NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE GENERAL SPECIFICATIONS

Texas

WATERING FACILITY
INSTALLATION OF NEW WATERING FACILITY

(No.)

Code 614

1. SCOPE

The work shall consist of furnishing and installing the watering facility, fittings, and appurtenances as specified for livestock and/or wildlife use at selected locations.

2. LOCATION

The watering facility shall be located as shown on the drawings/map or as staked in the field.

When a watering facility is located within 100 feet to a well, the watering facility shall be:

a. located down gradient from the well and

b. livestock shall be excluded by fencing for a minimum distance of 20 feet from the well head

3. PUBLIC AND PRIVATE UTILITIES

Utilities are defined to be public or private, overhead and underground power or communication lines, and any pipelines. The landowner\operator\contractor must conduct their own search and discovery for utilities in order to lesson or avoid potential damages. During planning, the owner\operator must complete a TX-ENG-80A, UTILITIES INVENTORY to document know utilities. The owner\operator or their representative must complete TX-ENG-80B, COOPERATOR CONFIRMATION OF THE ONE-CALL UTILITY SAFETY SYSTEM to comply with State law prior to any ground disturbance and return to a USDA-NRCS representative.

4. QUALITY CONTROL

Quality control of all materials and construction procedures is the responsibility of the landowner and contractor. NRCS will make periodic review(s) of the work for the benefit of the agency which will include the final construction check.

5. MATERIALS

All materials used for the watering facility, fittings, and appurtenances shall be new. All materials shall have a life expectancy that meets or exceeds the planned life of the installation.

A. Tanks and Troughs

All manufactured troughs will have inlets, outlets, drains and overflow devices as per construction details.

a. Fiberglass
Prefabricated fiberglass storage tanks and troughs shall meet one of the following standards:

i. ASTM Standard D3299 - Standard Specification for Filament-Wound Glass-fiber-reinforced Thermoset Resin Corrosion Resistant Tanks.

ii. ASTM Standard D4097 - Standard Specification for Contact-Molded Glass-fiber-reinforced Thermoset Resin Corrosion Resistant Tanks.

iii. AWWA Standard D120 - Thermosetting Fiberglass-reinforced Plastic Tanks

The structure shall be made of ultraviolet resistant materials or shall have a durable coating to protect the structure from deterioration due to sunlight. Tank must be dark in color to prevent growth of algae inside the tank.

b. Polyethylene
Prefabricated polyethylene tanks shall meet one of the following standards:

i. ASTM D1998 - Standard Specification for Polyethylene Upright Storage Tanks.

ii. NSF/ANSI Standard 61 - Drinking Water System Components - Health Effects.

The tank must be designed to prevent UV damage and dark enough to prevent growth of algae inside the tank. Polyethylene upright storage tanks must have a minimum depth of 3.5 feet.

c. Concrete
Concrete facilities shall be constructed from a concrete mix producing a minimum compressive strength of 3,000-PSI at 28 days or as specified on the drawings:

Cement shall be Portland cement Type II, IIA or V

Precast concrete troughs manufactured under plant control conditions must have minimum 3" wall thickness except that this wall thickness must be increased to 4" where corrosive conditions are expected

d. Steel

i. A Steel used must conform to ASTM Grade A-36.

ii. Minimum thickness shall be 3/16-inch (7 gauge) for structures up to 6 foot depth or as designed for a tank company.

iii. Acceptable jointing methods are welded and bolted with gaskets

iv. No field installed penetrations will be allowed without prior approval from the engineer.

v. Coated or painted watering facilities must be manufactured from carbon steel and must be designed for water with a specific gravity of 1.0.

vi. Coatings and paints must be applied per manufacturer's requirements and meet the requirements of NSF and/or FDA for potable.

vii. Vessel penetrations must be made prior to coating.

e. Galvanized Metal

i. Unlined galvanized watering facilities shall have a minimum thickness of 20-gauge for both the wall and bottom. Galvanization shall meet or exceed ASTM A-653 G90.

ii. Galvanized metal water storage facilities using a liner will have a minimum galvanized metal thickness of 23 gauge and a minimum depth of 5 feet. Galvanization shall meet or exceed ASTM A-653 G90.

f. Liner

i. Liners must have a minimum thickness of 20 mils. The liner shall be manufactured to be suitable for the intended use and meet or exceed the Material Specification 594 – Geomembrane Liner. Select appropriate property values for the specific material type used.

B. Escape Ramps

Escape Ramps shall be made of the following materials:

a. Coated/Painted Steel.

b. Stainless Steel.

c. Concrete.

d. Polyethylene

e. Fiberglass

f. Grouted Rock

g. Other material (approved by Zone Engineer)

6. PLUMBING

Plumbing shall be new 2-inch galvanized steel, copper, bronze, Sch-40 unthreaded or Sch-80 threaded PVC. All fittings shall comply with the ASTM standard for the type of fitting and material used. Refer to applicable Standard Drawing for additional plumbing requirements.

Double check valves or other measures prescribed in local plumbing codes are required at watering facility inlets when watering facilities are connected to waterlines that have domestic users.

Shut-off valves will be installed on inlets and outlets to cut off flow as necessary for repairs and maintenance.

Watering facilities shall be equipped with a water inlet pipe, drainage outlet and overflow outlet, as either individual outlets or combination of outlets. Overflow outlets will be piped to a stable point of release at least 20 feet from the watering facilities.

All valves and pipes shall be protected by shields or covers, or designed to prevent damage

by livestock and be protected from freezing and ice damage. PVC pipe shall be made of ultraviolet resistant materials or shall have a durable coating of ultraviolet resistant paint to protect from deterioration due to sunlight.

Closed top tanks shall be vented and have an access port with lid for safety and maintenance purposes installed in accordance with the manufacturer's recommendations.

7. FOUNDATION

When the watering facility manufactures provides specific foundation requirements, they shall be used.

Where specific manufacturer foundation requirements are not furnished, the foundation shall be prepared by leveling, compacting and smoothing the area where the facility is to be installed. The foundation area shall be free of debris and rocks or pebbles larger than ½-inch in diameter. Fill material under or around the watering facility shall be compacted to the density of the existing natural materials.

For watering facilities 2 foot and less in height, the foundation shall support the watering facility such that the finished, settled facility does not vary from the high point to the low point around its flange (lip) more than 2-inches for facilities 14-feet and less in diameter and 3-inches for all other facility diameters. When the watering facility is not level around its flange (lip), the top of the overflow outlet shall be a minimum of 1-inch below the lowest point along the flange (lip).

All plumbing used in the floor shall be positioned prior to final smoothing of the foundation. Where floor drains are used, the outlet for the drain shall be positioned prior to final smoothing of the foundation. All backfill for underground pipes shall be compacted to the degree required to prevent settlement after construction is completed.

Surface drainage problems shall be eliminated. If needed the foundation area and the immediate surrounding area shall be smoothed and graded to permit drainage of surface water. Subsurface drainage will be provided as needed.

Refer to applicable Standard Drawing for additional foundation requirements.

8. INSTALLATION

All construction shall be performed in a professional manner, and the job site shall have a neat appearance when finished. All disturbed areas not graveled or paved shall have erosion controlled by vegetative or other approved methods.

Closed top storage tanks shall be installed vertically and above ground.

No concrete should be placed prior to approval of the grade, alignment, and placement of the steel reinforcement, forms and appurtenances by a USDA-NRCS representative.

9. PROTECTIVE AREA / APRON

The area adjacent to the watering facility that will be trampled by livestock shall have an apron constructed in accordance to Texas Specification Heavy Use Area Protection 561.

10. CERTIFICATION

The installer of the watering facility shall furnish the owner/operator a certification (with a copy provided to USDA-NRCS) that the installed watering facility, appurtenances, and installation conform to the requirements of this specification and appropriate Standard Drawing.

The manufacturer of the watering facility must provide NRCS a written certification that the facility meets the material and manufacturing requirements of this specification.

11. MEASUREMENT

An onsite check of the completed installation will be performed by a USDA-NRCS representative to measure installed dimensions and quantities.

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12. CONSTRUCTION DETAILS

Watering Facility Material:

Standard Drawing Number:

Size:

Location of Shut-off Valve(s):

Location of Double Check Valve(s) or Backflow Prevention Device(s) (if applicable):

Minimum Length of Overflow / Drain Pipe(s):

Escape Ramp (if applicable)
Number (Min. 1 each 30 foot of rim)
Material
Standard Drawing Number:

Method of Anchoring / Foundation (Check One)

Prefabricated, non-concrete watering facilities that are utilized for drinking (Troughs):

- ☐ An automatic inflow float valve on a pressurized inflow supply line such as a public water supply, a well with electric pump, an elevated storage tank, and the water level in the watering facility is maintained at or near full capacity.
- ☐ Anchors attached to the drinking facility and embedded in the ground. Anchors will be a minimum of three in number equally spaced on the perimeter. Anchors can be ½-in. rod anchors, standard T or U section steel post (1.33-lbs./ft.), metal pipe (min. 2-3/8-in. OD); treated timber post (4-in. top diameter); or untreated cedar, bois-d-`arc, mulberry, mesquite, or black locust post (4-in. top diameter), or as specified by the manufacturer.
- ☐ Installing a 4 inch thick and 5 foot wide concrete apron
- ☐ Installing a 6 inch thick and 5 foot wide gravel or caliche apron
- ☐ Mounding soil material to a depth of 1 foot sloped out a 10:1 slope
- ☐ The facility's concrete floor
- ☐ Manufacturer's recommendation,

Watering facilities that are not utilized for drinking may be stabilized using the following methods (Tanks):

- ☐ Manufacturer recommendation

☐ Anchors installed according to manufacturer recommendations.
☐ By maintaining a minimum required water depth in the watering facility.

Minimum required water depth for tank stability (if applicable):_____inches

☐ The facility's concrete floor
☐ Alternative methods of anchorage may be accepted if they have been designed by a professional engineer licensed in Texas.

PROTECTIVE AREA / APRON (Check One)

☐ Installing a 4 inch thick and 5 foot wide concrete apron
☐ Installing a 6 inch thick and 5 foot wide gravel or caliche apron
☐ Mounding soil material to a depth of 1 foot sloped out a 10:1 slope
☐ Other

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See Attached Texas General Specification Heavy Use Area Protection 561

ATTACHMENTS:

1. TX- ENG-80B, Cooperator Confirmation of the One-Call Utility Safety System Form
2. Responsibilities for Conservation Systems Constructed with NRCS Technical Assistance.
3. Layout Map with Pipeline ID and Stations.
4. Watering Facility Operations & Maintenance Plan.
5.

This general specification, attached construction details and the requirement for completion of a TX-ENG-80B have been reviewed with me and I agree to install my watering facility according to these general specifications.

_____ _____

Owner \ Operator ***Date***