

May 5, 1997

Dan A. Westermeyer, Owner
Reese Concrete Products Manufacturing Inc.
1606 South Ely
Kennewick, Washington 99337-2899

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

Re: WQ-CAS-Tank Plan Materials

Dear Mr. Westermeyer:

The design information and plans for your pre-cast concrete tanks prepared by Leonard A. Harms, P.E., have been reviewed and found to comply with the Department's standards. As part of the tank approval, a set of plans is being returned with additional changes noted. The tank configurations are: 1000 gallon septic tank and a 1500 gallon two-compartment combination septic tank and dosing tank. REESE CONCRETE PRODUCTS MFG. INC. is authorized to manufacture and distribute these tanks for use in on-site sewage disposal systems in Oregon until further notice, providing the following conditions are met:

1. Each tank must be manufactured in compliance with the Department's rules and the enclosed plans and specifications. Any deviation from the approved plans and specifications shall not be permitted unless and until authorized in writing by this office.
2. The concrete mix shall be in accordance with the mix specified on the plans. The minimum concrete strength of 5,000 psi must be achieved. Three concrete sample cylinders shall be taken and tested for each tank manufactured until the minimum compressive strength is obtained. Thereafter, you shall take at least one concrete sample cylinder for each five (5) tanks produced. Samples shall be alternately broken at 7 and 28 days. All samples may be done at your option. All test results shall be made available for Department review upon request.
3. Each tank shall be cured and protected from premature drying and excessive hot or cold temperatures (particularly Eastern Oregon) for the first 10 days following casting. Tanks may be transported from the casting yard after 7 days, or earlier if the concrete has reached two-thirds of its design strength. Proper curing techniques must be utilized to ensure watertight tanks.
4. You are responsible for providing a watertight tank and we recommend that you pre-test some percentage of your tanks at your plant before delivery to the job site.



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

DEQ-1



5. You are to deliver to the purchaser a fully assembled and complete tank, and provide the tank riser(s) and cover(s). *Cutting a hole 1/16 inch larger than the pressure transport and applying silicone is not acceptable for the ADS riser. Use a neoprene grommet or other equivalent method. For routing pipe through the concrete riser, the opening should be designed with a knock-out. If full penetration of silicone is not possible around pipe, an expansive non-shrink non-swell grout may be used.*
6. The mastic sealant used at the tank wall/top joint is specified as butyl rubber joint sealant meeting ASTM C990-91 standards. This sealant shall also be used for attaching the concrete riser to tank lid and finishing with a non-shrink grout. *This sealant is not to be used at riser lid since it makes the lid non-removable. Instead, use a non-adhering, durable, foam gasket to restrict access to vectors and vermin, control odors, and retard infiltration. Since riser lids are not fastened, lids must be weighted (no more than 75 pounds) to prevent easy removal. Lids should contain reinforced steel, two 3/8 inch bars, for strength.*
7. The four inch PVC coupler with seep ring groove is specified where the plastic inlet and outlet fittings pass through the tank walls. *This groove assures a weak plan for fracture. Instead, the coupler should be non-grooved, primed and sprinkled with a fine grade sand. The coupler must be in place within the form at the time the tanks walls and bottom are poured.*
8. The inlet and outlet "sanitary tee" fittings shall be four inch Sch. 40 PVC plastic, and be compatible with the coupling within the wall.
9. The tank is not acceptable for use at locations where motor vehicles are likely to pass over. A tank placed at such a location shall require an engineering analysis of the potential top loading, and preparation of site-specific plans and specifications for the tank. In areas where the tank is shallow or in high water tables, an 8 inch lid will be used in place of the four inch lid to add the additional weight necessary to keep the tank submerged.
10. Any effluent filter assembly proposed for use within your tanks must be specified if it requires replacement or modification of the 4 inch diameter sanitary tee fitting at the tank outlet. Please be aware the filter assembly shall perform the same as a sanitary tee if the filter is removed. Assemblies with large effluent housings may impair the ability to clean and otherwise service the tank, and may cause the Department to require an additional full size manhole riser and gasketed cover.

Reese Concrete Products Manufacturing Inc.

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11. The tank installation manual, on waterproof paper or equivalent, shall be provided with each tank [refer to OAR 340-73-025(13)]. The manual shall describe how to properly install the tank, risers(s) and lid, pipe connections, testing procedures, backfill, and any special precautions or limitations. The manual for tanks designed with pumps and siphons must also describe the installation specifications for the pump or siphon, valves, pump control and alarm switch placement, etc. Specific siphon information, including but not limited to the type or model of siphon, screen, and related apparatus to be used within the tank, shall also be described in the manual. The manual needs to complement the structural design unique to each tank.
12. All tanks are to comply with structural requirements as specified in Oregon Administrative Rules (OAR) 340-73-025(5).
13. Each tank shall be marked on the uppermost tank surface over the outlet with the liquid capacity, date of manufacturer, burial depth limit, and either your full business name or the assigned number 1540.

In conclusion, the key elements required in producing a durable watertight tank include using a high-quality, well graded (non-porous), concrete mix with low water/cement ratios. Also proper curing practices and adequate consolidation is important. Close attention to all manufacturing and installation details is the best investment in preventing cracking during curing, storage, transportation and installation.

Please feel welcome to contact me if you have any questions about this letter. My telephone number is (503) 229-5189 or toll free 1-800-452-4011.

Sincerely,



Dewey W. Darold, R.S.
On-Site Sewage Disposal Program
Community Assistance Section
Water Quality Division

DWD:dwd

Enclosures

cc: Len Harms, P.E.

DEQ: Eastern Region: Bend Office

DEQ: Eastern Region: Pendleton Office

HARMS & ASSOCIATES

1632 WEST SYLVESTER • PASCO, WASHINGTON 99301 • (509) 547-2679

April 7, 1997

Dewey Darold, R.S.
Oregon Department of Environmental Quality
Water Quality Division
811 Southwest Sixth Avenue
Portland OR 97204-1390

Re: Reese Concrete Products Manufacturing, Inc.
WQ Plan
Materials Precast Concrete Tanks

File #96-078.1

Dear Mr. Darold:

Enclosed is the requested information. The letter and attached submittals are in response to your January 24, 1997 letter addressing 6 items:

1. **Rebar Placement:** Reinforcement has been included for all portions of the tank walls, top and side and is shown on the attached plans. This reinforcement is based on Grade 60 with #3 rebars in 5000 psi concrete. The bars overlap at the corners 12".
2. **Riser Details:** The riser details are being resubmitted with several modifications. However, ADS pipe is still being submitted as the method for the most adaptable use in the field since it can be cut to 3'+ long for shipping and then adjusted (cut) at the site to final height when final backfill occurs. It is poured into the concrete lid, and since it has a heavy ribbed surface, it has built in seep ring capability. The enclosures on the ADS pipe are submitted for your information regarding the type of pipe and materials that are used.

The concrete risers are set into a groove with a rubber sealant which meet the requirements stated in Item 2 of your letter.

Transport Pipe (exiting through the risers): Specifications call for a hole 1/16" larger than the outside pipe diameter. Then apply a 1/4" bead of silicone sealant on the inside and outside of the riser around the transport pipe.

3. **Float Settings:** The plans show the dosing tank with the required float settings for the alarm, and the 45 and 90 gallon dose. It should be understood that the installer of the pressure dosing system is ultimately responsible for the final settings and dosing volumes. *- No, This is Mfg. responsibility.*
4. **Depth:** In the areas where the tank is shallow or in high water tables, an 8" lid will be used in place of the 4" to add the additional weight necessary to counteract buoyancy.

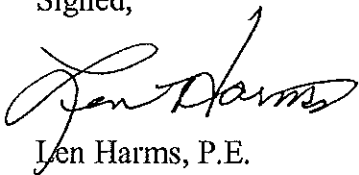
The maximum tank bury depth on the unit being submitted is 3', requiring a maximum of 24" opening for the manhole riser.

The lids have been additionally reinforced for the 2500 lb. load as described in the OAR. However, it is to be understood that the lids are not to be traffic bearing or to have any vehicle load applied to them.

5. **Installation Manual:** Attached is the installation manual that should have been in the previous submittal.
6. **Seep Ring:** A 4" PVC coupler is poured into the tank walls which is used as the connection for the inlets and outlets. This coupler detail is shown on the attached plans and has a 3/16" groove around the circumference of the coupler at the middle, providing for an inverted seep ring. This is placed in the tank at the time the tank walls are formed and poured.
change as per item #7 in letter.

The two compartment 1200 gallon and 1500 septic tanks are not being submitted for approval at this time. The pump chamber screen for pressurized distribution systems is mentioned in the installation manual.

Signed,



Len Harms, P.E.

LH/rh

xc: Dan Westermeyer, Reese Tanks

Enclosures:

Plan Sheets 1-4 and A
ADS Pipe Information
Installation Manual

REESE CONCRETE

**SEPTIC TANK/PUMP CHAMBER
INSTALLATION MANUAL**

PROVIDED BY:
HARMS & ASSOCIATES
1632 WEST SYLVESTER STREET
PASCO, WASHINGTON 99301

(509) 547-2679

APRIL 1997

**SEPTIC TANK/PUMP CHAMBER
INSTALLATION MANUAL
REESE CONCRETE**

WATER TABLE

If the water table is higher than 3 feet below the surface of the ground, no septic tank may have more than 3 feet of soil cover above the top of the tank. If the water table is lower than the bottom of the tank, the tank may have up to 4 feet of cover above the top of the tank. For intermediate levels of the water table, the top of the tank must not be lower than the water table.

EXCAVATION

The rough excavation shall have its bottom 1 foot below the intended base of the tank, and 2 feet wider than the base dimensions of the tank on all sides, to allow workman access if required. The sides of the excavation must be laid back at a minimum flatness of 1.5 horizontal to 1 vertical for safety against cave-in. If the soil characteristics demand, a flatter lay-back may be required to prevent cave-in.

After the rough excavation is complete, including trenches for inlet and outlet pipes, bed all pipes with a minimum of 6 inches of select native backfill, sand or 3/8" minus gravel. Bed the tank with 1 foot of select native backfill, sand or 3/8" minus gravel. Level the tank bedding uniformly.

INSTALLATION

Lower the tank into the excavation using the pre-cast lift points and spreader bars in the lift sling to prevent damage to the sidewalls of the tank. Position the tank in alignment with the inlet and outlet pipes, preparatory to receiving the lid of the tank. If the water table is higher than the base of the tank, temporary pumping of the ground water may be required to prevent tank flotation.

When the tank is in position, apply the butyl joint sealant around the edge of the tank and lower the lid of the tank into position. Insure that the sealant fully fills the voids between the lid and the tank. When the lid has been fully seated to the tank, make the pipe connections with the Fernco couplers.

After pipe connections are made and any internal filtration and/or pump equipment is installed, install the riser(s) using the butyl sealant and non-shrink grout. The lid may then be installed using mastic bead sealant as shown on plan sheet A. If the water table is higher than half the depth of the tank, anti-flotation measures must be taken to prevent tank movement until the excavation is fully backfilled. - 140
Fill w/ H₂O

To prevent tank flotation, prepare sandbags filled with local native earth in such a quantity that when laid in a single layer on the top of the tank, the average height of the sandbagged layer is 12".

Backfill against the tank using select native (no rocks over 1") material for a minimum distance of 6" away from the tank. At distances greater than 6" from the tank, native excavation material may be used for backfill. Deposit backfill without compacting except for limited areas under the inlet and outlet pipes. If sandbags are in use to prevent flotation, the backfill on the top of the tank may be added as the sandbags are removed. Bring finish grade to match surrounding grade.

RISER PENETRATION: - Describe how to make hole thru riser wall.
Electric cords from pump/Floats must also be routed thru riser wall. Describe.
Penetrations through the riser for the transport line and/or electrical shall be placed through an opening 1/16" larger than the O.D. of the pipe. A 1/4" bead of silicone caulking shall then be applied around the pipe on the inside and outside of the riser.

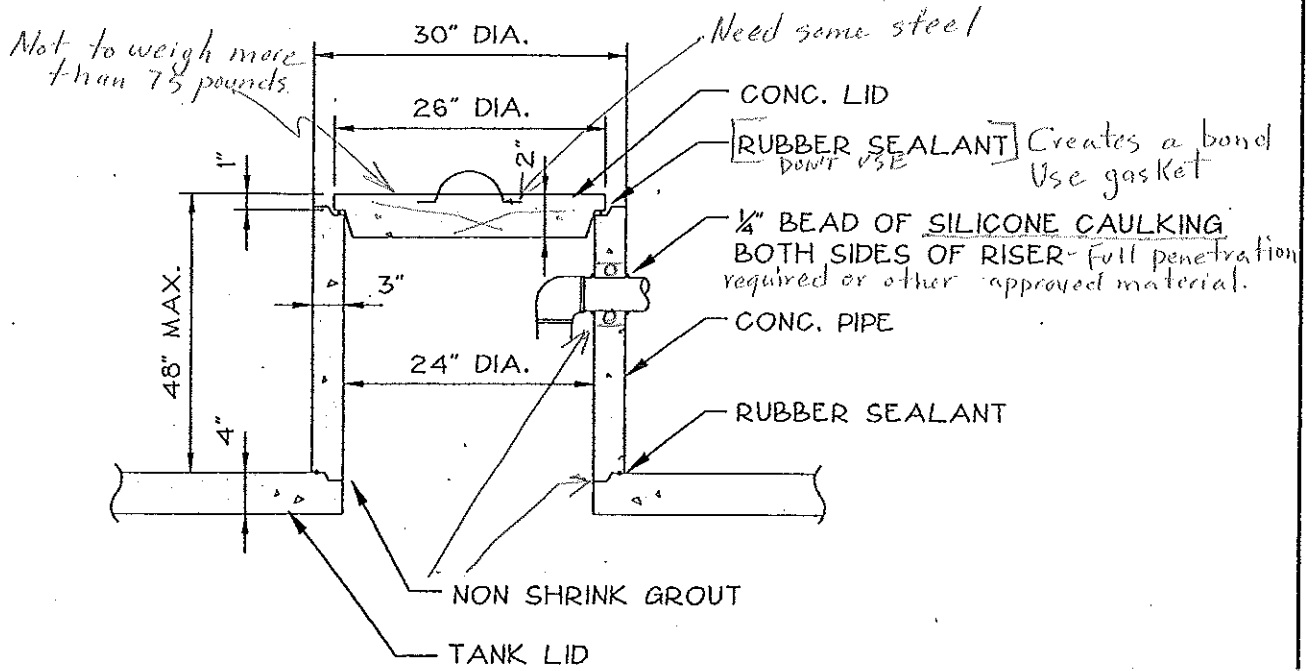
WATERTIGHTNESS

After installation, all tanks shall be watertight. Each tank shall be water tested by stopping the inlet and outlet pipe with inflatable stoppers, and filling the tank to a point at least 2 inches above the point of riser connection to the top of the tank. During the test there shall be no more than 1 gallon leakage over a 24 hour period. This requirement shall be ascertained by measuring the water level from a known point on the riser at the start of the test. At the end of the 24 hour period, make-up water may be required to bring the water level back to that noted at the start of the test. One gallon of make-up water is then added and the water level noted. If the water level rises to or above the previous level, the tank has passed the test. If one gallon of make-up water does not bring the water level back to the initial level, the tank fails the test, and remedial measures must be taken.

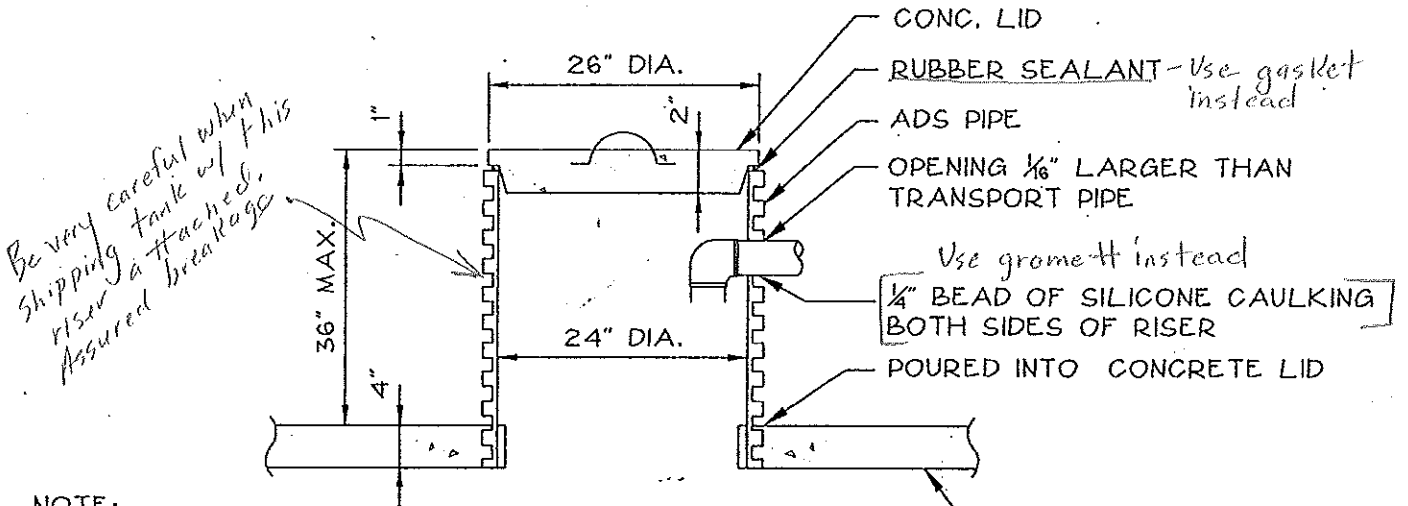
SCREENS

If the pump chamber discharges to a pressurized distribution system or if the effluent pump used will not pass at least a 3/4 inches sphere, then, an 1/8 inch noncorrosive plastic screen is required and the screen must extend above the maximum liquid depth including the "alarm" float setting.

ALT. 1

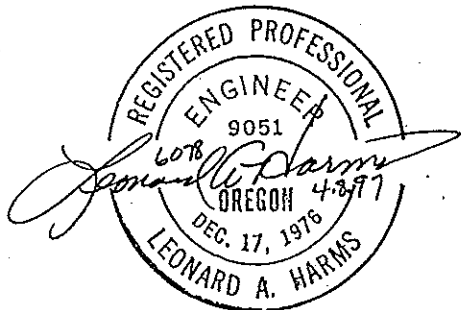


ALT. 2



NOTE:

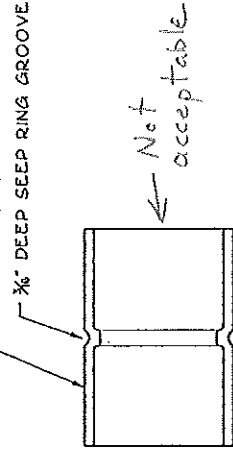
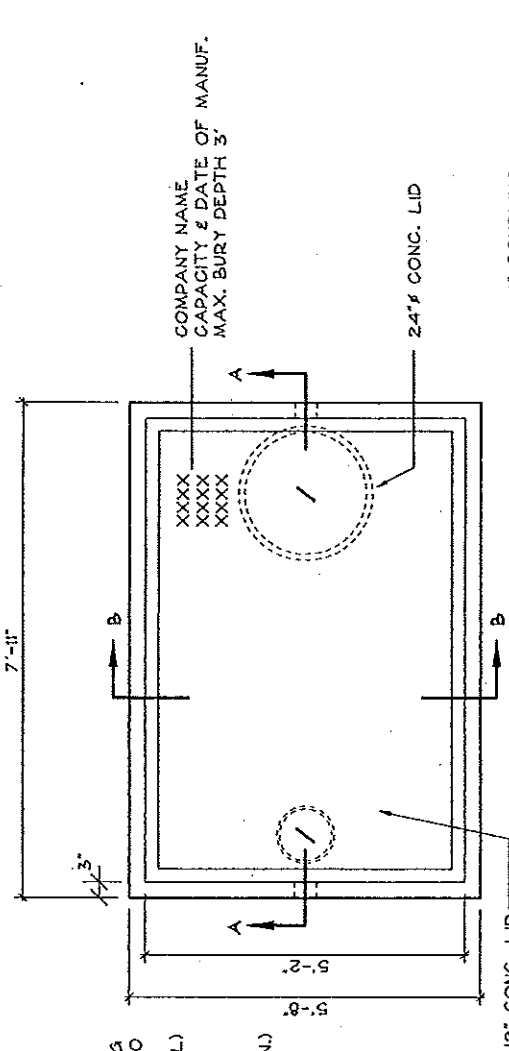
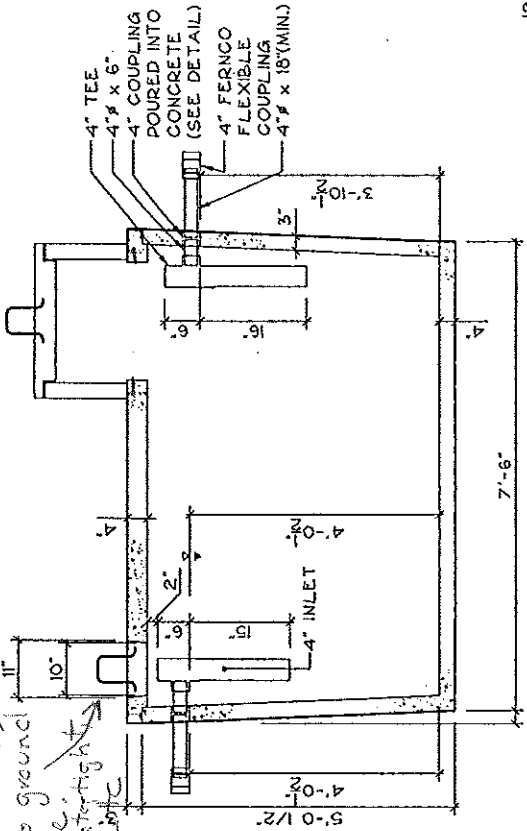
- RUBBER SEALANT SHALL BE RV30 BUTYL JOINT SEALANT MEETING ASTM C990-91 STANDARDS, & FED. SPECIFICATIONS SS-S-210, SS-S-210A.



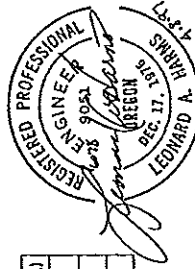
SCALE: (N.T.S.)	FILE: 96-078.1	DRAWN: D.D.L.
DATE: 4/08/97		
TANK RISERS		
REESE CONCRETE PRODUCTS 1606 S. ELY ST., KENNEWICK, WA 99337 (509) 586-3704		DWG. FILE: SHEET SHEETA A

1000 GALLON PRECAST CONCRETE SEPTIC TANK (SINGLE COMPARTMENT)

Service access riser to ground surface. Make watertight durable joint.



TOP VIEW

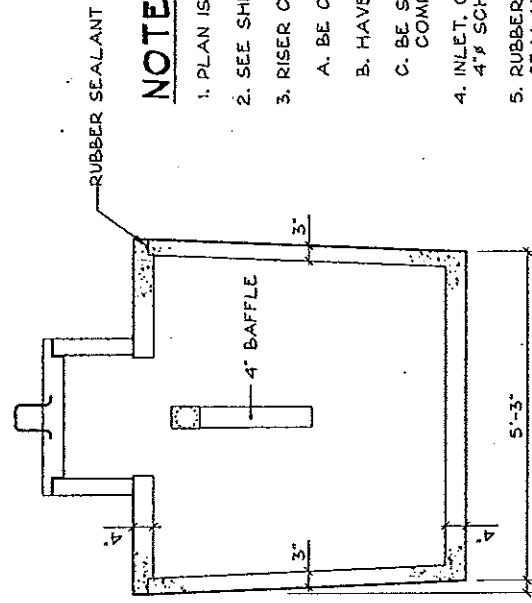


TANK VOLUME (1000 GAL.)	
TOTAL GAL.	1296
OPERATING GAL.	1043
GAL. / IN.	21.5

NOTES:

1. PLAN IS DIMENSIONAL REFERENCE ONLY.
2. SEE SHEET 2 AND 3 FOR STRUCTURAL PLAN.
3. RISER CONNECTIONS (SEE SHEET A) TO THE TANK SHALL:
 - A. BE CONSTRUCTED OF ADS OR CONCRETE PIPE
 - B. HAVE AN INSIDE DIA. OF 24"
 - C. BE SEALED OR GROUTED WITH A MATERIAL COMPATIBLE TO BOTH LID, RISER, AND TANK
4. INLET, OUTLET, AND BAFFLE FITTINGS SHALL BE 4" SCH. 40 PVC
5. RUBBER SEALANT SHALL BE RV30 BUTYL JOINT UNLESS OTHERWISE SPECIFIED UNLESS OTHERWISE SPECIFIED. SEALANT MEETING ASTM C890-91 STANDARDS, & FED. SPECIFICATIONS SS-S-210, SS-S-210A

SECTION A-A



SECTION B-B

4" COUPLING DETAIL

APPROVED BY: _____ DATE: _____
 DEPT. OF ENVIRONMENTAL QUALITY

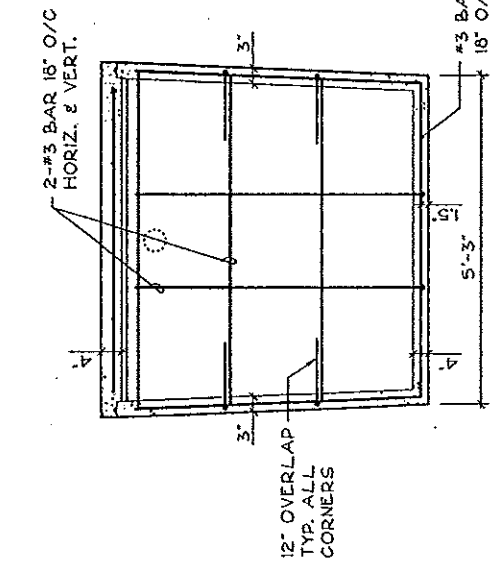
SCALE: (N.T.S.)	FILE:	DRAWN:
DATE: 4/08/97	96-078.1	R.J.S./D.E.L.

1000 GAL. SEPTIC TANK (OREGON)

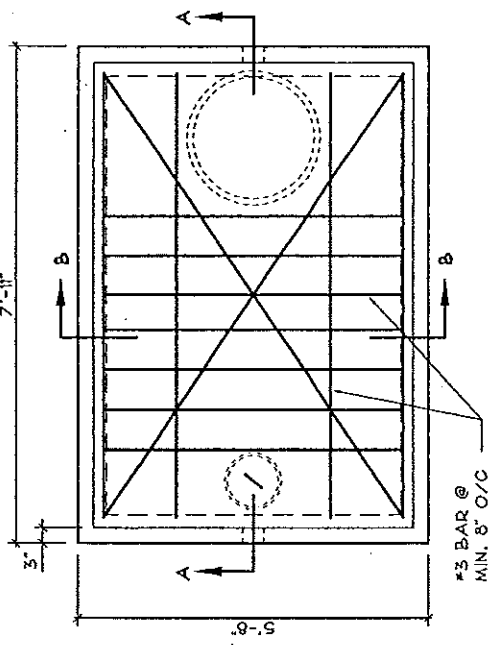
REESE CONCRETE PRODUCTS
 1606 S. ELY ST. KENNEWICK, WA 98337
 (509) 586-3704

DWG. FILE: SHEET
 1000-B 1/4

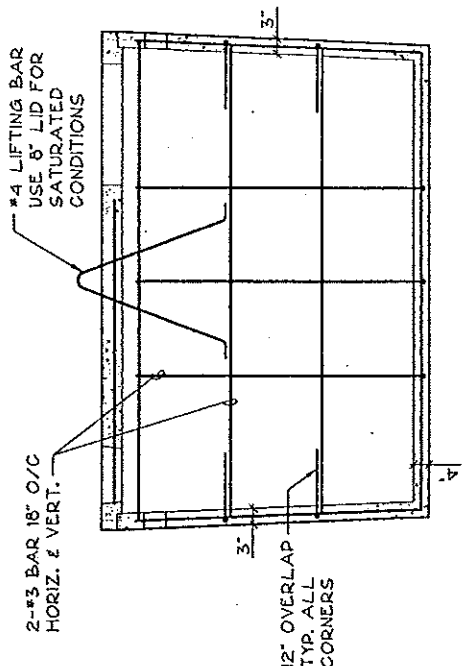
Single
1000 GALLON PRECAST CONCRETE SEPTIC TANK TWO COMPARTMENT



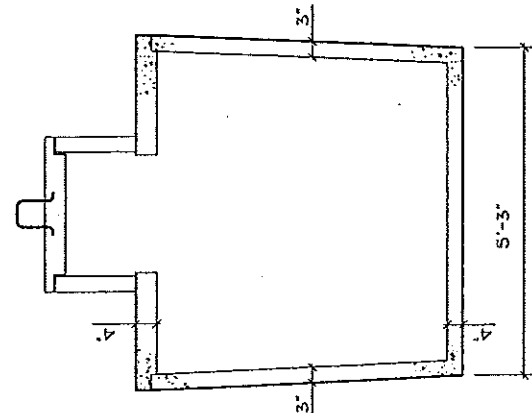
END VIEW



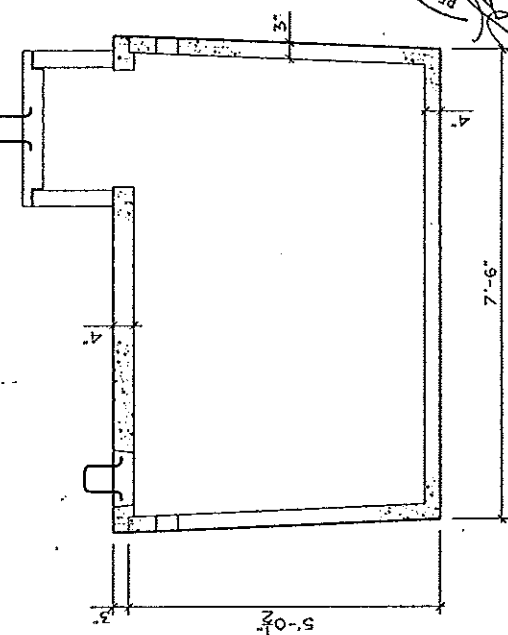
TOP VIEW (LID)



SIDE VIEW



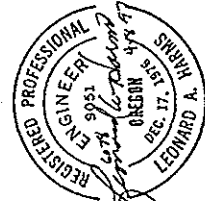
SECTION A-A



SECTION B-B

DESIGN NOTES:
(1000 & 1500 GAL TANKS)

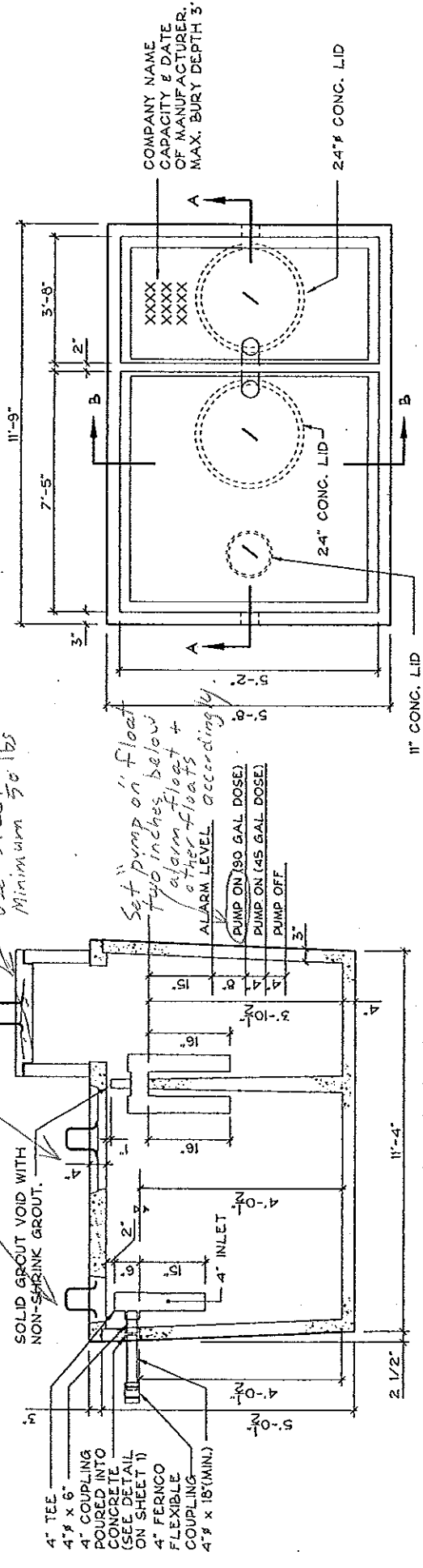
1. CONCRETE DESIGN COMPRESSIVE STRENGTH: 5000 PSI @ 28 DAYS.
2. EXTERNAL LATERAL LOAD: 62.4 PCF (EPF).
3. SOIL LOAD ON LID: 300 PSF @ 3'.
4. REINFORCEMENT STEEL: GRADE 60.
5. MAXIMUM TANK DEPTH: 3' FROM TOP OF LID
6. LIDS & TANK ARE NON-TRAFFIC BEARING.
7. SEE SHEET A FOR RISER DETAILS.



SCALE: (N.T.S.)	FILE:	DRAWN:
DATE: 4/08/97	96-078.1	R.J.S./D.E.L./DDL
STRUCTURAL PLAN - 1000 GAL. SEPTIC TANK (OREGON)		
REESE CONCRETE PRODUCTS 1606 S. ELY ST., KENNEWICK, WA 99337 (509) 586-3704		DWG. FILE: SHEET STL1000B 2/4

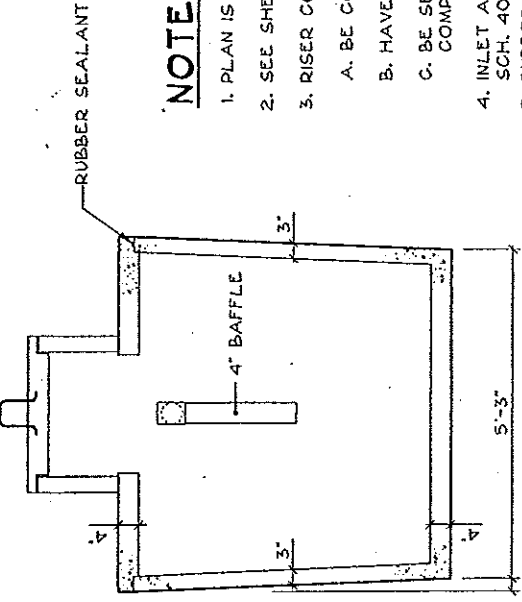
1500 GALLON PRECAST CONCRETE COMBINATION SEPTIC TANK / PUMP CHAMBER

Service access riser to ground surface required



TOP VIEW

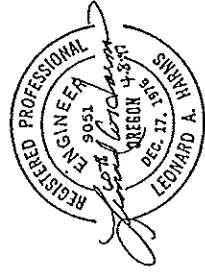
SECTION A-A



SECTION B-B

NOTES:

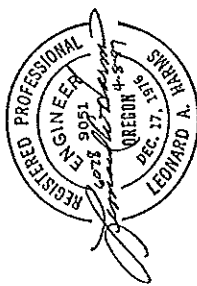
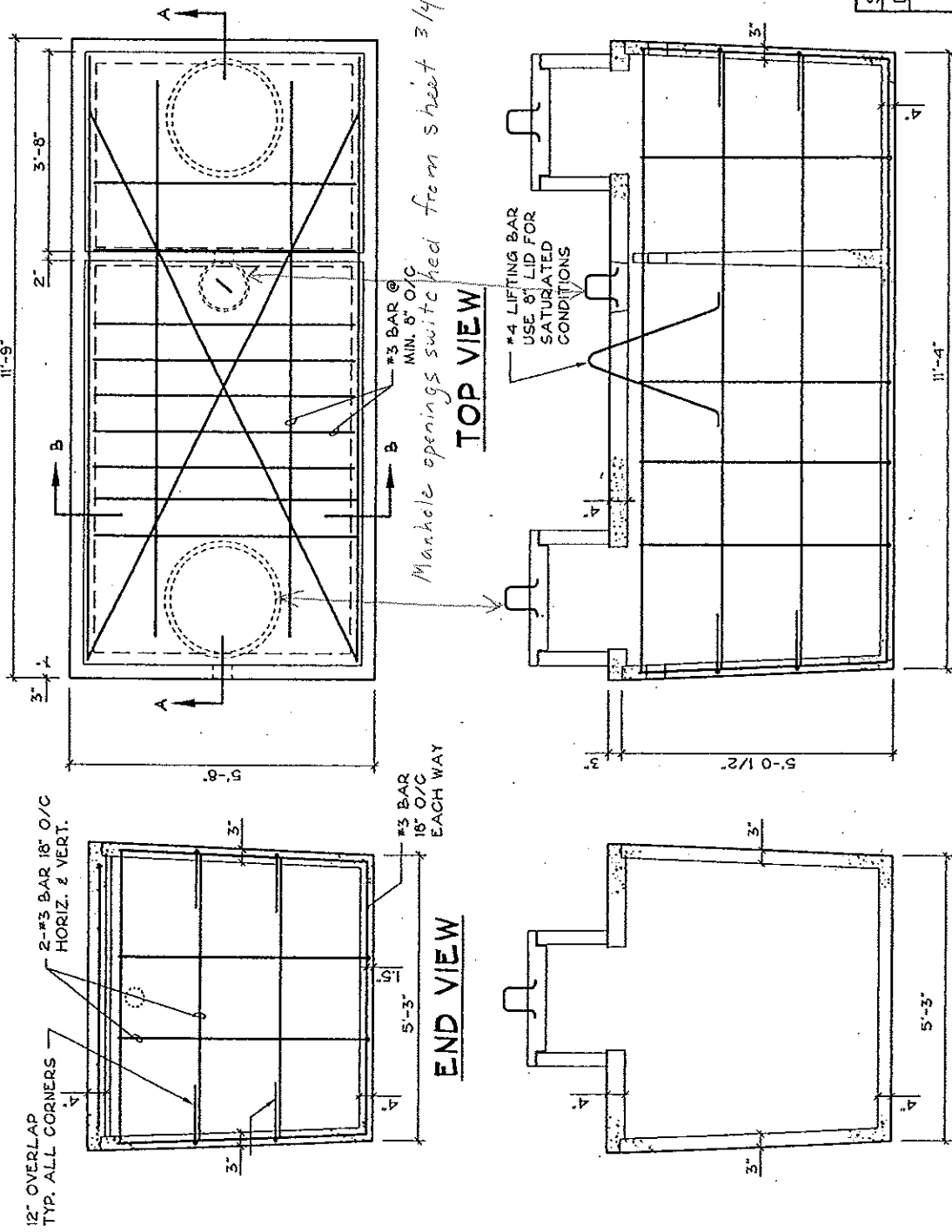
1. PLAN IS DIMENSIONAL REFERENCE ONLY.
2. SEE SHEET 2 AND 3 FOR STRUCTURAL PLAN.
3. RISER CONNECTIONS (SEE SHEET A) TO THE TANK SHALL:
 - A. BE CONSTRUCTED OF ADS OR CONCRETE PIPE
 - B. HAVE AN INSIDE DIA. OF 24"
4. INLET AND Baffle FITTINGS SHALL BE SCH. 40 PVC OR ABS
5. RUBBER SEALANT SHALL BE RV30 BUTYL JOINT UNLESS SEALANT MEETING ASTM C990-91 STANDARDS, & OTHERWISE FED. SPECIFICATIONS 55-S-210, 55-S-210A noted.



SCALE: (N.T.S.)	FILE:	DRAWN:
DATE: 4/08/97	96-078.1	D.E.L.
1500 GAL. SEPTIC TANK / PUMP CHAMBER (OREGON)		
REESE CONCRETE PRODUCTS		
1606 S. ELY ST., KENNEWICK, WA 98337		
(509) 586-3704		
DWG. FILE:	1000-A	SHEET 3/4

closing tank

1500 GALLON PRECAST CONCRETE COMBINATION SEPTIC TANK / PUMP CHAMBER



DESIGN NOTES:

1. CONCRETE DESIGN COMPRESSIVE STRENGTH: 5000 PSI @ 28 DAYS
2. EXTERNAL LATERAL LOAD: 62.4 PCF (EPF)
3. SOIL LOAD ON LID: 300 PSF @ 3'
4. REINFORCEMENT STEEL: GRADE 60
5. MAXIMUM TANK DEPTH: 3' FROM TOP OF LID
6. LIDS & TANK ARE NON-TRAFFIC BEARING

SCALE: (N.T.S.)	FILE:	DRAWN:
DATE: 4/08/97	96-078.1	J.B. / D.E.L.
STRUCTURAL PLAN - 1500 GAL. COMBINATION SEPTIC TANK/PUMP CHAMBER (OREGON)		
REESE CONCRETE PRODUCTS		
1506 S. ELY ST., KENNEWICK, WA 98337		
DWG. FILE: SHEET		
(509) 586-3704		
STL1500B		
4/4		