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<td>1 ½” Water Meter Installation</td>
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<td>3” – 4” Domestic Meter Installation</td>
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<td>Water Meter Placement</td>
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<td>1” &amp; 2” Steel Water Meter Box</td>
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<td>1” Air &amp; Vacuum Valve Assembly</td>
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<td>2” Blow-Off Assembly</td>
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<td>W-27A</td>
<td>Pressure Reducing Valve (PRV) Top View</td>
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<td>Pressure Reducing Valve (PRV) Side View</td>
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<td>W-27C</td>
<td>Pressure Reducing Valve (PRV) Ladder, Pipe Penetration, &amp; Wall Flange</td>
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<td>Pressure Reducing Valve (PRV) 1” Air Vacuum Valve Assembly Installation</td>
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<tr>
<td>W-32</td>
<td>Water Main Flushing</td>
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</tbody>
</table>
NOTES

1. MECHANICAL JOINTS WITH ROMAC PIPE RESTRAINERS MAY BE USED AT FITTINGS IN LIEU OF FLANGE TO FLANGE CONNECTIONS SHOWN ABOVE, WHERE APPROVED BY THE CITY ENGINEER.

2. BUTTERFLY VALVE OPERATING NUTS SHALL BE ON THE NORTH AND WEST SIDE OF THE MAIN.
NOTES

1. CALL IN LOCATES TWO BUSINESS DAYS BEFORE YOU DIG. (1–800–424–5555)

2. IN RIGHT–OF–WAY USE 100% 5/8 MINUS CRUSHED ROCK FOR BEDDING, PIPE ZONE AND BACKFILL

3. FOUNDATION MATERIAL SHALL BE 1 3/4” MINUS CRUSHED ROCK OR OTHER AGGREGATE AS APPROVED BY CITY ENGINEER.

4. GRIND AND OVERLAY LIMITS SHALL EXTEND A MINIMUM OF 10' PAST THE END OF TRENCH AREAS.

5. SEAL ALL FINAL PATCHING AND PAVING SEAMS WITH LIQUID ASPHALT, SQUEEgee OR MOP THE SEALER, COVER WITH DRY SAND.

WIDTH TRENCH

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>PIPE ZONE MAX. TRENCH WIDTH</th>
<th>MAX. TRENCH WIDTH AT SUBGRADE</th>
<th>MAX. RESTORATION WIDTH AT SURFACE</th>
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</thead>
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<tr>
<td>WATER SERVICES</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
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<td>4&quot; OR 6&quot;</td>
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<td>6'-0&quot;</td>
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<td>16&quot;</td>
<td>3'-0&quot;</td>
<td>5'-0&quot;</td>
<td>7'-0&quot;</td>
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</table>

CLASS "B" ASPHALT CONC. MATCH EXISTING THICKNESS, 4" MINIMUM THICKNESS ON RESIDENTIAL STREETS AND 8" MINIMUM THICKNESS ON ARTERIALS

GRIND LIMITS (NOTE 4)

5/8" MINUS CRUSHED ROCK COMPACTED TO 95%

EXCAVATION PROTECTION PER SPECIFICATIONS

WATER, SEWER, OR STORM DRAIN PIPE

FOUNDATION MATERIAL AS REQUIRED (NOTE 3)
## THRUST BLOCKING TABLE

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
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<th>B</th>
<th>C</th>
<th>D</th>
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</table>

### NOTES

1. ROMAC MJ WEDGE ACTION RETAINER MAY BE SUBSTITUTED FOR VERTICAL BLOCKING UPON PRIOR APPROVAL OF THE CITY ENGINEER.

2. CONCRETE THRUST BLOCKING SHALL BE POURED AGAINST UNDISTURBED EARTH.

3. THRUST BLOCKS SHALL BE CAST–IN–PLACE AND BE CONSTRUCTED WITH CLASS 3000 OR COMMERCIAL CONCRETE.

4. BLOCK SHALL BEAR AGAINST FITTINGS ONLY AND SHALL BE CLEAR OF BOLTS AND JOINTS TO PERMIT TAKING UP OR DISMANTLING JOINT. WRAP FITTINGS WITH 8 MIL THICK POLYETHYLENE SHEETING PRIOR TO POURING CONCRETE.

5. BEARING AREA MUST BE ADJUSTED FOR HIGHER INTERNAL PRESSURES AND LOWER SOIL BEARING VALUES.

6. THE CONTRACTOR SHALL INSTALL BLOCK WHICH IS ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY STAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.
### Vertical Thrust Blocking

**For 11 1/4" - 22 1/2" - 45°**

<table>
<thead>
<tr>
<th>PIPE SIZE NOM. INCHES</th>
<th>TEST PRESSURE</th>
<th>VERTICAL BEND DEGREES</th>
<th>AMOUNT CONCRETE BLOCKING - CF. FT.</th>
<th>LENGTH OF SIDE BLOCKING - INCHES</th>
<th>SHACKLE ROD DIA. - INCHES</th>
<th>DEPTH OF ROD IN CONCRETE - INCHES</th>
<th>NUMBER OF TIE RODS SETS (2 EMBEDDED RODS PER SET)</th>
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### Notes

1. Concrete shall be 3000 psi concrete

2. Shackle rods/all thread shall be zinc plated. Refer to chart for size and number of shackle rods. Refer to pipe clamp for installation of shackle rod. After concrete is placed, 24 hours later install nut and washer and tighten shackle rods nuts on pipe clamp.

3. Anvil pipe clamp 595 fits 4"-24" dia.

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**City of Mercer Island**

**Standard Details**

**Water**

**Vertical Concrete Blocking**

3-30-2021

No scale

W-5B
ELEVATION

J-BOLT STAINLESS STEEL AND THREADED FOR CONNECTION TO PIPE CLAMP. FOLLOWING INSTALLATION ALL EXPOSED CONNECTORS TO BE COATED W/ROYSTON ROSCOTS (SEE W-5 FOR DETAILS).

NOTES

1. SLOPES GREATER THAN 20% – PROVIDE CONCRETE SLOPE ANCHORS (20’ TO 25’ ON CENTER)

2. RESTRAINED JOINT PIPE, ROMAC PIPE RESTRainers OR OTHER METHODS OF RESTRAINT MAY BE USED WITH PRIOR APPROVAL OF THE CITY ENGINEER.

CITY OF MERCER ISLAND
STANDARD DETAILS WATER

ALTERNATE "A" PIPE ANCHOR

REV DATE
7-01-2014
NO SCALE
W-6A
APPROVED
NOTES
1. PIPE ANCHORS ARE TO BE INSTALLED ON ALL SLOPES GREATER THAN 20% AS FOLLOWS.
   A. NOT OVER 36 FEET CENTER TO CENTER ON GRADES 20% UP TO 35%.
   B. NOT OVER 24 FEET CENTER TO CENTER ON GRADES 35% UP TO 50%.
   C. NOT OVER 16 FEET CENTER TO CENTER ON GRADES 50% AND OVER.

2. RESTRAINED JOINT PIPE, ROMAC PIPE RESTRAINERS OR OTHER METHODS OF RESTRAINT MAY BE USED WITH PRIOR APPROVAL OF THE CITY ENGINEER.
NOTES

1. VALVE BOX SHALL BE OLYMPIC FOUNDRY PART NO. VB940 OR EQUAL.

2. THE TOP AND LID SHALL HAVE A MACHINED FIT.

3. LOCKING LID, WHEN REQUIRED, SHALL BE OLYMPIC FOUNDRY PART NO. 13-5200 OR EQUAL.
NOTES

1. VALVE BOX RISER WITH PAVING LUGS SHALL BE OLYMPIC NO. VB2 OR EQUAL.

2. MINIMUM VALVE BOX BOTTOM LENGTH OVERALL = 21 1/16". SHORT RISERS ARE NOT PERMITTED.

3. SEE DWG. NO. W-7 FOR DETAILS.
NOTES

1. EXTENSIONS ARE REQUIRED WHEN THE VALVE NUT IS MORE THAN FOUR (4) FEET BELOW FINISHED GRADE.

2. EXTENSIONS ARE TO BE A MINIMUM OF ONE (1) FOOT LONG. ONLY ONE EXTENSION PER VALVE WILL BE ALLOWED.

3. ALL EXTENSIONS ARE TO BE MADE OF CAST OR DUCTILE IRON, Sized AS NOTED AND PAINTED WITH TWO COATS ASPHALTIC VARNISH.
NOTES

1. PROVIDE A VALVE MARKER POST FOR EACH VALVE OUTSIDE OF THE PAVEMENT.

2. THE FIBERGLASS VALVE MARKER POST SHALL BE BLUE IN COLOR, 3 3/4" WIDE (FLAT), 60" LONG, AND FURNISHED WITH A 2" x 2", HIGH-INTENSITY WHITE REFLECTOR (250 CANDLE POWER) AND A FLEXIBLE ANCHOR BARB. VALVE MARKER SHALL BE CARSONITE UTILITY MARKER CUM 375 OR EQUAL.

3. THE POST SHALL BE SITUATED IN A SAFE, REASONABLY CONSPICUOUS LOCATION, AND AT A RIGHT ANGLE TO THE ROADWAY FROM THE VALVE.

4. STENCIL FOOTAGE MEASUREMENT ON FRONT OF MARKER USING BRIGHT WHITE PAINT.
NOTES

1. STAINLESS STEEL TAPPING TEES SHALL HAVE FULL CIRCLE SEAL.

2. STEEL TAPPING TEES SHALL BE EPOXY COATED.

3. NO SIZE ON SIZE TAPS. TAP SHALL BE AT LEAST 2" SMALLER DIAMETER THAN THE EXISTING MAIN.

4. TAPPING TEES SHALL BE MULLER OR EQUAL.

DUCTILE IRON TAPPING TEE
MECHANICAL JOINT SLEEVE
INSTALLED ON ASBESTOS CEMENT PIPE, CAST IRON PIPE AND DUCTILE IRON PIPE

STAINLESS STEEL TAPPING TEE
INSTALLED ON ASBESTOS CEMENT PIPE, CAST IRON PIPE AND DUCTILE IRON PIPE
METER BOX SHALL BE FOG TITE J20S STEEL BOX WITH TAR COATING OR MID-STATES PLASTIC MSBCF1324—12 PLASTIC BOX WITH DUCTILE IRON LID.

PAVEMENT

5/8" CRUSHED ROCK GRAVEL BACKFILL FOR DRAINAGE

SUBGRADE

FORD SERIES VBH74—12W—11—44—NL COPPER SETTER

SEE NOTE 2

VARIES 6" MINIMUM 8" MAXIMUM

PROJECT LIMITS

1. WATER SERVICES SHALL COMPLY WITH THE REDUCTION OF LEAD IN DRINKING WATER ACT DATED 01/04/2014.

2. ON EXISTING WATER MAINS USE NYLON COATED D.I. SADDLE WITH STAINLESS STEEL DOUBLE STRAPS, ROMAC 202NS, OR APPROVED EQUAL.

3. MINIMUM DISTANCE BETWEEN CORP STOPS SHALL BE 18". MINIMUM DISTANCE BETWEEN TAPS, BETWEEN CORP STOP AND PIPE ENDS SHALL BE 24", ALL HORIZONTALLY STAGGERED.

4. PLASTIC METER BOXES SHALL NOT BE INSTALLED WITHIN ROADWAY, SIDEWALK, OR DRIVEWAYS.

5. UPON CITY ENGINEER'S APPROVAL, METER BOXES ARE ALLOWED TO BE INSTALLED IN PORTLAND CEMENT CONCRETE PAVEMENT OR SIDEWALK.

6. WHEN CONNECTING TO EXISTING PRIVATE SUPPLY LINE CONTAINING FERROUS METAL, PROVIDE INSULATING COUPLING (DB SERIES WITH C21 SERIES ADAPTERS) AND PROVIDE REDUCER AS NECESSARY TO MATCH EXISTING PRIVATE SUPPLY LINE DIAMETER.

7. SERVICE LINE SHALL BE PERPENDICULAR TO THE WATER MAIN AND STRAIGHT TO WATER METER, UNLESS OTHERWISE APPROVED BY CITY ENGINEER. PROVIDE WINDING SLACK IN THE SERVICE LINE BETWEEN THE MAIN AND WATER METER.

8. WATER METER SUPPLIED BY CITY.

9. ALL FITTINGS TO BE BRASS COMPRESSION TYPE, FORD QUICK JOINT OR EQUAL.

10. NO SERVICE CONNECTIONS BETWEEN BLOW-OFF AND END OF MAIN.
2-2" BRASS 90 DEGREE
1-2x3" BRASS NIPPLE
2" BRASS 90 DEGREE
2" BALL CORP.
IPxIP TYPE THREAD
FORD FB5007

2" SDR-9 CTS 250 PSI PIPE, ONE PIECE. PE 4710 ASTM-2737
2" x 1 1/2" IPxIP BELL REDUCER FOWLER NO. BFR76
2" COMPRESSION FITTINGS FORD GB477Q
2" CTS QUICK JOINT STIFFENER FORD NO. 55Q
2" GATE VALVE CONFORMING TO AWWA C509
2" THREADED BRASS NIPPLE LENGTH VARIES

NYLON COATED D.I. SADDLE WITH STAINLESS STEEL DOUBLE STRAPS. ROMAC 202NS, OR APPROVED EQUAL.
PIPE BELL, MAIN FITTING, OR ANY SERVICE CONNECTION.

METER BOX SHALL BE FOG TITE #2 ALL STEEL BOX WITH TAR COATING, OR MID-STATES PLASTICS BCF SERIES METER BOX WITH DUCTILE IRON HINGED LID
EXISTING GRADE

CAST IRON VALVE BOX, VB840 (SEE W-7)
12 GAUGE INSULATED LOCATE WIRE ATTACHED TO METALLIC PIPE USING TAPE OR ZIP TIES EVERY 6"

WATER MAIN

25'±
8"x8" CONC. BRICK 1-1/2" THICK MIN. VARIES

ELEVATION VIEW
NOTES
1. WATER SERVICES SHALL COMPLY WITH THE REDUCTION OF LEAD IN DRINKING WATER ACT DATED 01/04/2014.
2. MINIMUM DISTANCE BETWEEN CORP STOPS SHALL BE 18'. MINIMUM DISTANCE BETWEEN TAPS, BETWEEN CORP STOP AND PIPE ENDS SHALL BE 24', ALL HORIZONTALLY STAGGERED.
3. PLASTIC METER BOXES SHALL NOT BE INSTALLED WITHIN ROADWAY, SIDEWALK, OR DRIVEWAYS.
4. UPON CITY ENGINEER'S APPROVAL, METER BOXES ARE ALLOWED TO BE INSTALLED IN PORTLAND CEMENT CONCRETE PAVEMENT OR SIDEWALK.
5. WHEN CONNECTING TO EXISTING PRIVATE SUPPLY LINE CONTAINING FERROUS METAL, PROVIDE INSULATING COUPLING (DB SERIES WITH C21 SERIES ADAPTERS) AND PROVIDE REDUCER AS NECESSARY TO MATCH EXISTING PRIVATE SUPPLY LINE DIAMETER.
6. SERVICE LINE SHALL BE PERPENDICULAR TO THE WATER MAIN AND STRAIGHT TO WATER METER. UNLESS OTHERWISE APPROVED BY CITY ENGINEER. PROVIDE WINDING SLACK IN THE SERVICE LINE BETWEEN THE MAINT AND WATER METER.
7. WATER METER SUPPLIED BY CITY.
8. ALL FITTINGS TO BE BRASS COMPRESSION TYPE, FORD QUICK JOINT OR EQUAL.
9. NO SERVICE CONNECTIONS BETWEEN BLOW-OFF AND END OF MAIN.

CITY OF MERCER ISLAND
STANDARD DETAILS
WATER
1-1/2" WATER METER INSTALLATION
02-05-2021 NO SCALE W-14

REV DATE APPROVED
NOTES
1. WATER SERVICES SHALL COMPLY WITH THE REDUCTION OF LEAD IN DRINKING WATER ACT DATED 01/04/2014.
2. MINIMUM DISTANCE BETWEEN CORP STOPPERS SHALL BE 18'. MINIMUM DISTANCE BETWEEN TAPS, BETWEEN CORP STOP AND PIPE ENDS SHALL BE 24", ALL HORIZONTALLY STAGGERED.
3. PLASTIC METER BOXES SHALL NOT BE INSTALLED WITHIN ROADWAY, SIDEWALK, OR DRIVEWAYS.
4. UPON CITY ENGINEER'S APPROVAL, METER BOXES ARE ALLOWED TO BE INSTALLED IN PORTLAND CEMENT CONCRETE PAVEMENT OR SIDEWALK.
5. WHEN CONNECTING TO EXISTING PRIVATE SUPPLY LINE CONTAINING FERROUS METAL, PROVIDE INSULATING COUPLING (DB SERIES WITH C21 SERIES ADAPTERS) AND PROVIDE REDUCER AS NECESSARY TO MATCH EXISTING PRIVATE SUPPLY LINE DIAMETER.
6. SERVICE LINE SHALL BE PERPENDICULAR TO THE MAIN AND STRAIGHT TO WATER METER, UNLESS OTHERWISE APPROVED BY CITY ENGINEER. PROVIDE WINDING SLACK IN THE SERVICE LINE BETWEEN THE MAIN AND WATER METER.
7. WATER METER SUPPLIED BY CITY.
8. ALL FITTINGS TO BE BRASS COMPRESSION TYPE, FORD QUICK JOINT OR EQUAL.
9. NO SERVICE CONNECTIONS BETWEEN BLOW-OFF AND END OF MAIN.

CITY OF MERCER ISLAND
STANDARD DETAILS
WATER

2" WATER METER INSTALLATION
02-05-2021 NO SCALE W-14A

REV DATE
APPROVED
MATERIAL LIST, 3" & 4" METER

1. FLEX. CPLG. TO FIT, ROMAC 501 OR APPROVED EQUAL. (4" X 3" REDUCER, M.J. FOR 3" METER INSTALLATION)
2. DOUBLE STRAP SADDLE, ROMAC 202NU OR APPROVED EQUAL.
3. 2" IPXIP BALL CORP. FORD FB500–7 OR APPROVED EQUAL.
4. 2" BRASS 90° BEND.
5. 2" FORD B11–777 FIPS X FIPS 1/4 TURN BALL VALVE (WITH LOCKING EAR), OR APPROVED EQUAL, WITH ONE 2" X 6" BRASS NIPPLE.
6. FORD QUICK JOINT C85–77Q OR APPROVED EQUAL.
7. M&H C515 STYLE 7000 FLG X FLG RESILIENT SEATED GATE VALVE WITH SQUARE OPERATING NUT OR APPROVED EQUAL.
8. METRON METER WITH 2" TAPPED FLANGED SPACER AND SENSUS RADIO MXU PROVIDED BY THE CITY AT THE CONTRACTORS EXPENSE. LENGTH OF VARIES BY SIZE.
9. FLG X SPOOL, 12” MINIMUM. CONNECTION AT GATE VALVE MAY USE OPTIONAL EZ FLANGE 1000 OR APPROVED EQUAL.
10. CPLG ADPT, FLG ROMAC FCA 501 OR APPROVED EQUAL.
11. PRECAST VAULT TO BE APPROPRIATELY SIZED FOR SIZE OF WATER SERVICE. ACCESS HATCH TO BE LW PRODUCTS, HS–30, 3’ X 5’ SINGLE DOOR WITH NON–SLIP FINISH. LID OPENING TO BE PLACED FOR PROPER LADDER ACCESS.
12. ROMA–GRIP RESTRAINT OR APPROVED EQUAL.
13. 2” BRASS PIPE CUT AND THREADED TO FIT.
14. LADDER PER W–27C.
15. WHEN INSTALLING VAULT IN SIDEWALK OR PAVED AREAS, SET FRAME AND HATCH AT FINISHED GRADE. VAULT TOP SLAB SHALL REMAIN BELOW GRADE.

NOTES:

A. – 9.5” MIN.
B. – 6.0” MIN.
C. – 2.5’ MIN.
D. – 1.0’ MIN.
E. – 4.0” MIN.
F. – PIPING FROM MAIN TO VAULT SHALL BE D.I. WITH A 4” MIN. TAP.
G. – PIPE OPENINGS SHALL BE CORED AND SEALED USING A LINK SEAL OR APPROVED EQUAL. NO GROUT PERMITTED.
INSTALLATION IN PLANTER STRIP 3' OR WIDER

INSTALLATION BEHIND SIDEWALK

INSTALLATION IN SIDEWALK

INSTALLATION WITH NO SIDEWALK

CITY OF MERCER ISLAND
STANDARD DETAILS
WATER
WATER METER PLACEMENT

3–20–2006 NO SCALE W-16

REV DATE
APPROVED
NOTES

1. FOR 1" STEEL BOX, USE FOG TITE J20S LID OR EQUAL, WITH A 3/4" ROUND HOLE.

2. 2" METER BOX SHALL BE FOG TITE #2J20S ALL STEEL BOX WITH TAR COATING. LID SHALL BE HINGED WITH 3/4" DIA. LIFTING HOLE.
NOTES:

1. METER BOX SHALL BE MID-STATES PLASTICS AS SHOWN, WITH A DUCTILE IRON LID WITH A FLIP OR HINGED INSPECTION LID TO INCLUDE A 3/4" PICK HOLE.

2. PLASTIC WATER METER BOXES SHALL NOT BE INSTALLED WITHIN A DRIVING OR PARKING AREA.
A. SEE W-19B FOR MATERIAL LIST.

B. VALVE ASSEMBLY TO BE CENTERED IN VAULT.

C. TEE AND GATE VALVE REQUIRED ON MAIN.

D. WHEN DOUBLE CHECK VALVE ASSEMBLY IS USED IN SAME LINE WITH DOMESTIC BUILDING METER, METERED DETECTOR BYPASS SHALL BE OMITTED.

E. ASSEMBLY TO BE MAINTAINED BY OWNER AND ANNUAL CERTIFICATION IS REQUIRED.

F. THE CITY OF MERCER ISLAND MUST TEST AND CERTIFY THE FIRE LINE BEFORE CONNECTION TO THE CITY SYSTEM IS ALLOWED.

G. FIRELINE SHALL NOT BE PUT INTO SERVICE UNTIL THE DOUBLE CHECK VALVE ASSEMBLY IS APPROVED BY THE CITY.

H. VAULT PENETRATIONS SHALL BE CORE DRILLED.

I. A THRUST RING OR APPROVED EQUAL SHALL BE INSTALLED ON INLET SIDE OF PIPE RESTRAINED JOINT.

J. MATERIALS FOR BYPASS SHALL BE ALL BRASS AND COPPER WITH SWIVEL COUPLINGS BETWEEN SHUT-OFF VALVES FOR REPLACEMENT.
<table>
<thead>
<tr>
<th>KEY NO.</th>
<th>QUANTITY</th>
<th>4&quot;</th>
<th>6&quot; &amp; 8&quot;</th>
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<td>PRE CAST CONCRETE VAULT AS APPROVED BY THE CITY ENGINEER</td>
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<td>1</td>
<td>LW PRODUCTS ALUMINUM, SINGLE DOOR, H=20 OR EQUAL.</td>
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<td>2</td>
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<td>FABRICATED BOLT-ON LADDER. USE THREE SETS OF MOUNTING BRACKETS ATTACHED TO VAULT WALL WITH 5/8&quot; DIAMETER CORROSION RESISTANT ANCHOR BOLTS (HILTI KIW BOLT, PHILIPS RED HEAD OR APPROVED EQUAL). ALL STEEL FOR LADDER SHALL BE A-36. OSHA APPROVED HOT DIPPED GALVANIZED AFTER FABRICATION. SEE DRAWING NO. W-27C.</td>
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<td>4&quot; DIAMETER FLEXIBLE FLANGED COUPLING ADAPTER ROCKWELL TYPE 912</td>
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<td>8&quot; OR 6&quot; DIAMETER FLEXIBLE FLANGED COUPLING ADAPTER ROCKWELL TYPE 912</td>
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<td>4&quot; O.S. &amp; Y. GATE VALVE U.L. APPROVED</td>
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<td>8&quot; OR 6&quot; O.S. &amp; Y. GATE VALVE U.L. APPROVED</td>
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<td>4&quot; D.S.H.S. APPROVED DOUBLE CHECK VALVE ASSEMBLY, INCLUDING 2 O.S. &amp; Y. GATE VALVES, TEST COCK, 3/4&quot; DOUBLE CHECK VALVE, SINGLE OR MULTI JET METER (TO READ IN CUBIC FEET) AND 3/4&quot; BRASS OR COPPER BYPASS WITH IN LINE VALVE.</td>
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<td>8&quot; OR 6&quot; D.S.H.S. APPROVED DOUBLE CHECK VALVE ASSEMBLY, INCLUDING 2 O.S. &amp; Y. GATE VALVES, TEST COCK, 3/4&quot; DOUBLE CHECK VALVE, SINGLE OR MULTI JET METER (TO READ IN CUBIC FEET) AND 3/4&quot; BRASS OR COPPER BYPASS WITH IN LINE VALVES.</td>
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<td>2</td>
<td>ADJUSTABLE PIPE SADDLE SUPPORT (ITT GRINNEL FIG 264 OR APPROVED EQUAL). ATTACH TO VAULT FLOOR WITH FOUR 1/2&quot; DIAMETER CORROSION RESISTANT ANCHOR BOLTS (HILT KIWI BOLT, PHILIPS RED HEAD OR APPROVED EQUAL). SEE DRAWING NO. W-27C.</td>
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<td>PEA GRAVEL BACKFILL FOR PIPE BEDDING UNDER PRECAST CONCRETE UTILITY VAULT.</td>
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<td>4&quot; DIAMETER UNDERDRAIN, CONNECT TO DRAINAGE SYSTEM, SCHEDULE 200 PERFORATED PVC WITH GALVANIZED SCREEN EACH END.</td>
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<td>4&quot; DIAMETER CL. 52 DUCTILE IRON PIPE</td>
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<td>6&quot; OR 8&quot; DIAMETER CL. 52 DUCTILE IRON PIPE</td>
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<td>3/4&quot; GATE VALVE U.L. LISTED</td>
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<td>5/8&quot; x 3/4&quot; ACCULINK MULTINET MASTER METER WITH SENSUS COMPATABLE MXU READ IN CU. FT. MULTI-JET</td>
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<tr>
<td>13</td>
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<td>3/4&quot; DOUBLE CHECK VALVE</td>
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<td>SOLID PVC PIPE SUMP DRAIN. SIZE PER MANUFACTURER’S RECOMMENDATION. CONNECT TO DRAINAGE STRUCTURE AS APPROVED</td>
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<tr>
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<td>3/4&quot; &quot;Y&quot; STRAINER</td>
</tr>
</tbody>
</table>

**NOTES**

1. ALL VAULT, BASED AND TOPS TO BE COATED WITH DAMPPROOFING.

2. SIZE DETERMINED ON BASIS OF ACTUAL FIRE DEMAND.

3. SEE W-19A FOR ADDITIONAL DETAILED MATERIAL NOTES.
NOTE:

1. 1-5 1/4" M.V.O. HYDRANT WITH 2-2 1/2" N.T.S. M.J. INLET WITH LUGS, BRASS-TO-BRASS SUB-SEAT AND 1-4 1/2" PUMPER, SEATTLE STANDARD PIPE THREAD WITH 4" STORZ CONNECTOR HARRINGTON MODEL NO. HPAA40-40-004/CAP, SIZE 4.875"-INCH BY 6"-INCH.

2. NO DOMESTIC CONNECTIONS CAN BE MADE TO THE FIRE HYDRANT RUNS.

3. ANY FIRE HYDRANT RUN OVER 18 FEET IN LENGTH OF PIPE SHALL HAVE RESTRAINED JOINT GASKETS.

4. USE ROMA GRIP, OR APPROVED EQUAL, PIPE RESTRAINERS AT VALVE AND HYDRANT BASE.

5. HYDRANT SHALL BE PAINTED WITH 2 COATS OF FARMEST #250 HIGH GLOSS WHITE PAINT, OR APPROVED EQUAL, APPLIED WITH A PAINT BRUSH. DO NOT APPLY PAINT TO STORZ FITTINGS, VALVES, PORT THREADS, OR BELOW SAFETY FLANGE.

6. BOLLARDS MAY BE USED TO PROTECT THE HYDRANT WHEN NO CURBS ARE PRESENT OR IN EXPOSED AREAS OF PARKING LOTS.

7. STRAIGHT PIPE TO HYDRANTS FROM MAIN, NO BENDS.

8. REMOVE CHAINS FROM HYDRANT CAPS.

9. VALVE AND HYDRANT MUST BE PLUMB.

10. THIS DISTANCE IS MEASURED FROM BOTTOM OF SAFETY FLANGE TO LEVEL OF FINISH GRADE BELOW HYDRANT.

CITY OF MERCER ISLAND
STANDARD DETAILS
WATER
FIRE HYDRANT CONNECTION

W-24
02-23-2021
NO SCALE
APPROVED
NOTE:
1. 1–5 1/4" M.V.O. HYDRANT WITH 2–2 1/2" N.T.S. M.J. INLET WITH LUGS, BRASS–TO–BRASS SUB–SEAT AND 1–4 1/2" PUMPER, SEATTLE STANDARD PIPE THREAD WITH 4" STORZ CONNECTOR ITEM NUMBER HPAA40–40–004/CAP SIZE 4.875–INCH BY 6–INCH.
2. WET TAP IS ALLOWED ONLY UPON CITY'S APPROVAL. NO SIZE ON SIZE WET TAPS.
3. NO DOMESTIC CONNECTIONS CAN BE MADE TO THE FIRE HYDRANT RUNS.
4. ANY FIRE HYDRANT RUN OVER 18 FEET IN LENGTH OF PIPE SHALL HAVE RESTRAINED JOINT GASKETS.
5. USE ROMA GRIP, OR APPROVED EQUAL, PIPE Restrainers AT Valve AND Hydrant BASE.
6. HYDRANT SHALL BE PAINTED WITH 2 COATS OF FARWEST #250 HIGH GLOSS WHITE PAINT, OR APPROVED EQUAL, APPLIED WITH A PAINT BRUSH. DO NOT APPLY PAINT TO STORZ FITTING, BRASS PORT THREADS, OR BELOW SAFETY FLANGE.
7. BOLLARDS MAY BE USED TO PROTECT THE HYDRANT ONLY IN PARKING LOTS WHEN NO CURBS ARE PRESENT OR IN EXPOSED AREAS OF PARKING LOTS.
8. STRAIGHT PIPE TO HYDRANTS FROM MAIN, NO BENDS.
9. REMOVE CHAINS FROM HYDRANT CAPS.
10. VALVE AND HYDRANT MUST BE PLUMB.
11. THIS DISTANCE IS MEASURED FROM BOTTOM OF SAFETY FLANGE TO LEVEL OF FINISH GRADE BELOW HYDRANT.
12. TAPPING SLEEVE O.D. (OUTSIDE DIAMETER) RANGE MUST BE COMMENSURATE WITH PIPE O.D.
NOTES

1. ALL FITTINGS SHALL BE BRASS. ALL PIPE SHALL BE COPPER, UNLESS OTHERWISE SHOWN.

2. TAP FOR COMBINATION AIR AND VACUUM VALVE ASSEMBLY MUST BE INSTALLED AT HIGHEST POINT OF WATER MAIN. EXACT LOCATION OF ASSEMBLY TO BE DETERMINED BY CITY.

3. AT THE CITY INSPECTORS DISCRETION A CONCRETE BLOCK SHALL BE PLACED UNDER VALVE BOX TO KEEP BALL VALVE EXPOSED.

4. VALVE MARKER POST SHALL BE PAINTED WITH 2 COATS OF FARWEST #250 HIGH GLOSS WHITE PAINT, OR APPROVED EQUAL, APPLIED WITH A PAINT BRUSH.

5. IN LOAD BEARING LOCATIONS, OLYMPIC FOUNDRY SM-30, H-20 RATING, METAL METER BOX SHALL BE USED.

CITY OF MERCER ISLAND
STANDARD DETAILS
WATER

1” AIR & VACUUM VALVE ASSEMBLY

REV DATE
11–21–2017
NO SCALE
W-25
APPROVED
NOTES

1. ALL FITTINGS SHALL BE BRASS.

2. TAP FOR COMBINATION AIR AND VACUUM VALVE ASSEMBLY MUST BE INSTALLED AT HIGHEST POINT OF WATER MAIN. EXACT LOCATION OF ASSEMBLY TO BE DETERMINED BY CITY.

3. AT THE CITY INSPECTORS DISCRETION A CONCRETE BLOCK SHALL BE PLACED UNDER VALVE BOX TO KEEP BALL VALVE EXPOSED.

4. VALVE MARKER POST SHALL BE PAINTED WITH 2 COATS OF FARWEST #250 HIGH GLOSS WHITE PAINT, OR APPROVED EQUAL, APPLIED WITH A PAINT BRUSH.

5. IN LOAD BEARING LOCATIONS, 2” STEEL METER BOX PER CITY’S STANDARD DETAILS W-17 SHALL BE USED. DEPENDING ON HEIGHT OF THE COMPLETE AIR VAC ASSEMBLY, STACKING METER BOXES MAY BE REQUIRED.
NOTES
1. ALL PIPING MATERIALS, FITTINGS, COUPLINGS SHALL BE BRASS. NO GALVANIZED MATERIALS WILL BE ALLOWED.
NON-SHRINK GROUT PENETRATIONS TO WATER TIGHT CONDITIONS SEE DETAIL W-27C

LADDER SHALL BE EQUIP. W/BILCO "LADDER-UP" POLE. LADDER SHALL BE BOLTED TO SIDE & BOTTOM OF VAULT ON SIDE OF LADDER AND RUNGS TO BE EXTENDED 2" BEYOND EDGE OF OPENING. SEE DETAIL W-27C

SEE DAVIT PER W-27D

SUMP W/ GALVANIZED STEEL GRATE

1/2" BRASS CORP. STOP W/ PRESSURE GAUGE (0-100 OR 160 PSI) 1" SADDLE W/ DOUBLE STAINLESS STEEL STRAPS, ROMAC 202-NS

1" SERVICE SADDLE W/ DOUBLE STAINLESS STEEL STRAPS, ROMAC 202-NS

1/2" BRASS CORP. STOP W/ PRESSURE GAUGE (0-100 OR 160 PSI) 2" SADDLE W/ DOUBLE STAINLESS STEEL STRAPS, ROMAC 202-NS

2" BALL LOCKING VALVE (IP)

2" 90° BEND (IP): SCH. 40 STAINLESS STEEL

2" UNION: SCH. 40 STAINLESS STEEL

DI PIPE/WALL FLANGE, PER W-27C

ADJUSTABLE PIPE SUPPORT FOR BOTH MAINLINE & BYPASS LINE

INSTALL SUMP PUMP (GCS AUTOMATIC SUMP DRAIN EJECTOR ASSEMBLY MODEL #996633, OR APPROVED EQUAL). TAP FOR SUMP DRAIN ASSEMBLY SHALL BE ON THE HALF SECTION, HORIZONTAL DIRECTION TO THE WATER LINE.

UTILITY VAULT. OLD CASTLE 687-LA OR APPROVED EQUAL

1-INCH AIR VACUUM RELEASE VALVE ASSEMBLY PER W-27E

NOTES:

1. THE DESIGN ENGINEER MUST SUBMIT A SPECIFIC DESIGN BASED ON THE TYPICAL LAYOUT FOR EACH INSTALLATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION AND SUBMITTALS FOR ALL MATERIALS.

2. THE REQUIRED PRESSURE REDUCING STATION CAPACITY AND SIZE SHALL BE DETERMINED BY CITY ENGINEER.

3. THE DESIGN ENGINEER TO NOTE FLOW DIRECTON AND PRESSURE SETTING ON THE PLANS.

4. INSIDE DIMENSIONS OF VAULT VARY DEPENDING ON PIPE SIZE. THE DESIGN ENGINEER MUST SPECIFY VAULT SIZE CONSISTENT WITH THE MINIMUM DIMENSIONS SHOWN IN THE DETAILS.

5. THE BYPASS PRV, PIPING, AND FITTINGS MAY BE LARGER THAN 2" AS APPROVED BY THE CITY ENGINEER.

6. LADDER SHALL BE 1'-6" WIDE, LENGTH TO FIT SIZE OF VAULT. SEE DETAILS W-27C.
HYDRAULICALLY ASSISTED ALUMINUM DOUBLE DOORS, SELF DRAINING W/ H-20 LOAD & LOCKING HASP

MINIMUM 2' OF LEVEL UNOBSERVED AREA AROUND HATCHES

DEPENDING ON SITE SPECIFICS, EXACT LOCATION OF VENT PIPE WILL BE FIELD VERIFIED AND DETERMINED BY CITY ENGINEER.

PRESSURE REDUCING VALVE (PRV) SIDE VIEW

CONCRETE BLOCK (2,500 SI MIN.)
WALL PENETRATION SEE DETAIL W-27C

PRESSURE REDUCING VALVE (PRV) SIDE VIEW

ADJUSTABLE PIPE SUPPORT

PIECE

ANCHOR BOLTS
BASE FLANGE
GROUT

ADJUSTABLE PIPE SUPPORT

NOTES:
1. MATERIAL LIST AND DESCRIPTIONS PROVIDED ON W-27A

CITY OF MERCER ISLAND
STANDARD DETAILS
WATER
PRESSURE REDUCING VALVE (PRV)
SIDE VIEW

07-01-2021
NO SCALE
W-27B

ADJUSTABLE PIPE SUPPORT SCHEDULE (IN INCHES)

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<tr>
<th>PIPE SIZE</th>
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LADDER SECTION AND DETAILS

PULL UP LOOP

ADJUSTABLE MOUNTING FITS LADDERS WITH RUNG SPACING UP TO ABOUT 14" [355MM] CENTER TO CENTER

5'-1 3/8" [1560mm] RETRACTED

1/2" x 4" WIDE BENT FLAT P (ALUM.) TO LADDER RAILS

5/8" DIA. BOLTS WITH 2 NUTS ASPH. COATED
1/4" x 5" FLAT P WASHER
DRILL HOLE FOR BOLT, TYP.

ADJUSTABLE MOUNTING FITS LADDERS WITH RUNG SPACING UP TO ABOUT 14" [355MM] CENTER TO CENTER

1" DIA. SOLID SHAFT x 1'-7" LONG LADDER RUNGS (ALUM.) AT 12" O.C. WELD BOTH SIDES TO LADDER RAILS

3/4" x 5" x 5" SHIM P WITH OVER SIZE HOLE FOR RETAINER NUT, ASPHALT COATED

LADDER RAILS ROUND CORNERS AT TOP WITH 1/4" MIN. RADIUS

2-1/4" [57mm] CENTER TO CENTER

5'-1 3/8" [1560mm] RETRACTED

DUCTILE IRON PIPE
ROUGHEN SURFACE OF CORED HOLE THROUGH EXISTING WALL. CLEAN AND COAT WITH A BONDING AGENT.

LADDER OP SAFETY POST

1/2" x 4" WIDE BENT FLAT P (ALUM.) TO LADDER RAILS

1/2" x 4" WIDE BENT FLAT P (ALUM.) TO LADDER RAILS

UNIFLANGE ADAPTER

OUTSIDE OF VAULT

INSIDE OF VAULT

24" MIN.

6" MIN.

6" MIN.

VAULT WALL

LINK SEAL OR EQUAL

RESTRAINT BLOCK

ROMA GRIP WALL FLANGE

UNIFLANGE ADAPTER

RESTRNT BLOCK

WALL PENETRATION DETAIL

( FOR ALL PIPE PENETRATIONS)

WALL FLANGE DETAIL

CITY OF MERCER ISLAND
STANDARD DETAILS
WATER
PRESSURE REDUCING VALVE (PRV)
LADDER, PIPE PENETRATION, & WALL FLANGE

#6 @ 9' EA. WAY, E.F.

2 - #6 E.F.

#6

2'-0"

4'-0"

5'-0"

4'-0"

#5 @ 9" EA. WAY, E.F.
NOTE:
DAVIT CONCRETE PAD SHALL BE INSTALLED ON SIDE OF PRV VAULT THAT IS CLEAR OF THE HATCH IN OPEN POSITION. EXACT LOCATION OF THE CONCRETE PAD SHALL BE FIELD VERIFIED AND APPROVED BY CITY ENGINEER.

CITY OF MERCER ISLAND
STANDARD DETAILS
WATER
PRESSURE REDUCING VALVE (PRV)
DAVIT
07-01-2021 NO SCALE W-27D

PLAN VIEW - DAVIT SLEEVE
NOT TO SCALE

SECTION VIEW - DAVIT SLEEVE
NOT TO SCALE
VAULT WALL

INSIDE

OUTSIDE

(1) - 1" BRASS RETURN "U" OR APPROVED EQUAL.

1. ALL FITTINGS SHALL BE BRASS, ALL PIPE SHALL BE BRASS OR COPPER, UNLESS OTHERWISE SHOWN.

2. TAP FOR COMBINATION AIR AND VACUUM VALVE ASSEMBLY MUST BE INSTALLED AT HIGHEST POINT OF WATER MAIN. EXACT LOCATION OF ASSEMBLY TO BE DETERMINED BY CITY.

3. COPPER LINE MUST MAINTAIN LEVEL GRADE - NO DIPS OR BELLIES.

VALVE ASSEMBLY DETAIL

1" CORPORATION STOP IPT THREADx MIPT EQUAL TO FORD FB5004

VERTICAL TAP AT HIGH POINT

NYLON COATED D.I. SADDLE WITH STAINLESS STEEL DOUBLE STRAP, ROMAC 202-NS, OR APPROVED EQUAL

PIPE PENETRATION AT VAULT WALL DETAIL

CITY OF MERCER ISLAND

STANDARD DETAILS

WATER

PRESSURE REDUCING VALVE (PRV)

1" AIR VACUUM VALVE ASSEMBLY INSTALLATION

07-01-2021

NO SCALE

W-27E

REV DATE

APPROVED
PRESSURE REDUCING VALVE
WILKINS 600 SERIES OR EQUAL
(WITH BUILT IN BYPASS)
FINISH GRADE

UNION (INTERNAL PART OF P.R.V.)

COPPER TUBING W/ALL NECESSARY FITTINGS (TYPICAL EACH SIDE)

SERVICE FROM METER

1" ROUND WASHED GRAVEL 6" DEEP

WHERE P.R.V. IS INSTALLED ON EXISTING SERVICE,
CUT IN EXISTING SERVICE, INSTALL NEW COPPER TUBING
AND NECESSARY FITTINGS REQUIRED TO MAKE A COMPLETE INSTALLATION OF P.R.V.

USE TRAFFIC LID WHERE SPECIFIED IN PLAN, SPECIFICATIONS OR AS DIRECTED BY ENGINEER.

SEE TABLE FOR REQUIRED RISERS

FOG TITE METER BOX AS REQUIRED

6" MIN. 9" MAX.

NOTES
1. P.R.V. SHALL HAVE AN INTEGRAL BYPASS.

<table>
<thead>
<tr>
<th>P.R.V. SIZE</th>
<th>FOG TITE METER BOX NO.</th>
<th>RISER REQUIRED</th>
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<tbody>
<tr>
<td>2&quot;</td>
<td>2</td>
<td>12&quot;</td>
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<tr>
<td>1-1/2&quot;</td>
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</tbody>
</table>
1. CONTRACTOR TO DETERMINE ALIGNMENT, SIZE AND GRADE OF EXISTING FACILITIES PRIOR TO SHUTDOWN.

2. ALL EXCAVATION, PIPING, FITTINGS, MATERIALS, BACKFILL COMPACTION AND STREET RESTORATION ARE THE CONTRACTOR'S RESPONSIBILITY.

3. ALL MATERIALS TO BE ON SITE PRIOR TO SHUTDOWN OF EXISTING MAIN.

4. ALL PRESSURE TESTING, DISINFECTION, BACTERIA TESTING, TASTE TESTING AND NOTIFICATION OF RESIDENTS EFFECTED BY THE SHUTDOWN SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 7, 8 & 9 OF DIVISION 9, WATER ENGINEERING STANDARDS, PRIOR TO CONNECTION TO THE CITY SYSTEM OF THE NEW WATER MAIN.

5. LONG PATTERN MECHANICAL JOINT, SLEEVE, WITH PIPE CUT TO FIT GAP – FURNISH AND INSERTED AT TIME OF CONNECTION.

6. TEE OR TAPPING TEE AND MATERIALS NECESSARY TO MAKE THE FINAL CONNECTION TO THE CITY WATER SYSTEM SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR.

7. CLEAN POTABLE WATER HOSE, WATER METER AND DCVA PROVIDED BY CITY, A RENTAL FEE IS REQUIRED.

8. HYDRANT PERMIT REQUIRED.

9. CHECK WITH SEWER DEPARTMENT BEFORE DISCHARGING INTO THE SANITARY SEWER SYSTEM. ALL CHLORINATED WATER MUST BE DISCHARGED INTO THE SANITARY SEWER SYSTEM, UNLESS DECHLORINATED FIRST.

NOTES

1. ALL FITTINGS TO BE DUCTILE IRON.

2. ALL EXCAVATION SHALL PROVIDE A MINIMUM OF 1' CLEAR AROUND PIPE AND FITTINGS.