

Colorado
Practice Documentation Requirements Checklist
for
533 - Pumping Plant

Minimum documentation requirements for this practice are outlined below. Documentation for associated practices or system components shall follow the appropriate practice documentation requirements for those practices or components. Some items may not be applicable in all cases; mark "N/A" in the check box if such is the case.

Participant Name:	Address:
Project Name & Location:	

<input checked="" type="checkbox"/>	By:	Date:
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RESOURCE INVENTORY

Purpose and objectives of practice clearly identified.			
Water source and water quantity determined.			
Water quality noted (debris, sediment, etc.).			
Required applicable permits (pumping, well installation, etc) determined.			
Soils and Geologic investigation: consider soil types, characteristics, depths, topography, water tables, inhibiting layers, seepage rates, etc.			
Location of utilities and power sources and consideration of alternative power sources.			
Right of way easements, utility clearances, SHPO clearance, and applicable State and Federal permits are obtained.			
Available water rights documentation on file.			
NRCS-CPA-52, Env. Effects Worksheet and CO-SSC-1, Cult. Res. Survey Form, completed.			
CO-ENG-13, Notice of Participant Responsibilities, has been reviewed with the cooperator, signed, and filed.			

DESIGN SURVEY

Design survey (location, pertinent water surface elevations, or topographic data, as required)			
Benchmarks set			
Survey data plotted			

DESIGN

Engineering Job Class determined and noted			
Minimum & maximum flow rate requirements determined			
Minimum & maximum pumping levels or lifts determined			
Minimum & maximum design operating pressure head(s) determined			
Determine nominal pump size, number of pumps and/or stages, pump efficiencies, etc.			
Pump power unit determined (electric, combustion engine, solar, etc.) and sized, along with all necessary controls and safety shutoff devices			
Electrical panel & wiring requirements determined			
Evaluate need for Variable Frequency Drive (VFD) controls if applicable			

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Net Positive Suction Head (NPSH _A vs. NPSH _R) – primarily applicable in centrifugal pump installations			
Pump & pipeline appurtenance design as applicable (backflow prevention device, air valves, pressure relief valves, etc.)			
Water measurement method determined and designed (if applicable)			
Energy savings or air quality calculations, if applicable			
Structural design computations (pump foundation or supports, anchoring, vibration control, pump housing, sump design, etc.)			
Quantities and cost estimates determined			
Design computations have been checked by the appropriate person(s).			

PLANS AND SPECIFICATIONS

Where applicable, construction drawings drawn on appropriately-sized standard drawing sheets. Include standard drawings as appropriate. Drawings to include the following:			
Engineering Job Class			
Location map or description			
Scaled or dimensioned drawing showing layout of components, alignment, stationing, structural features, appurtenances, etc.			
Stationed profile along centerline of pumping plant system to the outlet point or to the connection to the pipeline showing ground line, pump intake & outlet requirements (screens, connections, valves, etc.), appurtenances, minimum & maximum hydraulic grade lines, etc.			
Appurtenance installation details			
Structural details as needed (sump, pump foundation, connections, etc.)			
Pump performance criteria, such as maximum & minimum design flow, operating pressures, expected efficiency, etc.			
Necessary safety devices (safety shields, warning signs, shutoff devices, etc.)			
Material quantities			
Construction notes and General notes as required			
Note on drawings to call the Utility Notification Center of Colorado (UNCC), 8-1-1 or 1-800-922-1987, prior to any excavation.			
Construction specifications prepared (Colorado FOTG Practice Specifications or other).			
All engineering reports, designs, drawings, specifications, and related information have been reviewed and checked by appropriate personnel in accordance with current Colorado NRCS policy.			
Construction drawings and specifications have been approved and drawings signed			
O&M Plans prepared			
Plans, specifications, and O&M plans have been reviewed with the cooperator.			
Preconstruction meeting with cooperator and contractor.			

CONSTRUCTION LAYOUT SURVEYS (if performed by NRCS)

Centerline alignment stakes with offset grade stakes			
Layout, alignment, and reference stakes for structures and pipeline appurtenances			

COMPLIANCE CHECKS & FINAL DOCUMENTATION

Documentation data from pump manufacturer, such as, pump model, pump performance curves, motor type & horsepower rating, etc.			
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Pump depth setting, drop pipe size, pump outlet pipe size, etc.			
Material quantities and type			
Number, type , and location of all pipeline appurtenances, including drains, screens, valves, pressure regulators, pressure reducers, pressure gauges, outlets, air vents, stand pipes, etc.			
Location and types of flow measurement devices, if used			
Location and elevation of structural features critical to the operation of the pump (stand pipes, sumps, inlet structures, outlet structures, etc.)			
Results of installed pump test			
UNCC (Utility Notification) ticket number has been recorded.			
Construction inspection reports recorded.			
All permit requirements have been satisfied			
Changes in design are noted and approved by the landowner and the designer, and proper engineering review/approval is obtained.			
“As-Built” plans prepared and filed (Required if significant changes in design occur during construction and for Job Class V and above). If no significant changes, mark original plans “As-Built”			
Practice completion certified on CO-ENG-1, CO-ENG-12, or checkout notes.			
Progress reported.			