

PUMPING PLANT FOR WATER CONTROL

Design Survey

The following information shall be obtained and recorded in the field notes:

- a. Topographic survey elevations showing profile of suction and discharge line.
- b. Minimum and maximum water surface elevations at source (if this cannot be obtained – for a well - at the time of the design note well head elevation).
- c. Available power sources (single phase or three phase if electric).
- d. Required maximum discharge elevation & minimum pressure requirements.
- e. Required discharge.

Design Data

The following will be considered minimum in the design of pumping plants. The information will be recorded in the design notes:

- a. Total Dynamic Head (TDH) computations for the required flow rate and the associate hydraulic grade line computations (if static and drawdown well elevations cannot be obtained, at time of design, use hydraulic elevations based off of well head – be sure to note the elevations are off the well head on the drawings).
- b. Estimated horsepower requirement computation based on maximum efficiency and power source available.
- c. Structural design and minimum hydraulic size for sump and pump installation.
- d. Housing and pad requirements for installation.
- e. Selection of automation and safety accessories.
- f. Records indicating NRCS obligations regarding State and Federal regulations have been met including, but not limited to, the following: ground water rules, water rights, easements, Army Corp of Engineer's 404 permits, NPDES storm water permits, cultural resources, etc.
- g. Quantity computations.

Drawings and Specifications

The construction drawings shall include but will not be limited to the following:

- a. Overall plan view layout of system showing location of structure.
- b. Location map with legal description and north arrow.
- c. Detailed plan and sectional views of all structures showing dimensions, reinforcement requirements, and types of materials.
- d. Profile of installation.
- e. Detailed view showing size and location of safety devices (backflow switches, etc) and appurtenances.
- f. Diameter, type, class, thickness and coating requirement for all pipes involved.
- g. Table of quantities.
- h. Construction notes.

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- i. Engineering job classification is shown and proper engineering approval is obtained.
- j. Cooperator's signature of review and acceptance to construct the project according to the plans and specifications.

Practice specifications along with applicable "Items of Work and Construction Details" shall be provided for each item or phase of construction. There are no standard specifications covering a pump or power unit. Sufficient information must be provided to enable a supplier to furnish a unit that will meet the requirements of the system at or near the design efficiency specified.

Layout Survey Notes

The following information shall be recorded in the field notes:

- a. Alignment stakes with offset reference hubs and stakes.
- b. Required cut stakes.
- c. Appurtenance location stakes (if required).

Compliance Checks

The complexity of the pumping plant will dictate the need for compliance checks during construction. All compliance check shall be recorded in the field notes. Narratives of construction checks shall be recorded in the job diary or on a sheet in the field notes. Compliance checks shall include but will not be limited to the following:

- a. Dimensions and elevations of structures.
- b. Data from information plate on pump and power supply.
- c. Type and quality of material.
- d. Location, type and sizes of appurtenances.
- e. Field test of installation.
- f. Statement of compliance signed by NRCS personnel with applicable job approval authority that the work meets the plans and specifications. (A NRCS employee, with proper job approval authority, shall certify on the as-built drawings whether the as-built practice does or does not meet the requirements of the standards and specifications.)
- g. Changes in design are documented.

As-Built Plans

As-Built plans shall be prepared for all pumping plants. These drawings shall reflect all significant changes in measurements, quantities, alignment, elevations, or design changes. If there were no significant changes, the original drawings shall be marked "As-Built".