

**NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATIONS**

PUMPING PLANT

(No.)
Code 533

GENERAL

Plans and design shall be in accordance with NRCS conservation practice standard for Pumping Plant, Code 533. The vendor or contractor furnishing pumps and motors shall provide the necessary performance curves, ratings, and other operating data to determine that they will meet the capacity, head, and other operating requirements in the engineering plan and specifications.

The engineering plans and specifications for pumping plant shall specify the type of equipment, material, and accessories and contain all necessary supporting data such as performance curves, manufacturer's recommendations, drawings, sketches, etc.

When NRCS is required or expected to certify the practice to the landowner, it shall be approved by the responsible NRCS person before installation begins.

INSTALLATION

Construction shall be performed to the neat lines and grades specified by the design and shown on the engineering plans. All special requirements of the equipment manufacturer shall be met.

Construction operations shall be conducted in a skillful and workmanlike manner. The completed job shall present a workmanlike appearance. Air and water pollution will be minimized and held within legal limits.

Pumps and Power Units. Pumps and power units shall be set on a firm base and be placed in proper alignment. All pertinent safety codes and manufacturer's recommendations shall be followed in the installation of the equipment. As

a minimum, revolving engine components, outside faces of pulleys, sheaves, sprockets, and gears on drives that rotate with projections, revolving shafts, except smooth shaft ends protruding less than one half of the diameter of the shaft, and nip points on exposed gears, belts, chain drives and idlers shall be shielded or shall be guarded by location to minimize inadvertent contact.

Steel. Exposed steel surfaces shall be protected from corrosion by galvanizing, painting, or other approved coatings.

Concrete. The mix design and testing of concrete shall be consistent with the size, and requirements of the job. Mix requirements or necessary strength shall be specified, but shall have a minimum cement content of 5 sacks per cubic yard and a maximum net water content of 7 gallons per sack. The type of cement, air entrainment, slump, aggregate, or other properties shall be specified. As a minimum, aggregates shall be reasonably well graded, clean, durable and shall not contain clay lumps and organic matter in excess of 3 percent of the total weight. Concrete water shall be free of acid, alkali, oils, and organic matter. All concrete is to consist of a workable mix that can be placed and finished in an acceptable manner. Necessary curing shall be specified. Reinforcing steel shall be placed as indicated during concrete placement. Subgrades and forms shall be installed to line and grade, and the forms shall be watertight and unyielding as the concrete is placed.

Timber. All lumber in contact with the ground or compost shall be pressure-treated in accordance with ASTM D 1760, latest edition.

Testing. The installer, vendor, or contractor shall demonstrate by testing that the pumping

plant will function properly at design capacity.
There shall be no objectionable flow conditions.

Gates, valves, pipe connections, discharge bays, power units, pumps, automatic controls, suction pipe and bays and other accessories and appurtenances shall perform satisfactorily.

Basis of acceptance. The acceptability of the pumping plant shall be determined by inspections to check compliance with the provisions of this standard with respect to the design of the pump, power units, the appurtenances used, and the minimum installation requirements. Where NRCS is responsible to certify the pumping plant, NRCS will be notified when construction begins to allow for scheduling timely construction inspections.

Certification and guarantee. The installing contractor shall certify that the installation complies with the requirements of this standard. A written guarantee that protects the owner against defective workmanship and materials for not less than one (1) year and that identifies the manufacturer and appropriate ratings (horsepower, capacity, rpm, head, etc.) of equipment used shall be furnished. The one-year guarantee is not required when the landowner installs the pumping plant.