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.

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 shall conduct their own search and discovery for utilities in order to lessen or avoid potential damages, injuries or loss of life. During planning, the owner\operator should complete a TX-ENG-80A UTILITIES INVENTORY to document known utilities. The owner\operator or their representative shall 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 it 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. WATER FACILITY MATERIALS

Unless otherwise specified on the drawings or plans, 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.

All manufactured troughs will have inlets, outlets, drains and overflow devices as needed.

All fiberglass watering facilities shall be manufactured in accordance with ASTM D-4097 or ASTM D-3299.

Concrete watering facilities and concrete aprons 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.

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Precast concrete structures shall be pre-certified by NRCS. Precast concrete troughs manufactured under plant control conditions must have minimum 3" wall thickness except that this wall thickness will be increased to 4" where corrosive conditions are expected.

Watering facilities constructed with a concrete base and steel plate walls shall have a minimum wall thickness of 1/8 inch (11 gauge) for facilities 4 feet or less in height and a minimum of 3/16-inch (7-gauge) for facilities between 4 and 6 feet in height. Corrugated Metal shall be minimum 16 gage. Steel plate should not be used in corrosive water conditions.

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.

Lined galvanized metal water storage facilities with a reinforced plastic liner will have a minimum galvanized metal thickness of 23 gauge and a minimum depth of 5 feet. The reinforced plastic liner will have a minimum thickness of 20 mils and meet or exceed the ASTM D751 test for penetration resistance of 50lbs and breaking force of 375lb (length) and 275lb (width).

All polyethylene watering facilities shall be in accordance with ASTM D1998. Polyethylene upright storage tanks must have a minimum depth of 3.5 feet.

6. 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.

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

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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. PROTECTIVE AREA\ APRON

The area adjacent to the watering facility that will be trampled by livestock shall have an apron a minimum of 5 ft. in width surrounding the watering facility. The apron shall be constructed of 4-in. thick concrete, 6-in. thick gravel, crushed rock or caliche, or 12 inch thick mounded soil sloped away from the facility at a 10:1 slope.

Recognized good concrete practices shall be used in making, delivering, and placing the concrete. The concrete shall be reinforced with 6-inch x 6-inch, No. 10-gage welded wire mesh. The welded wire mesh shall be placed so that it will be 2-inches below the finished surface of the apron and joints shall be overlapped not less than 8 inches. The finished surface of concrete apron shall slope away from drinking trough.

When materials other than concrete are used, the protected area/apron shall be compacted to a smooth finish to provide firm footing, adequate drainage, and reduce erosion. The protected area/apron will be left in a workmanlike condition with no piles of protection material or soil remaining.

9. PLUMBING

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

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.

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

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Closed top tanks shall be vented and have a manway for safety and maintenance purposes installed in accordance with the manufacturer's recommendations.

10. STABILITY

Prefabricated, non-concrete watering facilities will require protection against overturning.

Watering facilities that are utilized for drinking may be stabilized using the following methods:

(1) 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.
(2) Installing a 4 inch thick and 5 foot wide concrete apron
(3) Installing a 6 inch thick and 5 foot wide gravel or caliche apron
(4) Mounding soil material to a depth of 1 foot sloped out a 10:1 slope.
(5) 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.
(6) The facility's concrete floor
(7) Manufacturer's recommendation,

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

(1) Manufacturer recommendation
(2) Anchors installed according to manufacturer recommendations.
(3) By maintaining a minimum required water depth in the watering facility. The minimum water depth in feet will be shown in the construction details. To assure that the minimum water depth for stability is not unknowingly withdrawn below the required depth, the water supply outlet pipe will be 1) fitted through the sidewall of the water storage facility at the distance "hw" above the floor of the water storage facility, or 2) made as a standpipe through the bottom of the water storage facility with the height of the standpipe within the water storage facility being the distance "hw" above the inside floor. A valve may be placed at the bottom of the water storage facility for cleanout and maintenance, but the supply outlet will not be connected to such cleanout facility.
(4) The facility's concrete floor
(5) Alternative methods of anchorage may be accepted if they have been designed by a professional engineer licensed in Texas.

11. 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 USDA-NRCS, Texas Conservation Practice Standard Watering Facility Code 614 and\or appropriate manufacturing criteria.

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12. MEASUREMENT

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

13. CONSTRUCTION DETAILS

Planned Location of Shut-off valve(s): _____

Planned Minimum Length of Overflow\ Drain Pipe(s): _____ ft.

Planned Access and Escape Features for Wildlife (if applicable): _____

_____

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

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

_____

Other details_____

ATTACHMENTS:

Standard Drawing Number: _____

Contractor's Certification Sheet for: (Concrete or Concrete and Steel) (Fiberglass)
(Heavy Equipment Tire) (Lined Galvanized Metal) (Polyethylene)
(Unlined Galvanized Metal) (_____)

TX-ENG-80B, Cooperator Confirmation of the One-Call Utility Safety System
O&M Plan for Watering Facilities

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<u>This construction 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 construction specifications.</u>

_____ _____

Owner/Operator **Date**