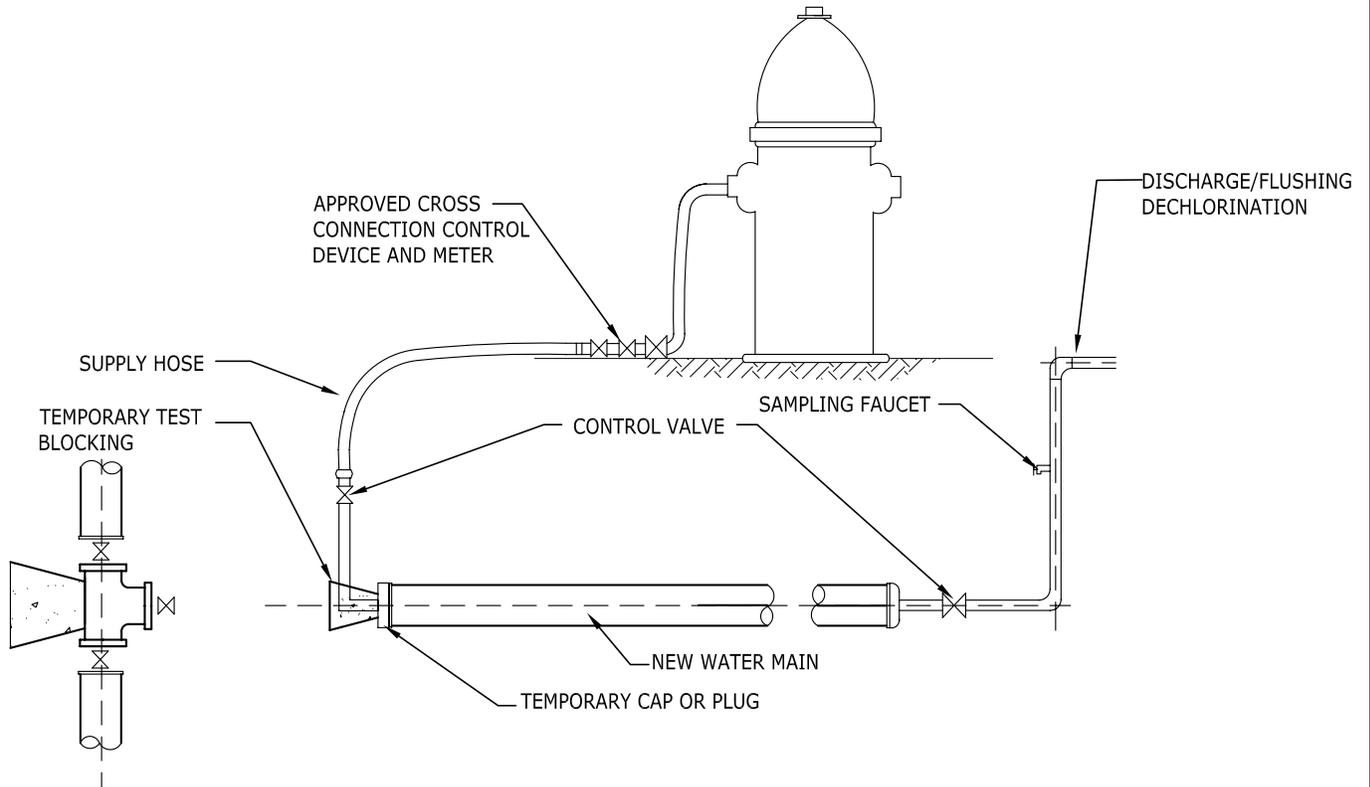
(5) SEE STANDARD PLAN 3-3 FOR GUARD POST DETAILS.

6. WHEN FIRE HYDRANTS FALL BEHIND DITCH LINE, PLACE CULVERT IN DITCH FOR MIN. OF 10' & BACK FILL WITH CRUSHED SURFACING TOP COURSE. RIP RAP ENDS AS NEEDED FOR EROSION CONTROL.
7. NO HYDRANT SHALL BE INSTALLED LESS THAN 10 FEET FROM THE EDGE OF A PRIVATE STREET OR DRIVEWAY APPROACH.
8. FIRE HYDRANT SHALL FACE THE ADJACENT STREET UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
9. A TEMPORARY USE HYDRANT PERMIT, METER AND CHECK VALVE ASSEMBLY ARE REQUIRED FOR DRAWING WATER FROM HYDRANTS. PERSONS DRAWING WATER ILLEGALLY WILL BE PROSECUTED.



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		CITY OF KENT ENGINEERING DEPARTMENT	
		STANDARD FIRE HYDRANT	
DESIGNED: DMW	SCALE: NONE	STANDARD PLAN 3-1	
DRAWN: BB	DATE: _____		
CHECKED: _____	ENGINEER: _____		
APPROVED: _____			



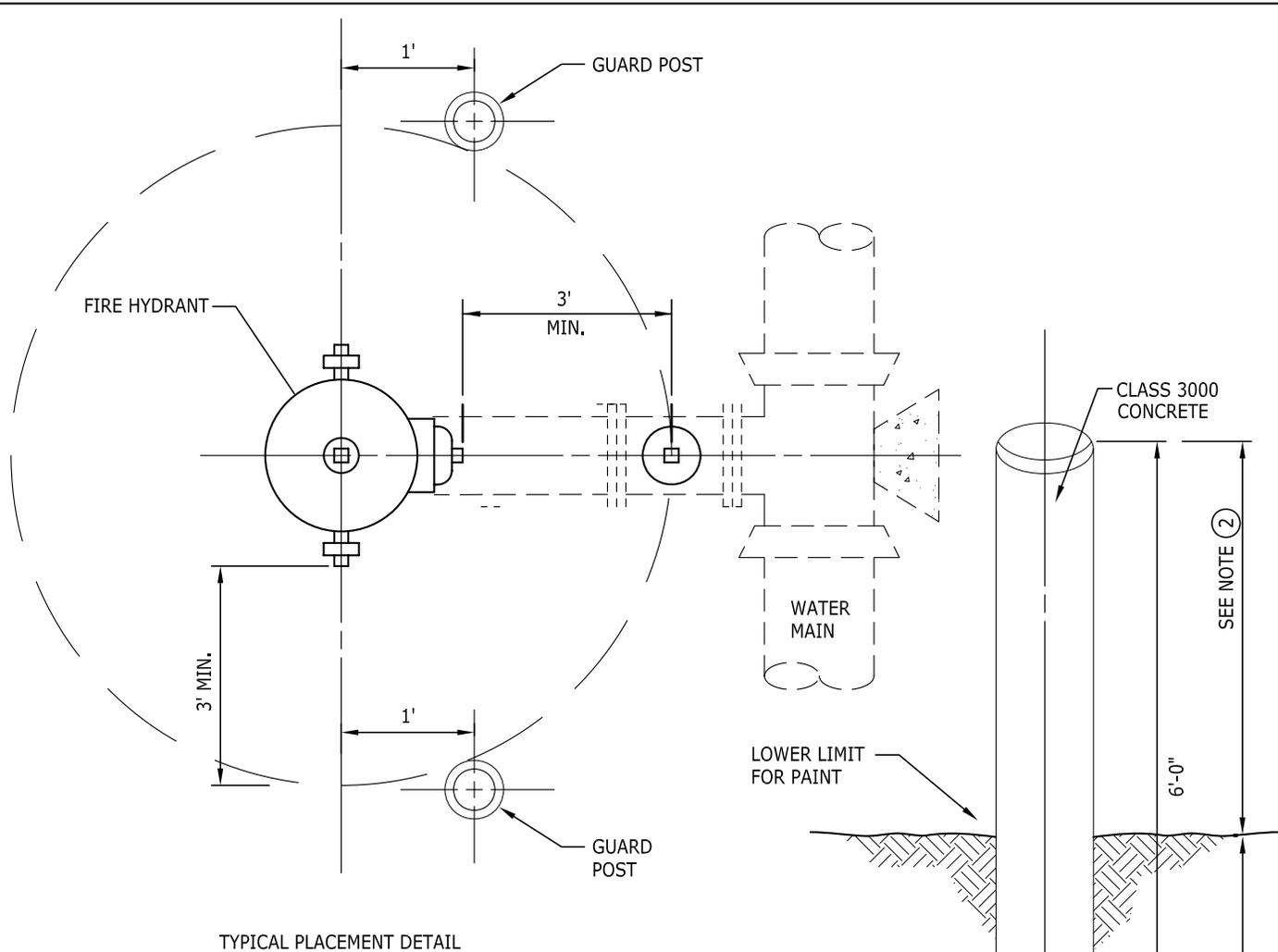
NOTES:

1. THE USER SHALL PROVIDE THEIR OWN GATE VALVE BETWEEN THE METER AND DISCHARGE POINT.
2. CROSS CONNECTION CONTROL DEVICE AND METER SHALL BE SUPPORTED IF NOT RESTING ON THE GROUND.

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		CITY OF KENT ENGINEERING DEPARTMENT	
		TEMPORARY HYDRANT CONNECTION	
DESIGNED _____	SCALE NONE	STANDARD PLAN	
DRAWN _____	DATE 6-11-99		
CHECKED _____	ENGINEER	3-2	
APPROVED _____			



TYPICAL PLACEMENT DETAIL

NOTES:

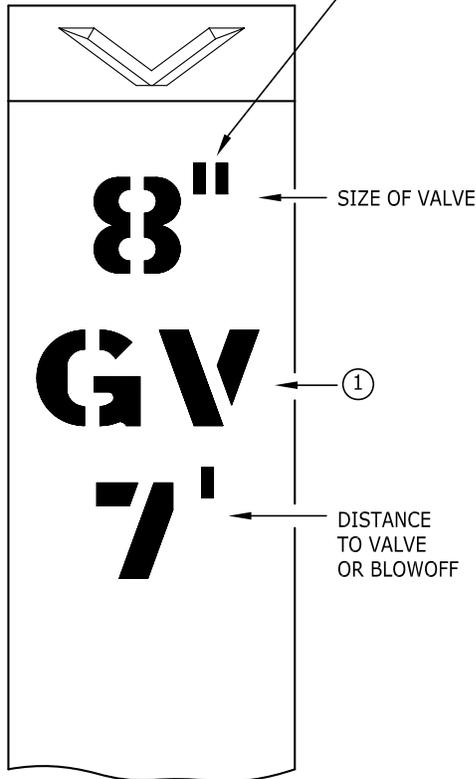
1. THE FOG-TITE HYDRANT GUARD POST IS PRE- APPROVED. ALL OTHERS REQUIRE WRITTEN APPROVAL OF THE ENGINEER PRIOR TO INSTALLATION
- ② GUARD POST ARE INSTALLED WITH TOPS SET AT THE SAME HEIGHT AS THE HYDRANT. IF MORE THAN ONE POST IS SET, THEY SHALL BE SET AT THE SAME HEIGHT.
3. PAINT EXPOSED POST THE SAME COLOR AS THE FIRE HYDRANT. SEE STANDARD PLAN 3-1
4. SEE STANDARD PLAN 3-1 FOR FIRE HYDRANT DETAILS.
5. GUARD POSTS ARE NOT USED WHERE FIRE HYDRANT IS LOCATED BEHIND CURB AND GUTTER OR POSTED SPEED LESS THAN 40 MPH
6. GUARD POST SHALL BE LOCATED OUTSIDE OF THE CLEAR ZONE. SEE STANDARD PLAN 6-50.
7. FOR USE ON PRIVATE PROPERTY.

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		CITY OF KENT ENGINEERING DEPARTMENT	
		GUARD POST	
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	STANDARD PLAN 3-3	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____		
APPROVED _____			

TYPICAL 2" HIGH BLACK STENCIL MARKINGS ON THIS FACE ONLY. HOMERIGHT PAINT.



"V" IS PRE-CAST GROOVE IN TOP OF POST.

CLASS 3000 CONCRETE

FINISHED GRADE

LOWER LIMIT FOR 2 COATS OF WHITE PAINT ON ALL FACES (SEE STANDARD PLAN 3-1 NOTE 2 FOR TYPE)

#3 REINFORCED BAR

1 1/4" TYP.

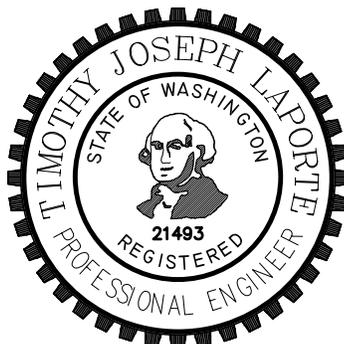
WEIGHT: 53-60 LBS.

- ①. USE
 "GV" FOR GATE VALVE
 OR
 "BV" FOR BUTTERFLY VALVE
 OR
 "BO" FOR BLOWOFF ASSEMBLY

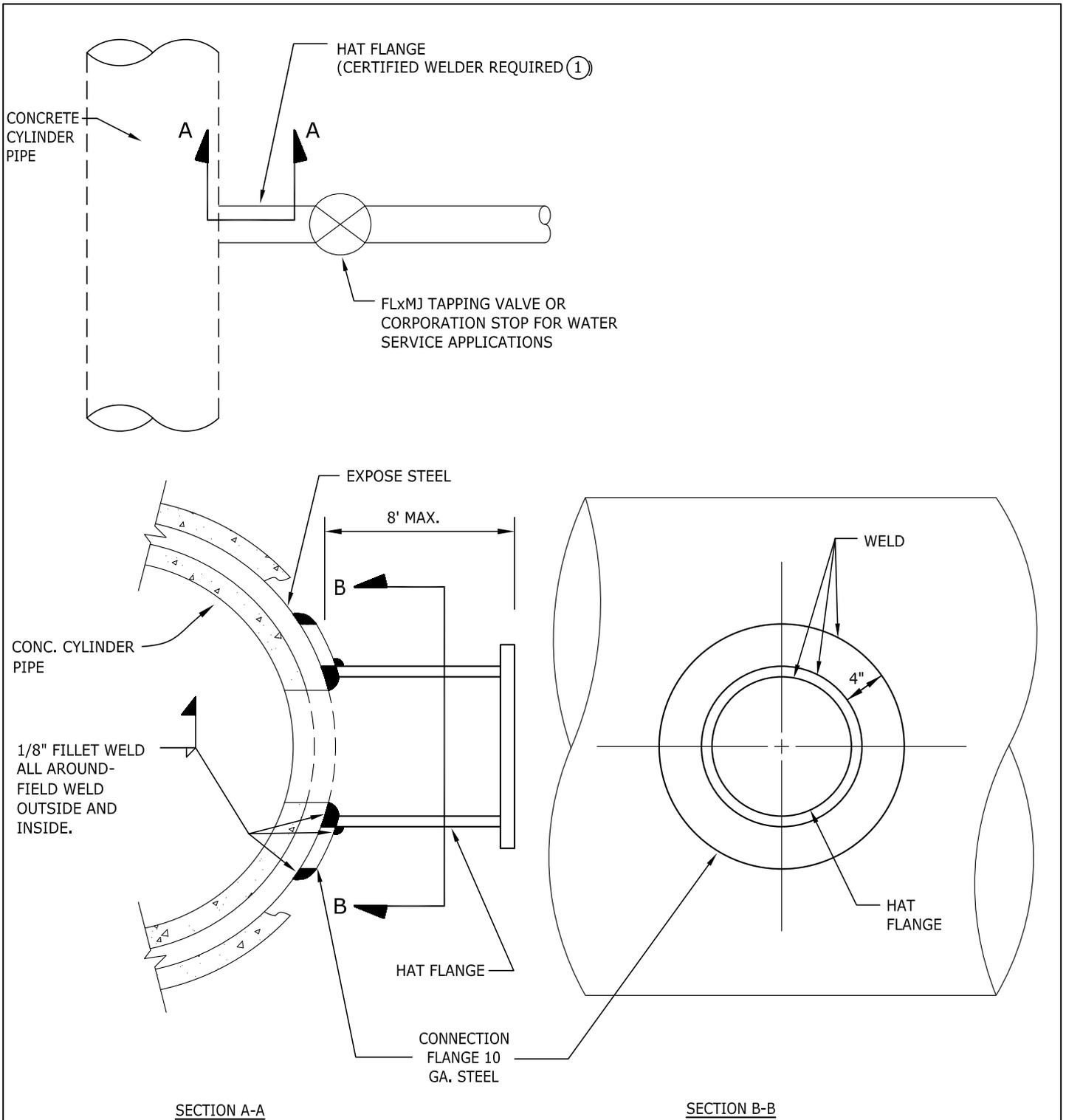
NOTES:

- FOR USE ON PRIVATE PROPERTY.
- THE FOG TITE INC. VALVE MARKER POST WITH THE "WATER" LEGEND IS THE PRE-APPROVED PRODUCT. ALL OTHERS REQUIRE THE WRITTEN APPROVAL OF THE ENGINEER PRIOR TO INSTALLATION.

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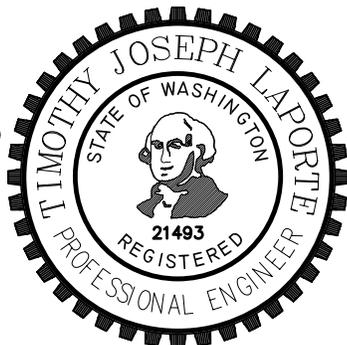


		CITY OF KENT ENGINEERING DEPARTMENT	
		VALVE MARKER POST	
DESIGNED: DMW	SCALE: NONE	STANDARD PLAN 3-4	
DRAWN: BB	DATE: _____		
CHECKED: _____	ENGINEER		
APPROVED: _____			



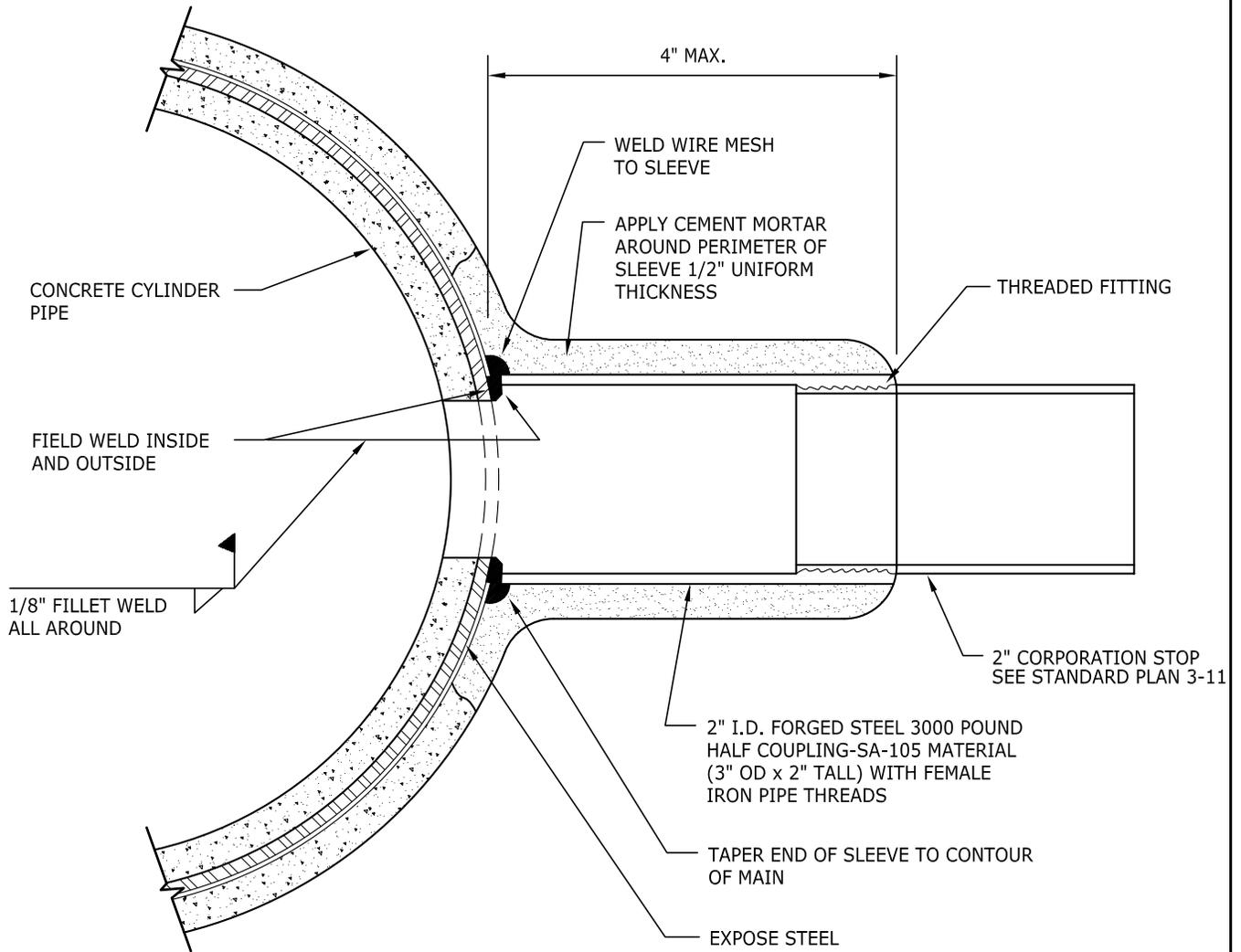
NOTES:

- ① CERTIFIED WELDER SHALL BE PRE-APPROVED BY THE CITY OF KENT WATER DEPARTMENT.
2. FLANGE & VALVE TO BE PRE-APPROVED BY THE CITY OF KENT.
3. APPLY CEMENT MORTAR TO COVER ALL EXPOSED STEEL. (1/2" UNIFORM THICKNESS) EXCEPT THE BOLTED FLANGE AREA.



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		CITY OF KENT ENGINEERING DEPARTMENT	
		CONNECTION TO CONCRETE CYLINDER MAIN (4" TO 12")	
DESIGNED	DMW	SCALE	NONE
DRAWN	BB	DATE	
CHECKED			
APPROVED		ENGINEER	
			3-5



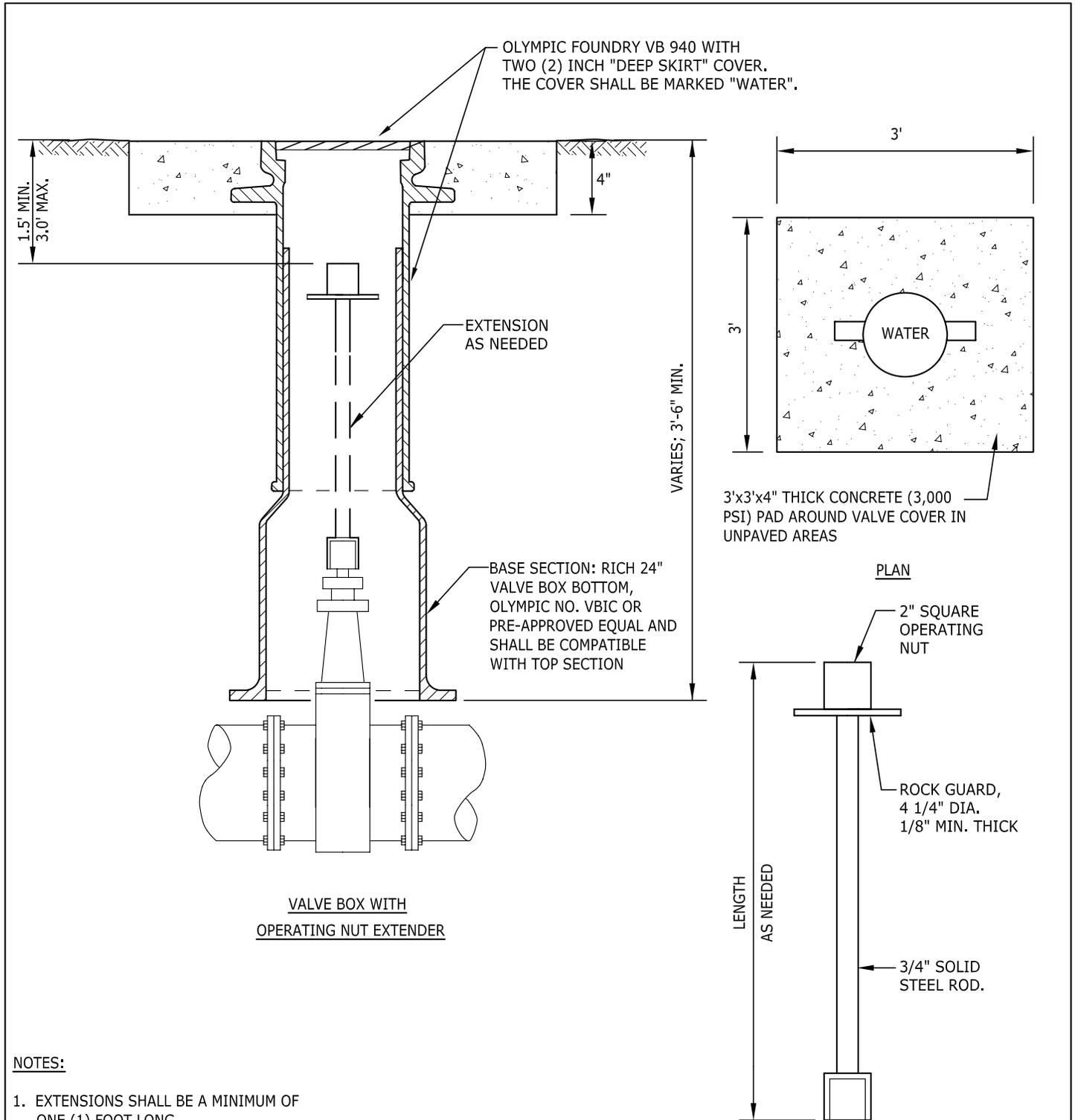
NOTE:

CERTIFIED WELDER SHALL BE PRE-APPROVED BY THE CITY OF KENT WATER DEPARTMENT.

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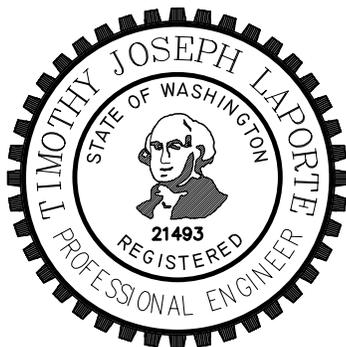


		CITY OF KENT ENGINEERING DEPARTMENT	
		2" CONNECTION TO CONCRETE CYLINDER MAIN	
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	STANDARD PLAN 3-6	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____		
APPROVED _____			



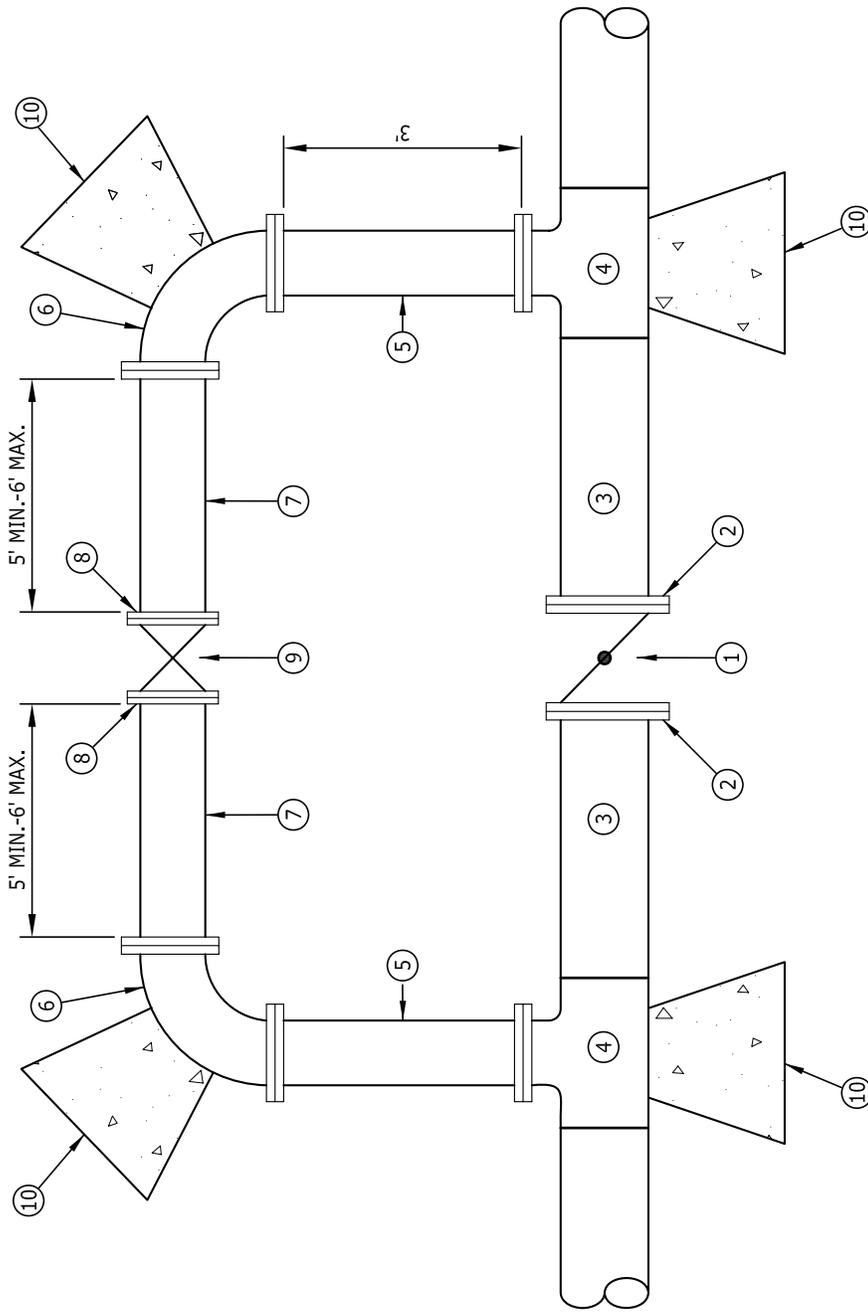
NOTES:

1. EXTENSIONS SHALL BE A MINIMUM OF ONE (1) FOOT LONG.
2. EXTENSIONS SHALL BE SIZED AS NEEDED, AND PAINTED WITH TWO (2) COATS OF METAL PAINT.
3. EARS, LUGS OR STAINLESS CAP SCREWS ON COVER SHALL BE ALIGNED WITH DIRECTION OF WATER FLOW.
4. FOR ADDITIONAL REQUIREMENTS AND USE SEE WSDOT STD. SPECIFICATIONS SECTION 3.19
5. VALVE BOX SHALL BE CENTERED OVER 2" SQUARE OPERATING NUT.

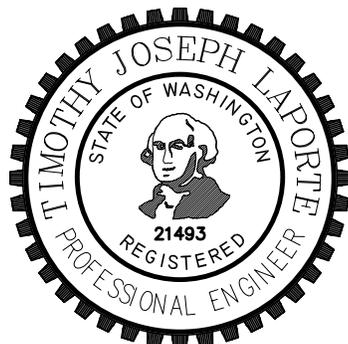


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		CITY OF KENT ENGINEERING DEPARTMENT	
		VALVE BOX AND OPERATING NUT EXTENDER	
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	STANDARD PLAN 3-7	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____		
APPROVED _____			



- ① 18" OR GREATER BUTTERFLY VALVE FLxFL OPERATOR ON OPPOSITE SIDE OF BY-PASS CENTER BUTTERFLY VALVE BETWEEN TEE'S.
- ② FLxMJ ADAPTER WITH MEGA LUG FOLLOWERS.
- ③ DI PIPE, LENGTH AS NEEDED.
- ④ X"x6" TEE M3xFL WITH MEGA LUG FOLLOWERS.
- ⑤ 3'-6"Ø SPOOL FLxMJ.
- ⑥ 6" 90° BEND FLxFL.
- ⑦ 6" FL x PE SPOOL.
- ⑧ 6" FLxMJ ADAPTER WITH MEGA LUG FOLLOWERS.
- ⑨ 6" GATE VALVE FLxFL.
- ⑩ THRUST BLOCKING.

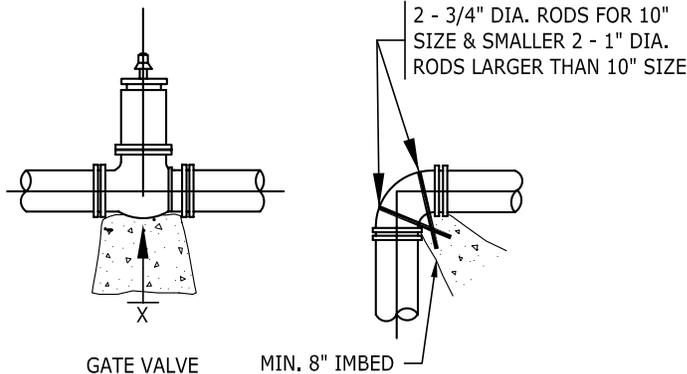


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		CITY OF KENT ENGINEERING DEPARTMENT	
		18" OR GREATER VALVE BY-PASS	
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	STANDARD PLAN 3-8	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____		
APPROVED _____			

THRUST BLOCK - TABLE							
PIPE SIZE	PRESSURE PSI	MINIMUM BEARING AREA AGAINST UNDISTURBED SOIL SQUARE FEET					
		A	B	C	D	E	X (100 PSI)
4"	200	2/(1)	1/(NONE)	1/(NONE)	NONE	NONE	NONE
	300	3/(2)	2/(2)	2/(1)	1/(1)	NONE	NONE
6"	200	4/(3)	3/(2)	3/(1)	1/(1)	1/(NONE)	NONE
	300	6/(4)	4/(3)	3/(2)	2/(1)	1/(NONE)	NONE
8"	200	7/(5)	5/(3)	4/(3)	2/(2)	1/(1)	3/(2)
	300	11/(8)	8/(5)	6/(4)	3/(2)	2/(1)	
10"	200	11/(8)	8/(6)	6/(4)	3/(2)	2/(1)	4/(3)
	275	16/(11)	11/(7)	9/(6)	5/(3)	3/(2)	
12"	200	16/(11)	11/(8)	9/(6)	5/(3)	3/(2)	5/(4)
	250	24/(16)	17/(11)	13/(9)	7/(5)	4/(3)	
14"	200	22/(13)	16/(11)	12/(8)	6/(4)	3/(2)	7/(6)
	250	33/(22)	23/(16)	18/(12)	9/(6)	5/(3)	
16"	200	29/(19)	21/(14)	16/(11)	8/(6)	5/(3)	10/(7)
	225	32/(21)	23/(16)	17/(12)	9/(6)	5/(3)	
18"	200	36/(24)	26/(17)	20/(13)	10/(7)	5/(4)	13/(9)
20"	200	45/(29)	32/(21)	24/(16)	13/(8)	7/(4)	16/(11)
24"	200	64/(43)	46/(30)	35/(23)	18/(12)	9/(6)	23/(16)

NOTE: ADDITIONAL BLOCKING MUST BE PROVIDED IF GATE VALVE IS AT END OF LINE DURING TESTING. ADDITIONAL BLOCKING SHALL ALSO BE PROVIDED UNDER TEES AND CROSSES.

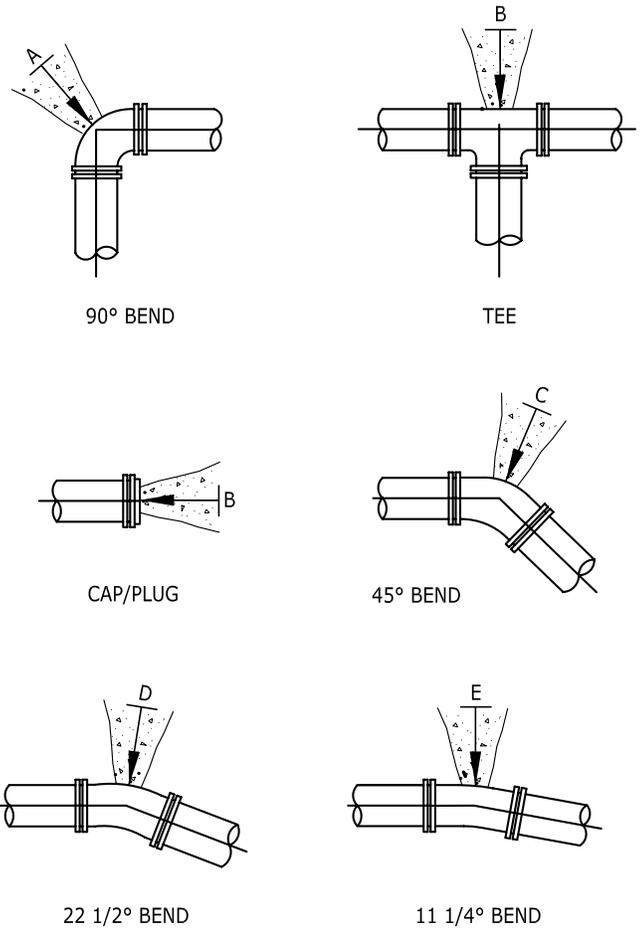


SAFE BEARING LOADS IN LB./SQ. FT.
THE SAFE BEARING LOADS GIVEN IN THE FOLLOWING TABLE ARE FOR HORIZONTAL THRUSTS WHEN THE DEPTH OF COVER OVER THE PIPE EXCEEDS 2 FEET.

<u>SOIL</u>	<u>SAFE BEARING LOAD</u> LB. PER SQ. FT.
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* MUCK, PEAT, ETC.	0
SOFT CLAY	1,000
SAND	2,000
SAND & GRAVEL	3,000
SAND & GRAVEL	3,000
CEMENTED WITH CLAY	4,000
HARD SHALE	10,000

* IN MUCK OR PEAT, ALL THRUSTS SHALL BE RESTRAINED BY PILES OR TIE RODS TO SOLID FOUNDATIONS OR BY REMOVAL OF MUCK OR PEAT AND REPLACEMENT WITH BALLAST OF SUFFICIENT STABILITY TO RESIST THRUST.

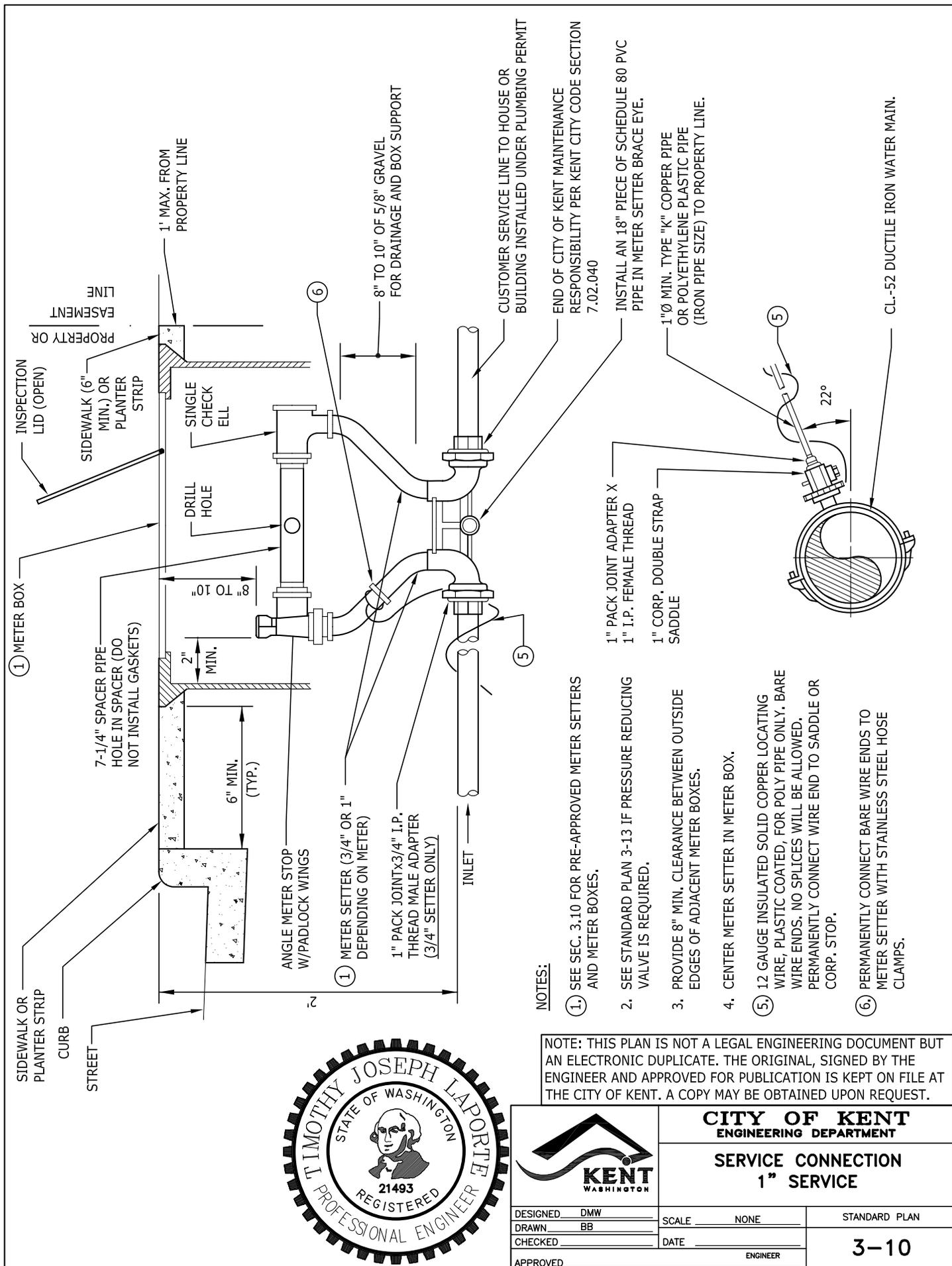


NOTES:

1. SQUARE FEET OF CONCRETE THRUSTS - BLOCK AREA BASED ON SAFE BEARING LOAD OF 2000/(3000) POUNDS PER SQUARE FOOT.
2. AREAS MUST BE ADJUSTED FOR OTHER SIZE PIPE, PRESSURES & SOIL CONDITIONS.
3. CONCRETE BLOCKING SHALL BE CAST IN PLACE, CLASS 3,000 & HAVE MINIMUM OF 1/4 SQUARE FOOT BEARING AGAINST THE FITTING. VALVES MAY ALSO BE SUPPORTED WITH 10"x10"x4" CONCRETE CINDER BLOCKS WITH COMPOSITE SHIMS.
4. BLOCK SHALL BEAR AGAINST FITTINGS ONLY & SHALL BE CLEAR OF JOINTS TO PERMIT TAKING UP OR DISMANTLING JOINT.
5. CONTRACTOR SHALL INSTALL BLOCKING ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.
6. WRAP WATER MAIN WITH 4 MIL POLYETHYLENE SHEETING IN AREA OF THRUST BLOCK.

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		CITY OF KENT ENGINEERING DEPARTMENT	
		CONCRETE BLOCKING	
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	STANDARD PLAN	
DRAWN <u>BB</u>	DATE _____	3-9	
CHECKED _____	ENGINEER _____		
APPROVED _____			

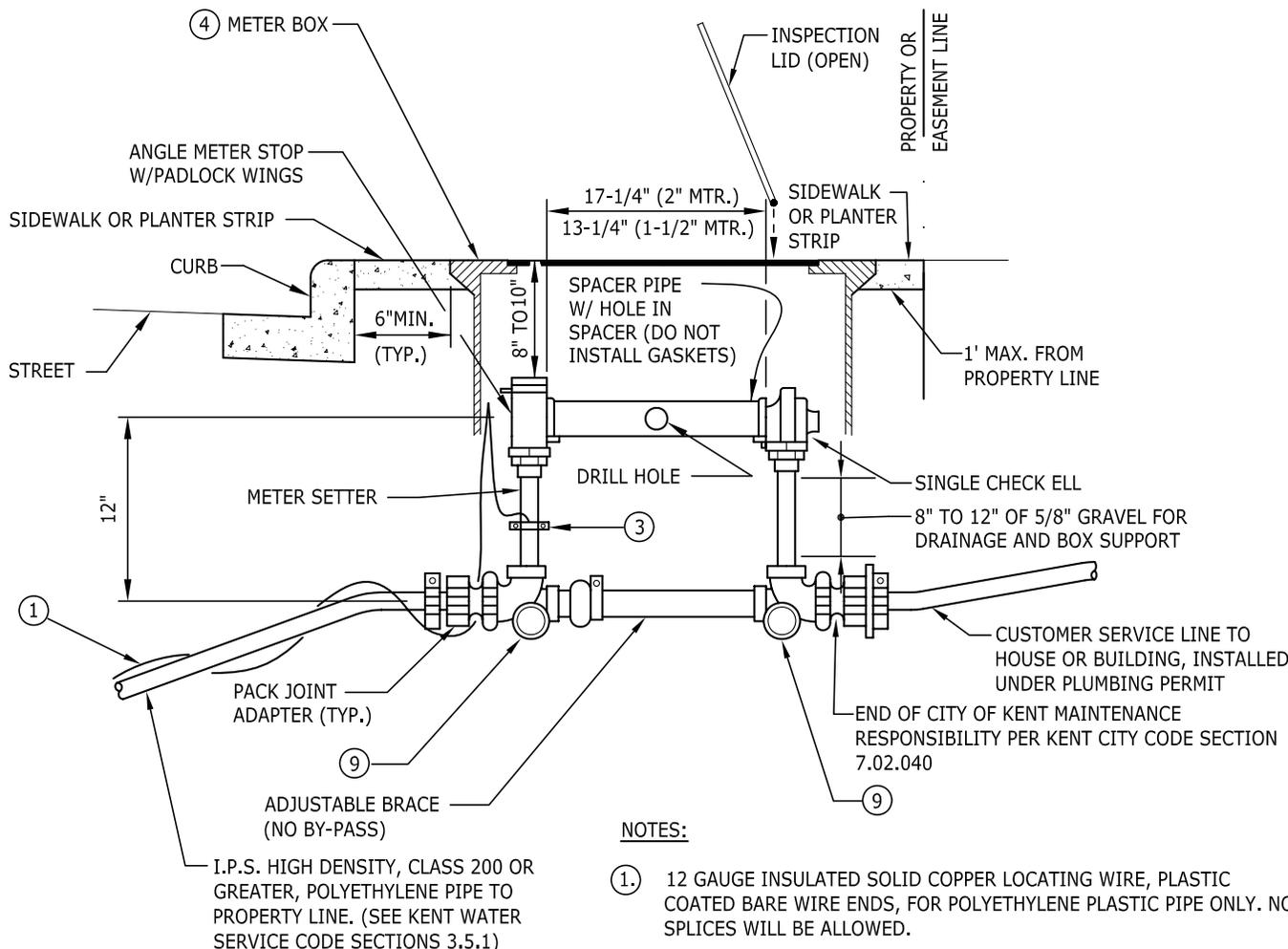


- NOTES:
- SEE SEC. 3.10 FOR PRE-APPROVED METER SETTERS AND METER BOXES.
 - SEE STANDARD PLAN 3-13 IF PRESSURE REDUCING VALVE IS REQUIRED.
 - PROVIDE 8" MIN. CLEARANCE BETWEEN OUTSIDE EDGES OF ADJACENT METER BOXES.
 - CENTER METER SETTER IN METER BOX.
 - 12 GAUGE INSULATED SOLID COPPER LOCATING WIRE, PLASTIC COATED, FOR POLY PIPE ONLY. BARE WIRE ENDS. NO SPLICES WILL BE ALLOWED. PERMANENTLY CONNECT WIRE END TO SADDLE OR CORP. STOP.
 - PERMANENTLY CONNECT BARE WIRE ENDS TO METER SETTER WITH STAINLESS STEEL HOSE CLAMPS.

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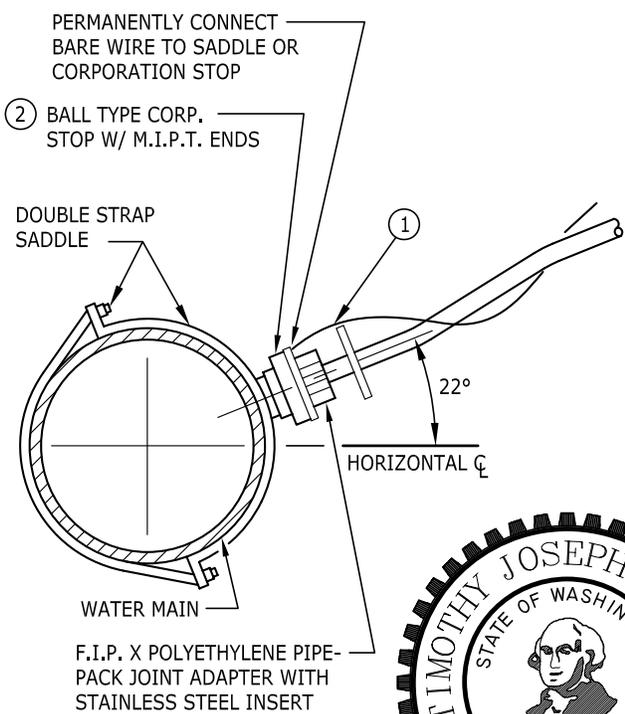


		CITY OF KENT ENGINEERING DEPARTMENT	
		SERVICE CONNECTION 1" SERVICE	
DESIGNED	DMW	SCALE	NONE
DRAWN	BB	DATE	
CHECKED		ENGINEER	
APPROVED		3-10	

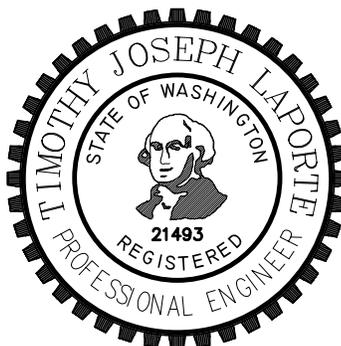


NOTES:

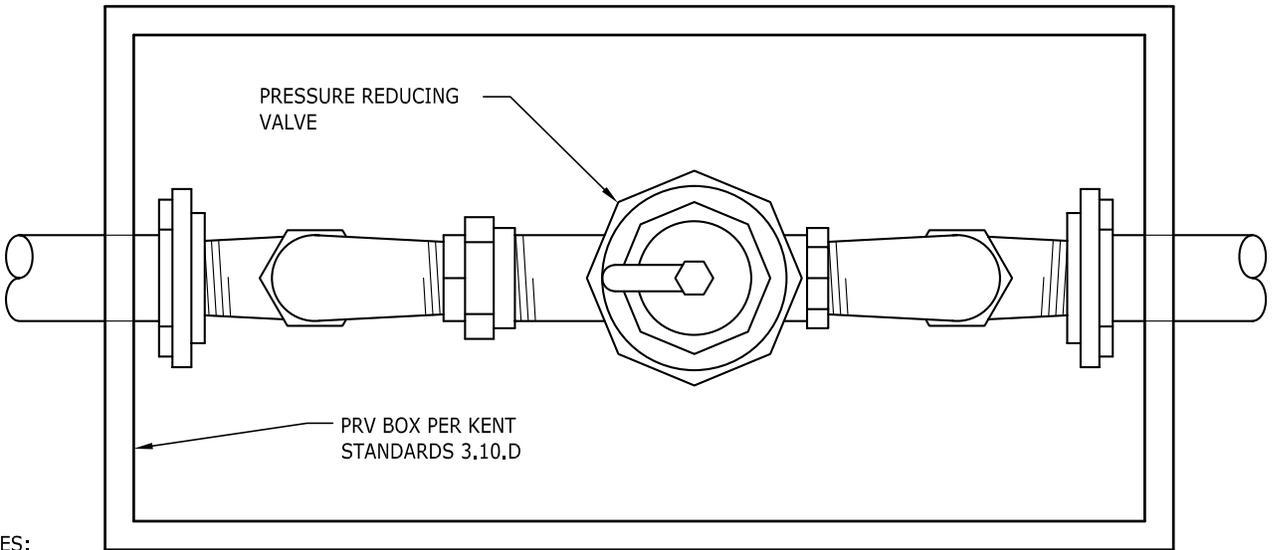
- ① 12 GAUGE INSULATED SOLID COPPER LOCATING WIRE, PLASTIC COATED BARE WIRE ENDS, FOR POLYETHYLENE PLASTIC PIPE ONLY. NO SPLICES WILL BE ALLOWED.
- ② FORD NO. FB-500 CORPORATION STOP OR APPROVED EQUAL.
- ③ PERMANENTLY CONNECT BARE WIRE ENDS TO METER SETTER WITH STAINLESS STEEL HOSE CLAMPS.
- ④ SEE SEC. 3.10 FOR PRE-APPROVED METER SETTERS AND METER BOXES.
- 5. SEE STANDARD PLAN 3-13 IF PRESSURE REDUCING VALVE IS REQUIRED.
- 6. PROVIDE 8" CLEARANCE BETWEEN OUTSIDE EDGES OF ADJACENT METER BOXES.
- 7. CENTER METER SETTER IN METER BOX.
- 8. REDUCERS INSIDE SETTERS ARE NOT ALLOWED.
- ⑨ INSTALL AN 18" PIECE OF SCHEDULE 40 PVC PIPE IN EACH OF THE METER SETTER BRACE EYES.



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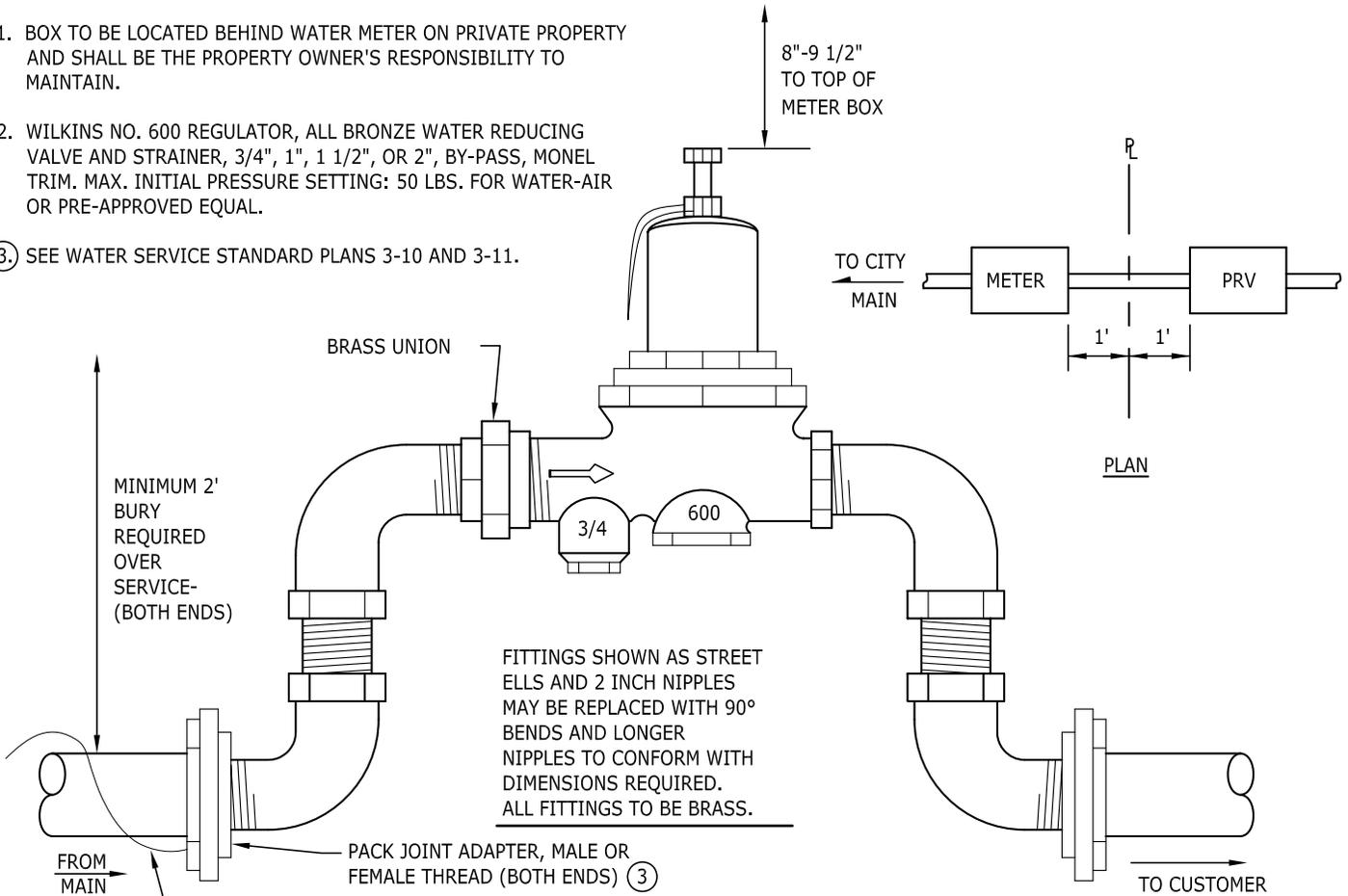


		CITY OF KENT ENGINEERING DEPARTMENT	
		SERVICE CONNECTION 1-1/2" & 2" SERVICE	
DESIGNED: DMW	SCALE: NONE	STANDARD PLAN 3-11	
DRAWN: BB	DATE: _____		
CHECKED: _____	ENGINEER: _____		
APPROVED: _____			



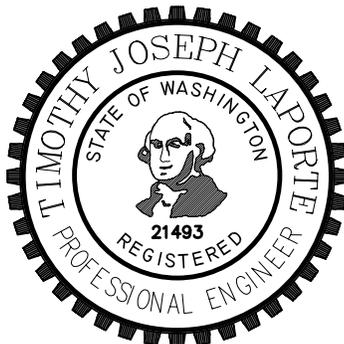
NOTES:

1. BOX TO BE LOCATED BEHIND WATER METER ON PRIVATE PROPERTY AND SHALL BE THE PROPERTY OWNER'S RESPONSIBILITY TO MAINTAIN.
2. WILKINS NO. 600 REGULATOR, ALL BRONZE WATER REDUCING VALVE AND STRAINER, 3/4", 1", 1 1/2", OR 2", BY-PASS, MONEL TRIM. MAX. INITIAL PRESSURE SETTING: 50 LBS. FOR WATER-AIR OR PRE-APPROVED EQUAL.
3. SEE WATER SERVICE STANDARD PLANS 3-10 AND 3-11.

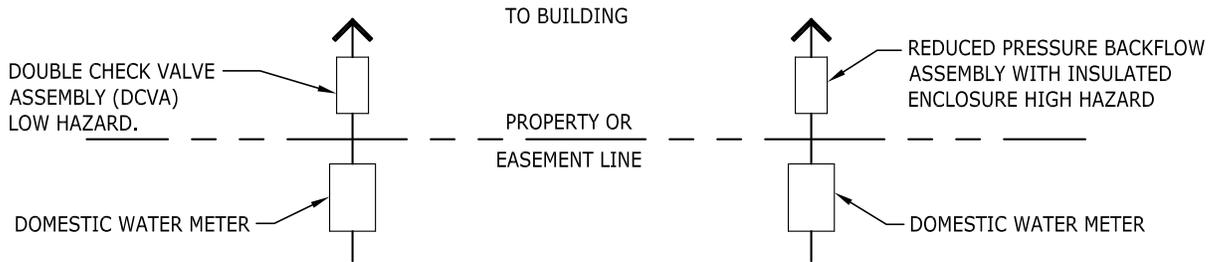


FITTINGS SHOWN AS STREET ELLS AND 2 INCH NIPPLES MAY BE REPLACED WITH 90° BENDS AND LONGER NIPPLES TO CONFORM WITH DIMENSIONS REQUIRED. ALL FITTINGS TO BE BRASS.

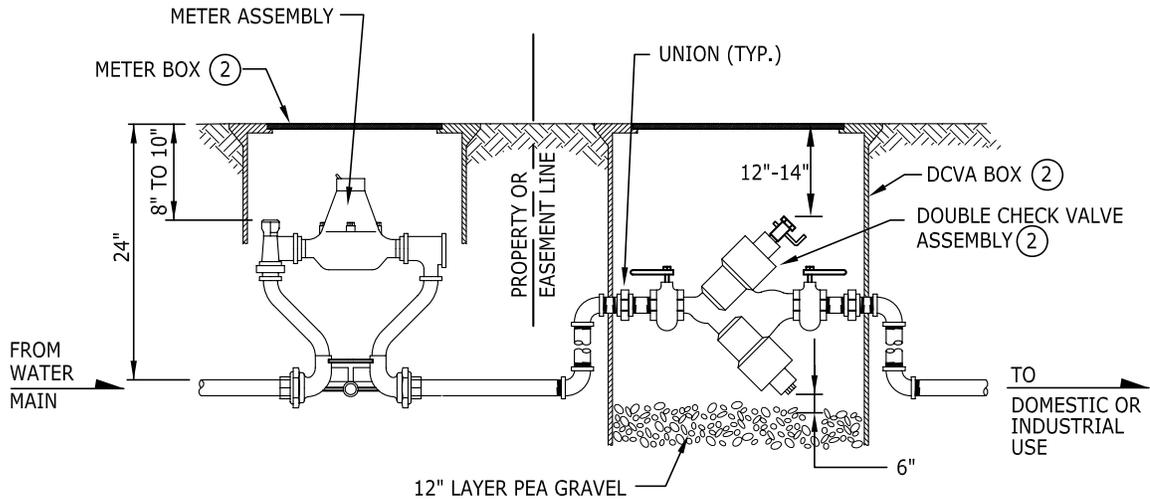
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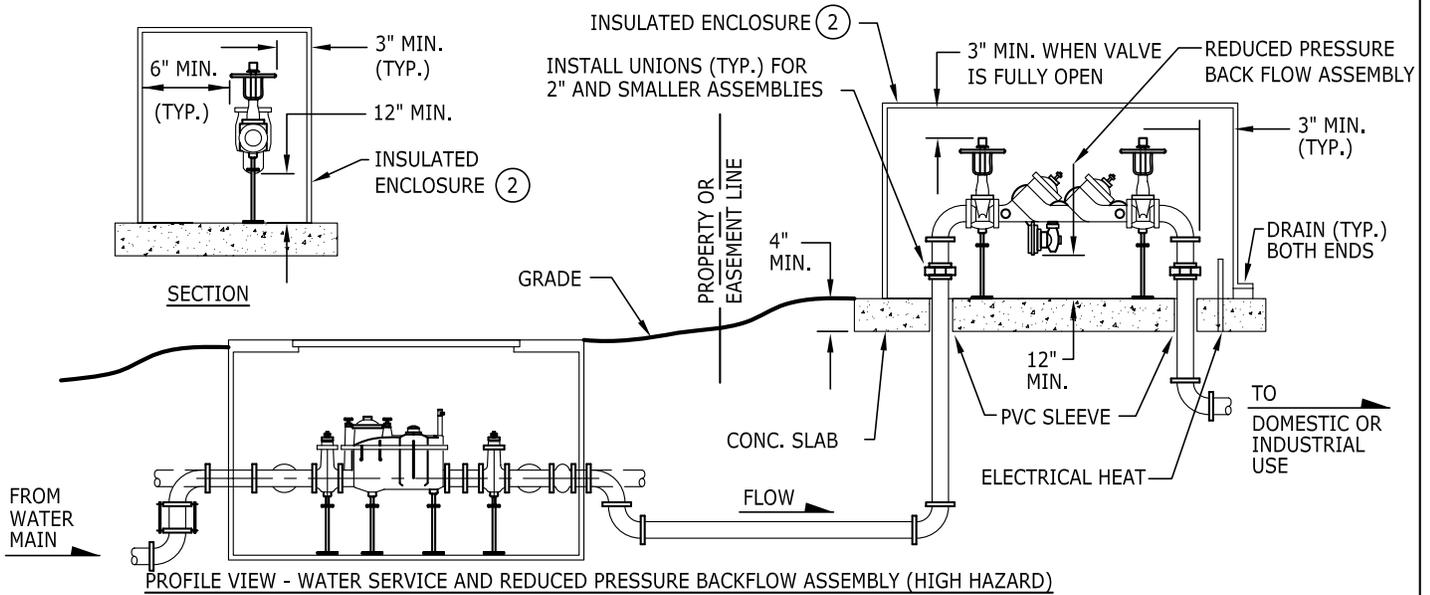
		CITY OF KENT	
		ENGINEERING DEPARTMENT	
PRESSURE REDUCING VALVE WITH BOX FOR 3/4", 1", 1-1/2", OR 2" SERVICE LINES			
DESIGNED	DMW	SCALE	NONE
DRAWN	BB	DATE	
CHECKED			
APPROVED			ENGINEER
			3-13



PLAN VIEW - TYPICAL INSTALLATION



PROFILE VIEW - WATER SERVICE AND DOUBLE CHECK VALVE ASSEMBLY (LOW HAZARD)



PROFILE VIEW - WATER SERVICE AND REDUCED PRESSURE BACKFLOW ASSEMBLY (HIGH HAZARD)

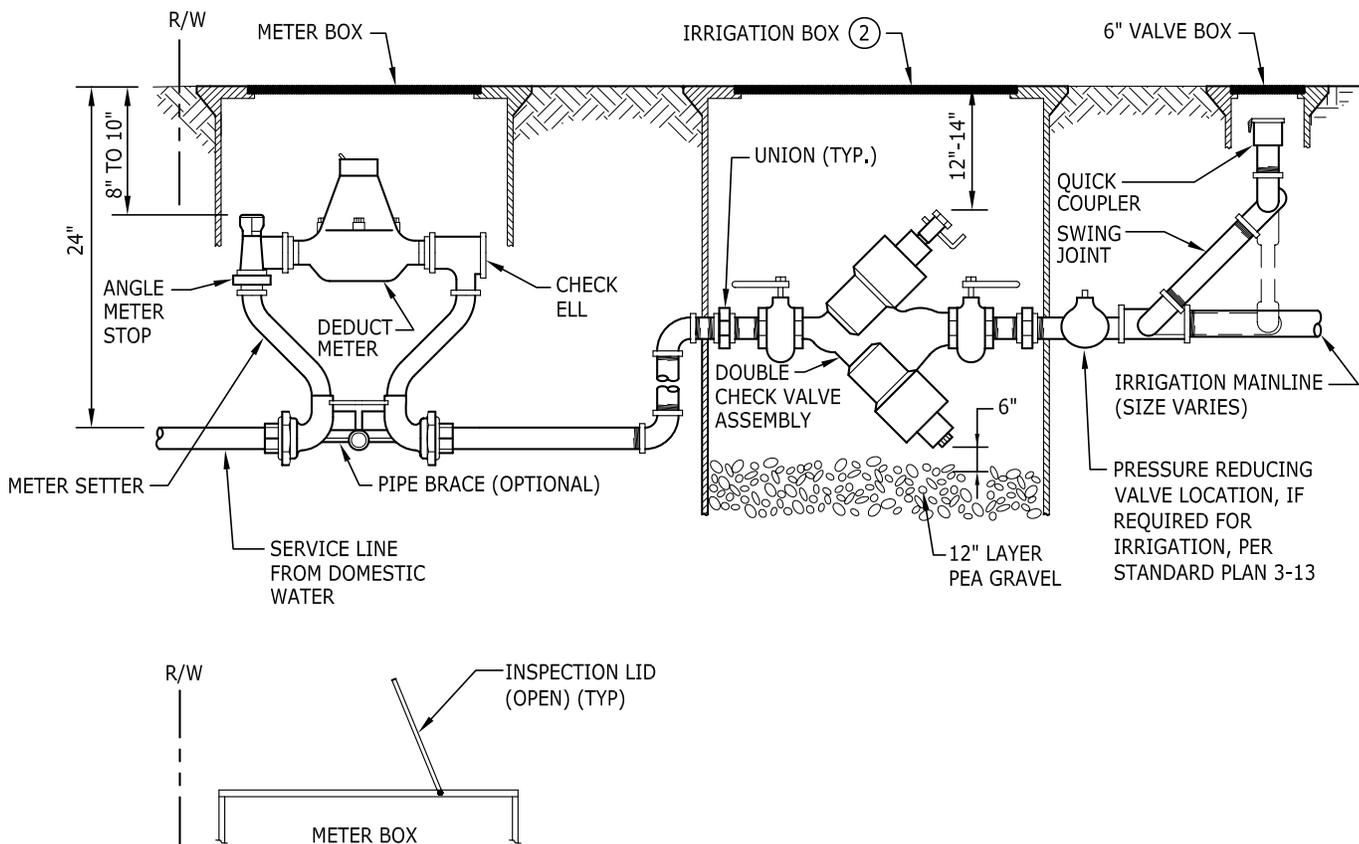
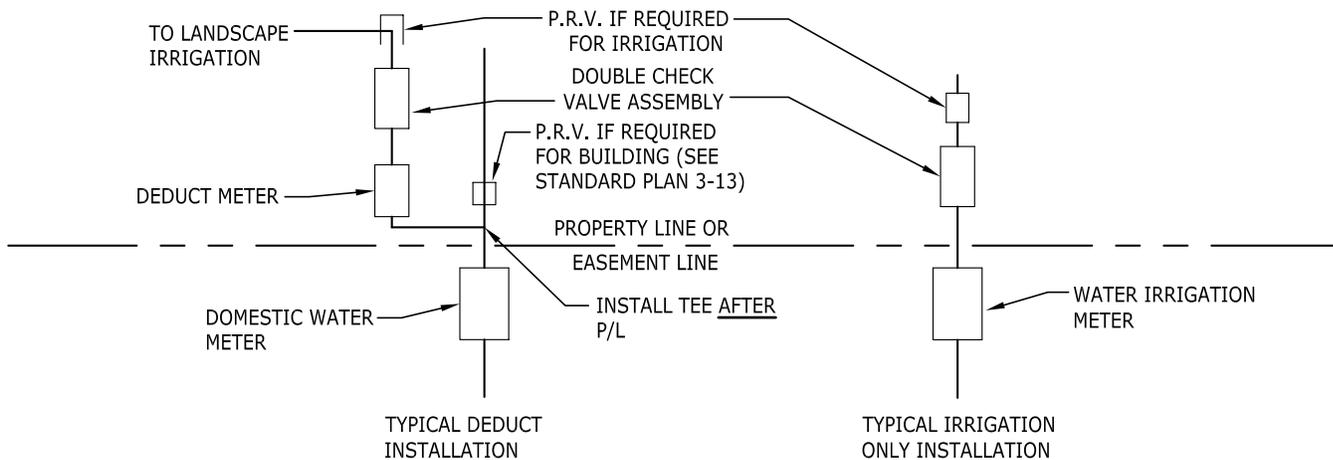
NOTES:

1. DRAWINGS ARE ILLUSTRATIONS ONLY. SIZE OF METER AND BACKFLOW PREVENTER SHALL BE PER THE APPROVED PLANS.
2. BOXES OR VAULTS SHALL PER SECTION 3.10.
3. INSULATED ENCLOSURES SHALL ALLOW MINIMUM CLEARANCES.
4. BACKFLOW PREVENTION SHALL BE PER SECTION 3.16.



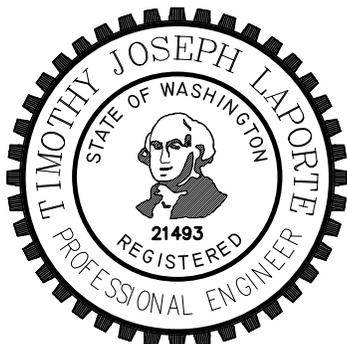
NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE ORIGINAL, SIGNED BY THE ENGINEER AND APPROVED FOR PUBLICATION IS KEPT ON FILE AT THE CITY OF KENT. A COPY MAY BE OBTAINED UPON REQUEST.

		CITY OF KENT	
		ENGINEERING DEPARTMENT	
DOMESTIC SERVICE CONNECTION PREMISE ISOLATION			
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	3-14	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____		
APPROVED _____			



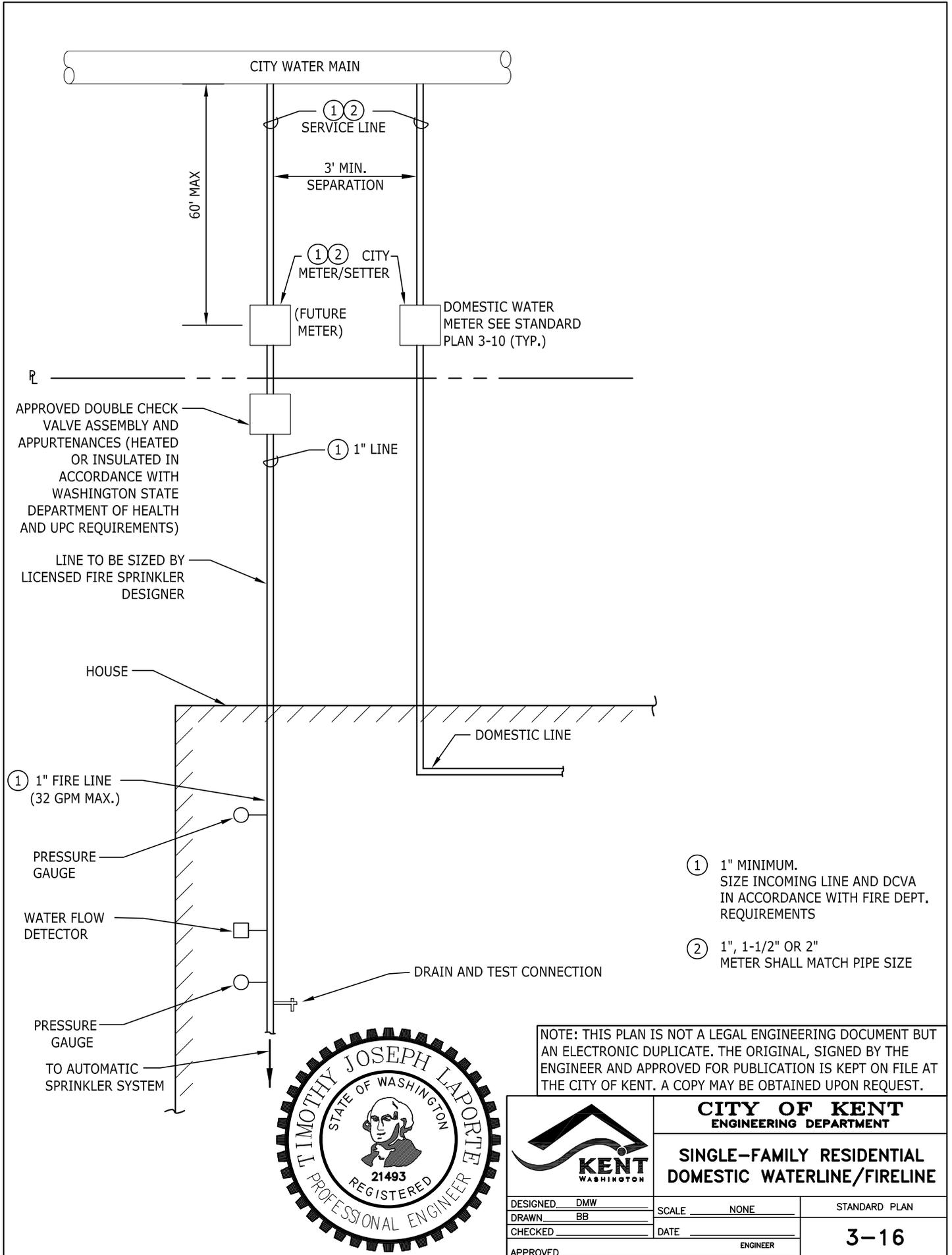
NOTES:

1. DRAWINGS ARE ILLUSTRATIONS ONLY. SIZE OF METER AND BACKFLOW PREVENTER SHALL BE PER THE APPROVED PLANS
2. BOXES OR VAULTS SHALL BE PER SECTION 3.10.
3. BACKFLOW PREVENTION SHALL BE PER SECTION 3.16.
4. FOR IRRIGATION USE ONLY INSTALLATION. THE DCVA AND IRRIGATION BOX SHALL BE INSTALLED PRIOR TO THE METER BEING SET. THE DCVA CAN BE CERTIFIED AFTER INSTALLATION OF THE METER.



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		CITY OF KENT ENGINEERING DEPARTMENT	
		IRRIGATION SERVICE INSTALLATION	
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	3-15	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____	STANDARD PLAN	
APPROVED _____			

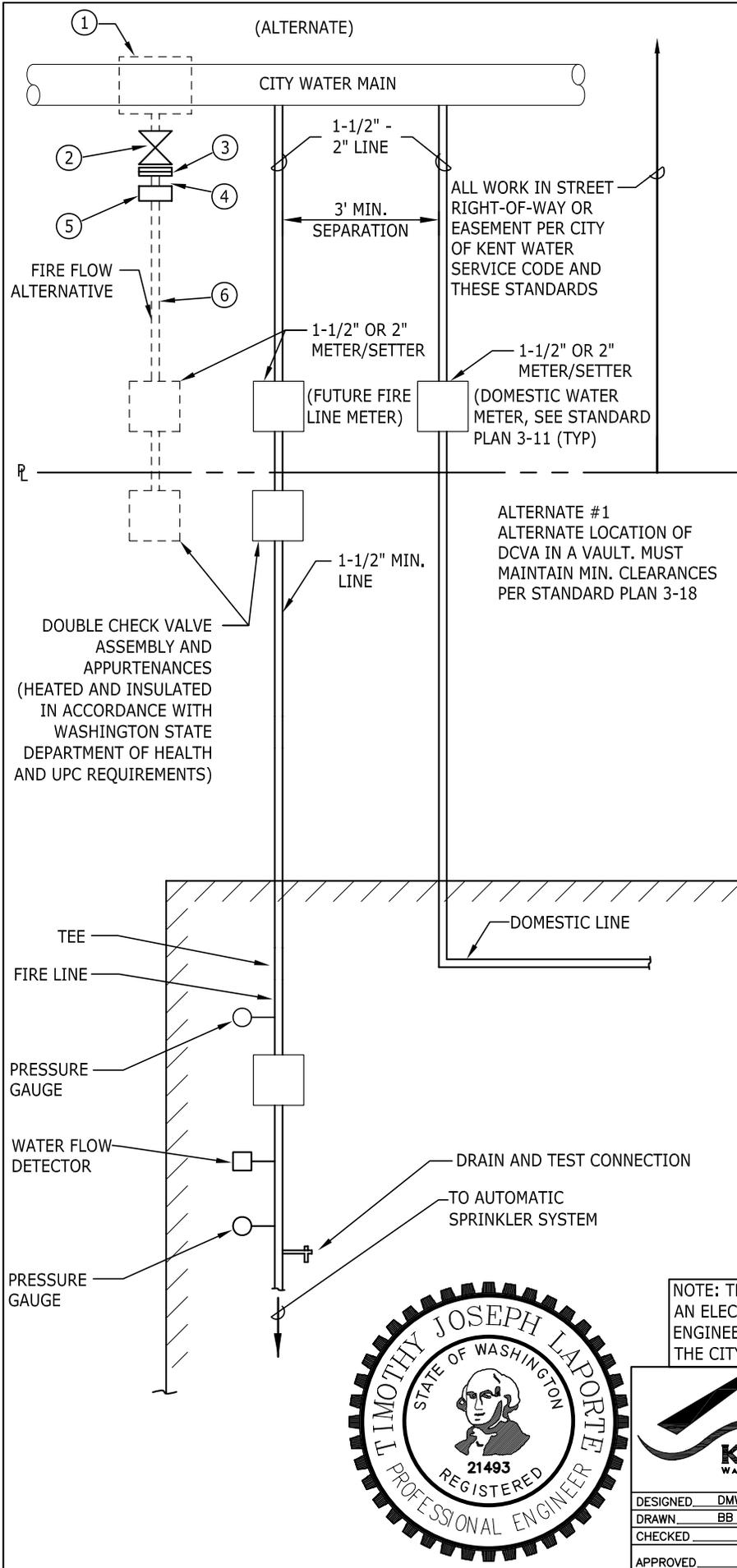


- ① 1" MINIMUM. SIZE INCOMING LINE AND DCVA IN ACCORDANCE WITH FIRE DEPT. REQUIREMENTS
- ② 1", 1-1/2" OR 2" METER SHALL MATCH PIPE SIZE

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		CITY OF KENT ENGINEERING DEPARTMENT	
		SINGLE-FAMILY RESIDENTIAL DOMESTIC WATERLINE/FIRELINE	
DESIGNED: <u>DMW</u>	SCALE: <u>NONE</u>	3-16	
DRAWN: <u>BB</u>	DATE: _____		
CHECKED: _____	ENGINEER: _____	STANDARD PLAN	
APPROVED: _____			



NOTE:

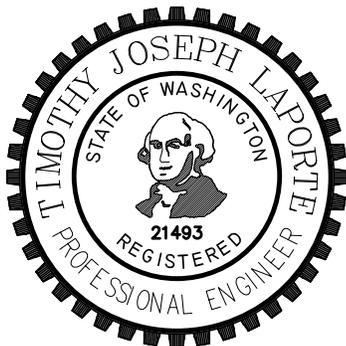
ALL MATERIALS, CONSTRUCTION, APPARATUS, CONNECTIONS AND APPURTENANCES SHALL BE IN ACCORDANCE WITH KENT CITY CODES, STANDARDS AND DETAILS

FIRE LINE SYSTEMS EXCEEDING FLOW RATES OF 2 INCH DOMESTIC WATER METER, SHALL BE REQUIRED TO USE DOUBLE DETECTOR CHECK VALVE ASSEMBLIES PER STANDARD PLAN 3-18.

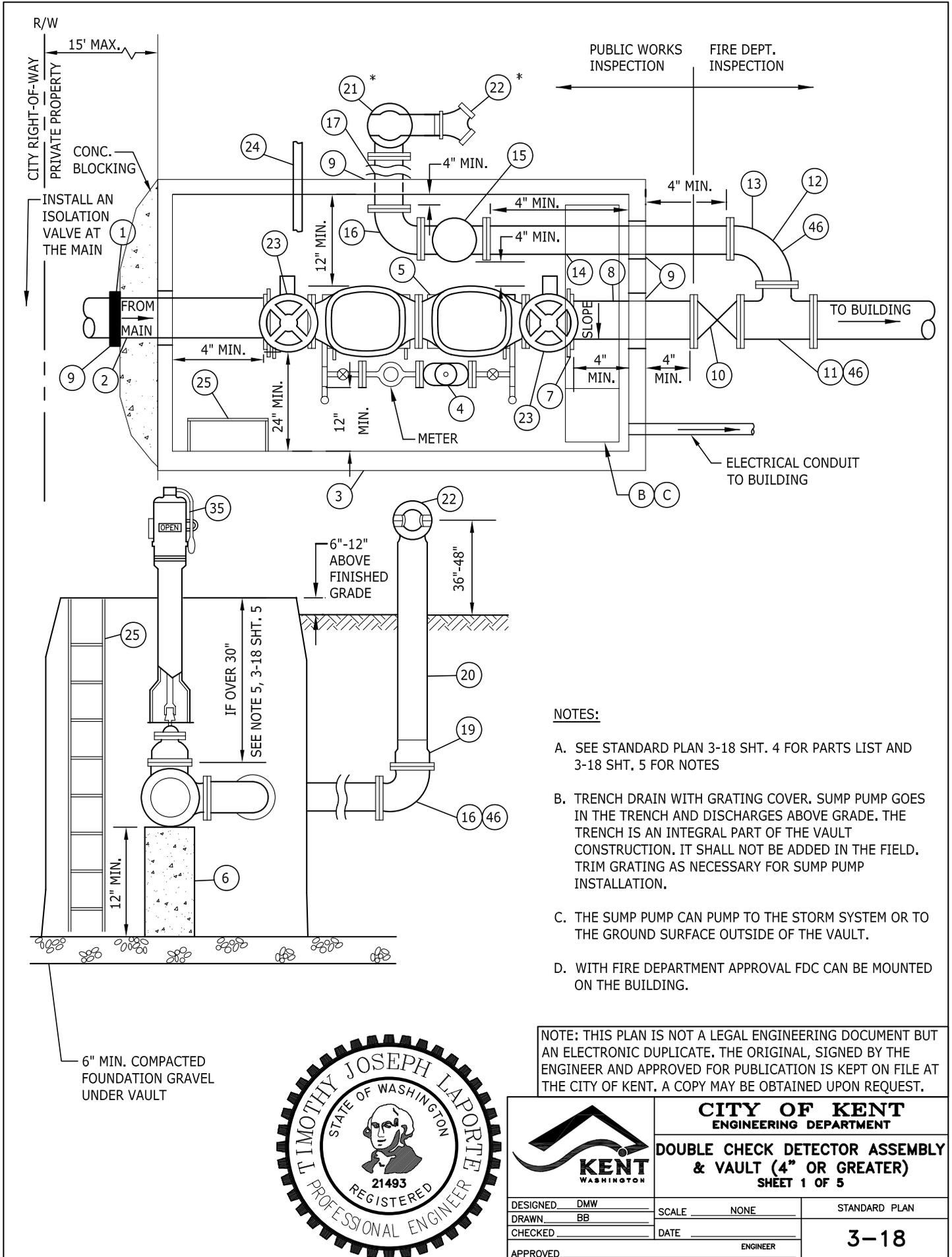
FOR SERVICES LARGER THAN 2"

- 1. WET TAPPING SLEEVE (FL) ON EXISTING MAIN, OR 4" TEE (FL) ON NEW MAIN
- 2. 4" RESILIENT WEDGE GATE VALVE (FLxFL)
- 3. 4" REDUCER COMPANION (FL W/ 2" TAP)
- 4. 2" NIPPLE, BRASS M.I.P.T.xM.I.P.T.
- 5. 2" FEMALE IP THREAD x 2" PACK JOINT ADAPTER
- 6. 2" HDPE
- 7. 1-1/2" MINIMUM, OR SIZE INCOMING LINE AND DCVA IN ACCORDANCE WITH FIRE DEPT. REQUIREMENTS. ACCESS TO DOUBLE CHECK HAS TO BE APPROVED
- 8. SPRINKLER SYSTEMS WITH 20 HEADS OR MORE REQUIRE A FIRE DEPT. CONNECTION CHECK VALVE ASSEMBLY
- 9. OUTSIDE LOCATION REQUIRES APPROVAL OF UNDERGROUND FIRELINE PLAN

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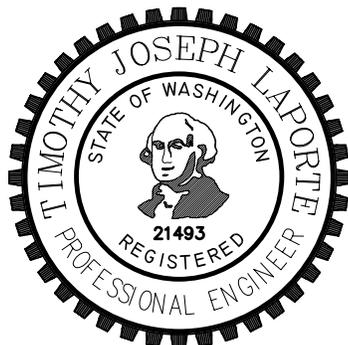
		CITY OF KENT ENGINEERING DEPARTMENT	
		MULT-FAMILY RESIDENTIAL DOMESTIC WATERLINE/FIRELINE	
DESIGNED: DMW	SCALE: NONE	STANDARD PLAN	
DRAWN: BB	DATE: _____	3-17	
CHECKED: _____	ENGINEER: _____		
APPROVED: _____			



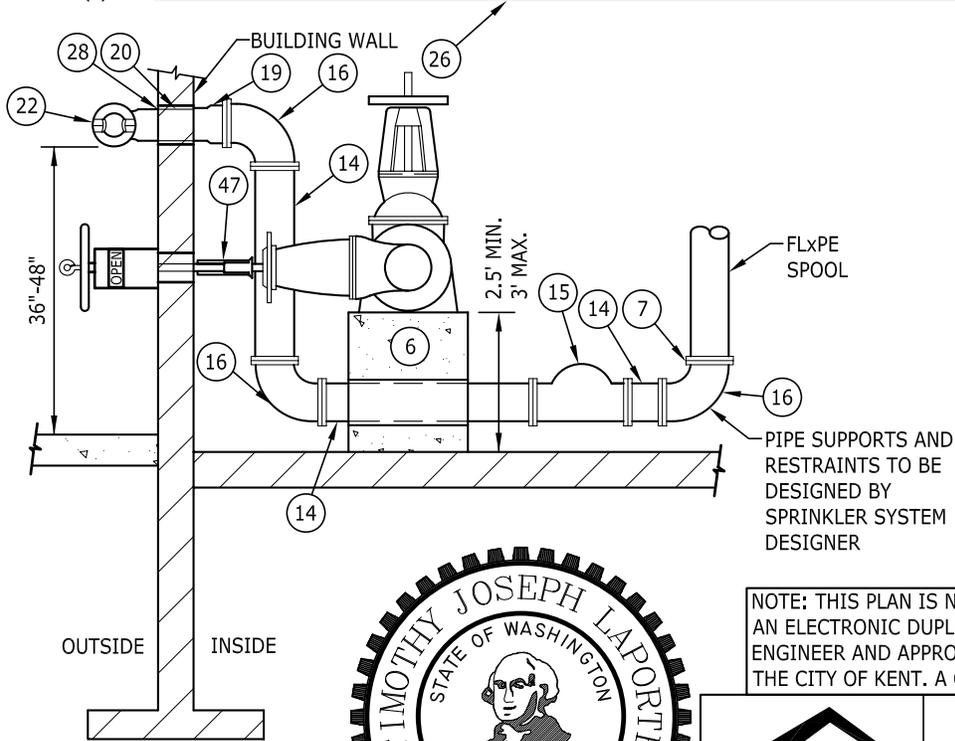
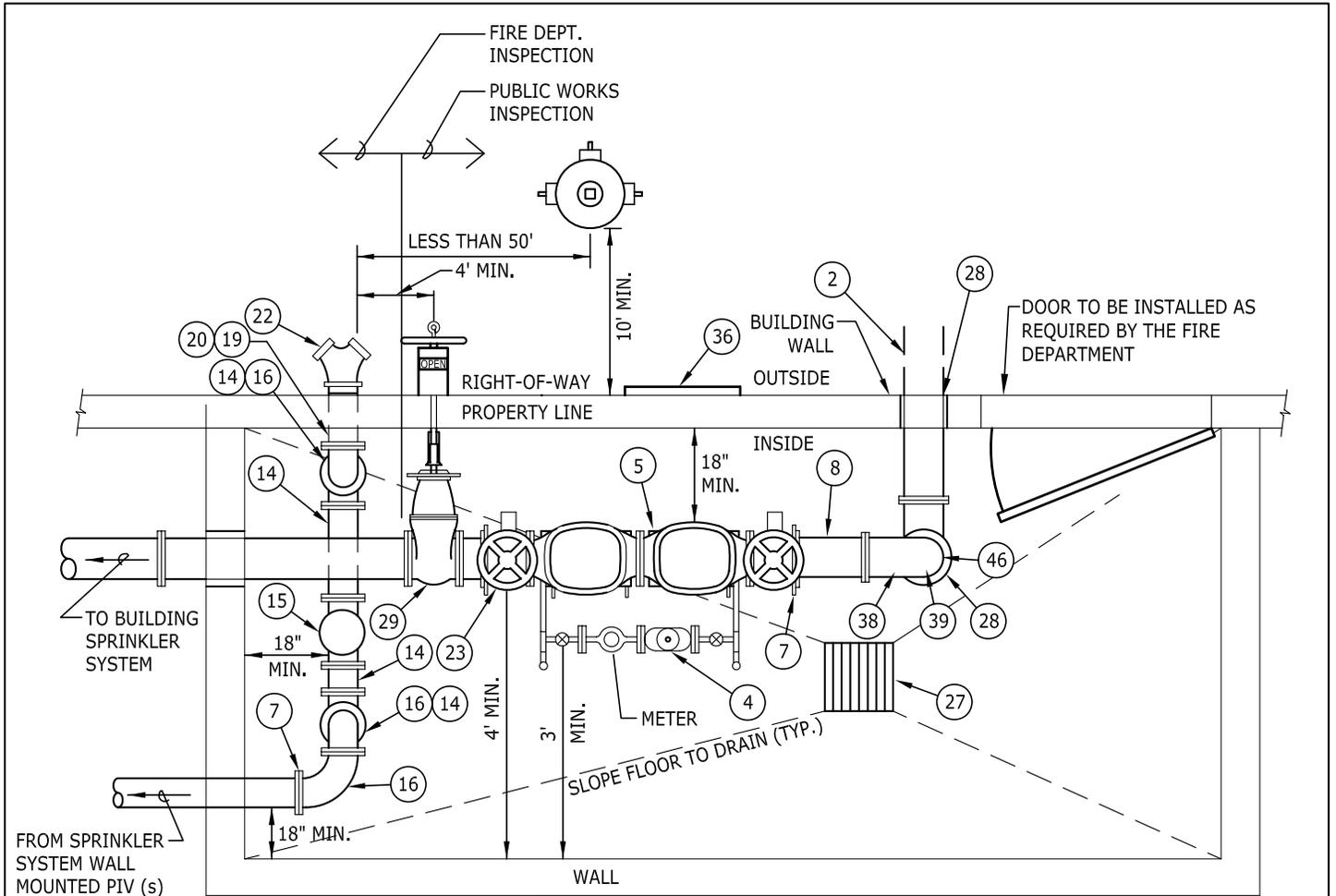
NOTES:

- A. SEE STANDARD PLAN 3-18 SHT. 4 FOR PARTS LIST AND 3-18 SHT. 5 FOR NOTES
- B. TRENCH DRAIN WITH GRATING COVER. SUMP PUMP GOES IN THE TRENCH AND DISCHARGES ABOVE GRADE. THE TRENCH IS AN INTEGRAL PART OF THE VAULT CONSTRUCTION. IT SHALL NOT BE ADDED IN THE FIELD. TRIM GRATING AS NECESSARY FOR SUMP PUMP INSTALLATION.
- C. THE SUMP PUMP CAN PUMP TO THE STORM SYSTEM OR TO THE GROUND SURFACE OUTSIDE OF THE VAULT.
- D. WITH FIRE DEPARTMENT APPROVAL FDC CAN BE MOUNTED ON THE BUILDING.

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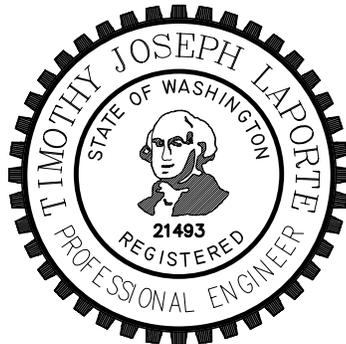
CITY OF KENT ENGINEERING DEPARTMENT		
DOUBLE CHECK DETECTOR ASSEMBLY & VAULT (4" OR GREATER) SHEET 1 OF 5		
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	STANDARD PLAN
DRAWN <u>BB</u>	DATE _____	3-18
CHECKED _____	ENGINEER _____	
APPROVED _____		



NOTES:

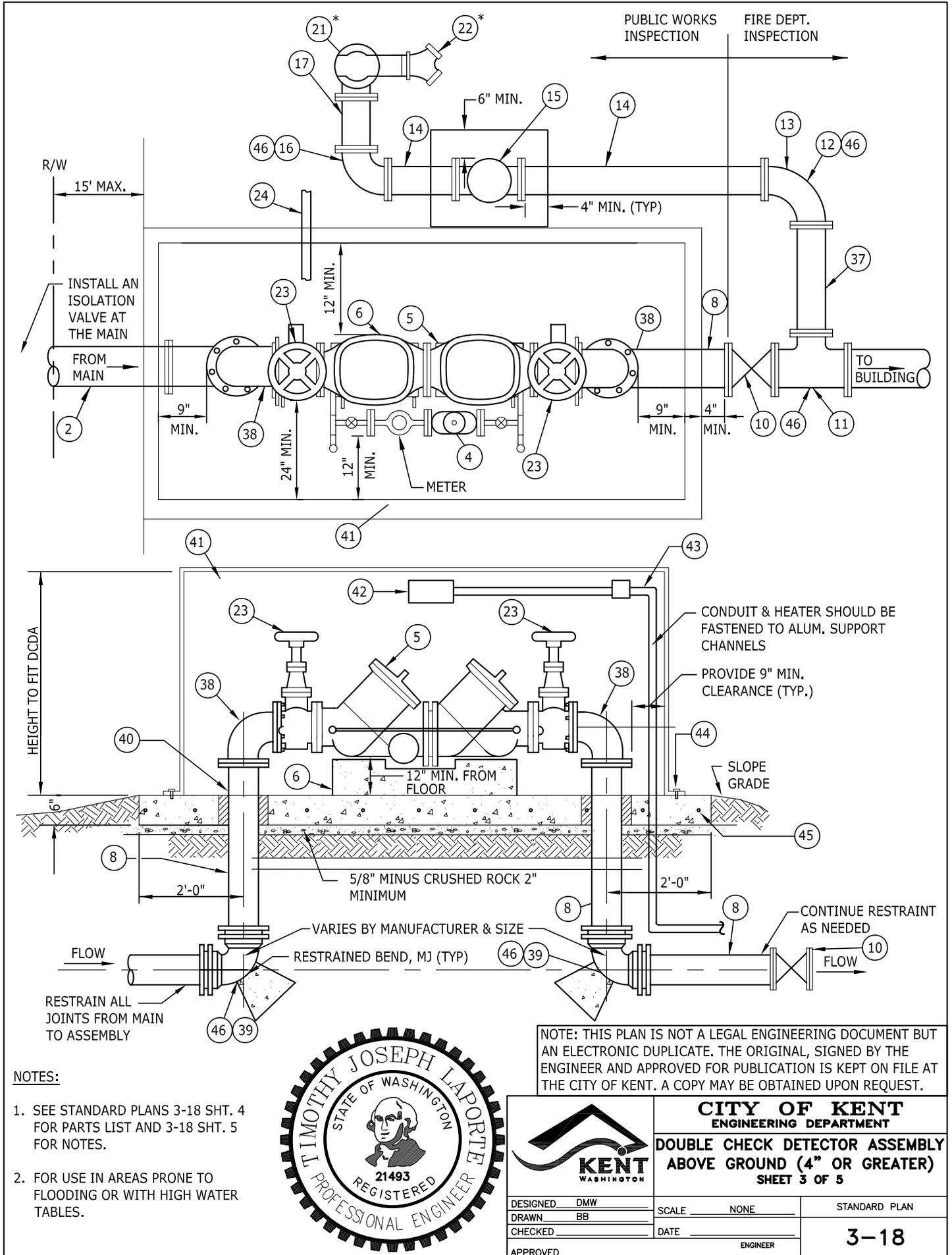
1. SEE STANDARD PLANS 3-18 SHT. 4 FOR PARTS LIST AND 3-18 SHT. 5 FOR NOTES.
2. INTERIOR DCDA SHALL ONLY BE ALLOWED IN ZONING AREAS THAT HAVE ZERO SETBACK REQUIREMENTS BETWEEN THE BUILDING AND THE PROPERTY LINE.

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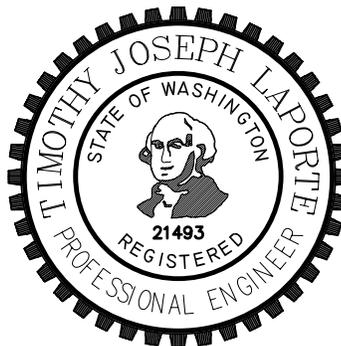
		CITY OF KENT ENGINEERING DEPARTMENT	
		DOUBLE CHECK DETECTOR ASSEMBLY INSIDE BUILDING (4" OR GREATER) SHEET 2 OF 5	
DESIGNED	DMW	SCALE	NONE
DRAWN	BB	DATE	
CHECKED			
APPROVED		ENGINEER	

3-18



NOTES:

1. SEE STANDARD PLANS 3-18 SHT. 4 FOR PARTS LIST AND 3-18 SHT. 5 FOR NOTES.
2. FOR USE IN AREAS PRONE TO FLOODING OR WITH HIGH WATER TABLES.



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		CITY OF KENT ENGINEERING DEPARTMENT	
		DOUBLE CHECK DETECTOR ASSEMBLY ABOVE GROUND (4" OR GREATER) SHEET 3 OF 5	
DESIGNED	DMW	SCALE	NONE
DRAWN	BB	DATE	
CHECKED		ENGINEER	
APPROVED			

3-18

DOUBLE CHECK DETECTOR ASSEMBLY PARTS LIST

SEE KCC CHAPTER 13
AND STANDARD PLAN 3-18 SHEET 5 FOR NOTES.
SEE STANDARD PLAN 3-18 SHEETS 1, 2 AND 3 FOR PLAN, ELEVATION & SECTION.

- | | |
|---|---|
| <p>① LOCKING FOLLOWER RING.</p> <p>② 4" MIN. RESTRAINED JOINT D.I. CLASS 52.</p> <p>③ PRECAST CONC. VAULT. SEE KCC TITLE 13 FIRE PREVENTION AND PROTECTION</p> <p>④ APPROVED DCVA IN BYPASS LINE (LATEST HEALTH DEPARTMENT AND CITY OF KENT APPROVED LIST) SHALL BE ON OPPOSITE SIDE OF PUMPER LINE. (PART OF DCDA).</p> <p>⑤ DCDA IN MAIN LINE (LATEST DEPARTMENT OF HEALTH APPROVED LIST).</p> <p>⑥ CONC. SUPPORT PADS UNDER CHECK VALVES.</p> <p>⑦ 10", 8", 6" OR 4" FL COUPLING ADAPTER.</p> <p>⑧ 10", 8", 6" OR 4" PEXFL PIPE.</p> <p>⑨ GROUT INTERIOR & EXTERIOR ALL AROUND PIPE TO MAKE WATER TIGHT SEAL.</p> <p>⑩ 10", 8", 6" OR 4" RESILIENT WEDGE GATE VALVE, FLxFL W/ POST INDICATOR W/ TAMPER SWITCH.</p> <p>⑪ 10", 8", 6" OR 4" TEE, FLxFL</p> <p>⑫ 10", 8", 6" OR 4" REDUCING 90° BEND, FLxFL AS REQ'D.</p> <p>⑬ 6" OR 4" LONG RADIUS 90° BEND, FLxFL</p> <p>⑭ 6" OR 4" SPOOL, FLxFL</p> <p>⑮ 6" SWING TYPE GRAVITY OPERATED CHECK VALVE, FL W/ BALL DRIP IN VAULT OR INSIDE BUILDING DEPENDING ON DCDA APPLICATION.</p> <p>⑯ 6" OR 4" 90° BEND, FLxFL</p> <p>⑰ 6" OR 4" SPOOL, FLxFL.</p> <p>⑱ NOT USED</p> <p>⑲ FLxIP ADAPTER.</p> <p>⑳ 6" OR 4" GALV. PIPE, THREADED, LENGTH AS REQ'D (SEE STD. PLAN 3-18 SHT. 5).</p> <p>㉑* 4"x4"x6" BULL HEAD THREADED TEE.</p> <p>㉒* UL LISTED FD CONNECTION & UL LISTED LOCKING CAPS, LOCATE WITHIN 50' MAX. OF A PUBLIC FIRE HYDRANT. WITH FIRE DEPARTMENT APPROVAL, FDC CAN BE MOUNTED ON THE BUILDING.</p> <p>㉓ O.S & Y VALVES TO BE RESILIENT WEDGE WITH TAMPER SWITCHES. ADD WIRING IN ACCORDANCE WITH L & I (SEE NOTE 18 ON STD. PLAN 3-18 SHT. 5).</p> <p>㉔ GALV. CONDUIT SLEEVE, SEALED BOTH ENDS, FOR ELECTRONIC MONITORING WIRES.</p> <p>㉕ LADDER AS REQ'D PER OSHA.</p> <p>㉖ WALL AS REQUIRED BY THE FIRE MARSHALL</p> <p>㉗ FLOOR DRAIN TO BUILDING PLUMBING STORM SYSTEM.</p> <p>㉘ 2" CLEARANCE INTERIOR AND EXTERIOR ALL AROUND PIPE.</p> | <p>⑳ 10", 8", 6" OR 4" NON-RISING STEM RESILIENT WEDGE GATE VALVE WITH 2" OPERATING NUT.</p> <p>㉑ APPROVED DCVA IN BYPASS LINE (LATEST HEALTH DEPARTMENT AND CITY OF KENT APPROVED LIST) SHALL BE ON OPPOSITE SIDE OF EXTERIOR WALL. (PART OF DCDA)</p> <p>㉒ 6" OR 4" RESTRAINED JOINT DIP, CL 52.</p> <p>㉓ DRAIN ROCK, 1/2 C.Y.</p> <p>㉔ 4"x4"x6" BULL, ELBOW, THREADED.</p> <p>㉕ 10", 8", 6", OR 4" RESILIENT WEDGE GATE VALVE, FL W/POST INDICATOR W/TAMPER SWITCH.</p> <p>㉖ SIGN ON OUTSIDE OF BUILDING..... FIRELINE
DCDA
INSIDE BLDG.</p> <p>㉗ 10", 8", 6" OR 4" SPOOL, FLxFL.</p> <p>㉘ 10", 8", 6" OR 4" 90° BEND, FLxFL.</p> <p>㉙ 10", 8", 6" OR 4" 90° BEND, MJ.</p> <p>㉚ WRAP PIPE WITH 1/2" EXPANSION JOINT MATERIAL.</p> <p>㉛ FIBERGLASS OR ALUMINUM ENCLOSURE</p> <p>㉜ HOT BOX HEATER.</p> <p>㉝ 120 VOLT PULL BOX FOR HEATER CONDUIT AND WIRES FROM SEPARATE ELECTRICAL CIRCUIT FROM SERVED FACILITY. ALSO INCLUDE ELECTRICITY FOR ELECTRONIC SUPERVISION OF CONTROL VALVES.</p> <p>㉞ 3/8" SS EXP BOLTS 24" O.C.</p> <p>㉟ REINFORCED CONCRETE SLAB WITH #4 AT 15" O.C. EACH WAY.</p> <p>㊱ CONCRETE BLOCKING AS REQUIRED.</p> <p>㊲ DISTANCE FROM THE OPERATING NUT TO THE INSIDE WALL SHALL BE 18" MIN. OR PER THE MANUFACTURER'S RECOMMENDATION.</p> |
|---|---|

* ㉑ & ㉒ ARE GENERALLY 6" WITH THE BULLHEAD, ELBOW AS INDICATED. IN CASES WHERE A 4" DCVA IS APPROVED THE BULL, ELBOW IS ELIMINATED AND THE FD CONNECTION IS ATTACHED DIRECTLY TO THE GALV. PIPE.

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		CITY OF KENT ENGINEERING DEPARTMENT	
DOUBLE CHECK DETECTOR ASSEMBLY & VAULT PARTS LIST SHEET 4 OF 5			
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	STANDARD PLAN 3-18	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____		
APPROVED _____			

DOUBLE CHECK DETECTOR ASSEMBLY

MINIMUM CLEARANCES IN VAULT ARE DEPENDENT UPON LOCATION OF PUMPER CONNECTION.

GENERAL NOTES:

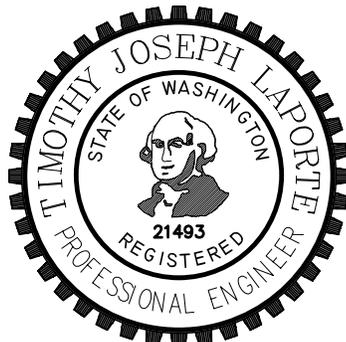
1. VAULT DIMENSIONS BASED ON SIZE OF APPARATUS AND MEETING MINIMUM CLEARANCES.
2. ALL VAULT LIDS SHALL BE GALVANIZED STEEL AND HAVE DOUBLE DOORS WITH LID UNDER DRAINS WHICH DRAIN TO EXTERIOR OF VAULT.
3. MINIMUM APPARATUS SIZE SHALL BE 4 INCHES.
4. VAULT SHALL BE SEALED TO PREVENT WATER LEAKAGE.
5. LADDERS WITHIN VAULTS SHALL BE REQUIRED WHEN DEPTH FROM TOP OF LID TO TOP OF APPARATUS EXCEEDS 30", AND/OR THE APPARATUS IS MORE THAN 12" ABOVE THE FLOOR. INSTALLATION OF ALL LADDERS SHALL BE IN COMPLIANCE TO OSHA.
6. ALL BACKFLOW PREVENTERS SHALL BE ON THE LATEST LIST APPROVED BY THE DEPARTMENT OF HEALTH AND THE CITY OF KENT.
7. MAKE ALL ATTEMPTS TO LOCATE DCDA VAULT OR INSULATED ENCLOSURE AND SWING CHECK VAULT IN PLANTING AREA & NOT IN PAVING AREA.
8. ALL BENDS AND ELBOWS TO BE CAST IRON, CLASS 250, CEMENT LINED. (SEE APWA AND AWWA).
9. BYPASS LINE TO BE ON OPPOSITE SIDE OF PUMPER LINE.
10. INSTALL THREADED PLUGS IN ALL 8 TEST COCKS.
11. TEMPORARY SUPPORT SHALL BE PROVIDED UNDER VALVES AT THE TIME OF INSTALLATION. AFTER COMPLETE INSTALLATION REMOVE THE TEMPORARY SUPPORT AND INSTALL CONCRETE SUPPORT PAD WITH 6" BRICK SHIMS AS REQUIRED.
12. FOR FIRE PIPING SYSTEM INSTALLATIONS ON PRIVATE SIDE OF VAULT, THE CONTRACTOR MUST HAVE SPECIAL FIRE CERTIFICATION.
13. GROUT INTERIOR AND EXTERIOR ALL AROUND PIPE MAKING A WATER TIGHT SEAL.
14. ALL PIPE TO BE DUCTILE IRON CEMENT LINED CLASS 52 PIPE EXCEPT WHERE INDICATED. INSTALLATION MUST ALLOW CLEARANCE FOR PROPER OPERATION OF ALL O.S AND Y's.
15. GALVANIZED STEEL PIPE SHALL BE WRAPPED WITH POLYETHYLENE WRAPPING 10mm THICKNESS.
16. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, CITY AND MANUFACTURER STANDARDS.
17. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL DCDA IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
18. DCDA IS PRIVATE AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATIONS REQUIRED.
19. ELECTRONIC SUPERVISION OF CONTROL VALVES IS REQUIRED.
20. THE INSTALLATION OF THE FIRE DEPARTMENT CONNECTION SHALL BE PER THE FIRE CODE OFFICIAL.
21. AN ISOLATION VALVE SHALL BE PROVIDED AT THE CITY WATER MAIN.
22. BY-PASS AND FIRE DEPARTMENT CONNECTION AS SHOWN IN 3-18 SHEETS 1, 2 AND 3 ARE REQUIRED.
23. SEE STANDARD PLAN 3-18 SHEETS 1, 2 AND 3 FOR PLAN, ELEV. & SECTION.
24. SEE STANDARD PLAN 3-18 SHEET 4 FOR PARTS LIST.

INSIDE BUILDING NOTES:

1. ROOM IN WHICH DCDA IS PROPOSED TO BE LOCATED SHALL:
 - A. HAVE FLOOR DRAINS CONNECTED TO STORM OR SANITARY SEWER.
 - B. HAVE A HEATING SYSTEM (40° F MIN. TEMP.) NO HEAT TAPE.
 - C. NOT BE USED FOR STORAGE AROUND THE DCDA.
 - D. HAVE CLEARLY DELINEATED ACCESS WAYS TO DCDA AND WALL MOUNTED PIVS.
2. GROUT ALL AROUND PIPE WHERE IT ENTERS THE BUILDING.
3. IF PRIVATE HYDRANTS ARE REQUIRED FOR THE PROJECT, ENTIRE SYSTEM (HYDRANTS & FIRELINE) SHALL BE ISOLATED FROM CITY SYSTEM BY A DCDA LOCATED AT THE PROPERTY LINE PER STANDARD PLAN 3-18 SHTS 1 & 3.
4. INSTALLATION OF DCDA IS APPROVED BY HORIZONTAL ALIGNMENT ONLY.
5. A HEATED, R-19 INSULATED WOOD FRAMED ENCLOSURE IS AN ACCEPTABLE ALTERNATIVE TO A ROOM IF DCDA IS TO BE LOCATED IN AN UNHEATED BUILDING. THE ENCLOSURE MUST MEET ALL REQUIREMENTS OF THE DEVELOPMENT SERVICES DIVISION.
6. INTERIOR DCDA SHALL ONLY BE ALLOWED IN ZONING AREAS THAT HAVE ZERO SETBACK REQUIREMENTS BETWEEN THE BUILDING AND THE PROPERTY LINE.
7. FOR INSIDE BUILDING DCDA, THE CITY'S RESPONSIBILITY SHALL CEASE TEN FEET (10') OUT SIDE OF THE BUILDING.

ABOVE GROUND NOTES:

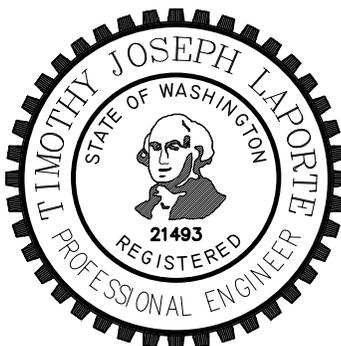
1. "HOT BOX" TO BE LOCATED OUTDOORS AND ACCESSIBLE TO THE CITY. ALTERNATE LOCATION REQUIRES THE CITY APPROVAL.
2. HEATERS AND WIRING SHALL BE RATED AT 2,000 WATT FOR 8" AND UNDER: 3,000 WATT FOR 10".
3. CONCRETE TO BE 2500 PSI (MINIMUM) MIX WITH AIR ENTRAINMENT.
4. DRAIN TO DAYLIGHT WITH BIRD SCREEN LOCATED AT SLAB LEVEL (SIZED PER MANUFACTURERS RECOMMENDATION).
5. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND DCDA.



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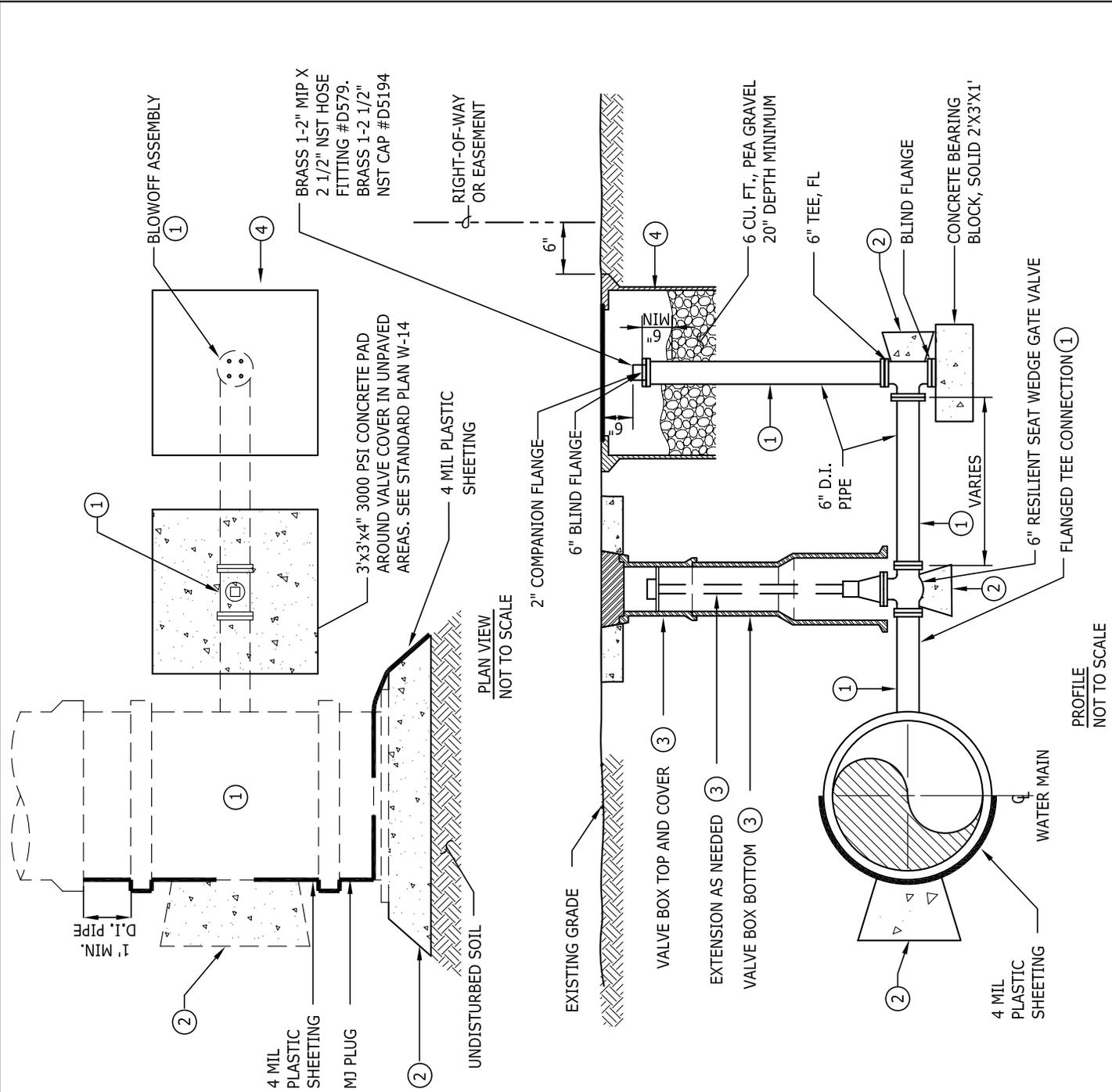
		CITY OF KENT ENGINEERING DEPARTMENT	
DOUBLE CHECK DETECTOR ASSEMBLY & VAULT NOTES SHEET 5 OF 5			
DESIGNED: <u>DMW</u>	SCALE: <u>NONE</u>	STANDARD PLAN 3-18	
DRAWN: <u>BB</u>	DATE: _____		
CHECKED: _____	APPROVED: _____	ENGINEER	

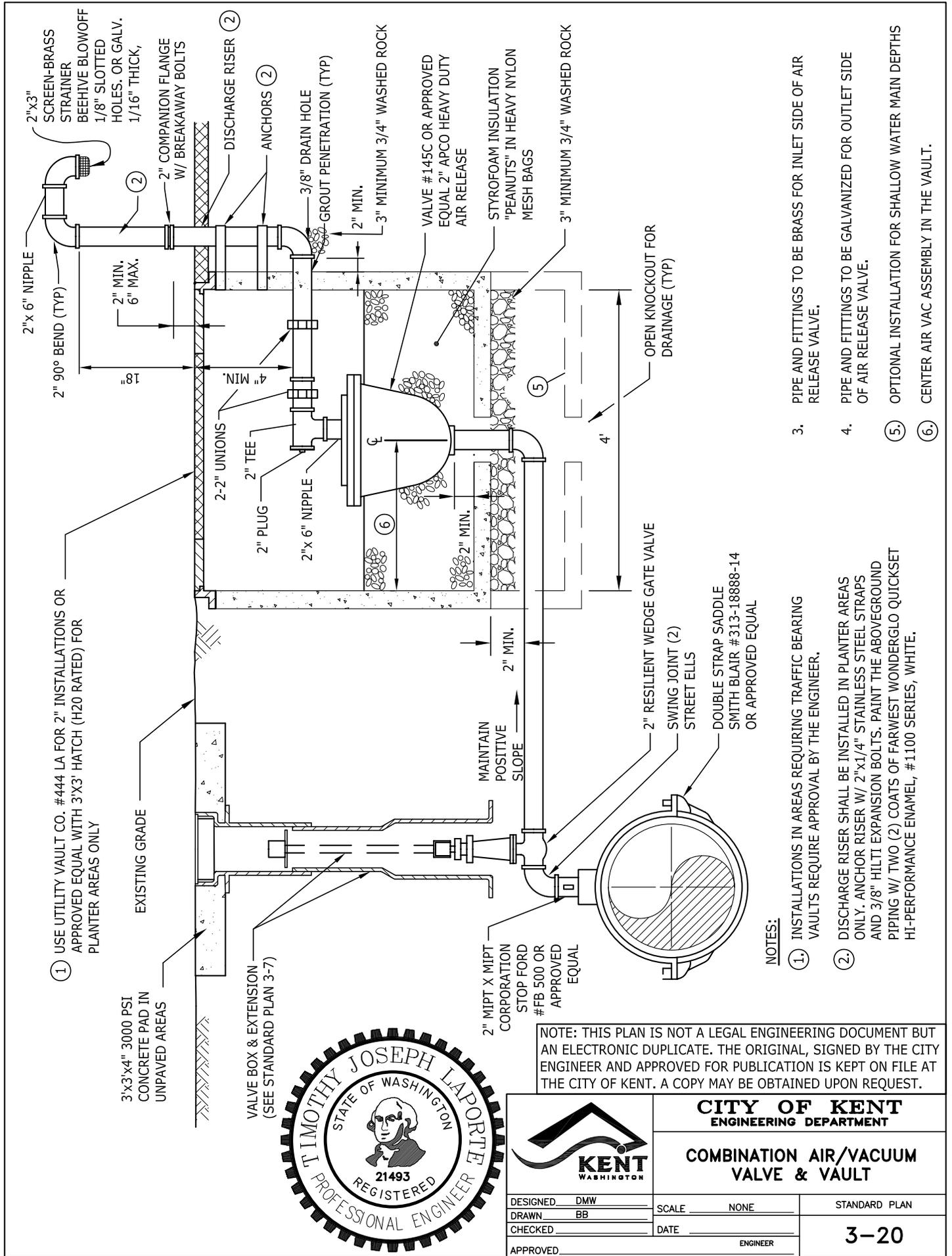
- NOTES:**
1. TEE, VALVE AND PIPING SHALL BE PER SECTION 3.19.
 2. CONCRETE BLOCKING SHALL BE CLASS 3000 (SEE SECTION 3.20.C.)
 3. VALVE BOX SHALL BE OLYMPIC FOUNDRY VB940 WITH TWO (2) INCH "DEEP SKIRT" COVER. THE COVER SHALL BE MARKED "WATER" THE EARS SHALL ALIGN IN THE DIRECTION OF FLOW. (SEE STANDARD PLAN 3-7).
 4. OLYMPIC FOUNDRY #SM30 METER BOX.



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		CITY OF KENT ENGINEERING DEPARTMENT	
		STANDARD 6" BLOWOFF ASSEMBLY	
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	STANDARD PLAN 3-19	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____		
APPROVED _____			





① USE UTILITY VAULT CO. #444 LA FOR 2" INSTALLATIONS OR APPROVED EQUAL WITH 3'X3' HATCH (H20 RATED) FOR PLANTER AREAS ONLY

3'X3'X4" 3000 PSI CONCRETE PAD IN UNPAVED AREAS

EXISTING GRADE

VALVE BOX & EXTENSION (SEE STANDARD PLAN 3-7)

2" MIPT X MIPT CORPORATION STOP FORD #FB 500 OR APPROVED EQUAL

MAINTAIN POSITIVE SLOPE

2" RESILIENT WEDGE GATE VALVE

SWING JOINT (2) STREET ELLS

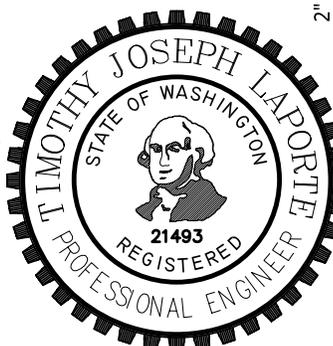
DOUBLE STRAP SADDLE SMITH BLAIR #313-18888-14 OR APPROVED EQUAL

OPEN KNOCKOUT FOR DRAINAGE (TYP)

NOTES:

- ① INSTALLATIONS IN AREAS REQUIRING TRAFFIC BEARING VAULTS REQUIRE APPROVAL BY THE ENGINEER.
- ② DISCHARGE RISER SHALL BE INSTALLED IN PLANTER AREAS ONLY. ANCHOR RISER W/ 2"X1/4" STAINLESS STEEL STRAPS AND 3/8" HILTI EXPANSION BOLTS. PAINT THE ABOVEGROUND PIPING W/ TWO (2) COATS OF FARWEST WONDERGLO QUICKSET HI-PERFORMANCE ENAMEL, #1100 SERIES, WHITE.
- ③ PIPE AND FITTINGS TO BE BRASS FOR INLET SIDE OF AIR RELEASE VALVE.
- ④ PIPE AND FITTINGS TO BE GALVANIZED FOR OUTLET SIDE OF AIR RELEASE VALVE.
- ⑤ OPTIONAL INSTALLATION FOR SHALLOW WATER MAIN DEPTHS
- ⑥ CENTER AIR VAC ASSEMBLY IN THE VAULT.

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CITY OF KENT
ENGINEERING DEPARTMENT

COMBINATION AIR/VACUUM VALVE & VAULT

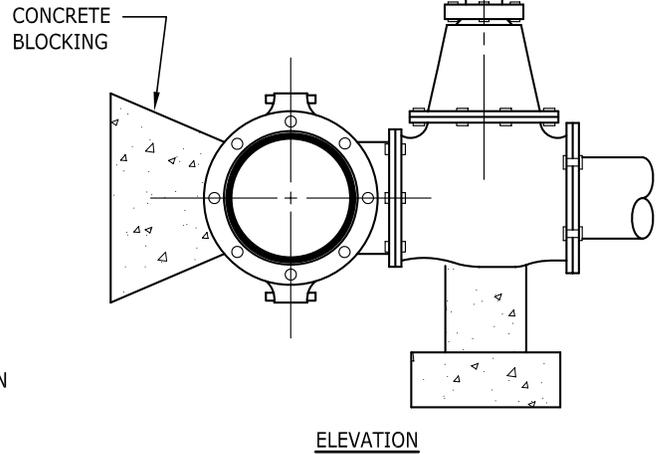
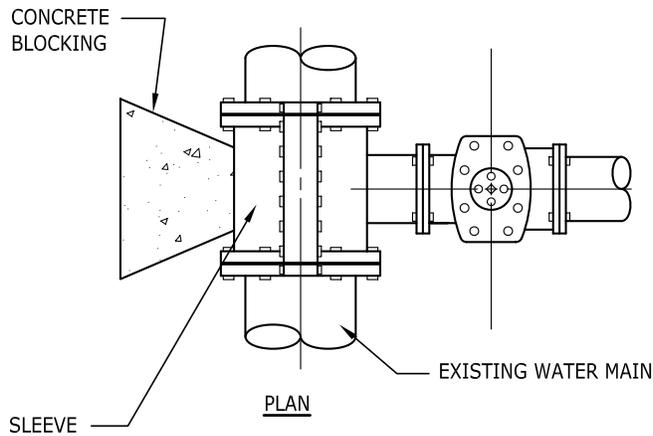
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APPROVED:

SCALE: NONE
DATE:
ENGINEER:

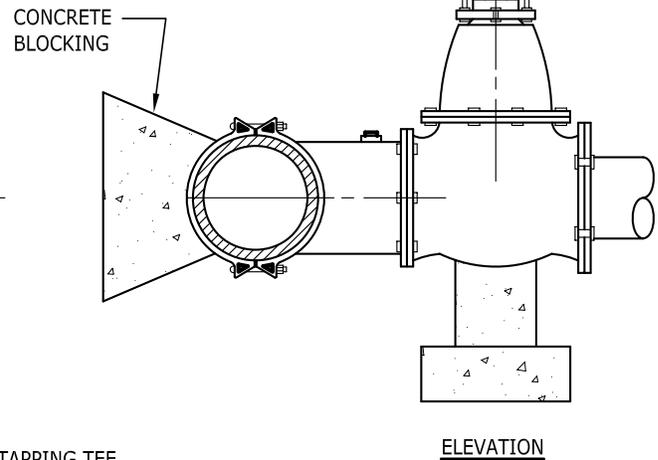
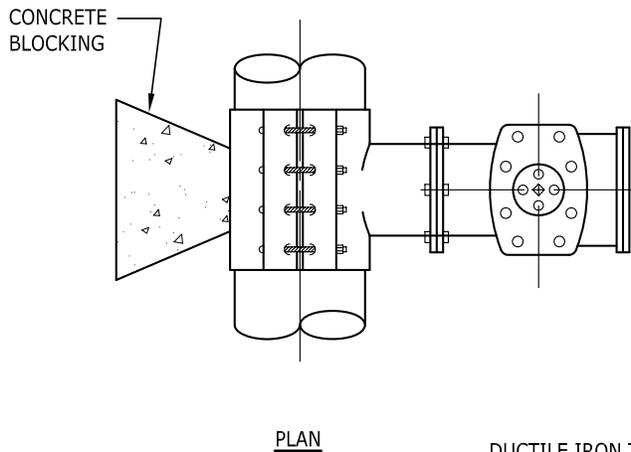
STANDARD PLAN
3-20

NOTES:

1. MECHANICAL JOINT LONG SLEEVES SHALL BE HEAVY DUTY CAST DUCTILE IRON, HAVE END AND SIDE GASKETS.
2. LONG TAPPING SLEEVE & VALVE ASSEMBLY TO BE PRE-APPROVED BY THE ENGINEER. PRESSURE TESTING SHALL BE APPROVED BY CONSTRUCTION INSPECTOR PRIOR TO TAPPING. FOLLOW AWWA REQUIREMENTS FOR DISINFECTION OF TAPPING SLEEVES (AWWA STD. C651)
3. WET TAPS SHALL NOT BE ALLOWED ON SAME SIZE OR SMALLER MAINS.

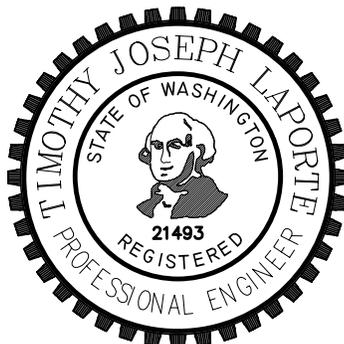


**HEAVY DUTY CAST DUCTILE
IRON TAPPING TEE**

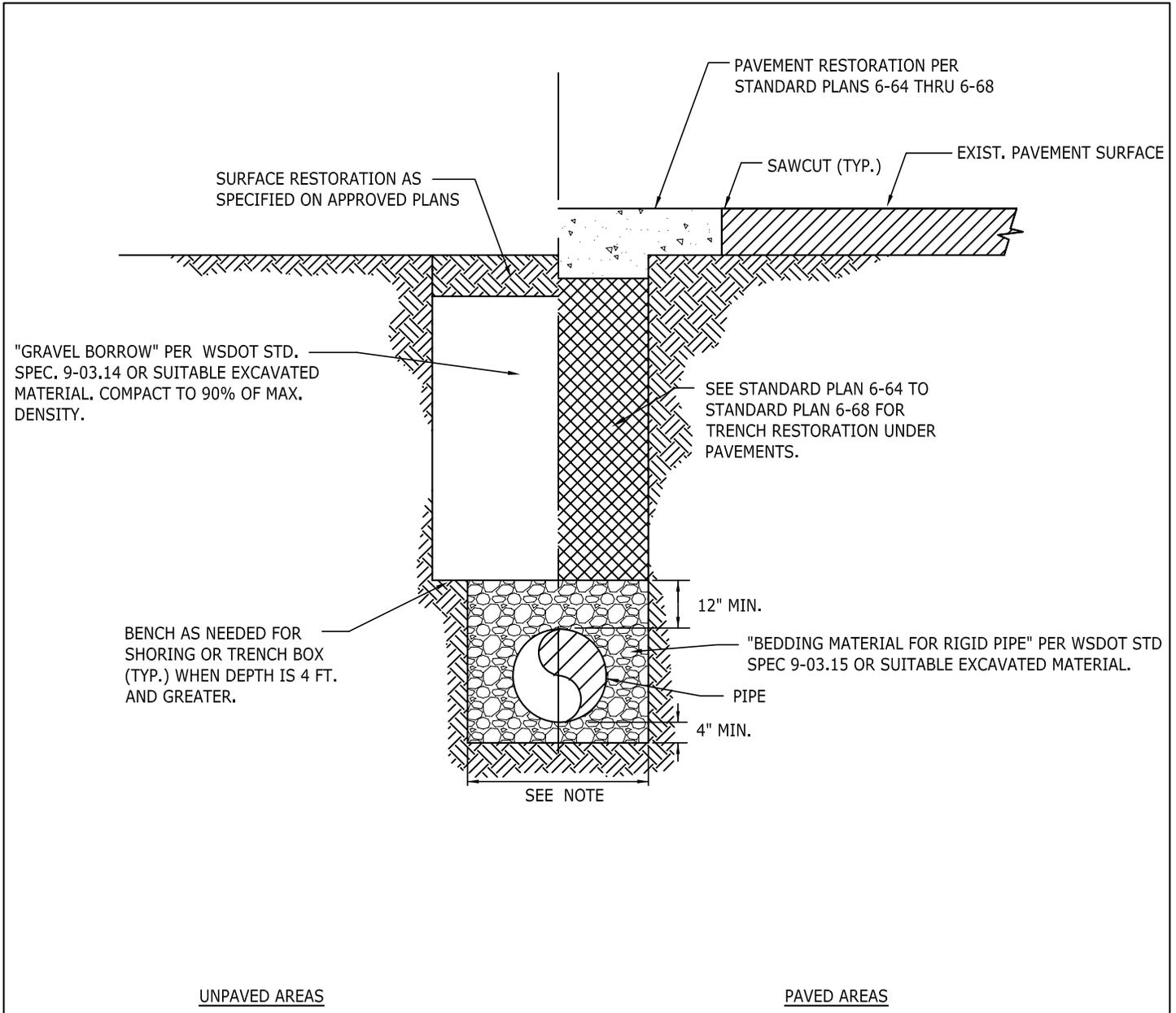


DUCTILE IRON TAPPING TEE

NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE ORIGINAL, SIGNED BY THE ENGINEER AND APPROVED FOR PUBLICATION IS KEPT ON FILE AT THE CITY OF KENT. A COPY MAY BE OBTAINED UPON REQUEST.



		CITY OF KENT ENGINEERING DEPARTMENT	
		TAPPING SLEEVE AND VALVE ASSEMBLIES	
DESIGNED	DMW	SCALE	NONE
DRAWN	BB	DATE	
CHECKED			
APPROVED		ENGINEER	
			3-21



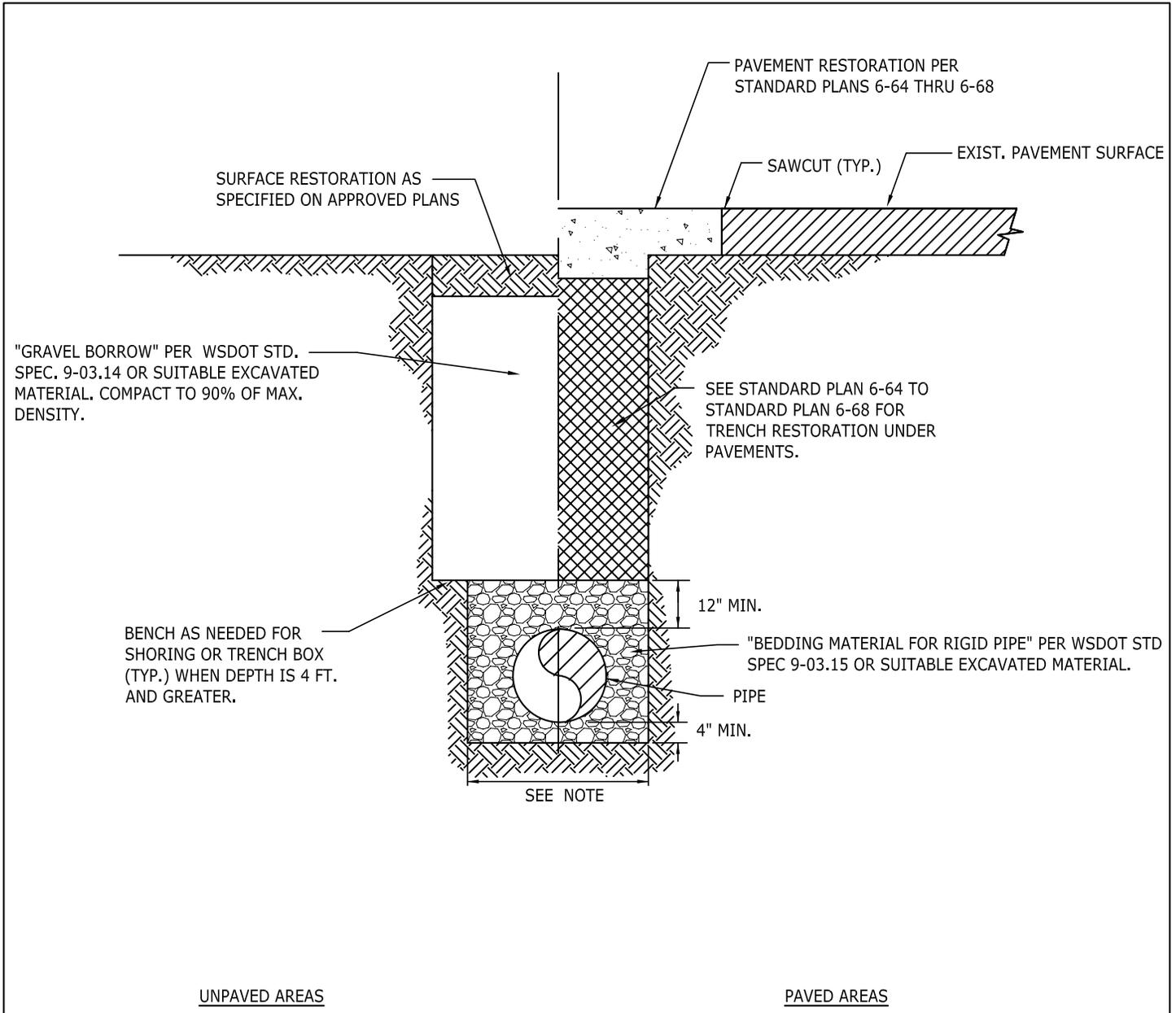
NOTE:

MAXIMUM WIDTH OF TRENCH AT TOP OF PIPE
 * 30" FOR PIPE UP TO AND INCLUDING 12" NOMINAL DIAMETER.
 * O.D. PLUS 16" FOR PIPE LARGER THAN 12" NOMINAL DIAMETER.

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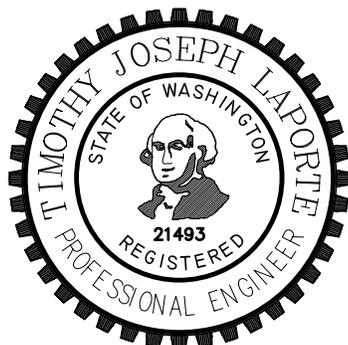
		CITY OF KENT ENGINEERING DEPARTMENT	
		TYPICAL PIPE TRENCH	
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	3-22	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER _____		
APPROVED _____			



NOTE:

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		CITY OF KENT ENGINEERING DEPARTMENT	
		TYPICAL PIPE TRENCH	
DESIGNED <u>DMW</u>	SCALE <u>NONE</u>	3-22	
DRAWN <u>BB</u>	DATE _____		
CHECKED _____	ENGINEER		
APPROVED _____			