Construction Specifications and Materials

Bid Items 1 and 3 Construction Specifications – T-post and Structure Removal

Scope

The work shall consist of removal and disposal of t-posts, wire, fence structures currently supporting stream crossings, and materials from existing stream crossings from the designated areas. Materials may be salvaged by the contractor should they chose.

Disposal of Materials

All materials shall be disposed of in accordance with all applicable local and state regulations.

Certification and Payment

Each bid item will be separately measured and certified by NRCS staff upon completion of all work to ensure that work complies with the specifications.

Bid Item 2 Construction and Materials Specifications – Field Fence North Parcel

Scope and Specs

The work consists of installation of new wood posts in between existing wood posts, installing/tightening new wire, and replacing any structure this is deteriorated enough so as to prevent adequate support and tightening of wires.

- 6,350 feet of fencing
- Line posts shall have a minimum top diameter of 3 inches and shall be a minimum of 6 feet in length. Corner, gate and brace posts shall have a minimum top diameter of 5 inches and shall be a minimum of 7 feet in length. Braces shall have a minimum top diameter of 4 inches and shall be a minimum of 6 feet in length.
- Post spacing after new posts are installed will not exceed 10 feet
- Posts must have a minimum expected lifespan of 20 years. See NRCS Practice Specification – Fence (Code 382) below for post species and treatment options to achieve 20 year lifespan.
- Wire spacing, from top to bottom, is as follows: 42”, 30”, 23”, 16”
- Top and bottom wire will be smooth, two middle wires will be barbed

Certification and Payment

Each bid item will be separately measured and certified by NRCS staff upon completion of all work to ensure that work complies with the specifications.

Bid Item 4 Construction and Materials Specifications – Field Fence South Parcel

Scope and Specs

The work consists of installation of new wood posts in between existing wood posts, installing/tightening new wire, and replacing any structure this is deteriorated enough so as to prevent adequate support and tightening of wires.

- 6,430 feet of fencing
- Line posts shall have a minimum top diameter of 3 inches and shall be a minimum of 6 feet in length. Corner, gate and brace posts shall have a minimum top diameter of 5 inches and shall be a minimum of 7 feet in length. Braces shall have a minimum top diameter of 4 inches and shall be a minimum of 6 feet in length.
- Post spacing after new posts are installed will not exceed 10 feet
- Posts must have a minimum expected lifespan of 20 years. See NRCS Practice Specification – Fence (Code 382) below for post species and treatment options to achieve 20 year lifespan.
- Wire spacing, from top to bottom, is as follows: 42", 30", 23", 16"
- Top and bottom wire will be smooth, two middle wires will be barbed

Bid Item 5 Construction and Materials Specification – Stream Crossings

Scope and Specs

The work consists of installation of 4 PVC picket stream crossings. This includes installation of new structures of adequate strength to support the tension created by the picket crossings. All work must comply with the specs below.

- 4 stream crossings

Bid Item 6 Construction and Materials Specifications – Contingency for Fence Structure replacement

Scope and Specs

The work includes the replacement of up to 4 structures, need being determined by the contractor once they assess structure condition with respect to structure's ability to support new wire tension for the lifespan of the fence. If a structure is not expected to outlive the existing wood line posts, it should be replaced.

Mobilization and Pollution Control

This work consists of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work for which payment is provided elsewhere in the contract. Pollution control consists of all measures to adequately ensure that any chemicals, fuels, lubricants, or other potential contaminants are managed in accordance with all applicable local, state, and Federal laws.

Work shall be completed at a time when site conditions are dry enough to allow for minimal soils disturbance from equipment and construction activities. If large areas of bare mineral soil are exposed, contractor will be responsible for remediating such damage. It is understood that some disturbance will be unavoidable as a part of construction activities. A recommended seed list has been attached.

Practice Specification
Fence (Code 382)
Standard Wire Fence

GENERAL

Installation shall be in accordance with an approved plan. Details of construction shown on the drawings but not include herein are considered as part of these specifications. Construction activities shall be in accordance with applicable OSHA regulations.

All materials will be new, with the exception of railroad ties used for corners or braces.

Prior to construction the fence lines shall be cleared of any possible obstruction that would hinder the fence placement and operation.

The soil surface along the fence line shall be relatively smooth such that placement of the bottom fencing member does not exceed the maximum fence member to soil surface spacing specified.

The fence materials shall have an expected life of at least 10 years with routine maintenance. All wood materials except Orange Osage, Western Red Cedar, Juniper and Black Locust that have contact with the soil shall be treated with an EPA-registered wood preservative. Wood posts shall be treated from the butt end of the post to distance of at least 30 inches for line posts and 36 inches for all corner, gate and brace posts. Refer to Table 1 for the life expectancy of treated versus untreated wood posts.

MATERIALS

Wood Posts. Line posts shall have a minimum top diameter of 3 inches and shall be a minimum of 6 feet in length. Corner, gate and brace posts shall have a minimum top diameter of 5 inches and shall be a minimum of 7 feet in length. Braces shall have a minimum top diameter of 4 inches and shall be a minimum of 6 feet in length.

Table 1. Life Expectancy of Untreated and Treated Fence Posts (Years)

Kind of Wood	Un-treated	Pressure Treated	Hot and Cold Bath	Cold Soak
Western Red Cedar	12-15	20-25	20-25	-
Lodgepole & Ponderosa Pine	2-4	20-25	15-20	10-20
Aspen or Cottonwood	1-3	15-20	10-15	5-10
Douglas Fir & Western Hemlock	3-6	20-35	15-25	10-20

Steel Posts. Steel line posts shall be the “T”, “U” or “Y” type with a welded or riveted anchor plate near the bottom (minimum 18 inches square area) and have suitable corrugations, knobs, studs or grooves for fastening the wire. Line posts shall weigh at least 1.25 pounds per linear foot of length and shall be a minimum of 5.5 feet long.

Barbed Wire. Barbed wire shall be composed of two strands of 12.5-gauge zinc coated wire wrapped around each other, with 2-point 14 gauge barbs spaced no more than 5 inches apart conforming to ASTM A 121.

Smooth Wire. Smooth wire shall be a single steel wire of 9-gauge or heavier, two wrapped strands of 12.5-gauge or heavier wire or 12.5-gauge or heavier hi-tensile wire. Wire shall have a minimum tensile strength of 45,000 psi.

Wire Panel Fasteners. Staples shall be 9-gauge or heavier and have a minimum length of 1.5 inches, except 1.0 inch staples are allowed on very hard woods. Fasteners for use with steel posts shall be 12-gauge or heavier zinc coated wire.

INSTALLATION

The fence shall be reasonably straight and shall not deviate more than 12 inches between any corner and gate or line brace assembly.

Post Depth. Line steel posts shall be set a minimum depth of 1.5 feet and wood line posts shall be set to a minimum depth of 2 feet, unless otherwise specified. Gate, corner and brace posts shall be set to a minimum depth of 3 feet, unless otherwise specified. Steel pipe and angle section posts shall be embedded in a 12-inch circular or square concrete pier, except when set in firm rock.

Post Spacing. The maximum post spacing interval shall be 20 feet on fences without fence stays, 25 feet with one stay between posts and 30 feet with two stays between posts.

Line Bracing. Line brace assemblies shall be located at all corners, gates and abrupt changes in vertical topography (generally considered as 15 degrees). On straight reaches of fencing line braces shall be installed at a spacing of no more than 1300 feet.

Wire Spacing. Wire spacings are as follows, unless otherwise specified:

Table 2. Wildlife Barbed Wire Fence

Wire Description	Spacing Measured From Groundline (inches)			
4 -wire	16	23	30	42

Wire Fasteners. Staples shall be driven diagonally into the wood grain of the post. Space shall be left between the post and the staple to allow movement of the wire. Fasteners on steel posts shall be snug enough to prevent vertical movement of the wire on the post.

Drainageways. In crossing drainageways or depressions a weight or deadman anchor shall be fastened to the fence to maintain the required spacing interval or additional wires shall be added to maintain the required minimum wire height from the groundline.

WILDLIFE FENCES

In areas commonly used by wildlife, fencing should be designed to facilitate passage of wildlife species without injury. The bottom wire will be smooth and a minimum of 16” from the ground to allow for the passage of antelope and fawn deer. Spacing between the top two wires will be 12” to reduce instances of entanglement (see Table 4).