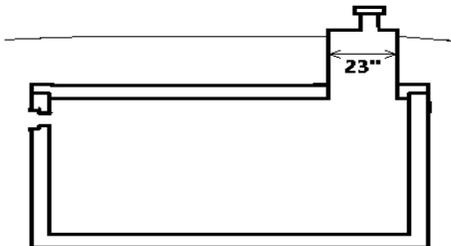


**HOLDING TANK COMPONENT MANUAL
FOR PRIVATE ONSITE WASTEWATER TREATMENT SYSTEMS (POWTS)
(VERSION 2.0)**



**State of Wisconsin
Department of Safety & Professional Services
Division of Safety and Buildings**



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I. INTRODUCTION AND SPECIFICATIONS

This **Private Onsite Wastewater Treatment System (POWTS)** component manual provides design, construction, inspection, operation, and maintenance specifications for a prefabricated or site-constructed holding tank component that has a current Plumbing Product Approval from the Department. Site-constructed holding tank components that do not have plumbing product approval must be submitted as an individual site design. Violations of this manual constitute a violation of chs. SPS 383 and 384, Wis. Adm. Code.

Note 1: Detailed plans and specifications must be developed, and submitted for review and approval to the governing unit having plan review authority. In addition, a state Sanitary Permit must be obtained from the department or governmental unit having jurisdiction. See Section VII for more details.

Note 2: To search for holding tanks with current Plumbing Product approval, see sewage tanks, http://dsps.wi.gov/php/sb-ppalopp/prodcode_alpha_list.php#S.

Table 1 SIZE AND LOCATION	
Holding capacity	≥ 5 times estimated daily wastewater flow or 2000 gals, whichever is greater
Horizontal setback distances	Meet s. SPS 383.43 (8) (i), Wis. Adm. Code
Location of service access opening	< 25 feet to an all-weather road measured from the furthest service access opening or pump out port.

Table 2 OTHER SPECIFICATIONS	
Tank design and construction	Meets s. SPS 384.25, Wis. Adm. Code
Alarm or warning system	Meets ss. SPS 383.43(8)(e)2. and 384.25 (10), Wis. Adm. Code
Metering	When specifically required, meets s. SPS 383.54 (2), Wis. Adm. Code
Installation in soils that indicate periodic or constant saturation.	Meets s. SPS 383.43 (8) (g), Wis. Adm. Code.
Installation inspection	In accordance with ch. SPS 383, Wis. Adm. Code
Management	In accordance with ch. SPS 383, Wis. Adm. Code and this manual
Piping materials for vents	≥ 2" I.D. pipe constructed of materials listed in ch. SPS 384, Table 84.30-1, Wis. Adm. Code.
Vent Location and Orientation	Meets ss. SPS 382.31(16)(d)2. and 383.45(6)(b), Wis. Adm. Code. Vent openings are oriented down.

II. DEFINITIONS

Definitions not found in this section are located in ch. SPS 381, Wis. Adm. Code, or the terms use the standard dictionary definition.

“Service provider” means the individual or company that is responsible for inspecting, maintaining or servicing the holding tank system.

“All-weather road” means a gravel or paved surface that can support a fully loaded pump truck in all seasons.

III. DESCRIPTION AND PRINCIPLE OF OPERATION

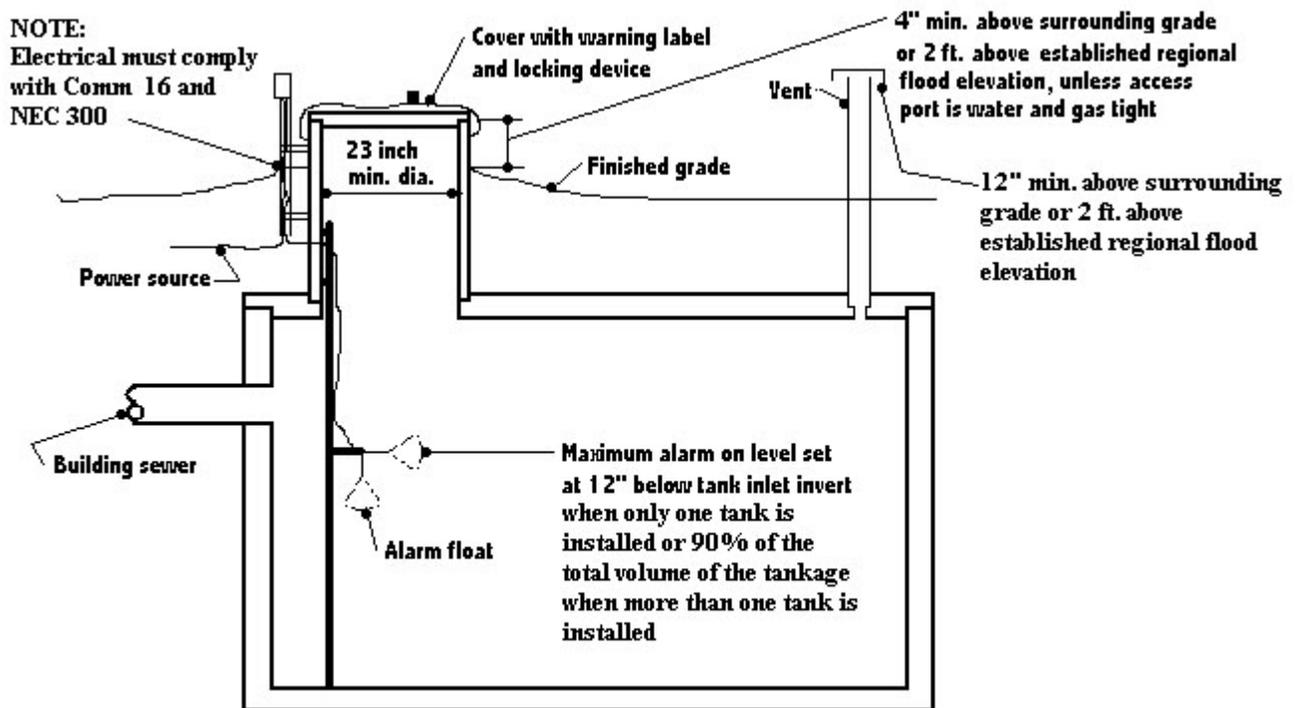
The POWTS holding tank serves to contain wastewater or sewage on site until the contents are pumped and hauled to a proper point of disposal. Pumping and monitoring reports are submitted to the governmental unit or designated agent.

The holding tank installed under this component manual holds domestic wastewater, stormwater or clearwater inclusions permitted under s. SPS 382.36, Wis. Adm. Code, until pumped by an individual certified as a septage servicing operator under ch. NR 114, Wis. Adm. Code. See Figure 1 for an example of a typical holding tank.

Industrial wastewater is regulated by the Department of Natural Resources (DNR), and is not included in this specification, unless approved by the DNR in advance.

Figure 1 – Cross-section of Holding Tank

(Note: All Comm code references are renumbered as SPS codes; i.e., COMM 16 is now SPS 316.)



Cross-Section of Holding Tank

IV. DESIGN

A. Tank Size:

1. One- and Two-family Dwellings. The minimum liquid capacity of a holding tank for one- and two-family dwelling applications shall not be less than 2000 gallons or 5 times the estimated daily wastewater flow determined in accordance with s. SPS 383.43(3), (4), or (5), Wis. Adm. Code, whichever is greater.

2. Public Facilities. The minimum liquid capacity of a holding tank for public facilities shall not be less than 2000 gallons or 5 times the estimated daily wastewater flow determined in accordance with s. SPS 383.43(6), Wis. Adm. Code or Table 3 whichever is greater. Estimated flows for facilities not listed in Table 3 shall be provided pursuant to s. SPS 383.43(6), Wis. Adm. Code.

B. Tank Anchoring:

When a holding tank may be installed in saturated soils (see ch. SPS 385, Wis. Adm. Code, for information on how to determine soil saturation) and/or in an area that is considered part of a 100 year flood plain, the tank shall meet the provisions of s. SPS 383.43(8)(g), Wis. Adm. Code.

See chapter SPS 383, Wis. Adm. Code, Appendix for examples of anchoring calculations.

C. Monitoring/Management Equipment:

The alarm for the holding tank installation is an audible and/or visual alarm installed in a conspicuous location in or on the building served or on a post near the tank. The alarm is connected to a float switch or other electrical sensor in the holding tank. The maximum alarm on level is set at 12 inches below the tank inlet when only one tank is used or 90% of the total volume of the tankage when more than one tank is used.

V. SITE PREPARATION AND CONSTRUCTION

A. Sanitary Permit:

Prior to the construction of the system, a state sanitary permit shall be obtained and posted in a clearly visible location on the site. Arrangements for inspection(s) must be made with the governmental unit that issues the state sanitary permit. When a POWTS is located or will be located on property owned by the state, the sanitary permit shall be obtained from the department. Arrangements for inspection(s) shall be made with the department.

B. Site Preparation and Tank Installation:

The holding tank must be installed in accordance with the manufacturer's printed instructions, product approval, plan approval and specifications in this component manual. If there is a conflict between the manufacturer's instructions and the product approval, plan approval and/or component manual specifications, the product approval, plan approval and/or component manual specifications take precedence.

1. The tank shall be set level. (Refer to tank manufacturer's recommendations for bedding and backfill listed in tank approval letter.)

2. Access openings that terminate at grade and/or less than 2 feet above the established regional flood elevation (if applicable) must have watertight access openings. Access openings that terminate at least 4 inches above the surrounding grade and 2 feet above the established regional flood elevation (if applicable) are not required to have watertight access openings.

3. Access opening covers that terminate at or above grade may be provided with a service port that is 8 inches inside diameter. The reduced opening must have a locking device or a brass cleanout plug. Service ports larger than 8 inches inside diameter must have a locking device in accordance with s. SPS 384.25(7)(h), Wis. Adm. Code.

4. All access openings shall be located so as to permit a minimum of 3 feet of clear space above the opening and 2 feet in all directions horizontally from any point of the access opening for purposes of inspection, maintenance or servicing. Access openings within 10 feet of any building shall also be gas tight.

5. The connection of the holding tank to the sanitary sewer shall be by means of a mechanical joint, solvent cement joint or other joint conforming to s. SPS 384.40, Wis. Adm. Code.

6. Below grade connections. Joints between the tank, access opening risers, and covers shall be watertight.

C. Alarm Equipment Installation:

The alarm switch shall be set to activate an alarm when liquid volume is 12 inches below the tank inlet invert or at 90% of the liquid capacity of the tank below the tank inlet invert. All wiring shall be installed in accordance with National Electrical Code (NEC) Article 300 and s. SPS 316.23, Wis. Adm. Code.

D. Backfill:

The holding tank excavation is backfilled as per manufacturer instructions with sufficient soil material, so as to divert surface water runoff away from the tank location.

VI. OPERATION, MAINTENANCE and PERFORMANCE MONITORING

A. Owner is Responsible:

The POWTS owner is responsible for the operation and maintenance of the POWTS locking device, alarm and access opening. The owner or owner's agent is required to submit reports as required by s. SPS 383.55 (1), Wis. Adm. Code, to the governmental unit or designated agent.

B. Approvals and Inspections:

Design approval and site inspections before, during and after construction are conducted by the governmental unit or other appropriate jurisdiction(s) in accordance with ss. SPS 383.22 and 383.26, Wis. Adm. Code.

C. Performance Expectations:

1. Maintenance cycle. The holding tank must be serviced by certified septage operators (pumpers). An alarm system must be installed to activate when the liquid level in a single tank is within 12 inches of the inlet invert or when the total volume of the tankage of multiple tanks reaches 90%.

2. Performance monitoring. Within 30 calendar days from the date of an inspection, maintenance or servicing event, the owner of the POWTS or the owner's agent shall file a report with the governmental unit or designated agent.

D. User's Manual:

A user's manual shall accompany the POWTS component and be provided to the owner following installation. At a minimum, the manual shall contain the following information:

1. Diagram(s) of all components and their locations.

2. Names and phone numbers of local governmental unit authority, component manufacturer or POWTS service provider to be contacted in the event of component failure or malfunction.
3. A management plan that contains information on the periodic inspection, maintenance or servicing of the component, including electrical/mechanical components.

VII. PLAN SUBMITTAL AND INSTALLATION INSPECTION

A. Plan Submittal:

In order to install a POWTS correctly, it is important to develop plans that will be used to guide the installation. The following checklist may be used when preparing plans for review. Conformance to the list is not a guarantee of plan approval. Additional information may be needed or requested to address unusual or unique characteristics of a particular project. Contact the reviewing agency for specific plan submittal requirements, which may be different than the list included in this manual.

B. General Submittal Information:

1. Legible photocopies of reports, forms, plans, and other documents are acceptable. However, an original signature is required on certain documents (i.e., index page).
2. Submittal of additional information requested during plan review or questions concerning a specific plan must be referenced to the identification number assigned to that plan by the reviewing agency.
3. Plans or documents must be permanent, legible copies or originals.

C. Forms and Fees:

A current version of a completed Application For Review form, (SBD-10577) along with proper fees must be included with plans submitted to the department. An application form can be downloaded at <http://dsps.wi.gov/sb/docs/SB-FormPowtsAppl10577.pdf> . If plans are to be submitted to a designated county plan review agent, the agent should be contacted for information regarding application forms and fees.

D. Soils Related Information:

1. A holding tank is a component that does not utilize in situ soil for treatment or dispersal of wastewater; therefore a soil test is not required per s. SPS 383.44 (1), Wis. Adm. Code.
2. Pertinent flood plain areas and OHWM designations of navigable waters of the state shall be shown on a soil test and/or the system plot plan.
3. A soil test may be required (one borehole at tank location) for the evaluation of saturated soil depths if tank anchoring is a concern.
4. Section SPS 383.32(2), Wis. Adm. Code, allows municipalities to prohibit or limit holding tanks. These municipalities may require a complete soil test by ordinance to verify that a holding tank is the only option available.

E. Documentation Requirements:

1. Architects, engineers or plumbing designers shall sign, seal and date each page of the submittal or sign, seal and date an index page, which is attached to the bound set.
2. Master Plumbers and Master Plumbers-Restricted Service shall, sign, date and include their license number on each page of the submittal or sign and date an index page which is attached to each bound set .
3. At least three sets of plans and one set of specifications (clear, permanent and legible) shall be submitted to the department. Submittals must be on paper measuring at least 8 ½ by 11 inches. Each plan set shall be bound using staples, brads or other permanent fasteners. Pages which are held together by rubber bands and/or paper clips are not considered to be a bound volume.

F. Plot Plan Information:

1. Dimensioned plans or plans drawn to scale (scale indicated on plans) with property lines, parcel size, and property boundaries clearly marked.
2. Benchmark and north arrow.
3. Elevations when the bottom of the furthest tank is proposed to be located more than 15 feet below the elevation where the all-weather road is to be provided.
4. Information showing that the access opening of the furthest tank is located not more than 25 feet horizontally from where the all-weather road is to be provided.
5. Pertinent existing and proposed buildings, wells, water lines, swimming pools, flood plain location and elevation and OHWM designations of navigable waters.
6. Location information; legal description (down to 40 acres and/or subdivision), block and lot number of platted lands.

G. System Sizing:

1. For one- and two-family dwellings the number of bedrooms shall be included.
2. For public facilities, the sizing calculations shall be included; see Table 3.

H. Tank Information:

1. Construction details for site-constructed tanks. (Note: Site-constructed tanks that do not have a valid plumbing product approval are not included within the scope of this manual and must be submitted as individual site designs.)
2. Size, model number and manufacturer information for prefabricated tank(s).
3. Installation information must include vent and access opening locations, depth to inlet, and height/elevation of freeboard, if applicable.

4. Anchoring information shall be provided whenever a tank is located within the 100-year floodplain and/or the depth to seasonal soil saturation indicates anchoring is necessary to prevent flotation of the tank.

5. Cross section of tank (or tanks to be installed in series), with information regarding liquid depth, depth of high water alarm, approved joints and any modifications (suction pipes, etc.) clearly marked.

I. Septage Disposal:

Estimated daily wastewater flows greater than 3,000 gpd, shall include information pursuant to s. NR 113.07(1)(e), Wis. Adm. Code. Written notification from the Department of Natural Resources shall be provided confirming agreement from a publicly owned treatment works to accept the contents from the holding tank.

J. Inspections:

Inspection(s) shall be made in accordance with ch. 145.20, Wis. Stats., and s. SPS 383.26, Wis. Adm. Code. The POWTS holding tank inspection form, found on the following two pages, may be used. The inspection of the POWTS installation is to verify that the POWTS conforms to specifications listed in Tables 1 and 2 of this manual and the approved plans.

POWTS HOLDING TANK INSPECTION REPORT

(ATTACH TO PERMIT)

Page 1 of 2

GENERAL INFORMATION

Permit Holder's Name	<input type="checkbox"/> City <input type="checkbox"/> Village <input type="checkbox"/> Town of	County	Sanitary Permit No.
Plan ID No.	Tax Parcel No.	Property Address if Available	

TANK INFORMATION

TYPE	MANUFACTURER/MODEL #	CAPACITY

SETBACKS

Property Line	Well	Water Service	Building	All-Weather Road	OHWM	Swimming Pool

DEVIATIONS FROM APPROVED PLAN

--

COMMENTS (Persons present, discrepancies, etc.)

--

COMPONENTS NOT INSPECTED

--

Plan Revision Required <input type="checkbox"/> Yes <input type="checkbox"/> No	Date:	Signature of Inspector:	Cert. Number
--	-------	-------------------------	--------------

Sketch on page 2

ELEVATION DATA

Page 2 of 2

Point	Backsight	Height of Instrument	Foresight	Elevation	Comments
Bench mark					
Bldg. sewer					
Tank inlet					
Tank outlet					
Tank inlet					
Tank outlet					
Bottom of furthest tank					
Top of all-weather road					

SKETCH OF COMPONENT & ADDITIONAL COMMENTS

TABLE 3 PUBLIC FACILITY WASTEWATER FLOWS		
Source	Unit	Estimated Wastewater Flow (gpd)
Apartment or Condominium	Bedroom	100
Assembly hall (no kitchen)	Person (10 sq. ft./person)	1.3
Bar or cocktail lounge (no meals served)	Patron (10 sq. ft./patron)	4
Bar or cocktail lounge* (w/meals - all paper service)	Patron (10 sq. ft./patron)	8
Beauty salon	Station	90
Bowling alley	Bowling lane	80
Bowling alley (with bar)	Bowling lane	150
Camp, day and night	Person	25
Camp, day use only (no meals served)	Person	10
Campground or Camping Resort	Space, with sewer connection and/or service building	30
Campground sanitary dump station	Camping unit or RV served	25
Catch basin	Basin	65
Church (no kitchen)	Person	2
Church* (with kitchen)	Person	5
Dance hall	Person (10 sq. ft./person)	2
Day care facility (no meals prepared)	Child	12
Day care facility* (with meal preparation)	Child	16
Dining hall* (kitchen waste only without dishwasher and/or food waste grinder)	Meal served	2
Dining hall* (toilet and kitchen waste without dishwasher and/or food waste grinder)	Meal served	5
Dining hall* (toilet and kitchen waste with dishwasher and/or food waste grinder)	Meal served	7
Drive-in restaurant* (all paper service with inside seating)	Patron seating space	10
Drive-in restaurant* (all paper service without inside seating)	Vehicle space	10
Drive-in theater	Vehicle space	3
Employees (total all shifts)	Employee	13
Floor drain (not discharging to catch basin)	Drain	25
Gas station / convenience store	Patron (min. 500 patrons)	3
Gas station (with service bay)		
Patron	Patron	3
Service bay	Service bay	50
Hospital*	Bed space	135
Hotel, motel or tourist rooming house	Room	65
Medical office building		
Doctors, nurses, medical staff	Person	50
Office personnel	Person	13
Patients	Person	6.5
Migrant labor camp (central bathhouse)	Employee	20

* May be high strength waste

TABLE 3 PUBLIC FACILITY WASTEWATER FLOWS (continued)		
Source	Unit	Estimated Wastewater Flow (gpd)
Mobile Home (Manufactured home) (served by its own POWTS)	Bedroom	100
Mobile home park	Mobile home site	200
Nursing, Rest Home, Community Based Residential Facility	Bed space	65
Outdoor sport facilities (toilet waste only)	Patron	3.5
Parks (toilets waste only)	Patron (75 patrons/acre)	3.5
Parks (toilets and showers)	Patron (75 patrons/acre)	6.5
Public shower facility	Shower taken	10
Restaurant*, 24-hr. (dishwasher and/or food waste grinder only)	Patron seating space	4
Restaurant*, 24-hr. (kitchen waste only without dishwasher and/or food waste grinder)	Patron seating space	12
Restaurant, 24-hr. (toilet waste)	Patron seating space	28
Restaurant*, 24-hr. (toilet and kitchen waste without dishwasher and/or food waste grinder)	Patron seating space	40
Restaurant*, 24-hr. (toilet and kitchen waste with dishwasher and/or food waste grinder)	Patron seating space	44
Restaurant* (dishwasher and/or food waste grinder only)	Patron seating space	2
Restaurant* (kitchen waste only without dishwasher and/or food waste grinder)	Patron seating space	6
Restaurant (toilet waste)	Patron seating space	14
Restaurant* (toilet and kitchen waste without dishwasher and/or food waste grinder)	Patron seating space	20
Restaurant* (toilet and kitchen waste with dishwasher and/or food waste grinder)	Patron seating space	22
Retail store	Patron (70% of total retail area ÷ 30 sq. ft. per patron)	1
School* (with meals and showers)	Classroom (25 students/classroom)	500
School* (with meals or showers)	Classroom (25 students/classroom)	400
School (without meals or showers)	Classroom (25 students/classroom)	300
Self-service laundry (toilet waste only)	Clothes washer	33
Self-service laundry (with only residential clothes washers)	Clothes washer	200
Swimming pool bathhouse	Patron	6.5

* May be high strength waste