Custer Gallatin National Forest
Admin Stock Facility Fence Improvements
Specifications

USDA Forest Service, Region 1
Custer Gallatin National Forest
Beartooth, Gardiner, Yellowstone Ranger Districts
Stillwater County and Park County, Montana

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CGNF ADMIN STOCK FACILITY FENCE IMPROVEMENTS

SECTION 000100 - MOBILIZATION

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes: Preparatory work and operations, including those necessary to the movement of personnel, equipment, supplies and incidentals to the project site; and for other work and operations which must be performed or costs incurred prior to beginning work on the various items on the project site.

1.2 PRODUCTS

A. There are no applicable requirements.

1.3 EXECUTION

A. There are no applicable requirements.

1.4 MEASUREMENT AND PAYMENT

A. Units: Progress payments will be made as follows:

1. When 5% of the original Contract amount is earned from other bid items, 50% of the amount bid for mobilization or 5% of the original Contract amount, whichever is lesser, will be paid.
2. When 10% of the original Contract amount is earned from other bid items, 100% of the amount bid for mobilization or 10% of the original Contract amount, whichever is lesser, will be paid.
3. Upon completion of work for the project, payment of the amount bid for mobilization in excess of 10% of the original Contract amount will be paid.
4. The total sum of all payments shall not exceed the original Contract amount bid for mobilization, regardless of the fact that the Contractor may have shut down the work on the project or moved equipment away from the project and then back again.

B. Basis of payment

1. Payment: Prices and payment will be full compensation for the work described in this section. Payment will be made under:

Pay Item	Pay Unit
(100) Mobilization….....	Lump Sum

END OF SECTION

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SECTION 010250 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 Measurement and Payment – Measurement and payment for contract work will be made only for and under those pay items included in the SCHEDULE OF ITEMS. All other work and materials will be considered as included in the payment for items shown.

A. When more than one class size, or thickness is specified in the SCHEDULE OF ITEMS for any pay item, suffixes will be added to the item number to differentiate between items to be bid.

1.2 Determination of Quantities – The following methods of measurement are used to determine contract quantities for payment.

A. For individual construction items, longitudinal and lateral measurements for area computations will be made horizontally or corrected to horizontal measurement unless otherwise specified. Measurements for seeding, mulching, geotextiles, netting, erosion control, blankets, and sodding will be along slope lines.

B. Structures will be measured according to neat lines SHOWN ON THE DRAWINGS or as altered by the COR in writing to fit field conditions.

C. For Standard manufactured items, such as fence, wire, plates, rolled shapes, pipe conduits, etc., identified by gauge, weight, section dimensions, etc., such identification shall be considered the nominal weights or dimensions. Unless controlled by tolerances in cited specifications, manufacturer's tolerances will be accepted.

1.3 Unit of Measurement – Payment will be by units defined and determined according to U.S. Standard measure as follows:

A. Acre – Make longitudinal and transverse measurements for area computations horizontally.

B. Cubic Yard – A measurement computed by one of the following methods:

1. Excavation, Embankment, or Borrow – The measurement computed by one of the average end area method from measurements made longitudinally along a centerline or reference line.
2. Material in Place or Stockpile - The measurement computed with dimensions of the in-place material.
3. Material in the Delivery Vehicle - The measurement computed using measurements of material in the hauling vehicles at the point of delivery. Vehicles shall be loaded to at least their water level capacity. Leveling of the loads may be required when vehicles arrive at the delivery point.

C. Cubic Yard Mile – A combination of linear and volumetric measurement meaning the movement of a cubic yard of material 1 mile.

D. Each – One complete unit, which may consist of one or more parts.

E. Gallon – The quantity may be measured by any of the following methods:

1. Measured volume container.
2. Metered volume. Use an approved metering system.
3. Commercially packaged volumes.

F. Hour – Measurement will be for the actual number of hours ordered and performed by the Contractor.

G. Linear Foot – Measure from end to end, parallel to the base or foundation being measured, or horizontal.

H. MFBM – One thousand board feet measure based on nominal widths, thickness, and extreme usable length of each piece of lumber or timber actually incorporated in the job.

I. Mile – Measure horizontal along the centerline of each roadway, approach road, or ramp.

J. Pound – If sacked or packaged material is furnished, the net weight as packed by the manufacturer may be used.

K. Square Foot - Measure on a plane parallel to the surface being measured or horizontal.

L. Square Yard – Measure on a plane parallel to the surface being measured or horizontal.

M. Station – One hundred linear feet measured horizontally.

N. Station Yard – A combination of linear and volumetric measurement meaning the movement of a cubic yard of material one station.

O. Thousand Gallons Mile – A combination of linear and volumetric measurement meaning the movement of 1,000 gallons of material 1 mile.

P. Ton – Short ton consisting of 2,000 pounds.

Q. Ton Mile – A combination of linear and weight measurement meaning the movement of 1 ton of material 1 mile.

1.4 Methods of Measurement – One of the following methods of measurement for determining final payment is DESIGNATED on the SCHEDULE OF ITEMS for each pay item:

A. Contract Quantities (CQ) And Design Quantities (DQ) – These quantities denote the final number of units to be paid for under the terms of the contract. They are based upon the original design data available prior to advertising the project. Original design data include the preliminary survey information, design assumptions, calculations, drawings, and the presentation in the contract. Changes in the number of units SHOWN in the SCHEDULE OF ITEMS may be authorized under any of the following conditions:

1. As a result of changes in the work authorized by the Contracting Officer.
2. As a result of the Contracting Officer determining that errors exist in the original design data used to determine designed quantities that cause a pay item to change by more than 15 percent.
3. As a result of the Contractor submitting to the Contracting Officer a written request showing evidence of errors in the original design data used to determine design quantities that cause a pay item total to change by more than 15%. The evidence must be verifiable and consist of calculations, drawings, or other data that show how the designed quantity is believed to be in error.

B. Staked Quantities (SQ) – These quantities are determined from staked measurements prior to construction.

C. Actual Quantities (AQ) – These quantities are determined from measurements of completed work.

D. Vehicle Quantities (VQ) – These quantities are measured or weighed in hauling vehicles.

E. Lump Sum Quantities (LSQ) – These quantities denote one complete unit of work as required by or described in the contract, including necessary materials, equipment, and labor to complete the job. They will not be measured.

PART II – PRODUCTS (Not Applicable).

PART III – EXECUTION (Not Applicable).

END OF SECTION

USDA FOREST SERVICE, R-1
CGNF ADMIN STOCK FACILITY FENCE IMPROVEMENTS

SECTION 014000 – QUALITY CONTROL AND QUANTITY MEASUREMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Scope – This work shall consist of providing quality control in conformance with the Inspection of Construction provisions of this contract to ensure compliance with the drawings, specifications, and provisions of the contract, and measuring the quantities of completed work in conformance with the provisions of the applicable specifications. The Contractor shall provide all personnel, equipment, tests, and reports necessary to meet the requirements of this specification.

B. Measurement and Payment – No separate payment will be made for the work included under this section. Payment for this work is considered incidental to other items of work.

1.2 PRODUCTS

A. There are no applicable requirements.

1.3 EXECUTION

A. There are no applicable requirements.

END OF SECTION

USDA FOREST SERVICE, R-1
CGNF ADMIN STOCK FACILITY FENCE IMPROVEMENTS

SECTION 323120 - STOCK GATE

PART 1 - GENERAL

1.1 SUMMARY

A. This work shall consist of furnishing and installing pre-fabricated road closure gates, accessories, support post, locking posts, and rail barriers. The specific gate manufacturer, type, size, gauge, materials, location and orientation of the gate shall be approved by the Contracting Officer prior to ordering and initiating installation. The color of the Gates and Posts shall be Green as approved by the Contracting Officer.

1.2 SUPPLIERS OF GATES

A. Provide gates of same manufacturer's throughout all sites.

1.3 SUBMITTALS

A. Submit catalog data, shop drawings or detailed information showing compliance with these specifications and drawings.

B. Submit manufacturers instruction for gate installation.

1.4 MEASUREMENT AND PAYMENT

A. The QUANTITY to be measured shall be the number of gates of the size designated in the schedule of items and completed in place and accepted. Measurement of the unit shall include all materials including the gate, posts, concrete, and accessories.

PART 2 - PRODUCTS

2.1 GATES

A. Heavy Duty steel horizontal rails with pentagon design.

B. Height: 52-inches.

C. Frame: 1.66 O.D. 13-gauge Tube.

D. Horizontal Rails: 5 pentagonal, 14-gauge high strength steel.

E. Hinges: ¾” x 12” threaded-rod hinge or 1/4" x 3" welded to steel post, 180-deg. swing. Furnish a minimum of three hinges per gate.

F. Latch: 33" chain with keeper. Deep Creek Trailhead 6 ft wide stock gate to include two way gate latch.

G. Stays: 2-14 ft. and 3-16 ft.

H. Length: as specified on the Schedule of Items and as shown in the Plans.

I. Manufacture: Power River "Classic" Gate meets the above specification and is preapproved. Powder River Classic or approved equal.

J. Color: shall be green as approved by the Contracting Officer.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Welding required in assembling gates shall be done in accordance with the best modern practice and the applicable requirements of AWS D1.1.

B. After assembly, nongalvanized steel pipe gates shall be cleaned and painted with one coat of zinc-rich primer and two coats of exterior enamel of the type and color specified in part 2 above.

C. Prior to fully installing posts, the gate and posts shall be fully aligned to ensure proper functioning upon completion.

D. Backfill shall be compacted in 6-inch layers to finished grade.

E. Upon completion of gate and post installation, the area around gate and posts shall be finish grades and raked to allow for seeding.

END OF SECTION

USDA FOREST SERVICE, R-1
CGNF ADMIN STOCK FACILITY FENCE IMPROVEMENTS

SECTION 323312 – 3 STRAND BARBLESS WIRE FENCE

PART 1 - GENERAL

1.1 SUMMARY

A. This item shall consist of furnishing and erecting a 3 strand wire fence consisting of Double Strand barbless wire of the type required in accordance with these specifications and details shown on the drawings, at the locations designated in reasonably close conformity with the lines shown on the drawings or established on the ground, or as staked by the Contracting Officer. Deep Creek Trailhead Location.

1.2 SUBMITTALS

A. Preservative retention test results shall be forwarded to the Contracting Officer with the "Certificate of Inspection of Treatment".

B. Wire Certifications.

C. Steel Pipe Post Certifications

D. Welder Certifications

1.3 MEASUREMENT AND PAYMENT

A. Payment for wire fence will be measured by the linear foot between centers of end posts excluding the length between centers of gate posts along the slope of the bottom wire completed in place and accepted.

B. Wire gates will be measured by the number of each type installed in place and accepted.

PART 2 - PRODUCTS

2.1 POSTS, BRACES AND STAYS

A. Steel T-Posts shall be 6 feet long T-posts conforming to AAHSTO M 281, 1.33 pounds per foot minimum, factory painted, with anchor plate.

B. Wood posts, braces and stays shall be of the types below.

1. Peeled and pressure treated (non-CCA) Southern Yellow, Lodge Pole, or Ponderosa pine and Douglas Fir or Western Larch, conforming to the requirements of AASHTO M 168-84. They shall be no.2 or better structural grade when graded in accordance with current rules of either the west coast lumber inspection bureau or western wood products association.

a. Pressure treatment:

1) "Empty Cell Process" as required by the American Wood Preservers Association (AWPA), with a copper naphthenate solution.

a) The copper naphthenate solution shall contain not less than 6% or more than 8% copper in the form of copper naphthenate, in petroleum oil, AWPA P9, conforming to AWPA P8 and AWPA C1 for oil-borne preservatives.

2) The minimum amounts of preservative treatment retained and the amount of penetration required shall be the minimum values that are shown in AWPA C2.

a) Methods of determining the amount of penetration and retention shall conform to AWPA C1, and AWPA C2. The amount of retention shall be determined by the assay method for timber with soil contact.

2. Peeled Juniper, Cedar, or Cypress.
3. Braces and wood stays shall be of the same material used for posts.
4. Wood stays shall be minimum 2 inch diameter, maximum 3 inch diameter.
5. Utilize post sizes as SHOWN ON THE DRAWINGS as post dimensions will vary for each facility site, fence type, and use such as brace post vs line post etc.

C. Wire Stays will not be required at the Deep Creek Trailhead Location.

2.2 WIRE

A. Smooth wire used for Brace Panel Tension Wire shall be smooth 9 gauge zinc-coated wire.

B. Each of the three strands of wire will consist of Double Strand Barbless wire, 12 ½ gauge zinc-coated wire wrapped around each other. Red Brand or approved equal.

2.3 STAPLES

A. Staples shall be 9 gauge or heavier and have a minimum length of 1-1/2 inches.

2.4 WIRE CLIPS

A. Wire clips shall be 12-1/2 gauge galvanized steel wire fasteners.

2.5 SPIKES

A. Spikes shall be 60d zinc-coated, steel-wire nails.

2.6 OBJECT MARKERS

A. Type 2 object markers (6" x 12") shall be installed on a galvanized steel plate.

B. Type 3 object markers shall be constructed on a fiberglass substrate and shall be red and white, double sided, reflectorized.

C. Object markers shall meet the requirements of the current manual on uniform traffic control devices (MUTCD) and are incidental to gate construction.

PART 3 - EXECUTION

3.1 CLEARING

A. All trees, brush and other obstacles which interfere with proper construction of the fence shall be removed in advance. Material so removed shall be removed at ground level with minimum disturbance to soil surface to protect aesthetics and prevent erosion. Slash from clearing the fence line will be scattered away from the fence line. Existing Fence to be removed and disposed of off Forest Service Lands in a lawful manner.

B. Existing fence to be removed and shall be disposed of in a lawful manner off National System Lands. The Contractor is responsible for all disposal costs and fees.

3.2 GENERAL

A. Grading along the fence line is not required. In general, the fence shall be erected on the undisturbed, natural ground. Fence wires shall not be attached to trees. Fences shall be reasonably straight and shall not deviate more than 12 inches between corner, gate or line brace assembly.

B. Install fencing as staked in field by Contracting Officers Representative.

C. When a fence line approaches a ditch, gully, or depression, the last post on level ground shall be placed close enough to the edge of the drop-off that the wire may be strung to a post in the depression without touching the ground.

D. When the depth of a depression on a fence exceeds the total vertical wire spacing over a maximum horizontal run of 2 spaces, an extra fence shall be constructed through the depression or sag bracing installed.

3.3 POSTS

A. Space interval between posts shall not exceed 12 feet for the Deep Creek Trailhead location.

B. Posts type is shown on the plans and varies per each site.

C. All wood posts (corner braces and line braces) shall be set solidly in soil to depths shown on drawings.

D. Posts may be driven if posts are not damaged during installation. Posts shall be solidly set and plumb. Loose or Damaged posts will be removed and reinstalled.

E. All steel posts (line posts) shall be driven to depths shown on drawings with the top of the anchor plate is embedded 6 inches minimum.

3.4 BRACES

A. Corner braces will be located at every change in fence line direction.

B. Line braces shall reinforce fence line structure and anchor long wire stretches which shall not exceed distances shown in tables on drawings. Braces shall be placed at abrupt changes in vertical topography (15 degrees or more change in elevation).

C. Line braces shall also be located at both sides of all gates.

D. Bracing shall be dapped 1" into posts.

E. Tension wires shall be mortised into posts, stapled, and twisted tight, leave tensioning sticks installed.

3.5 WIRE

A. Wire shall never be kinked or nicked, and shall be pulled tight with due consideration for contraction and expansion.

B. Wire spacing shall be as shown on the drawings. The wire shall be attached on the side of the post where the greatest pressure from cattle exists.

C. All line wires shall be dead-ended on gate, corner, angle, and line brace posts. The ends are to be wrapped three times around the post, stapled securely, and twisted back on the stretched wire six times.

D. Wire splices shall be wrapped six times. The wraps shall be adjacent to each other to form neat, tight wraps.

3.6 WIRE FASTENERS

A. Barbless wire shall have one staple per wire per post and two staples per wire per post in sag sections. Staples shall be driven into wooden posts as shown on the drawings angled somewhat to cross the grain.

B. Staples shall be driven into brace posts so that wire will not move.

C. Wire shall be stapled and wired to wood stays. Staples shall be driven into stays so that wire will move.

D. Wire clips shall be used to attach each wire to the steel posts.

3.7 GATES

A. Gates shall be 12 feet wide in length. Unless otherwise noted in the Plans.

B. Gates shall have the same wire spacing as the fence. Unless otherwise noted in the Plans.

C. Smooth wire shall be used for loops.

D. Object markers shall be installed on front and back sides of posts so visible from both directions of approach as shown on the drawings. Type 3 markers shall be secured to the gate as shown with galvanized smooth wire.

END OF SECTION 02822

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SECTION 323316 – CONTINUOUS PANEL FENCE

PART 1 - GENERAL

1.1 SUMMARY

A. The Contractor shall construct a continuous panel fence in accordance with these specifications and the location as shown on the drawing and as staked by the Contracting Officer. Deep Creek Admin Stock Facility.

PART 2 - PRODUCTS

2.1 POSTS

A. Line Posts shall be 2 7/8” Diameter x 8 feet in length, schedule 80 steel pipe posts.

B. Gate Posts shall be 4 ½” Diameter x 8 feet in length, 0.250 thickness steel pipe posts.

C. Post Top: A 0.280 thick plate or post cap shall be welded on top of the post to seal it. The plate or post cap shall be the same size as the diameter of the pipe and be welded continuously to the pipe.

D. Clips used to connect panels to the steel posts shall be welded on to the steel pipe posts prior to attaching panels to the posts.

2.2 PANELS

A. Panels shall be constructed of 1 ¼” rail with majority of panels when possible being 20 feet in length. Panels shall be 5 rail 48” in height with approximately 10 ¾” spacing. All panels shall be installed on posts with clips. Connection clips should be welded onto the steel post prior to connecting the panel to the post. Contractor to submit continuous panel specifications and shop drawings for approval and shall be approved prior to ordering and fabrication of panels. Mountain View Metal Works provides a preapproved panel that meets the requirements for the Deep Creek Admin Stock Site Project application.

B. All metal used to fabricate metal panels shall be certified that it is non radioactive.

2.3 GATES

A. Gates that are required for the Continuous Panel Fence, that are designed and fabricated specifically to be installed with the continuous panel fence may be substituted in place of the standard metal stock gates specified in section 323120. The continuous panel gates shall be constructed by the same manufacturer that is fabricating the continuous panels. Gates must be of the same material type, size, dimension and style of the continuous panel. Contractor to submit continuous panel gate specifications and shop

drawings for approval and shall be approved prior to ordering and fabrication of the gates. If approved the substituted gates shall only be used for the nine 12 foot wide gates identified for the Continuous Panel Corral System located at the Deep Creek Admin Stock Facility.

2.4 BOLTS

A. Bolts shall be 3/8" diameter of the length required.

2.5 SUBMITTALS

A. Steel Post Certifications.

B. Continuous Panel shop drawings and metal Certifications.

C. Non radioactive Metal and Materials Certification.

D. Welder Certifications.

E. Gate Certifications.

2.6 MEASUREMENT AND PAYMENT

A. Payment for continuous panel fence will be measured by the linear foot between centers of end posts excluding the length between centers of gate posts along the slope of the panel completed in place and accepted.

B. Gates will be measured by the number of each type installed in place and accepted.

PART 3 - EXECUTION

3.1 CLEARING

A. All trees, brush and other obstacles which interfere with proper construction of the fence shall be removed in advance. Material so removed shall be removed at ground level with minimum disturbance to soil surface to protect aesthetics and prevent erosion. Slash from clearing the fence line will be scattered away from the fence line. Existing Fence to be removed and disposed of off Forest Service Lands in a lawful manner.

B. Existing fence to be removed and shall be disposed of in a lawful manner off National System Lands. The Contractor is responsible for all disposal costs and fees.

3.2 GENERAL

A. Grading along the fence line is not required. In general, the fence shall be erected on the undisturbed, natural ground. The style of fence construction including the post spacing and pole attachment method shall be as shown on the drawings.

3.3 POST SETTING

A. Post holes not larger than 16 inch diameter shall be excavated to a depth of 36 inches. Backfill shall be hand tamped around the posts so as to make the post solid and plumb. Any loose posts shall be removed and reinstalled. Posts shall be set to not exceed 10 feet in spacing.

B. Posts may be driven if posts are not damaged during installation. Posts shall be solidly set and plumb. Loose or Damaged posts will be removed and reinstalled.

C. Posts shall be set to not exceed 10 feet between posts.

D. Posts shall be set at 3 feet depth.

3.4 POST AND PANEL INSTALLATION

A. All panels shall be installed on steel pipe posts. All panels shall be installed on posts with clips. Connection clips should be welded onto the steel post prior to connecting the panel to the post. Connection clips shall be used for corner connections of the panels. The completed fence shall be neat and uniform in appearance and solidly installed. Panels should be installed to be approximately 10 inches off the ground.

3.5 CLEANUP

A. When the fence has been installed, complete, the general area shall be cleaned up to present a finished appearance.

END OF SECTION

USDA FOREST SERVICE, R-1
CGNF ADMIN STOCK FACILITY FENCE IMPROVEMENTS

SECTION 323317 – STEEL PANEL TEMPORARY FENCE

PART 1 - GENERAL

1.1 SUMMARY

A. The Contractor shall construct a temporary steel panel fence in accordance with these specifications and the location as shown on the drawing and as staked by the Contracting Officer. Deep Creek Admin Stock Facility.

PART 2 - PRODUCTS

2.1 POSTS

A. Posts shall be sound, peeled, treated, free from rot, disease, or insects. Posts shall have a 6-inch minimum tip diameter. Posts which are set in the ground, or concrete footings, shall have at least 3 feet of the largest end of the post treated with a wood preservative to protect it from insects and decay. Acceptable methods of treatment are:

B. Lumber preservatives and treatment methods shall meet the requirements of AASHTO M133.

C. All lumber shall be pressure treated using the "Empty Cell Process" as required by the American Wood Preservers Association (AWPA), with a copper naphthenate solution. The copper naphthenate solution shall contain not less than 6% or more than 8% copper in the form of copper naphthenate, in petroleum oil, AWPA P9, conforming to AWPA P8 and AWPA C1 for oil-borne preservatives.

D. The minimum amounts of preservative treatment retained and the amount of penetration required for the Species Indicated on the Drawings, shall be the minimum values that are shown in AWPA C2. Methods of determining the amount of penetration and retention shall conform to AWPA C1, and AWPA C2. The amount of retention shall be determined by the assay method for timber with soil contact. Test results shall be forwarded to the Contracting Officer with the "Certificate of Inspection of Treatment."

E. Before any lumber is placed in the work, the Contractor shall furnish to the Contracting Officer a "Certificate Confirming Compliance for Retention and Penetration", issued by an approved inspection agency, testing laboratory or treating plant, for each charge, in each shipment.

F. Posts shall be 6 inch minimum diameter, 8 feet in length, set at 3 feet deep, and no more than 12 feet between posts.

2.2 PANELS

A. Panels shall be constructed of 14 gauge High Tensile Steel, Heavy Duty Panel 12 feet width x 64 inches height. Panels shall be a 6 rail panel. Wood Posts shall be placed at 12 foot intervals to provide support to the steel panel temporary fence.

B. Manufacture: Powder River “Classic” Panel meets the above specification and is preapproved. Powder River Classic or approved equal.

C. Color: shall be green as approved by the Contracting Officer.

2.3 SUBMITTALS

A. Submit catalog data, shop drawings, or detailed information showing compliance with these specifications and drawings. Post Certifications and Preservative retention test results shall be forwarded to the Contracting Officer with the "Certificate of Inspection of Treatment."

B. Submit manufacturers instruction for panel installation.

2.4 MEASUREMENT AND PAYMENT

A. Payment for steel panel temporary fence will be measured by the linear foot between centers of end posts excluding the length between centers of gate posts along the slope of the panel completed in place and accepted.

B. Gates will be measured by the number of each type installed in place and accepted.

PART 3 - EXECUTION

3.1 CLEARING

A. All trees, brush and other obstacles which interfere with proper construction of the fence shall be removed in advance. Material so removed shall be removed at ground level with minimum disturbance to soil surface to protect aesthetics and prevent erosion. Slash from clearing the fence line will be scattered away from the fence line. Existing Fence to be removed and disposed of off Forest Service Lands in a lawful manner.

B. Existing fence to be removed and shall be disposed of in a lawful manner off National System Lands. The Contractor is responsible for all disposal costs and fees.

3.2 GENERAL

A. Grading along the fence line is not required. In general, the fence shall be erected on the undisturbed, natural ground. The style of fence construction including the post spacing and pole attachment method shall be as shown on the drawings.

3.3 POST SETTING

A. Post holes not larger than 16 inch diameter shall be excavated to a depth of 36 inches. Backfill shall be hand tamped around the posts so as to make the post solid and plumb. Any loose posts shall be removed and reinstalled.

B. Posts may be driven if posts are not damaged during installation. Posts shall be solidly set and plumb. Damaged posts will be removed and new post reinstalled.

C. Posts shall be set to not exceed 12 feet in spacing.

D. Posts shall be set at 3 feet depth.

3.4 POST AND PANEL INSTALLATION

A. All panels shall be installed and connected and secured to wood posts utilizing clamps to prevent movement and provide a solidly installed fence.

3.5 CLEANUP

A. When the fence has been installed, complete, the general area shall be cleaned up to present a finished appearance.

END OF SECTION

USDA FOREST SERVICE, R-1
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SECTION 323322 – POST AND POLE WITH BARBLESS WIRE FENCE

PART 1 - GENERAL

1.1 SUMMARY

A. The Contractor shall construct a post and pole fence in accordance with these specifications and the location as shown on the drawing and as staked by the Contracting Officer. Hayes McPherson Admin Stock Facility.

1.2 POSTS

A. Posts shall be sound, peeled, treated, Lodgepole Pine, free from rot, disease, or insects. Posts shall have a 6-inch minimum tip diameter. Posts which are set in the ground, or concrete footings, shall have at least 3 feet of the largest end of the post treated with a wood preservative to protect it from insects and decay. Acceptable methods of treatment are:

B. Lumber preservatives and treatment methods shall meet the requirements of AASHTO M133.

C. All lumber shall be pressure treated using the "Empty Cell Process" as required by the American Wood Preservers Association (AWPA), with a copper naphthenate solution. The copper naphthenate solution shall contain not less than 6% or more than 8% copper in the form of copper naphthenate, in petroleum oil, AWPA P9, conforming to AWPA P8 and AWPA C1 for oil-borne preservatives.

D. The minimum amounts of preservative treatment retained and the amount of penetration required for the Species Indicated on the Drawings, shall be the minimum values that are shown in AWPA C2. Methods of determining the amount of penetration and retention shall conform to AWPA C1, and AWPA C2. The amount of retention shall be determined by the assay method for timber with soil contact. Test results shall be forwarded to the Contracting Officer with the "Certificate of Inspection of Treatment."

E. Before any lumber is placed in the work, the Contractor shall furnish to the Contracting Officer a "Certificate Confirming Compliance for Retention and Penetration", issued by an approved inspection agency, testing laboratory or treating plant, for each charge, in each shipment.

F. Utilize post sizes as SHOWN ON THE DRAWINGS as post dimensions will vary for each Stock Facility site, fence type, and use such brace post vs line post etc.

1.3 POLES

A. Poles shall be sound Lodgepole Pine, free from rot, disease, or insects. Poles shall have a 4 inch minimum tip diameter and a 16-foot minimum length. Poles shall be peeled and trimmed smooth of limbs and snags. Poles shall be pressure treated meeting the same requirements as described for Posts in the previous section.

1. Top rail for fence shall be half round rails, 4 inch minimum tip diameter and 16 feet minimum length. As shown in the Plans.
2. Rails used for Wood Pole/Rail Gates shall be full round rails, 4 inch minimum tip diameter and 16 feet minimum length. As shown in the Plans.

1.4 BOLTS

A. Bolts shall be 3/8" diameter of the length required.

1.5 WIRE

A. Wire to be used for fence shall be Barbless Wire shall be 2 strands of 12 ½ gauge zinc-coated wire wrapped around each other. Red Brand or approved equal.

B. Smooth wire used for Brace Panel Tension Wire shall be 9 gauge zinc-coated wire.

1.6 STAPLES

A. Staples shall be 9 gauge or heavier and have a minimum length of 1-1/2 inches.

1.7 SPIKES

A. Spikes shall be 60d zinc-coated, steel-wire nails.

1.8 LAG SCREWS

A. Lag Screws shall be structural and construction rated, minimum length of 6 inches.

1.9 OBJECT MARKERS

A. Type 2 object markers (6" x 12") shall be installed on a galvanized steel plate.

B. Object markers shall meet the requirements of the current manual on uniform traffic control devices (MUTCD) and are incidental to gate construction.

1.10 SUBMITTALS

A. Preservative retention test results shall be forwarded to the Contracting Officer with the "Certificate of Inspection of Treatment."

B. Wire Certifications

1.11 MEASUREMENT AND PAYMENT

A. Payment for wire fence will be measured by the linear foot between centers of end posts excluding the length between centers of gate posts along the slope of the bottom wire completed in place and accepted.

B. Gates will be measured by the number of each type installed in place and accepted.

PART 2 - EXECUTION

2.1 CLEARING

A. All trees, brush and other obstacles which interfere with proper construction of the fence shall be removed in advance. Material so removed shall be removed at ground level with minimum disturbance to soil surface to protect aesthetics and prevent erosion. Slash from clearing the fence line will be scattered away from the fence line. Existing Fence to be removed and stacked in areas on site that are approved by the Contracting Officer.

B. Existing fence shall be removed and stockpiled in designated locations as identified by the Contracting Officer.

2.2 GENERAL

A. Grading along the fence line is not required. In general, the fence shall be erected on the undisturbed, natural ground. The style of fence construction including the post spacing and pole attachment method shall be as shown on the drawings.

B. Install fencing as staked in the field by Contracting Officers Representative.

2.3 POST SETTING

A. Post holes not larger than 16 inch diameter shall be excavated to a depth of 36 inches. Backfill shall be hand tamped around the posts so as to make the post solid and plumb. Any loose posts shall be removed and reinstalled.

B. Posts may be driven if posts are not damaged during installation. Posts shall be solidly set and plumb. Damaged posts will be removed and new post reinstalled.

C. Posts shall be set to not exceed 14 feet in spacing.

D. Posts shall be set at 3 feet depth.

2.4 POST INSTALLATION

A. Poles shall be overlapped and connected to the post using structural and construction rated 6” lag screws. The completed fence shall be neat and uniform in appearance and solidly installed.

2.5 BRACES

A. Corner braces will be located at every change in fence line direction.

B. Line braces shall reinforce fence line structure and anchor long wire stretches which shall not exceed distances shown in tables on drawings. Braces shall be placed at abrupt changes in vertical topography (15 degrees or more change in elevation).

C. Line braces shall also be located at both sides of all gates.

D. Bracing shall be dapped 1" into posts.

E. Tension wires shall be mortised into posts, stapled, and twisted tight, leave tensioning sticks installed.

2.6 WIRE

A. Wire shall never be kinked or nicked, and shall be pulled tight with due consideration for contraction and expansion.

B. Wire spacing shall be as shown on the drawings.

C. All line wires shall be dead-ended on gate, corner, angle, and line brace posts. The ends are to be wrapped twice around the post, stapled securely, and twisted back on the stretched wire six times.

D. Wire splices shall be wrapped six times. The wraps shall be adjacent to each other to form neat, tight wraps.

2.7 GATES

A. Gate Types will vary See Gate Specifications Sec 323120 for Standard Metal Stock Gate Specifications, and Plans for Metal Stock Gate, Pole and Rail Gate Details.

2.8 CLEANUP

A. When the fence has been installed, complete, the general area shall be cleaned up to present a finished appearance.

END OF SECTION

USDA FOREST SERVICE, R-1
CGNF ADMIN STOCK FACILITY FENCE IMPROVEMENTS

SECTION 323332 – BARBED WIRE FENCE AND GATES

PART 1 - GENERAL

1.1 SUMMARY

A. This item shall consist of furnishing and erecting wire fences and gates of the type required in accordance with these specifications and details shown on the drawings, at the locations designated in reasonably close conformity with the lines shown on the drawings or established on the ground. Meyers Creek Admin Stock Facility.

1.2 REFERENCE SPECIFICATIONS

A. The publications listed below form a part of this specification to the extent reference. The publications are referred to in the text by the basic designation only.

1. ASTM A121 Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.

1.3 SUBMITTALS

A. Preservative retention test results shall be forwarded to the Contracting Officer with the "Certificate of Inspection of Treatment".

B. Wire Certifications.

C. Gate Closer

D. Steel Post Certifications. (Upon approval of Option #4)

E. Welder Certifications. (Upon approval of Option #4)

1.4 MEASUREMENT AND PAYMENT

A. Payment for wire fence will be measured by the linear foot between centers of end posts excluding the length between centers of gate posts along the slope of the bottom wire completed in place and accepted.

B. Wire gates will be measured by the number of each type installed in place and accepted.

PART 2 - PRODUCTS

2.1 POSTS, BRACES AND STAYS

A. Steel T-Posts shall be 6 feet long T-posts conforming to AAHSTO M 281, 1.33 pounds per foot minimum, factory painted, with anchor plate.

B. Wood posts, braces and stays shall be of the types below.

1. Peeled and pressure treated (non-CCA) Southern Yellow, Lodge Pole, or Ponderosa pine and Douglas Fir or Western Larch, conforming to the requirements of AASHTO M 168-84. They shall be no.2 or better structural grade when graded in accordance with current rules of either the west coast lumber inspection bureau or western wood products association.

    a. Pressure treatment:

        1) "Empty Cell Process" as required by the American Wood Preservers Association (AWPA), with a copper naphthenate solution.

            a) The copper naphthenate solution shall contain not less than 6% or more than 8% copper in the form of copper naphthenate, in petroleum oil, AWPA P9, conforming to AWPA P8 and AWPA C1 for oil-borne preservatives.

        2) The minimum amounts of preservative treatment retained and the amount of penetration required shall be the minimum values that are shown in AWPA C2.

            a) Methods of determining the amount of penetration and retention shall conform to AWPA C1, and AWPA C2. The amount of retention shall be determined by the assay method for timber with soil contact.

2. Peeled Juniper, Cedar, or Cypress.
3. Braces and wood stays shall be of the same material used for posts.
4. Wood stays shall be minimum 2 inch diameter, maximum 3 inch diameter.
5. Utilize post sizes as SHOWN ON THE DRAWINGS as post dimensions will vary for each facility site, fence type, and use such as brace post vs line post etc.

C. Wire stays shall be no. 9 twisted wire manufactured wire stays.

2.2 STEEL PIPE POST

A. Steel Pipe Post: (Used only for corner and corner braces upon approval of Option #4)

B. Size: 4 1/2" diameter x 8 feet in length, 0.250 thickness steel pipe posts. Length shall be a minimum of 8 feet with 36” set solidly in the ground.

C. Post Top: A 0.250 thick plate shall be welded on top of the post to seal it. The plate shall be the same size as the diameter of the pipe and be welded continuously to the pipe.

D. Paint: Steel Pipe Fence Post shall be painted to be silver in color.

E. Steel Pipe Posts in Specification Section 323332 to be used on the Wildlife Friendly barbwire fence at the Meyers Creek Stock Facility specifically for Corner and Corner Braces upon approval of Option #4.

2.3 WIRE

A. Barbed wire shall be 2 strands of 12 ½ gauge zinc-coated wire wrapped around each other with 2-point, 14 gauge barbs spaced not more than 5 inches apart conforming to AAHTO M 280. Red Brand or approved equal.

B. Smooth wire used for Brace Panel Tension Wire shall smooth be 9 gauge zinc-coated wire.

2.4 STAPLES

A. Staples shall be 9 gauge or heavier and have a minimum length of 1-1/2 inches.

2.5 WIRE CLIPS

A. Wire clips shall be 12-1/2 gauge galvanized steel wire fasteners.

2.6 SPIKES

A. Spikes shall be 60d zinc-coated, steel-wire nails.

2.7 OBJECT MARKERS

A. Type 2 object markers (6" x 12") shall be installed on a galvanized steel plate.

B. Object markers shall meet the requirements of the current manual on uniform traffic control devices (MUTCD) and are incidental to gate construction.

PART 3 - EXECUTION

3.1 CLEARING

A. All trees, brush and other obstacles which interfere with proper construction of the fence shall be removed in advance. Material so removed shall be removed at ground level with minimum disturbance to soil surface to protect aesthetics and prevent erosion. Slash from clearing the fence line will be scattered away from the fence line. Existing Fence to be removed and disposed of off Forest Service Lands in a lawful manner.

B. Existing fence to be removed and shall be disposed of in a lawful manner off National System Lands. The Contractor is responsible for all disposal costs and fees.

3.2 GENERAL

A. Grading along the fence line is not required. In general, the fence shall be erected on the undisturbed, natural ground. Fence wires shall not be attached to trees. Fences shall be reasonably straight and shall no deviate more than 12 inches between corner, gate or line brace assembly.

B. Install fencing as staked in field by Contracting Officers Representative.

C. When a fence line approaches a ditch, gully, or depression, the last post on level ground shall be placed close enough to the edge of the drop-off that the wire may be strung to a post in the depression without touching the ground.

D. When the depth of a depression on a fence exceeds the total vertical wire spacing over a maximum horizontal run of 2 spaces, an extra fence shall be constructed through the depression or sag bracing installed.

3.3 POSTS

A. Space interval between posts shall be 16 1/2 feet for the Meyers Creek Admin Stock Facility Fence.

B. Posts type is shown on the plans and varies per each site.

C. All wood posts (corner braces and line braces) shall be set solidly in soil to depths shown on drawings.

D. Wood Posts may be driven if posts are not damaged during installation. Posts shall be solidly set and plumb. Loose or Damaged posts will be removed and reinstalled.

E. Stays shall be placed halfway approx. (8.3 feet) between two wood posts. (Meyers Creek Facility).

F. Upon approval of Option #4, Steel pipe posts will be used in place of wood posts for all corner posts and braces. Post holes not larger than 16 inch diameter shall be excavated to a depth of 36 inches. Posts shall be plumb and solid set in a soil cement mixture that consists of 80% soil, 10% cement, and 10% water.

3.4 BRACES

A. Corner braces will be located at every change in fence line direction.

B. Line braces shall reinforce fence line structure and anchor long wire stretches which shall not exceed distances shown in tables on drawings. Braces shall be placed at abrupt changes in vertical topography (15 degrees or more change in elevation).

C. Line braces shall also be located at both sides of all gates.

D. Bracing shall be dapped 1" into posts.

E. Tension wires shall be mortised into posts, stapled, and twisted tight, leave tensioning sticks installed.

3.5 WIRE

A. Wire shall never be kinked or nicked, and shall be pulled tight with due consideration for contraction and expansion.

B. Wire spacing shall be as shown on the drawings. The wire shall be attached on the side of the post where the greatest pressure from cattle exists.

C. All line wires shall be dead-ended on gate, corner, angle, and line brace posts. The ends are to be wrapped three times around the post, stapled securely, and twisted back on the stretched wire six times.

D. Wire splices shall be wrapped six times. The wraps shall be adjacent to each other to form neat, tight wraps.

3.6 WIRE FASTENERS

A. Barbed wire shall have one staple per wire per post and two staples per wire per post in sag sections. Staples shall be driven into wooden posts as shown on the drawings angled somewhat to cross the grain.

B. Staples shall be driven into brace posts so that wire will not move.

C. Wire shall be stapled and wired to wood stays. Staples shall be driven into stays so that wire will move.

D. Wire clips shall be used to attach each wire to the steel posts.

3.7 GATES

A. Gates shall be 12 feet wide in length. Unless otherwise noted in the Plans.

B. Gates shall have the same wire spacing as the fence. Unless otherwise noted in the Plans.

C. Smooth wire shall be used for loops.

D. Object markers shall be installed on front and back sides of posts so visible from both directions of approach as shown on the drawings.

END OF SECTION 02822