



## Tech Note: Corrugated Steel Foundation Rings



**The use of corrugated steel panels is an effective and cost-saving technique for the construction of gravel filled or concrete filled foundation rings**

Contain Enviro Services Ltd. stocks corrugated steel panels in 5 standard heights, 12", 22", 33", 44" and 57" wall heights. Each radius panel section is approximately 9.5 feet in length. When 4 panel sections are bolted together a 12 foot diameter ring is created. By adding each additional 9.5 foot panel section, the diameter grows in 3 foot intervals, resulting in a wide selection of diameters and wall heights to suit most every project.

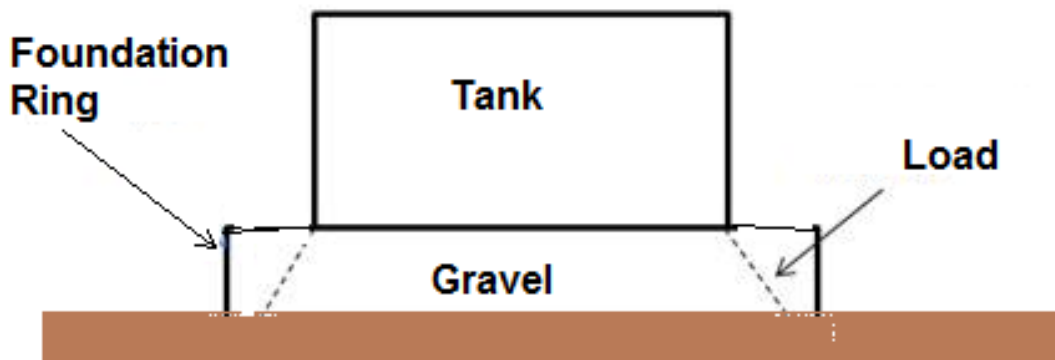
When designing a foundation ring filled with gravel, the compacted gravel below the tank must provide the support with only the outer perimeter of gravel acting on the foundation ring. It is important to select a large enough diameter so that the downward load of the tank falls within the diameter of the foundation ring (see diagram on the next page). For a 22" high foundation ring there must be at least 2.5 feet between the edge of the tank and the foundation ring, a 33" wall requires a minimum of 3.5 feet, a 44" wall requires 4.5 feet and our 57" wall requires at least 6 feet between the edge of the tank and the foundation ring. This equates to the diameter of the foundation ring being a minimum 12 feet larger than the tank diameter.

The design should consider this open area between the tank and the foundation ring itself. A protective surface of asphalt and proper drainage should be provided to the gravel from rainfall or the spring snow melt. If drainage is poor and the gravel gets wet enough to become fluidized, loads would be transferred to the foundation ring wall and subsequent damage could occur.



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Care must be taken when filling and compacting the gravel as to not overstress the corrugated steel ring. Gravel should be placed inside in lifts then compacted to the required levels, additional care must be taken in the areas adjacent to the steel walls so as to not damage and potentially weaken the foundation ring. Improper compaction could contribute to the tank settling into the gravel foundation, creating a low spot around the tank where water can pool and rust the tank base or walls, all tank foundations require routine inspection and maintenance to ensure the tanks integrity.



Some projects require the foundation ring to be filled with concrete, insulating concrete is a common choice so as to provide a solid and robust foundation for heated tanks. Again there are some design considerations that must be taken into account. As liquids distribute their loads differently than solids, care must be taken when filling the foundation ring with the liquid concrete. Depending on the Specific Gravity of the concrete, the foundation ring must be filled in lifts; with the concrete being allowed to solidify before additional lifts are added (Please contact your Contain Enviro Services Representative for direction on this issue). The corrugated steel foundation rings acts as a concrete form, providing containment and support until the concrete hardens to form the sturdy concrete foundation for the tank.

For more demanding applications, Contain Enviro Services can install exterior pads and braces to the foundation ring, or use thicker gauges of corrugated steel wall panels to provide even additional strength.

Contain Enviro Services Ltd. is the leader in the supply and installation of corrugated steel containment systems for use as primary or secondary containment in a wide variety of challenging applications, and can provide you with the design support to deal with your most demanding application.

**For More Information, Please Visit Our Website [www.contain.ca](http://www.contain.ca)**