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Transfer Station Concrete Design

The design and strength of the concrete components of a transfer station are important because a failure in any portion of the concrete structure may cause a release of contaminants to the ground water.

The first consideration in the design of any concrete structure is the load that will be imposed on it. Concrete can attain a design compressive strength as high as 9000 pounds per square inch (PSI) but 3000 PSI to 4000 PSI is the usual range. With reinforcing steel and sufficient thickness, 3000-PSI concrete can successfully withstand the loads induced by loaded route trucks and transfer station power equipment. Most transfer station operations involve dumping either on a tipping floor or directly into a transferring vehicle. Scraping waste from the floor will be a normal practice. This procedure requires that the concrete be resistant to continuous abrasion from scraping with heavy equipment. Therefore, to address this concern it may be beneficial to use higher design strength concrete with air entrainment to promote durability. Air entrained concrete is also more resistant to the freezing and thawing stresses placed on it by weather extremes.

All concrete cracks over time because it has a high shrinkage coefficient. It is necessary to provide contraction-cracking control in the form of contraction joints. Contracting joints will also be the entryway for pollutants to enter the ground from the tipping floor. It will be necessary to seal the joints to prevent leakage while also preventing tearing the sealing material out of the joint. The Nebraska Department of Environment and Energy (NDEE) suggests that contraction joints be placed on the basis of 100 square feet of surface area of the tipping floor or 30 lineal feet of vertical wall. The Department suggests that the joints in the flat work not be sawed but be of the molded type. The joint molding tool for this work could be shaped wider at the surface of the floor to hold the joint sealant below the wearing surface of the tipping floor. Vertical wall contraction joints should also include a water stop.

If there are any questions or other issues that need to be discussed, please call the Waste Management Section at (402) 471-4210.

RESOURCES:

- NDEE Home Page <http://dee.ne.gov/>

Contacts:

- NDEE Waste Management Section (402) 471-4210
- NDEE Toll Free Number (877) 253-2603

- NDEE Hazardous Waste Compliance Assistant
- Email questions to: NDEE.moreinfo@nebraska.gov

(402) 471-8308

NDEE Publications:

- [Title 132 – Integrated Solid Waste Management Regulations](#)
Titles are available on the NDEE Home Page under “Laws/Regs & EQC”, “Rules & Regulations”

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