

**NATURAL RESOURCES CONSERVATION SERVICE**  
**Wyoming**  
**CONSTRUCTION SPECIFICATIONS**  
**FOR**  
**HEAVY USE AREA PROTECTION**

\_\_\_\_\_  
(Owner/Operator)

\_\_\_\_\_  
(Project Title)

**GENERAL**

Installation shall be in accordance with an approved design and plan. Details of construction shown on the drawings but not included herein are considered as a part of this specification. Construction activities shall be in accordance with applicable OSHA regulations.

**SITE PREPARATION**

The area shall be cleared and stripped of all brush, roots, sod, large rock or other material not suited for foundation material for the designated heavy use area protection materials. All unsuitable materials shall be removed and disposed of in designated areas.

**EXCAVATION**

The foundation area will be excavated to the lines and grades shown on the drawings or as staked in the field. Any over-excavation will be backfilled with select material and compacted to the density of the surrounding material.

**CONCRETE**

Concrete work under these specifications shall be constructed to the dimensions, lines, and grades as shown on the drawings. The subgrade for concrete shall be prepared as shown on Wyoming Standard Plan 561-01.

Concrete compressive strength shall be at least 4000 psi at 28 days. The mix design shall be in accordance with ASTM C 94 and this specification. The concrete shall be proportioned to include not less than 6 sacks cement per cubic yard of concrete, except fly ash may be used as substitution for not greater than 20 percent of the Portland cement. Ready-mix concrete suppliers can precertify their concrete mix. When a precertified mix is used the mix number will be shown on the concrete delivery ticket. Non certified ready-mix suppliers shall furnish mix design and concrete cylinder test break data for Engineer approval prior to placement.

Cement shall be low alkali Type II or IIA Portland cement.

Fly ash shall conform to requirements of ASTM C 618 as applicable.

Coarse aggregate shall be maximum size of 1-1/2 inches per designations in ASTM C 33.

Air entrainment conforming to the requirements of ASTM C 260, shall be used. The air content shall be 5 to 7 percent.

Forms shall conform to the shapes, lines, and dimensions as shown on the drawings. They shall be braced and/or tied together so as to maintain position and shape and be sufficiently tight to prevent leakage of mortar. Forms shall be thoroughly oiled or wetted and cleaned of debris prior to placement of concrete

Reinforcing steel deformed bars shall meet the requirements of ASTM A 615 and welded wire reinforcement shall meet the requirements of ASTM A 185. All reinforcement shall be free from rust, oil, grease, paint or other deleterious matter. Items to be embedded in the concrete shall be positioned

accurately and firmly anchored to prevent displacement during placement of concrete. The minimum splice length for deformed bars is 30 bar diameters and for welded wire mesh the larger of 6 inches or 2 mesh spacings.

Concrete shall be deposited as closely as possible to its final position and shall be worked into the corners and angles of the forms and around all reinforcement and embedded items in a manner to prevent segregation of aggregates or excessive laitance. Consolidation of concrete shall be accomplished by means of internal type mechanical vibrators, rodding, spading, or hand tamping. Concrete slump shall be in the range of 3 inches plus or minus 1 inch, unless cylinder test break data is submitted showing that compressive strength can be achieved with the higher slump.

Construction joints shall be provided as shown in the drawings. Joints shall be thoroughly cleaned and laitance removed before a new pour is made. Each joint shall be wetted immediately before the placing of new concrete.

Expansion and contraction joints shall be located and sealed as shown on the drawings.

The use of preformed elastomeric compression joint seals shall meet the requirements of ASTM D 2628. A lubricant/adhesive is required when installing the preformed seal into the joint according to ASTM D 2835. Seals fabricated from fuel resistant materials are to be used in areas where fuel spillage may be expected.

The use of a hot applied, field-poured, rubberized asphalt sealant shall meet the requirements of Federal Specification SS-S-1401C. However, asphalt based sealants shall not be used in areas where fuel or lubricant spillage is expected. Separating material in the form of adhesive backed tape or low strength plastic strips shall be installed to prevent the field poured sealant from bonding to the bottom of the sealant area. These materials should have a melting point at least 5 degrees Fahrenheit higher than the pouring temperature of the sealant and should be approximately 1/8 inch wider than the nominal width of the sealant joint. If there is any doubt about the compatibility of the separating material and the sealant, a trial joint may be sealed during the equipment evaluation to ensure the material will perform as desired.

All joints shall be sawed with a self-propelled concrete saw. After the initial sawing to control cracking of the concrete, the cuts shall be inspected for spalling. Spalls that extend more than 1/4 inch horizontally from the sidewall of the initial cut shall be repaired. Void areas caused by honeycombing of the concrete must also be patched to provide a solid joint sidewall for the sealant to bond. After the required curing period, the initial saw cut shall be widened to the size joint specified. The depth of cut shall be uniform and the width shall not vary along the length of the joint. Following the sawing operation, the joints shall be sandblasted to remove laitance, curing compound, sawing dust, and other foreign debris from the joint sidewalls and from the pavement surface adjacent to the joint to a width of approximately 1 to 2 inches.

Finishing. After the concrete has been consolidated, the unformed surfaces shall be given a wood float or waffle type finish. Immediately after form removal, formed surfaces shall be cleaned of all defective concrete and effectively repaired.

Protection and Curing. Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. Exposed surfaces shall be kept continuously moist for the entire period. For formed surfaces, the protection may be accomplished by leaving the forms in place and keeping them wet for the entire curing period. Moisture shall be maintained by sprinkling, flooding, or fog spraying or by covering with continuously moistened canvas, cloth mats, straw, earth, or other approved material. In lieu of water curing, the concrete shall be cured by spraying with an approved sealing compound. The sealing compounds shall be applied as soon as practicable after the concrete is finished. The sealing compound shall meet or exceed the requirements of ASTM C 309. All surfaces shall be kept moist until the compound is applied.

