

General Notes:

1. Concrete thrust block area based upon a safe bearing load of 2000/(3000) Lbs. per Sq. Ft.
2. Areas must be adjusted for other size pipe, pressures and soil conditions.
3. Concrete blocking shall be cast-in-place and have minimum of 1/2 square foot contact bearing against the fitting.
4. Block shall bear against fittings only and shall be clear of joints to permit taking up or dismantling joint.
5. Contractor shall install blocking adequate to withstand test pressure as well as to continuously withstand operating pressure under all conditions of service.
6. Polyethylene wrap not shown for clarity.
7. In muck or peat, all thrusts shall be restrained by piles or tie rods to solid foundations or by removal of muck or peat and replacement with ballast of sufficient stability to resist thrusts.

THRUST BLOCK SIZING FOR 250 PSI PRESSURE

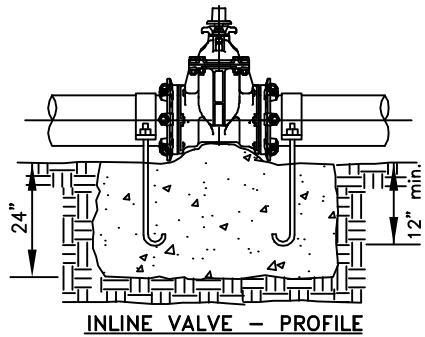
Min. Bearing Area Against Undisturbed Soil—Sq. Ft.

PIPE SIZE	(A)	(B)	(C)	(D)	(E)
4"	3/(2)	2/(1)	2/(1)	1/(1)	1/(1)
6"	6/(4)	4/(3)	3/(2)	2/(1)	1/(1)
8"	10/(7)	7/(5)	5/(4)	3/(2)	2/(1)
10"	15/(10)	11/(7)	8/(5)	4/(3)	2/(2)
12"	22/(14)	15/(10)	12/(8)	6/(4)	3/(2)
14"	29/(20)	21/(14)	16/(11)	8/(5)	4/(3)
16"	38/(26)	27/(18)	21/(14)	11/(7)	5/(4)
18"	48/(32)	34/(23)	26/(18)	13/(9)	7/(5)
20"	60/(40)	42/(28)	32/(22)	17/(11)	8/(6)
24"	86/(58)	61/(41)	47/(31)	24/(16)	12/(8)

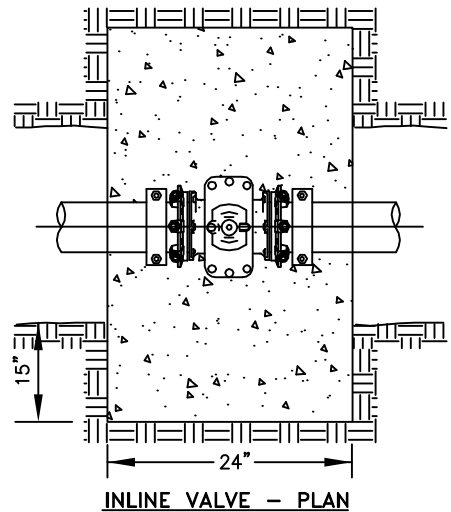
SAFE BEARING LOADS IN LBS./SQ. FT.

The safe bearing loads given in the following table are for horizontal thrusts when the depth of cover over the pipe exceeds 2 feet.

SOIL	SAFE BEARING LOAD
*Muck, peat, etc.(See note 7.)	0
Soft clay	1,000
Sand	2,000
Sand and gravel	3,000
Sand and gravel cemented w/clay	4,000
Hard shale	10,000



INLINE VALVE — PROFILE



INLINE VALVE — PLAN

Notes:

1. Concrete blocking is based on 250 psi water pressure and 2500 psi concrete strength.
2. Hardware not embedded in concrete shall be cleaned and coated with coal tar epoxy.
3. In-line valve shall be M.J. x M.J. and be restrained with Mega-Lugs, or equal.

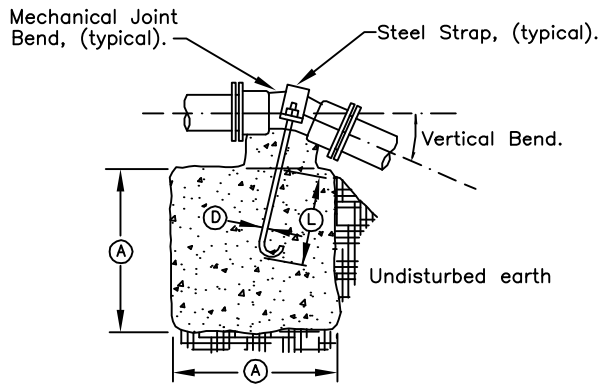
CONCRETE BLOCKING - HORIZONTAL

NOT TO SCALE

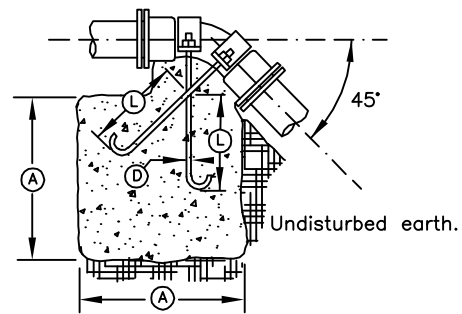
Detail Approvals
 Engineer GSM
 Manager DPK

**NORTHSHORE UTILITY DISTRICT
 STANDARD WATER DETAILS**

1



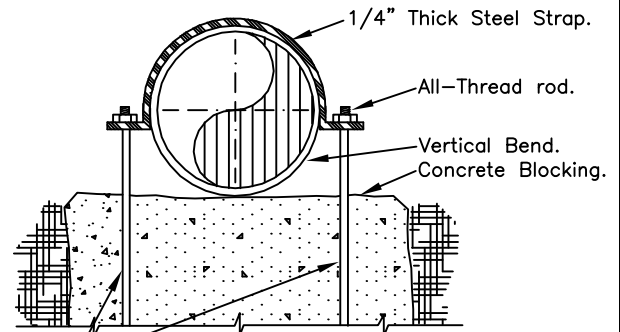
BLOCKING FOR 11-1/4°, 22-1/2° & 30° VERTICAL BENDS



BLOCKING FOR 45° VERTICAL BENDS

VERTICAL BLOCKING

PIPE SIZE	VERT. BEND	CU.FT.	(A)	(D)	(L)
4"	11-1/4°	8	2.0'	3/4"	1.5'
	22-1/2°	11	2.2'	3/4"	2.0'
	30°	17	2.6'	3/4"	2.0'
	45°	30	3.1'	3/4"	2.0'
6"	11-1/4°	11	2.2'	3/4"	2.0'
	22-1/2°	25	2.9'	3/4"	2.0'
	30°	41	3.5'	3/4"	2.0'
	45°	68	4.1'	3/4"	2.0'
8"	11-1/4°	16	2.5'	3/4"	2.0'
	22-1/2°	47	3.6'	3/4"	2.5'
	30°	70	4.1'	3/4"	2.5'
	45°	123	5.0'	3/4"	2.0'
12"	11-1/4°	32	3.2'	3/4"	2.0'
	22-1/2°	88	4.5'	7/8"	3.0'
	30°	132	5.1'	7/8"	2.5'
	45°	232	6.1'	3/4"	2.5'
16"	11-1/4°	70	4.1'	7/8"	3.0'
	22-1/2°	184	5.7'	1-1/8"	4.0'
	30°	275	6.5'	1-1/4"	4.0'
	45°	478	7.8'	1-1/8"	4.0'
20"	11-1/4°	91	4.5'	7/8"	3.0'
	22-1/2°	225	6.1'	1-1/4"	4.0'
	30°	330	6.9'	1-3/8"	4.5'
	45°	560	8.2'	1-1/4"	4.0'
24"	11-1/4°	128	5.0'	1"	3.5'
	22-1/2°	320	6.8'	1-3/8"	4.5'
	30°	480	7.9'	1-5/8"	5.5'
	45°	820	9.4'	1-3/8"	4.5'



2 - 1/2" ϕ rods for 10" size and smaller.
2 - 1" ϕ rods for larger than 10" size.

TYPICAL CROSS-SECTION

Notes:

1. Concrete blocking is based on 250 psi water pressure and 2500 psi concrete strength.
2. Bolts and nuts not embedded in concrete shall be cleaned and coated with coal tar epoxy.
3. Polyethylene wrap not shown for clarity.

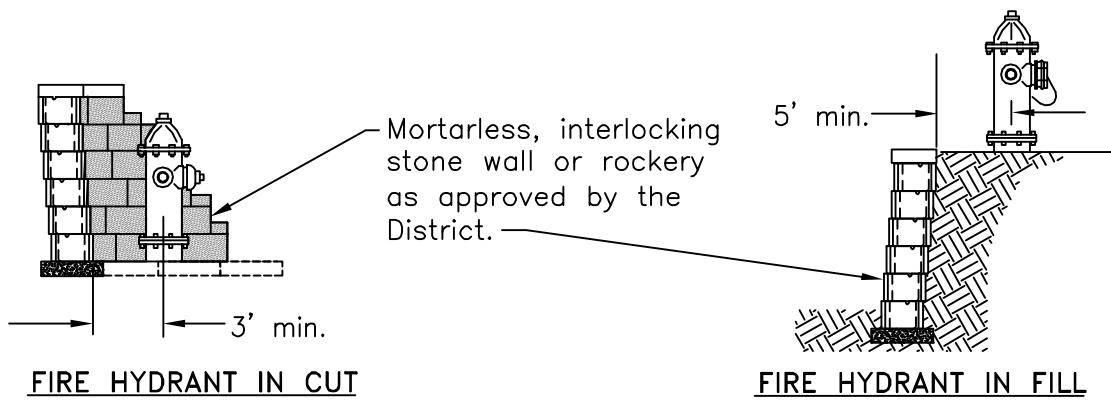
CONCRETE BLOCKING - VERTICAL

NOT TO SCALE

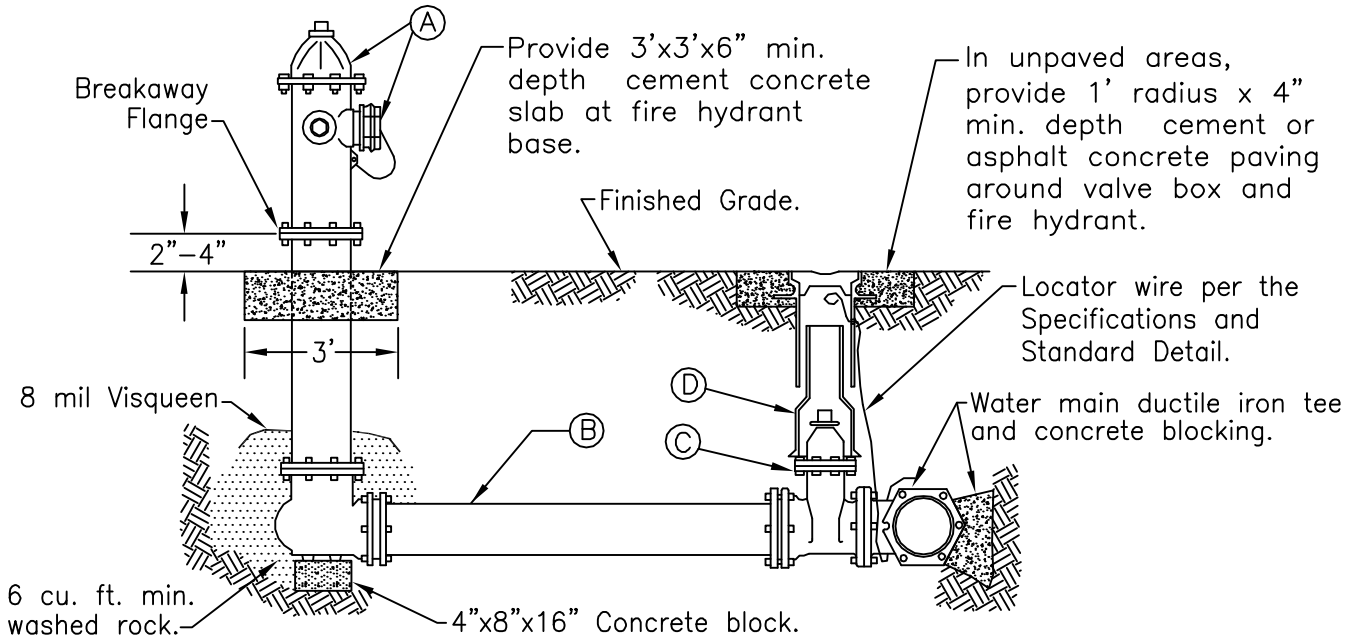
Detail Approvals
 Engineer GSM
 Manager DPK

NORTHSHORE UTILITY DISTRICT
STANDARD WATER DETAILS

2



FIRE HYDRANT LOCATION IN CUT OR FILL



MATERIALS LIST

ITEM	DESCRIPTION
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- Ⓐ Hydrant: Shall be Mueller Super Centurion, American Darling B-62-B, Clow Medallion, M&H 929 or AVK Nostalgic in conformance with AWWA Standard Specification C-502. Provide Storz adapters as follows: 4" for Bothell and King Co. F.D. #16, 5" for Kirkland and none required for City of Woodinville. Hydrant shall be prime coated with Steelcote SR53 heavy duty brush type enamel. Top coat shall be two brush coats of Sherwin/Williams White Industrial Enamel #B54W101.
- Ⓑ 6" Cl. 52 D.I. pipe, 3' min. and 50' max. with restrained joints.
- Ⓒ 6" R.W. Gate valve, F.L.xR.J.: Shall be per the Specifications.
- Ⓓ Two-piece valve box per the Specifications and Standard Detail.

Notes:

1. Hydrant shall be oriented per Fire Marshall and have 3' min. clearance around centerline.
2. Gate valve operating nut shall be 2' minimum and 4'-6" maximum from finished grade.
3. Bollards required only on private property.

FIRE HYDRANT ASSEMBLY

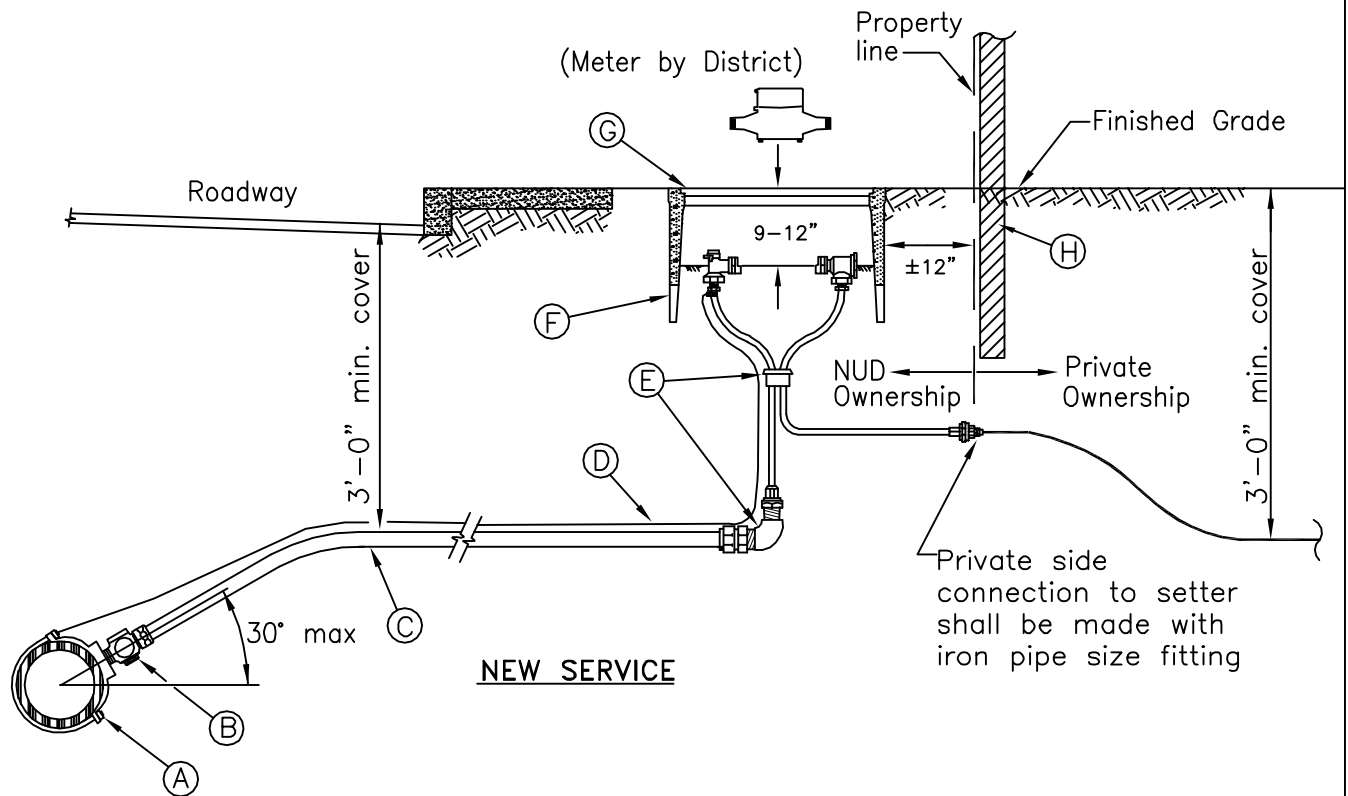
NOT TO SCALE

Detail Approvals	
Engineer	GSM
Manager	DPK

**NORTHSHORE UTILITY DISTRICT
STANDARD WATER DETAILS**

3

January 2011
W-3(Hydrant).dwg



MATERIALS LIST

<u>ITEM</u>	<u>DESCRIPTION</u>
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- | | |
|-----|--|
| (A) | Saddle: Stainless steel single strap with epoxy coated ductile iron casting and CC threads. Saddle shall be Ford FC101, Romac 101NS, Mueller DR1S, or District approved equal. Direct tap of ductile iron, Cl. 52 or greater, is allowed. |
| (B) | 1" corporation stop, CCxPack Joint. Ford F1001 or approved equal. |
| (C) | 1" polyethylene pipe per the Specifications. SIDR 7, 200 psi rating. Pipe shall be continuous from corporation stop to meter setter. |
| (D) | Locator wire: 14 gauge copper, continuous, solid core, neoprene coated per the Specifications. Connection at the meter setter shall be made with a stainless steel clamp. Connection at the main line wire shall be made with a split-bolt connector. Strip coating prior to connection. |
| (E) | 1" meter setter: Ford VBH94-15W-11-44ZA, with 1" 90° brass elbow, MIPxMIP, and 1" adapter, FIPxPack Joint, or equal. |
| (F) | Meter box: ARMORCAST, A6001946PCX12 (NO MOUSE HOLES) |
| (G) | Cover: ARMORCAST, A6001969RCI-H10 |
| (H) | 2"x4"x6, marker post. Bury 3'. Paint white with "Water" stenciled in blue paint. |

NOTE: If required for premise isolation, an approved backflow assembly shall be installed immediately behind the water meter per District Standard Detail #14.

1" WATER SERVICE

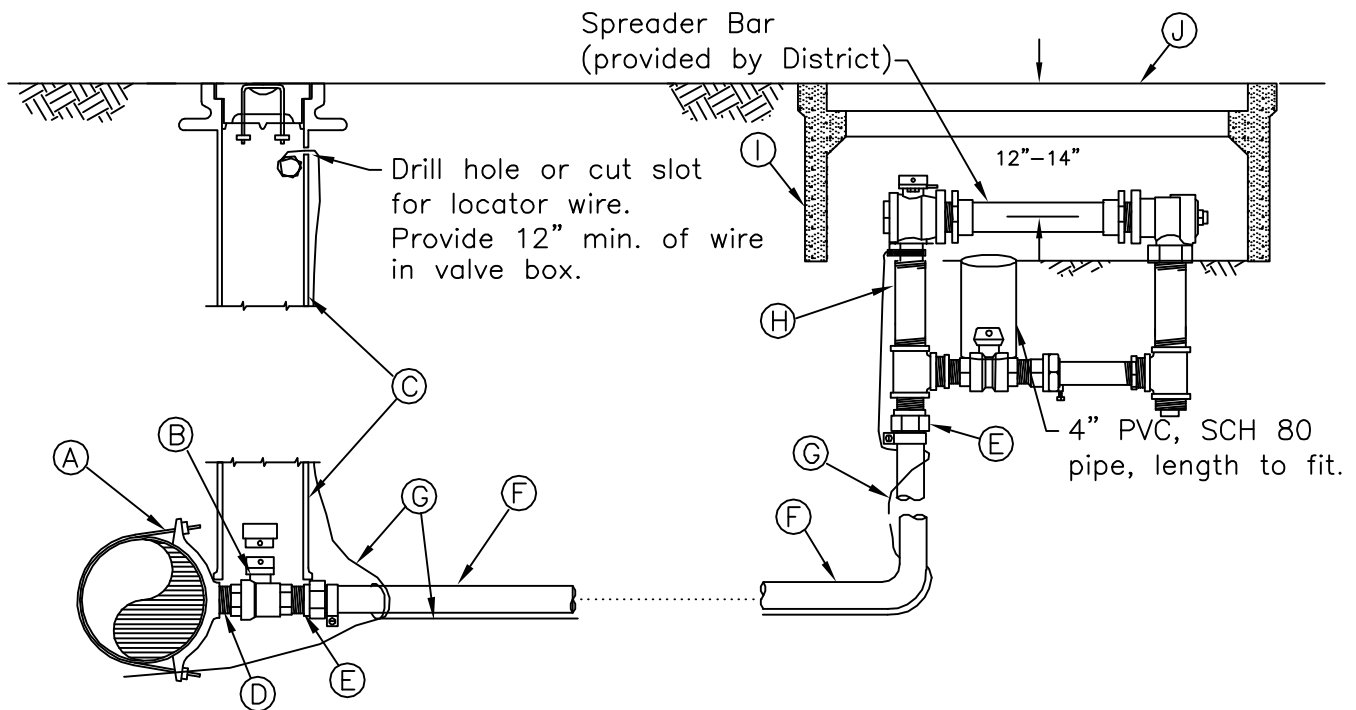
NOT TO SCALE

Detail Approvals	
Engineer	GSM
Manager	DPK

NORTHSHORE UTILITY DISTRICT
STANDARD WATER DETAILS

4

November 2011
W-4(1WaterService).dwg



MATERIALS LIST

<u>ITEM</u>	<u>DESCRIPTION</u>
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- | | |
|-----|--|
| (A) | Saddle: Stainless steel double strap with ductile iron casting and 1-1/2" or 2" IPS tap. Saddle shall be Ford FC202, Romac 202NS, Mueller DR2S, or District approved equal. |
| (B) | Ball valve, FIPxFIP, Ford #B11-666 for 1-1/2" and Ford #B11-777 for 2". |
| (C) | Two-piece cast iron valve box per the Specifications and Standard Detail. |
| (D) | Brass nipple, MIPxMIP, length to fit. |
| (E) | Adapter, MIPxPack Joint, Ford #C86-66 for 1-1/2" and Ford #C86-77 for 2". |
| (F) | Polyethylene pipe per the Specifications. SIDR 7, 200 psi rating. Pipe shall be continuous from ball valve to meter setter. |
| (G) | Locator wire: 14 guage copper, continuous, solid core, neoprene coated per the Specifications. Connection at the meter setter shall be made with a stainless steel clamp. Connection at the main line wire shall be made with a split-bolt connector. Strip coating prior to connection. |
| (H) | 1-1/2" meter setter: Ford VBH8612B. 2" meter setter: Ford VBH8712B. |
| (I) | Meter box: Non-traffic areas: Brooks #65-S, Fogtite #2 w/inspection plate or Utility Vault #65-1528C-DPF.
Traffic areas: Brooks #65, Fogtite #2, or Utility Vault #65-1528. |
| (J) | Cover: Non-traffic areas: See Meter Box descriptions above.
Traffic areas: Brooks #65-TF with max view reader lid, or Utility Vault #65-1528C-DPF. |

NOTE: If required for premise isolation, an approved backflow assembly shall be installed immediately behind the water meter per District Standard Detail #14.

1-1/2" and 2" WATER SERVICE

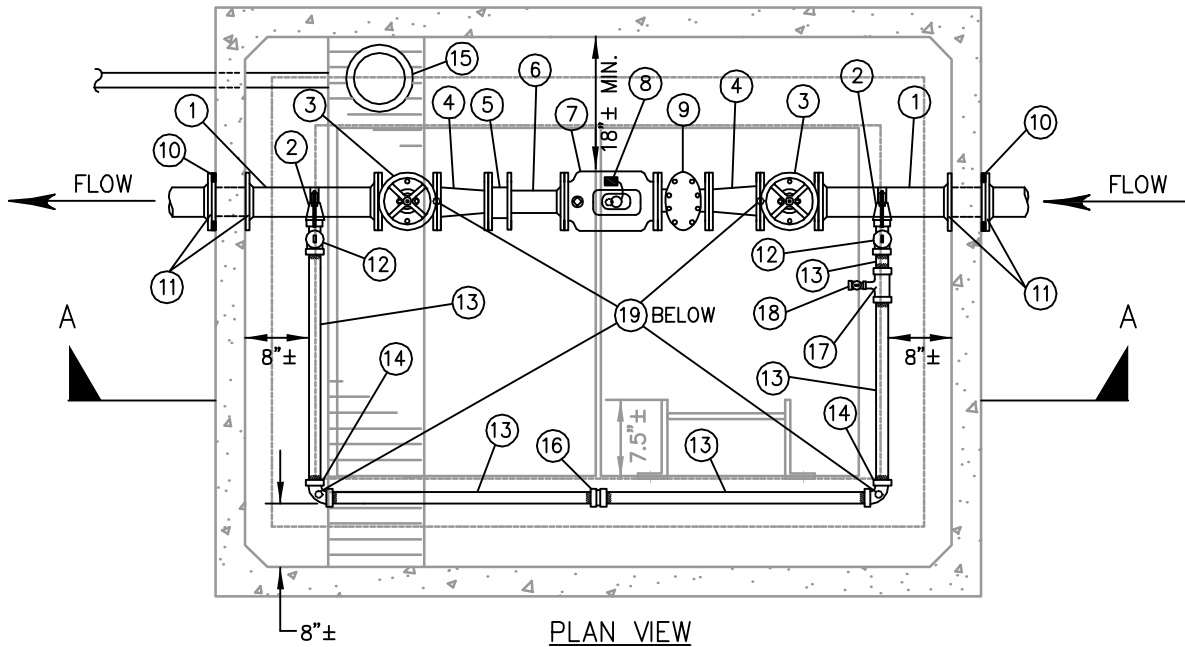
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Detail Approvals	
Engineer	GSM
Manager	DPK

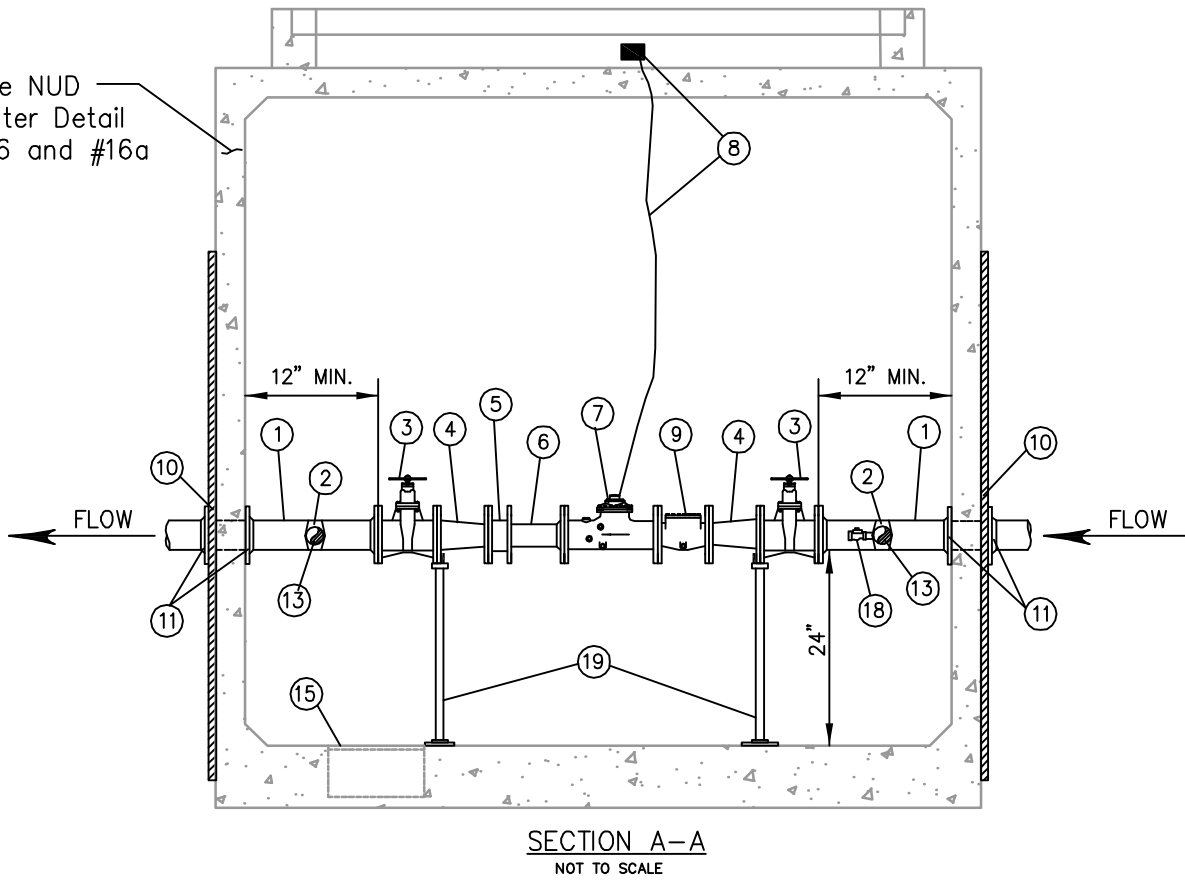
NORTHSHORE UTILITY DISTRICT
STANDARD WATER DETAILS

5

August 2011
W-5(2WaterService).dwg



See NUD
Water Detail
#16 and #16a



3" WATER SERVICE

NOT TO SCALE

Detail Approvals
 Engineer GSM
 Manager DPK

NORTHSHORE UTILITY DISTRICT STANDARD WATER DETAILS

6

August 2011
3_WaterMeter.DWG

MATERIAL LIST:

ITEM	QTY.	DESCRIPTION
①	2	4" D.I. ADAPTER, FL x PE, 5'± LONG.
②	2	SADDLE WITH STAINLESS STEEL STRAP, 2" IP TAP, FORD#FS202 SADDLE WITH IP7 TAP OR EQUAL
③	2	4" RESILIENT SEAT GATE VALVE, NRS, FL, O-RING PACKING WITH HANDWHEEL. VALVE TO BE AMERICAN, WATEROUS, MUELLER, M&H, OR CLOW MEETING AWWA C-515.
④	2	4" X 3" D.I. REDUCER, FL.
⑤	1	3" FLANGED COUPLING ADAPTER TO BE FORD FLANGED COUPLING ADAPTER, STYLE FFCA W/STAINLESS STEEL ANCHOR STUDS, OR EQUAL.
⑥	1	3" D.I. ADAPTER, FL x PE, LENGTH TO FIT.
⑦	1	3" FLANGED SINGLE REGISTER HIGH PERFORMANCE COMPOUND METER, TO BE PROVIDED BY DISTRICT AND INSTALLED BY CONTRACTOR.
⑧	1	METER TRANCEIVER UNIT (MXU) AND MOUNTING BRACKET, TO BE PROVIDED BY DISTRICT AND INSTALLED BY CONTRACTOR ON HATCH RISER.
⑨	1	3" FLANGED STRAINER, TO BE PROVIDED BY DISTRICT AND INSTALLED BY CONTRACTOR.
⑩	4	2" X 2" X 1/4" MIN. WALL THICKNESS SQUARE STEEL TUBING, 6' MIN. LENGTH. BOLT TO VAULT WALL IN FOUR PLACES WITH STAINLESS STEEL ANCHOR BOLTS.
⑪	4	UNI-FLANGE ADAPTER.
⑫	2	2" MIP X FIP LOCKABLE BALL VALVE.
⑬	5	2" BRASS NIPPLE, LENGTH TO FIT.
⑭	2	2" BRASS 90° BEND.
⑮	1	SUMP PUMP OR GRAVITY DRAIN AS REQUIRED BY SITE CONDITIONS, TO BE DETERMINED BY THE DEVELOPER AND CONTRACTOR AND REVIEWED AND APPROVED BY THE DISTRICT. FOR GRAVITY: SUMP DRAIN, ZURN Z-551, THREADED, WITH ZURN Z-1099 BACKWATER VALVE, THREADED x NO-HUB, WITH 4" D.I. PIPE TO 12" MIN. BEYOND VAULT WALL AND 4" D.I., MIN. 1% SLOPE TO DAYLIGHT OR C.B. FOR SUMP PUMP: 16" DIAM. x 6" DEEP SUMP WITH ZOELLER MODEL 57 SUMP PUMP. PROVIDE ELECTRICAL POWER PER ALL APPLICABLE CODES. CONSTRUCT 1-1/4", SCH. 80 PVC DISCHARGE PIPING, WITH LOCATE WIRE. TO NEAREST CATCH BASIN OR APPROVED LOCATION.
⑯	1	2" BRASS UNION.
⑰	1	2" X 1" BRASS TEE.
⑱	1	1" MIP LOCKABLE BALL VALVE WITH CAP.
⑲	4	AJUSTABLE PIPING SUPPORT, STANDON MODEL #S89, OR EQUAL.

NOTES:

1. PROVIDE SHOP DRAWINGS AND SUBMITTALS FOR ALL MATERIALS TO THE DISTRICT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
2. VAULT SHALL BE UTILITY VAULT 687-LA (8'L x 6'W x 7'D; INSIDE DIMENSION). SEE DISTRICT STANDARD DETAIL #S 16 AND 16a FOR VAULT DETAIL.
3. ALL PIPE AND CONDUIT PENETRATIONS SHALL BE CORE-DRILLED ON-SITE AND SHALL BE SEALED WATERTIGHT. PROVIDE "LINK-SEAL" FITTINGS AT ALL PENETRATIONS.
4. ALL PIPING AND APPURTENANCES OUTSIDE THE VAULT SHALL BE RESTRAINED JOINT. IN ADDITION TO THE RESTRAINED JOINTS, THRUST BLOCKING AT ALL TEES AND BENDS PER DISTRICT STANDARD WATER DETAIL #S 1 AND 2 SHALL BE REQUIRED.
5. THE CONTRACTOR IS RESPONSIBLE FOR ELECTRICAL PERMITS AND APPROVALS FOR SUMP PUMP INSTALLATIONS.
6. IF REQUIRED FOR PREMISE ISOLATION, AN APPROVED BACKFLOW ASSEMBLY SHALL BE INSTALLED IMMEDIATELY BEHIND THE WATER METER PER DISTRICT STANDARD DETAIL #14.

3" WATER SERVICE

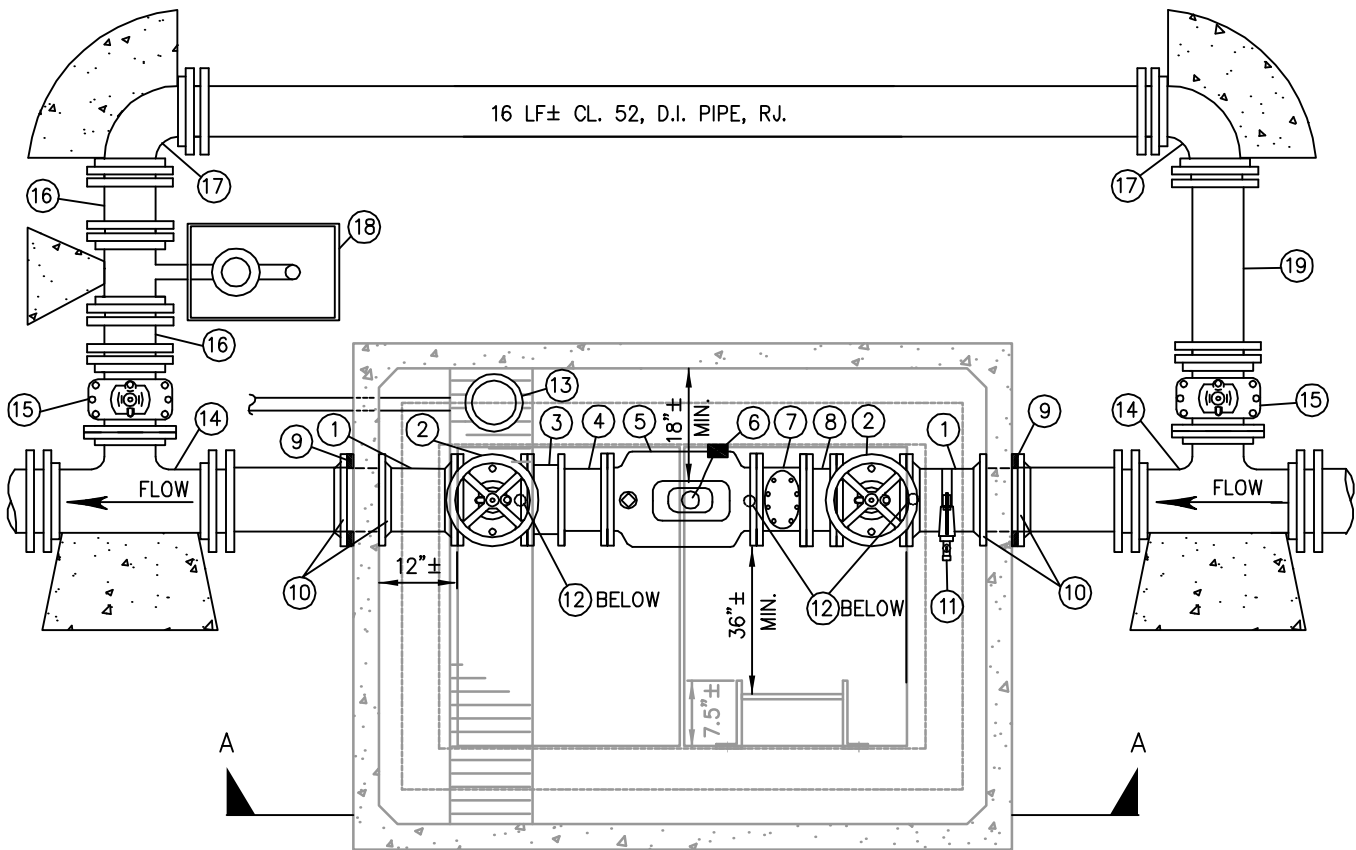
NOT TO SCALE

Detail Approvals
 Engineer GSM
 Manager DPK

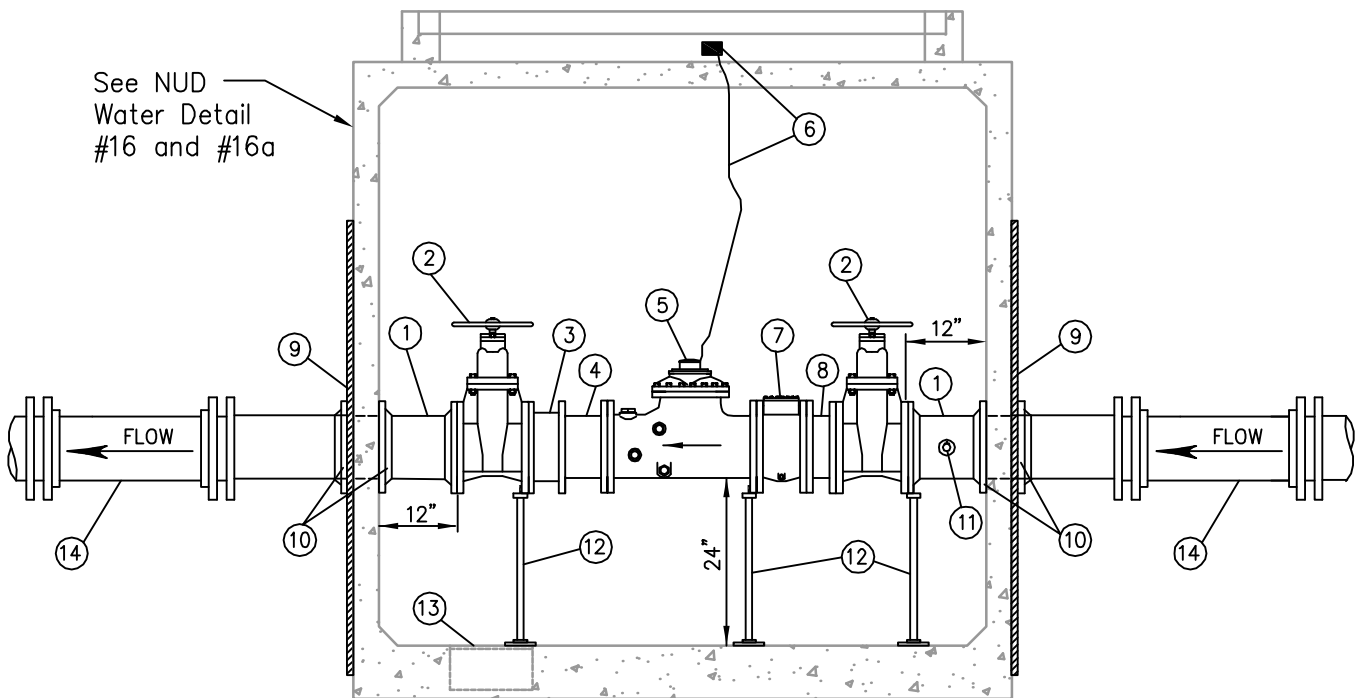
**NORTHSHORE UTILITY DISTRICT
 STANDARD WATER DETAILS**

6a

August 2011
 3_WaterMeter.DWG



PLAN VIEW
NOT TO SCALE



SECTION A-A
NOT TO SCALE

4" & 6" WATER SERVICE

NOT TO SCALE

Detail Approvals
 Engineer GSM
 Manager DPK

NORTHSHORE UTILITY DISTRICT STANDARD WATER DETAILS

7

MATERIAL LIST: ALL PIPING & APPURTENANCES TO MATCH METER SIZE

ITEM	QTY.	DESCRIPTION
①	2	D.I. ADAPTER, FL x PE, 5'± LONG.
②	2	RESILIENT SEAT GATE VALVE, NRS, FL, O-RING PACKING WITH HANDWHEEL. VALVE TO BE AMERICAN, WATEROUS, MUELLER OR CLOW MEETING AWWA C-515.
③	1	FLANGED COUPLING ADAPTER TO BE FORD FLANGED COUPLING ADAPTER, STYLE FFCA W/STAINLESS STEEL ANCHOR STUDS, OR EQUAL.
④	1	D.I. ADAPTER, FL x PE, LENGTH TO FIT.
⑤	1	FLANGED SINGLE REGISTER HIGH PERFORMANCE COMPOUND METER, TO BE PROVIDED BY DISTRICT AND INSTALLED BY CONTRACTOR.
⑥	1	METER TRANCEIVER UNIT (MXU) AND MOUNTING BRACKET, TO BE PROVIDED BY DISTRICT AND INSTALLED BY CONTRACTOR ON HATCH RISER.
⑦	1	FLANGED STRAINER, TO BE PROVIDED BY DISTRICT AND INSTALLED BY CONTRACTOR.
⑧	1	5" D.I. SPOOL, FL X FL
⑨	4	2" X 2" X 1/4" MIN. WALL THICKNESS SQUARE STEEL TUBING, 6' MIN. LENGTH. BOLT TO VAULT WALL IN FOUR PLACES WITH STAINLESS STEEL ANCHOR BOLTS.
⑩	4	UNI-FLANGE ADAPTER.
⑪	1	SADDLE WITH STAINLESS STEEL STRAP, 1" IP TAP AND 1" MIP LOCKABLE BALL VALVE WITH CAP.
⑫	3	AJUSTABLE PIPING SUPPORT, STANDON MODEL #S89, OR EQUAL.
⑬	1	SUMP PUMP OR GRAVITY DRAIN AS REQUIRED BY SITE CONDITIONS, TO BE DETERMINED BY THE DEVELOPER AND CONTRACTOR AND REVIEWED AND APPROVED BY THE DISTRICT. FOR GRAVITY: SUMP DRAIN, ZURN Z-551, THREADED, WITH ZURN Z-1099 BACKWATER VALVE, THREADED x NO-HUB, WITH 4" D.I. PIPE TO 12" MIN. BEYOND VAULT WALL AND 4" D.I., MIN. 1% SLOPE TO DAYLIGHT OR C.B. FOR SUMP PUMP: 16" DIAM. x 6" DEEP SUMP WITH ZOELLER MODEL 57 SUMP PUMP. PROVIDE ELECTRICAL POWER PER ALL APPLICABLE CODES. CONSTRUCT 1-1/4", SCH. 80 PVC DISCHARGE PIPING, WITH LOCATE WIRE TO NEAREST CATCH BASIN OR APPROVED LOCATION.
⑭	2	D.I. TEE, FL x RJ.
⑮	2	RESILIENT SEAT GATE VALVE, NRS, FL x RJ. VALVE TO BE AMERICAN, WATEROUS, MUELLER, M&H, OR CLOW MEETING AWWA C-509. VALVE BOX TO BE PER DISTRICT STANDARD WATER DETAIL #9.
⑯	2	D.I. SPOOLS, 1'± LONG.
⑰	2	90° D.I. BENDS, RJ.
⑱	1	2" BLOW-OFF ASSEMBLY, PER DISTRICT STANDARD WATER DETAIL #10.
⑲	1	D.I. SPOOL, 3'± LONG.

NOTES:

1. PROVIDE SHOP DRAWINGS AND SUBMITTALS FOR ALL MATERIALS TO THE DISTRICT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
2. VAULT SHALL BE UTILITY VAULT 687-LA (8'L x 6'W x 7'D; INSIDE DIMENSION). SEE DISTRICT STANDARD DETAIL #'S 16 AND 16a FOR VAULT DETAIL.
3. ALL PIPE AND CONDUIT PENETRATIONS SHALL BE CORE-DRILLED ON-SITE AND SHALL BE SEALED WATERTIGHT. PROVIDE "LINK-SEAL" FITTINGS AT ALL PENETRATIONS.
4. ALL PIPING AND APPURTENANCES OUTSIDE THE VAULT SHALL BE RESTRAINED JOINT. IN ADDITION TO THE RESTRAINED JOINTS, THRUST BLOCKING AT ALL TEES AND BENDS PER DISTRICT STANDARD WATER DETAIL #'S 1 AND 2 SHALL BE REQUIRED.
5. THE CONTRACTOR IS RESPONSIBLE FOR ELECTRICAL PERMITS AND APPROVALS FOR SUMP PUMP INSTALLATIONS.
6. IF REQUIRED FOR PREMISE ISOLATION, AN APPROVED BACKFLOW ASSEMBLY SHALL BE INSTALLED IMMEDIATELY BEHIND THE WATER METER PER DISTRICT STANDARD DETAIL #14.

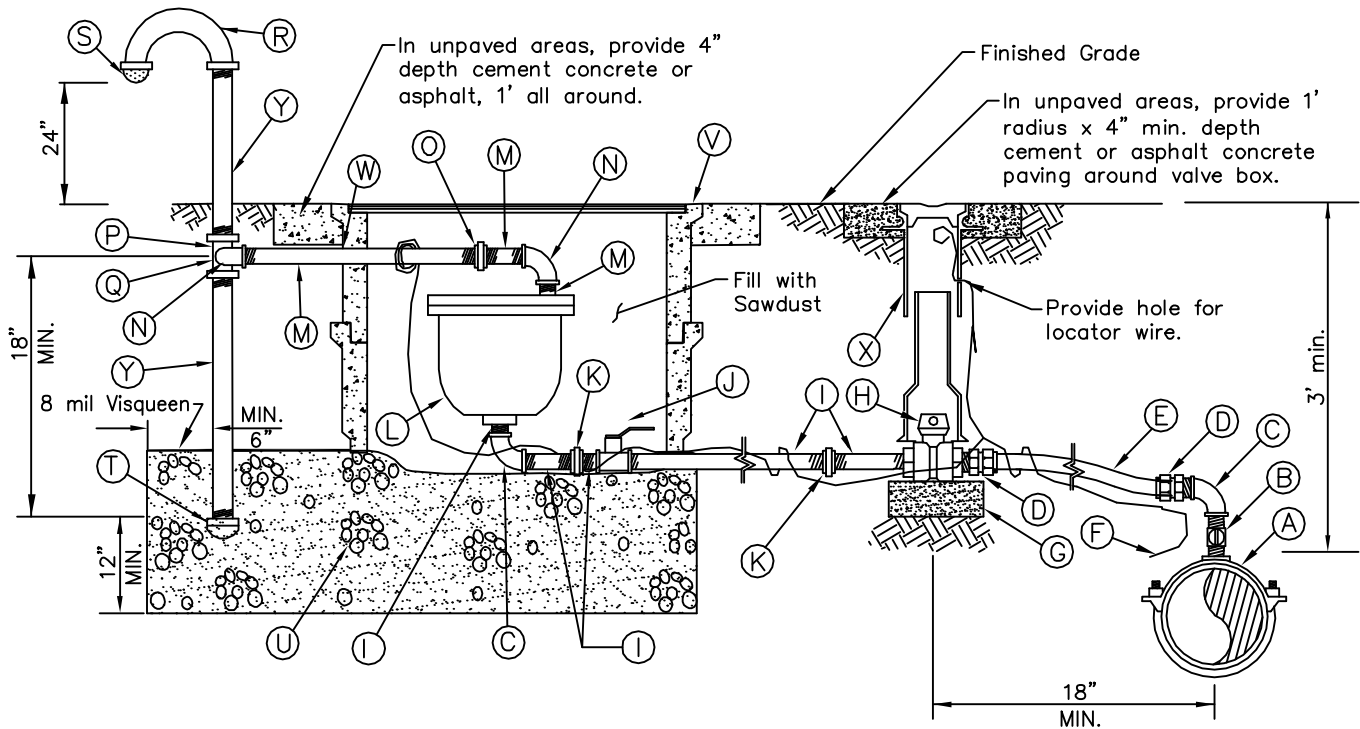
4" & 6" WATER SERVICE

NOT TO SCALE

Detail Approvals
 Engineer GSM
 Manager DPK

**NORTHSHORE UTILITY DISTRICT
 STANDARD WATER DETAILS**

7a



MATERIAL LIST

ITEM	QTY.	DESCRIPTION
(A)	1	Saddle: Single-strap, stainless-steel, tapped 1" CC Thread. Ford FC101, Romac 101NS, Mueller DR1S or District approved equal.
(B)	1	1" Corporation stop, CCxMIP.
(C)	2	1" 90° brass elbow, FIPxFIP.
(D)	2	1" adapter, MIPxPack Joint, Ford #C86-44 for SIDR 7, 200 psi pipe.
(E)	1	1" Polyethylene pipe per the Specifications. SIDR 7, 200 psi rating, length to fit.
(F)	1	Locator wire per the Specifications. 14 gauge neoprene coated copper. Continue with Mainline.
(G)	1	4"x8"x16" concrete block.
(H)	1	1" ball valve, FIPxFIP, Ford #B11-44 with 2" operating nut.
(I)	5	1" Brass nipple, length to fit.
(J)	1	1" MATCO-NORCA 754 brass ball valve or equal
(K)	2	1" brass union.
(L)	1	1" Air/Vacuum relief valve, APCO #143C or District approved equal.
(M)	3	1" galvanized nipple, length to fit.
(N)	2	1" 90° galvanized elbow, FIPxFIP.
(O)	1	1" galvanized union.
(P)	1	2"x2"x1" TEE, FIP.
(Q)	1	1" galvanized close nipple, MIP, between the elbow (N) and the tee (P).
(R)	1	2" 180° return bend.
(S)	1	2" beehive strainer.
(T)	1	2" cap with 1/8" hole for drain
(U)		Washed gravel, passing 1 1/2" and retained on 1/4" mesh
(V)	2	17"x28" concrete meter box equal to Brooks 65 with cover equal to Brooks 65-TF.
(W)	1	Cut opening as required, after installation, grout around pipe
(X)	1	Two-piece, cast iron valve box per the Specifications and Standard Detail.
(Y)	2	2" galvanized nipple, length to fit.

NOTES:

- The location of the assembly as shown on the plans is approximate only. The final location shall be at the local high point of the water main as directed by the District in the field during construction.
- The 2" Standpipe above ground, the meter box lid and the valve box lid shall be prime coated with Steelcote SR53 heavy duty brush type enamel. Top coat shall be two coats of Sherwin/Williams White Industrial Enamel #B54W101 or Krylon Industrial Rust Tough White enamel.

1" AIR & VACUUM RELIEF VALVE ASSEMBLY

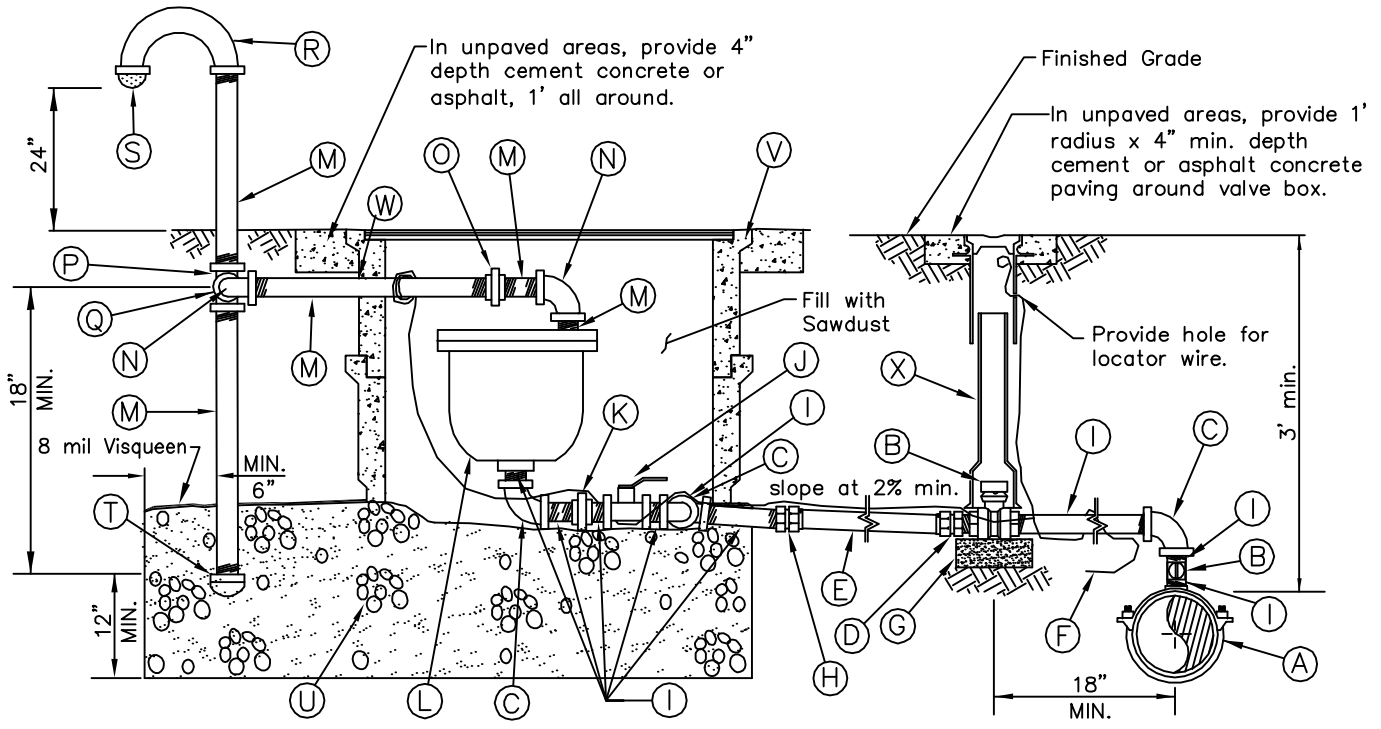
NOT TO SCALE

Detail Approvals
 Engineer GSM
 Manager DPK

NORTHSHORE UTILITY DISTRICT
STANDARD WATER DETAILS

8

August 2011
 W-8(1-AirValve).dwg



MATERIAL LIST

ITEM	QTY.	DESCRIPTION
(A)	1	Saddle: Double-strap, stainless-steel, tapped 2" IP. Ford FC202, Romac 202NS, Mueller DR2S or District approved equal.
(B)	2	2" ball valve, FIPxFIP, Ford #B11-777 with 2" operating nut.
(C)	4	2" 90° brass elbow, FIPxFIP.
(D)	1	2" adapter, MIPxPack Joint, Ford #C86-77 for SIDR 7, 200 psi pipe.
(E)	1	2" Polyethylene pipe per the Specifications. SIDR 7, 200 psi rating, length to fit.
(F)	1	Locator wire per the Specifications. 14 gauge neoprene coated copper. Continue with Mainline.
(G)	1	4"x8"x16" concrete block.
(H)	1	2" adapter, FIPxPack Joint, Ford #C86-77 for SIDR 7, 200 psi pipe.
(I)	9	2" Brass nipple, length to fit.
(J)	1	2" MATCO-NORCA 754 brass ball valve or equal
(K)	1	2" brass union.
(L)	1	2" Air/Vacuum relief valve, APCO #145C or District approved equal.
(M)	5	2" galvanized nipple, length to fit.
(N)	2	2" 90° galvanized elbow, FIPxFIP.
(O)	1	2" galvanized union.
(P)	1	2"x2"x2" TEE, FIP.
(Q)	1	2" galvanized close nipple, MIP, between the elbow (N) and the tee (P).
(R)	1	2" 180° return bend.
(S)	1	2" beehive strainer.
(T)	1	2" cap with 1/8" hole for drain
(U)		Washed gravel, passing 1 1/2" and retained on 1/4" mesh
(V)	2	17"x28" concrete meter box equal to Brooks 65 with cover equal to Brooks 65-TF.
(W)	1	Cut opening as required, after installation, grout around pipe
(X)	1	Two-piece, cast iron valve box per the Specifications and Standard Detail.

NOTES:

1. The location of the assembly as shown on the plans is approximate only. The final location shall be at the local high point of the water main as directed by the District in the field during construction.
2. The 2" Standpipe above ground, the meter box lid and the valve box lid shall be prime coated with Steelcote SR53 heavy duty brush type enamel. Top coat shall be two coats of Sherwin/Williams White Industrial Enamel #B54W101 or Krylon Industrial Rust Tough White enamel.

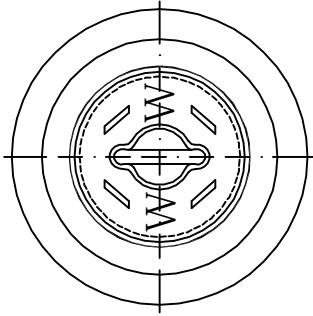
2" AIR & VACUUM RELIEF VALVE ASSEMBLY

NOT TO SCALE

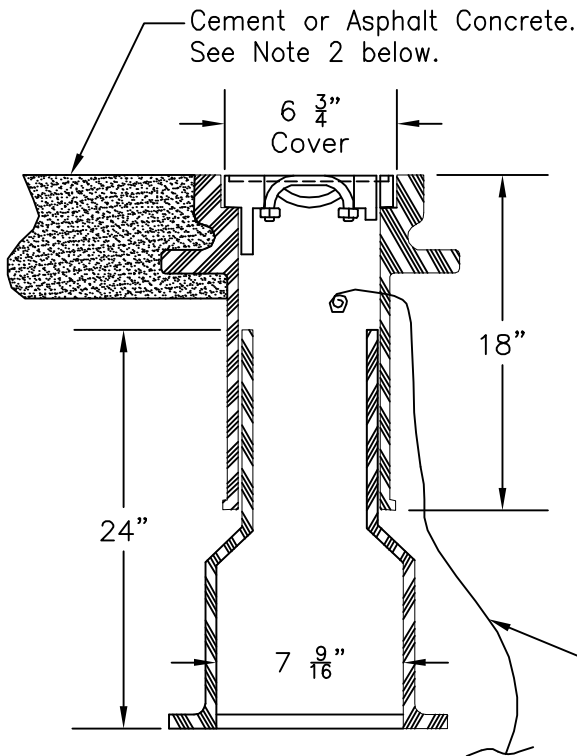
Detail Approvals
 Engineer GSM
 Manager DPK

**NORTHSHORE UTILITY DISTRICT
 STANDARD WATER DETAILS**

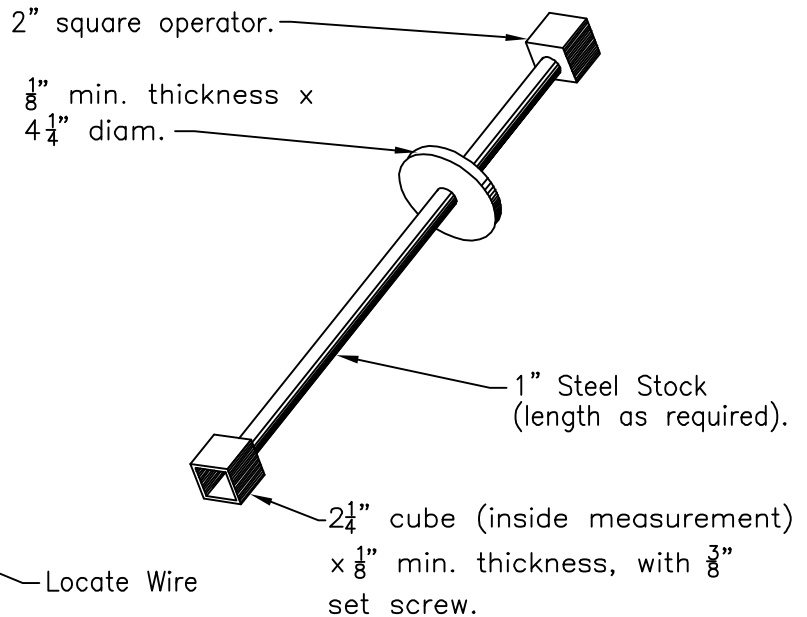
9



PLAN



VALVE BOX



VALVE OPERATING NUT EXTENSION

Notes:

1. Cast-iron valve box shall be Olympic Foundry part number 045.
2. If valve box is in an unpaved area, provide 1' radius x 4" minimum depth cement or asphalt concrete paving around valve box.

Notes:

1. Length as required to put operating nut two (2) feet from finished grade.
2. Extensions are required when valve nut is more 4.5' below finished grade.
3. Extensions to be a minimum of one (1) foot long.
4. One (1) Extension per valve.

VALVE BOX & OPERATING NUT EXTENSION

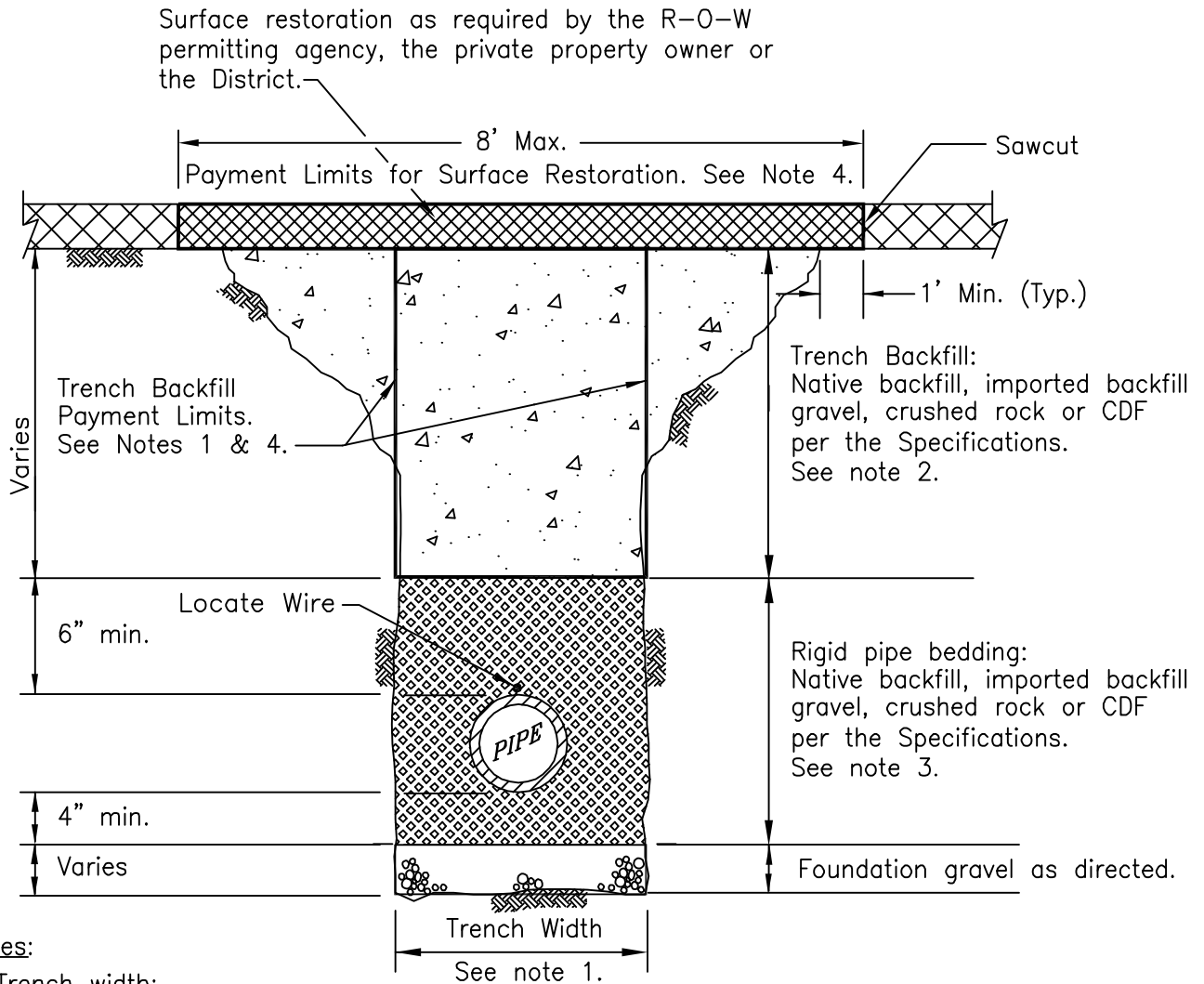
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NORTHSHORE UTILITY DISTRICT
STANDARD WATER DETAILS

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August 2011
 W-11(ValveBox).dwg



Notes:

1. Trench width:
 Minimum: Pipe O.D. + 12" (6" each side of pipe).
 Maximum: 40" for 15"Ø pipe and smaller.
 (1-1/2 x I.D.) + 18" for 18"Ø pipe and larger.
 The neat-line payment limits for trench backfill materials shall be based upon the maximum allowable trench width as shown above.
2. Native material, if allowed for trench backfill, shall meet the requirements of select borrow per the Specifications. Trench backfill shall be compacted to a minimum of ninety-five percent (95%) of Modified Proctor in the Right-Of-Way and improved easements and to ninety percent (90%) in unimproved easement areas. See the Specifications for additional information.
3. Native material, if allowed for rigid pipe bedding, shall be sand and gravel with no material larger than 1-1/2". See the Specifications for additional information.
4. The neat-line limits shown will be used to calculate the maximum quantity of trench backfill and surface restoration materials allowed. Payment for bedding gravel will be considered incidental to payment made for pipe. Payment for foundation rock will be based upon the quantities used as directed by the District. See the Contract documents for additional information.

TYPICAL TRENCH SECTION & PAYMENT LIMITS

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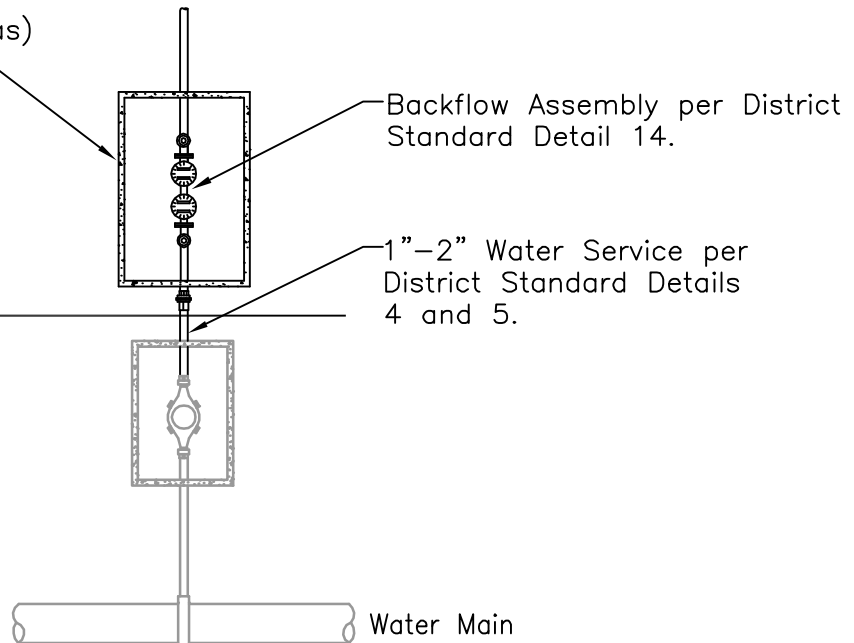
NORTHSHORE UTILITY DISTRICT
STANDARD WATER DETAILS

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Brooks #65-S meter box
(Brooks #65-TF in paved areas)
or equal.

Private Property
(Private Ownership)

Right-of-way or
easement



Notes :

1. For all properties requiring fire sprinklers, the Applicant's Fire Protection System Designer shall size the water meter and water service supply lines.
2. For all properties requiring irrigation systems, the Applicant's Irrigation System Designer shall size the water meter and water service supply lines.
3. The premise isolation backflow assembly used, either a double check valve assembly or reduced pressure backflow assembly (backflow assembly), shall meet WAC 246-290-490 "Cross-Connection Control" and be an approved assembly as shown on the Washington State approval listing.
4. The backflow assembly shall be installed immediately behind the water meter on private property. Installation of the backflow assembly internal to the building will not be allowed unless approved by the District.
5. The backflow assembly is to be tested at installation and annually thereafter. The test shall be performed by a certified Washington State Backflow Assembly Tester. For a list of certified testers, please contact the District Utility Specialist, Water Quality at (425) 398-4417. A copy of the test report shall be sent to the following address:

Northshore Utility District
Attn: Water Quality
6830 NE 185th St
Kenmore, WA 98028
6. Following installation of the water meter, the District will padlock the meter until notified 24 hours in advance by the owner/ installer that the backflow assembly is ready to test. Upon receipt of the backflow assembly test report, the District will remove the padlock.

1" - 2" FIRE SPRINKLER OR IRRIGATION BACKFLOW PREVENTION

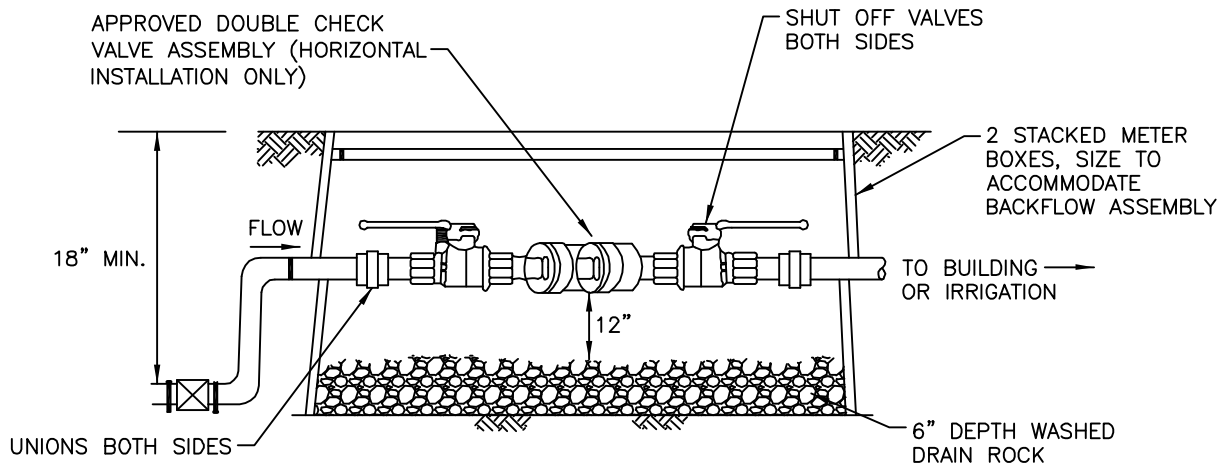
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Detail Approvals
Engineer GSM
Manager DPK

**NORTHSHORE UTILITY DISTRICT
STANDARD WATER DETAILS**

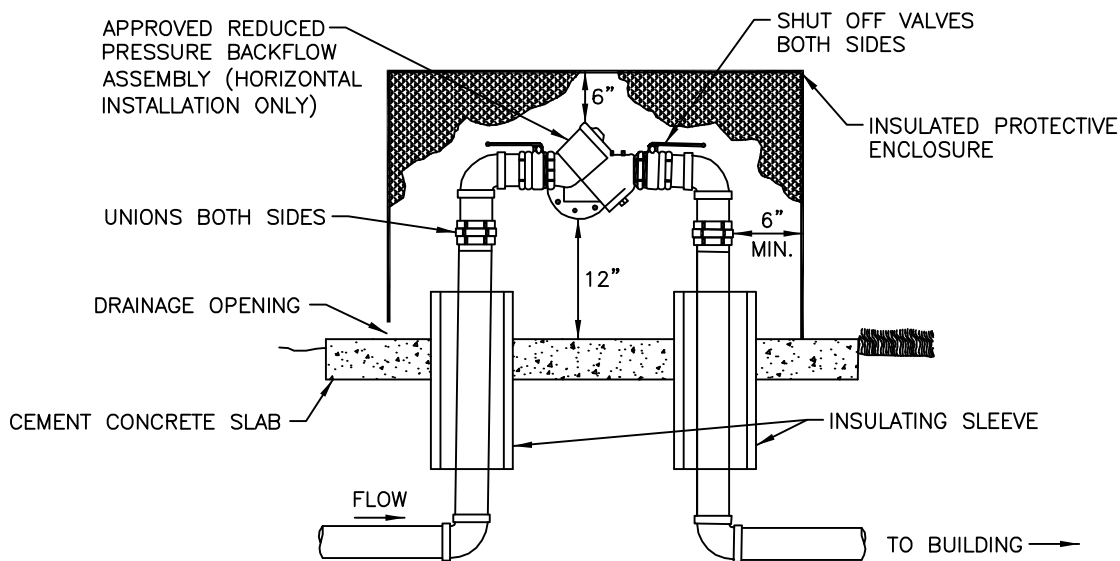
13

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W-13(SFR Sprinkler).dwg



DOUBLE CHECK VALVE ASSEMBLY (SECTION)

NOT TO SCALE



REDUCED PRESSURE BACKFLOW ASSEMBLY (SECTION)

NOT TO SCALE

NOTES:

1. THE BACKFLOW ASSEMBLY SHALL BE AN APPROVED ASSEMBLY AS SHOWN ON THE WASHINGTON STATE APPROVAL LISTING.
2. BACKFLOW ASSEMBLY INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND MEET THE MINIMUM STANDARDS OF THE UNIFORM PLUMBING CODE.
3. BACKFLOW ASSEMBLY SHALL BE CENTERED WITHIN THE ENCLOSURE AND PROVIDE MINIMUM HORIZONTAL AND VERTICAL CLEARANCE AS REQUIRED.
4. THE BACKFLOW ASSEMBLY SHALL BE INSTALLED IMMEDIATELY BEHIND THE WATER METER ON PRIVATE PROPERTY. INSTALLATION OF THE BACKFLOW ASSEMBLY INTERNAL TO THE BUILDING WILL NOT BE ALLOWED UNLESS APPROVED BY THE DISTRICT (SITE SPECIFIC CONDITIONS OR CONSTRAINTS WILL BE CONSIDERED FOR ALTERNATE LOCATION OF THE BACKFLOW ASSEMBLY). SEE DISTRICT SPECIFICATIONS FOR ADDITIONAL INFORMATION.

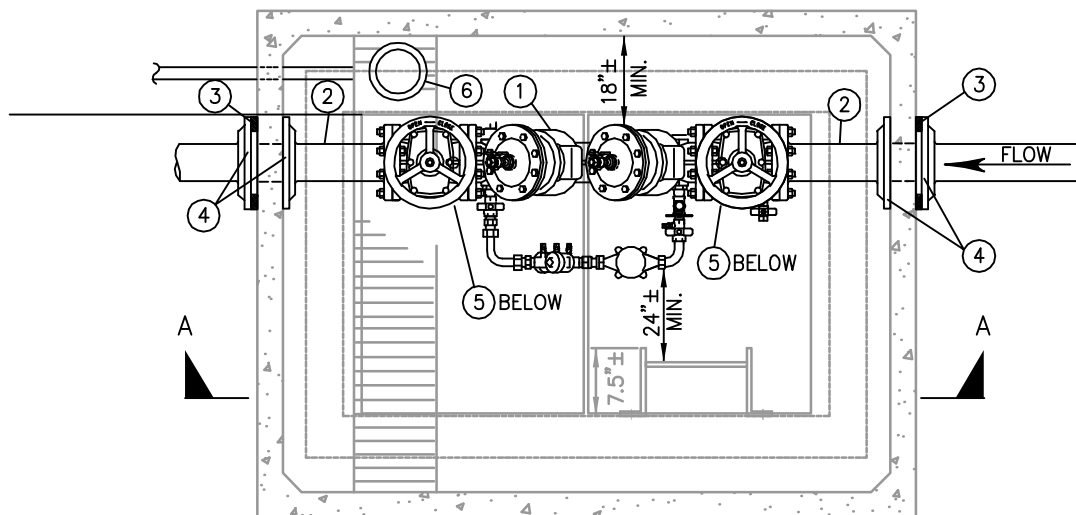
**PREMISE ISOLATION BACKFLOW ASSEMBLY
GENERAL INSTALLATION GUIDELINES**

NOT TO SCALE

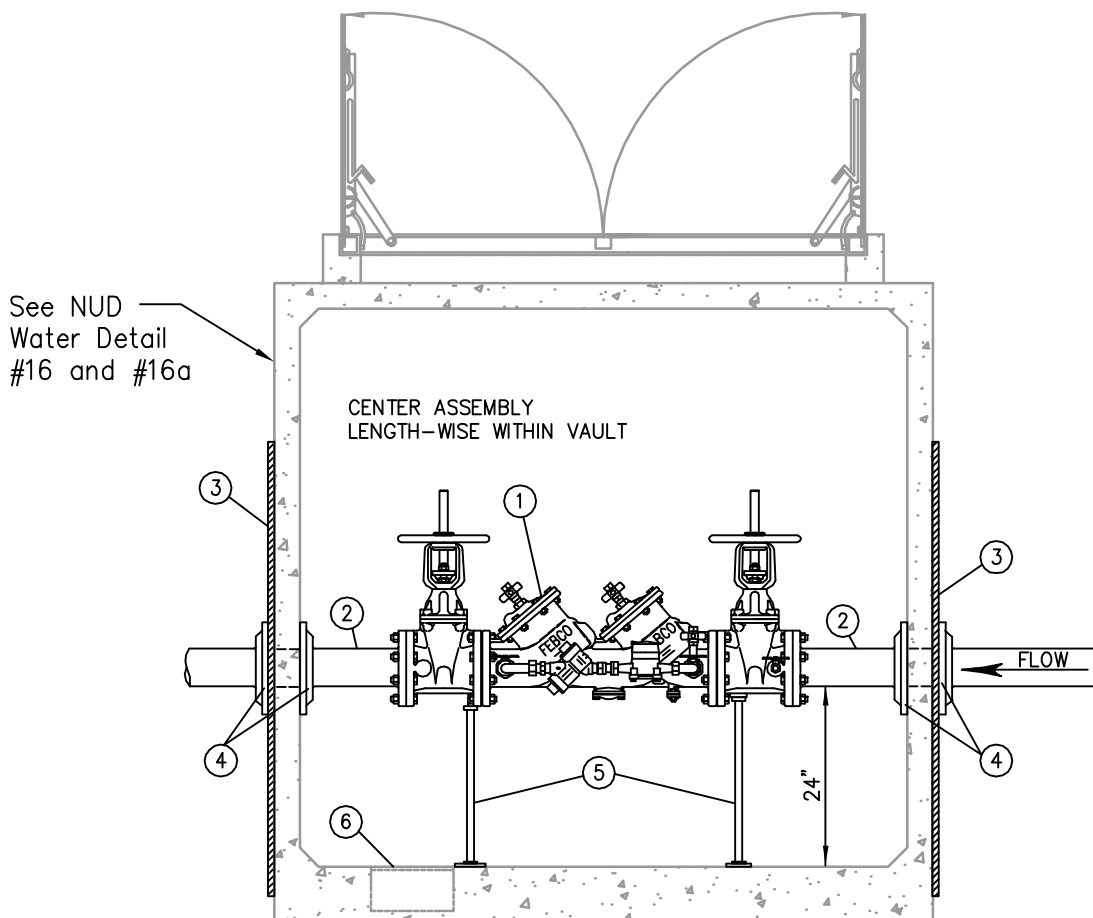
Detail Approvals _____
 Engineer GSM _____
 Manager DPK _____

**NORTHSHORE UTILITY DISTRICT
STANDARD WATER DETAILS**

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PLAN VIEW



SECTION A-A

2 $\frac{1}{2}$ " - 8" DOUBLE CHECK DETECTOR ASSEMBLY

NOT TO SCALE

Detail Approvals
 Engineer GSM
 Manager DPK

NORTHSHORE UTILITY DISTRICT
STANDARD WATER DETAILS

15

August 2011
 W-15(2.5-8_DCDA).dwg

MATERIAL LIST: ALL PIPING & APPURTENANCES TO MATCH DCDA SIZE

ITEM	QTY.	DESCRIPTION
①	1	DOUBLE CHECK DETECTOR ASSEMBLY SHALL BE FEBCO MODEL 856, WILKINS MODEL 350 DA, WATTS SERIES 757 DCDA, OR DISTRICT APPROVED EQUAL MEETING THE AWWA STANDARD C-510 AND BE WASHINGTON STATE APPROVED. TEST COCKS SHALL BE CAPPED WITH PLASTIC CAPS. BYPASS METER TO BE BADGER, M35 SHORT.
②	2	D.I. ADAPTER, FL x PE, 5'± LONG.
③	4	2" X 2" X 1/4" MIN. WALL THICKNESS SQUARE STEEL TUBING, 6' MIN. LENGTH. BOLT TO VAULT WALL IN FOUR PLACES WITH STAINLESS STEEL ANCHOR BOLTS.
④	4	UNI-FLANGE ADAPTER.
⑤	2	AJUSTABLE PIPING SUPPORT, STANDON MODEL #S89, OR EQUAL.
⑥	1	SUMP PUMP OR GRAVITY DRAIN AS REQUIRED BY SITE CONDITIONS, TO BE DETERMINED BY THE DEVELOPER AND CONTRACTOR AND REVIEWED AND APPROVED BY THE DISTRICT. FOR GRAVITY: SUMP DRAIN, ZURN Z-551, THREADED, WITH ZURN Z-1099 BACKWATER VALVE, THREADED x NO-HUB, WITH 4" D.I. PIPE TO 12" MIN. BEYOND VAULT WALL AND 4" D.I., MIN. 1% SLOPE TO DAYLIGHT OR C.B. FOR SUMP PUMP: 16" DIAM. x 6" DEEP SUMP WITH ZOELLER MODEL 57 SUMP PUMP. PROVIDE ELECTRICAL POWER PER ALL APPLICABLE CODES. CONSTRUCT 1-1/4", SCH. 80 PVC DISCHARGE PIPING, WITH LOCATE WIRE TO NEAREST CATCH BASIN OR APPROVED LOCATION.

NOTES:

1. PROVIDE SHOP DRAWINGS AND SUBMITTALS FOR ALL MATERIALS TO THE DISTRICT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
2. DOUBLE CHECK DETECTOR ASSEMBLY AND ALL PIPING SHALL BE SIZED BY A LICENSED FIRE SPRINKLER ENGINEER/CONTRACTOR.
3. VAULT SHALL BE UTILITY VAULT 687-LA (8'L x 6'W x 7'D; INSIDE DIMENSION). SEE DISTRICT STANDARD DETAIL #S 16 AND 16a FOR VAULT DETAIL.
4. ALL PIPE AND CONDUIT PENETRATIONS SHALL BE CORE-DRILLED ON-SITE AND SHALL BE SEALED WATERTIGHT. PROVIDE "LINK-SEAL" FITTINGS AT ALL PENETRATIONS.
5. ALL PIPING AND APPURTENANCES OUTSIDE THE VAULT SHALL BE RESTRAINED JOINT. IN ADDITION TO THE RESTRAINED JOINTS, THRUST BLOCKING AT ALL TEES AND BENDS PER DISTRICT STANDARD WATER DETAIL #S 1 AND 2 SHALL BE REQUIRED.
6. THE CONTRACTOR IS RESPONSIBLE FOR ELECTRICAL PERMITS AND APPROVALS FOR SUMP PUMP INSTALLATIONS.
7. THE DCDA SHALL BE INSTALLED OUTSIDE OF THE BUILDING IN A VAULT PER DISTRICT STANDARD DETAIL #S 16 AND 16A. INSTALLATION OF THE DCDA INTERNAL TO THE BUILDING WILL NOT BE ALLOWED UNLESS APPROVED BY THE DISTRICT (SITE SPECIFIC CONDITIONS OR CONSTRAINTS WILL BE CONSIDERED FOR ALTERNATE LOCATION OF THE DCDA).
8. NUD'S OWNERSHIP WILL BE TO THE UPSTREAM EDGE OF THE VAULT, OR IF THE DCDA IS ALLOWED WITHIN A STRUCTURE, UP TO THE FACE OF THE BUILDING.

2 1/2" - 8" DOUBLE CHECK DETECTOR ASSEMBLY

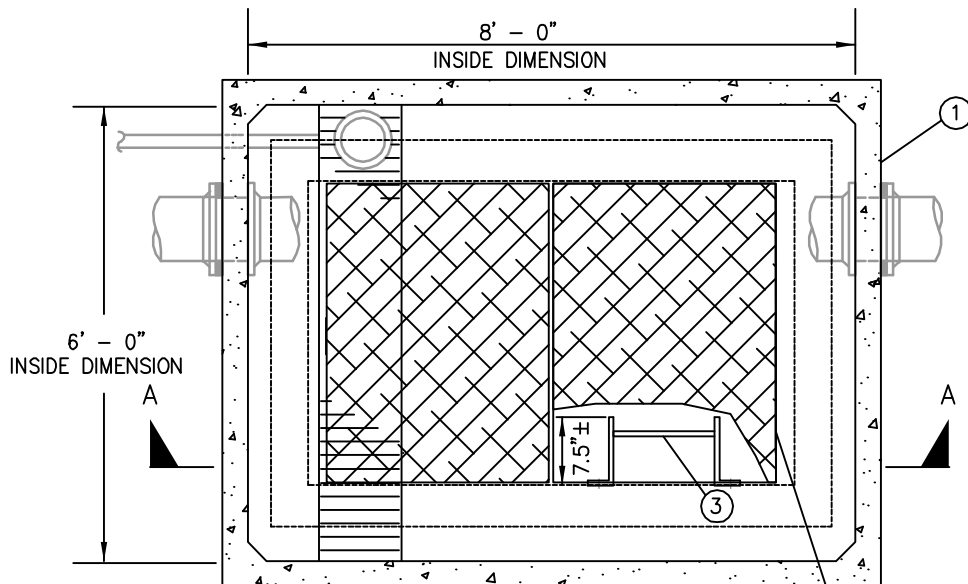
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Detail Approvals
 Engineer GSM
 Manager DPK

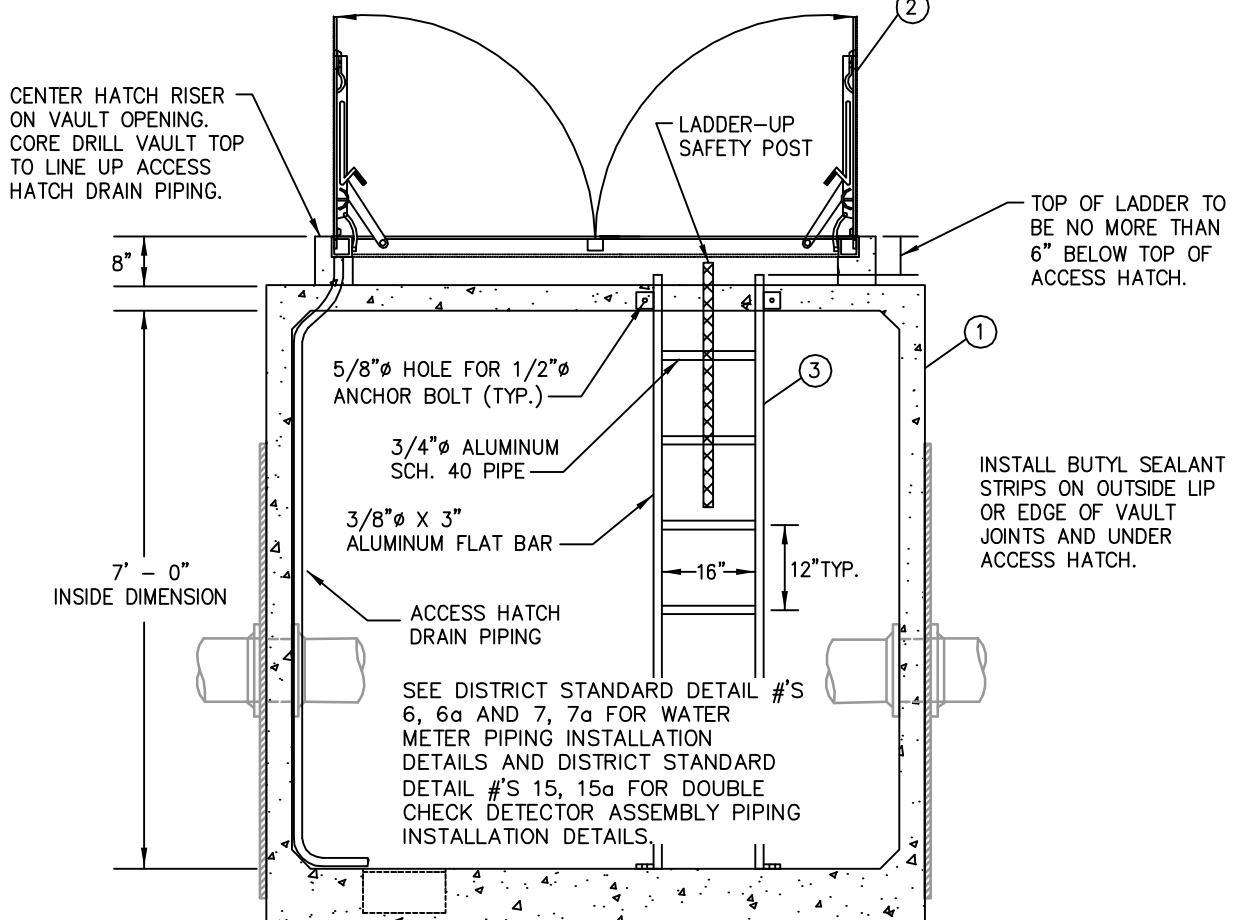
NORTHSHORE UTILITY DISTRICT
STANDARD WATER DETAILS

15a

August 2011
 W-15(2.5-8_DCDA).dwg



PLAN VIEW
NOT TO SCALE



SECTION A-A
NOT TO SCALE

VAULT DETAIL

NOT TO SCALE

Detail Approvals
 Engineer GSM
 Manager DPK

NORTHSHORE UTILITY DISTRICT STANDARD WATER DETAILS

16

August 2011
 W-16(Vault).dwg

MATERIAL LIST:

ITEM	DESCRIPTION
①	<p>PRECAST CONCRETE UNDERGROUND VAULT, 687-LA BY "UTILITY VAULT COMPANY". BASE SECTION: 687-BL WITH FULL-WIDTH SUMP AND GRATE. TOP SECTION: 687 WITH 48" x 72" HATCH OPENINGS LOCATED AS SHOWN TO ACCOMMODATE THE CONCRETE COVER, NO. 57 CLX 42S, AND THE 48" x 72" DOUBLE LEAF HATCH. CORE DRILL CONCRETE TOP SECTION OF VAULT TO ALIGN WITH ACCESS HATCH DRAIN AND INSTALLATION OF 1-1/2" ACCESS HATCH DRAIN PIPING.</p> <p>ALL VAULT WALLS SHALL BE SOLID FULL WIDTH WITH NO KNOCK-OUTS OR CHANNELS. THE VAULT MANUFACTURER SHALL ENSURE THAT NO VAULT JOINTS ARE LOCATED WITHIN 6" OF THE EDGE OF CORE-DRILLED PENETRATIONS. SEE NOTES BELOW.</p> <p>INSTALL BUTYL SEALANT STRIPS BETWEEN VAULT SECTIONS AND UNDER ACCESS HATCH PER MANUFACTURER'S RECOMMENDATIONS AND ENSURE THAT SEALANT IS NOT SQUEEZED INTO VAULT.</p> <p>PAINTING: THE INTERIOR OF THE CONCRETE VAULT SHALL BE PAINTED AT THE VAULT MANUFACTURER WITH ONE COAT STEELCOTE DAMP-TEX NO. 22 PRIMER AND TWO COATS STEELCOTE DAMP-TEX ENAMEL, APPLIED AT 1 TO 3 MILS DRY FILM THICKNESS, COLOR WHITE.</p> <p>THE EXTERIOR BELOW GRADE OF THE CONCRETE VAULT SHALL BE PAINTED WITH ONE COAT TNE MEC HI-BUILD TNE ME-TAR EPOXY COAL TAR, APPLIED AT 16 TO 20 MILS DRY FILM THICKNESS.</p>
②	<p>ACCESS HATCH: "UTILITY VAULT" CONCRETE COVER NO. 57 CLX 42S WITH "LW PRODUCTS" 48" X 72" DOUBLE LEAF HATCH, H-20. PROVIDE 1-1/2" SCH. 80 CONDUIT FROM HATCH GUTTER TO VAULT SUMP SECURED TO VAULT WALL WITH APPROVED FASTENERS AT 3' SPACING.</p>
③	<p>ALUMINUM LADDER BOLTED TO VAULT BASE AND HATCH RISER WITH SS HARDWARE. LADDER TO INCLUDE BILCO "LADDER-UP" SAFETY POST.</p>

NOTES:

1. PROVIDE SHOP DRAWINGS AND SUBMITTALS FOR ALL MATERIALS TO THE DISTRICT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
2. VAULTS FOR WATER METERS AND DOUBLE CHECK DETECTOR ASSEMBLIES 10" AND LARGER WILL BE DETERMINED BY THE DISTRICT AT THE TIME OF PLAN REVIEW.
3. PIPE AND CONDUIT PENETRATIONS SHALL BE CORE-DRILLED ON-SITE AND SHALL BE SEALED WATERTIGHT. PROVIDE "LINK-SEAL" FITTINGS AT ALL PENETRATIONS.
4. SEE DISTRICT STANDARD DETAIL #'S 6, 6a AND 7, 7a FOR WATER METER PIPING INSTALLATION DETAILS AND DISTRICT STANDARD DETAIL #'S 15, 15a FOR DOUBLE CHECK DETECTOR ASSEMBLY PIPING INSTALLATION DETAILS.

VAULT DETAIL

NOT TO SCALE

Detail Approvals
 Engineer GSM
 Manager DPK

**NORTHSHORE UTILITY DISTRICT
 STANDARD WATER DETAILS**

16a

August 2011
 W-16(Vault).dwg