

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE GENERAL SPECIFICATIONS
HEAVY USE AREA PROTECTION

(Ft.)

CODE 561

SCOPE

The work shall consist of furnishing and installing the surfacing materials as specified, in order to provide a stable, non-eroding surface for areas frequently used by animals, people or vehicles to treat animal health or water quality resource concerns. Construction shall be carried out in such a manner that erosion, water, air, and noise pollution will be minimized and held within legal limits as established by state regulations.

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 an OK-ENG-45 UTILITIES INVENTORY & CONSTRUCTION RELEASE FORM to document known utilities in order to comply with State law prior to any ground disturbance and return it to a USDA-NRCS representative.

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.

FOUNDATION PREPARATION

The foundation shall be prepared by leveling, smoothing, and proper compaction of the area where the surfacing materials are to be installed. The base shall be reasonably smooth and free of debris, holes, depressions, projections, muddy conditions, standing or flowing water and loose rocks and clods larger than 3/8 inch in size.

When specified, a layer of sand or fine gravel shall be placed between the bottom of the surfacing material and subgrade. On moderately to high shrink/swell soils a minimum of a 4" layer of 3/8 inch crushed rock or concrete sand may be specified under concrete slabs or other non flexible surfacing materials for a base, it shall be saturated to consolidate the sand or crushed rock base. The material shall be free of organic material, excess fines, and rock larger than 3/8 inch in size.

GEOTEXTILE

All materials used in the installation shall be equal in size and quality to that specified or shown on the drawings. All materials shall conform to appropriate ASTM specifications. When not otherwise specified all geotextile shall be a Class 1 nonwoven geotextile fabric with a minimum weight of 8 ounces per square yard.

When geotextile is used, the geotextile shall be placed on the surface at the locations and in accordance with the details shown on the drawings. It shall be unrolled along the placement area and loosely laid, without stretching, in such a manner that it conforms to the surface irregularities when material are placed on or against it. The geotextile may be folded and overlapped to permit proper placement in designated areas.

For areas where the geotextile will be installed on slopes less than 1 percent, it shall not be placed until it can be anchored and protected with the specified covering within 48 hours or protected from exposure to ultraviolet light. In no case shall material be dropped on uncovered geotextile from a height of more than 5 feet. Unless otherwise specified, the minimum overlap of geotextile panels shall be 24 inches. The geotextile may be temporarily secured with pins recommended or provided by the manufacturer, but they shall be removed before the permanent covering material is placed.

When the geotextile material is laid on a slope that is greater than 1 percent, the geotextile shall not be placed until it can be anchored and protected with the specified covering within 48 hours or protected from exposure to ultraviolet light. In no case shall material be dropped on uncovered geotextile from a height of more than 3 feet. The geotextile shall be joined by overlapping a minimum of 18 inches (unless otherwise specified) and secured against the underlying foundation material. Securing pins approved and provided by the geotextile manufacturer shall be placed along the edge of the panel or roll material to adequately hold it in place during installation. The pins shall be steel or fiberglass formed as a **U**, **L**, or **T** shape or contain "ears" to prevent total penetration through the geotextile. Steel washers shall be provided on all but the **U**-shaped pins. The upstream or upslope geotextile shall overlap the abutting downslope geotextile. At vertical laps, securing pins shall be inserted through the bottom layers along a line through approximately the mid-point of the overlap. At horizontal laps and across slope laps, securing shall be inserted through the bottom layer only. Securing pins shall be placed along a line about 2 inches in from the edge of the placed geotextile at intervals not to exceed 12 feet unless otherwise specified. Additional pins shall be installed as necessary and where appropriate to prevent any undue slippage or movement of the geotextile. The use of securing pins will be held to the minimum necessary. Pins are to remain in place unless otherwise specified.

Should the geotextile be torn or punctured, or the overlaps disturbed, as evidenced by visible geotextile damage, subgrade pumping, intrusion, or grade distortion, the backfill around the damaged or displaced area shall be removed and restored 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. The patch shall extend a minimum of 2 feet from the edge of any damaged area.

SURFACE TREATMENT

All materials used in the installation shall be equal in size and quality to that specified or shown on the drawings. All materials shall conform to appropriate ASTM specifications.

Reinforced Concrete Slab. When concrete is used for the treatment area it shall meet the requirements called for by the design and/or Oklahoma Conservation Practice Standard 561 – Heavy Use Area Protection. All concrete shall be poured against proper forming material. Joints shall be placed as shown on the drawings. All concrete treatment areas shall have a perimeter footing and reinforcement steel to the extent shown on the drawings. The concrete surface shall have a rough finish.

Reinforcement shall be placed as shown on the plans and shall be free of oil and other foreign matter such as loose coatings of rust, scale, or dirt. The reinforcement shall be tied in place so that it is 2 to 2½ inches below the finished surface of the concrete slab. The slab reinforcement shall rest on the horizontally projecting legs of the vertical bars. Welded wire, as shown on the standard drawing, or fiber reinforcement can also be used.

The concrete shall be good quality using sound and clean aggregates. A job or ready-mix concrete shall consist of approximately 1 part cement, 2 parts sand, and 4 parts coarse aggregate (1 ½ inch maximum size). The water-cement ratio shall be no more than 6 gallons of water to 1 - 80 pound sack of cement when dry aggregates are used. If the sand and gravel used is moist, the water shall be reduced to no more than 5 gallons per sack of cement.

All concrete is to consist of a workable mix that can be placed and finished in an acceptable manner. The concrete shall be delivered to the site and discharged into the forms within 1 ½ hours after the

introduction of the cement to the aggregates unless the concrete mix is designed with set retarder and is approved for use by the technician.

Concrete shall be placed to the lines and grades as shown on the plans or as staked in the field. The concrete for the slab shall be placed after the slab reinforcement is in place. Care shall be used in placing the concrete to avoid segregation.

Isolation or expansion joints shall be installed when a concrete slab is poured against something that could be affected by shrinkage or swelling of the concrete slab. Examples include but are not limited to water tanks and troughs, existing slabs, building walls, support columns or conduits. Isolation joints are formed by placing preformed joint material next to the column or wall or standpipe prior to pouring the slab. Isolation joint material should go all the way through the slab, starting at the sub-base, but should not extend above the top. Isolation Joint materials range from inexpensive asphalt-impregnated fiberboard to cork to closed cell neoprene. For a cleaner looking isolation joint, the top part of the preformed filler can be cut off and the space filled with elastomeric sealant.

When the entire area to be surfaced can't be poured at one time, construction joints shall be used. When the slab will have no significant traffic crossing the joint, a plain butt joint, with no reinforcement crossing the joint, is acceptable. For a plain butt joint the bond area between the separate pours shall be left untroweled and shall be thoroughly cleaned to insure a good bond between the two pours. When the slab is design to handle vehicular traffic, equipment or other non foot traffic loading, a construction joint with load transfer capabilities will be required.

The concrete shall be consolidated as it is placed to ensure a tight bond to reinforcing steel and to yield dense concrete reasonably free of voids. When concrete is placed with the top slab surface level with the natural ground, forms may not be required. When forms are required, either metal or wood forms may be used. After the forms are removed, all exposed voids shall be filled with cement-sand mortar. The entire wall surface shall be wet rubbed to accomplish a dense smooth surface.

Concrete shall not be placed when the outside temperature is below 40 degrees or above 90 degrees Fahrenheit. Concrete placed during cold weather shall be protected from freezing during the curing period. The concrete shall be cured by covering it with burlap, canvas, or other suitable material and kept from drying out for at least 7 days. The concrete may be cured by coating the surface with an approved white-pigmented curing compound.

Contraction or crack control joints shall be required in all concrete slabs greater than 100 square feet, greater than 10 feet in length or as specified on the drawings. Contraction joint spacing shall be no more than 10 feet. Cut the control joints to a depth of 25% of the depth of the slab. Contraction joints may be cut into fresh concrete using a grooving tool or zip strip. Contraction joints can also be saw cut into hardened concrete as soon as possible after the concrete hardens. In hot weather the concrete may crack if joints are not cut within 6 – 12 hours after finishing.

Aggregate Surface Treatment. When aggregate is used for the treatment area it shall meet the requirements called for by the design and/or the Oklahoma Conservation Practice Standard 561 – Heavy Use Area Protection. All aggregate shall be composed of clean, hard and durable mineral particles free from organic matter, clay balls, soft particles, or other substances that would interfere with the free-draining properties of the aggregates.

All aggregate surfaces shall be placed on geotextile unless otherwise specified on the drawings or site specific construction specifications. The aggregate shall be placed by equipment on the subgrade surface to the depth and dimension as shown on the drawings. It shall be installed to the full course thickness in one operation and in such a manner as to avoid serious displacement of the underlying material. Compaction of the aggregate is not required, but the surface of such material shall be finished reasonably smooth and free of mounds, dips, or windrows.

Bituminous Concrete Pavement. Refer to *AASHTO Guide for Design of Pavement Structures* and the Oklahoma Department of Transportation specification for design and installation criteria for bituminous concrete paving.

All Other Surfacing Materials. All Surfacing materials not included above will have a site specific design, material and construction specification developed based on the properties of the material with compressive strengths necessary for the expected use and loading on the heavy use area.