

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE GENERAL SPECIFICATIONS
Texas**

**HEAVY USE AREA PROTECTION
(For Apron around Livestock Watering Facility)
Constructed from Gravel, Crushed Rock, Concrete)
(No.)
Code 561**

1. SCOPE

The work shall consist of furnishing and installing a protective apron around a watering facility constructed from gravel, crushed rock, or concrete. The protective apron shall have a minimum width of 5 ft.

2. LOCATION

The apron around 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 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. The owner/operator shall complete TX-ENG-80A, Utilities Inventory, during planning and return it to the NRCS representative. The owner/operator shall also ensure that TX-ENG-80B, Cooperator Confirmation of the One-Call Utility Safety System is completed and returned to the NRCS representative prior to layout or any ground disturbance.

4. QUALITY CONTROL

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

Quality control shall be the primary responsibility of the producer/contractor. The producer/contractor shall provide to NRCS quality photographs showing the placement of the geotextile and steel reinforcement when required. For the geotextile, photos shall show correct overlapping, no tears prior to placement of rock and method used to place the rock. For the steel, photos shall show spacing of steel, overlapping of steel at joints and height of steel above the foundation. Photos shall have a reference scale such as a tape measure with clearly visible numbers and/or markings.

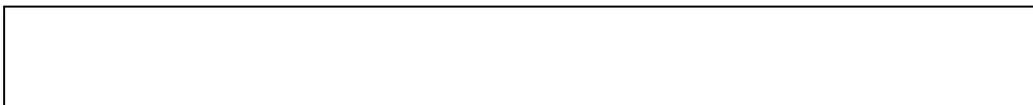
5. PROTECTIVE APRON METHODS:

The protective area/apron shall be installed according to one of the following methods.

Method 1: The apron shall be constructed of 6-in. thick layer of gravel or crushed rock.

Method 2: The apron shall be constructed of 6-in. thick gravel or crushed rock on a geotextile filter fabric material foundation.

Method 3: The apron shall be constructed of a minimum of 4 inch thick concrete.



6. MATERIALS AND INSTALLATION

All construction shall be performed in a professional manner, and the job site shall have a neat appearance when finished.

Any existing material shall be excavated from the foundation of the apron to the depths, widths, lengths, and slopes required by the drawing.

The apron shall be placed to a smooth finish to provide firm footing, adequate drainage, and reduce erosion. The protective apron will be left in a workmanlike condition with no piles of protection material or soil remaining.

Crushed Rock/Gravel The gravel or crushed rock shall be approved by NRCS representative prior to installation. Materials shall be hard and durable. Gradation must be reasonably well graded with larger (1.5" to 2") aggregate uniformly distributed and smaller aggregate filling voids. Maximum aggregate size shall not exceed 2".

Gravel or crushed rock shall be placed and compacted to a minimum thickness of 6 inches over the entire apron area. Aggregate may be placed by equipment or by hand. If the gravel or crushed rock is used for stability of the watering facility, the thickness shall be measured from the bottom of the watering facility.

Concrete: Concrete shall have a minimum 28-day compressive strength of 3,000 PSI. The maximum permissible aggregate size shall be 1 ½ inch. The concrete shall be reinforced with welded wire mesh or reinforcing steel. Welded wire mesh shall be 6 inch X 6 inch, No. 10 gage with 8-inch overlaps at the joints. Reinforcing steel shall be a minimum of No. 3 rebar on 18-inch centers with 18-inch overlaps at the joints. Reinforcement shall be placed 2 inches below the finished surface.

Recognized good concrete practices shall be used in making, delivering, and placing the concrete. The concrete shall be placed to a 4 inch thickness. The finished surface of the concrete apron shall slope away from drinking facility.

Geotextile: Geotextile shall be used on all soils where the migration of the rock is a known problem. Geotextile is recommended on other soils where the migration of the rock is likely to occur such as in clays or silts and sands. Migration is likely to occur in clays when wet and silts and sands when they are dry. Any soil that is poorly drained and saturated will allow the rock to migrate into the base soil.

The filter cloth shall be a non-woven needle-punched geotextile material in accordance with the following test methods and minimum values:

Property	Test method	Class I
Tensile strength (pounds)	ASTM D 4632 grab test	180 minimum in any principal direction
Puncture (pounds)	ASTM D 4833	80 minimum
Ultraviolet light (% residual tensile strength)	ASTM D 4355 150-hr exposure	70 minimum
Apparent opening size (AOS)	ASTM D 4751	As specified: Max. #40

Elongation at failure (%)	ASTM D 4632	≥ 50
Permittivity sec ⁻¹	ASTM D 4491	0.70 minimum

The surface on which the geotextile is to be placed shall be graded to the neat lines and grades as shown on the drawings. The geotextile shall be joined by overlapping a minimum of 18 inches and secured against the underlying foundation material. In no case shall material be dropped on uncovered geotextile from a height of more than 3 feet. The geotextile shall not be placed until it can be properly anchored and covered within 48 hours. No equipment shall operate directly on the geotextile. Anchoring of geotextile shall be done according to manufacturer recommendations.

Every precaution shall be taken not to tear the geotextile, however, should the geotextile be torn or punctured the damaged or displaced area shall be repaired to the original approved condition. The repair shall consist of a patch of the same type of geotextile being used and overlaying the existing geotextile by a minimum of 2 feet from the edge of any damaged area. If the foundation below the geotextile is damaged, the backfill around the damaged or displaced area shall be restored to the original approved condition prior to the repair.

7. MEASUREMENT

An onsite check of the completed installation will be performed by an USDA-NRCS representative.

Payment will be based on the designed surface area of the protective apron.

8. CONSTRUCTION DETAILS

Protective Apron Method _____ shall be used.

Designed protective apron width _____ ft.

Designed protective apron surface area _____ sq.ft.

ATTACHMENTS:

1. Standard Drawing Number: TX-DWG-9008
2. TX-ENG-80B, Cooperator Confirmation of the One-Call Utility Safety System
3. O&M Plan for Heavy Use Area Protection
4. Responsibilities For Conservation Systems Constructed with NRCS Technical Assistance Landowners.

This construction specification, attached construction details, and the requirement for completion of a TX-EN-80B have been reviewed with me and I agree to install this practice according to these construction specifications.

Owner/ Operator

Date