60"ø Manhole Section

NOTE: MAX. LONG. BAR SPACING IS 12" C.–C.

	INVERT TO STREET GRADE	T_w =5.0"			T_w = 6.0"			T_w =6.75"		
		OUTSIDE	INSIDE	ON CTR.	OUTSIDE	INSIDE	ON CTR.	OUTSIDE	INSIDE	ON CTR.
TYPE 1	0 Ft to 15 Ft	0.16	0.15	0.24	0.16	0.09	0.20	0.13	0.08	0.17
	15 Ft to 30 Ft	0.32	0.18	0.53	0.25	0.19	0.42	0.22	0.16	0.36
TYPE 2	0 Ft to 15 Ft	0.17	0.15	0.28	0.19	0.09	0.22	0.16	0.08	0.20
	15 Ft to 30 Ft	0.37	0.18	0.63	0.28	0.19	0.48	0.24	0.16	0.42

'C' Bars–1 No. 4 hoop req'd. for less than 2'–0" clr. between blockout and top of section.

72"ø Manhole Section

NOTE: MAX. LONG. BAR SPACING IS 12" C.–C.

	INVERT TO STREET GRADE	T_w =6.0"			T_w = 7.0"			T_w =7.75"		
		OUTSIDE	INSIDE	ON CTR.	OUTSIDE	INSIDE	ON CTR.	OUTSIDE	INSIDE	ON CTR.
TYPE 1	0 Ft to 15 Ft	0.19	0.19	0.26	0.17	0.16	0.22	0.16	0.14	0.20
	15 Ft to 30 Ft	0.33	0.28	0.58	0.27	0.23	0.48	0.26	0.26	0.42
TYPE 2	0 Ft to 15 Ft	0.19	0.13	0.28	0.18	0.15	0.23	0.16	0.17	0.28
	15 Ft to 30 Ft	0.36	0.13	0.65	0.29	0.15	0.52	0.26	0.17	0.46

'C' Bars– 2 NO. 5 HOOPS 2" CLR. OF TOP OF MH BARREL } REQ'D. FOR LESS THAN 2'–0" CLR.
2 NO. 3 HOOPS 2" CLR. OVER PIPE BLOCKOUTS } BETWEEN BLOCKOUT AND TOP OF SECTION.

84"ø Manhole Section

NOTE: MAX. LONG. BAR SPACING IS 12" C.–C.

	INVERT TO STREET GRADE	T_w =7.0"			T_w = 8.0"			T_w =8.75"		
		OUTSIDE	INSIDE	ON CTR.	OUTSIDE	INSIDE	ON CTR.	OUTSIDE	INSIDE	ON CTR.
TYPE 1	0 Ft to 15 Ft	0.20	0.13	0.26	0.17	0.12	0.22	0.15	0.10	0.20
	15 Ft to 30 Ft	0.33	0.23	0.59	0.28	0.26	0.50	0.30	0.23	0.45
TYPE 2	0 Ft to 15 Ft	0.23	0.15	0.33	0.21	0.17	0.28	0.19	0.19	0.25
	15 Ft to 30 Ft	0.36	0.15	0.65	0.30	0.17	0.55	0.30	0.19	0.49

'C' Bars– 2 NO. 5 HOOPS 2" CLR. OF TOP OF MH BARREL } REQ'D. FOR LESS THAN 2'–0" CLR.
2 NO. 3 HOOPS 2" CLR. OVER PIPE BLOCKOUTS } BETWEEN BLOCKOUT AND TOP OF SECTION.

96"ø Manhole Section

NOTE: MAX. LONG. BAR SPACING IS 12" C.–C.

	INVERT TO STREET GRADE	T_w =8.0"			T_w = 9.0"			T_w =9.75"		
		OUTSIDE	INSIDE	ON CTR.	OUTSIDE	INSIDE	ON CTR.	OUTSIDE	INSIDE	ON CTR.
TYPE 1	0 Ft to 15 Ft	0.25	0.18	0.33	0.21	0.16	0.29	0.21	0.14	0.27
	15 Ft to 30 Ft	0.41	0.26	0.77	0.35	0.30	0.66	0.37	0.27	0.59
TYPE 2	0 Ft to 15 Ft	0.26	0.17	0.34	0.22	0.19	0.30	0.20	0.21	0.28
	15 Ft to 30 Ft	0.43	0.17	0.82	0.37	0.19	0.70	0.34	0.21	0.63

'C' Bars– 2 NO. 5 HOOPS 2" CLR. OF TOP OF MH BARREL } REQ'D. FOR LESS THAN 2'–0" CLR.
2 NO. 3 HOOPS 2" CLR. OVER PIPE BLOCKOUTS } BETWEEN BLOCKOUT AND TOP OF SECTION.

PROVIDE MIN. LONGITUD. REINF. AS SHOWN, 1" CLR. OF INSIDE AND OUTSIDE FACES, OR AT CENTER OF WALL

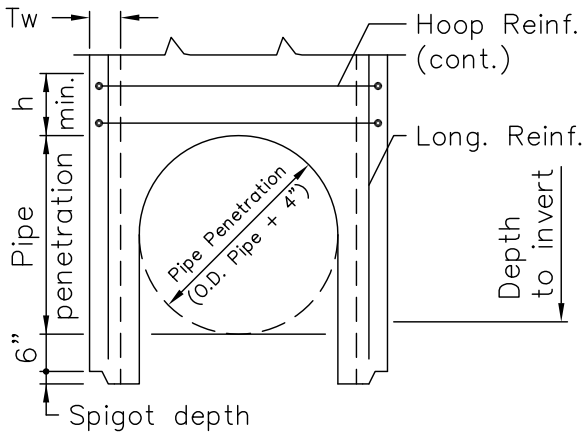
AREAS ARE IN^2/FT OF CIRCUMFERENCE AND MAY BE WELDED WIRE FABRIC, BARS OR A COMBINATION OF BOTH.

LARGE PRECAST CONCRETE MANHOLE– LONG. BASE SECTION REINF.

DRAWING NO. 200

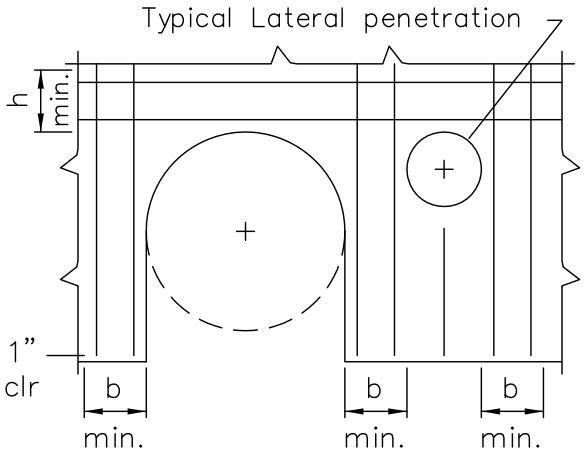
REVISED 12–06

Clean Water Services



For Base Slab see 4–08–3A

MANHOLE BASE SECTION ELEVATION



For Base Slab see 4–08–3A

PARTIAL MANHOLE BASE SECTION ROLLOUT

Notes:

1. Manufacture manhole base section and risers above in conformance with ASTM C478 except as noted in specifications and herein. Lap length for hoop reinforcement in band "h" shall be 30 bar diameters and laps shall be staggered.
2. Steel reinforcement in bands "h" and "b" is in addition to that required by ASTM C478 and is shown in square inches per foot of band width. Bar spacing shall not exceed 6".
3. Manhole base sections shall have no joints below top of band "h".
4. Concrete: f'c = 4,000 psi
   Reinforcement steel: Grade 60
5. There shall be no penetrations in hoop band "h" above main line pipe penetrations or in longitudinal bands "b" next to both sides of all openings.
6. Additional longitudinal reinforcement area can be reduced 50% outside of "b" bands.
7. Thickness "Tw" is minimum manhole base section wall thickness for a given pipe diameter.
8. Do not backfill until concrete fill over the manhole base has achieved 90% of its compressive strength (4,000 psi). For shape of concrete fill see Std. Drawing NO. 650.
9. Provide 6"x6" concrete collar around pipe penetrations per Std. Drawing NO. 655.

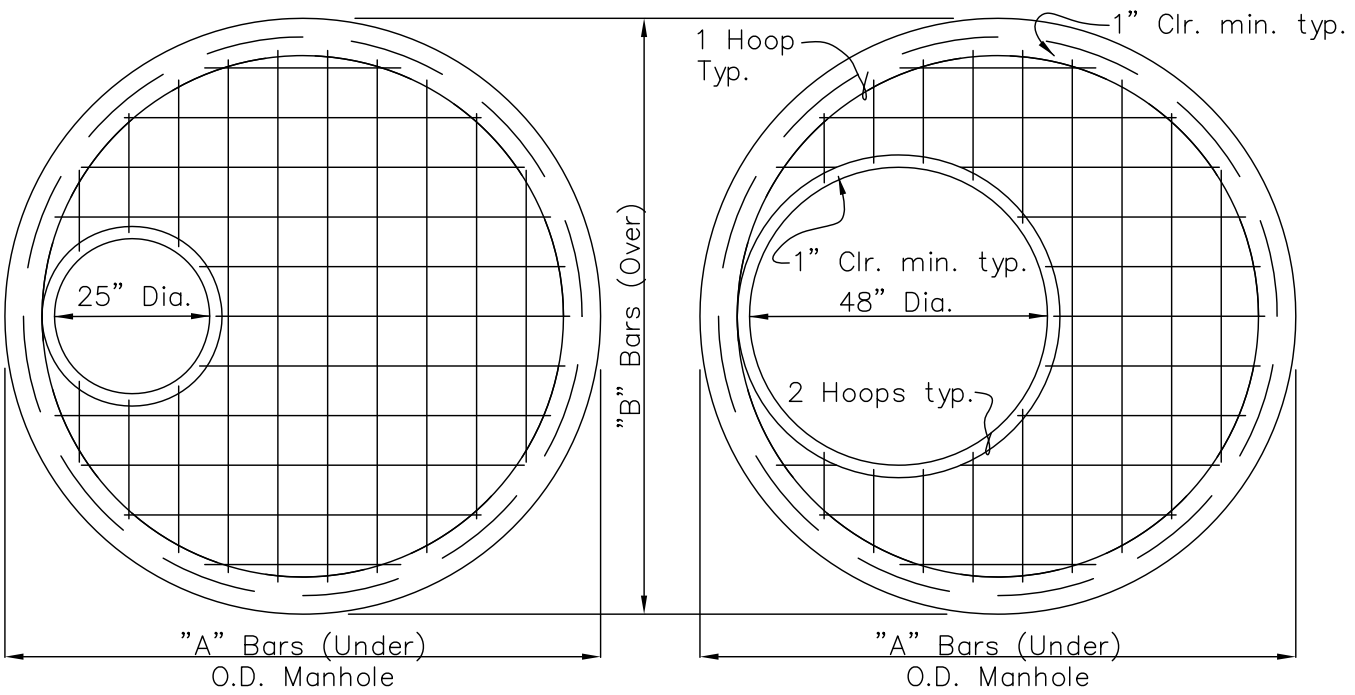
MH Dia. (in)	Thickness Tw min. (in)	Band Width h=b min. (ft)	Depth to Invert max. (ft)	Inside Pipe Dia. (in)	Additional Reinforcement Required			
					Hoop Reinf. (h)		Long. Reinf. (b)	
					Outside Face (in^2/ft)	Inside Face (in^2/ft)	Outside Face (in^2/ft)	Inside Face (in^2/ft)
108	9	1.00	15	48 or less	.381	.381	.260	.260
108	9	1.25	15	54–60	.381	.381	.394	.394
108	10	1.75	15	66–84	.381	.381	.643	.643
108	11	1.00	30	48 or less	.790	.790	.432	.432
108	12	1.25	30	54–60	.790	.790	.576	.576
108	16	1.75	30	66–84	.790	.790	.773	.773
120	10	1.00	15	48 or less	.423	.423	.260	.260
120	10	1.50	15	54–72	.423	.423	.480	.480
120	11	2.00	15	78–96	.423	.423	.713	.713
120	11	1.00	30	48 or less	.880	.880	.432	.432
120	14	1.50	30	54–72	.880	.880	.677	.677
120	17	2.00	30	78–96	.880	.880	.991	.991

LARGE PRECAST CONCRETE MANHOLE BASE SECTION REINF. 108" & 120"

DRAWING NO. 210

REVISED 12–06

Clean Water Services

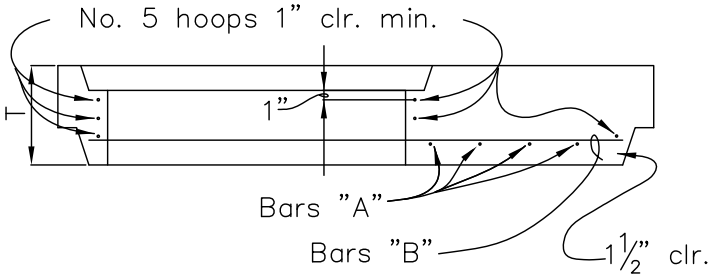


TOP SLAB "A"

TOP SLAB "B"

NOTES:

1. All concrete shall have a 28 day ultimate compressive strength of 4,000 psi.
2. All reinforcement shall have a minimum yield strength of 60,000 psi, (Grade 60).
3. All lap splices shall be 24 bar diameters unless noted otherwise.
4. Add steps as required by Standard Drawing NO. 010



TOP SLAB TYPICAL SECTION

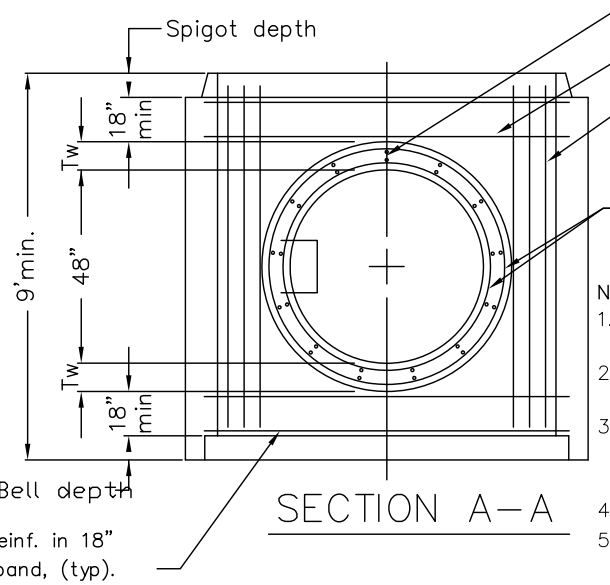
	TOP SLAB "A"			TOP SLAB "B"			TOP SLAB "B"		
	COVER DEPTH								
	6" to 12"			4'–0" to 7'–0"			7'–1" to 22'–0"		
Size	T	"A" Bars	"B" Bars	T	"A" Bars	"B" Bars	T	"A" Bars	"B" Bars
60"	8"	No.5 @ 7½"	No.5 @ 7½"	12"	No.5 @ 9"	No.5 @ 9"	12"	No.5 @ 9"	No.5 @ 9"
72"	10"	No.5 @ 7"	No.5 @ 7"	12"	No.5 @ 9"	No.5 @ 9"	12"	No.5 @ 7"	No.5 @ 7"
84"	11"	No.5 @ 7"	No.5 @ 7"	12"	No.5 @ 6"	No.5 @ 6"	12"	No.6 @ 6"	No.5 @ 7"
96"	12"	No.5 @ 6"	No.5 @ 6"	12"	No.5 @ 6"	No.5 @ 6"	14"	No.6 @ 6"	No.5 @ 6"
108"	N/A	N/A	N/A	12"	No.6 @ 8"	No.6 @ 8"	16"	No.7 @ 9"	No.7 @ 9"
120"	N/A	N/A	N/A	12"	No.6 @ 7"	No.6 @ 7"	16"	No.7 @ 8"	No.7 @ 8"

LARGE PRECAST CONCRETE MANHOLE TOP SLABS

DRAWING NO. 220

REVISED 12–06

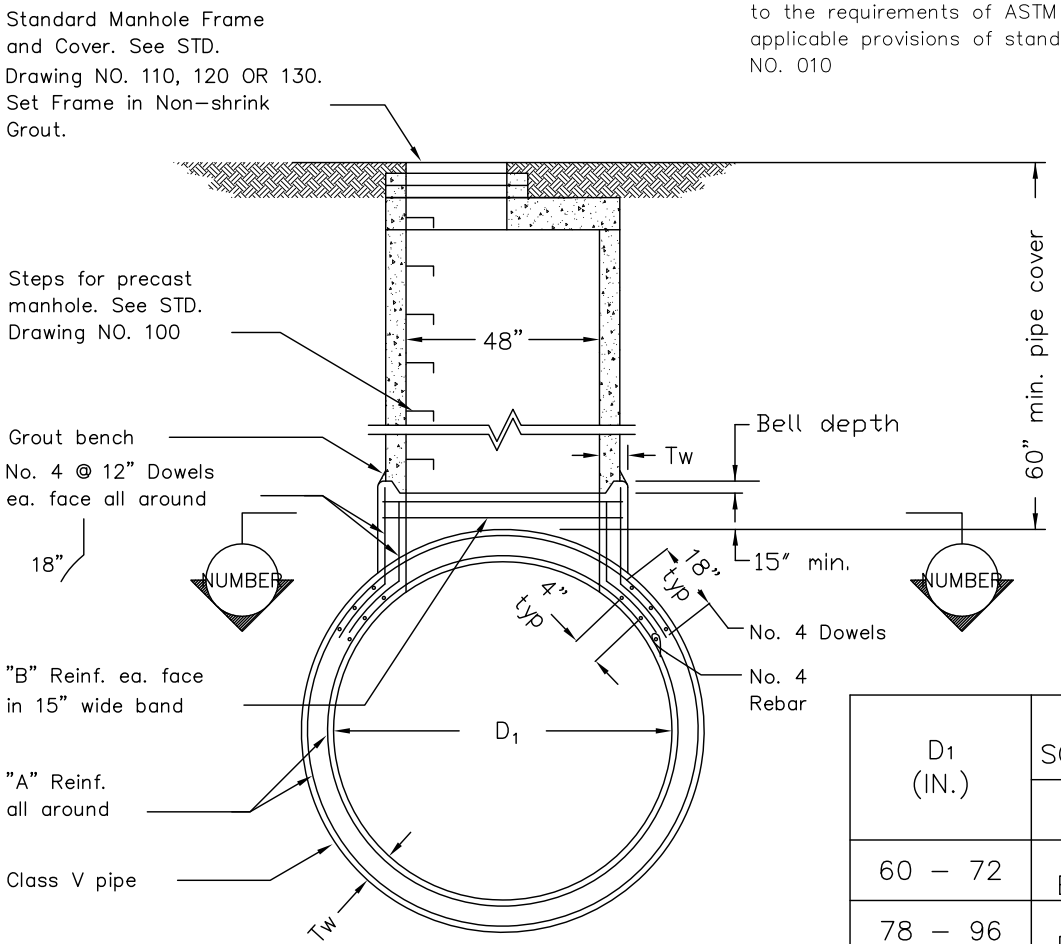
Clean Water Services



SECTION A–A

NOTES:

1. T–TOP Manhole as shown is for new pipline construction only.
2. T–TOP Manhole pipe section shall be Class V Pipe per ASTM C–76.
3. Reinforcement shown is in addition to that required for class V Pipe and is applied in both inside and outside faces.
4. Tw of riser = Tw of pipe but not less than 6".
5. Concrete f'c = 6000 psi Reinforcement Steel; Grade 60.
6. Maximum invert depth shall be 30'.
7. All pre–cast manhole riser sections shall comform to the requirements of ASTM C–478 and applicable provisions of standard manhole drawing NO. 010



CROSS SECTION

D_1 (IN.)	ADDITIONAL REINF. SQUARE INCHES (TOTAL)	
	"A"	"B"
60 – 72	.177 EA. FACE	.511 EA. FACE
78 – 96	.224 EA. FACE	.584 EA. FACE
102 – 120	.265 EA. FACE	.658 EA. FACE

T–TOP MANHOLE WITH 48" RISER

Clean Water Services

DRAWING NO. 230

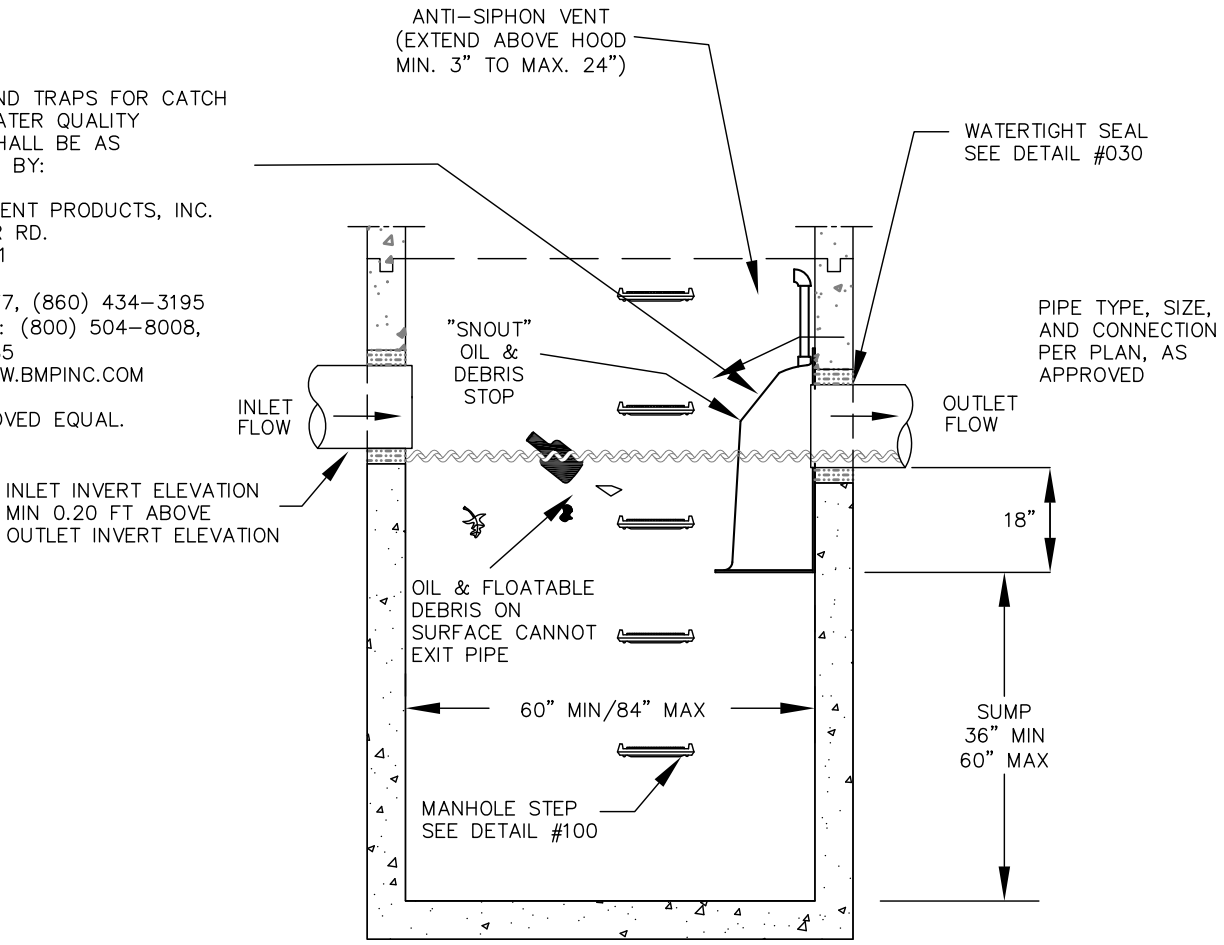
REVISED 12–06

ALL SNOUTS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY:

BEST MANAGEMENT PRODUCTS, INC.
53 MT. ARCHER RD.
LYME, CT 06371

(860) 434–0277, (860) 434–3195
FAX TOLL FREE: (800) 504–8008,
(888) 354–7585
WEB SITE: WWW.BMPINC.COM

OR PRE–APPROVED EQUAL.



NOTES:

1. ALL MANHOLE SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C–478 AND APPLICABLE PROVISIONS OF STD. MANHOLE DRAWING NO. 010.
2. INLET AND OUTLET PIPE NOT TO EXCEED 18"DIA.
3. PROVIDE SPECIAL DETAIL FOR SNOUT 18" DIA.
4. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY THE OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATIONS.
5. ANCHORING HARDWARE FOR THE HOOD SHALL BE EMBEDDED INTO CONCRETE; ANCHORING INTO GROUT IS NOT AUTHORIZED.
6. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL.
7. INSTALL PER MANUFACTURER'S INSTRUCTION AND USING MANUFACTURER'S INSTALLATION KIT.

SUMP VOLUME AVAILABLE PER DEPTH OF SUMP

	36" MINIMUM	60" MAXIMUM
60" M.H.=	58.9 CF	98.1 CF
72" M.H.=	84.8 CF	141.3 CF
84" M.H.=	115.4 CF	192.4 CF

PROVIDE SPECIAL DETAIL FOR VOLUME REQUIREMENTS EXCEEDING 192.4 CF

SUMP VOLUME REQUIREMENTS
20 CF/1.0 CFS OF INFLOW
58.9 CF MINIMUM REQUIRED

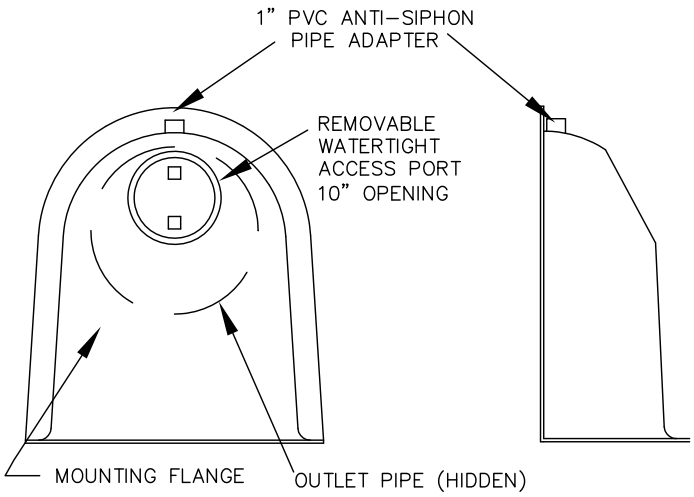
WATER QUALITY MANHOLE (SNOUT) A

DRAWING NO. 250

REVISED 12–16

Clean Water Services

CONFIGURATION DETAIL

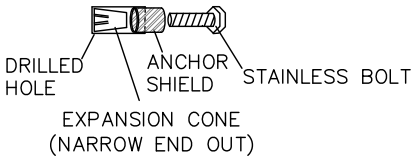


FRONT VIEW

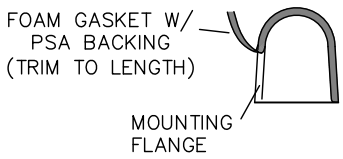
SIDE VIEW

INSTALLATION DETAIL

DETAIL A



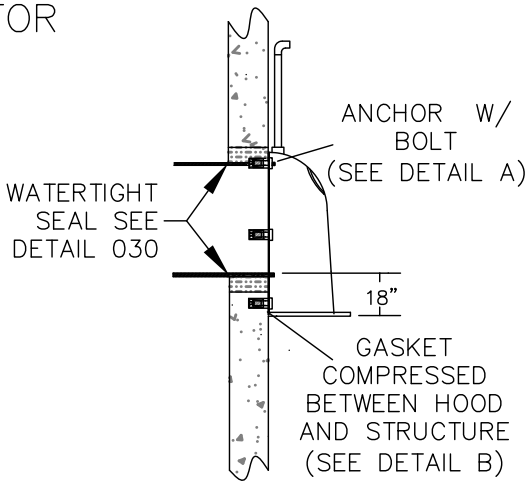
DETAIL B



SNOUT OIL-WATER-DEBRIS SEPARATOR

NOTES:

1. ALL HOODS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY BEST MANAGEMENT PRODUCTS, INC. OR PRE-APPROVED EQUAL.
2. ALL HOODS SHALL BE CONSTRUCTED OF A GLASS REINFORCED RESIN COMPOSITE WITH ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM 0.125" LAMINATE THICKNESS.
3. ALL HOODS SHALL BE EQUIPPED WITH A WATERTIGHT ACCESS PORT, A MOUNTING FLANGE, AND AN ANTI-SIPHON VENT AS DRAWN. (SEE CONFIGURATION DETAIL)
4. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATION.
5. THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A DISTANCE OF 18" FROM I.E. OUT.
6. THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF 24" ACCORDING TO STRUCTURE CONFIGURATION.
7. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL.
8. THE HOOD SHALL BE SECURELY ATTACHED TO STRUCTURE WALL WITH STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKET AS SUPPLIED BY MANUFACTURER. (SEE INSTALLATION DETAIL)
9. ANCHOR BOLTS SHALL BE INSTALLED INTO THE CONCRETE OF THE STRUCTURE'S WALL. (NOT WITHIN GROUT)
10. INSTALLATION INSTRUCTIONS SHALL BE FURNISHED WITH MANUFACTURER SUPPLIED INSTALLATION KIT.
    KIT SHALL INCLUDE:
    A. INSTALLATION INSTRUCTIONS
    B. PVC ANTI-SIPHON VENT PIPE AND ADAPTER
    C. OIL-RESISTANT CRUSHED CELL FOAM GASKET WITH PSA BACKING
    D. 3/8" STAINLESS STEEL BOLTS
    E. ANCHOR SHIELDS



BEST MANAGEMENT PRODUCTS, INC.
53 MT. ARCHER RD.
LYME, CT 06371
TOLL FREE: (800) 504-8008 (888) 354-7585
WEB SITE: WWW.BMPINC.COM

INSTALLATION NOTE:

POSITION HOOD SUCH THAT BOTTOM FLANGE IS 18" BELOW THE PIPE INVERT.

WATER QUALITY MANHOLE (SNOUT) B

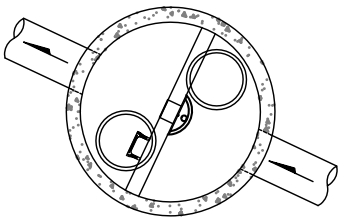
DRAWING NO. 260

REVISED 12-16

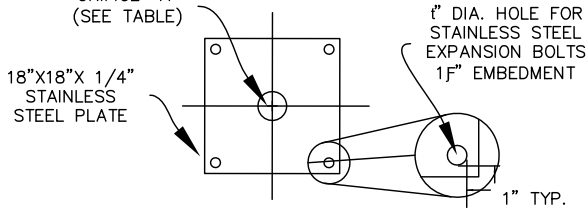
Clean Water Services

NOTES:

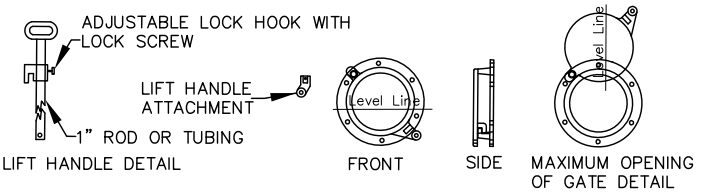
1. BAFFLE WALL SHALL HAVE #4 BAR AT 12" SPACING EACH WAY.
2. PRECAST BAFFLE SHALL BE KEYED AND GROUTED IN PLACE. JOINT BETWEEN CONCRETE BAFFLE AND MANHOLE WALL SHALL BE WATERTIGHT.
3. UPPER FLOW ORIFICE SHALL BE ALUMINUM, ALUMINIZED STEEL OR TREATMENT 1 GALVANIZED STEEL.
4. FRAME AND LADDER OR STEPS ARE TO BE OFFSET SO THAT SHEAR GATE IS VISIBLE FROM THE TOP; CLIMB-DOWN SPACE IS CLEAR OF RISER AND GATE; FRAME IS CLEAR OF CURB.
5. MULTI-ORIFICE ELBOWS SHALL BE PRE-INSTALLED TO INSURE LADDER CLEARANCE.
6. RESTRICTOR PLATE WITH ORIFICE AS SPECIFIED IN THE CONTRACT. OPENING IS TO BE CUT ROUND AND SMOOTH. NEOPRENE GASKET SHALL BE INSTALLED BETWEEN THE ORIFICE PLATE AND CONCRETE BAFFLE TO PROVIDE A WATERTIGHT SEAL.
7. SHEAR GATE SHALL BE MADE OF ALUMINUM ALLOY IN ACCORDANCE WITH ASTM B 26M AND ASTM B 275, DESIGNATION Zg32A OR CAST IRON IN ACCORDANCE WITH ASTM A 48, CLASS 30B. LIFT HANDLE MAY BE SOLID ROD OR HOLLOW TUBING WITH ADJUSTABLE HOOK AS REQUIRED. NEOPRENE RUBBER GASKET REQUIRED BETWEEN RISER MOUNTING FLANGE AND GATE FLANGE. MATING SURFACES OF LID AND BODY SHALL BE MACHINED FOR PROPER FIT. FLANGE MOUNTING BOLTS SHALL BE....."DIAMETER STAINLESS STEEL.
8. SHEAR GATE MAXIMUM OPENING SHALL BE CONTROLLED BY LIMITED HINGE MOVEMENT, STOP TAB OR SOME OTHER DEVISE.
9. ALTERNATE SHEAR GATES DESIGNS ARE ACCEPTABLE, IF MATERIAL SPECIFICATIONS ARE MET AND FLANGE BOLT PATTERN MATCHES.
10. MANHOLE CERTIFICATION REQUIRED FOR TRAFFIC LOADING.



PLAN



RESTRICTOR PLATE, ORIFICE



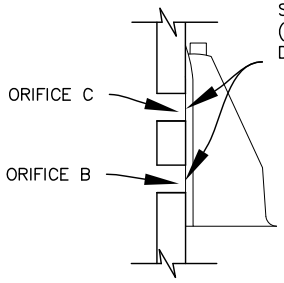
SHEAR GATE
MANUFACTURED BY KENNEDY VALVE OR EQUAL

INSTALLATION NOTE:

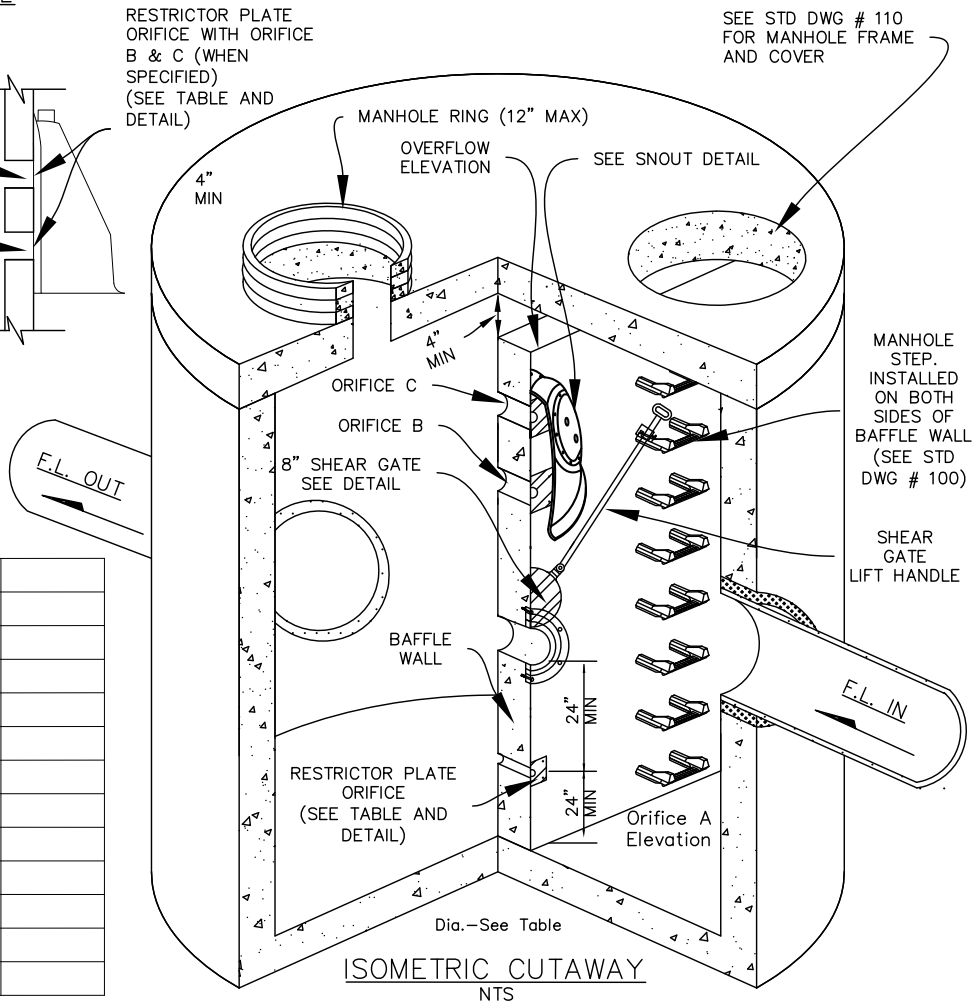
POSITION HOOD SUCH THAT BOTTOM FLANGE IS MIN 2" BELOW THE ORIFICE B INVERT.

ONE SNOUT MAY BE USE FOR BOTH ORIFICE C AND B.

IT MAY NEED BE NECESSARY TO USE TWO SNOUTS AND OFF SET ORIFICES TO MEET PLAN ELEVATION.



SNOUT DETAIL



ISOMETRIC CUTAWAY
NTS

FLOW CONTROL STRUCTURE TABLE

Diameter Of Manhole (In.) 60" MIN	
F.L. (In)	
F.L. (Out)	
Outlet Pipe Diameter (In.)	
Number Of Orifice	
Orifice A Elevation	
Diameter Of Orifice A (In.)	
Orifice B Elevation	
Diameter Of Orifice B (In.)	
Orifice C Elevation	
Diameter Of Orifice C (In)	
Overflow Elevation	
Rim Elevation	

FLOW CONTROL STRUCTURE DETAIL

DRAWING NO. 270

REVISED 02-17

Clean Water Services