Spirolite® Manholes

Spirolite Corporation

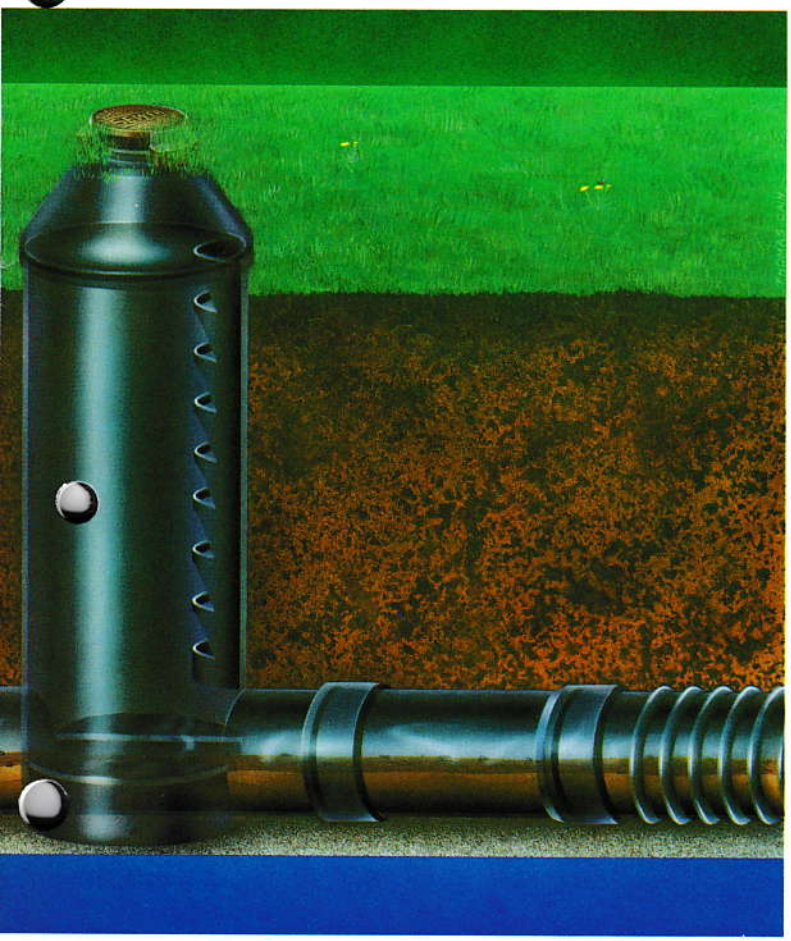
A Wholly Owned Subsidiary of
Chevron Chemical Company

Chevron

Spirolite® Manholes Offer Many Important Benefits

1. Precision engineered, bottle-tight gasketed joints.
2. Easy and economical to install.
3. Corrosion resistant and rugged.
4. Outstanding hydraulic characteristics.
5. Available in 48″ and 60″ diameters.
6. Available with High Density Polyethylene ladders and cones.

BEST SANITARY SEWER SYSTEM ON THE MARKET



TIGHT JOINTS

Gasketed joints between pipe and manhole provide you with a bottle tight joint. You no longer have to accept manhole leaks. All joints connecting pipe to pipe and pipe to manhole are precision engineered to meet or exceed the rigorous testing requirements of ASTM D-3212. Now the entire pipe/manhole joint system can withstand the same rigorous testing procedures which have traditionally applied only to pipe. This virtually eliminates infiltration and exfiltration throughout the entire pipe/manhole system!

EASILY AND ECONOMICALLY INSTALLED

- Manholes are precision engineered to be economically installed. Naturally lightweight, the bell x bell manhole is set and centered by field cutting and connecting pieces of corewall extensions to connect the manhole base to the pipe.
- Centering and joining are quick and easy. The backhoe bucket used to excavate the trench may be used to position, center and join the Spirolite® manhole. There is no need for heavy, expensive equipment to lift concrete manholes.
- Precision engineering brings the base and necessary riser height to the jobsite as one piece for quick, easy installation. Minor adjustments to height can be made in the field by cutting the riser to the required elevation.
- No benching is required, Spirolite® manholes are carefully benched in the factory by experienced craftsmen.
- No concrete trucks required. Just place the lightweight manhole directly on the gravel foundation. Simple and easy — lays as fast as the pipe.

CORROSION RESISTANT & RUGGED

Spirolite® manholes are not affected by sewer gases or hydrogen sulfide. Manholes are made from the same high quality, high density polyethylene as Spirolite® pipe. Made of Class 160 corewall pipe, these manholes are rugged enough to withstand the toughest burial conditions.

OUTSTANDING HYDRAULIC CHARACTERISTICS

Precision engineered and pre-benched at the factory, these manholes offer smooth, uninterrupted flow characteristics. High density polyethylene's naturally smooth surface combined with precision benching maximize flow capacity through the manhole.

AVAILABLE IN 48″ AND 60″ DIAMETERS

Standard Spirolite® manholes are available in 48 and 60 inch riser I.D.'s. Standard manholes for 18″ - 54″ through pipe are readily available in 48″ and 60″ riser I.D.'s. Manhole tee's in 48″ and 60″ riser I.D.'s are available for 48″ - 84″ through pipe.

CONES & LADDERS

The engineers at Spirolite have developed a superior HDPE manhole cone and ladder which provide the strength and toughness for which Spirolite has become known. Ladders, which are thermally welded to the manhole, are available as an optional accessory. Gasketed joints at the cone/riser insure a bottle tight system.

INSTALLATION IS QUICK

Precision engineering brings you a one piece manhole that is lightweight and easily couples to Spirolite® pipe. Installation is simple.

PRODUCT SIZING SELECTION

Spirolite® manholes are available as one piece through heights of 40 ft. For heights in excess of 40 ft., contact Spirolite.

The height of a Spirolite® manhole is measured from the invert to the riser top as shown in Figure 1. When sizing for manholes in the street, allow for an H-20 concrete slab, grade rings and pavement. (See Figure 2.) It is a good idea to order your manhole at least a foot longer than required to allow for grade variations. Minor adjustments can easily be made in the field by cutting the riser to the required height.

UNLOADING

Spirolite® manholes can be unloaded from a truck by using a boom and sling arrangement. For easy lifting, a timber can be placed across both stubouts, attached to a cable as shown in Figure 3.

SITE PREPARATION

The key to a successful installation is achieving stable and permanent support under and around the manhole. The manhole should be installed in a dry trench. Place sufficient crushed stone or other Class I material to provide a stable foundation. The thickness of the foundation layer should be a minimum of 8 inches. Foundation material should be compacted to 95% Standard Proctor density.

PLACEMENT AND ASSEMBLY

Cut a Spirolite® smoothwall closure piece to the required length and insert the spigot end into the bell of the last Spirolite® pipe laid. (The cut of the pipe must be square — i.e. a 90° angle between the pipe and the cut.) Lower the manhole into the trench and onto the prepared foundation. Align the manhole bell with the closure piece.

Place the manhole shoulder gasket on the cut end of the closure piece. Push the manhole joint "home" (See Figure 4). Check plumb using a standard bubble level. Join the remaining closure piece to the upstream stubout.

BACKFILLING

Backfilling procedures for the manhole are generally the same as required for the pipe. The manhole stubouts and closure pieces should be backfilled in accordance with the Engineers specifications for the pipe. Backfill around the remainder of the manhole can be native soil, if compactible (i.e. Classified as Class I, II, III or IVa). The backfill should be free of large chunks, stones and debris. Place fill in 12 inch lifts and compact to 90% Standard Proctor density. (Under streets, compaction should be increased to 95% Standard Proctor.) Place backfill evenly around pipe to prevent moving the pipe out of alignment. (See Figure 5.)

FINISHING MANHOLE TO GRADE

Once the manhole has been properly installed and backfilled, place the shoulder gasket on the cut end of the riser. Closure of the manhole is achieved by placing the Spirolite® cone on top of the riser. A concrete ring or course of brick should be placed on the cap's shoulder to support the cast iron ring and cover. Where installed in the street, an H-20 slab should be placed over the riser or a concrete cap should be poured over the dome to provide independent support for vehicular loading. (See page 8.)

EASY, AND ECONOMICAL

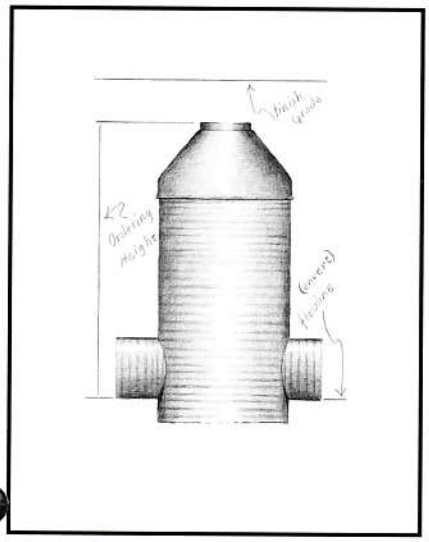


Figure 1

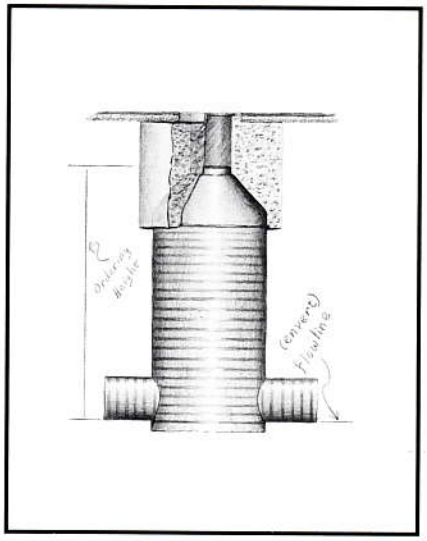


Figure 2

Figure 3

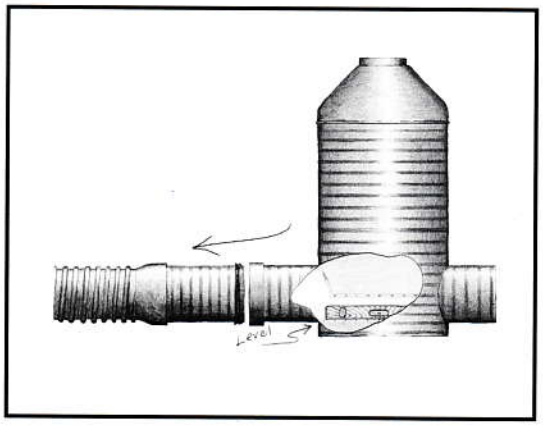


Figure 4

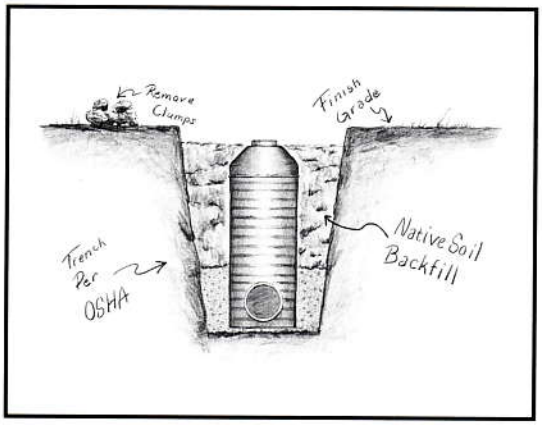


Figure 5

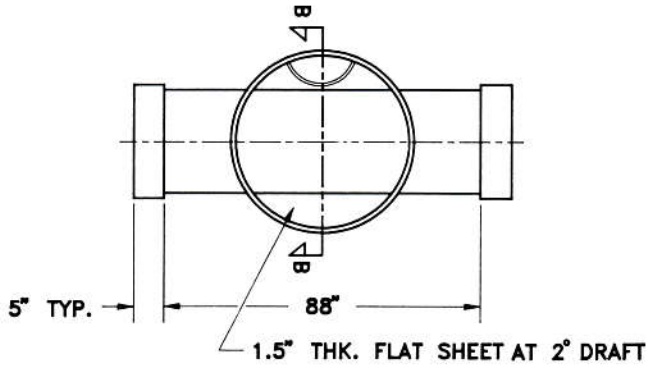
SPIROLITE® STANDARD MANHOLE

ALL DIMENSIONS ARE INCHES (NOMINAL)

Through Pipe I.D.	BELL O.D.	Ts	RISER I.D.	Tr	RISER I.D.	Tr
18	23.7	1.56	48	2.0	60	2.3
21	26.7	1.56	48	2.0	60	2.3
24	29.7	1.56	48	2.0	60	2.3
27	32.7	1.56	48	2.0	60	2.3
30	35.7	1.56	48	2.0	60	2.3
33	38.7	1.56	48	2.0	60	2.3
36	42.8	1.91	48	2.0	60	2.3
42	48.8	1.91	48	2.0	60	2.3
48	55.4	2.04	*	*	60	2.3
54	61.5	2.17	*	*	60	2.3

*Not available in specified riser ID. Contact Spirolite for custom design.

Riser I.D.	Standard Through Pipe I.D.'s (See Table)
48"	18"-42"
60"	18"-54"



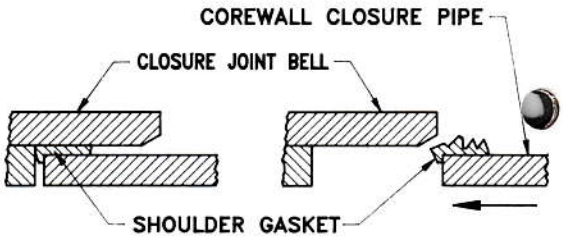
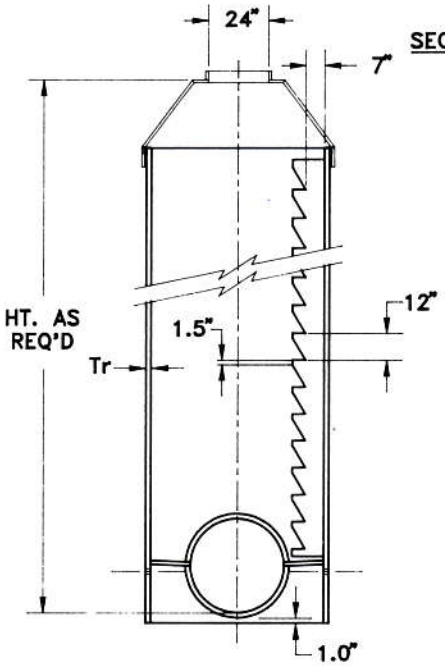
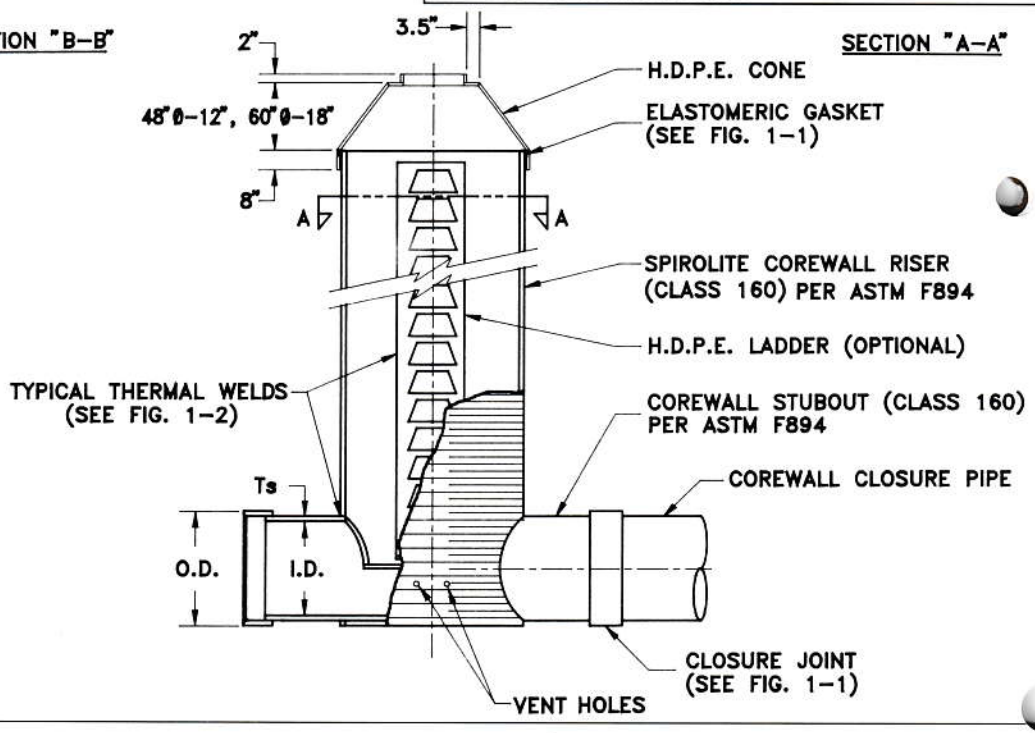


FIG. 1–1, GASKETED CLOSURE JOINT

Common to both manholes





SPIROLITE® STANDARD MANHOLE 'TEE'

Riser I.D.	Standard Through Pipe I.D.'s (See Table)
48″	48″-84″
60″	60″-84″

ALL DIMENSIONS ARE INCHES (NOMINAL)

Through Pipe I.D.	BELL O.D.	Ts	'T' RISER I.D.	Tr	'T' RISER I.D.	Tr
48	55.36	2.0	48	2.0	*	*
54	61.52	2.1	48	2.0	*	*
60	67.77	2.3	48	2.0	60	2.3
66	67.77	2.3	48	2.0	60	2.3
72	80.55	2.5	48	2.0	60	2.3
78	84.71	2.6	48	2.0	60	2.3
84	93.03	2.7	48	2.0	60	2.3

*Not available in specified riser ID. Contact Spirolite for custom design.

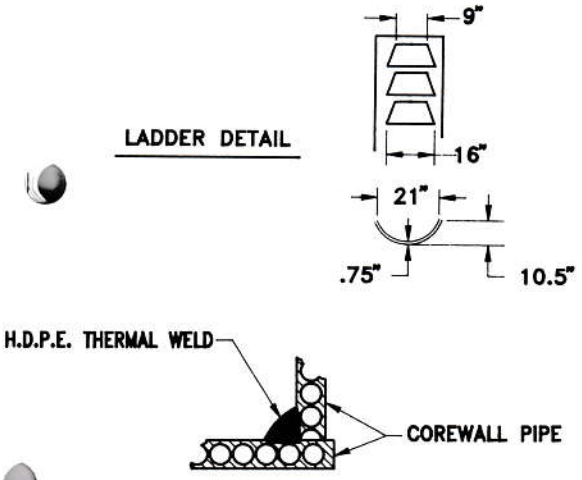
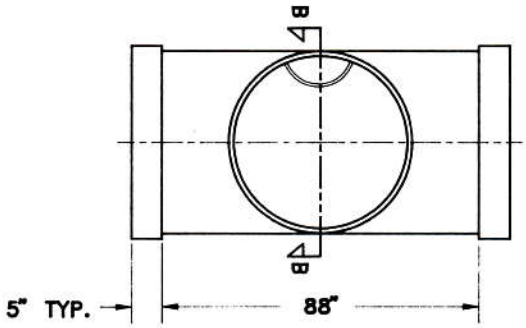
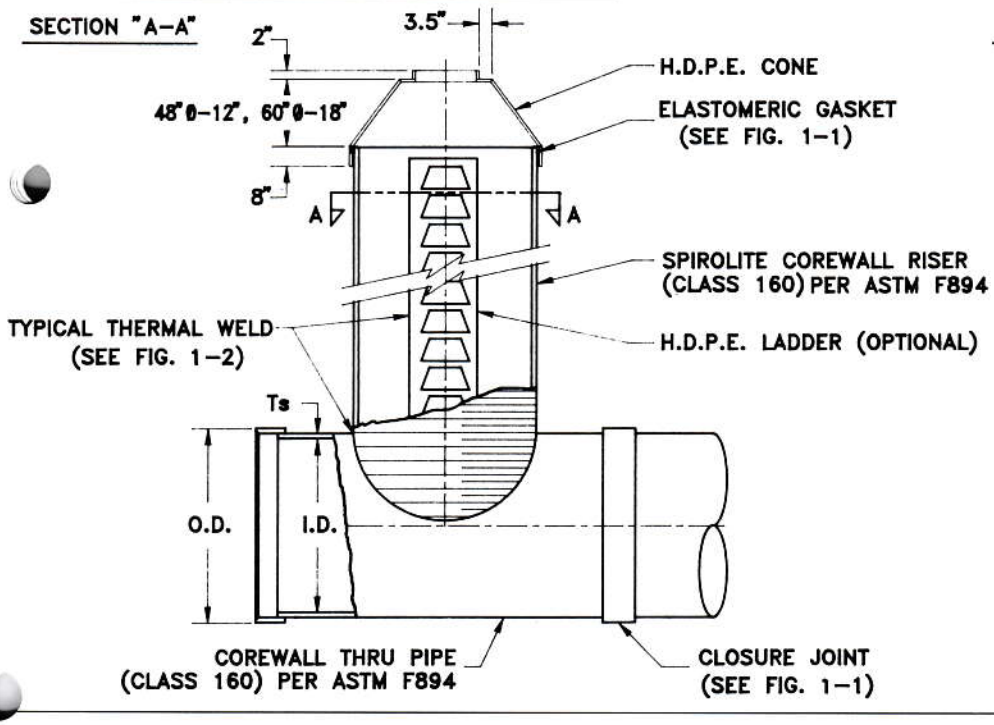
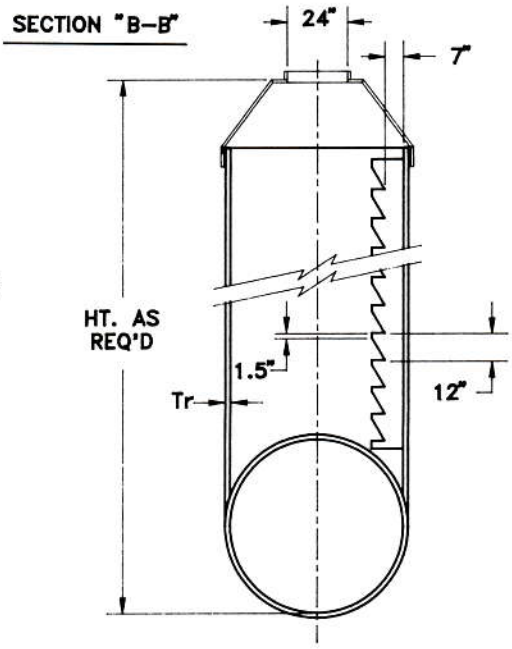


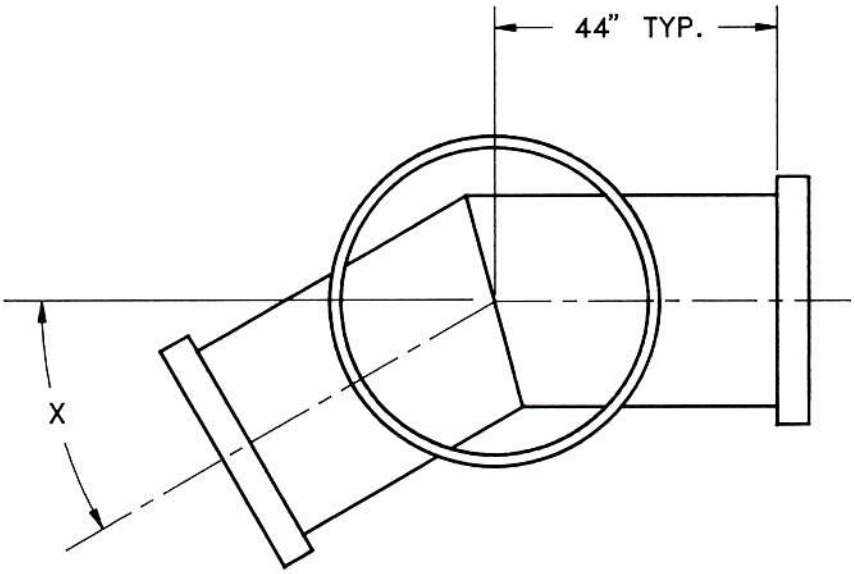
FIGURE 1–2, THERMAL WELD





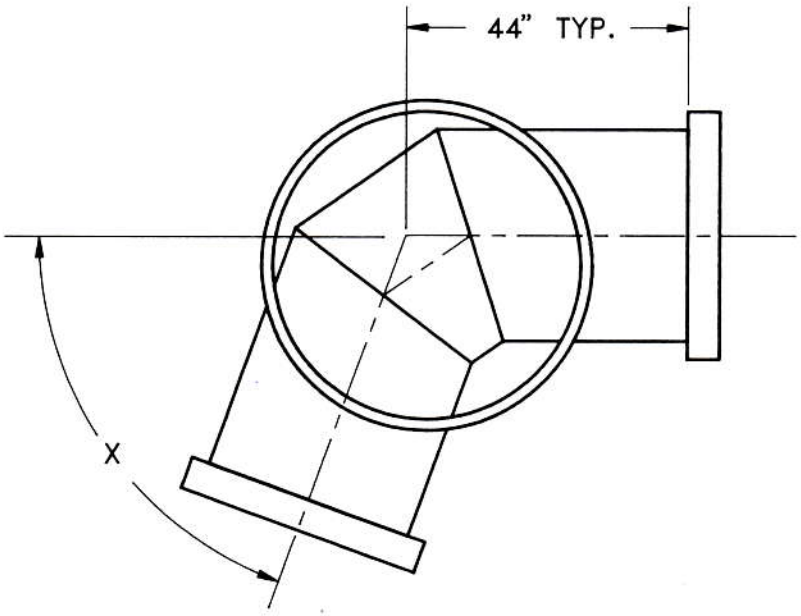


STANDARD BENDS FOR SPIROLITE® MANHOLES



ONE MITER BEND

PIPE DIAMETER (in.)	ANGLE (X) 48" RISER I.D.	ANGLE (X) 60" RISER I.D.	TOTAL LAYING LENGTH
18	0 - 60°	0 - 60°	88
21	0 - 60°	0 - 60°	88
24	0 - 60°	0 - 60°	88
27	0 - 60°	0 - 60°	88
30	0 - 60°	0 - 60°	88
33	0 - 60°	0 - 60°	88
36	0 - 60°	0 - 60°	88
42	*	0 - 60°	88
48	*	0 - 45°	88



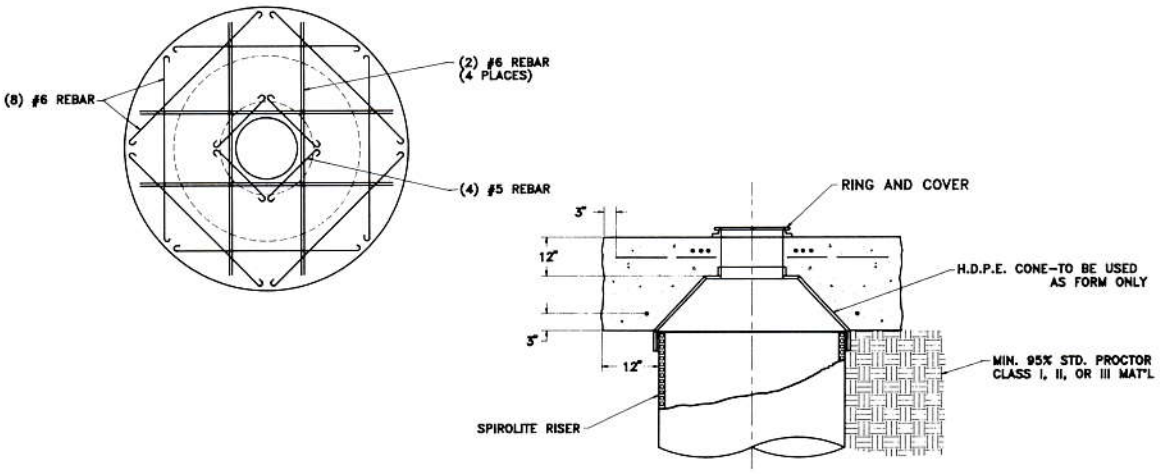
TWO MITER BEND

PIPE DIAMETER (in.)	ANGLE (X) 48" RISER I.D.	ANGLE (X) 60" RISER I.D.	TOTAL LAYING LENGTH
18	61 - 90°	61 - 90°	88
21	61 - 90°	61 - 90°	88
24	61 - 90°	61 - 90°	88
27	61 - 90°	61 - 90°	88
30	61 - 90°	61 - 90°	88
33	61 - 90°	61 - 90°	88
36	61 - 90°	61 - 90°	88
42	*	61 - 90°	88
48	*	*	88

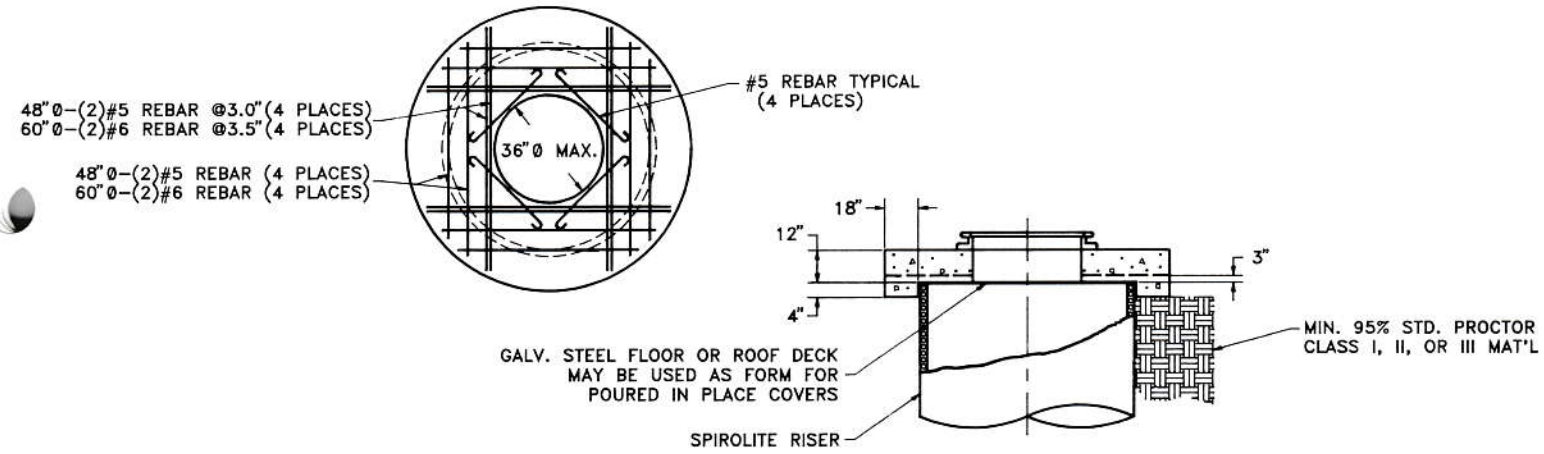
* Not available in specified riser diameter
Contact Spirolite for custom design

NOTE: The risers may be offset to facilitate the two miter bends.

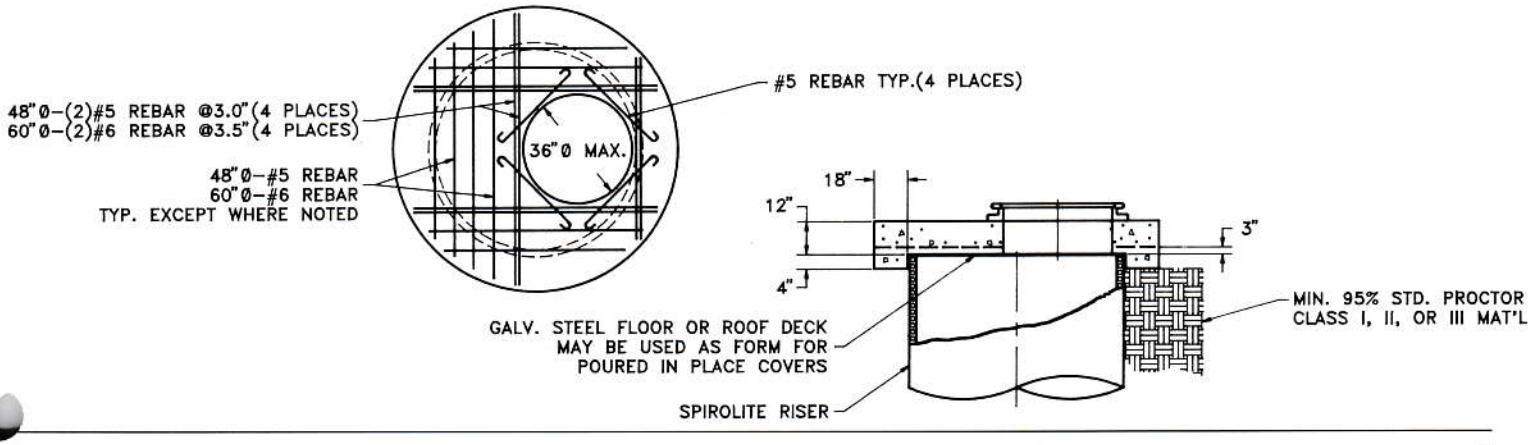
CONE DETAILS FOR TRAFFIC LOADING SITUATIONS



CONCENTRIC H-20 MANHOLE CAP FOR 48" & 60" RISERS



ECCENTRIC H-20 MANHOLE CAP FOR 48" & 60" RISERS



FLOTATION CALCULATIONS

Where groundwater rises above the pipe crown, even temporarily, the manhole should be checked for flotation. Table III contains the necessary information to make this evaluation by solving the following equation:

Flotation Equation

I	+	II	=	III	+	IV
Upward Thrust of Base	+	Upward Thrust of Riser	=	Downward Force of Soil Over The Through Pipe	+	Frictional Resistance of Soil Surrounding the Manhole

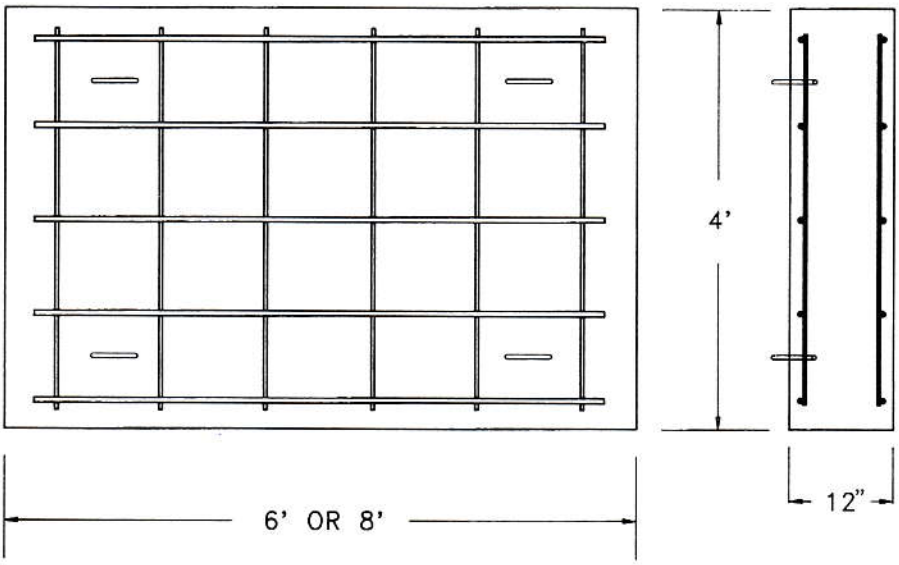
To complete this evaluation simply fill in the values from Table III as shown in the following examples. Remember that the tables have built-in safety factors and as long as the total downward forces (III & IV) are equal to or greater than the upward forces (I & II), anti-flotation anchors are not required.

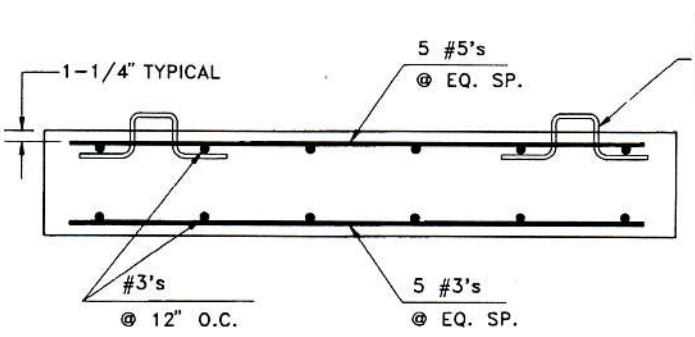
If anti-flotation anchors are required, use 4′ x 6′ pads for 48″ manhole risers and 4′ x 8′ pads for 60″ risers. (See page 10 for details on proper placement.)

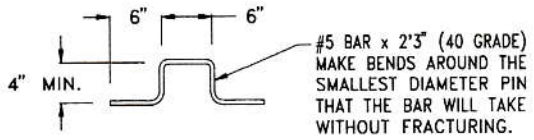
When anti-flotation anchors are used refer to Tables III and IV to obtain the values necessary to complete the flotation evaluation:

I_a	+	II	=	III_a
Upward Thrust of **Anchored** Base (See Table IV)	+	Upward Thrust of Riser (See Table III)	=	Downward Forces of Anti-Flotation Anchors (See Table IV)

Anti-Flotation Anchor







LIFTING HOOK DETAIL

Anti-Flotation Anchor Installation

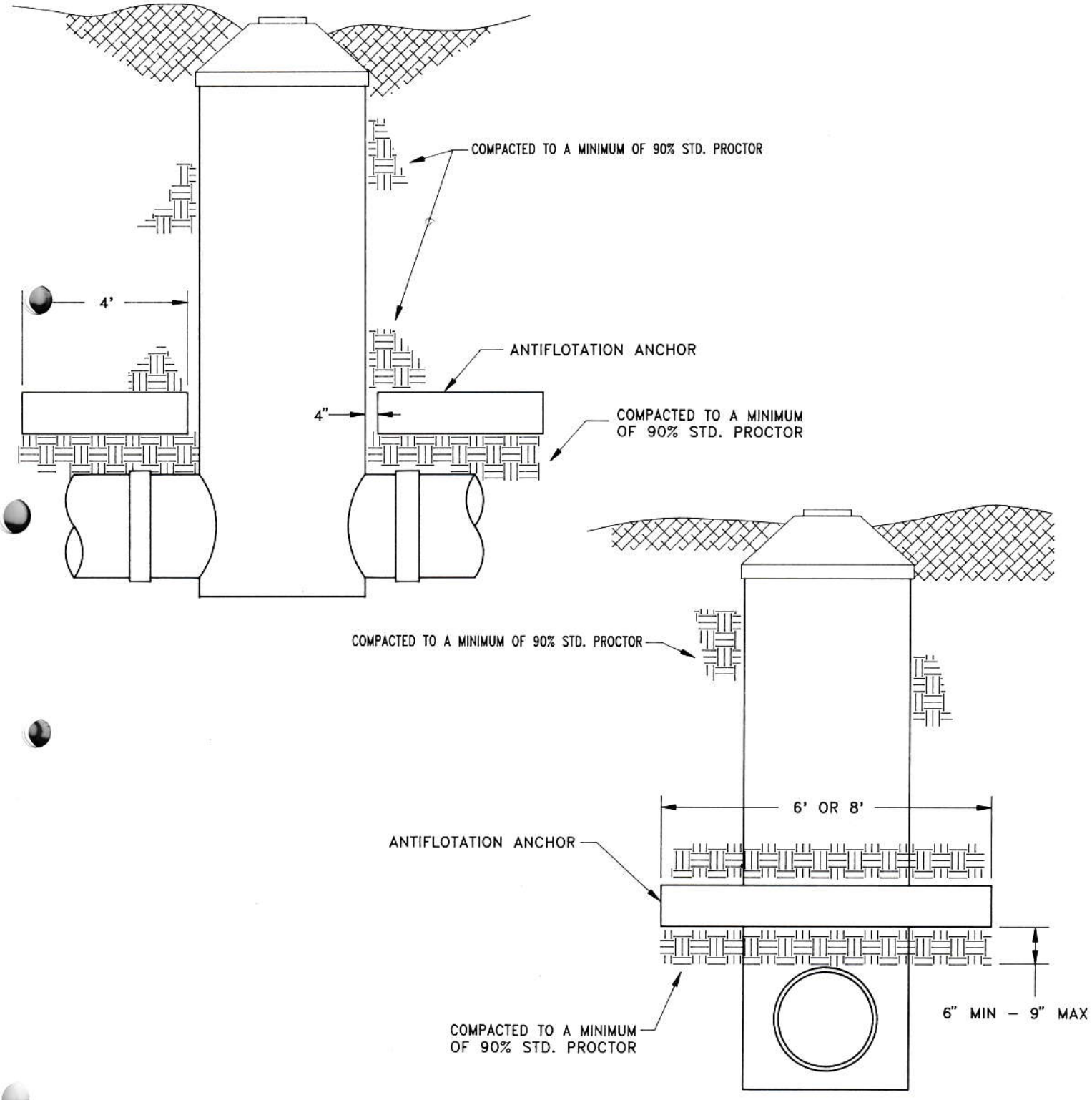


TABLE III

SPIROLITE® MANHOLE BUOYANCY CALCULATION

48 INCH DIAMETER MANHOLE BASE AND RISER

Product	Through Pipe Nominal Diam (In.)	I Upward Thrust of Base (Lbs.)	II Upward Thrust of Riser Per Vertical Foot of Cover / % Water to Top (Lbs/Vertical Ft) 10	20	30	40	50	60	70	80	90	100	III Downward Force of Soil Over Through Pipe Vertical Foot of Cover (Safety Factor = 1.2) Soil Wet Wgt = 120 lbs/cu ft* (Lbs/Vertical Ft) Below Water	Above Water	IV Frictional Resistance of Soil Surounding Manhole at Noted Depth Safety Factor = 2.0 and Soil Wet Wgt = 120 lbs/cu ft* (Lbs) 5 ft. Below Water	Above Water	10 ft. Below Water	Above Water	15 ft. Below Water	Above Water	20 ft. Below Water	Above Water	25 ft. Below Water	Above Water
Standard Manhole	18	1475	85	170	256	341	426	511	597	682	767	852	313	652	421	878	1685	3510	3791	7898	6740	14042	10531	21940
	21	1839	85	170	256	341	426	511	597	682	767	852	361	752	397	828	1590	3312	3577	7452	6359	13248	9936	20700
	24	2240	85	170	256	341	426	511	597	682	767	852	409	852	373	777	1491	3107	3355	6990	5965	12426	9320	19416
	27	2678	85	170	256	341	426	511	597	682	767	852	457	952	347	723	1388	2892	3124	6508	5554	11570	8677	18078
	30	3153	85	170	256	341	426	511	597	682	767	852	505	1052	320	667	1280	2667	2881	6001	5121	10669	8002	16670
	33	3668	85	170	256	341	426	511	597	682	767	852	553	1153	291	606	1164	2456	2620	5457	4657	9702	7277	15159
	36	4279	85	170	256	341	426	511	597	682	767	852	607	1264	256	534	1025	2135	2306	4804	4100	8541	6406	13345
	42	5494	85	170	256	341	426	511	597	682	767	852	703	1464	180	375	721	1502	1622	3379	2883	6007	4505	9386
Manhole Tee	48	7303	85	170	256	341	426	511	597	682	767	852	946	1970	0	0	0	0	0	0	0	0	0	0
	54	8986	85	170	256	341	426	511	597	682	767	852	1142	2379	0	0	0	0	0	0	0	0	0	0
	60	10910	85	170	256	341	426	511	597	682	767	852	1338	2788	0	0	0	0	0	0	0	0	0	0
	66	13053	85	170	256	341	426	511	597	682	767	852	1534	3196	0	0	0	0	0	0	0	0	0	0
	72	15406	85	170	256	341	426	511	597	682	767	852	1730	3604	0	0	0	0	0	0	0	0	0	0
	78	17951	85	170	256	341	426	511	597	682	767	852	1925	4010	0	0	0	0	0	0	0	0	0	0
	84	20739	85	170	256	341	426	511	597	682	767	852	2122	4420	0	0	0	0	0	0	0	0	0	0

60 INCH DIAMETER MANHOLE BASE AND RISER

Product	Through Pipe Nominal Diam (In.)	I Upward Thrust of Base (Lbs.)	II Upward Thrust of Riser Per Vertical Foot of Cover / % Water to Top (Lbs/Vertical Ft) 10	20	30	40	50	60	70	80	90	100	III Downward Force of Soil Over Through Pipe Vertical Foot of Cover (Safety Factor = 1.2) Soil Wet Wgt = 120 lbs/cu ft* (Lbs/Vertical Ft) Below Water	Above Water	IV Frictional Resistance of Soil Surounding Manhole at Noted Depth Safety Factor = 2.0 and Soil Wet Wgt = 120 lbs/cu ft* (Lbs) 5 ft. Below Water	Above Water	10 ft. Below Water	Above Water	15 ft. Below Water	Above Water	20 ft. Below Water	Above Water	25 ft. Below Water	Above Water
Standard Manhole	18	1793	132	264	396	528	660	793	925	1057	1189	1321	235	489	561	1169	2245	4678	5052	10525	8981	18711	14034	29237
	21	2194	132	264	396	528	660	793	925	1057	1189	1321	271	564	538	1122	2154	4487	4845	10095	8614	17946	13460	28041
	24	2630	132	264	396	528	660	793	925	1057	1189	1321	307	639	515	1073	2060	4291	4635	9656	8239	17166	12874	26821
	27	3099	132	264	396	528	660	793	925	1057	1189	1321	343	714	491	1023	1964	4092	4419	9206	7856	16366	12275	25572
	30	3601	132	264	396	528	660	793	925	1057	1189	1321	379	789	466	971	1865	3886	4197	8743	7461	15544	11658	24287
	33	4142	132	264	396	528	660	793	925	1057	1189	1321	415	865	441	918	1763	3672	3966	8262	7050	14688	11016	22951
	36	4777	132	264	396	528	660	793	925	1057	1189	1321	455	948	411	857	1645	3426	3700	7709	6579	13705	10279	21414
	42	6026	132	264	396	528	660	793	925	1057	1189	1321	527	1098	354	737	1415	2948	3184	6633	5660	11792	8844	18424
	48	7441	132	264	396	528	660	793	925	1057	1189	1321	600	1251	286	596	1145	2385	2576	5367	4580	9541	7156	14908
	54	8997	132	264	396	528	660	793	925	1057	1189	1321	674	1404	201	418	803	1672	1806	3762	3210	6688	5016	10451
Manhole Tee	60	11505	132	264	396	528	660	793	925	1057	1189	1321	977	2036	0	0	0	0	0	0	0	0	0	0
	66	13539	132	264	396	528	660	793	925	1057	1189	1321	1174	2445	0	0	0	0	0	0	0	0	0	0
	72	15829	132	264	396	528	660	793	925	1057	1189	1321	1369	2853	0	0	0	0	0	0	0	0	0	0
	78	18329	132	264	396	528	660	793	925	1057	1189	1321	1564	3258	0	0	0	0	0	0	0	0	0	0
	84	21082	132	264	396	528	660	793	925	1057	1189	1321	1761	3669	0	0	0	0	0	0	0	0	0	0

* To convert to different soil weights, multiply downward force and frictional values by the following factors:

Soil Weight (lbs/ft³)	Wet	Dry
110	0.83	0.92
100	0.65	0.83
90	0.48	0.75

Flotation Equation

I + II = III + IV

Upward Thrust of Base + Upward Thrust of Riser = Downward Force of Soil Over The Through Pipe + IV Frictional Resistance of Soil Surrounding the Manhole

TABLE IV

ANTI-FLOTATION ANCHOR BUOYANCY CALCULATIONS

Through Pipe Nominal Diameter (in.)	Ia Upward Thrust of Anchored 48" Base (lbs.)	Ia Upward Thrust of Anchored 60" Base (lbs.)	Through Pipe Height of Cover (ft.)	IIIa Total Downward Force of Soil Over Anti-Flotation Anchors (Safety Factor = 1.2) Soil Wet Weight = 120 lbs/cu ft (lbs/both anchors)			
				Anchor Size 4 ft x 6 ft*		Anchor Size 4 ft x 8 ft*	
				Below Water	Above Water	Below Water	Above Water
18	1996	2314	2	2304	4800	3072	6400
21	2532	2887	3	4608	9600	6144	12800
24	3130	3519	4	6912	14400	9216	19200
27	3789	4209	5	9216	19200	12288	25600
30	4509	4957	6	11520	24000	15360	32000
33	5296	5769	7	13824	28800	18432	38400
36	6235	6733	8	16128	33600	21504	44800
42	8119	8651	9	18432	38400	24576	51200
48	10712	10850	10	20736	43200	27648	57600
54	13281	13293	12	25344	52800	33792	70400
60	16194	16788	14	29952	62400	39936	83200
66	19428	19914	16	34560	72000	46080	96000
72	22972	23395	18	39168	81600	52224	108800
78	26801	27180	20	43776	91200	58368	121600
84	30993	31336	22	48384	100800	64512	134400
			24	52992	110400	70656	147200
			26	57600	120000	76800	160000

*Reinforced concrete anchors, 12" thick

Note: Buoyant Weight of: 4' × 6' × 12" Anchor = 4200 lbs.
4' × 8' × 12" Anchor = 5600 lbs.

CALCULATION EXAMPLES

EXAMPLE I

Relatively Dry Conditions
Maximum Water Level = 2′ over through pipe
Riser = 48″ Diameter, 15′ high from pipe crown
(Note: Height of manhole is calculated from the invert)
Through Pipe = 36″
Soil Weight = 120 lbs/ft³
% Riser under water = $^{2}/_{15}$ = 13% — use 20% column in Table III

Using the information from above, fill in data from the table to complete the Flotation Equation.

I	+	II	=	III	+	IV
Step A:						
Upward Thrust of Base	+	Upward Thrust of Riser	=	Downward Force of Soil Over The Through Pipe	+	Frictional Resistance of Soil Surrounding the Manhole
Step B:						
4,279	+	(15•170)	=	(2•607)+(13•1264)	+	3,416
4,279	+	2,550	=	17,646	+	3,416
6,829 lbs.			<	21,062 lbs.		
			OK			

Since downward force clearly exceeds upward thrust, the manhole will not float and anti-flotation anchors are not required.

Explanation:

I Upward Thrust of the Base — 4,279 lbs. is obtained from Section 1 of the table across from the 36″ through pipe I.D.

II Upward Thrust of the Riser — 2,550 lbs. is the result of multiplying the height of the cover (15 feet) by the upward thrust per foot (170 lbs.) found on Section II of the table across from the 36″ through pipe I.D.

III Downward Force of Soil over the Through Pipe — 17,646 lbs. is the product of the weight of the soil below the water table (2 ft. • 607) added to the weight above the water table (13 ft. • 1264)

IV Frictional Resistance of Soil Surrounding the Manhole — This value is determined by solving the following equation with values from Section IV of the table. (See Steps A & B below.)

Frictional Resistance	=	Above Water Resistance	+	Below Water Resistance
	=	2135	+	1281
	=	3416 lbs.		

Step A: Above Water Resistance is derived by selecting the appropriate depth (10 ft. in the table — 13 ft. is the actual value, use 10 ft. to be conservative).

Step B: Below Water Resistance is derived by solving the following equation.

Below Water Resistance	=	Resistance of Total Manhole Height — Assume 100% Under Water	-	Below Water Value of the Distance the Riser is in Dry Soil
	=	2306	-	1025
	=	1281 lbs.		

EXAMPLE 2

Wet Conditions
Maximum Water Level = 15′ over pipe crown
Riser = 48″ Diameter, 15′ high from pipe crown
(Note: Price of the manhole is measured from invert)
Through Pipe = 36″
Soil Weight = 120 lbs./ft.³
% Riser under water = $^{15}/_{15}$ = 100%

Using the information from above, fill in data from the table to complete the Flotation Equation.

I	+	II	=	III	+	IV
Step A:						
Upward Thrust of Base	+	Upward Thrust of Riser	=	Downward Force of Soil Over The Through Pipe	+	Frictional Resistance of Soil Surrounding the Manhole
Step B:						
4,279	+	(15 • 852)	=	(15 • 607)	+	2,306
4,279	+	12,780	=	9,105	+	2,306
17,059			<	11,411		

Since downward force is less than upward thrust, the manhole **will** require 4′ x 6′ anti-flotation anchors.

Using the date from above and the information in Table IV we complete the Flotation Equation revised for anti-flotation anchors.

I_a	+	II	=	III_a
Step A:				
Upward Thrust of **Anchored** Base	+	Upward Thrust of Riser	=	Downward Forces of Anti-Flotation Anchors (Anchor Weight + Soil)
Step B:				
6235	+	15 (852)	=	$4200 + \left[\frac{29{,}952 + 34{,}560}{2}\right]$
6235	+	12,780	=	4200 + 32,256
19,015			<	36,456
			OK	

Explanation:

I Upward Thrust of the Base — 4279 lbs. is obtained from Section I of the table across from the 36″ through pipe I.D.

II Upward Thrust of the Riser — 12,780 lbs. is the result of multiplying the height of cover (15 feet) by the upward thrust per foot (852 lbs.) found on Section II of the table across from the 36″ through pipe I.D.

III Downward Force of Soil over the Through Pipe — 9,105 lbs. is the product of the weight of the soil below the water table (15 ft. • 607)

IV Frictional Resistance of Soil Surrounding the Manhole — This value is determined by solving the following equation with values from Section IV of the table. (See Steps A & B below.)

Frictional Resistance	=	Above Water Resistance	+	Below Water Resistance
	=	0	+	2306
	=	2306 lbs.		

Step A: Since the entire manhole is below the water table the Above Water Resistance = 0.

Step B: Below Water Resistance is derived by solving the following equation:

Below Water Resistance	=	Resistance of Total Manhole Height — Assume 100% Under Water	-	Below Water Value of the Distance the Riser is in Dry Soil
	=	2306	-	0
	=	2306 lbs.		

V Anti-Flotation Anchors Flotation Equation — The Upward Thrust of **Anchored** Base (6235 lbs.) is used because the anchors now cover 4′ of through pipe. The value is obtained from Table IV in Section Ia across from the 36″.

VI Upward Thrust of Riser — 12780 lbs. (same as from Explanation II above)

VII Downward Force of Anti-Flotation Anchor —

- The Anchor Weight, 4200 lbs., is obtained from Table IV. Where the depth of cover is 4 feet or less, the anchor weight should be reduced by a 1.2 safety factor to allow for surface variations in the depth of cover.
- The Total Downward Force of Soil over Concrete Anchor — 32256 lbs. This value is obtained from Table IV, Section IIIa at a height of cover of 15′ (interpolate between 14′ and 16′) -

$$\left[\frac{29{,}952 + 34{,}560}{2}\right] = 32{,}256 \text{ lbs.}$$

SPECIFICATIONS

SECTION 1 - GENERAL

SECTION 1.1 SCOPE:

1.1.1. This specification covers the requirements of **Spirolite®** High Density Polyethylene manholes in nominal sizes of 48" and 60" with integral bell joints.

SECTION 1.2 DEFINITIONS:

Under this standard, the following definitions apply:

1.2.1. Purchaser: The person, firm, corporation or government agency engaging in a contract or agreement to purchase pipe according to this standard.

1.2.2. Inspector: The authorized representative of the purchaser entrusted with the duty of inspecting pipe produced and witnessing tests performed under these standards.

1.2.3. Inspection: Inspection of the pipe and the tests by the inspector:

1.2.4. Manhole Design: The manhole shall be manufactured by the fabrication of High Density Polyethylene as defined in Section 2. Manhole walls and stubout shall be a minimum of Class 160 as defined in ASTM F-894. The manhole wall profile shall be in accordance with the manufacturer's recommendation.

1.2.5. Joints: The pipe shall be produced with bell and spigot end construction. Joining will be accomplished by rubber gasket in accordance with the manufacturer's recommendations.

SECTION 2 - BASIC MATERIALS

SECTION 2.1 BASIC MATERIALS:

2.1.1. Manholes and Fittings: The riser and stubouts shall be made of high density, high molecular weight polyethylene pipe material meeting the requirements of Type III, Class C, Category 5, Grade P34, as defined in ASTM D-1248 *Standard Specification for Polyethylene Plastics Molding and Extrusion Materials.* Clean rework material generated by the manufacturer's own production may be used so long as the manhole or fittings produced meet all the requirements of this specification.

2.1.2. Gaskets: Rubber gaskets shall comply in all respects with the physical requirements specified in the non-pressure requirements of ASTM Specification F-477.

2.1.3. Lubricant: The lubricant used for assembly shall have no detrimental effect on the gasket or on the pipe.

SECTION 3 - REQUIREMENTS

SECTION 3.1 WORKMANSHIP:

3.1.1. The pipe and fittings shall be homogenous throughout and free from visible cracks, holes, foreign inclusions or other injurious defects. The pipe shall be as uniform as commercially practical in color, opacity, density and other physical properties.

SECTION 3.2 RING STIFFNESS CONSTANT

3.2.1. Ring Stiffness Constant (RSC) values for the pipe used to manufacture the manholes can be directly related to the pipe's class designation. (Nominal RSC of Class 40 pipe = 40, etc.) The minimum RSC is 90% of the nominal when tested in accordance with section 4.3.2. Manholes shall have a RSC of 160.

SECTION 4 - INSPECTION AND TESTING

SECTION 4.1 INSPECTION REQUIREMENTS:

4.1.1. Access: The inspector shall have free access to the inspection area of the manufacturer's plant. The manufacturer shall make available to the inspector, without charge, all reasonable facilities for determining whether the manhole meets the requirements of this specification.

4.1.2. Certification: As the basis of the acceptance of the material, the manufacturer will furnish a certificate of conformance to these specifications upon request. When prior agreement is being made in writing between the purchaser and the manufacturer, the manufacturer will furnish other conformance certification in the form of affidavit of conformances, test results, or copies of test reports.

SECTION 4.2 PHYSICAL TEST REQUIREMENTS:

4.2.1. Sampling: The selection of the sample or samples of pipe shall be as agreed upon by the purchaser and the manufacturer. In case of no prior agreement, any sample selected by the manufacturer shall be deemed adequate.

4.2.1.1. Sample size for flattening test will be one sample per size and class of pipe per project.

4.2.2. Conditioning: Conditioning of samples prior to and during tests shall be as agreed upon by the purchaser and manufacturer. In case of no prior agreement, the conditioning procedure used by the manufacturer shall be deemed adequate.

SECTION 5 - INSTALLATION

5.1.1. Manholes shall be installed in accordance with the manufacturer's recommendations.

SECTION 6 - DELIVERY

6.1.1. All manholes, couplings and fittings shall, unless otherwise specified, be prepared for standard commercial shipment.

Spirolite®

Questions?

Contact Spirolite's Customer Service Centers for help:

Reno, NV — 702/ 677-7700
Waxahachie, TX — 214/ 937-0839
Norcross, GA — 404/ 497-2309

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