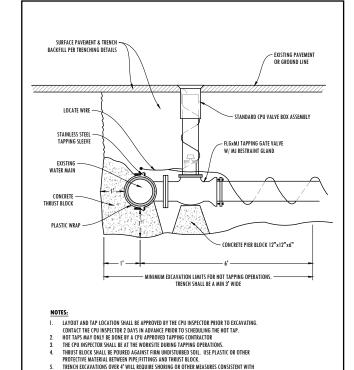


WATER MAIN INSTALLATION

W-SD

CPO



FILE NAME STANDARD HOT TAP 4W

APPLICABLE LOCAL STATE OR FEDERAL SAFETY CODES

SHEET 1 OF 1

8W

SHEET 1 OF 1

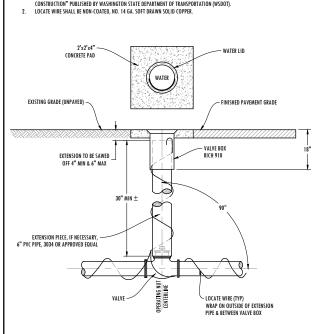
Public

Public

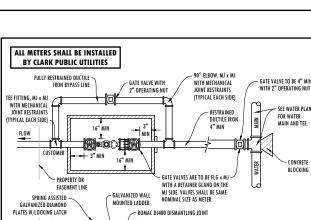
Utilities

REVISED 04/17/202

STANDARD DETAILS



STANDARD DETAILS



- 12" MIN. DEPTH

3", 4", 6" AND 8" STANDARD METER

INSTALLATION DETAILS

STANDARD DETAILS

STANDARD DETAILS

DRAIN ROCK

ADD CRUSHED ROCK TO VALUET

ALL IDINTS SHALL BE RESTRAINED FROM THE MAIN LINE TEE TO

ALLOW WATER PASSAGE). CONTACT CPU WATER UTILITY FOR

DISTANCE BETWEEN METER GATE VALVES PRIOR TO INSTALLATION

TEN PIPE DIAMETERS OF STRAIGHT PIPE REQ'D. IN & OUT OF METER

INSTALL VAULT IN SOFT-SCAPE AREA, VERTICALLY FLUSH WITH CURB

ALL JOINTS SHALL BE RESINAINED FROM HE MAIN LINE HE TO PROVIDE FOR METER REMOVAL. PIPE MATERIAL SHALL BE DI. PRIOR TO METER INSTALLATION, GATE VALVES SHALL BE ALIGNED & SPACED W/ RIGID SPOOL (DRILLED WITH HOLES SO AS NOT TO

10" MIN -

(360-992-8022)

OR SIDEWALK.

FILE NAME

3W

SHEET 1 OF 1

NOTES:

FINISHED GRADE -

4'x4'x4" 2500 PSI

CONCRETE PAD AT

PIER BLOCK

FILE NAME

7W

SHEET 1 OF 1

16"x10"x6" MIN

NSPECTOR'S DISCRETION

PIPE SUPPORT -

DI FLANGE ADAPTER W/ SET SCREWS TO PROVIDE THRUST RESTRAINT AGAINST CONCRETE VAILET

NOTE "A":
FOR 3" METER, CONTRACTOR TO INSTALL 4" X 3" REDUCING SPOOL TO

OLDCASTLE PRECAST VAULTS (OR APPROVED EQUAL):

A 4-INCH DRAIN LINE SHALL BE EXTENDED TO AN APPROVED

DRAINAGE OUTLET. IN LOCATIONS W/ NO FEASIBLE DRAINAGE SYSTEM, DRAIN MAY BE CONNECTED TO A CPU APPROVED

Clark

Utilities

Public

Public

Utilities

REVISED 07/30/202

VAULTS SHALL BE PRE-APPROVED PRIOR TO INSTALLATION

3" & 4": #575-LA

DRYWELL SYSTEM.

©

STUB SERVICES SHALL BE PRESSURE TESTED WITH THE MAIN LINE AND BE CAPABLE OF WITH-STANDING THE MAINS TEST

9. ALL COMPRESSION FITTINGS TO HAVE STAINLESS STEEL INSERTS. METER BOX SHALL BE ONE PIECE HOPE (HOMOGENOUSLY MOLDED AS ONE UNIT) WITH HDPE LID.
INSIDE DIMENSIONS: 17" WIDE x 30" LONG x 18" DEEP.

> DOUBLE STRAP BRASS SERVICE SADDLE -ROMAC STYLE 202B OR APPROVED EQUAL. C900 PVC PIPE SHALL HAVE SERVICE IF VAULT MUST BE LOCATED IN A WALKING AREA, A NON-SKID SADDLES WITH BRASS BANDS TRAFFIC RATED LID SHALL BE REQUIRED.

> > Clark

Public

INSTALL METER BOX FLUSH VERTICALLY WITH SIDEWALK OR CURB 1-1/2 & 2" METER LAY LENGTH: 17-1/4" GROUND LINE - 6" PVC EXTENSION PIE METER (TO BE PROVIDED & SET BY CPU) VALVE (NUT OPERATED - ANGLE BALL VALVE -200 PSI SDR-- WATER MAIN 2" PI x MIP ~ ADAPTER CAP YOKE WITH LIFT-TAR -ONE PIECE LOCATE WIRE CONNECT WIRE TO WATER LOCKING BYPASS -4" x 2" DIA BRASS NIPPLE INSTALL METER YOKE WITH BY-PASS -(MUELLER B2423N OR APPROVED EQUAL

2" WATER SERVICE WITH

1-1/2" OR 2" WATER METER

ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CLARK PUBLIC UTILITIES (CPU) WATER CONSTRUCTION SPECIFICATIONS, STANDARD DETAILS AND THE LATEST EDITION OF THE "STANDARD SPECIFICATIONS FOR ROAD AND ROBGE CONSTRUCTION" PUBLISHED BY WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (MSDOT).

A WATER UTILITY INSPECTOR SHALL BE AT THE JOB SITE DURING CONSTRUCTION OF ALL WATER FACILITIES. CONTACT 360-992,8019 TWO (2) WORKING MAY FROIT OT COMMERCING WORK.

WORK WITHIN COUNTY IGHT-OF-WAY SHALL CONFORM WITH CLARK COUNTY PUBLIC WORKS UTILITY PERSUIT REQUIREMENTS.

AND DETAILS. WORK WITHIN STATE RIGHT-OF-WAY SHALL CONFORM TO WSDOT UTILITY PERMIT REQUIREMENTS AND DETAILS. THE LOCATION OF THE UTILITIES SHALL BE VERIFIED IN ADVANCE TO ALLOW FOR ALIGNMENT ADJUSTMENTS. CALL UTILITY

NO CONNECTIONS WILL BE ALLOWED TO AN EXISTING SERVICE PRIOR TO AN APPROVED PURITY TEST. PURITY TEST SHALL

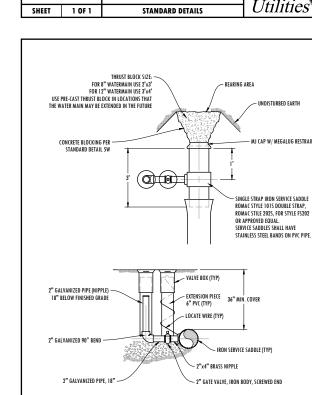
LOCATES TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION (1-800-553-4344).

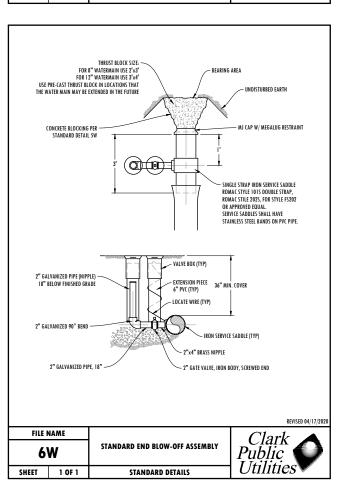
PRECEDE PRESSURE TEST

FILE NAME

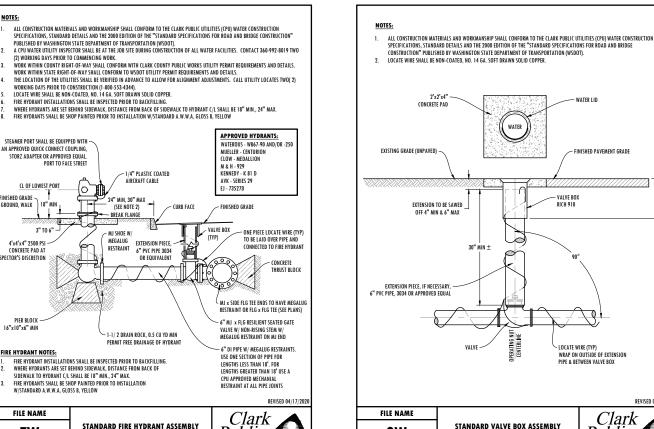
2W

A TAPPING COMPANY APPROVED BY CLARK PUBLIC UTILITIES SHALL BE USED TO MAKE ALL TAPS. LOCATE WIRE SHALL BE COATED, NO. 14 GA. SOFT DRAWN SOLID COPPER.





| 2" GALVANIZED PIPE, 18" — | | PE, 18" 2" GATE VALVE, IRON I | BODY, SCREWED END |
|---------------------------|--------|--------------------------------|-------------------|
| FILE I | NAME | | clark |
| 6W | | STANDARD END BLOW-OFF ASSEMBLY | l Public 🚺 |
| SHEET | 1 OF 1 | STANDARD DETAILS | Utilities |



CAST IN PLACE BLOCKING SHALL BE POURED AGAINST FIRM UNDISTURBED SOIL WITH MINIMUM BEARING PRESSURE OF 2.000 LR/SQ.FT CONCRETE FOR ALL BLOCKING SHALL HAVE A 28-DAY MINIMUM COMPRESSIVE STRENGTH OF 2,500 PSI. CONCRETE BLOCKING FOR VERTICAL BENDS SHALL REQUIRE SITE SPECIFIC ENGINEERING DESIGN. LAYOUT TO BE APPROVED BY THE INSPECTOR PRIOR TO AND AFTER ALL THRUST BLOCKS SHALL BE PLACED IN CENTER OF TEE OR BEND THESE DETAILS IN NO WAY LIMIT THE SIZE OR LOCATION OF ADDITIONAL BLOCKING WHEN REQUESTED BY THE UTILITY. 10. THRUST BLOCKS ON WATER MAINS AND FITTINGS 12" OR LARGER SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER AND APPROVED BY CLARK PUBLIC UTILITIES PRIOR TO CONSTRUCTION. MINIMII HORIZ. FITTINGS (BENDS) MINIMUN BLOCK SIZE (FT.) BEARING LENGTH O BLOCKING REA (SE (FT.-IN.) 4" 6" 8" 10" 12" FILE NAME THRUST BLOCK

STANDARD DETAILS

ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CLARK PURLIC LITUITIES (CPU) WATER CONSTRUCTION

WORKING DAYS PRIOR TO CONSTRUCTION (1-800-553-4344).
A TAPPING COMPANY APPROVED BY CLARK PUBLIC UTILITIES SHALL BE USED TO MAKE ALL TAPS.

L COMPRESSION FITTINGS TO HAVE STAINLESS STEEL INSERTS.

ONE PIECE, LOCATE WIRE -

(TYP) LOOPED THOUGH LOWER LOCKING EAR

ONE PIECE LOCATE WIRE, TO BE

FOR 1" METERS, METER BOX SHALL BE 13" WIDE x 24" LONG x 18" DEEP

METER TO BE PROVIDED -

FILE NAME

1W

SHEET 1 OF 1

5W

SHEET 1 OF 1

ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CLARK PUBLIC UTILITIES (FUT) WATER CONSTRUCTION SPECIFICATIONS, STANDARD EFALLS, AND THE LATES TEDTION OF THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" PUBLISHED BY WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT).

A WATER UTILITY INSPECTOR SHALL BE AT THE JOB SITE DURING CONSTRUCTION OF ALL WATER FACILITIES. CONTACT 360-992-8019 TWO (2) WORKING DAYS PRIOR TO COMMENCING WORK.

WORK WITHIN COUNTY RICHT-OF-WAY SHALL CONFORM WITH CLARK COUNTY PUBLIC WORKS UTILITY PERMIT REQUIREMENTS AND DETAILS.

WORK WITHIN STATE RIGHT-OF-WAY SHALL CONFORM TO WSDOT UTILITY PERMIT REQUIREMENTS AND DETAILS.

THE LOCATION OF THE UTILITIES SHALL BE VERIFED IN ADVANCE TO ALLOW FOR ALIGNMENT ADJUSTMENTS. CALL UTILITY LOCATES TWO (2)

LOCATE WINE SHALL BE COATED, NO. 14 GA. SOFT DRAWN SOLID COPPER.

METER BUX ASSEMBLES SHALL BE ARMORCAST, RAYEN, DPW OR APPROVED COULT.

NO CONNECTIONS WILL BE ALLAWOOD ON A MEXISTING SERVICE PRODE TO AN APPROVED PURITY TEST. PURITY TEST SHALL PRECEDE PRESSURE TEST.

SERVICE SADDLES:

PROVIDE BRASS OR BRONZE SERVICE SADDLES

WITH NEOPRENE GASKETS CEMENTED IN PLACE

AND I.P.S. TAP AS SPECIFIED ON THE CONTRAC

DRAWINGS (900 PVC PIPE SHALL HAVE SERVI

DRAWINGS. LYOU PYC PIPE SHALL HAVE SERVIC Saddles with Brass Bands; otherwise, Saddles Shall be specifically designed for the type of pipe to which they are being

1. SADDLES FOR 1" AND 2" SERVICE LINES ON WATER MAINS 8" AND SMALLER SHALL BE "ROMA

. SADDLES FOR 1" AND 2" SERVICE LINES ON

WATER MAINS 10" AND LARGER SHALL BE "ROMA

1" CORPORATION STOP, W/ PACK JOINT, INSTA-TITE OR APPROVED EQUAL OUTLET. CORPORATION STOP IS TO BE BEDDED IN SAND OR APPROVED MATERIAL USE FORD (FB-1101),

Public

CAST IN PLACE BLOCKING SHALL BE POURED WITHOUT DIRECT CONTACT TO THE PIPE OR FITTINGS.

PROTECTIVE MATERIAL SUCH AS PLASTIC OR APPROVED EQUAL

BLOCKING SHALL BE DESIGNED FOR STATIC PRESSURE OF 200 PSI OR 1.5 TIMES THE WORKING PRESSURE, WHICHEVER IS GREATER.

Public

THRUST BLOCK NOTES:

Utilities

SEE "SERVICE SADDLES" IN NOTES SECTION ABOVE

APPROVED BY CPU INSPECTO

REVISED 05/06/20

0

1018" OR APPROVED EQUAL.

2028" OR APPROVED FOUAL

STUB SERVICES SHALL BE PRESSURE TESTED WITH THE MAIN LINE AND BE CAPABLE OF WITH-STANDING THE MAINS TEST PRESSURE.
WATER METER BOX SHALL BE PLACED IN NON-PAVED AREAS, OUT OF CONFLICT WITH DRIVEWAYS, LANDSCAPING AND OTHER UTILITIES.

- 3/4" OR 1" OUTLET & 1" INLET BALL ANGLE

METER STOP W/ LOCKING LUGS. INLET TO BE PACK JOINT, INSTA-TITE OR APPROVED EQUAL USE FORD BAGS SERIES, MUELLER E-24259 OR

METER BOX SHALL BE ONE PIECE HDPE

HOMOGENEOUSLY MOLDED AS ONE UNI WITH HDPE LID RATED FOR INCIDENTAL

11" WIDE x 18" LONG x 12" DEEP (MIN.) INSTALL METER BOX

SIDEWALK

1" IPS PE 3406 200 PSI SDR-7 ASTM D-2239

STANDARD 1" WATER SERVICE WITH

5/8", 3/4" OR 1" WATER METER

STANDARD DETAILS

— CURB

SIDEWALK OR CURB



WATER MAIN INSTALLATION

W-SD

CPU

0.35" A.C.P. <u>OVER</u> 0.20" OF 5/8" MINUS C.S.T.C. <u>OVER</u>

Public Utilities

TYPE 'C' PAVEMENT SECTION

TYPE 'C-1'
(COLLECTOR OR ARTERIAL) 0.50' A.C.P. <u>OVER</u> 0.80' OF 1-1/4" MINUS C.S.B.C.

0.80' 1-1/4" MINUS C.S.B.C.

SAWCUT & TACK COAT EXISTING SURFACES PRIOR TO PAVING. SEAL W/ AR-4000 & SAND FOLLOWING PAVING

COMPACTED TO 95% OF MAX DENSITY

TOP AND BASE COURSE SECTION DEPTH PER TABLE

SECLARIX COUNTY OR WSDOT UTILITY PERMIT, WHICHEVER IS APPLICABLE, FOR ADDITIONAL TRENCH BACKFILL AND SUBFACING REQUIREMENTS.

NATIVE MATERIALS MAY BE SUBSTITUTED FOR IMPORTED GRANULAR MATERIAL PROVIDING IT IS PRE-APPROVED BY THE COUNTY BIGINEER OR AUTHORIZED REPRESENTATIVE.

TRENCH EKCAVATION, BEDDING, AND BACKFILL FOR WATER MAINS STALL BE IN ACCORDANCE WITH SECTION 7-10 OF THE MOST CHEMENT STANDARD SEPCIFICATIONS.

SUBSECTION 7-10.3(9) OF THE STANDARD SPECIFICATIONS.

4. IN THE TRENCH ZONE, USE METHOD C COMPACTION PER SECTION 2-03.3(14).

ASPHALT CONCRETE PAVEMENT

TYPE 'C1' & 'C2' RESTORATION

STANDARD DETAILS

TYPE 'C-2' (RESIDENTIAL)



- LOCATE WIRE SHALL BE NON-COATED, NO. 14 GA. SOFT DRAWN SOLID COPPER.
 NO CONNECTIONS WILL BE ALLOWED TO AN EXISTING SERVICE PRIOR TO AN APPROVED PURITY TEST. PURITY TEST SHALL PRECEDE PRESSURE TEST.
- STUB SERVICES SHALL BE PRESSURE TESTED WITH THE MAIN LINE AND BE CAPABLE OF WITH-STANDING THE MAINS TEST PRESSURE.

FILE NAME

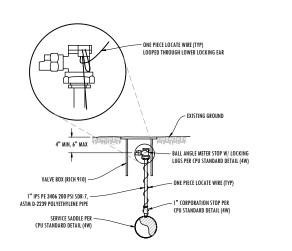
9W

SHEET 1 OF 1

FILE NAME

13W

SHEET 1 OF 1



STANDARD MANUAL AIR RELEASE VALVE

STANDARD DETAILS

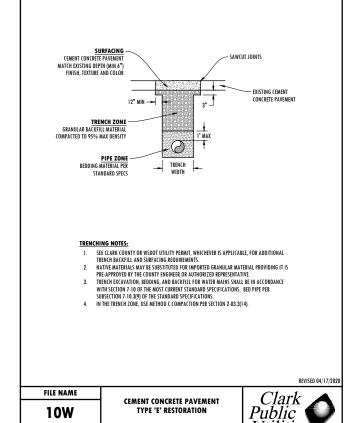
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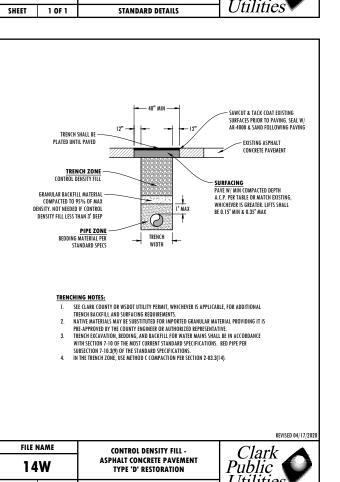
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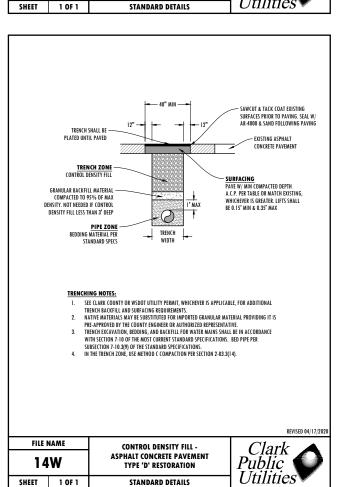
AREA TO BE RESTORED

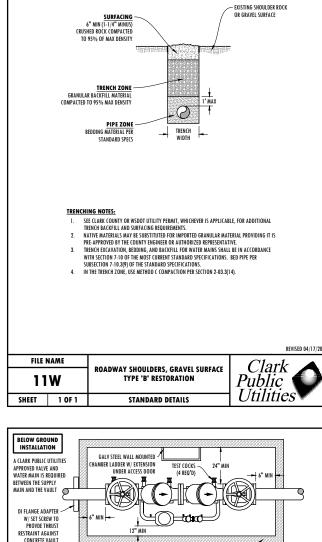
TO MATCH EXISTING

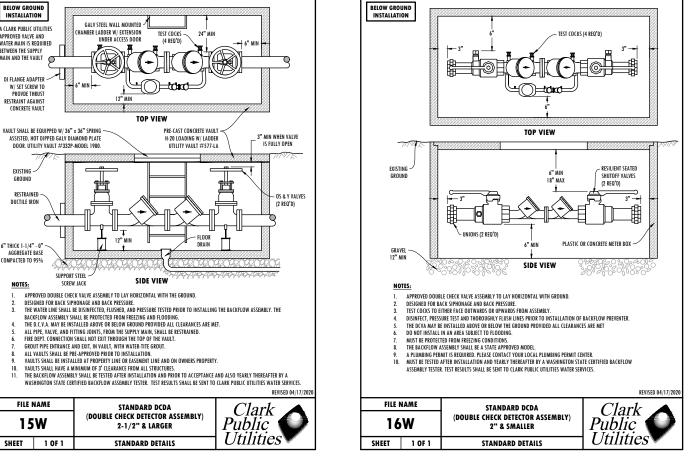
Utilities











PER TABLE OR MATCH EXISTING, WHICHEVER IS GREATER. LIFTS SHALL BE

LIFTS (0.25' MAX FOR SURFACE LIFTS)

TRENCH ZONE GRANULAR BACKFILL MATERIAL

TRENCHING NOTES:

FILE NAME

12W

SHEET 1 OF 1

COMPACTED TO 95% MAX DENSIT

0.15' MIN & 0.35' MAX FOR NON-SURFACE

PIPE ZONE BEDDING MATERIAL PER STANDARD SPECS TRENCHING MOTES:

1. SEE CLARK COUNTY OR WSDOT UTILITY PERMIT, WHICHEVER IS APPLICABLE, FOR ADDITIONAL TRENCH BACKFILL AND SURFACING REQUIREMENTS.

2. NATIVE MATERIALS MAY BE SUBSTITUTED FOR IMPORTED GRANULAR MATERIAL PROVIDING IT IS PRE-APPROVED BY THE COUNTY REGINEED OR DIVIDINGED REPRESINTATIVE.

3. TRENCH EXCAVATION, BEDDING, AND BACKFILL FOR WATER MAINS SHALL BE IN ACCORDANCE WITH SECTION 7-10 OF THE MOST COMERNY TSANDARD SPECIFICATIONS. BED PIPE PER SUBSECTION 7-10 39) OF THE TSANDARD SPECIFICATIONS.

4. IN THE TRENCH ZONE, USE METHOD C COMPACTION PER SECTION 2-03.3(14).

NATIVE BACKFILL OUSTSIDE ROADWAY

TYPE 'A' RESTORATION

STANDARD DETAILS

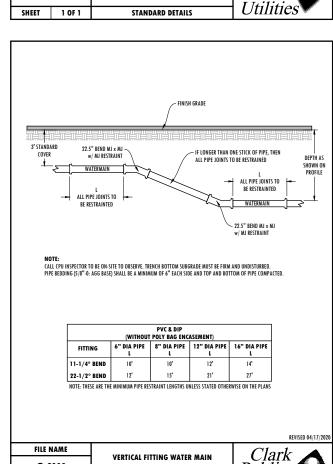


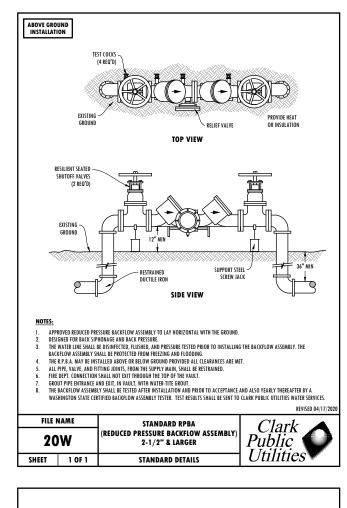


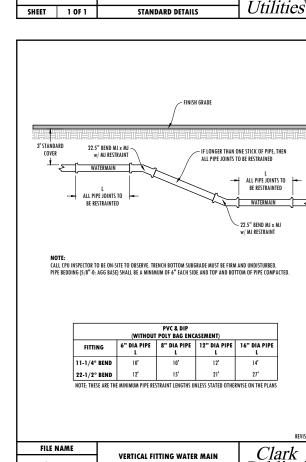


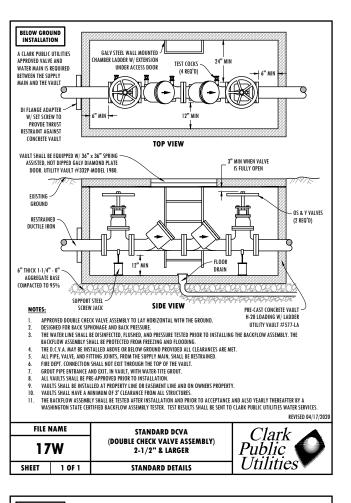
WATER MAIN INSTALLATION

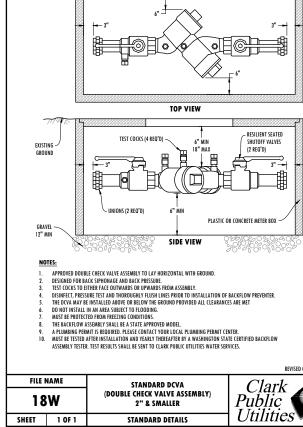
CPU W-SD



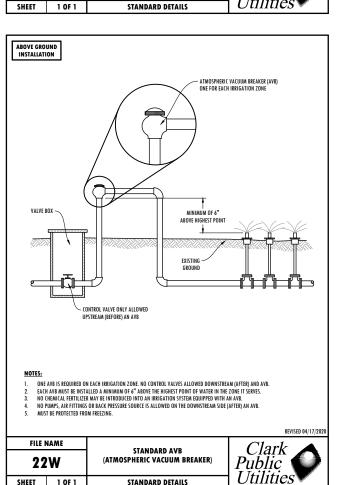


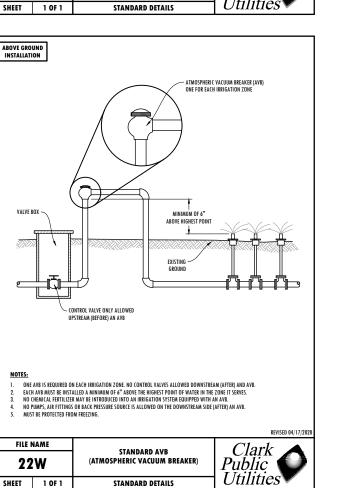


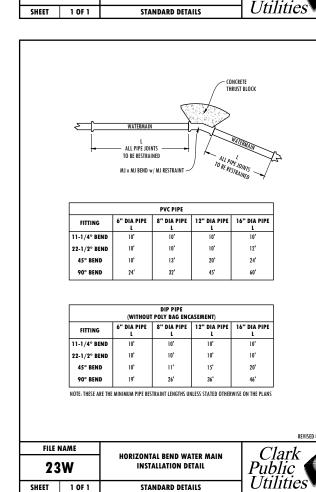




BELOW GROUND INSTALLATION







ABOVE GROUND

12" MIN. 5' MAX ABOVE HIGHEST POINT OF USE & ALL DOWN STREAM

FILE NAME

19W

RESILIENT SEATED SHIITOFF VALVES

(2 REQ'D

Public

MINIMUM OF 6" CLEARANCE

- SCHEDULE 80 OR GALV. PIPE

APPROVED PRESSURE VALVE BREAKER ASSEMBLY MUST BE INSTALLED VERTICALLY, 12" MIN TO 5' MAX ABOVE THE HIGHEST POINT OF USE AND ALL DOWNSTREAM PIPING.
DESIGNED FOR BACK SIPHONAGE ONLY, NOT BACK PRESSURE.
DISINETCY, PRESSURE TEST AND THOROUGHTY FLUSH THIS PRIOR TO INSTALLATION OF BACKFLOW PREVENTER.
IF A PIRA IS INSTALLED INDOORS, CONSIDERATION MUST BE GIVEN TO WATER LEAKAGE IF THE BACKFLOW PREVENTER FAILS (EXCESSIVE WATER SCHILLAGE).

THE BACKFLOW ASSEMBLY SHALL BE A STATE APPROVED MODEL.

A PLUMBING PERMIT IS REDD. PLEASE CONTACT YOUR LOCAL PLUMBING PERMIT CENTER.

A PLUMBING PERMIT IS REDD. PLEASE CONTACT YOUR LOCAL PLUMBING PERMIT CENTER.

MUST BE TESTED ATTER INSTALLATION AND YEARLY THEREAFTER BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. TEST

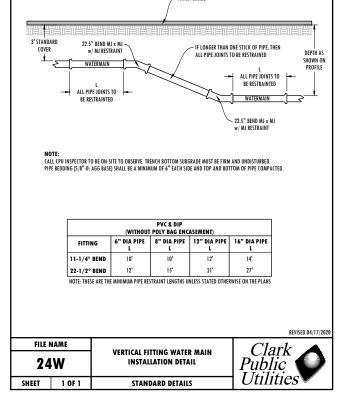
STANDARD PVBA (PRESSURE VACUUM BREAKER ASSEMBLY

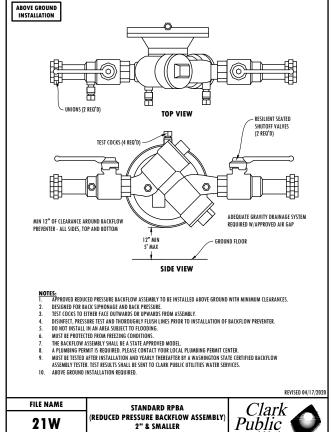
2" & SMALLER

WATER SPILLAGE).
THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.

RESULTS SHALL BE SENT TO CLARK PUBLIC UTILITIES WATER SERVICES.

AROUND BACKFLOW PREVENTER ALL SIDES, TOP AND BOTTOM.





STANDARD DETAILS

SHEET 1 OF 1

Utilities





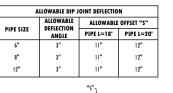
1. PIPE FITTINGS SHALL BE GRAY-IRON OR DUCTILE IRON AND SHALL CONFORM TO AWWA STANDARD CI 10. DUCTILE IRON (COMPACT) FITTINGS CONFORMING TO AWWA STANDARD C153 MAY BE SUBSTITUTED IN LIFE OF AWWA C110 FITTINGS FOR TTING SIZES 3-INCHES THROUGH 24-INCHES IN DIAMETER. FITTINGS SHALL BE MECHANICAL JOINT OR FLANGED AS REQUIRED AND SHOWN ON THE PLANS.

2. DUCTILE IRON AND GREY IRON MECHANICAL JOINT FITTINGS SHALL BE PRESSURE RATED FOR 350 PSI. DUCTILE IRON AND GREY IRON FLANGED IOINT FITTINGS SHALL BE PRESSURE RATED FOR 250 PSI.

3. FITTINGS SHALL BE MORTAR LINED AND SEAL COATED.

- 4. BELOW GROUND USE FLANGE ADAPTERS THE FLANGE ADAPTER TO CONNECT PLAIN END PVC PIPE OR DIP TO FLANGED FITTINGS SHALL BE A DUCTILE IRON FITTING CONFORMING TO ANSI/AWWA C153/A21.53. FITTING SHALL BE MECHANICAL JOINT ON ONE FND AND FLANGED ON THE OPPOSITE FND.
- 5. DUCTULE IRON AND GREY IRON SOLID SLEEVES SHALL BE OF THE LONG BODY DESIGN AND BOTH ENDS MECHANICAL IDINT.
- 6. GASKETS FOR FLANGED JOINTS SHALL BE 1/8" THICK, FULL FACED WITH AT LEAST (3) BULB TYPE RIBS MOLDED INTO BOTH FACES.
- MECHANICAL JOINT GASKETS SHALL BE STANDARD STYRENE BUTADIENE RUBBER (SBR) GASKETS
- 8. BOLTS AND NUTS SHALL BE CARBON STEEL AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 OR ASTM A193 GRADE B7 WITH ASTM A194 GRADE 2H HEAVY HEX NUTS.
- GATE VALVES (4" TO 8") GATE VALVES FOR BURIED SERVICE SHALL BE THE RESILIENT-SEAT TYPE, WITH AN IRON BODY, NON-RISING STEM, BOLTED BONNET, LEFT OPENING AND SHALL CONFORM TO AWWA STANDARD C509 AND C515. THE WEDGE SHALL BE TOTALLY ENCAPSULATED WITH RUBBER. ALL GATE VALVES SHALL BE RATED AT 250 PSI FOR AWWA SERVICE. THE INTERIOR AND EXTERIOR SHALL BE FUSION-BONDED EPOXY AND ALL COATINGS AND/OR LININGS SHALL CONFORM TO AWWA STANDARD CSSO AND SHALL BE SUITABLE FOR POTABLE WATER SERVICE AND NSE CERTIFIED.
- 10. BUTTERFLY VALVES (10" AND LARGER) BUTTERFLY VALVES SHALL BE SHORT BODY CLASS 250 VALVES CONFORMING TO THE REQUIREMENTS OF AWWA STANDARD CSO4. BUTTERFLY VALVES SHALL BE RUBBER SEATED AND TIGHT CLOSING. VALVE RODIES SHALL BE HIGH STRENGTH CAST IRON OR HIGH STRENGTH DUCTILE IRON. VALVE INTERIOR AND EXTERIOR SURFACES SHALL BE COATED WITH FPOXY IN ACCORDANCE WITH AWWA CSD4 AND SHALL RESULTABLE FOR POTABLE WATER SERVICE AND NSE 61

| O-FV | | | C_{12} |
|-------|--------|--------------------------------|----------------|
| | | FITTING & VALVE SPECIFICATIONS | Publ |
| SHEET | 1 OF 1 | STANDARD DETAILS | 1 <i>Utili</i> |





| ALLOWABLE PVC PIPE BENDING | | |
|----------------------------|-------------------------------------|-------------------------|
| PIPE SIZE | ALLOWABLE MINIMUM BENDING RADIUS | ALLOWABLE OFFSET "S" |
| 6" | 200' | 12" |
| 8" | 250' | 9.5" |
| 12" | 350' | 7" |



PIPE SHALL BE MADE BY BENDING THE PIPE AND NOT DEFLECTING PIPE JOINTS

| | | | REVISED 04 | |
|-----------|--------|--|------------|--|
| FILE NAME | | | Clark | |
| | | DUCTILE PIPE DEFLECTION & PVC PIPE BEND DETAIL | Public | |
| EET | 1 OF 1 | STANDARD DETAILS | Utilities▼ | |

PVC PIPE PIPE SIZE L₁ L₂ ALL PIPE JOINTS TO BE 20' 12" RESTRAINED 52' FIG CROSS WATERMAIN WATERMAIN FIG x MI GATE VALVE w/ MJ RESTRAIN (WITHOUT POLY BAG ENCASEMENT PIPE SIZE L1 L2 L3 RESTRAINED E E 12" NOTE: THESE ARE THE MINIMUM PIPE RESTRAINT ALL PIPE IOINTS TO BE ALL PIPE IOINTS TO BE CONCRETE THRUST BLOCK -- FLG TEE WATERMAIN - WATERMAIN FLG x MJ GATE VALVE w/ MJ RESTRAINT L2 PIPE JOINTS T RESTRAINED

GENERAL INSTALLATION NOTES:

FILE NAME

25W

SHEET 1 OF 1

INSTALL WATER MAIN WITH 3.0 FEET OF MINIMUM COVER UNLESS OTHERWISE NOTED. DEPTH MAY INCREASE AT UTILITY AND CULVERT

TYPICAL FITTING & VALVE

INSTALLATION DETAIL

STANDARD DETAILS

Public

Utilities

- 2. LOCATE WIRE SHALL BE COATED (BLUE INSULATED), NO. 14 GA. SOFT DRAWN SOLID COPPER. USE WATERPROOF CONNECTORS AT ALL WIRE
- 3. NEW AND REPAIRED WATER MAINS SHALL BE DISINFECTED PER AWWA C651 PRIOR TO BEING PLACED INTO SERVICE. CONNECTION TO AN

EXISTING WATER MAIN MAY ONLY BE DONE AFTER PROPER DISINFECTION, TESTING, FLUSHING AND APPROVAL BY CPU

- WHENEVER A PIPE IS CUT AND NOT RECONNECTED, THE CUT ENDS SHALL BE CAPPED OR PLUGGED, AS DIRECTED BY THE CPU INSPECTOR
- 5. ALL WATER SERVICES, BLOW-OFF ASSEMBLIES, AIR RELEASE VALVES, FIRE HYDRANT ASSEMBLIES, VALVE BOXES AND THRUST BLOCKING SHALL BE
- 6. WATER MAINS BEING INSTALLED NEAR TELEPHONE/CABLE COMMUNICATIONS SHALL HAVE A MINIMUM 12" HORIZONTAL AND 6" VERTICAL
- 7. WATER MAINS BEING INSTALLED NEAR UNDERGROUND ELECTRICAL LINES SHALL HAVE A MINIMUM 60" HORIZONTAL AND 6" VERTICAL
- 8. REQUIRED SEPARATION BETWEEN WATER LINES AND SANITARY SEWER LINES SHALL BE AS FOLLOWS:

HORIZONTAL SEPARATIONS (PARALLEL)
A MINIMUM SEPARATION OF TEN (10) FEET (MEASURED EDGE TO EDGE) BETWEEN SANITARY SEWER LINES AND WATER LINES SHALL BE
MAINTAINED WHENEVER POSSIBLE. WHEN CONDITIONS PREVENT THE MINIMUM TEN (10) FOOT HORIZONTAL SEPARATION THE ENGINEER SHALL

- **VERTICAL SEPARATION (PERPENDICULAR)** Water lines crossing sanitary sewer lines shall be laid above the sewer lines to provide a separation of at least 18" between THE INVERT OF THE WATER PIPE AND THE CROWN OF THE SANITARY SEWER PIPE. A LENGTH OF WATER PIPE SHALL BE CENTERED AT THE POINT OF CROSSING AND SHALL BE THE LONGEST STANDARD LENGTH AVAILABLE FROM THE MANUFACTURER.
- 9 THE CONTRACTOR SHALL HISE CONSTRUCTION METHODS THAT PROTECT THE PIPE INTERIORS FITTINGS AND VALVES AGAINST CONTAMINATION
- 10. ANY PIPE, FITTINGS OR VALVES THAT CANNOT BE DISINFECTED WITH THE MAIN LINE BY CHLORINE FOR 24 HOURS SHALL HAVE THE INTERIORS SWABBED WITH A 1% HYPOCHLORITE SOLUTION BEFORE INSTALLATION.
- 11. CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED AT ALL TEES, BENDS, DEAD ENDS AND WHERE INDICATED ON THE PLANS
- 12. ALL MI FITTINGS SHALL RE RESTRAINED USING MI MECHANICAL RESTRAINT FOLLOWER GLANDS APPROPRIATE FOR THE PIPE MATERIAL
- 13. 6" WATER PIPE LEADING TO FIRE HYDRANTS SHALL BE DIP AND SHALL BE ONE CONTINUOUS PIECE OF PIPE. IF THE RUN IS LONGER THAN ONE PIECE OF PIPE, THEN ALL PIPE JOINTS SHALL BE MECHANICALLY RESTRAINED WITH "FIELD-LOK" GASKETS OR OTHER CPU APPROVED RESTRAINTS

REVISED 04/17/2

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GENERAL NOTES:

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- 1. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CLARK PUBLIC UTILITIES (CPU) WATER CONSTRUCTION SPECIFICATIONS, STANDARD BETAILS AND THE MOST CORRENT EDITION OF THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" PUBLISHED BY WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WORDOLT).
- 2. A CPU WATER UTILITY INSPECTOR SHALL BE AT THE JOB SITE DURING CONSTRUCTION OF ALL WATER FACILITIES. CONTACT 360-992-8019 TWO

TYPICAL IN-LINE VALVE

INSTALLATION DETAIL

STANDARD DETAILS

- 3. WORK WITHIN COUNTY RIGHT-OF-WAY SHALL CONFORM WITH CLARK COUNTY PUBLIC WORKS UTILITY PERMIT REQUIREMENTS AND DETAILS. WORK WITHIN STATE RIGHT-OF-WAY SHALL CONFORM TO WSDOT UTILITY PERMIT REQUIREMENTS AND DETAILS.
- 4. VALVE SHALL BE 2" SQUARE OPERATING NUT OR AS SPECIFIED ON PLANS.

ALL PIPE JOINTS TO BE

PVC PIPE

80'

PIPE SIZE L

8"

12"

WATERMAIN

ALL PIPE IOINTS TO BE

DIP PIPE (WITHOUT POLY BAG ENCASEMEN

> 50' 25'

> > Public

Utilities

WATERMAIN

MI v MI VAIVE

PIPE SIZE

12"

REQUIRED LENGTH WHEN PIPE JOINT RESTRAINT IS ONLY EFFECTIVE IN TENSION (SUCH AS FIELD-LOK GASKETS

REQUIRED LENGTH WHEN PIPE JOINT RESTRAINT IS ONLY EFFECTIVE IN BOTH TENSION AND COMPRESSION L2: (SUCH AS A MJ SLEEVE WITH MJ RESTRAINT OR A PROPRIETARY INTEGRAL BELL & SPIGOT RESTRAINT SYSTEM).

- 5. THE LOCATION OF THE UTILITIES SHALL BE VERIFIED IN ADVANCE TO ALLOW FOR ALIGNMENT ADJUSTMENTS. CALL UTILITY LOCATES TWO (2)
- 6. ONLY TAPPING COMPANIES APPROVED BY CLARK PUBLIC UTILITIES SHALL BE USED TO MAKE ALL TAPS.
- 7. ACTUAL ROAD ALIGNMENTS MAY VARY FROM RIGHT-OF-WAY INDICATED. THE CONTRACTOR SHALL VERIFY THE PROPOSED PIPE ALIGNMENT AND REPORT DIFFERENCES TO THE CPU INSPECTOR. ALL ALIGNMENT CHANGES MUST BE APPROVED BY THE CPU INSPECTOR PRIOR TO INSTALLATION.
- 8. DRIVEWAYS DISTURBED BY CONSTRUCTION SHALL BE RESTORED BY THE CONTRACTOR TO "LIKE" OR BETTER CONDITION. REFER TO PLAN FOR
- 9. CONTRACTOR SHALL VERIFY EXISTING UTILITY CULVERTS, CONDUITS AND LINE LOCATION PRIOR TO CONSTRUCTION. DUE TO FIELD CONDITIONS, TH CONTRACTOR SHALL FILE DUBUST THE VERTICAL AND HORIZONTAL ALIGNMENT OF THE WATER MAIN TO CLEAR THE UTILITY IN CONFLICT AND PROVIDE THE MAIN. 3.0 FEET OF COVER AS APPROVED BY THE CPU INSPECTION. ALL CULVER'S WHICH ARE DISTORDED BY CONSTRUCTION SHALL BE RESTORDED BY THE CONTRACTOR IN ACCORDANCE WITH THE SPECIFICATIONS
- 10. FENCES DISTURBED BY CONSTRUCTION SHALL BE RESTORED OR REPLACED BY THE CONTRACTOR TO "LIKE" OR BETTER CONDITION.
- 11. CONTRACTOR SHALL VERIFY EXISTING SIGN AND MAILBOX LOCATIONS PRIOR TO CONSTRUCTION. SIGNS & MAILBOXES THAT ARE DISTURBED BY CONSTRUCTION SHALL BE RELOCATED BACK FROM BOGG OF PAVEMENT, 1.0 FEET CLEAR OF WATER MAIN. ANY SIGNS OR MAILBOXES DAMAGED SHALL BE REPARABED OR REPLACE OA SPE RIFE SPECIFICATIONS.
- 12. THE LOCATIONS OF ALL EXISTING UTILITIES ARE FOR INFORMATIONAL PURPOSES ONLY. MANY LOCATIONS ARE PER SCHEMATIC RECORD DAWNINGS. THE CURRENT AND EXACT LOCATIONS OF FACILITIES AT LEAST 48 BUSINESS DAY HOURS PRIOR TO EXCAVATION. CALL 1-800-553-4344 FOR UTILITY DAYS PRIOR TO EXCAVATION. CALL 1-800-553-4344 FOR UTILITY LOCATE SERVICE.
- 13. THE WATER FACILITIES SHALL RECOME THE PROPERTY OF CLARK PUBLIC LITHLITIES AFTER A SATISFACTORY BACTERIA AND PRESSURE TEST HAVE BEEN PERFORMED BY THE UTILITY. ALL MATERIALS AND WORKMANSHIP ARE SUBJECT TO A ONE YEAR WARRANTY, COMMENCING AT ACCEPTANCE OF FINAL TESTING. REPLACEMENT AND/OR REPAIRS OF DEFECTIVE MATERIALS SHALL BE THE DEVELOPERS/OWNERS RESPONSIBILITY.
- 14. WHEN ASSESTOS CONCRETE PIPE IS ENCOUNTERED, THE CONTRACTOR SHALL SUPPLY WORKERS WHO ARE CERTIFIED TO WORK ON ASSESTOS CONCRETE PIPE.
- 15. THE CONTRACTOR SHALL TRANSFER AND/OR ABANDON EXISTING SERVICES AS DIRECTED BY THE INSPECTOR.
- 16. THE INSTALLED WATER MAIN SHALL BE PRESSURE TESTED AT A MINIMUM OF 200 PSI OR 1.5 TIMES THE WORKING PRESSURE, WHICHEVER IS GREATER. THE TEST WILL BE PERFORMED BY THE CLARK PUBLIC UTILITIES INSPECTOR. THE CONTRACTOR SHALL PROVIDE ASSISTANCE AS NEEDED.
- 17. THE INSTALLED WATER MAIN SHALL BE THOROUGHLY DISINFECTED AND FLUSHED IN ACCORDANCE WITH THE CLARK PUBLIC UTILITIES STANDARDS AND REQUIREMENTS. ONLY CLARK PUBLIC UTILITIES EMPLOYEES ARE PERMITTED TO FILL AND FLUSH THE WATER MAIN. THE CONTRACTOR SHALL PROVIDE ASSISTANCE AS NEEDED. IN AREAS WHEERE THE FACHIORIMATION OF FLUSHED WATERS 100 POSSIBEL, THE CONTRACTOR SHALL PROVIDE
- 18. PRIOR TO ACCEPTING THE SYSTEM OR ALLOWING THE MAIN TO BE PUT IN SERVICE, A WATER SAMPLE SHALL BE TAKEN BY THE CLARK PUBLIC UTILITIES INSPECTOR AND A TEST PERFORMED BY AN ACCREDITED LAB TO INSURE NO HAZARD EXIST REVISED 04/17/202

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MECHANICAL JOINT RESTRAINT SPECIFICATIONS

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- MECHANICAL JOINT RESTRAINT SHALL BE ACCOMPLISHED BY A RESTRAINT DEVICE CONSISTING OF A FOLLOWER GLAND UTILIZING MULTIPLE GRIPPING WEDGES. GLAND BODY AND WEDGES SHALL BE DUCTILE IRON AND EPOXY COATED.
- T-BOLTS AND NUTS SHALL BE HIGH STRENGTH LOW ALLOY STEEL T-BOLTS AND STEEL SHALL MEET AWWA (11) COMPOSITION SPECIFICATIONS
- RESTRAINT GLAND SHALL UTILIZE A STANDARD MECHANICAL JOINT GASKET.
- THE FOLLOWING IS THE APPROVED LIST OF RESTRAINED JOINT SYSTEMS FOR MECHANICAL JOINTS AND DIF
- "ROMAGRIP", ROMAC INDUSTRIES. "SERIES 1000 TUFGRIP", TYLER UNION.
- "MEGALLIG" FRAA IRON INC
- 5. THE FOLLOWING IS THE APPROVED LIST OF RESTRAINED JOINT SYSTEMS FOR MECHANICAL JOINTS AND PVC:
- "ROMAGRIP FOR PVC", ROMAC INDUSTRIES.
- "SERIES 2000 FOR PVC TUFGRIP", TYLER UNION
- "MEGALUG SERIES 2000 PV", EBAA IRON, INC. APPROVED FOLLIVALENT

DUCTILE IRON PIPE RESTRAINED JOINT SPECIFICATIONS

- PIPE ININT RESTRAINT EOR DIP SHALL RE ACCOMPLISHED WITH A PIPE RELL/SPIGOT INTEGRAL LOCK MECHANISM AS AN ALTERNATIVE AND WHERE ALLOWED BY CLARK PUBLIC UTILITIES, A BOLTLESS RESTRAINING GASKETS FOR DIP TYTON JOINT STYLE
- PIPE MAY BE USED. THE RESTRAINT GASKET SHALL BE A BOLTLESS GASKET WITH INTEGRAL RESTRAINING SYSTEM UTILIZING STAINLESS STEEL PARTS AND SHALL BE PRESSURE RATED FOR 350 PSI. THE GASKETS SHALL BE IN CONFORMANCE WITH ANSI/AWWA C111/A21.11 AND CERTIFIED TO NSF/ANSI 6. THE FOLLOWING IS THE APPROVED LIST OF DIP PIPE JOINT RESTRAINED GASKET SYSTEMS:
- "FIELD LOK 350 GASKET", U.S. PIPE AND FOUNDRY CO
- "GRIPPER GASKET", GRIPPER GASKET LLC.
- APPROVED EQUIVALENT

- PVC PIPE RESTRAINED JOINT SPECIFICATIONS

 1. PVC PIPE JOINT RESTRAINT FOR MAY BE ACCOMPLISHED BY UTILIZING A PROPRIETARY PVC PIPE WHICH UTILIZES A PIPE BELL/SPIGOT INTEGRAL JOINT RESTRAINT MECHANISM. THE FOLLOWING IS THE APPROVED LIST OF PROPRIETARY PVC C-900 PIPE JOINT RESTRAINED
 - "EAGLE LOC 900". JM EAGLE
 - "CERTA-LOK C900/RJ", CERTAINTEED
 - "DIAMOND LOK-21", DIAMOND PLASTICS INC.
 - "RIFBERLOK" GASKET

SHEET

2. AS AN ALTERNATIVE, PVC PIPE MAY BE COUPLED TO CREATE A RESTRAINED JOINT BY UTILIZING A GREY IRON OR DUCTILE IRON MECHANICAL JOINT LONG PATTERN SLEEVE WITH A RESTRAINT FOLLOWER GLAND UTILIZING MULTIPLE GRIPPING WEDGES.

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| | | MECHANICAL JOINT & PIPE JOINT RESTRAINT SPECIFICATIONS | Public |
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EXISTING WATER SERVICES:

THE CONTRACTOR SHALL TRANSFER, MOVE AND/OR ABANDON EXISTING WATER SERVICES AS DIRECTED BY THE CLARK PUBLIC UTILITIES

- EXISTING WATER SERVICES TO BE ABANDONED SHALL BE EXCAVATED TO THE CORP. STOP AT THE WATER MAIN AND THE CORP STOP SHALL BE CLOSED. THE METER BOX SHALL BE REMOVED AND THE WATER SERVICE LINE CAN BE ABANDONED IN PLACE. THE EXISTING METER SHALL BE RETURNED TO CLARK PUBLIC UTILITIES WATER DEPT. ROAD REPAIR SHALL BE AS REQUIRED BY THE CLARK COUNTY RIGHT OF WAY PERMIT REQUIREMENTS.
- 2. WHEN AN EXISTING WATER SERVICE IS TO BE MOVED, THE CONTRACTOR SHALL EXPOSE A PORTION OF THE EXISTING WATER SERVICE SO THAT THE CLARK PUBLIC UTILITIES INSPECTOR CAN EVALUATE THE MATERIAL SIZE AND CONDITION OF THE EXISTING WATER SERVICE LINE.

THE INSPECTOR WILL DETERMINE WHETHER THE WATER SERVICE LINE CAN BE EXTENDED OR SHORTENED. IF THE INSPECTOR DETERMINES THE EXISTING WATER SERVICE LINE IS SUBSTANDARD, THEN A NEW POLYETHYLENE (PE) SERVICE LINE SHALL BE INSTALLED FROM THE WATER MAIN (MINIMUM SIZE 1" DIA).

ALL EXISTING WATER SERVICE LINES THAT ARE LESS THAN 1" DIAMETER SHALL BE CONSIDERED SUBSTANDARD AND SHALL BE REPLACED WITH A NEW 1", 1-1/2", OR 2" WATER SERVICE LINE PER CLARK PUBLIC UTILITIES STANDARD

MAIN LINE PIPE MATERIAL:

UNLESS OTHERWISE STATED ON THE PLAN, ALL MAIN LINE PIPE SHALL BE EITHER DUCTILE IRON PIPE (DIP), POLYVINYL CHLORIDE PIPE (PVC) OR HIGH-DENSITY POLYETHYLENE PIPE (HDPE). ALL PIPE SHALL BE SUITABLE FOR POTABLE WATER SERVICE IN ACCORDANCE WITH ANSI/NSF 61

- A DIICTILE IRON PIPE SHALL CONFORM TO ANSI A21.51 OR AWWA C151. IISE PIISH ON IOINTS EXCEPT WHERE OTHER IOINT TYPES ARE NOTED ON THE CONTRACT DRAWINGS. ALL DUCTILE IRON PIPE SHALL BE GAUGED FOR DIP 12" DIAMETER AND SMALLER. UNLESS
 SPECIFICALLY NOTED ON THE CONTRACT DRAWINGS, 3"-12" PIPE SHALL BE PRESSURE CLASS 350 AND PIPE SIZES GREATER THAN 12" DIAMETER SHALL BE THICKNESS CLASS 52
- POLYVINYL CHLORIDE (PVC) PRESSURE PIPE (4".30"). USE UN-PLASTICIZED PVC PLASTIC PIPE WITH INTEGRAL BELL AND SPIGOT JOINTS. USE PUSH-ON JOINTS EXCEPT WHERE OTHER JOINT TYPES ARE NOTEO ON THE CONTRACT DEAWNINGS. PIPE SHALL MEET THE REQUIREMENTS OF DR 18, UNLESS OTHERWISS NOTEO ON THE DRAWNING, UNLESS SPECIFICALLY NOTEO ON THE CONTRACT DRAWNINGS, 4"-12" PIPE SHALL MEET THE REQUIREMENTS OF AWAY G90S.
- HIGH-DENSITY POLYETHYLENE PIPE (HDPE) SHALL BE BLACK WITH A MINIMUM OF TWO EQUALLY SPACED BLUE COLORED STRIPES EXTRUDED INTO THE OUTER SHELL IN CONFORMANCE WITH THE UNIFORM COLOR CODE (UCC), UNLESS OTHERWISE NOTED ON THE DRAWINGS, PIPE SHALL BE IRON PIPE SIZE (IPS) AND HAVE A WALL-THICKNESS DIMENSION RATIO (DR) OF 9. SMALL DIAMETER PIPE (3/4"-3"), SHALL CONFORM TO ANSI/AWWA (901 AND LARGE DIAMETER PIPE (4"-65") PIPE SHALL CONFORM TO ANSI/AWWA (906.

FILE NAME MAIN LINE PIPE MATERIAL & 0-PM **EXISTING WATER SERVICE NOTES** SHEET 1 OF 1 STANDARD DETAILS

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WATER MAIN INSTALLATION

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