

NATURAL RESOURCES CONSERVATION SERVICE
Wyoming
CONSTRUCTION SPECIFICATIONS
FOR
STRUCTURE FOR WATER CONTROL
(STEEL STRUCTURE)

Owner/Operator

Project/Title

GENERAL

Installation shall be in accordance with an approved design and plan. Construction details 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.

EXCAVATION

The foundation area will be cleared of all roots, brush, sod and debris. The cut-off trench and wing wall trench shall be excavated to allow the placement of the structure 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. The structure shall be placed on a firm foundation. Unsuitable materials shall be removed.

METAL

Unless otherwise specified in the drawings or within this specification, materials shall conform to one or more of the following specifications:

A. Structural Steel

- (1) Structural steel shall conform to ASTM Specification A-36.
- (2) High-strength low-alloy structural steel shall conform to ASTM Specification A-242 or A-588.

- (3) Structural steel shall conform to ASTM Specification A-36.
- (4) High-strength low-alloy structural steel shall conform to ASTM Specification A-242 or A-588.
- (5) Carbon steel plates of structural quality to be bent or formed cold shall conform to ASTM Specification A-283, Grade C.
- (6) Carbon steel sheets of structural quality shall conform to ASTM Specification A 1011, Grade 40, or A 1008, Grade 40.
- (7) Carbon steel strips of structural quality shall conform to ASTM Specification A 1011, Grade 36.

B. Commercial or Merchant Quality Steel
 Commercial or merchant quality steel shall conform to the requirements of the applicable ASTM Specification listed below:

<u>Product</u>	<u>ASTM Specification</u>
Carbon steel bars	A 575, Grade M 1015 to Grade M1031
Carbon steel sheets	A 1011
Carbon steel strips	A 1011
Zinc-coated carbon steel sheets	A 653 or A 924

C. Aluminum Alloy

Aluminum alloy products shall conform to the requirements of the applicable

ASTM Specifications listed below.
 Unless otherwise specified, Alloy 6061-T6 shall be used.

<u>Product</u>	<u>ASTM Specification</u>
Standard structural shapes	B 308
Extruded structural pipe and tube	B 429
Extruded bars, rods, shapes, and tubes	B 221
Rolled or cold-finished bars, rods, and wire	B 211
Sheet and plates	B 209

D. Fabrication

Fabrication of structural steel shall conform to the requirements of Section 123 of the “Specifications for the Design, Fabrication and Erection of Structural Steel for the Buildings (Riveted, Bolted, and Arc Welded Construction)”, American Institute of Steel Construction.

Fabrication of structural aluminum shall conform to the requirements in the Aluminum Construction Manual, “Specifications for the Aluminum Structures,” Section 6 and Section 7, The Aluminum Association, November, 1967.

E. Welding

Steel welding electrodes shall conform to the requirements of American Welding Society Specification AWS A5.1. "Specification for Mild Steel Covered Arc-Welding Electrodes," except that they shall be uniformly and heavily coated (not washed) and shall be of such a nature that the coating will not chip or peel while being used with the maximum amperage specified by the manufacturer.

Aluminum welding electrodes shall conform to the requirements of American Welding Society Specification AWS A5.10, "Specification for Aluminum and Aluminum-Alloy Welding Rods and Bare Electrodes."

F. Cleaning and Painting of Metal Work

All metal surfaces shall be prepared for painting by removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants from surfaces with solvents or commercial cleaners using various methods of cleaning, such as wiping, dipping, steam cleaning, or vapor degreasing. After degreasing is completed, sand or grit blasting shall be performed to remove all dirt, rust, mill scale, and other foreign material or residue. After cleaning, the metal surfaces shall be painted with two coats of coal tar epoxy at a dry-film thickness of 8 mils per coat. The coal tar epoxy shall have a minimum of 75 percent solids, by volume, and conform to the requirements of Specification No. 16, Type 1, Class II, of the Steel Structures Painting Council. (Note: Galvanized surfaces require a pretreatment vinyl acid wash primer before applying paint. Sandblasting of aged galvanized surfaces does not require a vinyl wash treatment.).

PIPE MATERIALS

Fittings that are welded during fabrication shall be accomplished in a good workmanship like manner resulting in a continuous smooth surface finish. All welding of pipe materials to the structure shall conform to the requirements of

American Welding Society (AWS) specification for the materials being used.

Corrugated steel pipe shall be metallic zinc coated, aluminum coated, or aluminum-zinc alloy coated conforming to the requirements of ASTM A 742, A 760, A 761, A 762, A 849, A 875, A 885, and A 929 for the specified type, class, fabrication of pipe and coating. Polymer-coated pipe shall be coated on each side with a minimum thickness of 0.01 inches (10 mils), designated as grade 10/10 in ASTM A 762.

Aluminum corrugated pipe shall conform to the requirements of ASTM B 745, B 746 or B 790 for the specified pipe sheet thickness, shape type, and fabrication method. Bituminous coatings when specified shall conform to the requirements of ASTM A 849.

When pressure tight polyvinyl chloride (IPS, PIP or Schedule pipe) or high pressure polyethylene pipes are to be attached to a metal structure a weld on starter coupler or weld on wedge tight flange adapter will be welded to the steel structure.

Ribbed low pressure plastic pipe is to be attached with a rolled steel insert which will be welded to the structure. The inside diameter of the plastic pipe shall be equal to the outside diameter of the metal insert. Attachment requirements shall be outlined on the drawings.

BACKFILL

Backfill materials shall be free of rocks, stones, sod, brush, roots, or other perishable or unsuitable material. Cobble and rock fragments having a maximum dimension of more than three inches shall not be used within 1 foot of the structure. To the extent they are suitable excavated materials will be used to complete necessary backfills.

The moisture content of fill material shall be maintained within the limits required to prevent the adherence of the fill material to the plate (shoe) of the hand compaction equipment and

ensure the crushing and blending of the soil clods. Generally when soil material is squeezed in the hand it will retain a ball shape, but there will not be free water on the surface.

Supplemental water, when required, shall be applied to get water uniformly dispersed throughout the fill materials.

The fill placed around the structure will be brought up at approximately uniform height on all sides of the structure. Hand directed tamper compacted fills shall be placed in layers not exceeding 4 inch thickness prior to being compacted. The backfill material shall be compacted to a density equal to that of the adjacent ground. Heavy compaction equipment shall not be operated within 2 feet of any structure. Hand directed tampers or compactors shall be used on areas not accessible to heavy compaction equipment and within 2 feet of any structure. The passage of heavy equipment will not be allowed over any type of conduit until the compacted backfill has been placed a minimum of two feet over the top of the pipe. The layer thickness for equipment compacted fills shall not exceed 8 inches prior to compaction.

CLEAN-UP

The site shall be cleared of all unused materials, forms, etc. needed for the construction.

ADDITIONAL SPECIFICATIONS