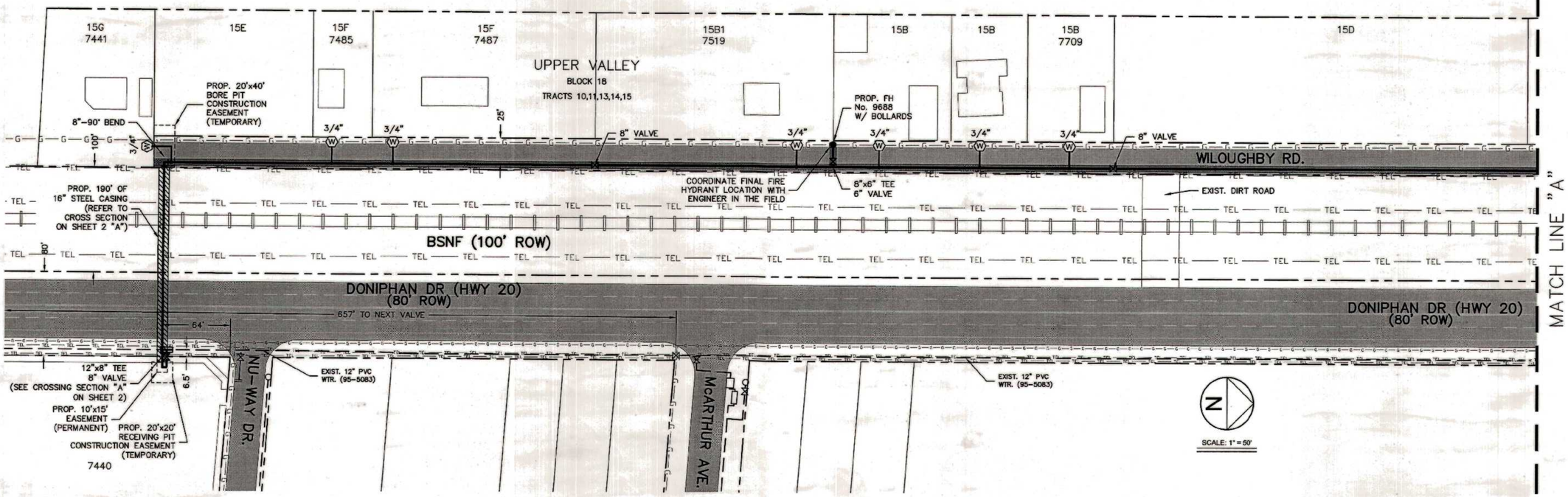

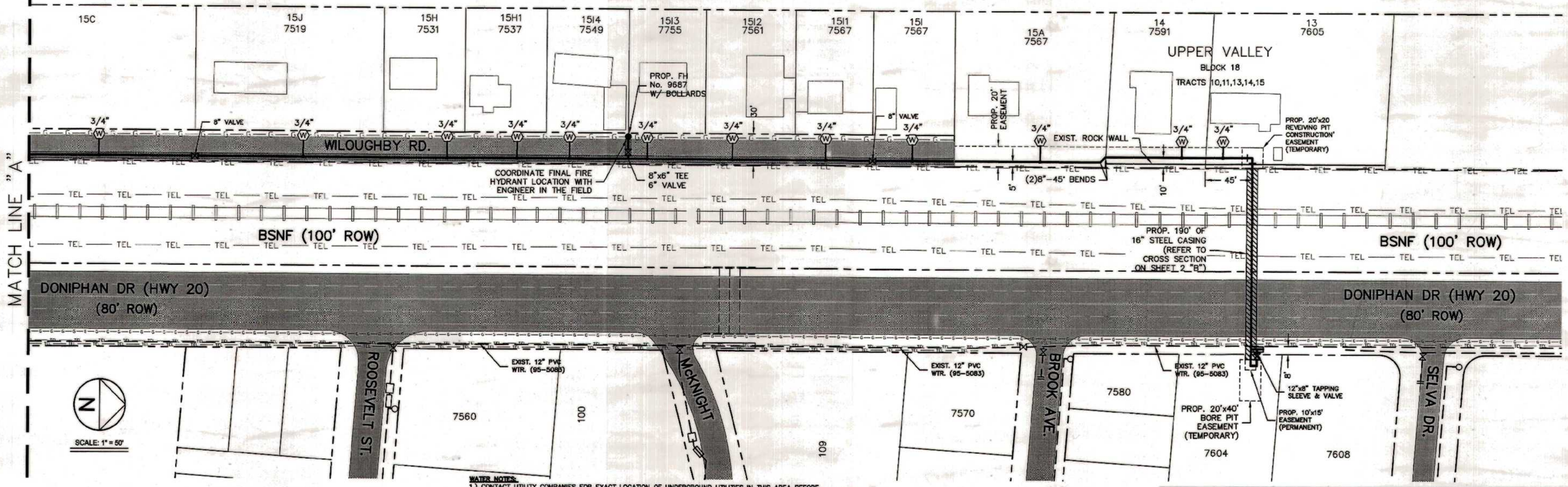

CONTRACTOR TO POTHOLE!!
VERIFY DEPTHS OF ALL EXISTING UTILITIES

STREET NAME	LENGTH & SIZE OF PIPE
WILOUGHBY RD.	2,758' OF 8" P.V.C. PIPE C-900 CLASS 235

WATER NOTES:

1.) CONTACT UTILITY COMPANIES FOR EXACT LOCATION OF UNDERGROUND UTILITIES IN THIS AREA BEFORE EXCAVATION.
2.) INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES EXCEEDING A DEPTH OF (5') FEET AS PER O.S.H.A. STANDARDS.
3.) PROVIDE ADEQUATE CONCRETE THRUST BLOCKING AT THE FOLLOWING: TAPPING SLEEVES, TEES, BENDS, PLUGS AND ALL FITTINGS.
4.) ALL VALVES ON P.V.C. WATER MAINS SHALL BE ANCHORED IN CONCRETE.
5.) P.V.C. PIPE SHALL BE PLACED WITH SELECT BEDDING MATERIAL ALL AROUND.
6.) CITY PAVING CUT PERMIT REQUIRED BEFORE EXCAVATION.
7.) AN EASEMENT IS REQUIRED TO ACCOMMODATE PROPOSED WATER LINES AND FIRE HYDRANTS. REFER TO STANDARD UTILITY DOCUMENTATION IN E.P.W.U.-P.S.B. DEVELOPER AGREEMENT FOR EASEMENT TERMS AND CONDITIONS.
8.) THE P.S.B. MAKES NO REPRESENTATION THAT GROUND WATER LEVEL SHOWN IN THIS PLAN IS ACCURATE.
9.) TxDOT UTILITY PERMIT REQUIRED BEFORE EXCAVATION.
10.) CONSTRUCTION OF PUBLIC WATER & SANITARY SEWER MAINS, INCLUDING MATERIALS & TESTING SHALL COMPLY WITH EPWU STANDARD SPECIFICATION FOR THE INSTALLATION OF WATER MAINS, SEWER MAINS & RELATED APPURTENANCES.

PAVING REPAIR NOTES:

1.) CITY PAVING CUT PERMIT REQUIRED BEFORE EXCAVATION.
2.) NO EXISTING PAVING PATCHES FOUND WITHIN 8 FEET OF PROPOSED PAVING CUT.
3.) REMOVE AND RESTORE EXISTING CURB & GUTTER (and or SIDEWALK) TO NEAREST JOINT.
4.) REPAINT AFFECTED TRAFFIC MARKINGS.

ENGINEER'S SEAL

STATE OF TEXAS
AMY C. CASTNER
113706
LICENSED
PROFESSIONAL ENGINEER
9/12/16

REVISIONS	DATE	REVISED BY

FINAL PRINT 8/12/2016

EL PASO WATER UTILITIES
PUBLIC SERVICE BOARD

WILOUGHBY RD. 8" P.V.C. WATER LINE EXTENSION

SCALE	DRAWN BY	JOB NO.	DATE
1" = 50'	A.A.B. / M.G.	16-5127	02/04/2016
	CHECKED BY F.H.2	DESIGNED BY A.C.	SHT. 1 OF 4

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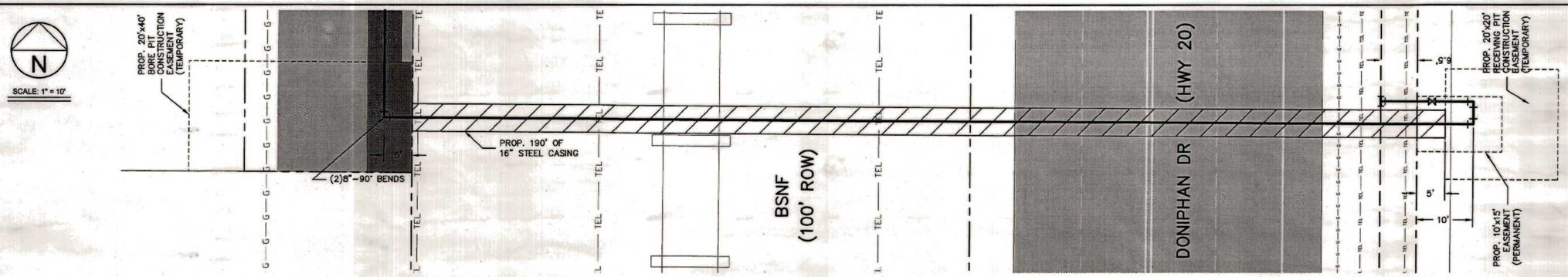
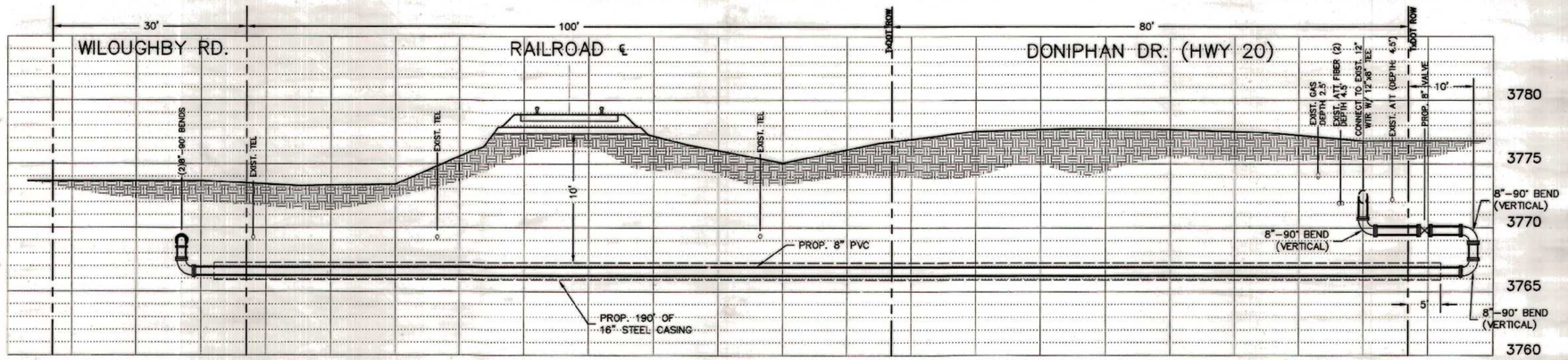
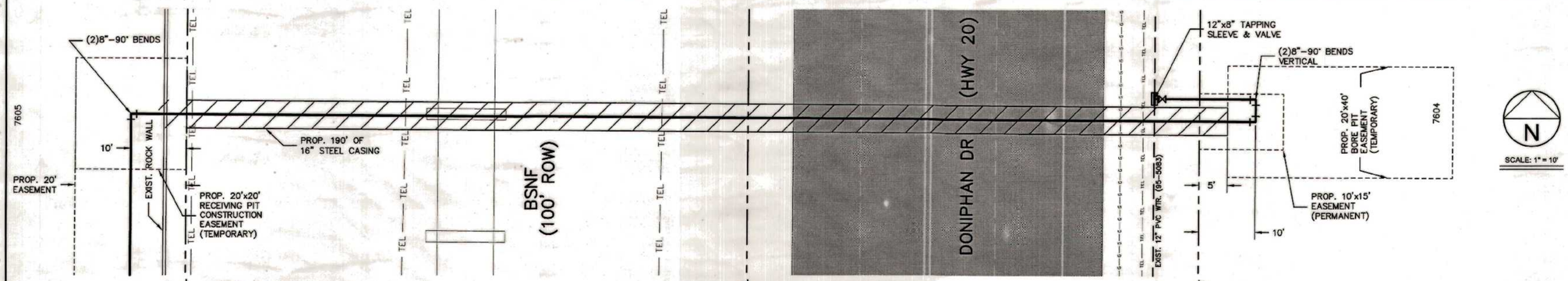
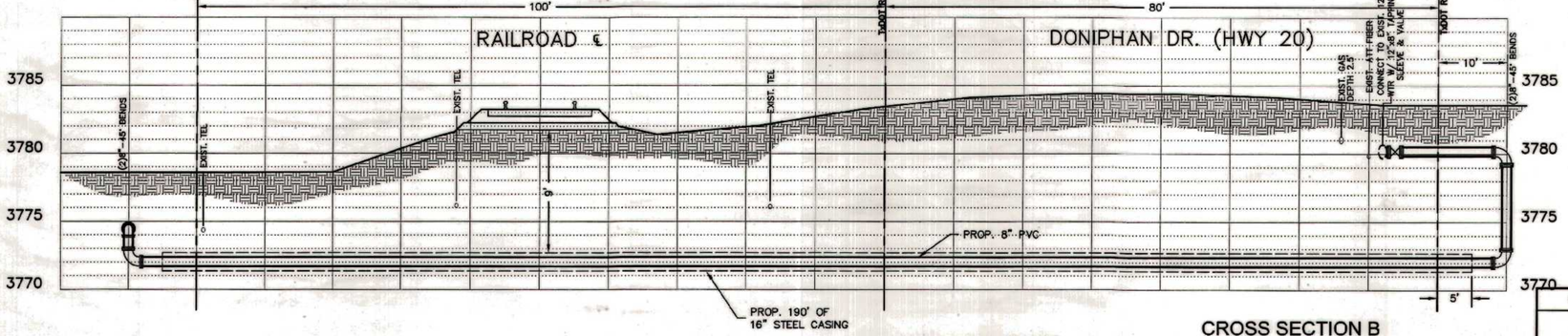




CROSS SECTION A





CROSS SECTION B

CONTRACTOR TO POTHOLE!!
VERIFY DEPTHS OF ALL EXISTING UTILITIES

FINAL PRINT 9/12/2016

ENGINEER'S SEAL	REVISIONS	DATE	REVISED BY
STATE OF TEXAS — AMY C. CASTNER — 113706 — LICENSED PROFESSIONAL ENGINEER — 9/12/16			

EL PASO WATER UTILITIES
PUBLIC SERVICE BOARD

WILOUGHBY RD. 8" P.V.C. WATER LINE EXTENSION

SCALE	DRAWN BY	JOB NO.	DATE
HOR. 1" = 10'	A.A.B. / M.G.	16-5127	02/04/2016
VERT. 1" = 5'	CHECKED BY F.H.Z	DESIGNED BY A.C.	SHT 2 OF 4

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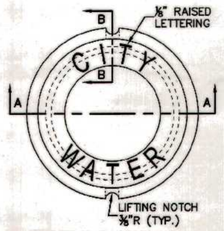
GENERAL NOTES

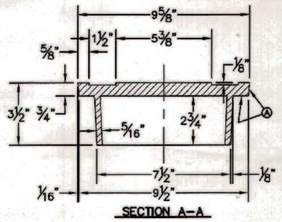
1.) CONTACT UTILITY COMPANIES FOR EXACT LOCATION OF UNDERGROUND UTILITIES IN THIS AREA BEFORE EXCAVATION.
2.) THIS WORK TO BE DONE IN CONJUNCTION WITH THE COUNTY OF EL PASO "*WILOUGHBY RD. 8" P.V.C. WATER LINE EXTENSION*" PROJECT.
3.) CONTRACTOR SHALL PAY CLOSE ATTENTION TO THE UTILITY SHEETS; COORDINATE SEQUENCE OF WORK, AND SHALL COORDINATE FIELD LOCATIONS OF ALL UTILITIES WITH THE APPROPRIATE UTILITY COMPANIES IN ORDER TO MINIMIZE CONFLICTS DURING WATER CONSTRUCTION AND TO PREVENT DAMAGE TO ANY UTILITIES.
4.) INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES EXCEEDING A DEPTH OF 5-FEET AS PER O.S.H.A. STANDARDS.
5.) WHEN EXISTING PAVEMENT AND BASE ARE TO BE CUT & RESTORED, CONTRACTOR SHALL PLACE 12-INCHES OF CEMENT STABILIZED BACKFILL (2-SACK) AND 2-INCHES OF ASPHALT. TYPE OF REPLACEMENT MATERIALS MUST BE APPROVED BY ENGINEER.
6.) CONTRACTOR IS RESPONSIBLE FOR ACQUIRING AND PAYING ALL PERMITS ASSOCIATED WITH WATER CONSTRUCTION.
7.) ALL EXISTING FACILITIES CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING WATER AND SANITARY SEWER LINES (INCLUDING SERVICES) FROM DAMAGE AS A RESULT OF CONSTRUCTION ACTIVITIES.
8.) RECONNECTION OF EXISTING FACILITIES SHOWN ON THIS PLAN MUST BE MADE SUCH THAT MINIMAL INTERRUPTION OF WATER AND SANITARY SEWER SERVICE TO CUSTOMER IS MADE.
9.) CONTRACTOR SHALL PROVIDE TEMPORARY SERVICE TO CUSTOMERS IF SERVICE WILL BE INTERRUPTED FOR MORE THAN 4 HOURS IN A 24-HOUR PERIOD AND SHALL ISSUE A 48-HOUR ADVANCE NOTICE TO THE CUSTOMERS WHOSE SERVICES WILL BE INTERRUPTED.
10.) USE CAUTION WHEN DIGGING IN THE AREA OF EXISTING ELECTRIC, TELEPHONE & GAS MAINS.
11.) TRAFFIC CONTROL WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.
12.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PRIVATE PROPERTY CAUSED BY THE CONSTRUCTION PROJECT. THE CONTRACTOR UPON RECEIPT OF A COMPLAINT OF DAMAGE, SHALL WITHIN 10 DAYS, RESPOND IN WRITING WITH A PROPOSAL TO REPAIR SAID DAMAGE.
13.) EMERGENCY RESPONSE NOTE: THE CONTRACTOR SHALL IMMEDIATELY CALL AND NOTIFY THE EL PASO WATER UTILITIES DISPATCHER AT 594-5775 OR 594-5778 WHEN A WATER OR SANITARY SEWER MAIN IS BROKEN DURING CONSTRUCTION EXCAVATION AND THE EXTEND OF THE BREAK FOR IMPLEMENTATION OF UTILITIES EMERGENCY RESPONSE ACTION PLAN. THE CONTRACTOR SHALL ALSO IMMEDIATELY NOTIFY THE EL PASO WATER UTILITIES FIELD INSPECTOR AND PROJECT ENGINEER ASSIGNED TO THE PROJECT.
14.) IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD LOCATE ALL UNDERGROUND UTILITIES, SHOWN OR NOT SHOWN IN THE PLANS, AND COORDINATE WORK WITH ALL HOME OWNERS, UTILITY COMPANIES, BUSINESSES, TxDOT, AND THE CITY OF EL PASO FOR ANY RELOCATION AND/OR PROTECTION OF EXISTING LINES PRIOR TO CONSTRUCTION. ALL EXISTING UTILITY DEPTHS ARE UNKNOWN. THE CONTRACTOR SHALL BE ULTIMATELY RESPONSIBLE FOR ACQUIRING FIELD DEPTHS OF ALL UTILITIES WITHIN THE PROJECT AREAS. CONTRACTOR SHALL CALL THE RESPECTIVE "1-CALL" NUMBER FOR SUCH UTILITIES. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING UTILITY LINES BY POT HOLING AND/OR OTHER METHODS AT LEAST 14 DAYS AHEAD OF PIPE LAYING CREWS TO ALLOW THE ENGINEER A REASONABLE AMOUNT OF TIME TO INITIATE ANY NECESSARY CHANGES IN ALIGNMENT AND/OR GRADE PIPELINE. THE CONTRACTOR SHALL OBTAIN ALL PERMITS FROM THE CITY'S ENGINEERING DEPARTMENT. CONSTRUCTION DIVISION, TxDOT RR.
15.) ALTHOUGH ALL EFFORTS HAVE BEEN MADE TO INDICATE ALL MAJOR EXISTING UTILITIES ON PLANS, ALL EXISTING UTILITIES CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION OF THE NEW LINE EXCEPT AS NOTED IN THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING AND RELOCATING ALL IN PLACE UTILITIES (INCLUDING SERVICE CONNECTIONS) FROM DAMAGE DURING CONSTRUCTION ACTIVITIES. SERVICE CONNECTIONS SHOWN ON THE PLANS ARE APPROXIMATE CONTRACTOR TO SUPPORT AND MAINTAIN ALL EXISTING EXPOSED UTILITIES IN SERVICE.
16.) THE CONTRACTOR SHALL NOTIFY (VERBALLY AND WRITTEN) ALL RESIDENTS AND BUSINESS OWNERS THAT MAY BE AFFECTED BY THE CONSTRUCTION FOURTEEN DAYS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE TEMPORARY SERVICE TO CUSTOMERS IF SERVICE WILL BE INTERRUPTED FOR MORE TAN 4 HOURS IN A 24-HOUR PERIOD AND SHALL ISSUE A 48-HOUR ADVANCE NOTICE TO THE CUSTOMERS WHOSE SERVICES WILL BE INTERRUPTED.
17.) PRIOR TO BEGINNING WORK ADJACENT TO AND/OR WITHIN TxDOT RIGHT-OF-WAY, CONTRACTOR SHALL DEVELOP A TRAFFIC CONTROL PLAN AND SUBMIT TO TEXAS HIGHWAY DEPARTMENT FOR APPROVAL CONTRACTOR SHALL NOT BEGIN WORK UNTIL THE TRAFFIC CONTROL PLAN HAS BEEN APPROVED, A COPY OF WHICH IS TO BE PROVIDED TO THE ENGINEER. TRAFFIC CONTROL PLAN SHALL BE PREPARED IN CONFORMANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS. ALL WORK WITHIN OR ADJACENT TO TxDOT R.O.W. SHALL BE PERFORMED IN ACCORDANCE WITH TxDOT RULES AND REGULATIONS, INCLUDING TxDOT'S UTILITY ACCOMMODATION RULES.
18.) ALL TIE-INS SHALL BE CLOSELY COORDINATED WITH E.P.W.U. AT LEAST 71 HOURS PRIOR TO ACTUAL CONSTRUCTION. CLOSING AND OPENING OF EXISTING VALVES SHALL BE OPERATED BY E.P.W.U. ONLY. CONTACT ROBERT CORRAL AT 915-594-5782 WITH E.P.W.U.
19.) CONTRACTOR SHALL INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES EXCEEDING A DEPTH OF FIVE FEET (5') AS REQUIRED BY O.S.H.A. EXISTING SOIL CONDITIONS MAY DICTATE THE NEED FOR A TRENCH SAFETY SYTEM WHEN TRENCH IS LESS THAN 5' IN DEPTH.
20.) CONTRACTOR SHALL COORDINATE NEW WATER SERVICE METER LOCATION WITH E.P.W.U. & PROPERTY OWNER PRIOR TO RELOCATION.
21.) ALL PRESSURIZED PVC PIPE SHALL BE MARKED WITH DUAL INDICATOR LINES AT THE SPIGOT END INDICATING PROPER PENETRATION WHEN THE JOINT IS ASSEMBLED. IN LIEU OF DUAL LINES, BELL PROTECTION SYSTEM AT EACH JOINT TO WATER-MEVENT OVER INSERTION MAY BE USED.

1.) PROVIDE ADEQUATE CONCRETE THRUST BLOCKING AND MECHANICAL RESTRAINT DEVICES AT THE FOLLOWING: TAPPING SLEEVES, TEES, BENDS, PLUGS, AND ALL FITTINGS.
2.) ALL PVC PIPE ON THIS PLAN SHALL BE ENCASED WITH SELECT BEDDING MATERIAL.
3.) ALL VALVES ON WATER MAINS SHALL BE ANCHORED IN CONCRETE, AS PER DETAILS AND SPECIFICATIONS.
4.) INSTALL NEW WATER LINE WITH MIN. OF 4 OR 5 FEET OF COVER UNDER EXIST. FINISHED GRADE.
5.) LOCATION OF EXISTING WATER SERVICES IS APPROXIMATE. CONTRACTOR SHALL VERIFY EXACT LOCATION OF SERVICES, AT AND WITH RESPECT TO THE NEW RIGHT-OF-WAY, PRIOR TO CONSTRUCTION.
6.) EXACT LOCATION OF FIRE HYDRANT TO BE DETERMINED IN THE FIELD. ALL NEW FIRE HYDRANTS SHALL INCLUDE A DAVIDSON ANTI-TERRORISM VALVE INSIDE PRIOR TO SHIPPING TO PROJECT SITE.
7.) CUTTING, REMOVAL, AND RECONNECTION OF EXISTING WATER MAINS AND /OR SERVICES SHALL BE SUBSIDIARY TO THE WATER SYSTEM CONSTRUCTION.
8.) BYPASS OF EXISTING WATER MAINS AND/OR SERVICES TO ASSIST IN CONSTRUCTION ACTIVITIES SHALL BE SUBSIDIARY TO THE WATER SYSTEM CONSTRUCTION.
9.) ALL ASBESTOS CEMENT PIPE THAT REQUIRES REMOVAL SHALL BE HANDLED AND DISPOSED IN ACCORDANCE WITH STATE REQUIREMENTS & SPECIFICATIONS.

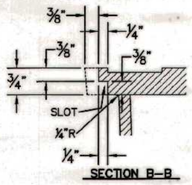


GENERAL NOTES:
1. CASTINGS TO SMOOTH AND VOID OF AIR HOLES.
2. WEIGHT OF COVER IS 18 POUNDS.

CONSTRUCTION KEY NOTES:
A. TO BE ROUGH GROUND OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.

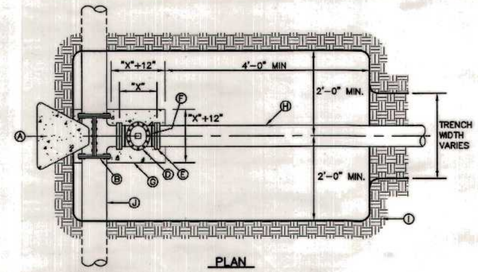


SECTION A-A

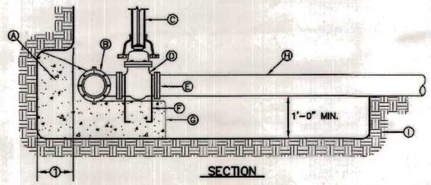


SECTION B-B

STANDARD DETAIL	DATE: 2/16/2006 REV: 12/14/2007	BONNET BOX COVER (FLIP RESISTANT)	N.T.S.	el paso WATER	DETAIL No. 289-2



PLAN

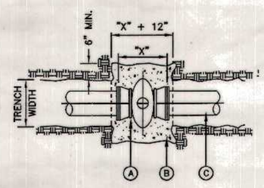


SECTION

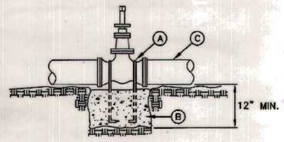
GENERAL NOTES:
1. THRUST BLOCKING SHALL EXTEND TO UNDISTURBED EARTH.
2. TAPPING SLEEVE SHALL BE 18" MINIMUM FROM ANY BELL, COUPLING, VALVE OR FITTING LOCATED ALONG EXISTING WATER LINE TO BE TAPPED.
3. REPLACE EXCAVATED MATERIAL WITH CEMENT STABILIZED BACKFILL PRIOR TO PAVING.
4. JOINTS AND BOLTS SHALL BE CLEAR OF CONCRETE.
5. INSTALL PERMANENT THRUST BLOCKING UNDER VALVE BEFORE TAP IS MADE. JOINTS AND BOLTS TO BE CLEAR OF CONCRETE.

CONSTRUCTION KEY NOTES:
A. CONCRETE THRUST BLOCKING, PER DETAIL 270.
B. TAPPING SLEEVE.
C. RISER INSTALLATION, PER DETAIL 280.
D. TAPPING VALVE.
E. VALVE ENDS FOR TYPE OF PIPE INSTALLED.
F. 2-#5 REBAR HAIRPINS, PAINT UNEMBEDDED PORTION OF BARS WITH 2-COATS OF COAL TAR EPOXY, THEN COVER WITH 2" MINIMUM OF CEMENT MORTAR.
G. CONCRETE VALVE SUPPORT, PER DETAIL 271.
H. NEW WATER LINE TO BE INSTALLED.
I. UNDISTURBED EARTH.
J. EXISTING WATER MAIN TO BE TAPPED.

STANDARD DETAIL	DATE: 9/1994 REV: 8/9/2006	TAPPING SLEEVE AND VALVE INSTALLATION	N.T.S.	el paso WATER	DETAIL No. 286



PLAN

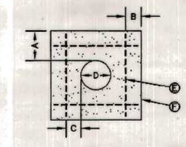


SECTION

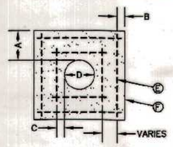
GENERAL NOTES:
1. THE ENGINEER SHALL PROVIDE DESIGN FOR ALL VALVES GREATER THAN 12".
2. COMPLY WITH REQUIREMENTS OF AWWA C-550, PROTECTIVE EPOXY INTERIOR COATINGS FOR VALVES.

CONSTRUCTION KEY NOTES:
A. TWO No. 5 REBAR HAIR PINS. PAINT UNEMBEDDED PORTION OF REBARS WITH TWO COATS OF COAL TAR EPOXY.
B. CONCRETE VALVE SUPPORT, 2500 PSI. CONCRETE.
C. APPROVED PIPE.

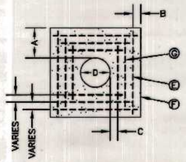
STANDARD DETAIL	DATE: 2/1994 REV: 12/12/2011	VALVE ANCHOR	N.T.S.	el paso WATER	DETAIL No. 271



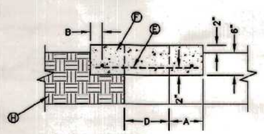
PLAN VIEW - SINGLE REBAR



PLAN VIEW - TWO REBARS



PLAN VIEW - THREE REBARS



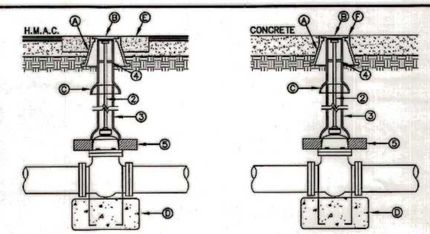
SECTION VIEW

GENERAL NOTES:
1. THE CONCRETE APRON SHOULD BE CAST IN-PLACE CONCRETE. (MINIMUM 28 DAY COMPRESSIVE STRENGTH 4000 PSI. HIGH EARLY CONCRETE IS REQUIRED)
2. TOPS OF CONCRETE APRON SHALL BE FLUSH WITH ROADWAY SURFACE OR FINISHED GRADE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. PROVIDE A MINIMUM OF 1 1/2" OF CONCRETE COVER FOR ALL REINFORCEMENT STEEL.
4. REINFORCING SHALL MEET ASTM C-478 AND *TRAFFIC LOADING* (HS-20).
5. NO. 3 REBARS SPACED EQUALLY MAY BE LAP TIED OR SQUARE HOOPS.

CONSTRUCTION KEY NOTES:
E. #3 REINFORCING STEEL TYP.
F. CONCRETE APRON.
G. #3 REINFORCING STEEL EQUALLY SPACED.
H. COMPACTED BACKFILL.

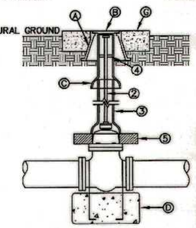
"D" DIAMETER OF PENETRATION	NUMBER OF #3 REINFORCING STEEL BARS	"A" MINIMUM CONCRETE HORIZONTAL DIMENSION FROM PENETRATION	"B" MINIMUM CLEARANCE FROM EDGE OF CONCRETE APRON TO CENTER OF NEAREST REBAR	"C" MINIMUM CLEARANCE FROM PENETRATION EDGE TO CENTER OF NEAREST REBAR
0" TO 6"	1	4"	1½"	4½"
6.1" TO 18"	2	6"	1½"	1½"
18.1" AND OVER	3	8"	1½"	1½"

STANDARD DETAIL	DATE: 11/6/2008 REV:	CONCRETE APRON INSTALLATION IN NON PAVED AREAS	N.T.S.	el paso WATER	DETAIL No. 184-2



ASPHALT ROADWAY

CONCRETE ROADWAY

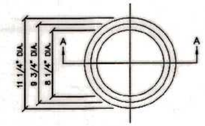


UNPAVED AREAS

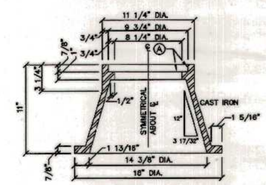
GENERAL NOTES:
1. VALVE TYPE AND VALVE ENDS SHALL BE AS SHOWN ON THE PLANS.
2. ALL BURIED VALVES 5' AND DEEPER SHALL BE PROVIDED WITH SOLID STEEL EXTENSION STEM OPERATOR WITH 2" SQUARE AWWA NUT WITHIN 36" OF VALVE BOX COVER. NUT IS TO INDICATE DIRECTION OF ROTATION TO OPEN VALVE.
3. 8" DIA. MINIMUM VITRIFIED CLAY OR SDR 35 P.V.C. PIPE, PIPE SHALL NOT REST ON VALVE BODY.
4. ⅜" THICK STEEL TRASH RING VALVE BOX INSIDE DIAMETER MINUS ⅜".
5. MINIMUM 2½" CONCRETE OR BRICK ALL AROUND.
6. CLEAN BONNET BOX OF ALL DEBRIS AND SOIL.
7. COAT BURIED PIPE AND BONNET BOX PER SPECIFICATIONS. VALVE SHALL BE WRAPPED IN POLYETHYLENE IN ACCORDANCE WITH SPECIFICATIONS.

CONSTRUCTION KEY NOTES:
A. BONNET BOX (SEE DETAIL 268).
B. BONNET BOX COVER (SEE DETAILS 269-1 & 269-2).
C. FINAL EXTENSION TO BONNET BOX SHALL BE WITH BELL AND SPIGOT ENDS (CLAY OR SDR 35 P.V.C. SPOOL).
D. CONCRETE VALVE ANCHOR (SEE DETAIL 271).
E. CONCRETE COLLAR (SEE DET 184-1) FLUSH WITH TOP OF H.M.A.C.
F. BONNET BOX FLUSH WITH TOP OF CONCRETE. CONCRETE COLLAR NOT NEEDED.
G. CONCRETE APRON (SEE DETAIL 184-2) FLUSH WITH BONNET BOX AND 2" ABOVE NATURAL GROUND.

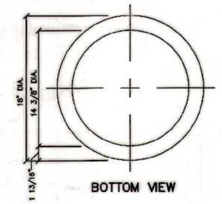
STANDARD DETAIL	DATE: 5/1994 REV: 6/22/2009	GATE VALVE INSTALLATION	N.T.S.	el paso WATER	DETAIL No. 280



TOP VIEW



SECTION A-A



BOTTOM VIEW

GENERAL NOTES:
1. CASTING TO BE SMOOTH AND VOID OF AIR HOLES.
2. WEIGHT OF BONNET BOX IS 95 POUNDS.

CONSTRUCTION KEY NOTES:
A. TO BE ROUGH GROUND OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.

STANDARD DETAIL	DATE: 2/1994 REV:	BONNET BOX	N.T.S.	el paso WATER	DETAIL No. 288

FINAL PRINT 9/12/2016

ENGINEER'S SEAL: STATE OF TEXAS — AMY C. CASTNER — 113706 — LICENSED PROFESSIONAL ENGINEER — 9/12/16

REVISIONS	DATE	REVISED BY

EL PASO WATER UTILITIES
PUBLIC SERVICE BOARD

WILOUGHBY RD. 8" P.V.C. WATER LINE EXTENSION

SCALE	DRAWN BY	JOB NO.	DATE
AS SHOWN	A.A.B. / M.G.	16-5127	02/04/2016
	CHECKED BY F.H.2	DESIGNED BY A.C.	SHT 3 OF 4

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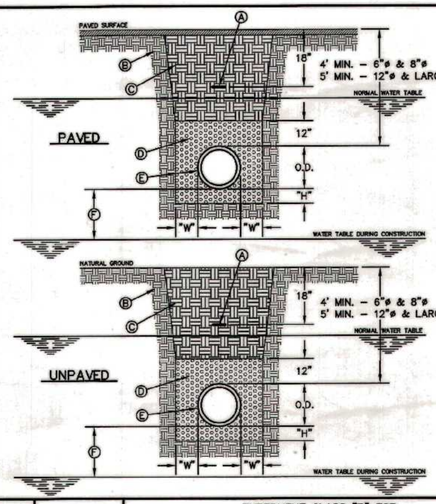


GENERAL NOTES:

1. BEDDING FOR PRESSURE PIPE IN WET CONDITIONS.
2. PROVIDE TRENCH SAFETY SYSTEM FOR TRENCH DEPTHS GREATER THAN 5 FEET.
3. A DRY TRENCH MUST BE MAINTAINED WHILE PLACING BEDDING.
4. IF THE NATIVE MATERIAL EXCAVATED FROM THE TRENCH IS UNSUITABLE AS BACKFILL MATERIAL, OR THE REQUIRED COMPACTION IS UNATTAINABLE, THE CONTRACTOR SHALL, AT HIS EXPENSE, IMPORT SELECT MATERIAL TO BE MIXED WITH OR USED IN PLACE OF THE NATIVE MATERIAL. SELECT MATERIAL MUST BE APPROVED BY EPWU. SUBSTITUTE SOIL CEMENT SLURRY (1–SACK) IF REQUIRED IN SPECS.

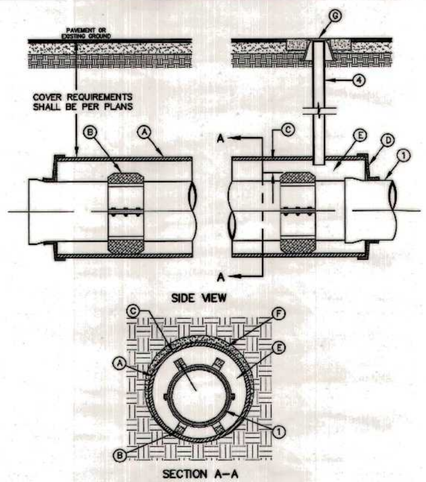
CONSTRUCTION KEY NOTES:

A. APPROVED MARKING TAPE.
B. UNDISTURBED STABLE MATERIAL.
C. NATIVE MATERIAL BACKFILL.
PAVED CONDITION: COMPACT TO 90% DENSITY PER ASTM D–1557 MODIFIED PROCTOR.
UNPAVED CONDITION: COMPACT TO 85% DENSITY PER ASTM D–1557 MODIFIED PROCTOR.
(*SEE NOTE #4 IF THESE PREVIOUS CONDITIONS CANNOT BE MET.)
D. USE CLASS I GRAVEL PER ASTM D–2321 AND D–2487. NO COMPACTION REQUIRED. USE MINIMAL TAMPING, RODDING OR HAUNCH SLICING CAREFULLY IN THE EMBEDMENT ZONE, IF REQUIRED BY THE ENGINEER, TEST PER ASTM D–4254 PERCENT OF RELATIVE DENSITY.
E. APPROVED PIPE (WRAP PVC PIPE IN APPROVED POLYETHYLENE SHEETING, MINIMUM 8 MIL THICKNESS).
F. 18" MINIMUM UNLESS OTHERWISE SPECIFIED.
G. TRENCH DIMENSIONS AS FOLLOWS:

PIPE DIAMETER	"H"
6" – 30"	4"
GREATER THAN 30"	6"

PIPE DIAMETER	"W"
6" – 30"	8"
GREATER THAN 30"	12"

STANDARD DETAIL	DATE: 5/7/2007 REV: 7/6/2010	EMBEDMENT CLASS "B" FOR PRESSURE PIPE WET CONDITIONS	N.T.S.	el paso WATER	DETAIL No. 172



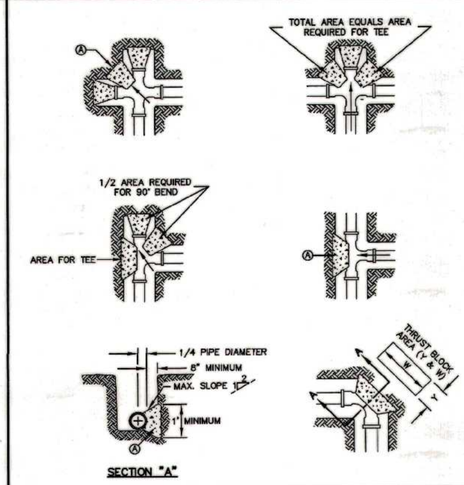
GENERAL NOTES:

1. INSTALLATION FOR APPROVED CARRIER PIPE.
2. CASING SHALL BE INSTALLED USING EITHER JACKING, BORING OR TUNNELING METHODS FROM THE END WHICH CREATES A MINIMUM OF ACCESS AND RELOCATION PROBLEMS.
3. INSULATED SPACERS SHALL BE USED WHEN SPECIFIED, TO PROVIDE CORROSION PROTECTION.
4. PRECAST/ONE-WAY OUTLET (0") WITH BONNET BOX AND COVER SHALL BE USED WHEN REQUIRED BY OTHER GOVERNING AGENCIES.

CONSTRUCTION KEY NOTES:

A. STEEL CASING MINIMUM YIELD 38000 PSI, SIZE AND LENGTH AS SPECIFIED.
B. CASING INSULATORS, SPACING AND LOCATION PER MANUFACTURES RECOMMENDATIONS. INSULATORS SHALL FIT SNUG OVER THE CARRIER PIPE.
C. POSITION CARRIER PIPE APPROXIMATELY IN CENTER OF CASING. MINIMUM SPACING BETWEEN INSULATOR AND CARRIER PIPE SHALL BE 1", MAXIMUM SPACING SHALL BE 2".
D. END SHALL BE SEALED WITH BRICK AND MORTAR, BULKHEAD AND GROUT, OR WITH SYNTHETIC RUBBER SEAL, AS SPECIFIED.
E. ANNULAR SPACE SHALL BE LEFT OPEN FOR CATHODICALLY PROTECTED SYSTEM WHERE BOTH CASING AND CARRIER PIPE ARE METALLIC MATERIAL, OR AS OTHERWISE SPECIFIED.
F. PRESSURE GROUT ANNULAR SPACE OUTSIDE CASING AFTER CASING IS INSTALLED.
G. BONNET BOX AND COVER (SEE DETAILS 268, 269–1 & 269–2) SET FRAME AND COVER FLUSH WITH ROADWAY SURFACE OR FINISHED GRADE (SEE DETAIL 280).

STANDARD DETAIL	DATE: 3/1994 REV: 1/7/2013	CARRIER PIPE INSTALLATION WITH CASING INSULATORS	N.T.S.	el paso WATER	DETAIL No. 180



GENERAL NOTES:

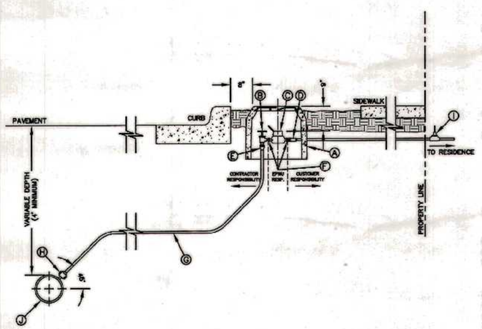
1. TABLE IS BASED ON 2000#/SQ. FT. SOIL. IF CONDITIONS ARE FOUND TO INDICATE SOIL BEARING IS LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
2. AREAS FOR PIPE LARGER THAN 18" SHALL BE CALCULATED.
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 2500 PSI.
4. THRUST BLOCK IS TO EXTEND TO UNDISTURBED SOIL.
5. SIZE MAY BE DECREASED FOR LESSER DEGREE BENDS AS DETERMINED BY ENGINEER.
6. KEEP CONCRETE CLEAR OF M.J. OR BELL AND SPIGOT JOINTS.
7. BLOCK IN A SIMILAR MANNER AT TEES, HYDRANTS, PLUG OR OTHER LOCATIONS AS REQUIRED.
8. WHEN NECESSARY ADDITIONAL THRUST RESTRAINT METHODS MAY BE USED, SUCH AS MECHANICAL JOINT RESTRAINTS, TIE–RODS (INSTALLED PER MANUFACTURERS' RECOMMENDATIONS) OR OTHER APPROVED METHODS.

CONSTRUCTION KEY NOTES:

A. LENGTH "Y & W" AS REQUIRED TO OBTAIN BEARING AREA AGAINST UNDISTURBED SOIL.
B. ADDITIONAL EXCAVATION IF NECESSARY TO OBTAIN REQUIRED BEARING AREA.
C. MINIMUM THRUST BLOCK AREA REQUIREMENTS FOR (Y & W) AS FOLLOWS:

PIPE SIZE	WATER PIPE	
	TEE, DEAD END 90° BEND	45° AND 22 1/2° BENDS
4" & LESS	3 SQ. FEET	3 SQ. FEET
6"	4 SQ. FEET	3 SQ. FEET
8"	6 SQ. FEET	3 SQ. FEET
10"	9 SQ. FEET	5 SQ. FEET
12"	13 SQ. FEET	7 SQ. FEET
16"	23 SQ. FEET	12 SQ. FEET
18"	29 SQ. FEET	15 SQ. FEET

STANDARD DETAIL	DATE: 2/1994 REV: 8/7/2006	CONCRETE THRUST BLOCKING	N.T.S.	el paso WATER	DETAIL No. 270



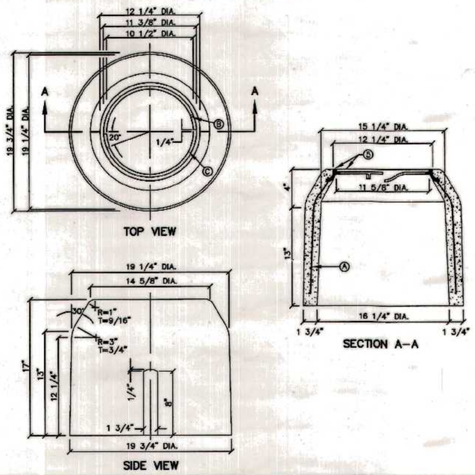
GENERAL NOTES:

1. DETAIL SHOWN FOR A 3/4" SERVICE, 1" SERVICE INSTALLATION IS SIMILAR EXCEPT FOR SIZES OF PIPE, FITTING, METER AND BOX (TYPE "B").
2. WHERE NO CURB EXISTS, METER IS TO BE SET NEAR PROPERTY LINE OR AT DESIGNATED LOCATION.
3. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY PIPE, FITTINGS, AND METER BOXES REQUIRED. IT SHALL BE THE RESPONSIBILITY OF THE PRIVATE OWNER TO HAVE A CERTIFIED PLUMBER INSTALL A BACKFLOW PREVENTER AND EXTEND SERVICE LINE ON DISCHARGE SIDE OF METER.
4. NO SPLICING SHALL BE ALLOWED. FULL LENGTH OF PIPING SERVICE SHALL BE INSTALLED.
5. THE EPWU WILL FURNISH AND INSTALL THE METER.

CONSTRUCTION KEY NOTES:

A. METER BOX TYPE "A" (SEE DETAILS 291 & 292) SHALL BE SET SLIGHTLY HIGHER THAN SURROUNDING GROUND OR AT CURB LEVEL.
B. 3/4" ANGLE SERVICE VALVE.
C. WATER METER (CENTER INSIDE METER BOX).
D. WHEN REQUIRED BY EPWU, A DUAL CHECK BACKFLOW PREVENTER SHALL BE INSTALLED ON THE OUTLET SIDE OF THE METER.
E. END FLARE OF SERVICE LINE.
F. INLET AND OUTLET COUPLING.
G. 3/4" COPPER SERVICE LINE (SEE NOTE 4).
H. 5/8" X 3/4" CORPORATION STOP
I. PRESSURE REGULATOR SOMETIMES LOCATED NEAR THE RESIDENCE.
J. WATER MAIN

STANDARD DETAIL	DATE: 10/20/2000 REV: 5/24/2007	SERVICE LINE ¾" AND 1" INSTALLATION BY CONTRACTOR	N.T.S.	el paso WATER	DETAIL No. 290–4



GENERAL NOTES:

1. INSTALL TO GRADE MATCHING TOP OF CURB.
2. ANGLE VALVE SHALL BE IN LINE WITH THE INLET/OUTLET PORTS OF THE METER BOX.
3. METER BOXES SHALL NOT BE INSTALLED UNDER SIDEWALKS, DRIVEWAYS, OR PROPOSED ABOVE GROUND STRUCTURES.
4. WHERE NO CURBING EXIST, INSTALL BOXES IN ACCESSIBLE LOCATIONS BEYOND LIMITS OF STREET SURFACING, WALKS AND DRIVEWAYS.
5. METER BOX RING AND COVER PER EPWU DETAILS 300 AND 301.
6. WHERE IT IS NECESSARY TO INSTALL A TYPE "A" BOX FOR 3/4" METER UNDER ROADWAYS OF TRAFFIC BEARING SURFACES, BOX SHALL BE ENCASED IN 12" CONCRETE, 3000 PSI. MINIMUM.
7. METER BOX SHALL BE SINGLE UNIT CONSTRUCTION; CONCRETE TO HAVE A MINIMUM 28 DAYS COMPRESSIVE STRENGTH OF 4000 PSI.

CONSTRUCTION KEY NOTES:

A. 3/16", 9 GAUGE BLACK ANNEALED WIRE
B. LUG–STOP C. CAST IRON RING

STANDARD DETAIL	DATE: 4/1994 REV: 8/24/2006	METER BOX TYPE "A" FOR ¾" SERVICE INSTALLATION	N.T.S.	el paso WATER	DETAIL No. 291

FINAL PRINT 9/12/2016

ENGINEER'S SEAL

STATE OF TEXAS
AMY C. CASTNER
113706
LICENSED
PROFESSIONAL ENGINEER
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