Standard Drawings for Water & Wastewater Construction

Dallas Water Utilities

City of Dallas
Water Utilities Department

OCTOBER 2009
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PART 1
(Series 100)

COMMON FOR WATER & WASTEWATER MAIN CONSTRUCTION

City of Dallas
Water Utilities Department
# PART 1
## COMMON FOR WATER & WASTEWATER CONSTRUCTION

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BY OTHER THAN OPEN CUT-FOR WATER MAINS & WASTEWATER MAINS
(NON Tx.D.O.T. - NON RAILROAD)

GENERAL NOTES

1. By Other Than Open Cut Construction Methods Are To Conform NCTCOG Specifications Item 503.3 Methods Of Jacking, Boring, Or Tunneling & 2009 D.W.U. Addendum To NCTCOG Specs. (Unless Otherwise Noted)
2. Carrier Pipe To Be Made Up Outside The Limits Of By Other Than Open Cut Area, Then Pushed Through Shaft Area.
3. The Carrier Pipe Must Be Restrained (Weighted) In Place Prior To The Placing Of Grout To Prevent The Carrier Pipe From Floating.
4. The Voids Between The Carrier Pipe, Or Encasement Pipe/TunnelLiner (If Used), And The Earthen Bore Are To Be Filled With Grout.
5. Hold-Down Jacks Or Pipe Spacers (If Required By Design) Shall Conform To Page 109. Additionally, Grout Will Be Applied To All Voids Between The Carrier Pipe And Encasement Pipe.
6. When Main Is Installed With An Encasement Pipe Or TunnelLiner Plate, The Carrier Pipe Is To Be Supported By A Class “B” Concrete Cradle As Shown On Page 108.
7. The Contractor Must Submit An Encasement Design For Approval By The Owner. For Encasement Pipes Greater Than 15 Inches (I.D.), The Submittal Must Be Sealed By A Professional Engineer Registered Within The State Of Texas.

NCTCOG Spec: 203.5.7.2 - Tunneling
NCTCOG Spec: 503.3 - Methods Of Jacking, Boring Or Tunneling
2009 DWU Addendum: 503.3.3.1 - General

BY OTHER THAN OPEN CUT
(Non-Tx.D.O.T. & Non-Railroad)
TYPICAL FOR HIGHWAY CROSSING FOR ALL WASTEWATER MAINS &
FOR WATER MAINS 12 in. & UNDER IN DIAMETER

Required Safety Distances
Service Rd. (w/o Curb) 10 ft.
Service Rd. (w/Curb) 5 ft.
Ramp 20 ft.

Existing High Volume Roads
(Interstate Highways)
Pavement Structure
Including Sub-Base

Normal Face Of
Bore Pit

30 ft. Min.
See Note 6 & 7

Existing High
Volume Or
Secondary Roads
Pavement Structure
Including Sub-Base

24 in. min.

PLACE BY OTHER THAN OPEN CUT
ENCASMENT PIPE SPECIFICATIONS (See 104 & 105)

GENERAL NOTES

1. Carrier Pipe To Be Made Up Outside The Encasement Pipe And Pushed Through With The Bell Of The Pipe Resting On The Encasement Pipe Or A Class "B" Concrete Cradle Where Applicable.

2. Carrier Pipe Shall Be Supported On A Continuous Class "B" Concrete Cradle, Within Corrugated Metal And Flange Liner Encasements.

3. Carrier Pipe Must Be Restrained (Weighted) In Place Prior To The Placing Of Grout To Prevent The Carrier Pipe From Floating.


5. In Tunnel Sections, Voids Between Earth Or Rock & Enc. Pipe Shall Be Filled With 1:7 Grout Including 5% Air Entrainment By Pressure Injection.

6. Where Circumstances Necessitate The Excavation Of A Bore Pit Or Trench Closer To The Edge Of Pavement Than Set Forth On This Sheet, Guard Fense Or Other Approved Protective Devices Will Be Installed For The Protection Of The Traveling Public.


8. The Contractor Must Submit An Encasement Design For Approval By The Owner. For Encasement Pipes Great Than 15 Inches (I.D.), The Submittal Must Be Sealed By A Professional Engineer Restored Within The State Of Texas.

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HIGHWAY CROSSING
FOR ALL WASTEWATER MAINS & FOR
WATER MAINS 12" & UNDER IN DIAMETER.

NCTCOG Spec: 509.2 - State Highway Crossing
NCTCOG Spec: 702.2.1 - Quality Of Concrete

DWU 102
DATE OCT. 2009
TYPICAL FOR HIGHWAY CROSSING FOR WATER MAINS OVER 12in. (30.5cm.) DIAMETER

PLACE BY OTHER THAN OPEN CUT

ENCASEMENT PIPE SPECIFICATIONS (See 104 & 105)

GENERAL NOTES

1. There shall be a minimum of two hold-down jacks or pipe spacers per carrier pipe joint, see 109. Additionally, grout shall be applied to all voids between the carrier pipe and encasement pipe.

2. In Sawed Sections, voids between earth or rock & Enc. Pipe shall be filled with 1:7 grout including 5% air entrainment by pressure injection.

3. Carrier pipe shall be supported on a continuous Class "B" concrete cradle, within corrugated metal and flange liner encasements.


5. When standard pipe is made up inside larger Enc. Pipe, the carrier pipe shall be laid to grade on a class "B" concrete embedment which shall extend to the 1/4 point of the diameter of the carrier pipe. When mechanical joint pipe is used as a carrier pipe in larger Enc. Pipe, precast concrete blocks may be placed back of each bell. Each block will have minimum dimensions of 9" in length by 0.866 "D" in breadth (where "D" is the external diameter of the placed carrier pipe) with a sufficient thickness to clear the bells from the Enc. Pipe and to bring the carrier pipe to grade.

6. Where circumstances necessitate the excavation of a bore pit or trench closer to the edge of pavement than set forth on this sheet, guard fence or other approved protective devices will be installed for the protection of the traveling public.

7. If construction site is wider than required safety distances and if side slopes will allow, construction of bore pits may be allowed (With TxDOT approval) but access to those pits must be by means other than main traffic lanes.

8. The contractor must submit an encasement design for approval by the owner. For encasement pipes greater than 15 inches (ID), the Submittal must be sealed by a Professional Engineer registered within the state of Texas.

9. The encasement pipe shall be extended beyond the existing pavement, as shown on the plans or specifications, where practicable. The encasement pipe shall be extended to provide a minimum of 30 ft. of cover for the carrier pipe. Where practicable, the carrier pipe shall be extended beyond the existing pavement to provide a minimum of 5 ft. of cover for the carrier pipe.

NCTCOG Spec: 509.2 - State Highway Crossing
NCTCOG Spec: 702.04 - Quality of Concrete

REFER TO PAGES: 102 104 105 106 107 108 109

HIGHWAY CROSSING FOR WATER MAINS OVER 12" DIAMETER

DWU (Page No.) 103

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HIGHWAY CROSSING ENCASEMENT PIPE, GAUGE, CLASS, COVER

DEWU

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NOTE: ∞ Infinity

HIGHWAY CROSSING ENCASEMENT PIPE, GAUGE, CLASS, COVER

DWU: 105

DATE: OCT. 2009
STATE HIGHWAY CROSSINGS

All State Highway crossings shall conform to Tx.D.O.T.’s Public Transportation Utility Accommodation Policy Manual Special Specifications, and the following requirements:

All excavations within the State controlled right-of-way shall be back filled by tamping in 6 inch horizontal layers. All surplus material shall be removed from the right-of-way and the excavation area shall be restored flush with the surrounding natural ground.

All areas of sod that are disturbed by the construction operations are to be restored at completion of project. Areas with slopes of 2% or less are to be restored by mulch sodding. Areas with slopes greater the 2% are to be restored with block sod.

Crossings below paved roadways by water and wastewater mains within the State controlled right-of-way are to be installed by boring or tunneling methods. Optional “Wet”bore or “Slurry” bore methods must be approved by Tx.D.O.T. Water or other fluids used in the boring operation may only be used for lubricating the cutting head of the tunneling machine. Bores may not be installed by water jetting or jacking.

Highway crossings for all wastewater lines and water lines 12 inches and under will require an encasement pipe at least 2 inches greater than the largest outside diameter of the carrier pipe. The diameter of the encasement pipe for water lines over 12 inches will be determined by the Design Engineer and indicated on design plans. Encasement pipes will be of sectional liner or smooth bore steel pipe to suit conditions of crossing. Manholes will be specified on design plans. For all mains, voids between encasement and carrier pipe will be filled with 1:7 Grout with 5% Air Entrainment. Regardless of method used for installing the encasement pipe, it will be installed with even bearing throughout its length, and all voids between the encasement pipe and the earth or rock shall be filled with grout. Timber supports shall not be used. Trench excavations and bore pits shall not be closer than 30 feet from the edge of the nearest through traffic lane of High Volume Roadways. For other paved areas (Service Roads), open trenching and bore pits shall not be closer than 10 feet from the edge of pavement or 5 feet from the face of curb. The carrier pipe will be the kind and class designed to carry the water and wastewater. No explosives shall be used within limits of Highway without written permission from the Tx.D.O.T.

See 102, 103, 104, 105, 107

NCTCOG Spec: 509.2 - State Highway Crossing
STATE HIGHWAY CROSSINGS
Continued

Depth of Cover

If depth of cover is insufficient to support live and dead loads, encasement or carrier pipe shall be installed concurrently as excavation of hole progresses so as to leave no more than 2 linear feet of unprotected hole at one time.

Open Cutting Of Pavement

Specific Tx.D.O.T. written approval is required for open cutting of all State Highway pavements. Any approved open cutting of pavement must conform to the special Tx.D.O.T. specification "Utility Facilities Involving Open Cutting of Pavement".
PLAN VIEW

PROFILE VIEW

SECTION A-A

TUNNEL APPROACHES
WITH CASING SPACERS

DWU

PAGE 1

108

DATE

OCT. 2009
CASING SPACERS

Wooden Skids Strapped To Carrier Pipe With Steel Straps or Heavy Wire

Notch Skids To Facilitate Strapping Operation And To Prevent Strap Or Wire Movement

Skids To Run Length Of Pipe (With Exception Of Bell And Spigot Areas)

Evenly Space Skids
4 Skids For 12" Or Less Carrier Pipes
6 Skids For Carrier Pipes Larger Then 12" to 20"

WOODEN SKIDS

Encasement Pipe

Hold-Down-Jacks
Minimum 2 Per Pipe Joint (See Fabrication Detail Pg.109A)

FOR STEEL ENCASEMENT PIPE
Carrier Pipe Is to Rest On Bottom Of Encasement Pipe

FOR FLANGED LINER PLATE
Carrier Pipe Is To Rest On A 6" Thick Concrete Pad

HOLD-DOWN-JACK

CARRIER PIPE SUPPORT (TUNNEL)

DWU

(PAGE No.)

109

DATE

OCT. 2009
1/4" Steel Plate
(Fabricate To Match I.D. Radius Of Encasement Pipe)

1 1/4" X 8" Std. Machine Bolt

1 1/4" Std. Nut
(Adjusting Point For Hold-Down-Jack)

1 1/4" Heavy Steel Washer

2" Galv. Iron Pipe
(Hold-Down-Jack Spacer, Length As Required For Installation Of Carrier Pipe In Encasement Pipe)

1 1/2" X 1" Galv. Iron Pipe
(Centering Plug Welded To Base Plate To Secure Hold-Down-Jack Spacer)

1/4" Steel Plate
(Fabricate To Match O.D. Radius Of Carrier Pipe)

ALL MATERIALS TO BE HOT DIPPED GALVANIZED AFTER FABRICATION

HOLD-DOWN-JACK FABRICATION DETAIL

DWU 109A
DATE DEC.2001
SECTION A-A

NOTES:
1. Bc = Outside Diameter Of Pipe
2. Bd = Trench Width (See Pg.112 for Calculation Of "Bd")
SEAL THE SPACE BETWEEN THE ENCASEMENT PIPE AND THE CARRIER PIPE AT EACH END WITH NON-SHRINK CEMENT GROUT OR WITH A MANUFACTURED SEAL TO PREVENT SOIL MIGRATION INTO THE ENCASEMENT PIPE OR FULLY GROUT THE SPACE BETWEEN THE ENCASEMENT PIPE AND THE CARRIER PIPE PER THE DISCRETION OF THE PROJECT ENGINEER.

SECTIONAL PLAN VIEW

ENCASEMENT PIPE TO BE MIN. 150 P.S.I. PRESSURE RATED AND TWO (2) NOMINAL SIZES LARGER THAN CARRIER PIPE

EMBDEMMENT AND BACKFILL AS SPECIFIED ON PLANS

SECTION A-A

ENCASEMENT DETAIL FOR NON-PRESSURE RATED WASTEWATER MAINS ABOVE WATER MAINS

DWU  111

DATE  OCT. 2009
SECTION A-A

ENCASEMENT DETAIL FOR PROPOSED WATER MAINS BELOW WASTEWATER MAINS

DWU

DATE

OCT. 2009
TRENCH WIDTH FOR WATER & WASTEWATER MAINS ARE LIMITED TO "Bd" AS CALCULATED BY THE FOLLOWING FORMULAS:

For 12" Diameter Pipe and Smaller:

Minimum - "Bd" (Trench Width) = Outside Diameter of Pipe Bell plus 12 inches or a minimum of 24", Whichever is greater

Maximum - "Bd" (Trench Width) = Shall Not Exceed 32"

For Pipe Diameters Greater Than 12" to 24":

"Bd" (Trench Width) Shall Be Limited To Outside Diameter of Pipe Bell plus 12 inches

For Pipe Diameters Greater Than 24" to 72":

"Bd" (Trench Width) Shall Be Limited To Outside Diameter of Pipe plus 24 inches

For Pipe Diameters Greater Than 72":

"Bd" (Trench Width) Shall Be Limited To Outside Diameter of Pipe Times (X) 1.25 plus 12 inches

(REFER TO PAGES 113 THRU 119 FOR USAGE OF "Bd")
SELECT OR GRANULAR MATERIAL COMPACTED TO 90% OF STD. PROCTOR DENSITY.

CONCRETE CRADLE (CLASS "B" CONC.)

12" MIN. ABOVE PIPE BELL

1/4 Bc

6" MIN. BELOW PIPE BELL

Bd

CLASS "A"

CLASS "B" CONCRETE CRADLE
PLAIN CONC. LF 2.8
REINF. CONC. LF 3.4 P-0.4%

N.T.S.

NOTES:
1. LF - LOAD FACTOR TO BE USED TO DETERMINE 3 EDGE BEARING BASED ON TYPE OF EMBEDMENT.
2. FREE-FALL OF CONCRETE NOT TO EXCEED 5 FT. MAXIMUM.
3. P - Rho FOR STEEL %
4. Bc - OUTSIDE DIAMETER OF PIPE
5. Bd - TRENCH WIDTH
6. MIN. EMBEDMENT PLACEMENT TO BE MEASURED FROM EDGE OF PIPE BELL

CLASS "B" PLAIN OR REINFORCED CONCRETE.

COMPACTED CRUSHED STONE
STD. GRADATION

12" MIN. ABOVE PIPE BELL

1/2 Bc

6" MIN. BELOW PIPE BELL

Bd

CLASS "A-1"

CLASS "B" CONCRETE CAP
PLAIN CONC. LF 2.8
REINF. CONC. LF 3.4 P-0.4%
REINF. CONC. LF 4.8 P-1.0%

N.T.S.

(REFER TO PAGE 112 FOR CALCULATION OF "Bd")

EMBEDMENT CLASS "A" & "A-1"
SELECT OR CRANULAR MATERIAL COMPACTED TO 90% OF STD. PROCTOR DENSITY

12" MIN. ABOVE PIPE BELL

GRANULAR MATERIAL COMPACTED TO 90% OF STD. PROCTOR DENSITY

12" MIN. ABOVE PIPE BELL

CLASS "B"
N.T.S.
L.F. = 1.9
E' = 700

CLASS "B+"
N.T.S.
BEDDING ANGLE 150°
L.F. = 1.9
E' = 700

CLASS "B-1"
N.T.S.

COMPACTED CRUSHED STONE,
STD. GRADATION

COMPACTED CRUSHED STONE,
FINE GRADATION

COMPACTED CRUSHED STONE,
FINE GRADATION

Bc

VARIES

VARIES

VARIES

1/2 Bc

1/2 Bc

1/4 Bc

Bd

Bd

Bd

6" MIN. BELOW PIPE BELL

6" MIN. BELOW PIPE BELL

6" MIN. BELOW PIPE BELL

NOTES:
1. FOR MAINS 42" DIAMETER AND LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH
4. L.F. = LOAD FACTOR TO BE USED TO DETERMINE 3 EDGE BEARING BASED ON TYPE OF EMBEDMENT.
5. MIN. EMBEDMENT PLACEMENT TO BE MEASURED FROM EDGE OF PIPE BELL

(REFER TO PAGE 112 FOR CALCULATION OF "Bd")

EMBEDMENT
CLASS "B", "B+", & "B-1"

DWU

DATE

OCT. 2009
COMPACTED SELECT OR GRANULAR MATERIAL COMPACTED TO 90% OF STD. PROCTOR DENSITY

CLASS "B-2"
N.T.S.

CLASS "B-3"
N.T.S.

CLASS "B-4"
N.T.S.

NOTES:
1. Bc = OUTSIDE DIAMETER OF PIPE
2. Bd = TRENCH WIDTH
3. MIN. EMBEDMENT PLACEMENT TO BE MEASURED FROM EDGE OF PIPE BELL

(REFER TO PAGE 112 FOR CALCULATION OF "Bd")
CLASS "C"

N.T.S.
BEDDING ANGLE 75°
L.F. = 1.5
E' = 300

NOTES:
1. FOR MAINS 42" DIAMETER AND
   LARGER, 1/6 Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH
4. L.F. = LOAD FACTOR TO BE USED TO
   DETERMINE 3 EDGE BEARING BASED ON TYPE OF EMBEDMENT.
5. MIN. EMBEDMENT PLACEMENT TO BE MEASURED FROM EDGE OF PIPE BELL

CLASS "C+"

N.T.S.
BEDDING ANGLE 75°
L.F. = 1.5
E' = 300

CLASS "C-1"

N.T.S.

SAND, FINE GRADATION

12" MIN. ABOVE PIPE BELL

1/6 Bc

VARES

6" MIN. BELOW PIPE BELL

SELECT OR GRANULAR MATERIAL
COMPACTED TO 90% STD. PROCTOR DENSITY

GRANULAR MATERIAL COMPACTED TO
90% OF STD. PROCTOR DENSITY

COMPACTED CRUSHED STONE,
STD. GRADATION

COMPACTED CRUSHED STONE,
FINE GRADATION

EMBEDMENT
CLASS "C", "C+", & "C-1"

DATE
OCT. 2009

DWU (PAGE NO.)
116

(REFER TO PAGE 112 FOR CALCULATION OF "Bd")
NOTES:

1. FOR MAINS 42" DIAMETER AND LARGER, \( \frac{1}{8} \) Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH
4. LF. = LOAD FACTOR TO BE USED TO DETERMINE 3 EDGE BEARING BASED ON TYPE OF EMBEDMENT.
5. MIN. EMBEDMENT PLACEMENT TO BE MEASURED FROM EDGE OF PIPE BELL

(REFER TO PAGE 112 FOR CALCULATION OF "Bd")
NOTES:
1. $B_c =$ OUTSIDE DIAMETER OF PIPE
2. $B_d =$ TRENCH WIDTH
3. $L.F.$ = LOAD FACTOR TO BE USED TO DETERMINE 3 EDGE BEARING BASED ON TYPE OF EMBEDMENT.
4. FREE-FALL OF CONCRETE NOT TO EXCEED 5 FT. MAXIMUM.
5. MIN. EMBEDMENT PLACEMENT TO BE MEASURED FROM EDGE OF PIPE BELL

(REFER TO PAGE 112 FOR CALCULATION OF "$B_d" )

EMBEDMENT
CLASS "G" & "G-1"

DWU
DATE
OCT. 2009
SELECT OR FINE
GRANULAR MATERIAL
COMPACTED TO 90% OF
STD. PROCTOR DENSITY

COMPACTED
CRUSHED STONE,
FINE GRADATION

CLASS "B-1a"

CLASS " B-2a "

CLASS " B-5 "

NOTES:
1. Bc = OUTSIDE DIAMETER OF PIPE
2. Bd = TRENCH WIDTH
3. MIN. EMBEDMENT PLACEMENT TO BE
   MEASURED FROM EDGE OF PIPE BELL

REFER TO PAGE 112 FOR CALCULATION OF "Bd"

EMBEDMENT
CLASS "B-1a", "B-2a" & "B-5"

DATE
OCT. 2009
STABILIZED BACKFILL & RIP-RAP DETAIL
FOR EMBANKMENT SLOPE PROTECTION

*OPTION
Dry Rip-Rap As Indicated on Design Plans.
Dry Rip-Rap to Span Disturbed Trench Width Area Plus 1 Ft. on Each Side.

NCTCOG Spec: 803.3 - Riprap
NCTCOG Spec: 504.6.2 - Stabilized Backfill
2009 DWU Addendum: 803.3.4.DWU - Measurement And Payments

DWU DATE
120 OCT. 2009
NOTES:
1. Contractor Must Contact Owner Of Existing Conduit 48 Hours Prior To Construction.
2. Columns May Be 12" Square or 12" Round.
3. The Engineer Shall Determine If A Foundation Is Required.
4. The Bottom Elevation Of The Vertical Columns Shall Be At The Base Of The Excavation, As Minimum, Or Lower As Determined By The Engineer.
5. The Vertical Columns Must Have A Minimum Horizontal Clearance Equal To The Minimum Ditch Width As Outlined In Sheet 113.

NCTCOG Spec: 702.2 - Mix Design And Mixing Concrete For Structures
NCTCOG Spec: 303.2.9 - Steel Reinforcement
2009 DWU Addendum Item 702.DWU - Concrete Structures

TYPE "A"
UTILITY SUPPORT

DATE
OCT. 2009
PART 2
(Series 200)

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*3 Bars @ 24" O.C. (E.W.) & 4-5 Bars Diagonal® Meter

**NOTE:**
Water Services Greater Than 30 L.F. From the Main Must Be 1" Copper (Min.) or Same Size As Meter, Whichever Is Greater.

---

**WATER MAIN IN STREET**

3/4" Compression Corp. Cock
3/4" Copper Service Line Soft Copper (Type K)

---

**WATER MAIN IN PARKWAY**

3/4" WATER SERVICE INSTALLATIONS (SIDEWALK ADJACENT TO CURB)

**NOTE:**
Water Services Greater Than 30 L.F. From the Main Must Be 1" Copper (Min.) or Same Size As Meter, Whichever Is Greater.

---

**REPLACEMENT MAINS:**
Contractor To Install New Deadhead In This Position, Replace Meter Box & Reconnect Service To Existing Meter.

---

**SUBDIVISIONS (PRIVATE CONTRACTS)**
Contractor To Install New Deadhead In This Position, New Meter Box, Meter, and Connection To Service Line By Others.

---

**NOTE:**
3/4" Service Lines To Have A Minimum Of 3' Separation.

---

**NCTCOG Spec:** 502.10.3.1 - Taps and Tap Assemblies In Water Conduit
2009 DWU Addendum:
502.10.3.11.DWU - Taps Through 502.10.3.17.DWU - Tapping Of PVC Pipe

---

**DATE:**
OCT. 2009
NOTE:
Water Services Greater Than 30 L.F. From The Main Must Be 1" Copper (Min.) Or Same Size As Meter, Whichever Is Greater.

Water Main in Street

Water Main in Parkway

3/4" Water Service Installations (Sidewalk 5' from Curb)
Flush Point

(SIZE DESIGNATED ON PLANS)

N.T.S.

Concrete Sidewalk

1" Ball Valve
Curb Stop

1" Copper Service Pipe
Soft Copper (Type-K)

Rising Grade

1" Corporation Cock
(Compression)

Water Main

Small Plastic Meter Box with Lid

3 Bars @ 24" O.C. (E.W.) & 4 Bars Diagonal @ Meter Box

Note:
Center Flush Point
With Meter Box In
Exist./Prop. Sidewalk

Flush Point Installation

DWU

Date

Oct. 2009
AIR RELEASE VALVE
TYPE "1"

NOTE:
WHEN NOT IN PAVING OR WALK, A CONCRETE PAD, REINFORCED W/ 3 BARS AT 12" C-C EACH WAY, SHALL EXTEND A MINIMUM OF 2' AROUND THE METER BOX AND VENT PIPE, AND SHALL BE A MINIMUM OF 4" THICK.

N.T.S.

REFERENCE PAGE 210

DWU
DATE 208
OCT. 2009
EXPANDED METAL SCREEN
GALVANIZED CARBON STEEL
½"-18 GAUGE

A - A

SECTION

AIR VENT
N.T.S.

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<th>MINIMUM FITTING HEIGHT</th>
<th>VENT PIPE DIAMETER</th>
<th>MANHOLE DIAMETER</th>
<th>VENT PIPE MATERIAL</th>
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<tr>
<td>2&quot;</td>
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<td>8&quot;</td>
<td>26&quot;</td>
<td>2&quot;</td>
<td>5'</td>
<td>GALVANIZED OR PAINTED BLACK IRON</td>
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<td>18&quot;</td>
<td>31&quot;</td>
<td>3&quot;</td>
<td>5'</td>
<td>CLASS 52 DUCTILE IRON</td>
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<td>6'</td>
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<td>62&quot;</td>
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<td>6'</td>
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<td>12&quot;</td>
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<td>12&quot;</td>
<td>6'</td>
<td>CLASS 52 DUCTILE IRON</td>
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PLAN VIEW
N.T.S.

REFER TO PAGES 208, 209, & 211

AIR RELEASE VALVE
TYPE "2"

DWU
Page No.3
210
DATE
OCT. 2009
GENERAL NOTES

1. Manholes must be precast.

2. Air vent pipes 4" and larger shall be Class 52 Ductile Iron Pipe with flange fittings with Rustoleum 7582 gray primer or equal in lieu of tar coating. Pipe shall be painted with Devguard 4308 or equal (SILVER COLOR) per manufacturer’s instructions prior to installation.

3. A Dallas Water Utilities warning sign shall be furnished by the City and installed by the Contractor.

4. Vent pipe must be extended a minimum of 2 feet above the water surface of the 100 year frequency flood (AS STATED ON DESIGN PLANS), or 7 feet above ground line, whichever is greater.

5. The following table of dimensions govern the required depths of cover for the installation of Type 2 air valves within public rights-of-ways:

6. All underground portions of Ductile Iron Pipe will be encased in polywrap.

<table>
<thead>
<tr>
<th>AIR VALVE SIZE</th>
<th>VALVE FITTING ASSEMBLY MIN. HEIGHT</th>
<th>MINIMUM REQUIRED DEPTH OF COVER</th>
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<tbody>
<tr>
<td>2&quot;</td>
<td>26&quot;</td>
<td>7.5'</td>
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<tr>
<td>3&quot;</td>
<td>31&quot;</td>
<td>7.8'</td>
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<td>4&quot;</td>
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<td>6&quot;</td>
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<td>10.8'</td>
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<tr>
<td>12&quot;</td>
<td>72&quot;</td>
<td>11.7'</td>
</tr>
</tbody>
</table>

REFER TO PAGES 209 & 210

GENERAL NOTES
TYPE 2 AIR VALVE

DWU

(PAGE NO.) 211

DATE

OCT. 2009
HORIZONTAL GATE VALVE WITH MANHOLE INSTALLATION
BLOWOFF INSTALLATIONS

90° BASE BEND
M.J. w/RETAINER GLAND X
FLG. & BLIND FLANGE (UP)

CONNECTOR-ADAPTOR
FLG. X M.J. W/
RETAINER GLAND

PIPE
P.E. X P.E.

CLASS "F" REINFORCED
CONCRETE MANHOLE

STD. 32" CI M.H. FRAME
AND COVER SEE PG.222

4" DIAM PRECAST
MANHOLE

OPTIONAL BLOWOFF
WITH MANHOLE
(ASSPECIFIED ON DESIGN PLANS)

NON-BLOWOFF INSTALLATIONS

CONNECTOR-ADAPTOR
FLG. X M.J. W/
RETAINER GLAND

GATE VALVE
FLG. X FLG.

TEE
FLG. X FLG.

INSTALL BLIND
FLANGE PLUG

PIPE
FLG. X P.E.

SOLID SLEEVE
M.J. X M.J. W/
RETAINER GLAND

PIPE
FLG. X P.E.

90° BEND
FLG. X FLG.

GATE VALVE
FLG. X FLG.

PIPE JOINT

FLG. OUTLETS WITH
FLANGE INSULATION
KITS, SEE PG.223
(EACH SIDE)

1" IP. THD OUTLET
1" CORP. COCK
1" COPPER PIPE
TEST POINTS
(EACH SIDE)

1" FLARED
CURB STOPS

INSEDE OF M.H. TO FLUSH
WITH OUTSIDE OF FLANGE

STD. 4" CI M.H. FRAME
AND COVER SEE PG.222

6" DIAM PRECAST
MANHOLE

CLASS "F" REINFORCED
CONCRETE BASE

INSTALL BUTTERFLY
VALVE W/ INSULATION
FLANGE KITS SEE PG.223

SEAL BROKEN OUT
PORTION OF MANHOLE
W/ BRICK AND MORTAR
COAT INSIDE & OUTSIDE
W/ NON-SHRINK GROUT

PLAN

REFER TO GENERAL NOTES
FOR LARGE VALVES WITH
MANHOLES - PAGE 216

BUTTERFLY VALVE
WITH MANHOLE INSTALLATION

DWU

214

DATE

OCT.2009
OPTIONAL BLOWOFF WITH MANHOLE (AS SPECIFIED ON DESIGN PLANS)

REFER TO GENERAL NOTES FOR LARGE VALVES WITH MANHOLES - PAGE 216

BUTTERFLY VALVE WITH MANHOLE INSTALLATION

DWU

OCT. 2009
GENERAL NOTES

1. Precast grade rings shall be eliminated and the top of the manhole shall be placed at existing grade when the location is not in an existing or proposed street. For this case only, the standard 40" manhole frame and cover will be set in the manhole precast top.

2. In open country, a 4" thick concrete pad, reinforced with #3 bars on 12" centers each way shall extend a minimum of 2' around the manholes and bypass valve stack.

3. When a reducer is installed into a hub and valve, the exposed steel on the end of the reducer will be wrapped with wire mesh and a minimum of 1" mortar coating shall be applied.

4. Manholes for 30" and larger valves shall be 6' in diameter.

PLAN VIEW FOR TYPICAL REINFORCING FOR WATER ACCESS MANHOLE TOPS
(MANHOLE FOR VALVE ACCESS SHOWN)
Concrete Slab, Size As Required By Size Of Valve (Class "F" Conc.)

Standard Precast Manhole (See Note #4 Page 216)

6" Min.

Valve Actuator

Seal Broken Out Portion Of Manhole W/ Brick And Mortar, Coat Inside & Outside W/ Non-Shrink Grout

Backfill 12" Around Valve Body & Tapping Sleeve W/Cement Stabilized Sand @ 2 Sacks Per Cubic Yard or As Noted On Plans.

Cement / Mortar Coating For Protection Or Tapping Sleeve Assembly

Thrust Blocking See Page 232

7 @ 12" O.C. 6" Min.
- E.W. TOP

6 @ 12" O.C.
- E.W. BOTTOM

1" Flared Curb Stop

1" Copper Pipe

Valve Actuator

12" High M.H. Base Section

Class "F" Conc. Support Block For Valve Body & By Pass Valve

Refer To General Notes For Large Valves With Manholes - Page 216

SECTION "A-A"
OPERATING NUT RISER (For Large Valve Installations)
NOT IN PAVEMENT
Match Existing Soil & Compact As Needed Or As Required By Construction Inspector.

IN PAVEMENT

4" to 16" GATE
VALVE ABANDONMENT
Install Valve Cover Assembly Centered Over Valve Stack And Flush With Grade Surface.

Valve Stack To Be Set 3" Below Grade Surface

Existing Ground Surface

Extension Stem to Be Fabricated So That It's Operating Nut Is Set 12" Below Finished Surface Grade.


6" Valve Stack To Be One Continuous Pipe Joint

Gate Valve

Install 2" Thick Wooden Blocks Or Neoprene Bonnet To Valve Stack Spacers (VALVE STACK IS NOT TO REST DIRECTLY ON VALVE BODY OR VALVE BONNET)

If Valve Operating Nut Is More Than 7" Below Surface Level, Then Extension Stem Must Be Installed.

4" to 16" GATE VALVE
COVER, STACK, & STEM INSTALLATION

DWU

PAGE NO. 1

JUNE 2002

DATE

219 A
40" Std. C.I.M.H. Frame & Cover
See Page 221

Precast Grade Rings
- 7 @ 12" O.C.
  - E.W. Top
- 6 @ 12" O.C.
  - E.W. Bottom

5' Dia. M.H.
(See Note*2)

1" Corp. - I.P. Thread
To Mueller Thread
No. M8995 - 1" Pitot
Outlet-Straight Up

12" Min.

CLASS F
CONC.

Undisturbed Earth Or Rock
As Directed By Construction Inspector.

END VIEW

30"

SECTION A-A

PICTURE VIEW

5'-0" Dia.
Manhole

4 - 7 Diagonals
(Top)

- 7 @ 12" O.C.
  - E.W. Top
- 6 @ 12" O.C.
  - E.W. Bottom

4 - 6 Diagonals
(Bottom)

Pitot
Outlet

Class F
Conc. Base

NOTES

1. Locate Pitot Outlets At Least 20 Pipe Diameters From Any Bends, Tees, Reducers Or Other Obstructions.

2. Manhole Shall Be Precast As Per NCTCOG Spec: 502.1.1.1

3. Precast Grade Rings Shall Be Eliminated When Not In Existing Or Proposed Street (Open Country). In This Case, 40" Standard C.I. M.H. Frame And Cover Shall Be Set In M.H. Top.

NCTCOG Spec: 502.1.1.1 - Precast Reinforced Concrete Manhole Section

PITOT OUTLET

DATE

220

OCT. 2009
SECTION THRU COVER

1/2" Letters 1/4" Raised

PLAN

WATER

SECTION THRU FRAME

42"
40"

4 1/8" 2" 38" 2" 4 1/8"

8"
5 3/4"

6"
1 1/4"

1/4"

39 3/4"
1/8" 6" 1/2" 1/2"

1/2"
1 1/2" 1/8" 15 3/8" 6" 15 3/8" 1/8" 1/2"

Galvanized Lock-Nuts

5/8" Galvanized U-Bolt

Machined Bearing Surfaces

Ring & Cover Material per
ASTM A48 Class 35B Min.
Gray Iron Castings.

STANDARD 40" MANHOLE
FRAME AND COVER
1 1/2" LETTERS (RECESSED FLUSH)

(6) 1" DIA HOLES ON A 37" DIA B.C.

1/2" LETTERS (RECESSED FLUSH)

(2) PICKBARS

PLAN VIEW

BOTTOM VIEW OF COVER

COVER SECTION

COVER = GRAY IRON
ASTM A48 CL35B

FRAME = GRAY IRON
ASTM A48 CL35B

STANDARD 32" MANHOLE.
FRAME AND COVER

WATER

DWU

PAGE NO. 1

FEB. 2009
**INSULATING MATERIAL (KIT)**

1. \( \frac{3}{4} \)" THICK - CIRCULAR (DOUGHNUT) GASKET
2. INSULATING SLEEVE FOR EACH BOLT
3. 2 - INSULATING WASHERS FOR EACH BOLT
4. 2 - STEEL WASHERS FOR EACH BOLT

**REINFORCED CONCRETE CYLINDER PIPE**

**BUTTERFLY VALVE ASSEMBLY W/M.H

**SEE DETAIL "A"**

**BY-PASS ASSEMBLY**

**TYPICAL INSTALLATION POINTS OF INSULATION KITS FOR CATHODIC ISOLATION ON LARGE WATER MAINS**

**INSULATION KIT INSTALLATION DETAIL**

( FOR R.C.C.P. INSTALLATIONS )

**REINFORCED CONCRETE CYLINDER PIPE**

**EXTERIOR CEMENT MORTAR APPLIED WITHIN STEEL BANDED AND FABRIC WRAPPER (DAPER). THE MIX MORTAR MIX IS TO BE Poured INTO TOP SIDE OF WRAPPER OPENING UNTIL MORTAR HAS ADVANCED COMPLETELY AROUND PIPE JOINT.**

**PIPE BONDING STRAP TO BE TUCKED INTO JOINT AND COMPLETELY COVERED WITH VIN. ½" THICK MORTAR COAT**

**STEEL BANDS**

**FABRIC**

**EXTERIOR CEMENT MORTAR GROUT**

**INTERIOR CEMENT MORTAR GROUT**

**INTERIOR MORTAR TO BE HAND APPLIED AND SMOOTHED TO FLUSH WITH INSIDE PIPE WALL.**

**DETAIL "B"**

**MORTAR PROTECTION @ R.C.C.P. JOINTS**

( BELL & SPIGOT JOINT SHOWN - ALSO APPLIES TO FLANGED JOINTS)

**MORTAR PROTECTION @ R.C.C.P. JOINTS & INSULATION KIT FOR FLANGED JOINTS**

**DWU**

**PAGE NO.**

**2 2 3**

**DATE**

**OCT. 2009**
Install:
- 1-2 x 6" F.H. Tee
- 1-6" Valve
- 1- F.H.

7.5' Max. To Back Of Curb
2.5' Min. To Back Of Curb

7.5' Max. To Back Of Curb

End Of Radius

Edge Of Pavement

Water Main

Main At Normal Depth

18" TO 24"

Use Offset Or 2 Bends As Required

No More Than One Extension On Barrel Of F.H. With Max. 18" Extension

When No Curb Or Gutter Exists, Set F.H. On Front Slope Of Ditch With Q Of Nozzle Equal To The Crown Of The Road.

18" Min. Above Existing Ground

GENERAL NOTES
1. Q Of F.H. Barrel Shall Not Be Less Than 2.5 Or More Than 7.5 From Back Of Curb Or Edge Of Pavement.
2. Do Not Set F.H. In An Existing Or Proposed Sidewalk, Unless Otherwise Noted.
3. All Tees For F.H.'s Must Provide Secure Anchoring From The Main To F.H. Valves
4. Set F.H. On The Lot Line Extended When Possible.
5. On Private Contracts, The Developer's Engineer Will Stake Location & Grade, Must Still Meet DWU Requirements.

METHODS FOR SETTING FIRE HYDRANTS

DWU 224

DATE OCT. 2009
45° Bend With Retainer Glands And Class "B" Concrete Thrust Blocking As Required.

Embedment As Specified In Plans

Ex. Water

Abandon In Place

Prop. Main

I.D. Min.

2. Min.

45° Bend With Retainer Glands And Class "B" Concrete Thrust Blocking As Required.

Abandon In Place

45° Bend With Retainer Glands And Class "B" Concrete Thrust Blocking As Required.

Solid Sleeve

Nipple

I.D. * 10 ft. Min.

Pipe Material As Specified on Plans

STANDARD WATER MAIN LOWERING

DWU 225

DATE APRIL 2001
6" D.I. Post For Bracing Test Station

Leave Slack 2 ft. Of Conductor Coiled In Enclosure.

Hoffman-A8R84 Enclosure (8"x8"x4"
N.E.M.A. Type 3R Enclosure) With Screw Fastening Cover Mount To Post

1" Rigid Galv. Conduit Secure To Post With 2- Conduit Straps

No. 10 A.W.G. Single Strand Conductor Type R.H.W. Insulation With Neoprene Jacket. Connect To Nearest Spigot

See Page 228 For Connection Detail

NOTE:
Conductor To Be Continuous With No Splices. Avoid Breaks To Conductor Jacket Or Insulation. Any Breaks To Jacket Insulation Must Be Repaired With 2 Layers Of 600V. Electrical Heat Shrink Tape. Any Contact Of Bare Conductor To Soil Will Render Erroneous Test Results When Monitoring Pipe Conditions.
TEST STATION INSIDE MANHOLE TYPE I

Leave Slack 2ft. Of Conductor Coiled In Enclosure, (8"x8"x4" N.E.M.A. Type Y3R Enclosure) With Screw Fastening Cover. Mount To Post.

No. 10 Conn. Wire
Manhole Wall
No. 10 A.W.G. Single Strand Conductor Type R.H.W. Insulation With Neoprene Jacket, Connect To Nearest Spigot. See Page 228 For Connection Detail.

Nearest Joint Outside MH.

NOTE: Contract To Provide Drainage At Manhole

3/8" - 10 Chat Pocket On corner

4" PVC Drain Pipe At Construction Engineer Option

NOTE:
Conductor To Be Continuous With No Splices.
Avoid Breaks To conductor Jacket Or Insulation.
Any Breaks To jacket insulation Must Be Repaired With 2 Layers Of 600V. Electrical/Heat Shrink Tape. Any Contact Of Bare Conductor To Soil Will Render Erroneous Test Results When Monitoring Pipe Conditions.

TEST STATION IN METER BOX TYPE II

Leave Slack 2ft. Of Conductor Coiled In Enclosure, (8"x8"x4" N.E.M.A. Type Y3R Enclosure) With Screw Fastening Cover. Mount To Post.

No. 10 Conn. Wire
Receptacle W/W.P. Cover Bolt To Pull Box

Ex. Ground

Small Plastic Meter Box & Dial

No. 10 Conn. Wire

1-1/2" PVC Conduit

Pavement

Crushed Rock
3 cu. ft.

2" x 6" Treated Wood Post

NOTE:
No. 10 A.W.G. Single Strand Conductor Type R.H.W. Insulation With Neoprene Jacket, Connect To Nearest Spigot. See Page 228 For Connection Detail.
SECTION

Apply 2 layers of 600V Electrical Heat Shrink Tape from base of weld of spigot to a 6' overlap of conductor insulation and jacket.

Cad. Weld Conductor to 1/4" Steel Rod

Pipe Bonded at Joints

END VIEW

NOTE:

Conductor to be continuous with no splices, avoid breaks to conductor jacket or insulation. Any breaks to jacket insulation must be repaired with 2 layers of 600V Electrical Heat Shrink Tape. Any contact of bare conductor to soil will render erroneous test results when monitoring pipe conditions.

REFER TO PAGES 226 & 227
HORIZONTAL THRUST BLOCK
AT PIPE BEND
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REFER TO GENERAL NOTES FOR THRUST BLOCKING - PAGE 234

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Refer to general notes for thrust blocking - Page 234

**Horizontal Thrust Block at Tees and Plugs**

DWU: 232

Date: Dec. 2001
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<td>104.0</td>
<td>272.0</td>
<td>136.0</td>
<td>384.0</td>
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</tbody>
</table>

---

### Section "A-A"

**N.T.S.**

**Assumed Horizontal**

**Vertical Component of Thrust - Tabulated Value**

**Reinforcing Bars - 4 @ 12" Centers.**

**For Pipe Sizes Greater Than 12" Reinforcing Shall Be As Specified By Engineer.**

---

### Vertical Thrust Block at Pipe Bend

REFER TO GENERAL NOTES FOR THUST BLOCKING - PAGE 234
GENERAL NOTES FOR ALL THRUST BLOCKS:

1. Concrete for blocking shall be CLASS "B".

2. All calculations are based on internal pressure of 200 P.S.I. for ductile iron and P.V.C., and 150 P.S.I. for concrete pipe.

3. Volumes of thrust blocks are net volumes of concrete to be furnished. The corresponding weight of the concrete (CLASS "B") is equal to or greater than the vertical component of the thrust on the vertical bend.

4. Wall thickness T (See Table Page 230) assumed for estimating purposes only.

5. Pour concrete for thrust blocks against undisturbed earth.

6. Dimensions may be varied as required by field conditions where and as directed by the inspector. The volume of concrete blocking shall not be less than shown in tables.

7. The calculations are based on bearing pressures equal to 1,000 lbs./s.f. in soil and 2,000 lbs./s.f. in rock.

8. Use polyethylene wrap between concrete blocking and bends, tees, and plugs to prevent the concrete from sticking to fittings.

9. Concrete shall not extend beyond joints.

REFER TO PAGES: 229, 230, 231, 232, & 233
<table>
<thead>
<tr>
<th>SIZE AND MATERIAL TYPE OF WATER MAINS</th>
<th>EMBEDMENT TYPE PER DEPTH IN EARTH</th>
<th>EMBEDMENT TYPE PER DEPTH IN ROCK</th>
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<tr>
<td></td>
<td>0'-8'</td>
<td>8'-16'</td>
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<tr>
<td>16&quot; And Smaller Ductile Iron</td>
<td>D+</td>
<td>C</td>
</tr>
<tr>
<td>18&quot; And Larger Ductile Iron</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>16&quot; And Smaller Pretensioned</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>18&quot; And Larger Pretensioned</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>All Prestressed</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>All Steel</td>
<td>B+</td>
<td>B+</td>
</tr>
<tr>
<td>All P.V.C. Water Pipe</td>
<td>C+</td>
<td>B+</td>
</tr>
</tbody>
</table>
Slope To Drain

Ex. Grade

Fill With Class "B"
Concrete W/ Damed Top

6" D.I. Pipe
Clean Metal And Apply
1 Coat Of Rustoleum
7582 Gary Primer
And Two Coats Of
DevGuard 4308 Silver
Point To Visible Surfaces

Install Expansion Joint
Sealing Compound At
Concrete Penetrations

12" Dia. Class "B"
Concrete Base

4' To 6' As Directed By The
Construction Inspector
Install 4 - 6" Dia. Steel Guard Posts Spaced 4'-6" Apart (Equal Distance From F.H.)
See Page No. 236

Refer. To Pages 224 & 236

GUARD POST PROTECTION FOR FIRE HYDRANTS

DWU  237
DATE  OCT. 2009
DETAIL FOR METER VAULTS

DETAIL FOR METERS 2" AND SMALLER

GUARD POST PROTECTION FOR WATER METERS
PART 3
(Series 300)

WASTEWATER MAIN CONSTRUCTION

City of Dallas
Water Utilities Department
# PART 3
## WASTEWATER MAIN CONSTRUCTION

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| Wastewater Manhole--Pressure Type | --- 304 |
| Wastewater Manhole--Fiberglass | --- 305 |
| Wastewater Manhole--Vented | --- 306 |
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| Wastewater Manhole--Invert Intersection Details | --- 309 |
| Wastewater Manhole--Invert Bench Details | --- 309A |
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1) All non-pressure type manholes are to be constructed with a minimum of 2 - precast concrete grade rings and with an internal chimney seal. The maximum allowable extension of manhole necks using grade rings is limited to 30". See typical drawing detail on page 327.

2) All manholes are to have inverts constructed as per details on pages 309 and 309A.

3) All wastewater main stubouts from manholes shall be a minimum of 5 feet in length and terminated with a water tight stopper or cap.

4) Where new manholes are constructed in advance of proposed paving, the frame and cover shall be set 23" below the proposed top of curb, or flush with the existing ground, which ever is lower. Use precast concrete grade rings to raise M.H. frame and cover to final paving grade. (LIMITED TO 30" MAXIMUM MANHOLE NECK EXTENSION, AS MEASURED FROM THE TOP TAPER OF THE M.H. CONE TO M.H. LID). When M.H. neck extension exceeds 30", then the M.H. cone is to be removed and reset in such a manner as to reduce the number of grade rings required to reset M.H. frame and cover to final grade. See typical drawing detail on page 301.

5) For all manholes with cast in place bases, the first pipe joint must extend a minimum of 5 feet past the edge of manhole, with a concrete cradle poured integrally with the base, and under the entire pipe joint length.

6) All cast in place manholes are to be constructed with pipe to manhole connectors as per detail on page 310, or with a connector as approved by the DWU construction superintendent.

7) False manhole bottoms are required on all advance of paving projects. They shall be constructed, installed, and removed in accordance with details and instructions on page 311.
FOR CONSTRUCTION OF MANHOLES IN ADVANCE OF PROPOSED PAVING PROJECTS, See Detail on Pg. 301 & GeneralNote #4 On Pg. 302.

STD. M.H. FRAME & COVER AS SPECIFIED

FINISHED GRADE

USE PRECAST CONCRETE GRADE RINGS AND NON SHRINK GROUT AS REQUIRED TO SET MANHOLE FRAME AND COVER TO FINAL GRADE.

See GeneralNote #1 On Page 302

PRESSURE-TYPE-MANHOLE TO HAVE M.H. FRAME CAST IN ROOF

CONSTRUCTION JOINT WITH KEY WAY WATERSTOP, AND "3'S AT 12" O.C. EXTENDING 9" INTO WALL (NOT REQ'D FOR CONTINUOUS POUR)

1/2" NON SHRINK GROUT COATING

"3'S AT 6" O.C., E.W.

FRAME & COVER AS SPECIFIED ON PLANS

4" 3/16" MIN. 6" MIN.

6" MIN. 4"-0"

8" MIN. 5'-0" & 6'-0"

ALL MANHOLES WITH GRADE RINGS SHALL BE FURNISHED WITH INTERNAL CHIMNEY SEAL.

See Pg. 327 & 302

MANHOLE FRAME TO BE CENTERED

CLASS "F" CONCRETE MONOLITHIC POUR

ROOF STEEL LAYOUT N.T.S.

REFER TO GENERAL NOTES FOR WASTEWATER MANHOLE CONSTRUCTION - PAGE 302

WASTEWATER MANHOLE CAST-IN-PLACE

DWU

DATE

303

OCT.2009
CONCRETE CONE \(\Leftrightarrow\) ROOF OPTIONS \(\Leftrightarrow\) REINFORCED CONCRETE SLAB

FOR 5' & 6' DIA. M.H.'S SEE TRANSITION DETAIL

MANHOLE DETAIL

APPROVED RESILIENT PIPE-TO-MANHOLE CONNECTOR OR GASKET

FIRST MAIN LINE JOINT TO BE A MIN. OF 5' LONG, WITH CONCRETE CRADLE (POURED CONTINUOUS WITH CONCRETE BASE) AND UNDER ENTIRE JOINT

See General Note #5 On Pg. 302

CONNECTION DETAIL

REFER TO GENERAL NOTES FOR WASTEWATER MANHOLE CONSTRUCTION - PAGE 302

WASTEWATER MANHOLE PRESSURE-TYPE

N.T.S.

FRAME & COVER AS SPECIFIED ON PLANS

PRESSURE-TYPE-MANHOLE: TO HAVE M.H. FRAME CAST IN ROOF WITH CONTINUOUS POUR FROM BASE

CONSTRUCTION JOINT WITH KEYWAY WATERSTOP, AND 
"3'S AT 12" O.C. EXTENDING 9" INTO WALL (NOT REQUIRED FOR CONTINUOUS POUR)

SECTON A - A

N.T.S.

"3'S AT 6" O.C., E.W.

ROOF STEEL LAYOUT

N.T.S.

MANHOLE FRAME TO BE CENTERED

TRANSITION DETAIL FOR 5' & 6' DIA. M.H.'S

N.T.S.

FRAME & COVER AS SPECIFIED ON PLANS

PRESSURE-TYPE-MANHOLE: TO HAVE M.H. FRAME CAST IN ROOF

30" O.C. E.W.

MANHOLE FRAME TO BE CENTERED

N.T.S.

GEOTEXTILE LINER MATERIAL

ROCK FOUNDATION
WASTEWATER MANHOLE
FIBERGLASS

NOTES:
1. Future connections. If a sealant between pipe & M.H. is needed, use approved silicone sealant.
2. Design: HS 20 loading

REFER TO GENERAL NOTES FOR WASTEWATER MANHOLE CONSTRUCTION - PAGE 302
TURBINE VENTILATOR- FIBERGLASS OR ALUMINUM WITH NYLON BUSHINGS

APPLY RUSTOLEUM 7582 GRAY PRIMER AND DEVGUARD 4308 SILVER PAINT

12 GAUGE STAINLESS STEEL STRAPS

6" P.V.C. SDR-35 PIPE

HEIGHT TO BE 2" ABOVE 100 YEAR FLOOD PLAIN OR 6" WHICHEVER IS GREATER

4'-6"

2'-6"

2'-0"

2'-0"

5'-0"

5'-0"

90° BEND

6" DIAMETER TREATED SUPPORT POLE

APPROVED RESILIENT PIPE-TO-MANHOLE CONNECTOR OR GASKET

WASTEWATER MANHOLE VENTED

DATE

OCT. 2009

DWU

306
\[ d = \text{PIPE DIAMETER} \]

\[ \frac{1}{2}d \]

FOR PIPE SMALLER THAN 15" IN DIAMETER

\[ d = \text{PIPE DIAMETER} \]

\[ \frac{3}{4}d \]

FOR PIPE FROM 15" TO 24" IN DIAMETER

\[ d = \text{PIPE DIAMETER} \]

\[ d \]

FOR PIPE LARGER THAN 24" IN DIAMETER
DIMENSION FOR MANHOLE PIPE CONNECTOR A.S.T.M. C-923

<table>
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<tr>
<th>PIPE SIZE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<td>1(\frac{1}{2})&quot;</td>
<td>(\frac{7}{8})&quot;</td>
<td>(\frac{3}{8})&quot;</td>
<td>10°</td>
<td>(\frac{1}{4}&quot; - \frac{3}{8}&quot;)</td>
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<tr>
<td>8&quot; - 21&quot;</td>
<td>2(\frac{1}{8})&quot;</td>
<td>(1\frac{3}{8})&quot;</td>
<td>(\frac{5}{8})&quot;</td>
<td>10°</td>
<td>(\frac{1}{4}&quot; - \frac{3}{8}&quot;)</td>
</tr>
<tr>
<td>24&quot; - 60&quot;</td>
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<td>(\frac{3}{4})&quot;</td>
<td>10°</td>
<td>(\frac{1}{4}&quot; - \frac{3}{8}&quot;)</td>
</tr>
</tbody>
</table>

MANHOLE PIPE CONNECTOR
(FOR CAST-IN-PLACE MANHOLES)
INSTALLATION

FALSE MANHOLE BOTTOM SHALL BE FURNISHED AND INSTALLED IN ALL MANHOLES CONSTRUCTED IN ADVANCE OF PAVING. THESE FALSE MANHOLE BOTTOMS WILL BE INSTALLED AT A TIME DIRECTED BY THE ENGINEER BUT WILL USUALLY BE AFTER ALL WORK IS COMPLETED ON THE WASTEWATER SYSTEM INCLUDING THE AIR TEST, BUT PRIOR TO THE FINAL INSPECTION.

REMOVAL

FALSE MANHOLE BOTTOM SHALL BE REMOVED AFTER THE FINAL APPURTENANCE ADJUSTMENT INSPECTION. THE PAVING CONTRACTOR AND OWNER'S REPRESENTATIVE WILL COORDINATE THE REMOVAL OF THE FALSE MANHOLE BOTTOMS.

INSTALLATION AND REMOVAL POSITION

NYLON ROPE HANDLES

3/4" PLYWOOD

METAL STRAP HINGES
(MIN. 3" LONG) W/BOLTS

WASTEWATER MANHOLE
FALSE BOTTOM

D - INSIDE DIAMETER OF MANHOLE

PLAN VIEW

N.T.S.

5/8" HOLE FOR 1/2" NYLON ROPE HANDLES

5/8" HOLES FOR 1/2" NYLON ROPE HANDLES

D/3

D1

D2

D3

D4

D5

DWU

311

DATE

DEC.2001
1 \frac{1}{2}" LETTERS (RECESSED FLUSH)

(6) 1" DIA HOLES ON A 37" DIA B.C.

\frac{1}{2}" LETTERS (RECESSED FLUSH)

(2) PICKBARS

PLAN VIEW

32"

1 \frac{1}{2}"

31 13\frac{1}{16}"

2"

COVER SECTION

32 \frac{3}{16}"

1 \frac{1}{2}"

4 \frac{1}{2}"

30"

33 \frac{7}{8}"

40 \frac{3}{4}"

COVER - GRAY IRON
ASTM A48 CL35B

FRAME - GRAY IRON
ASTM A48 CL35B

BOTTOM VIEW OF COVER

WASTEWATER

STANDARD 32"
C.I. M.H. FRAME & COVER

DWU

DATE
FEB.2009

PAGE NO. 312
NOTE: For seal between frame and cover use either \( \frac{d}{6} \)" thick copper gasket or \( \frac{d}{4} \)" diameter neoprene "O"-ring. Location of the "O"-ring is left to the manufacturer, but subject to approval by DWU Construction Engineer.

\( \frac{1}{2} \)" Letters \( \frac{1}{4} \)" Raised

(8) \( \frac{1}{4} \)" Dia. Anchor Holes

\( \frac{3}{8} \)" Wide \( \times \) \( \frac{1}{4} \)" Deep Grooves at \( \frac{1}{2} \)" O.C.

2 \( \times \) 2" \( \times \) 3/4" Pick Slots with 1 - 1" Dia. Steel Rod Each

INDEX NOTCHES: Engraved into the Casting \( \frac{1}{6} \)" Deep

Drill and Tap Holes
Furnish 4 - \( \frac{5}{8} \)" \( \times \) 2" Hex Head Stainless Steel Bolts

SECTION "A-A"

1" Dia. - 6" Long Stainless Steel Anchor Bolts w/ Hex Head Nuts 8 Required

RING & COVER MATERIALS:
SECTION THRU COVER

PLAN

42\(\frac{1}{4}\)"

WASTEWATER

RING & COVER MATERIAL:
ASTM A48 CLASS 35B MIN. GRAY IRON CASTINGS.

SECTION THRU FRAME

STANDARD 40" MANHOLE
FRAME AND COVER

DATE
DEC. 2001

PAGE NO. 1

315
OUT OF PAVEMENT

N.T.S.

EX. M.H. FRAME & COVER TO BE REMOVED & SALVAGED
RESTORE SURFACE WITH TOP SOIL AND BLOCK SOD.

REMOVE TOP PORTION OF M.H. FOR 2' MINIMUM CLEARANCE FROM SURFACE OF EXISTING PAVEMENT, GROUND, OR PROPOSED PAVEMENT (WHICHEVER IS GREATER)

EXISTING PAVEMENT

PLUG WITH CLASS "B" CONCRETE

SAND AND/OR GRAVEL COMPACTED TO 90% (95% IN PAVEMENT) OF THE MAXIMUM STANDARD PROCTOR DRY DENSITY AS PER NCTCOG SPEC: 504.5.3.2.2

TO BE PLUGGED PRIOR TO POURING CLASS "B" CONCRETE.

CLASS "B" CONC. TO A POINT ABOVE TOP OF PIPE.

EXISTING CONC. BASE

TO BE PLUGGED PRIOR TO POURING CLASS "B" CONCRETE

EX. WASTEWATER MAIN

EX. M.H. FRAME & COVER TO BE REMOVED & SALVAGED PAVING TO BE REPAIRED AS PER P.W.S.T. PAVEMENT CUT AND REPAIR STANDARDS

ABANDONMENT OF MANHOLE IN OR OUT OF PAVEMENT

NCTCOG Spec: 504.5.3.2.2. - Densities - Areas Not Subjected To Or Influenced By Vehicular Traffic
2009 DWU Addendum: 504.5.3.2.2.DWU: Densities - Areas Not Subjected To Or Influenced By Vehicular Traffic

DWU 316

DATE OCT. 2009
WASTEWATER MAIN CLEANOUT

NOTE:
IF CLEANOUT IS PLACED IN ADVANCE OF PAVEMENT PLACE SAND AROUND CLEANOUT CASTING IN LIEU OF CLASS "B" CONCRETE.

PROFILE VIEW
N.T.S.

SECTION "X - X"
N.T.S.

CLEANOUT CASTING OPENING TO BE INSTALLED CENTERED OVER THE CENTERLINE OF THE CLEANOUT STACK EXTENDED TO GROUND LEVEL.

CLASS "B" CONCRETE
2'-6" X 2'-0" X 6"
FOUNDATION

6" CLEANOUT STACK

22 1/2° BEND
CLASS "B" CONCRETE

FOR EARTH DITCH
USE CLASS "C" EMB. FOR CLAY PIPE
USE CLASS "B-1" EMB. FOR P.V.C.
FOR ROCK DITCH:
CLASS "A" EMB.

1ST. JOINT FROM 22 1/2° BEND TO BE A REDUCER TO 6" IF MAIN IS LARGER THAN 6".

WATER TIGHT REMOVABLE PLUG

CLASS "B" CONCRETE
KEY:
1. WASTEWATER MAIN
2. 6" WYE OR TAPPING SADDLE (SEE NOTE 8)
3. 6" WASTEWATER LAT. (LENGTH VARIES)
4. 6" X 4" RED. AND 4" X 4" TEE OR WYE, OR 6" X 4" TEE.
5. 4" STACK (LENGTH VARIES)
6. 4" WASTEWATER LAT. CLEANOUT CASTING
7. 4" WASTEWATER PIPE (LENGTH VARIES)
8. ADAPTOR
9. BUILDING SEWER LAT.
10. CLASS "B" CONCRETE
11. 6" X 4" REDUCER
12. COMPACTED AS SPECIFIED, OR INUNDATED SAND

NOTES:
1. CLEANOUT CASTING TO BE FURNISHED AND PLACED PER SPECIAL CONDITIONS IN VEHICLE TRAFFIC AREAS AND FOR COMMERCIAL MAINLINE LATERALS, WASTEWATER CLEANOUT SHALL BE OF CAST IRON.

2. SLOPE OF LATERAL TO BE 1% MIN., 2% MAX. UNLESS INSTRUCTED OTHERWISE BY OWNER.

3. THE WASTEWATER LATERAL SHALL BE CONNECTED TO BUILDING LATERAL AND CONSTRUCTED IN SUCH MANNER AS TO CLEAR EXISTING UTILITIES AND PROPOSED FACILITIES SUCH AS STORM SEWER MAINS, PAVING, SIDEWALKS, RETAINING WALLS, ETC. VERTICAL BENDS (22.5° MAX.) MAY BE USED IF APPROVED BY OWNER.

4. THE MAINLINE LATERAL CONNECTION TO THE PRIVATE BUILDING LATERAL SHALL BE AS CLOSE TO THE PROPERTY LINE AS POSSIBLE.

5. INSTALL 4" STOPPER OR CAP AT PROPERTY LINE IF BUILDING LATERAL DOES NOT EXIST.

6. SUBSTITUTE 4" FOR 6" FITTINGS IF PLANS OR SPEC. COND. CALL FOR 4" LATERALS.

7. THE CLEANOUT STACK & CASTING MAY BE PLACED IN THE PARKWAY, VEHICLE TRAFFIC AREAS, OR SIDEWALK, IF NECESSARY.

8. TAPPING SADDLES CAN ONLY BE USED IN CONJUNCTION WITH PIPE BURSTING OR IF THE EXISTING MAIN IS 10" OR LARGER.
KEY

1. WASTEWATER MAN
2. WYE (45° MAX.)
3. MAINLINE LATERAL
4. 45° BEND (MAX.)
5. ADAPTOR
6. RUBBER SLEEVE COUPLING
   OR PVC ADAPTER COUPLING
7. CLASS "B" CONCRETE
8. EMBEDMENT SAME AS USED ON MAIN.

NOTES:

A) THE WYE AND ADAPTORS INSTALLED SHALL BE OF THE SAME MATERIAL AS THE WASTEWATER MAINLINE.

B) THE WYE AND ADAPTORS SHALL BE ASSEMBLED PRIOR TO INSTALLATION.

C) CONNECTIONS TO THE EXISTING MAIN SHALL BE MADE USING A RUBBER SLEEVE COUPLING WITH STAINLESS STEEL BAND CLAMPS. THE CLAMPS SHALL BE TIGHTENED TO THE TORQUE RECOMMENDED BY THE MANUFACTURER.

D) THE EMBEDMENT USED SHALL BE EQUAL TO THAT USED FOR THE MAINLINE SEWER.

E) RUBBER SLEEVE COUPLINGS SHALL BE USED FOR CLAY TO CLAY OR CLAY TO CONCRETE CONNECTIONS ONLY.

NOTE: THIS DETAIL SHALL NOT BE USED FOR THOSE CASES WHERE 150 PSI PVC IS REQUIRED BY T.C.E.Q.

WASTEWATER LATERAL WYE
CONNECTION TO THE EXISTING MAINLINE

DWU 320
DATE OCT. 2009
NOTES:
1. THE WORDS "WASTEWATER LATERAL CLEANOUT" SHALL BE CAST INTO TOP OF COVER.
2. MATERIALS TO BE CAST IRON, P.V.C. OR ABS PLASTIC.
TRENCH WITH SLOPING SIDES
N.T.S.

NOTES:
1. WYE SHALL BE SUPPORTED AS SHOWN FOR WYE CONNECTION SUPPORT.
2. LATERALS ARE TO CLEAR ALL EXISTING UTILITIES. 11 1/2" OR 22 1/2° BEND, ONLY, MAY BE REQUIRED.

WASTEWATER LATERAL CONNECTIONS IN EARTH & IN ROCK

DWU 322
DATE NOV. '96
Example:
Vertical Depth = 5 1/2'
Horizontal Distance = 14 1/2'
Use Lateral Type III as shown above.

LATERAL APPLICATION SCHEDULE
DEEP CUT CONNECTION
W/C.O.

DEEP CUT CONNECTION

Note! Clean out as per Page 319 to Ground Surface

24"

Min.

Bd

Capped

Wye, Or Double Wye As Req'd

Sand Backfill

Wye

Class "B" Conc.

SEC. "A-A"

1 - Joint

Embed. As Per Plans

Sewer Main

Sewer Pipe

Class "B" Conc.

Class "B" Conc.

Variable as per Plans

REFER TO PAGES 319, 321, 322 & 324

DEEP - CUT CONNECTION

DATE

OCT. 2009

325

DWU

PAGE NO. 1
WASTEWATER LATERALS ARE TO BE CONSTRUCTED TO CLEAR EXISTING AND PROPOSED FACILITIES, SUCH AS STORM SEWER MAINS, RETAINING WALLS, OTHER UTILITIES, ETC. THE WASTEWATER LATERAL SHALL HAVE A MINIMUM COVER OF 4'-0" BELOW THE PROPOSED TOP OF PAVEMENT CURB GRADE AT THE PROPERTY LINE, DETERMINED FROM PAVING GRADE, OR AS REQUIRED TO MAINTAIN A MINIMUM OF 1.00% GRADE, OR AS DIRECTED BY THE OWNER.

WASTEWATER LATERAL STUBOUT

N.T.S.

WASTEWATER LATERAL STUBOUT
USE PRECAST CONCRETE GRADE RINGS AND NON SHRINK GROUT AS NECESSARY TO SET MANHOLE FRAME AND COVER TO FINAL GRADE. See General Note #1 On Page 302.

NOTE:
INTERNAL CHIMNEY SEAL TYPE TO BE APPROVED BY CONSTRUCTION ENGINEER

REFER TO GENERAL NOTES FOR WASTEWATER MANHOLE CONSTRUCTION - PAGE 302, & DRAWINGS ON PAGES 301, 303, 304, & 305
Cut as Required for 6, 8, 10, 12 inch Pipe Along Cutting Groove

Gasket
Riser Plug

DETAIL A

15" OR 18" P.V.C. SDR 35
Water Tight Adaptor P.E. to PVC
Water Tight Adaptor PVC to PVC for PVC Pipe Clay to PVC for Clay Pipe Alternate Connection May Be Made With A Manufacturers Trapped Gasket

Cross Link High Density Polyethylene Access Fitting or Linear Low Density Polyethylene

DETAIL B

Standard DWU Cast Iron M. H. Frame & Cover as per Page 312 Pavement

EX Ground

SECTION A-A

UNDISTURBED SOIL

DRAINAGE

UNDISTURBED SOIL

DRAINAGE

WATER TIGHT PLUG

TWO CONCRETE GRADE RINGS (MINIMUM) AND NON-SHRINK GRAOUT

15" OR 18" P.V.C. PIPE ASTM D 3034 (SDR 35)

UNDISTURBED SOIL

SAND OR STABILIZED SOIL Compacted to 95% Std. Proctor Density and Placed in 6-inch Lifts Beginning at the Wastewater Access Device Working Outward to the Excavation Walls

CROSS LINK HIGH DENSITY POLYEThYLENE ACCESS FITTING or LINEAR LOW DENSITY POLYEThYLENE

COMPACTED CRUSHED STONE, FINE GRADATION

EQUAL TO PIPE EMBEDMENT

WASTEWATER ACCESS DEVICE

DWU 328

PAGE OCT. 2009
SAMPLE SITE CONSTRUCTION NOTES

A. The 4' X 3' Platform is to be constructed of Class "B" Concrete and a minimum of 4" thick. Reinforce pad with 3 bars at 12" O.C. in both directions and centered within pad.

B. The platform is to be level, with the cleanout cover flush with the surface of the platform.

C. The platform and cleanout cover are to be elevated a minimum of 2" to 3" above ground level to prevent intrusion of rainwater runoff.

D. The pipe opening shall be covered with a C.O. casting and cover. The casting shall be connected to the pipe with water tight adaptor. The pipe running down from the platform should connect to the sewer lateral with a straight tee (C.O. tee), not a curve tee, so that the wastewater flow into the lateral be observed from the platform. Standard lateral C.O. castings (Plastic or Cast Iron) will be furnished upon request.

E. 1/2" threaded female anchor bolts shall be in each corner 10" inset from the rear and sides of the pad. The front bolts need to be 26" from the rear of the pad. The top of the female anchor bolts shall be flush with the surface of the platform.

* Any question concerning the installation of the sample platform should be addressed to: Pretreatment & Laboratory Services.
PART 4
(Series 400)

WATER & WASTEWATER
ADJUSTMENTS
### PART 4

**WATER AND WASTEWATER ADJUSTMENTS**

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417
NOTE: If the existing wastewater main is in cone section or if there is only one riser section, the entire manhole must be removed and a new manhole is to be installed.
**FIGURE 1 EXISTING MANHOLE**

1. Install a false bottom in the manhole.
2. Remove and salvage the existing ring and cover and remove the existing grade rings or brick. If the ring and/or cover are damaged at any time prior to final acceptance, it will be replaced by the contractor at no cost to the City.

**FIGURE 2**

3. Remove the existing manhole cone section to a minimum of 6" below the cone taper to M.H. Wall.

**FIGURE 3 PRE-GRADING**

4. Form and monolithically pour a new manhole extension with cone section. Use epoxy bonding agent "Sikadur 32, HMA" or approved equal, to bond new concrete to existing concrete. Coat entire outside of the new concrete with a waterproof bituminous coating. Set the salvaged ring and cover on top of new section with concrete mortar.

**FIGURE 4 PRE-PAVING**

5. Remove the salvaged ring and cover and mortar.
6. Use precast concrete grade rings to raise M.H. frame and cover to final paving grade. (LIMITED TO 30" MAX. MANHOLE NECK EXTENSION, AS MEASURED FROM THE TOP TAPER OF THE M.H. CONE TO M.H. LID). When M.H. neck extension exceeds 30", then the M.H. cone is to be removed and reset in such a manner as to reduce the number of grade rings required to reset M.H. frame and cover to final grade.
7. Set the salvaged ring and cover in place with non-shrink grout. Install internal chimney seal. See pg. 327
8. Coat the entire outside of the neck with a waterproof bituminous coating.
9. The false bottom will be removed during the final inspection.

**ADJUSTMENT OF STANDARD CAST-IN-PLACE MANHOLE**

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<thead>
<tr>
<th>DWU</th>
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</tr>
</thead>
<tbody>
<tr>
<td>DATE</td>
<td>DEC. 2001</td>
</tr>
</tbody>
</table>
FIGURE 1 EXISTING MANHOLE
1. Install a false bottom in the manhole.
2. Remove and salvage the existing ring and cover and remove the existing grade rings or brick. If the ring and/or cover are damaged at any time prior to final acceptance, it will be replaced by the Contractor at no cost to City.
3. Cut the existing manhole at a point no closer than 2" below the bottom of the cone section.

FIGURE 2 PRE-GRADING
4. Build up or remove a portion of the manhole to meet the required depth. A new riser section may be required if the manhole is to be raised. The salvaged cone section may be used if approved by the engineer. A manufacturer's repair kit approved by the engineer must be used to make the connections.
5. Backfill material must be sand or stabilized soil compacted to a minimum of 90% Std Proctor Density and placed in 6" lifts beginning at the manhole and working outward to the excavation walls.
6. Reset the salvaged ring and cover on the cone section with concrete mortar.

FIGURE 3 PRE-PAVING
7. Remove the salvaged ring and cover and mortar.
8. Use precast concrete grade rings and non-shrink grout to raise M.H. frame and cover to final paving grade. (LIMITED TO 30" MAX. MANHOLE NECK EXTENSION, AS MEASURED FROM THE TOP TAPER OF THE M.H. CONE TO M.H. LID). When M.H. neck extension exceeds 30", then the M.H. cone is to be removed and reset in such a manner as to reduce the number of grade rings required to reset M.H. frame and cover to final grade.
9. Set the salvaged ring and cover in place with non-shrink grout. Install internal chimney seal. See pg. 327.
10. Coat the entire outside of the neck with a waterproof bituminous coating.
11. The false bottom will be removed during the final inspection.

ADJUSTMENT OF FIBERGLASS MANHOLE
NOTE: The valve cover must always be exposed so the valve can be operated at any time. Exceptions must be approved by the engineer in advance.

The existing valve cover and lid may be reused if not damaged during removal. If the valve cover and/or lid is damaged at any time prior to final acceptance, it will be replaced by the contractor at no cost to the City.

FIGURE 1 EXISTING VALVE STACK AND COVER
FIGURE 2 PRE-GRADING
1. If the proposed paving is 2’ to 4’ below the top of the existing valve cover, the entire valve stack and cover may be left in place until final adjustment for paving.

FIGURE 3 PRE-GRADING
2. If the proposed paving is less than 2’ below the top of the existing valve cover, the valve stack must be extended.
3. The cover is removed and an extension of soil pipe only is installed on the existing valve stack. The valve stack and extension must be properly aligned so that the valve can be operated properly. The extension must be connected to the existing valve stack with a bell and rubber gasket.

FIGURE 4 PRE-PAVING
4. The valve stack or extension is cut to a point not more than 3” below the proposed top of paving.
5. The valve cover is installed over the valve stack or extension to the top of the paving grade.
**FIGURE 1 EXISTING LATERAL WITHOUT CLEANOUT**

1. The adaptor may not be encased in concrete. If it is not, the same adaptor may be used if it is in serviceable condition. If the adaptor is encased in concrete, the concrete and adaptor must be removed and replaced.

**FIGURE 2 NEW CLEANOUT INSTALLED**

2. Cut the existing lateral as shown and remove the existing lateral pipe to the private line.
3. Install the new cleanout as shown. The new pipe and embedment shall be of the same type as the existing.
FIGURE 1 EXISTING LATERAL
1. Conflict with a proposed utility shown.

FIGURE 2 PRE-PAVING
2. The new adjustment may be constructed over or under the proposed conflict:
   A. A downstream minimum grade of 1.0% must be maintained.
   B. Bends greater than 22½ degrees are NOT permitted.
   C. The new pipe and embedment must be of the same type as the existing. (Unless the laterals is concrete pipe, in which case clay pipe is to be used.)
   D. Connections between the existing lateral pipe and new lateral pipe may be made with a rubber sleeve coupling or PVC adapter, which ever is appropriate.
   E. A minimum clearance between the outside of the new lateral pipe and the proposed conflict will be 6". If the clearance is less than 6", a steel pipe or D.I. pipe encasement will be required as shown on PAGE 414. ENCASEMENT PROTECTION FOR WASTEWATER MAINS.

3. The existing wye or tee connection to the existing main may have to be removed and reinstalled to meet the proposed new grade of the lateral. This work, if required, will be included at no additional cost to the City.
NOTES

A) The new lateral pipe shall be the same type of pipe as the existing lateral. If the laterals are concrete, the entire lateral must be rebuilt.

B) For commercial laterals, use cast iron cleanout castings only.

C) The new cleanout shall be constructed as close to the property line as possible.

D) NCSCG Spec 702.2.4 Quality of Concrete

E) The embedment will match the embedment on the existing lateral.

PROCEDURE

1. Remove existing cleanout and lateral to limits of existing concrete.

2. Salvage the cleanout casting and lid. If either is damaged, a new cleanout casting and/or lid will be furnished at no cost to the City.

3. Install the lateral extension and cleanout as shown in the detail using all new materials. The salvaged cleanout casting and lid may be used if approved by the engineer.
1. WASTEWATER MAIN
2. WYE (45° MAX.)
3. MAINLINE LATERAL
4. 45° BEND (MAX.)
5. WATER TIGHT RUBBER SLEEVE COUPLING OR PVC ADAPTOR
6. CLASS "B" CONCRETE
7. EMBEDMENT SAME AS USED ON MAIN

REFER TO PAGE 319 "LATERAL CONSTRUCTION"
FOR PROFILE VIEW

NEW LATERAL

EXISTING LATERAL

A) The wye and adaptors installed shall be of the same material as the wastewater mainline.
B) The wye and adaptors shall be assembled prior to installation.
C) Connections to the existing main shall be made using a rubber sleeve coupling with stainless steel band clamps or PVC adaptor. The clamps shall be tightened to the torque recommended by the manufacturer.
D) The embedment used shall be equal to that used for the mainline sewer.
E) Class "B" concrete shall be installed in accordance with PAGE 322 to support the wye.

REPLACE EXISTING LATERAL TO EXISTING MAINLINE

NCTCOG Spec 702.2.4 - Quality Of Concrete

DWU
DATE
408
OCT.2009
NEW WALK IN AN AREA TO BE FILLED

SET THE NEW METER BOX IN THE CENTERLINE OF THE PROP. NEW WALK. SET THE METER BOX AT THE EXISTING GROUND ELEVATION. IT WILL BE RAISED TO GRADE DURING PAVING OPERATIONS.

NEW WALK IN AN AREA TO BE CUT

SET THE NEW METER BOX IN THE CENTERLINE AND AT THE ELEVATION OF THE PROP. NEW WALK. SET THE METER IN THIS BOX. STACK METER BOX ON TOP OF THIS BOX TO THE EXISTING GROUND. PUT THE METER BOX LID ON THE TOP BOX. THIS IS LIMITED TO 2 STACKED METER BOXES. ANY ADDITIONAL LOWERING TO GRADE WILL BE DONE DURING PAVING OPERATIONS.

ELEVATION

A NEW WATER SERVICE IS INSTALLED TO THE NEW BOX. A LINE IS RUN FROM THE NEW BOX TO THE PROPERTY LINE NEXT TO THE EXISTING HOUSE LINE AND TURNED UP WITH A CURB STOP. AFTER FLUSHING, THE NEW LINE IS CONNECTED TO THE EXISTING HOUSE LINE AT THE PROPERTY LINE.

PLAN

IF A NEW SERVICE IS INSTALLED TO REPLACE AN EXISTING SERVICE TO THE EXISTING MAIN, THE CONNECTION WILL BE MADE AS FOLLOWS:

EXISTING MAIN UNDER PRESSURE. Connect the new copper pipe to the existing corporation cock on the main.

EXISTING MAIN NOT UNDER PRESSURE. Tap the existing main a minimum of 1" from the existing tap and install a new corporation cock and service. Remove the existing corporation cock and plug the tap with a plug approved by the engineer.

If the new copper pipe is connected to the existing copper pipe, it shall be accomplished with the use of an approved compression type coupling.

If any existing water service is galvanized pipe, it must be replaced to the existing main with a new copper service.

REFER TO PAGES 201 THRU 206 WATER SERVICE INSTALLATIONS

METER BOX REPLACEMENT

DWU

DATE

JUNE 2002
FIGURE 1. EXISTING CLEANOUT
1. Remove and salvage the existing cleanout. If the cleanout cannot be salvaged or is damaged prior to final acceptance, it will be replaced by the contractor at no cost to the city.

FIGURE 2. PRE - GRADING
2. Remove the cleanout pipe to a point 23" below the proposed top of curb.
3. Plug the pipe with a "T" Cone Stopper or approved equal.

FIGURE 3. PRE - PAVING
4. Extend the existing cleanout pipe, if required. The connection to the existing pipe will be made with a rubber sleeve coupling. The new pipe and embedment shall be of the same type as the existing.
5. Set the salvaged or new cleanout on a Class B concrete pad.
6. Insert a "T" Cone Stopper or approved equal in the cleanout pipe.

REFER TO PAGE 317 MAINLINE CLEANOUT
NOTES:

1. All materials must be new.
2. Install the new service with a minimum clearance of 1 foot below the excavation of the trench for the proposed storm sewer and a minimum of 1 foot clearance from the edge of the trench excavation when the service is installed laterally along the proposed storm sewer.
3. The minimum bending radius of the copper shall be 6 times the O.D. of the pipe.
4. Adjustment of the proposed water service may be over the proposed storm sewer only if the minimum clearances are maintained, otherwise the service must be installed under the proposed storm sewer excavation.
5. The bend angle is not to exceed 45° for any bend in a new copper service line.
NOTES

1) Use an epoxy bonding agent to bond new concrete to existing concrete. Bonding agent shall be "Sikadur 32, HiMod" or Approved Equal.

2) Epoxy grout to be a high strength rigid epoxy adhesive manufactured for the purpose of anchoring dowels into hardened concrete. Epoxy grout shall be "Sikadur Hi-Mod, LV No. 32" or approved equal.

3) Coat the entire outside of the new concrete with a waterproof bituminous coating.

4) Follow construction sequence typical to the notes as outlined on page 402.

ADJUSTMENT OF TYPE "S" MANHOLE
NOTES:
1. REPLACE EX. R,C,P./CLAY PIPE WITH CLAY PIPE.
   REPLACE P.V.C. PIPE WITH P.V.C. PIPE.
2. USE RUBBER SLEEVE COUPLINGS FOR R,C,P./CLAY PIPE WITH CLAY PIPE.
   USE PRESSURE RATE PVC COUPLINGS FOR PVC PIPE WITH PVC PIPE.
3. RELAY NEW WASTEWATER MAIN TO MATCH EXISTING GRADE.

WASTEWATER MAIN UNDERCUT
BY PROPOSED STORMWATER MAIN
NOTES:

1. REPLACE EX. R.C.P./CLAY PIPE WITH CLAY PIPE.
   REPLACE P.V.C. PIPE WITH P.V.C. PIPE.
2. USE RUBBER SLEEVE COUPLINGS FOR R.C.P./CLAY PIPE WITH CLAY PIPE.
   USE PRESSURE RATE PVC COUPLINGS FOR PVC PIPE WITH PVC PIPE.
3. RELAY NEW WASTEWATER MAIN TO MATCH EXISTING GRADE.

ENCASEMENT PROTECTION FOR WASTEWATER MAIN
TO BE INSTALLED BY PUBLIC WORKS STORM SEWER CONTRACTOR

Break Holes In Storm Sewer To Allow Installation Of Encasement With Wastewater Main To Grade, Seal/Breakouts With Non-Shrink Grout To Insure Watertight Seal.

Encasement Pipe To Be A Minimum 150 P.S.I. Pressure Rated Steel, Ductile Iron or PVC Pipe And Two (2) Nominal Sizes Larger Than The Carrier Pipe

Pressure Rated Wastewater Coupling

Rubber Sleeve Or PVC Coupling

Carrier Pipe To Be Supported Within Encasement Pipe At Five Feet Intervals With Casing Spacers.

Seal The Space Between The Encasement Pipe And The Carrier Pipe At Each End With Non-Shrink Cement Grout Or With A Manufactured Seal To Prevent Soil Migration Into The Encasement Pipe Or Fully Grout The Space Between The Encasement Pipe And The Carrier Pipe Per The Discretion Of The Project Engineer.

NOTES:

1. REPLACE EX. R.C.P./CLAY PIPE WITH CLAY PIPE.
   REPLACE P.V.C. PIPE WITH P.V.C. PIPE.

2. USE RUBBER SLEEVE COUPLINGS FOR R.C.P./CLAY PIPE WITH CLAY PIPE.
   USE PRESSURE RATE PVC COUPLINGS FOR PVC PIPE WITH PVC PIPE.

3. RELAY NEW WASTEWATER MAIN TO MATCH EXISTING GRADE.

WASTEWATER MAIN PASSING THROUGH STORM WATER MANHOLE

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Proposed Pipe To Soil Potential Test Station Relocation In Meter Box Type II

MECHANICAL CABLE SPLICE DETAIL

RELOCATION OF PIPE-TO-SOIL POTENTIAL TEST STATION (BURIED CONFIGURATION)
PART 5
(Series 500)

4" AND LARGER WATER SERVICE INSTALLATIONS

City of Dallas
Water Utilities Department
# PART 5

## LARGE WATER SERVICE INSTALLATIONS

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GENERAL DESCRIPTION OF LARGE WATER SERVICES

1) A Closed Fireline Service -
   A) Definition - A system with automatic sprinklers only, regularly inspected and supervised by an insurance agency.
   B) Metering - Monitored with a detector check device.

2) Combined Water Service - (Domestic and Fire)
   A) Definition - Fire protection and domestic water through a single water service and meter.
   B) Metering - Metered with Underwriter approved "FM" full flow meter or turbine meter with U.L. approved strainer.

3) Domestic Water Service
   A) Definition - Domestic water through a single water service and meter.
   B) Metering - Metered with C.T. meter or turbine meter with domestic type strainer.

4) Irrigation Water Service
   A) Definition - Same as domestic water through a single water service and meter without a bypass and for irrigation purpose only.
   B) Metering - Metered with C.T. meter or turbine meter with domestic type strainer.
MINIMUM EASEMENT SIZES
FOR LARGE METER INSTALLATIONS

COMBINED SERVICE - 15' x 30' EASEMENT

FIRE LINE SERVICE - 10' x 15' EASEMENT

DWU

PAGE NO. 1

DATE
JUNE 2002
TYPICAL FOR ALL LARGE METER VAULTS

LARGE SERVICE INSTALLATION DETAIL
ELEVATION VIEW

NCTCOG Spec:504.2.2.1 - Crushed Stone Embedment

DWU 503

Date: OCT.2009
F.M. VAULT

* Special Applications To Be Determined By Engineer.

D.C. VAULT

* Special Applications To Be Determined By Engineer.
SECTION VIEW

Precast Meter Vault
With 4-Two Ton Lifting Anchors

4" at 10" E.W.
(Centered in Wall)

5'0" x 10'-4" Precast Floor Slab, With
4 - Two Ton Lifting Anchors

Vault Opening
39" X 49"

60"

5"

4"

10" VAULT

Available Heights
36", 48", 60"

Special Applications To Be Determined
By Engineer.
GENERAL NOTES FOR
MATERIAL AND CONSTRUCTION METHODS

1.) All materials including tapping sleeves, tapping valves, valves, pipe, associated fittings and construction methods shall conform to the most current version of NCTCOG specifications, DWU Addendum to that specification, this manual and the latest addition of the approved materials list.

NOTE:

A.) Only full body gray or ductile iron fittings and glands will be permitted for large water service installation. In no case will compact fittings be allowed.

B.) All connections including valves and fittings shall be restrained joints. No threaded rod will be allowed. Along with restrained joints, thrust blocking will be required.

C.) All pipe must be either Ductile Iron (Class 52) or PVC C900 (DR-14).

2.) All precast vaults and precast floors used in the installation of large water services will meet DWU specifications and must be on the approved materials list.

3.) Cast in place concrete shall be class "F" concrete, except for concrete used for thrust blocking, which shall be class "B" concrete.

4.) The 3' x 4' aluminum access hatch cover shall meet DWU specifications and must be on the approved material list. (Currently supplied by DWU and may be purchased for use on DWU facilities only.)
### Material List

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<th>Quantity</th>
<th>Description</th>
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</thead>
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<td>1</td>
<td>2 Eq.</td>
<td>8&quot; x 8&quot; Nipple M.J. x F.</td>
</tr>
<tr>
<td>2</td>
<td>2 Eq.</td>
<td>8&quot; x 6&quot; Tee F. x F.</td>
</tr>
<tr>
<td>3</td>
<td>2 Eq.</td>
<td>8&quot; Gate Valve F. x F.</td>
</tr>
<tr>
<td>4</td>
<td>3 Eq.</td>
<td>Valve Stack Riser Cover &amp; Lid</td>
</tr>
<tr>
<td>5</td>
<td>1 Eq.</td>
<td>6&quot; x 60&quot; Pipe S. x S.</td>
</tr>
<tr>
<td>6</td>
<td>1 Eq.</td>
<td>6&quot; Flanged Coupling Adaptor</td>
</tr>
<tr>
<td>7</td>
<td>1 Eq.</td>
<td>6&quot; Meter As Specified (Type F.M. Shown)</td>
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<tr>
<td>8</td>
<td>1 Eq.</td>
<td>6&quot; x 4&quot; Tee F. x F. (Test Point)</td>
</tr>
<tr>
<td>9</td>
<td>1 Eq.</td>
<td>4&quot; Gate Valve F. x F. (Test Point)</td>
</tr>
<tr>
<td>10</td>
<td>1 Eq.</td>
<td>8&quot; x 6&quot; Reducer F. x M.J.</td>
</tr>
<tr>
<td>11</td>
<td>1 Eq.</td>
<td>6&quot; x 12&quot; Nipple F. x F.</td>
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<tr>
<td>12</td>
<td>2 Eq.</td>
<td>6&quot; x 36&quot; Nipple F. x F.</td>
</tr>
<tr>
<td>13</td>
<td>1 Eq.</td>
<td>6&quot; 90° Bend F. x F.</td>
</tr>
<tr>
<td>14</td>
<td>1 Eq.</td>
<td>6&quot; Gate Valve F. x M.J.</td>
</tr>
<tr>
<td>15</td>
<td>1 Eq.</td>
<td>6&quot; 90° Bend M.J. x F.</td>
</tr>
<tr>
<td>16</td>
<td>1 Eq.</td>
<td>6&quot; Pipe</td>
</tr>
<tr>
<td>17</td>
<td>1 Eq.</td>
<td>Precast F.M. Vault</td>
</tr>
<tr>
<td>18</td>
<td>1 Eq.</td>
<td>F.M. Vault Floor (Not Shown)</td>
</tr>
<tr>
<td>19</td>
<td>1 Eq.</td>
<td>Access Hatch (Not Shown)</td>
</tr>
<tr>
<td>20</td>
<td>1 Eq.</td>
<td>8&quot; x 6&quot; Reducer F. x F.</td>
</tr>
</tbody>
</table>

### Diagram

- **Direction of Flow**: Directed to the right.
- **Vault Opening**: Located at section 17.

---

**8" Combined Service with 6" Meter**
10" COMBINED SERVICE
WITH 10" METER

Material List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 Ea.</td>
<td>10&quot; x 8&quot; Nipple M.J. x F.</td>
</tr>
<tr>
<td>2</td>
<td>2 Ea.</td>
<td>10&quot; x 10&quot; Tee F. x F.</td>
</tr>
<tr>
<td>3</td>
<td>2 Ea.</td>
<td>10&quot; Gate Valve F. x M.J.</td>
</tr>
<tr>
<td>4</td>
<td>3 Ea.</td>
<td>Valve Stack Riser Cover &amp; Lid</td>
</tr>
<tr>
<td>5</td>
<td>1 Ea.</td>
<td>10&quot; x 100&quot; Pipe S. x S.</td>
</tr>
<tr>
<td>6</td>
<td>1 Ea.</td>
<td>10&quot; Flanged Coupling Adaptor</td>
</tr>
<tr>
<td>7</td>
<td>1 Ea.</td>
<td>10&quot; U.L. Approved Strainer (For Turbine)</td>
</tr>
<tr>
<td>8</td>
<td>1 Ea.</td>
<td>10&quot; Meter As Specified (Type F.M. Shown)</td>
</tr>
<tr>
<td>9</td>
<td>1 Ea.</td>
<td>10&quot; x 4&quot; Tee F. x F. (Test Point)</td>
</tr>
<tr>
<td>10</td>
<td>1 Ea.</td>
<td>4&quot; Gate Valve F. x F. (Test Point)</td>
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</table>

<table>
<thead>
<tr>
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<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>2 Ea.</td>
<td>10&quot; x 10&quot; Nipple F. x F.</td>
</tr>
<tr>
<td>12</td>
<td>2 Ea.</td>
<td>10&quot; x 36&quot; Nipple F. x F.</td>
</tr>
<tr>
<td>13</td>
<td>1 Ea.</td>
<td>10&quot; 90° Bend F. x F.</td>
</tr>
<tr>
<td>14</td>
<td>1 Ea.</td>
<td>10&quot; Gate Valve F. x F.</td>
</tr>
<tr>
<td>15</td>
<td>1 Ea.</td>
<td>10&quot; 90° Bend M.J. x F.</td>
</tr>
<tr>
<td>16</td>
<td>1 Ea.</td>
<td>10&quot; Pipe</td>
</tr>
<tr>
<td>17</td>
<td>1 Ea.</td>
<td>Precast F.M. Vault</td>
</tr>
<tr>
<td>18</td>
<td>1 Ea.</td>
<td>F.M. Vault Floor (Not Shown)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access Hatch (Not Shown)</td>
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</table>

Vault Opening

Ref. 501 to 506

DWU

Page No. 512

JUNE 2002
Material List

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<th>Part No.</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
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</tr>
<tr>
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<td>2 Ea.</td>
<td>6&quot; x 4&quot; Tee F. x F.</td>
</tr>
<tr>
<td>3</td>
<td>1 Ea.</td>
<td>6&quot; Gate Valve F. x M.J.</td>
</tr>
<tr>
<td>4</td>
<td>3 Ea.</td>
<td>Valve Stack Riser Cover &amp; Lid</td>
</tr>
<tr>
<td>5</td>
<td>1 Ea.</td>
<td>6&quot; x 24&quot; Pipe S. x S.</td>
</tr>
<tr>
<td>6</td>
<td>1 Ea.</td>
<td>6&quot; Flanged Coupling Adapter</td>
</tr>
<tr>
<td>7</td>
<td>1 Ea.</td>
<td>6&quot; Meter As Specified (Type C.T. Shown)</td>
</tr>
<tr>
<td>8</td>
<td>1 Ea.</td>
<td>6&quot; x 24&quot; Pipe F. x F.</td>
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</table>

Material List

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<th>Description</th>
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</thead>
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<td>1 Ea.</td>
<td>4&quot; 90 Deg. Bend F. x F.</td>
</tr>
<tr>
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<td>1 Ea.</td>
<td>4&quot; 90 Deg. Bend M.J. x F.</td>
</tr>
<tr>
<td>12</td>
<td>1 Ea.</td>
<td>4&quot; Gate Valve F. x M.J.</td>
</tr>
<tr>
<td>13</td>
<td>1 Ea.</td>
<td>4&quot; Pipe</td>
</tr>
<tr>
<td>14</td>
<td>1 Ea.</td>
<td>Precast D.C. Vault</td>
</tr>
<tr>
<td>15</td>
<td>1 Ea.</td>
<td>D.C. Vault Floor (Not Shown)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access Hatch (Not Shown)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4&quot; Gate Valve F. x F.</td>
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6" DOMESTIC SERVICE WITH 6" METER

Ref. 501 to 506

DWU 515
JUNE 2002
### Material List

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<th>Part No.</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2 Ea.</td>
<td>8&quot; x 8&quot; Nipple M.J. x F.</td>
</tr>
<tr>
<td>2</td>
<td>2 Ea.</td>
<td>8&quot; x 4&quot; Tee F. x F.</td>
</tr>
<tr>
<td>3</td>
<td>1 Ea.</td>
<td>8&quot; Gate Valve F. x M.J.</td>
</tr>
<tr>
<td>4</td>
<td>3 Ea.</td>
<td>Valve Stack Riser Cover &amp; Lid</td>
</tr>
<tr>
<td>5</td>
<td>1 Ea.</td>
<td>8&quot; x 24&quot; Pipe S. x S.</td>
</tr>
<tr>
<td>6</td>
<td>1 Ea.</td>
<td>8&quot; x 6&quot; Reducing Flanged Coupling Adapter</td>
</tr>
<tr>
<td>7</td>
<td>1 Ea.</td>
<td>6&quot; Meter As Specified (Type C.T. Shown)</td>
</tr>
<tr>
<td>8</td>
<td>1 Ea.</td>
<td>6&quot; x 24&quot; Pipe F. x F.</td>
</tr>
<tr>
<td>9</td>
<td>1 Ea.</td>
<td>8&quot; x 6&quot; Reducer F. x F.</td>
</tr>
<tr>
<td>10</td>
<td>2 Ea.</td>
<td>4&quot; x 36&quot; Nipple F. x F.</td>
</tr>
<tr>
<td>11</td>
<td>1 Ea.</td>
<td>4&quot; 90 Deg. Bend F. x F.</td>
</tr>
<tr>
<td>12</td>
<td>1 Ea.</td>
<td>4&quot; 90 Deg. Bend M.J. x F.</td>
</tr>
<tr>
<td>13</td>
<td>1 Ea.</td>
<td>4&quot; Gate Valve F. x M.J.</td>
</tr>
<tr>
<td>14</td>
<td>1 Ea.</td>
<td>4&quot; Pipe</td>
</tr>
<tr>
<td>15</td>
<td>1 Ea.</td>
<td>Precast D.C. Vault</td>
</tr>
<tr>
<td>16</td>
<td>1 Ea.</td>
<td>D.C. Vault Floor (Not Shown)</td>
</tr>
</tbody>
</table>

### CAD Drawing

**8" Domestic Service with 6" Meter**

Ref. 501 to 506

**DWU**

**Date**

JUNE 2002
Material List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>1 Ea.</td>
<td>4&quot; Flanged Coupling Adaptor</td>
</tr>
<tr>
<td>②</td>
<td>1 Ea.</td>
<td>4&quot; Detector Check Device W/ By-Pass Meter</td>
</tr>
<tr>
<td>③</td>
<td>1 Ea.</td>
<td>4&quot; x 8&quot; Nipple M.J. x F.</td>
</tr>
<tr>
<td>④</td>
<td>1 Ea.</td>
<td>Precast D.C. Vault</td>
</tr>
<tr>
<td></td>
<td>1 Ea.</td>
<td>D.C. Vault Floor (Not Shown)</td>
</tr>
<tr>
<td></td>
<td>1 Ea.</td>
<td>Access Hatch (Not Shown)</td>
</tr>
</tbody>
</table>

Ref. 501 to 506

4" CLOSED FIRELINE SERVICE
WITH 4" DETECTOR CHECK DEVICE

June 2002
Material List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Quantity</th>
<th>Description</th>
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<tbody>
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<td>1 Ea.</td>
<td>6&quot; Flanged Coupling Adapter</td>
</tr>
<tr>
<td>②</td>
<td>1 Ea.</td>
<td>6&quot; Detector Check Device W/ By-Pass Meter</td>
</tr>
<tr>
<td>③</td>
<td>1 Ea.</td>
<td>6&quot; x 8&quot; Nipple M.J. x F.</td>
</tr>
<tr>
<td>④</td>
<td>1 Ea.</td>
<td>Precast D.C. Vault</td>
</tr>
<tr>
<td>⑤</td>
<td>1 Ea.</td>
<td>D.C. Vault Floor (Not Shown)</td>
</tr>
<tr>
<td>⑥</td>
<td>1 Ea.</td>
<td>Access Hatch (Not Shown)</td>
</tr>
</tbody>
</table>

Ref. 501 to 506

6" CLOSED FIRELINE SERVICE
WITH 6" DETECTOR CHECK DEVICE

JUNE 2002
Material List:

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>1 Ea.</td>
<td>8&quot; X 6&quot; Flanged Coupling Adaptor</td>
</tr>
<tr>
<td>②</td>
<td>1 Ea.</td>
<td>6&quot; Detector Check Device W/ By-Pass Meter</td>
</tr>
<tr>
<td>③</td>
<td>1 Ea.</td>
<td>8&quot; X 6&quot; Reducer M.J. X F.</td>
</tr>
<tr>
<td>④</td>
<td>1 Ea.</td>
<td>Precast D.C. Vault</td>
</tr>
<tr>
<td>⑤</td>
<td>1 Ea.</td>
<td>D.C. Vault Floor (Not Shown)</td>
</tr>
<tr>
<td>⑥</td>
<td>1 Ea.</td>
<td>Access Hatch (Not Shown)</td>
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</table>

8" CLOSED FIRELINE SERVICE WITH 6" DETECTOR CHECK DEVICE

Ref. 501 to 506

DWU 519
JUNE 2002
# Material List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1 Ea.</td>
<td>8&quot; Flanged Coupling Adaptor</td>
</tr>
<tr>
<td>②</td>
<td>1 Ea.</td>
<td>8&quot; Detector Check Device W/ By-Pass Meter</td>
</tr>
<tr>
<td>③</td>
<td>1 Ea.</td>
<td>8&quot; X 8&quot; Nipple M.J. X F.</td>
</tr>
<tr>
<td>④</td>
<td>1 Ea.</td>
<td>Precast D.C. Vault</td>
</tr>
<tr>
<td></td>
<td>1 Ea.</td>
<td>D.C. Vault Floor (Not Shown)</td>
</tr>
<tr>
<td></td>
<td>1 Ea.</td>
<td>Access Hatch (Not Shown)</td>
</tr>
</tbody>
</table>

---

**8" CLOSED FIREFIELD SERVICE WITH 8" DETECTOR CHECK DEVICE**

---

Ref. 501 to 506
GENERAL DESCRIPTIONS AND NOTES
FOR SUSPENDED VAULT INSTALLATION

1.) Suspended Vault Installation refers to the design and construction methods required to install a large water service within the basement or substructure of a building. This design and construction method is occasionally required in the Central Business District or in other commercial areas where the basements or substructure of the buildings extend into the right-of-way creating conditions that are too congested for conventional vault construction. The suspended vault installation method is compatible with all large water services.

2.) The design of the cast-in-place reinforced concrete vault piping configuration and vault support system for the suspended vault installation is to be performed and sealed by a registered Professional Engineer at the expense of the Contractor or Developer. All plans are to be approved by Dallas Water Utilities.

3.) Refer to "General Notes" Page No. 506 for additional information on large water service installations.
Meter Vault To Have Direct Street Level Access

3' 0" x 4' 0" Aluminum Access Hatch Per D.W.U. Spec. 7420-0031-86

Face of Building Of Property Line

Sidewalk Area

Cast In Place Reinforced Concrete Meter Vault Constructed In Building Substructure.

Core Drill Holes With 10" Clearance From Vault Floor. Seal Opening Around Piping With Ram-Neck Type Caulking.

Vault To Have, 2" Maximum Grate Drain. (Slope Floor To Drain)

Pier Supports

Limits Of Basement, Underground Parking Or Building Substructure.

Meter & By Pass Piping To Be Supported By Adjustable Pipe Supports Or Concrete Pipe Supports.

TYPICAL FOR ALL SUSPENDED VAULTS
(Combined Service, Perpendicular To Distribution Main Shown)
### Material List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Quantity</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>2</td>
<td>2 Eq.</td>
<td>2&quot; x 7&quot; C.I. Tee F. x F.</td>
</tr>
<tr>
<td>3</td>
<td>2 Eq.</td>
<td>2&quot; Gate Valve F. x F.</td>
</tr>
<tr>
<td>4</td>
<td>3 Eq.</td>
<td>Valve Stack Riser Cover &amp; Lid</td>
</tr>
<tr>
<td>5</td>
<td>1 Eq.</td>
<td>2&quot; x 1&quot; C.I. Nipple F. x S.</td>
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<tr>
<td>6</td>
<td>1 Eq.</td>
<td>Flanged Coupling Adaptor</td>
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<tr>
<td>7</td>
<td>1 Eq.</td>
<td>2&quot; Meter As Specified (Type F.M. Shown)</td>
</tr>
<tr>
<td>8</td>
<td>1 Eq.</td>
<td>2&quot; x 4&quot; C.I. Tee F. x F. (Test Point)</td>
</tr>
<tr>
<td>9</td>
<td>1 Eq.</td>
<td>4&quot; Gate Valve F. x F. (Test Point)</td>
</tr>
<tr>
<td>10</td>
<td>3 Eq.</td>
<td>4&quot; x 24&quot; C.I. Nipple F. x F.</td>
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<tr>
<td>11</td>
<td>1 Eq.</td>
<td>2&quot; C.I. 90° Bend F. x F.</td>
</tr>
<tr>
<td>12</td>
<td>1 Eq.</td>
<td>2&quot; Gate Valve F. x M.J.</td>
</tr>
<tr>
<td>13</td>
<td>1 Eq.</td>
<td>2&quot; C.I. 90° Bend M.J. x F.</td>
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<tr>
<td>14</td>
<td>1 Eq.</td>
<td>2&quot; D.I. Pipe, Class 52, Approx. 10'</td>
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<tr>
<td>15</td>
<td>1 Eq.</td>
<td>Cast In Place Concrete Vault</td>
</tr>
<tr>
<td>16</td>
<td>1 Eq.</td>
<td>Access Hatch (Not Shown)</td>
</tr>
</tbody>
</table>

**Note:** Size As Specified

---

### TYPICAL SUSPENDED VAULT DETAIL

**Meter Perpendicular to Main**

**Ref. 522**

**DWU 525**

**Date:** OCT.2009
TYPICAL SUSPENDED VAULT DETAIL
METER PARALLEL TO MAIN

LOCATE 39" X 49" VAULT OPENING
OVER METER AND TEST TEE