WIESER WASTE TRANSFER TANKS, MANURE CHANNELS, AND FLUME VAULT

Owner and Manufacturer:

Wieser Concrete Products, Inc.
W3716 U. S. Highway 10
Maiden Rock, Wisconsin 54750
715/647-2311 Toll Free 800/325-8456

Designer:

Daryl D. Burns, P.E.
Daryl Burns Engineering, LLC
7305 Collins Street, Whitney Point, NY 13862

Drawings and Design Manual:

The design for each tank size is documented in a separate submittal titled, "Design Computations for Precast Concrete Vault NRCS (*tank number)*" sealed by Daryl Burns, P.E. 10/24/2023. Approved tank sizes and design conditions are shown on the following page 10-WI-31.

The design for the approved manure channels and flume vault is included in the following and signed by Daryl Burns, P.E. on the date shown:

- Design Computations for 2'-2 ½" Span x 3'-6" Rise Maximum ID, Precast Concrete Manure Channel, dated 6/10/2023.
- Design Computations for 15 ft x 2 ft x 5 ft Maximum ID Precast Concrete Flume Vault, dated 1/8/2024.
- Design Computations for 15 ft x 2 ft x 9.58 ft Maximum ID Precast Concrete Flume Vault, dated 1/8/2024.

The design for the precast Auger Channel, 12' long x 1'-7" top span x 1'-4" deep, was approved by NRCS.

The designs and drawings provided by the engineering consultant on behalf of Wieser Concrete Products are considered "standard drawings". No changes or additions are allowed without the approval of the engineer of record, Daryl D. Burns, P.E.

Design Assumptions:

Tank design options include traffic loads and soil backfill of 100 pcf or 60 pcf. The table on page 10-WI-31 includes a column showing the allowable groundwater depth below the top of the tank (zero datum) which requires no extra measures to resist flotation forces with a 1.2 factor of safety. This depth was determined by the designer for the top of tank being at grade. If the tank is to be buried, an evaluation is needed to determine if the tank requires base extensions to resist flotation. If needed, footing extensions should be manufactured with the tank.

Manure channels are designed for a soil backfill of 100 pcf or 60 pcf. Optional covers are provided to support traffic or cattle loading.

Flume vault options include traffic and non-traffic loads and soil backfill of 100 pcf or 60 pcf. The design for traffic loading must utilize a cast-in-place 8-inch structurally reinforced concrete topping. See the Wieser drawing for details.

Product Use:

The drawings must be incorporated into a site-specific construction plan prepared and approved by a private engineer or agency staff. The preparer of the construction plan is responsible for siting the structure in compliance with WI Conservation Practice Standards (CPS) 313, Waste Storage Facility, and 634, Waste Transfer.

Tanks installed in saturated soils should be backfilled with sand/gravel up to the seasonal high-water level. If footing extensions are needed to resist flotation, they should be manufactured with the tank.

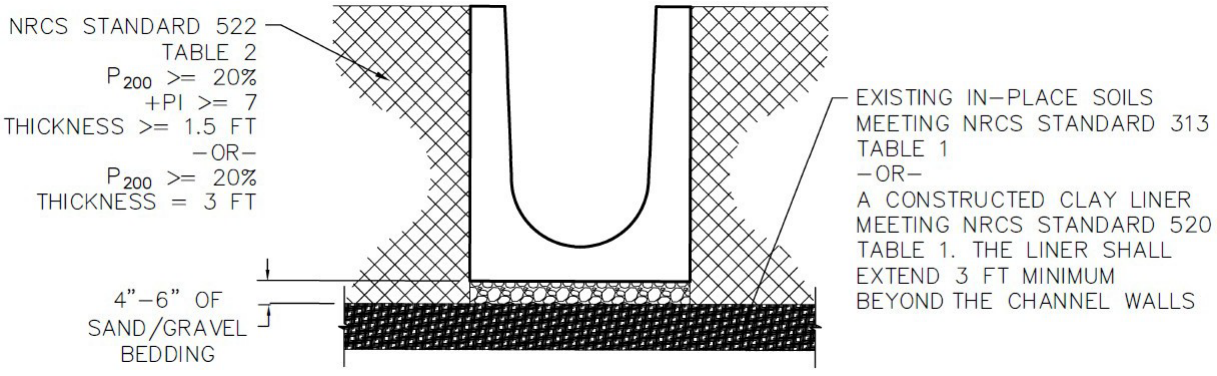
Manure and auger channels shall be installed on 4 to 6 inches of sand/gravel bedding to ensure firm, uniform bearing. Soil under the bedding shall meet in-situ soil criteria in CPS 313 Table 1, OR constructed clay liner criteria in CPS 520, Table 1. In-situ soil or clay liner is exempt from additional sub-liner criteria. In-situ soil or clay liner shall extend at least three (3) feet beyond the concrete. Manure and auger channel walls shall be backfilled with soil liner that meets CPS 522, Table 2 (Column B or C). Soil liner backfill is exempt from additional sub-liner criteria. See Figure 1. The Wieser drawings provide an optional precast top slab or cast in frame and grate.

The flume vault is precast in one or two pieces, depending on the depth. There are no adjacent soil requirements. The HDPE pipe connection is cast in the end walls. Installation of the HDPE transfer pipe will utilize gasketed bell and spigot joints.

Review and Acceptance:

The State Conservation Engineer in Wisconsin performed an engineering review of the design for compliance with the Wisconsin NRCS Conservation Practice Standard 313 loadings and 634 criteria.

Figure 1.



	Design Load Cases						
Tank	**100pcf Lateral Load with H20 Traffic-Max. Earth Cover (ft)**	**60pcf Lateral Load with H20 Traffic-Max. Earth Cover (ft)**	**100pcf Lateral Load without Traffic-Max. Earth Cover (ft)**	**60pcf Lateral Load without Traffic-Max. Earth Cover (ft)**	**Top, Wall and Bottom Thickness (in)**	**Groundwater location for No Anti Float Measures Required (ft)**	**If Groundwater is higher than left column, provide Precast or Field Cast Base Extension (in)**
W8000	1.375	6.3	1.875	6.375	12"/6"/12" with traffic 9"/6"/9" without traffic	-3.71	24
W12000	-1	2.979	-0.5	3.813	12"/6"/12" with traffic 9"/6"/9" without traffic	-6.36	23
W18000	-1	3.099	-0.5	3.828	12"/6"/12" with traffic 9"/6"/9" without traffic	-6.03	26
W38000	N/A	N/A	-3.25	0.422	9"/6"/9"	-8.57	38
WEHD1600-LP	8	14	N/A	N/A	6"/6"/6"	-1.30	6
WEHD1000-600LP	8	14	N/A	N/A	6"/6"/6"	-1.30	6
WEHD1200-800	6	12.5	N/A	N/A	6"/6"/6"	-1.74	6
WEHD2000	6.25	13	N/A	N/A	6"/6"/6"	-1.65	6
WEHD2500	10	16	N/A	N/A	6"/6"/6"	-2.18	6
WEHD3000	7.25	15	N/A	N/A	6"/6"/6"	-2.72	6
WEHD4000	3.5	9.83	N/A	N/A	6"/6"/6"	-3.83	6
WEHD4000-LP	7.75	12	N/A	N/A	9"/6"/7"	-1.97	6
WEHD5000	5.33	12	N/A	N/A	8"/6"/7"	-3.26	6
WEHD6000	2.5	9.5	N/A	N/A	8"/6"/7"	-4.04	6
WEHD6000-LP	4.75	9	N/A	N/A	9"/6"/7"	-2.88	8
WEHD7000	1.75	7	2.5	7.67	9"/6"/7"	-4.00	8
WEHD8000	0.17	5.25	1	5.53	9"/6"/7"	-4.69	8
WEHD9000	N/A	3.42	-0.67	3.5	9"/6"/7"	-5.37	6
WEHD10000	N/A	0.25	-2	1.5	9"/6"/7"	-6.06	6

Notes:

-Zero Datum = top of tank, positive numbers are earthfill above the datum, negative numbers mean earthfill/groundwater is below the datum

-N/A – means that the tank was not designed for this condition

-Other anti-flotation measures may be used if desired

-Structural calculations use the following assumptions for loading conditions:

-Equivalent lateral fluid pressures include: 60 pcf used for gravel backfill and 100 pcf used for site soils

-Traffic loading capacity is for H-20 design vehicle (32,000 lb. axle)