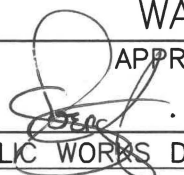


WOODLAND WATER STANDARDS SHEET INDEX

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WATER STANDARDS - SHEET INDEX

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1/21/22

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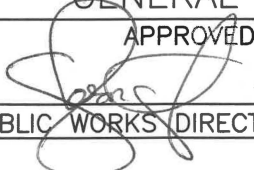
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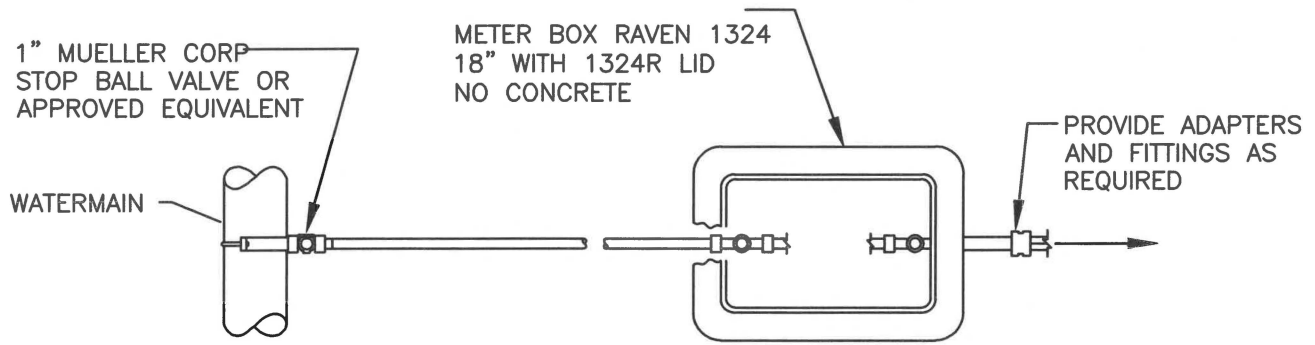
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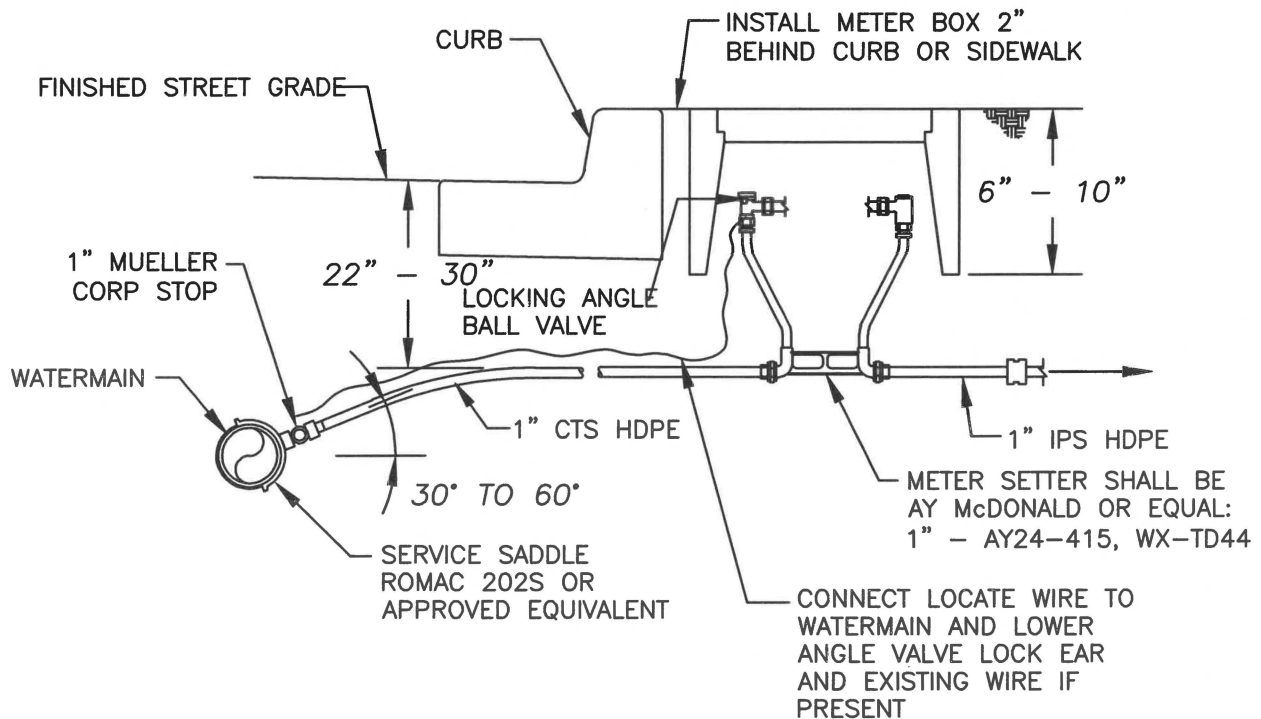
GENERAL NOTES FOR WATER MAIN INSTALLATION

1. ALL WORKMANSHIP AND MATERIAL SHALL BE IN ACCORDANCE WITH THE WSDOT/APWA STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION HEREIN IDENTIFIED AS THE "STANDARD SPECIFICATIONS", AND AWWA SPECIFICATIONS, EXCEPT AS MODIFIED BELOW OR BY CITY OF WOODLAND STANDARD DETAILS.
2. A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH CITY OF WOODLAND AT LEAST 48-HOURS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE CONSTRUCTION SCHEDULES AND TRAFFIC CONTROL PLANS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. PROPOSED "EQUIVALENTS" MUST BE SUBMITTED TO THE CITY OF WOODLAND FOR APPROVAL.
3. THE CONTRACTOR SHALL NOTIFY THE CITY PUBLIC WORKS DEPARTMENT AT (360) 225-7999, 48-HOURS PRIOR TO LIVE TAPS OR OTHER CONNECTIONS TO EXISTING WATERMAINS. WHERE CONNECTIONS REQUIRE SHUT-DOWN OF SERVICE, CONNECTION POINTS WILL BE EXPOSED FOR "FIELD VERIFICATION" BY CONTRACTOR AND CONNECTION DETAILS SHALL BE VERIFIED 48 HOURS PRIOR TO DISTRIBUTING SHUT-DOWN NOTICES.
4. CALL UNDERGROUND LOCATE AT 811 A MINIMUM OF 48-HOURS PRIOR TO ANY EXCAVATIONS.
5. UNLESS OTHERWISE ESTABLISHED IN WRITING BY THE CITY, ALL WATER MAINS SHALL BE STAKED FOR GRADES AND ALIGNMENT BY AN ENGINEERING OR SURVEYING FIRM CAPABLE OF PERFORMING SUCH WORK.
6. EXISTING VALVES AND ANY VALVES INSTALLED DIRECTLY TO AND CONNECTED TO A PORTION OF ACTIVE WATER SYSTEM ARE TO BE OPERATED BY CITY OF WOODLAND REPRESENTATIVES ONLY.
7. WATER MAINS SHALL BE PVC IN ACCORDANCE WITH AWWA C900, MINIMUM DR18 OR DUCTILE IRON PRESSURE CLASS 52 OR AS NOTED ON DRAWING. ALL MATERIAL IN CONTACT WITH DRINKING WATER MUST CONFORM TO ANSI/NSF STANDARD 61 AND BE LEAD FREE.
8. ALL LINES SHALL BE CHLORINATED AND TESTED IN CONFORMANCE WITH THE STANDARD SPECIFICATIONS PRIOR TO USE.
9. HARD COPY AND ELECTRONIC "AS-BUILT" DRAWINGS SHALL BE SUBMITTED TO CITY OF WOODLAND UPON COMPLETION OF THE WORK.
10. ALL WATERMAINS, FIRE HYDRANTS, BLOW OFF ASSEMBLIES, VACUUM BREAKERS, AND WATER SERVICES MUST HAVE LOCATE WIRE INSTALLED.
11. ALL MECHANICAL JOINT FITTINGS AND FITTINGS SHALL BE RESTRAINED USING MJ FOLLOWER GLANDS, MEGALUG, OR EQUAL.
12. PIPE SHALL BE INSTALLED IN CONFORMANCE WITH DETAIL W-13.
13. RESTORATION SHALL CONFORM WITH STANDARD DETAIL T-33.
14. THE MIN. DIAMETER FOR WATER MAIN INSTALLATION IS 8-INCHES. ASBESTOS CONCRETE (AC) AND/OR ANY WATER MAIN, REGARDLESS OF MATERIAL TYPE, 6-INCHES AND SMALLER MUST BE REPLACED.

	GENERAL NOTES FOR WATER MAIN INSTALL				W-01	
	APPROVED	REVISIONS	DATE	DRAWN		DESIGNED
	 PUBLIC WORKS DIRECTOR	11-7-23 DATE				



PLAN VIEW



SECTION VIEW

NOTES:

1. SERVICE LINES ON NEW WATERMANS SHALL BE PRESSURE TESTED UP TO THE LOCKING ANGLE BALL VALVE AS PART OF THE WATERMAIN TESTING.
2. METER BOXES SHALL HAVE A 4' WOOD STAKE WITH BLUE PAINT BEHIND THE BOX.
3. ALL DOMESTIC AND IRRIGATION METERS SHALL BE SUPPLIED, OWNED, AND INSTALLED BY THE CITY OF WOODLAND.

3/4" AND 1" WATER SERVICE

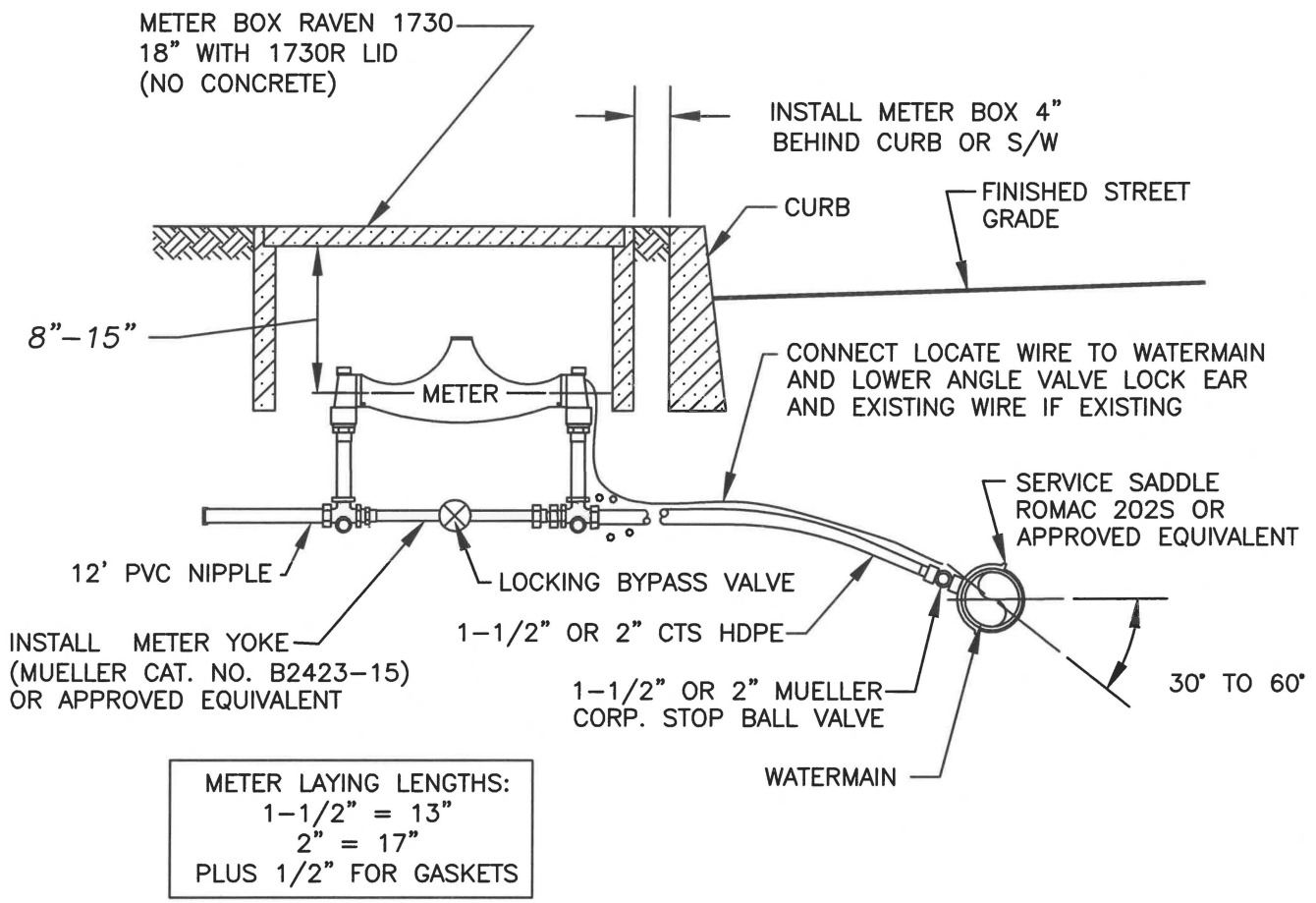


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W-02



NOTES:

1. ALL DOMESTIC AND IRRIGATION METERS SHALL BE SUPPLIED, OWNED, AND INSTALLED BY THE CITY OF WOODLAND.
2. PRIOR TO CITY INSTALLATION OF METERS, ALL SERVICE APPLICATIONS MUST BE COMPLETED AND APPROVED, SERVICE FEES PAID IN FULL AND AS-BUILTS SUBMITTED AND APPROVED.
3. CONTRACTOR SHALL CONTACT THE CITY OF WOODLAND PUBLIC WORKS OFFICE (360) 225-7999 48-HOURS PRIOR TO INSTALLING ANY WATER SERVICE CONNECTIONS.
4. METERS WILL NOT BE SET BY THE CITY PRIOR TO DISINFECTION OF THE MAIN AND SERVICE, AND PRIOR TO A SUCCESSFUL BACTERIOLOGICAL TEST.
5. SERVICE LINES ON NEW WATERMAINS SHALL BE PRESSURE TESTED UP TO THE LOCKING ANGLE BALL VALVE AS PART OF THE WATERMAIN TESTING.
6. DURING THE PRESSURE TEST, THE MAIN SHALL BE OPEN FOR INSPECTION OF ALL CORPORATION STOPS.
7. USE 1-7/8" BIT FOR ALL 2" SADDLE TAPS AND 1-3/8" BIT FOR 1-1/2" SADDLE TAPS.
8. METER BOXES ARE NOT ALLOWED IN HARD SURFACED AREAS WITHOUT PRIOR WRITTEN APPROVAL. METER BOXES IN HARD SURFACE AREAS SHALL BE SLIGHTLY HIGHER (1/8" MAX) THAN SURROUNDING GRADE AND BOTH THE BOX AND LID MUST BE TRAFFIC RATED.
9. 1 1/2" METER CAN BE INSTALLED IN A 2" SETTING WITH ADAPTORS.

1-1/2" AND 2" WATER SERVICE



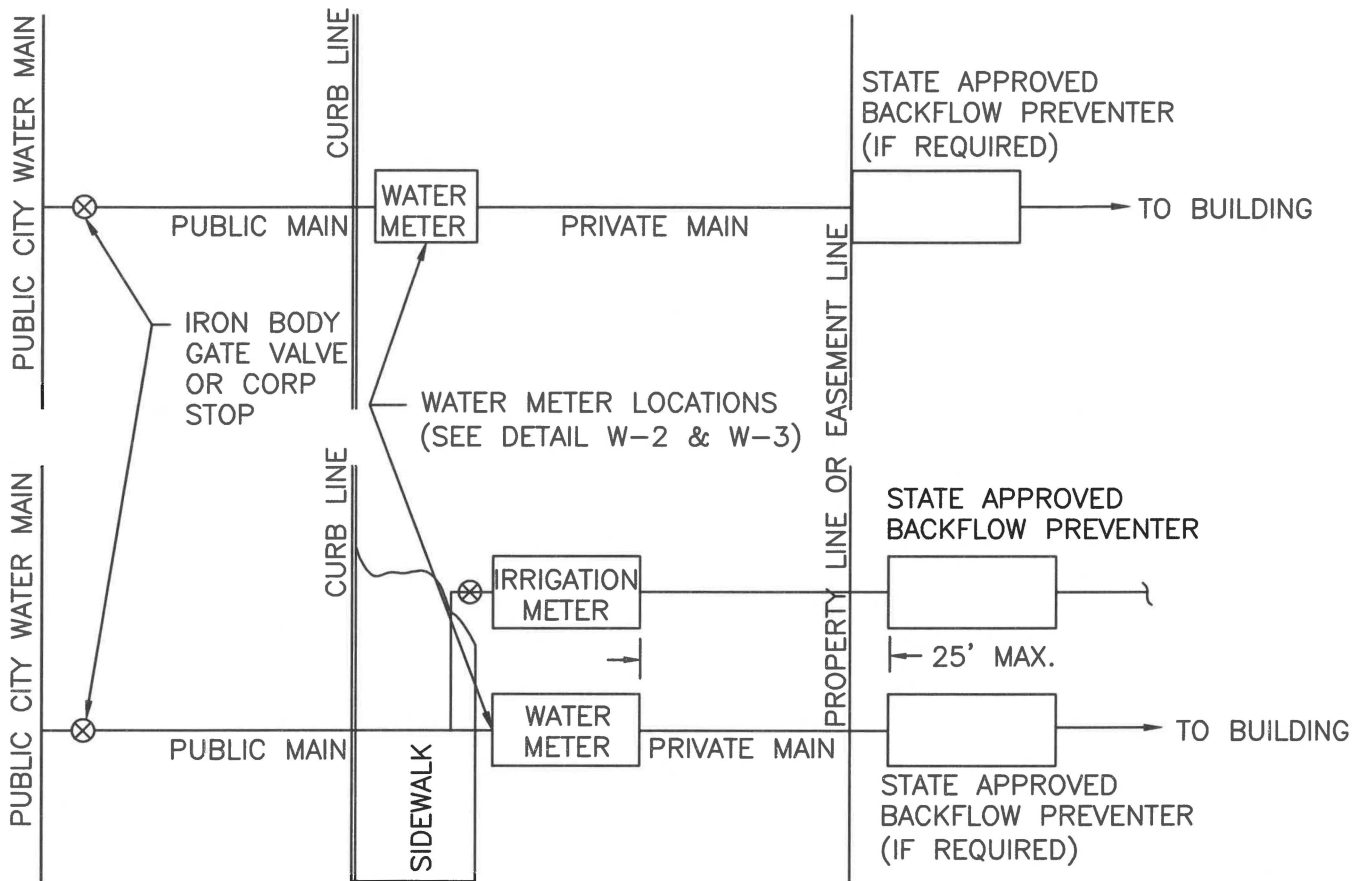
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PUBLIC WORKS DIRECTOR

1/21/22
DATE

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W-03




NOTES:

1. ALL NON-SINGLE FAMILY DOMESTIC SERVICES SHALL BE TAPPED SEPARATELY FROM ANY FIRE PROTECTION AND FIRE HYDRANT LEAD PIPING.
2. ALL IRRIGATION METERS SHALL BE PER APPROVED PLAN.
3. IRRIGATION METERS SHALL BE PLACED IN A STANDARD METER BOX WITH READER LID ACCORDING TO METER SIZE (SEE DETAIL W-02 & W-03).
4. EXCEPTIONS TO THESE REQUIREMENTS MAY BE SUBMITTED IN WRITING FOR REVIEW AND APPROVAL.
5. IRRIGATION METERS WILL BE READ DURING REGULAR BILLING CYCLES.

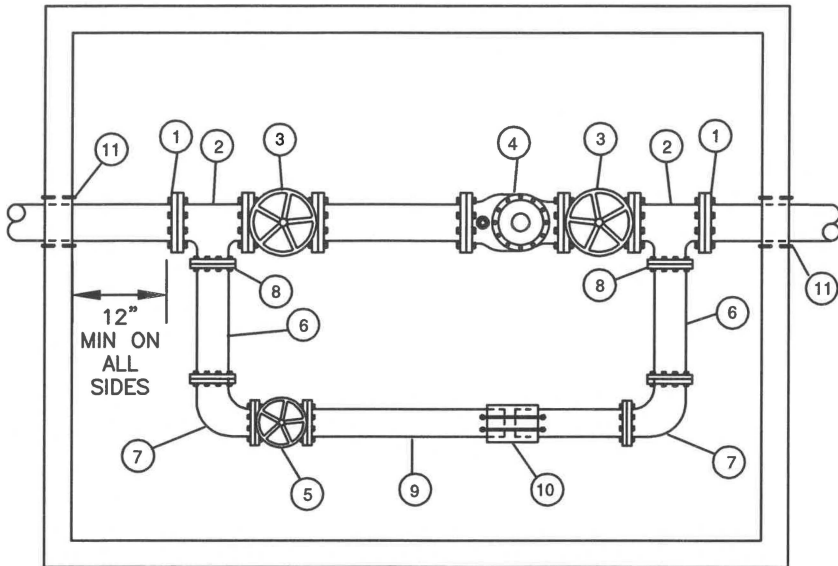
STANDARD METER LOCATIONS



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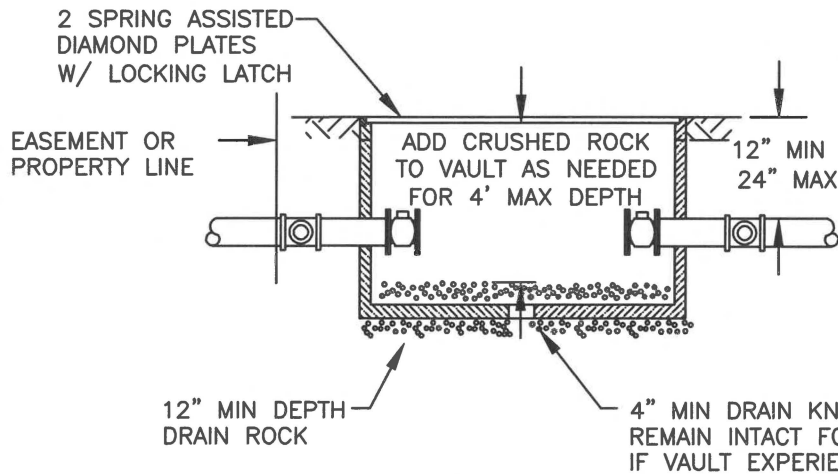
W-04



- ① FLEX X FLG COUPLING
- ② ALL-FLG TEE
- ③ FLG RES. SEATED GATE VALVE W/HAND WHEEL
- ④ COMPOUND METER
- ⑤ GATE VALVE W/HAND WHEEL
- ⑥ BRASS OR DUCTILE IRON NIPPLES
- ⑦ 90° ELBOWS (MATERIAL TO BE SAME AS PIPE)
- ⑧ COMPANION FLG
- ⑨ BRASS OR DUCTILE IRON PIPE
- ⑩ MECHANICAL COUPLING
- ⑪ PIPE SLEEVE

VAULT

UTILITY VAULT CO. R.C.P. VAULTS
 #575-LA-3660P #76632
 #676-WA-3660P W/#57-TL-B LID



METER SIZE	BY-PASS LINE SIZE	BY-PASS MATERIAL
3" & 4"	2" MIN	COPPER
6"	4"	DUCTILE IRON
8"	6"	DUCTILE IRON

NOTES:

1. THE CITY OF WOODLAND WILL SUPPLY, OWN AND MAINTAIN THE METER, METER SPACER, REDUCING TEE, AND STRAINER. CONTACT THE CITY PUBLIC WORKS DEPARTMENT 2 WEEKS PRIOR TO INSTALLATION.
2. ALL METERS SHALL BE INSTALLED BY THE CITY. CONTRACTOR TO INSTALL TEMP. SPACER AS PER NOTE 1.
3. 10 PIPE DIAMETERS OF STRAIGHT PIPE REQUIRED, IN & OUT OF METER (IF USING 6" PIPE, NO BENDS ALLOWED WITHIN 5' OF THE METER IN EITHER DIRECTION [IE: 6" x 10 = 60"]).
4. PIPE AND FIXTURES TO BE SET ON VALVE STANDS INSTALLED ACCORDING TO MANUFACTURERS SPECS.
5. REMOTE READER UNIT SHALL BE LOCATED IN A READILY ACCESSIBLE AREA OUTSIDE THE VAULT, AS APPROVED BY THE CITY.
6. CONTRACTOR SHALL USE APPROPRIATE METHODS TO ENSURE COPPER PIPE, FITTINGS AND JOINTS WILL REMAIN LEAK-TIGHT.
7. METER BOX SHALL NOT BE ALLOWED IN HARD SURFACED AREAS WITHOUT PRIOR WRITTEN APPROVAL. METER BOXES AND LIDS IN HARD SURFACE AREAS SHALL BE SLIGHTLY HIGHER THAN SURROUNDING GRADE AND BOTH MUST BE TRAFFIC RATED.
8. INSTALL OR CONNECT LOCATING WIRE WITH LONG LOOP IN VAULT.

COMPOUND METER INSTALLATION

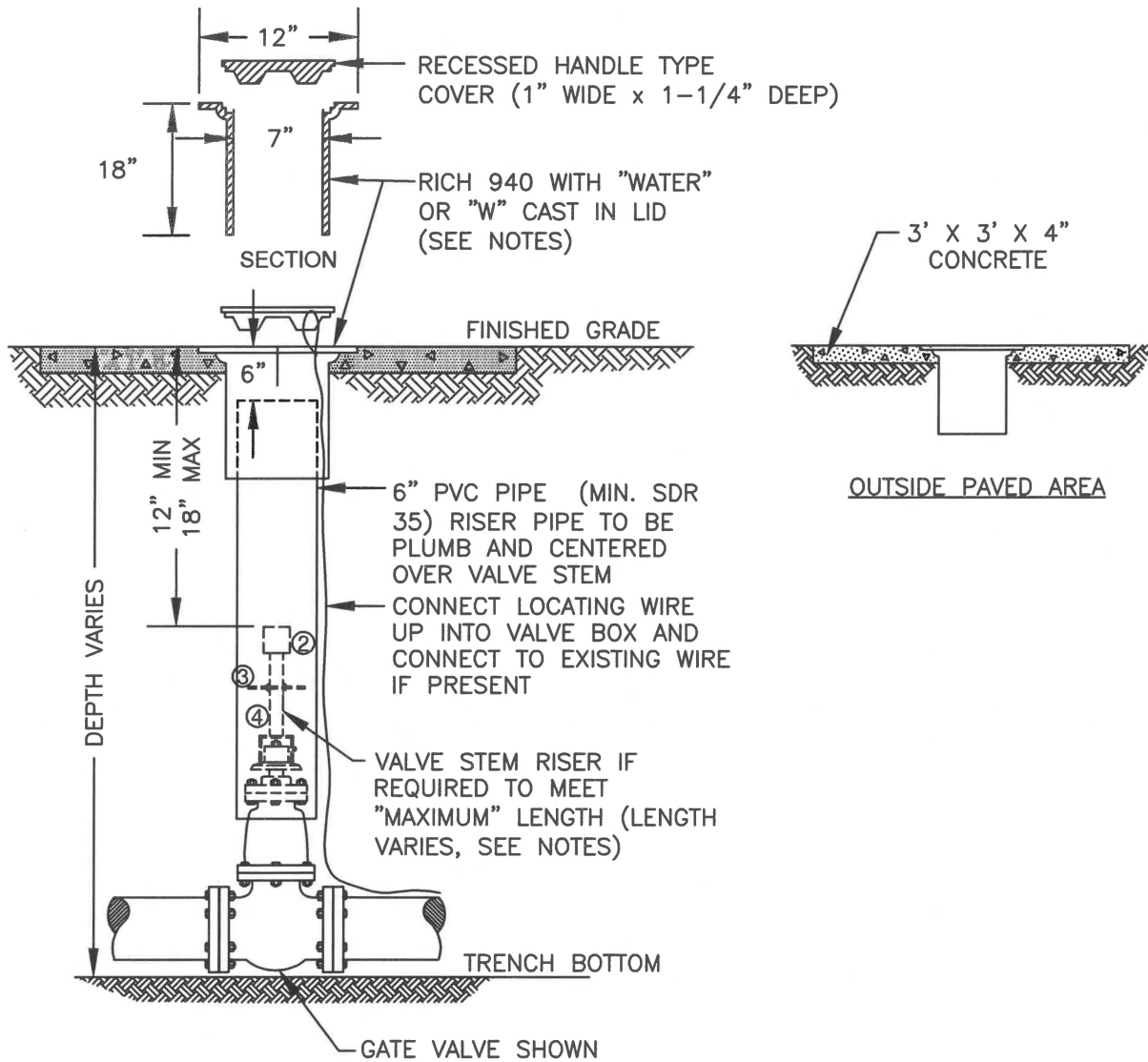


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W-05



NOTES:

1. VALVE STEM EXTENSION TO INCLUDE THE FOLLOWING WELDS TO BE 1/4" FILLET WELD ALL AROUND.
2. VALVE OPERATING NUT OR 1-7/8" X 1-7/8" X 2" HIGH GRADE STEEL.
3. 3/16" THICK X 5-1/5" DIA STEEL GUIDE PLATE SHAFT.
4. 2" X 2" X 3/16" SQUARE STRUCTURAL STEEL TUBING TO FIT OPERATING NUT.
5. FOR NEW VALVES IN EXISTING STREET, RESTORE PAVEMENT PER CITY OF WOODLAND STANDARDS.

STANDARD VALVE BOX AND COVER



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W-06

GENERAL NOTES FOR BACKFLOW PROTECTION

1. ALL REDUCED PRESSURE AND BACKFLOW DEVICES SHALL BE WASHINGTON STATE APPROVED, PER WAC 246-290.
2. FIRE SPRINKLER AND IRRIGATION SYSTEMS SHALL BE PROTECTED WITH STATE APPROVED BACKFLOW PROTECTION AS PRESCRIBED IN WAC 246-290. IRRIGATION SYSTEMS ARE PROTECTED COMMENSURATE WITH THE DEGREE OF HAZARD AS DEFINED BELOW:
 - HIGH HEALTH HAZARD - IS ASSESSED TO ANY IRRIGATION SYSTEM THAT CONTAINS PUMPS OR INFECTORS FOR THE ADDITION OF CHEMICALS. THIS RISK ASSESSMENT IS ALSO BASED ON THE ADDITIONAL HAZARD POSED BY BACTERIAL CONTAMINANTS FOUND ON LAWNS, AND ON THE POSSIBILITY OF CHANGES BEING MADE TO THE IRRIGATION SYSTEM BY THE CUSTOMER. AN APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY, OR AN APPROVED AIR GAP SEPARATION, SHALL BE REQUIRED IN ALL CASES WHERE MEANS ARE PROVIDED FOR CHEMICALS OR HERBICIDES TO BE INJECTED INTO THE IRRIGATION SYSTEM, OR WHERE AN AUXILIARY SUPPLY IS ALSO PROVIDED FOR IRRIGATION WATER.
 - LOW HEALTH HAZARD - IS ASSESSED TO ALL IRRIGATION SYSTEMS NOT OTHERWISE ASSESSED AS A HIGH HEALTH HAZARD. THIS RISK ASSESSMENT IS BASED ON THE HAZARD POSED BY BACTERIAL AND CHEMICAL CONTAMINANTS FOUND ON LAWNS, AND ON THE POSSIBILITY OF CHANGES BEING MADE TO THE IRRIGATION SYSTEM BY THE CUSTOMER. AN APPROVED DOUBLE CHECK VALVE ASSEMBLY IS REQUIRED.
3. ALL COMMERCIAL, INDUSTRIAL AND MULTI-FAMILY FACILITIES SHALL BE PROTECTED WITH WASHINGTON STATE APPROVED BACKFLOW PROTECTION.
4. FURTHER BACKFLOW PREVENTION SHALL BE REQUIRED BY THE CITY OF WOODLAND DEPENDENT UPON ACTIVITY (BOILERS, CHILLERS, CHEMICAL ADDITION, BOOSTER PUMPS, WELLS, MEDICAL EQUIP. SODA POP MACHINES, ETC).
5. ALL HOSEBIBS SHALL BE PROTECTED WITH VACUUM BREAKERS.
6. IF CHEMICALS ARE ADDED TO THE FIRE PROTECTION SYSTEM, A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER IS REQUIRED.
7. IF A WELL IS NOW EXISTING ON-SITE OR IS DRILLED IN THE FUTURE, A REDUCED PRESSURE BACKFLOW ASSEMBLY WILL BE REQUIRED AT EACH METER.
8. WHERE A VAULT IS REQUIRED, A GALV. STEEL WALL MOUNTED CHAMBER LADDER W/EXTENSIONS IS REQUIRED AND SHALL BE CENTERED UNDER THE ACCESS DOOR.
9. DOUBLE CHECK ASSEMBLIES SHALL BE INSTALLED IN EITHER AN APPROVED VAULT OR INSIDE THE BUILDING IN A MAINTAINABLE LOCATION.
10. REDUCED PRESSURE ASSEMBLIES SHALL BE INSTALLED EITHER OUTSIDE ABOVE GROUND OR INSIDE THE BUILDING.
11. ALL BACKFLOW DEVICES SHALL BE PROTECTED FROM FREEZING.
12. BACKFLOW PREVENTION ASSEMBLY VAULTS (I.E.: FIRE AND SERVICE PROTECTION) MUST BE INSTALLED AT THE CUSTOMER'S SIDE OF THE EASEMENT OR PROPERTY LINE. ALTERNATE LOCATIONS MUST BE REQUESTED IN WRITING AND APPROVED BY CITY OF WOODLAND PUBLIC WORKS PRIOR TO INSTALLATION.
13. NO PART OF THE BACKFLOW PREVENTION ASSEMBLY SHALL BE SUBMERGED IN WATER OR INSTALLED IN A LOCATION SUBJECT TO FLOODING. IF A BACKFLOW PREVENTION ASSEMBLY IS INSTALLED IN A VAULT OR BASEMENT, ADEQUATE DRAINAGE OR DEWATERING SHALL BE PROVIDED.
14. ALL FIRE PROTECTION SERVICES SHALL HAVE A IRON BODY GATE VALVE AT THE PUBLIC MAIN AND SHALL BE PRIVATE AFTER THAT VALVE.
15. ALL DOMESTIC SERVICES WITH BACKFLOW PROTECTION SHALL BE PRIVATE AFTER THE DOMESTIC WATER METER.
16. ALL BACKFLOW PREVENTION DEVICES SHALL BE TESTED AFTER INSTALLATION PRIOR TO ACCEPTANCE AND ANNUALLY THEREAFTER BY A CERTIFIED BACKFLOW ASSEMBLY TESTER. A PARTIAL LIST OF WASHINGTON STATE APPROVED TESTERS IS AVAILABLE UPON REQUEST. TEST RESULTS SHALL BE SENT TO THE CITY OF WOODLAND PUBLIC WORKS DEPARTMENT.

MAIL TEST RESULTS TO: CITY OF WOODLAND
 PUBLIC WORKS
 P.O. BOX 9
 WOODLAND, WA 98674


EMAIL TEST RESULTS TO: PWCLERK@CI.WOODLAND.WA.US

FAX TEST RESULTS TO: 360-225-7336

GENERAL NOTES FOR BACKFLOW PROTECTION

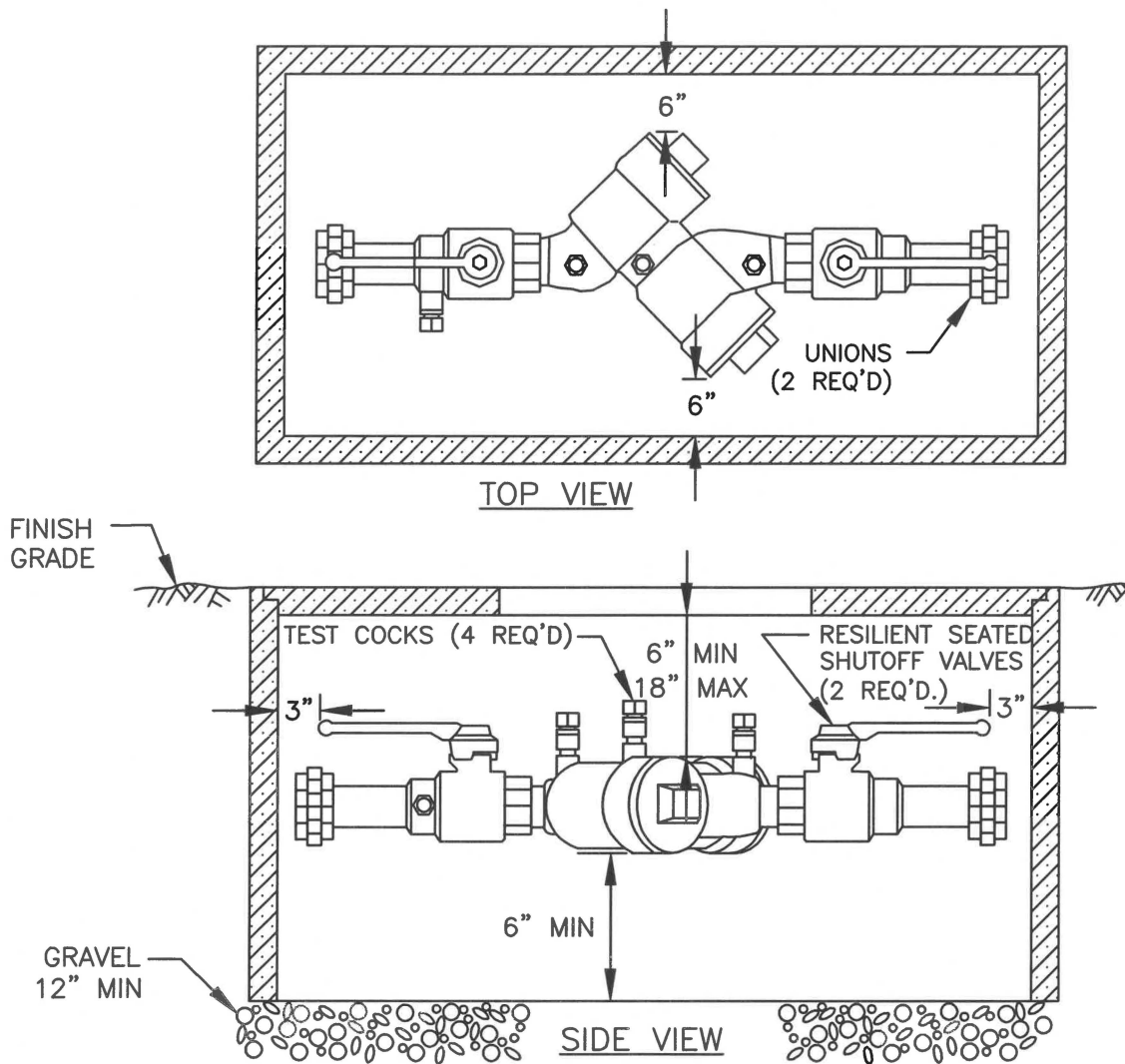


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W-07



NOTES:

1. DOUBLE CHECK VALVE ASSEMBLY (DCVA) SHALL BE APPROVED BY THE STATE OF WASHINGTON. APPROVED DCVA TO BE INSTALLED IN THE ORIENTATION (VERTICAL OR HORIZONTAL) FOR WHICH THEY ARE APPROVED.
2. DCVA MAY BE INSTALLED ABOVE OR BELOW GROUND PROVIDED ALL CLEARANCES ARE MET.
3. DESIGN FOR BACK SIPHONAGE AND BACK PRESSURE.
4. ALL INSTALLATIONS SHALL HAVE TWO UNIONS.
5. TEST COCKS TO EITHER FACE OUTWARDS OR UPWARDS FROM ASSEMBLY.
6. THE WATER LINE SHALL BE DISINFECTED, FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLATION OF THE BACKFLOW ASSEMBLY.
7. DCVA SHALL BE ACCESSIBLE AND PROTECTED FROM FREEZING AND FLOODING.
8. A PLUMBING PERMIT IS REQUIRED, CONTACT THE WOODLAND BUILDING DEPARTMENT AT (360) 225-7299.
9. DCVA SHALL BE TESTED AFTER INSTALLATION, THEN ANNUALLY BY A WASHINGTON STATE CERTIFIED BACKFLOW TESTER. DCVA SHALL BE RETESTED IF MOVED OR REPAIRED. RESULTS SHALL BE SUBMITTED TO THE CITY OF WOODLAND PUBLIC WORKS DEPARTMENT.

DOUBLE CHECK VALVE ASSEMBLY 2" & SMALLER



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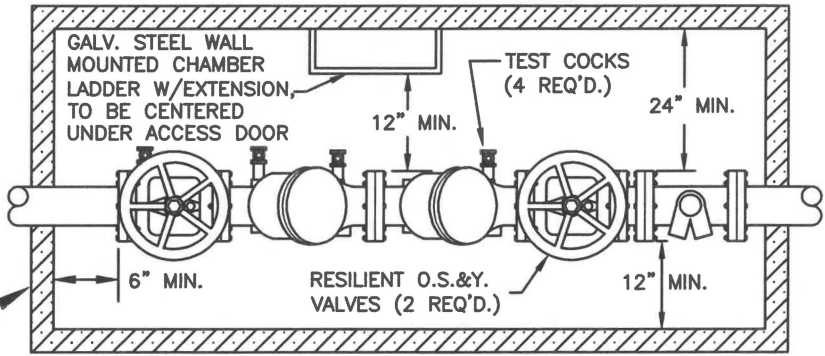
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W-08A

UTILITY VAULT SIZING CHART
(OR APPROVED EQUAL)

PIPE DEPTH UP TO	DCVA SIZE	FDC TEE INSIDE VAULT	FDC TEE OUTSIDE VAULT
4'	4"	675-WA W/2-332P	575-WA W/2
6'	4"	676-WA	577-WA
4'	6"	687-WA	675-WA W/2
6'	6"		676-WA
6'	8"	5106-WA	687-WA
6'	10"	5106-WA	5106-WA

PRE-CAST CONC. VAULT H-20 LOADING LID W/LADDER



TOP VIEW

VAULT SHALL BE EQUIPPED W/36"X36" SPRING ASSISTED, HOT DIPPED GALV. DIAMOND PLATE DOOR. UTILITY VAULT #332P

PUMPER CONNECTION (FDC) MAY BE INSTALLED THROUGH VAULT LID (AS SHOWN), SIDE WALL OR DOWNSTREAM OF VAULT, DEPENDING UPON SITE LOCATION

3" MIN. W/FULLY OPEN VALVE

CORE DRILL 1" LARGER THAN PIPE O.D.

FINISH GRADE

A CITY APPROVED ISOLATION VALVE IS REQ'D BETWEEN THE SUPPLY MAIN AND THE VAULT

SUPPORT STEEL SCREW JACK

12" MIN.
48" MAX.

SIDE VIEW

NOTES:

- DOUBLE CHECK VALVE ASSEMBLY (DCVA) SHALL BE APPROVED BY THE STATE OF WASHINGTON. APPROVED DCVA TO BE INSTALLED IN THE ORIENTATION (VERTICAL OR HORIZONTAL) FOR WHICH THEY ARE APPROVED.
- DCVA SHALL BE INSTALLED AT THE PROPERTY LINE OR EASEMENT LINE AND ON OWNER'S PROPERTY.
- ALL VAULTS SHALL BE PRE-APPROVED PRIOR TO INSTALLATION.
- THE DCVA MAY BE INSTALLED ABOVE OR BELOW GROUND PROVIDED ALL CLEARANCES ARE MET.
- DESIGNED FOR BACK SIPHONAGE AND BACK PRESSURE.
- THE WATER LINE SHALL BE DISINFECTED, FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLATION OF THE BACKFLOW ASSEMBLY.
- THE DCVA SHALL BE ACCESSIBLE AND PROTECTED FROM FREEZING AND FLOODING.
- ALL PIPE, VALVE AND FITTING JOINTS, FROM SUPPLY MAIN, SHALL BE FLANGED OR RESTRAINED.
- GROUT PIPE ENTRANCE AND EXIT, IN VAULT, WITH WATERTIGHT GROUT.
- AS OF JANUARY 4, 2014 ALL NEWLY INSTALLED FITTINGS IN CONTACT WITH WATER SHALL BE IN COMPLIANCE WITH THE REVISED SECTION 1417 OF THE EPA SAFE WATER DRINKING ACT AND CERTIFIED LEAD FREE USING NSF 372 STANDARDS.
- DCVA SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL STRUCTURES.
- A PLUMBING PERMIT IS REQUIRED, CONTACT THE WOODLAND BUILDING DEPARTMENT AT 360-225-7299.
- DCVA SHALL BE TESTED AFTER INSTALLATION, THEN ANNUALLY BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. DCVA SHALL BE RETESTED IF MOVED OR REPAIRED. RESULTS SHALL BE SENT TO THE CITY OF WOODLAND PUBLIC WORKS DEPARTMENT.

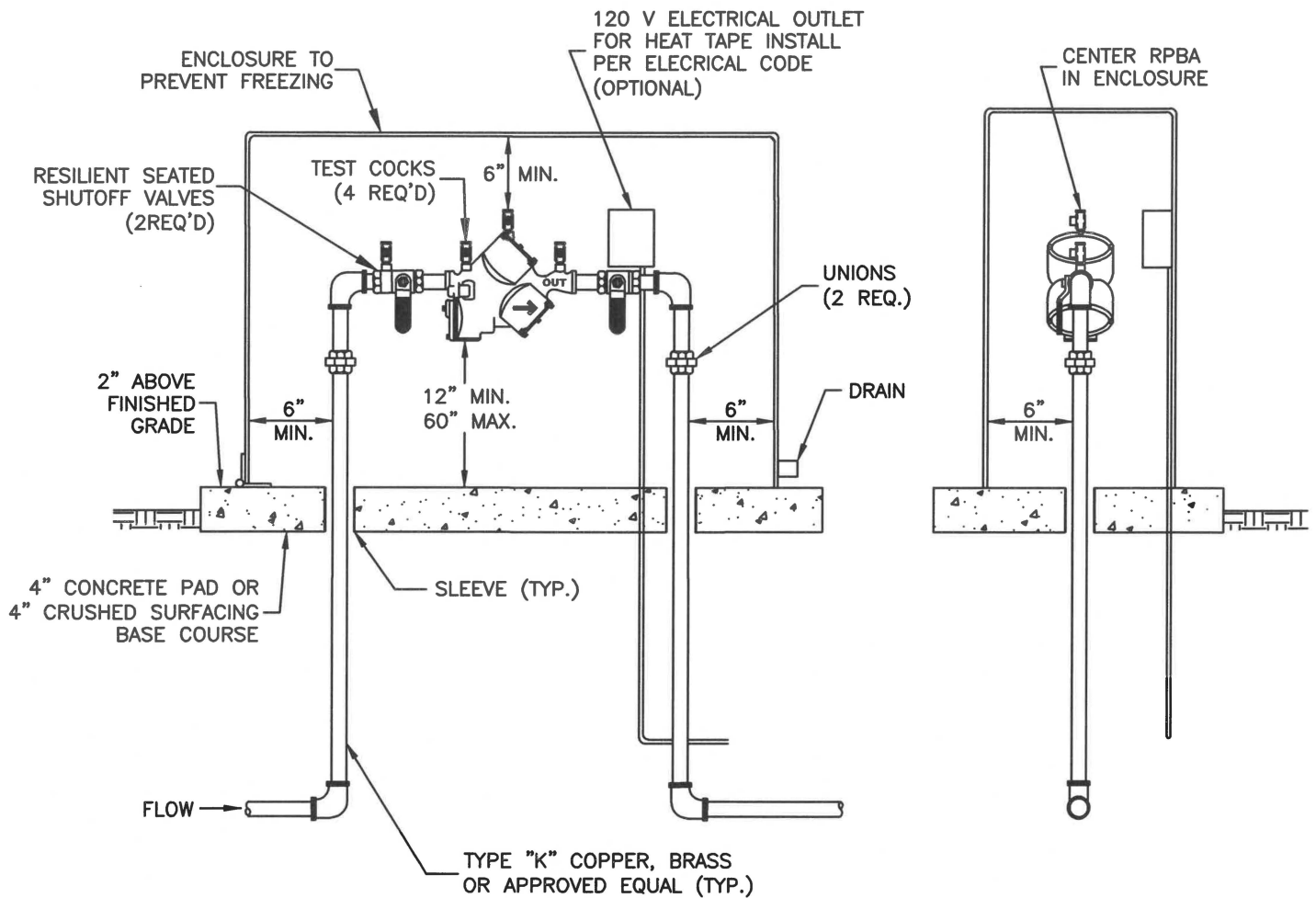
DOUBLE CHECK VALVE ASSEMBLY 2 1/2" & LARGER



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DATE 1/21/22

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W-08B



NOTES:

1. REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) SHALL BE APPROVED BY THE STATE OF WASHINGTON. APPROVED RPBA TO BE INSTALLED IN THE ORIENTATION (VERTICAL OR HORIZONTAL) FOR WHICH THEY ARE APPROVED.
2. THE WATER LINE SHALL BE DISINFECTED, FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLATION OF THE BACKFLOW ASSEMBLY.
3. DESIGN FOR BACK SIPHONAGE AND BACK PRESSURE.
4. ALL INSTALLATIONS SHALL HAVE TWO UNIONS.
5. ABOVE GROUND INSTALLATION ONLY.
6. DO NOT INSTALL IN A PIT, TRENCH OR AREA SUBJECT TO FLOODING.
7. RPBA MUST BE ACCESSIBLE AND PROTECTED FROM FREEZING.
8. DRAIN SHALL BE SIZED PER THE AWWA CROSS CONNECTION MANUAL.
8. A PLUMBING PERMIT IS REQUIRED, CONTACT THE WOODLAND BUILDING DEPARTMENT AT (360) 225-7299.
9. RPBA MUST BE TESTED AFTER INSTALLATION, THEN ANNUALLY BY A WASHINGTON STATE CERTIFIED BACKFLOW TESTER. RPBA SHALL BE RETESTED IF MOVED OR REPAIRED. RESULTS SHALL BE SENT TO THE CITY OF WOODLAND PUBLIC WORKS DEPARTMENT.

REDUCED PRESSURE BACKFLOW ASSEMBLY 2" & SMALLER



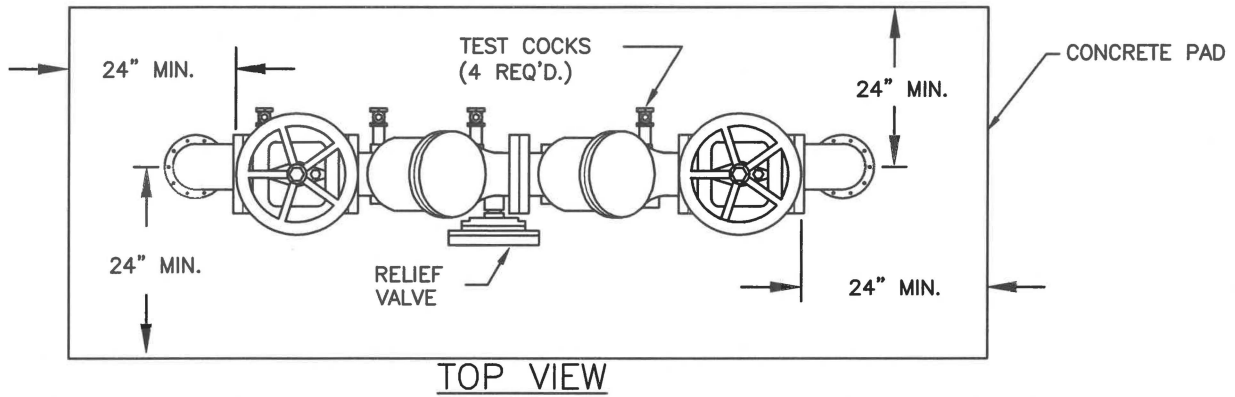
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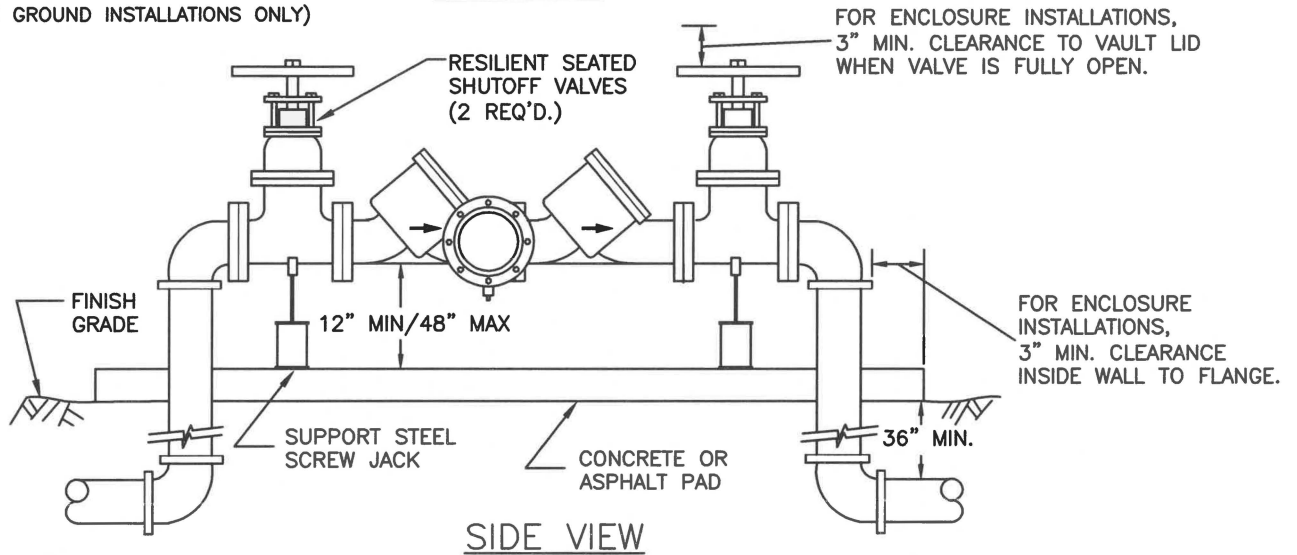
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W-09A



(ABOVE GROUND INSTALLATIONS ONLY)



NOTE:
A CITY APPROVED VALVE IS REQ'D BETWEEN THE SUPPLY MAIN AND THE RPBA

NOTE:
PROVIDE HEAT AND/OR INSULATION

NOTES:

1. REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) SHALL BE APPROVED BY THE STATE OF WASHINGTON. APPROVED RPBA TO BE INSTALLED IN THE ORIENTATION (VERTICAL OR HORIZONTAL) FOR WHICH THEY ARE APPROVED.
2. RPBA SHALL BE INSTALLED AT PROPERTY LINE OR EASEMENT LINE AND ON OWNER'S PROPERTY.
3. ALL ENCLOSURES SHALL BE PRE-APPROVED PRIOR TO INSTALLATION.
4. DO NOT INSTALL IN A PIT, TRENCH OR AN AREA SUBJECT TO FLOODING.
5. THE WATER LINE SHALL BE DISINFECTED, FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLATION OF THE ASSEMBLY.
6. ALL UNDERGROUND PIPE, VALVES AND FITTING JOINTS SHALL BE RESTRAINED FROM THE SUPPLY MAIN. ALL ABOVE GROUND JOINTS SHALL BE FLANGED.
7. GROUT PIPE ENTRANCE AND EXIT IN VAULT, WITH WATERTIGHT GROUT.
8. HEAT AND/OR INSULATION SHALL BE PROVIDED TO PREVENT FREEZING.
9. ADEQUATE GRAVITY DRAINAGE SYSTEM REQUIRED WITH APPROVED AIR GAP.
10. MINIMUM 24" CLEARANCE ON ALL SIDES AROUND RPBA.
11. A PLUMBING PERMIT IS REQUIRED, CONTACT THE WOODLAND BUILDING DEPARTMENT AT 360-225-7299.
12. THE RPBA SHALL BE TESTED AFTER INSTALLATION THEN ANNUALLY BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. RPBA SHALL BE RETESTED IF MOVED OR REPAIRED. RESULTS SHALL BE SENT TO THE CITY OF WOODLAND PUBLIC WORKS DEPARTMENT.

REDUCED PRESSURE BACKFLOW ASSEMBLY 2 1/2" & LARGER

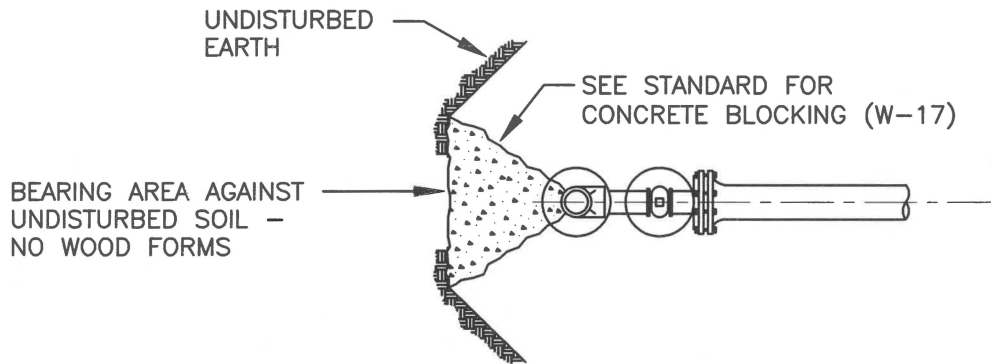


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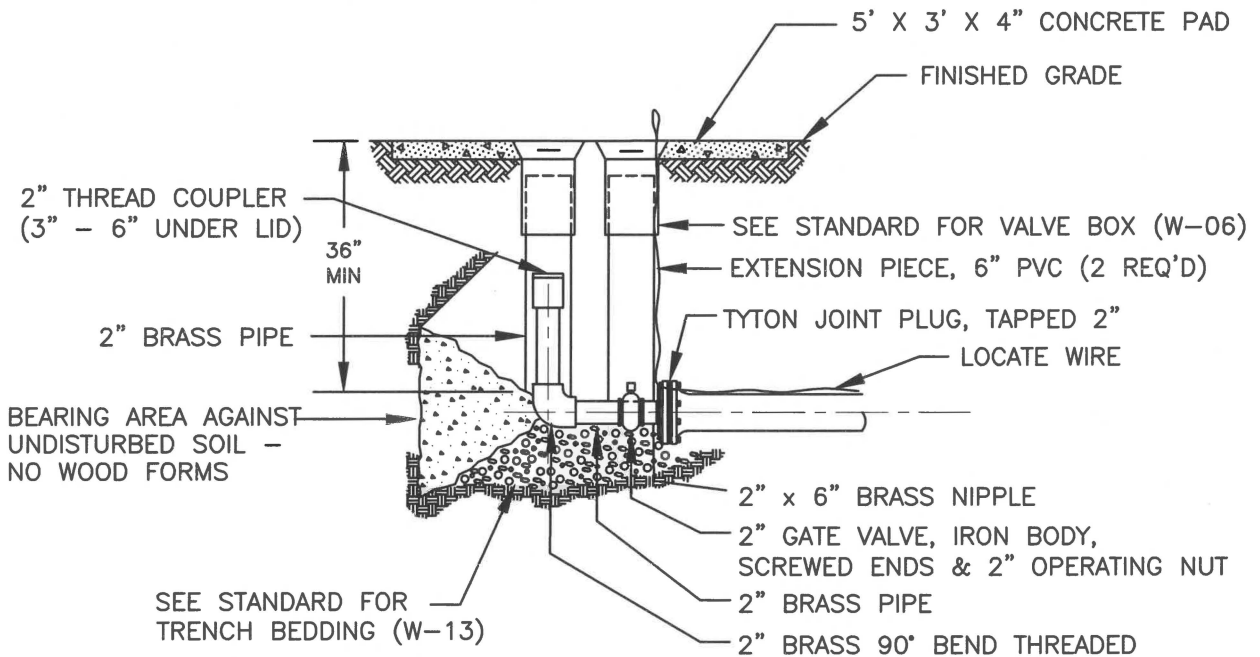
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W-09B



PLAN VIEW



SIDE VIEW

NOTE:

1. NO WOOD OR TIE DOWNS ALLOWED.

STANDARD BLOW OFF



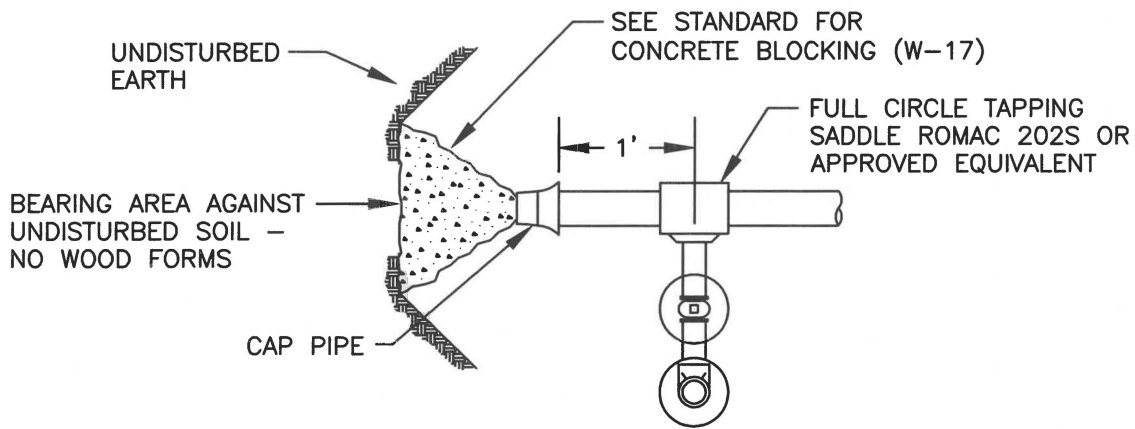
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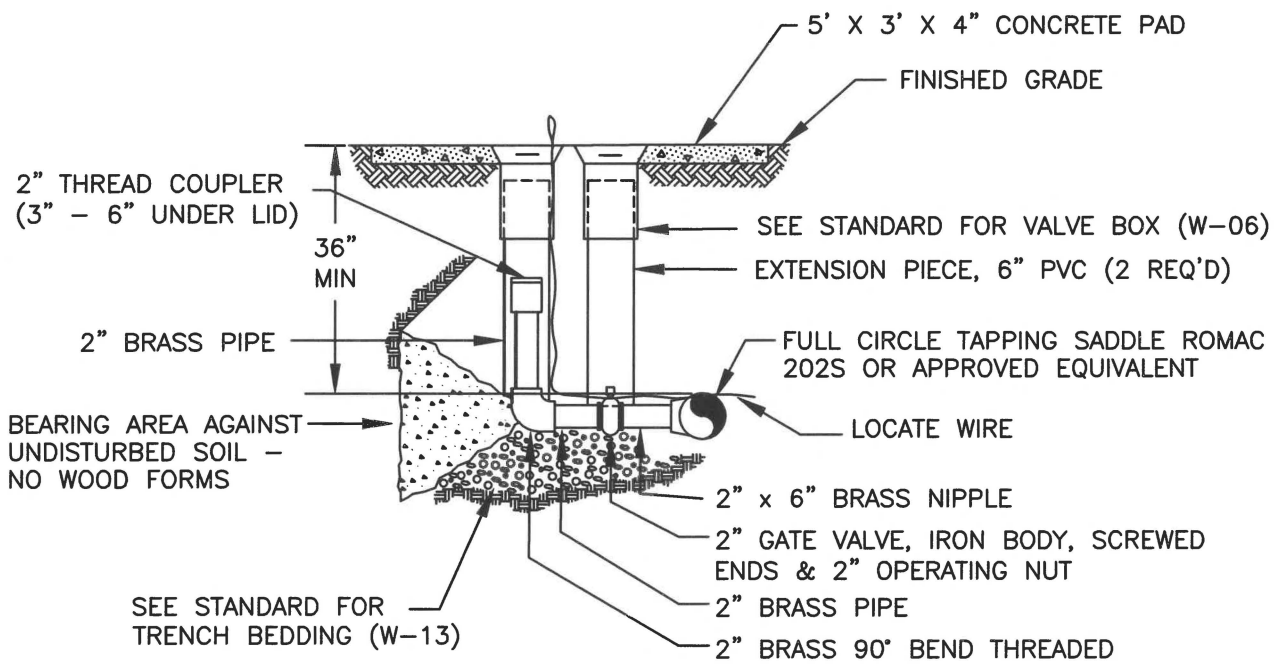
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W-10



PLAN VIEW



TOP VIEW

SIDE TAP BLOW OFF

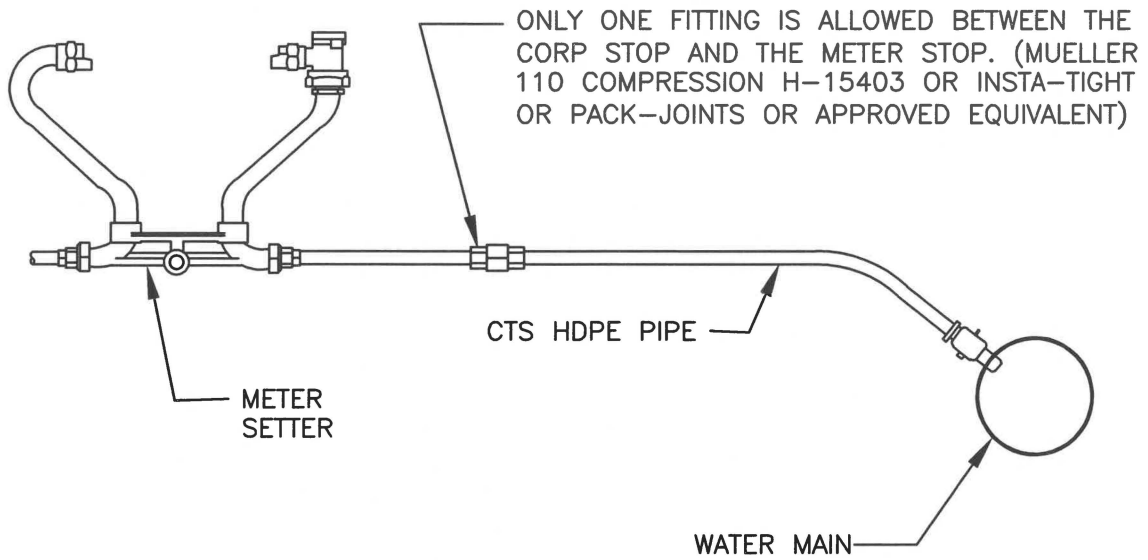


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NOTE:

1. REPLACE ALL SERVICES WHICH MEET ANY OF THE FOLLOWING CONDITIONS:
 - A. METER BOX IS RELOCATED
 - B. SUBSTANDARD EITHER BY MATERIALS OR LACK OF COVER
 - C. THE METER SETTER MUST BE REPLACED
2. ALL SERVICES MUST TERMINATE AT METER SETTER.
3. FOR SERVICE TRANSFERS ONLY, ONE FITTING IS ALLOWED BETWEEN THE CORP STOP AND THE METER STOP.

METER SERVICE TRANSFER AND REPLACEMENT



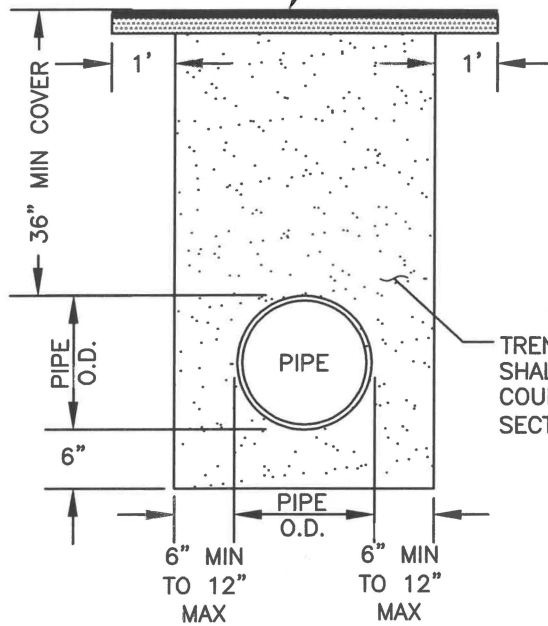
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HOT MIX ASPHALT CL. 1/2-INCH PG 58H-22 (3 TO 30 ESAL MIX DESIGN) PER WSDOT STD. SPEC. HMA AND CSBC THICKNESS PER ROADWAY CLASSIFICATION. SEE STD. DETAILS T-23 THROUGH T-27 AND T-33.



TRENCH BACKFILL AND PIPE BEDDING SHALL BE CRUSHED SURFACING TOP COURSE PER WSDOT STD. SPEC. SECTION 9-03.9(3).

NOTE:

1. PIPE BEDDING AND TRENCH BACKFILL SHALL BE COMPACTED TO 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY PER ASTM. D1557, IN 6-INCH MAXIMUM LIFTS.
2. MATERIALS, WORKMANSHIP, AND INSTALLATION SHALL BE PER THE MOST CURRENT WSDOT STD. SPECIFICATIONS, AS AMENDED BY CITY STANDARDS.
3. SEE CITY STD. DETAIL T-33 FOR STD. TRENCH RESTORATION.

WATER PIPE TRENCH BEDDING & BACKFILL



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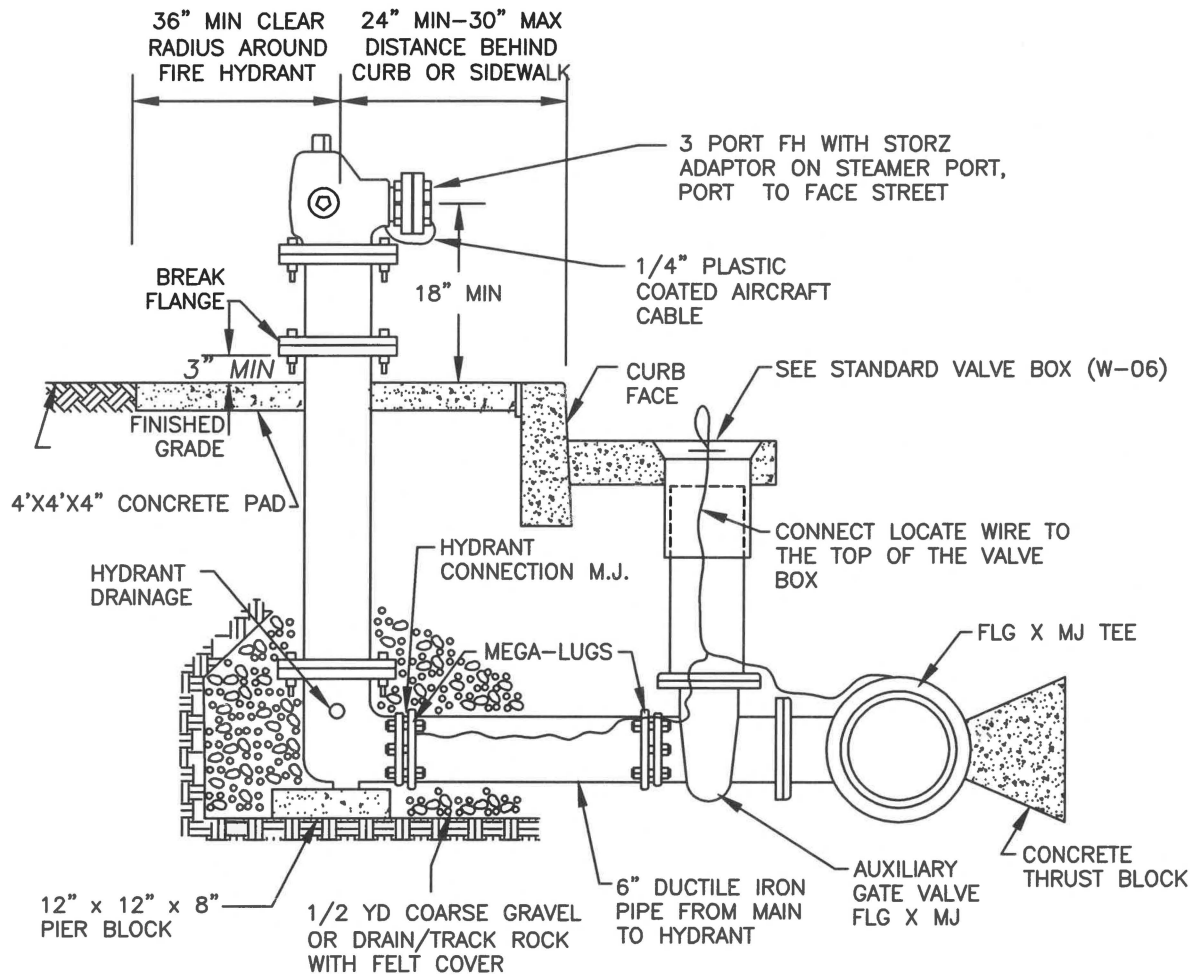
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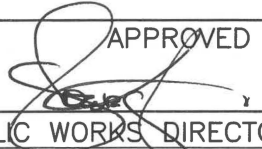


NOTES:

1. IN GENERAL, FIRE HYDRANT LOCATIONS SHALL BE AS SHOWN ON THE PLANS AND SHALL CONFORM TO THIS DETAIL. FIRE HYDRANTS SHALL NOT BE SET UNTIL LOCATION AND DEPTH ARE APPROVED BY THE CITY OF WOODLAND PUBLIC WORKS DEPARTMENT.
2. FIRE HYDRANT INSTALLATION SHALL BE APPROVED BY THE CITY OF WOODLAND PUBLIC WORKS DEPARTMENT PRIOR TO BACKFILLING.
3. HYDRANT TO BE WATEROUS WB67 CLASS 250.
4. HYDRANT TO BE 5-1/4" COMMERCIAL W/ (2) 2-1/2" NST, (1) 4-1/2" NST THREADED PORT(S) WITH (1) 5" TWO LUG QUARTER TURN STORZ OR APPROVED EQUAL PUMPER PORT CONNECTION.
5. THE FIRE HYDRANT SHALL BE INSTALLED SO THAT IT IS PLUMB IN ALL DIRECTIONS.
6. FOUR (4) GUARD POSTS TO BE INSTALLED IN UNPROTECTED AREAS (4' RADIUS).
7. FIRE HYDRANTS SHALL BE FACTORY PAINTED OR QUALITY FIELD PAINTED WITH RODDA SILICONE ALKYD ENAMEL HEAVY DUTY GLOSS SAFETY YELLOW 7-32616-1 TO NEW CONDITION.
8. HYDRANT STANDARD BURY IS 4' UNLESS OTHERWISE NOTED ON THE PLANS, OR WHEN BREAKAWAY JOINT IS INSTALLED 7" ABOVE FINISHED GRADE.
9. ALL JOINTS SHALL BE RESTRAINED UTILIZING MECHANICAL RESTRAIN SYSTEMS. CONCRETE THRUST BLOCKS SHALL NOT BE ALLOWED.
10. STORZ ADAPTORS ARE REQUIRED.
11. INSTALL LOCATING WIRE AND CONNECT TO EXISTING WIRE IF PRESENT.

FIRE HYDRANT

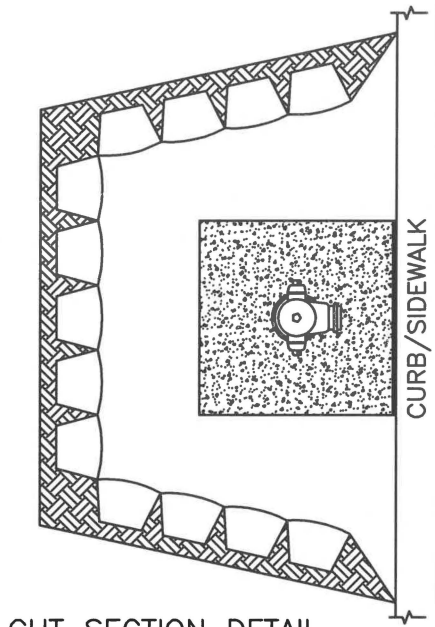


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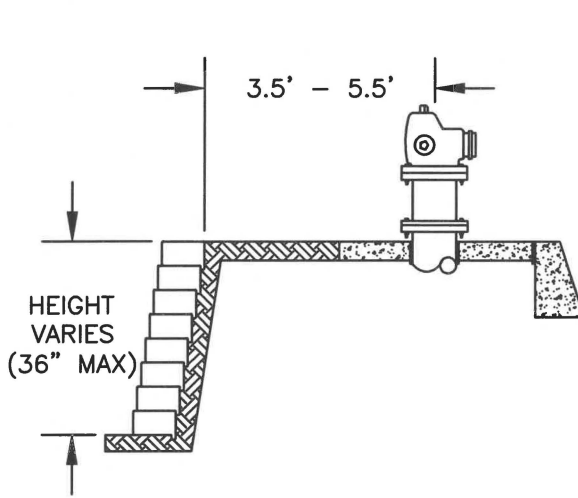
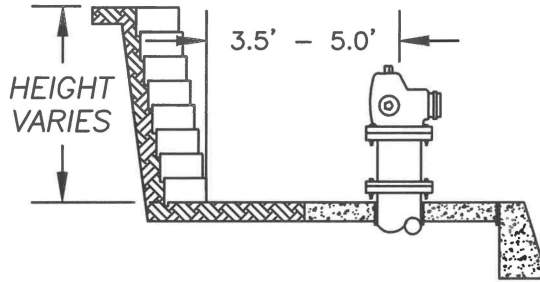
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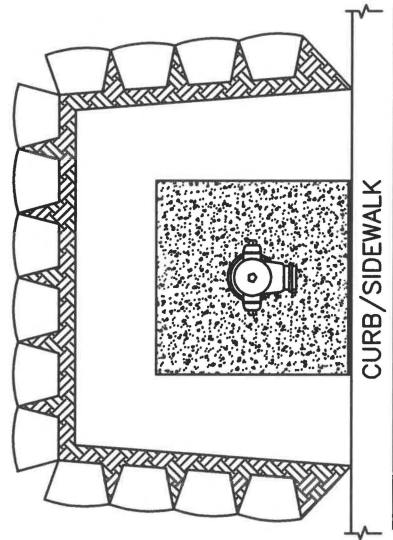
W-14



CUT SECTION DETAIL



FILL SECTION DETAIL



NOTES:

1. CONSULT I.B.C. FOR RETAINING WALL CONSTRUCTION REQUIREMENTS.
2. THE AREA WITHIN THE RETAINING WALL BOUNDARIES FROM THE CURB/SIDEWALK TO THE REAR RETAINING WALL SHALL HAVE A MAXIMUM SLOPE OF 1% IN ANY DIRECTION.
3. THE 4'x4' CONCRETE PAD SHALL HAVE A MAXIMUM SLOPE OF 1%.
4. RETAINING WALL SHALL MAINTAIN A MINIMUM RADIUS OF 3.5' AROUND THE HYDRANT

HYDRANT RETAINING WALL DETAIL



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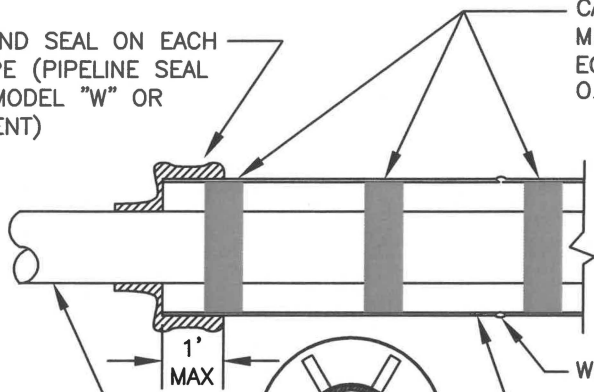
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INSTALL FLEXIBLE END SEAL ON EACH END OF CASING PIPE (PIPELINE SEAL & INSULATOR INC MODEL "W" OR APPROVED EQUIVALENT)

CASING SPACER - MIN 3 PER 18' PIPE, EQUALLY SPACED, 5' O.C., TYP.



RESTRAINED JOINT CARRIER PIPE - SEE PLANS FOR CARRIER PIPE SIZE AND CLASS RATING

WELDED JOINT

STEEL CASING ASTM A 139 GRADE B MIN WALL THICKNESS - SEE PLANS FOR CASING SIZE AND MIN WALL THICKNESS

CASING SPACER - SEE SCHEDULE FOR SIZE (PIPELINE SEAL & INSULATOR INC MODEL C8G-2 OR APPROVED EQUIVALENT) 3 PER 18' JOINT OF PIPE, EQUALLY SPACED

CASING SIZING REQUIREMENTS

CARRIER PIPE	MINIMUM CASING REQUIREMENTS	WALL THICKNESS
4"	16" A36 STEEL	3/8"
6"	16" A36 STEEL	3/8"
8"	24" A36 STEEL	3/8"
10"	24" A36 STEEL	3/8"
12"	24" A36 STEEL	3/8"
16"	36" A36 STEEL	5/8"
24"	48" A36 STEEL	5/8"

NOTES:

1. CASING TO BE EXTENDED 5' BEYOND ANY CURBS, WALLS, STRUCTURES, OR FOOTINGS.
2. PUBLIC AND PRIVATE MAINS SHALL BE PLACED IN SEPARATE CASINGS.
3. FOR CASINGS UNDER RAILROAD TRACKS, WRITTEN PERMISSION FOR THE OWNER OF THE RAILROAD TRACKS IS REQUIRED PRIOR TO OBTAINING CITY OF WOODLAND PERMITS TO PROCEED.
4. NO PRIVATE UTILITIES SHALL BE ALLOWED IN CITY OF WOODLAND CASINGS.

PIPE CASING DETAIL



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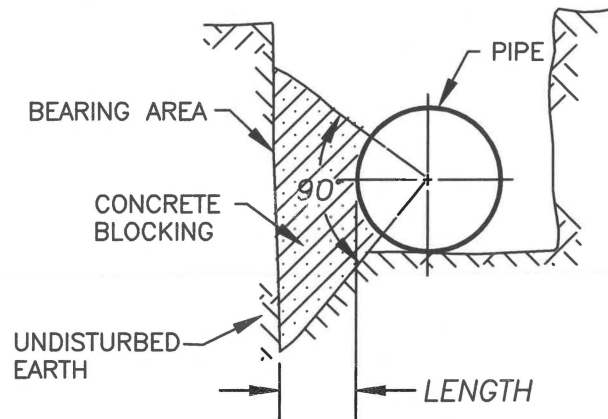
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SOIL BEARING = 2000 LB/S.F.				
PIPE SIZE	HORZ. BENDS	MIN. BEARING AREA S.F.	MIN. VOL. OF BLOCKING C.F.	MIN. LENGTH OF BLOCKING
4"	TEE	2.3	0.8	0.86
	90°	3.2	1.4	1.06
	45°	1.7	0.5	0.73
	22-1/2°	0.9	0.2	0.46
	11-1/4°	-	-	-
6"	TEE	4.7	2.4	1.24
	90°	6.6	4.0	1.53
	45°	3.6	1.6	1.05
	22-1/2°	1.8	0.6	0.66
	11-1/4°	0.9	0.2	0.39
8"	TEE	8.0	5.4	1.63
	90°	11.4	9.0	2.00
	45°	6.2	3.6	1.37
	22-1/2°	3.1	1.3	0.87
	11-1/4°	1.6	0.5	0.51
10"	TEE	12.1	9.9	2.00
	90°	17.1	16.7	2.46
	45°	9.3	6.6	1.69
	22-1/2°	4.7	2.4	1.08
	11-1/4°	2.4	0.9	0.63
12"	TEE	17.1	16.7	2.37
	90°	24.2	28.0	2.93
	45°	13.1	11.2	2.01
	22-1/2°	6.7	4.1	1.28
	11-1/4°	3.4	1.5	0.74
16"	TEE	23.8	27.3	2.73
	90°	33.6	46.0	3.37
	45°	18.2	18.3	2.29
	22-1/2°	9.3	6.7	1.42
	11-1/4°	4.7	2.4	0.80
18"	TEE	29.9	38.5	3.05
	90°	42.2	64.7	3.79
	45°	22.9	25.8	2.57
	22-1/2°	11.7	9.4	1.60
	11-1/4°	5.9	3.3	0.90
24"	TEE	52.3	89.1	4.03
	90°	74.0	149.8	5.00
	45°	40.0	59.7	3.55
	22-1/2°	20.4	21.7	2.11
	11-1/4°	10.3	7.7	1.18



NOTES:

1. ALL BLOCKING SHALL BE POURED AGAINST FIRM UNDISTURBED SOIL.
2. ALL CONCRETE BLOCKING SHALL BE POURED IN PLACE WITHOUT DIRECT CONTACT TO PIPE, FITTINGS OR FLANGES. 15 LB. ASPHALT- IMPREGNATED FELT, OR EQUIVALENT AS APPROVED BY THE INSPECTOR, SHALL BE PLACED BETWEEN THE CONCRETE AND PIPE, FITTINGS OR FLANGES.
3. LAYOUT TO BE APPROVED BY THE INSPECTOR PRIOR TO AND AFTER CONCRETE POUR.
4. CONCRETE FOR ALL BLOCKING SHALL HAVE A 28-DAY MINIMUM COMPRESSIVE STRENGTH OF 2,300 P.S.I.
5. THIS CHART IS NOT APPLICABLE TO VERTICAL BENDS. LOCATION SPECIFIC DESIGN IS REQUIRED FOR SUCH INSTALLATIONS.
6. WHERE THE TRENCH SOIL HAS A BEARING PRESSURE LESS THAN 2000 POUNDS PER SQUARE FOOT, LOCATION SPECIFIC DESIGN IS REQUIRED.

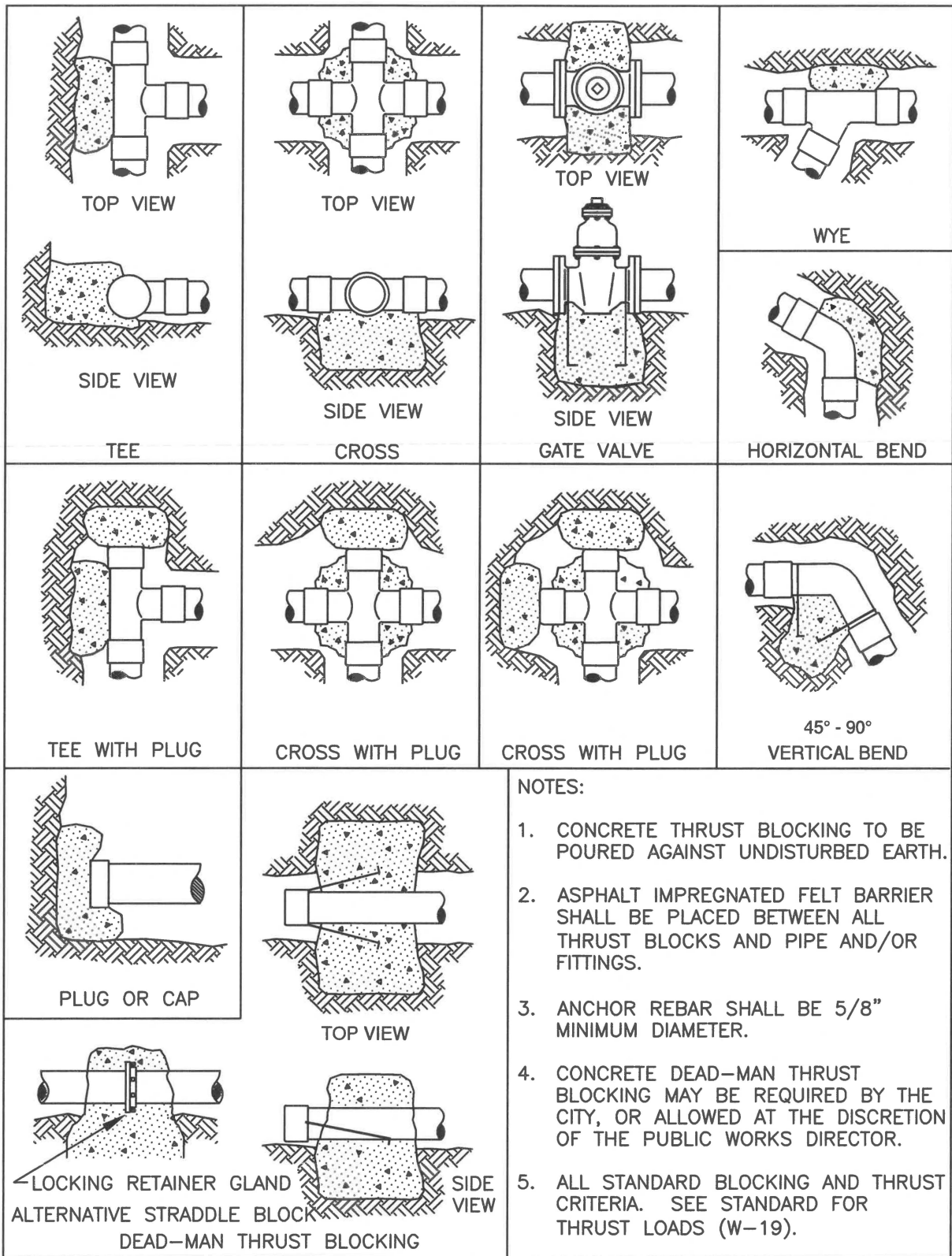
STANDARD THRUST BLOCK



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THRUST BLOCKING



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THRUST LOADS

THRUST AT FITTINGS IN POUNDS AT 200 POUNDS PER SQUARE INCH OF WATER PRESSURE

PIPE DIAMETER	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND	DEAD END OR TEE
4"	3,600	2,000	1,000	500	2,600
6"	8,000	4,400	2,300	1,200	5,700
8"	14,300	7,700	4,000	2,000	10,100
10"	22,300	12,100	6,200	3,100	15,800
12"	32,000	17,400	8,900	4,500	22,700
14"	43,600	23,600	12,100	6,100	30,800
16"	57,000	30,800	15,700	7,900	40,300



NOTES:

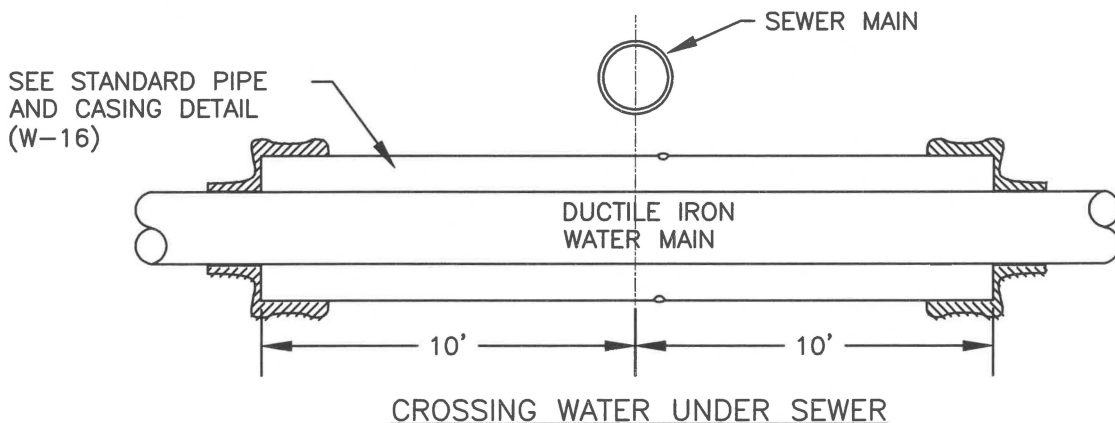
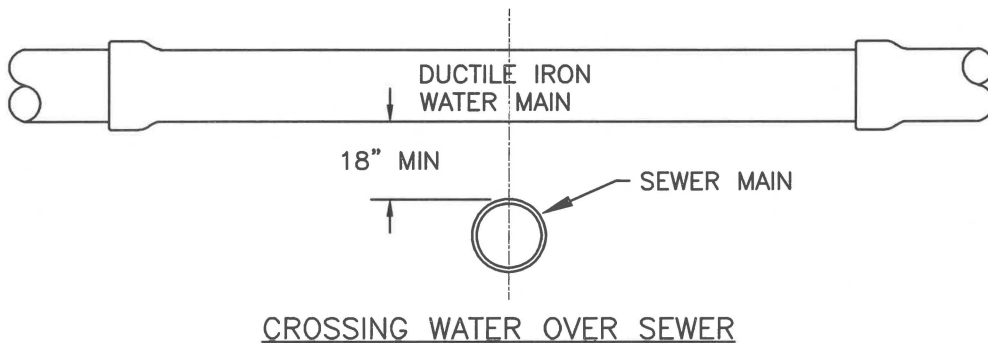
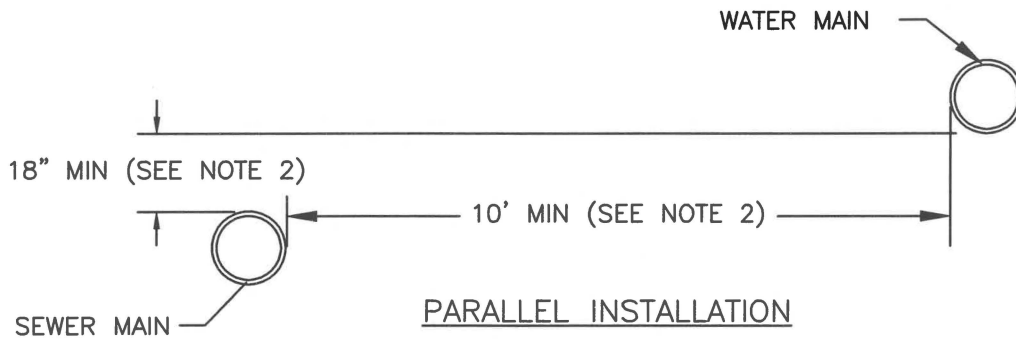
1. BLOCKING SHALL BE COMMERCIAL CONCRETE POURED IN PLACE AGAINST UNDISTURBED EARTH. FITTING SHALL BE ISOLATED FROM CONCRETE THRUST BLOCK WITH ASPHALT IMPREGNATED FELT OR SIMILAR MATERIAL.
2. TO DETERMINE THE BEARING AREA OF THE THRUST BLOCK IN SQUARE FEET (S.F.):
EXAMPLE : 12" - 90° BEND IN SAND AND GRAVEL 32,000 LBS 3000 LB/S.F. = 10.7 S.F. OF AREA
3. AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZE, PRESSURES AND SOIL CONDITIONS.
4. BLOCKING SHALL BE ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.

SAFE SOIL BEARING LOADS

FOR HORIZONTAL THRUSTS WHEN THE DEPTH OF COVER OVER THE PIPE EXCEEDS 2 FEET

SOIL	POUNDS PER SQUARE FOOT
MUCK, PEAT	0
SOFT CLAY	1,000
SAND	2,000
SAND & GRAVEL	3,000
SAND & GRAVEL CEMENTED WITH CLAY	4,000
HARD SHALE	10,000

	THRUST LOADS					W-19
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	DATE 1/21/02					



NOTES:

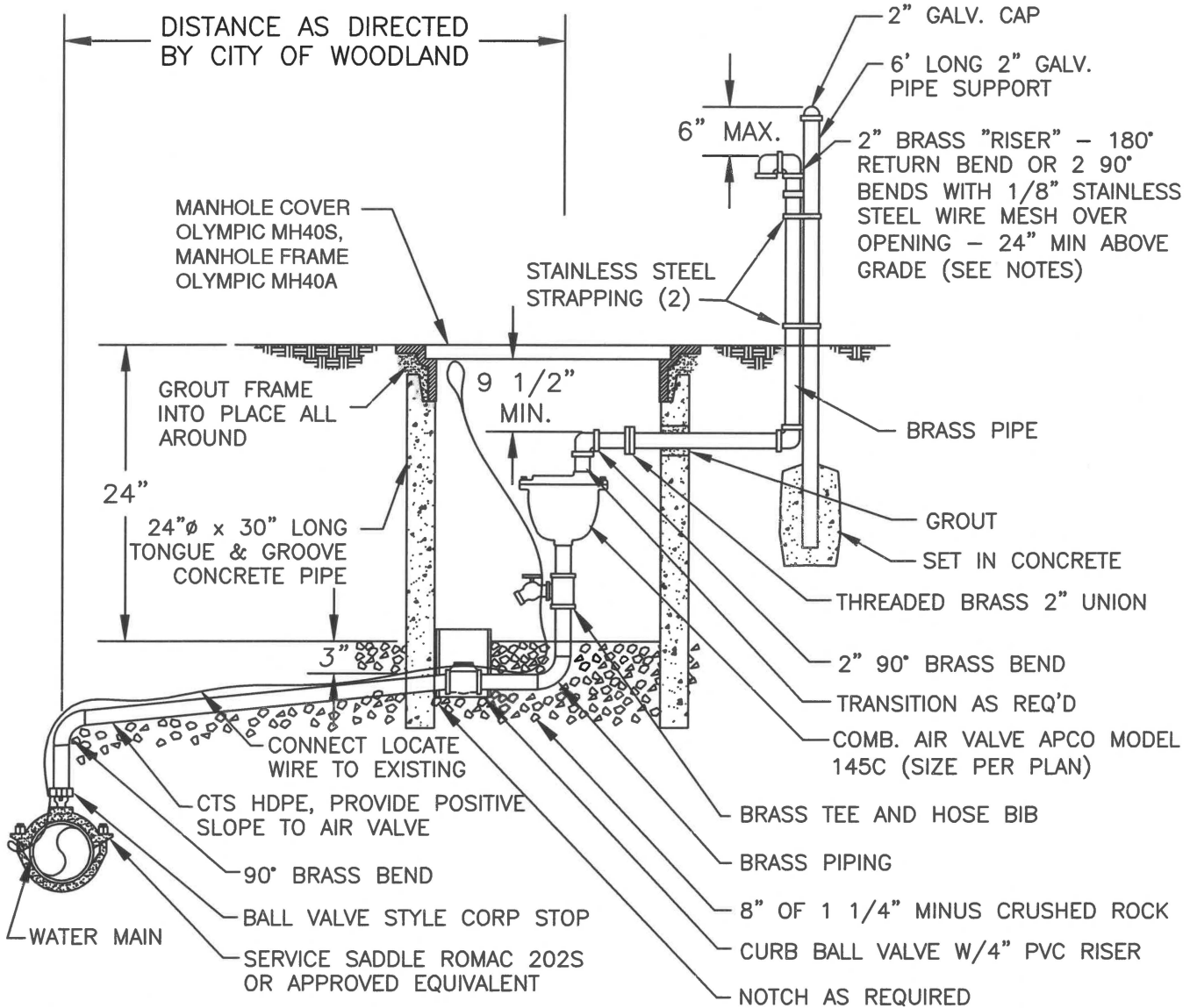
1. EXCEPTIONS SHALL BE APPROVED BY THE CITY OF WOODLAND IN WRITING.
2. WHERE MINIMUM CLEARANCES CANNOT BE MET, THE SEWER MAIN SHALL BE PLACED IN SEPARATE TRENCHES AND CONSTRUCTED OF MATERIALS EQUIVALENT TO THE CITY OF WOODLAND WATER MAIN STANDARDS, INCLUDING PRESSURE TESTING. ADEQUATE RESTRAINT SHALL BE PROVIDED TO ALLOW TESTING TO OCCUR.
3. ALL SEWER CROSSINGS OVER OR UNDER WATER MAINS SHALL MAXIMIZE THE JOINT SEPARATION BY USING THE LONGEST STANDARD LENGTH PIPE AVAILABLE FROM THE MANUFACTURER FOR BOTH THE WATER AND SEWER MAINS. BOTH PIPES SHALL BE CENTERED AT THE POINT OF CROSSING.
4. ALL SEWER CROSSING OVER WATER MAINS SHALL BE CONSTRUCTED OF MATERIALS EQUIVALENT TO THE CITY OF WOODLAND WATER MAIN STANDARDS, INCLUDING PRESSURE TESTING

WATER AND SEWER SPACING



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NOTES:

1. VALVE ASSEMBLY SHALL BE SET AT THE HIGH POINT OF THE LINE.
2. A MINIMUM OF ONE 4" ADJUSTMENT RING MUST BE PROVIDED IN TRAFFIC AREA SETTINGS. SADDLE TAP, PIPING & VALVE TO MATCH COMBINATION AIR VALVE INLET SIZE (SEE PLAN). ADJUSTMENT RINGS AND MANHOLE RING TO BE GROUTED, WATER TIGHT.
3. TERMINATE EXHAUST INSIDE VAULT WITH 90° BEND (DOWN) AND WIRE MESH IF VAULT IS DRAINED TO DAYLIGHT.
4. LOCATE WIRE SHALL INCLUDE A LOOP THAT CAN BE REACHED FROM OPEN COVER.

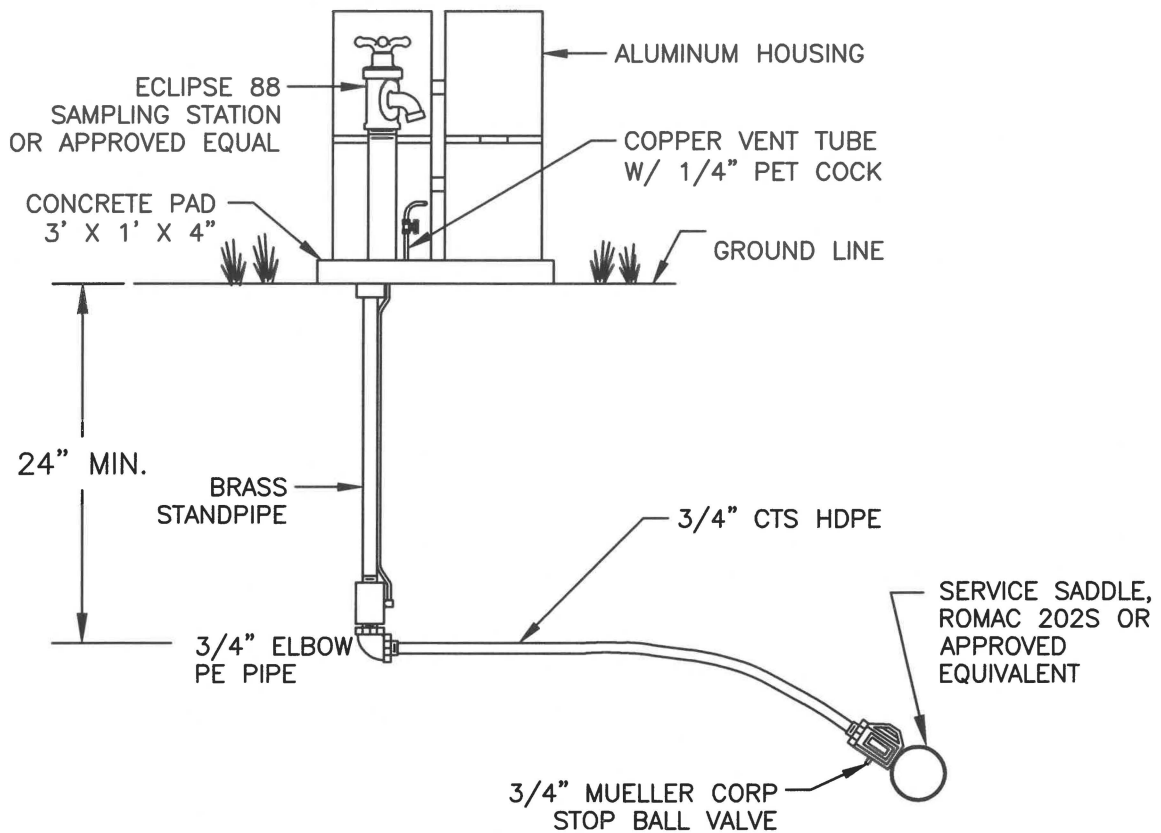
COMBINATION AIR RELEASE VALVE



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NOTES:

1. SAMPLING STATIONS SHALL BE 24" BURY, WITH A 3/4" FIP INLET, AND A (3/4" HOSE) NOZZLE.
2. ALL STATIONS SHALL BE ENCLOSED IN A LOCKABLE, NONREMOVEABLE, ALUMINUM-CAST HOUSING.
3. WHEN OPENED, THE STATION SHALL REQUIRE NO KEY FOR OPERATION, AND THE WATER WILL FLOW IN AN ALL BRASS WATERWAY.
4. ALL WORKING PARTS WILL ALSO BE OF BRASS AND BE REMOVABLE FROM ABOVE GROUND WITH NO DIGGING. EXTERIOR PIPING SHALL BE BRASS.
5. A COPPER VENT TUBE WILL ENABLE EACH STATION TO BE PUMPED FREE OF STANDING WATER TO PREVENT FREEZING AND TO MINIMIZE BACTERIA GROWTH.
6. ECLIPSE NO. 88 BRASS SAMPLING STATION SHALL BE INSTALLED.
7. INSTALL LOCATE WIRE.
8. POUR 3' X 1' X 4" CONCRETE PAD.

SAMPLING STATION



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Standard Abbreviations

AB	ANCHOR BOLT	H	HIGH, HORIZONTAL	S	SOUTH
AC	ASPHALTIC CONCRETE, ACOUSTIC	HB	HOSE BIB	SCH	SCHEDULE
ADJ	ADJUSTABLE	HDPE	HIGH DENSITY POLYETHYLENE	SEC	SECOND
AL	ALUMINUM	HOA	HAND-OFF-AUTO	SHT	SHEET
ALT	ALTERNATE	HP	HORSEPOWER	SIM	SIMILAR
AMB	AMBIENT	HT	HEIGHT	SOLN	SOLUTION
APPROX	APPROXIMATELY	HZ	HERTZ (CYCLES PER SECOND)	SPEC	SPECIFICATION
ASSY	ASSEMBLY	ID	INSIDE DIAMETER	SQ	SQUARE
AUTO	AUTOMATIC	IPS	IRON PIPE SIZE	SS	SANITARY SEWER, SOLID
AUX	AUXILIARY	JB	JUNCTION BOX	SST	STAINLESS STEEL
		JT	JOINT	STA	STATION
BF	BLIND FLANGE			STD	STANDARD, STUD
BLDG	BUILDING			STL	STEEL
BV	BALL VALVE	LB	POUND(S)	STRUCT	STRUCTURAL
		LVR	LOUVER		
CB	CATCH BASIN	LW	LOCATE WIRE	T	TRAP, TOP, TANGENT
CDF	CONTROL DENSITY FILL	MAG	MAGNETIC	TB	TERMINAL BOX, TOP & BOTTOM
CEM	CEMENT	MAINT	MAINTENANCE	T/B	TOP OF BANK
CFM	CUBIC FEET PER MINUTE	MAT'L	MATERIAL	TC	TOP OF CURB/CONCRETE
CJ	CONSTRUCTION JT	MAX	MAXIMUM	TDH	TOTAL DYNAMIC HEAD
CL	CENTERLINE	MCC	MOTOR CONTROL CENTER	TESCP	TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN
CLR	CLEAR	MIN	MINIMUM, MINUTE	THRD	THREAD(ED)
CO	CLEANOUT	MJ	MECHANICAL JOINT	TOW	TOP OF WALL
COMB	COMBINATION			TRANS	TRANSITION
CONC	CONCRETE, CONCRETING	N	NEUTRAL, NORTH	TS	TOP OF SLAB/SLOPE
CPLG	COUPLING	NC	NORMALLY CLOSED	TYP	TYPICAL
CSTC	CRUSHED SURFACING TOP COURSE	NE	NORTH EAST		
CTR	CENTER	NEG	NEGATIVE	UG	UNDERGROUND
CTS	COPPER TUBE SIZE	NO	NORMALLY OPEN, NUMBER	UH	UNIT HEATER
CSBC	CRUSHED SURFACING BASE COURSE	NPSH	NET POSITIVE SUCTION HEAD	U/P	UTILITY POLE
		NRS	NONRISING STEM		
		NTS	NOT TO SCALE	VAC	VACUUM, VOLTS ALTERNATING CURRENT
D	DRAIN, DECANT	OD	OUTSIDE DIAMETER	VAR	VARIABLE, VARIES
DI	DUCTILE IRON	OH	OVER HEAD	VC	VERTICAL CURVE
DIA, Ø	DIAMETER	OPNG	OPENING	VERT	VERTICAL
DWG(S)	DWG(S)			VTR	VENT THROUGH ROOF
		PE	PLAIN END, POLYETHYLENE		
E	EAST	PEN	PENETRATION	W	WEST, WATER
EA	EXHAUST AIR, EACH	PH	PHASE	W/	WITH
ECC	ECCENTRIC	PL	PROPERTY LINE	W/O	WITHOUT
ELEV.	ELEVATION (ELEV)	PLCS	PLACES	WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
ELECT	ELECTRICAL	PLY	PLYWOOD	WSEL	WATER SURFACE ELEVATION
E.O.P.	EDGE OF PAVEMENT	PP	POWER POLE	WT	WATERTIGHT, WEIGHT
EQUIP	EQUIPMENT	PRES	PRESSURE	WWF	WELDED WIRE FABRIC
EQUIV	EQUIVALENT	PRV	PRESSURE REDUCING (RELIEF) VALVE		
EX.	EXISTING	PS	PRESSURE SWITCH, PRESSURE SENSOR	XFMR	POWER TRANSFORMER
EXH	EXHAUST	PSI	POUNDS PER SQUARE INCH	XP	EXPLOSION PROOF
EXP	EXPANSION, EXPOSED	PVC	POLYVINYL CHLORIDE		
EXT	EXTERIOR	PVMT	PAVEMENT	#	NUMBER, POUNDS
				&	AND
FF	FINISH FLOOR	R	RADIUS, RISER	Ø	DIAMETER, PHASE
FIP	FEMALE IRON PIPE	R/C	REINFORCED CONCRETE		
FLEX	FLEXIBLE	RD	ROOF DRAIN, ROAD		
FLG	FLANGE	RED	REDUCED(R)		
FLR	FLOOR	REINF	REINFORCED		
		REQ'D	REQUIRED		
GALV	GALVANIZED	RPM	REVOLUTIONS PER MINUTE		
GPD	GALLONS PER DAY	R/W	RIGHT OF WAY		
GPM	GALLONS PER MINUTE				
GV	GATE VALVE				

STANDARD ABBREVIATIONS



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