

APPENDIX III

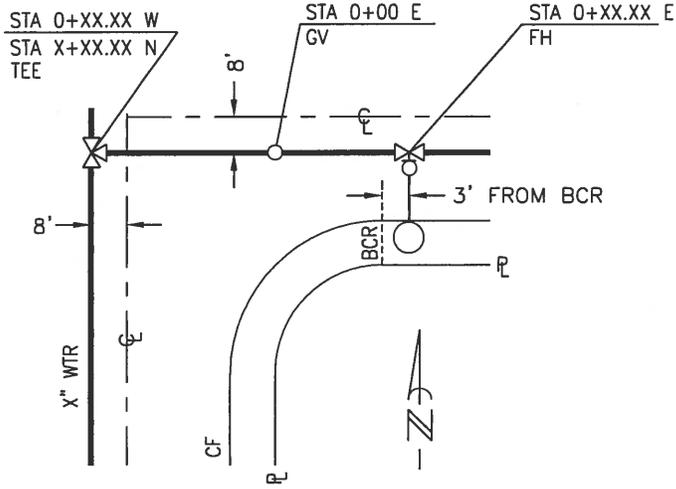
STANDARD DRAWINGS

INDEX

CWD	TITLE
010-1	Typical Cover Sheet
010-3	Typical Plan Detail
015-1	Water Main and Sanitary Sewer Separation, Case 1
015-2	Water Main and Sanitary Sewer Separation, Case 2
015-3	Water Main and Sanitary Sewer Separation, Notes
023-1	Structure Interference Type A, B, or C Encasement
023-2	Structure Interference Encasement Sections
030	Thrust Block Details, Typical
040-1	Typical Pipe Trench, Bedding, Backfill and Pavement Requirements
040-2	Typical Pipe Trench, Bedding, Backfill and Pavement Requirements (General Notes)
220	Typical Split Butt Strap, 8" Through 54" Diameter (150 PSI Design Pressure)
300	Typical Flanged Outlet, 4" Through 20"
320	Typical Flanged Tangent Outlet, 4" Through 12" Diameter
340	Typical Threaded Outlet, 1" Thru 2 1/2" Diameter
350	Typical Manway For Large Pipelines
409	6" Hydrant Head Blow-Off, Di Bury, 24" Main and Smaller
410-A	8" Blow-Off/ Pumper Outlet, Below Grade, With Less Than 10' of Cover
410-B	8" Blow-Off, Below Grade, With More Than 10' of Cover
411-A	Typical 2" Blow-Off Assembly, For Mains With Less Than 42" Of Cover
411-B	Typical 2" Blow-Off Assembly, For Mains With More Than 42" Of Cover
412	4" Through 10", Temporary Construction End Caps, For Flushing, Testing, & Chlorination
413	12" – 20" DI Temporary Construction End Cap For Flushing, Testing, & Chlorination
414	For Steel 16" – 54" CML&C Temporary Construction End Cap for Flushing, Testing, and Chlorination
432	Temporary Water Sampler
433	Water Quality Sampling Station
451	Typical 2" Air Valve Installation
460	Typical 4" Air Valve Installation
462	Typical 6" Air Valve Installation
465	Typical 8" Air Valve Installation
500	Typical Valve Box For Gate Valves
504	Tapping Sleeve And Tapping Valve Detail For Domestic And Fire Services
510	Typical Valve Box For Butterfly Valves
515	Typical Split-Sleeve Liner And Cap For 8" and 10" Valve Box
570	Typical Conduit Support
600	1" Water Service
601	2" Water Service
614	Temporary, Emergency, or Construction Water Service / Backflow Protection
615	4" Through 12" Above Ground Fire Service
616-1	Backflow Prevention Assembly 3/4" - 2-1/2" Above Ground Installation
616-2	Backflow Prevention Assembly Alternative Location Installation
617	Backflow Prevention Assembly 3" & Larger Above Ground Installation
620-1	3", 4" and 6" Compound Meter Water Service
620-2	Bill Of Materials For 3", 4" and 6" Compound Meter Water Service
621-1	8" FMCT Water Service
621-2	Bill Of Materials For 8" FMCT Water Service

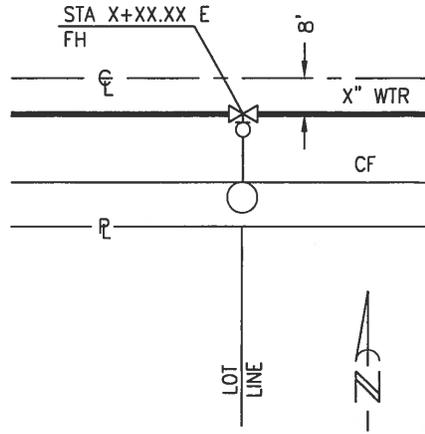
INDEX

CWD	TITLE
622-1	10" Domestic Water Service
622-2	Bill Of Materials for 10" Compound Water Service
700	Regular and Super Fire Hydrant Detail
800-1	Traffic Rated Vault For 3" Thru 6" Compound Meters
800-2	Traffic Rated Vault For 3" Thru 6" Compound Meters
811	Blow-Off Manhole Installation
816	Manhole Detail 48" Max ID Pipe
900-A	4" Dia. Guard Post Installation
900-B	2.5" Dia. Guard Post Installation
922	Test Lead Installation
923	Flange Insulation and Test Lead Installation
924	Joint Bond Details
960-1	Notification Sign
960-2	Notification Sign

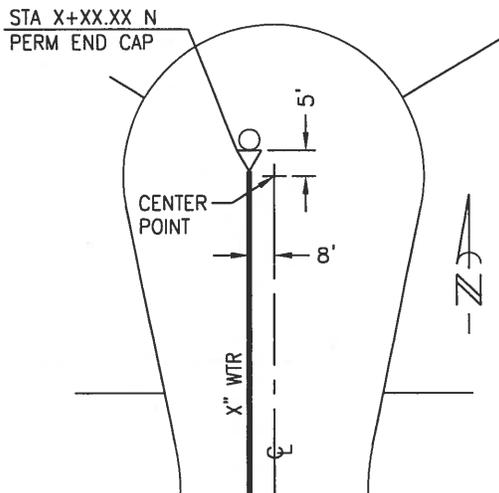


INTERSECTIONS

FIRE HYDRANT LOCATIONS

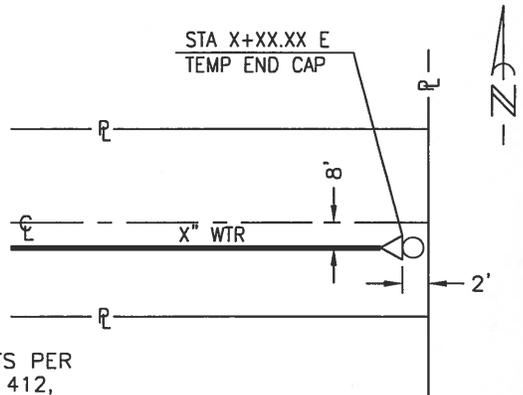


LOT LINES



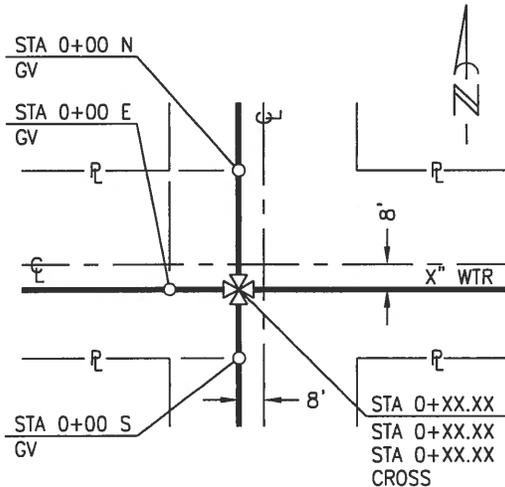
CUL-DE-SAC

END OF MAIN



DEAD-END

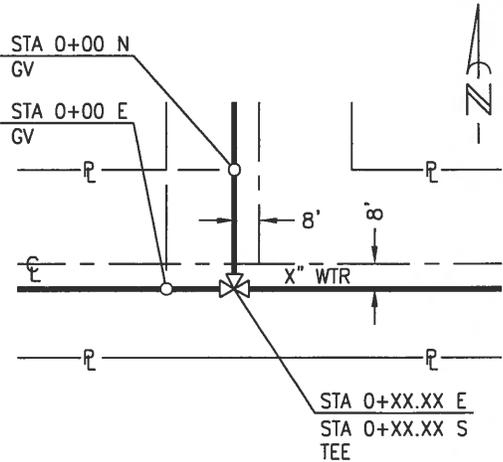
NOTE:
TYPICAL BLOW-OFFS PER
CWD-411A, 411B, 412,
OR 413



FOUR-WAY

VALVE LOCATION

NOTE:
VALVES SHALL BE
LOCATED ON THE
EXTENSION OF
PROPERTY LINES



THREE-WAY



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TYPICAL PLAN DETAIL

INSTALLATION OF NEW SANITARY SEWER

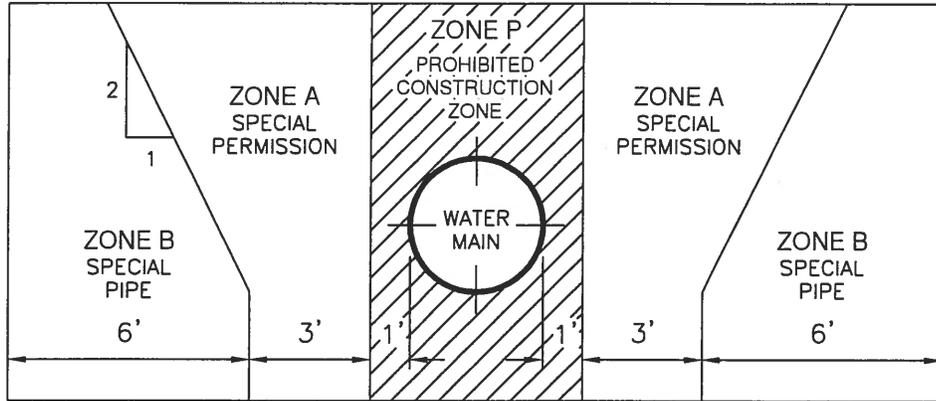


FIGURE 1 - PARALLEL CONSTRUCTION

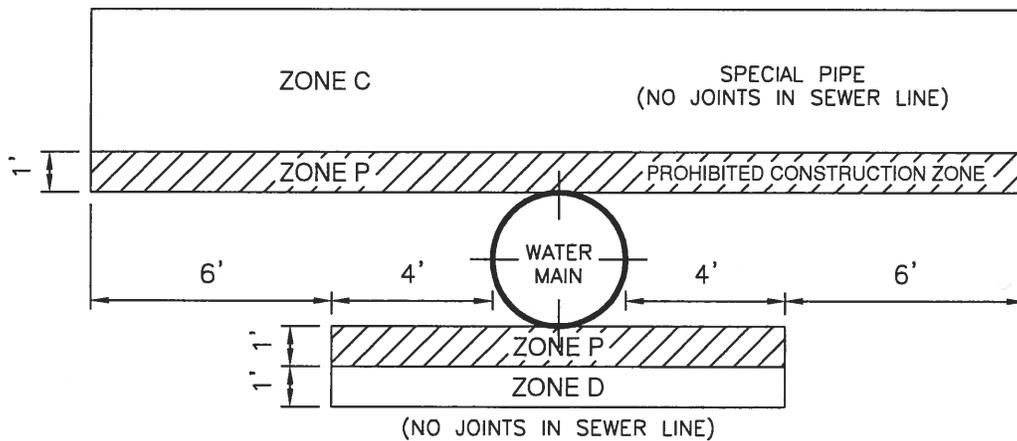


FIGURE 2 - CROSSINGS

MINIMUM SEPARATION REQUIREMENTS FOR WATER MAIN AND SEWER LINE CONSTRUCTION
PER SECTION 64630, TITLE 22 (WATER MAIN INSTALLATION, CALIFORNIA ADMINISTRATIVE CODE)



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

WATER MAIN AND SANITARY SEWER
SEPARATION
CASE 1

INSTALLATION OF NEW WATER MAIN

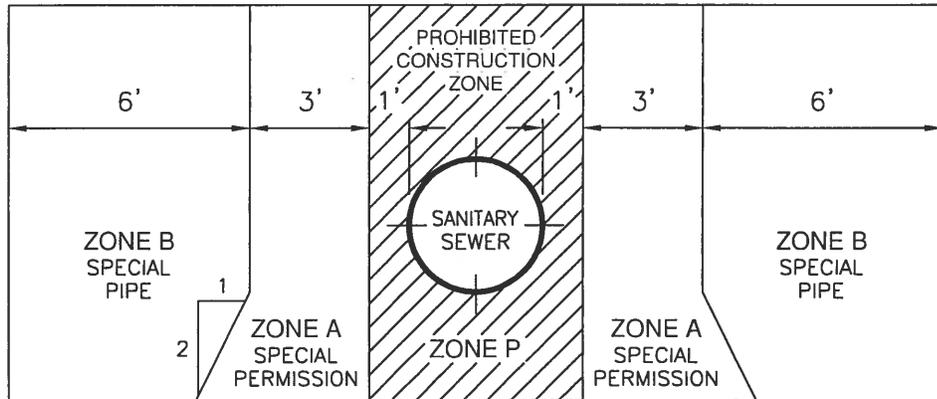


FIGURE 1 - PARALLEL CONSTRUCTION

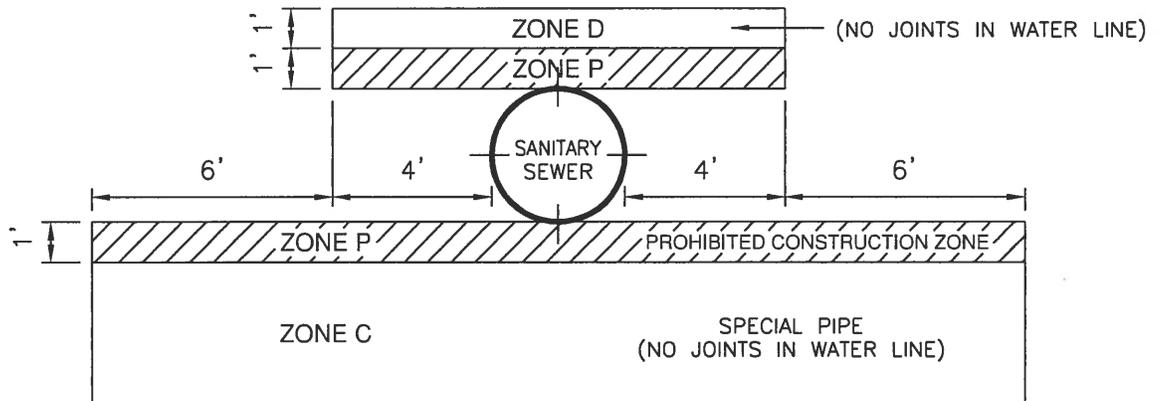


FIGURE 2 - CROSSINGS

NEW WATER MAIN - EXISTING SANITARY SEWER LINE

MINIMUM SEPARATION REQUIREMENTS FOR WATER MAIN AND SEWER LINE CONSTRUCTION
PER SECTION 64572 (WATER MAIN SEPARATION, CALIFORNIA WATERWORKS STANDARDS,
TITLE 22, CALIFORNIA CODE OF REGULATIONS.)



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

WATER MAIN AND SANITARY SEWER
SEPARATION
CASE 2

NOTES AND DEFINITIONS

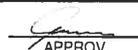
1. HEALTH AGENCY -- THE DEPARTMENT OF HEALTH SERVICES. FOR THOSE WATER SYSTEMS SUPPLYING FEWER THAN 200 SERVICE CONNECTIONS, THE LOCAL HEALTH OFFICER SHALL ACT FOR THE DEPARTMENT OF HEALTH SERVICES.
2. WATER SUPPLIER -- "PERSON OPERATING A PUBLIC WATER SYSTEM" OR "SUPPLIER OF WATER" MEANS ANY PERSON WHO OWNS OR OPERATES A PUBLIC WATER SYSTEM.
3. LOW HEAD WATER MAIN -- ANY WATER MAIN WHICH HAS A PRESSURE OF FIVE PSI (POUNDS PER SQUARE INCH) OR LESS AT ANY TIME AT ANY POINT IN THE MAIN.
4. DIMENSIONS ARE FROM THE OUTSIDE OF WATER MAIN TO THE OUTSIDE OF SANITARY SEWER LINE OR MANHOLE.
5. COMPRESSION JOINT -- A PUSH-ON JOINT THAT SEALS BY MEANS OF THE COMPRESSION OF A RUBBER RING OR GASKET BETWEEN THE PIPE AND A BELL OR COUPLING.
6. MECHANICAL JOINTS -- BOLTED JOINTS.
7. RATED WORKING WATER PRESSURE OR PRESSURE CLASS -- A PIPE CLASSIFICATION SYSTEM BASED UPON INTERNAL WORKING PRESSURE OF THE FLUID IN THE PIPE, TYPE OF PIPE MATERIAL, AND THE THICKNESS OF THE PIPE WALL.
8. FUSED JOINT -- THE JOINING OF SECTIONS OF PIPE USING THERMAL OR CHEMICAL BONDING PROCESSES.
9. SLEEVE -- A PROTECTIVE TUBE OF STEEL WITH A WALL THICKNESS OF NOT LESS THAN ONE-FOURTH INCH INTO WHICH A PIPE IS INSERTED.
10. GROUND WATER -- SUBSURFACE WATER FOUND IN THE PART OF THE GROUND THAT IS WHOLLY SATURATED.
11. HOUSE LATERAL -- A SANITARY SEWER CONNECTING THE HOUSE LATERAL DRAIN, BUILDING DRAIN, AND THE MAIN SANITARY SEWER LINE.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

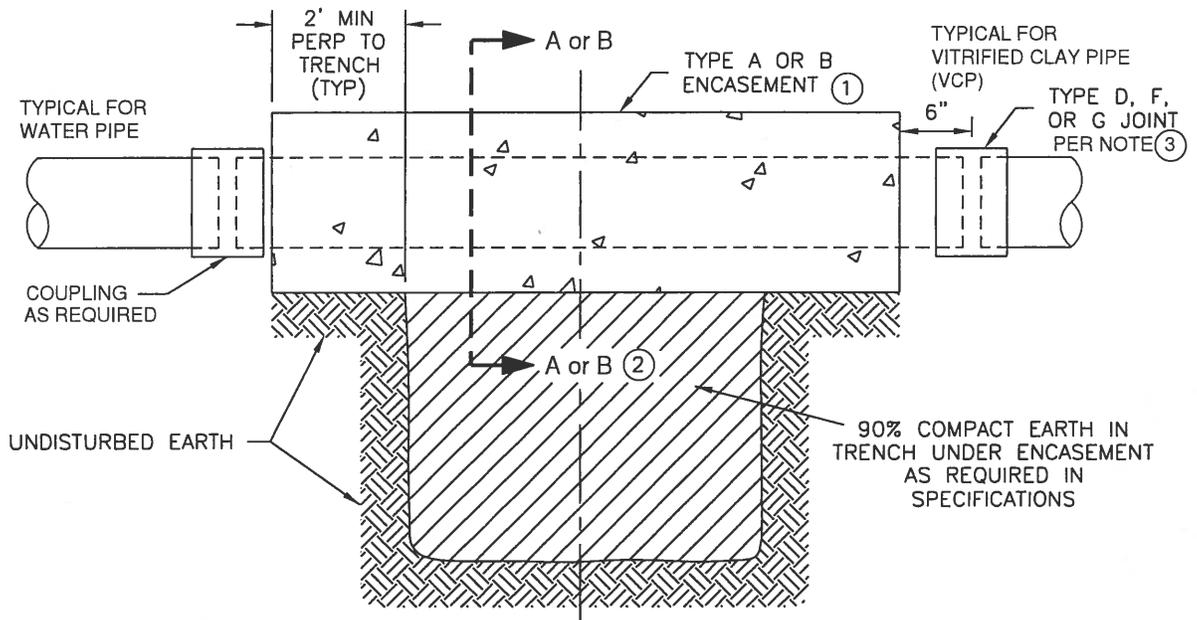
WATER MAIN AND SANITARY SEWER
SEPARATION
NOTES

CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING


APPROV.

1/8/2013
DATE

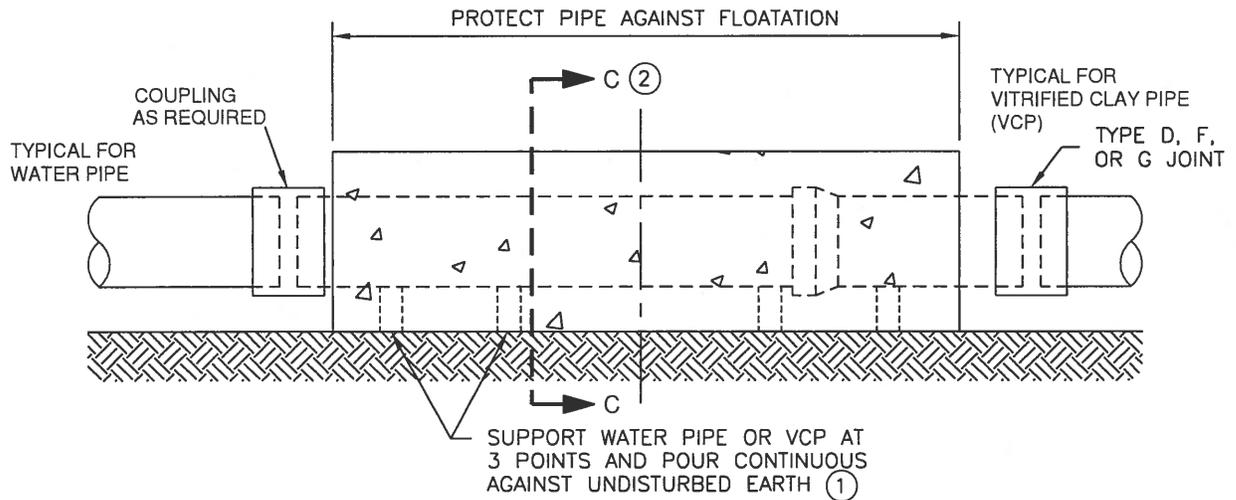
CWD-015-3



TYPE A OR B ENCASEMENT FOR WATER & SEWER
 REQUIRED TO SPAN TRENCH, OR WHERE ENCASEMENT
 IS NOT POURED ON UNDISTURBED EARTH

NOTE:

- ① EXTEND MACHINED PIPE ENDS BEYOND ENCASEMENT
- ② SEE CWD-023-2 FOR CROSS-SECTION OF A, B, OR C ENCASEMENT DETAIL
- ③ PIPE JOINT TYPES AND MATERIALS ARE PER GREEN BOOK SECTION 208



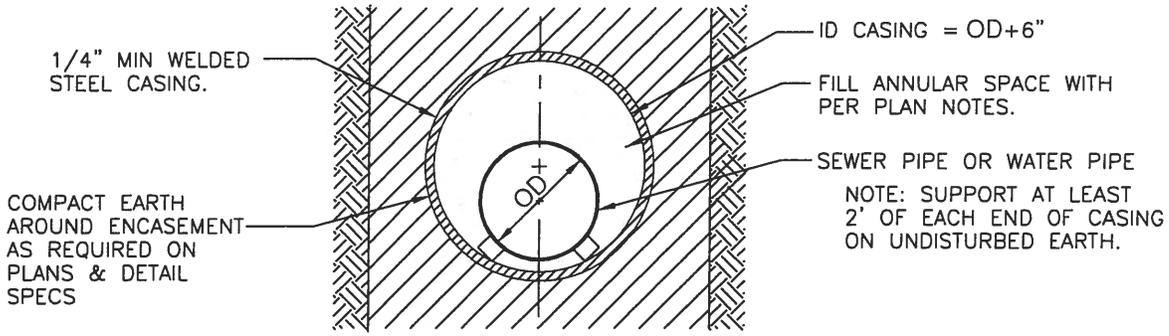
TYPE C ENCASEMENT FOR WATER & SEWER



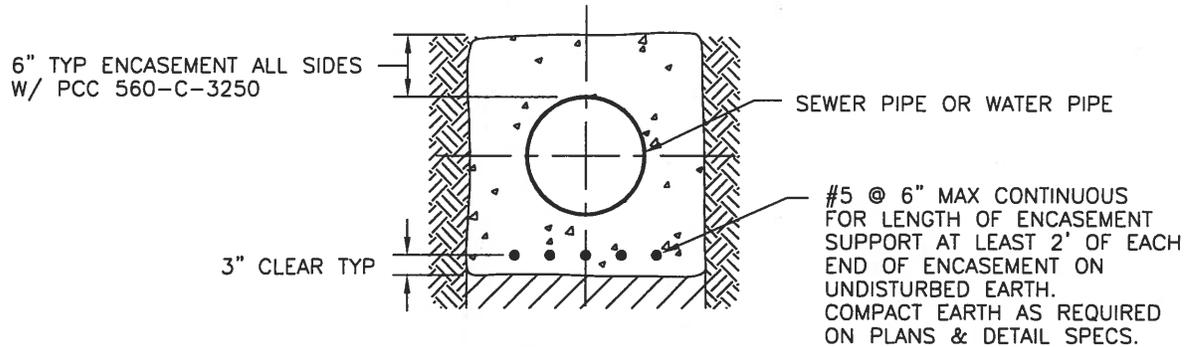
WATER DISTRIBUTION & TRANSMISSION
 PIPELINE CONSTRUCTION METHODS

STRUCTURE INTERFERENCE
 TYPE A, B, OR C ENCASEMENT

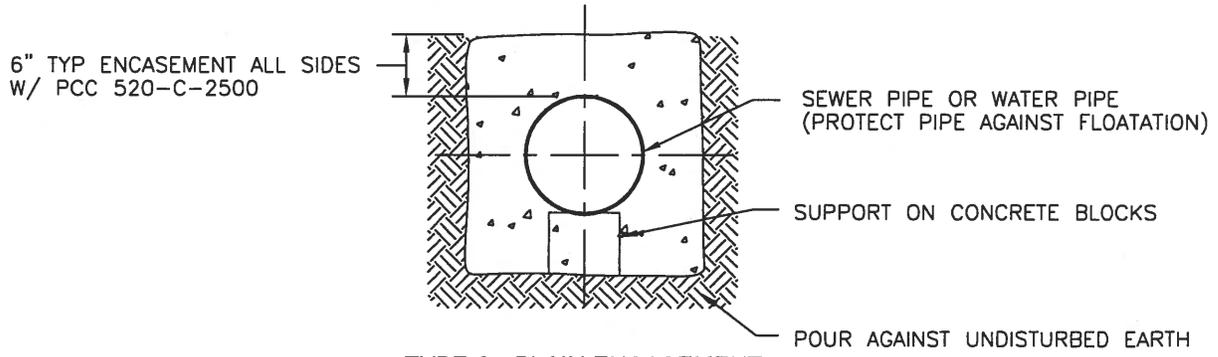
OD = OUTSIDE DIAMETER OF BELL, COLLAR, OR COUPLING.



**TYPE A - PIPE CASING
SECTION A**



**TYPE B - REINFORCED ENCASEMENT
SECTION B**



**TYPE C - PLAIN ENCASEMENT
SECTION C**

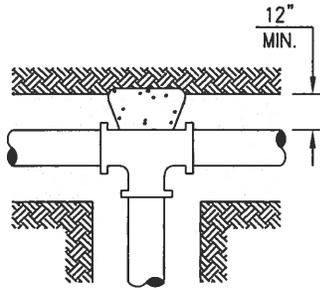
GENERAL NOTES

- 1.) ALL MATERIALS OF CONSTRUCTION SHALL CONFORM TO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION"

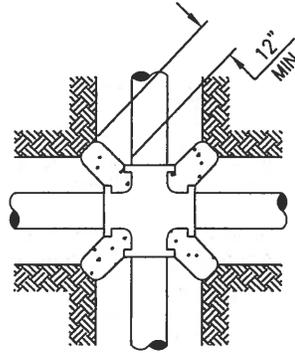


WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

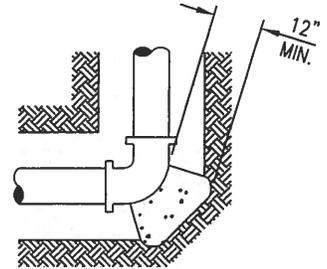
STRUCTURE INTERFERENCE
ENCASEMENT SECTIONS



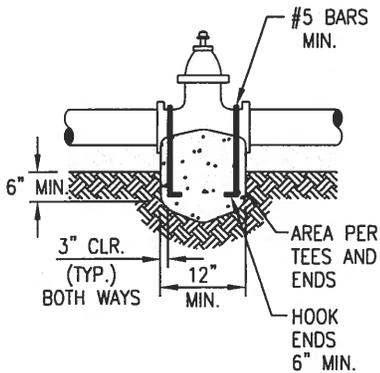
TEE



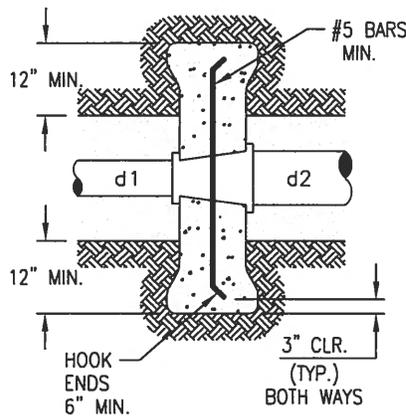
CROSS



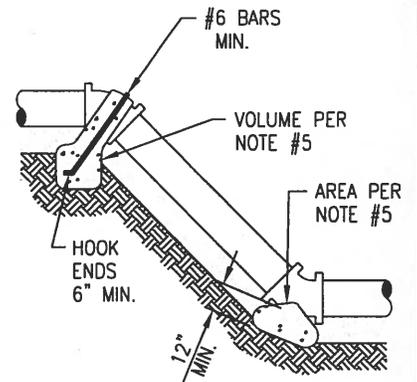
ELL



ANCHORAGE OF VALVE



REDUCER



VERTICAL P.I.

GUIDELINE

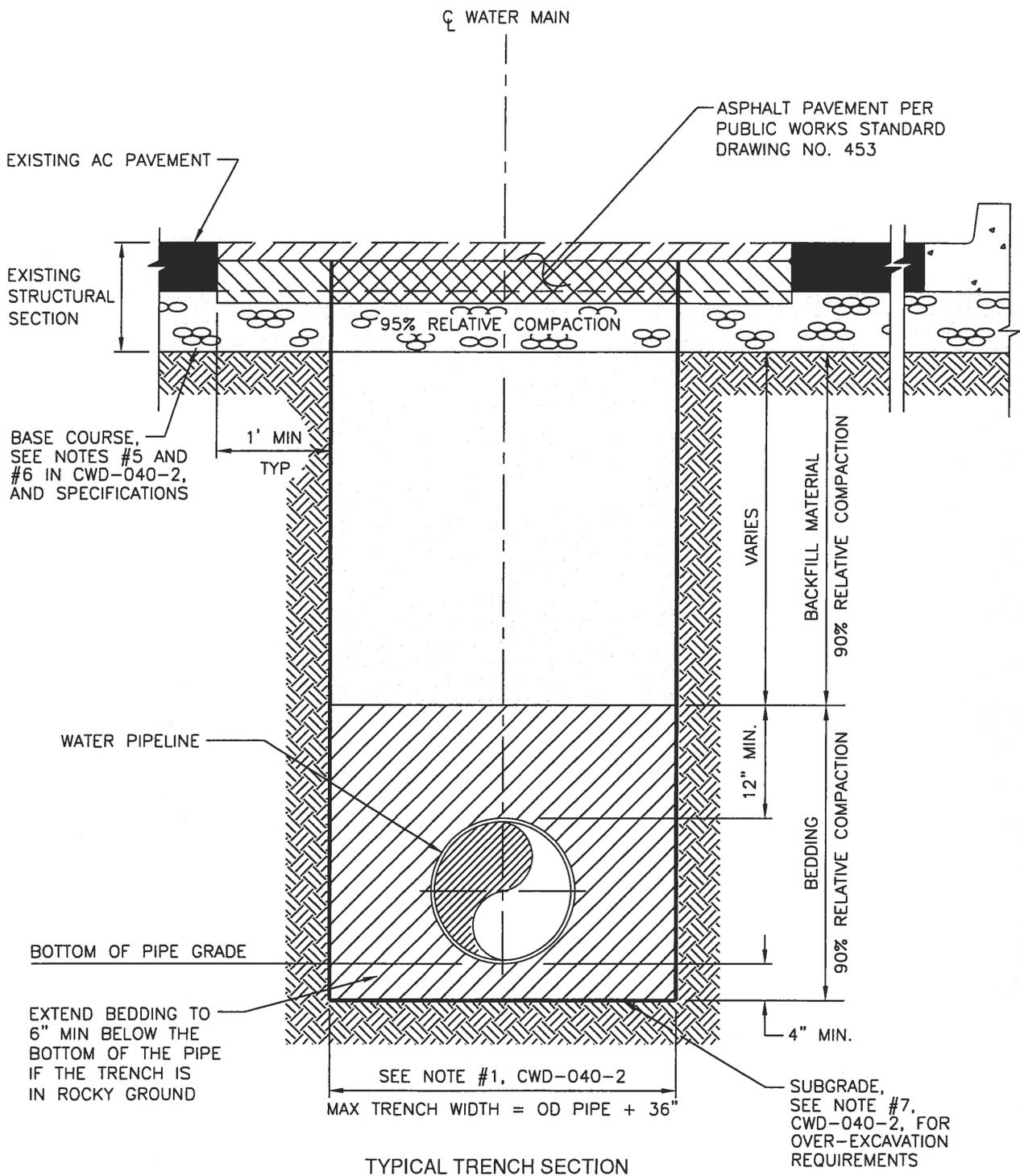
NOTES:

- 1.) ALL MATERIALS OF CONSTRUCTION SHALL CONFORM TO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION".
- 2.) THRUST AND ANCHOR BLOCKS FOR D.I.P. AND C.M.L.&C. STEEL PIPE SHALL BE OF PCC 450-C-2000 CONCRETE AND SHALL BE POURED AGAINST UNDISTURBED SOIL. CONCRETE SHALL BE KEPT CLEAR OF THE BELL END OF FITTINGS FOR DUCTILE IRON PIPE.
- 3.) ENGINEERED-APPROVED RESTRAINED JOINTS MAY BE USED IN-LIEU OF THRUST BLOCKS.
- 4.) ANCHOR BLOCK FOR GATE VALVES SHALL BE KEYED A MINIMUM OF 12 INCHES INTO TRENCH WALL AND 6 INCHES INTO BOTTOM OF TRENCH.
- 5.) THE ENGINEER OF RECORD SHALL SIZE ALL THRUST BLOCKS ON THE BASIS OF THE SOIL PASSIVE PRESSURE.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

THRUST BLOCK DETAILS
TYPICAL



SEE CWD-040-2 FOR NOTES
 PW STANDARD 453 SUPERCEDES IN CASE OF ANY VARIANCE



WATER DISTRIBUTION & TRANSMISSION
 PIPELINE CONSTRUCTION METHODS

**TYPICAL PIPE TRENCH,
 BEDDING, BACKFILL, AND PAVEMENT
 REQUIREMENTS**

GENERAL NOTES:

- 1.) MINIMUM TRENCH WIDTH = O.D. + 12" FOR 4" TO 12" NOMINAL DIAMETER PIPE AND O.D. + 18" FOR GREATER THAN 12" NOMINAL DIAMETER PIPE.
- 2.) THE MATERIAL FOR BEDDING SHALL BE COHESIONLESS SANDY LOAM, SAND, OR SANDY GRAVEL MATERIAL OBTAINED FROM PROJECT EXCAVATION OR FROM APPROVED BORROW AREAS. THE BEDDING MATERIAL SHALL NOT CONTAIN ANY ROCKS OR OTHER MATERIAL DELETERIOUS TO THE PIPE.
- 3.) SAND BEDDING SHALL BE USED WHEN THE SAND EQUIVALENT OF THE NATIVE MATERIAL IS LESS THAN 30, PER ASTM D2419.
- 4.) FOR PAVED AND UNPAVED AREAS, THE COMPACTION OF BEDDING AND BACKFILL MATERIALS AND PAVEMENT REPLACEMENT SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION "GREEN BOOK" LATEST EDITION.
- 5.) COMPACTED BACKFILL MATERIAL IN THE UNPAVED AREAS SHALL COMPLY WITH THE SAME REQUIREMENTS AS THE BACKFILL MATERIAL COMPACTION IN THE STREETS.
- 6.) THE BASE COURSE MATERIAL SHALL BE CRUSHED AGGREGATE BASE MATERIAL AS SPECIFIED IN SECTION 200-2 "UNTREATED BASE MATERIALS" OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.
- 7.) IF THE ENGINEER DETERMINES THAT THE SOIL UPON WHICH THE PIPE IS TO BE PLACED IS UNSTABLE, THE CONTRACTOR SHALL OVER-EXCAVATE THE BOTTOM OF THE TRENCH TO A DEPTH OF 12" OR AS DIRECTED BY THE ENGINEER AND PLACE A LAYER OF CRUSHED ROCK ON THE TRENCH SUBGRADE COMPACTED TO 90% RELATIVE COMPACTION.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

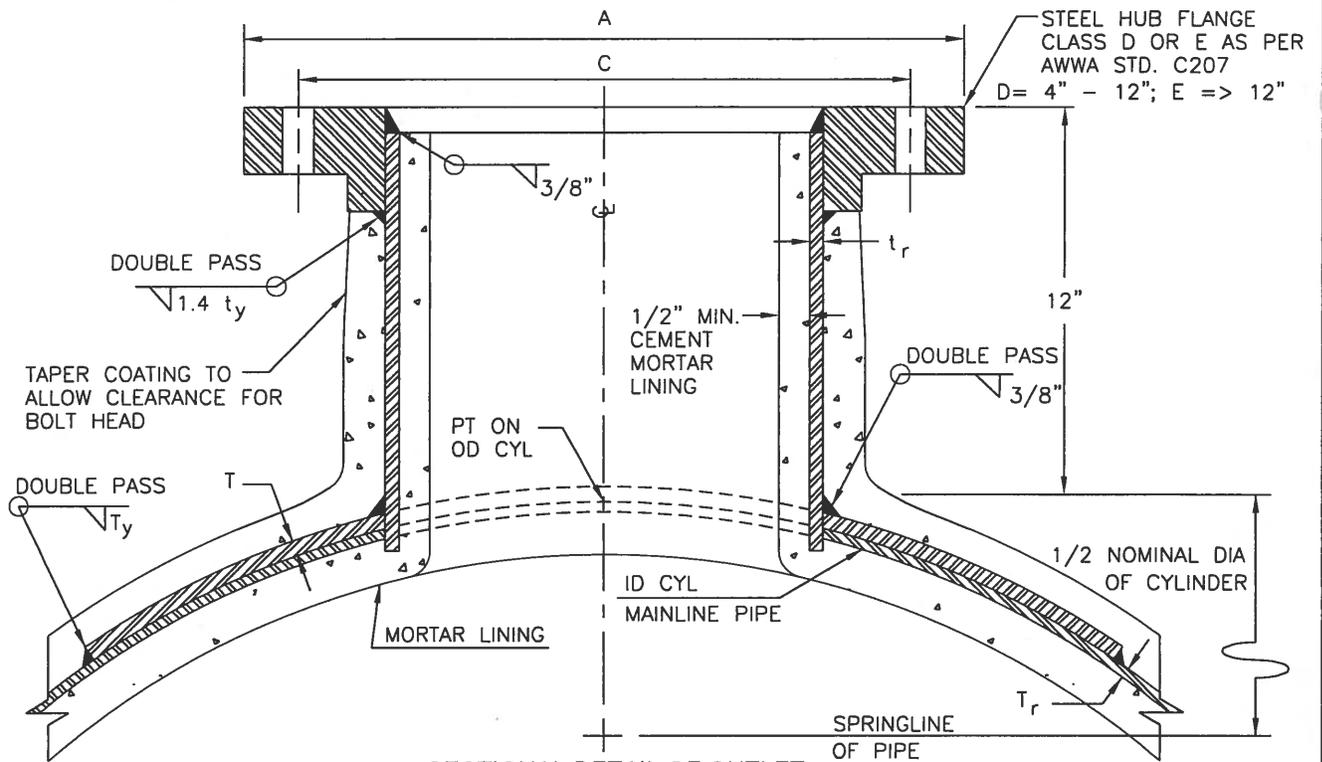
TYPICAL PIPE TRENCH,
BEDDING, BACKFILL, AND PAVEMENT
REQUIREMENTS (GENERAL NOTES)

CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING


APPROV.

1/8/2013
DATE

CWD-040-2



SECTIONAL DETAIL OF OUTLET

NOTE: ALL WELDS ARE FULL DOUBLE PASS WELDS.

NOMINAL OUTLET DIA (in.)	MINIMUM "t _r " (in.)	HUB FLANGE	
		"C" (in.)	A (in.)
4	0.237	7 1/2	9
6	0.280	9 1/2	11
8	0.322	11 3/4	13 1/2
10	0.366	14 1/4	16
12	0.375	17	19
14	0.375	18 3/4	21
16	0.375	21 1/4	23 1/2
18	0.375	22 3/4	25
20	0.375	25	27 1/2

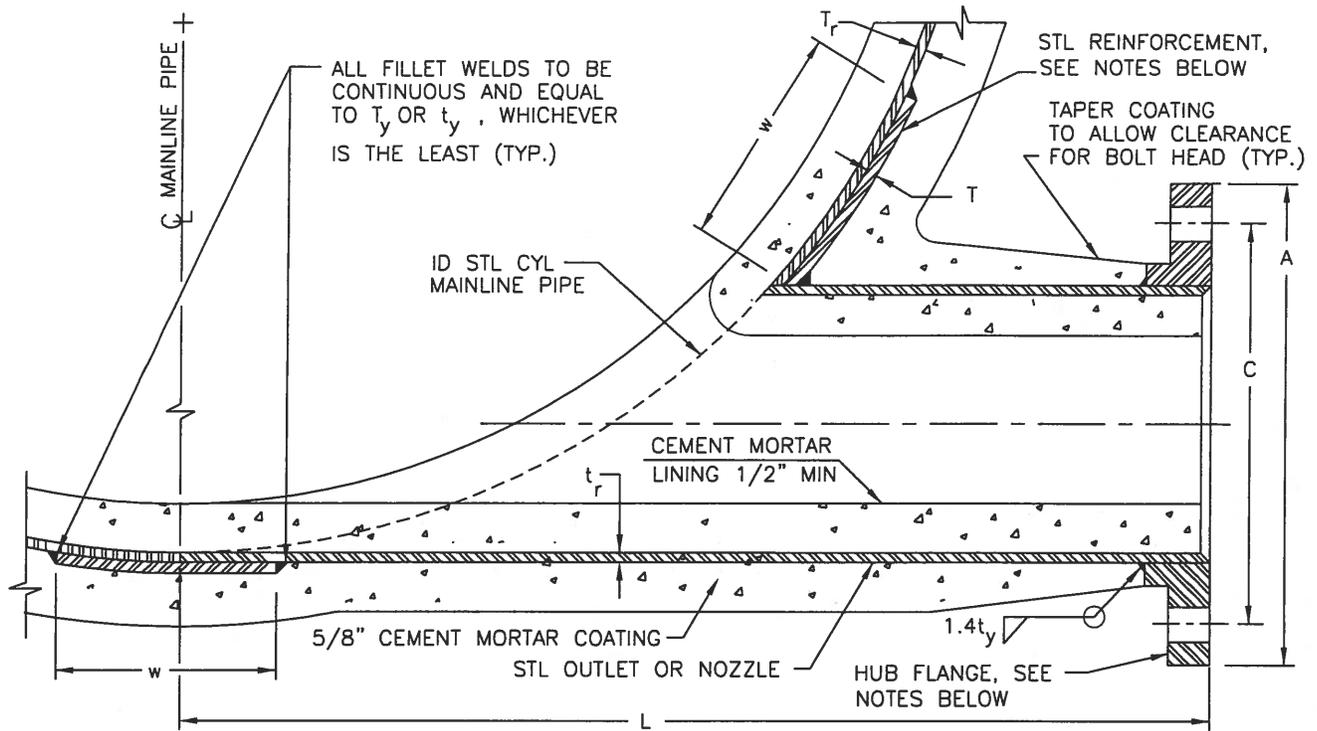
NOTES:

- 1.) SEE MAINLINE PIPING DRAWING FOR POSITION AND USE OF OUTLET.
- 2.) STEEL HUB FLANGE CLASS D OR E AS PER AWWA STD. C207, SEE ABOVE.
- 3.) SEE MAINLINE PIPE DRAWING FOR MINIMUM DESIGN THICKNESS "T_r".
- 4.) "w" AND "T", REINFORCEMENT PLATE DIMENSIONS FOR OUTLET JOINTS, TO BE DESIGNED PER AWWA M11, OR EQUAL TO MANUFACTURERS REINFORCING GUIDE.
- 5.) "T_y" = MAINLINE CYLINDER THICKNESS.
- 6.) "T_r" = REQUIRED MAINLINE CYLINDER THICKNESS.
- 7.) "t_y" = BRANCH CYLINDER THICKNESS.
- 8.) "t_r" = REQUIRED BRANCH CYLINDER THICKNESS.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TYPICAL FLANGED OUTLET
4" THROUGH 20"



SECTIONAL DETAIL OF OUTLET

NOMINAL OUTLET DIA (in)	MINIMUM " t_r " (in)	HUB FLANGE	
		"C" (in)	"A" (in)
4	0.237	7 1/2	9
6	0.280	9 1/2	11
8	0.322	11 3/4	13 1/2
10	0.366	14 1/4	16
12	0.375	17	19

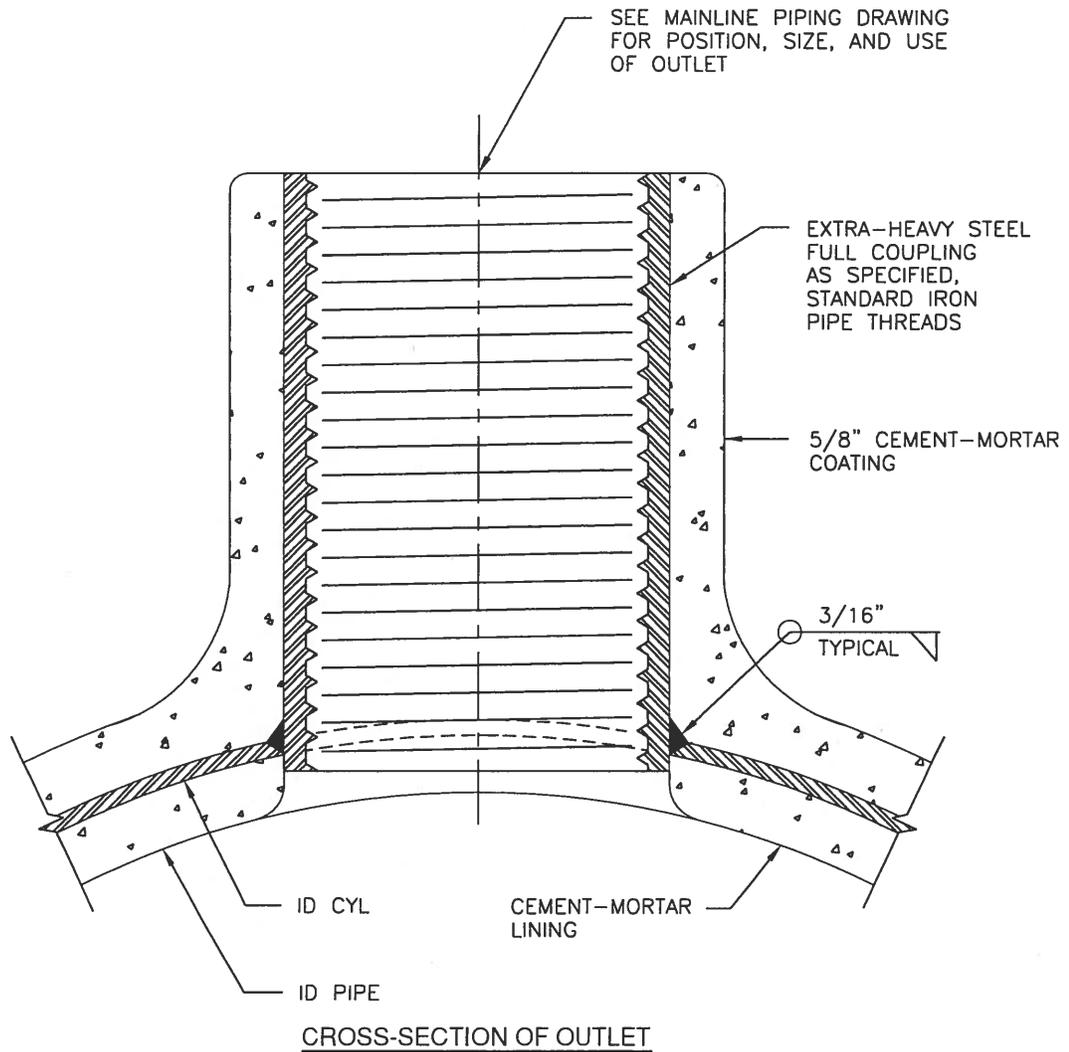
NOTES:

- 1.) SEE MAINLINE PIPING DRAWING FOR POSITION AND USE OF OUTLET.
- 2.) STEEL HUB FLANGE CLASS D AS PER AWWA STD. C207.
- 3.) SEE MAINLINE PIPING DRAWING FOR MINIMUM DESIGN THICKNESS " T_r ".
- 4.) " w " AND " T ", REINFORCEMENT PLATE DIMENSIONS FOR OUTLET JOINTS, TO BE DESIGNED PER AWWA MII, 13.3-13.6, OR EQUAL TO MANUFACTURERS REINFORCING GUIDE.
- 5.) " T_y " = MAINLINE CYLINDER THICKNESS.
- 6.) " T_r " = REQUIRED MAINLINE CYLINDER THICKNESS.
- 7.) " t_y " = BRANCH CYLINDER THICKNESS.
- 8.) " t_r " = REQUIRED BRANCH CYLINDER THICKNESS.
- 9.) " L " = $\frac{\text{NOMINAL DIA}}{2} + 12$ "



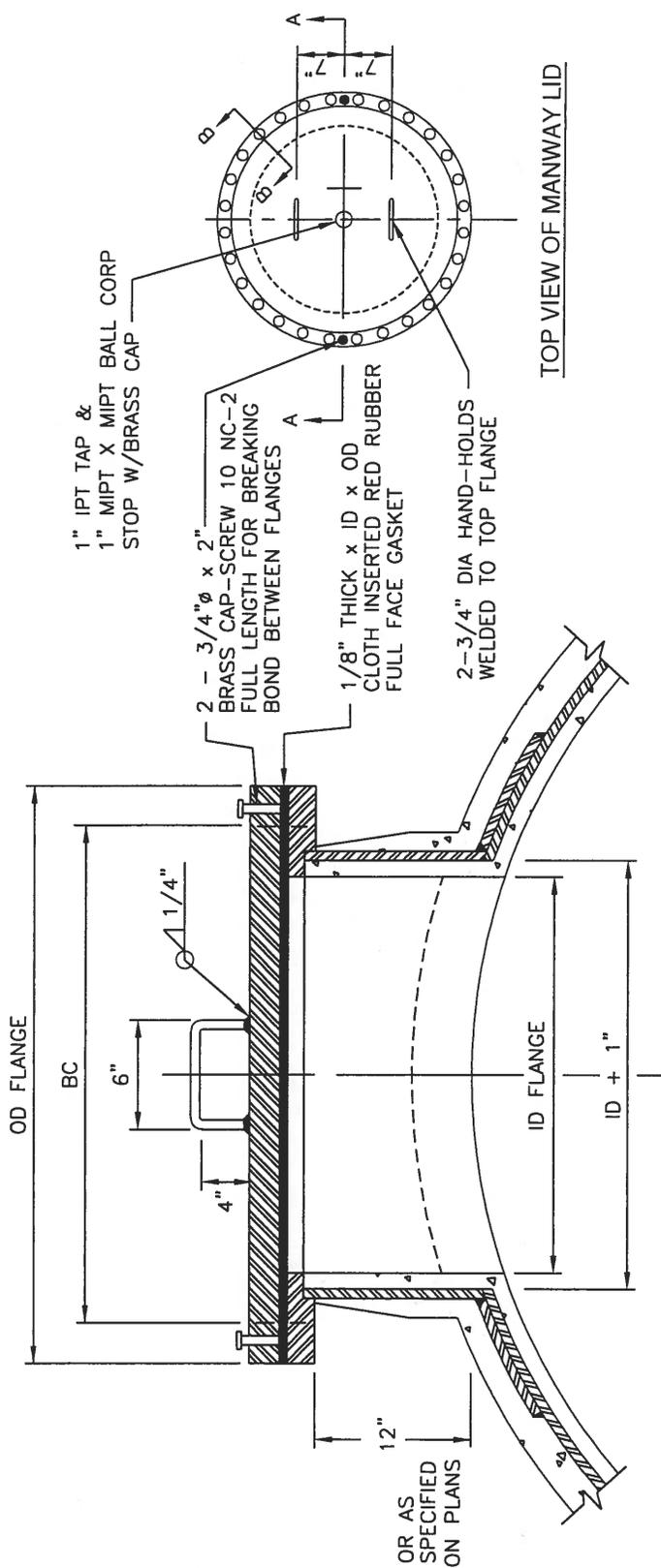
WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TYPICAL FLANGED TANGENT OUTLET
4" THROUGH 12" DIAMETER



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TYPICAL THREADED OUTLET
1" THROUGH 2 1/2" DIAMETER



1" IPT TAP &
1" MIPT X MIPT BALL CORP
STOP W/BRASS CAP

2 - 3/4" x 2"
BRASS CAP-SCREW 10 NC-2
FULL LENGTH FOR BREAKING
BOND BETWEEN FLANGES

1/8" THICK x ID x OD
CLOTH INSERTED RED RUBBER
FULL FACE GASKET

2-3/4" DIA HAND-HOLDS
WELDED TO TOP FLANGE

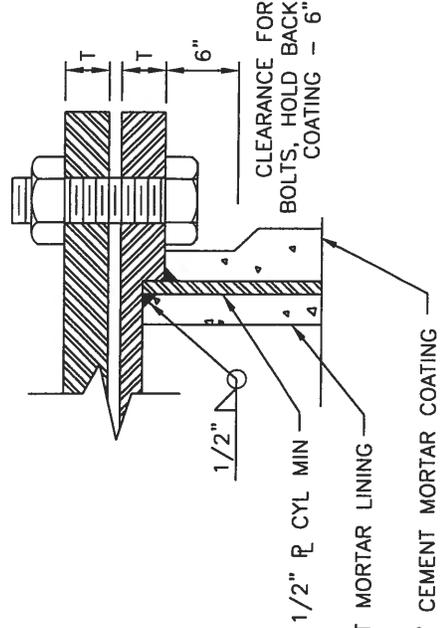
TOP VIEW OF MANWAY LID

NOTES: CROSS-SECTION OF MANWAY A-A

- 1.) PAINT ALL EXPOSED INTERIOR & EXTERIOR METAL SURFACES OF FLANGES, EXCEPT GASKET SURFACE, PER SPECIFICATIONS.
- 2.) 150 LB. HUB FLANGES SHALL BE USED IF WORKING PRESSURE 175 PSI OR LESS, 300 LB. FLANGES SHALL BE USED IF WORKING PRESSURE OVER 175 PSI.
- 3.) REINFORCE MANWAY IN ACCORDANCE WITH AWWA M11 OR EQUAL, MANUFACTURER'S REINFORCING GUIDE.
- 4.) MANWAY STATIONS MAY BE VARIED IN ORDER TO LOCATE THE 24" DIA OPENING @ MIDPOINT IN INDIVIDUAL PIPE LENGTHS THUS PERMITTING THE MANUFACTURE OF A UNIVERSAL PIPE LENGTH.
- 5.) PAINT UNDERSIDE OF BLIND FLANGE WITH EPOXY PER SPECIFICATIONS.
- 6.) REINFORCEMENT PLATE DIMENSIONS FOR OUTLET JOINTS, TO BE DESIGNED PER AWWA M11, 13.3 - 13.6, OR EQUAL TO MANUFACTURERS R/F GUIDE. 1/2" CEMENT MORTAR LINING.

ID	FLANGE OD	BC	T	BOLT DIA	NO. BOLTS	PIPE SIZE
24"	32"	29 1/2"	1 1/4"	1 1/4"	20	24" TO 30"
30"	38 3/4"	36"	1 3/8"	1 1/4"	28	36" & LARGER

HEX HEAD NUTS AND BOLTS IN ACCORDANCE WITH THE SPECIFICATIONS.

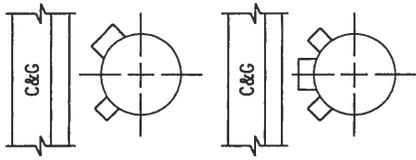


CROSS SECTION OF BOLT ASSEMBLY B-B



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

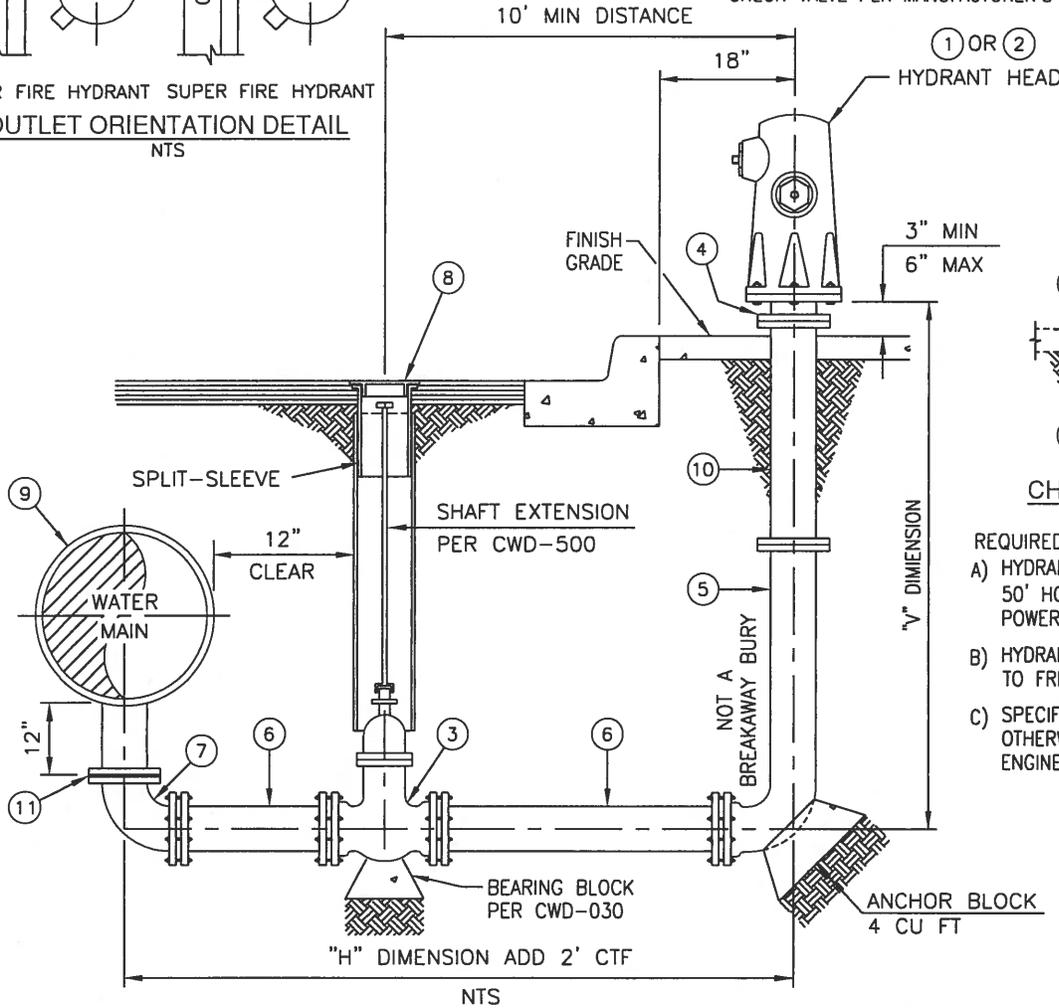
TYPICAL MANWAY FOR LARGE
PIPELINES



REGULAR FIRE HYDRANT SUPER FIRE HYDRANT
OUTLET ORIENTATION DETAIL
NTS

8" THICK CONCRETE COLLAR, 1' FROM FH EDGE TO OUTSIDE EDGE.
FINISH SURFACE SHALL BE BELOW CONNECTING BOLTS/NUTS.
INSTALLATION MAY VARY PER MANUFACTURER'S RECOMMENDATIONS.

CHECK VALVE PER MANUFACTURER'S RECOMMENDATIONS.



CHECK VALVE DETAIL

- REQUIRED IF:
- A) HYDRANT HEAD IS LOCATED WITHIN 50' HORIZONTAL OF OVERHEAD POWER LINES;
 - B) HYDRANT HEAD IS ADJACENT TO FREEWAY;
 - C) SPECIFIED ON THE PLANS, OR AS OTHERWISE REQUIRED BY THE ENGINEER.

BILL OF MATERIALS

ITEM	QUANTITY	REFERENCE
① STANDARD HYDRANT : 1 - 2 1/2", 1 - 4"	1	CWD-700
② SUPER HYDRANT : 2 - 2 1/2", 1 - 4"	1	CWD-700
③ 6" RW GATE VALVE (MJ x MJ)	1	CWD-500
④ 6" FLANGED ADAPTER, 8 HOLE TO 6 HOLE	1	
⑤ 6" x 48" DI BURY (FL x MJ)	1	
⑥ 6" DIP AS REQUIRED (W/ RESTRAINED MJ ADAPTERS)		
⑦ 6" DI 90° ELL (LONG RADIUS) (FL x MJ)	1	
⑧ 8" GATE BOX CAP, GALV SPLIT-SLEEVE, 12 GA STL PIPE	1	CWD-515
⑨ 6" FLANGED TEE OR 6" FLANGED OUTLET	1	
⑩ 6" x VARIABLE, DIP SPOOL, NON BREAKAWAY, (FL x FL)	1	
⑪ 6" FLANGE INSULATION KIT	1	
⑫ AVK FLOWGUARD II BREAK-OFF CHECK VALVE, OR APPROVED EQUAL.	1	

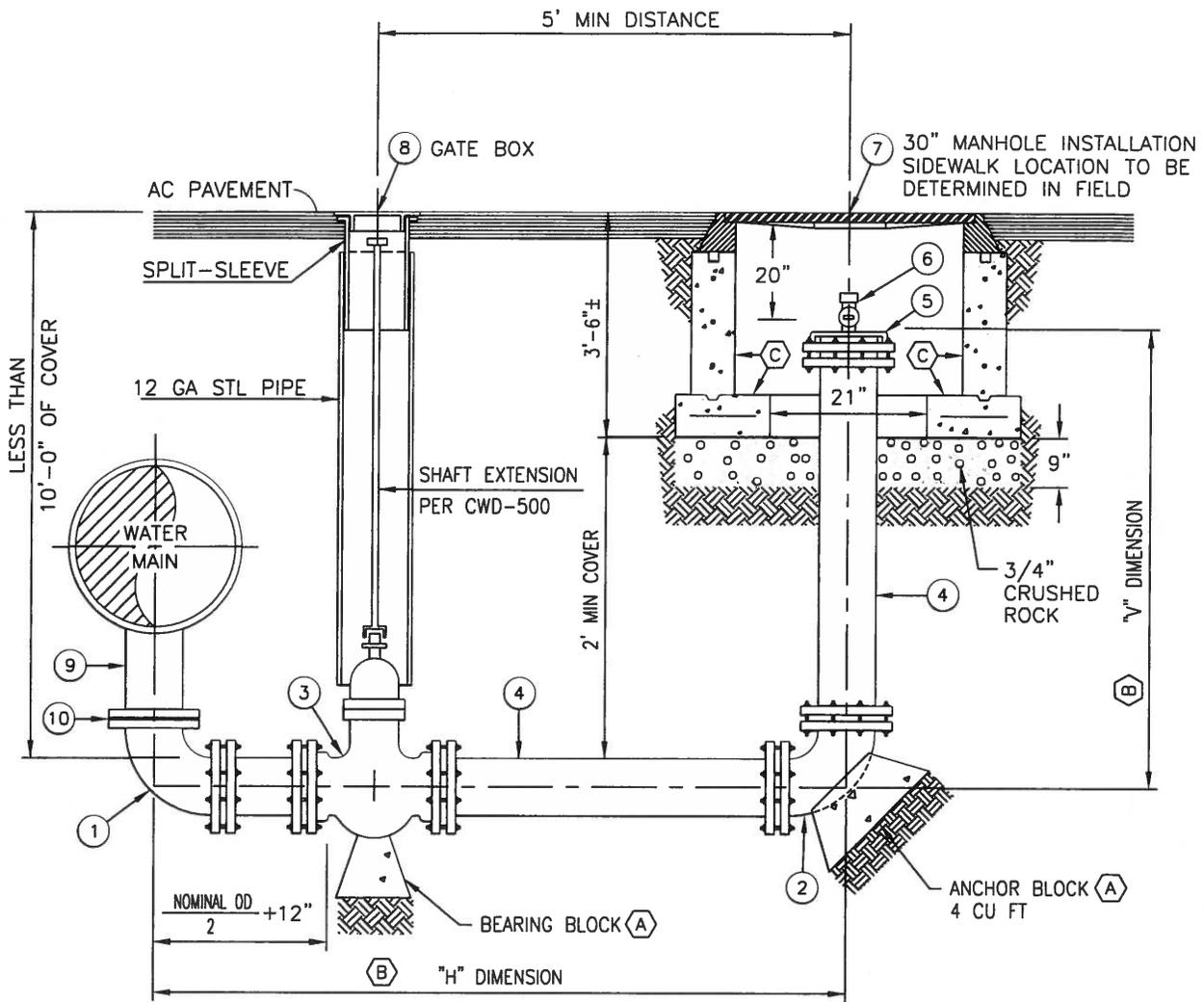
NOTES:

- 1.) STANDARD OR SUPER HYDRANT PER PLANS AND SPECIFICATIONS.
- 2.) BREAK-OFF BOLTS REQUIRED BETWEEN HYDRANT AND FLANGE. INSTALL PER SPECIFICATIONS.
- 3.) HYDRANT HEAD OUTLETS SHALL FACE STREET.
- 4.) TOP OF HYDRANT HEAD BLOW-OFF TO BE PAINTED BLUE #315-15 BY FULLER O'BRIEN CO. OR DEPARTMENT APPROVED EQUAL.
- 5.) "H" AND "V" DIMENSION AS SHOWN ON PLAN.
- 6.) BREAKAWAY SPOOLS OR BURY ARE NOT ALLOWED.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

6" HYDRANT HEAD BLOW-OFF
DI BURY
24" MAIN AND SMALLER



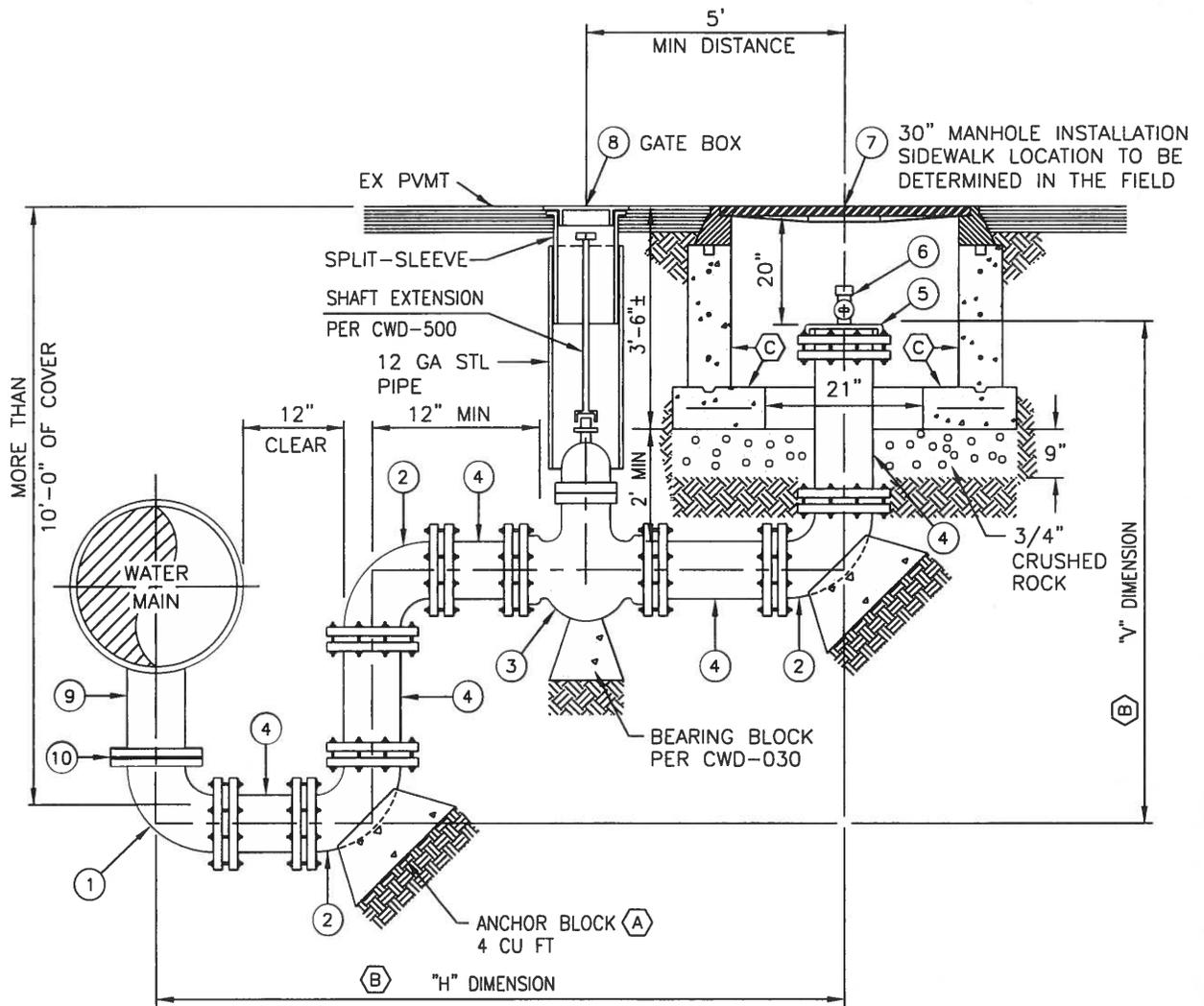
BILL OF MATERIALS		
ITEM	QUANTITY	REFERENCE
① 8" DI 90' ELL (LONG RADIUS) (FL x MJ)	2	
② 8" DI 90' ELL (LONG RADIUS) (MJ x MJ)	1	CWD-500
③ 8" RW GATE VALVE (MJ x MJ)		
④ 8" DIP AS REQUIRED (W/ RESTRAINED MJ ADAPTERS)	VARIES	
⑤ 8" MJ END CAP W/ 1" TAP, (IPT)	1	
⑥ 1" BALL CORP STOP (MIPT x MIPT) & 1" BRASS CAP		
⑦ 30" MANHOLE COVER & RIM 30" ID CONC MANHOLE SECTION		CWD-811
⑧ 8" GATE BOX CAP, GALV SPLIT-SLEEVE, AND 12 GA STL PIPE	1	CWD-515
⑨ 8" FLANGED OUTLET		CWD-300
⑩ 8" FLANGE INSULATION KIT	1	

- NOTES:**
- (A) ANCHOR AND BEARING BLOCKS PER CWD-030
 - (B) STATION, LOCATION, AND SPECIAL NOTES PER PLAN AND PROFILE SHEETS
 - (C) PRECAST CONCRETE BASE & SHAFT ONLY. GRADE RINGS NOT PERMITTED.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

8" BLOW-OFF / PUMPER OUTLET
BELOW GRADE
WITH LESS THAN 10' OF COVER



BILL OF MATERIALS

ITEM	QUANTITY	REFERENCE
① 8" DI 90° ELL (LONG RADIUS) (FL x MJ)	2	
② 8" DI 90° ELL (LONG RADIUS) (MJ x MJ)	1	CWD-500
③ 8" RW GATE VALVE (MJ x MJ)		
④ 8" DIP AS REQUIRED (W/ RESTRAINED MJ ADAPTERS)	VARIES	
⑤ 8" MJ END CAP W/ 1" TAP (IPT)	1	
⑥ 1" BALL CORP STOP (MIPT x MIPT) & 1" BRASS CAP		
⑦ 30" MANHOLE COVER & RIM 30" ID CONC MANHOLE SECTION		CWD-811
⑧ 8" GATE BOX CAP, GALV SPLIT-SLEEVE, AND 12 GA STL PIPE	1	CWD-515
⑨ 8" FLANGED OUTLET		CWD-300
⑩ 8" FLANGE INSULATION KIT		

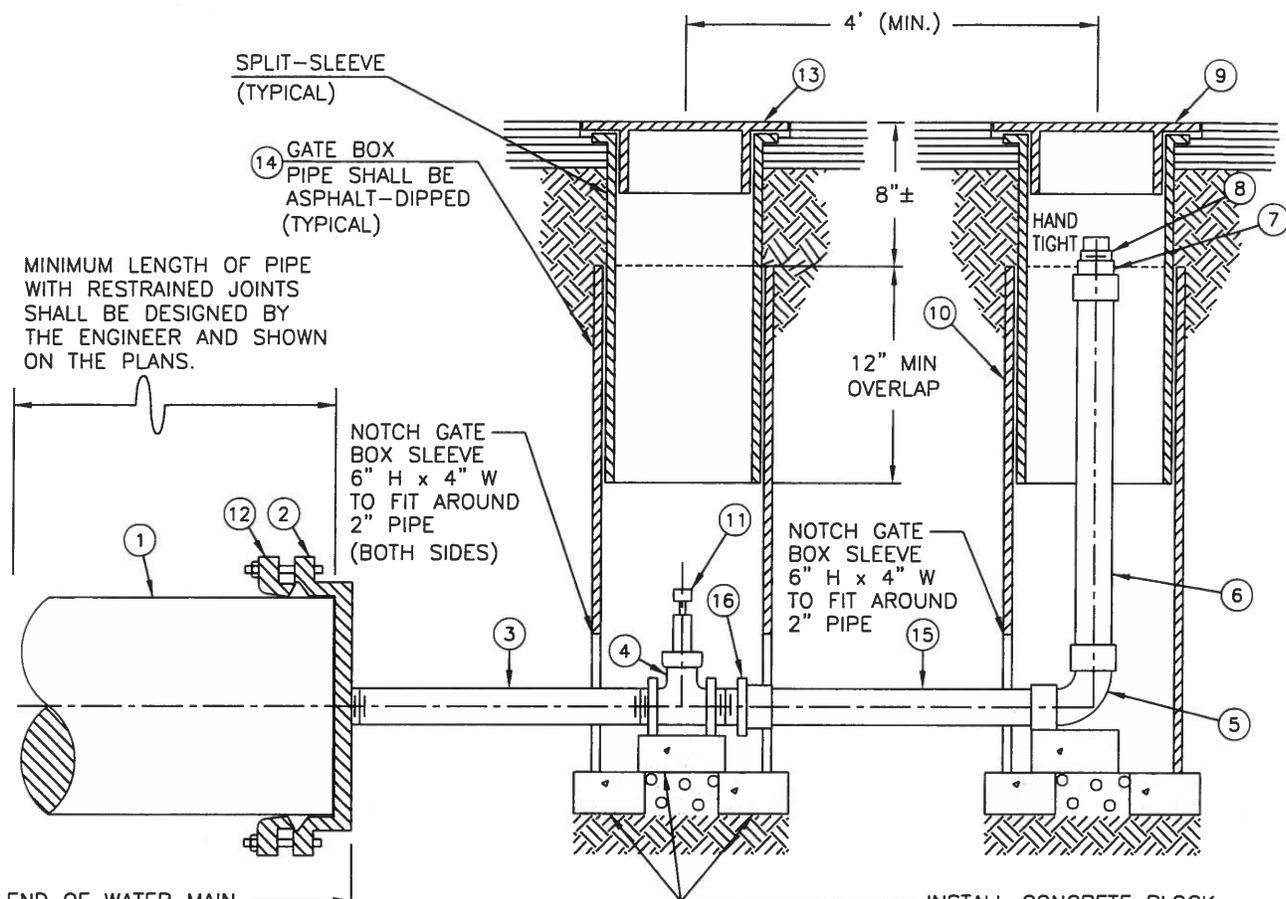
NOTES:

- (A) ANCHOR AND BEARING BLOCKS PER CWD-030
- (B) STATION, LOCATION, AND SPECIAL NOTES PER PLAN AND PROFILE SHEETS
- (C) PRECAST CONCRETE BASE & SHAFT ONLY. GRADE RINGS NOT PERMITTED.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

8" BLOW-OFF
BELOW GRADE
WITH MORE THAN 10' OF COVER



END OF WATER MAIN,
STATION AS SHOWN
ON PLANS

INSTALL CONCRETE BLOCK
AROUND CIRCUMFERENCE
OF GATE BOX PIPE WITH
3/4" CRUSHED ROCK IN
CENTER. SUPPORT VALVE
WITH CONC BLOCK.
(TYPICAL)

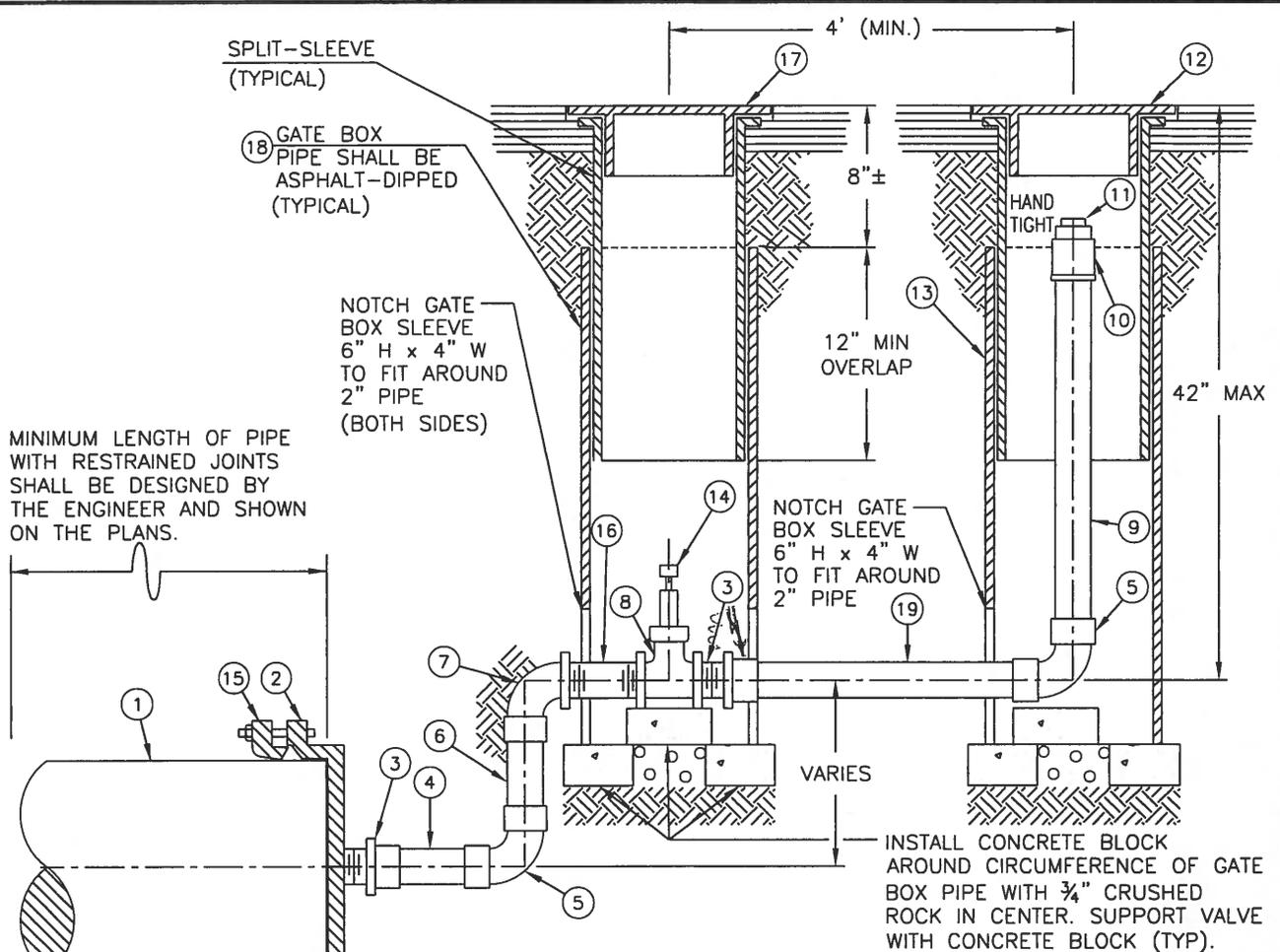
BILL OF MATERIALS

ITEM	QUANTITY	REFERENCE
① 4" THROUGH 12" MAIN	1	PER PLAN
② MAIN SIZE MJ CAP W/ 2" TAP, (FIPT)	1	PER PLAN
③ 2" x 12" BRASS NIPPLE	1	
④ 2" RW FULL BODY GATE VALVE, (FIPT)	1	
⑤ 2" 90° ELL (SW x SW)	1	
⑥ 2" x 30"± COPPER PIPE, HARD, NO JOINTS	VARIES	
⑦ 2" ADAPTER (SW x FIPT)	1	
⑧ 2" BRASS PLUG, (MIPT)	1	
⑨ 10" GATE BOX CAP AND SPLIT-SLEEVE	1	CWD-515
⑩ 10" DIA, 12 GA, STEEL PIPE	VARIES	
⑪ 2" SQUARE OPERATOR NUT	1	
⑫ MAIN SIZE GRIP RING KIT	1	
⑬ 8" GATE BOX CAP AND SPLIT-SLEEVE	1	CWD-515
⑭ 8" DIA, 12 GA, STEEL PIPE	VARIES	
⑮ 2" x 48"± COPPER PIPE, HARD, NO JOINTS	VARIES	
⑯ 2" ADAPTER (SW x MIPT)		



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TYPICAL 2" BLOW-OFF ASSEMBLY
FOR MAINS WITH LESS THAN
42" OF COVER



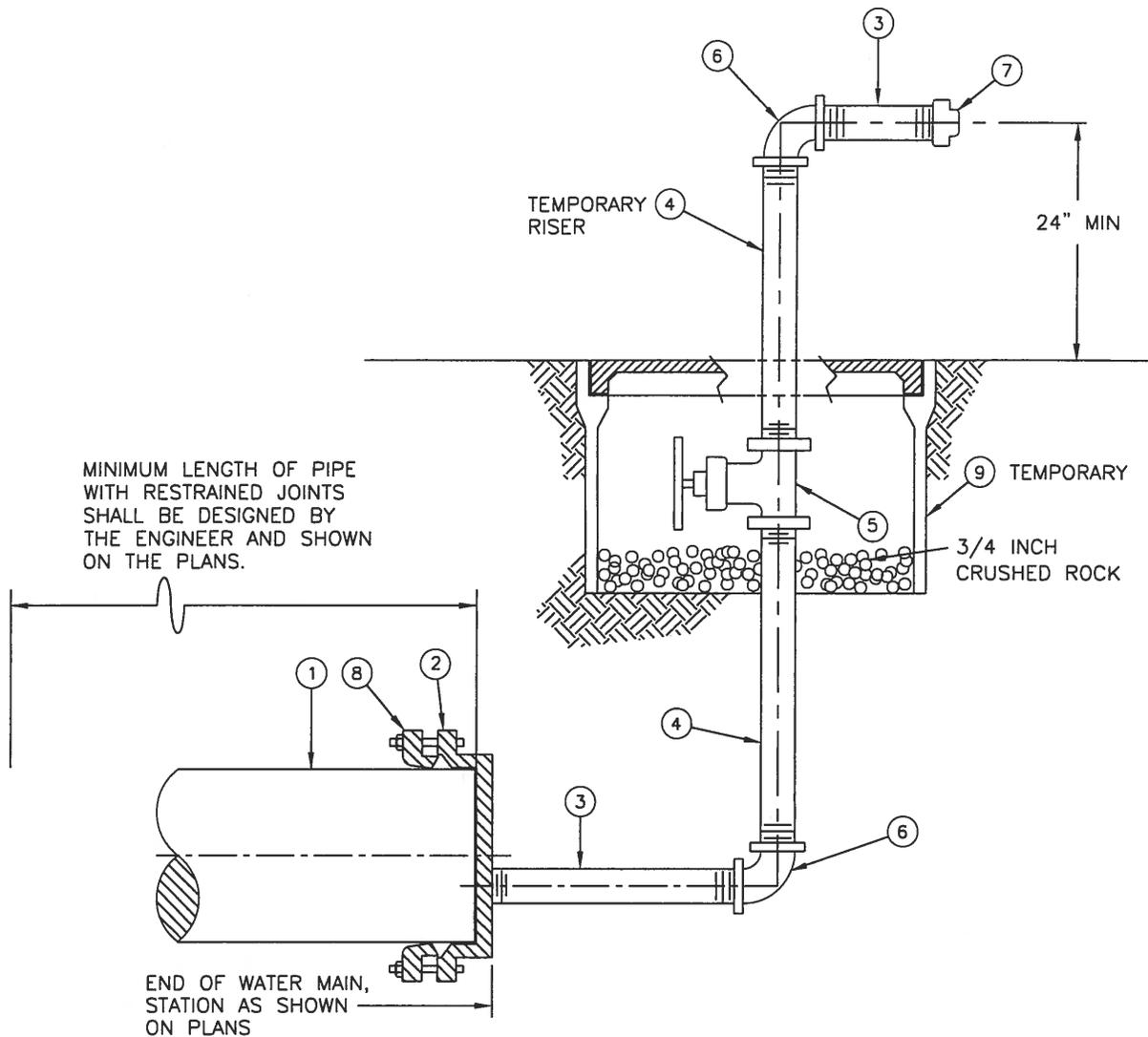
BILL OF MATERIALS

ITEM	QUANTITY	REFERENCE
① 4" THROUGH 12" MAIN	1	PER PLAN
② MAIN SIZE MJ CAP WITH 2" TAP, (IPF)	1	PER PLAN
③ 2" ADAPTER (MIPT x SW)	2	
④ 2" x 12" COPPER PIPE, SOFT	1	
⑤ 2" 90° ELL (SW x SW)	2	
⑥ 2" COPPER PIPE, HARD DRAWN	VARIES	
⑦ 2" 90° BRASS ELL (MIPT x SW)	1	
⑧ 2" RW FULL BODY GATE VALVE, (FIPT)	1	
⑨ 2" COPPER PIPE, HARD (NO JOINTS)	VARIES	
⑩ 2" ADAPTER (SW x FIPT)	1	
⑪ 2" BRASS PLUG (MIPT)	1	
⑫ 10" GATE BOX CAP AND SPLIT-SLEEVE	1	CWD-515
⑬ 10" DIA STEEL SLEEVE (VARIES)	VARIES	
⑭ 2" SQUARE OPERATOR NUT	1	SUPPLIED BY CITY
⑮ MAIN SIZE GRIP RING KIT	1	
⑯ 2" x 6" BRASS NIPPLE	1	
⑰ 8" GATE BOX CAP AND SPLIT-SLEEVE	1	
⑱ 8" DIA STEEL SLEEVE (VARIES)	1	
⑲ 2" x 48"± COPPER PIPE, HARD, NO JOINTS	VARIES	



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

**TYPICAL 2" BLOW-OFF ASSEMBLY
FOR MAINS WITH MORE THAN
42" OF COVER**



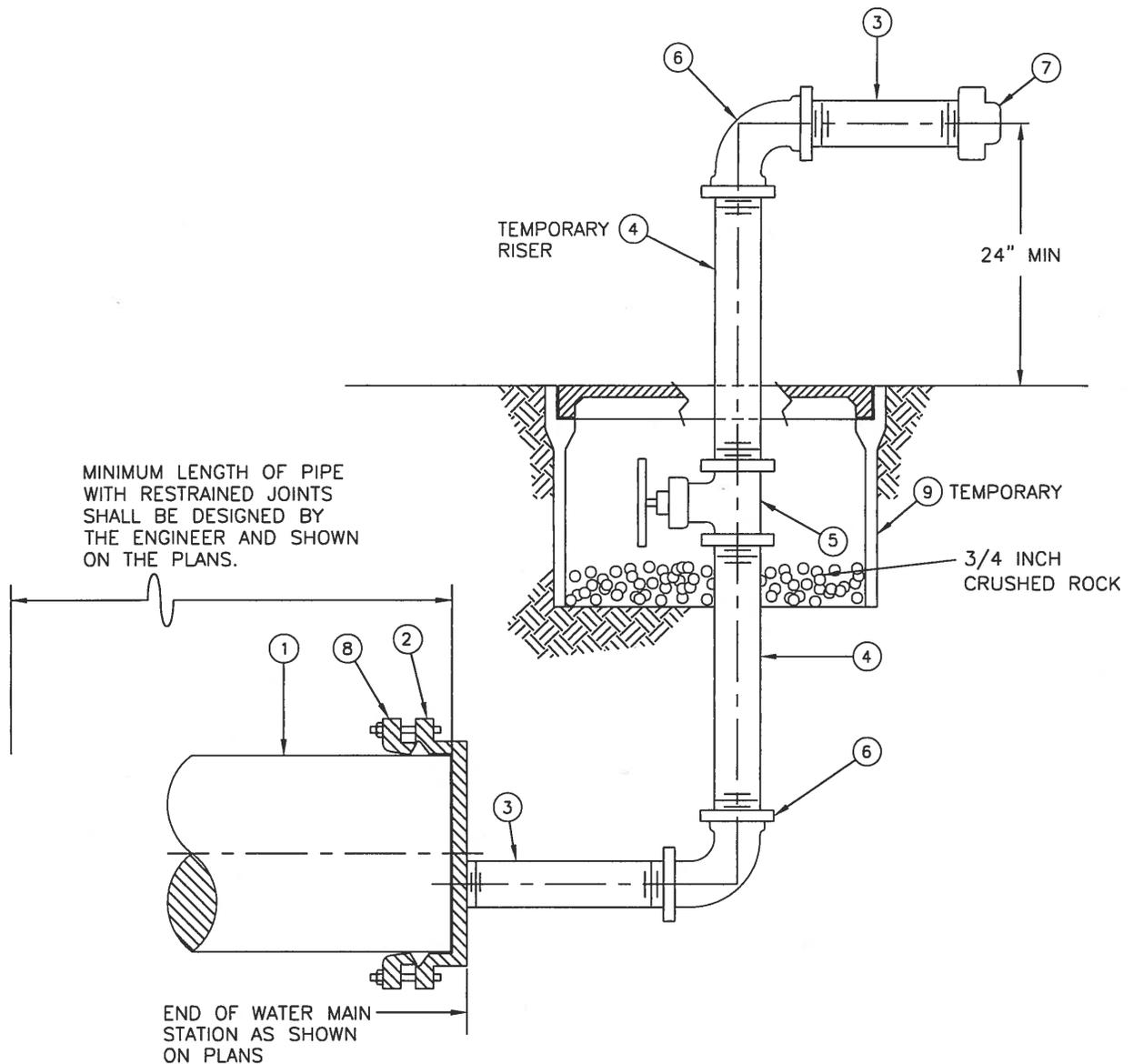
BILL OF MATERIALS	
ITEM	QUANTITY
① 4" - 10" WATER MAIN	PER PLAN
② 4" - 10" MJ END CAP W/ 2" ECCENTRIC TAP	1
③ 2" x 12" GALV STEEL PIPE, (IPT)	2
④ 2" GALV STEEL PIPE, (IPT)	6 LF ±
⑤ 2" VALVE (FIPT), PER SPECIFICATIONS	1
⑥ 2" x 90° GALV STEEL ELL, (FIPT)	2
⑦ 2" GALV END CAP, (FIPT)	1
⑧ MAIN SIZE GRIP RING KIT	1
⑨ METER BOX (TRAFFIC RATED LID AND BOX)	1

NOTES:
 1.) CONTRACTOR SHALL LEAVE END CAP IN PLACE UNTIL FINAL CONNECTION BY CITY FORCES



WATER DISTRIBUTION & TRANSMISSION PIPELINE CONSTRUCTION METHODS

4" THROUGH 10" TEMPORARY CONSTRUCTION END CAPS FOR FLUSHING, TESTING, & CHLORINATION



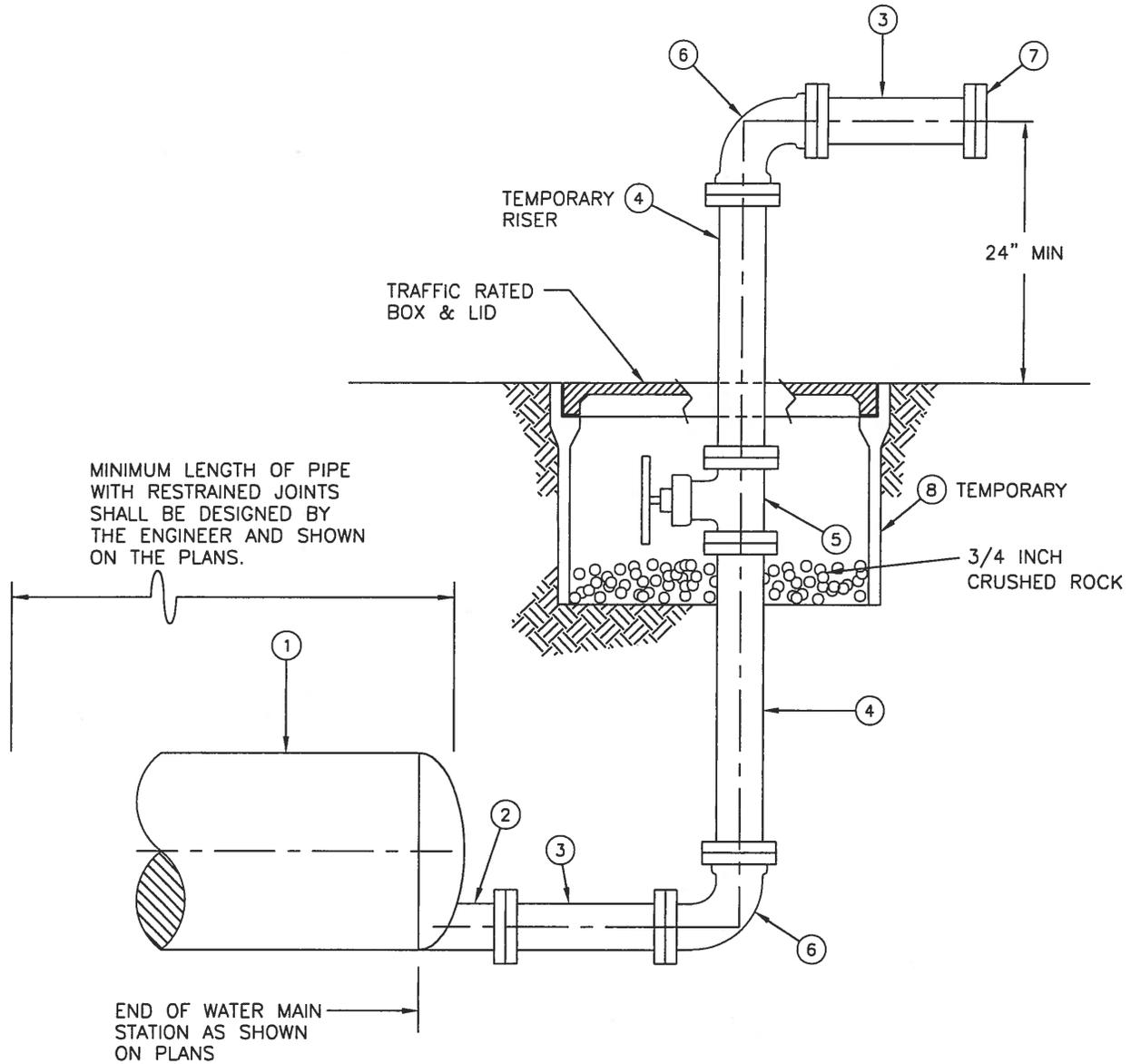
BILL OF MATERIALS	
ITEM	QUANTITY
① 12" - 20" WATER MAIN	PER PLAN
② 12" - 20" MJ END CAP W/ 4" ECCENTRIC TAP, (IPT)	1
③ 4" x 12" GALV STEEL PIPE, (IPT)	2
④ 4" GALV STEEL PIPE, (IPT)	6 LF ±
⑤ 4" VALVE (FIPT), PER SPECIFICATIONS	1
⑥ 4" x 90' GALV STEEL ELL, (FIPT)	2
⑦ 4" GALV END CAP, (FIPT)	1
⑧ MAIN SIZE GRIP RING KIT	1
⑨ METER BOX (TRAFFIC RATED LID AND BOX)	1

NOTES:
 1.) CONTRACTOR SHALL LEAVE END CAP IN PLACE UNTIL FINAL CONNECTION BY CITY FORCES



WATER DISTRIBUTION & TRANSMISSION PIPELINE CONSTRUCTION METHODS

12" THROUGH 20" DI TEMPORARY CONSTRUCTION END CAPS FOR FLUSHING, TESTING, & CHLORINATION



BILL OF MATERIALS	
ITEM	QUANTITY
① 16" - 54" WATER MAIN	PER PLAN
② 6" FLANGED OUTLET PER CWD 300	1
③ 6" x 12" FLANGED STEEL PIPE	2
④ 6" FLANGED STEEL PIPE	VARIES
⑤ 6" VALVE (FL x FL)	1
⑥ 6" 90° STEEL ELL (FL x FL)	2
⑦ 6" BLIND FLANGE	1
⑧ METER BOX (TRAFFIC RATED BOX & LID)	1

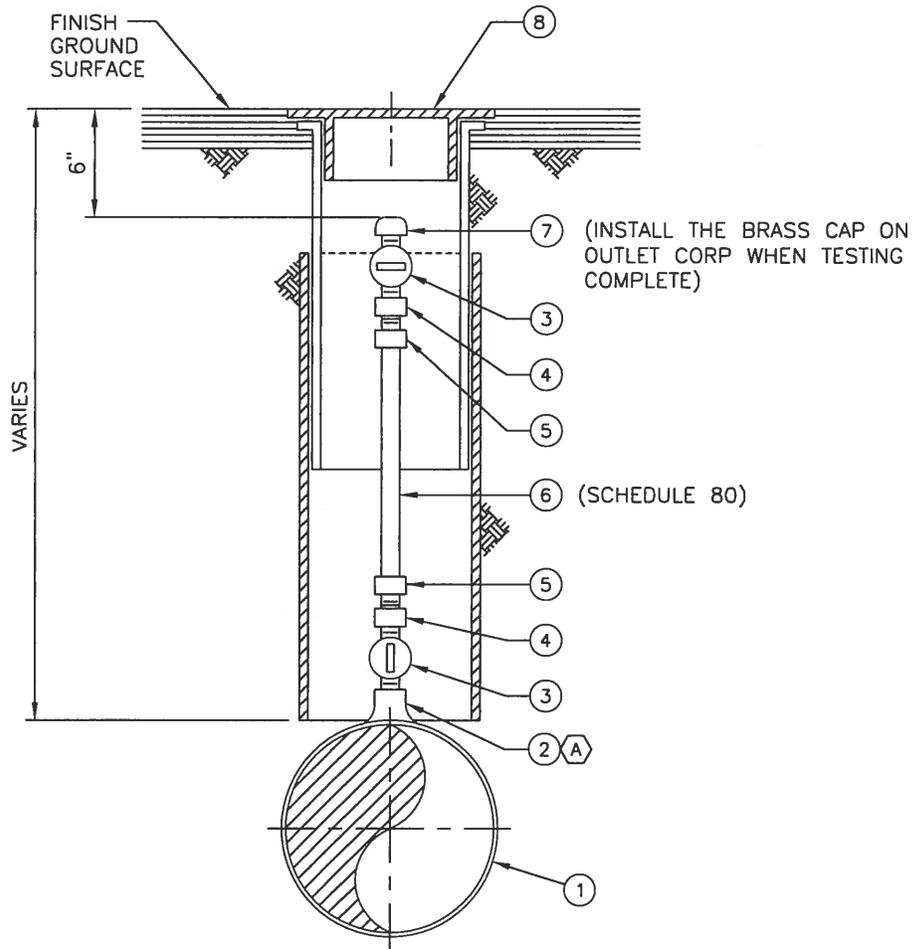
NOTES:

- 1.) CONTRACTOR SHALL LEAVE END CAP IN PLACE UNTIL FINAL CONNECTION BY CITY FORCES



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

16" THROUGH 54" CML&C STEEL
TEMPORARY CONSTRUCTION END CAP
FOR FLUSHING, TESTING, & CHLORINATION



BILL OF MATERIALS		
	QUANTITY	REF
① CML&C STEEL OR DIP WATER MAIN	PER PLAN	
② 1" THREADED OUTLET	1	CWD-340
③ 1" BALL CORP STOP (MIPT x MIPT)	2	
④ 1" GALV STEEL COUPLING	2	
⑤ 1" PVC ADAPTER	2	
⑥ 1" PVC PIPE	VARIES	
⑦ 1" BRASS CAP	1	
⑧ 10" GATE BOX AND SPLIT-SLEEVE	1	CWD-515

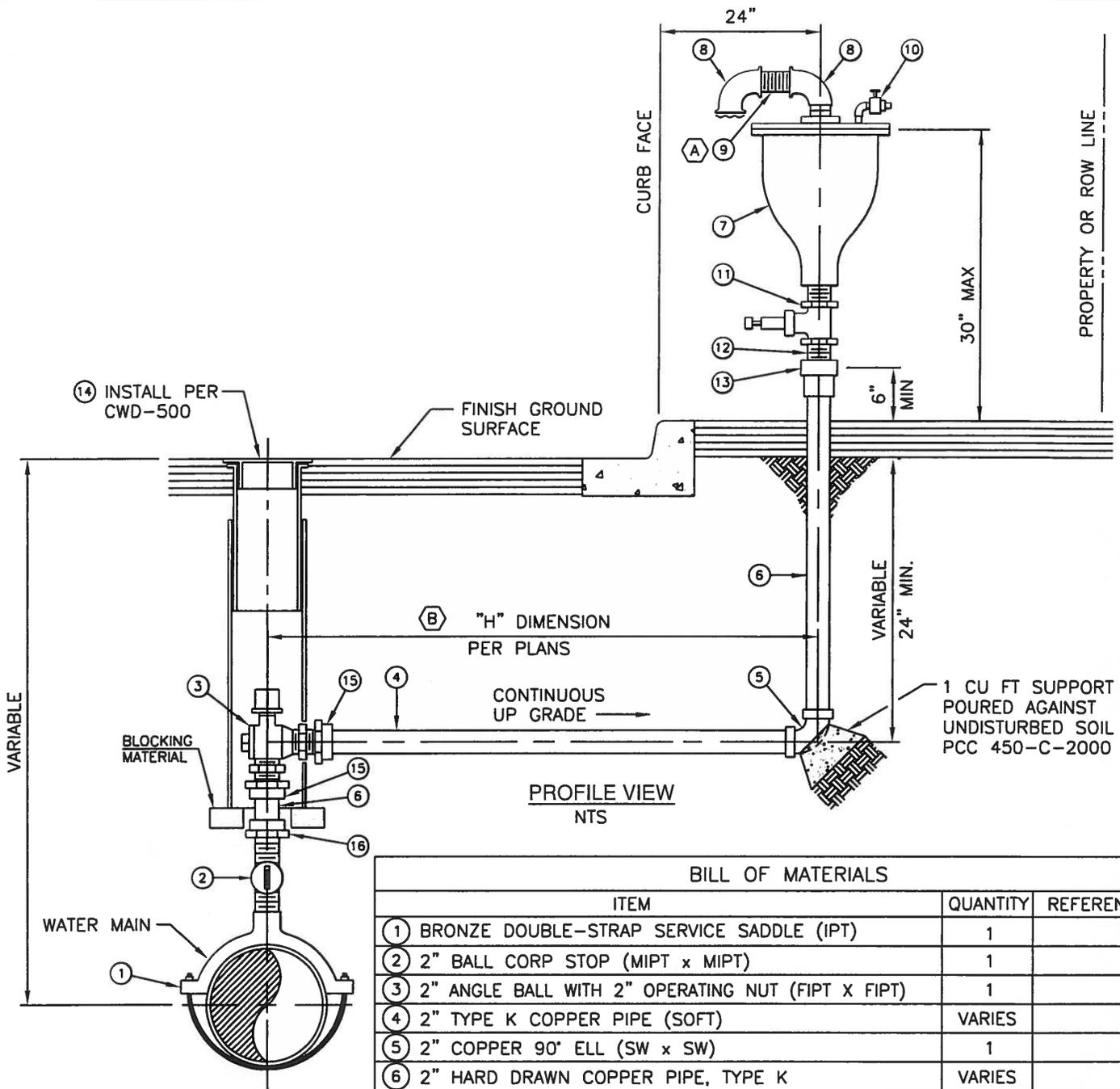
NOTES:

- 1.) CONTRACTOR SHALL REMOVE VALVE BOX, CLOSE AND CAP 1" BALL CORP STOP AND REMOVE PVC RISER FOLLOWING ACCEPTANCE OF THE TRANSMISSION MAIN.
 - 2.) STATION, LOCATION, AND SPECIAL NOTES PER PLAN AND PROFILE SHEETS.
- (A) DOUBLE-STRAP SERVICE SADDLES SHALL BE USED ON ALL DIP CONNECTIONS



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TEMPORARY
WATER SAMPLER



NOTES:

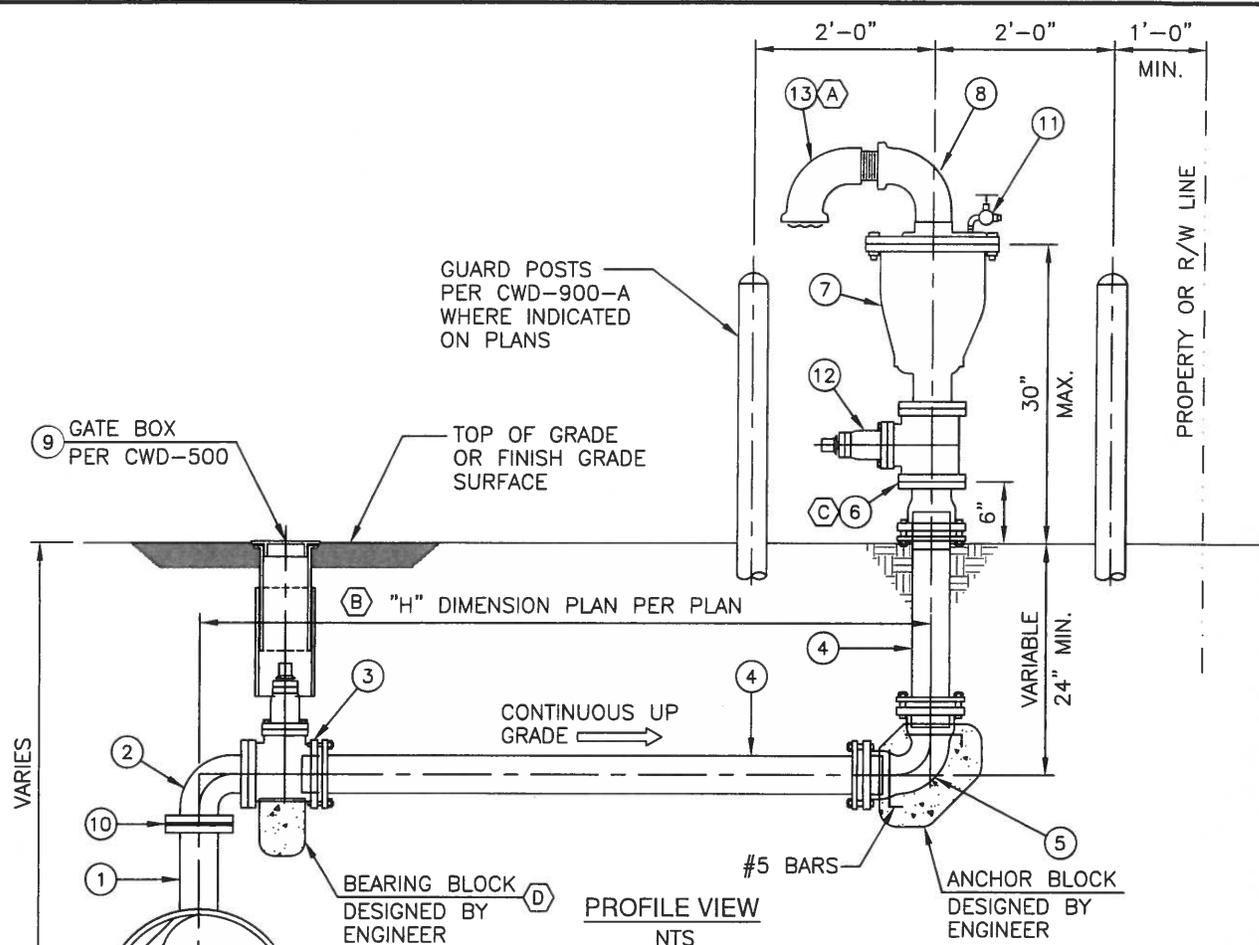
- (A) A 1/8" SQ MESH GALVANIZED SCREEN SHALL BE EPOXIED FLAT INTO OPEN ST ELL.
- (B) STATION, LOCATION, AND SPECIAL NOTES PER PLAN AND PROFILE SHEETS.
- (C) DOUBLE-STRAP SERVICE SADDLES SHALL BE USED ON ALL DIP CONNECTIONS.

BILL OF MATERIALS			
ITEM	QUANTITY	REFERENCE	
1	1		BRONZE DOUBLE-STRAP SERVICE SADDLE (IPT)
2	1		2" BALL CORP STOP (MIPT x MIPT)
3	1		2" ANGLE BALL WITH 2" OPERATING NUT (FIPT x FIPT)
4	VARIABLE		2" TYPE K COPPER PIPE (SOFT)
5	1		2" COPPER 90° ELL (SW x SW)
6	VARIABLE		2" HARD DRAWN COPPER PIPE, TYPE K
7	1		2" UNIVERSAL AIR VALVE
8	2		2" GALVANIZED STREET ELL
9	1		2"Ø x 3" CLOSE NIPPLE
10	1 EA		1/4" BRASS GATE VALVE, 1/4" BRASS PLUG, 1/4" x 2" BRASS NIPPLE, 1/4" BRASS STREET ELL
11			2" TEMP GATE VALVE & NIPPLE FOR FLUSHING & SAMPLING
12	1 EA		2"Ø x 6" NIPPLE
13	1 EA		2" BRONZE ADAPTER (SW x IPF)
14	1 EA	CWD-500	8" GATE VALVE CAP, GALV SPLIT SLEEVE, & 12 GA STL PIPE
15	2 EA		2" ADAPTER (MIPT x SW)
16	1 EA		2" ADAPTER (FIPT x SW)



WATER
DISTRIBUTION & TRANSMISSION
CONSTRUCTION METHODS

TYPICAL 2" AIR VALVE
INSTALLATION



NOTES:

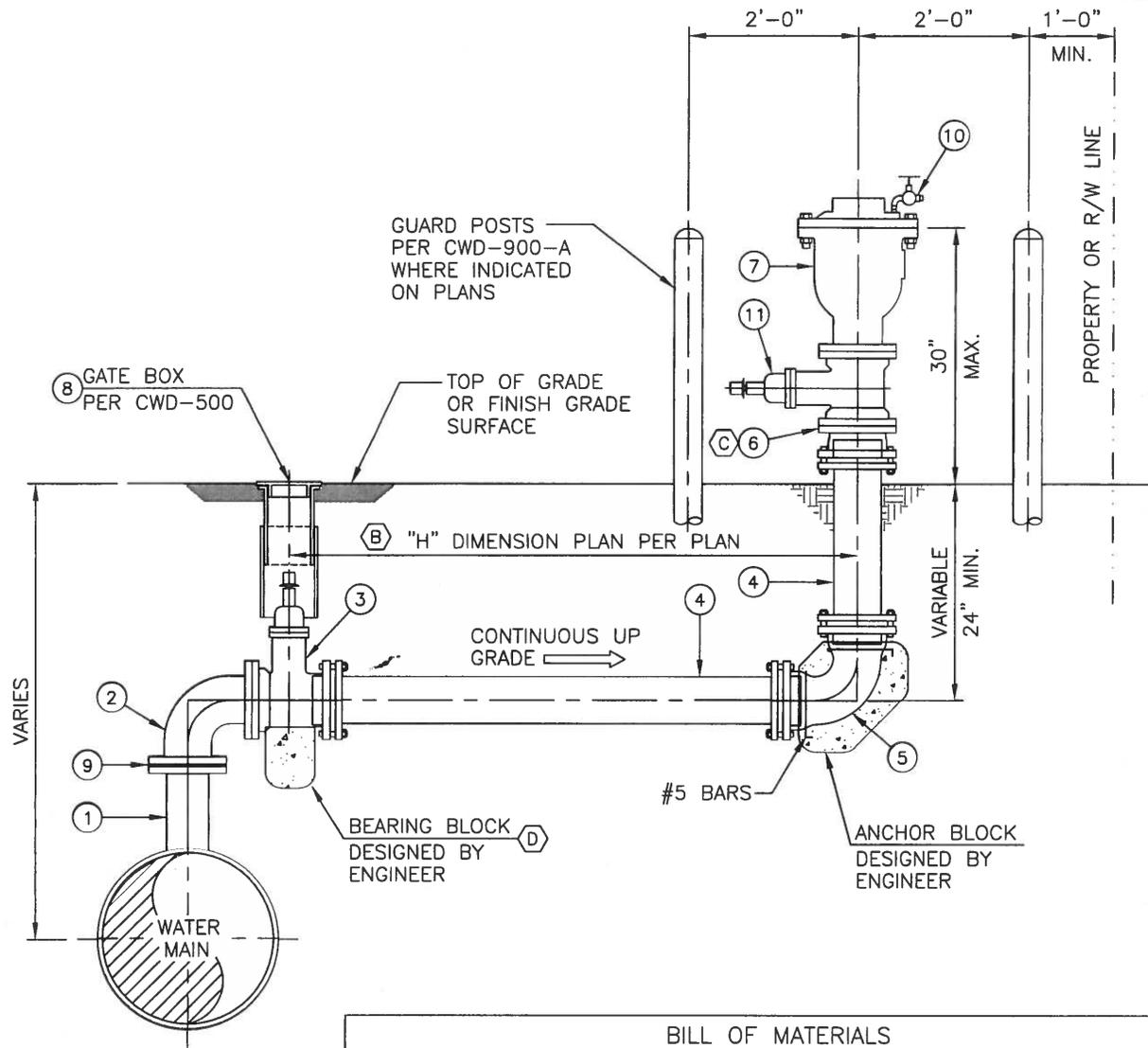
- A A 1/8" SQ. MESH, GALVANIZED SCREEN SHALL BE EPOXIED INTO OPEN STREET ELL.
- B STATION, LOCATION, AND SPECIAL NOTES PER PLAN AND PROFILE SHEETS.
- C BREAK-OFF BOLTS, CADMIUM-PLATED OR GALVANIZED. INSTALL WITH NUT ON TOP AND COUNTER-BORE, PACKED WITH SILICONE.
- D BEARING BLOCK SHALL NOT REST ON MAIN AND SHALL BE NOTCHED ON BOTH SIDES PER CWD-500

BILL OF MATERIALS		
ITEM	QUANTITY	REFERENCE
① 4" FLANGED OUTLET	1	CWD-300
② 4" 90° ELL (FL x FL)	1	
③ 4" RW GATE VALVE (FL x MJ)	1	
④ 4" DUCTILE IRON PIPE, PRESSURE CLASS 350	VARIABLE	
⑤ 4" 90° ELL (MJ x MJ)	1	
⑥ 4" ADAPTER (FL x MJ)	1	
⑦ 4" UNIVERSAL AIR VALVE	1	
⑧ 4" 90° GALV STREET ELL	1	
⑨ 8" GATE BOX CAP, GALV SPLIT-SLEEVE, AND 12 GA STL PIPE	1	CWD-500
⑩ FLANGE INSULATION KIT AS REQUIRED PER SPECIFICATIONS	1	
⑪ 1/2" BRASS GV 1/2" x 2" BRASS NIPPLE, 1/2" BRASS STREET ELL, & 1/2" BRASS PLUG	1	
⑫ 4" TEMP GATE VALVE AND NIPPLE FOR FLUSHING AND SAMPLING	1	
⑬ 4" 90° GALV ELL W/ NIPPLE	1	



WATER DISTRIBUTION & TRANSMISSION PIPELINE CONSTRUCTION METHODS

TYPICAL 4" AIR VALVE INSTALLATION



NOTES:

- (A) A 1/8" SQ. MESH, GALVANIZED SCREEN, SHALL BE EPOXIED INTO OPEN STREET ELL.
- (B) STATION, LOCATION, AND SPECIAL NOTES PER PLAN AND PROFILE SHEETS.
- (C) BREAK-OFF BOLTS, CADMIUM-PLATED OR GALVANIZED. INSTALL WITH NUT ON TOP AND COUNTER-BORE, PACKED WITH SILICONE.
- (D) BEARING BLOCK SHALL NOT REST ON MAIN AND SHALL BE NOTCHED ON BOTH SIDES PER CWD-500

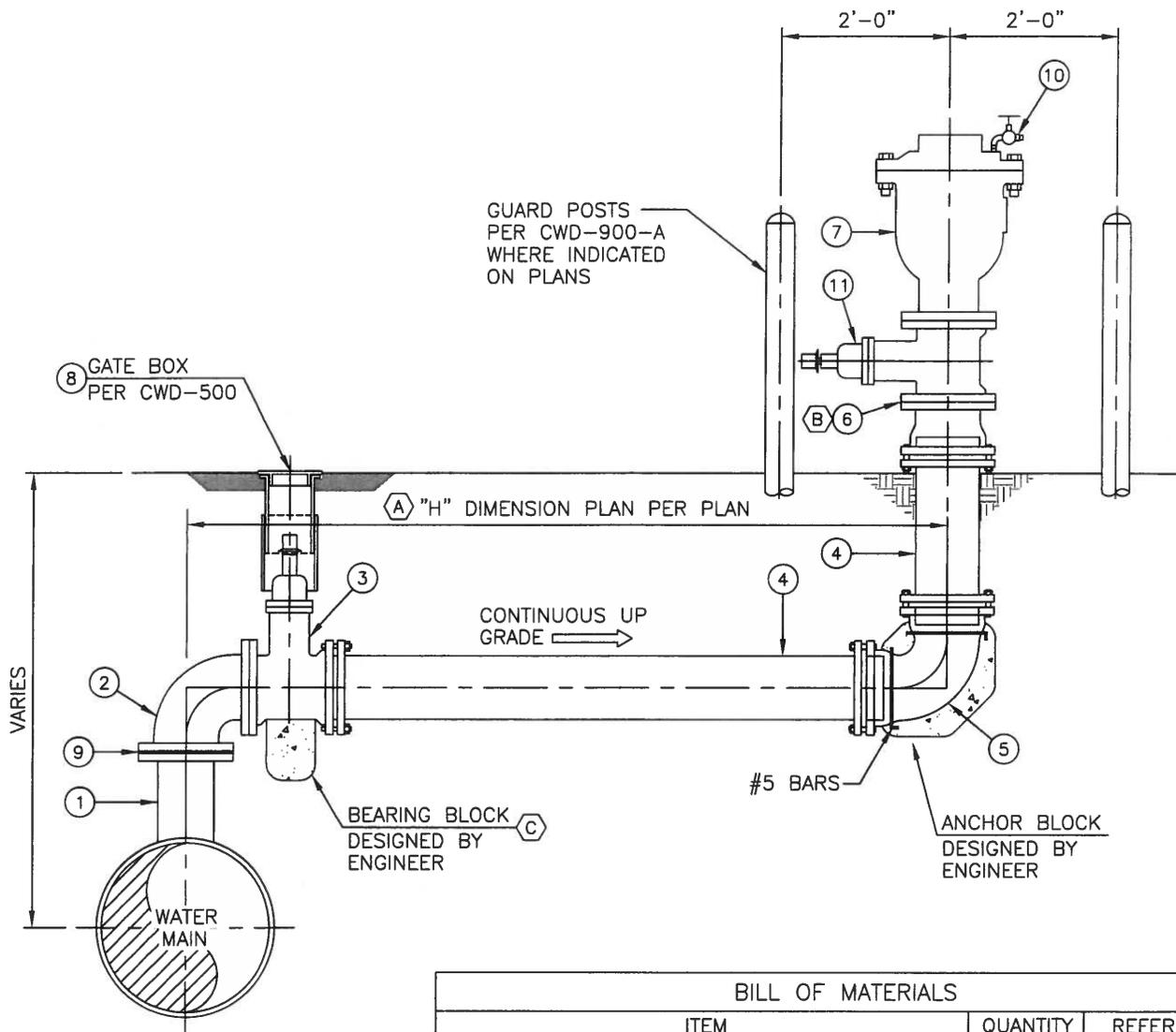
BILL OF MATERIALS

ITEM	QUANTITY	REFERENCE
(1) 6" FLANGED OUTLET	1	CWD-300
(2) 6" 90° ELL (FL x FL)	1	
(3) 6" RW GATE VALVE (FL x MJ)	1	CWD-500
(4) 6" DUCTILE IRON PIPE, PRESSURE CLASS 350	VARIABLE	
(5) 6" 90° ELL (MJ x MJ)	1	
(6) 6" ADAPTER (FL X MJ)	1	
(7) 6" COMBINATION AIR VALVE, PER SPEC	1	
(8) 8" GATE BOX CAP, GALV SPLIT-SLEEVE, AND 12 GA STL PIPE	1	CWD-515
(9) FLANGE INSULATION KIT AS REQUIRED PER SPECIFICATIONS	1	
(10) 1/2" BRASS GV, 1/2" x 2" BRASS NIPPLE, 1/2" BRASS STREET ELL, 1/2" BRASS PLUG	1 EA	
(11) 6" TEMP GATE VALVE AND NIPPLE FOR FLUSHING AND SAMPLING	1	



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

**TYPICAL 6" AIR VALVE
INSTALLATION**



VARIES

NOTES:

- A STATION, LOCATION, AND SPECIAL NOTES PER PLAN AND PROFILE SHEETS.
- B BREAK-OFF BOLTS, CADMIUM-PLATED OR GALVANIZED. INSTALL WITH NUT ON TOP AND COUNTER-BORE, PACKED WITH SILICONE.
- C BEARING BLOCK SHALL NOT REST ON MAIN AND SHALL BE NOTCHED ON BOTH SIDES PER CWD-500

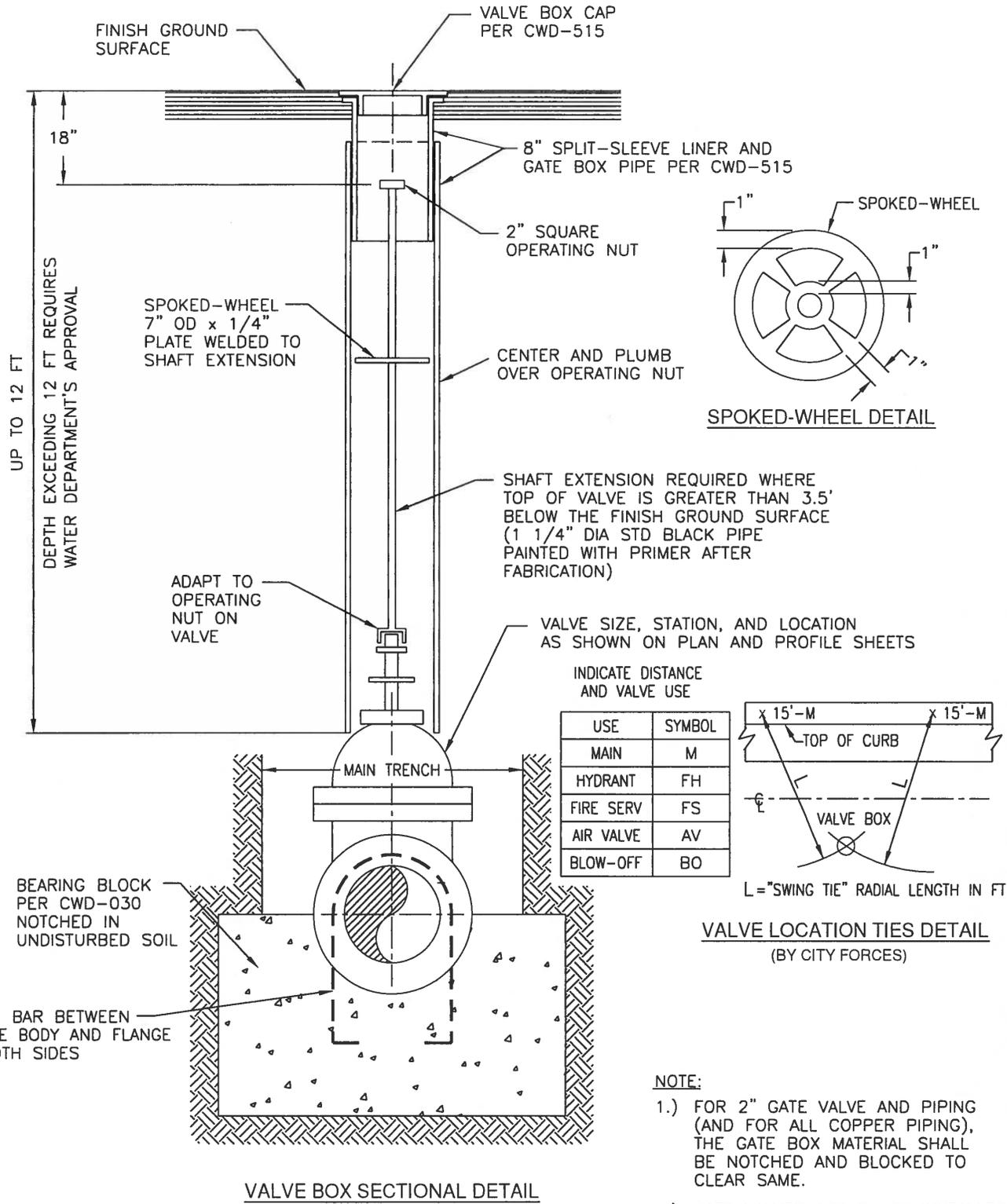
BILL OF MATERIALS

ITEM	QUANTITY	REFERENCE
① 8" FLANGED OUTLET	1	CWD-300
② 8" 90° ELL (FL x FL)	1	
③ 8" RW GATE VALVE (FL x MJ)	1	CWD-500
④ 8" DUCTILE IRON PIPE, PRESSURE CLASS 350	VARIABLE	
⑤ 8" 90° ELL (MJ x MJ)	1	
⑥ 8" ADAPTER (FL x MJ)	2	
⑦ 8" COMBINATION AIR VALVE, PER SPEC	1	
⑧ 8" GATE BOX CAP, GALV SPLIT-SLEEVE, AND 12 GA STL PIPE	1	CWD-515
⑨ FLANGE INSULATION KIT AS REQUIRED PER SPECIFICATIONS	1	
⑩ 1/2" BRASS GV, 1/2" x 2" BRASS NIPPLE, 1/2" BRASS STREET ELL, 1/2" BRASS PLUG	1 EA	
⑪ 8" TEMP GATE VALVE AND NIPPLE FOR FLUSHING AND SAMPLING	1	



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

**TYPICAL 8" AIR VALVE
INSTALLATION**



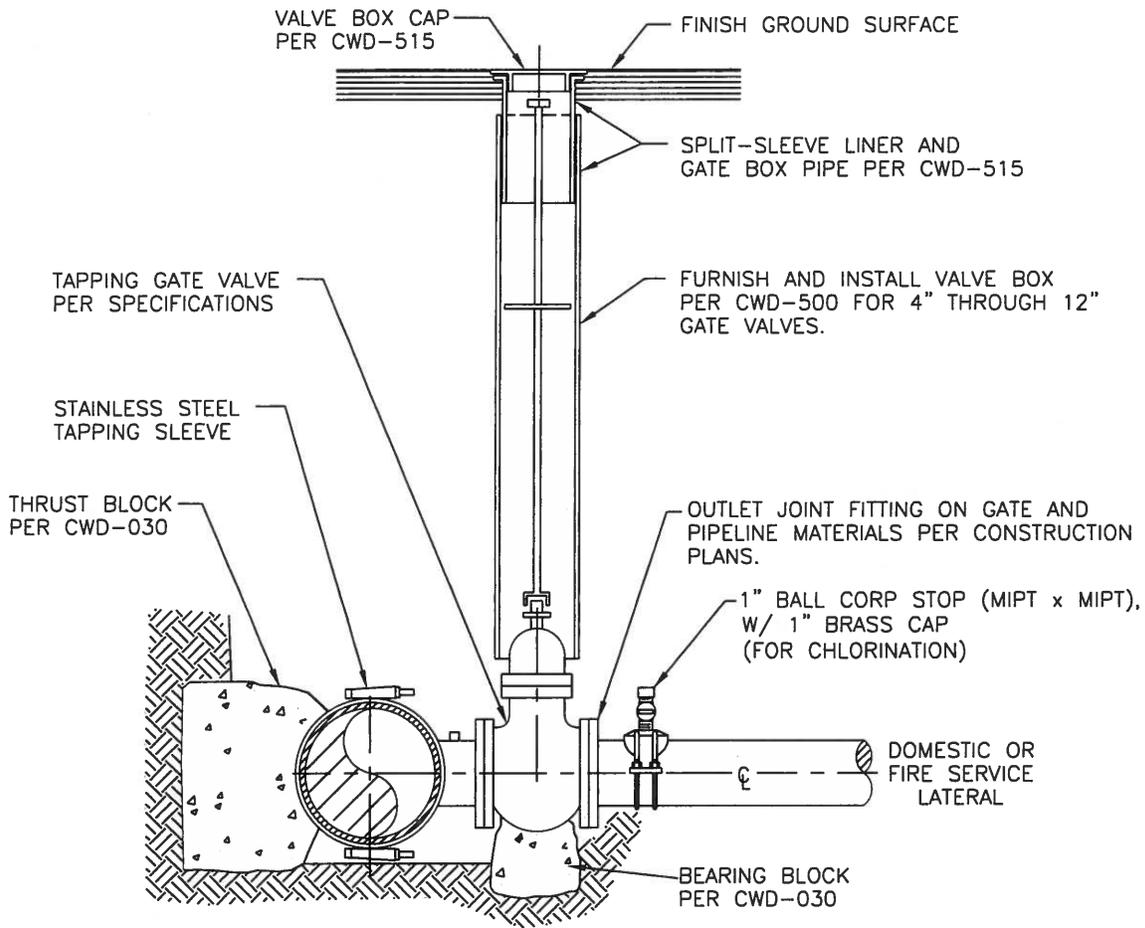
USE	SYMBOL
MAIN	M
HYDRANT	FH
FIRE SERV	FS
AIR VALVE	AV
BLOW-OFF	BO

- NOTE:**
- 1.) FOR 2" GATE VALVE AND PIPING (AND FOR ALL COPPER PIPING), THE GATE BOX MATERIAL SHALL BE NOTCHED AND BLOCKED TO CLEAR SAME.
 - 2.) GATE VALVES ARE TO BE INSTALLED IN THE VERTICAL POSITION UNLESS THEY ARE DESIGNED TO OPERATE IN OTHER POSITIONS.

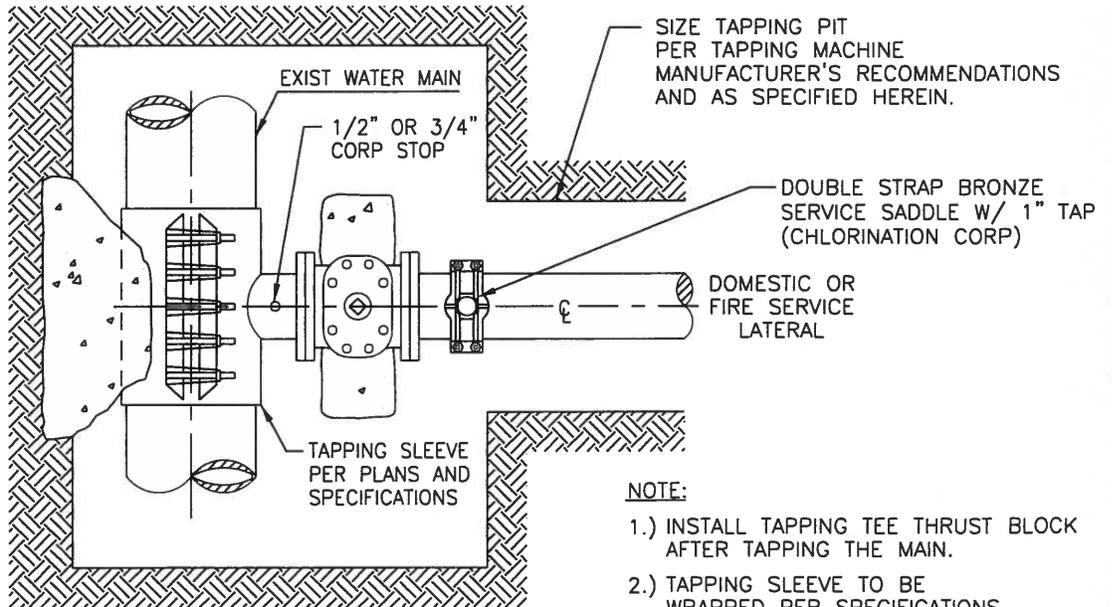


WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TYPICAL VALVE BOX FOR
GATE VALVES



SECTIONAL VIEW



PLAN VIEW

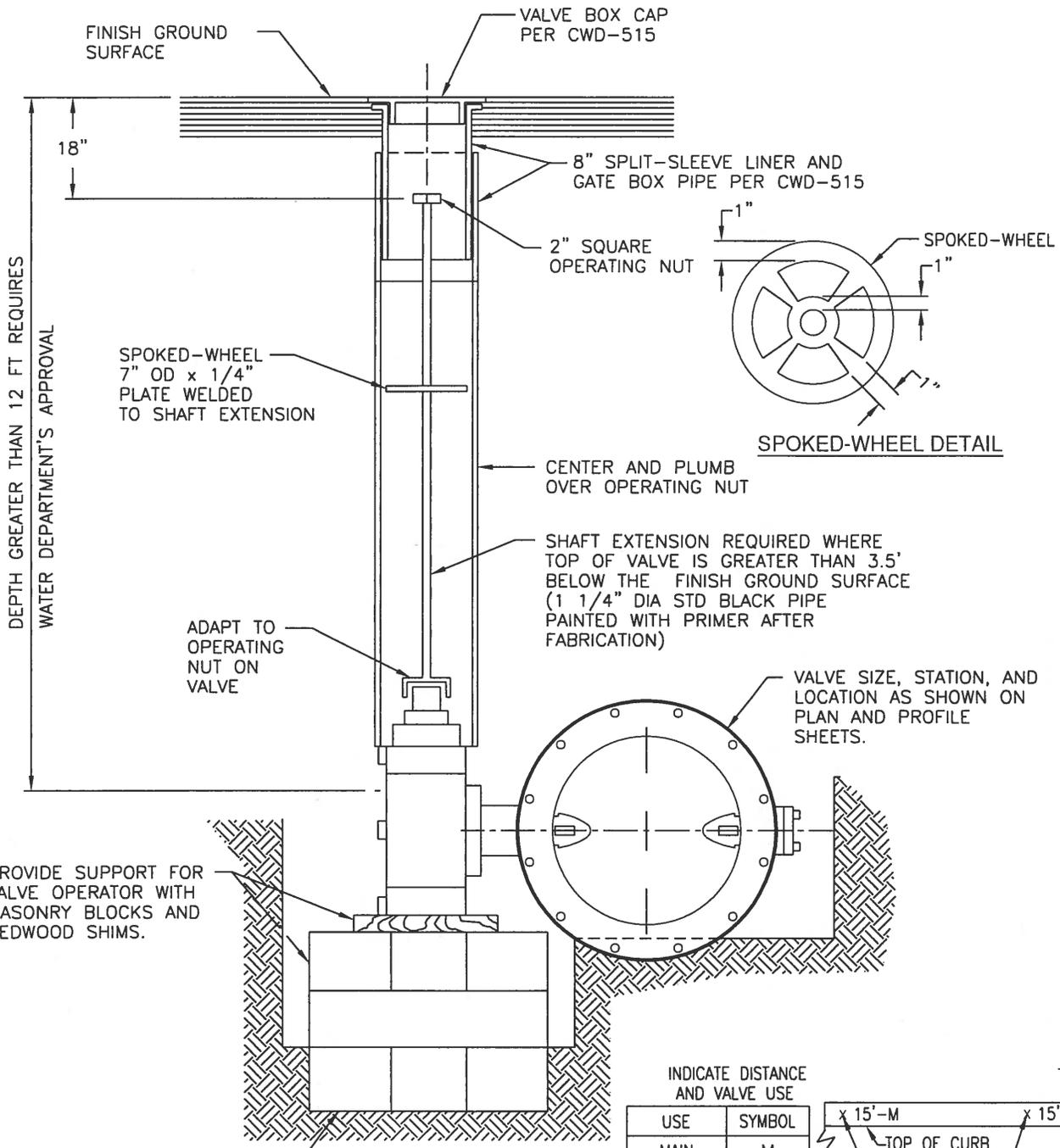
NOTE:

- 1.) INSTALL TAPPING TEE THRUST BLOCK AFTER TAPPING THE MAIN.
- 2.) TAPPING SLEEVE TO BE WRAPPED PER SPECIFICATIONS.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TAPPING SLEEVE AND
TAPPING VALVE DETAIL FOR
DOMESTIC AND FIRE SERVICES



DEPTH GREATER THAN 12 FT REQUIRES WATER DEPARTMENT'S APPROVAL

PROVIDE SUPPORT FOR VALVE OPERATOR WITH MASONRY BLOCKS AND REDWOOD SHIMS.

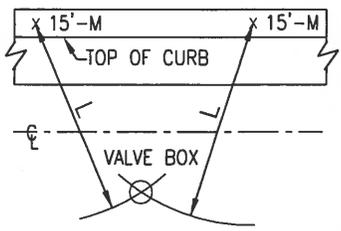
BLOCK TO UNDISTURBED SOIL

SECTIONAL VIEW

SPOKED-WHEEL DETAIL

INDICATE DISTANCE AND VALVE USE

USE	SYMBOL
MAIN	M
HYDRANT	FH
FIRE SERV	FS
AIR VALVE	AV
BLOW-OFF	BO



L = "SWING TIE" RADIAL LENGTH IN FT

VALVE LOCATION TIES DETAIL (BY CITY FORCES)



WATER DISTRIBUTION & TRANSMISSION PIPELINE CONSTRUCTION METHODS

TYPICAL VALVE BOX FOR BUTTERFLY VALVES

8" AND 10" (FOR 2" B.O. ASSEMBLY ONLY)
CAPS MANUFACTURED BY SOUTH BAY FOUNDRY,
SAN DIEGO, CA, OR APPROVED EQUAL.
CAP MARKED "CWD", PAINTED PER SPECIFICATION.

ADJUST CAP FLUSH
TO 1/4" HIGH ABOVE
FINISH STREET GRADE

FINISH GRADE

VALVE
BOX

DRILL 1/4" HOLE, 3/8" INSIDE INTERIOR RING
ON CAP SURFACE. INSTALL 1/4" x 1 1/2"
BRASS ROUND-HEAD SCREW, SECURE WITH A
1/4" BRASS NUT. ADD AN ADDITIONAL 1/4"
BRASS NUT AND WASHER TO THE 1/4" BRASS
SCREW TO FACILITATE FUTURE VALVE TAG.

COMPACT PAVEMENT UNDER
GATE CAP FLANGE AND SPLIT-SLEEVE LINER
WHEN SETTING OR ADJUSTING

SPLIT-SLEEVE LINER

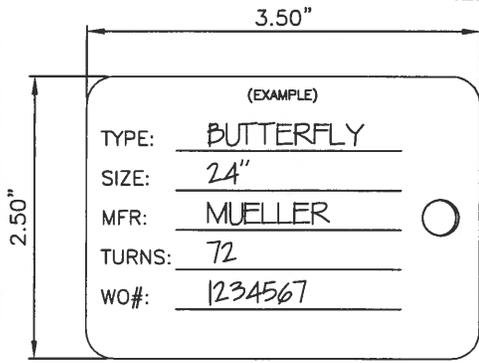
VALVE BOX

10" OD X 12 GA STL PIPE ASPHALT-DIPPED, FOR 2" B.O. ONLY
8" OD X 12 GA STL PIPE ASPHALT-DIPPED
DEPTH EXCEEDING 12'
REQUIRES WATER DEPT. APPROVAL

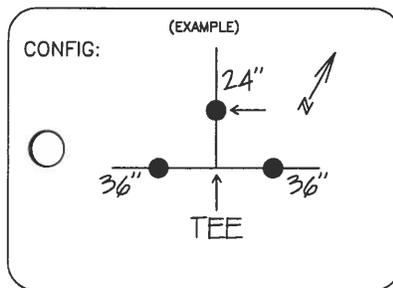
12" MIN
OVERLAP

VALVE BOX LINER SPECIFICATIONS:
20 GA x 18" LONG GALV STL
SPLIT-SLEEVE WITH 1 1/2" OVERLAP
AND 1/2" LIP (FLARE) ON ONE END.
OD FOR 8" VALVE BOX = 7 3/4"
OD FOR 10" VALVE BOX = 9 3/4"
10" VALVE BOX FOR 2" B.O. ONLY

SECTIONAL DETAIL



FRONT OF TAG

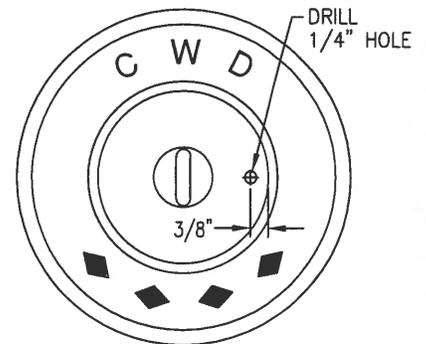


BACK OF TAG

TEMPORARY VALVE TAG ON NEW VALVES

NOTES:

- 1.) TAG MATERIAL SHALL BE WHITE, HEAVY-DUTY 20 MIL THICK VINYL.
- 2.) TEMPORARY VALVE TAG SHALL BE ATTACHED TO SCREW ON BOTTOM OF VALVE BOX CAP USING WIRE TIES.
- 3.) ALL VALVE INFORMATION SHALL BE WRITTEN WITH INDELIBLE MARKER.



TYPICAL VALVE BOX CAP

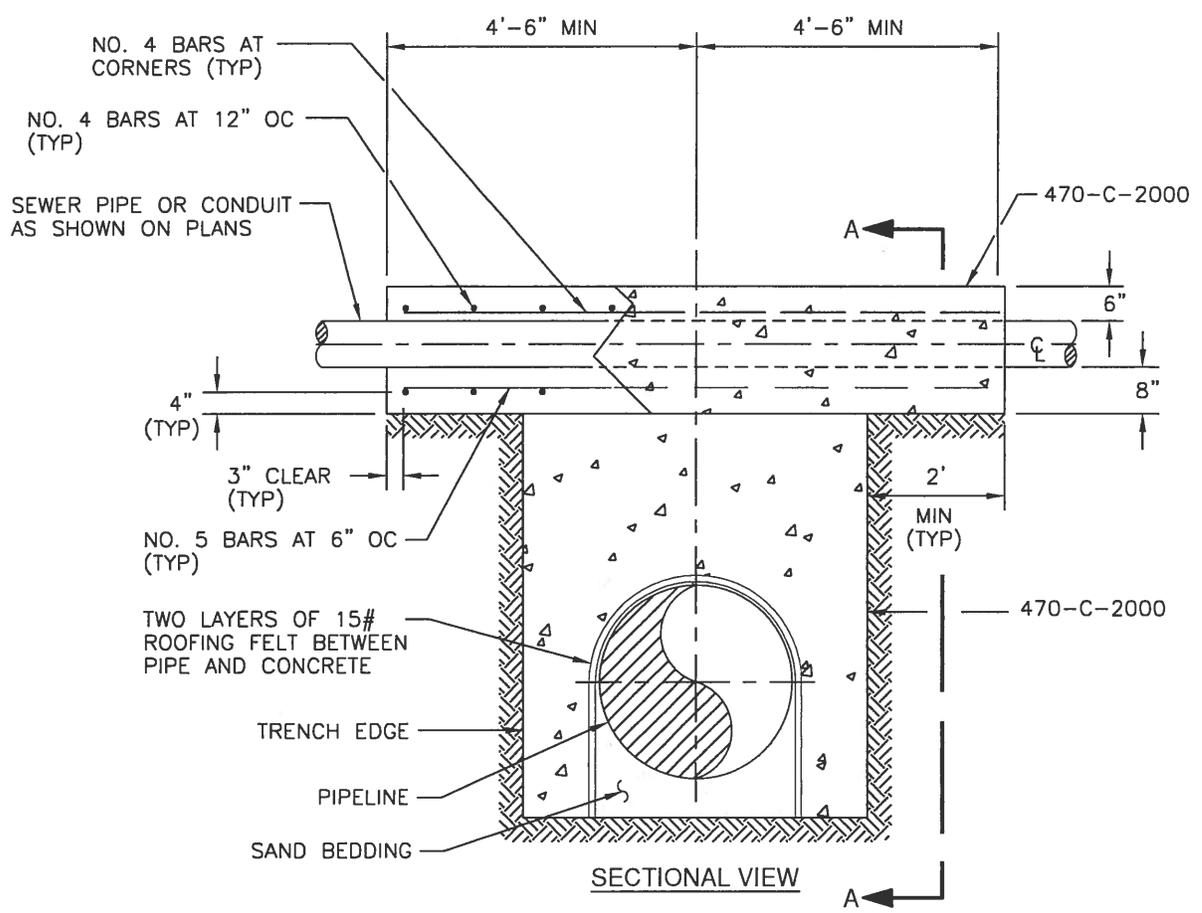
NOTES:

- 1.) THIS STANDARD IS TO BE USED IN CONJUNCTION WITH STANDARD DRAWINGS CWD-500, CWD-504, AND CWD-510.



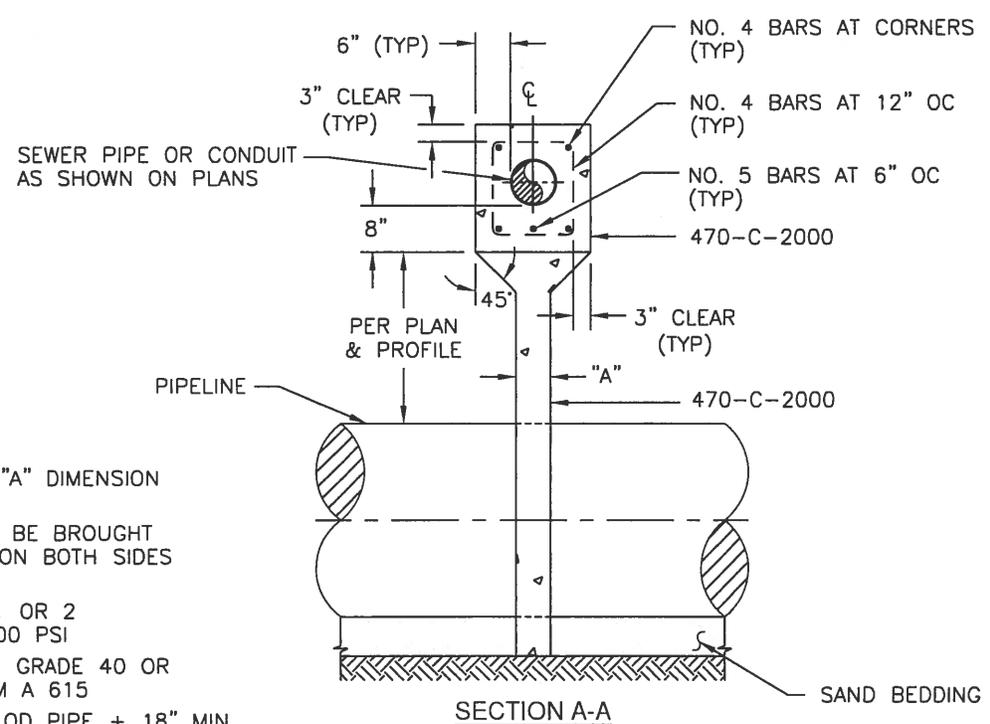
WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TYPICAL SPLIT-SLEEVE LINER AND CAP
FOR 8" AND 10" VALVE BOX



NO. 5 BARS AT 6" OC (TYP)
 TWO LAYERS OF 15# ROOFING FELT BETWEEN PIPE AND CONCRETE

SECTIONAL VIEW



SECTION A-A

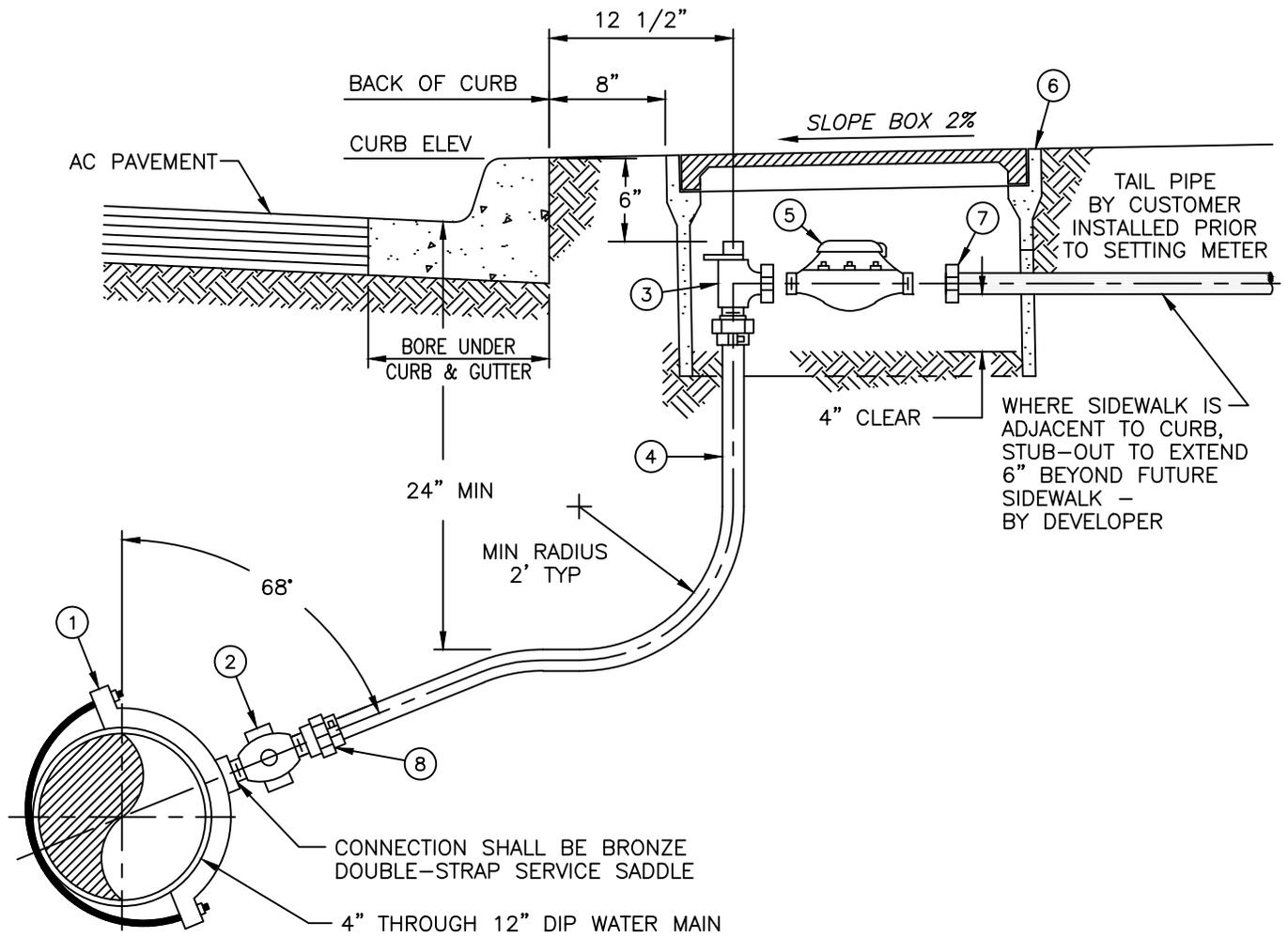
NOTES

- 1.) SEE PLAN FOR "A" DIMENSION (8" MIN)
- 2.) BACKFILL SHALL BE BROUGHT UP UNIFORMLY ON BOTH SIDES OF WALL.
- 3.) CEMENT: TYPE 1 OR 2 ASTM 5150, 2000 PSI
- 4.) REINFORCEMENT: GRADE 40 OR GRADE 60, ASTM A 615
- 5.) TRENCH WIDTH: OD PIPE + 18" MIN



WATER DISTRIBUTION & TRANSMISSION
 PIPELINE CONSTRUCTION METHODS

TYPICAL CONDUIT SUPPORT



TYPICAL STREET INSTALLATION

BILL OF MATERIALS	
ITEM	QUANTITY
① BRONZE DOUBLE-STRAP SERVICE SADDLE (IPT)	1
② 1" BRONZE BALL CORP STOP (MIPT x MIPT)	1
③ 1" ANGLE BALL METER STOP (COMP x METER COUPLING) (WITH 1" x 3/4" ADAPTER FOR 3/4" METER) PER SPECIFICATIONS	1
④ 1" TUBING, SOFT COPPER, TYPE K	VARIES
⑤ METER INSTALLED BY CITY FORCES	1
⑥ METER BOX PER SPECIFICATIONS AND/OR PLANS	1
⑦ 1" OR 3/4" COUPLINGS	1
⑧ 1" ADAPTER (FIPT x COMP)	1

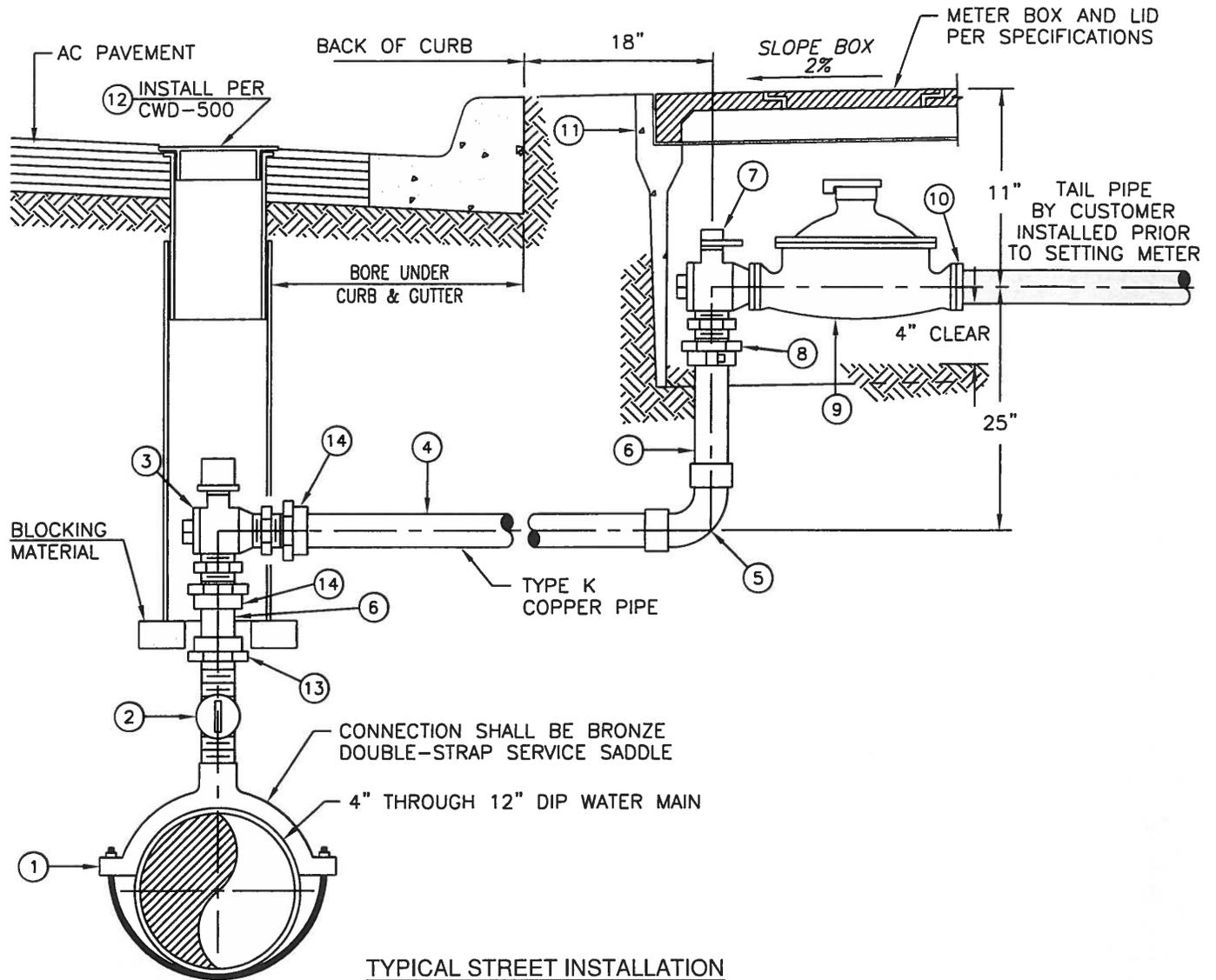
NOTES:

- 1.) METER BOX COVER TO BE CAST IRON WHERE BOX IS IN ALLEY OR DRIVEWAY.
- 2.) CONTRACTOR SHALL INSTALL METER BOXES WITH READING HOLE AT TIME ANGLE METER STOPS ARE INSTALLED.
- 3.) CITY WILL FURNISH A TEMPORARY SERVICE METER JUMPER, PRIOR TO INSTALLING METER, UPON PAYMENT OF FEES.
- 4.) METER BOX TO BE CLEANED BEFORE NEW METER CAN BE INSTALLED BY CITY FORCES.



**WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS**

1-INCH WATER SERVICE



TYPICAL STREET INSTALLATION

BILL OF MATERIALS	
ITEM	QUANTITY
① BRONZE DOUBLE-STRAP SERVICE SADDLE (IPT)	1
② 2" BALL CORP STOP (MIPT x MIPT)	1
③ 2" ANGLE BALL WITH 2" OPERATING NUT (FIPT x FIPT)	1
④ 2" SOFT COPPER PIPE, TYPE K	VARIES
⑤ 2" COPPER 90° ELL (SW/SW)	1
⑥ 2" HARD DRAWN COPPER (RISER PIPE)	VARIES
⑦ 2" ANGLE BALL METER STOP (IPF x METER FLG)	1
⑧ 2" COUPLING (COMP x MIPT)	1
⑨ 1 1/2" OR 2" METER (INSTALLED BY CITY)	1
⑩ 1 1/2" OR 2" METER FLANGE (INSTALLED BY CITY)	1
⑪ METER BOX: CONCRETE COVER 2 PC OR STEEL COVER 2 PC	1
⑫ 8" GATE VALVE CAP, GALV SPLIT SLEEVE, & 12 GA STL PIPE - PER CWD-500	1
⑬ 2" ADAPTER (FIPT x SW)	1
⑭ 2" ADAPTER (MIPT x SW)	2

NOTES:

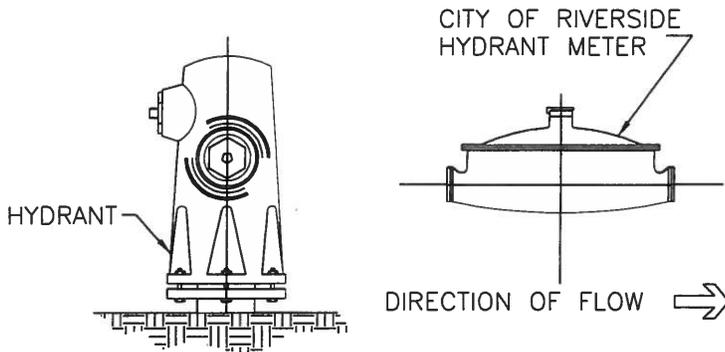
- 1.) A STEEL METER BOX LID IS REQUIRED IN ALLEY OR DRIVEWAY.
- 2.) DOUBLE GASKETS SHALL BE USED ON EACH SIDE OF METER SPACER (JUMPER) UNTIL METER IS INSTALLED BY CITY.
- 3.) INSTALL BLOCKING MATERIAL SO AS TO NOT IMPEDE ACCESS TO THE CORP STOP.
- 4.) USE HARD DRAWN RISER PIPE AND SWEAT FITTINGS AS NEEDED BETWEEN THE CORP STOP AND ANGLE BALL.



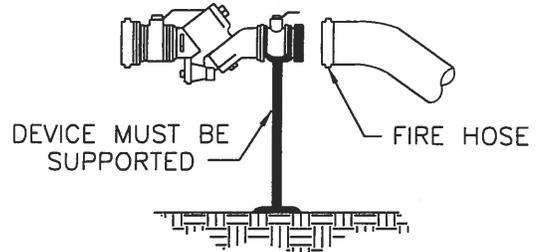
WATER
DISTRIBUTION & TRANSMISSION
CONSTRUCTION METHODS

2-INCH WATER SERVICE

WATER SERVICE CONNECTION, NOT LIMITED TO HYDRANT CONNECTIONS.



REDUCED PRESSURE BACKFLOW DEVICE FOR DIRECT CONNECTIONS



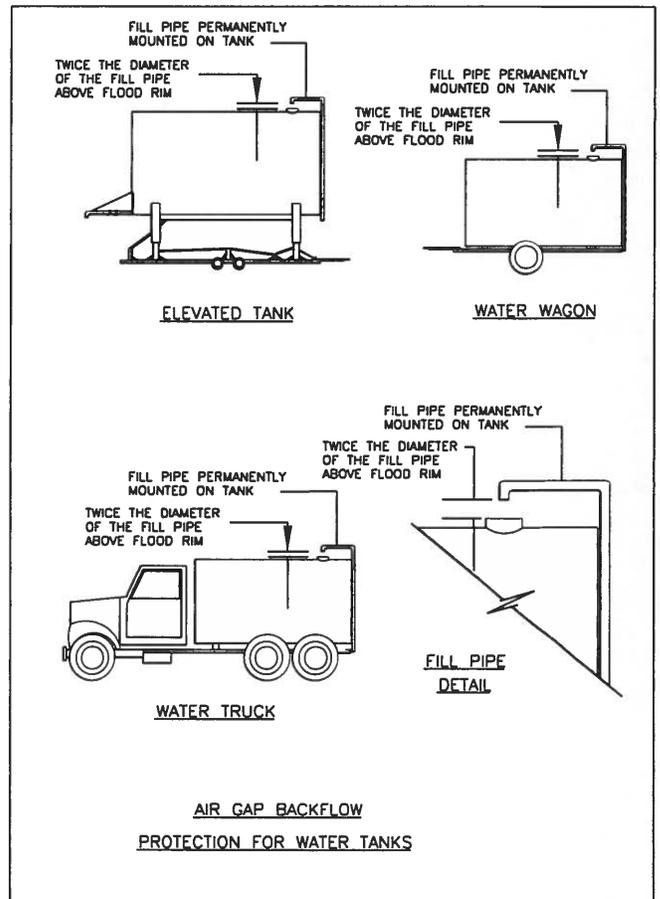
GUIDELINES:

1. AN AIR GAP IS REQUIRED AT SERVICE CONNECTION WHEN:
 - a) A REDUCED PRESSURE BACKFLOW DEVICE (RP) IS NOT AVAILABLE.
 - b) THE POTABLE WATER SUPPLY IS USED TO SUPPLEMENT A NON-POTABLE OR RECYCLED WATER SUPPLY.
2. A REDUCED PRESSURE BACKFLOW DEVICE (RP) IS REQUIRED WHEN:
 - a) AN AIR GAP IS NOT PRACTICAL.
 - b) CUSTOMER'S LENGTH OF HOSE EXCEEDS 50'.
 - c) WATER IS APPLIED DIRECTLY VIA HOSE.
 - d) THERE IS ANY PROCESS OR EQUIPMENT DIRECTLY SUPPLIED VIA CONNECTION.
 - e) THERE IS ANY RIDGED PIPING OR VALVE DOWNSTREAM OF CONNECTION.

CONNECTION IS SUBJECT TO APPROVAL OF THE PROGRAM SPECIALIST. CONNECTION AND BACKFLOW DEVICE MUST BE INSPECTED IMMEDIATELY AFTER INSTALLATION. TO SCHEDULE AN APPOINTMENT, CALL (951) 351-6320 OR (951) 351-6282.

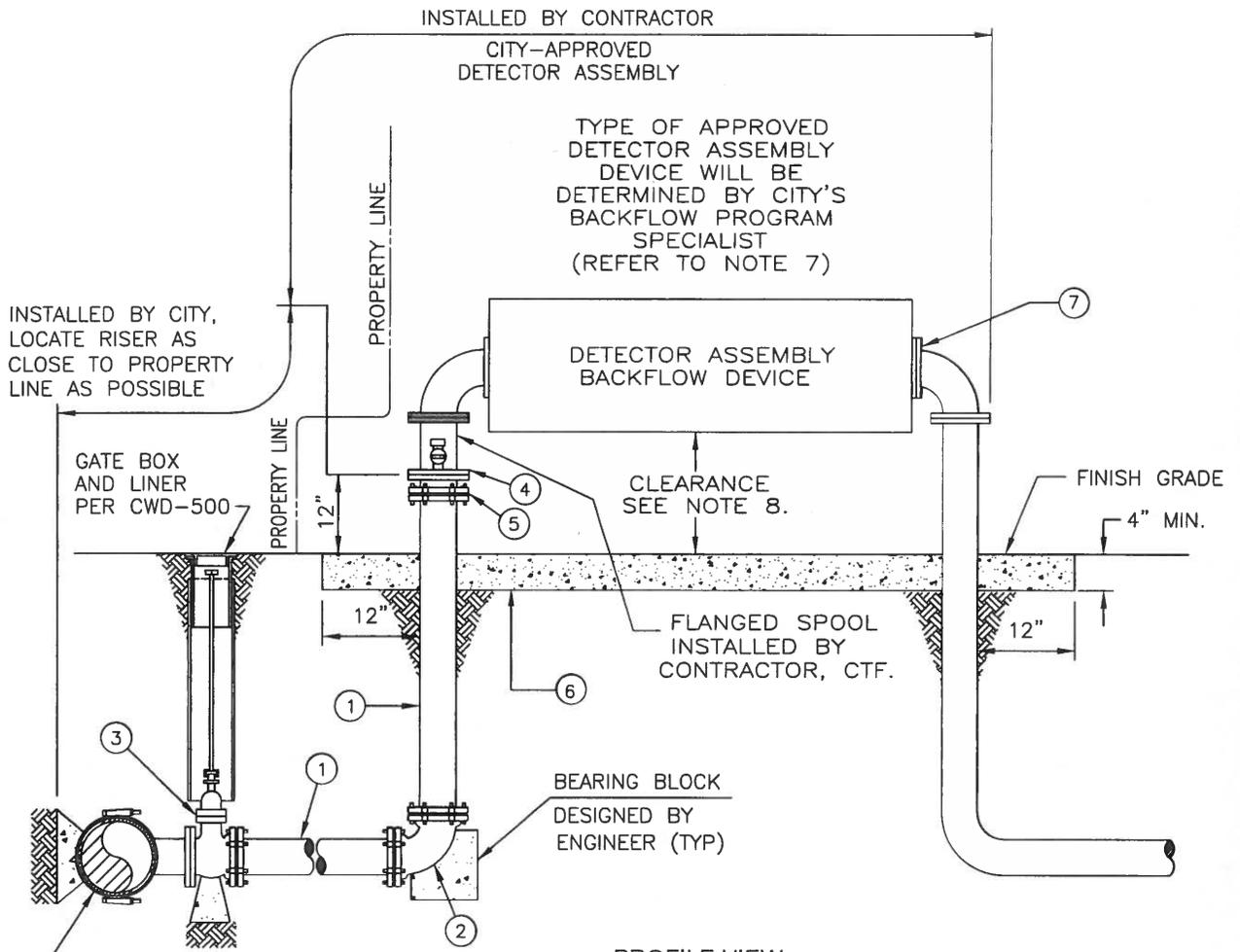
TEMPORARY CONNECTION METER CONTACTS

- TELEPHONE NUMBERS:
- (951) 826-5285 - WATER ENGINEERING
 - (951) 351-6320 - WATER OPERATIONS/BACKFLOW
 - (951) 351-6350 - WATER MAINTENANCE/METER SHOP
 - (951) 782-0330 - CUSTOMER SERVICE



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TEMPORARY, EMERGENCY, OR CONSTRUCTION
WATER SERVICE / BACKFLOW PROTECTION



PROFILE VIEW

NOTES

1. PRIME AND WRAP BURIED PIPE TO 6" ABOVE GRADE WITH POLYKEN #927 AND #900, OR APPROVED EQUAL.
2. CITY FORCES WILL BLIND FLANGE CONNECTION POINT. WATER INSPECTOR IS TO BE PRESENT WHEN BLIND FLANGE IS REMOVED AND DETECTOR ASSEMBLY IS INSTALLED.
3. FACILITIES TO BE DISINFECTED PER SPECIFICATION 205, PART 5.
4. CONTRACTOR TO SWAB CONNECTING VALVES WITH 600 PPM CHLORINE WHEN MAKING CONNECTION.
5. CONTRACTOR TO PAINT ALL ABOVE GRADE PIPING AND DETECTOR ASSEMBLY.
6. FOR 10" DETECTOR ASSEMBLY INSTALL 12" LATERAL AND PIPING. CUSTOMER TO SUPPLY 12" x 10" FLANGED REDUCERS ON BOTH SIDES OF DETECTOR ASSEMBLY.
7. CONTACT CITY BACKFLOW PROGRAM SPECIALIST FOR DETECTOR ASSEMBLY SPECIFICATION, AND FOR INSPECTION AND TESTING IMMEDIATELY AFTER INSTALLATION AT (951) 351-6320.
8. FOR DETECTOR ASSEMBLY CLEARANCE REQUIREMENTS REFER TO CWD-616-1 AND CWD-617.
9. RESTRAIN ALL JOINTS WITH APPROVED RESTRAINT ASSEMBLY.

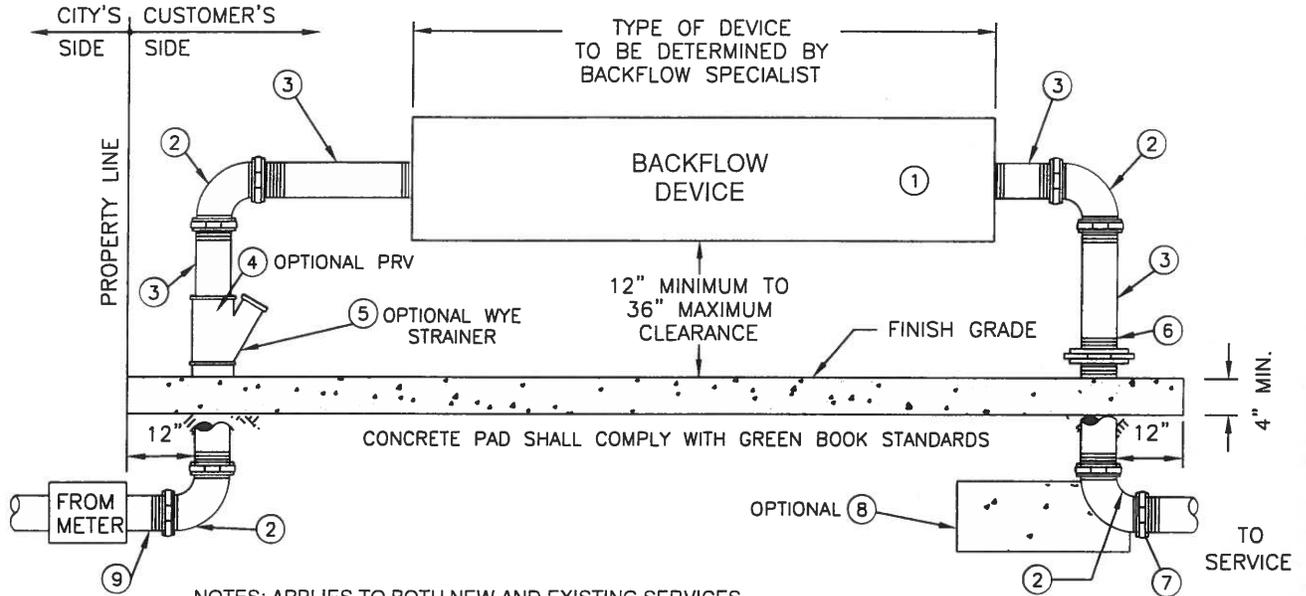
MATERIALS	
ITEM	
①	DUCTILE IRON PIPE (CLASS 350)
②	90° ELL (MJ X MJ, RESTRAINED).
③	GATE VALVE (FLG X MJ).
④	TEMPORARY BLIND FLANGE WITH 1" IPT TAP AND 1" BALL CORPORATION STOP FOR SAMPLE (BY CITY FORCES).
⑤	FLANGE X MECHANICAL JOINT ADAPTER, AS REQUIRED.
⑥	4" MIN. CONCRETE SLAB-NECESSARY FOR EROSION PREVENTION
⑦	TEST PLATE REQUIRED FOR PRESSURE TEST.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

4" THROUGH 12" ABOVE GROUND
FIRE SERVICE

TYPICAL BACKFLOW DEVICE CONFIGURATION



NOTES: APPLIES TO BOTH NEW AND EXISTING SERVICES.

1. PRIOR TO INSTALLATION, LOCATION OF THE BACKFLOW DEVICE SHALL BE SUBJECT TO APPROVAL OF THE PROGRAM SPECIALIST (951) 351-6320/6282. DEVICE SHALL BE LOCATED AS CLOSE TO THE METER AS PRACTICAL (MIN. 18", MAX. 24" BACK OF PROPERTY LINE.)
2. ANY DEVIATION FROM NOTE #1 IS SUBJECT TO CONDITIONS AS DESCRIBED WITHIN CWD-616-2.
3. INSPECTION OF PLUMBING BETWEEN METER AND BACKFLOW DEVICE IS REQUIRED PRIOR TO BACKFILLING OR POURING CONCRETE.
4. MATERIALS SHALL BE IN COMPLIANCE WITH THE APPROVED MATERIALS SPECIFIED BELOW.
5. THE DEVICE MUST BE INSPECTED AND TESTED IMMEDIATELY AFTER INSTALLATION. TO SCHEDULE AN APPOINTMENT CALL (951) 351-6320/6282.

ITEM	EACH	DESCRIPTION
①	1	BACKFLOW DEVICE
②	4	90 DEGREE ELBOW, BRASS OR HARD DRAWN COPPER
③	4	RISER & NIPPLES, BRASS OR HARD DRAWN COPPER
④	1	PRV VALVE (FOR PRESSURE IN EXCESS OF 80 PSI)

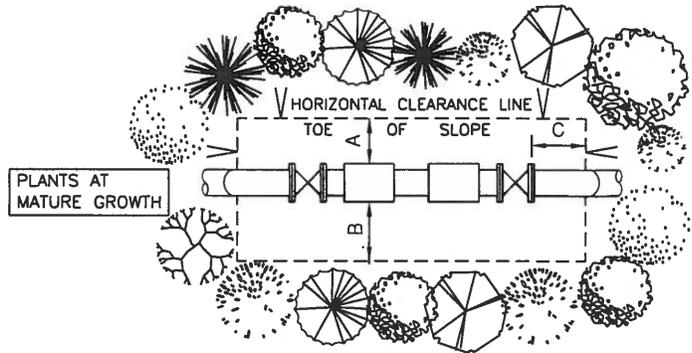
ITEM	EACH	DESCRIPTION
⑤	1	OPTIONAL WYE STRAINER
⑥	1	BRASS OR COPPER UNION (SEE NOTE *)
⑦	1	PVC MALE ADAPTER (MALE THREADED x FEMALE SLIP)
⑧	1	CONCRETE THRUST BLOCK (OPTIONAL)
⑨	1	SERVICE LINE, BRASS OR HARD DRAWN COPPER

ADEQUATE AND SAFE CLEARANCE MUST BE PROVIDED TO PERMIT TESTING AND REPAIR WORK

MINIMUM CLEARANCE SCHEDULE			
SIZE	A	B	C
3/4" THROUGH 2 1/2"	12"	18"	12"

NOTE *

A SECOND UNION ON OPPOSITE RISER MAY BE REQUIRED IF CLEARANCE REQUIREMENTS ARE NOT MAINTAINED.



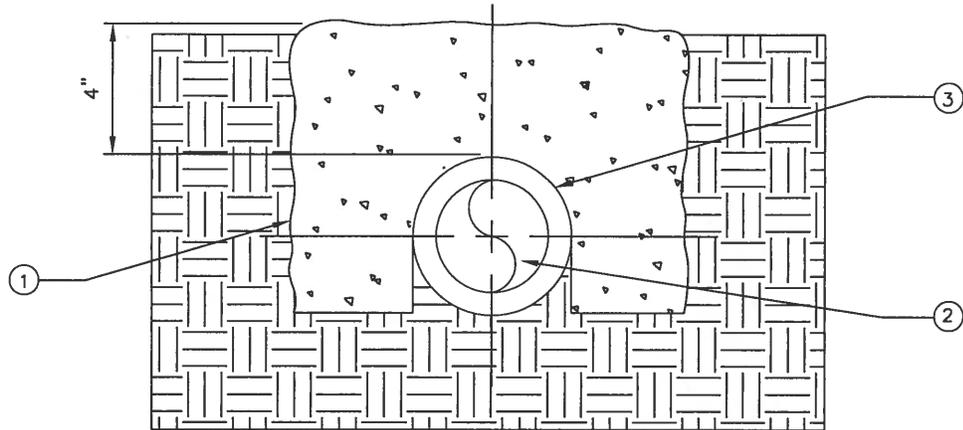
OVERHEAD VIEW OF CLEARANCE REQUIREMENTS



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

BACKFLOW PREVENTION ASSEMBLY
3/4" - 2 1/2" ABOVE GROUND INSTALLATION

PRIVATE SERVICE LINE ENCASEMENT



ITEM	DESCRIPTION
①	4" CONCRETE ENCASEMENT ALL SIDES.
②	BRASS OR COPPER WATER SERVICE LINE
③	CORROSION BARRIER

IF DETERMINED BY PUBLIC UTILITIES THAT A BACKFLOW DEVICE IS UNABLE TO BE INSTALLED IN ACCORDANCE WITH CWD-616-1, NOTE 1, AN ALTERNATIVE LOCATION MAY BE APPROVED AND THE FOLLOWING CONDITIONS SHALL APPLY.

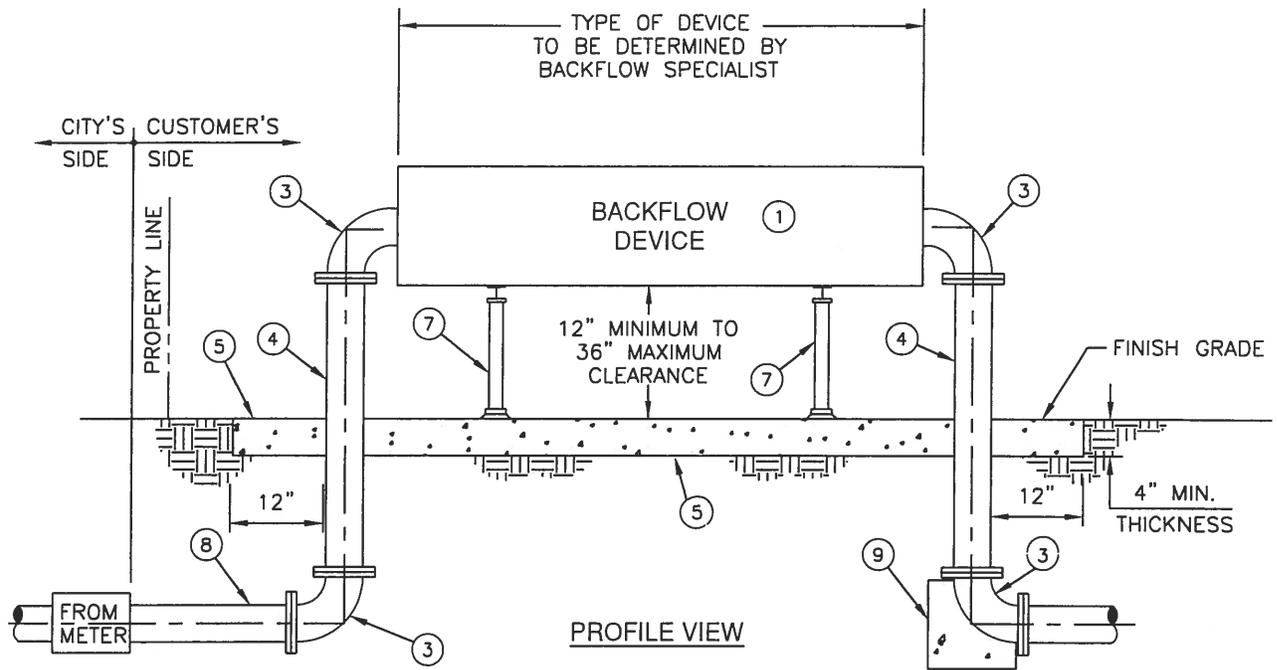
CONDITIONS:

1. A DRAWING DEPICTING THE PROPOSED PATH OF PIPING FROM THE WATER METER TO THE BACKFLOW DEVICE AND THE FINAL LOCATION OF DEVICE MUST BE SUBMITTED TO PUBLIC UTILITIES FOR APPROVAL.
2. ONCE APPROVED, INSTALLER MUST COORDINATE WITH THE BACKFLOW PROGRAM SPECIALIST TO OVERSEE, INSPECT, AND DOCUMENT THE INSTALLATION. CORROSION BARRIER TO BE INSPECTED PRIOR TO POURING OF CONCRETE.
3. MATERIALS SHALL REMAIN IN COMPLIANCE AS SPECIFIED WITHIN CWD-616-1.
4. MATERIALS SHALL BE IN COMPLIANCE WITH THE APPROVED MATERIALS SPECIFIED ON THE TABLE ABOVE.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

BACKFLOW PREVENTION ASSEMBLY
ALTERNATIVE LOCATION INSTALLATION



NOTES:

1. PRIOR TO INSTALLATION, LOCATION OF THE BACKFLOW DEVICE SHALL BE SUBJECT TO THE APPROVAL OF THE BACKFLOW PROGRAM SPECIALIST (951) 351-6320/6282. DEVICE SHALL BE LOCATED AS CLOSE TO METER AS PRACTICAL (MIN. 18", MAX. 24" BACK OF RW)
2. PLACE BOTTOM OF DEVICE A MINIMUM OF 12 INCHES AND NOT MORE THAN 36 INCHES ABOVE FINISH GRADE.
3. INSPECTION OF PLUMBING IS REQUIRED PRIOR TO CONCRETE THRUST BLOCK AND/OR ABOVE GROUND SLAB BEING POURED.
4. MATERIALS SHALL BE IN COMPLIANCE WITH THE APPROVED MATERIALS SPECIFIED BELOW.
5. THE DEVICE MUST BE INSPECTED AND TESTED IMMEDIATELY AFTER INSTALLATION. TO SCHEDULE AN APPOINTMENT CALL (951) 351-6320/6282.

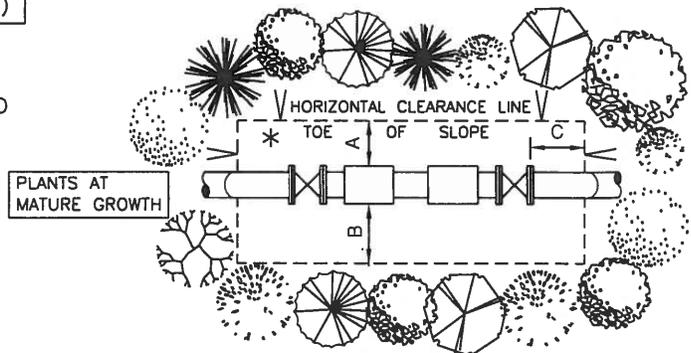
ITEM	EACH	DESCRIPTION
①	1	BACKFLOW DEVICE (TYPE OF DEVICE TO BE DETERMINED BY BACKFLOW PROGRAM SPECIALIST)
③	2	90 DEGREE ELBOW
④	2	FLANGED RISER PIPE
⑤		CONCRETE PAD (NECESSARY TO PREVENT CORROSION)

ITEM	EACH	DESCRIPTION
⑦	2	PIPE SUPPORT
⑧	1	SERVICE LINE (NO PVC)
⑨	1	CONCRETE THRUST BLOCK

ADEQUATE AND SAFE CLEARANCE MUST BE PROVIDED TO PERMIT TESTING AND REPAIR WORK

MINIMUM CLEARANCE SCHEDULE			
SIZE	* A	B	C
3" AND UP	24"	24"	12"

*REFERENCE TO INCLINE AND DECLINE SLOPES



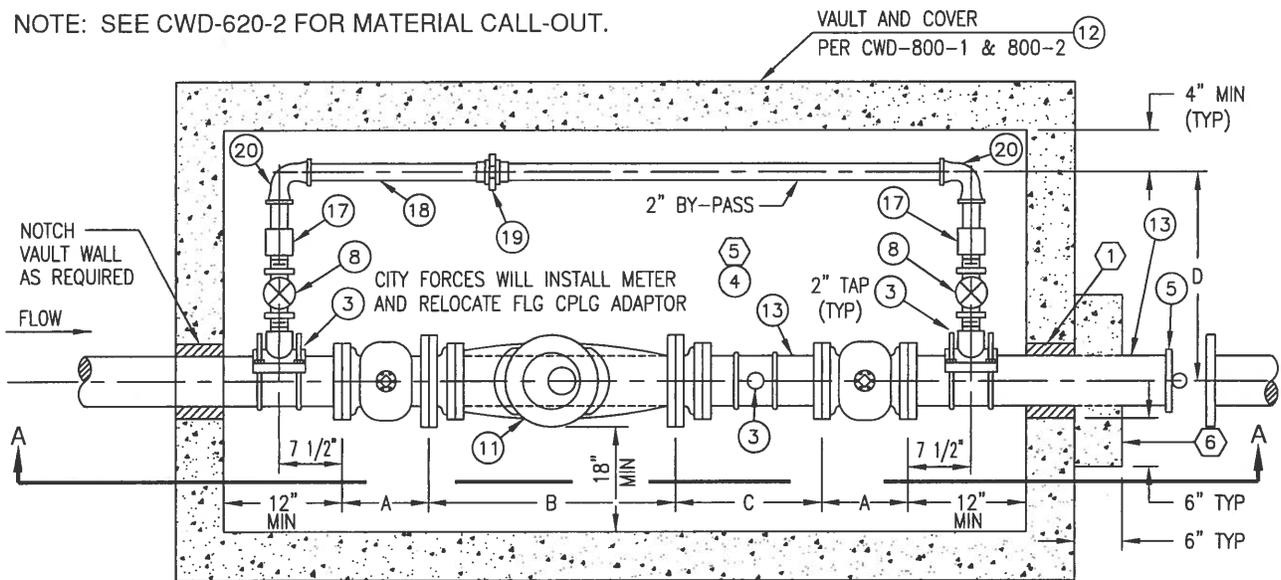
OVERHEAD VIEW OF CLEARANCE REQUIREMENTS



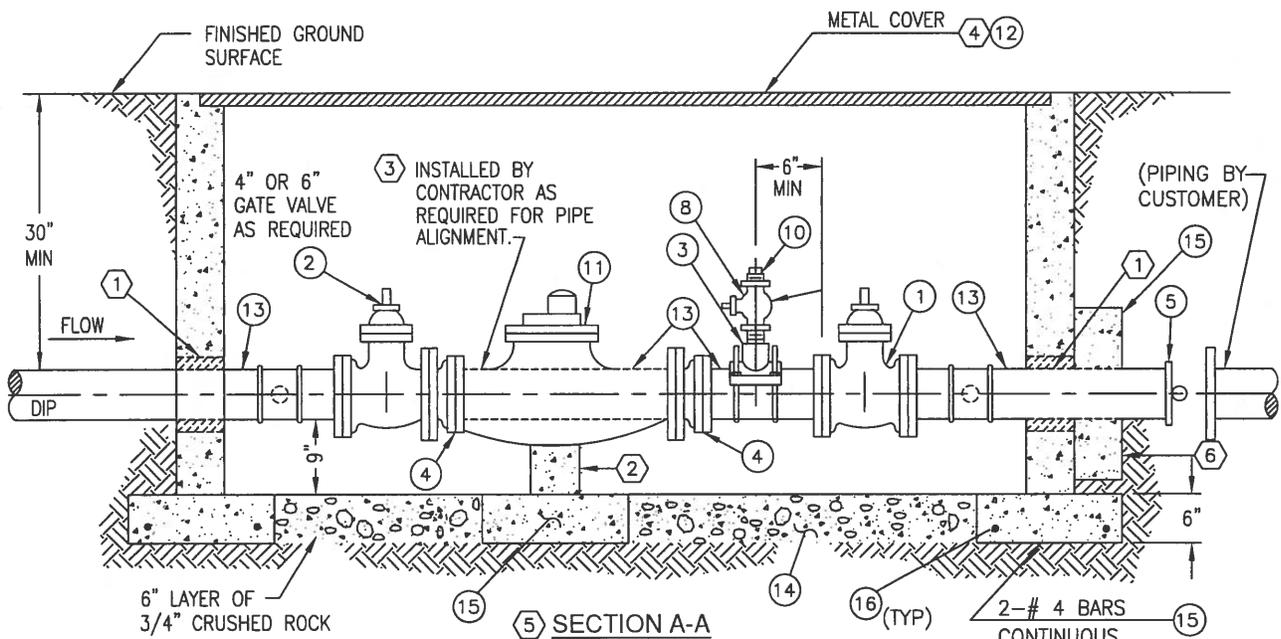
WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

BACKFLOW PREVENTION ASSEMBLY
3" & LARGER ABOVE GROUND INSTALLATION

NOTE: SEE CWD-620-2 FOR MATERIAL CALL-OUT.



(5) PLAN VIEW



(5) SECTION A-A

CONSTRUCTION NOTES:

- (1) DRY-PACK PIPE OPENINGS.
- (2) SUPPORT COMPOUND METER ON CONCRETE PAD WITH CONCRETE BLOCK.
- (3) CONTRACTOR SHALL INSTALL ALL PIPE, FITTINGS, AND MATERIALS BETWEEN THE TAPPING GATE AND "PIPING BY CUSTOMER", INCLUDING TEMPORARY CONNECTION AT INFLUENT VALVE.
- (4) ADJUST VAULT AND COVER TO MEET SIDEWALK AND CURB GRADE. PAINT PER SECTION 310.
- (5) PROVIDE JOINT RESTRAINTS PER CONSTRUCTION SPECIFICATIONS.
- (6) POUR PCC 480-C-2000 CONCRETE THRUST COLLAR AGAINST WALL OF VAULT.

TYPICAL DIMENSIONS				
SERVICE SIZE	A	B	C	D
3 IN.	9"	24"	29"±	11"
4 IN.	9"	24"	24±	11 1/2"
6 IN.	10 1/2"	36 1/2"	13"±	12 1/2"



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

3", 4", AND 6" COMPOUND METER
WATER SERVICE

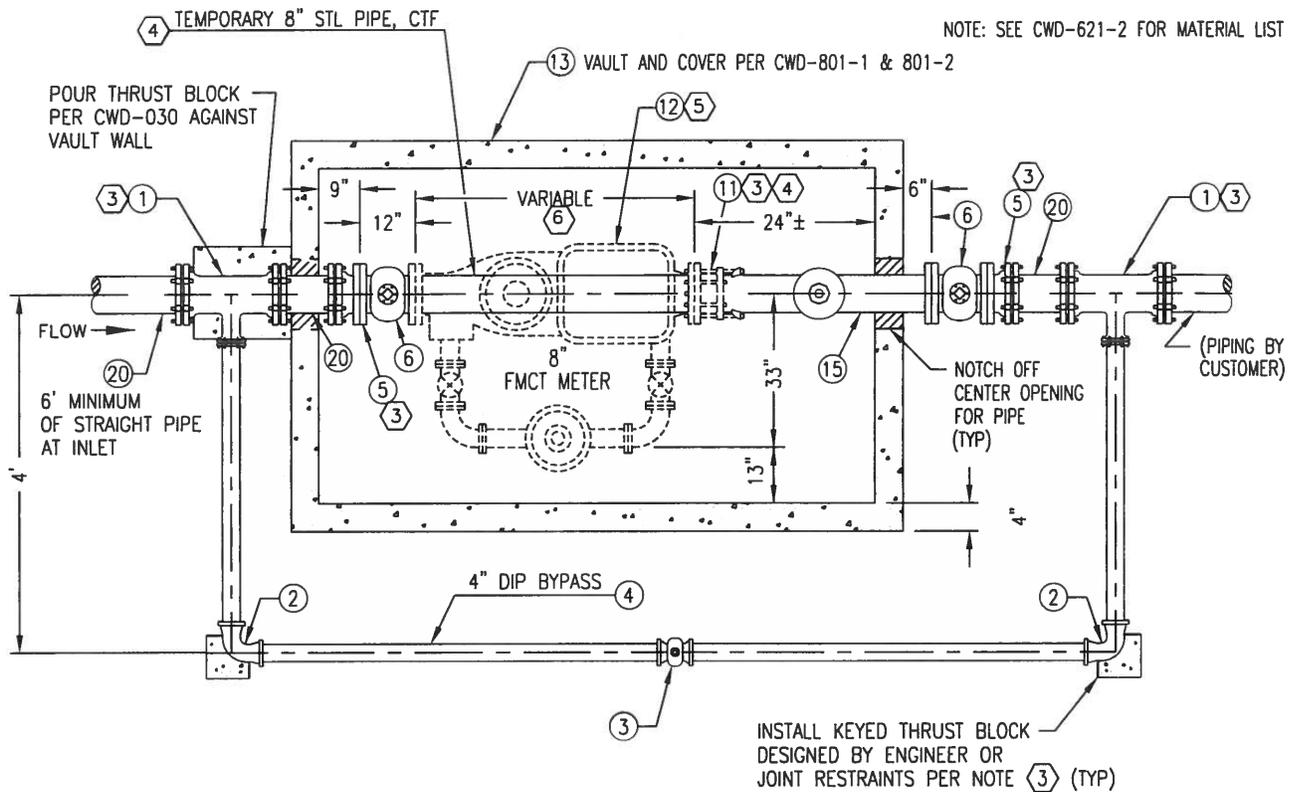
BILL OF MATERIALS

ITEM	QUANTITIES			REFERENCE
	3" METER	4" METER	6" METER	
① DIA RESILIENT WEDGE GATE VALVE (MJ X MJ)	1-(4" DIA)	1	1	
② DIA RESILIENT WEDGE GATE VALVE (MJ X FL)	1-(4" DIA)	1	1	
③ DIA x 2" BRONZE SERVICE SADDLE	3-(4" DIA)	3	3	
④ DIA FLANGE X MJ ADAPTER	1	1	1	
⑤ DIA 2" TEMPORARY CONSTRUCTION END CAP	1	1	1	CWD-412
⑥ 4" x 3" BRASS BUSHING	2	NA	NA	
⑦ 3" x 6" BRASS NIPPLE	1	NA	NA	
⑧ 2" CORP STOP (MIPT X MIPT)	3	3	3	
⑨ 4" SCREW FLANGE	2-(4" DIA)	NA	NA	
⑩ 2" BRASS CAP	1	1	1	
⑪ COMPOUND METER, DIA x FL x FL	1	1	1	PER REQ
⑫ VAULT AND COVER	1	1	1	CWD-800-1,2
⑬ DIA DUCTILE IRON PIPE, PRESSURE CLASS 350	VARIABLE			
⑭ 3/4" CRUSHED ROCK	16 CU FT			
⑮ CONCRETE PCC 480-C-2000	15 CU FT			
⑯ NO. 4 REBAR	48 LINEAR FT±			
⑰ 2" ADAPTER (FIPT X SW)	2	2	2	
⑱ 2" COPPER PIPE, SOFT	10 LINEAR FT ±			
⑲ 2" BRASS UNION (SW X SW)	1	1	1	
⑳ 2"-90° ELL (SW X SW)	2	2	2	

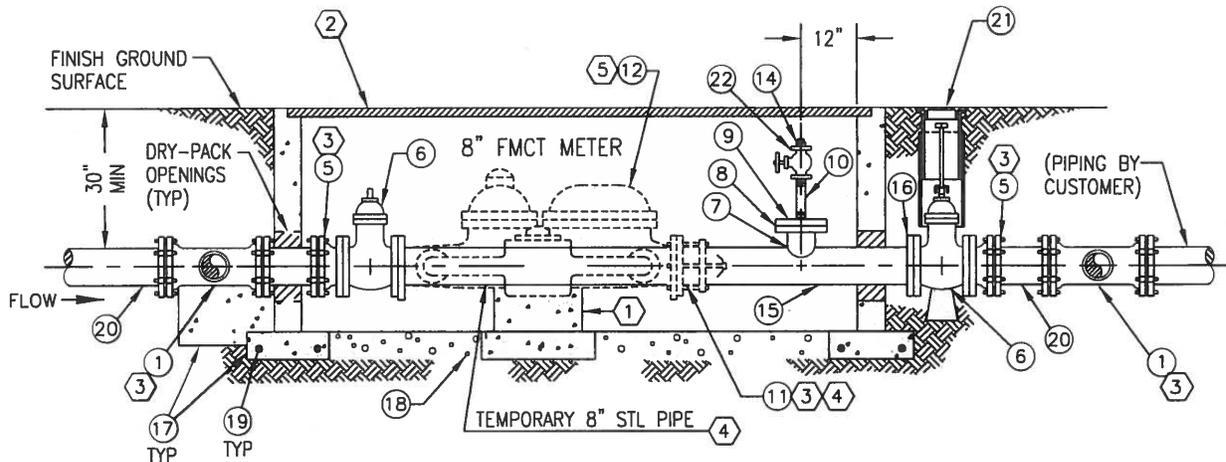


WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

BILL OF MATERIALS FOR
3", 4", AND 6" COMPOUND METER
WATER SERVICE



PLAN VIEW



PROFILE VIEW

GENERAL NOTES:

- 1 SUPPORT METER ON CONCRETE PAD AND CONCRETE BLOCK.
- 2 ADJUST VAULT AND COVER TO MEET SIDEWALK AND CURB GRADE. PAINT PER CONSTRUCTION SPECIFICATION SECTION 310.
- 3 RESTRAIN ALL MECHANICAL JOINTS PER CONSTRUCTION SPECIFICATIONS.
- 4 CONTRACTOR SHALL INSTALL ALL PIPE, FITTINGS, AND MATERIALS BETWEEN THE TAPPING GATE AND "PIPING BY CUSTOMER", INCLUDING TEMPORARY FLANGE COUPLING CONNECTION AT THE INFLUENT VALVE LOCATION.
- 5 CITY FORCES WILL FURNISH AND INSTALL 8" FMCT METER AND FAB METER READING LID.
- 6 VARIABLE LENGTH IS PER MANUFACTURER'S REQUIREMENTS.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

8" FMCT WATER SERVICE

BILL OF MATERIALS		
ITEM	QUANTITY	REFERENCE
① 8" x 4" TEE (MJ X MJ)	2	
② 4" - 90° ELL (MJ X MJ)	2	
③ 4" RW GATE VALVE (MJ X MJ)	1	
④ 4" DI PIPE	23 FT±	
⑤ 8" FL X MJ ADAPTER W/ 8" FL INSULATION KIT	2	
⑥ 8" GATE VALVE (FL X FL)	2	
⑦ 6" MORTAR LINED STEEL PIPE (FL X PE)	1 FT	
⑧ 6" WELD FLANGE	1	
⑨ 6" BLIND FLANGE W/ 2" IPT TAP	1	
⑩ 2" X 12" GALV NIPPLE	1	
⑪ 8" FLANGED COUPLING ADAPTER	1	
⑫ 8" COMPOUND METER	1	
⑬ VAULT AND COVER	1	CWD-801-1,2
⑭ 2" GALVANIZED PLUG	1	
⑮ 8" STL PIPE (SCHEDULE 40)	7 FT±	
⑯ 8" WELD FLANGE	1	
⑰ CONCRETE PCC 480-C-2000	20 CU FT±	
⑱ 3/4" CRUSHED ROCK (6" DEEP LAYER)	28 CU FT	
⑲ NO 4 REBAR	64 FT±	
⑳ 8" DI PIPE	VARIABLE	
㉑ 8" GATE BOX MATERIAL	1	CWD-500
㉒ 2" RW GATE VALVE W/ 2" NUT	1	



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

BILL OF MATERIALS FOR
8" FMCT WATER SERVICE

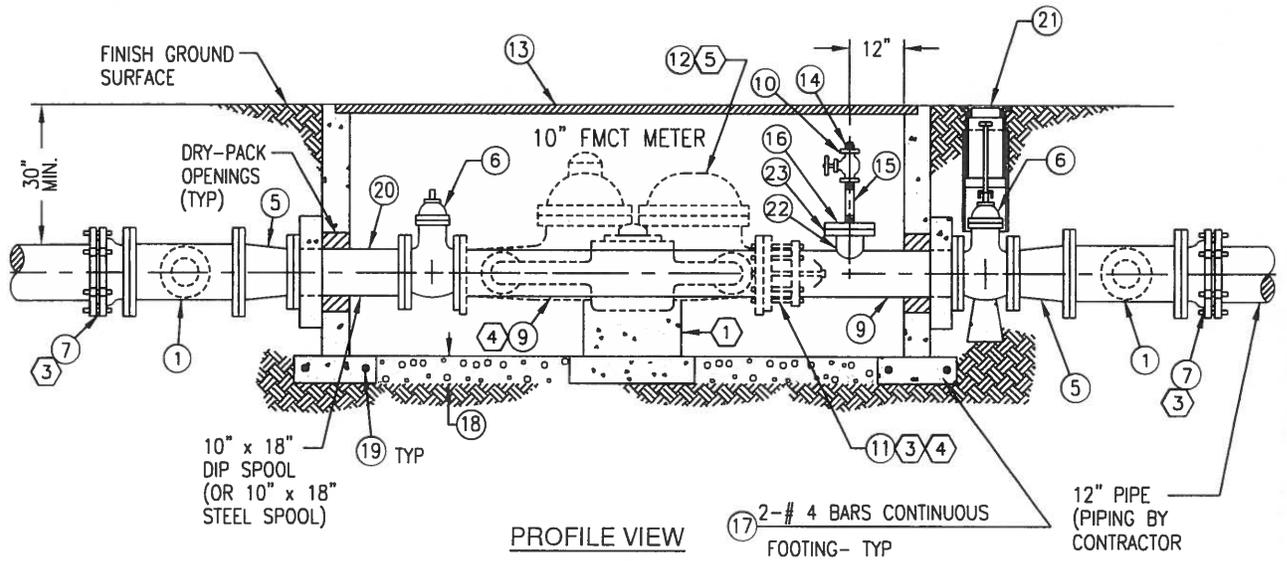
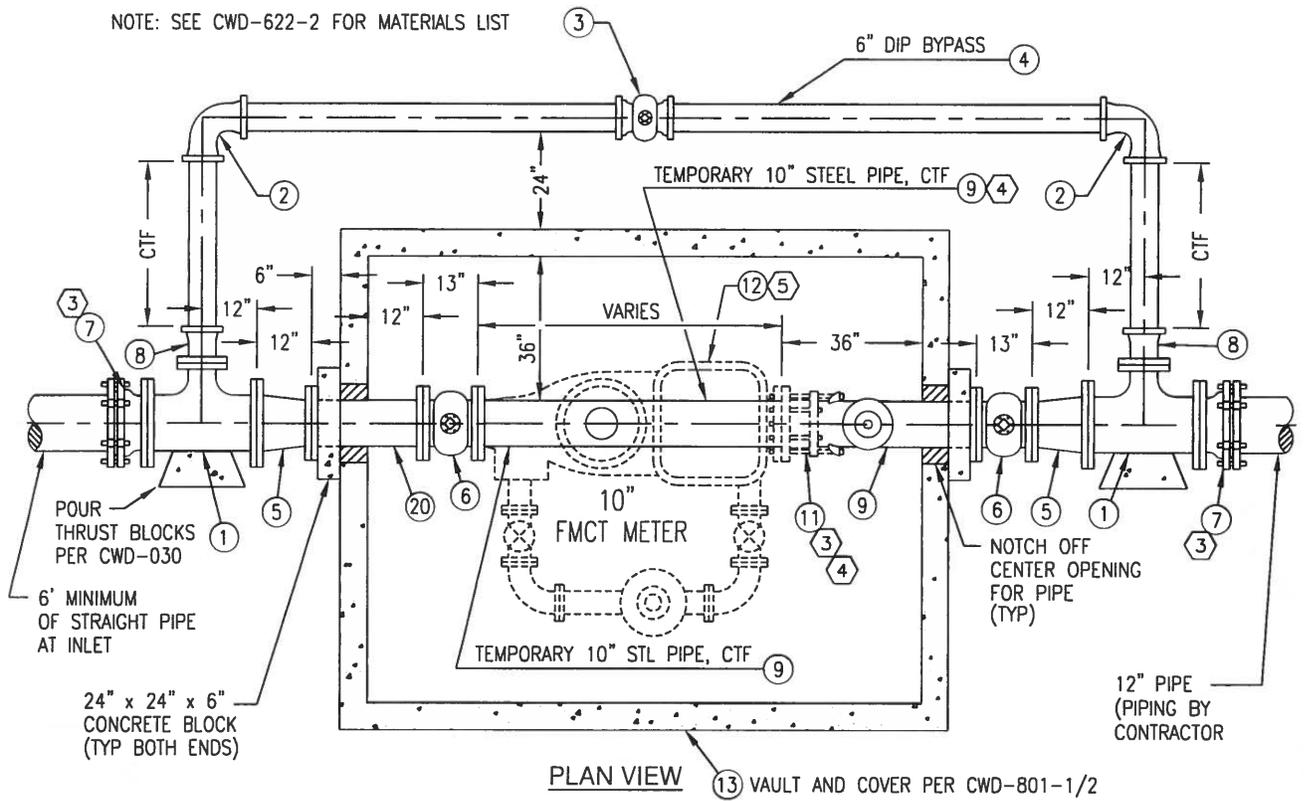
CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING

[Signature]
APPROV.

1/8/2013
DATE

CWD-621-2

NOTE: SEE CWD-622-2 FOR MATERIALS LIST



GENERAL NOTES:

- ① SUPPORT METER ON CONCRETE PAD AND CONCRETE BLOCK.
- ② ADJUST VAULT AND COVER TO MEET SIDEWALK AND CURB GRADE. PAINT PER CONSTRUCTION SPECIFICATION, SECTION 310.
- ③ RESTRAIN ALL MECHANICAL JOINTS PER CONSTRUCTION SPECIFICATIONS.
- ④ CONTRACTOR SHALL INSTALL ALL PIPE, FITTINGS, AND MATERIALS BETWEEN THE TAPPING GATE AND "PIPING BY CONTRACTOR", INCLUDING TEMPORARY FLANGE COUPLING CONNECTION AT INFLUENT VALVE.
- ⑤ CITY FORCES WILL FURNISH AND INSTALL 10" COMPOUND METER AND FAB. METER READING LID.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

10" DOMESTIC WATER SERVICE

BILL OF MATERIALS		
ITEM	QUANTITY	REFERENCE
① 12" x 6" TEE (FL X FL) *	2	
② 6" 90° ELL (MJ X MJ)	2	
③ 6" RW GATE VALVE (MJ X MJ)	1	
④ 6" DI PIPE	20 FT±	
⑤ 12" x 10" REDUCER (FL X FL)	2	
⑥ 10" GATE VALVE (FL X FL)	2	
⑦ 12" FL X MJ ADAPTER W/ 12" FLANGE INSULATION KIT	2	
⑧ 6" FL X MJ ADAPTER W/ 6" FLANGE INSULATION KIT	2	
⑨ 10" MORTAR LINED STL PIPE (FL X PE)	10 FT±	
⑩ 2" RW GATE VALVE W/ 2" NUT	1	
⑪ 10" FLANGE COUPLING ADAPTER	1	
⑫ 10" COMPOUND METER	1	
⑬ VAULT AND COVER	1	CWD-802-1/2
⑭ 2" GALVANIZED PLUG	1	
⑮ 2" X 12" GALV NIPPLE	1	
⑯ 6" BLIND FLANGE W/ 2" IPT TAP	1	
⑰ CONCRETE PCC 480-6-2000	40 CU FT	
⑱ 3/4" CRUSHED ROCK (6" DEEP LAYER)	40 CU FT	
⑲ NO 4 REBAR	64 FT±	
⑳ 10" x 18" DIP SPOOL, (FL X FL)	ALTERNATE FOR STEEL	
㉑ 8" GATE BOX MATERIAL	1	
㉒ 6" MORTAR LINED STL PIPE (FL X PE)	1 FT	
㉓ 6" WELD FLANGE	1	

* 12" x 12" TEE (FL X FL) WITH 12" x 6" REDUCER
MAY BE USED INSTEAD OF 12" x 12" x 6" TEE.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

BILL OF MATERIALS FOR
10" COMPOUND WATER SERVICE

CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING

[Signature]
APPROV.

1/8/2013
DATE

CWD-622-2

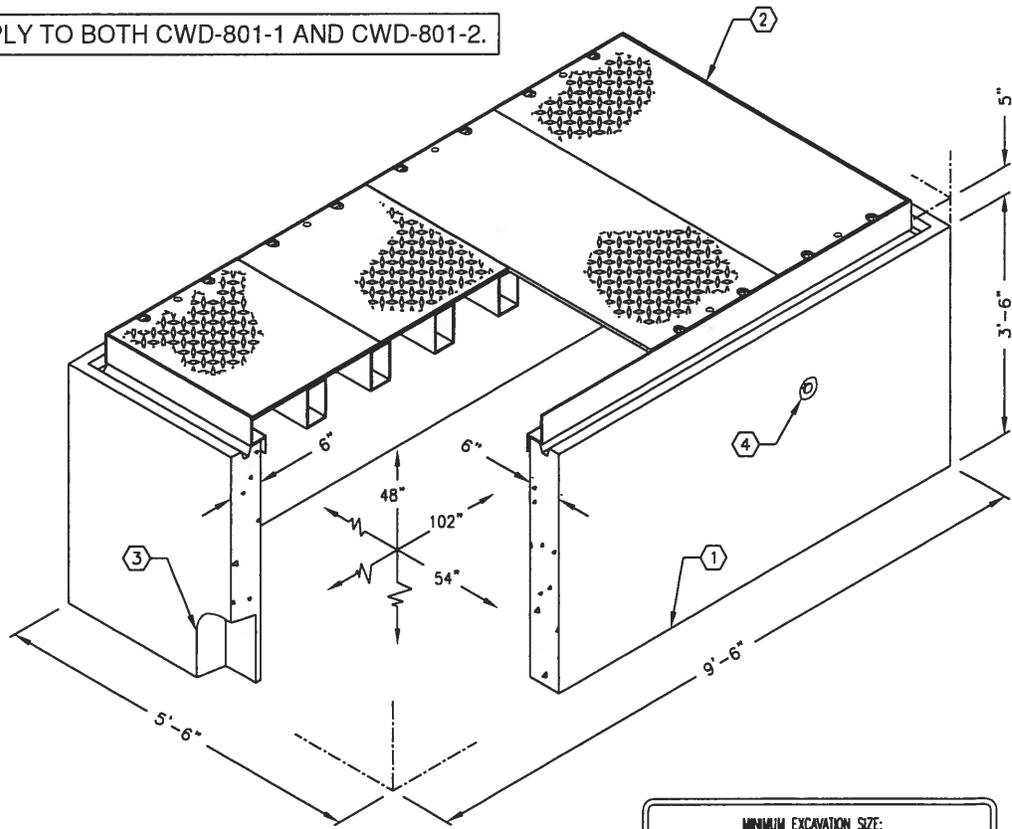
4' - 6" x 8' - 6" TRAFFIC VAULT X 47" DEEP

GENERAL NOTES:

- DESIGNED IN ACCORDANCE WITH AASHTO H-20-44 TRAFFIC BRIDGE LOADING USING 5,500 PSI [37.92MPa] COMPRESSIVE STRENGTH CONCRETE AND 60,000 PSI [413.2MPa] YIELD STRENGTH ASTM A-706 STEEL REINFORCEMENT.
 - COVER DESIGNED FOR H-20-44 TRAFFIC LOADING FOR USE IN OFF STREET LOCATIONS.
 - HANDHOLE TO BE PLACED ON A 6" [15cm] BASE OF CRUSHER RUN FOR EASE OF INSTALLATION AND EVEN LOAD DISTRIBUTION.
 - MINIMUM SOIL BEARING CAPACITY IS HEREBY ASSUMED TO BE 2000 PSF.
 - INSTALLATION OF MANHOLES, VAULTS, HANDHOLES.
 - ALL PERMISSIBLE TOLERANCES SHALL BE MET PER THE REQUIREMENTS OF THE MANUFACTURER.
- CONTRACTOR SHALL CUT-IN A 12" X 6" WINDOW FOR METER READING AS DIRECTED BY THE CITY WATER INSPECTOR.

1. 42" LOWER SECTION.
2. TRAFFIC COVER ASSEMBLY. INCLUDES: (1) FRAME FRAME, (7) BLACK TUBE BEAMS, (4) BLACK COVER BLACK COVER, (32) 1/2" PLATED SHAKEPROOF WASHER, (16) 1/2" x 1-1/2" H.H.S.S. BOLTS, (16) 1/2" UNISTRUT SPRING
3. 12" x 12" PIPE SLOT KNOCKOUT x 5 1/2" DEEP. LOCATE AS FOLLOWS: LOWER SECTION, (2) SHELL MTD.
4. 2 TON x 3 3/8" GALVANIZED RISS ANCHOR FOR HANDLING. LOCATE AS FOLLOWS: LOWER SECTION, (4) SHELL MTD.

THESE NOTES APPLY TO BOTH CWD-801-1 AND CWD-801-2.

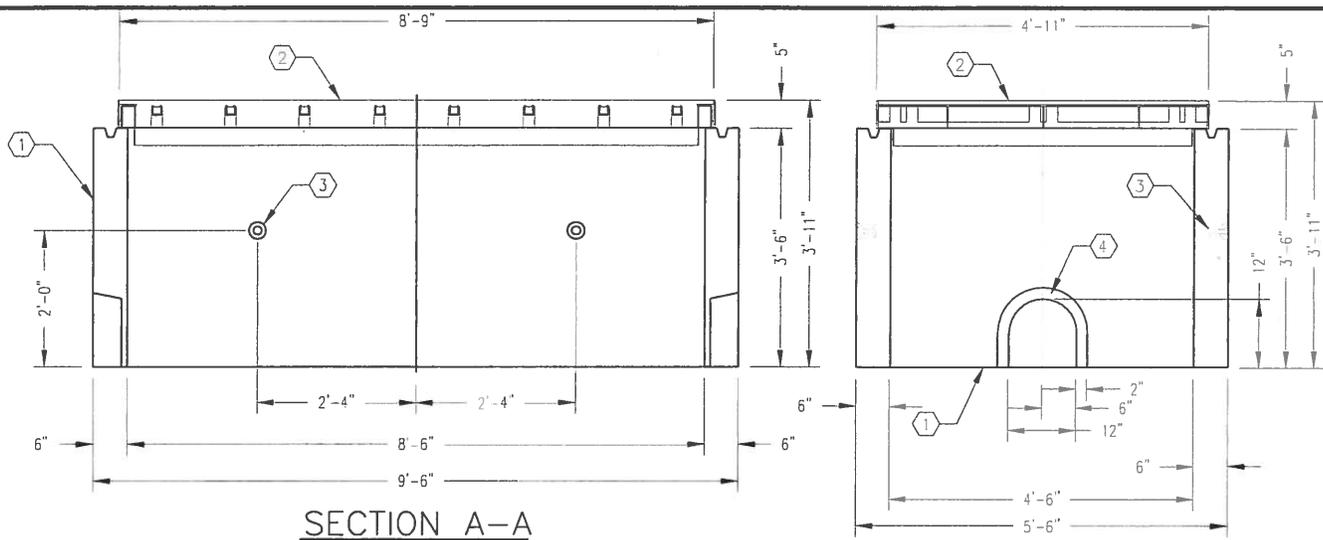


MINIMUM EXCAVATION SIZE:
6'-6" x 10'-6" x DEPTH REQ'D



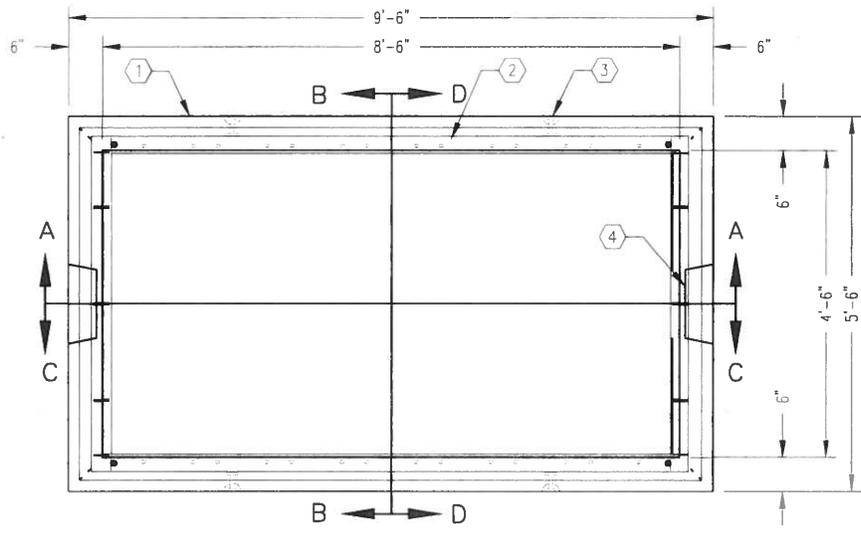
WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TRAFFIC RATED VAULT FOR
3" THROUGH 6" COMPOUND METERS



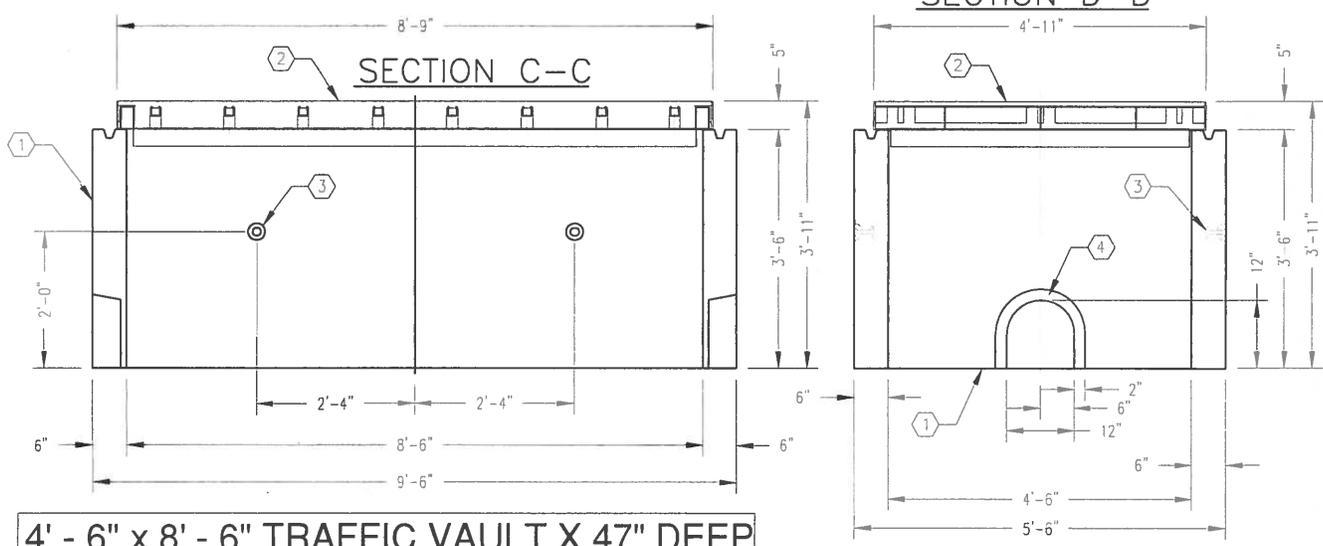
SECTION A-A

SECTION B-B



PLAN VIEW

SECTION D-D



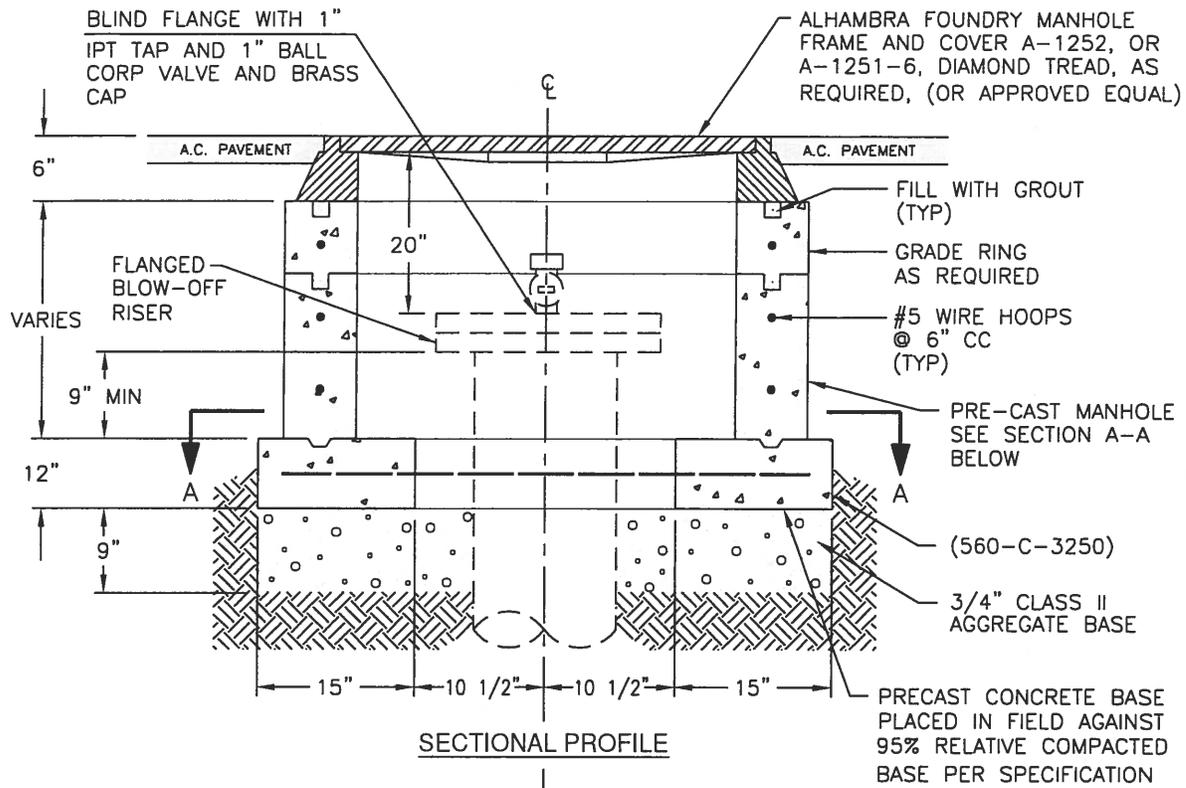
SECTION C-C

4' - 6" x 8' - 6" TRAFFIC VAULT X 47" DEEP

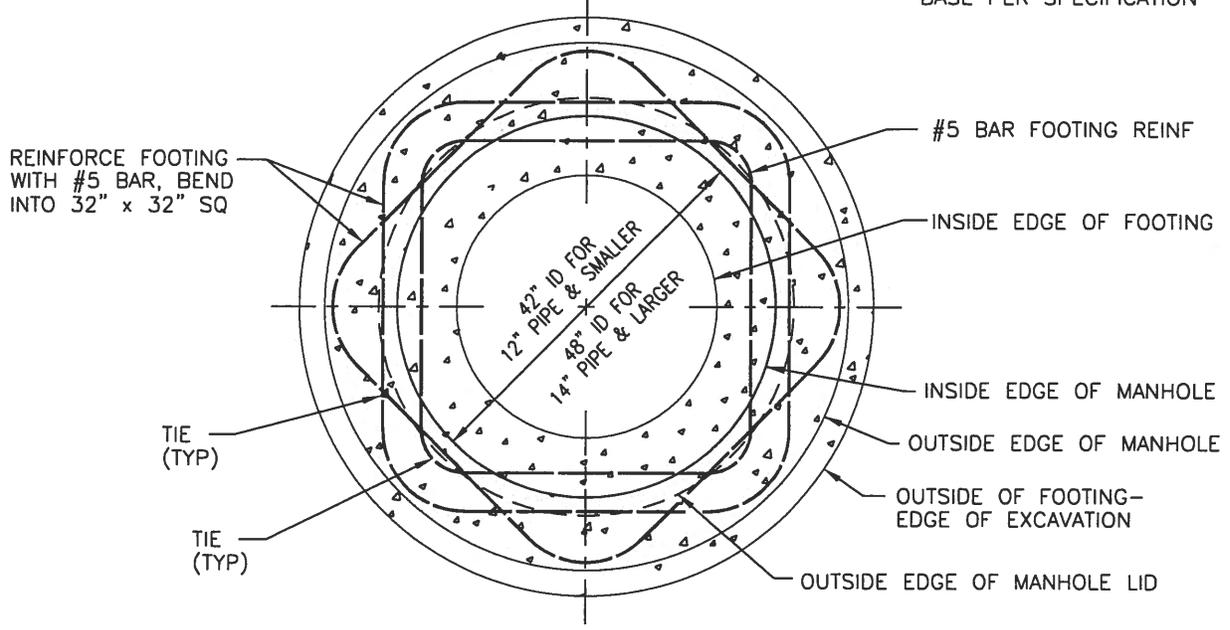


WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TRAFFIC RATED VAULT FOR
3" THROUGH 6" COMPOUND METERS



SECTIONAL PROFILE



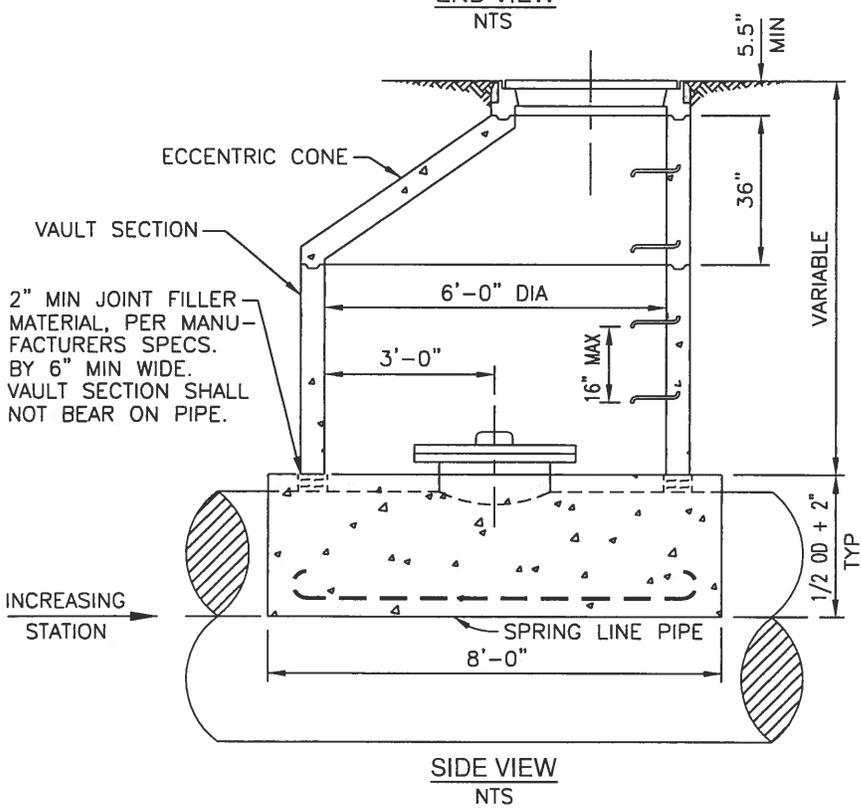
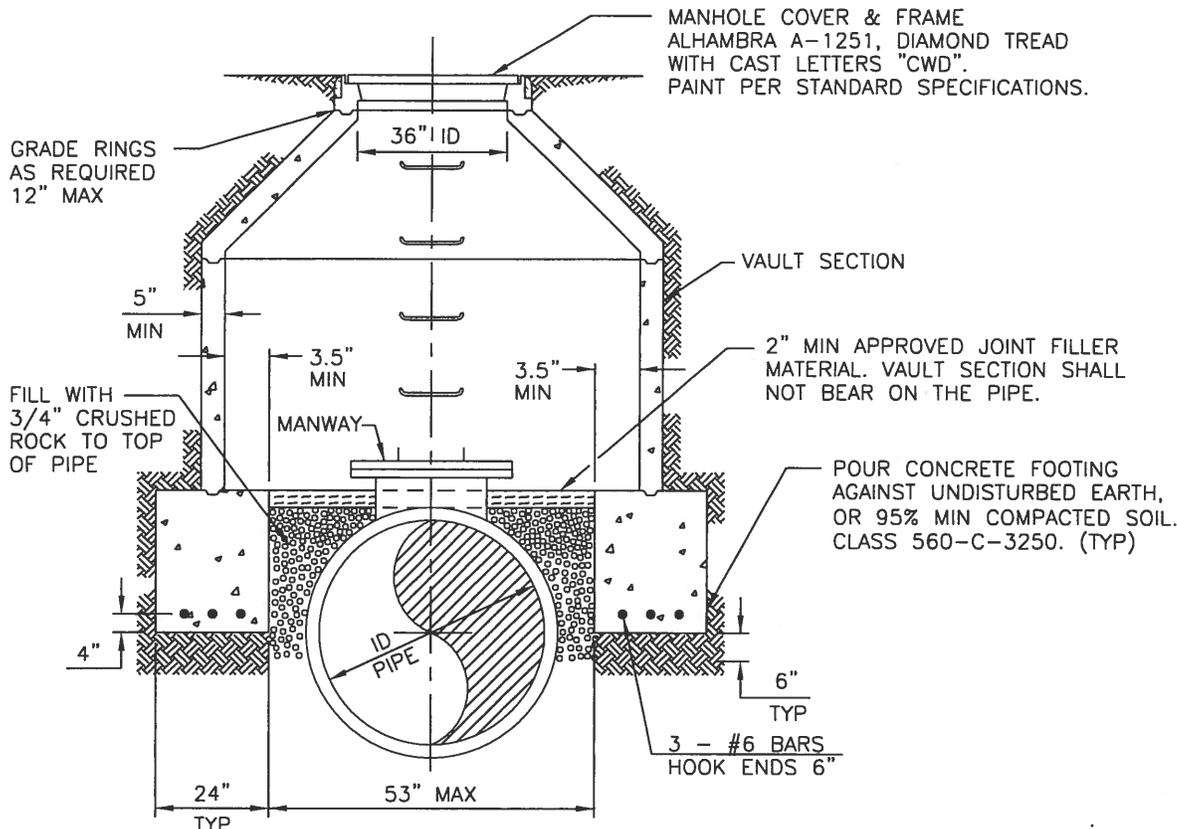
SECTION A-A

- PRE-CAST MANHOLE SECTION SPECIFICATIONS:**
- 1) DESIGN LOADING H = 20 - S 16
 - 2) CEMENT: TYPE II, ASTM C150, 3250 PSI
 - 3) REINFORCEMENT: GRADE 40 OR GRADE 60 ASTM A615
 - 4) COVER TO BE DIAMOND-TREAD FINISH, LETTERED "CWD"



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

BLOW-OFF MANHOLE
INSTALLATION

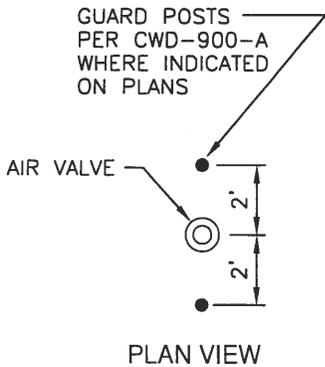
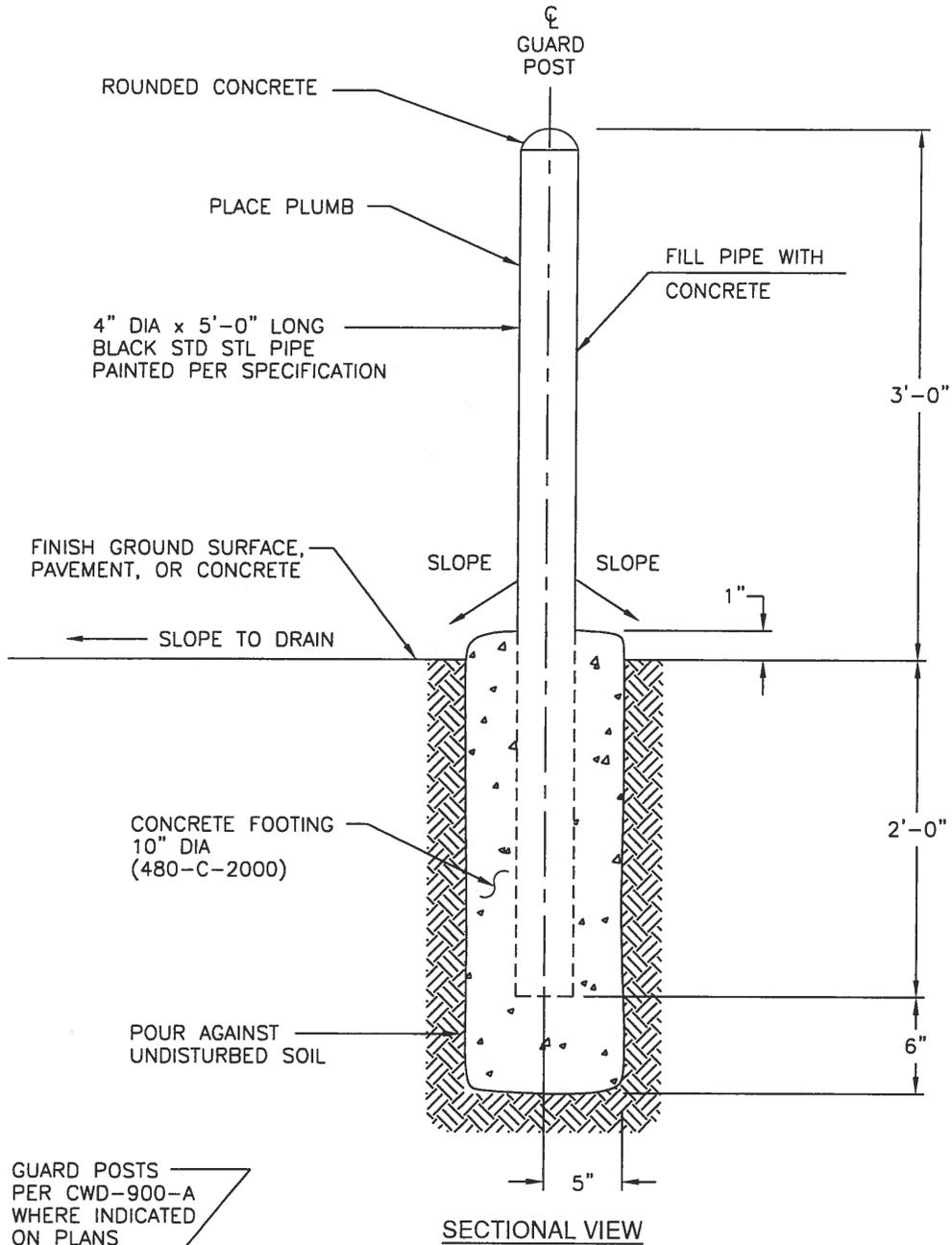


- NOTES:
- 1.) STEPS SHALL BE 16" WIDE STIRRUP TYPE SAFETY STEPS CAST IN-PLACE AT TIME OF MANUFACTURE. STEPS SHALL BE PLACED AT A MAX. OF 16" CENTER TO CENTER. MATERIAL FOR STEPS SHALL BE 3/4" GALV. STEEL, ASTM A-124.
 - 2.) WHEN MANHOLE IS IN PAVED AREA, MANHOLE FRAME SHALL BE SET AFTER ADJACENT PAVEMENT HAS BEEN PLACED. TOP SHALL BE FLUSH WITH PAVEMENT.
 - 3.) ALL JOINTS SHALL BE SEALED WITH AN APPROVED JOINT SEALANT.
 - 4.) VAULT SHALL BE DESIGNED FOR H-20, S-16 LOADING.
 - 5.) LOCATION FOR MANHOLES OVER MANWAYS AS SHOWN ON THE PLAN AND PROFILE SHEETS.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

MANHOLE DETAIL
48" MAX ID PIPE



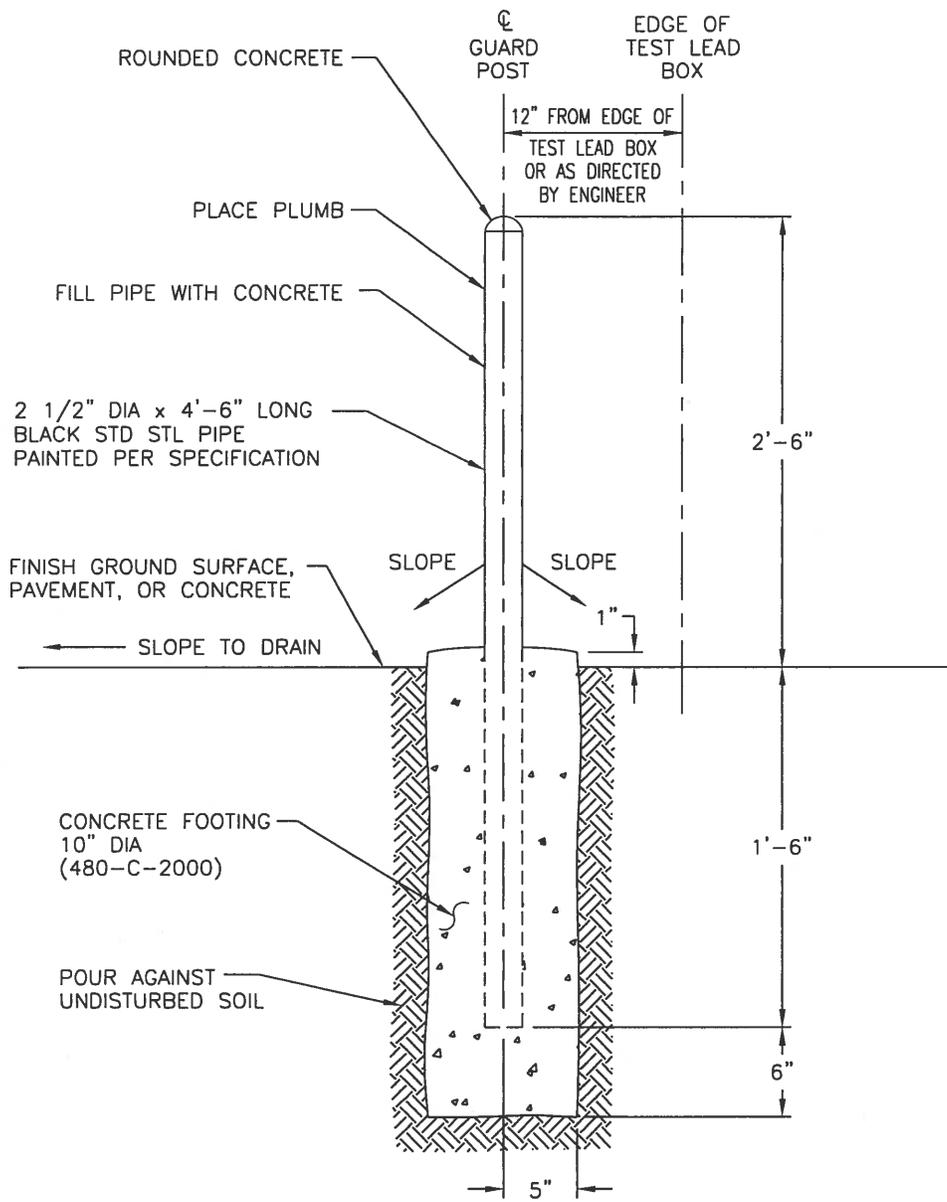
NOTES:

- 1.) NUMBER AND POSITION OF GUARD POSTS AS SPECIFIED ON PLANS.
- 2.) REFER TO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION", SEC. 210 AND SEC. 310.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

4" DIA. GUARD POST INSTALLATION



SECTIONAL VIEW

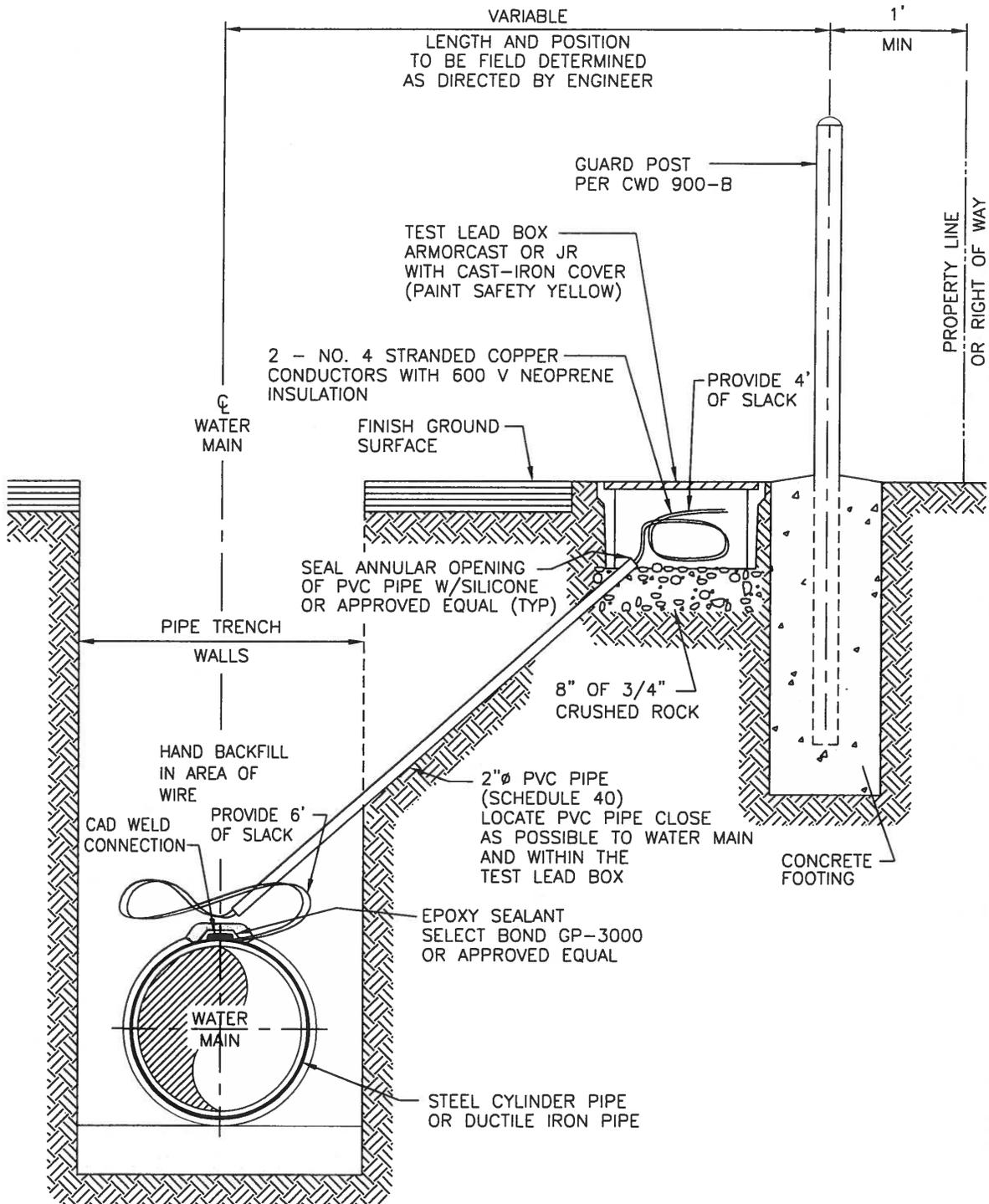
NOTES:

- 1.) NUMBER AND POSITION OF GUARD POSTS AS SPECIFIED ON PLANS.
- 2.) REFER TO "STANDARD SPECIFICATIONS PUBLIC WORKS CONSTRUCTION", SEC 210 AND 310.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

2.5" DIA. GUARD POST INSTALLATION



NOTES

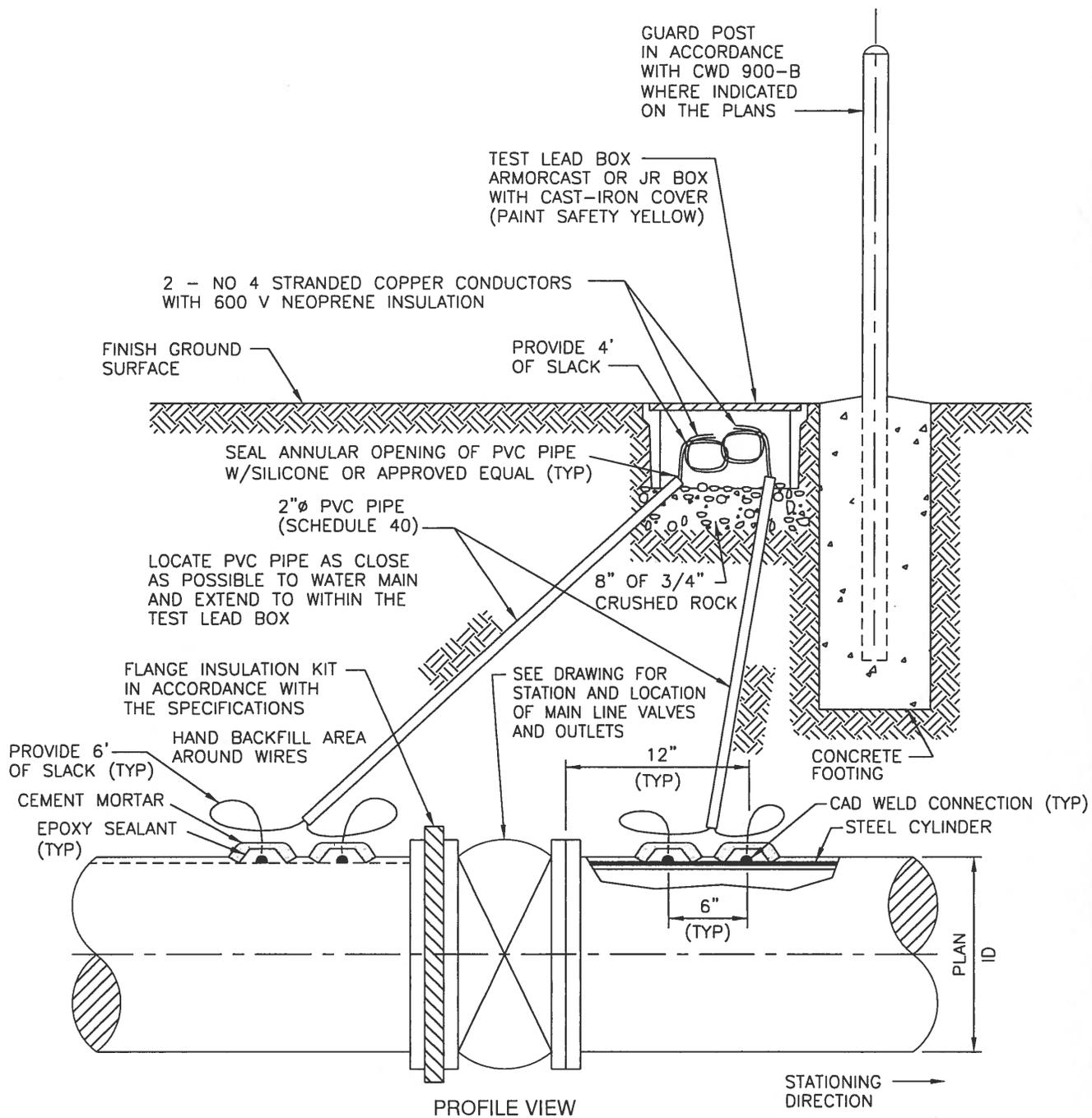
- 1.) "CADWELD" TYPE HA-3 CONNECTION, CAH AA-IL, WITH F33 STANDARD CHARGE (STEEL PIPE); TYPE HB CONNECTION, CA HBA-16, XF-19 CHARGE (DUCTILE IRON PIPE); OR CITY APPROVED EQUAL.
- 2.) PREPARATION OF CONDUCTOR AND PIPE SURFACES SHALL BE MADE PER THE PUBLISHED INSTRUCTIONS OF THE CONNECTOR MANUFACTURER.
- 3.) SEE DRAWINGS FOR STATION AND LOCATION OF TEST LEAD CONNECTIONS.
- 4.) EPOXY SEALANT: MIX AND FIRMLY APPLY EPOXY PUTTY TO PROVIDE A WATER-TIGHT SEAL AT LEAST 1/4 INCH THICK OVER WELD AND BARE WIRE. OVERLAY WIRE INSULATION BY 1/2 INCH.

PROFILE VIEW



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

TEST LEAD INSTALLATION



NOTES

- 1.) FLANGE INSULATION GASKETS SHALL BE FULL-FACED, NEOPRENE-COATED FABRIC-REINFORCED PHENOLIC, 1/8 INCH THICK. A ONE-PIECE SLEEVE AND WASHER, SEPARATE PHENOLIC WASHER, AND TWO CADMIUM-PLATED STEEL WASHERS SHALL BE USED FOR EACH BOLT OR CAP SCREW.
- 2.) FLANGE KITS SHALL BE FURNISHED IN ACCORDANCE WITH THE SPECIFICATIONS.
- 3.) TEST LEAD CONNECTIONS AND LOCATIONS IN ACCORDANCE WITH CWD-922.
- 4.) TEST LEADS SHALL BE TAGGED AND/OR COLOR-CODED EAST/WEST OR NORTH/SOUTH OF VALVE.
- 5.) TEST LEAD INSULATION KIT SHALL BE STRIPPED BACK ONE INCH FROM ENDS.
- 6.) WHEN FLANGE KITS ARE SPECIFIED: SIZE _____ - 150# - TYPE EN-DW.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

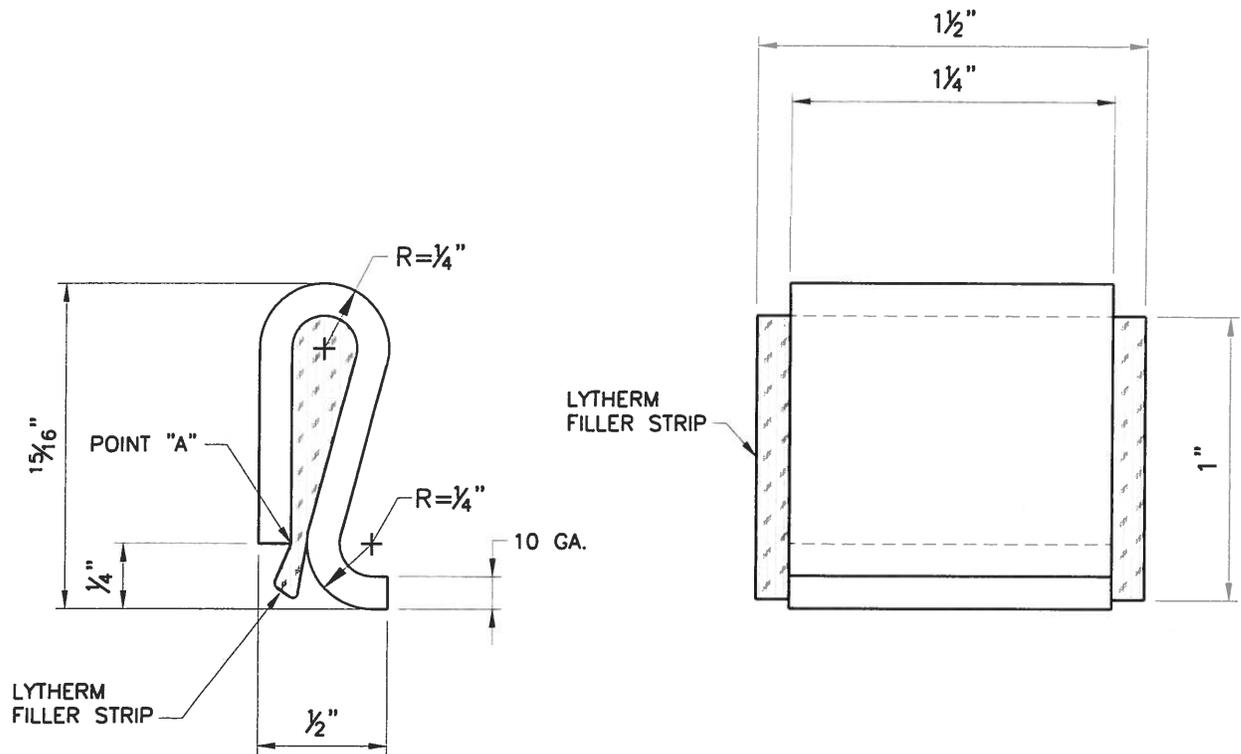
FLANGE INSULATION
AND TEST LEAD INSTALLATION

CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING

APPROV.

1/8/2013
DATE

CWD-923



NOTES:

1. STEEL BONDING CLIP SPECIFICATIONS:
MATERIAL SPECIFICATION ASTM A356 COMMERCIAL QUALITY
CUT LENGTH = $2\frac{1}{2}'' + X_6''$, WIDTH = $1\frac{1}{4}'' + X_6''$.
2. LYTHERM FILLER STRIP DIMENSIONS TO BE $1'' \times 1\frac{1}{2}''$
IN ORDER TO OVERLAP SIDES OF CLIP.
3. CRIMP BONDING CLIP OVER FILLER AT POINT "A" TO
COMPRESS FILLER.

PERFORMANCE NOTE:

THE ADDED FLEXIBILITY OF THE BONDING CLIP ($\frac{3}{4}''$ + MOVEMENT TOLERANCE) SIGNIFICANTLY REDUCES THE CHANCES OF WELDS BREAKING, AS OPPOSED TO THE RIGID "S"-BAR.

PIPE SIZE	JUMPERS/JOINT
16" THROUGH 24"	2
30" THROUGH 42"	3
46" THROUGH 54"	4

MILD STEEL JOINT BOND



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

JOINT BOND
DETAILS



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

NOTIFICATION SIGN

RIVERSIDE RENAISSANCE



• Project Name:

PROJECT NAME / WATER MAIN

• Streets Impacted:

• Project Duration:

• Contractor:

• Phone No.:

WARD PROJECT

COUNCIL MEMBER

MAYOR

CITY COUNCIL MEMBERS

CITY MANAGER

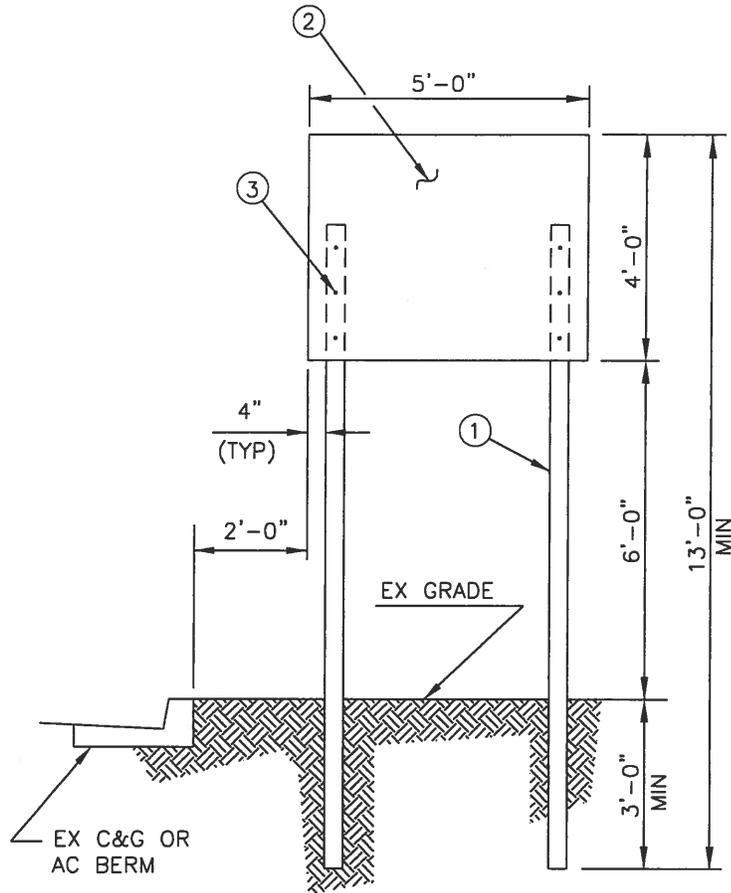
www.RiversideCa.gov

RIVERSIDE PUBLIC UTILITIES: (951) 826-5311

www.riversidepublicutilities.com

NOTIFICATION SIGN NOTES:

- 1). SIGN DIMENSIONS ARE TO BE 48"x60" WIDE.
- 2). SIGN SHALL BE BLUE LETTERS ON WHITE BACKGROUND WITH RPU LOGO CAN BE DOWNLOADED AT WWW.RIVERSIDEPUBLICUTILITIES.COM.
- 3). CITY SIGN TEMPLATE CAN BE DOWNLOADED AT WWW.RIVERSIDECA.GOV
- 4). SIGNS SHALL BE POSTED A MINIMUM OF ONE WEEK PRIOR TO CONSTRUCTION.
- 5). SIGN SHALL BE POSTED AT EACH END OF THE PROJECT AND LOCATIONS TO BE APPROVED BY THE ENGINEER PRIOR TO ERECTING THE SIGNS.
- 6). SEE CWD-960-2 FOR CONSTRUCTION OF SIGN.



CONSTRUCTION NOTES:

- ① 2 - DOUGLAS FIR CONSTRUCTION GRADE 4" X 4" POST.
- ② 3/4" THICK PLYWOOD.
- ③ FASTEN PLYWOOD SIGN TO POST W/ 6 - 5"± CARRIAGE BOLTS W/NUTS, FLAT WASHERS, AND JAM NUTS.

NOTES:

- 1) EXACT LOCATION OF SIGN TO BE DETERMINED BY ENGINEER WITH APPROVAL BY CITY PUBLIC UTILITIES DEPARTMENT.



WATER DISTRIBUTION & TRANSMISSION
PIPELINE CONSTRUCTION METHODS

NOTIFICATION SIGN