

NORTH CAROLINA DEPARTMENT OF ENVIRONMENT,  
HEALTH AND NATURAL RESOURCES  
DIVISION OF ENVIRONMENTAL HEALTH  
ON-SITE WASTEWATER SECTION

**SEPTIC TANK RISER ASSEMBLIES CONDITIONAL APPROVAL**

**SEPTIC TANK RISER ASSEMBLIES CONDITIONAL APPROVAL: SR-11-R2**

**ISSUED TO:** Sam Carter  
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**FOR:** Septic Tank Riser Assemblies Incorporating Ultra-Rib and Perma-Loc Pipe and Pump  
Tank Riser Assemblies Incorporating Ultra-Rib Pipe

**DATE:** April 9, 1999  
October 7, 2005 (addition of pump tank riser)

In accordance with North Carolina General Statute 130A-335, 130A-335.1, and 15A NCAC 18A .1954, an application by Sam Carter of Orenco Systems for approval of septic tank riser assemblies has been reviewed. These riser assemblies have been found to meet the minimum requirements established by statute and rule, when the following conditions for use, installation, operation and maintenance are met:

- I. Description:
  - a. Riser assemblies and associated accessories shall be designed and manufactured in accordance with plans, specifications and supporting documents provided by the manufacturer in their application for approval submitted to the On-Site Wastewater Section. The On-Site Wastewater Section shall be notified in writing of any new assemblies or modifications to the approved risers assemblies and accessories prior to use in septic tank systems.
  - b. Conditionally approved riser assemblies and other accessories shall meet the specifications outlined in Tables 1 through 5:

<b>Table 1. Conditionally Approved Risers Model Specifications (Orengo)</b>					
Riser Models <sup>a,b,c,d</sup>	Inside dia. (in.)	Wall thickness (in.)	Min. Pipe stiffness (psi)	Min. Tank Top Width Required (in.)	Riser Installation Limitations <sup>e,f</sup>
RU18XX 18" dia. Ultra-Rib	17.65	0.15	46	26	Septic Tank: Must be installed 6" below finished grade or at least 3" above finished grade.
RU21XX 21" dia. Ultra-Rib	20.75	0.18	46	29	Septic Tank: Must be installed 6" below finished grade or at least 3" above finished grade.
RR24XX 24" dia. Perma-loc	23.5	0.140	24	34	Septic Tank: Must be installed 6" below finished grade or at least 3" above finished grade.
RU24XX 24" dia. Ultra-Rib	23.5	0.20	46	34	Septic Tank: Must be installed 6" below finished grade or at least 3" above finished grade.
RU30XX 30" dia. Ultra-Rib	29.5	0.235	46	40	Septic Tank: Must be installed 6" below finished grade or at least 3" above finished grade.  Pump Tank: Must be installed at least 6" above finished grade.
RR30XX 30" dia. Perma-loc	29.5	0.20	24	40	Septic Tank: Must be installed 6" below finished grade or at least 3" above finished grade  Pump Tank: Must be installed at least 6" above finished grade.

Notes:

- a- "RU" Models utilize Ultra-Rib pipe meeting ASTM Standard F794, provided either by Orengo or separately purchased by septic tank manufacturer. Top of riser to be attached to riser lid (see Table 5) using four tamper-resistant stainless steel bolts and zinc-plated inserts installed per Orengo's specifications, or by using adapter Model RLA24 and tamper-resistant stainless steel bolts (applicable to Model RU24 only, see Table 4).
- b- "RR" Models utilize Perma-Loc pipe meeting AASHTO Standard M 304-M-91, provided either by Orengo or separately purchased by septic tank manufacturer. Top of riser to be attached to riser lid (see Table 5) by using adapter model RLA24 and tamper-resistant stainless steel bolts (see Table 4).
- c- XX indicates height of risers with a maximum value of 41".
- d- 18, 21, 24 and 30-inch riser models can be cast directly into the tank tops. The 24-inch riser models may be cast directly into the tank top or attached to a flanged tank adapter (see Table 2). Refer to installation techniques, below.
- e- This riser system must not be subjected to vehicular or other excessive live loads, or buried deeper than three feet below finished grade (consideration for use with traffic-rated tanks with deeper burial depths may be considered for approval on a case-by-case basis).
- f- Septic tank and pump tank manufacturers shall provide one or more additional mechanisms to prevent accidental entry to the tank (see further conditions below).

**Table 2. Conditionally Approved Flanged Tank Adapter**

Tank Flanged Adapter Models	Flange dia. (in)	Flange width (in)	Adapter Pipe Outside dia. (in.)	Adapter Pipe length (in)	Description
PRTA24 <sup>a</sup> (1/4" thick ABS)	27	1-3/4"	22-3/4"	3 1/4"	ABS cast-in tank adapter with at least two inches of concrete below the flange, a one inch concrete inner collar and a tapered concrete support collar outside beginning at 1-1/2" height above flange and tapering to the concrete tank top. Bond riser to adapter using manufacturer-specified adhesives <sup>b</sup>
PRTA30 <sup>a</sup> (1/4" thick ABS)	35"	2-1/2"	29-1/2"	3"	ABS cast-in tank adapter with at least two inches of concrete below the flange, a one inch concrete inner collar and a tapered concrete support collar outside beginning at 1-1/2" height above flange and tapering to the concrete tank top. Bond riser to adapter using manufacturer-specified adhesives <sup>b</sup>
FRTA30-FRP (3/16" thick fiberglass reinforced polyester)	31-7/8"	1-1/3"	29-1/4"	2-3/4"	Fiberglass-reinforced polyester tank adapter used to provide a watertight bond when installing a 30" diameter riser over an Orenco FRP tank opening. This Tank adapter is compatible with the RR30 and RU30 as listed under Table 1. <sup>b</sup>

Notes:

- a- May be used for 24-inch and 30 inch risers as listed in Table 1.
- b- Manufacturer-specified adhesives include Models ADH100, MA320, and IPS810, which shall be applied in accordance with manufacturer's specifications.

**Table 3. Conditionally Approved Grade-ring adapters<sup>a</sup>**

Adapter Models	Description
GRI18	Grade ring adapter for extending 18" dia. Riser
GRI21	Grade ring adapter for extending 21" dia. Riser
GRI24	Grade ring adapter for extending 24" dia. Riser
GRI30	Grade ring adapter for extending 30" dia. Riser

Note:

- a- Shall be attached to riser pipe sections using manufacturer-specified adhesives, which may include Models ADH100, MA320, and IPS810, which shall be applied in accordance with manufacturer's specifications

<b>Table 4. Conditionally Approved Riser to Lid Adapters<sup>a</sup></b>	
Adapter Models	Description
RLA24	24" adapter for attaching riser lid FL24 to 24-inch Perma-Loc or Ultra-Rib Riser

Note:

- a- Shall be attached to riser and lid using manufacturer-specified adhesives, which may include Models ADH100, MA320, and IPS810, which shall be applied in accordance with manufacturer's specifications

<b>Table 5. Conditionally Approved Riser Lid Model Specifications</b>				
Lid Models	Outside dia. (in)	Groove dia (in.)	Av. thickness	Description
FL 18g	20.25	17.5	5/8	Lids capable of supporting 2500 lb. wheel load, Lids with gasket
FL 21g	22 ½	20 ¾	5/8	Lids capable of supporting 2500 lb. wheel load, Lids with gasket
FL 24	25 ½	23 ½	5/8	Lids capable of supporting 2500 lb. wheel load, Lids without gasket (use with adapter RLA24)
FL 24g	25 ½	23 ½	5/8	Lids capable of supporting 2500 lb. wheel load, Lids with gasket
FL 30g	32	29 ½	5/8	Lids capable of supporting 2500 lb. wheel load, Lids with gasket

II. Use:

A tank manufacturer may propose to use one or more of these conditionally approved riser assemblies in one or more of their septic tanks or pump tanks. The tank manufacturer must notify the On-Site Wastewater Section in accordance with Rule .1953 of the tanks in which they propose to utilize any of these conditionally approved risers, showing any modifications to the approved tank plans which may be necessary to utilize the proposed risers.

III. Installation:

- A. The riser assemblies shall be assembled and installed in accordance with the manufacturer's specifications, applicable rules and approval conditions.
- B. **Septic Tank Installations:** For new installations, the Orenco riser assemblies shall be cast into the tank. The following alternative installation methods shall be used for risers to be installed with new septic tanks constructed on or after January 1, 1999, in accordance with manufacturer's specifications:

1. Cast-in-place with internal collar: The Ultra-rib or Perma-loc pipe models 21-inches in diameter, or larger, may be cast into the tank so that an internal concrete collar is retained (required to retain opening at least 17-inches in diameter). Prior to pouring, the riser pipe shall be placed in the tank top mold in such a manner that at least two inches of concrete shall be cast below the riser bottom. Alternately for the 24-inch and 30-inch Ultra-rib or Perma-loc risers, a flanged tank adapter (Model PRTA) may be used. The adapter ring shall be cast in the concrete in such a way that there will be at least two inches of concrete below the flange. At least a one-inch concrete inner collar shall be retained around the internal circumference of the riser. When the tank top slab thickness is less than four inches, a concrete fillet shall be provided around the outside of the riser pipe so that the total thickness of the concrete slab will be at least four inches around the pipe. The fillet shall taper away from the riser on a projected slope of 1:8. Four No. 3 rebar (one each on every side of opening, making a picture frame) shall be placed one inch away from the opening extending three to six inches beyond the tank opening.
  2. Cast-in-place without internal collar: The 18-inch Ultra-rib pipe may be cast directly into the tank fully penetrating the tank top. When the tank top slab is less than four inches thick, a concrete fillet shall be provided around the pipe so that the total thickness of the concrete slab will be at least four inches around the pipe, tapering away from the riser on a projected slope of 1:8. Four No. 3 rebar (one each on every side of opening, making a picture frame) shall be placed one inch away from the opening extending three to six inches beyond the tank opening.
- C. **Pump Tank Installations:** The 30-inch Ultra-Rib riser shall be cast directly into the tank fully penetrating the tank top or utilizing the PRTA as listed under Table 2 in accordance with manufacturers specifications. When the tank top slab is less than four inches thick, a concrete fillet shall be provided around the riser so that the total thickness of the concrete slab will be at least four inches around the riser, tapering away from the riser on a projected slope of 1:8. Four No. 3 rebar (one each on every side of opening, making a picture frame) shall be placed one inch away from the opening extending three to six inches beyond the tank opening.

Wire connection shall be made through bulkhead or gasket type connectors provided by the riser manufacturer and installed per manufacturer's recommendations, to make a secure watertight connection.

The pump discharge pipe shall exit through bulkhead type of manufacturer approved flexible gaskets provided by the riser manufacturer and installed per manufacturer's recommendations, to make a secure watertight connection. For systems where the discharge pipe is designed to pass through the riser, make certain the pump disconnect is reachable from the top of the riser (12-18 inches, maximum, below riser lid), and the pipe shall remain below the local frost line (12-18 inches, minimum, in most of North Carolina).

- D. Riser retrofit installations may also be approved by the local health department on a case-by-case basis when used with an existing septic tank or pump tank. Risers shall be attached in a structurally sound, watertight fashion in accordance with the riser manufacturer's specifications.
- E. Riser pipe sections may be extended by use of conditionally approved grade-ring adapters and manufacturer-specified adhesives (see Table 3) in accordance with riser manufacturer's specifications.
- F. In addition to the proposed tamper-resistant stainless steel fasteners provided by the riser manufacturer, additional security for septic tanks and pump tanks shall be provided as listed below.

**For Septic Tanks**, for additional security, the riser grate shall be provided by the riser manufacturer to be placed inside the riser, or approved equal or better security method provided.

**For Pump Tanks**, for additional security, the 30-inch riser lid shall have a minimum of four (4) screws in the lid, or an equal or better security method subsequently approved by the State.

- G. These riser assemblies must not be installed in areas subjected to vehicular traffic, or where the tank shall be buried more than three feet below finished grade.

IV. Literature:

The riser assembly manufacturer shall furnish with each riser assembly (and/or with associated riser assembly components) all pertinent installation and maintenance details.

V. Maintaining approval status:

The approval status is governed by Rule .1954(e).

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_