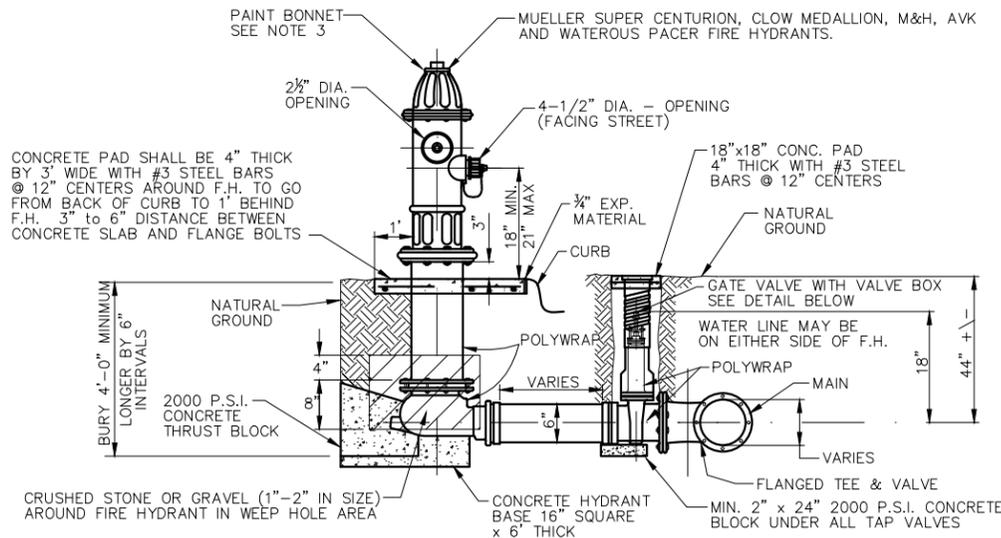


PAVEMENT MARKERS (REFLECTORIZED)
TYPE II
N.T.S.

HYDRANT MARKER NOTES

1. USE RAY-O-LITE PAT. 3 409 344 OR APPROVED EQUAL
2. HYDRANT MARKERS SHOULD BE PLACED 4" OFF THE CENTER STRIPE OR OTHER TRAFFIC BUTTONS AS PER DRAWINGS.
3. PAVEMENT MARKER NOTES FIRE HYDRANT LOCATION WILL BE MARKED BY PLACING A TYPE II PAVEMENT MARKER REFLECTORIZED BLUE 4" OFF OF THE TRAFFIC LANE BUTTONS. THE MARKER WILL BE IN THE LANE NEAREST TO THE FIRE HYDRANT. ALL MARKERS AT INTERSECTIONS SHOULD BE 10 FEET BACK FROM THE INTERSECTION.



STANDARD FIRE HYDRANT DETAIL
N.T.S.

FIRE HYDRANT NOTES:

1. FIRE HYDRANTS SHALL BE LOCATED 3- FEET OFF THE FACE OF CURB IN RESIDENTIAL AREAS. REFER TO PLANS FOR LOCATIONS IN OTHER ZONING DISTRICTS.
2. FIRE HYDRANTS SHALL BE COATED WITH KEM-LUSTRAL VERMILLION RED (F65R1) OR AN EQUIVALENT COATING.
3. ALL FIRE HYDRANTS SHALL BE PAINTED SILVER AFTER INSTALLATION. BONNET PAINT COLOR WILL DEPEND ON THE SIZE OF THE MAIN LINE.
6-INCH LINE - SILVER
8-INCH LINE - BLUE
12-INCH AND GREATER - YELLOW
4. FIRE HYDRANT SHALL NOT BE PLACED IN SIDEWALK.
5. ALL NUTS AND BOLTS FOR THE BONNET & FOOT OF FIRE HYDRANT SHALL BE STAINLESS STEEL.

GENERAL NOTES:

GENERAL:

- (A) All construction shall be in accordance with the standard specifications of the City of The Colony, which has also adopted the Fourth Edition of the "Standard Specifications For Public Works Construction - North Central Texas" herein referred to as "COG" specifications. Copies may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Suite 200, Arlington, Texas 76005-5888. (817) 640-3300.
- (B) Refer to COG division 500 specifications.

PIPE:

- (A) Water mains up to 12-inches diameter shall be Polyvinyl Chloride PVC C-900 or C-909 DR18 (Class 150), or DR14 (Class 200). Water mains greater than 12-inches diameter may be one of the following:
 1. Reinforced Concrete Cylinder Pipe (RCCP) C303 pressure class 150 or greater as specified by the Engineer. Refer to COG item 501.4 specifications.
 2. PVC pipe with minimum pressure class 165. PVC pipe shall not be used for mains greater than 24-inch diameter. Refer to COG item 501.14 specifications.
- (B) Embedment: Refer to COG item 504 specifications.
 1. For Pipe sizes 12-inches and smaller, the Embedment shall be as per the "Pipe Embedment Detail" on the Backfill / Embedment sheet.
 2. For pipe sizes larger than 12-inches, the Engineer shall specify the Embedment.
- (C) Cover: The following minimum cover over the waterline is required:
 1. 48-inches of cover over waterlines 12-inches in diameter or less,
 2. 60-inches to 72-inches of cover over waterlines larger than 12-inches in diameter.
 Note: Water mains buried with over 72-inches of cover shall be approved by the City Engineer.
- (D) Storage: PVC water pipe is allowed to be stored a maximum of six (6) months without cover. Thereafter all pipe should be covered or kept away from sunlight and to be protected from other elements.
- (E) Installation: Refer to COG item 506 specifications.
 1. Blue PVC water pipe is acceptable for the installation.
 2. All water mains, valves, fittings, etc. made with Ductile Iron or ferrous metal shall be wrapped with 89 mil. Polywrap.
- (F) Beveled ends of the pipe shall be removed when used in Mega Lug fittings.
- (G) Casings: When PVC water pipe is installed in casing, skids must be used to prevent damage to the pipe and bell during installation. PVC pipe should not rest on the Bells. Plastic spacers such as RACI or approved equal shall be used.

FITTINGS:

- (A) The Contractor may use cast iron or ductile iron fittings, complete with Polywrap.
- (B) All fittings shall be Mega Lug or equivalent unless specified otherwise.
- (C) All fittings shall be blocked as per the details on the Concrete Blocking sheet.
- (D) Refer to COG Item 501.7.4 specifications.

VALVES:

- (A) Valves installed on waterlines 12-inches diameter or less shall be vertical gate valves.
- (B) Valves installed on waterlines larger than 12-inches diameter shall be butterfly valves. An offset manhole shall be installed at the butterfly valve operator.
- (C) All gate valves shall have non-rising stems and resilient sealed wedge.
- (D) All valves and fire hydrants shall be in line with the lot lines, where possible.
- (E) All valve locations shall be marked with "V" stamped or cut on the curb and painted blue for water mains and silver for fire hydrants.
- (F) Refer to the details on this sheet and COG Item 502.6 specifications.

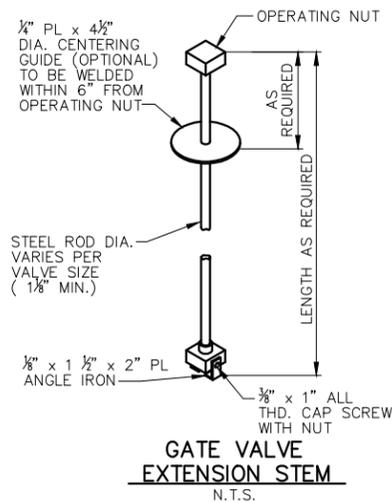
TESTING:

The following tests shall be performed:

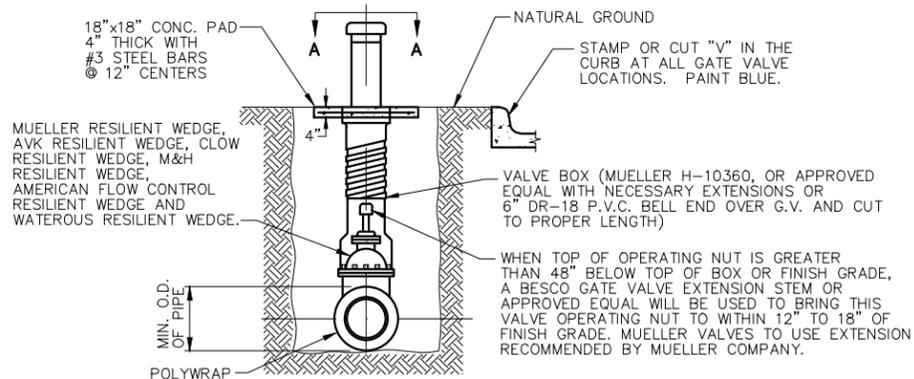
- (A) Purging by using the "Polly-Pig" method for all water lines greater than 200 feet in length, and less than 12-inches in diameter, to enter and exit at approved strategic locations and as per COG Item 506.7.3.1 specifications, to include all equipment, material, fittings, and labor. Lines larger than 12-inches shall be purged by the flushing method as per COG 506.7.3.2.
- (B) Hydrostatic test as per COG Item 506.5 specifications.
- (C) Disinfection shall follow as per COG Item 506.7.5 specifications and as approved by the City Engineer.
- (D) All bleeders to have corporation stops at the main.
- (E) One water sample per each street name (no greater than 1,000 feet), or as approved by the City Engineer.

BACKFILL AND COMPACTION REQUIREMENTS:

- (A) All ditchlines shall be mechanically tamped with the cost incidental to this bid item. Backfill, other than select fill, may consist of on-site or off-site inorganic soils and should be placed in loose lifts 6-inch - 8-inch in thickness and shall be compacted to 95% of the maximum dry density as defined by ASTM D-698 (Standard Proctor) procedures under existing and proposed pavement, and to 90 percent standard proctor procedures elsewhere. The moisture content of the fill at the time of compaction should be near optimum to four percentage points above the proctor optimum value. Densities shall be taken every one (1) lift at staggered one hundred (100) foot increments.



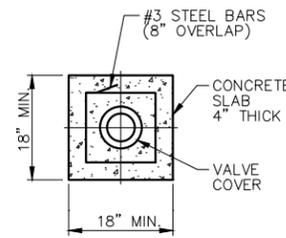
GATE VALVE EXTENSION STEM
N.T.S.



TYPICAL GATE VALVE SETTING AND BOX
N.T.S.

WATER VALVE NOTES:

1. CONCRETE SLABS FOR WATER VALVES SHALL NOT BE PLACED IN PAVEMENT.
2. FOR VALVE LOCATION IN PAVEMENT CONCRETE SHALL BE PLACED UP TO VALVE COVER.



VIEW A-A
N.T.S.

WATER STANDARD DETAILS

VALVE, HYDRANTS AND GENERAL NOTES

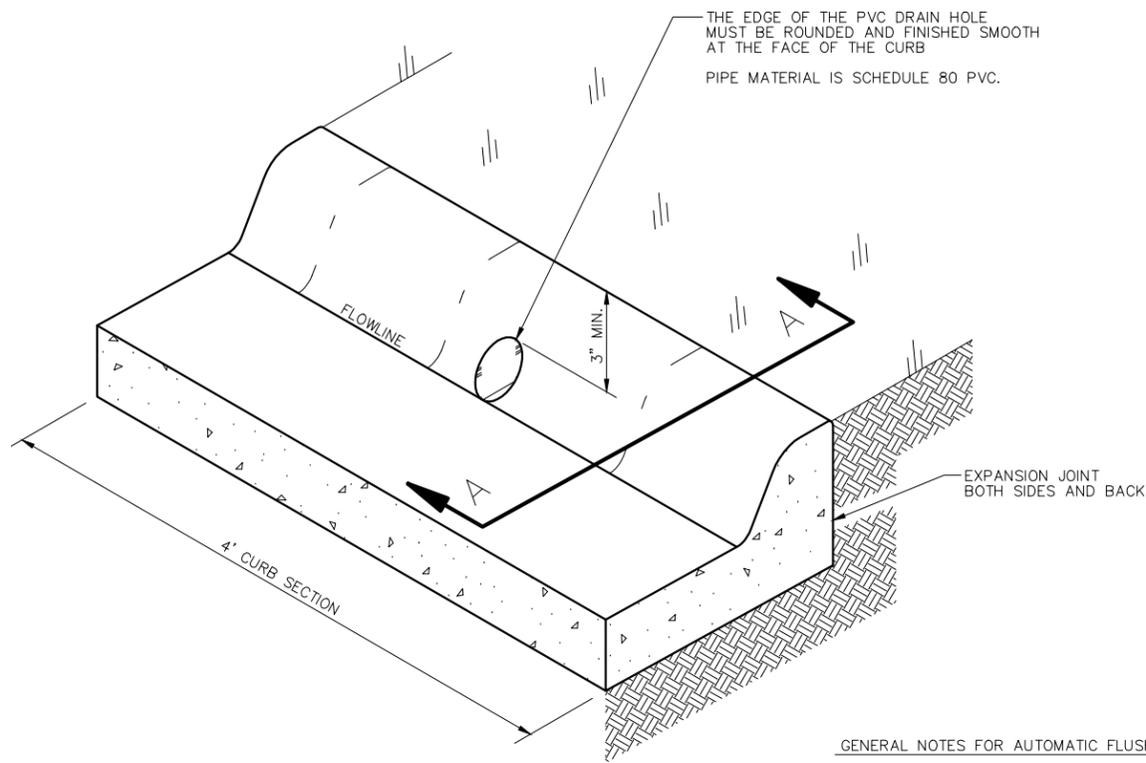


THE CITY OF THE COLONY
TEXAS

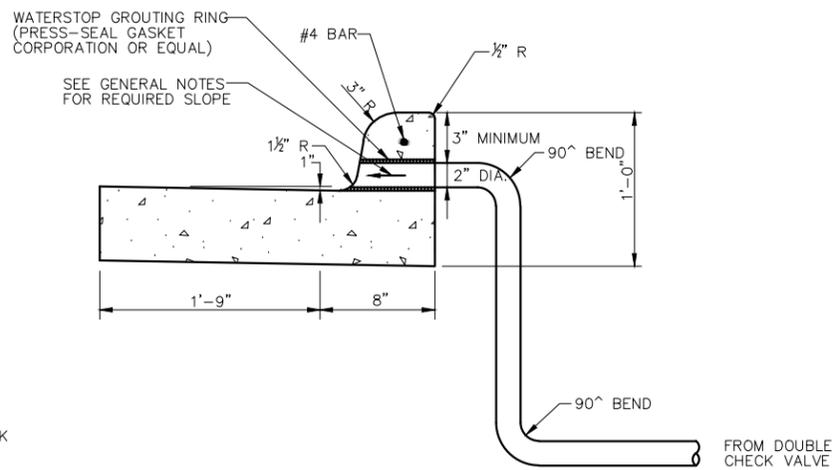
ENGINEERING DEPARTMENT

DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		JULY 7 2009	N.T.S.	W-1	

CERTIFICATION:
THIS CITY OF THE COLONY STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. THIS ENGINEER IS ALSO CERTIFYING THAT THE CONTENT OF THE DETAILS AND NOTES ON THIS SHEET HAVE NOT BEEN ALTERED FROM THAT RECEIVED FROM THE CITY OF THE COLONY.



ISOMETRIC VIEW
N.T.S.

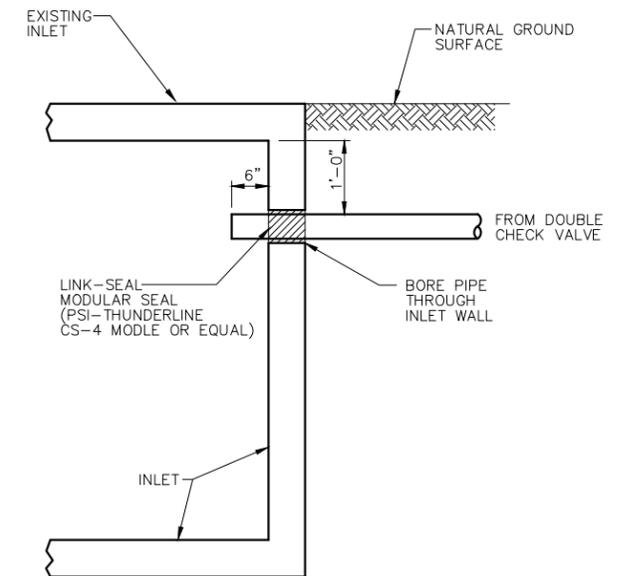


SECTION "A-A"
N.T.S.

GENERAL NOTES FOR AUTOMATIC FLUSH VALVE ASSEMBLY OUTFALL:

1. CURB DRAINS SHALL NOT BE CONSTRUCTED WITHIN 18-INCHES OF CONTRACTION OR EXPANSION JOINTS.
2. OPENING GRADE MAY VARY BETWEEN A MAXIMUM SLOPE OF 1/2-INCH PER FOOT AND A MINIMUM OF 1/4-INCH PER FOOT.
3. A 4-FOOT SECTION SHALL BE TAKEN OUT OF THE CURB FIRST. THEN A NEW 4-FOOT SECTION WILL BE POURED ALONG WITH A TWO (2) INCH PIPE OUTFALL AS SHOWN IN DETAIL.
4. EXPANSION JOINTS AND A NEW CURB SECTION SHALL CONFIRM WITH THE CITY OF THE COLONY CONCRETE PAVING STANDARD DETAILS.

OPTION 1: OUTFALL TO STREET DETAIL
N.T.S.



OPTION 2: OUTFALL TO INLET DETAIL
N.T.S.

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WATER STANDARD DETAILS
AUTOMATIC FLUSH VALVE ASSEMBLY
(SHEET 2 OF 2)



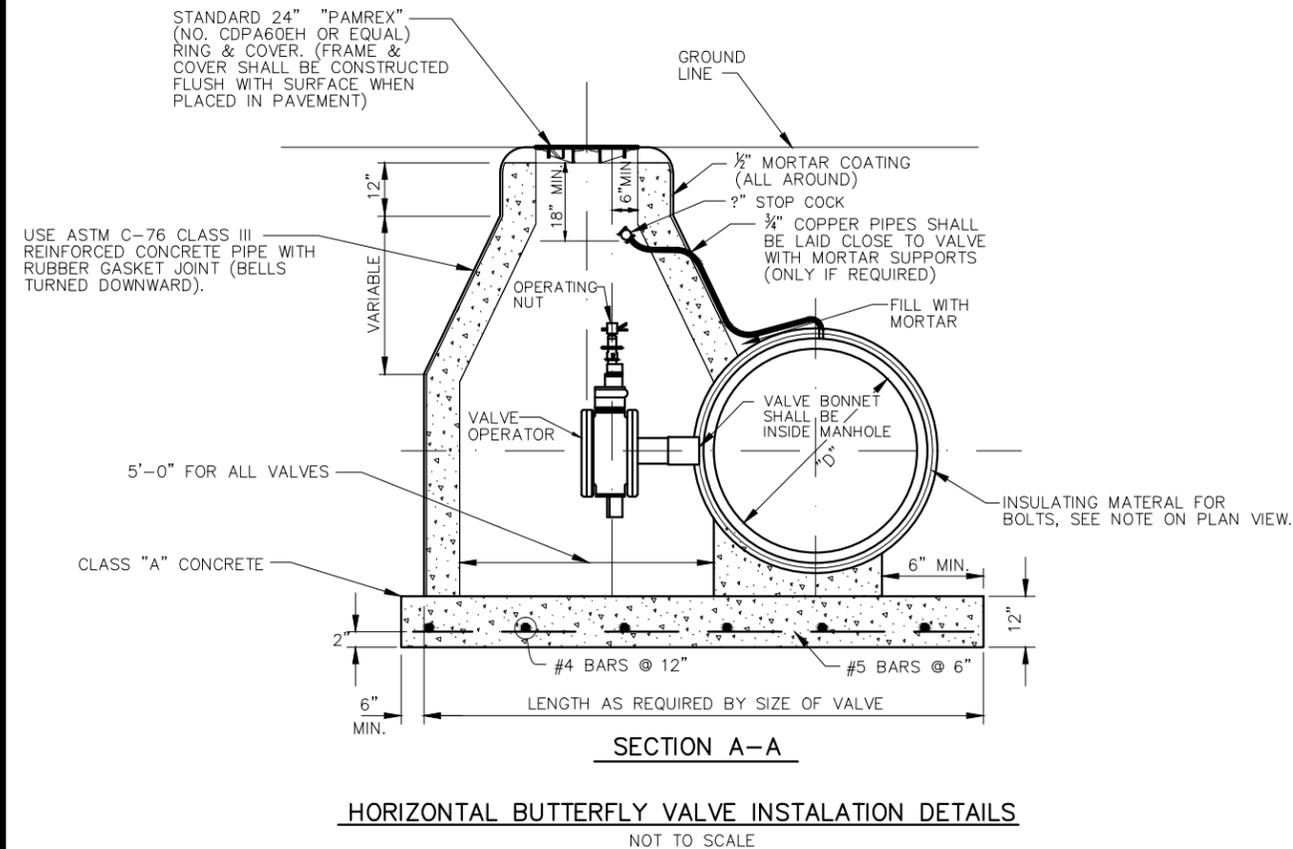
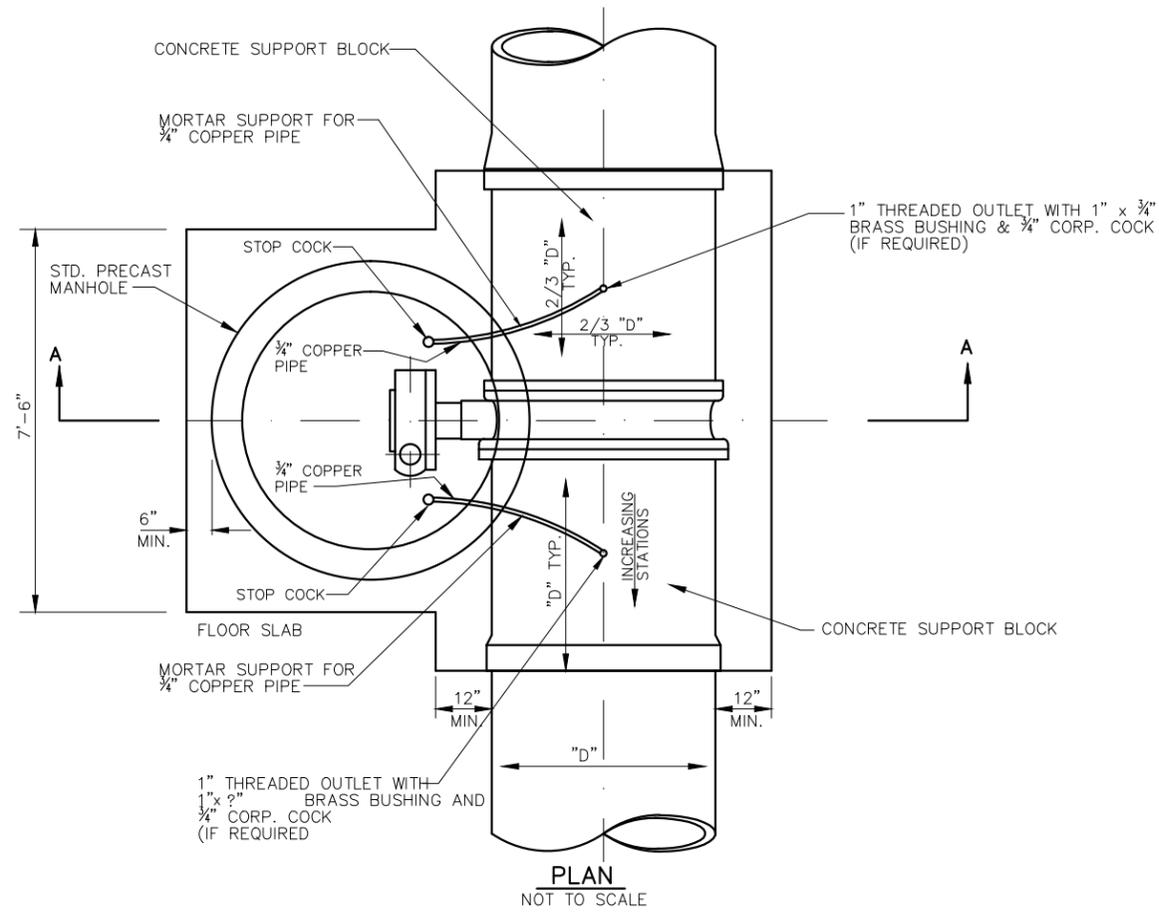
THE CITY OF THE COLONY
TEXAS

ENGINEERING DEPARTMENT

DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		JULY 7 2009	N.T.S.	W-10	

INSULATING KIT WHEN CALLED FOR ON THE PLANS OR IN THE SPECIFICATIONS :

1. 1/3" RAINBOW GASKET
2. INSULATING SLEEVE FOR EACH BOLT
3. 2 INSULATING WASHERS FOR EACH BOLT.
4. 2 STEEL WASHERS FOR EACH BOLT.
5. POLYWRAP VALVES



VALVE SIZE	MANHOLE DIAMETER	"D"
16	60	16
18	60	18
20	60	20
24	60	24
30	60	30
36	60	36
42	60	42
48	60	48
54	60	54
60	60	60

NOTE:

1. ALL WATER VALVES LARGER THAN 12-INCHES SHALL BE HORIZONTAL BUTTERFLY VALVES.
2. NO MANHOLE SHALL BE INSTALLED FOR PVC PIPE. USE REGULAR VALVE STACK IN LIEU AND EXTENSIONS AS REQUIRED.

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WATER STANDARD DETAILS

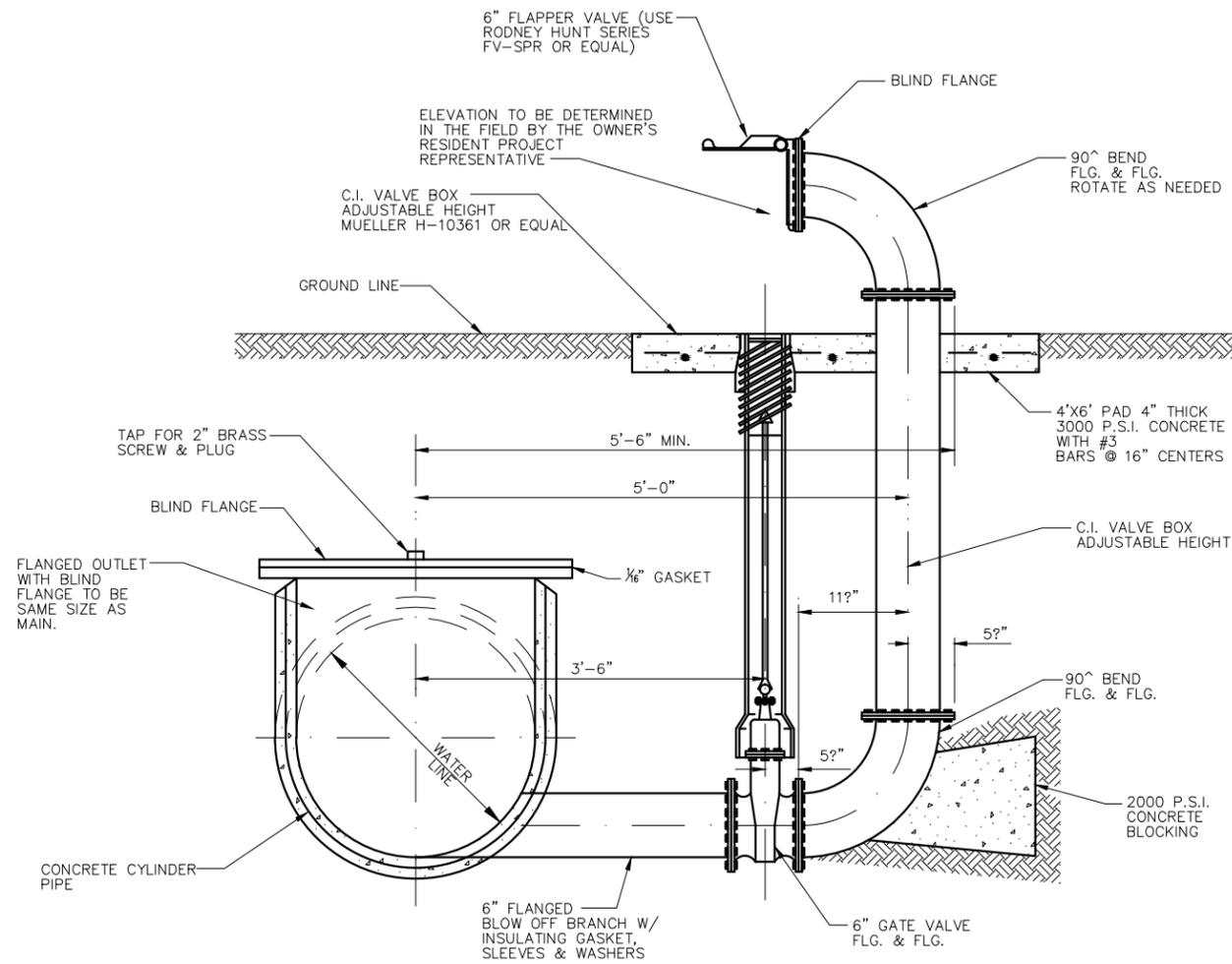
HORIZONTAL BUTTERFLY VALVE



THE CITY OF THE COLONY TEXAS

ENGINEERING DEPARTMENT

DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		JULY 7 2009	N.T.S.	W-11	



WATER BLOW-OFF DETAIL

NOT TO SCALE

GENERAL:

1. All construction shall be in accordance with the standard specifications of the City of The Colony, which has also adopted the Fourth Edition of the "Standard Specifications For Public Works Construction - North Central Texas" herein referred to as "COG" specifications. Copies may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Suite 200, Arlington, Texas 76005-5888. (817) 640-3300.
2. All ductile iron pipe shall be class 50, and polywrapped.
3. Refer to the "Water Standard Detail" sheet for valve, blocking and testing specifications.
4. Refer to the details on this sheet and COG Item 502.11.2 specifications.

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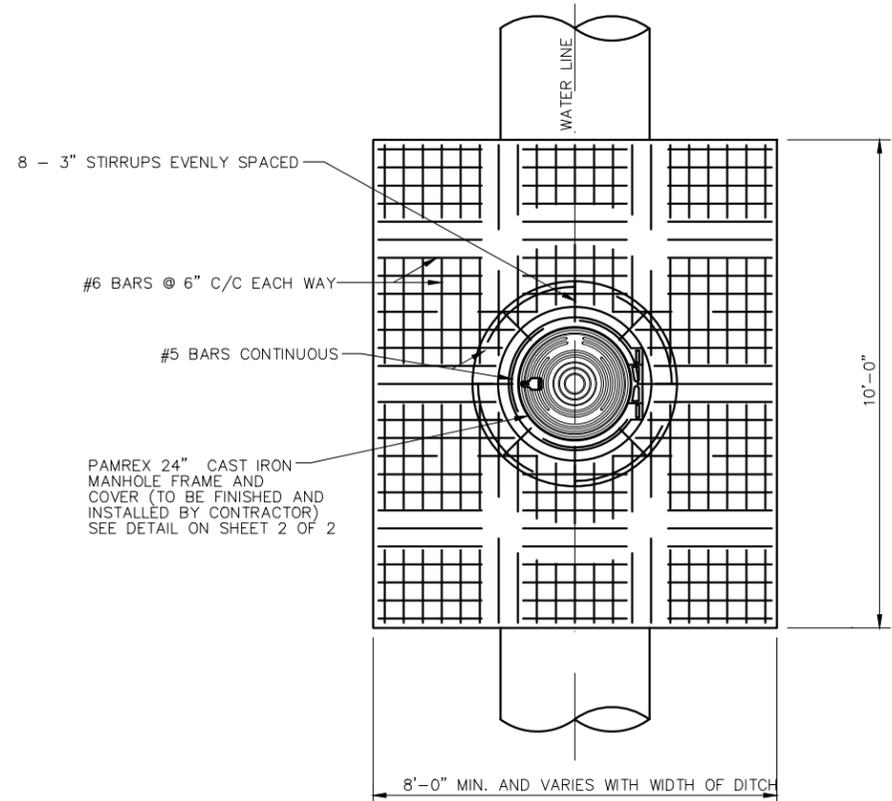
WATER STANDARD DETAILS

WATER BLOW OFF VALVE

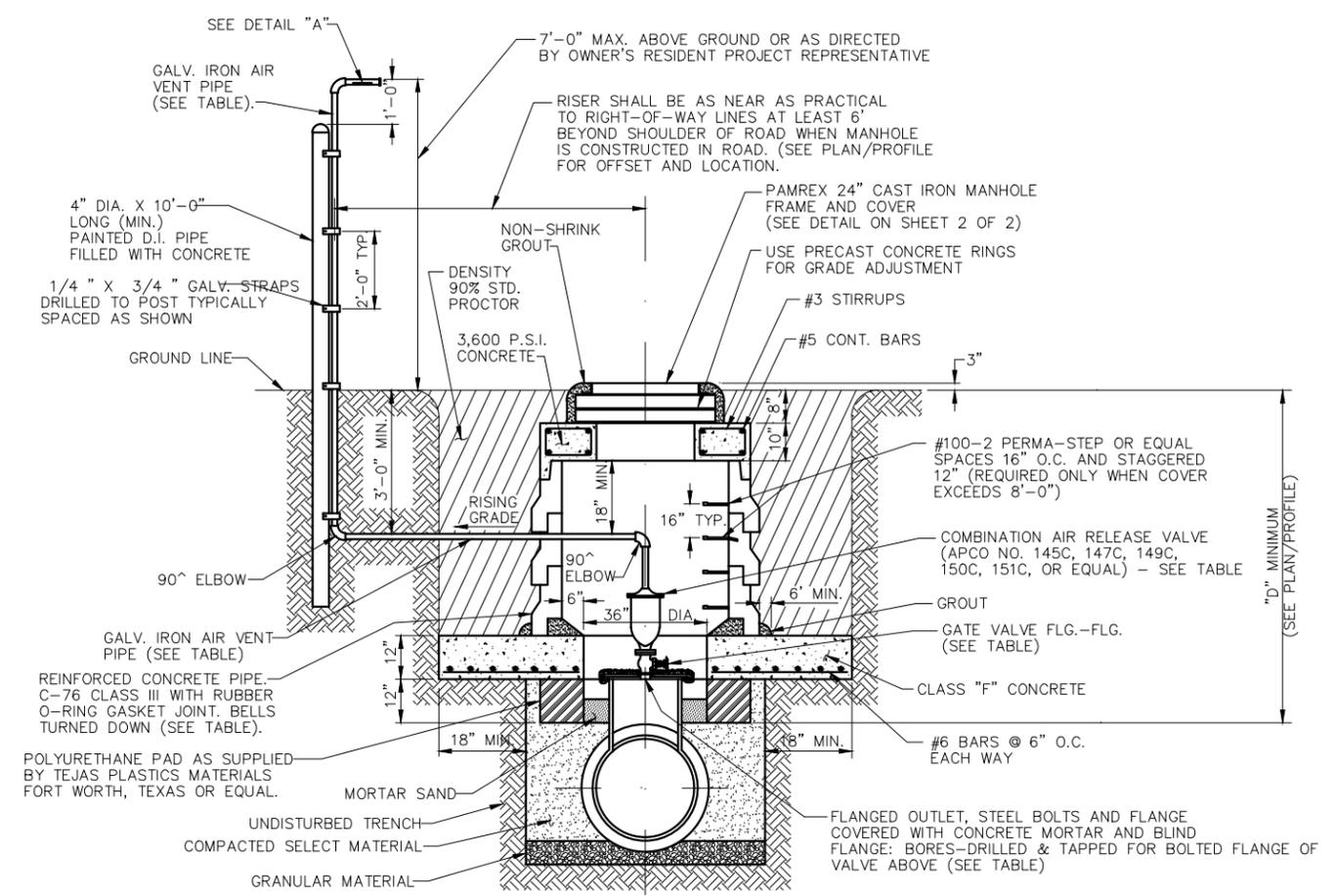


THE CITY OF THE COLONY
 TEXAS

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	M.S.		JULY 7 2009	N.T.S.	W-12	



PLAN
NOT TO SCALE



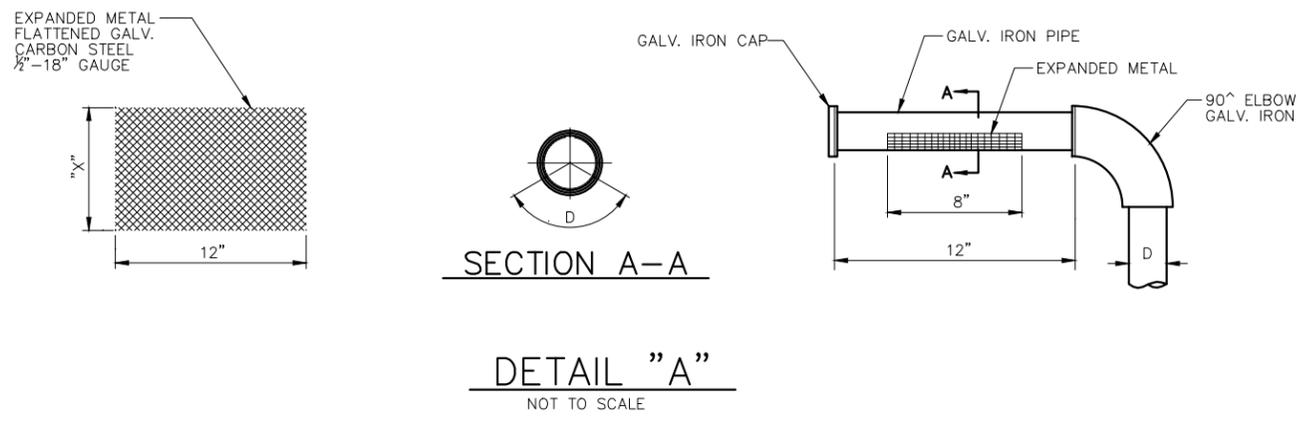
COMBINATION AIR RELEASE VALVE AND VAULT DETAIL
NOT TO SCALE

COMBINATION AIR RELEASE VALVE - TABLE OF SIZES						
AIR VALVE	VALVE	FLG. OUTLET (W)	VENT PIPE	EXPANDED METAL (X)	MANHOLE DIA.	MINIMUM COVER OVER PIPE (D)
1"	1"	8"	1"	3"	N/A	N/A
2"	2"	8"	2"	5"	4'	6.5'
3"	3"	12"	3"	8"	5'	7.0'
4"	4"	16"	4"	10"	5'	7.5'
6"	6"	18"	6"	16"	5'	8.5'
8"	8"	18"	8"	21"	5'	9.0'

GENERAL NOTES FOR AIR RELEASE VALVES:

GENERAL:

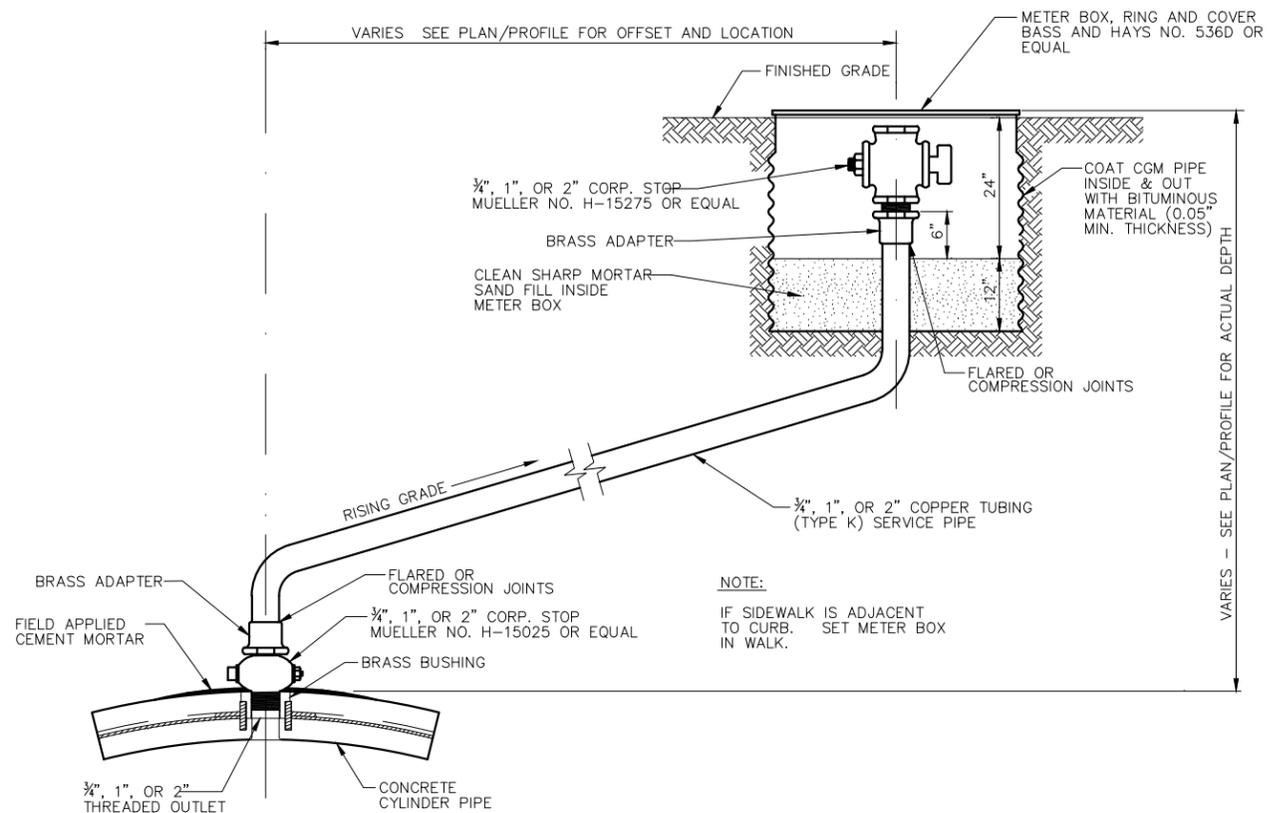
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE CITY OF THE COLONY, WHICH HAS ADOPTED THE FOURTH EDITION OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - NORTH CENTRAL TEXAS" HEREIN REFERRED TO AS "COG" SPECIFICATIONS. COPIES MAY BE OBTAINED FROM THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 616 SIX FLAGS DRIVE, SUITE 200, ARLINGTON, TEXAS 46005-5888. (817)640-3300.
- REFER TO THE DETAILS ON THIS SHEET.



DETAIL "A"
NOT TO SCALE

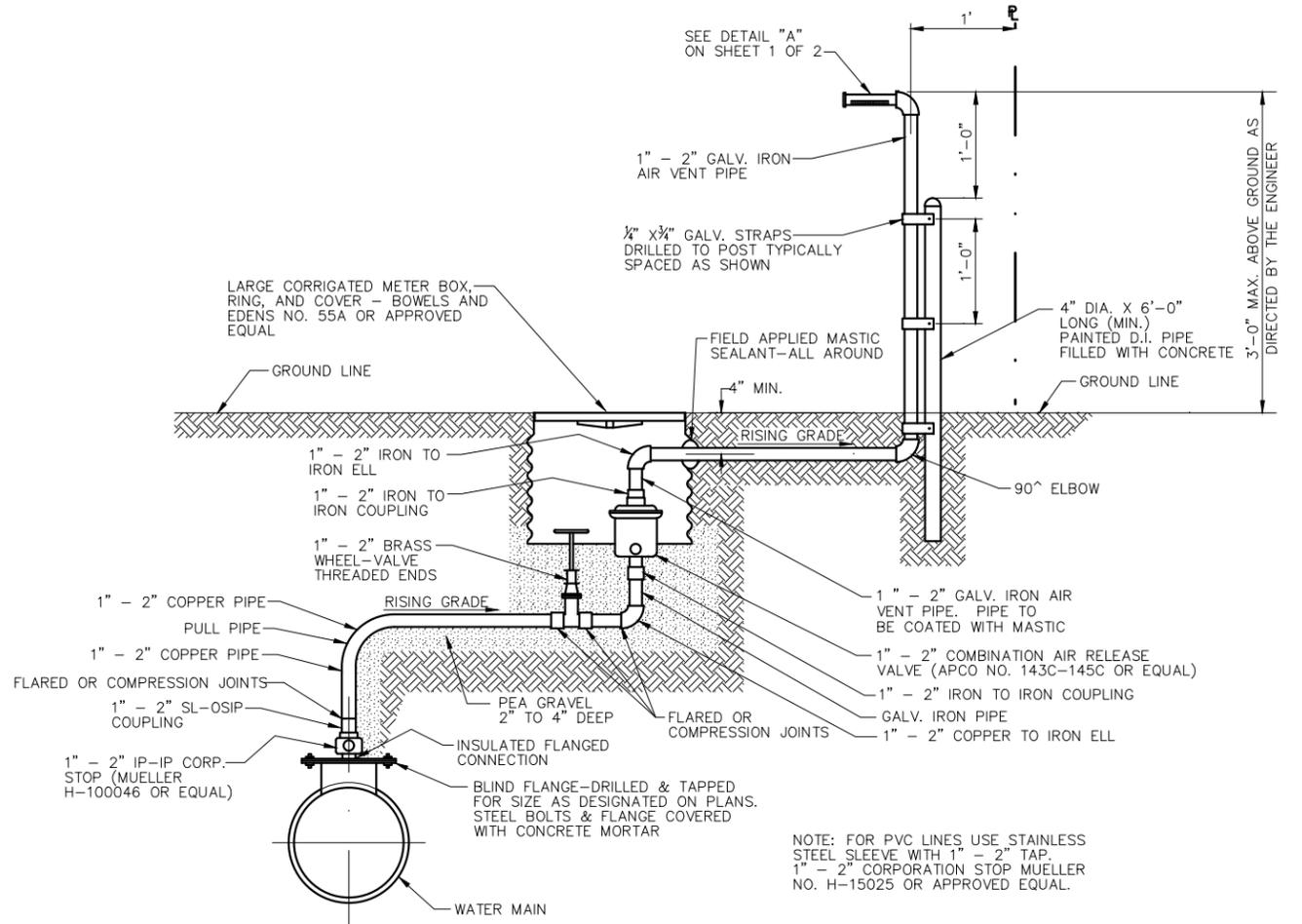
CERTIFICATION:
THIS CITY OF THE COLONY STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. THIS ENGINEER IS ALSO CERTIFYING THAT THE CONTENT OF THE DETAILS AND NOTES ON THIS SHEET HAVE NOT BEEN ALTERED FROM THAT RECEIVED FROM THE CITY OF THE COLONY.

WATER STANDARD DETAILS						
WATER AIR VALVE (SHEET 1 OF 2)						
						
THE CITY OF THE COLONY TEXAS ENGINEERING DEPARTMENT						
DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		JULY 7 2009	N.T.S.	W-13	

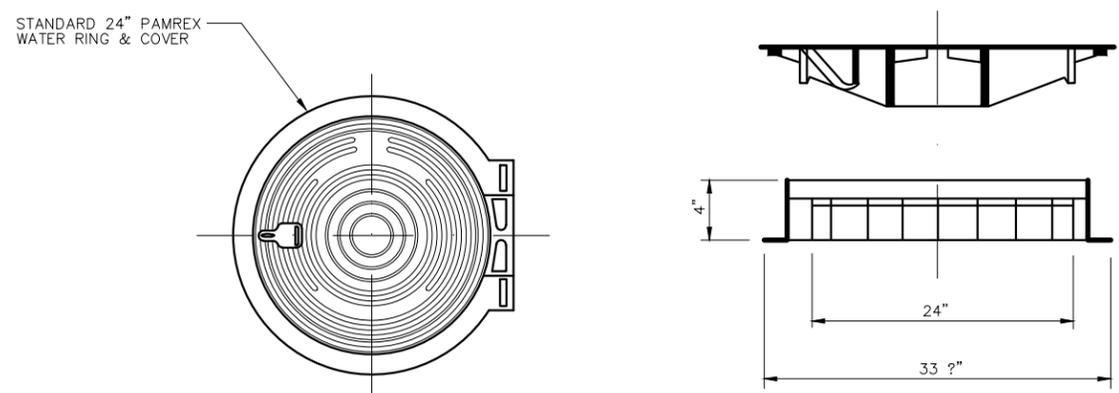


MANUALLY OPERATED AIR VALVE AND FLUSH POINT
 (SIZES DESIGNATED ON PLANS)
 NOT TO SCALE

NOTE:
 IF SIDEWALK IS ADJACENT
 TO CURB, SET METER BOX
 IN WALK.



COMBINATION AIR RELEASE VALVE AND METER BOX DETAIL
 NOT TO SCALE

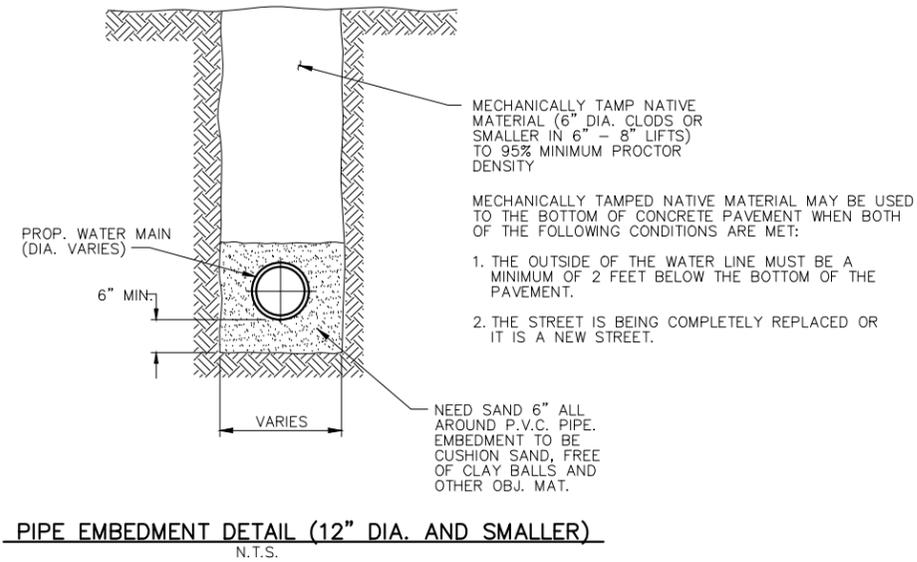


RING & COVER NOTES:
 1. THE STD. MANHOLE COVER SHALL BE PAMREX 24" RING AND COVER NO. CDPA60EH OR EQUAL
 2. APPROXIMATE WEIGHT OF RING=73 LBS. AND COVER=122 LBS.

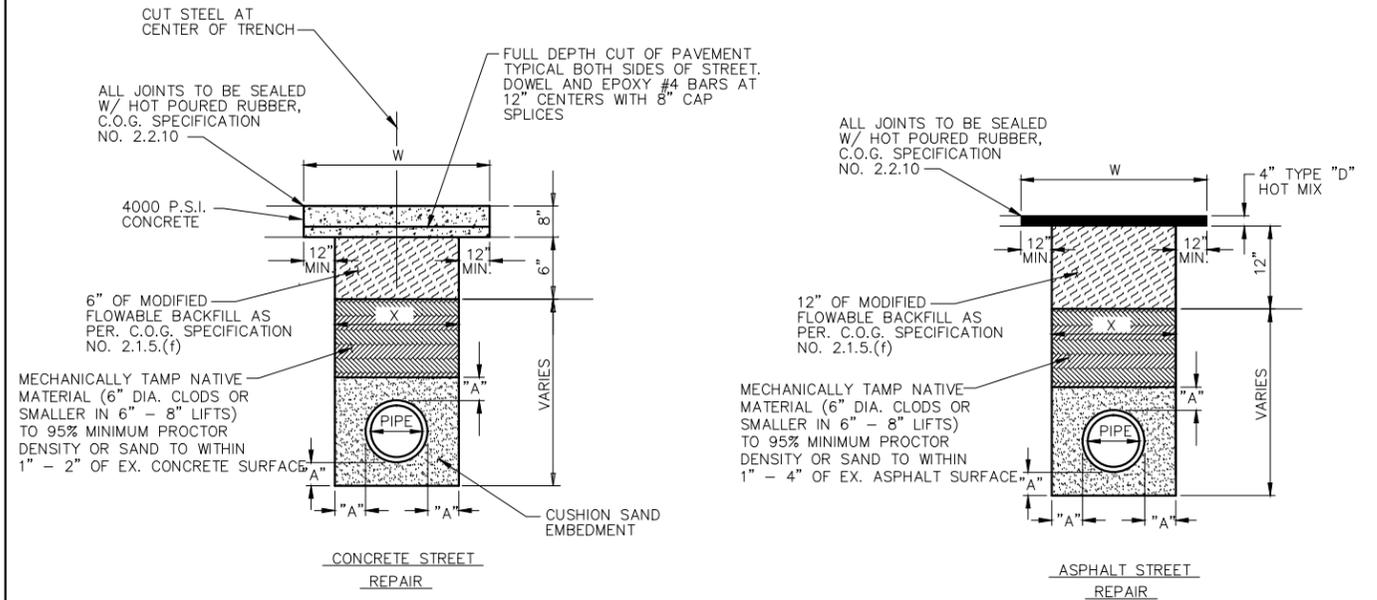
STANDARD 24" PAMREX RING & COVER
 NOT TO SCALE

CERTIFICATION:
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 STANDARD DETAIL SHEET
 IS AUTHORIZED FOR USE
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 AND NOTES ON THIS SHEET
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 FROM THAT RECEIVED FROM
 THE CITY OF THE COLONY.

WATER STANDARD DETAILS						
WATER AIR VALVE (SHEET 2 OF 2)						
						
THE CITY OF THE COLONY TEXAS ENGINEERING DEPARTMENT						
DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		JULY 7 2009	N.T.S.	W-14	



NOTE:
A COMMERCIALLY AVAILABLE MAGNETIC TAPE SHALL BE INSTALLED 12-INCHES ABOVE THE TOP OF ALL PVC WATER PIPE. THE TAPE SHALL BE BLUE IN COLOR AND HAVE THE WORDING "CAUTION WATER LINE BURIED BELOW".



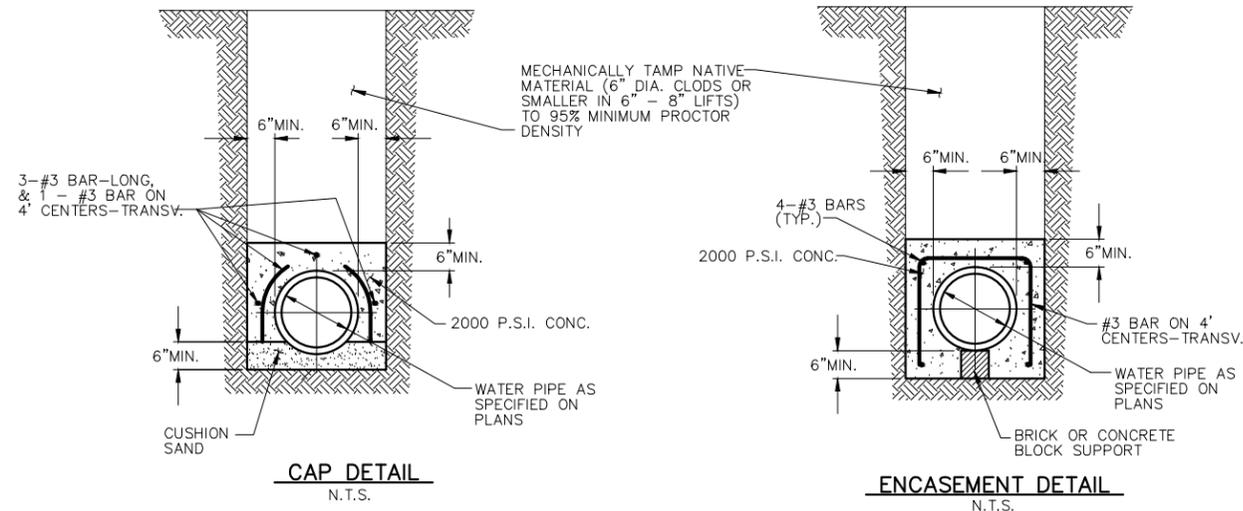
STREET BACKFILL & REPAIR
N.T.S.

NOTE:
SAWCUT TO REPAIR ASPHALT OR CONCRETE PAVEMENT PRIOR TO OPENING THE DITCH IN ORDER TO ENSURE A NEAT STRAIGHT EDGE.

TABLE OF DIMENSIONS FOR WIDTH OF TRENCH AND PAVEMENT REPLACEMENT

NORMAL SIZE OF PIPE IN INCHES	O.D. OF PIPE BELL IN INCHES (PVC-DR18)	MINIMUM TRENCH WALL CLEARANCE "A" IN INCHES	WIDTH OF TRENCH ('X')		WIDTH OF PVMT. REPLACEMENT *
			MAXIMUM ** IN INCHES	MINIMUM ** IN INCHES	('W') CONC. & ASPHALT **
6	6.9	6	24	19	48
6	6.9	6	24	19	48
10	11.10	6	28	24	48
12	13.20	6	30	26	50
16+	VARIES	8	*	*	*

NOTE: * REFER TO THE PLANS FOR SPECIFIED WIDTH OF REPLACEMENT.
** RECOMMENDED WIDTHS - VARIES BASED ON DEPTH. AND SOIL MATERIAL.



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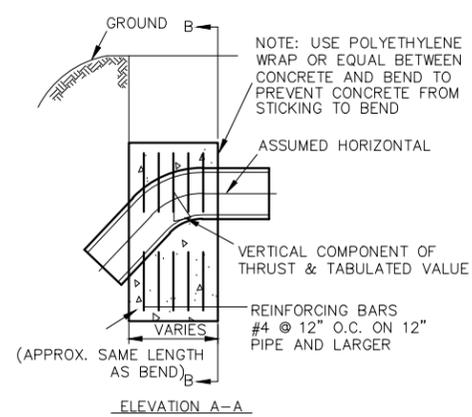
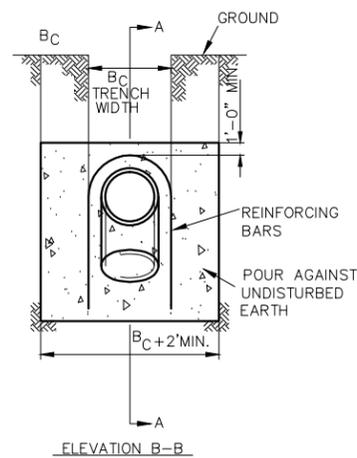
WATER STANDARD DETAILS
BACKFILL / EMBEDMENT



THE CITY OF THE COLONY
TEXAS

ENGINEERING DEPARTMENT

DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		JULY 7 2009	N.T.S.	W-2	

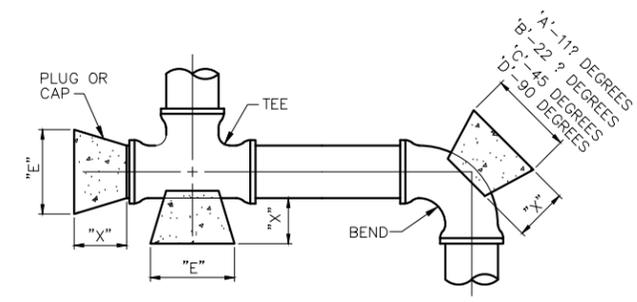


△	11.25°		22.50°		30°		45°		67.50°		90°		△
I.D. (IN.)	THRUST TONS	VOL. C.Y.	I.D. (IN.)										
4,6,8	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	5.0	2.5	4,6,8
10,12	2.2	1.1	4.3	2.2	5.7	2.8	8.0	4.0	10.5	5.2	11.3	5.7	10,12
16,18	5.0	2.5	9.7	4.9	12.7	6.4	18.0	9.0	23.5	11.8	25.5	12.7	16,18
20	6.1	3.1	12.0	6.0	15.7	7.9	22.2	11.1	29.2	14.5	31.4	15.7	20
24	8.2	4.4	17.3	8.7	22.6	11.3	32.0	16.0	41.8	20.9	45.2	22.6	24
30	10.5	5.2	20.3	10.1	26.5	13.3	37.5	18.8	49.0	24.5	53.1	26.5	30
36	14.9	7.5	29.2	14.6	38.2	19.1	54.0	27.0	70.5	35.3	76.4	38.2	36
42	20.3	10.1	39.8	19.9	52.0	26.0	73.5	36.7	96.0	48.0	104.0	52.0	42
48	26.5	13.2	51.9	26.0	67.9	33.9	96.0	48.0	126.0	62.7	136.0	67.9	48
54	33.5	16.8	65.7	32.9	85.9	42.9	122.0	60.7	159.0	79.4	172.0	85.9	54
60	41.4	20.7	81.2	40.6	106.0	53.0	150.0	75.0	196.0	98.0	212.0	106.0	60
66	50.1	25.0	98.2	49.1	128.0	64.2	182.0	90.7	237.0	119.0	257.0	128.0	66
72	59.6	29.8	117.0	58.4	153.0	76.3	216.0	108.0	282.0	141.0	305.0	153.0	72
78	69.9	35.0	137.0	68.6	179.0	90.0	254.0	127.0	331.0	166.0	358.0	179.0	78
84	81.1	40.5	159.0	79.5	208.0	104.0	294.0	147.0	384.0	192.0	416.0	208.0	84
90	93.1	46.5	183.0	91.3	239.0	119.0	337.0	169.0	441.0	221.0	477.0	239.0	90
96	106.0	53.0	208.0	104.0	272.0	136.0	384.0	192.0	502.0	251.0	543.0	272.0	96

VERTICAL THRUST BLOCK NOTES:

- ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 P.S.I. FOR 24" I.D. PIPE AND SMALLER AND 150 P.S.I. ON 30" I.D. AND LARGER.
- VOLUMES OF VERTICAL BEND THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THRUST ON THE VERTICAL BEND.
- WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATING PURPOSES ONLY.
- CONCRETE FOR BLOCKING SHALL BE 2000 P.S.I. CONCRETE.
- DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.

DIMENSIONS OF CONCRETE FOR VERTICAL THRUST BLOCKS AT FITTINGS



PIPE SIZE	X-*	11° DEGREES		22° DEGREES		45° DEGREES		90° DEGREES		TEE & PLUG	
		"A"	MIN. AREA	"B"	MIN. AREA	"C"	MIN. AREA	"D"	MIN. AREA	"E"	MIN. AREA
4"	1.5	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.06	1.00	1.00
6"	1.5	1.00	1.00	1.00	1.00	1.14	1.30	1.55	2.40	1.30	1.70
8"	1.5	1.00	1.00	1.08	1.18	1.52	2.31	2.07	4.27	1.74	3.02
10"	1.5	1.00	1.00	1.35	1.84	1.90	3.61	2.58	6.66	2.17	4.71
12"	1.5	1.00	1.33	1.63	2.65	1.86	5.19	3.10	9.60	2.61	6.79
14"	1.5	1.03	1.81	1.90	3.60	2.66	7.07	3.61	13.06	3.04	9.246
16"	2.0	1.18	2.36	2.17	4.71	3.04	9.23	4.13	17.06	3.47	12.06
18"	2.0	1.33	2.99	2.44	5.96	3.42	11.69	4.65	21.59	3.91	15.27
20"	2.0	1.48	3.70	2.71	7.35	3.80	14.43	5.16	26.86	4.34	18.85
21"	2.0	1.55	4.07	2.85	8.11	3.99	15.91	5.42	29.39	4.56	20.78
24"	2.0	1.77	5.32	3.25	10.59	4.56	20.77	6.20	38.39	5.21	27.14
27"	2.5	1.99	6.73	3.66	13.40	5.13	26.29	6.97	48.58	5.86	34.35
30"	2.5	2.22	8.31	4.07	16.55	5.70	32.46	7.74	59.98	6.51	42.41
33"	2.5	2.44	10.06	4.47	20.02	6.27	39.28	8.52	72.57	7.16	51.31
36"	2.5	2.66	11.97	4.88	23.83	6.84	46.74	9.29	86.37	7.81	61.07
39"	3.0	2.88	14.05	5.29	27.97	7.41	54.86	10.07	101.36	8.47	71.68
42"	3.0	3.10	16.30	5.69	32.43	7.98	63.62	10.85	117.56	9.12	83.13

HORIZONTAL THRUST BLOCK NOTES:

- USE MEGA LUGS OR EQUIVALENT FOR ALL BENDS.
- ALL CALCULATIONS ARE BASED ON A WATER LINE PRESSURE OF 150 P.S.I. AND AN ALLOWABLE SOIL BEARING VALUE OF 2,500 POUNDS PER SQUARE FEET.
- 2000 PSI. CONCRETE SHALL BE USED FOR ALL BLOCKING.
- THE MINIMUM VERTICAL DIMENSIONS OF ALL BLOCKING SHALL BE 1.5 TIMES THE PIPE DIAMETER WITH AT LEAST 0.75 TIMES THE PIPE DIAMETER EXTENDING BOTH ABOVE AND BELOW THE PIPE CENTERLINE. THIS DIMENSION DETERMINES THE "X" DIMENSION FOR 11 1/4° BENDS.
- FOR 22-1/2°, 45°, 90°, AND TEE AND PLUGS, THE VERTICAL DIMENSION SHALL BE EQUAL TO THE HORIZONTAL DIMENSION SHOWN TO PRODUCE THE REQUIRED MINIMUM AREA.
- ALL MINIMUM AREAS ARE IN SQUARE FEET.

DIMENSIONS OF CONCRETE FOR HORIZONTAL THRUST BLOCKING AT FITTINGS

CERTIFICATION:
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WATER STANDARD DETAILS

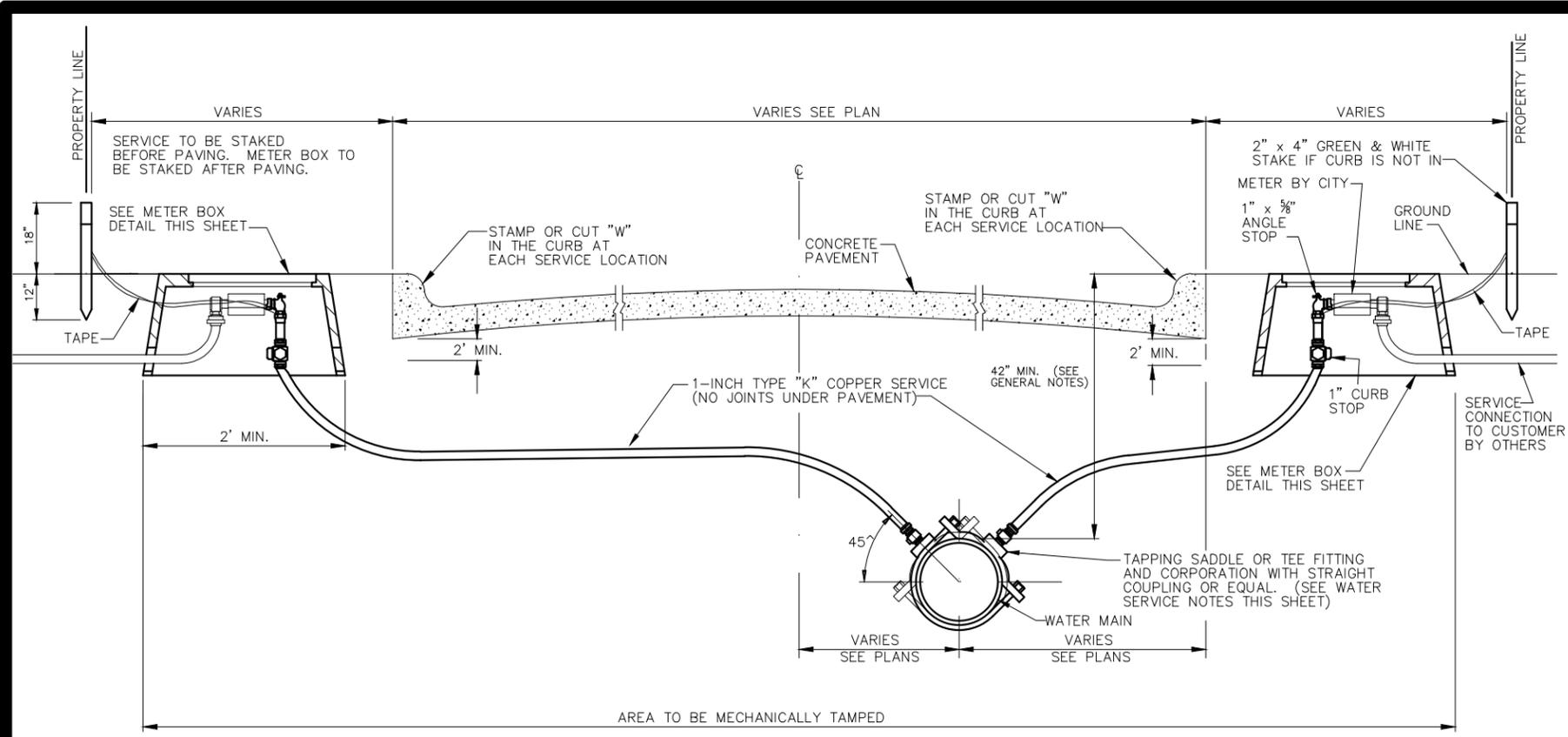
CONCRETE BLOCKING



THE CITY OF THE COLONY
TEXAS

ENGINEERING DEPARTMENT

DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		JULY 7 2009	N.T.S.	W-3	



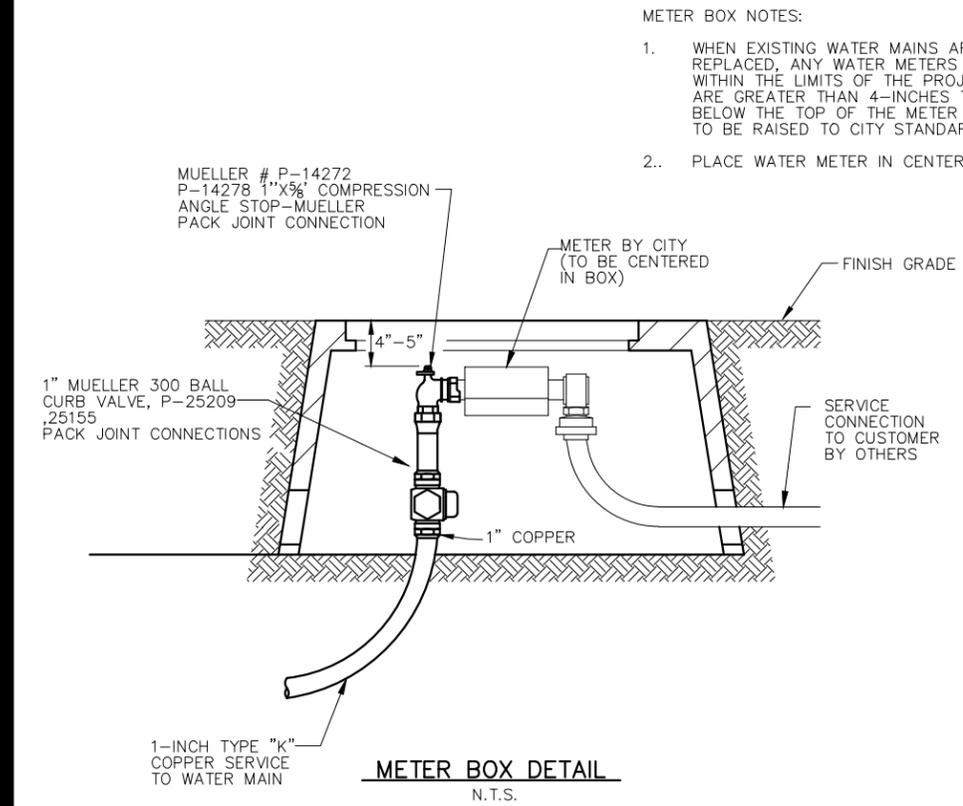
WATER SERVICE DETAIL
N.T.S.

WATER SERVICE NOTES:

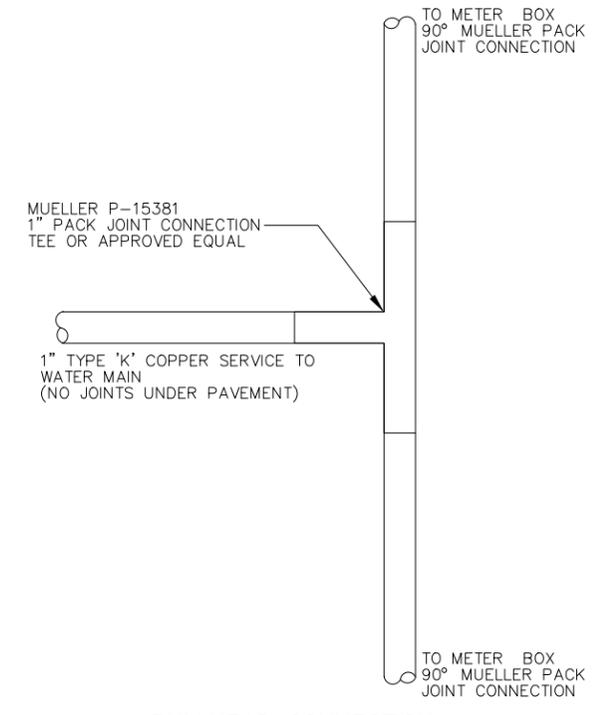
1. All property corners shall be staked with iron rods prior to the installation of any water services. Water service locations shall be staked in the field in accordance with Note 4 below.
2. Water services shall not be connected to fire hydrant lead lines.
3. All material shall conform to the standard specifications. See the "City of the Colony Addendum to the North Central Texas Council of Governments Standard Specifications for Public Works Construction" for a list of approved materials.
4. Residential water services shall be placed in the center of the lot with the sanitary sewer house connection placed 10 feet downstream. All taps shall be made at a 45 degree angle to the center of the pipe.
5. The Contractor shall set the meter boxes in all cases. The meter box shall be set within the right-of-way or a dedicated utility easement. The meter box shall be protected from vehicular traffic except as provided in Note 19 below.
6. It is the responsibility of the Contractor to furnish and install the corporation, water service pipe, cut-off angle valve, the connector pipe, and meter box, as per the details on this sheet.
7. Direct taps are not allowed, saddles shall be used.
8. Cutter for taps shall be of the double slotted type.
9. Taps shall have double strap brass saddles with a minimum width of 2 inches to provide full support and shall be Mueller BR2B or approved equal.
10. All taps larger than 2-inch shall be made using tapping tees.
11. Taps shall be a minimum of 1foot apart with taps no closer than 1foot from the end of the pipe.
12. All house services shall be 1inch Type "K" soft drawn copper.
13. Contractor may use either flared or compression fittings with pack joint connection with locked ends.
14. No splices of water services shall be permitted under pavement unless approved by the City Engineer.
15. Where splices are approved by the City Engineer, use a 3 part union copper to copper, Mueller H-15400 flared fitting, or Mueller H-15405 compression fitting with restrained union, or equal.
16. Corporations shall be minimum 1-inch. Mueller P-15028 flared corporation, or Mueller P-15008 compression corporation or approved equal.
17. Angle stops shall be Mueller P-14272 , 14278 or approved equal.
18. Meter boxes for 1-inch services shall be DFW120012.1. Meter boxes for 1-1/2-inch and 2-inch meters shall be DFW 1500.1.LID. Meters shall be centered in boxes.
19. Meter boxes shall be located outside of all flatwork, sidewalks and approaches, except when approved by the building official. A water meter service located in an area subject to vehicular traffic must employ a traffic rated meter box and lid with automatic meter reading capabilities.
20. No 90 degree bends may be installed in services, except as shown.
21. All water services to be marked by "W" stamped or cut on the curb.
22. Provide Mueller 300 ball curb valves P-25209 , P25155 with pack joint connection or approved equal.
23. All U Branch connections shall be Mueller P-15363 or approved equal.

METER BOX NOTES:

1. WHEN EXISTING WATER MAINS ARE BEING REPLACED, ANY WATER METERS FOUND WITHIN THE LIMITS OF THE PROJECT THAT ARE GREATER THAN 4-INCHES TO 5-INCHES BELOW THE TOP OF THE METER BOX ARE TO BE RAISED TO CITY STANDARDS.
2. PLACE WATER METER IN CENTER OF METER BOX.



METER BOX DETAIL
N.T.S.



BULLHEAD CONNECTION
N.T.S.

ABANDONING EXISTING SERVICE:

1. Remove tap and saddle and corporation from the main and install full circle clamp.

CERTIFICATION:
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WATER STANDARD DETAILS

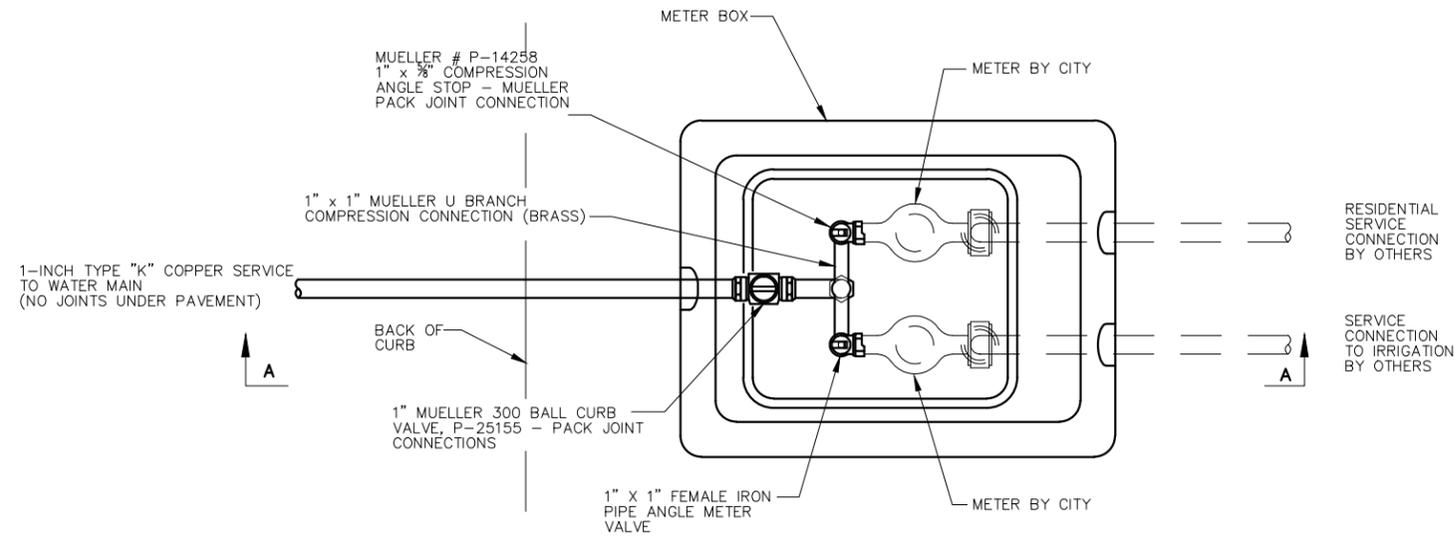
WATER SERVICES



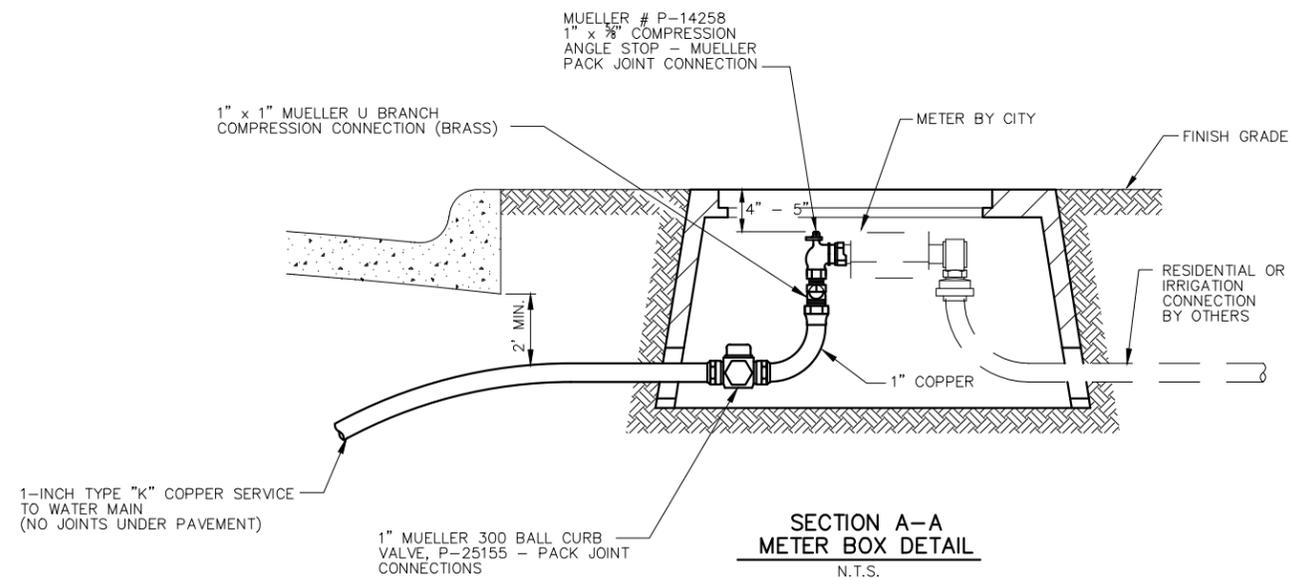
THE CITY OF THE COLONY
TEXAS

ENGINEERING DEPARTMENT

DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		AUGUST 2013	N.T.S.	W-4	



**PLAN VIEW
WATER SERVICE WITH U BRANCH
CONNECTION FOR A
COMBINATION DOMESTIC AND IRRIGATION METER**
NOT TO SCALE



**SECTION A-A
METER BOX DETAIL**
N.T.S.

METER BOX NOTES:

1. WHEN EXISTING WATER MAINS ARE BEING REPLACED, ANY WATER METERS FOUND WITHIN THE LIMITS OF THE PROJECT THAT ARE GREATER THAN 4-INCHES TO 5-INCHES BELOW THE TOP OF THE METER BOX ARE TO BE RAISED TO CITY STANDARDS.
2. PLACE WATER METER IN CENTER OF METER BOX.

CERTIFICATION:
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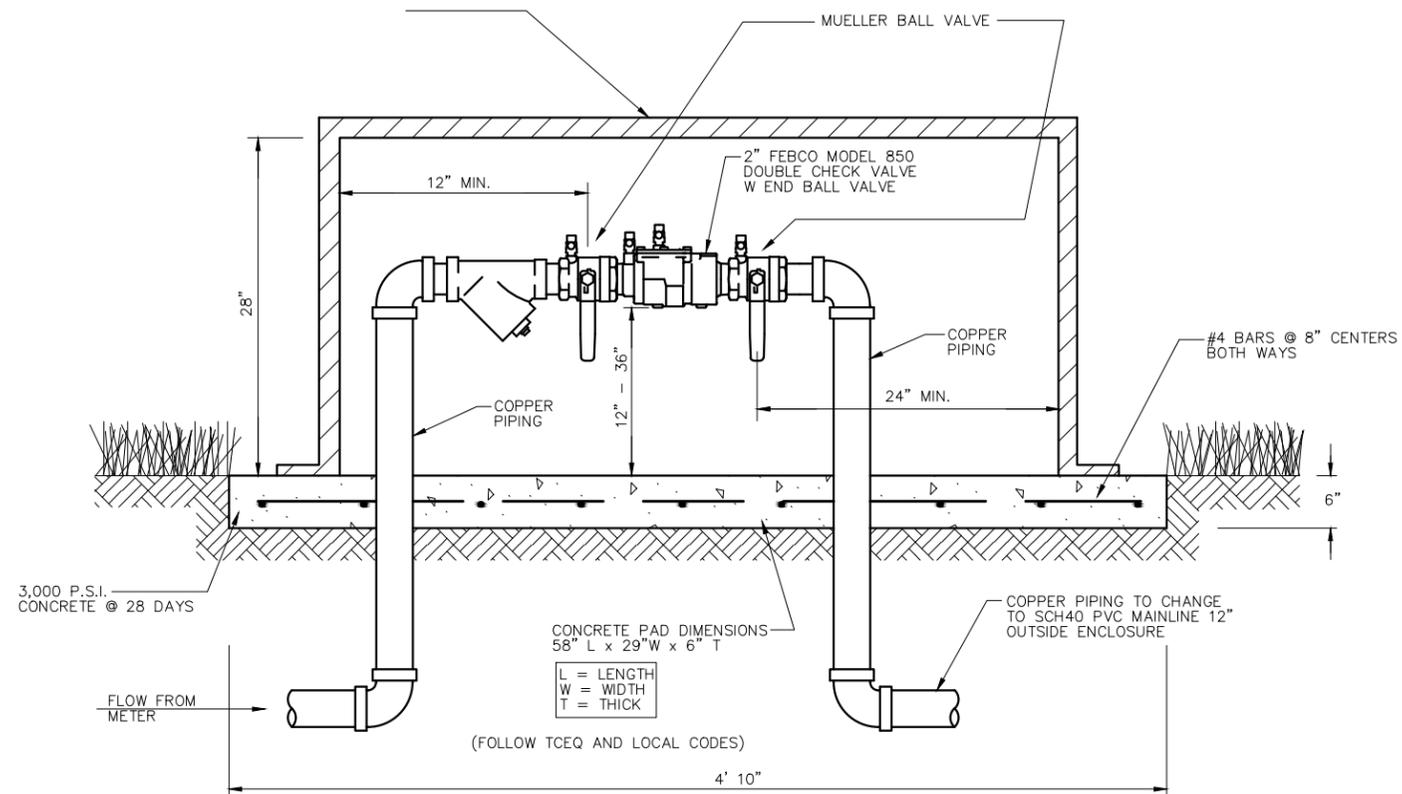
**WATER STANDARD DETAILS
COMBINATION WATER SERVICE
WITH U BRANCH CONNECTION FOR
DOMESTIC AND IRRIGATION METER**



THE CITY OF THE COLONY
TEXAS

ENGINEERING DEPARTMENT

DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		JULY 7 2009	N.T.S.	W-5	



- NOTES:
1. PROVIDE EXPANSION MATERIAL AROUND BFP RISERS.
 2. FINISH CONCRETE LEVEL AND SMOOTH. ALLOW CONCRETE TO CURE BEFORE SETTING ENCLOSURE.
 3. WIDTH OF PAD IS TO BE 2 FEET 5 INCHES.
- AQUASHIELD: 610 SOUTH Y STREET / P.O. BOX 10864 / FORT SMITH AR / 72917 / TEL: (479) 782-1800

DOUBLE CHECK VALVE ASSEMBLY WITH ENCLOSURE

NOT TO SCALE

CERTIFICATION:
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WATER STANDARD DETAILS
 ABOVE-GROUND
 DOUBLE CHECK ASSEMBLY
 WITH ENCLOSURE



THE CITY OF THE COLONY
 TEXAS

ENGINEERING DEPARTMENT

DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		JULY 7 2009	N.T.S.	W-6	

GENERAL NOTES:

GENERAL:

- (A) All construction shall be in accordance with the standard specifications of the City of The Colony, which has also adopted the Fourth Edition of the "Standard Specifications For Public Works Construction - North Central Texas" herein referred to as "COG" specifications. Copies may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Suite 200, Arlington, Texas 76005-5888. (817) 640-3300.
- (B) Refer to COG Items 502.12.2 and 502.6 specifications.
- (C) The assembly shall meet the basic requirements of ASSE 1048 for double check valves and meet requirements of AWWA, CSA, UI Classified, FM Approved. Assembly shall also be approved by the University of Southern California.
- (D) All details and specifications shown on this sheet will govern for the installation of the assembly.

LOCATION:

- (A) The vault shall be located on the owner's property and not within city right-of-way.
- (B) The owner at his option and the approval of the City of The Colony may be permitted to install the double check detector backflow preventer assembly inside the building. The installation would be required to be permitted with the Building Inspection Department and will be inspected by the Environmental Services Department and the Building Inspection Department. The Fire Department connection is to be located at the street. The Fire Department connection shall be within 6 feet of curb, unobstructed and in clear view. And Water Utility personnel shall have access during normal business hours.
- (C) The Fire Department connection may be installed outside the vault with the approval of the engineering division.

VAULT:

- (A) The valve vault may be precast as per details of Dalworth Quickset or Brooks Products or an approved equal.
- (B) The vault shall be placed on 8-inches crushed limestone and the vault shall have a sump with a minimum of a 12" X 12" grate in the bottom of the vault for drain purposes.
- (C) Concrete shall be minimum 6.5 sacks, with 4200 P.S.I. at 28 days.
- (D) Unit is to be of monolithic construction at floor and first stage of wall with sectional riser to required depth.
- (E) Reinforcement shall be Grade 60 steel Rebar conforming to ASTM A-615 on required centers or equal.
- (F) Hatchway shall be 1/4-inch Aluminum Diamond Plate Cover with extruded aluminum frame. Hatch to be furnished with 316 stainless steel snap lock and brass hinges.

PERMIT AND INSPECTION:

- (A) The installation of the check valves and vault shall be permitted and inspected by the Public Works Department of the City of The Colony. The applicant will be required to pay a permit fee in the amount of 4% of the contract amount and issue a maintenance bond in the amount of 50% of the contract amount to remain in effect for two (2) years from date of acceptance of installation.
- (B) The Pipe Line from the check valve vault to the building shall be permitted and inspected by the Plumbing Inspection Division of the City of The Colony.

INSTALLATION:

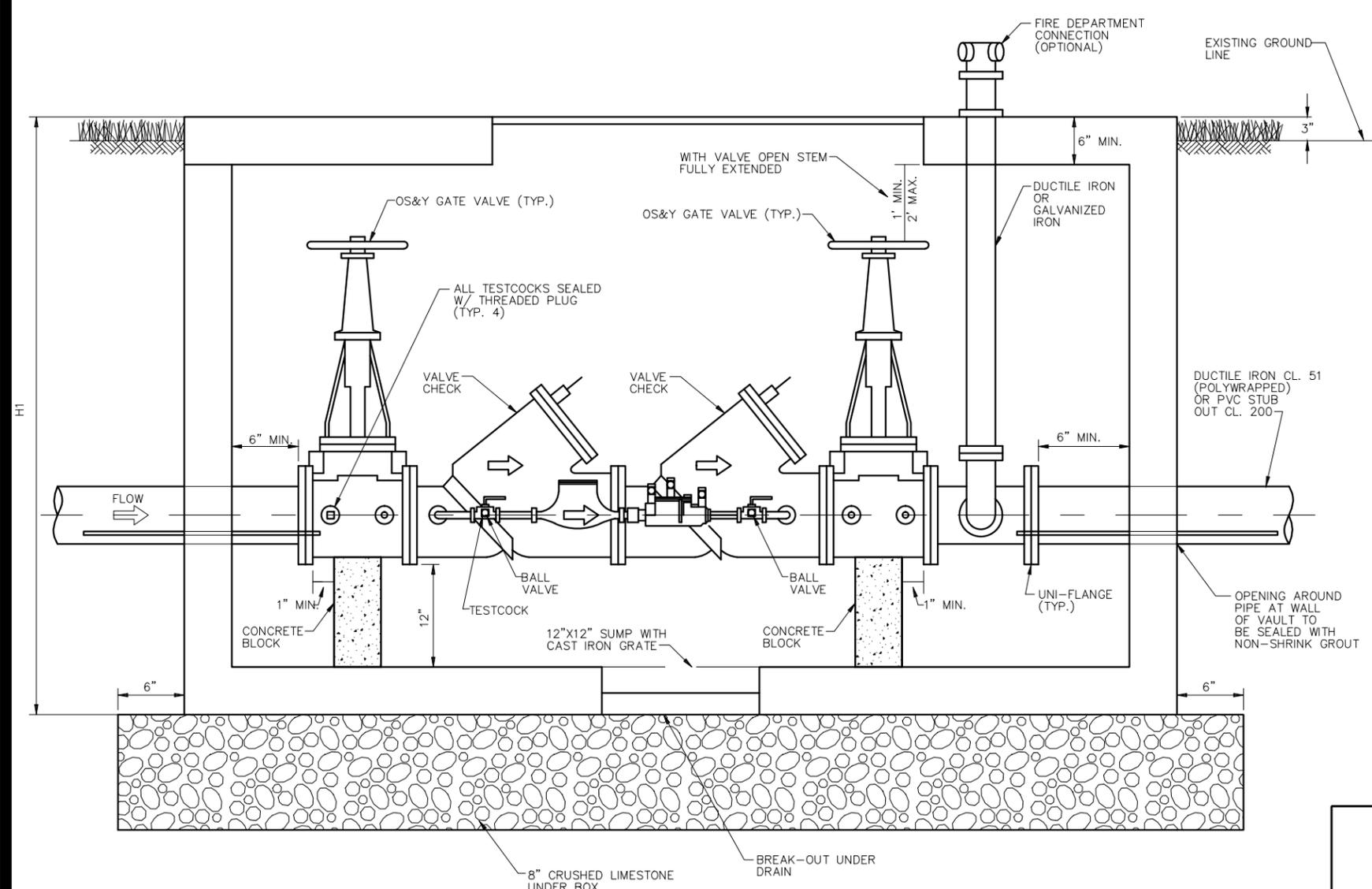
- (A) The double check detector backflow preventer assembly shall consist of a single complete assembly containing two independent acting check valves and four properly placed resilient test cocks for test of the assembly. Assembly shall also include two (2) U.L. Listed resilient seated OS & Y shutoff valves and test cocks.
- (B) Unit shall be U1/FM approved with UL/FM approved OS & Y shutoff valves.
- (C) OS & Y valves shall be Mueller, Waterous, Kennedy or an approved equal.
- (D) The auxiliary line shall consist of an approved backflow preventer (double check assembly completed with test cocks) and a 1/2" X 1/2" water meter.
- (E) The bypass auxiliary line shall have a double check assembly, Watts series 007, Ames 2000 SS BV or FEBCO 805 Y or an approved equal.
- (F) The bypass auxiliary line 1/2" X 1/2" meter shall be Hersey, Neptune or Badger.
- (G) The backflow preventer shall have a Epoxy coated cast iron body, Epoxy coated ductile iron body or stainless steel body with replacement bronze seats and/or a unitized stainless and plastic check assembly.
- (H) The double check detector backflow preventer assembly shall be a Watts series 709 DCDA OSYRW, AMES Model 3000 SS or FEBCO Model 856 or an approved equal.
- (I) 4-inch Wafer check valves shall be Kennedy, reliable Model DW, Mueller A 2102 or NBCO W-900W or an approved equal.

TESTING:

- (A) The Uniform Plumbing Code requires that this assembly must be tested immediately upon installation. Copies of the test report must be forwarded to the Environmental Services Department.
- (B) Upon installation and approval of fire sprinkler line/Fire Department connection, the owner shall be required to submit a yearly test report from a reputable testing company stating that the check valves are in good working condition. These test reports shall be submitted to the City of The Colony Environmental Services Department and the Fire Department once a year as required by the TCEQ rules and regulations and City of The Colony Code of Ordinances. The testing of backflow preventer assemblies which are installed to provide protection against Health hazards are to be completed by certified Fireline Testers that are qualified to test and repair backflow preventer assemblies on fire lines only.

MAINTENANCE:

- (A) The maintenance of the double check detector backflow assembly shall be by the property owner.



ELEVATION
N.T.S.

PARK EQUIPMENT CO. (OR EQUAL) VAULT DETAIL

MODEL	SIZE	DIMENSIONS			WEIGHT LBS.
		L1	W1	H1	
DDBP3	3"	6'-0"	3'-6"	4'-0"	2,700
DDBP4	4"	6'-0"	3'-6"	4'-0"	2,900
DDBP6	6"	7'-10"	4'-4"	5'-5"	9,000
DDBP8	8"	8'-8"	5'-0"	5'-6"	15,000
DDBP10	10"	9'-2"	5'-8"	8'-6"	18,000

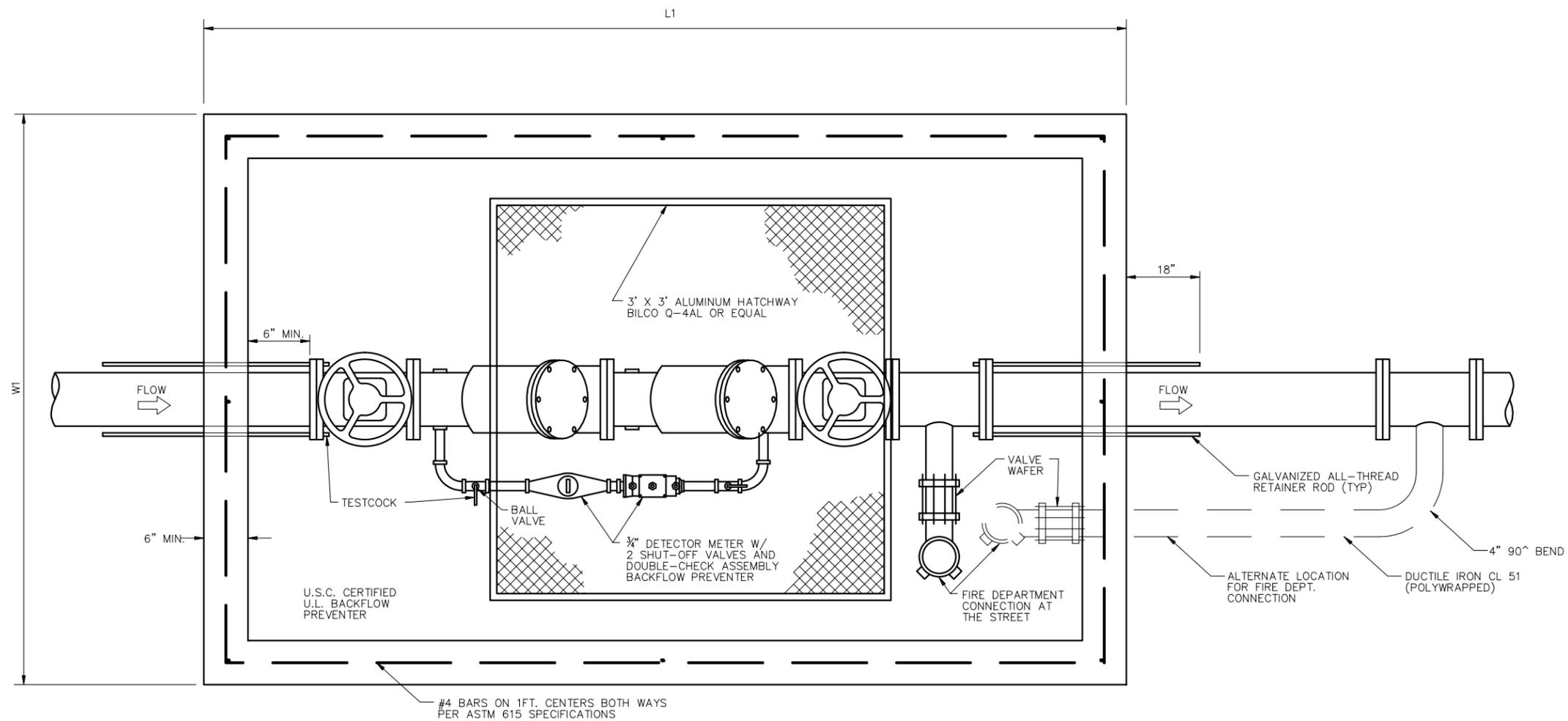
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WATER STANDARD DETAILS
WATER DETECTOR CHECK AND VAULT
(SHEET 1 OF 2)



THE CITY OF THE COLONY
TEXAS
ENGINEERING DEPARTMENT

DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		JULY 7 2009	N.T.S.	W-7	



PLAN VIEW
N.T.S.

CERTIFICATION:
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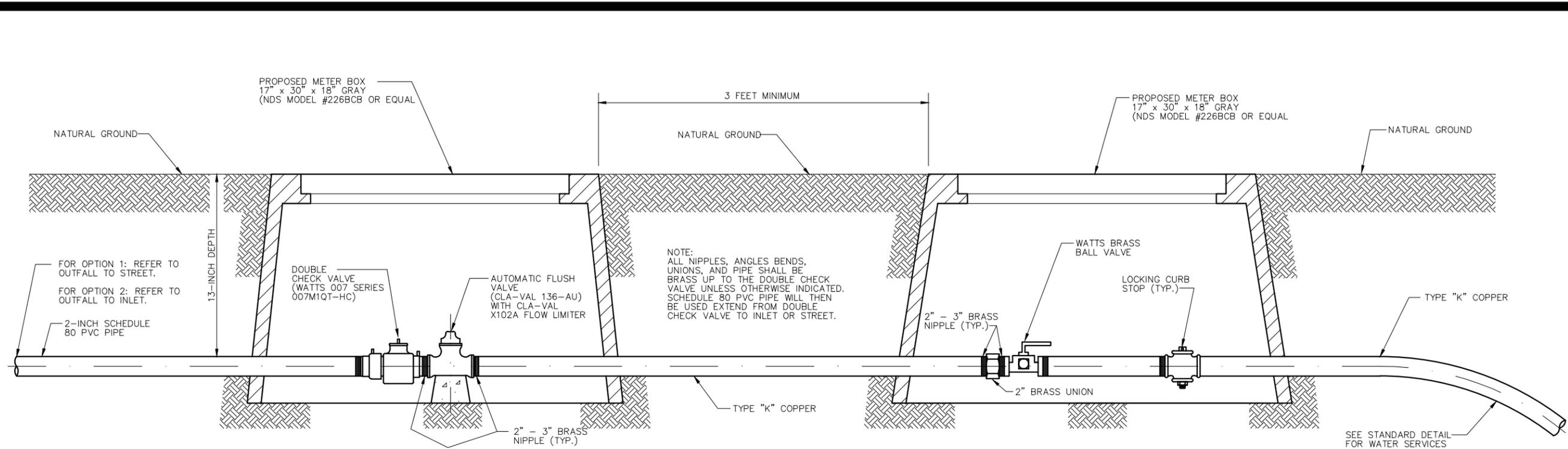
WATER STANDARD DETAILS
WATER DETECTOR CHECK AND VAULT
(SHEET 2 OF 2)



THE CITY OF THE COLONY
TEXAS

ENGINEERING DEPARTMENT

DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		JULY 7 2009	N.T.S.	W-8	



AUTOMATIC FLUSH VALVE ASSEMBLY DETAIL

N.T.S.

GENERAL NOTES FOR AUTOMATIC FLUSH VALVE ASSEMBLY:

GENERAL:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE CITY OF THE COLONY, WHICH HAS ADOPTED THE FOURTH EDITION OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - NORTH CENTRAL TEXAS" HEREIN REFERRED TO AS "COG" SPECIFICATIONS. COPIES MAY BE OBTAINED FROM THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 616 SIX FLAGS DRIVE, SUITE 200, ARLINGTON, TEXAS 46005-5888. (817) 640-3300.
2. REFER TO THE DETAILS ON THIS SHEET.
3. CLA-VALVE FLOW LIMITER SHALL BE FIELD ADJUSTED TO REGULATE DISCHARGE FROM THE FLUSH VALVE AS SPECIFIED BY THE CITY INSPECTOR.

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WATER STANDARD DETAILS						
AUTOMATIC FLUSH VALVE ASSEMBLY (SHEET 1 OF 2)						
						
THE CITY OF THE COLONY TEXAS						
ENGINEERING DEPARTMENT						
DESIGN	DRAWN	CHECK	REV. DATE	SCALE	FILE	NO.
	M.S.		JULY 7 2009	N.T.S.	W-9	