

NATURAL RESOURCES CONSERVATION SERVICE
Wyoming
CONSTRUCTION SPECIFICATIONS
FOR
SPRING DEVELOPMENT

(Owner/Operator)

(Project Title)

GENERAL

Installation shall be in accordance with an approved design and plan. Details of construction shown on the drawings but not included herein are considered as a part of this specification. Construction activities shall be in accordance with applicable OSHA regulations.

INSTALLATION

Disturbance of the site shall be limited to that needed to complete the installation. Sensitive areas that are flagged in the field or noted on the drawings shall be avoided.

Excavation for pipe trenches, spring boxes and appurtenances shall be as needed to install the appurtenant components as noted on the drawings.

Backfill shall be with materials shown on the drawings. Gravel and sand filters when specified shall be installed as to avoid contamination with other materials.

Backfill materials around and over pipelines and around spring boxes shall be hand compacted to a depth of at least 2-feet over the top of the pipe and within 2 feet of the structure.

On horizontal well installations the casing pipe shall be cemented in with pressure placed grout along side the casing. The grout or cement slurry shall have a water-cement ratio by volume of not more than 1:1. After placement, grout shall be allowed to set for a minimum of 12 hours before any further drilling is performed. The installation of the plastic pipe in the drill hole shall be done in a manner to allow a continuous pipe tube. Joints shall be glued.

PIPE MATERIALS

The collector conduit shall be of the size, material type as shown on the drawings. Unless otherwise specified, pipe shall conform to one of the following specifications:

- Corrugated polyethylene drainage tubing ASTM F 405 or F 667, AASHTO M 252 or AASHTO 294
- Corrugated polyvinyl chloride tubing ASTM F 800
- Polyvinyl chloride corrugated sewer pipe ASTM F 949
- Polyvinyl chloride sewer pipe ASTM D 2729
- Polyvinyl chloride pipe ASTM D 3033 or D 3034
- Concrete pipe for irrigation and drainage ASTM C 118
- Reinforced concrete pipe ASTM C 76
- Corrugated metal pipe ASTM A 760, A 761 A 762, A 849, A 875, A 885, A 929, B 745, B 746 or B 790

The casing pipe for horizontal wells shall be standard weight, galvanized steel pipe conforming to ASTM A 120. The liner pipe shall be Schedule 80 PVC 2110 plastic pipe conforming to ASTM D 1785. The pipe through the water bearing formation shall be either slotted or perforated with a minimum of 2 square inches of opening area per linear foot of pipe.

CONCRETE

Concrete work under these specifications shall be constructed to the dimensions, lines, and grades as shown on the drawings. The subgrade

for concrete shall be prepared as shown on the drawings or as directed by the technician.

Concrete compressive strength shall be at least 4000 psi at 28 days. The mix shall be in accordance with ASTM C 94 and this specification. When requested by the Technician the supplier shall furnish design mix and cylinder break test data.

Cement shall be low alkali Type II Portland cement.

Coarse aggregate shall be maximum size of 1-1/2 inches per designations of ASTM C 33.

Air entrainment conforming to the requirements of ASTM C 260, shall be used. The air content shall be 5 to 7 percent.

Forms shall conform to the shapes, lines, and dimensions as shown on the drawings. They shall be braced and/or tied together to maintain position and shape and; be sufficiently tight to prevent leakage of mortar. Forms shall be thoroughly oiled or wetted and cleaned of debris prior to placement of concrete. Forms shall not be removed without the approval of the Technician.

Reinforcing steel shall be deformed bars and be free from rust, oil, grease, paint or other deleterious matter. Items to be embedded in the concrete shall be positioned accurately and firmly anchored to prevent displacement during placement of concrete.

Placement. The concrete shall be deposited as closely as possible to its final position and shall be worked into the corners and angles of the forms and around all reinforcement and embedded items in a manner to prevent segregation of aggregates or excessive laitance. Consolidation of concrete may be accomplished by means of internal type mechanical vibrators, rodding, spading, or hand tamping.

Construction joints shall be provided as shown in the plans or as approved by the engineer. Joints shall be thoroughly cleaned and laitance removed before a new pour is made. Each joint shall be wetted immediately before the placing of new concrete.

Finishing. After the concrete has been consolidated, the unformed surfaces shall be given a wood float finish. Immediately after form removal, formed surfaces shall be cleaned of all defective concrete and effectively repaired. Snap ties shall be removed and the holes mortared.

Protection and Curing. Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. Exposed surfaces shall be kept continuously moist for the entire period. For formed surfaces, the protection may be accomplished by leaving the forms in place and keeping them wet for the entire curing period. Moisture shall be maintained by sprinkling, flooding, or fog spraying or by covering with continuously moistened canvas, cloth mats, straw, earth, or other approved material. In lieu of water curing, the concrete shall be cured by spraying with an approved sealing compound. The sealing compounds shall be applied as soon as practicable after the concrete finishing is completed. All surfaces shall be kept moist until the compound is applied.

Concreting in Cold Weather. Before any concrete is placed, all ice, snow and frost shall be completely removed from all surfaces to be in contact with the new concrete and the temperature of these surfaces shall be raised to as close as may be practical to the temperature of the new concrete that is to be placed thereon. No concrete shall be placed on a frozen subgrade or on one that contains frozen materials. Concrete shall not be mixed or placed when daily minimum atmospheric temperature is less than 40 degrees F., unless facilities are provided to ensure the adequate protection of the concrete. Temperature of the concrete at the time of placing shall not be less than 50 degrees F. nor more than 90 degrees F. The temperature of all aggregates and mixing water shall be not more than 100 degrees F. when introduced into the mixer. The use of accelerators or antifreeze compounds will not be allowed.

Concreting in Hot Weather. The Contractor shall apply effective means to maintain the

temperature of the concrete below 90°F during mixing, conveying, and placing.

FILTER MATERIALS

Sand-gravel filters shall be clean, hard material which does not decompose in air or water. Unless otherwise specified materials shall be 1-1/2 inch maximum size with 90 percent by weight passing a 3/4 inch sieve and with less than 10 percent passing a #60 sieve (0.25 mm).

Geotextile fabric materials shall be of the weight, type and opening size as shown on the drawings or the ADDITIONAL SPECIFICATIONS.

LUMBER

All lumber used shall be redwood, red cedar or be treated with a cold soak or pressure wood preservative meeting the requirements of ASTM D 1760 for underground burial.

FENCING

Posts may be galvanized steel or wood. Steel posts should be a minimum of 6.5 feet long and wood posts a minimum of 7.5 feet long. Wood posts shall be cedar, redwood, or other decay resistant wood or treated with Denta-chloro-phenal or creosote. Minimum top diameter for wood posts is 4 inches. All posts shall be firmly set into the ground, braced at all corners and turns, and spaced as shown on the drawings, but not to exceed 20 feet.

Wire. Barbed wire shall be a minimum of two strands of 12-1/2 gage, galvanized wire. Woven wire shall be galvanized, aluminum or plastic coated. Top and bottom wires shall be a minimum of 11-gage and intermediate line and stay wires shall be a minimum of 14-1/2 gage.

Hardware. Wire ties, clamps, staples, and related fence hardware shall have equivalent coating to the fencing being installed.

Pole or timber fence equivalent to standard barbed wire fence in usefulness and durability

may be used as an alternate when authorized by the responsible technician.

SEEDING

Seed the disturbed areas unless suitable vegetation already exists. Seedbed preparation, seed mixture, fertilizer, mulch, and application rates shall be in accordance with the attached ADDITIONAL SPECIFICATION for "Seeding".

CLEAN-UP

Waste earth material shall be smoothed and seeded.

ADDITIONAL SPECIFICATIONS