



## Practice Specification Watering Facility (Code 614)

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### 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.

### Location

The watering facility shall be located as shown on the drawings/map or as staked in the field and any trough shall be located at least 100 feet away from wells, streams, ponds, or riparian areas to minimize chance of contamination from fecal contamination or surface pollution.

### Public and Private Utilities

1. Utilities are defined to be overhead and underground power or communication lines, and pipelines. The contractor should conduct their own search and discovery for utilities in order to lessen or avoid potential damages. Other buried infrastructure, such as landowner-installed drainage tile, private water lines, or electrical lines, are the responsibility of the landowner to locate. The owner/operator shall complete TX-ENG-80A, Utilities Inventory, during planning and return it to the NRCS representative.
2. The owner/operator shall also ensure that TX-ENG-80B, Cooperator Confirmation of the Utility Locator Service, is completed and returned to the NRCS representative prior to layout or any ground disturbance.
3. Cooperators, sponsoring organizations, and/or contractors shall be liable for damage to utilities and damage resulting from disruption of service caused by installation activities. The Natural Resources Conservation Service (NRCS) makes no representation on the existence or non-existence of any utilities. Absence of utilities on drawings is not assurance that no utilities are present at the site.

### 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.

### Materials

All materials used for the watering facility, fittings, and appurtenances shall be new. Used rubber tires are allowed per an approved state drawing. All materials shall have a life expectancy that meets or exceeds the planned life of the installation.

1. 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 water.
- 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

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.

g. Used Rubber Tires

Used rubber tires can be used per an approved state drawing. Tires shall be inspected prior to installation.

2. 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)

## Plumbing

1. Plumbing shall be new 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.
2. 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.
3. Shut-off valves will be installed on inlets and outlets to cut off flow as necessary for repairs and maintenance.
4. 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.
5. 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.
6. 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.

## Foundation

1. When the watering facility manufacturer provides specific foundation requirements, they shall be used.
2. 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.
3. 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).
4. 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.
5. 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.

## Installation

1. 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.
2. Closed top storage tanks shall be installed vertically and above ground.
3. **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.**

## Protective Area / Apron

The area adjacent to the watering facility that will be trampled by livestock shall have an apron constructed in accordance to the Construction Details section below.

## Certification

1. 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.
2. The manufacturer of the watering facility must provide NRCS a written certification that the facility meets the material and manufacturing requirements of this specification.

## Construction Details

1. Watering Facility Material: \_\_\_\_\_
2. Standard Drawing Number: \_\_\_\_\_
3. Size: \_\_\_\_\_
4. Location of Shut-off Valve(s): \_\_\_\_\_
5. Location of Double Check Valve(s) or Backflow Prevention Device(s) (if applicable):  
\_\_\_\_\_
6. Minimum Length of Overflow / Drain Pipe(s): \_\_\_\_\_
7. Escape Ramp (if applicable) Number (Min. 1 each 30 foot of rim) / Material / Standard Drawing Number: \_\_\_\_\_
8. Method of Anchoring / Foundation (Check One):

### Prefabricated 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 crushed rock apron
- ☐ Installing a 6 inch thick and 5 foot wide gravel or crushed rock apron over geotextile fabric
- ☐ Mounding soil or caliche 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 (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.

9. 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 apron
- ☐ Installing a 6 inch thick and 5 foot wide gravel apron over geotextile fabric
- ☐ Mounding soil or caliche material to a depth of 1 foot sloped out a 10:1 slope
- ☐ Other: \_\_\_\_\_

See Attached Texas Practice Specification Heavy Use Area Protection 561.

**Attachments**

1. TX-ENG-80B, Cooperator Confirmation of the Utility Locator Service
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. Specific Site Requirements on the Following Page

<b>The above practice specifications, attached specific site requirements, and the requirement for completion of a TX-ENG-80A and a TX-ENG-80B have been reviewed with me, and a copy of each was provided. I agree to install this practice in accordance with the above referenced documents.</b>	
Owner/Operator Signature	Date

## **Specific Site Requirements**