Marcia Degen, P.E., Ph.D
Virginia Department of Health
Division of Onsite Sewage and Water Services
3639 Martinell Avenue
Roanoke, VA 24018

Re: Submittal for approval Roth RMT-500 MultiTank®

Dear Marcia,
The purpose of this letter is to request Virginia Department of Health approval of Roth Global Plastics RMT-500 tank. Roth Global Plastics, Inc. manufactures the RMT in five larger sizes each of which are approved by the Department per GMP 133A issued July 12, 2010.

Roth Model	Liquid Capacity	Total Capacity
RMT-500	500 GALS	525 GALS

Intended application-
The RMT-500 tank is intended to be used as a pump or dose tank and as the second tank in a "tanks in series" septic tank configuration where capacity requirements or the need for a hydraulic barrier between the first and second compartment dictates.

Materials of construction & manufacturing process-
The RMT-500 is manufactured from high molecular weight HDPE blow molding resin as is used in the manufacture of the balance of Roth RMT products. The RMT-500 is manufactured using the same multilayer blow molding process employed in the manufacture of the larger RMT tank sizes. The RMT-500 is molded as a single piece vessel with no seams or joints below the piping entry points. The height and width of the tank are the same as the larger models produced from the same mold set.

Structural design-
This product is designed for installation at a 4ft burial depth based on 150 lb/cu ft density. It is designed to be installed empty and pumped empty in the installed condition with no detrimental effect on the structure.

Watertightness-
The Roth manufacturing process produces a one piece monolithic tank envelope with only the access opening included. Each tank is made from a parison of molten HDPE which is "inflated" with air at a pressure of 140 PSI to form the finished part profile. The presence of any void or pinhole in the parison prevents the process from completing the part, in essence producing an airtight/watertight product.

Buoyancy-
As this product is designed to be pumped and maintained in either and empty or partially full condition on a continuous basis, consideration of buoyancy is important in installation design. Included in our attachments are a design detail for a buoyancy restraining collar and installation instructions for high groundwater installations.

The following support documentation is included:

- Attachment A- Specification Summary
- Attachment B- Specification drawings- RMT-500, Roth STAR 24™ system riser and lid
- Attachment C- RMT Capacity tables
- Attachment D- IAPMO/CSA product listing certificates
- Attachment E- RMT Certified Installer Handbook, Installation Instructions and Installation Key Facts
- Attachment F- RMT Buoyancy Restraining Collar Detail, Installation instructions-High Groundwater Conditions.
- Attachment G- Roth MultiTank® product and accessory brochure

Thank you for your consideration, please contact us if we may provide additional information of address questions.

Sincerely.

Bruce A. Stowe
Technical & Regulatory Affairs Manager
Roth Industries and Roth Global Plastics
bruces@roth-usa.com
www.roth-usa.com

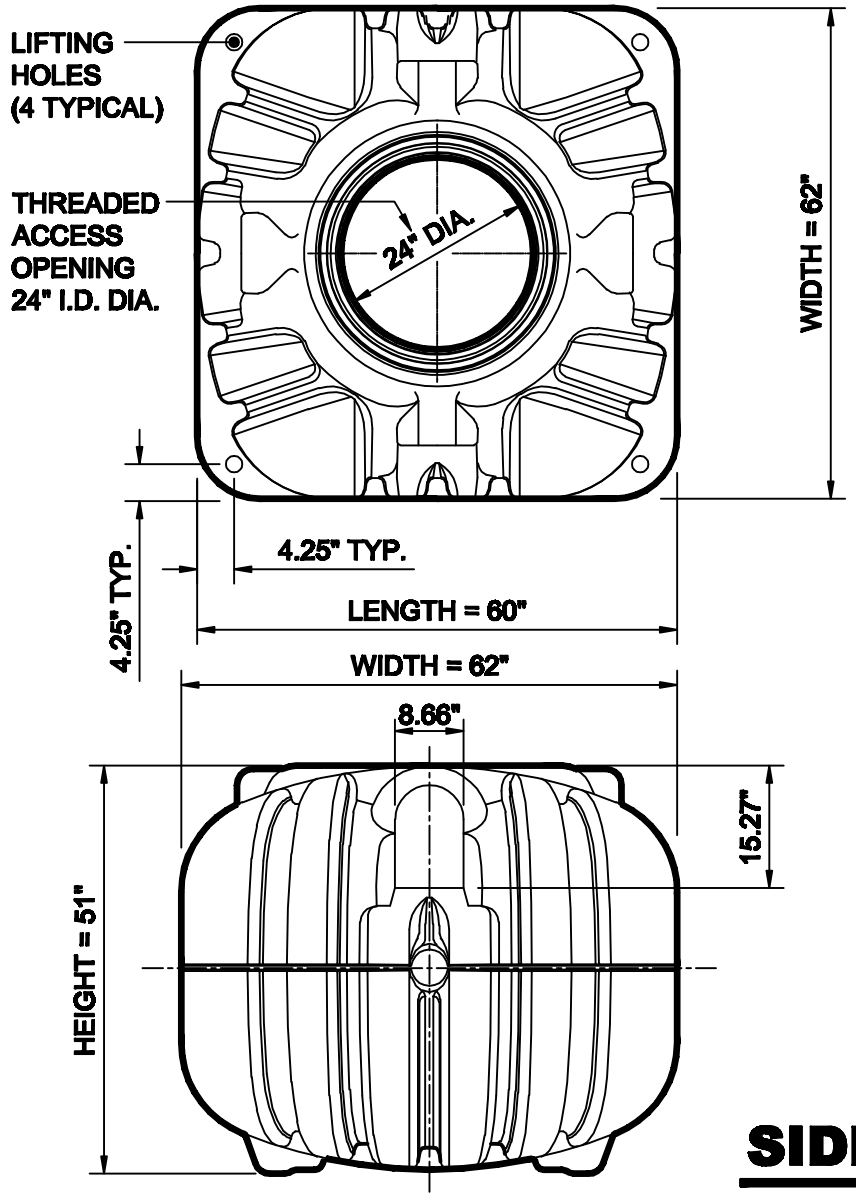
Attachment A
Specification Summary

Specification Summary-Roth RMT-500 Tank
Virginia Dept of Health 12 VAC 5-610-10 et seq.

Code Reference	Requirement	Value	Compliance	Comments
12VAC5-610-810.	Corrosion resistance	Must be corrosion resistant	√	HMW-HDPE
	Structural Strength	Lateral and bearing load capability	√	4 ft max burial depth
12VAC5-610-815.A	Capacity	750 Gal Min		500 gal pump/dose/tanks in series
12VAC5-610-815.B	Shape/profile	Rectangular in plan/cross sect/longitudinal		Dimensions- function of capacity
	L/D/W Ratio	2:1:1 to 3:1:1		Dimensions- function of capacity
	Liq Level	48 in min		40 in working level for septic tanks
	Freeboard	12 in min		10.5 inches
12VAC5-610-815.C1	Invert drop	>1 in, <2 in		3 inches for septic tanks
	Inlet below LL	6-8 in	√	6 inches
	Inlet above LL	8-10 in		6.5 inches
	Outlet below LL	35-40% of liquid depth	√	14 inches or 35%
	Outlet above LL	8-10 in		6 inches
	Inlet/outlet dia.	4 in	√	4 inches
12VAC5-610-815.C.2	Materials	Corrosion resistance comp. with sewer	√	Inlet-PVC, Outlet-ABS
12VAC5-610-815.D	Tank watertightness	Shall be WT and WT top/lid	√	One piece tank, gasketed lid
	min manway dim	18 in x18 in min	√	(1) 24 inch dia
12VAC5-610-815.E	Construction of Septic Tanks	Withstand bearing/ lateral loads	√	4 Ft max burial depth
12VAC5-610-815.F	Placement of tanks	Bedding, backfill, compaction and materials	√	Per Roth installation instructions.
12VAC5-610-817.C	Effluent filter	Insp port or effluent filter required	√	Effluent filter ready outlet tee
12VAC5-610-820.A	Tanks in Series	2 tanks used to meet min cap requirements	√	500 Gal- Tank 2 only in tanks in series
12VAC5-610-820.C	Water Stop	Water tight pipe penetrations required	√	ASTM-C564 Water tight pipe seals
General reference	Buoyancy restraint	Prevent flotation in pump/dose HGW install.		Design detail and instructions included
General reference	Product listings	IAPMO PS52/CSA B66		Certifiicates attached
General reference	Tank weight	225 lbs		

Attachment B
Specification Drawings

TOP



SIDE

TANK SPECIFICATIONS

DESIGN CAPACITY		TOTAL CAPACITY		WEIGHT
GALLONS	LITERS	GALLONS	LITERS	POUNDS
500	1893	525	1987	225

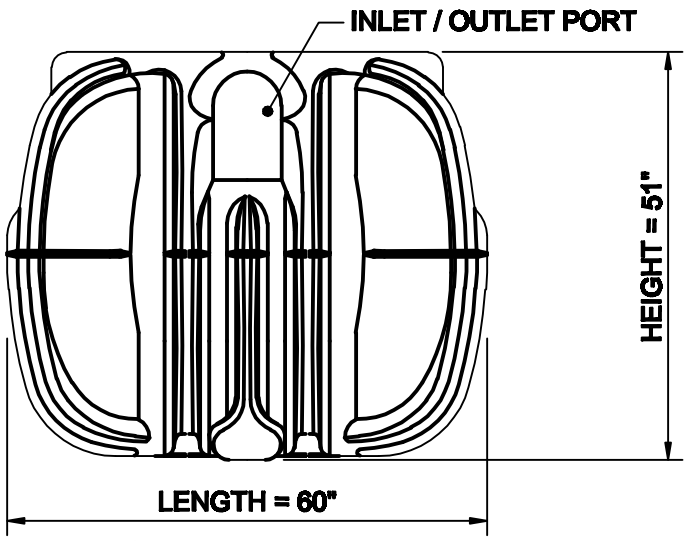
DWG SCALE: 1:1
PLOT SCALE: 1:2
SHEET #: 1 OF 3

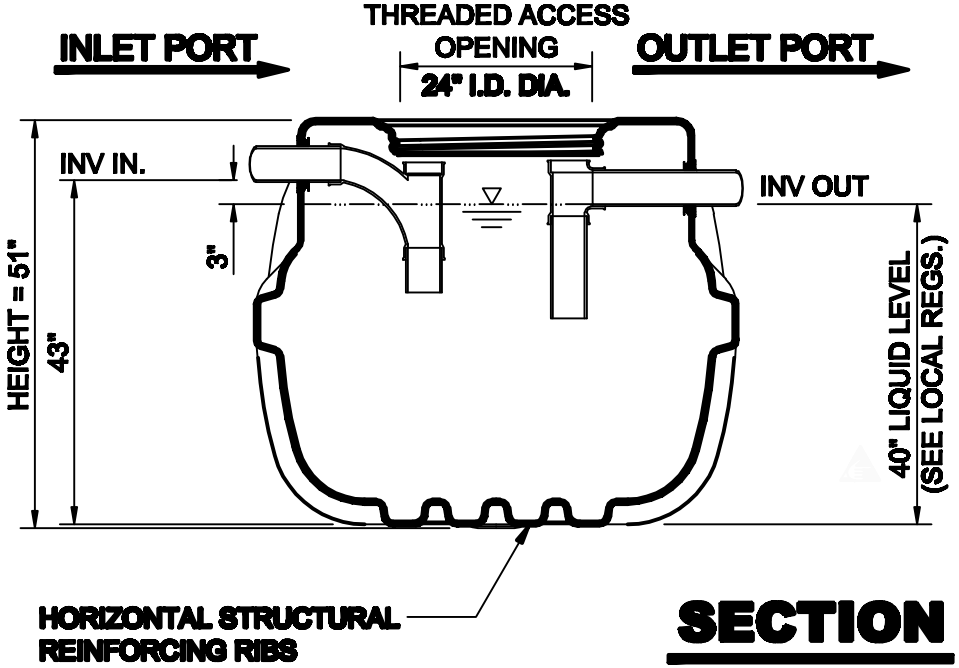
ROTH MultiTanK®
500 GALLON / MODEL RMT-500

Roth
YOUR ENVIRONMENT IS OUR BUSINESS.

ROTH GLOBAL PLASTICS
One General Motors Drive
Syracuse N.Y. 13206
Call Toll Free 866.943.7256
www.fnalo.net

ELEVATION





40" LIQUID LEVEL

SECTION

DWG SCALE:	1:1
PLOT SCALE:	1:2
SHEET #:	2 OF 3

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500 GALLON / MODEL RMT-500

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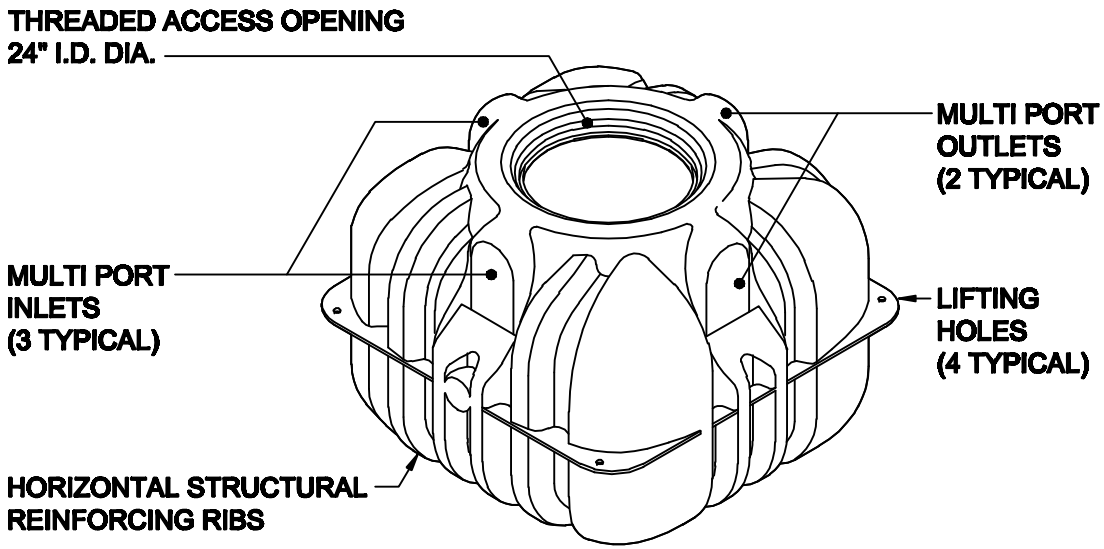
ISOMETRIC



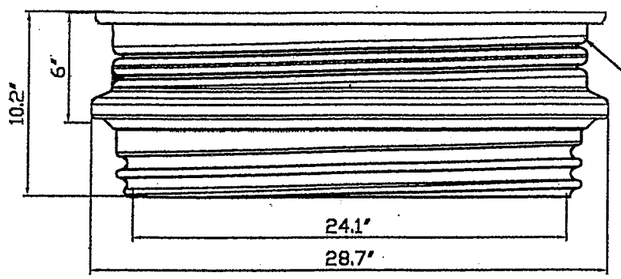
WARNING

TANK NOTES

1. Access at or above grade level must be secured against unauthorized access.
2. Tank is not rated for vehicular traffic loading.
3. All resin used is compliant with ASTM D 1248 as required by CSA B66 and IAPMO / ANSI Z1000-2007.
4. Tank material of construction is HMW-HDPE.
5. Primary dimensions are in inches
6. Minimum tank wall thickness is 1/4".
7. Labeling will include: manufacturer name, liquid capacity, date, maximum burial depth, and model number.
8. Riser cover contains the following: 6" x 3" warning:
   "Danger - Do not enter - Poison Gas" - written in English, French & Spanish.
9. Maximum burial depth from manufacturer is 48" unless specifically instructed otherwise by the factory.
10. Models RMT-750, RMT-1060, RMT-1250 and RMT-1500 are all certified to CSA and IAPMO standards.
11. Models RMT-500, RMT-900 and RMT-1000E are compliant with CSA and IAPMO standards.

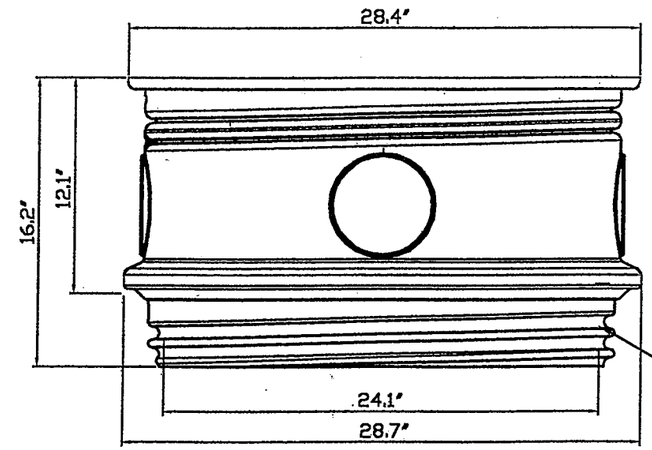
NOTES

DWG SCALE: 1:1 PLOT SCALE: 1:2 SHEET #: 3 OF 3	**ROTH MultiTanK®** **500 GALLON / MODEL RMT-500**	ROTH GLOBAL PLASTICS One General Motors Drive Syracuse N.Y. 13206 Call Toll Free 866.943.7256 www.fnalo.net



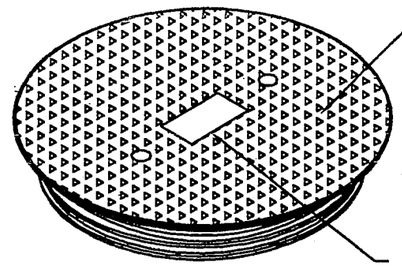
THREADED WATERTIGHT CONNECTION

STAR 6" RISER - MODEL 24R6



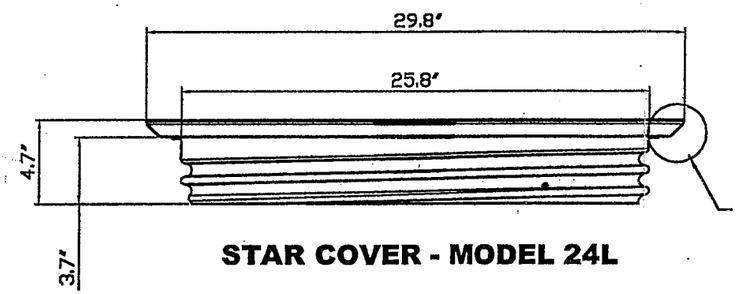
THREADED WATERTIGHT CONNECTION (TYP)

STAR 12" RISER - MODEL 24R12



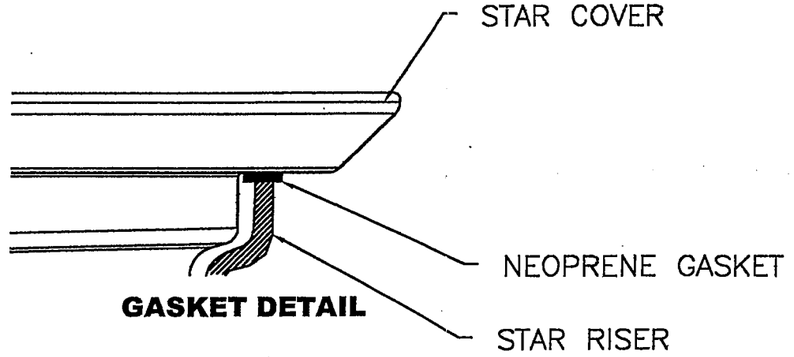
ANTI-SLIP SURFACE

WARNING LABEL "WARNING – POISON GASES DO NOT ENTER"



SEE GASKET DETAIL

STAR COVER - MODEL 24L



GASKET DETAIL

NOTES:
1. COVER SECURED WITH TAMPER RESISTANT STAINLESS STEEL FASTENER OR PADLOCK
2. RISER AND COVER MATERIAL IS HMW–HDPE

Roth

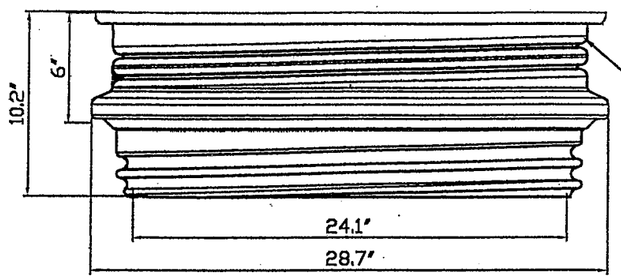
Scale: NOT TO SCALE

STAR(TM) SYSTEM
MODELS 24R6, 24R12
AND 24L

STAR RISER

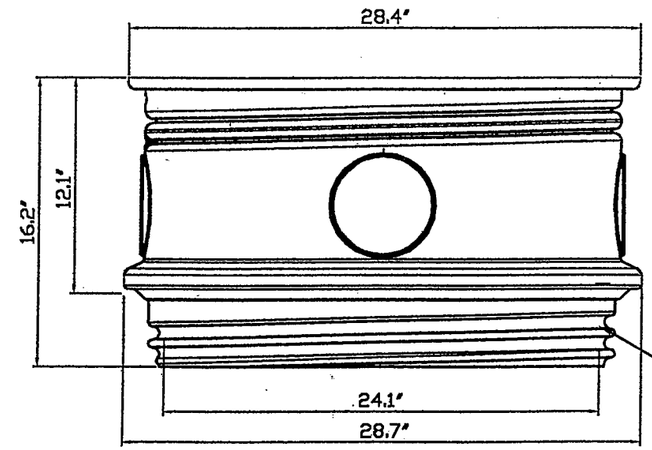
No.

Rev.
0



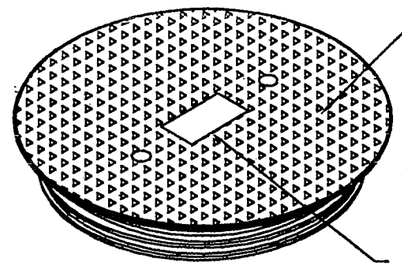
THREADED WATERTIGHT CONNECTION

STAR 6" RISER - MODEL 24R6



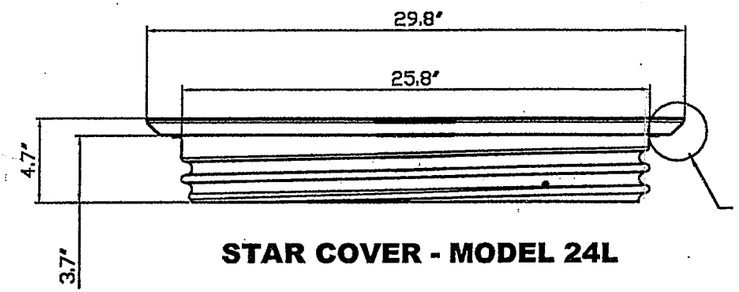
THREADED WATERTIGHT CONNECTION (TYP)

STAR 12" RISER - MODEL 24R12



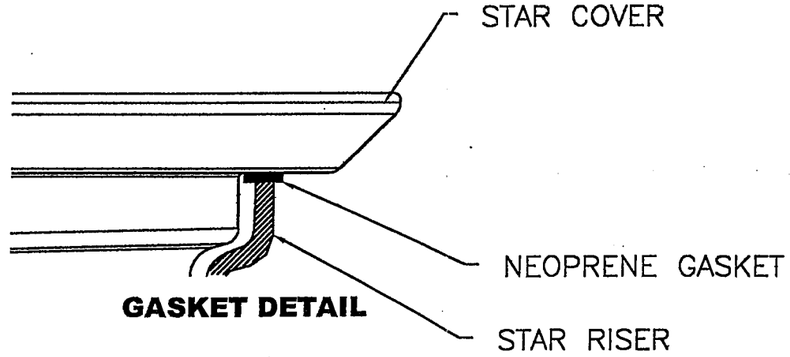
ANTI-SLIP SURFACE

WARNING LABEL "WARNING – POISON GASES DO NOT ENTER"



SEE GASKET DETAIL

STAR COVER - MODEL 24L



GASKET DETAIL

NOTES:
1. COVER SECURED WITH TAMPER RESISTANT STAINLESS STEEL FASTENER OR PADLOCK
2. RISER AND COVER MATERIAL IS HMW–HDPE

Roth

Scale: NOT TO SCALE

STAR(TM) SYSTEM
MODELS 24R6, 24R12
AND 24L

STAR RISER

No.

Rev. 0

Attachment C
RMT Capacity Tables

ST-300 Capacity Chart

Height (inches)	Gallons in Tank
0	0
1	3
2	6
3	9
4	12
5	18
6	23
7	28
8	33
9	39
10	44
11	51
12	58
13	65
14	72
15	79
16	86
17	94
18	102
19	110
20	118
21	126
22	134
23	142
24	151
25	159
26	167
27	175
28	183
29	191
30	200
31	208
32	216
33	224
34	232
35	239
36	246
37	253
38	259
39	266
40	273
41	278
42	284
43	289
44	294
45	299
46	304
47	308
48	313
49	316
50	319
51	322
52	325

ST-500 Capacity Chart

Height (inches)	Gallons in Tank
0	0
1	4
2	7
3	14
4	20
5	27
6	33
7	44
8	55
9	65
10	76
11	87
12	97
13	108
14	118
15	133
16	148
17	162
18	177
19	190
20	203
21	216
22	229
23	242
24	255
25	268
26	281
27	294
28	307
29	319
30	332
31	345
32	358
33	370
34	383
35	395
36	406
37	418
38	429
39	440
40	**452**
41	463
42	**474**
43	483
44	492
45	501
46	510
47	516
48	523
49	529
50	535

ST-750 Capacity Chart

Height (inches)	Gallons in Tank
0	0
1	7
2	14
3	23
4	32
5	48
6	65
7	83
8	101
9	122
10	144
11	165
12	187
13	210
14	234
15	257
16	284
17	308
18	333
19	357
20	382
21	407
22	432
23	455
24	478
25	499
26	521
27	548
28	576
29	599
30	623
31	648
32	673
33	697
34	721
35	742
36	762
37	785
38	809
39	833
40	**853**
41	875
42	**898**
43	917
44	936
45	953
46	970
47	979
48	985
49	993
50	1000

ST-900 Capacity Chart

Height (inches)	Gallons in Tank
0	0
1	7
2	13
3	24
4	35
5	52
6	68
7	92
8	115
9	139
10	163
11	186
12	208
13	241
14	273
15	302
16	330
17	357
18	383
19	411
20	438
21	468
22	498
23	528
24	558
25	583
26	608
27	636
28	663
29	691
30	719
31	749
32	779
33	806
34	833
35	861
36	888
37	915
38	941
39	966
40	**990**
41	1009
42	**1028**
43	1051
44	1073
45	1093
46	1113
47	1130
48	1147
49	1154
50	1161

ST-1000E Capacity Chart

Height (inches)	Gallons in Tank
0	0
1	7
2	13
3	24
4	35
5	52
6	68
7	92
8	115
9	139
10	163
11	186
12	208
13	241
14	273
15	302
16	330
17	357
18	383
19	411
20	438
21	468
22	498
23	528
24	558
25	583
26	608
27	636
28	663
29	691
30	719
31	749
32	779
33	806
34	833
35	861
36	888
37	915
38	941
39	966
40	**990**
41	1009
42	**1028**
43	1051
44	1073
45	1093
46	1113
47	1130
48	1147
49	1154
50	1161

ST-1060 Capacity Chart

Height (inches)	Gallons in Tank
0	0
1	10
2	20
3	37
4	55
5	76
6	97
7	120
8	144
9	174
10	203
11	234
12	265
13	294
14	323
15	356
16	390
17	423
18	457
19	488
20	520
21	552
22	584
23	618
24	653
25	684
26	715
27	750
28	785
29	816
30	847
31	880
32	913
33	947
34	982
35	1014
36	1047
37	1077
38	1107
39	1142
40	**1177**
41	1202
42	**1227**
43	1243
44	1259
45	1275
46	1290
47	1303
48	1316
49	1327
50	1337

ST-1250 Capacity Chart

Height (inches)	Gallons in Tank
0	0
1	7
2	16
3	25
4	41
5	63
6	91
7	115
8	147
9	179
10	213
11	241
12	281
13	309
14	352
15	389
16	419
17	452
18	489
19	520
20	556
21	592
22	637
23	667
24	701
25	737
26	771
27	804
28	838
29	872
30	912
31	948
32	985
33	1017
34	1052
35	1082
36	1117
37	1152
38	1192
39	1222
40	**1259**
41	1297
42	**1319**
43	1343
44	1374
45	1394
46	1422
47	1440
48	1453
49	1465
50	1469

ST-1500 Capacity Chart

Height (inches)	Gallons in Tank
0	0
1	14
2	27
3	49
4	71
5	101
6	131
7	163
8	196
9	230
10	264
11	309
12	354
13	396
14	438
15	482
16	526
17	571
18	616
19	656
20	696
21	741
22	786
23	831
24	876
25	919
26	961
27	1003
28	1046
29	1096
30	1146
31	1186
32	1226
33	1271
34	1316
35	1356
36	1396
37	1438
38	1480
39	1510
40	**1540**
41	1571
42	**1601**
43	1631
44	1660
45	1685
46	1703
47	1725
48	1742
49	1759
50	1771

Attachment D
IAPMO/CSA Listing Certificates

IAPMO RESEARCH AND TESTING, INC.

5001 E. Philadelphia Street, Ontario, CA 91761-2816 • (909) 472-4100 • Fax (909) 472-4244 • www.iapmort.org

CERTIFICATE OF LISTING

IAPMO Research and Testing, Inc. is a product certification body which tests and inspects samples taken from the supplier's stock or from the market or a combination of both to verify compliance to the requirements of applicable codes and standards. This activity is coupled with periodic surveillance of the supplier's factory and warehouses as well as the assessment of the supplier's Quality Assurance System. This listing is subject to the conditions set forth in the characteristics below and is not to be construed as any recommendation, assurance or guarantee by IAPMO Research and Testing, Inc. of the product acceptance by Authorities Having Jurisdiction.

Effective Date: March 2014 Void After: March 2015

Product: Sumps and Sewage Ejector Tanks File No. 5626

Issued To: ROTH GLOBAL PLASTICS
P.O. Box 245
SYRACUSE, NY 13211

Identification: Manufacturer's name or trademark, model or catalog number, "Wasteholding Tank", year of manufacture, above or below ground installation and the maximum recommended depth of earth cover for underground installation shall be permanently marked on the product. Product shall also bear the cUPC® certification mark.

Characteristics: Sumps and sewage ejector tanks to be installed using IAPMO listed fittings, in accordance with the manufacturer's instructions and the latest edition of the Uniform Plumbing Code®.

Products listed on this certificate have been tested by an IAPMO R&T recognized laboratory. This recognition has been granted based upon the laboratory's compliance to the applicable requirements of ISO/IEC 17025.

Products are in compliance with the following code(s):

Uniform Plumbing Code (UPC®)
National Plumbing Code of Canada

Products are in compliance with the following standard(s):

IAPMO PS 52-2009 and CSA B66-2010

Models:

RMT-300 & RMT-500

Print Certificate

Attachment E
RMT Certified Installer Handbook
Installation Instructions

POLY TANKS

INSTALLATION PROCEDURES

These installation instructions apply to sites with fr**ee-fl**owing native soils.

(See separate instructions for sites with clay or high groundwater.)

Step 1: Site Preparation & Notes

- Read “Key Roth Installation Facts” first (applies to Roth MultiTank® OR the FRALO Septec Tank)
- Max burial depth is 36" below grade, unless deep burial instructions (steps 11 & 12) on *“Key Installation Facts”* are followed.
- Absolutely no clay should be used for backfill.
- Inspect tank for any damage during handling or transportation.
- Tank must be uniformly supported.
- Failure to properly bed tank and compact fill will void the warranty.
- Absolutely no water is required for backfill. The tank is designed to be backfilled without water. Filling the tank with water prior to backfilling is not necessary and may cause installation problems. A nominal amount of water (6-8") may be used to ballast the tank during backfilling.

Step 2: Excavation Size

- Width and length of excavation shall be 12-18" greater than the tank on all sides and ends (FIG.1).
- Depth of the excavation shall be 6" greater than the tank (FIG.1).
- Do no over excavate or "belly-out" the excavation.

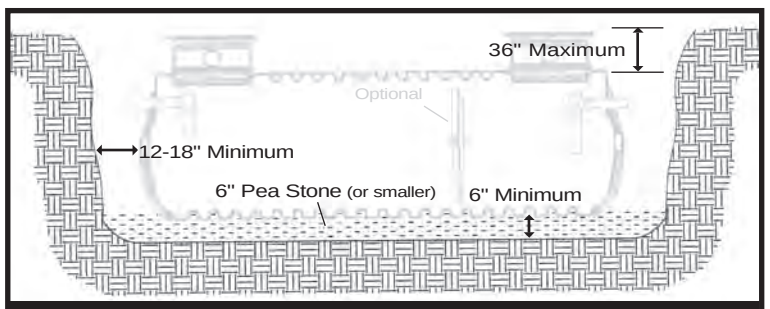


FIG.1 **Excavation**

Step 3: Bedding the Tank

- Add pea stone, sand, gravel or other similar granular material to bed the tank and ensure uniform compaction and that bed is level (FIG.1)
- Native material may be used to bed the tank providing it is properly placed and compacted.

Step 4: Tank Installation

- Prepare the tank for installation. Identify the inlet and outlet ends of the tank. Inlet and outlet may be located on the end or either side ports (per code requirements).
- For standard installation, identify drill location A (40" Liquid Level). Drill the inlet and outlet holes using a 5-inch diameter hole saw. (FL & IN tanks are pre-drilled)

*** IMPORTANT NOTE: For AZ, IL, NE drill dimple B (42" Liquid Level). Florida & Indiana tanks are pre-drilled at the factory.**

- Install provided rubber gasket in inlet and outlet ports. (Fig. 2)

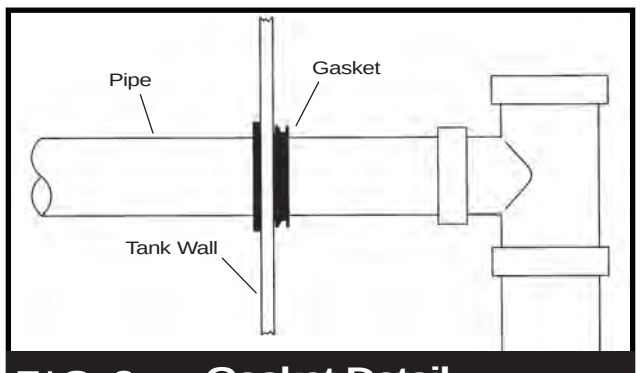


FIG.2 **Gasket Detail**

- Install the inlet and outlet tees, as required. (Fig. 3) Plumbing tees shall be located as close to the entrance point of the tank as possible (just inside the manway opening). Plumbing tees and gas-baffles are factory provided for Indiana tanks.

Step 4: Tank Installation (cont'd)

- Install the required Roth threaded Septic Access Riser System (STAR™), provided separately. (Fig. 3) See reverse for directions for sealing the riser system.
- Using the corner lifting holes, lower the tank into the excavation. Level the tank, and verify the outlet is lower than the inlet. Install remaining inlet and outlet plumbing. (Fig. 3)

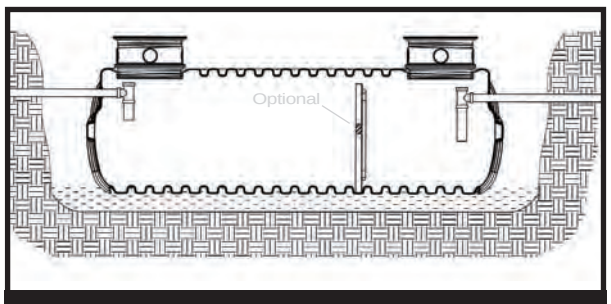


FIG.3 **Plumbing Install**

- Perform required water tightness, plumbing and/or tank inspection if applicable.

Step 5: Backfill

- Backfill in an alternating method around the tank using native material free of debris, sharp stones, and stones greater than 2" in diameter. Soil MUST flow freely into corrugations between tank ribs, including midpoint to belly of tank.
- Compact backfill in 6 inch lifts always working on the sides first and then the bulkheads (ends of tank).
- Use a hand tamper to achieve sidewall compression through compacted backfill. Mechanical compactors may be used if available on the site. Sidewall compression is essential to provide sidewall restraint after covering the tank. (Fig. 4)

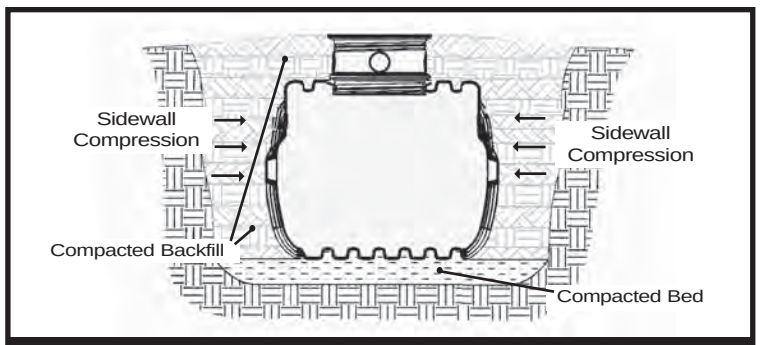


FIG.4 **Backfilling**

- When backfilling the top of the tank, backfill between risers first.
- Complete backfilling and grade the area.
- Failure to compact fill voids the tank warranty.

WARNING

- ***Tanks are designed for underground use only.***
- ***Installer shall comply with all federal, state, and local regulations.***
- ***Tanks are not rated for vehicular traffic. Avoid operation of vehicles heavier than 2500 pounds over the tank.***
- ***Internal water temperatures should not exceed 140° F.***
- ***Verify no underground utilities or pipes are located in the excavation vicinity.***
- ***Where saturated soil or seasonal high water tables are indicated between the bottom of the tank and the ground surface, see separate supplemental installation instructions for these site conditions.***
- ***Secure tank access by installing provided stainless steel fastener to the riser and cover.***

Roth Global Plastics, Inc.

STAR™ RISER SYSTEM

For ROTH MultiTank® & FRALO SEPTECH™ Tanks

INSTALLATION PROCEDURES

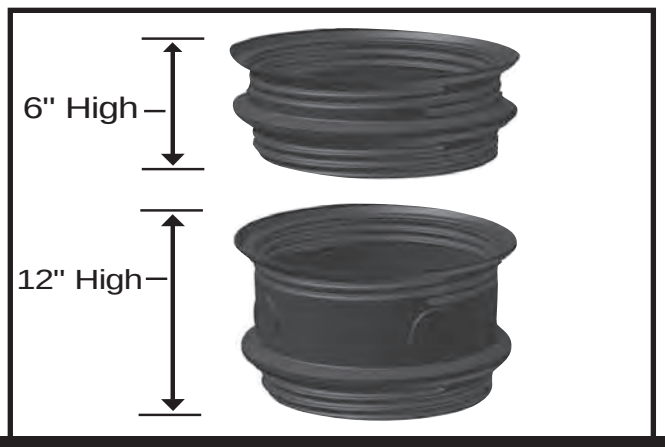


FIG.1 Riser Elevation

STEP 1 Determine riser elevation and required riser combination as per tank installation (see reverse). STAR™ risers are available in 6" (STAR-24R6) and 12" (STAR-24R12) height increments. (Fig.1)

FIG.2 Apply Gasket

STEP 2 Apply gasket (not included*) on the innermost flat ring on the tank surface. Be careful not to allow the gasket to overhang the threads where it would interfere with the thread engagement. (Fig.2)
*Indiana tanks and risers include gaskets.

FIG.3 Trim Gasket

STEP 3 Trim gasket 1/4" too long. A properly trimmed gasket is then compressed end to end. Ensure that the gasket is uniformly positioned and makes good contact with the tank surface. (Fig.3)

FIG.4 Install Riser

STEP 4 Screw the riser into the tank joint, being careful that the gasket remains in position. Properly installed, the gasket should show uniform compression around the entire joint. (Fig.4)

FIG.5 Additional Gaskets

STEP 5 Apply the gasket on the first riser on the thread portion which is facing up. (Fig.5). Trim the gasket to connect the pieces end to end. Screw the additional riser(s) into position.

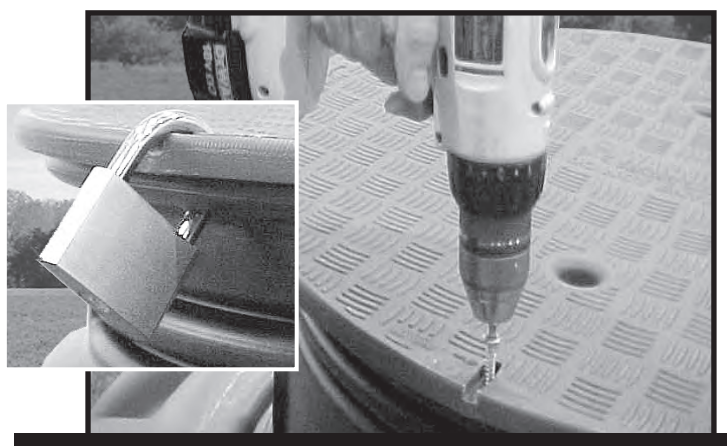


FIG.6 Secure Cover

STEP 6 Locate the "Secure Here" hole on the cover and install a tamper-resistant screw (STAR-SSCREW provided) through the lid and into the riser below. (Fig.6) To secure with padlock, drill a larger hole to accommodate the lock.

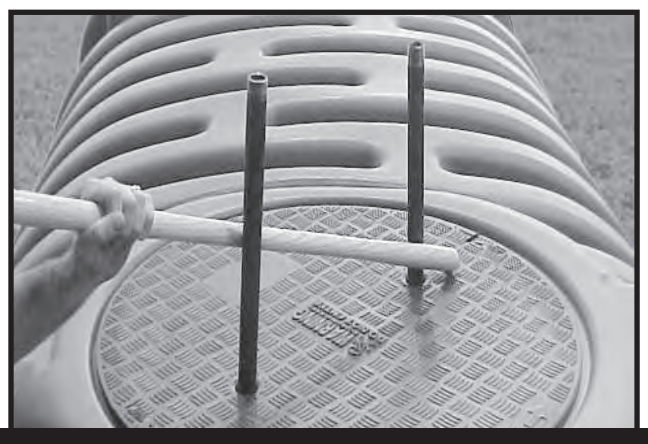


FIG.7 Remove Cover

STEP 7 If unable to remove cover by hand, insert 1" OD steel pipe into cover indentations and twist using a shovel handle, pipe or piece of wood. (Fig.7)

- ***To prevent unauthorized access, never install STAR™ Riser System without the factory provided tamper resistant screw.***
- ***Not rated for vehicular traffic loading.***

Roth Global Plastics, Inc.

ADVANCED TECHNOLOGY. TOTAL COMFORT

KEY INSTALLATION FACTS
READ THESE DETAILS BEFORE INSTALLATION!

1. Absolutely **NO WATER REQUIRED** for backfill. The tank is specifically designed to be backfilled **WITHOUT WATER**. The use of water prior to backfilling is not necessary and may cause installation problems. A nominal amount of water (6-8") may be used to ballast tank during backfilling.

2. The tank **MUST BE BEDDED IN SCREENED MATERIAL** (sand, pea gravel, stone dust, or other flowable fines). Native material is acceptable if it exhibits the same characteristics as select fill.

3. It is imperative that the **TANK HAUNCH BE SUPPORTED WITH FILL**. This is the area of the tank under the mold part-line along the sidewalls curving down to the belly of the tank.

4. The **TANK BELLY MUST BE SUPPORTED WITH FILL**. Due to the unique process, our tanks have a slight concave shape to the belly. Make sure that tank feet seated in the backfill and that the tank belly is well supported.

5. Our tanks achieve full structural integrity once installed properly. **SIDEWALL COMPRESSION THROUGH COMPACTED BACKFILL** is the key to this integrity. Use backhoe to compact sidewall backfill if possible.

6. **CORRUGATIONS MUST BE PACKED SOLIDLY** with backfill to achieve this. Compact backfill in 6" lifts as you backfill excavation.

7. Backfill tank to top of roof all the way around, then **BACKFILL BETWEEN RISERS FIRST**, then around the endwalls of tank. This technique will prevent backfill from pushing risers "in" or toward one another.

8. In areas of high groundwater, the tank **MUST BE FILLED** immediately following backfill.

9. Tanks are not designed or rated for vehicular traffic. Avoid operation of vehicles heavier than 2500 pounds. Maximum burial depth is 36" below grade.

10. Drill the "A" dimples for **ALL STATES AND PROVINCES (CANADA) EXCEPT FLORIDA, ILLINOIS, ARIZONA AND NEBRASKA.** The dimples are pre-offset at the factory. Drill the "B" dimples for Illinois, Arizona and Nebraska. All Florida destined tanks are pre-drilled.

11. For burial depths of 36" – 48", please follow the above steps but use select material for backfill to at least the top of the tank. Native material may be used for the cover providing it is absolutely free of clay and is a material that drains well. If surface water or saturated soils are a concern, install gravel or other well-draining material in lieu of any native material except for a minimum amount of top soil necessary to establish ground cover.

12. For burial depths greater than 48" (no greater than 72"), follow all of the above steps. In addition, a Schedule 40 PVC pipe support must be added between the roof and the floor just inside the edge of each manway in the mid-body of the tank. From the outside of the tank you can easily observe the pipe mounting tenons that are molded into the top of the first "trough" or inward corrugation past the manway. Each pipe should be field measured and cut due to nominal differences in the internal dimension of the tank.

Attachment F
RMT Buoyancy Restraining Collar Detail
Installation Instructions for HGW

ROTH RMT BUOYANCY RESTRAINING COLLAR-HIGH GROUNDWATER CONDITIONS

GENERAL NOTE:

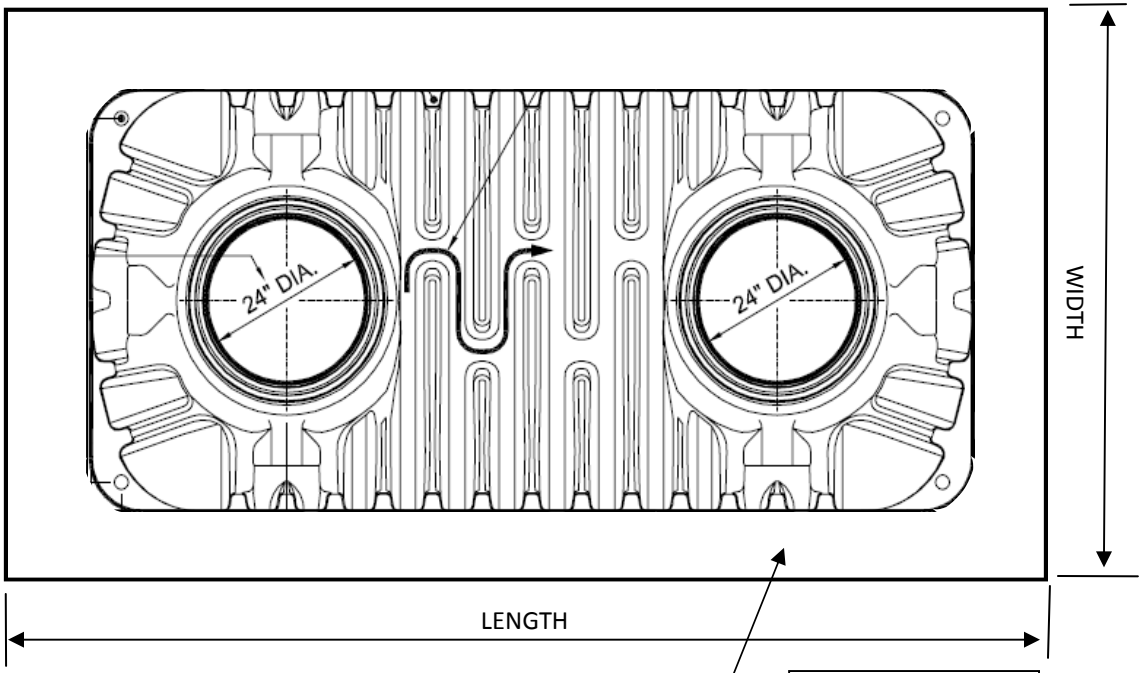
1) THE BUOYANCY RESTRAINING COLLAR DESIGN IS BASED ON BUOYANCY FORCE CALCULATIOINS AVAILABLE ON REQUEST FROM ROTH GLOBAL PLASTICS, INC. ALL FINAL DESIGN PARAMETERS ARE THE RESPONSIBILITY OF THE SYSTEM DESIGNER/INSTALLER.

CONCRETE NOTES:

1) PROVIDE CONCRETE TO OBTAIN THE MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS
2) CONCRETE MATERIALS AND WORKMANSHIP SHALL BE IN ACORDANCE WITH ACI-318-99 (BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE) AND ACI-301-LATEST EDITION (SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS)

REINFORCING STEEL:

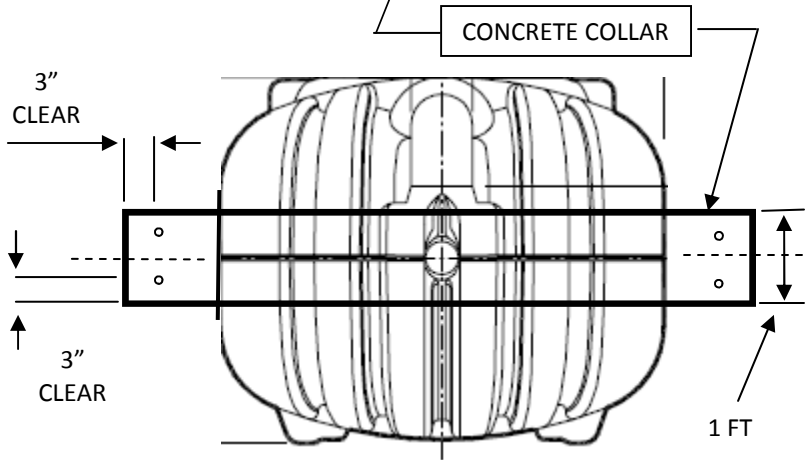
1) ALL STEEL SHALL BE BILLET STEEL CONFORMING TO STANDARDS OF ASTM A615, GRADE 60



CONCRETE COLLAR SPECIFICATIONS

TANK MODEL	RMT-500	RMT-750	RMT-1000E	RMT-1060	RMT-1250	RMT-1500
WIDTH (FT)	7'-0"	7'-0"	7'-6"	7'-6"	7'-6"	7'-6"
LENGTH (FT)	7'-0"	10'-6"	11'-6"	12'-0"	14'-0"	16'-6"
*NOMINAL SAFETY FACTOR	2.90	2.10	2.04	2.09	2.10	2.02
EST CONCRETE VOLUME	0.90	1.17	1.26	1.61	1.71	1.92

*based on installation with one foot of cover fill, density 115#/Ft^3



DWG SCALE: 1:1
PLOT SCALE: 1:2
SHEET NO. 1 OF 1

ROTH RMT
TANK BUOYANCY RESTRAINING SYSTEM

Roth Global Plastics, Inc.
One General Motors Drive
Syracuse, NY 13206
www.roth-usa.com

FRALO by Roth | Roth MULTITANK | POLY TANKS

INSTALLATION PROCEDURES - High Groundwater

These installation instructions apply to sites with high groundwater.

HIGH GROUNDWATER

Step 1: Site Preparation & Notes

- Read “Key Roth Installation Facts” first (applies to Roth MultiTank® OR the FRALO Septec Tank)
- Max burial depth is 36" below grade, unless deep burial instructions (steps 11 & 12) on *“Key Installation Facts”* are followed.
- Absolutely no clay should be used for backfill.
- Inspect tank for any damage during handling or transportation.
- Tank must be uniformly supported.
- Failure to properly bed tank and compact fill will void the warranty.
- Absolutely no water is required for backfill. The tank is designed to be backfilled without water. Filling the tank with water prior to backfilling is not necessary and may cause installation problems. A nominal amount of water (6-8") may be used to ballast the tank during backfilling.

Step 2: Excavation Size

- Width and length of excavation shall be 12-18" greater than the tank on all sides and ends (FIG.1).
- Depth of the excavation shall be 6" greater than the tank (FIG.1).
- Lengthen and deepen excavation at one end to provide dewatering pit as necessary.
- Do no over excavate or "belly-out" the excavation.

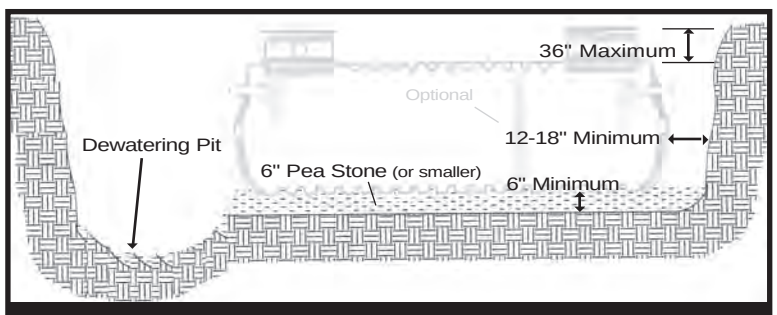


FIG.1 **Excavation**

Step 3: Bedding the Tank

- Add pea stone, sand, gravel or other similar granular material to bed the tank and ensure uniform compaction and that bed is level (FIG.1)
- Native material may be used to bed the tank providing it is properly placed and compacted.
- Keep excavation free of water at all times.

Step 4: Tank Installation

- Prepare the tank for installation. Identify the inlet and outlet ends of the tank. Inlet and outlet may be located on the end or either side ports (per code requirements).
- For standard installation, identify drill location A (40" Liquid Level). Drill the inlet and outlet holes using a 5-inch diameter hole saw. (FL & IN tanks are pre-drilled)

*** IMPORTANT NOTE: For AZ, IL, NE drill dimple B (42" Liquid Level). Florida & Indiana tanks are pre-drilled at the factory.**

- Install provided rubber gasket in inlet and outlet ports. (Fig. 2)

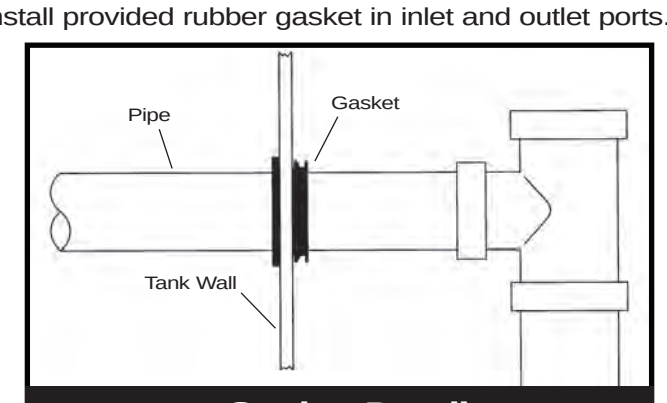


FIG.2 **Gasket Detail**

- Install the inlet and outlet tees, as required. (Fig. 3) Plumbing tees shall be located as close to the entrance point of the tank as possible (just inside the manway opening). Plumbing tees and gas-baffles are factory provided for Indiana tanks.

Step 4: Tank Installation (cont'd)

- Install the required Roth threaded Septic Access Riser System (STAR™), provided separately. (Fig. 3) See reverse for directions for sealing the riser system.
- Using the corner lifting holes, lower the tank into the excavation. Level the tank, and verify the outlet is lower than the inlet. Install remaining inlet and outlet plumbing. (Fig. 3)

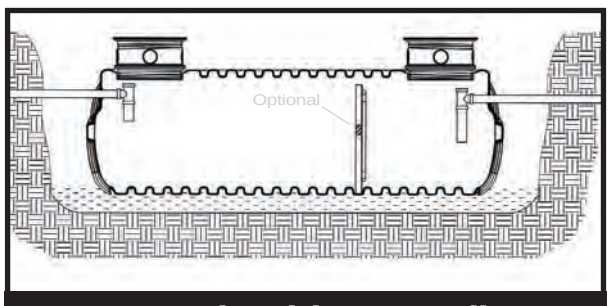


FIG.3 **Plumbing Install**

- Perform required water tightness, plumbing and/or tank inspection if applicable.

Step 5: Backfill

- Backfill in an alternating method around the tank using native material free of debris, sharp stones, and stones greater than 2" in diameter. Soil MUST flow freely into corrugations between tank ribs, including midpoint to belly of tank.
- Compact backfill in 6 inch lifts always working on the sides first and then the bulkheads (ends of tank).
- Stop backfilling 6" under mold part-line and add concrete collar.
- Add 16" W x 12" T concrete collar all the way around tank with 2-#4 rebar as shown.
- Use a hand tamper to achieve sidewall compression through compacted backfill. Mechanical compactors may be used if available on the site. Sidewall compression is essential to provide sidewall restraint after covering the tank. (Fig. 4)

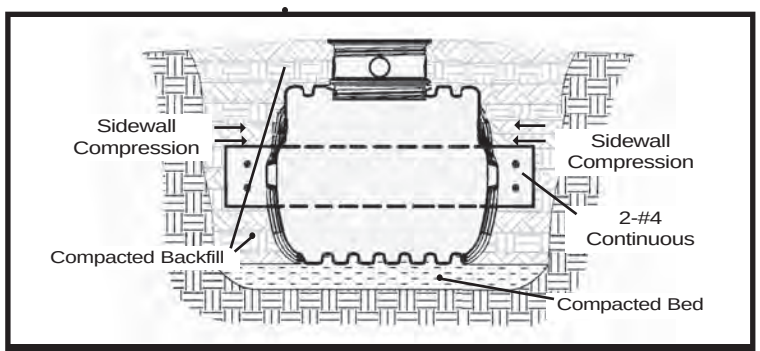


FIG.4 **Backfilling**

- When backfilling the top of the tank, backfill between risers first.
- Complete backfilling and grade the area.
- Failure to compact fill voids the tank warranty.

WARNING

- ***Tanks are designed for underground use only.***
- ***Installer shall comply with all federal, state, and local regulations.***
- ***Tanks are not rated for vehicular traffic. Avoid operation of vehicles heavier than 2500 pounds over the tank.***
- ***Internal water temperatures should not exceed 140° F.***
- ***Verify no underground utilities or pipes are located in the excavation vicinity.***
- ***Where saturated soil or seasonal high water tables are indicated between the bottom of the tank and the ground surface, see separate supplemental installation instructions for these site conditions.***
- ***Secure tank access by installing provided stainless steel fastener to the riser and cover.***

Roth Global Plastics, Inc.

STAR™ RISER SYSTEM

For ROTH MultiTank® & FRALO SEPTECH™ Tanks

INSTALLATION PROCEDURES

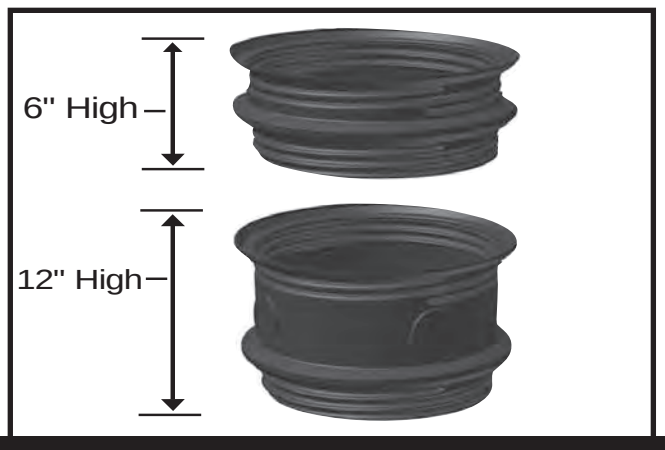


FIG.1 Riser Elevation

STEP 1 Determine riser elevation and required riser combination as per tank installation (see reverse). STAR™ risers are available in 6" (STAR-24R6) and 12" (STAR-24R12) height increments. (Fig.1)

FIG.2 Apply Gasket

STEP 2 Apply gasket (not included*) on the innermost flat ring on the tank surface. Be careful not to allow the gasket to overhang the threads where it would interfere with the thread engagement. (Fig.2)
*Indiana tanks and risers include gaskets.

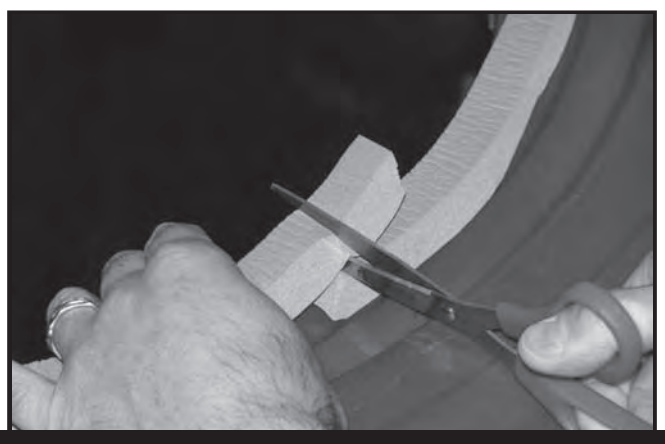


FIG.3 Trim Gasket

STEP 3 Trim gasket 1/4" too long. A properly trimmed gasket is then compressed end to end. Ensure that the gasket is uniformly positioned and makes good contact with the tank surface. (Fig.3)

FIG.4 Install Riser

STEP 4 Screw the riser into the tank joint, being careful that the gasket remains in position. Properly installed, the gasket should show uniform compression around the entire joint. (Fig.4)

FIG.5 Additional Gaskets

STEP 5 Apply the gasket on the first riser on the thread portion which is facing up. (Fig.5). Trim the gasket to connect the pieces end to end. Screw the additional riser(s) into position.

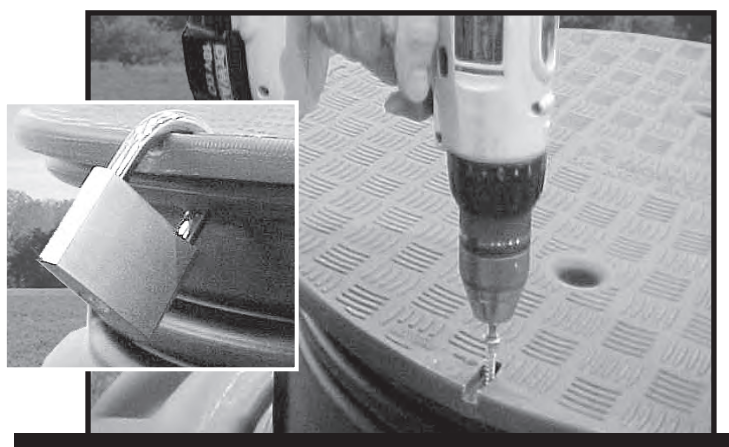


FIG.6 Secure Cover

STEP 6 Locate the "Secure Here" hole on the cover and install a tamper-resistant screw (STAR-SSCREW provided) through the lid and into the riser below. (Fig.6) To secure with padlock, drill a larger hole to accommodate the lock.

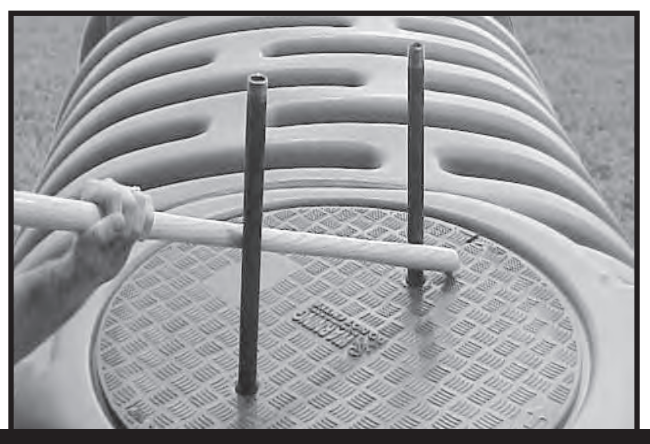


FIG.7 Remove Cover

STEP 7 If unable to remove cover by hand, insert 1" OD steel pipe into cover indentations and twist using a shovel handle, pipe or piece of wood. (Fig.7)

- ***To prevent unauthorized access, never install STAR™ Riser System without the factory provided tamper resistant screw.***
- ***Not rated for vehicular traffic loading.***

Roth Global Plastics, Inc.

Attachment G
RMT Product and Accessory Brochure