

MATERIALS

ITEM	UNIT	EST. QUANTITY	ITEM	UNIT	EST. QUANTITY
CORRUGATED METAL PIPE SUMP			PUMP REMOVAL SYSTEM		
Sump	Ln.ft.	-----	Internal discharge plumbing (---- galvanized steel, ---- cast iron, ---- stainless steel, ---- PVC, schedule 80, ---- flex hose) * Allow slack to remove sump cover	Ln.ft.	-----
24 in. dia., 16 gauge, one section corrugated metal pipe			External discharge plumbing (---- galvanized steel, ---- cast iron, ---- stainless steel, ---- PVC, schedule 80, ---- flex hose)	Ln.ft.	-----
Metal end plate (4 ft. X 4 ft., 16 gauge)	Ea.	-----	Lift chain, cable or rope (---- galvanized steel, ---- stainless steel, ---- poly., ---- other)	Ln.ft.	-----
			NOTE: Galvanized steel shall be used only in clean water applications.		
ELECTRICAL CONTROL PANEL	Each	-----	SUMP ACCESS COVER	Each	-----
Type of panel ---- Indoor ---- Outdoor			24 in. dia. external end cap, polyethylene		
---- Mounting stand on cover ---- Remote from sump			Steel suspension rod	Ln.ft.	-----
Power supply ---- Phase ---- Volts			Podlock and chain	Each	-----
Livestock wastes in sump, ---- yes, <u>intrinsically safe relays required</u> ---- no			WARNING SIGN	Each	-----
SUBMERSIBLE PUMP	Each	-----	Warning sign to be posted near sump access, suggested wording, "WARNING Toxic Gas or Suffocation Hazard"		
Type of pump Maximum solids size ---- in Beading, yes ---- no Livestock wastes in sump, ---- yes, <u>explosion protection required</u> ---- no Explosion proof motor ---- Submerge entire motor at all times					
Size of pump Capacity ---- gpm Static + friction head ---- ft Discharge size ---- in					
Power cord length Check valve ---- yes ---- none required, (Drain back discharge pipe into sump) Gate valve, yes ---- no	Ln.ft.	-----			
SUMP LEVEL CONTROL SYSTEM (with mounting hardware) Type of controls ---- Suspended ---- Pipe mounted ---- Wide angle Cord length Alarm, yes ---- no ---- Alarm float switch ---- Pump run light (mounted so it can be seen in the distance)	Each	-----			

SPECIFICATIONS

GENERAL
The owner representative should supply the pump, control panel, level control(s), and pump removal system for compatibility.
All materials within the sump shall be corrosion resistant.
The entire sump length shall be constructed with a single section of pipe. A metal plate shall be welded to the bottom of the sump. The influent pipe stub shall be welded flush to the sump at the specified elevation.
Wrap PE tubing and metal stub joint with filter fabric.
Galvanize all metal edges that have been cut, drilled, or welded.

ELECTRICAL CONTROL PANEL
The panel enclosure shall be constructed in conformance with applicable sections of NEMA.
A UL 508 Listing is required.
The control panel shall contain a nameplate, plastic coated wiring diagram, warning label against electric shock and a padlock provision.
All wiring shall be in accordance with N.E.C. and local codes, and only qualified electricians should make the installations.

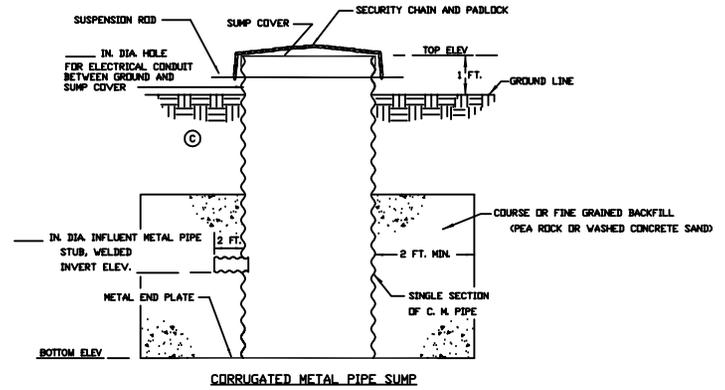
A dead front inner door shall be provided and all switches and reset buttons shall be operable through the inner door.
A pump circuit breaker, and a control circuit breaker shall be provided.
Magnetic motor starters (3 phase) shall be NEMA rated and equipped with overload protection. Horsepower rated contactors (single phase) shall also be NEMA rated.
Automatic pump operation shall be provided.
A pump run light (or elapsed time meter) and an off light hand-off-automatic switch shall be provided.
Continuous cords (without splices or junctions) shall be run from the pump and level controls to the control panel. If a junction box is absolutely necessary, it shall not be located in the sump.
Corrosive fumes shall not be allowed to enter the control panel.
A lightning arrester shall be installed at the control panel.

SUBMERSIBLE PUMP
The pump shall be capable of 24 hours of continuous operation without failure.
The motor shall meet the requirements of NEMA L (single phase) or NEMA B (3 phase).
The pump motors shall have thermal overload protection.
** Pump specifications and performance curve shall be submitted to a NRCS technical representative for review and approval seven days prior to installation.

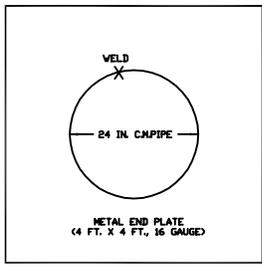
SUMP LEVEL CONTROLS
The level controls shall consist of mercury switches sealed in solid polypropylene floats. The cords shall be neoprene.
The level controls shall be located so they are not affected by influent flow.

PUMP REMOVAL SYSTEM
The removal system shall allow removal and reconnection of the pump without entering the sump.
The disconnect flange and coupler shall be pressure tight when the pump is activated.
** If the pump removal system varies from this general design, shop drawings of the pump removal system shall be submitted to a NRCS technical representative for review and approval seven days prior to installation.

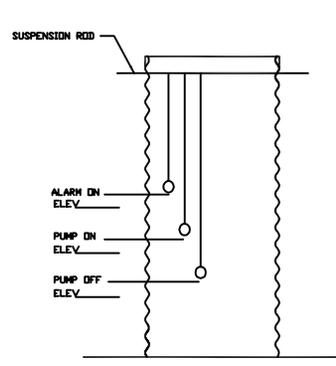
Follow the manufacturer's recommendations for installation of pump removal system.
SUMP ACCESS COVER
The polyethylene cover assembly shall contain stainless steel or galvanized hardware and locking provisions. A coupler shall be installed in the sump cover for the pump discharge plumbing.
The sump access cover shall not be subject to vehicular loading.
The polyethylene cover assembly shall be reviewed and approved by the pump supplier.



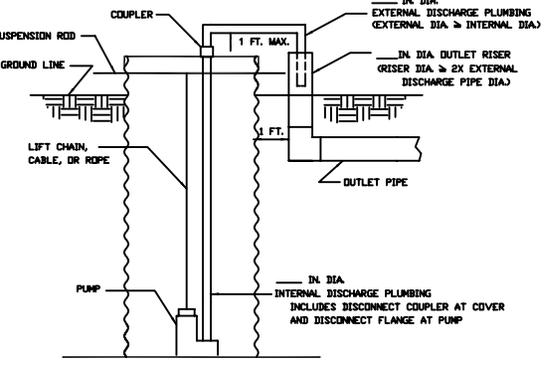
CORRUGATED METAL PIPE SUMP



METAL END PLATE
(PLAN VIEW)



SUMP LEVEL CONTROLS
(SUSPENDED TYPE SHOWN)



PUMP REMOVAL SYSTEM

DESIGN NOTES

1. Size sump and pump according to NRCS National Engineering Handbook, Section 16, and MN Technical Release 5
2. Check uplift on sump due to water table.

REVISIONS	
NO.	DATE

UNIT _____ (10/01/88)
 Designed _____
 Drawn _____ (SMB) (SMB)
 Checked _____
 Approved _____
 MINNESOTA
 CORRUGATED METAL PIPE PUMP STATION
 PLAN AND PROFILE
 COUNTY SWCD _____ COUNTY, MINNESOTA
USDA NRCS
 Natural Resources Conservation Service
 File No. MN615.DWG
 Drawing No. MN-ENG-615
 5/02
 Sheet of _____